Appendix A

Asset Management Plan 2025

City of North Bay

Table of Contents

Executive Summary

Scope

Municipal infrastructure is the backbone of the community, providing the foundation for the economic, social, and environmental health and growth of the community through the delivery of critical services. It enables:

- **Safe transportation** through roads, bridges, sidewalks, and transit system
- **Clean water and sanitation** via water supply, wastewater treatment, and stormwater management
- **Public safety and services** through fire stations, and police facilities
- **Community well-being** with parks, recreational facilities, and cultural facilities
- **Economic development** by supporting businesses, tourism, and efficient logistics

The goal of asset management is to deliver an adequate level of service in the most cost-effective manner to ensure service reliability to meet community expectations and regulatory compliance, reduce risks to minimize failures, safety hazards, and emergency repairs, maintain financial sustainability and stability, and to use data-driven insights to guide capital planning, maintenance schedules, and resource allocation.

The City of North Bay's (the "City") asset management plan (AMP) includes the following asset categories:

- Bridges and Culverts
- Facilities
- Fleet and Equipment
- Land Improvements
- Machinery and Equipment
- Roads Network
- Stormwater Network
- Wastewater Network
- Water Network

Significant Changes in Asset Management Plan Development

In the 2025 Asset Management Plan (AMP), the approach to identifying sustainable funding sources was refined to align more closely with O. Reg 588/17. Specifically, only grants that represent long-term, reliable commitments were included as sustainable sources. This reflects an evolution in understanding and philosophy around sustainability, ensuring that funding assumptions are realistic and compliant. As a result, the annual funding shortfall appears larger than in previous iterations.

The table below reconciles the shortfall calculated in this AMP with the shortfall that would have resulted if all funding sources used in prior AMPs were considered. Funding sources no longer included as sustainable are capital grants that, while approved, do not represent long-term guaranteed commitments and therefore cannot be relied upon in future years; such as, Investing in Canada Infrastructure Program, Connecting Links, and Northern Ontario Heritage Fund.

Annual Requirement as per 2025 AMP	$82,120,159
Total Average Annual Funding (sustainable sources only)	($39,570,000)
Average Annual Shortfall as per 2025 AMP	$42,550,159
Less: Previously Included Revenues (not considered sustainable in 2025 AMP)	($12,857,383)
Adjusted Annual Shortfall Net of Previously Included Revenues	$29,692,776
Average Annual Shortfall as per 2024 AMP	($28,847,260)
Difference in Shortfall Assuming All Previously Included Revenues	$845,516

As noted in the reconciliation above, the average annual shortfall, when considering all revenue sources previously included in the calculation of the average annual funding level, is fairly consistent with the shortfall calculated in the 2024 AMP (2.93% increase). This variance is reasonable and primarily attributable to improved condition data and updated asset replacement values. To remain in compliance with O. Reg 588/17, this revised approach to defining and determining sustainable funding sources will be applied to the calculation of the annual shortfall in all future iterations of the AMP.

Findings

The estimated overall replacement cost of the City's assets is $3.2 billion. 79% of all assets analyzed in this AMP are in fair or better condition and the assessed condition data was available for 62% of all assets. The 38% of assets without assessed condition data represents a data gap that persists in most municipalities and has been identified as an area of improvement for future asset management planning. The assets without assessed condition data used asset age to approximate condition. This is not usually accurate as age does not necessarily directly correlate to asset condition (condition assessments are essential to accurate asset management planning and is a recommendation for improvement in this AMP).

This AMP uses a combination of proactive lifecycle strategies (i.e. road network, bridges and culverts) as well as replacement only strategies (i.e. machinery and equipment) to determine the lowest cost option to maintain the current levels of service.

The estimated annual lifecycle investments required to meet current capital replacement and rehabilitation needs is $82.1 million. Based on a historical analysis of sustainable capital funding sources, the City is planning to invest, on average, $39.6 million annually towards capital projects; thereby, leaving an annual funding shortfall of $42.5 million. The average annual funding calculation includes only sustainable funding sources: tax levy, user rates, Ontario Community Infrastructure Fund (OCIF), and Canada Community Building Fund (CCBF). It excludes alternative funding sources such as reserves, grants without long-term reliable commitments, development charges. Debt is also excluded, as it is considered an important financing tool for the capital portfolio rather than a funding source.

The table below summarizes the above by asset category:

Asset Category	Replacement Cost	Annual Requirement	Average Annual Funding Capital Budget (2025-2034)	Annual Shortfall (Surplus)
Bridges and Culverts	121,453,980	1,914,857	907,896	1,006,961
Facilities	516,449,373	15,421,040	6,343,389	9,077,651
Fleet and Equipment	71,581,367	5,508,925	1,672,031	3,836,894
Land Improvements	174,324,847	8,082,204	2,453,054	5,629,150
Machinery and Equipment	43,647,325	3,704,687	1,124,421	2,580,266
Road Network	617,980,388	18,628,617	10,704,532	7,924,085
Stormwater Network	294,472,506	5,831,023	2,764,677	3,066,346
Wastewater Network	741,830,818	11,457,447	6,766,364	4,691,083
Water Network	663,475,259	11,571,359	6,833,636	4,737,723
Total	**3,245,215,863**	**82,120,159**	**39,570,000**	**42,550,159**

Findings – Continued

This AMP represents a snapshot in time and is based on the best available process, data, and information at the City. Strategic asset management planning is an ongoing and dynamic process that requires continuous support and dedicated resources.

The annual capital requirement to meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability per household is $3,499. This was calculated using the annual requirement as shown in the chart above and the number of dwelling units as per the City's 2024 Financial Information Return.

Recommendations

A financing strategy was developed to address the annual capital funding shortfall. To fully eliminate the City's infrastructure gap immediately, the required tax rate increase would be 29.3%, and the required user fee increase for water and wastewater would be 34.4% and 34%, respectively. To phase-in these changes over 10 years, the annual tax rate increase would need to be 2.60%, and the annual water and wastewater user fee increase would need to be about 3% each.

The City's Long-Term Capital Funding Policy calls for an annual increase to the general capital levy equal to 1% of the previous year's tax levy and an annual increase to water and wastewater user rates equal to 2% of the previous year's rates, less debt servicing costs, with an inflationary adjustment. This strategy is intended to gradually reduce the capital funding shortfall over time. However, based on the analysis in this AMP, these increases are not sufficient to fully address the infrastructure gap. Despite this limitation, the current policy will remain the recommended approach for now, as it provides a structured and sustainable framework for incremental progress. The policy will be revisited and brought forward to Council in 2026 for redevelopment to better align with long-term funding needs. In recent years, the policy has not been fully implemented due to a focus on limiting tax levy and water/wastewater rate increases. If applied as intended, the City's capital funding shortfall could still be reduced in 10 to 20 years, even though it would not completely eliminate the gap.

Several recommendations have been developed to guide the continuous refinement of the City's AMP. These include:

- Asset inventory data review and validation to ensure data completeness and accuracy
- The formalization of condition assessment strategies including a regular schedule for evaluations
- Implementation of risk-based decision-making as part of asset management planning and budgeting
- Continuous review, development, and implementation of optimal lifecycle management strategies
- Identification, establishment, maintenance, and review of proposed levels of service
- Develop and review short-term and long-term plans to meet capital requirements

1. Introduction

Community

The City of North Bay is a vibrant single-tier municipality in Northern Ontario known for its natural beauty, strong public services, and a balanced lifestyle. Nestled between Lake Nipissing and Trout Lake with a population of just over 52,000 residents, it is the perfect location to live, learn, work, and play. The local economy is made up of diverse industries and services. North Bay offers the benefits of urban and rural living that can provide an ideal balance for work and family life. The City has state of the art health care, a wide range of public and post-secondary education, specialty family services, retirement facilities, places of worship and cultural associations, accessible transportation, technology-infrastructure, and more. The natural environment provides the setting for all season recreational activities and special events.

An Overview of Asset Management

Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. Asset management is a strategic approach to maintaining and optimizing infrastructure assets to deliver reliable services, minimize costs, and support long-term sustainability.

Asset management objectives need to be achieved while also meeting several goals as outlined by Council:

- The effective management of the City's assets in line with corporate policies, strategies, and objectives, statutory and legislative requirements, and regulations
- Ensuring that assets are safe, appropriately accessible, well-maintained, and meet citizens' needs in a sustainable manner
- Recognizing appropriate levels and sources of capital investment required to meet the City's asset renewal and replacement needs
- Maximizing the service potential of current assets by ensuring they are used and maintained appropriately
- Achieving better value for money through evaluation processes that considers lifecycle costing
- Minimizing the City's exposure to risk as a result of asset failures

This plan provides the framework that functions along with annual budgets and financial planning needed to make the best possible decisions regarding City infrastructure. Also, the plan will develop the baseline for our current asset practices and will also identify the funding gap to maintain our current service levels. The costs required to operate and maintain an asset can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. The industry-standard approach to developing a practical AMP begins with a Strategic Plan, followed by an Asset Management Policy and Strategy.

Regulation

In December 2017, the Province passed an asset management planning regulation under the Infrastructure for Jobs and Prosperity Act 2015, Ontario Regulation 588/17. See the following link for the detailed Regulation: **https://www.ontario.ca/laws/regulation/r17588**

Strategic Asset Management Policy

An AMP is a core requirement of the asset management system. The AMP represents a statement of the principles guiding the City'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 City adopted its Strategic Asset Management Policy on July 1, 2019, in accordance with Ontario Regulation 588/17. As required, the policy includes statements with respect to strategic alignment, guiding principles, financial responsibilities, public input/council direction, governance, and continuous improvement. The key objectives of this policy are to:

- Provide a consistent framework for implementing asset management throughout the organization
- Provide transparency, accountability, and to demonstrate to stakeholders the legitimacy of decision-making processes which combine strategic plans, budgets, service levels, and risks

See the following link for the City's Strategic Asset Management Policy: https://www.northbay.ca/media/5osiawpa/corporate-asset-management-policy.pdf

North Bay's History with Asset Management

The City has long recognized the importance of proactive asset management and sustainable funding to maintain critical infrastructure.

In 2008 and again in 2014, the City undertook "State of Infrastructure" studies which assessed the condition and replacement value of core assets. These studies laid the foundation for today's asset management plan. Building on these studies, the City has continued to evolve its practices to align with O.Reg 588/17, including the development of a comprehensive plan for core assets in 2022, and for all municipal assets in 2024. These initiatives have influenced the move towards a lifecycle-based approach to asset management, prioritizing rehabilitation and leveraging grants to maximize taxpayer value.

Through consistent policy reviews, annual updates, and forward-thinking strategies, the City demonstrates its commitment to preserving infrastructure, managing costs, and ensuring sustainable service delivery for generations to come.

2. Asset Management Context

Key Concepts in Asset Management

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

2.1 Lifecycle Management Strategies

The condition or performance of most assets will deteriorate over time. Several factors can affect the process of an asset's deterioration, including, an asset's characteristics, location, utilization, maintenance history, and environment. As an asset deteriorates, the asset's ability to fulfill its intended function will deteriorate which can result in increased operating costs, increased maintenance costs, increase in risk, and service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of the community, it is important to establish a lifecycle management strategy to proactively manage an asset's deterioration. A lifecycle management strategy refers to the systematic approaches used to plan, operate, maintain, and eventually retire infrastructure assets in a way that maximizes value, minimizes risk, and ensures service continuity.

There are three categories of activities that can be done throughout the life of an asset that can extend the useful life of that asset. The three categories are: maintenance, rehabilitation, and replacement. The lifecycle strategy adopted will look differently depending on the asset category; for instance, the lifecycle strategy adopted could have one or more instance of maintenance or rehabilitation before the asset needs to be replaced/ reconstructed which could differ from the activities required by another asset class. Understanding the effects these activities have on the lifecycle of an asset and, the associated costs, will enable staff to make better recommendations. The following table provides a description of each type of activity and the relative difference in cost:

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

2.2 Risk Management Strategies

Risk Background

The City engaged PSD Citywide (PSD) as an asset management consultant to guide and develop lifecycle strategies, levels of service, and risk frameworks for infrastructure assets. The project's first area of focus was the development of risk frameworks. This report provides an overview of risk and then discusses the risk framework for each of the asset classes.

PSD conducted initial collaboration sessions with staff to develop risk frameworks. Risk and criticality models are key elements of good asset management practices and programs. Through their use, asset owners can rank and rate the level of business risk associated with each infrastructure asset. This customized analysis is generally based on the asset type, the attributes and considerations specific to it. Risk assessment can be conducted across all asset types and reviewed for all assets or at the individual asset level.

Identification of qualitative risks and development of quantified risk models are key elements of good asset management practices and programs. A clear understanding of qualitative risks and asset-specific quantitative risks enables more proactive and strategic asset management considerations and actions, including risk mitigation.

Approach to Risk

Municipalities generally take a "worst-first" approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality; however, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low-volume rural road. These higher risk assets should receive funding before others. By identifying the various impacts of asset failure and the likelihood that it will fail, risk management strategies identify critical assets and determine where maintenance efforts and spending should be focused.

The City's AMP includes a high-level evaluation of the 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.

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 or quantitative measurement that can be used to rank assets.

Risk = (Probability of Failure) X (Consequence of Failure)

Risk Scales

The City's approach relies on a quantitative measurement of risk. The probability and consequence of failure are each scored from 1 to 5, producing a minimum risk rating of 1 for the lowest risk assets and a maximum risk rating of 25 for the highest risk assets. The table below illustrates this approach:

Probability of Failure	Consequence of Failure	Risk Rating
1 – Rare	1 – Insignificant	1 – Lowest
2 – Unlikely	2 – Minor	4 – Low
3 – Possible	3 – Moderate	9 – Medium
4 – Likely	4 – Major	16 – High
5 – Almost Certain	5 – Severe	25 – Highest

Probability of Failure (PoF)

Several factors can help decision-makers estimate the probability or likelihood of an asset's failure. For example, a bridge may be in good structural condition, but its structure type or usage (traffic volumes) may increase its susceptibility to failure.

For each asset class, the risk model considers and accounts for various factors based on their respective weights. Weighting allows the model to recognize that each factor may impact the probability of failure to a different degree. Where the weight is higher, the impact that factor has on the model increases too.

Consequence of Failure (CoF)

The consequence of failure describes the overall anticipated effect of an asset's failure to the City and its asset management goals. Consequences of failure can range from insignificant to severe. For example, failure of an infrequently used bridge may affect only a small number of residents and/or inconvenience them slightly (i.e. minimal detour distance). Conversely, failure of a more significant bridge could create significant issues to industry transportation networks and affect residents' ability to access critical community services (i.e. hospitals and schools).

For each asset class, the CoF parameters aim to comprehensively capture relevant consequences and align with the Triple Bottom Line (economic, social, and environmental) approach to risk management. When the various consequences of an asset's failure are identified and properly weighted, an asset's criticality can be approximated.

Types of Consequences

Inherent in the management of public infrastructure is the assumption of risk. The risks that the City may be exposed to are often wide-ranging, and risks that materialize have a wide range of consequences. Generally, these consequences can be categorized as follows:

Consequence	Description
Financial	Direct financial consequences are typically measured as the replacement cost of the assets affected by the failure event.
Economic	Economic impacts of asset failure may include disruption to local economic activity and commerce, service disruptions, revenue loss, etc. Whereas financial impacts can be seen immediately or within hours or days, economic impacts can take weeks, months, and years to emerge.
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.
Health and Safety	Health and safety impacts may include injury, fatality, or impeded access to critical services (i.e. hospitals).
Strategic	Strategic consequences include the effects of an asset's failure on the community's long-term strategic objectives, including economic development, tourism, etc.

Risk Treatments

Understanding the risks carried by an asset is an important first step in identifying appropriate risk treatments. How asset owners choose to respond to risk may vary based on the assessed risks, the available risk treatments, and the risk appetite and tolerance. For reference, common risk treatments have been identified below:

Treatment	Description
Avoid (Completely or Significantly)	Completely: Disposing of the asset that carries the risk or discontinuing the services provided by the asset (i.e. permanently closing a road). This response may only be viable in select circumstances (i.e. Hammond St Bridge was removed with dead end turnarounds created). Significantly: Investing substantially in assets to reduce the risks they hold (i.e. replacing or significantly rehabilitating an important road asset reduces the probability of failure and therefore its overall risk).
Transfer	The risk carried by an asset is transferred to a third party (i.e. a public road is made private).
Mitigate	The risk is reduced through a variety of actions and initiatives. Some methods of risk reduction may be non-infrastructure based (i.e. updates to bus routes, etc.).
Accept	The risk is accepted and carried. This may be more common amongst road assets deemed less critical to the Municipality's transportation network.

2.3 Levels of Service

Levels of Service

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

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

Community Levels of Service

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

Technical Levels of Service

Technical levels of service are a measurement 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 City's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

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

Current and Proposed Levels of Service

Current LOS describes the quality and reliability of services that municipal assets provide to the community based on qualitative and quantitative metrics. Proposed LOS look towards the City'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 a municipality needs to strive for. Rather, a proposed LOS will be specific to each community with a focus on resident desires, political goals, and financial capacity. This can range from increasing service levels and costs, to maintaining or reducing current performance to mitigate future cost increases. Regardless of the proposed LOS chosen, O. Reg 588/17 requires municipalities to demonstrate the achievability of the selected metrics. This analysis has been done within each asset category.

2.4 Climate Change and the Impact on Asset Management

Climate Change

Climate change can cause severe impacts on human and natural systems around the world; for instance, increased temperatures, higher levels of precipitation, droughts, floods, 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 Canada is warming at roughly twice the global average, with northern regions experiencing even faster rates of warming. This trend is primarily driven by human-induced greenhouse gas emissions. The report highlighted that since 1948, Canada's average temperature has increased by 1.7°C, leading to more frequent and intense heatwaves, heavier rainfalls, and longer droughts. These changes are already affecting ecosystems, infrastructure, and public health across the country.

In addition to rising temperatures, the report documented significant changes in precipitation patterns, reductions in snow and ice cover, and thawing permafrost in northern communities. These shifts pose risks to biodiversity, water resources, and the stability of buildings and roads in affected areas. The CCCR served as a wake-up call, prompting governments and organizations to strengthen climate adaptation strategies and reduce emissions to mitigate future impacts.

Climate Profile for North Bay

According to Climatedata.ca, a collaboration supported by the ECCC, the City of North Bay is showing rising average temperatures, more frequent extreme hot days, and increased precipitation (all of which contribute to greater risk of flooding, infrastructure stress, and public health concerns). These changes are consistent with broader trends across Northern Ontario, where climate variability is intensifying. Climatedata.ca highlighted the following trends the City may experience:

Temperature Trends

- The average annual temperature is rising steadily, with projections showing significant warming by mid to late century
- More hot days (>30ºC) expected: historically there have been about 10-20 hot days per year, by 2100 this is projected to exceed 70 days under moderate emissions (SSP2-4.5) and over 100 days under high emissions (SSP5-8.5)
- Warmer winters: fewer extreme cold days and shorter frost periods, impacting ecosystems and winter recreation

Precipitation Trends

- Annual precipitation is increasing with projections showing 10-30% more rainfall by 2100
- More intense rainfall events: increased risk of flash floods and stormwater management challenges
- Shifting snowfall patterns: total snow may decline slightly, variability and heavy snow events could persist in the near term

Extreme Weather Events

- Heatwaves are expected to last longer and be more frequent, increasing health risks and energy demand for cooling
- Increased flooding risk due to higher rainfall and rapid snowmelt
- Increased wildfire risk due to the hotter and drier summers

Other Notable Tends

- Infrastructure stress caused by the increased freeze-thaw cycles and heavy precipitation
- Water quality concerns caused by warmer temperatures and heavy rainfall which can lead to algal blooms and contamination in lakes
- Ecosystem impacts due to the changing habitats for fish and wildlife including species migration

Incorporating Climate Change into Asset Management

Asset management practices are designed to ensure sustainable service delivery, providing reliable services to residents today without compromising the ability to meet the needs of future generations. Climate change poses a significant threat to this goal by shortening asset lifespans and increasing the likelihood of asset failure. Impacts such as flooding, extreme heat, drought, and more frequent and severe storms make it harder to maintain desired levels of service.

To achieve sustainable service delivery, climate considerations must be integrated into asset management. Aligning asset management with climate adaptation reflects industry best practices and supports a comprehensive approach to risk management, helping communities prepare for and respond to evolving climate challenges.

2.5 O. Reg 588/17 Compliance Review

The following table summarizes the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2025. The City received an extension to December 31, 2025, following communication with the Ministry of Infrastructure.

Requirement	O.Reg Section	Status
Summary of assets in each category	S.5(2),3(i)	Complete
Replacement costs of assets in each category	S.5(2),3(ii)	Complete
Average age of assets in each category	S.5(2),3(iii)	Complete
Condition of assets in each category	S.5(2),3(iv)	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2),3(v)	Complete
Current levels of service in each category	S.5(2),1(i-ii)	Complete
Current performance measures in each category	S.5(2),2	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2),4	Complete
Cost of providing lifecycle activities for 10 years	S.5(2),4	Complete
Incorporate growth assumptions into the asset management plan	S.5(2) 5(i–ii), 6(i–vi)	Complete
Proposed levels of service in each category for the next 10 years	S.6(1) 1(i–ii)	Complete
Statement on appropriateness of proposed levels of service in each category	S.6(1) 2(i–iv)	Complete
Lifecycle management for proposed levels of service	S.6(1) 4(i)	Complete
10-year capital costs for proposed levels of service	S.6(1) 4(ii)	Complete
Funding availability projections on proposed levels of service	S.6(1) 4(iii)	Complete

3. Scope and Methodology

Asset Categories in this Asset Management Plan

This AMP summarizes the state of the infrastructure for the City's asset portfolio, establishes current levels of service, outlines lifecycle strategies for optimal asset management and performance, and provides financial strategies to reach sustainability for each asset category. As the AMP is a living document, it should be updated regularly as new asset and financial data becomes available. The City's data collection programs and data updating processes are ongoing, and as such, the plan will be updated over time as more data regarding condition, capacity, expansion, and risks become available. The primary objective of the AMP is to ensure that the current assets owned and operated by the City are effectively managed in terms of ongoing maintenance and renewal activity so that desired levels of service are met now and into the future. The table below details each asset category outlined in this AMP as well as the applicable primary sustainable funding source:

Asset Category	Source of Funding
Bridges and Culverts	Tax Levy
Facilities	Tax Levy
Fleet and Fleet Equipment	Tax Levy
Land Improvements	Tax Levy
Machinery and Equipment	Tax Levy
Roads	Tax Levy
Stormwater	Tax Levy
Wastewater (Includes linear, machinery and equipment as well as facility assets)	Rate Supported
Water (Includes linear, machinery and equipment as well as facility assets)	Rate Supported

Determining 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 AMP relies on two methodologies:

- **Unit Cost** - User-Defined Cost and Cost/Unit: Based on costs provided by municipal staff, which could include average costs from recent contracts; information from engineering reports and assessments; staff estimates based on relevant information and experience
- **Historical Cost Inflation** - Cost Inflation/CPI Tables: Historical cost of the asset is inflated based on the 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. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

Since complete asset failure most often requires asset replacement as a resolution, replacement cost is a commonly used Consequence of Failure parameter. In most cases, the financial consequence of failure is based on the asset's replacement value.

Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the City expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to condition assessments, experience of municipal staff, and supplemented by industry standards.

By using an asset's in-service data and its EUL, the City can estimate the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the City can more accurately forecast when it will require replacement.

The SLR is calculated as follows:

Service Life Remaining (SLR) = In Service Date + Estimated Useful Life (EUL) – Current Year

Reinvestment Rate

As assets age and deteriorate, they require additional investment to remain in good condition. Reinvesting capital funds through renewal or replacement is essential to maintain an acceptable level of service. The reinvestment rate measures the available or required funding compared to the total replacement cost of all assets.

By comparing the actual reinvestment rate to the target rate, the City can identify any funding gaps. The reinvestment rate is calculated as follows:

Target Reinvestment Rate = Annual Capital Requirement / Total Replacement Cost

Actual Reinvestment Rate = Annual Capital Funding / Total Replacement Cost

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 City's asset portfolio. The table below outlines the condition rating system used in this AMP to determine asset condition. This rating system is aligned with the Canadian Core Public Infrastructure Survey, which is used to develop the Canadian Infrastructure Report Card. When assessed condition data is not available, service life remaining is used to approximate asset condition.

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

Asset Condition – Continued

To ensure the City's asset inventory continues to provide an acceptable level of service, the City will be monitoring the average condition of the assets. If the average condition declines, the lifecycle management strategy will be re-evaluated to determine what combination of maintenance, rehabilitation, and replacement activities are required to increase overall condition of the assets.

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

Public Engagement and Proposed Levels of Service

O. Reg. 588/17 requires municipalities to establish proposed levels of service (PLOS) for all infrastructure assets by July 1, 2025, which must be informed, not only by technical assessments and financial capacity, but also by the expectations of both municipal staff and the public.

To meet this requirement, the City undertook a structured engagement process that included a public survey and a scenario-based funding analysis to set realistic and sustainable service delivery targets.

Public Engagement Results

In July 2025, the City launched an Asset Management Survey to better understand community expectations regarding current service levels and satisfaction with service delivery. The survey also aimed to inform the development of proposed service levels that are realistic, transparent, and aligned with both staff input and public priorities. Participants completed either a short version (six questions) or the full version (~15 minutes in length) of the survey.

Survey respondents were asked to share their perspectives on several key areas related to municipal services and infrastructure; including, to evaluate current service levels, indicate current satisfaction with service delivery, rank priorities for future investment, provide input on service funding approaches, and offer feedback on proposed levels of service. A total of 1,675 responses were received of which 1,389 completed the full version of the survey.

Results indicated that roads and sidewalks, water services, and wastewater services were viewed as the most important services with transit and parking lots as the least important. There is conditional support for tax increases, with 36% in support of increases for core services only (roads, water, wastewater, stormwater), 26% in support of improving all services, 7% in support of reducing services to maintain or decrease taxes, and 31% with no preference on a change in service levels.

The open-ended feedback provided further insight into concerns on infrastructure funding, infrastructure quality with an emphasis on roads, sidewalks, and maintenance issues, and the need for improved housing, accessibility, and mental health care. The feedback collected through the Asset Management Survey is being used to inform the 2026 budget deliberations as well as to guide the development of proposed levels of service under O. Reg 588/17. It complements technical assessments and financial analysis to help ensure that future service levels align with community values and operational realities.

Proposed Levels of Service Scenarios

To ensure the City's service level targets remain financially achievable, three long-range funding scenarios were developed using asset data and lifecycle requirements from the AMP. Each scenario projects infrastructure outcomes and associated risks, reflecting different levels of capital investment and emphasizing the connection between service levels, affordability, and risk tolerance.

Scenario 1: Current Budget

This scenario maintains the City's current sustainable funding levels of $39,570,000 across all asset categories. This represents a reinvestment rate of 1.22% using the replacement costs as identified through this AMP.

Scenario 2: Budget Aligned with the 10-Year Phase-In

This scenario starts with the annual funding available as determined in the current budget in the first year and then increases by a constant calculated percentage until it reaches the average annual investments required at year 10. The remaining years use the average annual investment required.

Scenario 3: Budget Aligned with the Current Long-Term Capital Funding Policy

This scenario assumes the increase in capital funding is consistent with the City's current Long-Term Capital Funding Policy. This scenario assumes a baseline increase of 1% to the tax levy funded assets and 2% to the Water and Wastewater user rate funded assets each year. Note: an inflationary adjustment is included in the Long-Term Capital Funding Policy; however, for the purposes of this analysis, inflation was not taken into consideration.

Scenario 4: Optimal Budget

This scenario models an optimal funding strategy that assumes full alignment with lifecycle requirements as identified in this AMP. It represents an ideal scenario in which the City allocates sufficient annual capital investment from the outset to eliminate all infrastructure funding gaps across asset categories. This scenario demonstrates what would be required in a fully resourced environment to maintain infrastructure at targeted service levels indefinitely.

Making the Link

The data was analyzed alongside technical assessments from the 2024 AMP to determine what service levels are currently being achieved, where performance gaps exist, and what can be reasonably sustained or improved over time.

The City must consider working towards achieving a sustainable level of capital reinvestment within the next 10 years, which will allow for timely and cost-effective lifecycle activities. The insights gathered through the survey have been integrated within each category to ensure proposed levels of service are informed, credible, and can meet needs and expectations.

4. Portfolio Overview

Total Replacement Cost of the Asset Portfolio

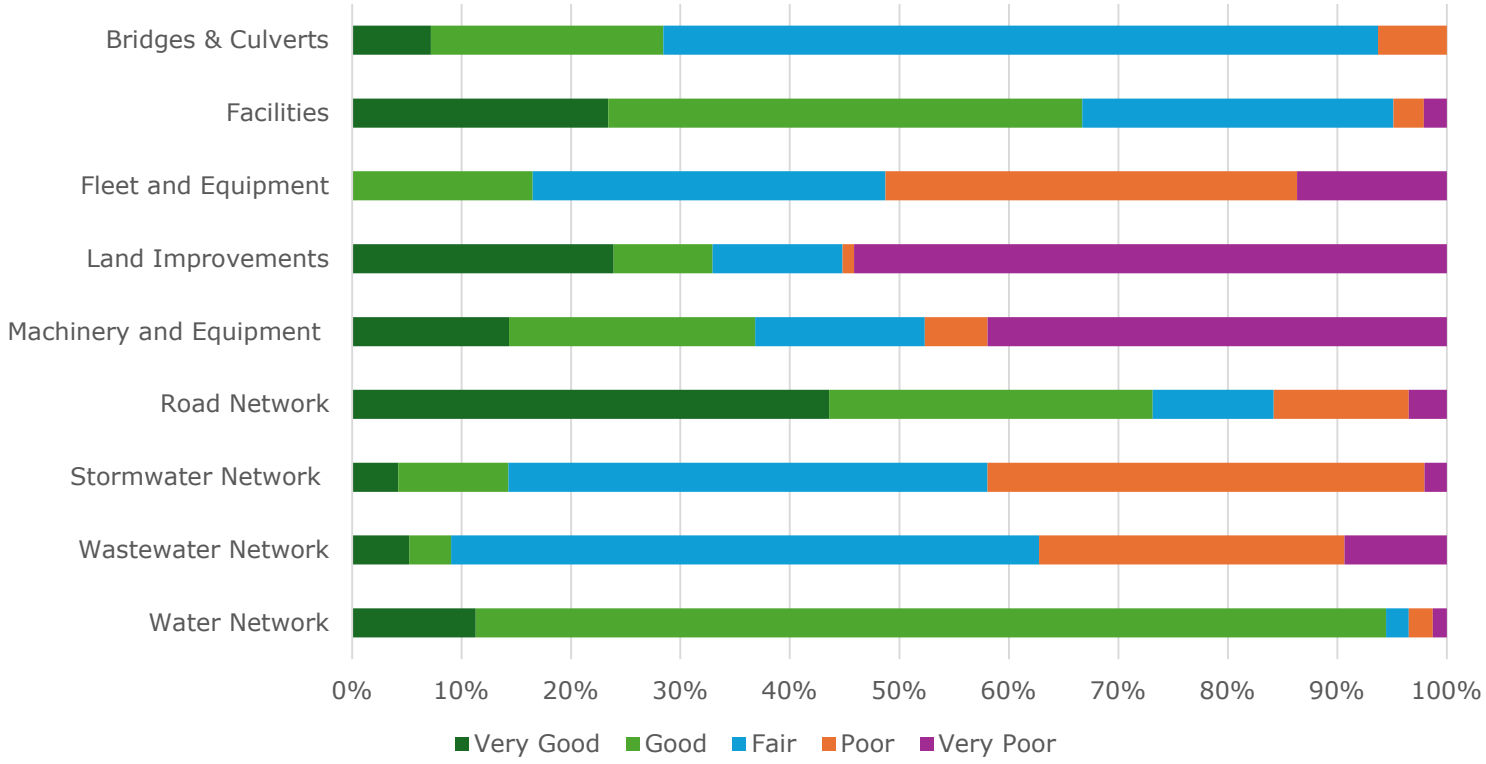
This AMP includes all City infrastructure as required by O. Reg 588/17. The state of infrastructure provides the baseline for discussion of the infrastructure and is intended to be the beginning of good asset management decision-making. The asset categories analyzed in this AMP have a total replacement cost of $3.24 billion based on the asset inventory data from the 2024 year-end. This total was determined based on a combination of user-defined costs and historical cost inflation. Replacement costs represent the replacement of existing assets with similar, not necessarily identical, assets that are available for procurement today.

A summary of the replacement costs, assessed average age of assets, and the average estimated useful life for each asset category detailed in this AMP is in the table below:

	Replacement Cost	Average Assessed Age	Average Estimated Useful Life (years)
Bridges and Culverts	121,453,980	20 Years 5 Months	75
Facilities	516,449,373	14 Years 4 Months	28
Fleet and Equipment	71,581,367	5 Years 7 Months	12
Land Improvements	174,324,847	22 Years 5 Months	24
Machinery and Equipment	43,647,325	7 Years 9 Months	9
Roads	617,980,388	11 Years 5 Months	26
Stormwater	294,472,506	44 Years 6 Months	75
Wastewater	741,830,818	47 Years 11 Months	73
Water	663,475,259	19 Years 4 Months	74
Total	3,245,215,863		

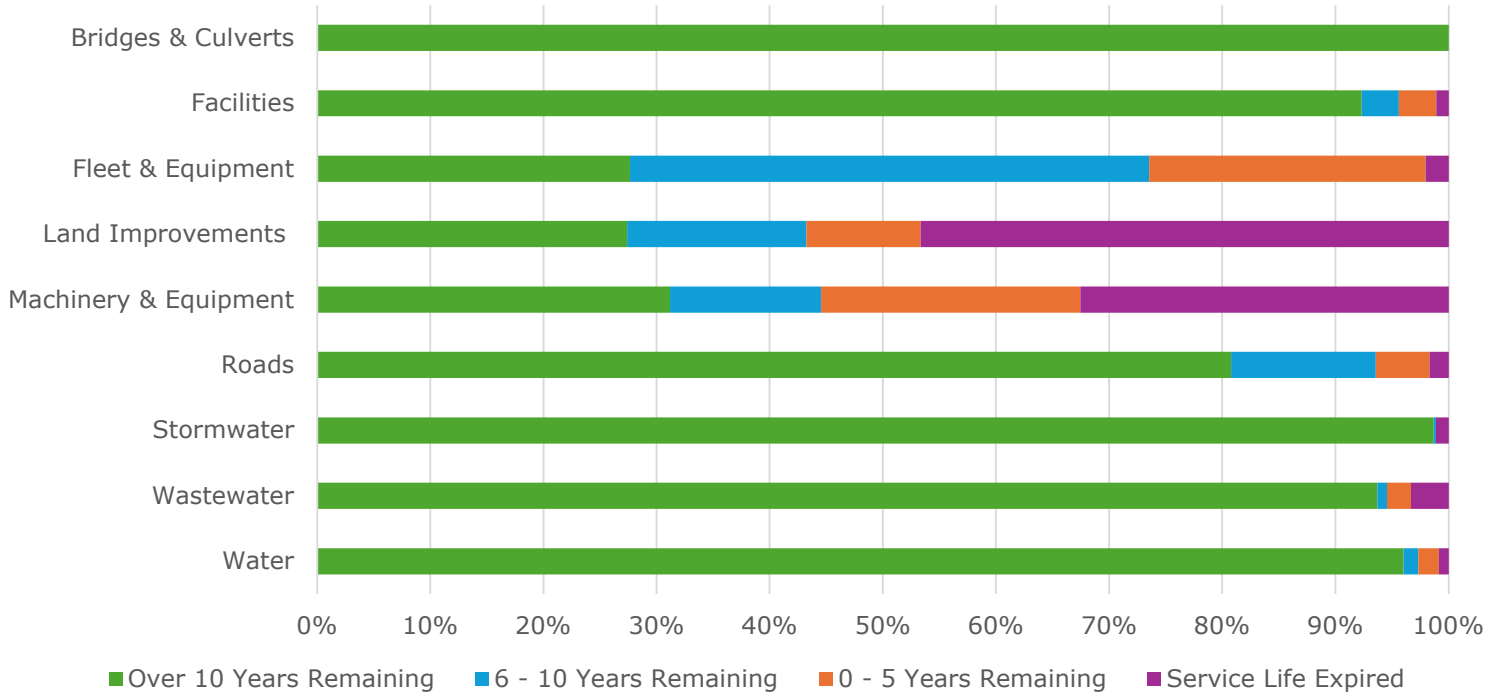
Condition of the Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 79% of the City's assets are in a fair or better condition. This estimate relies on both age-based and field condition data. This AMP relies on assessed condition data for 62% of assets. The remaining 38% of assets, age is used as an approximation for condition. Assessed condition data is integral in asset management planning as it reflects the true condition of the asset and its ability to perform its intended function. The table below details the condition of the assets in each asset portfolio.



Remaining Service Life

In conjunction with the average age and condition, it is important to understand the service life remaining. Service life remaining is based on the asset age, assessed condition, and estimated useful life. As the majority of assets have a useful life greater than 10 years remaining, the City has time to continue planning and to implement further lifecycle strategies that will provide the lowest long-term cost over the entire lifecycle of the asset.



Composition of Asset Sections

This section outlines the composition of each asset section and explains its components to provide context and minimize repetition.

Asset Inventory and Cost:

This section provides a concise summary of the asset category's inventory composition and associated replacement cost.

Asset Age:

This section provides a summary of the asset category's age profile. An asset's age profile combines its estimated useful life (EUL) and the percentage of that life that has been consumed. EUL represents the period an asset can safely and effectively serve its intended purpose. As assets near the end of their EUL, performance typically declines more rapidly. When paired with condition data, age profiles provide a clearer picture of infrastructure health. They help identify assets for detailed assessment, guide lifecycle strategy decisions, and support planning for future replacement peaks.

Asset Condition:

This section summarizes the overall condition of the asset category, provides a breakdown by the asset segments within the category, and details specific assets that are currently considered to be in poor or very poor condition.

Lifecycle Management Strategy:

This section summarizes the lifecycle management strategy adopted for the asset category. 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. Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation; however, at some point, replacement is required. Understanding what effect lifecycle activities have on assets and their cost enables more prudent lifecycle management decisions. Often, this also provides a better balance of asset cost, risk, and performance in alignment with organizational goals.

Composition of Asset Sections - Continued

Forecasted Capital Requirement for 10 Years:

This section outlines the annual funding shortfall for the asset category, including the average annual requirement and average annual funding levels. It also presents a graph showing the 10-year average annual investment required, which differs from the annual average requirement over the asset's lifecycle. Under O. Reg. 588/17, municipalities must project capital needs over a 10-year horizon; however, some interventions fall outside this window due to condition data and lifecycle schedules. The annual capital requirement reflects the average yearly funding needed for rehabilitation and replacement. Differences between 10-year and lifecycle requirements arise from planning horizons and asset condition: a 10-year plan addresses immediate needs and backlog, often resulting in higher annual costs, while lifecycle planning spreads costs evenly over decades, assuming proactive maintenance. In short, the 10-year approach tackles short-term realities, whereas lifecycle planning supports long-term sustainability.

Risk and Criticality:

This section explains the factors considered in determining the asset category's risk level. It includes a heat map illustrating overall risk levels based on these factors, along with an analysis of the results.

Risks are assessed using both qualitative and quantitative methods. Qualitative risks include non-measurable factors such as design, construction quality, climate change, and severe weather events, evaluated through expert judgment, inspections, and historical data. Quantitative risks rely on measurable data and engineering models, broken down into probability of failure and consequence of failure. Multiplying these values produces a risk score out of 25. For example, a bridge in good condition may still have a higher risk due to heavy traffic or structural type.

It is important to note that the assets in the high or very high risk categories do not necessarily require immediate renewal or replacement. Risk ratings may change as more detailed evaluations are completed (for example, condition assessments). Therefore, regular review of the data used to calculate risk and its outputs is essential, along with implementing appropriate mitigation strategies for identified risks.

Risks to Current Asset Management Strategies:

This section summarizes key trends, challenges, and risks to service delivery that the City is currently facing for the asset category.

Levels of Service:

This section details out the current community levels of service and the technical levels of service for the asset category.

Composition of Asset Sections - Continued

Proposed Levels of Service:

This section notes the methodology taken to set the City's proposed levels of service. Under Section 6(1) of O. Reg. 588/17, municipalities must establish proposed levels of service for each asset category and justify their appropriateness based on risk, cost, and community expectations. This involves evaluating whether current levels of service are adequate and, if necessary, setting measurable 10-year targets that balance safety, affordability, and sustainability. Proposed levels of service were analyzed on the following criteria:

Public Engagement Results: a review of the asset management survey results to determine if current levels of service meet community expectations.

Appropriateness Analysis: This section analyzes four funding scenarios to identify the level of investment that best minimizes risk, supports long-term sustainability, and meets community expectations. A graph included in this section illustrates the projected condition of the City's asset category over a defined time horizon under each scenario:

- Current funding (green line)
- Budget to eliminate the funding gap within 10 years (purple line)
- Budget aligned with the City's current Long-Term Capital Funding Policy (light blue line)
- Optimal budget (blue line)

This comparison provides insight into how different funding strategies influence asset condition and service levels over time.

Recommendations:

This section provides recommendations for the asset category based on the analysis conducted throughout the AMP. These recommendations are intended to guide decision-making by addressing identified risks, funding gaps, and service level objectives, while supporting long-term sustainability and compliance with regulatory requirements.

