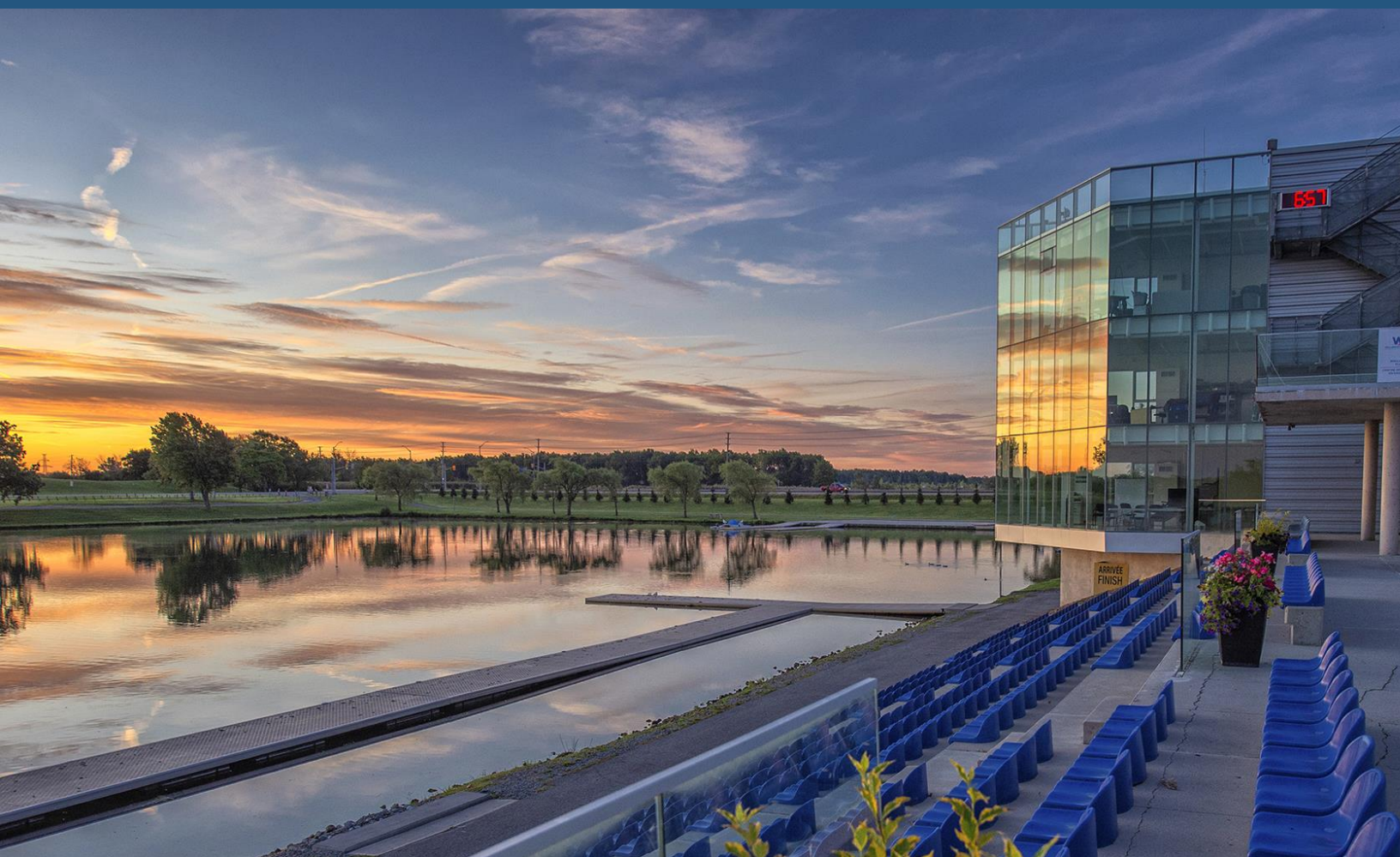


City of Welland Corporate Asset Management Plan 2024





This document titled City of Welland Corporate Asset Management Plan 2024 has been developed to meet the requirements of the Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure.