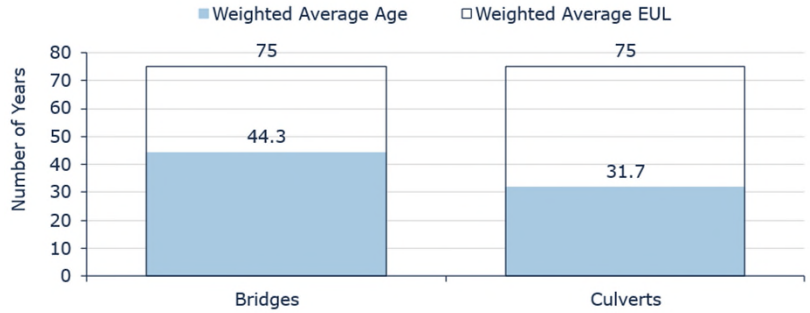
4.1 Bridges and Culverts

Asset Inventory and Cost

The City is responsible for 57 structural bridges and culverts and 65 non-structural bridges and culverts. The combined replacement value for bridges and culverts is approximately $121.5 million as per PSD Citywide, the City's asset management software.

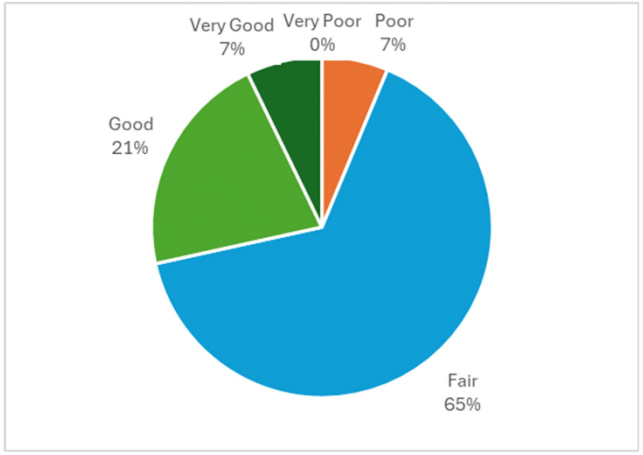
Asset Age

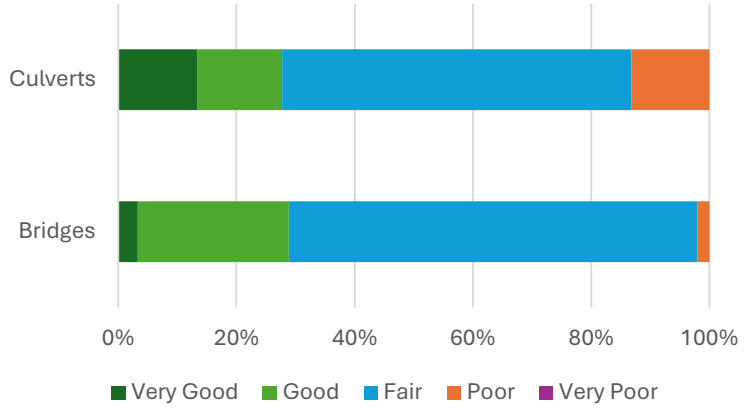
The table to the right illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. Currently the average assessed age, based on condition rating, is 20 years 5 months with an expected service life remaining of 54 years 9 months.



Asset Condition

The pie chart below illustrates the current average condition for bridges and culverts. One hundred percent of bridges and culverts were assessed in 2025, with 93% of the assets in this category being fair or above condition. Due to the health and safety aspects of this asset category, it is considered positive that no assets are in very poor condition, and only 7% are in poor condition. The chart details the assessed condition of all bridge and culvert assets by segment.





Asset Condition Analysis

The 7% of assets in poor to very poor condition primarily represents the Booth over Jessops Creek culvert. This was identified as being in poor condition through the OSIM report and will be considered for replacement through the 10-year Capital Budget process.

Lifecycle Management Strategy

For bridges and culverts, the lifecycle activities follow recommendations from the biennial Ontario Structural Inspection Manual (OSIM) reports, the latest completed in 2025. These activities are also informed by staff expertise. Enhanced practices include inspections of non-structural culverts, which have their own lifecycle events, and regular visual inspections between OSIM cycles to ensure conditions do not deteriorate unexpectedly. The OSIM report provides a Bridge Condition Index (BCI) score, calculated using asset management principles based on the remaining economic worth of the bridge. A new bridge starts at a BCI 100 and will deteriorate over time, though it will rarely reach a BCI 0 due to rehabilitation activities. The BCI is a weighted average of all elements and their condition states, reflecting their relative value and degree of deterioration. The City's goal is to maintain a BCI of 65 or greater for structural bridges and culverts.

The following table outlines the City's current lifecycle management strategy for bridges and culverts:

Event Class	Description of Current Strategy
Maintenance, Rehabilitation, and Replacement	All lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM). The report may lead to the need for a more detailed condition assessment on individual structures to identify a more detailed scope of required rehabilitation work.
Inspection	The most recent inspection report was completed in 2025.

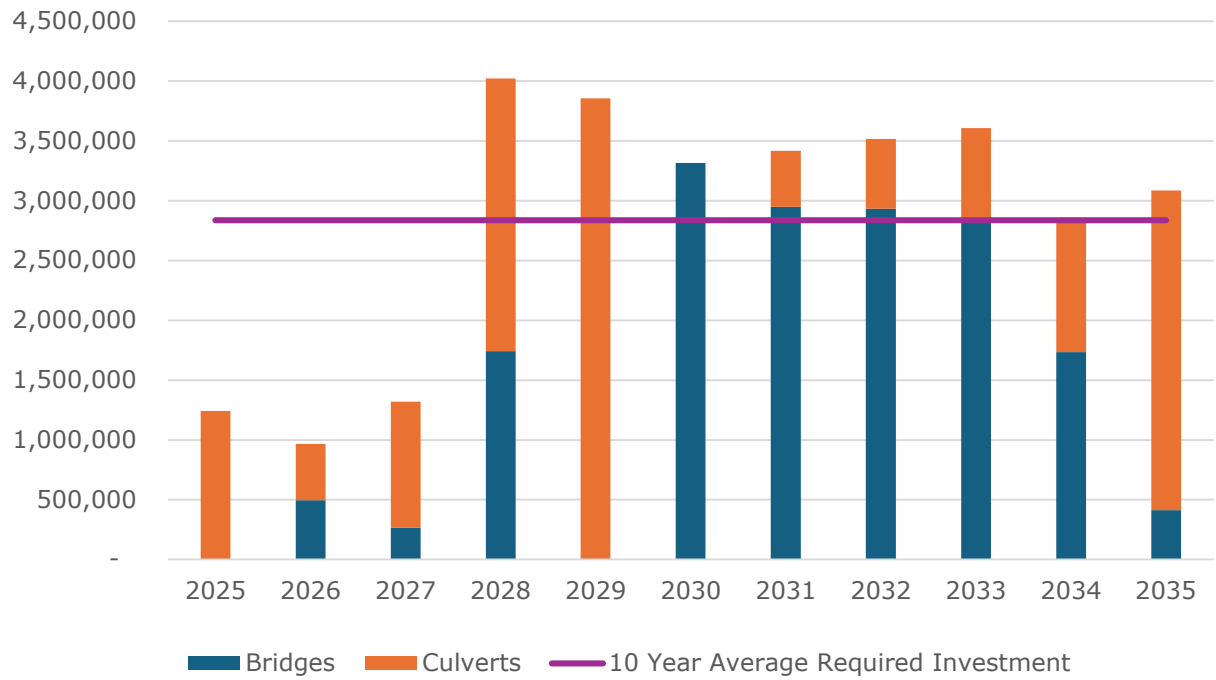
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $1.9 million. The graph below demonstrates the average annual capital investment required for the next 10 years of $2.8 million.

The annual funding shortfall is approximately $1.0 million (average annual requirement of $1.9 million less the 10-year average annual funding investment in the 2025 capital plan of $0.9 million). Note that the line in the accompanying graph represents the 10-year average required investment of $2.8 million.

The graph notes that the Pearson and Bank Street culverts are due for replacement. Construction for these culverts was awarded in October 2025 using a new trenchless rehabilitation method called Sprayed-In-Place Pipe (SIPP). This technique creates a seamless, structurally sound pipe within the existing deteriorating culvert. This work is expected to be completed by the end of 2026. Other notable assets that are coming due for replacement in the upcoming years include Booth over Jessop's Creek Culvert, Duke over Chippewa Creek Culvert, and Queen over Chippewa Bridge.

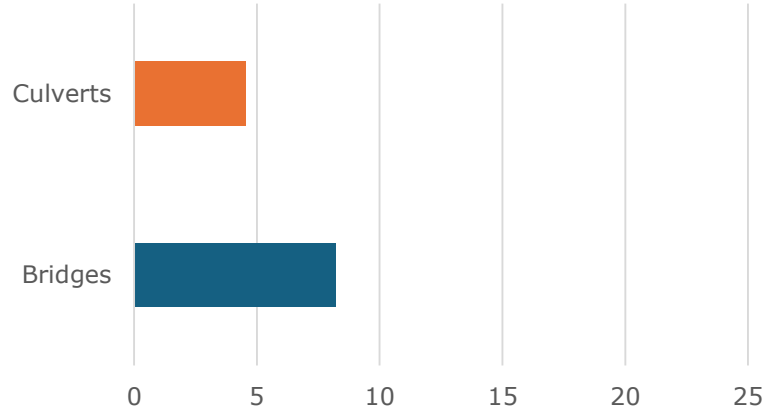
Please note that the figures presented in the graph have not been adjusted for inflation.



Risk and Criticality of Bridges and Culverts

Probability of failure for bridge and culvert assets is based on condition, route type, and structure type, while consequence of failure considers replacement cost, detour distance, road class, and traffic volumes. The heat map below shows the relationship between probability and consequence of failure, and overall, the average risk rating for bridges and culverts is low to very low. The bar chart below shows the average risk level for bridge and culvert assets in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$48,114,285	$34,695,501	$8,356,756	$30,287,438	-
(40%)	(29%)	(7%)	(25%)	(0%)



Heat Map Analysis

The 25% of assets in the high-risk category of the heat map above represents three bridges: Lamorie Street Bridge, Lakeshore Overpass, and Trout Lake Road Overpass. Of these, the Trout Lake Overpass has the highest consequence and a medium probability of failure. Bridges with a moderate risk rating include Fisher over Chippewa, and Riverbend Road over the La Vase River. Culverts tend to have lower replacement values, so even if their probability of failure is high due to poor condition, the consequence of failure is relatively low resulting in an overall lower risk rating.

Risks to Current Asset Management Strategies for Bridges and Culverts

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

- **Lifecycle Management Strategies:** The City utilizes the OSIM report to determine lifecycle management strategies for structured bridges and culverts; however, the data doesn't extend past the 10-year plan. No formal lifecycle strategy has been adopted for unstructured bridges and culverts. This poses a risk due to the absence of a structured approach to asset management.
- **Climate Change and Extreme Weather Events:** Flooding and extreme weather events can damage bridges and culverts, causing erosion and structural issues due to high water volumes.
- **Infrastructure Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.

Levels of Service

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

Community Levels of Service

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

Core Value	Level of Service Statement	Community Level of Service
Accessible and Reliable	Bridges and culverts provide reliable access to the roads for vehicles and/or pedestrians	Bridges and structural culverts are a key component of the municipal transportation network. Only one of the municipality's structures (Stanley St over Chippewa Creek) has loading or dimensional restrictions, meaning that some types of vehicles, including heavy transport, motor vehicles, emergency vehicles, and cyclists, cannot cross it.

Community Levels of Service - Continued

Core Value	Level of Service Statement	Community Level of Service
Safe and Regulatory	Bridges and culverts provide safe vehicular and/or pedestrian passage, and all structures are fully compliant with regulatory requirements	Every two years, the City contracts out the OSIM report and conducts regular visual inspections by staff to ensure that the condition of structures is not deteriorating unexpectedly.
Affordable	Bridges and culverts are managed cost-effectively for the expected level of service	Maintenance and rehabilitation for bridges and culverts include debris removal, erosion control, asphalt repairs, concrete crack injection, patching, bearing replacement, and, when necessary, deck replacement. These activities preserve structural integrity, extend service life, and reduce failure risk.
Sustainable	There are long-term plans in place for the sustainability of all bridges and culverts	The 10-year capital budget allocates annual funding to maintain and rehabilitate bridges and culverts.

Technical Levels of Service

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

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Accessible & Reliable	Bridges and culverts provide reliable access to the road network for vehicles and/ or pedestrians	% of bridges in the municipality with loading or dimensional restrictions	≤2% Current accessibility is satisfactory; any further reduction would not materially lower risk but would increase cost.	3.92%	1.71%	1.71%	Maintain

Technical Levels of Service - Continued

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Safe and Regulatory	Bridges and culverts provide safe vehicular and/or pedestrian passage, and all structures are fully compliant with regulatory requirements	% of bridges inspected every two years	100% Exceeds regulatory requirements. Maintaining this frequency ensures continued public safety and regulatory compliance	100%	100%	100%*	Maintain
Performance	There are long-term plans in place for the sustainability of all bridges and culverts	Average bridge condition index value for bridges in the municipality	≥65% Condition stable and above minimum (65). Higher target would require disproportionate spending for marginal benefit	68.3%	67%	71%	Maintain
		Average bridge condition index value for structural culverts in the municipality	≥65% Culverts performing within acceptable risk range; focus on risk-based prioritization rather than improved aggregate condition	66.5%	73%	70%	Maintain
Affordable	Bridges and culverts are managed cost-effectively for the expected level of service	Reinvestment rate**	1.33% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	0.21%	0.31%	0.21%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$1.9 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$195,000	$573,300	$300,536	Increase

* 2024 OSIM Report was completed in 2025

** The reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for bridge and culvert performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

Bridges and culverts were generally viewed as sufficient, with 72.62% of respondents rating their condition as acceptable or exceeding expectations. Another 16.76% indicated a need for improvement, while 10.62% had no preference. This aligns with current asset data, as mentioned above, which shows that 93% of bridge and culvert assets are in fair or better condition. Based on this analysis, it is reasonable to note that the City's current levels of service are meeting community expectations.

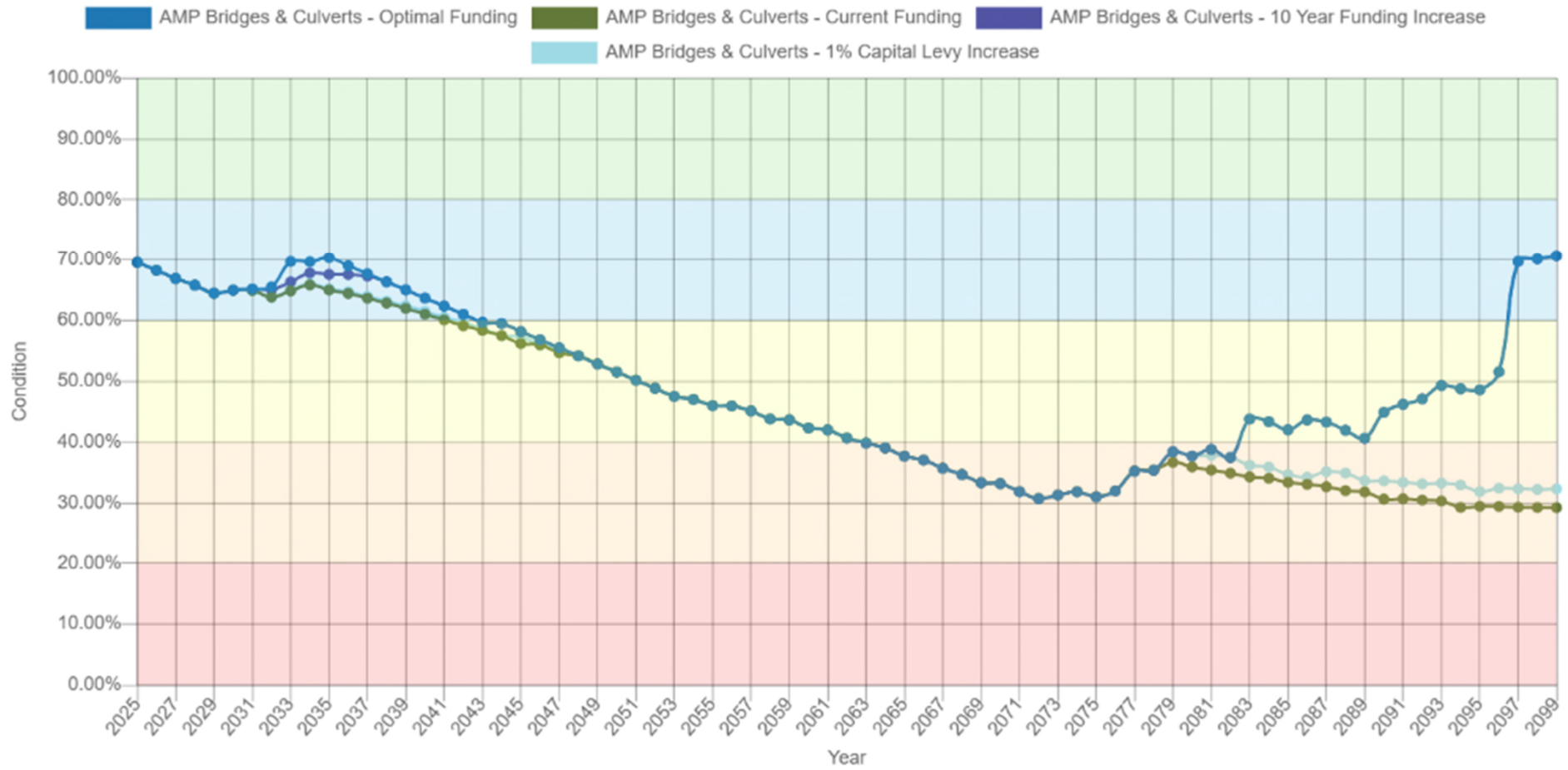
Appropriateness Analysis

The analysis of the funding strategies for bridge and culvert assets was done over a time horizon from 2025 to 2099. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the longer timeline best reflects bridges and culverts long service life. This analysis shows that the average condition of the assets will decline from approximately 70% (good) to 30% (poor) across all scenarios by 2075. This reflects the natural aging of infrastructure without significant intervention and aligns with the recent OSIM report, which indicated that no immediate rehabilitation or replacement work is required. As required work becomes due, the overall condition begins to improve under all funding levels; however, by the end of the timeframe, certain funding strategies cannot support the long-term replacement or rehabilitation needs for bridges and culverts.

Under the current funding level, the condition of bridges and culverts continues to decline, reaching approximately 29% (poor) by 2099. The Long-Term Capital Funding Policy, which includes a 1% annual levy increase, improves conditions only marginally to 32% (poor). Both scenarios fall well below acceptable standards and clearly indicate insufficient funding to maintain service levels over the long-term.

Appropriateness Analysis – Continued

In contrast, the optimal and 10-year phase-in funding strategies rebound quickly, restoring condition to 71% (good). This demonstrates the benefits of gradual but sustainable investment, even if major expenditures are deferred into the future. Without adequate funding, the network will experience accelerated deterioration, leading to higher lifecycle costs, increased risk of failure, and potential service disruptions. Conversely, early adoption of optimal or phased-in funding strategies can significantly reduce risk and avoid costly emergency repairs, while maintaining safe and reliable infrastructure for the community.



Recommendations

Data Review/Validation

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

Risk Management Strategies

Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure or data availability. As well as, implement risk-based decision-making within asset management planning and budgeting processes. This should include regular reviews of high-risk assets to identify and apply appropriate risk mitigation strategies.

Lifecycle Management Strategies

The AMP includes capital costs for major rehabilitation and reconstruction of bridges and culverts, as estimated through the OSIM report. Regular review of replacement values and lifecycle strategies is necessary to ensure information remains accurate. In addition to OSIM data, the City should identify projected capital rehabilitation and renewal costs for these assets.

Furthermore, the ongoing preventative maintenance program should be documented and mapped in the AMP software to improve efficiency and effectiveness of lifecycle strategies, with the overall goal of optimizing asset life in a cost-effective manner.

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates. Implement strategies to close any gaps between current and proposed service levels and periodically reassess these strategies as part of ongoing AMP updates to support continuous improvement.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

4.2 Facilities

Asset Inventory and Cost

A municipal facility is a publicly owned and operated physical asset, such as a building, structure, or site, used by a local government to deliver essential services, support administrative functions, and meet the needs of the community. The City is responsible for the operations and capital upkeep of several facilities used both for municipal operations and public services. Facilities include those under management by the following departments:

- Landfill
- Fleet
- Transit
- Public Works
- Parks
- Administration

The facilities for the City were broken down into the following segments reflecting groupings of assets by their service:

- Airport Facilities
- Emergency Services: Fire and Police Facilities
- General Government: Government (City Hall), Library Building, Parking Facilities, and Transit Building
- Landfill: Scale House, Leachate Plant and Pumping Stations
- Parks, and Recreation and Cultural Services Facilities: Arenas, Parks Structures, and Public Washrooms
- Public Works: Offices and Sand Dome

Asset Segment	Quantity (# Facilities)	Replacement Cost
Airport	12	38,496,694
Emergency Services	6	67,025,892
General Government	10	127,646,658
Landfill	5	8,079,683
Parks	49	19,182,781
Public Works	3	6,258,322
Recreational and Cultural Services	12	249,759,343
Overall Totals	**97**	**$516,449,373**

Current Asset Structure

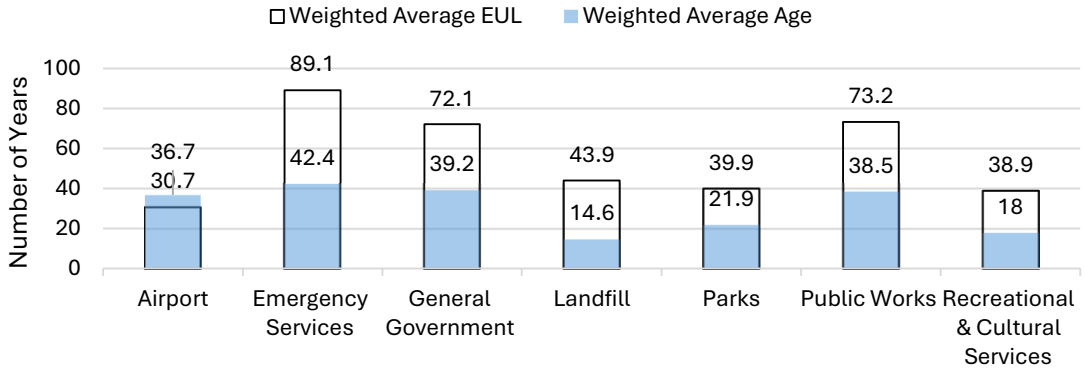
Currently, major components (e.g. HVAC, roof) are grouped as a singular asset and have not yet been componentized to a more granular level.

In most cases, replacement costs are the building's insured replacement value, and information on specific asset interventions (i.e. repairs, replacements) is limited.

NOTE: Water and wastewater facilities are recorded within the respective service area

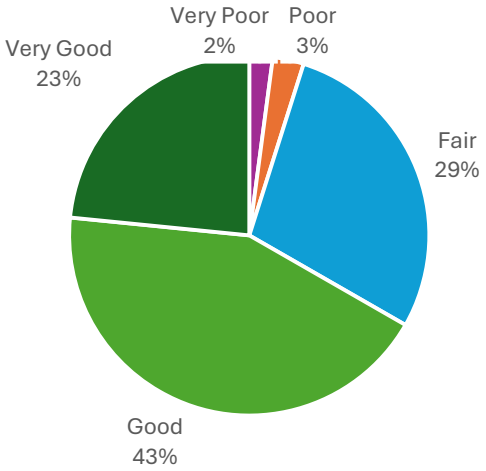
Asset Age

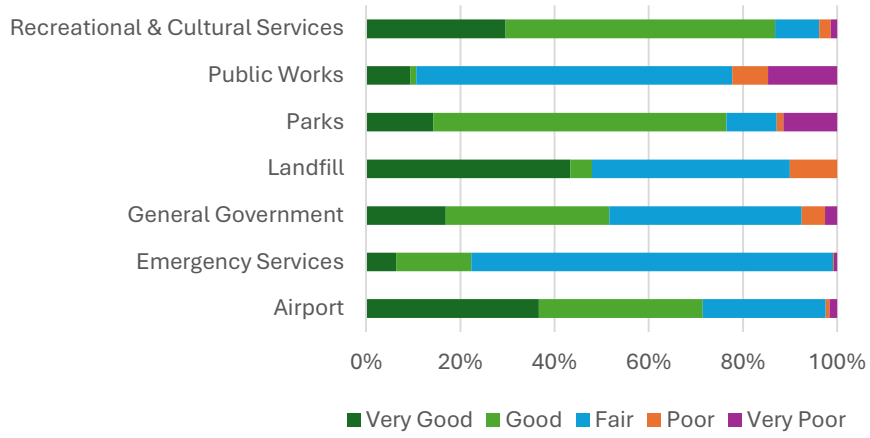
The table below illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of these assets. Currently the average assessed asset age (based on condition rating) in the facilities group is 14 years 6 months with an average service life remaining of 13 years 5 months.



Asset Condition

The pie chart below illustrates the current average condition of facilities, based on data gathered through formal condition assessments, staff visual inspections, and asset performance reviews. Overall, 95% of facilities are rated as fair or better. The chart details the assessed condition of all facility assets by segment, weighted against asset replacement cost. As noted in the pie chart, most assets fall within the fair or better category, reflecting a generally strong state of repair.





Asset Condition Analysis

The 5% of assets classified as poor to very poor condition primarily relates to several facilities where formal condition data has not yet been incorporated into the AMP. These assets are considered in poor or very poor condition largely due to age and include Pete Palangio, and sections of City Hall. It is essential to update the AMP with recent condition assessments or conduct regular evaluations to ensure asset conditions are accurately represented and inform future planning and investment decisions.

Lifecycle Management Strategy

The following table outlines the City's current lifecycle management strategy for facilities:

Event Class	Description of Current Strategy
Maintenance, Inspection, and Testing	**Airport Facilities** • Annual walkthroughs and in-depth inspections are conducted • Core functions such as HVAC and water supply are inspected weekly • Additional inspections are conducted as per service agreements and regulatory requirements **All Other Facilities** • Certain facilities undergo regular inspections • HVAC units in the City's facilities are inspected quarterly by Honeywell, Ainsworth, and other qualified contractors, with identified deficiencies reported to the City • Elevators are inspected semi-annually by OTIS and annually by the Technical Standards and Safety Association (TSSA), with inspection reports detailing deficiencies and recommendations • Fire alarms and sprinkler systems are regularly inspected and tested • Facilities maintenance is primarily funded through the annual operating budget

Lifecycle Management Strategy - Continued

Event Class	Description of Current Strategy
Rehabilitation	**Airport Facilities** • Rehabilitation efforts are pursued while maintaining service levels **All Other Facilities** • Accessibility concerns and improvement requests are reviewed and addressed by the City, with recent upgrades including renovations for improved accessibility and installation of emergency cardiac kit
Replacement	**Airport Facilities** • Replacement follows a 10-year capital plan, with additional replacements as needed **All Other Facilities** • Replacement decisions for building components are based on factors like occupant safety, legislative compliance, cost feasibility of rehabilitation, and replacement cost. Capital replacement projects are typically planned one to three year in advance

Forecasted Capital Requirement for 10 Years

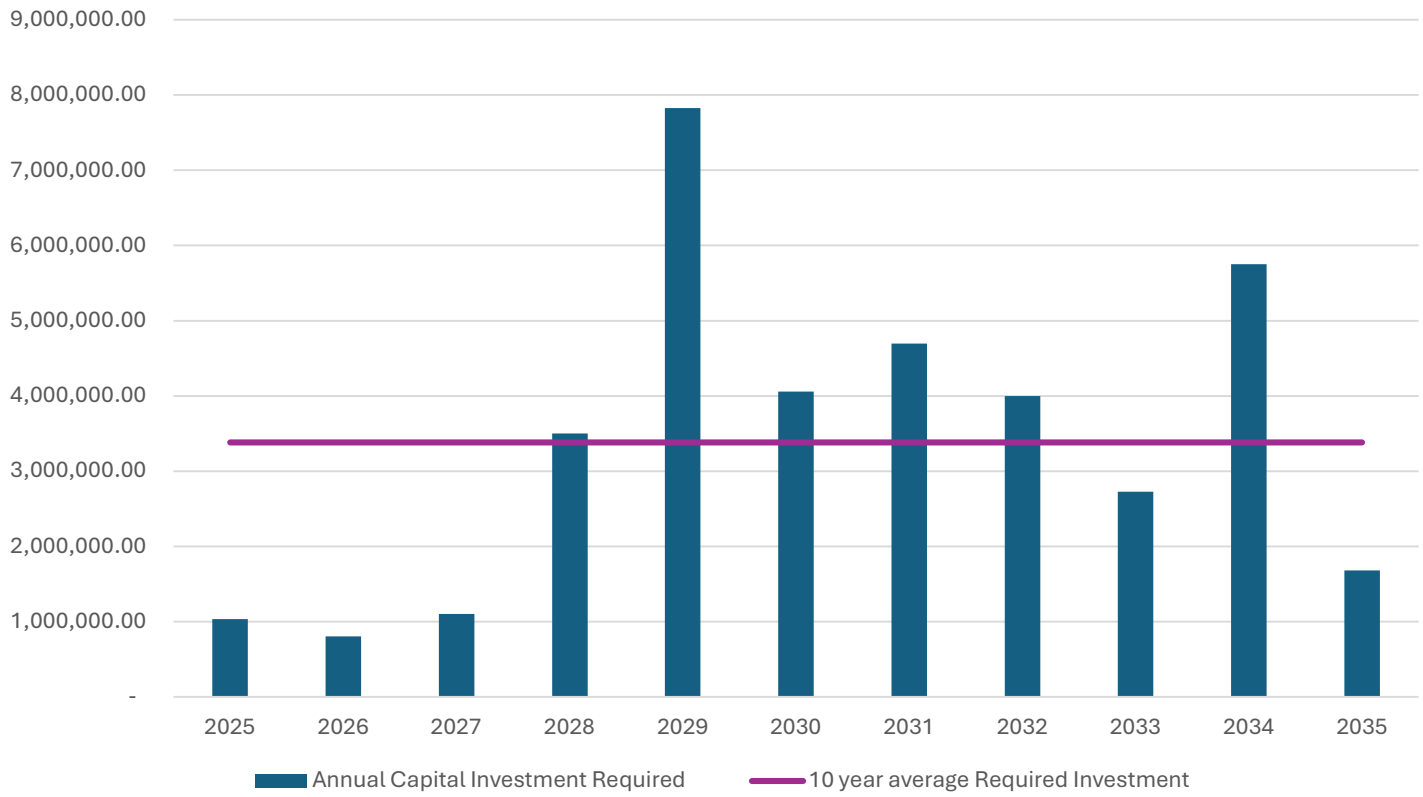
The time which every facility asset would be replaced was determined based on the existing data and data structure. Based on the estimated useful life, the total annual capital requirement was determined to be $15.4 million. This represents the required annual investment assuming all assets are replaced at end of life. The accompanying graph demonstrates the required annual capital for the next 10 years.

The annual funding shortfall is approximately $9.1 million (average annual requirement of $15.4 million less the 10-year average annual funding investment in 2025 capital plan of $6.3 million). Note that the line in the graph below represents the 10-year average required investment of $3.3 million.

Forecasted Capital Requirement for 10 Years – Continued

A significant investment is required in 2029 for roof, changerooms, and washrooms at Memorial Gardens and roof and washrooms City Hall.

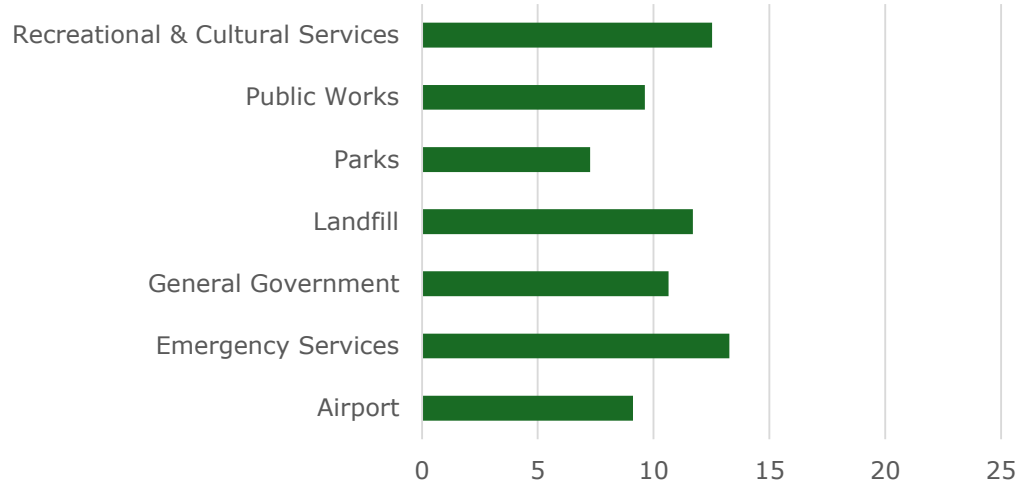
Note: the figures presented in the graph below have not been adjusted for inflation.



Risk and Criticality of Facilities

Probability of failure for facility assets relies on asset condition, while consequence of failure considers the replacement costs, criticality, and the type of facility. The heat map below shows the relationship between probability and consequence of failure. Overall, the average risk rating for facilities is 66% in high to very high risk. The bar chart below shows the average risk level for facility assets in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	**Low**	**Moderate**	**High**	**Very High**
$21,333,609	$122,645,752	$34,289,188	$210,304,799	$127,876,025
(4%)	(24%)	(7%)	(41%)	(25%)



Heat Map Analysis

The 25% of assets in the very high risk category of the heat map above represents the Police Station, which is currently in the planning phase for a replacement building, and the McIntyre St. parking garage, which is undergoing a comprehensive building condition assessment.

Risks to Current Asset Management Strategies for Facilities

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

- **Lifecycle Management Strategies:** Historically, lifecycle management for facilities has been largely reactive, creating challenges in balancing routine maintenance, major rehabilitation, and asset replacement.
- **Climate Change and Extreme Weather Events:** Facilities carry a significant burden in adapting to climate change, with roof structures particularly vulnerable. Increasingly unpredictable snow loads, and precipitation patterns can render existing estimates of useful life and maintenance schedules obsolete. This shift away from historical climate predictions affects many other facility asset types as well, and its impact is expected to grow in the future.
- **Infrastructure Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.
- **Infrastructure Design and Installation:** As facility assets age, certain design and implementation factors can negatively impact their ability to deliver intended services. For example, structural design standards and material technologies have advanced since the construction of some recreation facilities. As a result, these assets may not achieve their expected lifespan and could require rehabilitation or replacement sooner than those built to modern standards. Additionally, many facilities in the portfolio have reached an age where integrating new components, such as HVAC systems, requires additional investment to meet evolving standards and technologies.

Levels of Service

The following tables show the City's current level of service for facilities assets. Metrics include the community and technical levels of service that are required as part of O.Reg 588/17, as well as any additional performance measures that the City has selected for the AMP.

Community Levels of Service

The following table outlines the qualitative metrics that determine the community level of service provided by facilities:

Core Value	Level of Service Statement	Community Level of Service
Quality	Appropriate actions and interventions are taken to ensure the regular, safe use of facility assets, and facility assets are diverse and serve the needs of residents and the operations of the municipality	Recreation-focused facility assets include recreation centers, outdoor pavilions, community halls, and park washrooms. Municipal operations facilities consist of fire halls, the public works garage, and City Hall. Input from the Parks Master Plan and ongoing community engagement continues to shape the amenities offered throughout the City.
Performance	There are long-term plans in place for the renewal and replacement of facility assets	Decisions regarding the rehabilitation and replacement of facility assets are primarily driven by opportunities to improve accessibility, mitigate risks to occupant health and safety, ensure legislative compliance, and maintain cost and construction feasibility. Currently, component replacement through capital investment projects is forecasted up to ten years in advance, with formal planning occurring one year prior to project initiation.

Technical Levels of Service

The table below outlines the quantitative metrics that determine the technical level of service provided by facilities:

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance		Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2023	2024	
Safe & Reliable	Ensure safe facilities through inspection and maintenance	% of facilities inspected annually	100% Visual inspections adequate for short term; transition to cyclical BCAs (every 5 years) will enhance reliability.	100% (Visual)	100% (Visual)	Maintain /Improve Methodology
Condition & Sustainability	Maintain facilities in fair or better condition	% of facilities in fair or better condition	≥90% Above long-term sustainability target. Maintain reinvestment and consider BCA-driven planning.	83%	95%	Maintain
Performance	Appropriate actions and interventions are taken to ensure the regular, safe use of facility assets	Average condition of assets	≥75% Below targeted average condition of assets. Consider risk-based and BCA-driven planning.	62%	61%	Increase
Affordable	Facilities are managed cost-effectively for the expected level of service	Reinvestment rate*	2.99% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	1.52%	0.95%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$15.4 million Funding must increase to sustain LOS. Integration with financial strategy recommended.	$7.4 million	$4.9 million	Increase

* Reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for facility performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

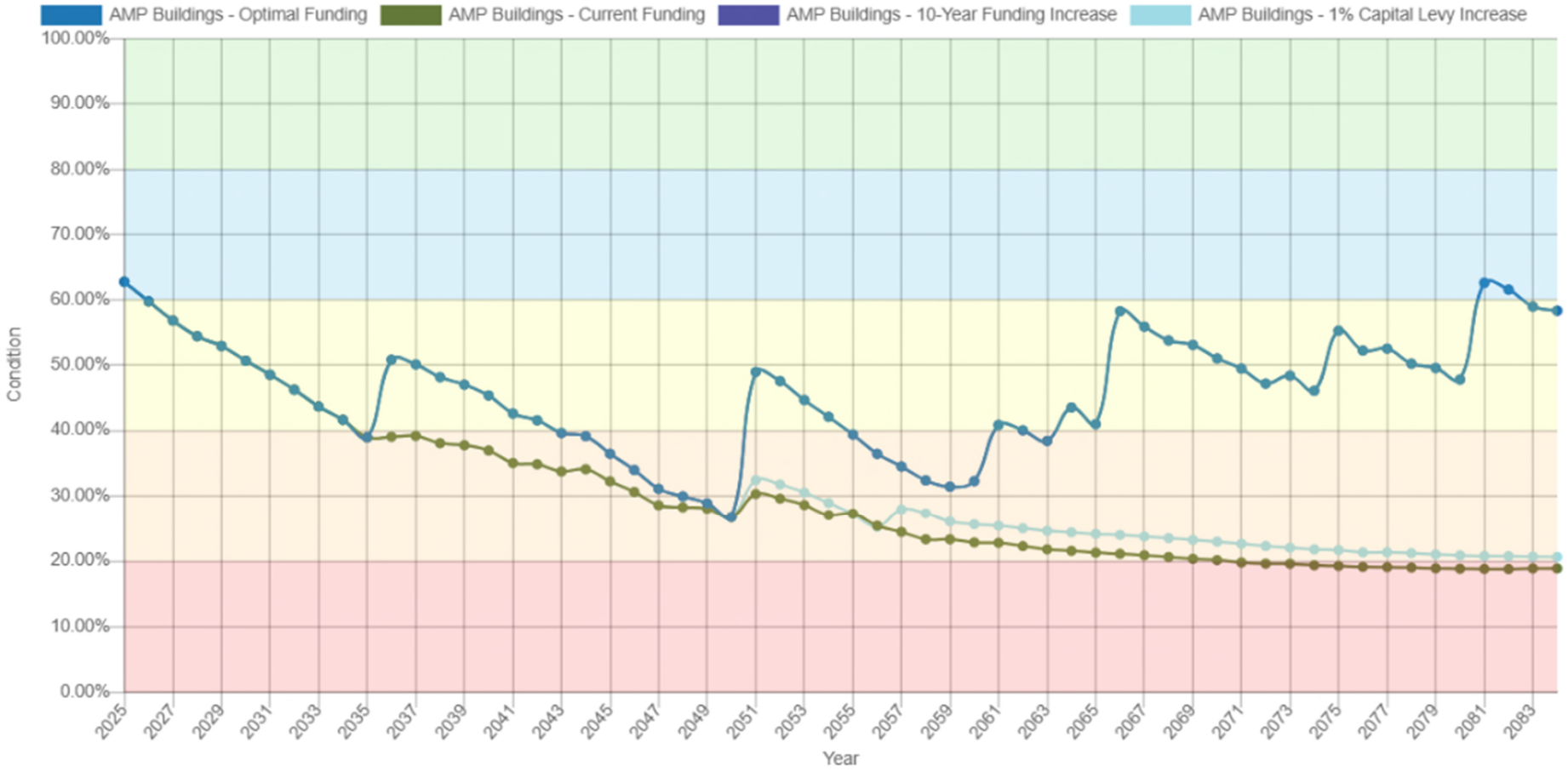
The public was generally satisfied with the performance and availability of facilities, with 44.99% of respondents satisfied, 14.62% dissatisfied, and 40.39% neutral or having no opinion. The condition of facilities were generally viewed as sufficient with 60.80% of respondents rating their condition as acceptable or exceeding expectations. Another 17.12% indicated a need for improvement, while 22.08% had no preference. This aligns with current asset data, as mentioned above, which shows that 95% of facility assets are in fair or better condition. Based on this analysis, it is reasonable to note that the City's current levels of service are meeting community expectations.

Appropriateness Analysis

The analysis of the funding strategies for facilities was done over a time horizon from 2025 to 2083. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the longer timeline best reflects the long service life of facilities. shows that current funding levels are insufficient to maintain service quality. All scenarios begin at an average condition of 63% (good) and decline to about 40% (poor) by 2035, reflecting the natural aging of facilities without major intervention. This is consistent across all strategies, as the earlier years require limited investments. As the investment requirements increase, the scenarios start to differ as the funding pool available starts to deviate further. The optimal and 10-year phase-in strategies follow the same path, and fluctuates over the term as lifecycle investments occur, resulting in periodic improvements to maintain assets to near acceptable standards. By 2083, both strategies end at a condition of 58% (fair). In contrast, the current funding and the Long-Term Capital Funding Policy, which includes a 1% annual levy increase, funding scenarios continue to decline gradually throughout the timeframe, reaching 19% (very poor) and 21% (poor), respectively, by 2083.

Appropriateness Analysis – Continued

These outcomes fall well below acceptable standards and indicate insufficient funding to support the long-term needs of facilities. Average condition over the entire horizon further illustrates the disparity between strategies. Current funding averages 30.03%, while the Long-Term Capital Funding Policy averages 31.37%, both signaling inadequate investment. Conversely, the optimal funding and 10-Year phase-in strategies maintain an average condition of 45.88%, significantly reducing risk and preserving service levels. This analysis underscores the critical importance of aligning funding strategies with long-term asset management objectives to maintain safe, reliable, and cost-effective facilities.



Recommendations

Asset Inventory

The City's facility inventory typically consists of one main asset and, in some cases, a few asset components. This approach is not ideal because facilities are made up of multiple distinct capital components, each with its own estimated useful life and maintenance requirements. To address this, the City should continue developing a consistent componentization strategy for facility assets. This will ensure all components are properly accounted for and that replacement schedules reflect each component's useful life and condition (e.g., poor condition may warrant earlier replacement).

Condition Assessment Strategies

By completing regularly scheduled building condition assessments (BCA), the City will gain more accurate insight into the near-term and long-term capital requirements for each facility. These identified capital requirements should be a key consideration when setting budgets and determining any required funding adjustments (i.e. taxation, reserve contributions, grant funding) to meet the capital needs.

Data Review/ Validation and Lifecycle Management Strategies

To improve planning accuracy, the City should continue reviewing and validating inventory data and replacement costs, incorporate componentization and condition assessment strategies, and implement targeted lifecycle strategies. These actions will provide better data and enhance the City's ability to plan for maintenance and replacement needs effectively.

Risk Management Strategies

Although 95% of facility assets are in fair or better condition, 66% are classified as high to very high risk. This is primarily due to their high replacement value, as the consequence of failure is largely tied to significant replacement costs. Regularly reviewing and updating risk models based on evolving data and improved understanding of failure probabilities and consequences will provide more accurate risk ratings. Additionally, implementing risk-based decision-making within asset management planning and budgeting processes is essential. This should include routine reviews of high-risk assets to identify and apply appropriate risk mitigation strategies.

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates to support continuous improvement.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

4.3 Fleet and Fleet Equipment

Asset Inventory and Cost

The City owns a range of fleet and equipment assets essential to daily operations. The Fleet Department manages these vehicles and allocates them to departments based on service costs. Departments that rely on fleet assets are grouped into segments within the AMP. Below are examples of these segments and common assets:

- Public Works, General Government, Parking, and Water and Sewer: Pick-up trucks, dump trucks, trailers, and small utility vehicles, such as excavators and tractors
- Transit: Transit vehicles, including multiple types of buses to support the City's transit program
- Landfill: Compactors, dozers, trucks, and loaders
- Parks, and Recreation and Culture: Trucks and light vehicles to meet transportation and operational needs of parks and recreation staff
- Fire: A variety of assets, such as tankers, pumpers, and utility vehicles
- Airport: Trucks and service vehicles for the ongoing maintenance and airport operations

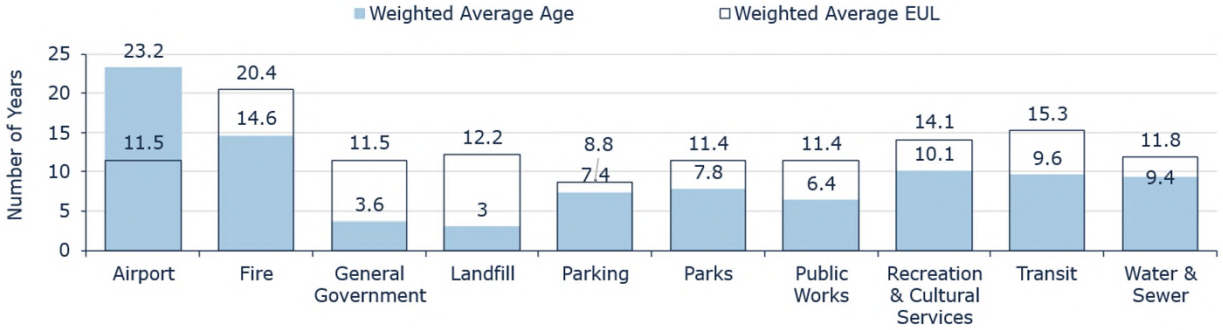
The City's fleet and fleet equipment assets have detailed records within AssetWorks, the City's fleet management system. High-level data from AssetWorks has been integrated into PSD Citywide, the City's asset management system.

The following table provides a summary of the fleet and fleet equipment by segment as per the 2024 year-end data:

Asset Segment	Quantity	Replacement Cost
Airport	11	1,883,476
Fire	23	14,072,302
General Government	8	363,500
Landfill	6	2,219,950
Parking	2	80,000
Parks	45	2,970,686
Public Works	80	14,648,311
Recreation and Cultural Services	6	912,875
Transit	30	27,464,034
Water and Sewer	49	6,966,233
Total	**260**	**$71,581,367**

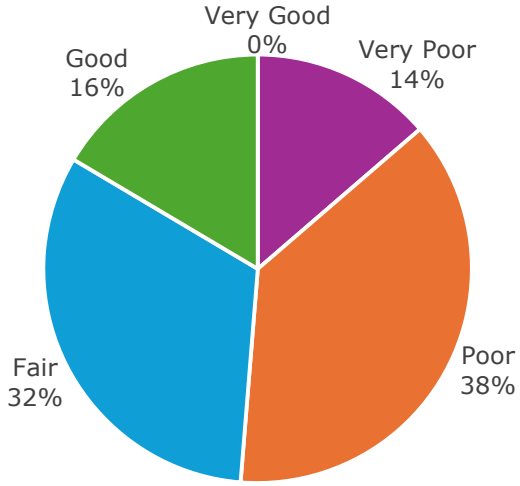
Asset Age

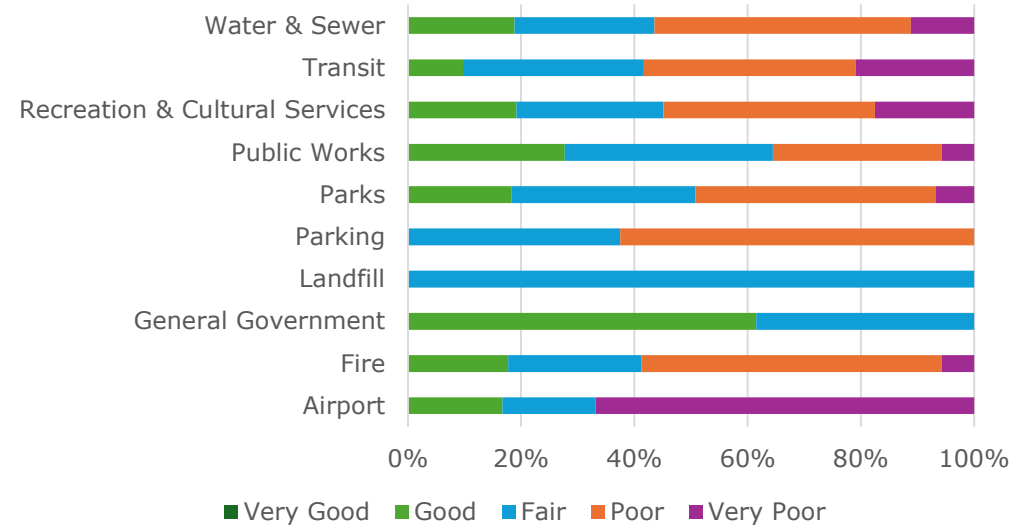
The table to the right illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. Currently the average assessed age (based on condition rating) is 5 years and 7 months with an expected service life remaining of 6 years 11 months.



Asset Condition

The pie chart below illustrates the current average condition for all fleet segments, based on condition assessments completed by mechanics according to Fleet's condition rating specifications. If a vehicle has not been inspected, the condition is based on age. The chart below details the assessed condition of all fleet assets by segment. As fleet vehicles rotate between segments, these ratings reflect a snapshot in time. Note: Airport fleet assets are managed by the Airport. As noted in the pie chart, 52% of these assets fall within the very poor to poor category.





Asset Condition Analysis

The 52% of assets classified as poor to very poor condition primarily consist of several transit buses and a fire pumper. These assets have been scheduled for replacement through the annual fleet replacement program. The City is currently receiving funding through the Investing in Canada Infrastructure Program to support the replacement of several conventional and specialized transit buses over the coming years.

Lifecycle Management Strategy

The following table outlines the City's current lifecycle management strategy for fleet and fleet equipment:

Event Class	Description of Current Strategy
Maintenance and Inspection	**General Fleet Assets** • General fleet vehicle maintenance is systematically managed and documented within a centralized Fleet Management Information System (FMIS) • Maintenance planning adheres to industry best practices • Vehicles undergo regular inspections before each use, with additional periodic inspections to ensure safety and compliance **Fire Fleet Assets** • Fire fleet assets undergo daily inspections in accordance with firefighting regulations • Specially certified staff mechanics handle maintenance while following manufacturer recommendations and legislative requirements, with additional maintenance performed as necessary for reliable operation • Third-party maintenance is enlisted when in-house capacity is exceeded

Lifecycle Management Strategy - Continued

Event Class	Description of Current Strategy
Rehabilitation	**General Fleet Assets** • Rehabilitation decisions are made on a case-by-case basis, considering asset type, usage, and criticality, and availability of resources **Fire Fleet Assets** • Rehabilitation is considered on a case-by-case basis while considering the remaining useful life and cost of the asset • Rehabilitation is not considered if it poses any risk to safety and firefighting operations
Replacement	**General Fleet Assets** • Replacement decisions consider asset age, condition, maintenance costs, and historical trends tracked in the fleet FMIS to maintain service levels • Technology advancements influence replacement strategies as vehicles evolve **Fire Fleet Assets** • Replacement decisions consider asset age, condition, maintenance history, and utility, integrated into the fleet FMIS for resource planning • Utility comparisons between existing and potential replacements guide decisions to optimize functionality and efficiency • Replacement ensures adequate primary and backup assets for emergency response readiness

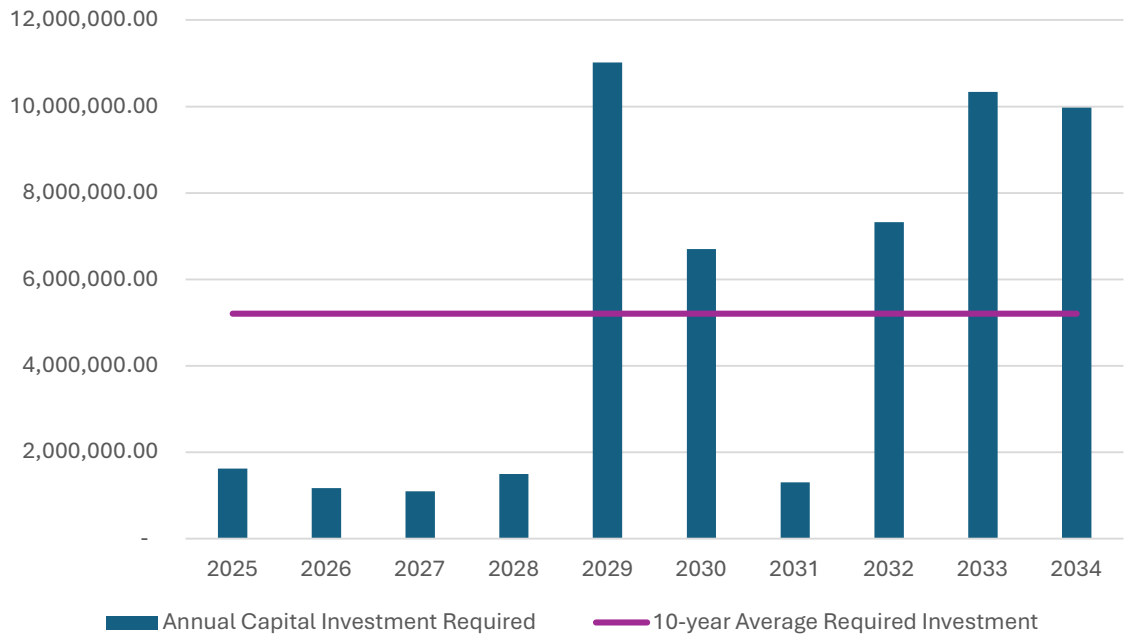
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $5.5 million. The accompanying graph demonstrates the average annual capital investment required for the next 10 years of $5.2 million.

The annual funding shortfall is approximately $3.8 million (average annual requirement of $5.5 million less the 10-year average annual funding investment in the 2025 capital plan of $1.7 million). Note that the line in the accompanying graph represents the 10-year average required investment of $5.2 million.

The graph indicates a significant investment spike required in 2029 which is driven by major replacements coming due in the Public Works, Transit, and Fire segments.

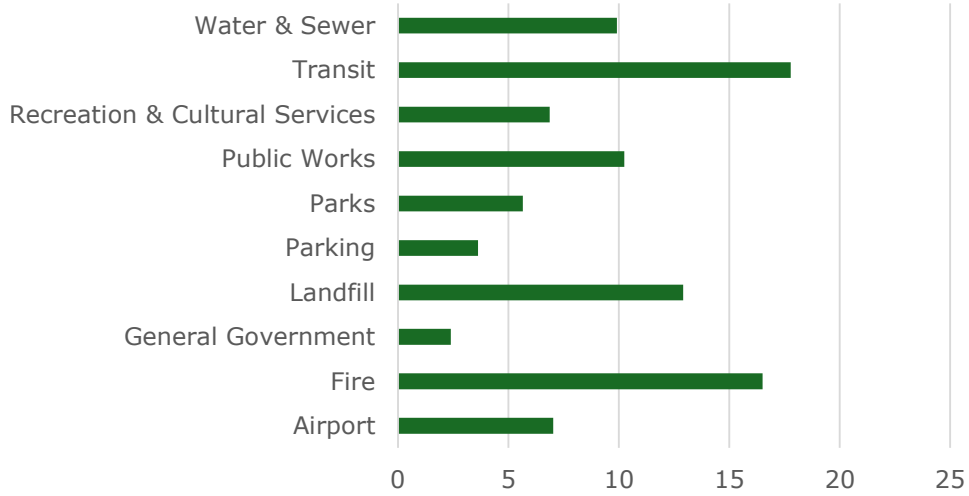
Please note that the figures presented in the graph have not been adjusted for inflation.



Risk and Criticality of Fleet and Fleet Equipment

Probability of failure for fleet and fleet equipment assets relies on asset condition, while consequence of failure considers the replacement cost of the asset. The heat map below shows the relationship between probability and consequence of failure. Overall, the average risk rating for fleet and fleet equipment is 73% in high to very high risk. The bar chart below shows the average risk level for fleet and fleet equipment assets by segment in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$5,107,024	$4,180,656	$10,413,764	$12,080,013	$39,799,911
(7%)	(6%)	(15%)	(17%)	(56%)



Heat Map Analysis

The highest-risk fleet assets include Fire Department pumpers and aerial trucks, Transit buses, and 6-ton plows. These assets have an average probability of failure of 3.97 (aging assets and/ or poor condition) and an average consequence of failure of 4.72 (high replacement cost), resulting in a very high risk rating of 18.74. These assets are being considered for replacement through the annual fleet replacement program.

Risks to Current Asset Management Strategies for Fleet and Fleet Equipment

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

- **Lifecycle Management Strategies:** Historically, lifecycle management for fleet and fleet equipment has been largely reactive, creating challenges in balancing routine maintenance, major rehabilitation, and asset replacement.
- **Fiscal Capacity and Cost Escalations:** Current reinvestment levels fall short of maintenance and rehabilitation needs, risking service declines and reduced asset life. Rising component costs and complexity drive higher repair expenses and downtime, while longer lead times for new assets further strain service delivery.
- **Aging Fleet:** The City's fleet and fleet equipment is aging, with many vehicles requiring frequent maintenance or replacement.
- **Organizational Capacity:** Increasing vehicle complexity and diversity, due to electronics and alternative fuel systems, has expanded parts, fuel, and maintenance needs. This requires more staff training and accounting for hidden costs in replacement planning. Limited staff capacity from turnover further reduces maintenance efficiency and asset management effectiveness.
- **Equipment Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.
- **Climate Change and Extreme Weather Events:** Fleet and fleet equipment assets face climate-related risks that can impact performance, lifecycle, and operational costs. Extreme weather events such as flooding, ice storms, and heat waves can damage vehicles or disrupt service delivery, while temperature extremes accelerate wear on components like tires, batteries, and cooling systems. In addition, evolving climate policies may require transitioning to low-emission or electric vehicles, introducing financial and operational challenges. These factors can shorten asset life, increase maintenance needs, and affect long-term budgeting.

Levels of Service

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

Community Levels of Service

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

Core Value	Level of Service Statement	Community Level of Service
Quality	Appropriate actions and interventions are taken to ensure the regular, safe use of Fleet assets. Fleet assets are essential components to the ongoing operation of municipal services	Maintenance of fleet asset conditions are essential to the City's Fire, Public Works, Parks, Recreation and Cultural Services departments.
Performance	There are long-term plans in place for the renewal and replacement of Fleet assets in line with estimated useful life and industry best practice	Capital replacement activities for fleet are generally planned 10 years in advance and consider the asset's age, condition, utility, availability of replacement stock, and cost-benefit analysis of replacement.

Technical Levels of Service

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

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance		Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2023	2024	
Quality	Appropriate actions and interventions are taken to ensure the regular, safe use of fleet assets Fleet assets are essential components to the ongoing operation of municipal services	Average condition of assets	≥75% Below targeted average condition of assets. Consider incorporating measurable level of service metrics; such as, cost per km, mean time to repair.	42%	60%	Increase

Technical Levels of Service - Continued

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance		Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2023	2024	
Performance	There are long-term plans in place for the renewal and replacement of Fleet assets in line with estimated useful life and industry best practice	% of assets in poor or very poor	≤40 Below target. Reduce share of poor or very poor units through prioritized replacement of high-risk vehicles (e.g. snowplows, fire trucks, transit buses).	47%	52%	Increase
		% of assets in good or very good	≥25 Establish renewal targets to improve condition distribution; aim to increase assets in good or very good condition to ≥25% by 2030.	23%	16%	Increase
Affordable	Fleet and fleet equipment are managed cost-effectively for the expected level of service	Reinvestment rate*	7.70% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	6.24%	2.56%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$5.5 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$3.2 million	$1.8 million	Increase

* The reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for fleet and fleet equipment performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

As the public does not interact with the majority of fleet and fleet equipment, the survey focused on the Transit segment fleet assets. The public was almost equally satisfied and dissatisfied with the performance and availability of Transit fleet with 16.29% being satisfied and 25.57% dissatisfied. The remaining 58.15% of respondents were neither satisfied, dissatisfied, or did not have an opinion. The respondents were also pretty split on the condition and maintenance of the City's Transit fleet with 31.33% rating the condition as acceptable or exceeds expectations and 27.20% indicated a need for improvement. The remaining 41.47% had no preference. This aligns with current asset data, which shows that 42% of Transit fleet assets are in fair or better condition and 58% of assets in poor or very poor.

Most of the City's fleet is aging and requires frequent repairs. To maintain current service levels, investment in fleet and equipment must increase.

Appropriateness Analysis

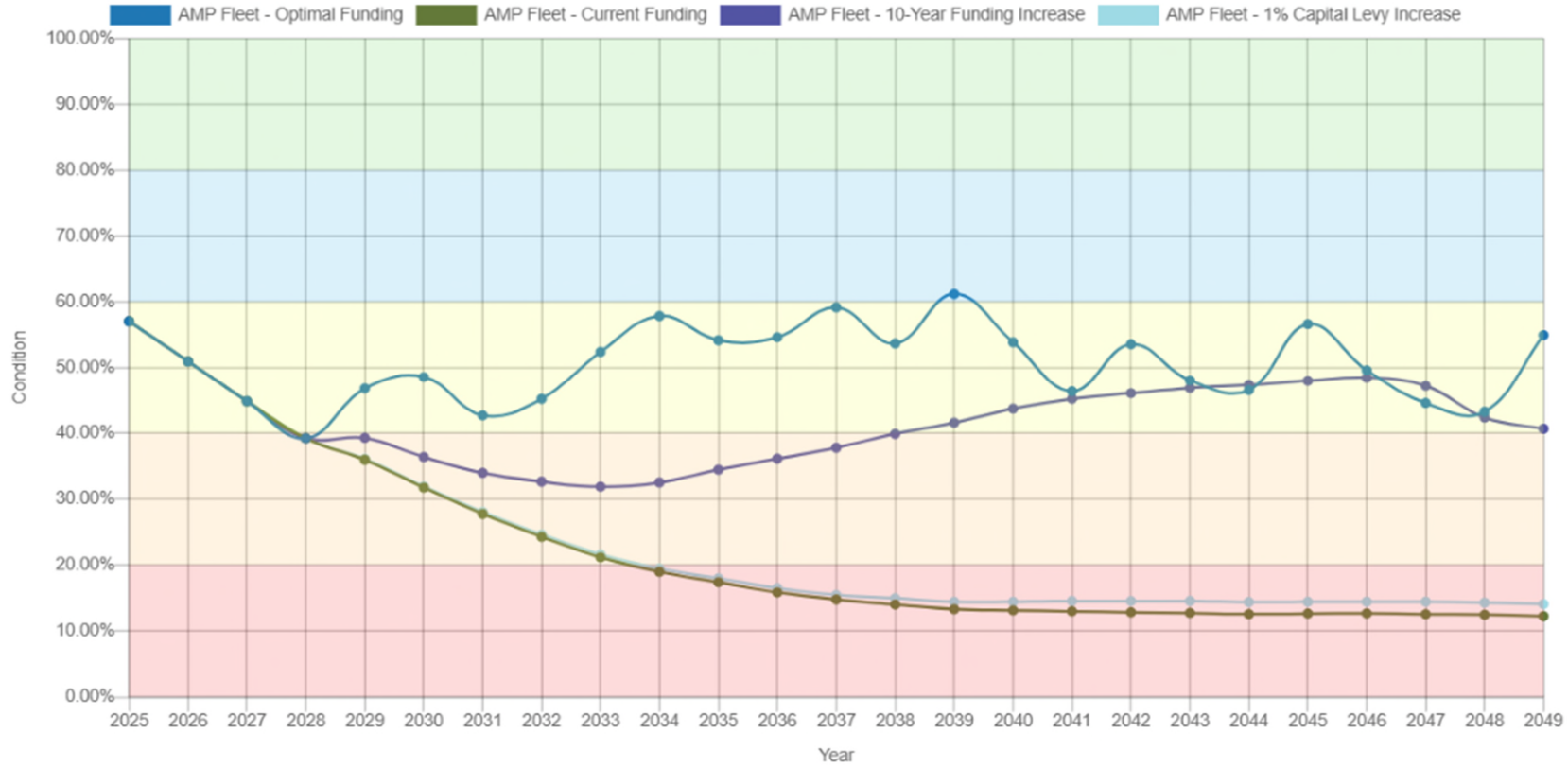
The analysis of fleet and fleet equipment was done over a time horizon from 2025 to 2049 horizon. This timeline was used to provide a representation of the lifecycle impacts of each funding decision; the shorter timeline best reflects the shorter service life of fleet and fleet equipment. This analysis shows that current funding levels are insufficient to maintain service quality. The four funding scenarios highlight significant differences in long-term sustainability. All scenarios start at an overall condition of 57% (fair) and decline to around 40% (poor) by 2028, reflecting lifecycle events occurring without the need for major investment in the early years. While this initial decline is consistent for all four funding strategies, beyond 2028, the scenarios diverge sharply. Under the current funding level, the condition continues to deteriorate steadily, reaching 12% (very poor) by 2049. Following the Long-Term Capital Funding Policy, which includes a 1% annual levy increase, performs slightly better but still declines to 15% (very poor) by the end of the timeframe. Both these outcomes fall well below acceptable standards and indicate insufficient funding to maintain service levels in the long-term.

In contrast, the 10-year phase-in and optimal funding strategies demonstrate the benefits of proactive investment. While conditions fluctuate as lifecycle events occur, these strategies maintain significantly higher performance levels. By 2049, the condition in the 10-year phase-in scenario ends at approximately 41% (fair), and the optimal funding scenario achieves 55% (fair), ensuring a more sustainable fleet and fleet equipment condition over the long-term.

Appropriateness Analysis – Continued

It is important to consider the long-term trend of each funding scenario. Under the current funding level, the average condition of fleet and fleet equipment is 22.12%. Following the Long-Term Capital Funding Policy, this improves slightly to 23.05%. However, under the optimal and 10-year phase-in scenarios, the average condition rises significantly to 50.60% and 41.72%, respectively. This demonstrates the critical importance of increasing investment for fleet and fleet equipment. As conditions decline, the risk of asset failure grows, leading to higher repair costs and more user complaints.

The implications of underfunded scenarios are clear: deferred maintenance and replacement will lead to higher lifecycle costs, increased risk of breakdowns, and potential service disruptions. Conversely, adopting optimal or phased-in funding strategies reduces risk, avoids costly emergency repairs, and supports reliable service delivery. This analysis underscores the critical need to increase investment in fleet and fleet equipment assets to maintain sustainability and align with long-term asset management objectives.



Recommendations

Data Review/ Validation

To improve planning accuracy, the City should continue to review and update replacement costs, especially for assets of high value. Wherever possible, obtain estimates based on comparable recent purchases or quotes. Consider incorporating key performance indicators and metrics to effectively monitor performance; such as, preventative-maintenance compliance (%), mean time to repair, cost per km. This will provide better data to track and report on level of service performance and support informed decision-making.

Replacement Costs

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

Condition Assessment Strategies

Ensure the process of assessing asset condition is uniform across fleet assets so that meaningful comparisons and inferences can be drawn from condition data. A manual detailing the factors reviews, with supportive information like photographs and scales, would be helpful, especially in the event of staff changes.

Identify condition assessment strategies for high value assets.

Risk Management Strategies

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

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates to support continuous improvement.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

4.4 Land Improvements

Asset Inventory and Cost

The City manages a diverse range of land improvement assets. For reporting purposes, these assets are summarized by department/ segment. Some examples of common assets included in these segments include:

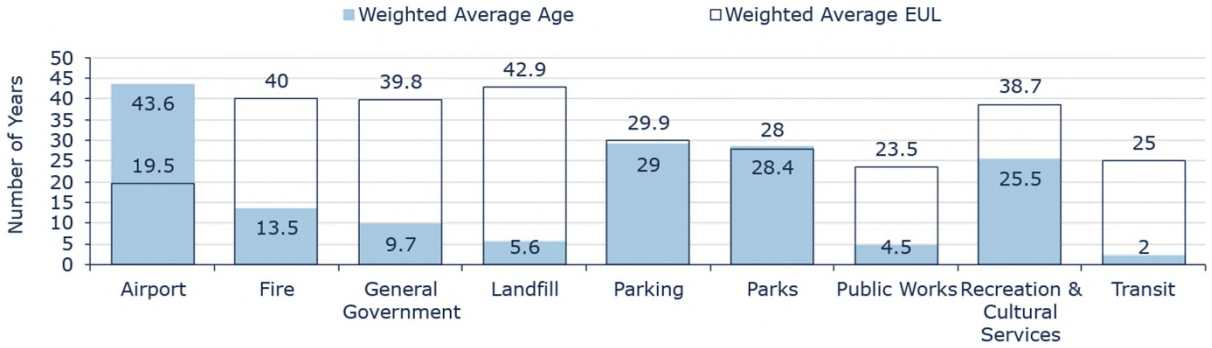
- Parks Land Improvements: Athletic fields, playgrounds, and non-enclosed structures like gazebos, benches, picnic tables
- Parking Lots: Parking lots for City buildings, fire halls, recreational facilities and parks
- Airport Land Improvements: Tarmac, electrical, and additional assets
- Landfill Land Improvements: Sludge ponds and clay liners
- Transit: Bus shelters

The following table provides summary information based on the 2024 year-end:

Asset Segment	Quantity	Replacement Cost
Airport	66	89,900,790
Fire	5	422,153
General Government	6	582,942
Landfill	4	4,913,380
Parking	49	14,661,158
Parks	499	61,638,673
Public Works	9	549,774
Recreation and Cultural Services	5	820,235
Transit	95	835,742
Total	**738**	**$174,324,847**

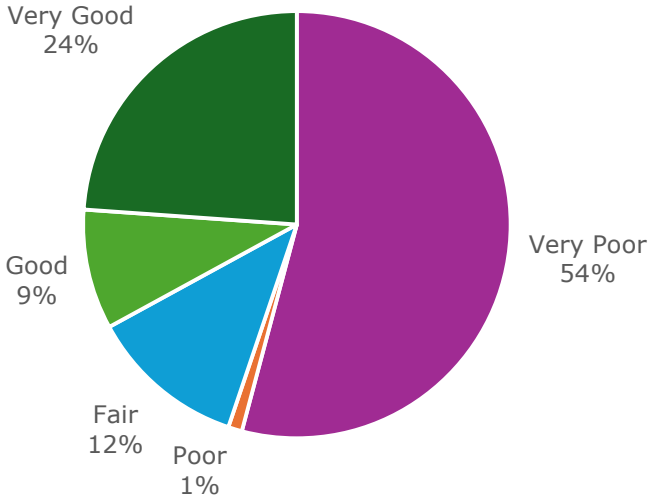
Asset Age

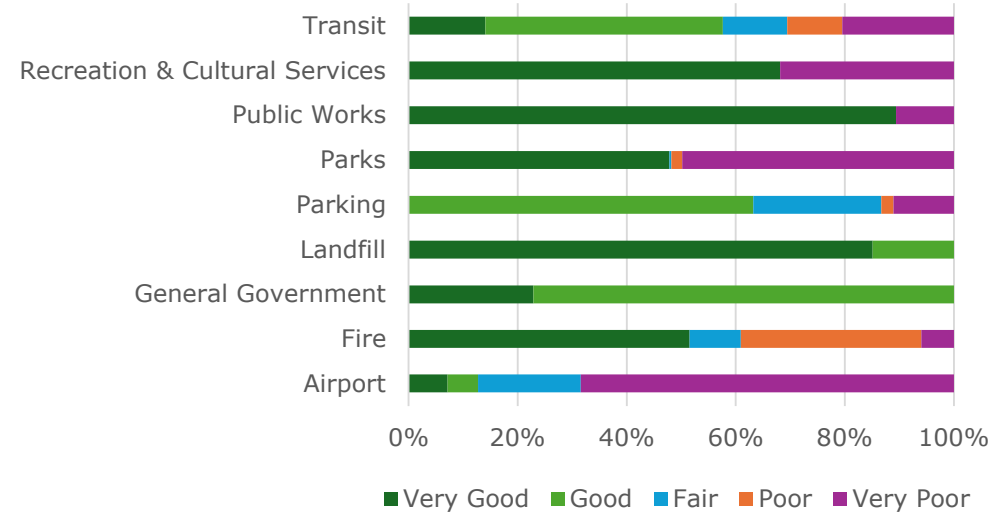
The table to the right illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. Currently the average assessed age (based on condition rating) is 22 years 5 months with an average service life remaining of 1 year 9 months.



Asset Condition

The pie chart below illustrates the current average condition for all land improvement segments, based on age and estimated useful life in accordance with the City's Tangible Capital Asset Policy. In the future, it is recommended to inspect and evaluate these assets against a defined set of criteria to better determine condition. The chart below details the average condition of all land improvement assets by segment. As noted in the pie chart, 55% of these assets fall within the very poor to poor category.





Asset Condition Analysis

The majority of the 55% of assets in poor to very poor condition represents the following assets:

- Airport: runways, aprons, taxiways, and related lighting
- Parks: playground equipment, lighting, and fencing
- Transit: bus shelters, and concrete pads

These assets have been considered for replacement through the 10-year Capital Budget process.

Lifecycle Management Strategy

The following table outlines the City's current lifecycle management strategy for land improvements:

Event Class	Description
Maintenance and Inspection	• Ongoing maintenance of land improvement assets is managed internally by the respective departments • Daily, weekly, monthly, and annual inspections of asset function and structure are conducted in-house, complemented by third-party assessments to meet regulatory standards
Rehabilitation	• Asset rebuilds are determined on a case-by-case basis, balancing cost considerations with staff capacity for repairs • Land improvement asset rehabilitation focuses on meeting expected lifespans while ensuring compliance with safety standards
Replacement	• Asset replacement decisions integrate factors such as useful life, anticipated utility, usage rates, and public feedback regarding safety and condition. These considerations inform replacement cost assessments • If an asset is damaged midway through the lifecycle, it will be slated for partial or full replacement, depending on the use and regulation context

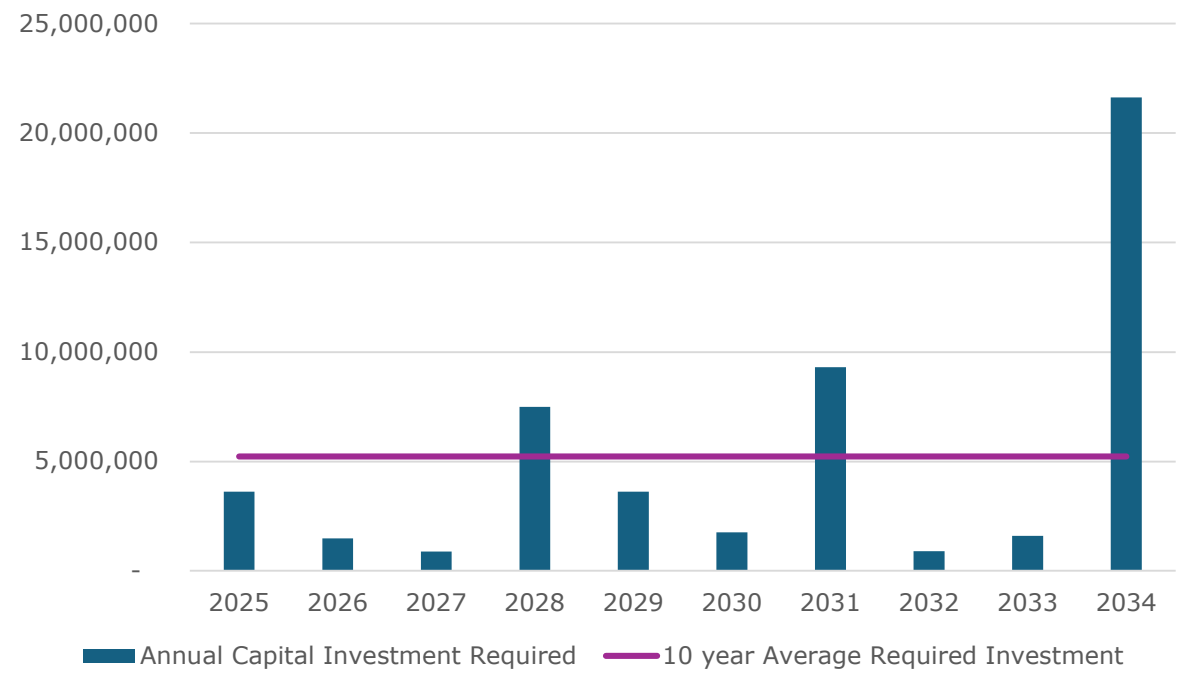
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $8.1 million. The accompanying graph demonstrates the average annual capital investment required for the next 10 years of $5.2 million.

The annual funding shortfall is approximately $5.6 million (average annual requirement of $8.1 million less the 10-year average annual funding investment in the 2025 capital plan of $2.5 million). Note that the line in the graph represents the 10-year average required investments of $5.2 million.

The graph indicates a significant investment required in 2034 which relates to major rehabilitation coming due for the Airport, including, replacement of runway 08-26.

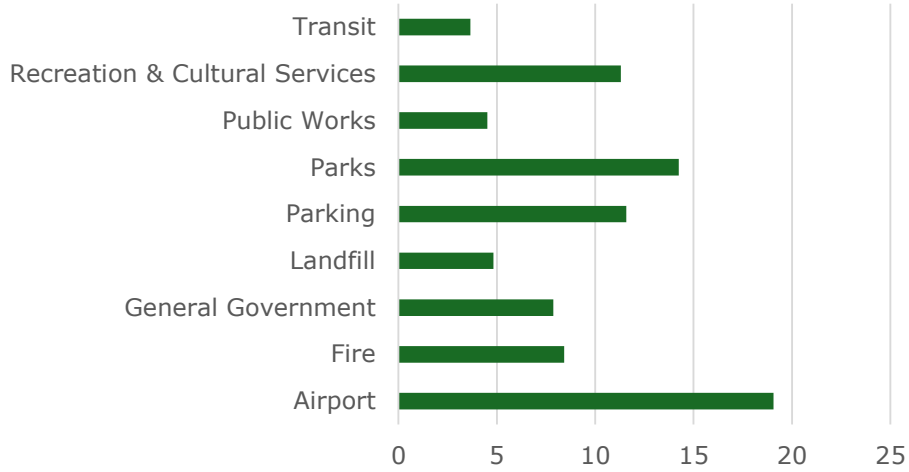
Please note that the figures presented in the graph have not been adjusted for inflation.



Risk and Criticality of Land Improvements

Probability of failure for land improvement assets relies on asset condition, while the consequence of failure considers the replacement cost of the asset. The heat map below shows the relationship between probability and consequence of failure. Overall, the average risk rating for land improvements is 70% in high to very high risk. The bar chart below shows the average risk level for land improvement assets by segment in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$8,702,139	$39,087,925	$5,451,002	$15,047,656	$106,036,125
(5%)	(22%)	(3%)	(9%)	(61%)



Heat Map Analysis

The highest-risk land improvement assets relate to the Airport's runways, aprons, taxiways, and related lighting. These assets have an average probability of failure of 4.91 (aging assets and/ or poor condition) and an average consequence of failure of 4 (high replacement cost), resulting in a very high risk rating of 19.64. These assets are being considered for replacement through the 10-year Capital Budget process.

Risks to Current Asset Management Strategies for Land Improvements

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

- **Lifecycle Management Strategies:** Historically, lifecycle management for land improvements has been largely reactive, creating challenges in balancing routine maintenance, major rehabilitation, and asset replacement.
- **Aging Infrastructure:** The City's land improvements, including Airport runways, taxiways, aprons, and related lighting, are aging and require significant maintenance and upgrades.
- **Climate Change and Extreme Weather Events:** Increasing variability in snow and precipitation loads is placing added stress on land improvement assets through more plowing, clearing, and load-bearing, accelerating deterioration, especially of asphalt surfaces, and challenging lifecycle timelines. In response, the City is exploring capacity increases through asset additions and enhancements.
- **Infrastructure Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.

Levels of Service

The following tables show the City's current level of service for the land improvement assets. Metrics include the community and technical levels of service that are required as part of O.Reg 588/17, as well as any additional performance measures that the City has selected for the AMP.

Community Levels of Service

The following table outlines the qualitative metrics that determine the community level of service provided by land improvement assets:

Core Value	Level of Service Statement	Community Level of Service
Quality	Appropriate actions and interventions are taken to ensure the regular, safe use of land improvement assets	Land improvement assets include municipal parks, airport assets, bus shelters, and sports fields. Wherever possible, assets are designed to serve a wide range of users.
Performance	There are long-term plans in place for the renewal and replacement of land improvement assets	Land improvement asset investment decisions are predominantly based on asset condition and expected future utility alongside existing rate of use and the relevant regulatory requirements surrounding the asset type. Land improvement capital investment projects are formally and publicly identified within the 10-year capital budget.

Technical Levels of Service

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

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance		Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2023	2024	
Quality	Appropriate actions and interventions are taken to ensure the regular, safe use of land improvement assets	Average condition of assets	≥70% in fair or better condition by 2035 Overall condition remains below acceptable thresholds with over half of assets rated poor or very poor. Develop class-based condition targets and renewal triggers	Poor: 21%	Poor: 27%	Increase

Technical Levels of Service - Continued

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance		Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2023	2024	
Performance	There are long-term plans in place for the renewal and replacement of land improvement assets	% of assets in good or very good condition	≥50% by 2030 Reinforce renewal prioritization for high-use and safety-critical sites.	27%	33%	Increase
		% of assets in poor or very poor condition	≤25% by 2035 Reduce backlog by advancing rehabilitation of poor-condition assets through risk-based prioritization and dedicated renewal funding.	51%	55%	Increase
Affordable	Land improvements are managed cost-effectively for the expected level of service	Reinvestment rate*	4:64% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	2.31%	1.54%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$8 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$5.2 million	$2.6 million	Increase

* Reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for land improvement performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

Due to the extensive range of land improvement assets managed by the City, the survey focused on three categories: parks and trail infrastructure, parking lots, and transit bus shelters. Results varied significantly between transit bus shelters and the other two categories; therefore, parks and trails and parking lots are analyzed separately from bus shelters.

Parks and Trails Infrastructure, and Parking Lots

Overall, these assets were viewed as adequate, with 66.50% of respondents rating their condition as acceptable or exceeding expectations. Another 18.29% indicated a need for improvement, while 15.21% expressed no preference. The chart below breaks down the condition by specific asset category:

	Acceptable/ Exceeds Expectations	Needs Improvement	No Preference	Actual Condition ≥ Fair
Parks and Trails	72.39%	18.54%	9.07%	48%
Recreational Areas and Playgrounds	59.26%	13.20%	27.54%	68%
Parking Lots	67.41%	21.51%	11.08%	87%

Interestingly, parks and trails were perceived to be in better condition compared to the City's actual condition data, suggesting a discrepancy between public perception and reality. It is recommended that condition data be reviewed to ensure accuracy and reasonableness.