I, Rob Axiak endorse the City of Welland Corporate Asset Management Plan 2024 prepared by City Staff and GEI Consultants Canada Ltd. As Chief Administrative Officer of the City of Welland, I acknowledge the accuracy of the document of the findings presented in this plan.

Signature:

Rob Axiak, CAO City of Welland

Date: June 6, 2024

Executive Summary

Asset Management Plan Overview

The City of Welland is located in the centre of beautiful Niagara Region between two great lakes, along the Welland Canal. The Welland River and the Welland Recreational Canal offer natural beauty and recreation opportunities. Welland has many attractions for both residents and visitors to enjoy including annual festivals, downtown restaurants, heritage buildings, outdoor sports, and beautiful public green spaces. All these activities and more are supported by the infrastructure network that the City works to maintain. This asset management plan (AMP) outlines key information about the assets that provide services to residents.

Similar to our last plan, this asset management plan works to answer the following questions:

- What do we own and why?
- What is it worth and what condition is it in?
- What are the current service levels?
- What activities do we employ to manage the assets and maintain those levels?
- What does all of that cost?

The objective of Asset Management is to outline and establish a set of planned actions, based on best practice that will enable assets to provide a sustainable Level of Service (LOS), while managing risk at the lowest lifecycle cost. The forecast scenarios provided in this plan analyze the current infrastructure investment requirements and compare them to current budgets to determine if the City of Welland is facing an infrastructure gap, based on the best information available on the City's assets.

Through this plan, the City meets all 2024 asset management plan requirements of Ontario Regulation 588/17. This plan sets the baseline for the City and provides the current level of service provided by the City's assets. Following approval of this plan, work will begin on the development of the 2025 AMP which will further expand on infrastructure expenditure requirements by way of determining proposed level of service, and the cost to achieve these targets.

City's Infrastructure Valuation and Condition Distribution

The City of Welland owns and operates approximately \$2.6B in assets across ten different service delivery groups. Each of these groups contributes to a quality standard of living for residents throughout the City of Welland. Figure 0-1 shows the overall asset valuation for each asset category.