Regarding service expansion, respondents showed greater support for parks and trail infrastructure:

- **42.91%** in favour
- **36.21%** not in favour
- **20.88%** no preference

In contrast, willingness to expand parking services was lower:

- **29.44%** in favour
- **47.97%** not in favour
- **22.66%** no preference

Public Engagement Results - Continued

Transit Bus Shelters

The majority of respondents (41.49%) had no preference on the condition of the transit bus shelters. Among those who expressed an opinion, these assets were generally viewed as adequate, with 32.19% rating their condition as acceptable or exceeding expectations. An additional 26.32% indicated that improvements were needed. This aligns with current asset data, which shows that 69% of bus shelter assets are in fair or better condition. Regarding service expansion, respondents were nearly split with 39.46% in favour, 32.95% no in favour, and 27.59% with no preference.

Appropriateness Analysis

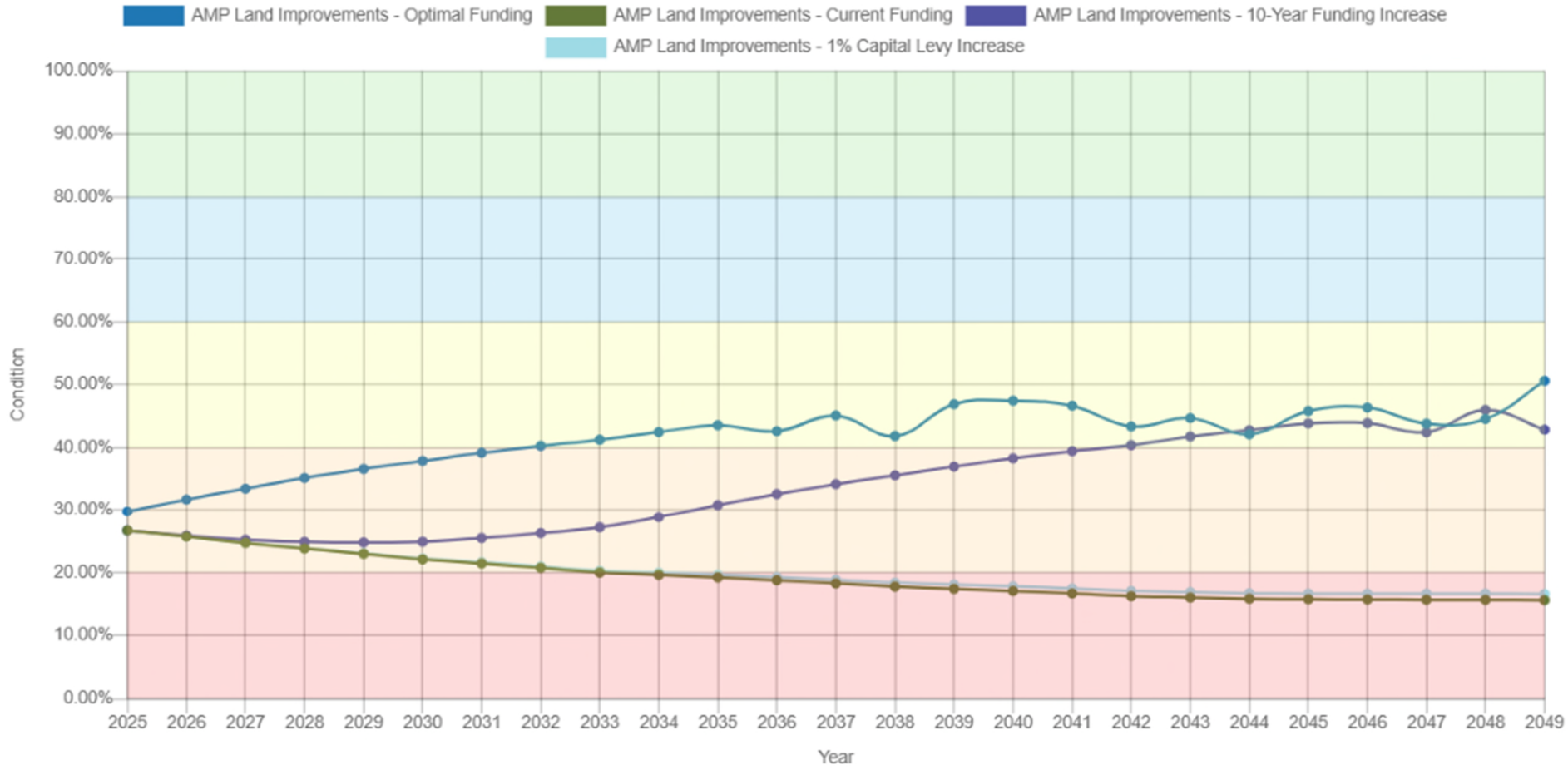
The analysis of the funding strategies for land improvement assets was done over a time horizon from 2025 to 2049. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the shorter timeline best reflects land improvements shorter service life. This analysis shows that current funding levels are insufficient to maintain service quality and clearly demonstrates the difference in long-term asset condition and sustainability. Under the optimal funding scenario, conditions start at approximately 30% (poor) and steadily rises to 51% (fair) by the end of the timeframe, with minor swings due to lifecycle requirements. This trends reflects the benefits of consistent and adequate investment in maintaining and renewing land improvement assets.

In contrast, the other three scenarios being at about 27% (poor) and diverge significantly over time. The current funding level and the Long-Term Capital Funding Policy, which includes a 1% annual levy increase, both show gradual deterioration, ending at 16% (very poor) and 17% (very poor), respectively, by 2049. These outcomes fall well below acceptable standards and indicate insufficient funding to support the long-term needs of land improvements. Meanwhile, the 10-year phase-in scenario demonstrates a more sustainable approach, following a steady upward trend with minor fluctuations due to lifecycle events, and ending at a condition of approximately 43% (fair).

It is important to consider the long-term trend of each funding scenario. Under the current funding level, the average condition of land improvement assets is 19.17%. Following the Long-Term Capital Funding Policy, this improves slightly to 19.70%. However, under the optimal and 10-year phase-in scenarios, the average condition rises significantly to 41.70% and 34.06%, respectively. This demonstrates the critical importance of increasing investment for land improvement assets. As conditions decline, the risk of asset failure grows, leading to higher repair costs and more user complaints.

Appropriateness Analysis – Continued

The implications of these trends are significant. Underfunded scenarios will result in accelerated deterioration, increased risk of failure, and higher lifecycle costs due to deferred maintenance and emergency interventions. Conversely, adopting optimal or phased-in funding strategies ensures that land improvement assets remain in a state of good repair, reduces risk, and avoids costly reactive measures. This analysis underscores the critical need for increased investment to maintain sustainability and align with long-term asset management objectives.



Recommendations

Data Review / Validation

Review internal processes for assessing asset condition to ensure that evaluation criteria are appropriate for each asset type. Establish a structured process supported by reference documentation outlining these criteria. Such documentation will promote objective analysis and provide continuity in the event of staff changes, supporting both new incumbents and the long-term sustainability of the asset management program.

Risk Management Strategies

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

Lifecycle Management Strategies

Evaluate the suitability of rehabilitating certain assets, particularly those that are costly to replace but can be cost-effectively restored (e.g. tennis courts). This approach may optimize lifecycle costs and extend asset usability. Incorporate findings from the Parks and Recreation Master Plan into asset investment decisions to ensure alignment with long-term community priorities and service objectives.

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates to support continuous improvement.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

4.5 Machinery and Equipment

Asset Inventory and Cost

North Bay owns a wide range of machinery and equipment assets essential to the City's daily operations. For reporting purposes, these assets have been grouped by their department of use. Below are the segments and examples of common assets within each:

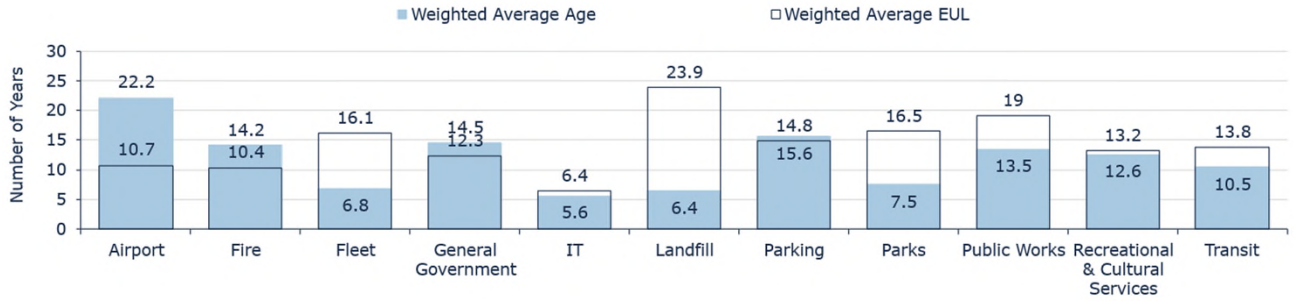
- Airport: tools, hoists, plow blades, sander units
- Emergency Services: tools, communication equipment, bunker gear, hoses
- Parks, and Recreational and Cultural Services: brooms, mowers, pressure washers
- Landfill: laboratory equipment, SCADA equipment
- Fleet, and Public Works: mechanics' tools, lifts
- Transit: coin vault, bus lift, bike racks
- Parking: pay stations, line painters
- IT, and General Government: computers, servers, cameras

The following table provides summary information based on a 2024 year-end:

	Quantity	Replacement Cost
Airport	74	1,024,815
Emergency Services	98	3,440,909
Fleet	33	2,357,735
General Government	31	2,293,172
IT	890	2,646,130
Landfill	15	1,741,411
Parking	24	2,358,430
Parks	102	3,004,837
Public Works	170	19,058,166
Recreational and Cultural Services	51	2,475,250
Transit	48	3,246,470
Total	**1,536**	**$43,647,325**

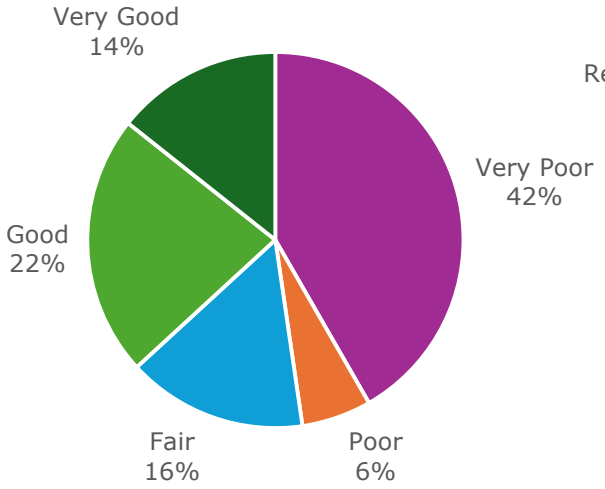
Asset Age

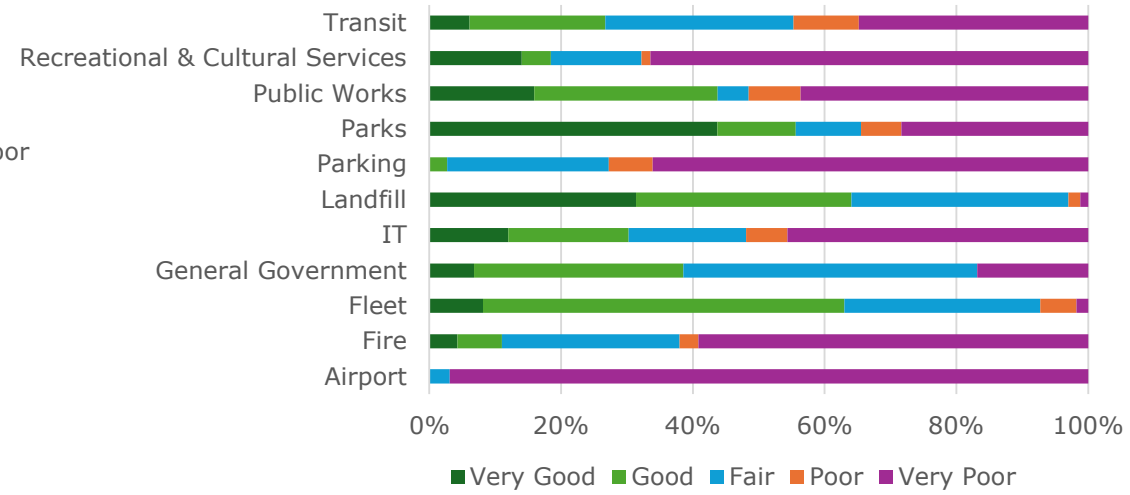
The table to the right illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. Machinery and equipment assets are recorded in PSD Citywide, the City's asset management software. Currently the average assessed age (based on condition rating) is 7 years 9 months with an expected service life remaining of 1 year 4 months.



Asset Condition

The pie chart below illustrates the current average condition for all machinery and equipment assets. Condition for these assets is based on asset age. The chart below details the assessed condition for all machinery and equipment assets by segment. As noted in the pie chart, 52% of these assets call within the fair to very good category.





Asset Condition Analysis:

The 48% of assets in the poor to very poor condition primarily relates to parking pay-and-display machines, bunker gear, sanders, and trackless tractors. These items have been considered replacement through the 10-year Capital Budget.

Lifecycle Management Strategy

The following table outlines the City's current lifecycle management strategy for machinery and equipment:

Event Class	Description of Current Strategy
Maintenance and Inspection	• Machinery and equipment are inspected routinely in accordance with regulations and service contracts, supplemented by annual asset inspections • Equipment requiring precision undergoes regular testing against known standards to ensure accuracy • Maintenance is performed on an as-needed basis, prompted by scheduled inspections or staff notifications • Certain maintenance tasks are managed internally when within staff capabilities. Third-party support is engaged when internal capacity is exceeded. Vendors are involved for assets under warranty terms
Rehabilitation	• Rehabilitation decisions are guided by factors; such as, remaining useful life, asset cost, usage, and criticality while ensuring operational activities and regulatory compliance are not compromised • Rehabilitation efforts are aligned with staff capabilities and available capacity to maintain efficiency and sustainability
Replacement	• Replacements are coordinated with vendors when assets fail within warranty terms • Scheduled replacements are phased based on asset useful life**,** aligned with asset criticality, and cost considerations. Planning also accounts for technological advancements and regulatory requirements

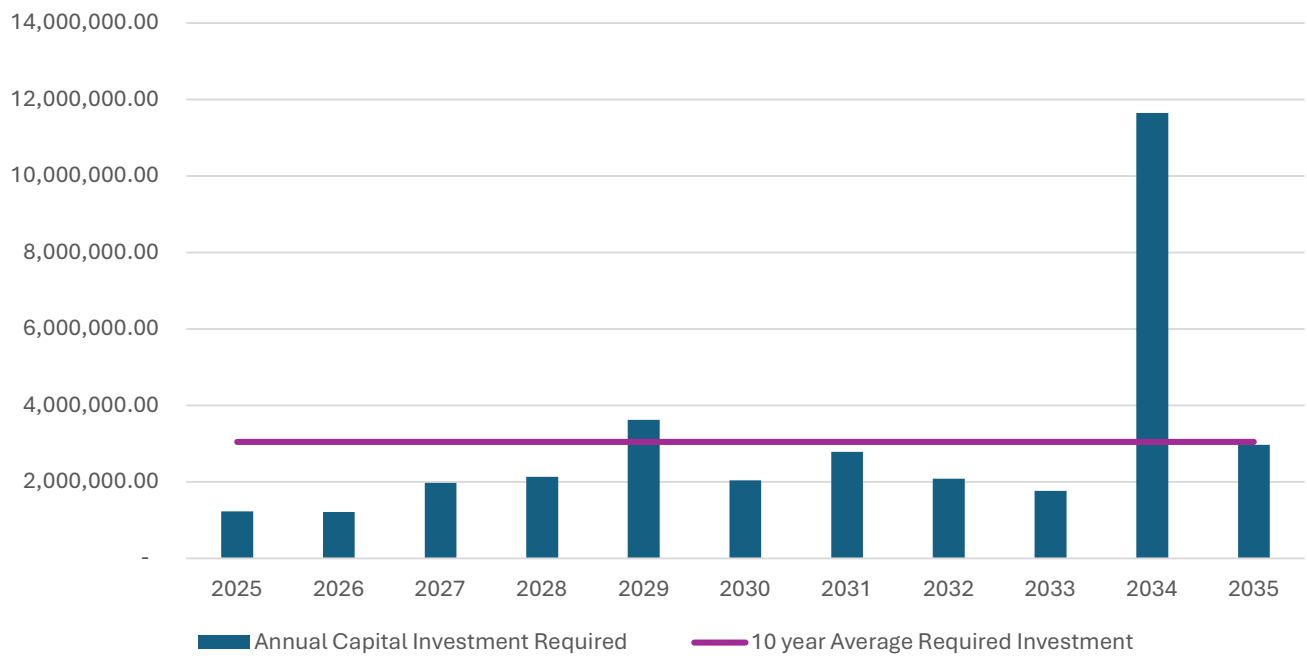
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $3.7 million. The accompanying graph demonstrated the average annual capital investment required for the next 10 years of $3.0 million.

The annual funding shortfall is approximately $2.6 million (average annual requirement of $3.7 million less the 10-year average annual funding investment in the 2025 capital plan of $1.1 million). Note that the line in the accompanying graph represents the 10-year average required investment of $3.0 million.

The graph shows that significant investment will be required by 2034, driven by major replacements coming due for public works assets—such as street signs, related supports, and traffic cameras—and fire service assets, including SCBA units and bunker gear.

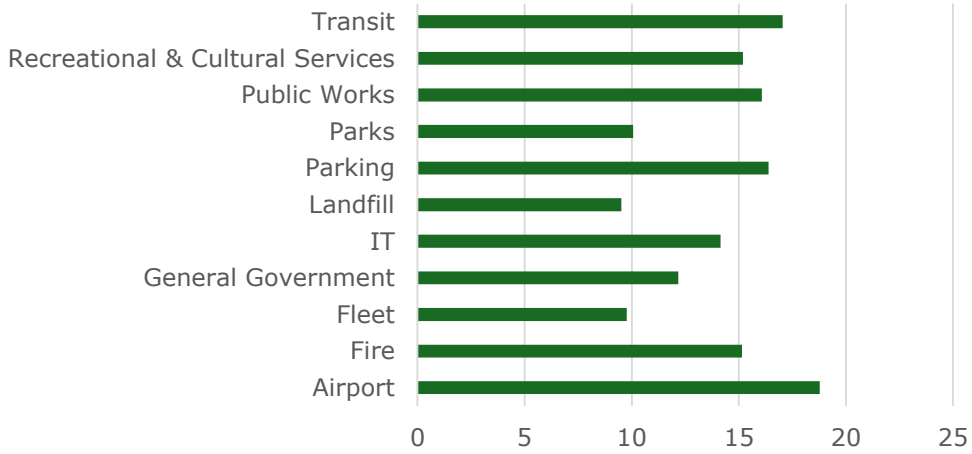
Please note that the figures presented in the graph have not been adjusted for inflation.



Risk and Criticality of Machinery & Equipment

Probability of failure for machinery and equipment assets relies on asset condition, while the consequence of failure considers the replacement cost of the asset. The heat map below shows the relationship between probability and consequence of failure. Overall, the average risk rating for machinery and equipment is 77% in high to very high risk. The bar chart below shows the average risk level for machinery and equipment assets by segment in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$2,170,994	$6,436,796	$1,454,909	$10,581,757	$23,002,869
(5%)	(15%)	(3%)	(24%)	(53%)



Heat Map Analysis

The highest-risk machinery and equipment assets include parking pay-and-display machines; public works and roads equipment such as salters, spreaders, and traffic control systems; transit hoists and related equipment; fire equipment such as bunker gear and hoses; and airport equipment such as hoists and air fans. Many of these assets are subject to regulatory replacement requirements or are already identified for renewal within the City's 10-year capital plan.

Risks to Current Asset Management Strategies for Machinery and Equipment

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

- **Lifecycle Management Strategies:** Historically, lifecycle management for machinery and equipment has been largely reactive, creating challenges in balancing routine maintenance, major rehabilitation, and asset replacement.
- **Asset Design and Installation:** Regulatory and standard changes pose an ongoing risk, especially in fire, airport, and landfill departments. These shifts affect maintenance practices, asset requirements, and capital forecasting, often requiring new assets and straining budgets. Changes can occur unexpectedly across all departments so proactive planning and engagement with industry experts are key to mitigating this risk.

Risks to Current Asset Management Strategies for Machinery and Equipment - Continued

- **Aging Equipment:** The City's machinery and equipment is aging, with many items requiring frequent maintenance or replacement.
- **Climate Change and Extreme Weather Events:** Machinery and equipment assets face climate-related risks that can affect reliability, performance, and lifecycle costs. Extreme weather events such as flooding, ice storms, and heat waves can damage equipment or disrupt operations, while temperature fluctuations accelerate wear on mechanical components, hydraulics, and electrical systems. Increased humidity and precipitation can lead to corrosion and premature failure, and changing climate conditions may require adjustments to operating environments and maintenance schedules. Incorporating climate risk into asset management for machinery and equipment ensures proactive adaptation, reduces downtime, and supports long-term operational resilience.
- **Equipment Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.

Levels of Service

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

Community Levels of Service

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

Core Value	Level of Service Statement	Community Level of Service
Quality	Appropriate actions and interventions are taken to ensure the regular, safe use of machinery and equipment assets	Machinery and equipment assets are diverse and support the operational needs of multiple City departments, including fire services, parks and recreation, public works, and the airport. These assets play a critical role in delivering essential services and maintaining day-to-day functionality across the municipality.
Performance	There are long-term plans in place for the renewal and replacement of machinery and equipment assets	Machinery and equipment replacement decisions primarily consider asset condition, criticality, and legislative compliance. Investments in these assets are identified and forecasted up to 10 years in advance and are subject to ongoing review to ensure that budgeting practices remain aligned with departmental needs and evolving operational requirements.

Technical Levels of Service

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

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance		Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2023	2024	
Quality	Appropriate actions and interventions are taken to ensure the regular, safe use of machinery and equipment assets	Average condition of assets	≥70% in fair or better condition by 2035 Condition remains below desired levels, with over one-third of assets rated as poor. Establish renewal triggers by asset class and track weighted condition annually.	32%	39%	Increase
Performance	There are long-term plans in place for the renewal and replacement of machinery and equipment assets	% of assets in good or very good condition	≥60% by 2035 Increase proactive renewals for heavily used operational equipment.	27%	36%	Increase
		% of assets in poor or very poor condition	≤25 by 2035 Reduce share of poor or very poor assets through a prioritized replacement strategy focused on critical and high-use machinery.	60%	48%	Increase
Affordable	Machinery and equipment are managed cost-effectively for the expected level of service	Reinvestment rate*	8.49% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	2.48%	1.45%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$3.7 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$1 million	$0.6 million	Increase

* Reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided be the total replacement cost including lifecycle events.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for machinery and equipment performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

As the public interacts with only a small portion of the City's machinery and equipment, the survey focused on parking pay stations and traffic control equipment such as signalized intersections and traffic devices. These assets were generally viewed as sufficient, with 62.48% of respondents rating their condition as acceptable or exceeding expectations, 30.23% indicating a need for improvement, and 7.29% expressing no preference. This aligns with current asset data showing 52% of machinery and equipment assets are in fair or better condition; however, overall condition is trending downward due to age-related deterioration. Delaying investment increases the risk of asset failure.

Appropriateness Analysis

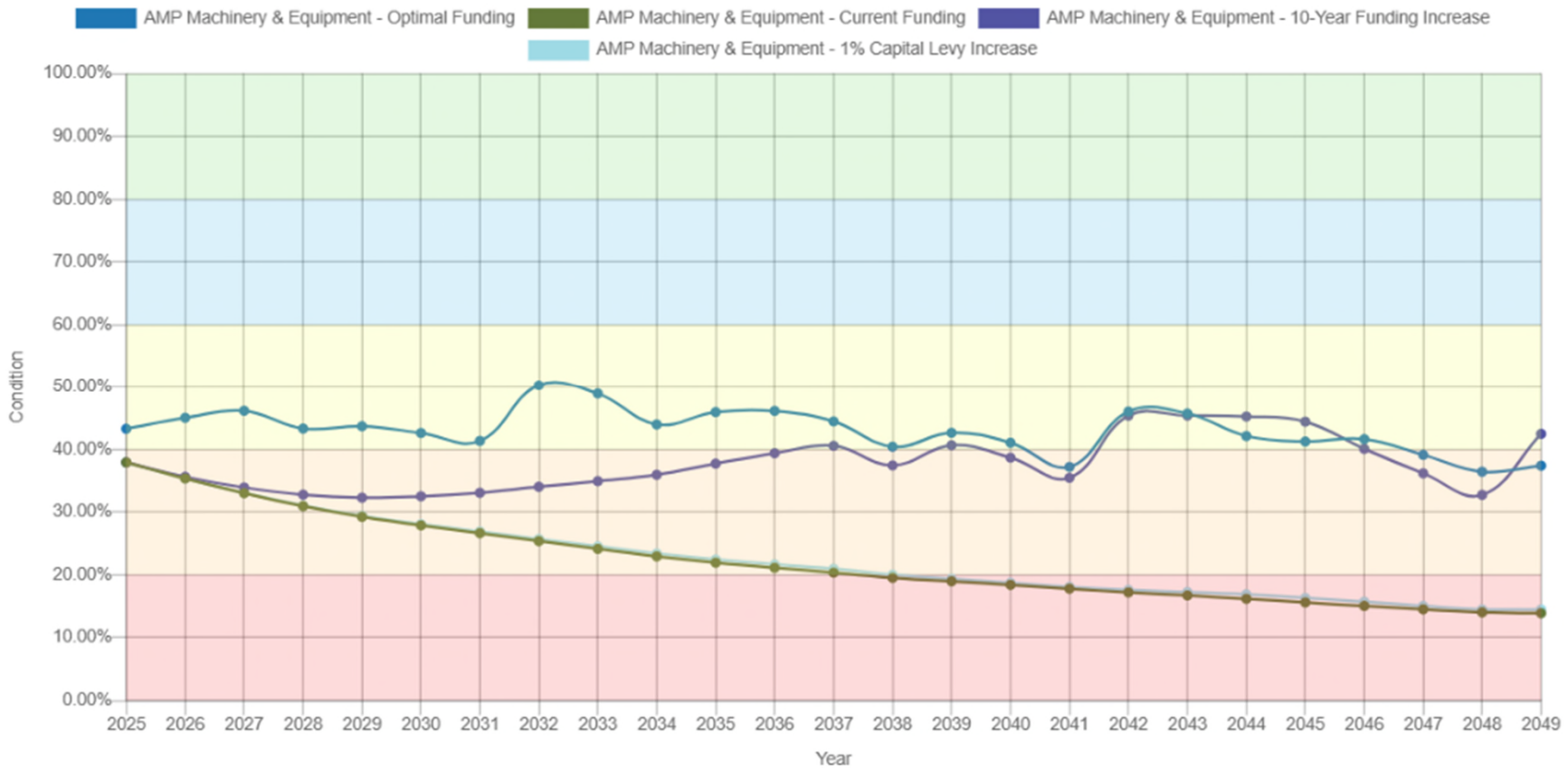
The analysis of the funding strategies for machinery and equipment was done over a time horizon from 2025 to 2049 horizon. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the shorter timeline best reflects machinery and equipment short service life. This analysis shows that current funding levels are insufficient to maintain service quality and clearly demonstrates the difference in long-term asset condition and sustainability. Under the optimal funding scenario, conditions start at approximately 43% (fair) and maintains that condition through the period and is at 37% (fair) by the end of the timeframe, with minor swings due to lifecycle requirements. This stability reflects the benefits of consistent and adequate investment in maintaining and renewing machinery and equipment assets.

In contrast, the other three scenarios being at about 38% (poor) and diverge significantly over time. The current funding level and the Long-Term Capital Funding Policy, which includes a 1% annual levy increase, both show gradual deterioration, each ending at 14% (very poor), by 2049.

Appropriateness Analysis - Continued

These outcomes fall well below acceptable standards and indicate insufficient funding to support the long-term needs of machinery and equipment. Meanwhile, the 10-year phase-in scenario demonstrates a more sustainable approach, following a steady upward trend with minor fluctuations due to lifecycle events, and ending at a condition of approximately 42% (fair).

The implications of these trends are significant. Underfunded scenarios will result in accelerated deterioration, increased risk of failure, and higher lifecycle costs due to deferred maintenance and emergency interventions. Conversely, adopting optimal or phased-in funding strategies ensures that machinery and equipment assets remain in a state of good repair, reduces risk, and avoids costly reactive measures. This analysis underscores the critical need for increased investment to maintain sustainability and align with long-term asset management objectives.



Recommendations

Data Review/ Validation

To improve planning accuracy, the City should continue to review and update replacement costs, especially for assets of high value. Wherever possible, obtain estimates based on comparable recent purchases or quotes. Consider incorporating key performance indicators and metrics to effectively monitor performance; such as, preventative-maintenance compliance (%), and mean time to repair. This will provide better data to track and report on level of service performance and support informed decision-making.

Replacement Costs

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

Condition Assessment Strategies

Ensure the process of assessing asset condition is uniform across machinery and equipment assets so that meaningful comparisons and inferences can be drawn from condition data. A manual detailing the factors reviews, with supportive information like photographs and scales, would be helpful, especially in the event of staff changes.

Identify condition assessment strategies for high value assets.

Risk Management Strategies

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

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates to support continuous improvement.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

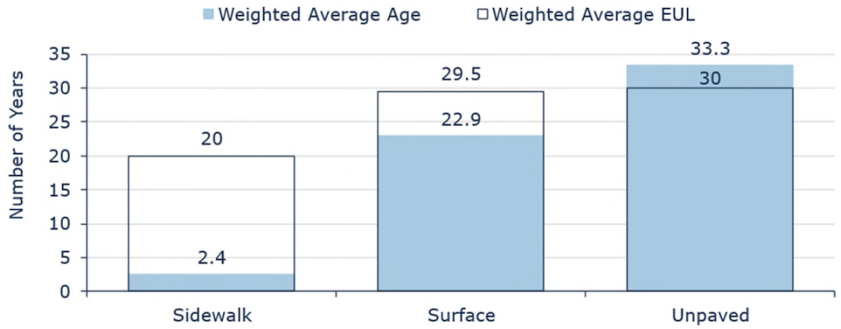
4.6 Road Network

Asset Inventory and Cost

Roads include all municipally owned and maintained roadways, along with supporting roadside infrastructure. The City's roads and sidewalks are maintained by the public works department, which also oversees winter control operations. The road network consists of paved roads, unpaved roads, and sidewalks. Paved roads have a combined length of 827 lane km, unpaved roads total 25 km, and sidewalks total 153 km. The estimated replacement value of the entire road network is $618 million.

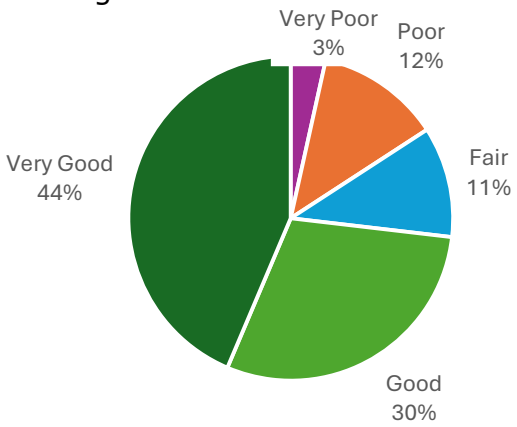
Asset Age

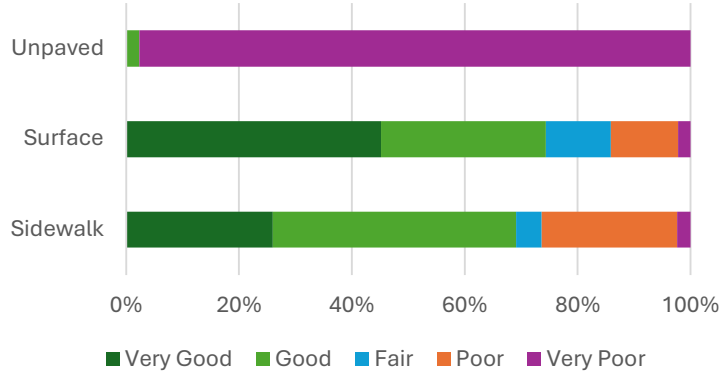
The table to the right illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. Currently the average assessed age (based on condition rating) for the road network is 11 years 5 months with and expected service life remaining of 14 years 7 months.



Asset Condition

The pie chart below illustrates the current average condition for the road network. Overall, 85% of the road network assets are rated fair or better. The chart details the assessed condition of all road network assets by asset type – unpaved roads, surface (paved) roads, and sidewalks. Examples of roads in the very poor category include Widdifield Station Road and Cedar Heights.





Asset Condition Analysis

The 15% of assets in poor to very poor condition relate to the unpaved road segments within the City, including, Evergreen Road, Old Callander Road, and Champlain Park Road. These road segments are planned for renewal and replacement through the City's annual on-going programs as identified through the 10-year Capital Budget process.

Approach to Condition for Road Network

Accurate and reliable condition data provides more confidence to determine remaining service life and to identify a cost-effect approach to managing assets. The following describes the City's current approach:

- A Road Needs Study is completed every five years. In 2021, the City engaged GM BluePlan Engineering Limited to assess 100% of the road network. Pavement Quality Index (PQI) values were collected, updated in the RoadMatrix system, and then uploaded to the corresponding road assets in PSD Citywide.
- Pothole patching is applied as per Minimum Maintenance Standards (MMS) requirements to repair pothole formations.
- Paved road resurfacing program of approximately $4 million annually that includes the maintenance and rehabilitation work such as, crack sealing, mill and pave, and full reconstruction.
- Unpaved road resurfacing program of approximately $0.7 million annually that includes maintenance and rehabilitation work such as, surface treatments.
- Sidewalk replacement program of approximately $0.4 million annually that includes repair and replacement of deteriorating sidewalks.

Lifecycle Management Strategy

The City's road system represents the second-highest value asset category in its portfolio.

Currently, the lifecycle strategy for unpaved roads and sidewalks is replacement at end of life. For paved roads, the City has developed proactive lifecycle interventions for various design classes. Rather than allowing roads to deteriorate until full replacement is required, strategic rehabilitation is expected to extend service life at a lower total cost, optimizing both life expectancy and overall investment.

Roads are subject to stresses such as winter freeze-thaw cycles and increased traffic loading, which accelerate deterioration and reduce life expectancy compared to other assets. Consequently, rehabilitation and replacement needs occur more frequently. The network's average Pavement Quality Index (PQI) is approximately 55, and the City's desired level of service is to maintain this average condition. This target aligns with community expectations and available funding levels.

Paved Roads – Lifecycle Events	Type of Work	Unit Cost
Crack Sealing	Preventative Maintenance	$27 per m
Chip Seal	Preventative Maintenance	$5.40 per m^2
Pulverize and Overlay (50/100mm)	Rehabilitation	$45/$80 per m^2
Mill, Removal, and Overlay (50/100mm)	Rehabilitation	$45/$80 per m^2
Overlay (50mm)	Rehabilitation	$40 per m^2
Full Replacement (Arterial, collector)	Replacement	$330 per m^2
Full Replacement (Local)	Replacement	$167 per m^2

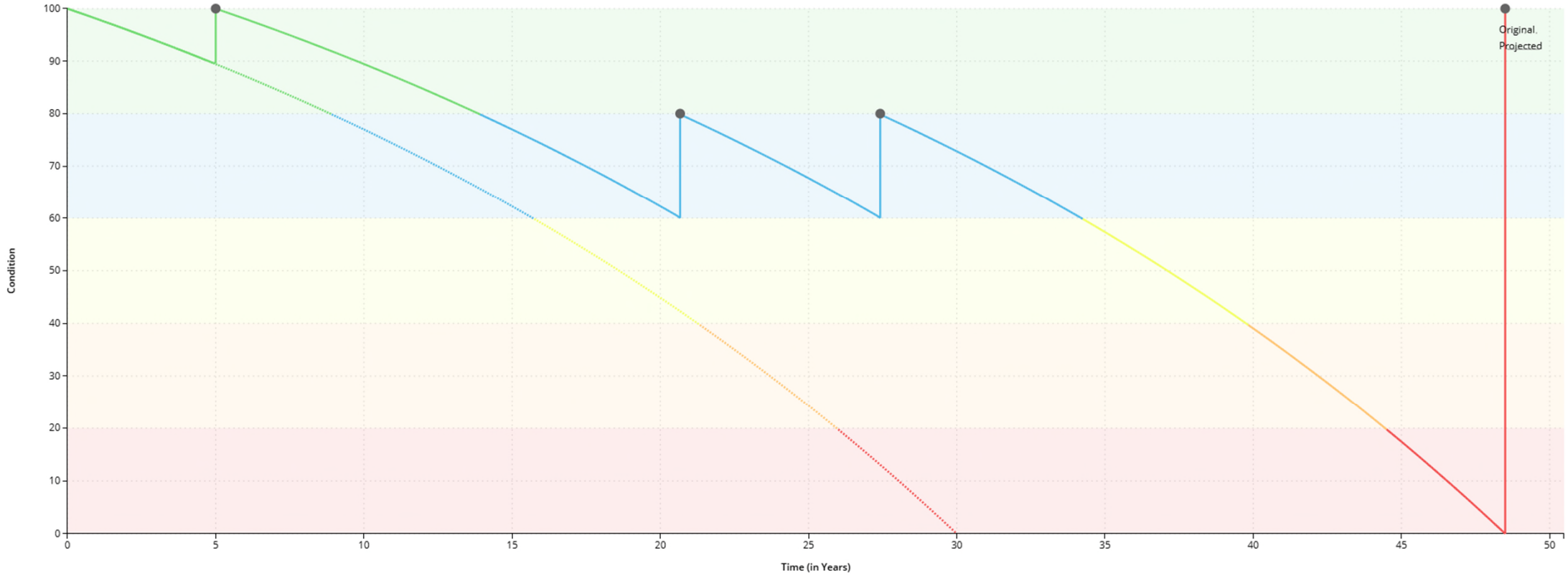
Implementing a proactive lifecycle strategy can generate both direct and indirect cost savings compared to end-of-life replacement. These savings are influenced by factors such as current market conditions, project coordination opportunities, and asset criticality. Beyond financial benefits, a proactive approach can reduce complaints, minimize health and safety risks, and help maintain the City's desired level of service.

Lifecycle Management Strategy - Continued

Below is a sample graph illustrating a potential lifecycle strategy application that includes:

1. Crack and seal applied at year 5
2. Mill and overlay applied when condition reaches the minimum accepted threshold for the road class; thereby extending the life from 30 years to 48 years before full replacement is required

For this AMP, this lifecycle strategy has been applied to the arterial, collector, and local paved roads.



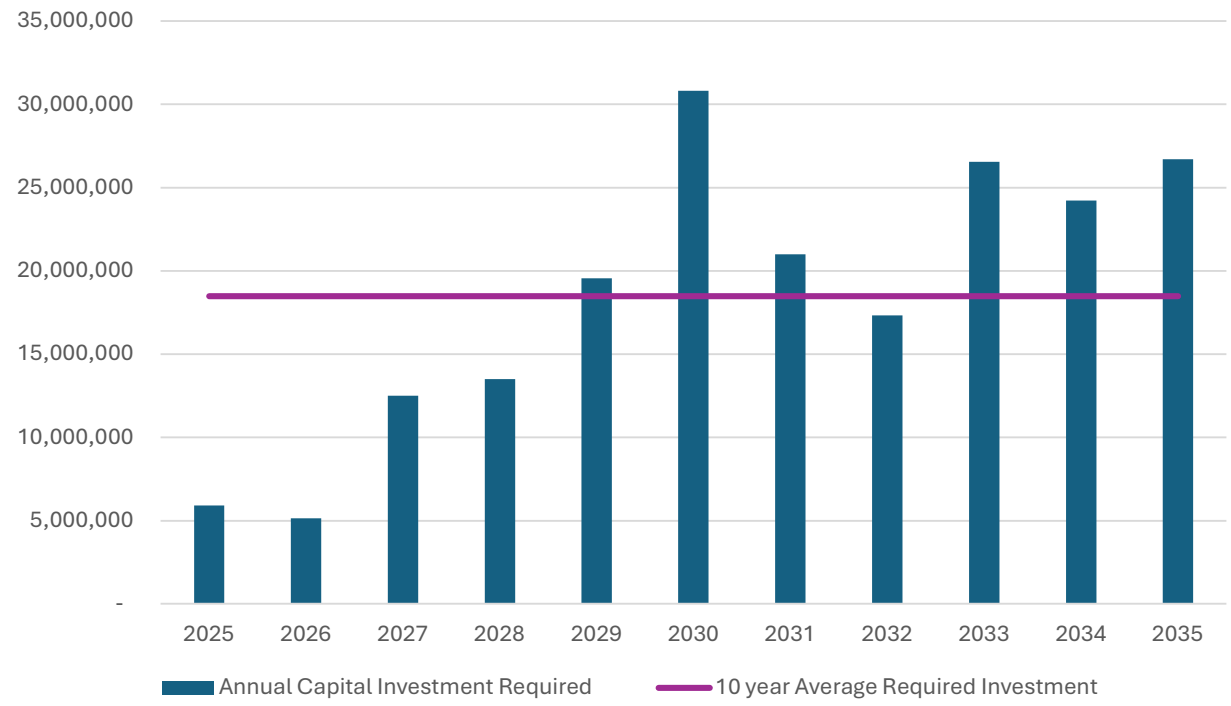
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $18.6 million. The accompanying graph demonstrates the average annual capital investment for the next 10 years of $18.4 million.

The annual funding shortfall is approximately $7.9 million (average annual requirement of $18.6 million less the 10-year average annual funding investment in the 2025 capital plan of $10.7 million). Note that the line in the accompanying graph represents the 10-year average required investment of $18.4 million.

The graph notes that a significant investment is required in 2030 which relates to the rehabilitation of local (Barnett Drive and Collins Drive) and rural roads (Widdifield Station Roads and Springdale Drive) which would be considered for replacement through the respective annual on-going projects.

Please note that the figures presented in the graph have not been adjusted for inflation.



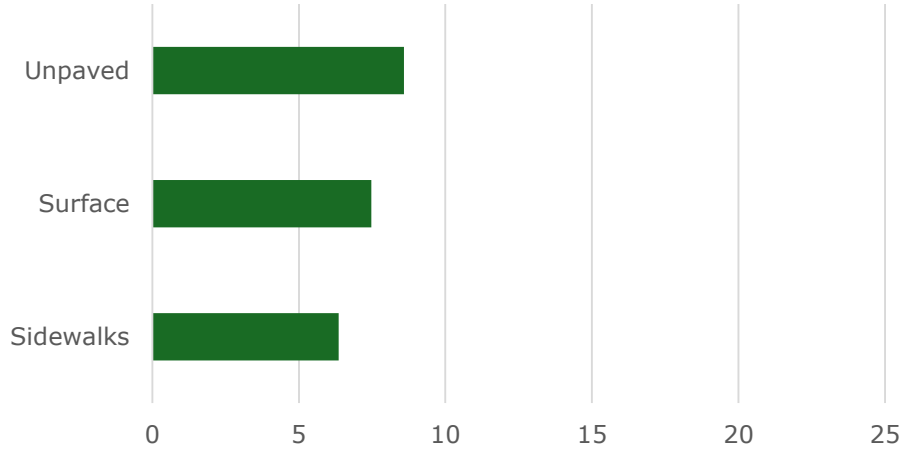
Risk and Criticality of the Road Network

The chart below details the probability and consequence of failure considered for each asset type within the road network.

Quantitative Measurement	Surface (Paved) Roads	Unpaved Roads	Sidewalks
Probability of Failure	Condition, drainage, and subgrade strength	Drainage and subgrade strength	Condition
Consequence of Failure	Replacement cost, road class, bus route, average annual daily traffic (AADT), and pavement type	Replacement cost and average annual daily traffic (AADT)	Replacement cost

The heat map below shows the relationship between probability and consequence of failure, and overall, the average risk rating for the road network is low to very low. The bar chart below shows the average risk level for road network assets in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$102,439,882	$284,255,741	$135,533,494	$92,912,101	$2,839,170
(17%)	(46%)	(22%)	(15%)	(<1%)



Heat Map Analysis

The 15% of assets in the high-risk category on the heat map represent surface (paved) roadways with high replacement costs, located on bus routes, and carrying high Average Annual Daily Traffic (AADT); such as, Franklin Street, Main Street West, and Algonquin Avenue. This category also includes unpaved roads in poor condition with high replacement costs, such as Champlain Park Road, and sidewalks in poor condition with significant replacement value.

Risks to Current Asset Management Strategies for the Road Network

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

- **Lifecycle Management Strategies:** While the City uses PSD Citywide to manage and track its asset portfolio for both tangible capital asset and asset management purposes, lifecycle management strategies—particularly for unpaved roads and sidewalks—are still under development.
- **Climate Change and Extreme Weather Events:** Climate change risks such as more intense and frequent rainfalls, as well as longer shoulder seasons with more frequent freeze-thaw cycles have significant implications on City road infrastructure. An increase in freeze-thaw cycles will lead to shorter life expectancies, and extreme weather events will likely lead to exceeding the capacity of watercourse crossing infrastructure and road washouts, leading to more frequent and substantive repairs, as well as significant disruptions to the road traffic system. Understanding the severity and frequency of these climate change events and the incorporation of climate change considerations into the City's asset management planning approach is critical to maintaining service levels and managing risk.
- **Infrastructure Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.
- **Aging Infrastructure:** The City's road network assets are aging and require significant maintenance and upgrades.
- **Infrastructure Design and Installation:** As assets mature, certain aspects of their design and implementation combine to have a detrimental impact on the ability of the asset to provide its service. For instance, design and material choices have advanced with the changes in climate. As a result, the assets aren't reaching the expected longevity and may require rehabilitation or replacement sooner than assets using updated design standards.

Levels of Service

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

Community Levels of Service

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

Core Value	Level of Service Statement	Community Level of Service
Accessible and Reliable	Roads are accessible to the whole community, and unplanned service disruptions are minimized	The City maintains urban arterial, collector, and residential roads as well as rural roads. See appendix 1 for a map of the roads.
Safe and Regulatory	Roads meet all minimum maintenance standards	The City completed a road condition assessment in November 2021. Every road section received a surface condition rating, which was then converted into a PQI measurement. PQI between 0 and 50 exhibits poor to very poor deterioration and requires renewal or full replacement within 0-10 years. PQI surface is in good condition or has been recently resurfaced. Renewal or reconstruction is not required for 10 to 20 years.
Affordable	Roads are managed cost-effectively for the expected level of service	Crack sealing, chip seal, mill, removal and overlay, and full replacement.
Sustainable	There are long-term plans in place for the sustainability of roads	See section 4.6.2. for description of the different levels of road class pavement conditions.

Technical Levels of Service

The table below outlines the quantitative metrics that determine the technical level of service provided by the roads.

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Accessible and Reliable	Roads are accessible to the whole community, and unplanned service disruptions are minimized	Lane-km of arterial roads (MMS classes 1 and 2) per land area in the municipality (km/km^2)	Maintain connectivity while emphasizing pavement quality and minimizing downtime through proactive maintenance.	0.35 *	0.35 *	0.35	Maintain
		Lane-km of collector roads (MMS classes 3 and 4) per land area in the municipality (km/km^2)	Introduce performance tracking for reliability (e.g., downtime, closure hours) to link LOS to user impact.	0.31 *	0.31 *	0.31	
		Lane-km of local roads (MMS classes 5 and 6) per land area in the municipality (km/km^2)	The local road system represents the majority of the network. Focus should shift from network expansion to maintaining condition and accessibility in all seasons.	1.91 *	1.91 *	1.91	

* The information provided last year has been updated following a comprehensive reevaluation. Changes were made to ensure accuracy and reflect the most current data available. Any discrepancies between previous and current versions are the result of this review process.

Technical Levels of Service - Continued

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Performance	There are long-term plans in place for the sustainability of the roads	Average pavement condition index (PCI) for paved roads	≥65% by 2035 Condition remains stable but below desirable long-term thresholds.	55.1%	55%	66.7%	Maintain
		Average surface condition for unpaved roads	Good Maintain current grading, resurfacing, and dust control practices; however, increase investment in unpaved roads.	Very Poor	Very Poor *	Very Poor	Increase
Affordable	Roads are managed cost-effectively for the expected level of service	Reinvestment rate**	2.19% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	1.9%	2.98%	1.55%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$18.6 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$10.1 million	$17.6 million	$13.1 million	Increase

* The information provided last year has been updated following a comprehensive reevaluation. Changes were made to ensure accuracy and reflect the most current data available. Any discrepancies between previous and current versions are the result of this review process.

** The reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for road network performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

Community feedback indicates mixed perceptions of the road network. While 44.33% of respondents were dissatisfied with the performance and availability of roads (26.39% satisfied, 29.19% neutral), nearly 49.15% rated the condition as acceptable or exceeding expectations (40.06% felt improvement was needed, and 10.79% had no preference).

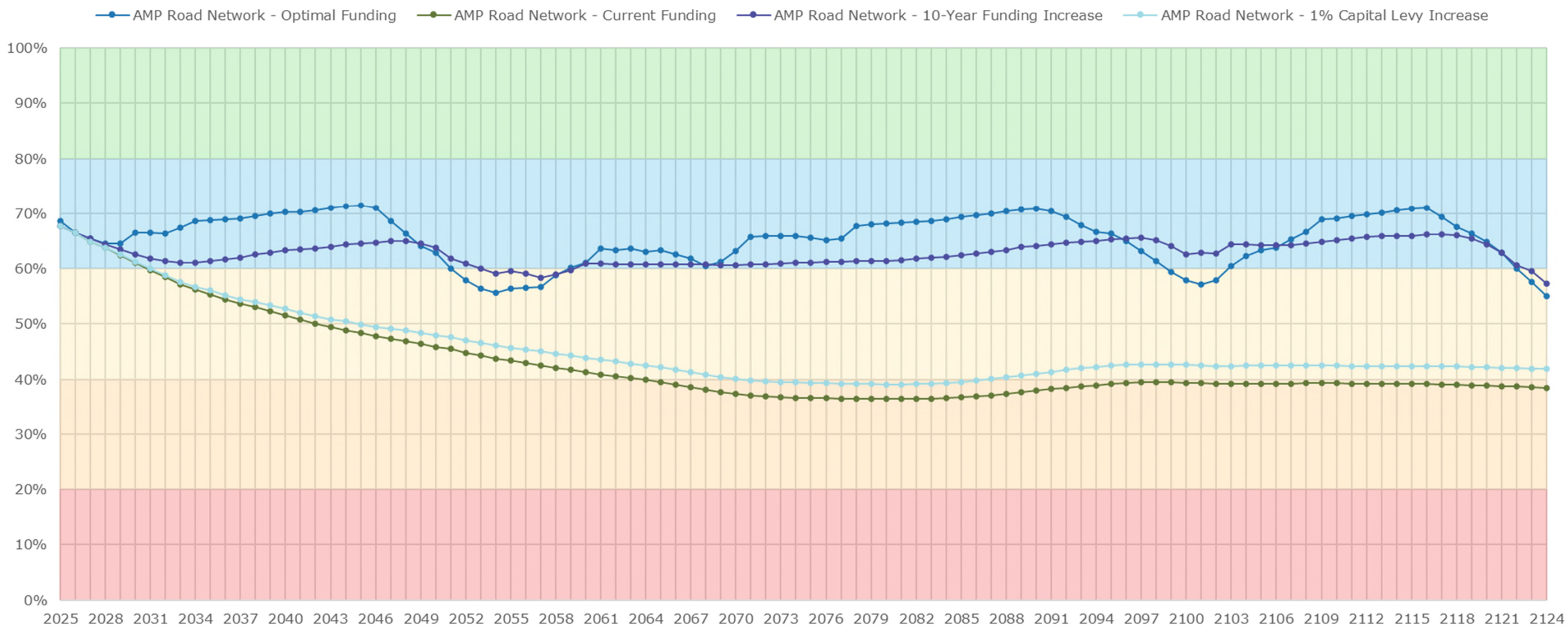
Asset management data supports this positive view of condition, showing that 85% of roads are in fair to very good condition. These findings suggest that while physical condition generally meets expectations, concerns about network performance and availability, such as connectivity, congestion, or accessibility, remain significant. Addressing these service-level issues alongside ongoing maintenance will be key to improving overall satisfaction.

Appropriateness Analysis

The analysis of the funding strategies for the road network was done over a time horizon from 2025 to 2124. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the longer timeline best reflects roads service life with lifecycle management strategies. This analysis shows that current funding levels are insufficient to maintain service quality. Under the existing approach, the network condition declines from approximately 68% (good) in 2025 to 39% (poor) by the end of the period, indicating significant deterioration and increased risk. The City's Long-Term Capital Funding Policy, which includes a 1% annual levy increase, performs slightly better, maintaining conditions near 42% (fair), but still falls short of sustaining desired service levels. Proactive strategies such as the 10-year funding phase-in and optimal funding scenario offer improved outcomes, keeping conditions closer to 60% (fair) over the long term. While these approaches slow deterioration and reduce lifecycle costs compared to current funding, they do not fully prevent decline without substantial upfront investment.

It is important to consider the long-term trend of each funding scenario. Under the current funding level, the average condition of road network assets is 43.09%. Following the Long-Term Capital Funding Policy, this improves slightly to 45.51%. However, under the optimal and 10-year phase-in scenarios, the average condition rises significantly to 65.43% and 62.85%, respectively. This demonstrates the critical importance of increasing investment in the road network. As conditions decline, the risk of asset failure grows, leading to higher repair costs and more user complaints.

Appropriate Analysis – Continued



Recommendations

Asset Inventory

Continue to review the infrastructure within the road network to ensure all assets within this category have been accounted for. Review replacement costs on an annual basis to ensure accuracy with recent market pricing.

Condition Assessment Strategies

The City anticipates continuing its practice of completing comprehensive assessments of the roads every five years. Condition assessment strategies for sidewalks and unpaved roads requires finalization. Continued linkage to GIS of all road assets is also recommended.

Lifecycle Management Strategies

Implement lifecycle management strategies for unpaved roads and sidewalks. Review the effectiveness of existing paved road lifecycle management strategies to assess their impact on cost, condition, and risk. Continue transitioning lifecycle management processes from RoadMatrix into Citywide to streamline operations. These actions will help realize potential cost avoidance and maintain a high quality of road pavement condition.

Risk Management Strategies

Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure or data availability. As well as, implement risk-based decision-making within asset management planning and budgeting processes. This should include regular reviews of high-risk assets to identify and apply appropriate risk mitigation strategies. Continue to transition risk models from RoadMatrix into Citywide.

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates. Implement strategies to close any gaps between current and proposed service levels and periodically reassess these strategies as part of ongoing AMP updates to support continuous improvement.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

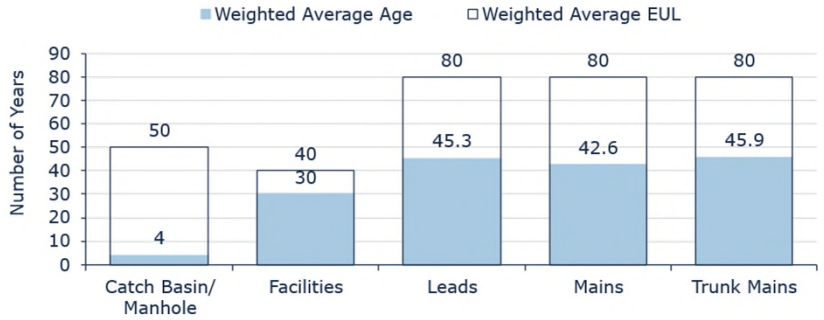
4.7. Stormwater Network

Asset Inventory and Cost

The City is responsible for maintaining a stormwater network of 122 km of storm mains, catch basins, culverts (less than 3m diameter), and other supporting infrastructure such as manholes, drains, pump stations, and storm pond systems. The estimated replacement value of the entire stormwater network is $294 million.

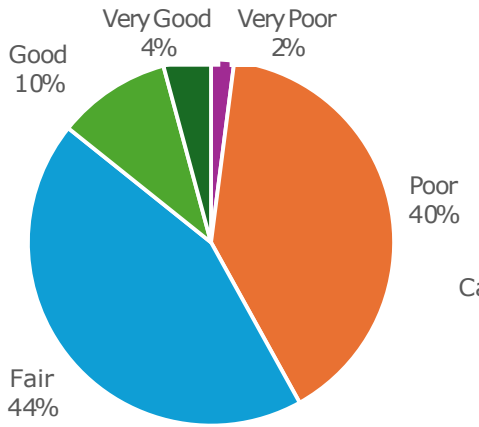
Asset Age

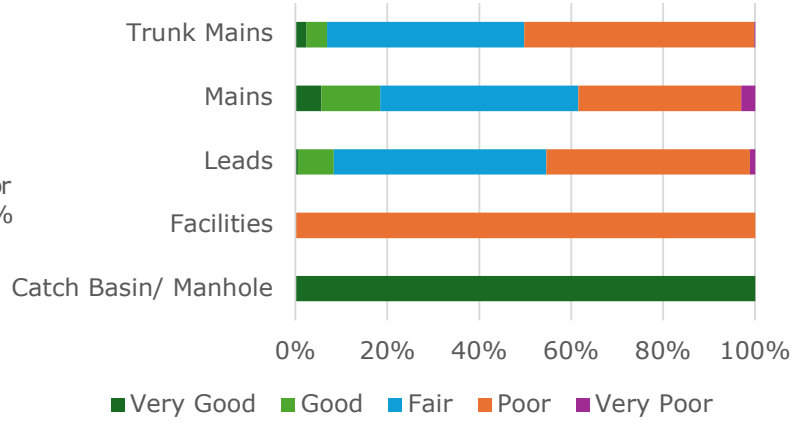
The table to the right illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. Currently the average assessed age (based on condition rating) is 44 years 6 months with an expected service life remaining of 30 years 5 months.



Asset Condition

The accompanying pie chart illustrates the current average condition for the stormwater network. Overall, 58% of the stormwater network assets are rated fair or better. The chart details the assessed condition of all stormwater network assets by asset type – trunk mains, mains, leads, facilities, catch basins/ manholes. Condition is primarily based on asset age, as a city-wide CCTV program has not yet been implemented.





Asset Condition Analysis

The 42% of assets in poor to very poor condition relate to various storm mains across the City; such as, mains along McIntyre Street West, Lakeshore Drive, Princess Street West, and Seymour Street. These mains will be replaced through the annual on-going program and through specific projects (Seymour Street) as identified through the 10-year capital budget.

Lifecycle Management Strategy

The stormwater system is supported by a proactive maintenance program that includes scheduled flushing, cleaning, and inspections. Additionally, CCTV inspections are used as a diagnostic tool to provide detailed information that guides capital rehabilitation and replacement decisions.

Activity Type	Description of Current Activity
Maintenance	Maintenance activities are completed to a lesser degree compared to other underground linear infrastructure. Primary activities include catch basin cleaning and storm main flushing, but only a small percentage of the entire network is completed per year
Assessment	CCTV inspections and cleaning are completed as budget becomes available, and this information will be used to drive forward rehabilitation and replacement plans
Rehabilitation	Trenchless relining reduces total lifecycle costs but also requires a formal condition assessment program to determine viability
Replacement	Without the availability of up-to-date condition assessment information, replacement activities are purely reactive in nature

Currently, the lifecycle strategy for all stormwater network assets other than mains and leads is full replacement at the end of their service life. For mains and leads, the City has developed proactive lifecycle interventions. Rather than allowing mains and leads to deteriorate until complete replacement is required, strategic rehabilitation is expected to extend service life at a lower cost, optimizing both life expectancy and overall investment. The City's lifecycle strategy for mains and leads includes scheduled activities and interventions designed to maintain functionality and reduce risk. These activities are projected to occur at specific intervals and associated costs, ensuring a cost-effective approach to asset management.

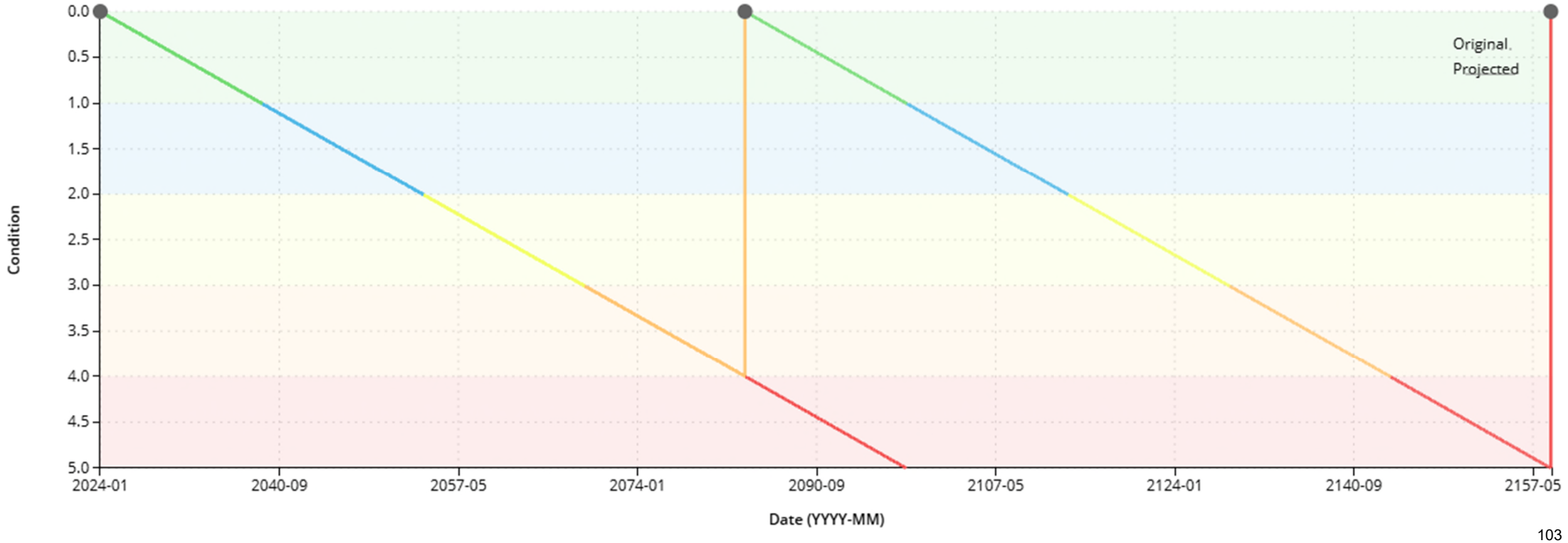
Mains and Leads – Lifecycle Events	Type of Work	Unit Cost
Flushing	Preventative maintenance	$5/m
CCTV Inspection	Assessment	$8/m
Trenchless Relining	Rehabilitation	≤300mm diameter: $1,500/ m >300mm diameter: $3,250/m

Lifecycle Management Strategy - Continued

Below is a sample graph illustrating a potential lifecycle strategy application that includes:

1. Flushing performed at regular intervals to flush out dirt, litter, sludge, and other forms of garbage from the pipelines
2. Cured-in-place or sprayed-in-place pipe when condition reaches the minimum accepted threshold for a main or lead; thereby extending the life from 60 years to 135 years before full replacement is required.

For this AMP, this lifecycle strategy has been applied to the stormwater mains and leads.



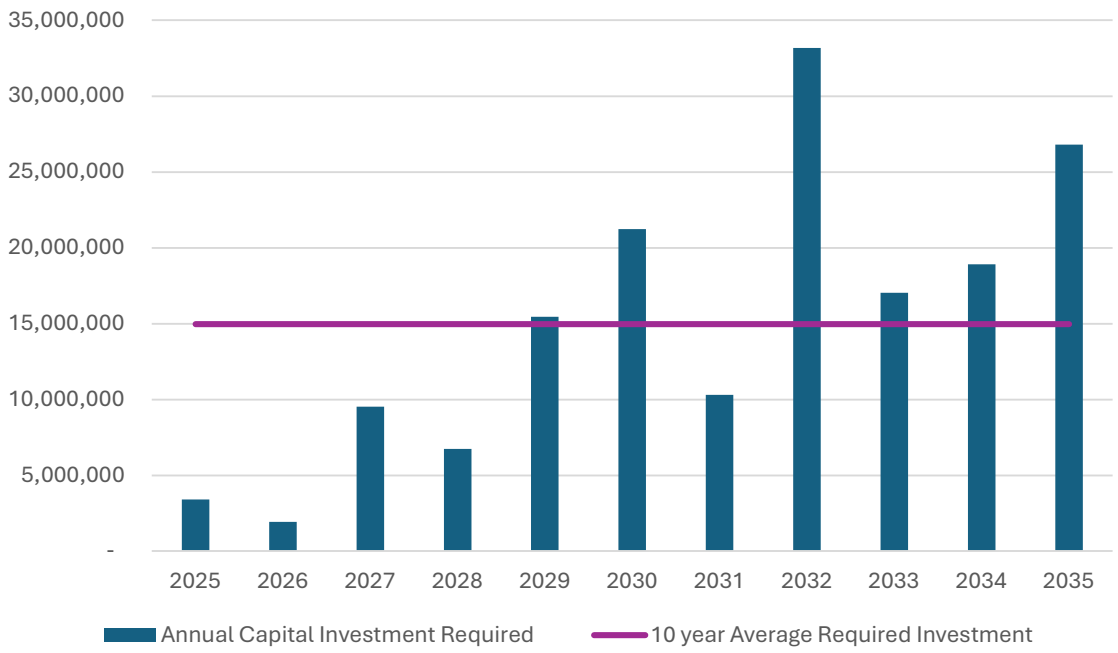
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $5.8 million. The accompanying graph demonstrates the average annual capital investment for the next 10 years of $15 million.

The annual funding shortfall is approximately $3 million (average annual requirement of $5.8 million less the 10-year average annual funding investment in the 2025 capital plan of $2.8 million). Note that the line in the accompanying graph represents the 10-year average required investment of $15 million.

The graph notes that a significant investment is required in 2030 and 2032 which relates to the rehabilitation of various storm mains and leads in the West Ferris area (Lakeshore Drive, Labreche Drive, Massey Drive, etc.) that are coming due for rehabilitation which would be considered for rehabilitation through the respective annual on-going projects.

Please note that the figures presented in the graph have not been adjusted for inflation.



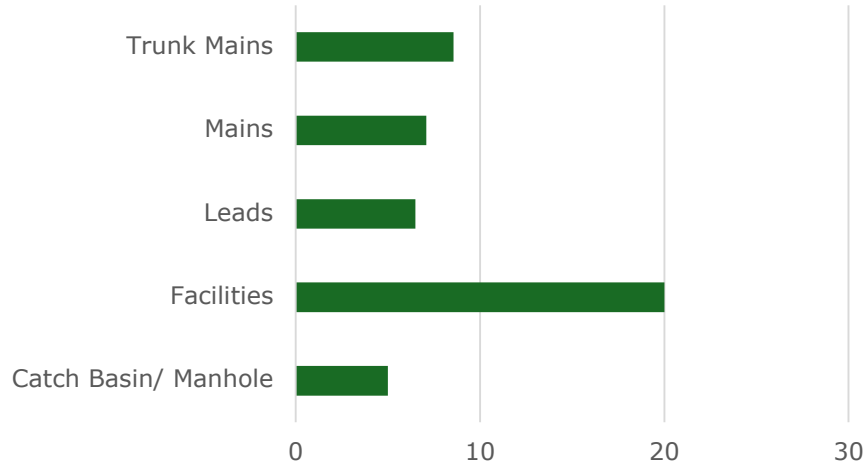
Risk and Criticality of the Stormwater Network

The chart below details the probability and consequence of failure considered for each asset type within the stormwater network.

Quantitative Measurement	Trunk Mains, Mains, and Leads	Facilities	Catch Basins / Manholes
Probability of Failure	Condition, and pipe material (in accordance with the NASSCO Pipeline Assessment Certification Program (PACP) rating system)	Condition	Condition
Consequence of Failure	Replacement cost, bury depth, and diameter	Replacement cost	Replacement cost

The heat map below shows the relationship between probability and consequence of failure, and overall, the average risk rating for the stormwater network is low to very low. The bar chart below shows the average risk level for stormwater network assets in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$62,186,447	$140,894,732	$72,148,882	$18,683,731	$558,714
(21%)	(48%)	(25%)	(6%)	(<1%)



Heat Map Analysis

The ~7% of assets in the high to high-risk category on the heat map represent mains that are in poor condition and the 10th Street Pumping Station which has a high replacement cost.

Risks to Current Asset Management Strategies for the Stormwater Network

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

- **Lifecycle Management Strategies:** Historically, lifecycle management for the stormwater network has been largely reactive, creating challenges in balancing routine maintenance, major rehabilitation, and asset replacement.
- **Climate Change and Extreme Weather Events:** Climate change risks such as more intense and frequent rainfalls, as well as longer shoulder seasons with more frequent freeze-thaw cycles have significant implications on City's stormwater infrastructure. An increase in freeze-thaw cycles will lead to shorter life expectancies, and extreme weather events will likely lead to exceeding the capacity of watercourse crossing infrastructure and stormwater and road washouts, leading to more frequent and substantive repairs, as well as significant disruptions to the stormwater and road traffic system. Understanding the severity and frequency of these climate change events and the incorporation of climate change considerations into the City's asset management planning approach is critical to maintaining service levels and managing risk.
- **Infrastructure Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.
- **Aging Infrastructure:** The City's storm network assets are aging and require significant maintenance and upgrades.
- **Infrastructure Design and Installation:** As assets mature, certain aspects of their design and implementation combine to have a detrimental impact on the ability of the asset to provide its service. For instance, design and material choices have advanced with the changes in climate. As a result, the assets aren't reaching the expected longevity and may require rehabilitation or replacement sooner than assets using updated design standards.

Levels of Service

The following tables show the City's current level of service for the stormwater network. Metrics include the community and technical levels of service metrics that are required as part of O. Reg 588/17, as well as any additional performance measures that the City has selected for the AMP.

Community Levels of Service

The following table outlines the qualitative metrics that determine the community level of service provided by the stormwater network:

Core Value	Level of Service Statement	Community Level of Service
Accessible and Reliable	The stormwater system protects property and people from the impacts of flooding	A map of the City's stormwater system is in Appendix 2.
Affordable	The stormwater system is affordable and managed cost-effectively for the expected level of service	Activities include flushing, CCTV inspection, localized repairs, pipe-lining, and end of life replacement.
Sustainable	The stormwater assets are managed efficiently, and long-term plans are in place for the sustainability of stormwater infrastructure	Current condition would be mostly based on age and material type.

Technical Levels of Service

The table below outlines the quantitative metrics that determine the technical level of service provided by the stormwater network:

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Accessible & Reliable	The stormwater system protects property and people from the impacts of flooding	%of properties in municipality resilient to a 100-year storm	≥90% by 2035 Resilience levels have plateaued, indicating limited progress in flood mitigation capacity. Introduce a phased capital program to achieve ≥ 90 % resilience by 2035 through targeted network upgrades and floodplain management.	87%	87%	87%	Increase

Technical Levels of Service - Continued

Core Value	Level of Service Statement	Technical Level of Service	Proposed LOS & Appropriateness Statement	Current and Historical Performance 2021	2023	2024	Assessment of Service Level
Accessible & Reliable	The stormwater system protects property and people from the impacts of flooding	%of the municipal stormwater management system resilient to a 5-year storm	≥ 80% by 2030 Performance remains static; increased rainfall variability and intensity pose growing risks. Upgrade undersized culverts and critical conveyance sections to raise resilience.	70%	70%	70%	Increase
Performance	Stormwater assets are managed efficiently, and long-term plans are in place for the sustainability of stormwater infrastructure	%of the stormwater system that is in good or very good condition	≥40% by 2035 Good condition continues to decline, suggesting insufficient maintenance and renewal. Establish routine inspection cycles and prioritize rehabilitation.	21%	16%	14%	Increase
		%of the stormwater system that is in poor or very poor condition	≤25% by 2035 Implement risk-based renewal and drainage optimization to reduce poor-condition assets.	34%	44%	42%	Increase
Affordable	The stormwater system is affordable and managed cost-effectively for the expected level of service	Reinvestment rate *	0.72% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	0.61%	1.28%	0.30%**	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$5.8 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$1.6 million	$3.6 million	$2.4 million	Increase

* The reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

** Lifecycle events were added to the stormwater network through the 2024 AMP which has influenced the current reinvestment rate in relation to the reinvestment rates noted through past AMPs.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for stormwater network performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

The public was generally satisfied with the performance and availability of the stormwater network, with 50.54% of respondents satisfied, 16.88% dissatisfied, and 32.58% neutral or having no opinion. The condition of the stormwater network was generally viewed as sufficient with 59.75% of respondents rating their condition as acceptable or exceeding expectations. Another 31.64% indicated a need for improvement, while 8.62% had no preference. This aligns reasonably well with current asset data, as mentioned above, which shows that 58% of stormwater network assets are in fair or better condition. The correlation suggests that public perception is broadly consistent with technical assessments, though the significant proportion seeking improvements highlights the need for targeted maintenance and rehabilitation strategies.

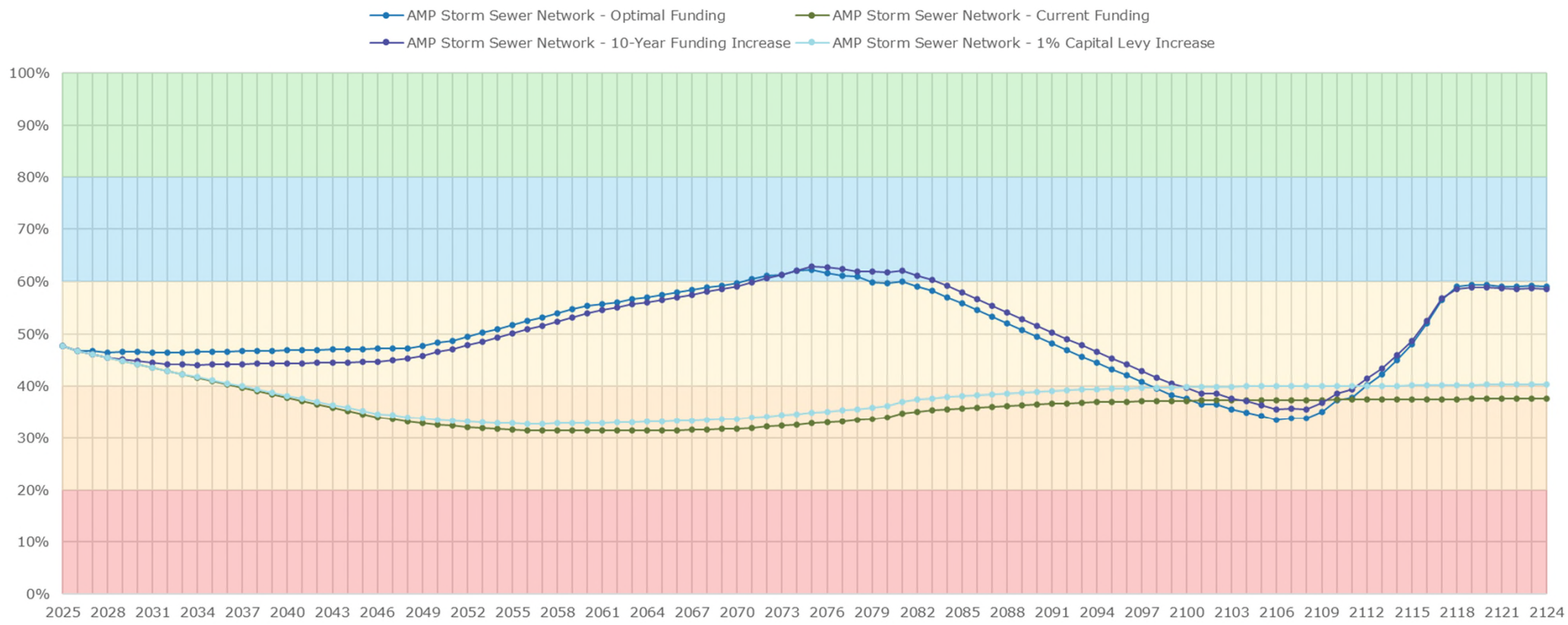
Appropriateness Analysis

The analysis of the funding strategies for the stormwater network was done over a time horizon from 2025 to 2124 horizon. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the longer timeline best reflects the stormwater network long service life with lifecycle management strategies. This analysis shows that current funding levels are insufficient to maintain service quality. All scenarios begin at the average condition of approximately 47% (fair) in 2025. From there, the current funding and Long-Term Capital Funding Policy, which includes a 1% annual levy increase, show a steady decline, stabilizing at an average condition of 36.15% (poor) and 37.89% (poor), respectively, before ending at 38% (poor) and 40% (poor/fair), respectively, by 2124. These results indicate that both strategies fail to provide adequate funding to maintain acceptable service levels over the long-term.

In contrast, the optimal and 10-year phase-in scenarios follow a more sustainable trajectory. Both strategies steadily improve conditions until approximately 2082, after which a temporary decline occurs, reaching 35% around 2103. This dip reflects typical lifecycle deterioration during periods when major investments are not required; however, conditions rebound significantly, with both strategies ending at approximately 60% (fair/good) by 2124. This demonstrates the benefits of proactive and sustainable funding, even when short-term fluctuations occur.

Appropriateness Analysis - Continued

The implications are clear: underfunded scenarios will lead to accelerated deterioration, increased risk of failure, and higher lifecycle costs due to deferred maintenance and emergency interventions. Conversely, adopting optimal or phased-in funding strategies ensures that stormwater assets remain in a state of good repair, reduces risk, and avoids costly reactive measures. This analysis underscores the critical importance of aligning funding strategies with long-term asset management objectives to maintain reliable stormwater services for the community.



Recommendations

Condition Assessment Strategies

Implement annual inspections and maintenance of municipal drains to reduce surface ponding issues. Typical activities include ditch and vegetation maintenance as well as realignment where necessary. In addition, establish a city-wide CCTV inspection program phased over 10–15 years to enable annual inspections of a select percentage of the stormwater network. Priority should be given to problematic areas first, and inspection results should be used to inform future lifecycle activities and capital planning.

Risk Management Strategies

Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure or data availability. As well as, implement risk-based decision-making within asset management planning and budgeting processes. This should include regular reviews of high-risk assets to identify and apply appropriate risk mitigation strategies.

Lifecycle Management Strategies

Implement lifecycle management strategies for stormwater facilities and catch basins/ manholes. Review the effectiveness of existing lifecycle management strategies for mains, trunk mains, and leads to assess their impact on cost, condition, and risk. These actions will help realize potential cost avoidance and maintain a reliable stormwater system.

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates to support continuous improvement.

Asset Inventory

Continue to review the infrastructure within the stormwater network to ensure all assets within this category have been accounted for. Review replacement costs on an annual basis to ensure accuracy with recent market pricing.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

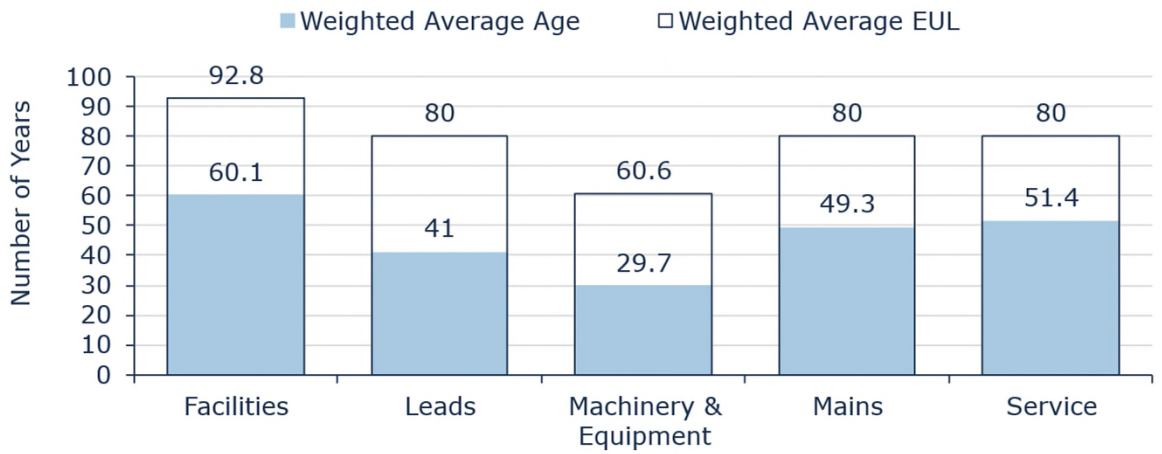
4.8 Wastewater Network

Asset Inventory and Cost

The wastewater network includes sanitary mains, 17 lift stations, manholes, force mains, and services. The system comprises approximately 270 km of sanitary mains, 15,000 services, and 3,500 sanitary maintenance holes. The City of North Bay Wastewater Treatment System has a design capacity of 54,500 m^3/day and operates as a Class 4 Wastewater Treatment Plant with a Class 2 wastewater collection system. The facility, located on Memorial Drive, treats all of North Bay's wastewater using a conventional activated sludge process. Treatment processes include raw sewage pumping, grinding and screening, grit removal, primary settling, aeration, final settling, chemical phosphorus removal, and chlorination for effluent disinfection. The original plant was constructed in 1962 and expanded in 1973 and 1984. The system also incorporates biological oxidation, anaerobic digestion, and centrifugation as part of its treatment operations. The estimated replacement value of the entire wastewater network is $742 million.

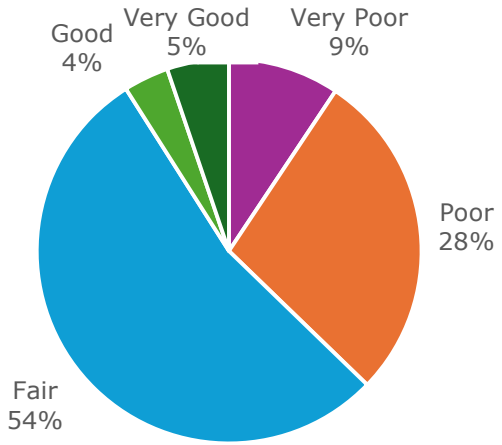
Asset Age

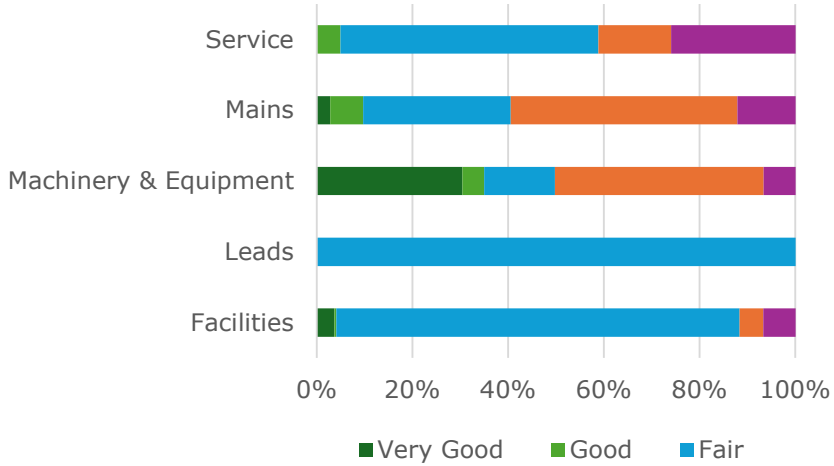
The table below illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. Currently the average assessed age (based on condition rating) is 51 years 1 months with an expected service life remaining of 48 years 11 months.