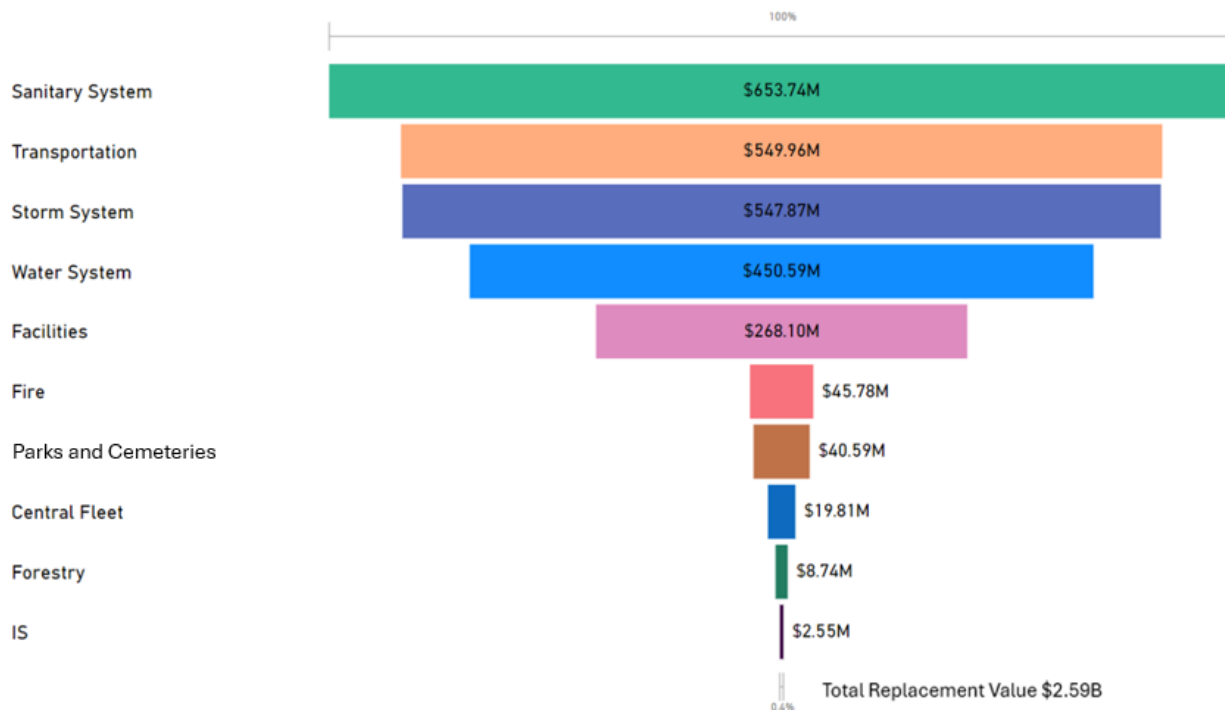


Figure 0-1. Overall Asset Valuation

Each asset category has its own chapter detailing the asset inventory and valuation, asset condition, asset age, levels of service, lifecycle management strategy and data confidence and improvement plan. Asset condition is an important metric used throughout this asset management plan, allowing the City to track progress in achieving levels of service and continuing to provide quality services to residents.

Figure 0-2 shows the overall asset condition by asset value. On average, assets in the City are in Fair condition. Over 50% of assets in the City are in Fair or better condition.

Figure 0-3 compares the asset category conditions based on replacement value. Detailed information on the City's assets can be found in the individual asset chapters. The City has put significant efforts in to collect information on all asset categories, including updated condition information. These efforts can be seen in the below figure, where there is minimal condition information that is unknown for all asset types. The only outlier is for forestry, as tree condition data is difficult to collect, and keep up to date, but the City has collected information on the tree's diameter and valuation, which can be viewed in its dedicated chapter.

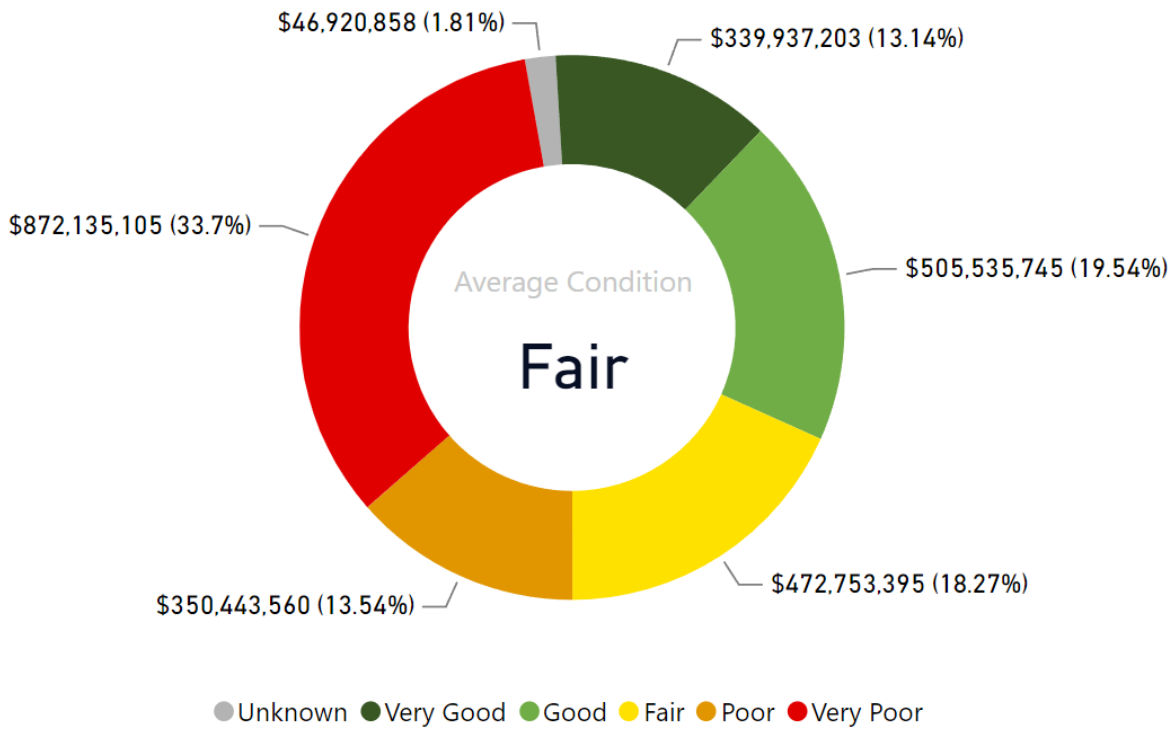


Figure 0-2. Overall Asset Condition Distribution (By Replacement Value)