Asset Condition

The accompanying pie chart illustrates the current average condition for the wastewater network. Overall, 63% of the wastewater network assets are rated fair or better. The chart details the assessed condition of all wastewater network assets by asset type – service, mains, machinery and equipment, leads, and facilities. Condition is primarily based on age is primarily based on asset age, as a city-wide CCTV program has not yet been implemented. Examples of assets in the very poor category include several lift stations, mains along McKeown which are currently being addressed, and a variety of machinery & equipment.





Lifecycle Management Strategy

The wastewater system is supported by a proactive maintenance program that includes scheduled flushing, cleaning, and inspections. Additionally, CCTV inspections are used as a diagnostic tool to provide detailed information that guides capital rehabilitation and replacement decisions.

Activity Type	Description of Current Activity
Maintenance	Primary activities include flushing and rodding, but only a small percentage of the entire network is completed per year
Assessment	CCTV inspections and cleaning are completed as budget becomes available, and this information will be used to drive forward rehabilitation and replacement plans
Rehabilitation	Trenchless relining reduces total lifecycle costs but also requires a formal condition assessment program to determine viability
Replacement	Without the availability of up-to-date condition assessment information, replacement activities are purely reactive in nature

Lifecycle Management Strategy - Continued

Currently, the lifecycle strategy for all wastewater network assets other than mains, service, and leads is full replacement at the end of their service life. For mains, service, and leads, the City has developed proactive lifecycle interventions. Rather than allowing mains, service, and leads to deteriorate until complete replacement is required, strategic rehabilitation is expected to extend service life at a lower cost, optimizing both life expectancy and overall investment. The City's lifecycle strategy for mains, service, and leads includes scheduled activities and interventions designed to maintain functionality and reduce risk. These activities are projected to occur at specific intervals and associated costs, ensuring a cost-effective approach to asset management.

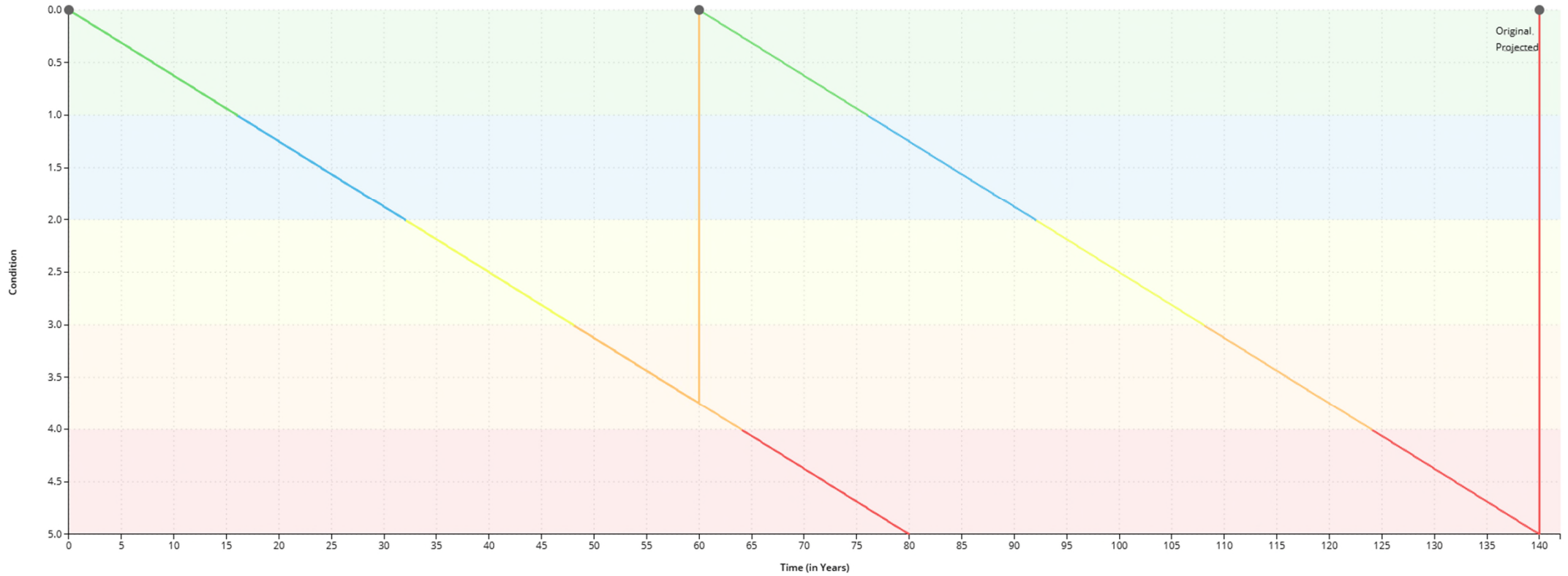
Mains, Service, and Leads – Lifecycle Events	Type of Work	Unit Cost
Flushing	Preventative maintenance	$5/m
Rodding	Preventative maintenance	$20/m
CCTV Inspection	Assessment	$8/m
Trenchless Relining	Rehabilitation	≤300mm diameter: $1,500/ m >300mm diameter: $3,250/m

Below is a sample graph illustrating a potential lifecycle strategy application that includes:

1. Flushing performed at regular intervals to flush out dirt, litter, sludge, and other forms of garbage from the pipelines
2. Rodding which includes using a long rod to find and clear blockages
3. Cured-in-place or sprayed-in-place pipe when condition reaches the minimum accepted threshold for a main, service, or lead; thereby extending the life from 60 years to 140 years before full replacement is required.

For this AMP, this lifecycle strategy has been applied to the wastewater mains, services, and leads.

Lifecycle Management Strategy - Continued



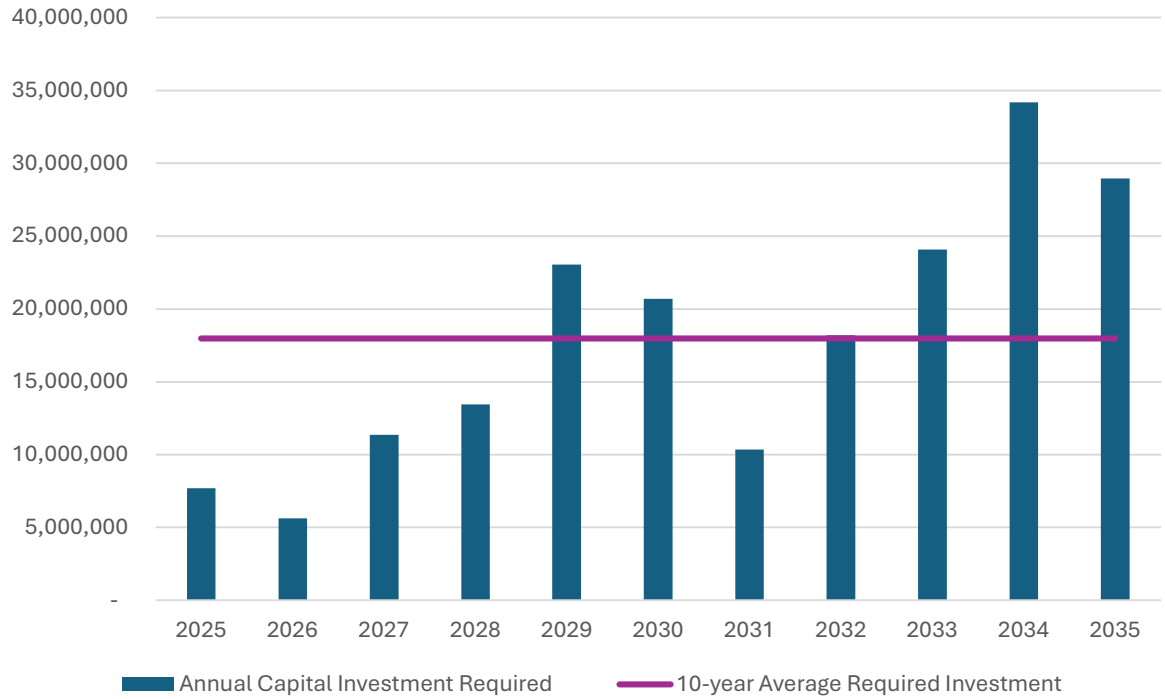
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $11.5 million. The accompanying graph demonstrates the average annual capital investment for the next 10 years of $18 million.

The annual funding shortfall is approximately $5.3 million (average annual requirement of $11.5 million less the 10-year average annual funding investment in the 2025 capital plan of $6.2 million). Note that the line in the accompanying graph represents the 10-year average required investment of $18 million.

The graph notes that a significant investment is required in 2034 which relates to the replacement of the muffin monster and the rehabilitation or replacement of various wastewater mains, service, and leads; such as, on Copeland Street, Wyld Street, and Birchwood Road that are coming due for rehabilitation which would be considered for rehabilitation through the respective annual on-going projects.

Please note that the figures presented in the graph have not been adjusted for inflation.



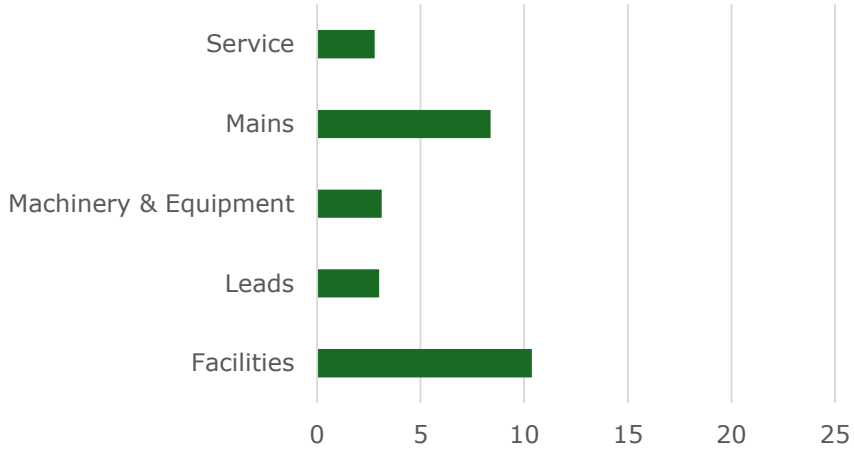
Risk and Criticality of the Wastewater Network

The chart below details the probability and consequence of failure considered for each asset type within the wastewater network.

Quantitative Measurement	Mains, Service, Leads	Facilities	Machinery and Equipment
Probability of Failure	Condition, and pipe material (in accordance with the NASSCO Pipeline Assessment Certification Program (PACP) rating system)	Condition	Condition
Consequence of Failure	Replacement cost, bury depth, diameter, associated road class and segment, and infiltration rates	Replacement cost, components, safety concerns, and redundancies	Replacement cost

The heat map below shows the relationship between probability and consequence of failure, and overall, the average risk rating for the wastewater network is high to very high. The bar chart below shows the average risk level for wastewater network assets in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$28,652,922	$117,896,860	$103,842,680	$134,672,773	$356,765,583
(4%)	(16%)	(14%)	(18%)	(48%)



Heat Map Analysis

The 66% of assets in the high to high-risk category on the heat map majorly represents machinery and equipment which have a high replacement cost. This also includes underground infrastructure in poor condition.

Risks to Current Asset Management Strategies for the Wastewater Network

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

- **Lifecycle Management Strategies:** Historically, lifecycle management for the wastewater network has been largely reactive, creating challenges in balancing routine maintenance, major rehabilitation, and asset replacement.
- **Infrastructure Design and Installation:** As assets mature, certain aspects of their design and implementation combine to have a detrimental impact on the ability of the asset to provide its service. For instance, design and material choices have advanced with the changes in climate. As a result, the assets are not reaching the expected longevity and may require rehabilitation or replacement sooner than assets using updated design standards.
- **Climate Change and Extreme Weather Events:** Climate change risks such as more intense and frequent rainfalls, rain on snow events, heat waves, and ice-storms have significant implications for City infrastructure. An increase in extreme weather events will likely lead to exceeding capacity of infrastructure and eventual flooding, thus requiring increased investment in maintenance and system improvements. Understanding the severity and frequency of these climate change events and the incorporation of climate change considerations into the City's asset management planning approach is critical to maintaining service levels and managing risk.
- **Infrastructure Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.
- **Aging Infrastructure:** The wastewater network is aging. While the City has completed upgrades, many wastewater sewer assets are now approaching or have exceeded their useful life, necessitating further attention and replacement in the near future.

Levels of Service

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

Community Level of Service

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

Core Value	Level of Service Statement	Community Level of Service
Accessible and Reliable	A reliable wastewater service is provided with minimal service disruptions	A map of the City's wastewater distribution network is in Appendix 3.
Safe and Regulatory	Wastewater is managed without risk or hazard to public health; there is full compliance with all regulatory requirements	Sanitary sewers are designed to meet the City of North Bay Design Guidelines, Provincial AODA Guidelines, and MECP Design Guidelines for Sewage Works.
Affordable	Wastewater services are affordable, and household charges are fair and reasonable; infrastructure is managed cost-effectively for the expected level of service	CCTV inspections are completed for wastewater to determine the condition of the infrastructure and reported issues. Rehabilitation projects are prioritized by growth and capacity considerations, in addition to condition.
Sustainable	Wastewater resources are used efficiently, and long-term plans are in place for the sustainability of wastewater treatment and infrastructure	Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets.

Technical Levels of Service

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

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Accessible and Reliable	A reliable wastewater service is provided with minimal service disruptions	% of properties connected to the municipal wastewater system	83% Coverage remains stable, reflecting limited expansion in the service area. Maintain this LOS unless future growth or infill areas necessitate increased connectivity.	83%	83%	83%	Maintain
		# 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	N/A Not applicable; the system design prevents combined sewer overflows. Maintain separation policy to uphold environmental compliance and minimize flood risk.	N/A – City does not own combined sewers	N/A – City does not own combined sewers	N/A – City does not own combined sewers	Maintain
Safe and Regulatory	Wastewater is managed without risk or hazard to public health; there is full compliance with all regulatory requirements	# of connection days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system	<40 Annual connection day backups by 2030 Backup frequency has declined slightly from 2021 levels, indicating improvement. Continue preventive maintenance and system cleaning.	48 /16,648	41 /16,783	32/ 16,747	Maintain/ Decrease
		# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0 Violations The City maintains full regulatory compliance with zero discharge violations. Preserve current inspection and monitoring programs.	1/16,648	5/16,783 *	15/ 16,747	Increase

* The information provided last year has been updated following a comprehensive reevaluation. Changes were made to ensure accuracy and reflect the most current data available. Any discrepancies between previous and current versions are the result of this review process.

Technical Levels of Service - Continued

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Performance	Wastewater resources are used efficiently, and long-term plans are in place for the sustainability of wastewater treatment and infrastructure	% of the wastewater system that is in good or very good condition	≥60% by 2035 Maintain targeted rehabilitation program and prioritize critical trunk mains.	10%	46% *	9%	Increase
		% of the wastewater system that is in poor or very poor condition	≤ 25% by 2035 Continue relining, replacement, and infiltration/inflow reduction to reduce poor-condition assets.	62%	35%	37%	Increase
Affordable	Wastewater services are affordable, and household charges are fair and reasonable; infrastructure is managed cost-effectively for the expected level of service	Reinvestment rate **	0.92% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	0.88%	1%	0.50%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$11.5 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$5.9 million	$7 million	$6.2 million	Increase

* There was a shift in the condition of the Wastewater Treatment Plant from "good" in 2023 to "fair" in 2024.

** The reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for wastewater performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

The public was generally satisfied with the performance and availability of the wastewater network, with 63.80% of respondents satisfied, 6.54% dissatisfied, and 29.66% neutral or having no opinion. The condition of facilities were generally viewed as sufficient with 77.55% of respondents rating their condition as acceptable or exceeding expectations. Another 12.65% indicated a need for improvement, while 9.80% had no preference. The data in this AMP tells a different story as 37% of wastewater assets are in poor to very poor condition and 54% are in fair condition. This disconnect between perception and reality highlights a critical need for accurate and comprehensive condition assessments. Public opinion often reflects service experience rather than underlying infrastructure health. While users may not notice deficiencies until failures occur, the technical data shows that the network is aging and at risk of accelerated deterioration. Without proactive condition assessments, decision-makers may underestimate future funding needs, leading to increased lifecycle costs, emergency repairs, and service disruptions. Implementing a robust inspection program, such as phased CCTV inspections and targeted evaluations, will provide reliable data to inform lifecycle strategies and capital planning. Accurate condition information ensures that funding decisions align with actual asset needs, maintaining service levels and reducing risk over the long term.

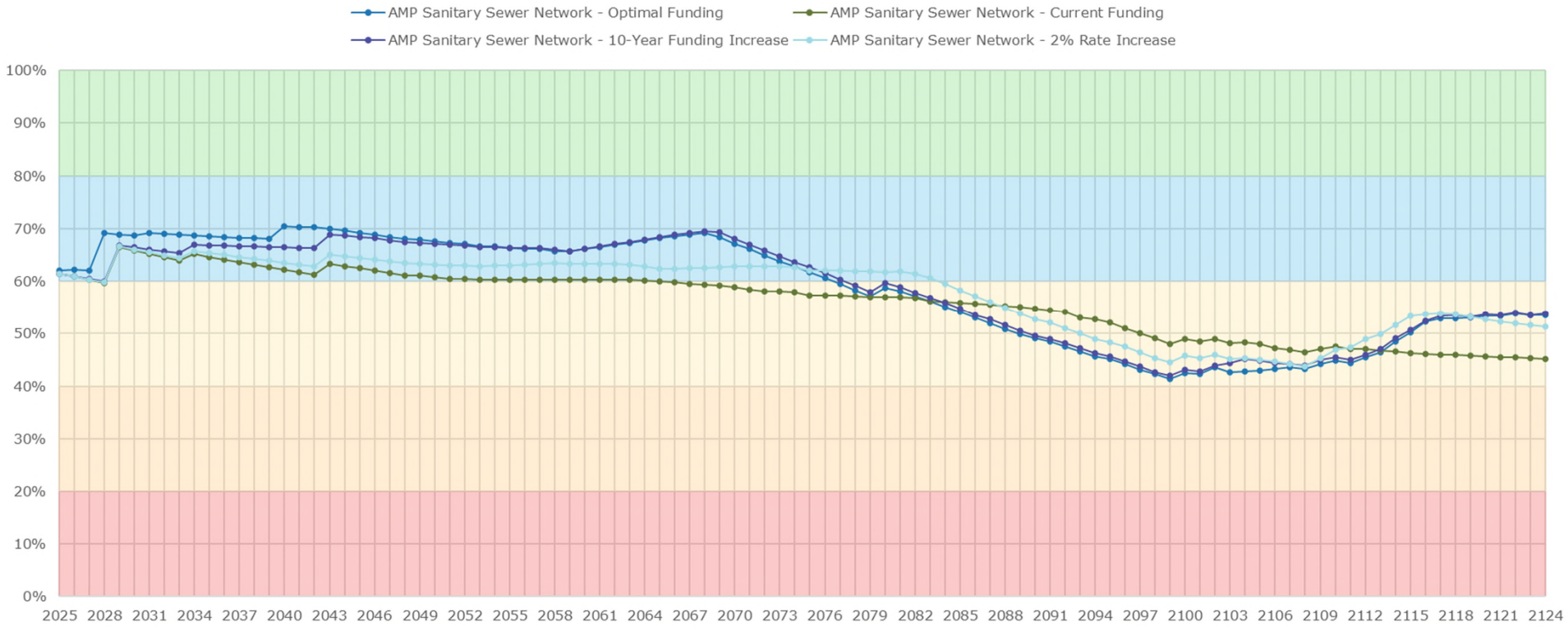
Appropriateness Analysis

The long-term analysis of the four funding strategies for the wastewater network was done over a time horizon from 2025 to 2124. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the longer timeline best reflects the wastewater network long service life with lifecycle management strategies. This analysis shows relatively stable performance compared to other asset classes in the AMP, but still indicates a need for increased investment to maintain sustainability. All scenarios begin at an average condition of approximately 62% (good) in 2025 and experience a brief improvement before gradually declining due to typical lifecycle deterioration during periods when major investments are not required.

This steady decline continues until around 2115, when the scenarios begin to diverge slightly. The current funding level fares worst, ending at 45% (fair) by 2124. Following the City's Long-Term Capital Funding Policy, which includes an annual 2% user rate increase, improves the condition to 51% (fair), while both the Optimal Funding and 10-Year Phase-In scenarios end at 53% (fair).

Appropriateness Analysis - Continued

Average conditions over the entire horizon show minimal variation: Current Funding: 56.04%, Long-Term Capital Funding Policy: 57.77%, 10-Year Phase-In: 58.42%, and Optimal Funding: 58.57%. These results suggest that while wastewater assets are more resilient than other infrastructure categories, current and user rate-based funding strategies still fall short of maintaining desired service levels over the long term. The slight differences in average condition mask the risk of deferred maintenance and the potential for costly emergency interventions if funding remains inadequate. Optimal and phased-in strategies provide better resilience and help sustain service levels, but even these approaches require ongoing monitoring and timely lifecycle interventions. Wastewater assets benefit from their robust design and long service life, which explains the slower rate of deterioration. However, without proactive funding increases, the system will gradually decline, increasing risk and lifecycle costs. Strategic investment planning remains essential to ensure compliance, reliability, and cost efficiency over the 100-year horizon.



Recommendations

Condition Assessment Strategies

Implement annual inspections and maintenance of municipal sewer to reduce asset failures. In addition, establish a city-wide CCTV inspection program phased over 10–15 years to enable annual inspections of a select percentage of the wastewater network. Priority should be given to problematic areas first, and inspection results should be used to inform future lifecycle activities and capital planning.

Risk Management Strategies

Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure or data availability. As well as, implement risk-based decision-making within asset management planning and budgeting processes. This should include regular reviews of high-risk assets to identify and apply appropriate risk mitigation strategies.

Lifecycle Management Strategies

Implement lifecycle management strategies for the wastewater network. Review the effectiveness of existing lifecycle management strategies for mains, service, and leads to assess their impact on cost, condition, and risk. These actions will help realize potential cost avoidance and maintain a reliable wastewater system.

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates. Implement strategies to close any gaps between current and proposed service levels and periodically reassess these strategies as part of ongoing AMP updates to support continuous improvement.

Asset Inventory

Continue to review the infrastructure within the wastewater network to ensure all assets within this category have been accounted for. Review replacement costs on an annual basis to ensure accuracy with recent market pricing.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

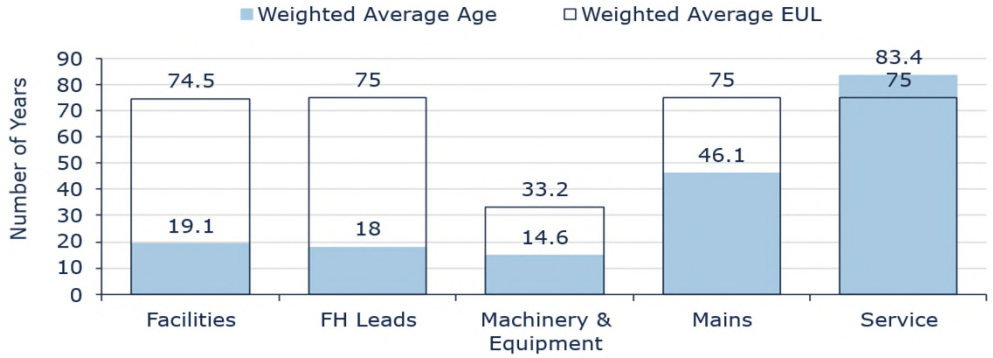
4.9 Water Network

Asset Inventory and Cost

The City is responsible for maintaining a water network of 280 km of water mains, FH leads, service, machinery and equipment, and related facilities. North Bay's Water Treatment Facility, operational since 2010, is a Class 3 plant with a Class 4 water distribution system, as rated by the Ministry of the Environment, Conservation and Parks (MECP). The facility uses a multi-barrier approach, including microfiltration with 11 membrane racks, UV disinfection, and chlorine treatment to ensure safe drinking water. Raw water is drawn from Trout Lake via a 300-meter intake pipe. The plant treats an average of 20 million liters per day and has a design capacity of 79.5 million liters per day. These treatment facilities consist of a group of components, including building structures, pipes, valves, pumps, supervisory control and data acquisition (SCADA) systems, and so forth. The estimated replacement value of the entire water network is $633 million.

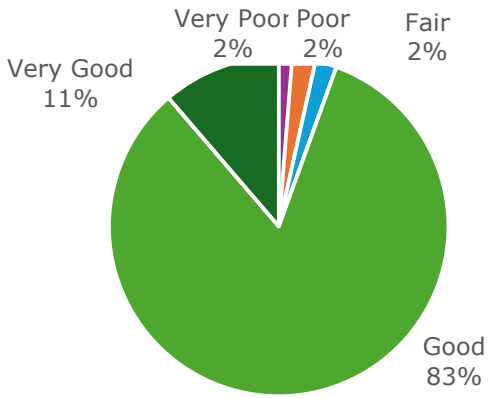
Asset Age

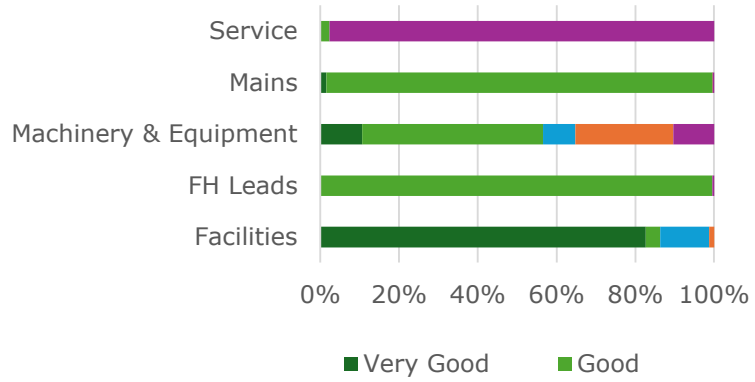
The table to the right illustrates the average current age of each asset type and its EUL. Both values have been weighted by the replacement cost of the assets. The average assessed age (based on condition rating) is 19 years 4 months with an expected service life remaining of 55 years.



Asset Condition

The accompanying pie chart illustrates the current average condition for the water network. Overall, 96% of the water network assets are rated fair or better. The chart details the assessed condition of all water network assets by asset type – facilities, FH leads, machinery and equipment, mains, and service. Condition is primarily based on asset age, as a city-wide CCTV program has not yet been implemented





Asset Condition Analysis

The 4% of assets in poor to very poor condition relates to various water mains around the City; including, Freguson Street, Fisher Street, and First Avenue.

Lifecycle Management Strategy

The water system is supported by a proactive maintenance program that includes scheduled flushing, cleaning, and inspections. Additionally, CCTV inspections are used as a diagnostic tool to provide detailed information that guides capital rehabilitation and replacement decisions.

Activity Type	Description of Current Activity
Maintenance	• Primary activities include flushing and valve turning (~300 valves/ year) • Hydrant valves are exercised regularly • Unidirectional flushing performed over a four-year cycle
Assessment	• CCTV inspections and cleaning are completed as budget becomes available, and this information will be used to drive forward rehabilitation and replacement plans • Age, pipe material, break history, and dirty water complaints are used to determine projected condition of mains • Fire flow and pressure testing performed, as required
Rehabilitation	Trenchless relining reduces total lifecycle costs but also requires a formal condition assessment program to determine viability
Replacement	Without the availability of up-to-date condition assessment information, replacement activities are purely reactive in nature

Currently, the lifecycle strategy for all water network assets other than mains, service, and FH leads is full replacement at the end of their service life. For mains, service, and FH leads, the City has developed proactive lifecycle interventions. Rather than allowing mains, service, and FH leads to deteriorate until complete replacement is required, strategic rehabilitation is expected to extend service life at a lower cost, optimizing both life expectancy and overall investment. The City's lifecycle strategy for mains, service, and FH leads includes scheduled activities and interventions designed to maintain functionality and reduce risk. These activities are projected to occur at specific intervals and associated costs, ensuring a cost-effective approach to asset management.

Lifecycle Management Strategy – Continued

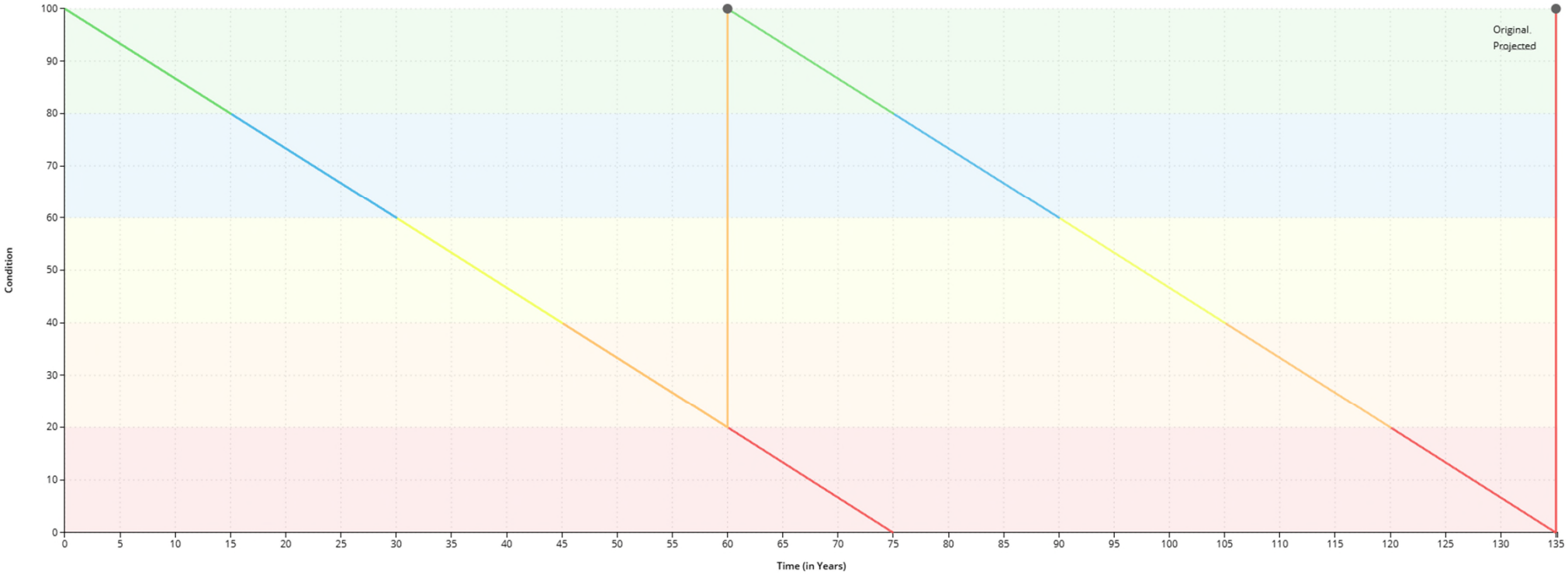
Mains, Service, and FH Leads - Lifecycle Events	Type of Work	Event Trigger
Valve Exercising	Maintenance	Every 4 years
Uni-directional flushing	Maintenance	Every 4 years
Large Diameter valve (16”+)	Maintenance	Every 2 years
Cathodic Protection	Preventative Maintenance	New Construction
Trenchless Re-lining	Rehabilitation	Condition
Full Reconstruction	Replacement	Condition/ New Development
Dead End Flushing	Preventative Maintenance	Twice Annually (spring/ fall)
Hydrant Maintenance	Preventative Maintenance	Every 4 years
Trenchless Relining	Rehabilitation	Condition

Below is a sample graph illustrating a potential lifecycle strategy application that includes:

- Cured-in-place or sprayed-in-place pipe when condition reaches the minimum accepted threshold for a main, service, or FH lead; thereby extending the life from 60 years to 135 years before full replacement is required.

For this AMP, this lifecycle strategy has been applied to the water mains, services, and FH leads.

Lifecycle Management Strategy – Continued



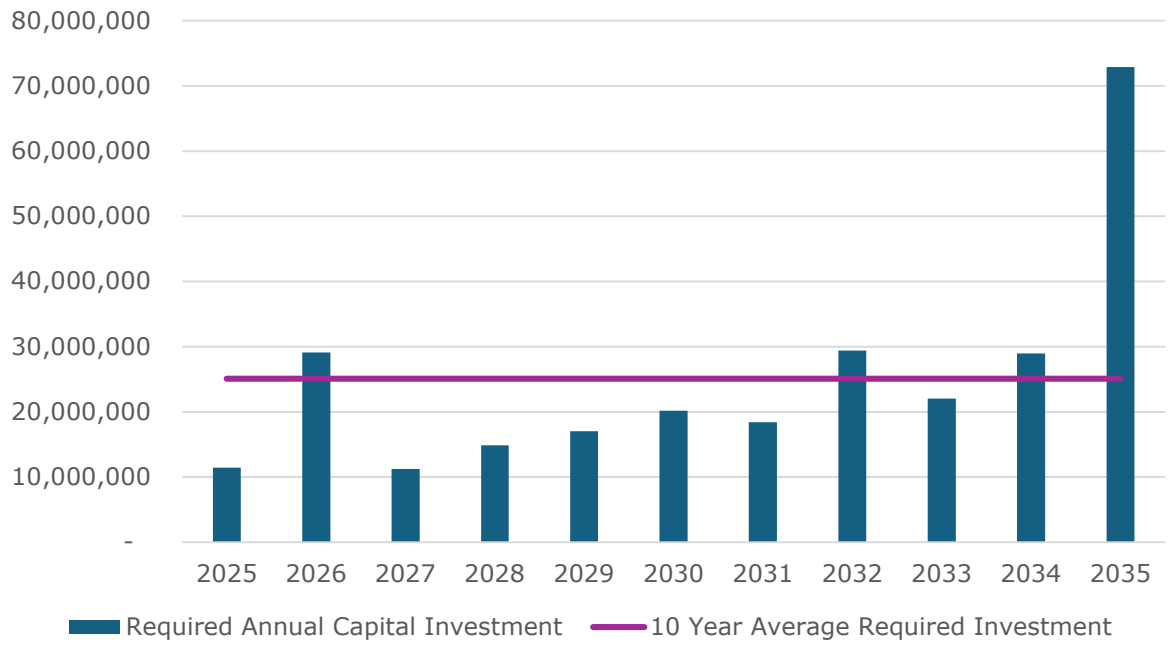
Forecasted Capital Requirement for 10 Years

Assuming all assets in this category are replaced at end of life, the total annual capital requirement is $11.6 million. The accompanying graph demonstrates the average annual capital investment for the next 10 years of $25 million.

The annual funding shortfall is approximately $4.7 million (average annual requirement of $11.5 million less the 10-year average annual funding investment in the 2025 capital plan of $6.8 million). Note that the line in the accompanying graph represents the 10-year average required investment of $25 million.

The graph notes that a significant investment is required in 2035 which relates to the replacement of membranes, which will have reached the end of their useful life, and the rehabilitation or replacement of various water mains, service, and FH leads; such as, on Lakeshore Drive, Marshall Avenue, and MacDonald Avenue that are coming due for rehabilitation which would be considered for rehabilitation through the respective annual on-going projects.

Please note that the figures presented in the graph have not been adjusted for inflation.



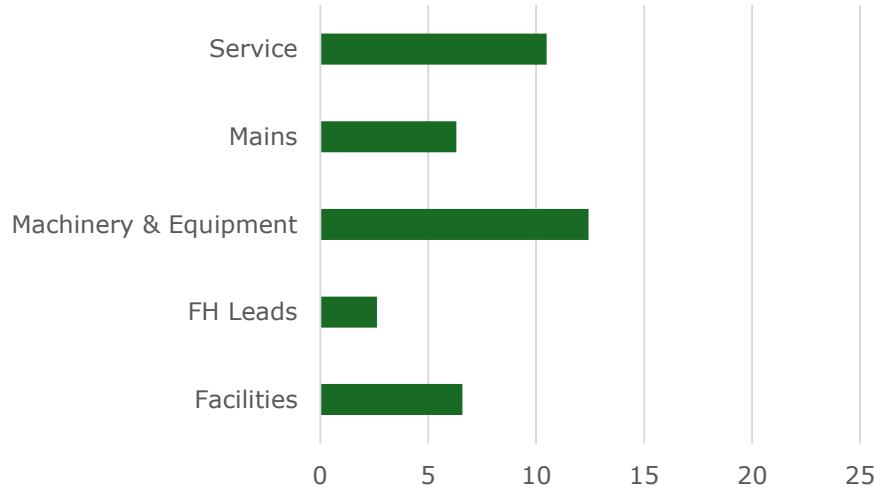
Risk and Criticality of the Water Network

The chart below details the probability and consequence of failure considered for each asset type within the water network.

Quantitative Measurement	Mains, Service, FH Leads	Facilities	Machinery and Equipment
Probability of Failure	Condition, and pipe material (in accordance with the NASSCO Pipeline Assessment Certification Program (PACP) rating system), soil corrosivity score, break history	Condition	Condition
Consequence of Failure	Replacement cost, diameter, and associated road class and segment	Replacement cost, components, safety concerns, and redundancies	Replacement cost

The heat map below shows the relationship between probability and consequence of failure, and overall, the average risk rating for the water network is low to very low. The bar chart below shows the average risk level for water network assets in this AMP.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	Low	Moderate	High	Very High
$99,662,936	$453,225,959	$40,667,301	$35,868,007	$34,051,056
(15%)	(68%)	(6%)	(5%)	(5%)



Heat Map Analysis

The 10% of assets in the high to high-risk category on the heat map majorly represents machinery and equipment which are in poor condition and/ or have a high replacement cost. This also includes underground infrastructure in poor condition.

Risks to Current Asset Management Strategies for the Water Network

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

- **Lifecycle Management Strategies:** Historically, lifecycle management for the water network has been largely reactive, creating challenges in balancing routine maintenance, major rehabilitation, and asset replacement.
- **Infrastructure Design and Installation:** As assets mature, certain aspects of their design and implementation combine to have a detrimental impact on the ability of the asset to provide its service. For instance, design and material choices have advanced with the changes in climate. As a result, the assets are not reaching the expected longevity and may require rehabilitation or replacement sooner than assets using updated design standards.
- **Climate Change and Extreme Weather Events:** Climate change risks such as more intense and frequent rainfalls, rain or snow events, heat waves, and ice-storms have significant implications for City infrastructure. An increase in extreme weather events will likely lead to exceeding capacity of infrastructure and eventual flooding, thus requiring increased investment in maintenance and system improvements. Understanding the severity and frequency of these climate change events and the incorporation of climate change considerations into the City's asset management planning approach is critical to maintaining service levels and managing risk.
- **Infrastructure Reinvestment:** The City follows the approved Long-Term Capital Funding Policy for annual capital investments. Included in the City's capital funding envelope is grants and other external sources of funding. The current Long-Term Capital Funding Policy will need to be revisited to align with the outcomes documented within this AMP.

Levels of Service

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

Community Level of Service

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

Core Value	Level of Service Statement	Community Level of Service
Accessible and Reliable	A reliable water supply is provided with minimal service disruptions	A map of the City's water distribution network is in Appendix 4. A map of the City's fire suppression network is in Appendix 5.
Safe and Regulatory	Water supply is safe to drink and meets all regulatory requirements	The City's annual drinking water inspection completed by the Ministry of the Environment Conservation and Parks rated the City water system at 100% for 2024.
Affordable	Water services are affordable, and household charges are fair and reasonable; infrastructure is managed cost-effectively for the expected level of service	Lifecycle activities include valve exercising, unidirectional flushing, cathodic protection, dead-end flushing, trenchless relining, and full reconstruction.
Sustainable	Water resources are used efficiently, and long-term plans are in place for the sustainability of the water supply and all water infrastructure	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. Lifecycle strategies are used as a proactive approach to having a sustainable system.

Technical Levels of Service

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

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Accessible and Reliable	A reliable water supply is provided with minimal service disruptions	% of properties connected to the municipal water system	≥83% Connectivity remains stable, reflecting full-service coverage within current urban boundaries. Maintain LOS and extend only where future development occurs.	83%	83%	83%	Maintain
		% of properties where fire flow is available	100% Full fire flow coverage achieved—critical for safety and emergency response. Maintain this standard through ongoing hydrant maintenance and flow testing.	83%	100%	100%	Maintain
		# of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system	<150 by 2030 Water main break frequency has decreased. Continue proactive replacement of aging mains and leak detection to further reduce disruptions.	248/ 16,779	200/ 16,783	185/ 16,876	Increase (proactive renewal)
Safe and Regulatory	Water supply is safe to drink and meets all regulatory requirements	# of connection-days per year where a boil water advisory or drinking water advisory notice is in place, compared to the total number of properties connected to the municipal water system	0 No boil water advisories reported since 2021. Maintain rigorous sampling, monitoring, and compliance with MECP standards.	15/ 16,779	0/ 16,783	0/ 16,876	Maintain

Technical Levels of Service - Continued

Core Value	Level of Service Statement	Technical Level of Service		Current and Historical Performance			Assessment of Service Level
			Proposed LOS & Appropriateness Statement	2021	2023	2024	
Performance	Water resources are used efficiently, and long-term plans are in place for the sustainability of the water supply and all water infrastructure	% of the water system that is in good or very good condition	≥95% Maintain proactive maintenance and renewal cycles.	93%	94%	94%	Maintain
		% of the water system that is in poor or very poor condition	≤5% Maintain this through continued targeted replacements.	4.31%	3%	4%	Maintain
Affordable	Water services are affordable, and household charges are fair and reasonable; infrastructure is managed cost-effectively for the expected level of service	Average annual residential water bill	Average residential cost remains stable and below inflation-adjusted trends. Maintain affordability while ensuring sufficient funding for renewal needs.	$563.78	$551.52	$558.12	Increase
		Reinvestment rate *	0.96% Reinvestment remains well below target, creating long-term renewal risk. Gradual increase recommended to close the funding gap.	0.62% **	0.98% **	0.62%	Increase
Sustainable	Ensure long-term service sustainability	10-year capital plan and funding forecast	$11.5 million Plan structure meets requirements, but funding must increase to sustain LOS. Integration with financial strategy recommended.	$3.7 million	$6.2 million	$7.4 million	Increase

* The reinvestment rate is the average annual funding as per the capital budget divided by the total replacement cost including lifecycle events. The target was established using the annual requirement divided by the total replacement cost including lifecycle events.

** Reinvestment rate was 1.59% before lifecycle events were incorporated into the water network.

Proposed Levels of Service

The proposed levels of service represents the City's long-term objectives for water performance. These targets are informed by technical analysis, stakeholder feedback, operational capacity, industry best practices, and through recommendations provided by PSD Citywide. These provide a framework for strategic planning that balances desired outcomes with available resources and risk considerations. The chart above identifies each technical level of service and includes the proposed level of service, an appropriateness statement, and summarizes the assessment based on the analysis described below.

Public Engagement Results

The public was generally satisfied with the performance and availability of the water network, with 72.98% of respondents satisfied, 10.63% dissatisfied, and 16.39% neutral or having no opinion. The condition of the water network was generally viewed as sufficient with 78.23% of respondents rating their condition as acceptable or exceeding expectations. Another 13.57% indicated a need for improvement, while 8.20% had no preference. This aligns reasonably well with current asset data, as mentioned above, which shows that 96% of water network assets are in fair or better condition. The correlation suggests that public perception is broadly consistent with technical assessments, though the significant proportion seeking improvements highlights the need for targeted maintenance and rehabilitation strategies.

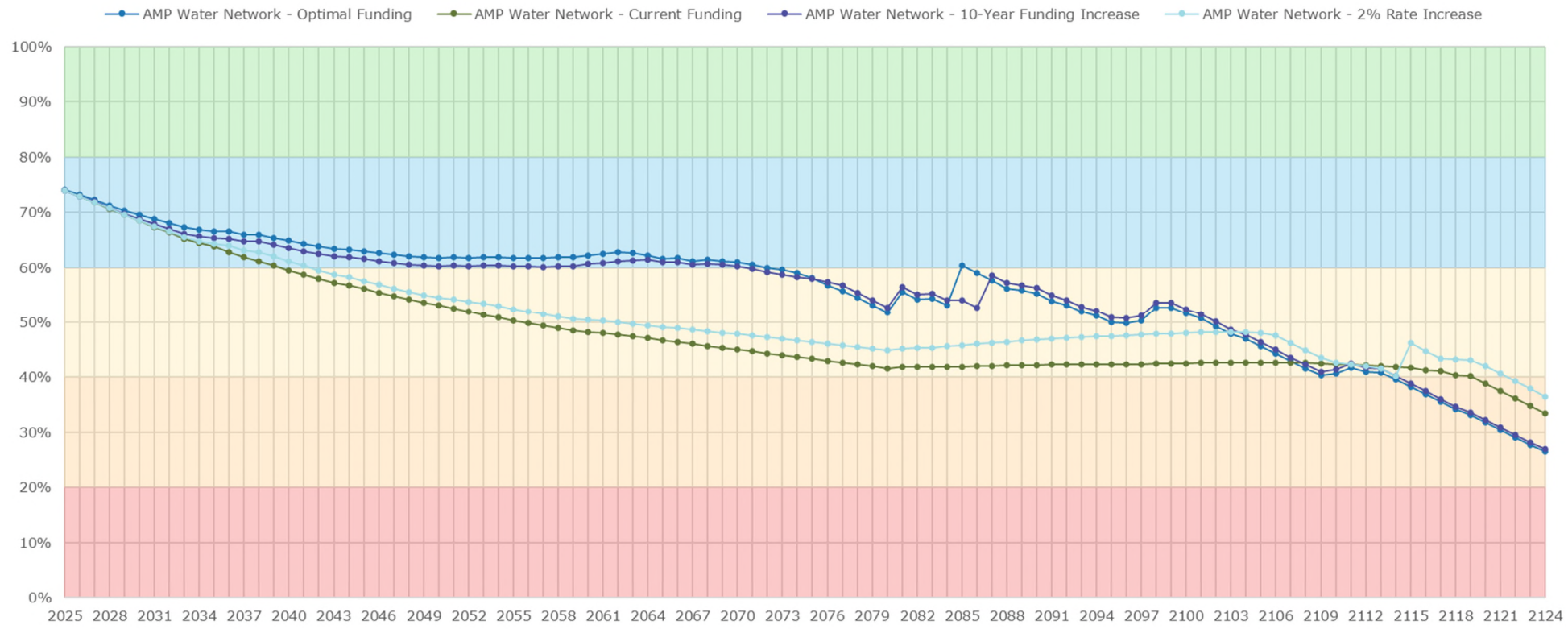
Appropriateness Analysis

The analysis of the four funding strategies for the water network was done over a time horizon from 2025 to 2124. This timeline was used to provide a reasonable representation of the lifecycle impacts of each funding decision; the longer timeline best reflects the water network long service life with lifecycle management strategies. This analysis shows relatively stable performance compared to other asset classes in the AMP, but still indicates a need for increased investment to maintain sustainability. All scenarios begin at an average condition of approximately 75% (good) in 2025 and experience a gradual declining due to typical lifecycle deterioration during periods when major investments are not required. The current funding and Long-Term Capital Funding Policy, which includes an annual 2% user rate increase, scenarios decline the fastest until 2106 and which point the optimal and 10-year phase-in scenarios intersect the previously mentioned scenarios and continue to decline until they each reach a condition of 28% (poor) by 2124 compared to the current funding condition of 34% (fair) and Long-Term Capital Funding Policy of 37% (fair).

This temporary position reflects the long service life of water network assets and the timing of planned lifecycle activities. As these activities become due, the condition of the assets under the optimal and 10-year phase-in scenarios will steadily improve because the funding will be available to maintain acceptable service levels over the long-term. It is important to consider the long-term trend of each funding scenario. Under the current funding level, the average condition of water network assets is 48.40%. Following the Long-Term Capital Funding Policy, this improves slightly to 51%. However, under the optimal and 10-year phase-in scenarios, the average condition rises to 55.47% and 55.13%, respectively. This demonstrates the critical importance of increasing investment in the water network. As conditions decline, the risk of asset failure grows, leading to higher repair costs and more user complaints.

Appropriateness Analysis - Continued

These results suggest that while water assets are more resilient than other infrastructure categories, current and user rate-based funding strategies still fall short of maintaining desired service levels over the long term. The slight differences in average condition mask the risk of deferred maintenance and the potential for costly emergency interventions if funding remains inadequate. Optimal and phased-in strategies provide better resilience and help sustain service levels, but even these approaches require ongoing monitoring and timely lifecycle interventions. Water assets benefit from their robust design and long service life, which explains the slower rate of deterioration. However, without proactive funding increases, the system will gradually decline, increasing risk and lifecycle costs. Strategic investment planning remains essential to ensure compliance, reliability, and cost efficiency over the 100-year horizon.



Recommendations

Condition Assessment Strategies

Implement annual inspections and maintenance of municipal water network to reduce asset failures. In addition, establish a city-wide CCTV inspection program phased over 10–15 years to enable annual inspections of a select percentage of the water network. Priority should be given to problematic areas first, and inspection results should be used to inform future lifecycle activities and capital planning.

Risk Management Strategies

Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure or data availability. As well as, implement risk-based decision-making within asset management planning and budgeting processes. This should include regular reviews of high-risk assets to identify and apply appropriate risk mitigation strategies.

Lifecycle Management Strategies

Implement lifecycle management strategies for the water network. Review the effectiveness of existing lifecycle management strategies for mains, service, and leads to assess their impact on cost, condition, and risk. These actions will help realize potential cost avoidance and maintain a reliable water system.

Levels of Service

Continue measuring current levels of service using O. Reg. 588/17 metrics and other meaningful indicators to support informed decision-making and regulatory compliance. Maintain and refine the proposed service levels in this 2025 AMP to align with community expectations, financial capacity, and operational realities. Implement strategies to close gaps between current and proposed service levels and reassess them regularly as part of AMP updates to support continuous improvement.

Asset Inventory

Continue to review the infrastructure within the water network to ensure all assets within this category have been accounted for. Review replacement costs on an annual basis to ensure accuracy with recent market pricing.

Recommendations - Continued

Financial and Sustainability

Ensure the capital budget accounts for current and forecasted requirements, with dedicated funding to avoid deferred work that could shorten asset life or reduce performance. Reevaluate the City's Long-Term Capital Funding Policy to confirm it supports asset sustainability over the long term. Future budgets should be aligned with this policy to meet asset management financial requirements, maintain service levels, minimize risk, and comply with regulatory obligations.

Climate Change Adaptation:

To ensure climate impacts are effectively managed in day-to-day operations, the City should implement ongoing practices that integrate climate considerations into asset management activities. This includes regularly monitoring asset performance for climate-related deterioration, updating risk models with the latest climate data, and incorporating climate indicators into maintenance and work management systems. Maintenance and renewal strategies should be reviewed periodically to prioritize climate-resilient materials and designs, while inspection frequencies for vulnerable assets should be adjusted as needed. Collaboration with regional climate networks and continuous staff training will help maintain awareness and preparedness. Finally, climate-related performance metrics should be reported annually to track progress and inform future planning, ensuring that adaptation measures remain aligned with long-term sustainability goals.

5. Impact of Growth

Population and Economic Growth Outlook

North Bay's population has been gradually increasing. The 2021 Census recorded 52,662 residents within the city, a 2.2% rise since 2016. The broader North Bay Census Agglomeration, which includes surrounding communities, reached 71,736 in 2021. This moderate growth trend is expected to continue over the coming decades. The City's Official Plan anticipates steady residential and non-residential growth over the medium and long term. For example, it forecasted an increase of about 3,119 households from 2009 to 2031 (from 22,962 to 26,081 households). This represents a modest but persistent rise in housing and population. North Bay's actual 2021 population aligns closely with earlier projections, and recent long-term forecasts (Hemson Consulting, 2019) likewise predict slow but steady growth through 2046, on the order of only 2–4% per decade.

Economic development initiatives aim to strengthen both population and employment growth. North Bay's diverse economy, anchored by advanced manufacturing, mining supply, aviation/aerospace, education, and health sciences, provides a solid foundation for job creation. The City's business community continues to grow by supporting local expansions and attracting new, compatible companies. Programs such as the Growth Community Improvement Plan (GCIP) encourage downtown revitalization, new housing, and industrial development through targeted incentives. For example, GCIP has supported infill projects (such as new residential units above downtown storefronts) and new industrial facilities in designated growth areas. These efforts seek to increase employment opportunities and attract new residents, countering historically slow growth.

Demographic trends will shape future service needs. North Bay has an aging population: as of 2021, 21.7% of residents were seniors (65+), compared to 14.4% under age 15. Without significant immigration of younger families, growth will likely skew toward older adults. This demographic shift may increase demand for accessible transit, healthcare facilities, and age-friendly housing, even if overall population growth remains modest. The City's strategic planning emphasizes attracting and retaining youth, skilled workers, and immigrants to sustain economic vitality. The forthcoming Strategic Plan Update (scheduled for 2027) will revisit population and employment targets, aligning the City's vision with updated census data and growth forecasts.

In summary, North Bay anticipates gradual population and job growth over the next decade and beyond. While expansion will not be rapid, the City is planning for steady increases in residents, housing, and economic activity. These growth assumptions, drawn from the Official Plan and recent Census trends, form the foundation for asset management planning, ensuring infrastructure investments align with North Bay's evolving population and economic landscape.

Land Use Planning for Sustainable Growth

Land Use Planning Framework: North Bay's land use planning framework is designed to manage growth sustainably. The City's Official Plan is the cornerstone policy guiding where and how development occurs. It provides a community vision for future change, balancing environmental, economic, and social factors. Council's goal is to grow North Bay in a sustainable manner by integrating the three pillars of sustainability; economic, social/cultural, and environmental, into all planning decisions. This approach ensures development maintains a high quality of life for future generations, avoids environmental degradation, and makes efficient use of infrastructure.

Urban Structure and Growth Areas: The Official Plan delineates an urban settlement area where most growth will occur, while limiting development in rural areas. Infill development and densification in built-up areas are encouraged to optimize existing infrastructure and reduce sprawl. For example, the Plan identifies Residential Intensification Areas (Schedule 11) and downtown/waterfront districts for redevelopment. Recent GCIP-supported infill projects, such as adding residential units above downtown storefronts, align with this strategy. By focusing growth inward, North Bay aims to control infrastructure costs and protect natural areas. The next five-year review of the Official Plan will update these policies and growth allocations, informed by new studies such as the Trout Lake Watershed Study.

Trout Lake Watershed Study: Environmental protection is central to North Bay's growth management. Trout Lake is the City's sole source of municipal drinking water, and its watershed lies partly within city boundaries. Strict land use controls have long been enforced to safeguard water quality. The Official Plan states that all lands within the watershed influence Trout Lake, and development is tightly limited and subject to rigorous environmental requirements. The ongoing Trout Lake Watershed Study (2023 and on-going) is updating scientific understanding of water quality and development capacity. Its findings will inform the Official Plan update, likely refining policies on lot creation, stormwater management, and permitted densities to ensure future growth maintains or improves water quality. North Bay is committed to directing growth to appropriate areas and implementing mitigation measures recommended by the study.

Planning for Infrastructure and Land Use: In tandem with the Official Plan, the City is undertaking studies to align land development with infrastructure capacity. An Infrastructure Background Study (2008) informed the current Official Plan, ensuring that land use designations matched the ability to extend water, sewer, and roads to new development areas. Now, as growth pressures evolve, North Bay has budgeted a comprehensive Infrastructure Modeling and Capacity Study (2025 and on-going) for its water, wastewater, and stormwater systems. This study will update the City's models to account for projected growth in population and new housing or employment areas. It will identify where system upgrades or expansions are needed to support planned development (for example, upsizing water mains for a new subdivision or ensuring wastewater treatment capacity for future industry). The results will guide both land use decisions (e.g. pacing of new subdivision approvals) and capital planning for infrastructure.

Land Use Planning for Sustainable Growth - Continued

Future Growth Areas: North Bay is also preparing for growth in designated greenfield areas on its periphery. Notably, the City has earmarked the Airport Heights and Cedar Heights areas for future residential development. To support this, the 2025 budget includes funding for Master Drainage Plans for both areas in 2026, with implementation of required stormwater infrastructure by 2032. These plans will design stormwater management systems such as, drainage channels, storm sewers, and retention ponds to service new neighbourhoods while preventing flooding and downstream impacts.

By investing in up-front planning, the City ensures that future development will be supported by adequate infrastructure and will not negatively affect existing communities or ecosystems. These plans will incorporate climate-resilient design (e.g., sizing for more intense rainfall events) and protect water resources as development occurs. This approach reflects North Bay's commitment to sustainable land use and proactive infrastructure planning.

In summary, North Bay's growth management strategy, embodied in its Official Plan and supporting studies, is to direct growth to suitable locations, encourage densification, and protect critical environmental features. Initiatives such as the Official Plan review, Trout Lake Watershed Study, and area-specific master plans ensure that future development is sustainable and aligned with infrastructure capacity. This proactive planning lays the groundwork for growth that the City can service effectively without compromising the natural and built environment residents value.

Infrastructure Capacity and Service Delivery Impacts

Even with modest growth rates, new development in North Bay will place additional demands on municipal infrastructure and services. This AMP must evaluate how core systems; roads, transit, water, wastewater, stormwater, will accommodate increased usage and identify where service levels may need enhancement. Several master plans and strategies are in place (or forthcoming) to address capacity and service delivery for a growing community.

Road Network & Traffic Safety: North Bay has completed a comprehensive Road Safety Strategy/Master Plan, now in implementation, to improve transportation safety and efficiency. This plan analyzed collision data, traffic volumes, and road conditions, recommending measures such as intersection upgrades, traffic calming, cycling infrastructure, and pedestrian safety improvements. The Road Safety Strategy's implementation, such as new traffic signals, bike lanes, and speed management in school zones, helps maintain or improve service levels despite growth. The strategy is scheduled for review and update in 2031 to address emerging issues like higher traffic in new subdivisions and increased active transportation usage. Public input reinforces this priority: 44% of residents identified roads and sidewalks as a top concern. Ongoing investments in road rehabilitation and safety will help meet these expectations as more users rely on the network.

Infrastructure Capacity and Service Delivery Impacts – Continued

Parking and Downtown Mobility: To support economic growth and an active downtown, North Bay is developing a Parking Master Plan (currently underway). This plan is assessing the capacity and usage of municipal parking lots, on-street parking, and future needs based on development trends. A growing population and workforce will increase vehicle demand, particularly in the central business district and waterfront areas targeted for intensification. The Parking Master Plan will recommend strategies such as optimizing existing parking assets, constructing new facilities if required, implementing modern payment technologies, and promoting alternative transportation options to manage demand. By taking a long-range view, the City aims to prevent parking shortages and traffic congestion that could result from uncoordinated growth. Adequate parking, alongside transit and active transportation, is essential for maintaining accessibility and convenience for residents, shoppers, and visitors as North Bay's economy expands.

Water, Wastewater and Stormwater Systems: The City's water treatment and distribution system, sewage collection and treatment system, and stormwater management network form the backbone of its municipal services. Currently, about 16,700 industrial, commercial, institutional, and residential accounts are connected to City water and sewer services. As the city adds new households and businesses, new linear infrastructure and facility capacity will be required to maintain service levels. The City's forthcoming Infrastructure Modeling and Background Study (2025) will pinpoint infrastructure upgrades needed to support forecasted growth. Key considerations include water supply capacity for new development (North Bay's water treatment plant draws from Trout Lake and has to meet any increased demand), sewage treatment plant capacity for higher wastewater flows, and extending water/wastewater mains to newly developing areas like Airport Heights. Additionally, water pressure and fire flow need to be ensured in expanding subdivisions. The City will have to extend watermains and perhaps add booster pumping stations or storage reservoirs as development extends further from the plant. On the stormwater side, urban growth increases impervious surfaces, so storm sewers, culverts, and management ponds must be sized to handle greater runoff. The Master Drainage Plans for growth areas (Cedar Heights and Airport Heights) will integrate with city-wide stormwater strategies to prevent any decline in level of service (e.g. no increase in flooding frequency). All new infrastructure will be designed to meet current engineering standards, meaning new subdivisions should enjoy equal or better service reliability (e.g. water pressure, sewer backups, drainage) compared to existing neighbourhoods. Importantly, the City recognizes that growth will "add new assets to the City's infrastructure portfolios" and increase the challenges of funding maintenance and renewal. Thus, capacity expansions are being carefully planned so they are cost-effective and phased with actual growth realization.

Transit and Active Transportation: For the size of the city, the transit system is robust; however, population growth will have a further impact on public transit demand and active transportation infrastructure. The City's transit services and active transportation strategy (the City has a 2008 Trails & Active Transportation Strategy) will need to evolve if ridership or usage grows. Currently, only 16% of residents expressed satisfaction with transit infrastructure, and 26% were dissatisfied, indicating room for improvement. As the City grows, improving transit routes, frequency, and amenities may become necessary to provide a viable alternative to driving (which also supports parking and climate goals). Likewise, expanding the network of bike lanes, sidewalks, and trails as called for in the City's active transportation plans, will help maintain quality of life and safety for a larger population.

In summary, infrastructure services across the board are being evaluated for growth impacts. Through master plans and ongoing monitoring, North Bay intends to ensure that service levels remain at or above current standards as new users connect to city systems.

Community Facilities and Service Expansion

In addition to hard infrastructure, community facilities and frontline services must scale up with growth to meet residents' needs. The City is proactively planning enhancements in recreation, parks, and emergency services in anticipation of future demand.

Recreation Facilities Master Plans: The City recognizes that a growing or changing population will require investments in recreation and sports infrastructure. In the 2025 capital budget, The City approved funding to kick off a Master Plan for the Steve Omischl Sports Complex and the Sam Jacks Recreation Complex and in 2024, Council approved the award for the build of the new Community and Recreation Centre. These facilities are vital for community sports, events, and recreation and as the population increases, especially among families and youth, recreational facilities are expected to face higher usage. The new master plan (though not yet commenced as of 2025) will evaluate community needs to accommodate growth over the next decade. By planning now, the City aims to ensure recreational level of service (e.g. hours of facility availability, variety of programs) does not fall behind as more residents utilize these complexes. A 2019 feasibility update for a multi-use recreational facility noted that population growth in North Bay is projected to be around 5% from 2016 to 2046, suggesting that while growth is slow, there will be incremental increases in demand for recreation. The master plan will outline phased improvements so that the City's recreation facilities can meet community needs through 2035 and beyond.

Parks and Open Space: North Bay has an established Parks Master Plan which is guiding annual park upgrades and expansions. This plan assesses the provision of parks, playgrounds, and trails per capita and by neighbourhood. As the population grows, the City is committed to providing equitable access to parkland and green space for both new and existing residents. Implementation is ongoing each year developing new parks in growth areas (the Official Plan appendices already include future park plans for areas like Cedar Heights and Airport Heights), improving playground equipment, adding trail connections, and enhancing waterfront parks. By following the Parks Master Plan recommendations, the City can maintain its current level of service in parks even as thousands of new residents join the community. Parks and recreation are crucial for quality of life and were rated positively by residents (65% satisfaction in a recent survey), so the City intends to keep up this standard through strategic park development tied to growth.

Fire and Emergency Services: With a larger population and new development areas, fire protection and emergency response must also expand to uphold public safety standards. North Bay's Fire & Emergency Services department will be undertaking a Fire Master Plan (scheduled in 2029) to chart the future of fire services. This plan will likely examine whether additional fire stations, trucks, or firefighters will be needed as the city grows in geographic area and population. For instance, new subdivisions in Airport Heights or other fringes may be farther from existing fire halls, potentially impacting response times. The Fire Master Plan will use growth forecasts and risk analysis to determine optimal station locations or whether to enhance capacity at existing stations. Although this plan is a few years out, the City has it on the roadmap to ensure fire and emergency medical response levels (e.g. response times, coverage) remain within targets despite growth. In the interim, the City continues to monitor development patterns; any large new industrial or residential area will be assessed for fire service impact (e.g. needing new hydrants or upgraded water flow for fire suppression). By the time the plan is completed, it will provide a blueprint through 2035 for capital and operational investments so that emergency services keep pace with community growth.

Community Facilities and Service Expansion - Continued

Other Community Services: The City's strategic planning also encompasses other services such as policing, transit (as noted earlier), and social services as the city grows. While not a focus of the AMP's infrastructure inventory, these services are considered in parallel with city strategies like the Community Safety and Well-Being Plan and updates to corporate strategic plans. For example, an increase in population may necessitate more transit routes or library services, these will be handled in their respective departmental plans. The Strategic Plan Update in 2027 will provide renewed corporate priorities, likely including goals for community health, culture, and housing in light of population changes. The City is also taking steps to address housing growth through initiatives like the Housing Strategy and incentives for residential development to ensure the supply of housing (and related infrastructure) meets the needs of a growing and changing demographic.

In summary, the City's various master plans for community facilities and services are aligned to accommodate growth, so that residents in 2031 or 2041 continue to enjoy a high level of service in recreation, safety, and amenities comparable to today.

Financial and Sustainability Considerations

Planning for growth is not only about expansion but it also requires careful financial planning and sustainable thinking to ensure that growth is affordable and resilient. The City's asset management and strategic documents emphasize the importance of balancing new investments with fiscal responsibility and climate adaptation:

Cost of Growth and Funding Strategies: Accommodating growth will require substantial capital investments in new or expanded infrastructure. The Ontario regulation requires the AMP to outline "estimated capital expenditures and significant operating costs to accommodate projected increases in demand" from population and economic growth. Preliminary analysis indicates that the City will need to invest in projects such as new watermains and sewers, road extensions, facility upgrades, and additional vehicles/equipment to service growth. These growth-related projects come with significant costs that are not currently covered in the City's existing asset management plan. To fund the infrastructure for growth, the City will utilize a combination of funding sources:

- Development Charges (DCs): The City levies development charges on new residential and non-residential developments. These charges are designed to pay for a portion of growth-related capital costs (e.g. enlarging a water treatment plant or building a new arterial road section). The City's financial policies allocate DC revenues to eligible projects so that "growth related project costs" are largely recovered from new development. This ensures that growth helps pay for itself and existing taxpayers are less burdened.
- Increased Tax Base: New development will expand the assessment base, resulting in higher property tax revenues over time. The regulation calls for identifying "funding projected to be available, by source, as a result of increased population and economic activity". In the City's case, an increase in population and businesses will gradually boost property tax, water/ sewer user fees, and other revenues. These new revenues can support the operating costs of expanded services (for example, more road maintenance or additional transit service hours, if needed) and help finance capital through debt repayment or reserve contributions.

Financial and Sustainability Considerations - Continued

- Grants and Partnerships: The City will continue to seek support from provincial and federal infrastructure funding programs to offset growth capital costs. Programs such as the Canada Community-Building Fund (formerly Gas Tax), Ontario's infrastructure grants, or special stimulus funds often prioritize projects that improve capacity for housing and economic growth. The City's compliance with asset management regulations is in part to qualify for such funding. Additionally, public-private partnerships might be explored for certain facilities if they can deliver growth infrastructure more efficiently.
- Debt Financing (Strategic Use of Debt): While the City primarily utilizes pay-as-you-go funding, strategic debt will be considered for large growth-related projects that have long-term benefits. The City's Long-Term Capital Financing Policy notes that debt can be appropriate for "new, non-recurring infrastructure" and "growth-related costs not recovered from development charges". By spreading the cost of new infrastructure over its useful life via debt, the City can align payment with the future residents who will benefit, rather than overburdening current taxpayers. The City will carefully manage its debt to stay within the annual repayment limit and its own policy targets, maintaining financial sustainability even as it invests in growth.

It is important to note that ongoing operating costs will also rise with growth; more roads to plow, more pipes to flush, more parks to maintain, and these costs will need to be built into future operating budgets. The City's annual budgeting process and 10-year capital forecasts will integrate the outputs of this growth, ensuring that lifecycle funding gaps do not widen due to unaccounted new assets.

Sustainability and Climate Resilience: The City's approach to growth is tightly linked with its climate change and sustainability objectives. The City currently incorporates climate change considerations into capital project design with various tools; such as, the Conservation and Demand Management Plan, and a Climate Change Adaptation and Mitigation Plan is currently under development, with implementation funding earmarked around 2031. As the community grows, this plan will guide how to reduce greenhouse gas emissions (for example, through sustainable transportation, energy-efficient building standards, etc.) and how to build resilience against climate impacts. For infrastructure, this means new assets will be designed for climate resilience (e.g. larger stormwater infrastructure to handle intense storms), robust shoreline protections, and infrastructure located outside of high-risk flood or erosion zones. Growth provides an opportunity to build better, greener infrastructure from the start. The City will also encourage climate-friendly growth patterns (such as denser, transit-oriented development) to help meet future climate plan targets.

Moreover, the Official Plan's sustainability principle (integrating economic, social, and environmental goals) ensures that growth decisions are not made on economic factors alone. For instance, expanding the City's footprint is weighed against the carbon footprint and potential loss of greenspace. The City's strategic documents reinforce that growth must enhance the community's attributes without compromising the environment or financial health. By 2031, when the Climate Change Master Plan is in full implementation, many of its recommendations (like nature-based solutions for stormwater, or electrification of public fleets) will intersect with asset management. The growth-related projects between now and then will be vetted for alignment with these climate goals. This integrated thinking supports provincial priorities as well, Ontario's policies now encourage municipalities to link infrastructure planning with climate change and housing needs.

Risk Management: Finally, as part of compliance with O. Reg. 588/17, this growth section also considers risks and mitigation measures. There are uncertainties in any growth projections, if growth is higher or lower than expected, the City may face different challenges (either strain on services or excess capacity). The regulation requires an "overview of the risks associated with implementation of the asset management plan and any actions proposed in response". Key risks include:

- *Financial risk:* Growth not paying for itself (mitigated by conservative financial planning and use of DCs and grants)
- *Service risk:* If growth outpaces infrastructure delivery, service levels could drop (mitigated by phasing development and closely monitoring capacity triggers)
- *Economic risk:* If anticipated growth does not materialize, the City could have invested in infrastructure prematurely (mitigated by scalable project design and regular review of growth forecasts)
- *Environmental risk:* Growth could impact the environment, e.g. water quality, if not properly managed (mitigated by studies like the Trout Lake Watershed Study and strict development controls)

The City's strategy is to remain agile and evidence-based, updating the AMP regularly, as required annually and at least every 5 years, to adjust to actual growth trends and new information.

Conclusion

The City's asset management planning for 2025 and beyond is to fully integrate growth considerations in accordance with provincial requirements and the City's own vision for the future. By referencing the Official Plan, master plans, and strategic initiatives, this section has outlined how expected population and economic growth will be accommodated through careful land use planning, infrastructure capacity upgrades, and service enhancements. The City's plans (from the Official Plan review and Trout Lake Study, to the Road Safety Strategy, Parks Master Plan, new facility plans, and upcoming Fire Master Plan) collectively ensure that as North Bay grows, it does so in a sustainable, well-managed way. Residents can be confident that the levels of service they enjoy (clean water, safe roads, responsive emergency services, and quality parks and facilities) will be maintained or improved in the coming years. Furthermore, by forecasting the costs of growth and funding strategies, the City is demonstrating fiscal responsibility and readiness to invest where needed.

In conclusion, North Bay is poised to achieve steady growth that aligns with its strategic goals and community values. Through proactive planning and community-informed priorities, the City will continue to "grow and develop North Bay in a sustainable manner", ensuring that infrastructure and services support a thriving, safe, and livable city for current and future generations.

6. Finance Strategy

Financing Strategy Background

The effectiveness and meaningfulness of an asset management plan is dependent on the integration with financial planning and long-term budgeting. The development of a comprehensive financial plan will allow the City to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, legislative requirements, and projected growth requirements.

This version of the AMP is primarily focused on the City's asset lifecycle needs, specifically the expenditures required to maintain the current level of service to the City's community. A funding shortfall, however, is not assessed for growth and service enhancement needs. Growth and service enhancement needs have been considered and will be further enhanced in a future AMP as the City's capacity and expertise in AMP develops. As growth and new assets are considered, an analysis of full lifecycle costing will form part of the decision-making process. The funding shortfalls discussed within this AMP mainly refers to the needs and funding available for existing assets to maintain the current levels of service. Not all new infrastructure that is in the 10-year Capital Budget have been identified in this AMP.

Working within current sustainable funding levels, the City must continuously prioritize expenditures between asset sustainability, growth demands, and changes in service levels. This AMP forecasts a shortfall in annual funding levels required for several assets to sustain their current expected level of service. This is a common challenge for cities across Canada, including the City of North Bay.

This AMP will inform the development of a financial plan that identifies the financial requirements for existing assets, utilizes existing service levels, identifies the traditional sustainable sources of municipal funds, and explores alternative non-traditional sources of municipal funds (reallocated budgets, partnerships).

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

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

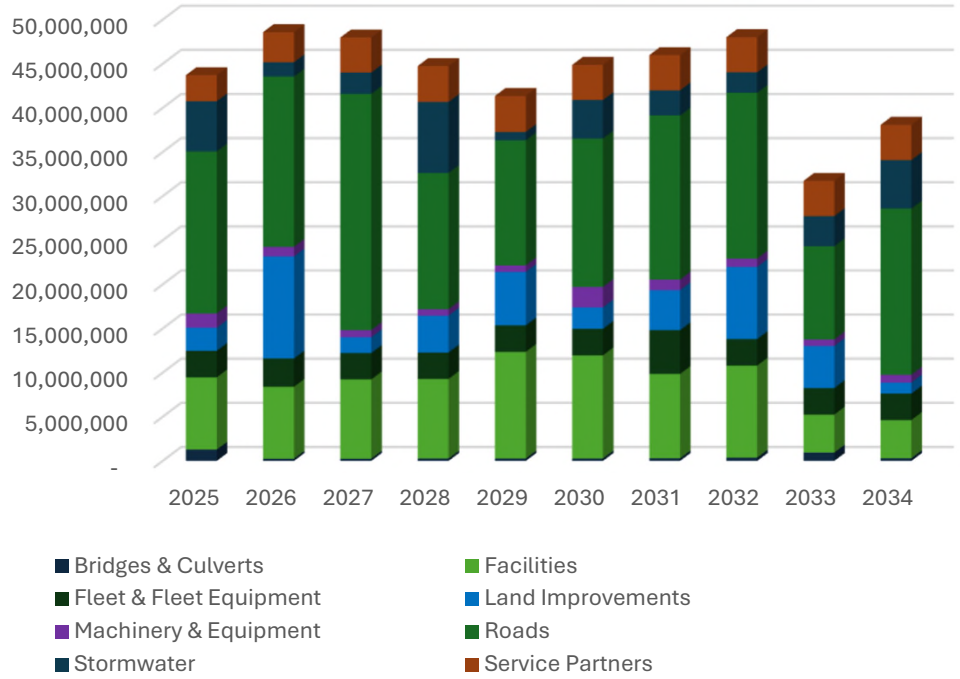
Capital Budget Forecast

Capital budget forecasts for the AMP period are based on the City's 2025 10-year Capital Budget, which meets the requirement of O.Reg 588/17. A multi-year capital budget plan is presented to Council on an annual basis. Generally, Council approves year one of the capital budget and approves, in principle, the remaining years.

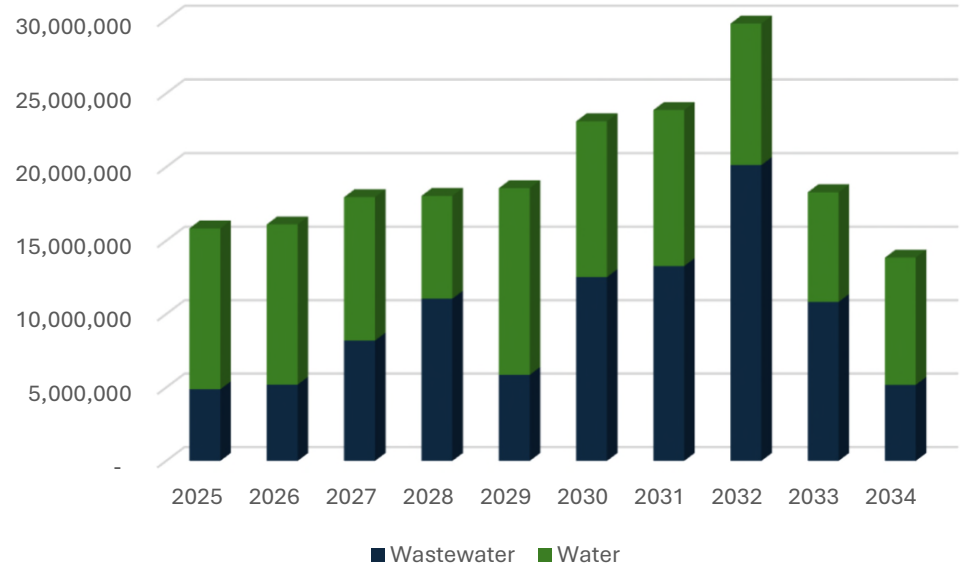
The selection, project development, and prioritization processes for the projects within the 10-year Capital Budget plan are reviewed with each service area to assess the program needs, trends, and priorities. The review includes actual costs incurred in the past for similar projects, as well as current costs to date for projects in progress. Capital project information is gathered from the service areas to provide justification for recommended projects.

The graph illustrates the 2025 10-year Capital Budget. For this AMP, the 2025-2034 General Capital Budget (tax levy funded) has been separated out into the various asset categories: roads, stormwater, bridges and culverts, land improvements, facilities, machinery and equipment, and fleet and fleet equipment. The 2025-2034 Water and Wastewater Capital Budget (funded by water and wastewater rates) has been separated by water and wastewater.

2025 General Capital Budget:



2025 Water and Wastewater Capital Budget:



Operating Budget

In preparing the Operating Budget, the Capital Budget forecast is taken into consideration. This ensures that sufficient funding is available to operate, repair, and maintain any new assets that were created in the previous year or are subject to significant renewal projects. Maintaining infrastructure in good condition continues to be a priority. In developing the annual Operating Budget, there is an annual transfer to the Capital Budget called PAYGO (pay as you go) that represents the cash payments collected through the tax levy or through water and wastewater rates for capital investments.

In accordance with the City's Long-Term Capital Funding Policy, moderate increases to the tax levy are necessary to ensure funding for capital investment and payment of principal and interest on debt. City Council continues to recognize and support the need for increased transfers to fund the Capital Budget due to inflationary pressures, as well as funding increases required to address municipal transformation projects.

The components related to the PAYGO funding of the Capital Budget will continue to be reviewed in conjunction with the needs identified in this AMP. There will also be an increased focus on the best lifecycle solutions for maintaining the asset base and continued delivery of current or improved LOS.

Maintaining assets is more than investments in capital. As discussed, lifecycle strategies include operating investments that ensure the assets are delivering the intended LOS. Therefore, long-term sustainable funding for maintenance and repairs is foundational to address challenges in infrastructure deficits because it is often preventative and will optimize the life of the assets. Generally, wages and materials for repairs are reported within the Operating Budget; however, there is also Operating Capital (routine maintenance/repairs) within the Capital Budget. The Average Annual Operating Capital in the table represents the investment in routine maintenance activities for the assets reported in this AMP and are calculated from the 2025 10-Year Capital Budget. It is recommended that a transition plan be developed to move expenditures of routine maintenance and repairs from capital to operating.

	Average Annual Operating Capital
Bridges and Culverts	273,200
Facilities	1,923,843
Fleet and Equipment	
Land Improvements	1,203,786
Machinery and Equipment	507,609
Roads	2,167,426
Stormwater	176,660
Wastewater	2,249,328
Water	4,277,770
Total	**12,779,622**

Capital Investment Revenue

The City obtains funding for its operating and capital expenditures from a number of sources. A significant portion of revenue is derived from property taxes and user rates. The City has adopted a Long-Term Capital Funding Policy that balances the traditional pay-as-you-go financing approach with debt and third-party funding sources. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period of the AMP; however, by Provincial AMP rules, only reliable and predictable sources of capital funding are used to benchmark funds that may be available in a given year. So, these periodic funding sources cannot be incorporated into an AMP unless there are firm long-term commitments in place. The funding sources considered sustainable for the purposes of this analysis are the tax levy, water and wastewater user rates, CCBF, and OCIF. OCIF and CCBF are considered reliable and predictable sources of funding since their funding formulas are multi-year commitments. With regards to the funding of capital projects, the main sources of current funding for the City are as follows:

1. Pay As You Go/PAYGO : General Operating Budget Tax Levy and Water and Wastewater User Rates
2. Reserves
    a) General, Water, and Wastewater Completed Capital Reserves
    b) Other Reserves
    c) Development Charges
3. External Sources
    a) Various Grants, including, but not limited to: Public Transit Infrastructure Funding, NOHFC, FEDNOR, Ontario Community Infrastructure Fund (OCIF), Canada Community Building Fund (CCBF)
    b) Developer Contributions
    c) Other One-time Third-Party Recoveries

Despite the City's continued increases in capital funding, to successfully deal with the infrastructure deficit, municipalities will need significant ongoing, reliable funding, and Provincial and Federal assistance. While the City continues to pursue all grant opportunities for capital projects, by their nature, they are not sustainable nor predictable. Debt is also not considered a revenue source, but rather, an important capital financing tool. As such, the use of grants will continue to be used to leverage funding, apply for available funding, and, where applicable, make City funding available for other projects.

Annual Capital Requirements

The annual capital requirements represents the amount the City should allocate each year to each asset category to address replacement needs and lifecycle activities as they occur, avoid infrastructure backlogs, and ensure long-term sustainability. Overall, as per the current data within the City's asset management program, PSD Citywide, the City needs to invest approximately $82.1 million annually to meet the capital requirements for the assets included in this AMP.

For most asset categories, the annual capital requirements are based on a "replacement only" approach, where capital expenditures occur solely during the initial construction and subsequent replacement of assets.

In contrast, for the bridges and culverts, road network, wastewater network, and water network, lifecycle management strategies have been implemented. These strategies identify capital costs associated with proactive rehabilitation and renewal efforts, ensuring the City's infrastructure is maintained through strategic investment beyond simple replacement. Lifecycle management strategies will be further refined and expanded across additional asset categories as the information held within the AMP develops and grows.

Annual Sustainable Funding Available

In contrast, the annual funding available is the average annual sustainable capital funding available to the City. Sustainable funding relates to those fundings that are reliable, predictable, and reasonably controllable. As mentioned previously, the City's average annual sustainable funding available is made up of tax levy, water and wastewater user rates, Canada Community Building Fund (CCBF), and Ontario Community Infrastructure Fund (OCIF).

Based on a historical analysis and projection of future sustainable capital funding sources, the City is committing, approximately, $39.6 million ($31 million in tax levy and user rates, $3.5 million in CCBF, and $5 million in OCIF) towards capital projects per year.

Note: In the 2025 AMP, the approach to identifying sustainable funding sources was refined to align more closely with O. Reg 588/17. Specifically, only grants that represent long-term, reliable commitments were included as sustainable sources. This reflects an evolution in understanding and philosophy around sustainability, ensuring that funding assumptions are realistic and compliant. As a result, the annual funding shortfall appears larger than in previous iterations.

Annual Funding Shortfall

Given the annual capital requirement of $82.1 million and the annual sustainable funding available of $39.6 million, there is currently a funding gap of $42.5 million.

While the AMP identifies a funding gap between sustainable capital funding and the City's annual capital requirements, it's important to note that this analysis excludes non-sustainable funding sources such as one-time grants or reserves. The City remains committed to actively pursuing all available grant opportunities and alternative funding programs to help offset this gap and support the long-term sustainability of its infrastructure.

Annual Funding Shortfall Reconciliation

As mentioned above, the approach to identifying sustainable funding sources for the 2025 AMP was refined from prior iterations to align more closely with O. Reg 588/17. Consequently, the annual funding shortfall now appears larger than in previous iterations. The table below reconciles the shortfall calculated in this AMP with the shortfall that would have resulted if all funding sources used in prior AMPs were considered. Funding sources no longer included as sustainable are capital grants that, while approved, do not represent long-term guaranteed commitments and therefore cannot be relied upon in future years; such as, Investing in Canada Infrastructure Program, Connecting Links, and Northern Ontario Heritage Fund.

Annual Requirement as per 2025 AMP		$82,120,159
Average Annual Tax Levy in Operating Budget	$18,020,000	
Average Annual User Rates in Water and Wastewater Budget	$13,100,000	
Average Annual OCIF	$5,000,000	
Average Annual CCBF	$3,450,000	
Total Average Annual Funding (sustainable sources only)		($39,570,000)
Average Annual Shortfall as per 2025 AMP		$42,550,159
Less: Previously Included Revenues (not considered sustainable in 2025 AMP)		($12,857,383)
Adjusted Annual Shortfall Net of Previously Included Revenues		$29,692,776
Average Annual Shortfall as per 2024 AMP		($28,847,260)
Difference in Shortfall Assuming All Previously Included Revenues		$845,516

As noted in the reconciliation above, the average annual shortfall, when considering all revenue sources previously included in the calculation of the average annual funding level, is fairly consistent with the shortfall calculated in the 2024 AMP (2.93% increase). This variance is reasonable and primarily attributable to improved condition data and updated asset replacement values. To remain in compliance with O. Reg 588/17, this revised approach to defining and determining sustainable funding sources will be applied to the calculation of the annual shortfall in all future iterations of the AMP.

General Capital Sustainable Funding Sources

The table below highlights the funding sources that are considered sustainable using the 2025 amounts as the baseline. The one exception to this was the OCIF amounts as they are projected to drop from $7.4 million to $5 million in 2026. As shown in the table, based on 2025 budget revenues from sustainable funding sources, the City is funded at 43.9% (total average annual funding divided by average annual investment required) of their long-term annual capital requirements for the infrastructure categories below.

Asset Category	Average Annual Investment Required	Capital Levy in Operating Budget PAYGO	CCBF	OCIF*	Total Average Annual Funding	Annual Deficit
Bridges and Culverts	**1,914,857**	581,184	-	326,712	**907,896**	**1,006,961**
Facilities	**15,421,040**	4,765,491	1,577,898	-	**6,343,389**	**9,077,651**
Fleet and Equipment	**5,508,925**	1,672,031	-	-	**1,672,031**	**3,836,894**
Land Improvements	**8,082,204**	2,453,054	-	-	**2,453,054**	**5,629,150**
Machinery and Equipment	**3,704,687**	1,124,421	-	-	**1,124,421**	**2,580,266**
Road Network	**18,628,617**	5,654,028	1,872,102	3,178,403	**10,704,532**	**7,924,085**
Stormwater Network	**5,831,023**	1,769,792	-	994,885	**2,764,677**	**3,066,346**
Total	**59,091,353**	**18,020,000**	**3,450,000**	**4,500,000**	**25,970,000**	**33,121,353**

The total annual requirements with lifecycle events for the asset categories in this section (tax funded) is $59.1 million. The City currently allocates approximately $26.0 million of sustainable revenue sources annually for general capital, leaving an annual deficit of $33.1 million.

The City had budgeted annual tax revenues of $114.1 million in 2025. Given that, without the consideration of any one-time or unpredictable funding sources, full funding of the proposed levels of service would require a 29.3% tax change over time.

* OCIF was adjusted to the projected normalized amount in 2026 and onwards

General Capital Sustainable Funding Sources - Continued

The table below outlines tax increase options to phase-in the proposed overall tax change of 29.3% as calculated previously.

	5 Year Phase-In	10 Year Phase-In	15 Year Phase-In	20 Year Phase-In
General Capital Infrastructure Deficit	33,121,353	33,121,353	33,121,353	33,121,353
Change in Debt Costs	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit	**33,121,353**	**33,121,353**	**33,121,353**	**33,121,353**
Tax Increase Required to Offset Deficit	29.3%	29.3%	29.3%	29.3%
Annual Phase-In Tax Increase	5.30%	2.60%	1.80%	1.30%

The City's Long-Term Capital Funding Policy calls for an annual increase to the general capital levy equal to 1% of the previous year's tax levy, less debt servicing costs, with an inflationary adjustment. This strategy is intended to gradually reduce the capital funding shortfall over time. However, based on this AMP, fully addressing the shortfall within 10 years would require an additional 1.6% increase annually, bringing the total to approximately 2.6% per year. This indicates that the current policy alone is not sufficient to close the gap. Despite this limitation, the existing policy will remain the recommended approach for now, as it provides a structured and sustainable framework for incremental progress. The policy will be revisited and brought forward to Council in 2026 for review and potential adjustment to better align with long-term funding needs. In recent years, the policy has not been fully implemented due to a focus on limiting tax levy increases. The financial analysis in this AMP reinforces the importance of adhering to the policy annually to achieve meaningful progress toward reducing the shortfall.

Water and Wastewater Capital Sustainable Funding Sources

The table below highlights the water and wastewater funding sources that are considered sustainable using the 2025 amounts as the baseline. As mentioned previously, the one exception to this was the OCIF amounts as they are projected to drop from $7.4 million to $5 million in 2026. As shown in the table below, based on 2025 budget revenues from sustainable funding sources, the City is funded at 59.1% (total average annual funding divided by average annual investment required) of their long-term annual capital requirements for these infrastructure categories below.

Asset Category	Average Annual Investment Required	Capital Levy in Water and Wastewater Budgets PAYGO	CCBF	OCIF*	Total Average Annual Funding	Annual Deficit
Wastewater Network	**11,457,447**	6,517,600	-	248,763	**6,766,364**	**4,691,083**
Water Network	**11,571,359**	6,582,400	-	251,237	**6,833,636**	**4,737,723**
Total	**23,028,806**	**13,100,000**	**-**	**500,000**	**13,600,000**	**9,428,806**

Water and Wastewater Capital Sustainable Funding Sources - Continued

Total annual requirements with lifecycle events for the asset categories in this section (rate funded) is a combined $23 million. The City is currently allocating a total of $13.6 million to the water and wastewater networks from sustainable revenue sources annually, leaving a total annual deficit of $9.4 million.

Given that the City had annual budgeted for each of water and wastewater user rate revenues was $13.8 million in 2025, without the consideration of any one-time or unpredictable funding sources, full funding of the proposed levels of service would require a 34% tax change over time for each of water and wastewater, respectively.

** OCIF was adjusted to the projected normalized amount in 2026 and onwards

The table below outlines tax increase options to phase-in the proposed overall tax change of 34% as calculated previously.

	Water Network				Wastewater Network			
	5 Year Phase-In	**10 Year Phase-In**	**15 Year Phase-In**	**20 Year Phase-In**	**5 Year Phase-In**	**10 Year Phase-In**	**15 Year Phase-In**	**20 Year Phase-In**
Water and Wastewater Capital Infrastructure Deficit	4,737,723	4,737,723	4,149,533	4,737,723	4,691,083	4,691,083	4,691,083	4,691,083
Change in Debt Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit	**4,737,723**	**4,737,723**	**4,149,533**	**4,737,723**	**4,691,083**	**4,691,083**	**4,691,083**	**4,691,083**
Tax Increase Required to Offset Deficit	34.4%	34.4%	34.4%	34.4%	34.0%	34.0%	34.0%	34.0%
Annual Phase-In Tax Increase	6.10%	3.00%	2.00%	1.50%	6.00%	3.00%	2.00%	1.50%

The City's Long-Term Capital Funding Policy calls for an annual increase to water and wastewater user rates equal to 2% of the previous year's user rates, less debt servicing costs, with an inflationary adjustment. This strategy is intended to gradually reduce the capital funding shortfall over time. However, based on this AMP, fully addressing the shortfall within 10 years would require an additional 1% increase annually, bringing the total to approximately 3% per year for each system. This indicates that the current policy alone is not sufficient to close the gap. Despite this limitation, the existing policy will remain the recommended approach for now, as it provides a structured and sustainable framework for incremental progress. The policy will be revisited and brought forward to Council in 2026 for review and potential adjustment to better align with long-term funding needs. In recent years, the policy has not been fully implemented due to a focus on limiting user rate increases. The financial analysis in this AMP reinforces the importance of consistent annual application of the policy to achieve meaningful progress toward reducing the shortfall.

The Infrastructure Gap

This AMP is focused on reporting on all assets while continuing to ensure the assets included in the report are able to be sustained at current service levels. This AMP is focused on determining the annual funding level required to sustain these assets going forward. This ensures consideration of the annual funding required to appropriately apply maintenance, rehabilitation, replacement, and reconstruction activities, which maintain and/or extend the life of the assets. The AMP defines the City's infrastructure gap as the shortfall between required annual needs to sustain current service levels over the life of the assets and the current annual sustainable funding levels based on the 2025 Capital Budget (adjusted for a projected decrease in OCIF amounts).

The table below provides a summary of the results by asset type and the overall infrastructure gap of approximately $42.5 million annually.

Asset Category	Replacement Cost	Replacement Cost with Events	Annual Requirement	Average Annual Funding Capital Budget (2025-2034)	Annual Shortfall (Surplus)
Bridges and Culverts	121,453,980	143,614,266	1,914,857	907,896	1,006,961
Facilities	516,449,373	516,449,373	15,421,040	6,343,389	9,077,651
Fleet and Equipment	71,581,367	71,581,367	5,508,925	1,672,031	3,836,894
Land Improvements	174,324,847	174,324,847	8,082,204	2,453,054	5,629,150
Machinery and Equipment	43,647,325	43,647,325	3,704,687	1,124,421	2,580,266
Road Network	617,980,388	852,038,915	18,628,617	10,704,532	7,924,085
Stormwater Network	294,472,506	810,849,917	5,831,023	2,764,677	3,066,346
Wastewater Network	741,830,818	1,244,288,409	11,457,447	6,766,364	4,691,083
Water Network	663,475,259	1,205,315,545	11,571,359	6,833,636	4,737,723
Total	**3,245,215,863**	**5,062,109,964**	**82,120,159**	**39,570,000**	**42,550,159**

The annual requirement (with events) in the table above represents the amount the City should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability through the implementation of the lifecycle strategies. As previously noted, the lifecycle strategies are continuously being improved and are subject to change based on new, more objective condition data, impacts of climate change, and unexpected external factors.

The Infrastructure Gap – Continued

Each asset category has been considered with the best information available at the time of this report, and considers the following:

- appropriate maintenance and rehabilitation activities that can be undertaken to extend the useful life
- the risks associated with running the assets to failure
- annual capital funding from sustainable revenue sources based on 2025 capital budget
- average annual needs for reconstruction/replacement

The annual capital funding from sustainable revenue sources in the table above represents the portion of the planned and projected funding sources that have been earmarked for each of the asset categories, less funding currently attributable to growth, and operating capital (routine maintenance/repairs).

As the data used to calculate the annual funding shortfall is linked to the 2025 10-year Capital Budget, the average annual funding is aligned to the current Long-Term Capital Funding Policy and the capital projects put forward without the details of the asset management system. It is recommended that future budgets have more emphasis put on ensuring project funding is clearly identified for maintenance/rehabilitation, growth, service enhancements, and/or economic development. This will ensure any increased funding approved by City Council to support the recommendations in this report, addressing the sustainability of existing assets at current LOS, is allocated as approved.

Funding Options

The City has several options with respect to funding the projected annual infrastructure gap. As previously mentioned, updating the Reserve Policy is an opportunity, as well as updates to the Long-Term Capital Funding Policy, including the following:

A. Implementation of an Allocation Policy

B. Strategic Use of Debt Limits

C. Apply the Long-Term Capital Funding Policy as Intended

A. Implementation of an Allocation Policy

The identified infrastructure funding gap is not absolute for several reasons, one of which is the current structure of the City's Long-Term Capital Funding Policy. This policy sets a total capital expenditure limit based on funds generated through debenture issuance and capital levy contributions after principal and interest payments. Additional funding sources, such as development charges, federal and provincial grants, and reserve transfers, are allocated at the project level to ensure compliance with their specific requirements. However, the policy does not define how funds should be distributed among asset categories or between growth and maintenance projects. For this plan, it was assumed that the allocation of funds in the 2027 10-year capital budget reflects the long-term distribution across asset categories and project types. As a result, the identified funding gaps may change with future updates to the Long-Term Capital Funding Policy. An allocation policy could also align with or complement recommended changes to the Reserve Policy, as the City currently lacks a formal approach for designating funding by asset category.

B. Strategic Use of Debt Limits

The current Long-Term Capital Funding Policy allows for $8.5 million in debt to be issued annually to support tax levy assets, and an additional $3 million in debt to be issues annually to support water and wastewater assets. Debt can play an important role in reducing the infrastructure funding gap when used strategically. Borrowing allows the City to spread the cost of major, long-lived projects over their useful life, promoting fairness between current and future taxpayers and avoiding large tax increases in any single year. However, excessive debt can strain financial sustainability and increase interest costs, so it must be managed carefully within provincial limits and internal policy targets. Debt should be reserved for projects that add new services, address one-time infrastructure needs, leverage third-party funding, or support growth where costs are not fully recovered through development charges. Council decisions on debt issuance should consider financial indicators such as sustainability (ability to meet obligations without undue tax burden), flexibility (capacity to adjust funding sources), and vulnerability (reliance on external grants). Updating the City's Long-Term Capital Financing Policy to align debt use with reserve strategies and development charge policies will help optimize borrowing as part of a balanced approach to maintaining and growing infrastructure.

C. Modifying Tax Levy and User Rate Funding (PAYGO)

The current Long-Term Capital Funding Policy allocates 1% of the previous year's tax levy for general capital and 2% of the previous water and wastewater user rates, less debt servicing costs, with an inflation adjustment. However, Council has not applied the inflation adjustment for several years, contributing to the growing infrastructure funding gap. Based on this AMP, applying the planned increases and inflation adjustments is critical to prevent further shortfalls.

Applying the Long-Term Capital Funding Policy as intended, along with annual inflation adjustments, is critical to closing existing funding gaps and maintaining alignment with reserve and debt policies. However, projections based on full implementation of the baseline percentage increase (excluding inflationary adjustments) indicate that the current policy is not sufficient to eliminate the infrastructure gap. The Long-Term Capital Funding Policy will be reviewed and brought forward to Council in 2026 with an updated recommendation aimed at providing a more sustainable funding approach to reduce the infrastructure gap over the long term.

Financial Strategy Recommendations

To achieve the proposed levels of service goals as outlined in this AMP, the City must address the funding gap for its assets. The analysis done indicates that the current annual tax-funded capital investment falls short of the required sustainable levels, creating risks to infrastructure condition and service reliability over time.

To bridge the gap and maintain long-term financial sustainability, the following strategies should be considered:

- Increase future capital budgets by the applicable inflation index on an annual basis. Small, incremental increases earmarked for capital renewal can build sustainable funding without sudden tax shocks
- Apply the baseline annual increase to both the General and Water/Wastewater capital levies, as outlined in the Long-Term Capital Funding Policy
- Strategic review of levels of service on an annual basis to ensure they remain relevant and appropriate
- Reallocate appropriate funding from asset categories in a surplus position to those in a deficit position, when possible
- Apply strategic use of debt principles to reflect eligible projects and financial indicators to support required annual debt issues
- Develop a plan to transition operating capital (routine maintenance/repairs) out of the 10-year Capital Budget and into the annual Operating Budget
- Take advantage of any non-sustainable funding sources as they become available (reserves, grants, development charges, etc.)
- Enhance the Capital Budget to clearly report maintenance, rehabilitation, growth, and service level changes
- Further refine lifecycle strategies and costing into capital planning to extend useful life of tax and user fee funded assets and optimize long-term planning, reducing the immediate financial burden
- Use risk-based prioritization to focus capital spending on critical assets and defer lower-risk projects

The phase-in of the recommendations may take several years; therefore, the next major AMP plan will be able to determine if further adjustments are required.

Reserve Funding

Reserves play a critical role in long-term financial planning. Reserves are not considered a sustainable funding source because they represent finite, non-recurring funds that are typically accumulated over time for specific purposes or emergencies. Unlike stable revenue streams such as property taxes or user fees, reserves do not provide a predictable or ongoing source of funding. Relying on reserves to meet annual capital requirements can undermine long-term financial sustainability, as these funds are not automatically replenished and may not be available when needed most. Sustainable funding strategies focus on consistent, renewable revenues that can support infrastructure needs over the long-term. Although not a sustainable funding source, the benefits of having reserves available for infrastructure planning include:

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

b) financing one-time investments

c) accumulating the funding for significant future infrastructure investments

d) managing the use of debt

e) normalizing infrastructure funding requirement

The table below identifies examples of some of the capital-related reserves currently available to support capital initiatives:

Reserve Name	Balance as of Dec 31, 2024 (Audited) *
General Completed Capital	$10,691,123
Water Completed Capital	$6,030,832
Wastewater Completed Capital	$5,856,016

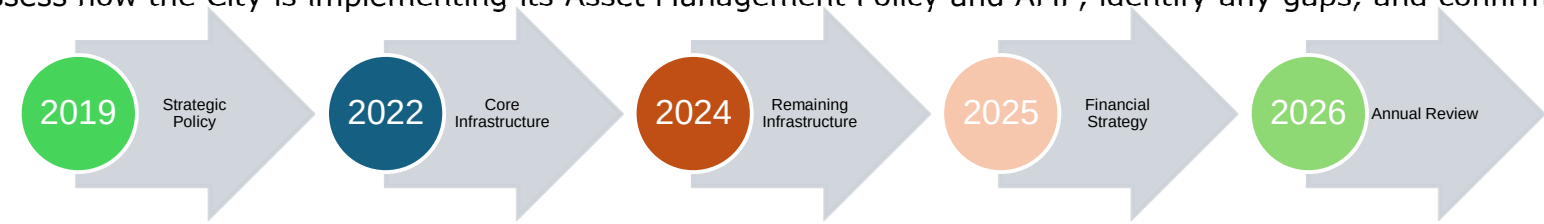
Most municipalities in the Province of Ontario fund capital projects through their reserves and therefore hold reserve accounts by asset category. The City of North Bay funds capital projects directly from the tax levy or rate support levy PAYGO, debt issuance, or other sources of funding. Capital reserves are established for one-time expenses or one-time revenues. The capital reserve target is established by the City's Reserve Policy, and the above-noted reserves are intended to be used for emergency capital costs, as a funding tool for unexpected capital project contingencies, and special circumstances as directed by Council. The reserves are funded primarily by savings from completed capital projects. Updating the Reserve Policy may provide an opportunity to better utilize the use of reserves in capital funding.

* These balances do not reflect future commitments and represent the balance as at December 31, 2024

Next Steps

O. Reg 588/17 requires a phased approach to asset management planning. The current major milestone, originally due July 1, 2025, was extended to December 31, 2025, following communication with the Ministry of Infrastructure. This final phase focuses on defining proposed levels of service and identifying the long-term financial strategies needed to support them. The City's AMP currently meets all previous requirements. Over the next year, staff will continue refining proposed service targets and aligning long-term funding strategies to ensure the City remains compliant with provincial regulations.

Going forward the AMP must be kept current, posted publicly, and updated at least every five years. An annual review on the progress of the AMP must be completed by July 1. This review should assess how the City is implementing its Asset Management Policy and AMP, identify any gaps, and confirm alignment with objectives.



Strategic Policy	Core Infrastructure	Remaining Infrastructure	Financial Strategy	Annual Review
• Define role of Council and senior management • Integration with budgets & long-term financial plan • Alignment with Official Plan • Alignment with Master Plans • Community engagement • Climate change mitigation & resiliency	• Phase 1: Roads, Bridges & Stormwater, Water, Wastewater • Inventory of assets • Current Levels of Service • Cost to maintain current Levels of Service	• Phase 2: All Assets • Inventory of assets • Current Levels of Service • Cost to maintain current Levels of Service	• Builds on Phase 1 & 2 • Proposed Levels of Service based on sustainability & affordability • Lifecycle management • Financial strategy	• Annual update to Council • CAM update every five years

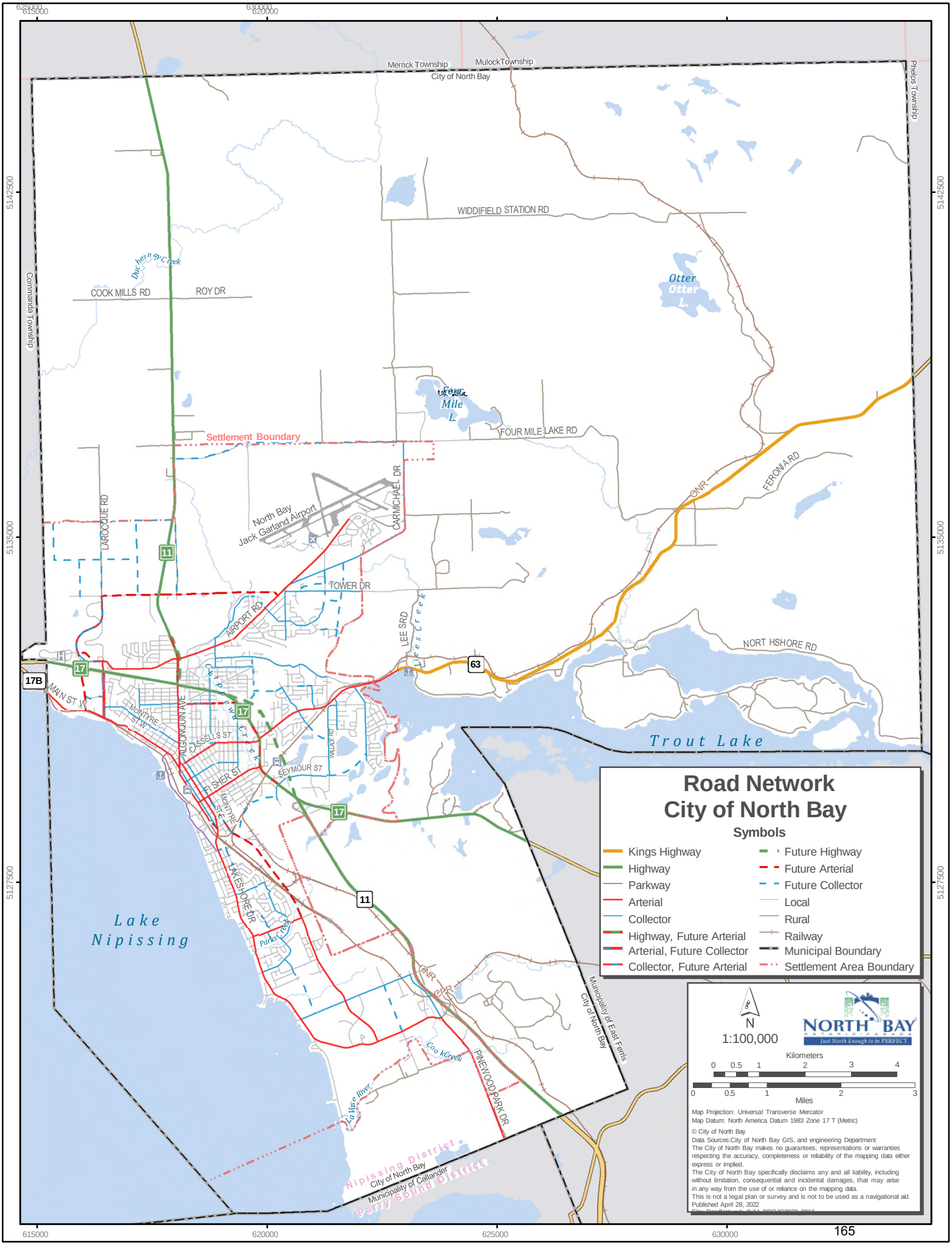
Recommendations	Timeline
Measure & Review Current LOS (Annual) • Review current LOS at least on an annual basis to identify trends and, as necessary, adjust asset operations, investment decisions, or strategic plans. Consider historic LOS when informing proposed LOS.	Ongoing
Determine Reporting Responsibility, Frequency, and Response Standards • Clearly define roles and responsibilities for data update, review, and LOS reporting. Consider developing a standard for reporting frequency, and as necessary, for reviewing and responding to LOS. • To support LOS reporting, consider drafting budgets based on the asset management categorization to support asset management analysis and determination of investment allocations by asset category.	Immediate
Further Refine Asset Management Data • Ensure asset conditions are updated regularly • Ensure asset replacement costs are reviewed and updated regularly • Ensure lifecycle strategies and costing is reviewed, updated, and completed for all asset categories, where applicable	Ongoing

Conclusion

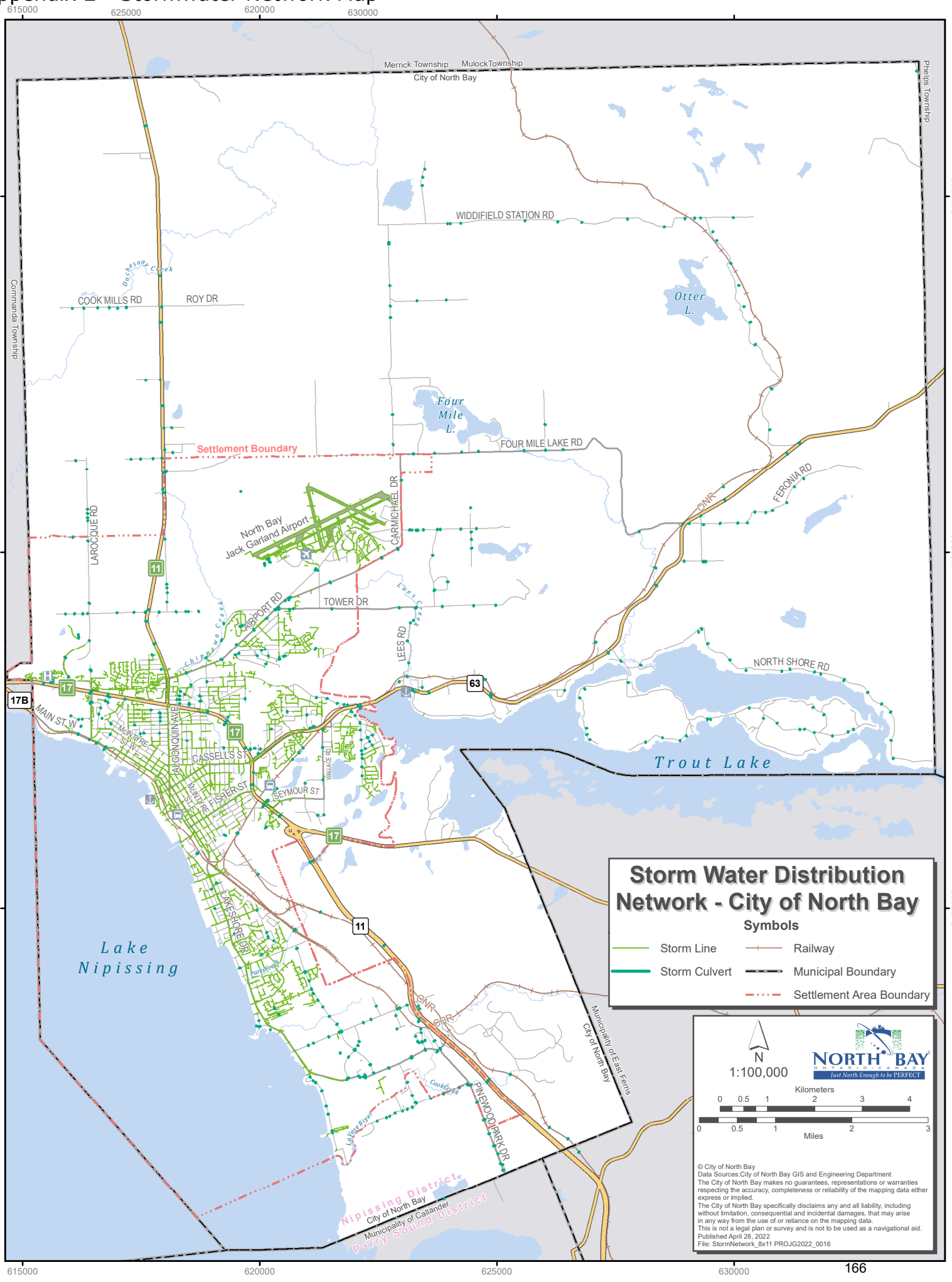
The City's infrastructure portfolio is both expanding and aging, creating significant challenges for effective management and maintenance amid increasing financial pressures. To maintain service reliability and comply with O. Reg. 588/17, the City must adopt a commitment to asset management and approve a phased-in financial strategy, incorporate growth considerations into the AMP, and assure optimized asset management practices.

Implementing these recommendations will enable the City to balance infrastructure investment, financial sustainability, and community expectations, ensuring long-term resilience and responsible stewardship of municipal assets.

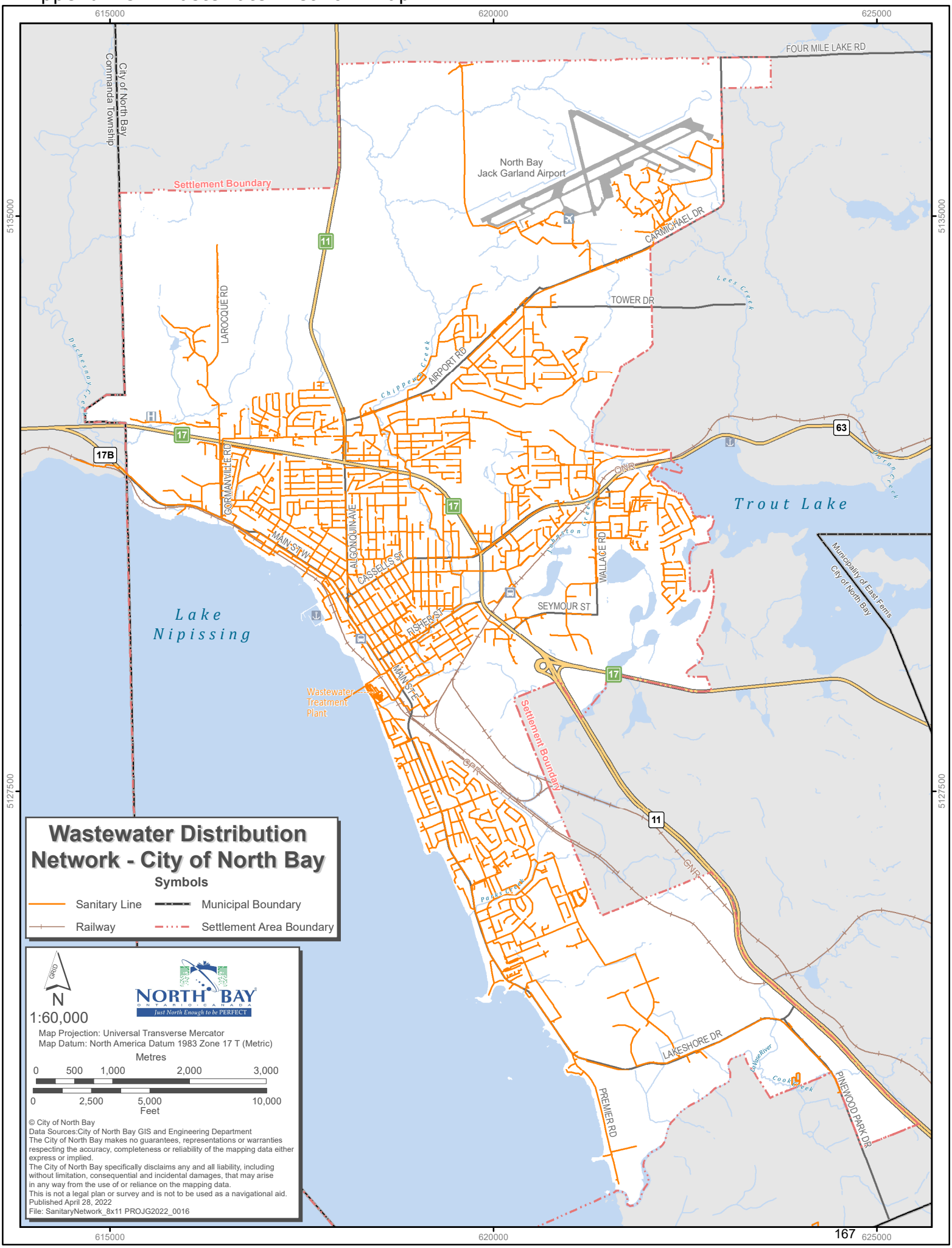
Appendix 1 – Road Network Map



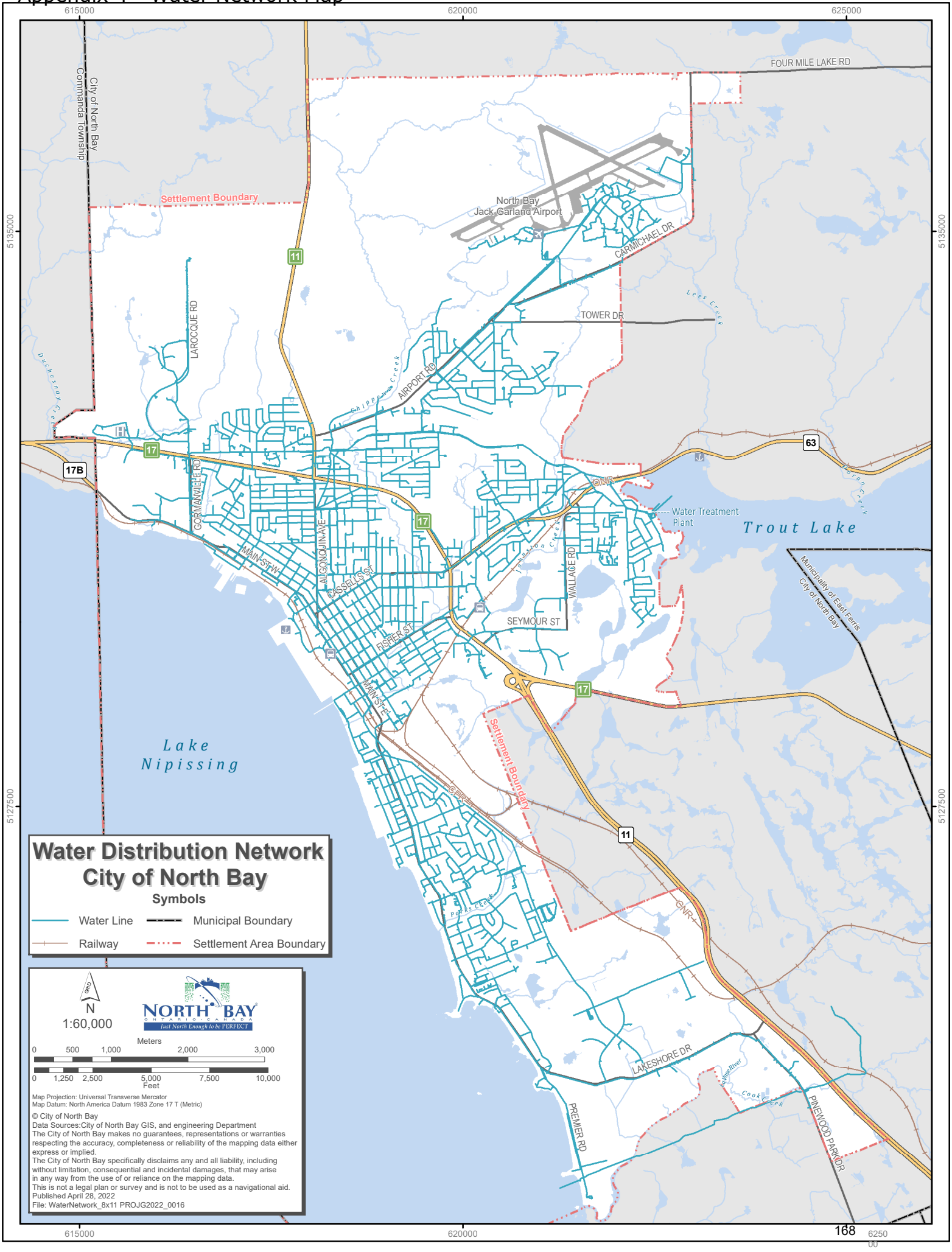
Appendix 2 - Stormwater Network Map



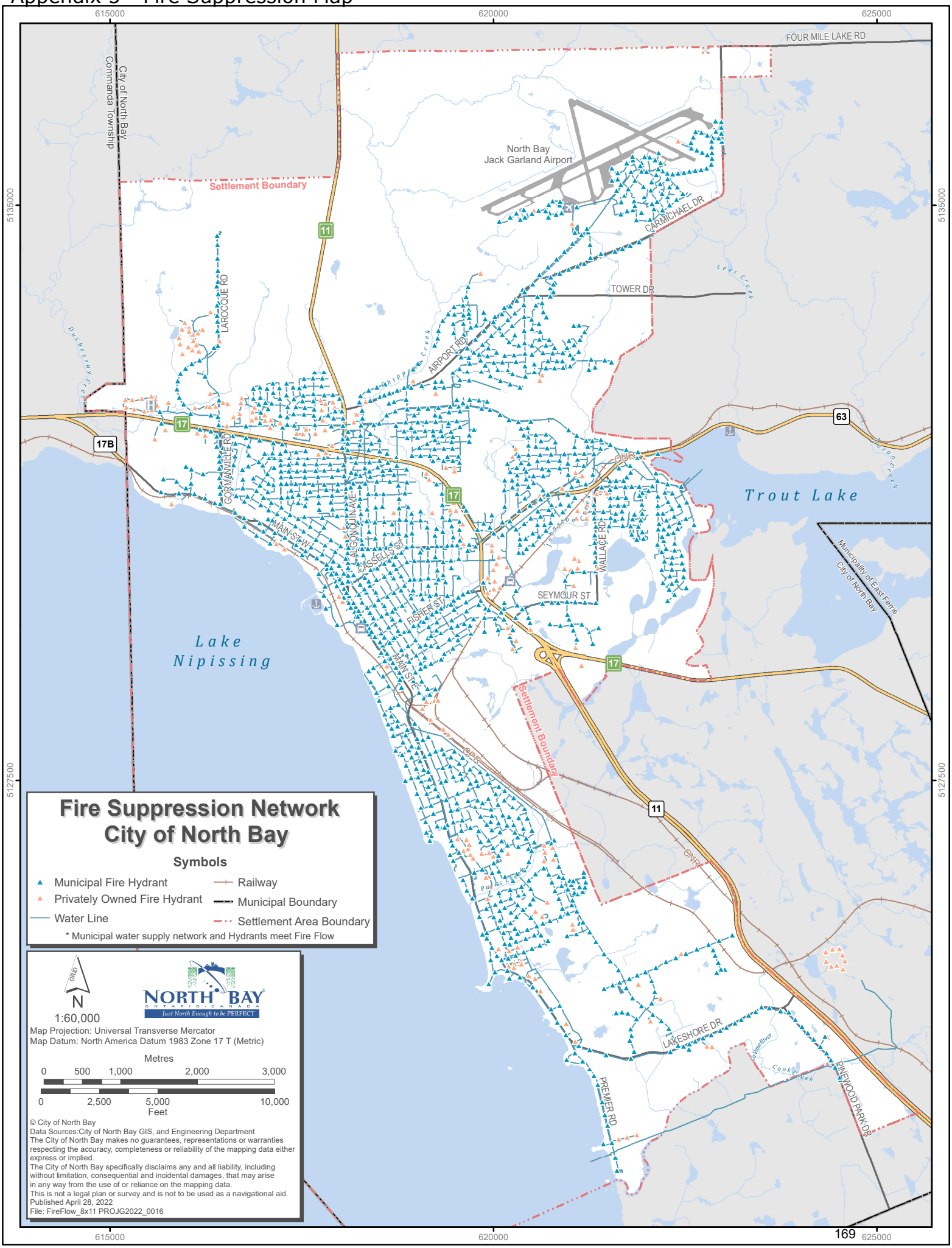
Appendix 3 - Wastewater Network Map



Appendix 4 - Water Network Map



Appendix 5 - Fire Suppression Map



References

PSD Citywide (Asset Management Planning Software)

AssetWorks (Fleet Management System)

RoadMatrix (Pavement Management System)

City of North Bay – 2025 General and Water and Wastewater Capital Budget

City of North Bay - Strategic Asset Management Policy

City of North Bay - Official Plan

City of North Bay – Strategic Plan

City of North Bay – Long-term Capital Funding Policy

City of North Bay – Reserve Policy

City of North Bay – Parks Master Plan

City of North Bay – Community Safety and Well Being Master Plan

City of North Bay - Active Transportation Master Plan

City of North Bay - Road Needs Study

City of North Bay – Road Safety Strategy

City of North Bay – Infrastructure Background Study (2008)

City of North Bay – Trout Lake Watershed and Management Study

City of North Bay – Multi-use Recreational Facility Feasibility update (2019)

Ontario Regulation 588/17 – Asset Management Planning for Municipal Infrastructure

NASSCO Pipeline Assessment Certification Program (PACP) rating system

Provincial AODA Guidelines for Sewage Works

MECP Design Guidelines for Sewage Works

MECP Water Treatment Facility Rating

Statistics Canada 2021 Census

Canadian Infrastructure Report Card 2019

Canada’s Changing Climate Report (CCCR 2019)