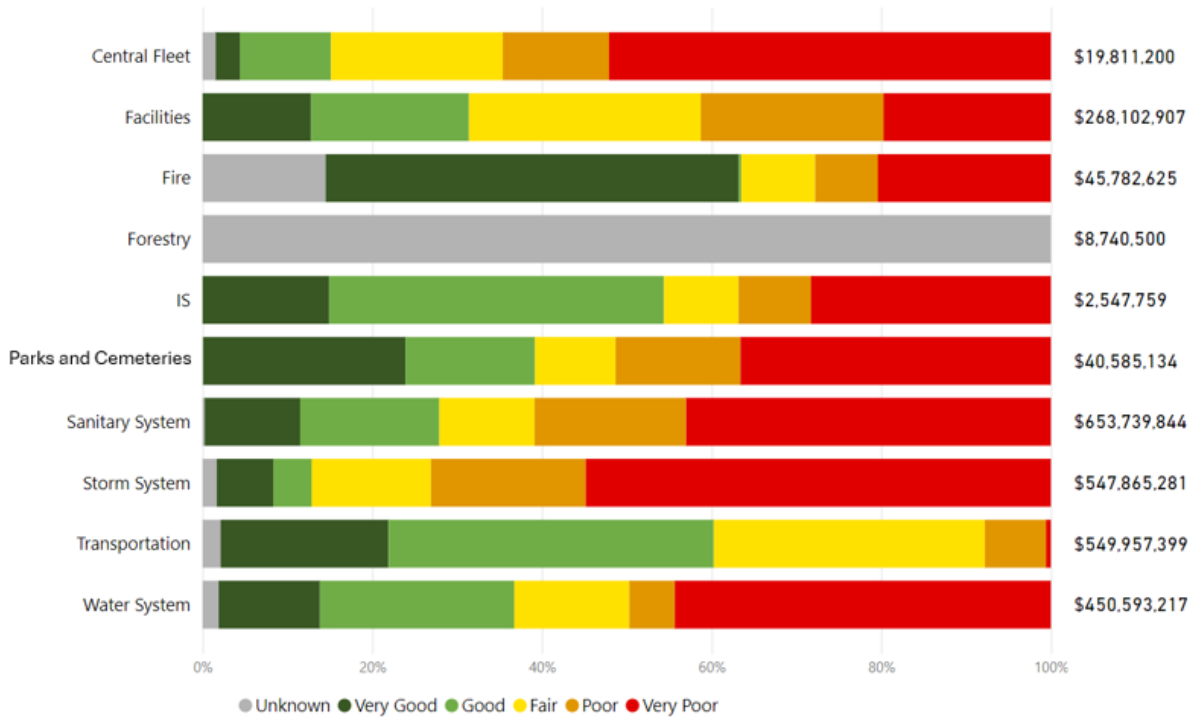


Figure 0-3. Asset Category Condition Profile (by Replacement Value)

Levels of Service

Levels of Service (LOS) metrics provide key performance information that supports the provisions of the respective asset categories within this plan. They support the organization's strategic goals and are derived from customer needs, Council strategic priorities, legislative and regulatory requirements, and the financial capacity of the municipality to deliver those service levels.

O.Reg. 588/17 has prescribed LOS metrics for core assets (including Bridges and Structures, Roads, Storm, Wastewater and Water assets). All other LOS, including those for non-core assets, were developed in consultation with City staff to be in line with strategic goals. These metrics can be found within the asset category chapters. This plan reports on the current LOS performance for the City. In the 2025 plan, the City will be required to set proposed, or a target, performance for these metrics, as well as report on the cost associated with meeting these targets.

LOS are crucial for the City to establish the standards and expectations for service delivery to the community. By tying assets to these service levels, the City can effectively assess and benchmark performance in meeting community needs and expectations. The City will have the ability to review their progress in meeting the proposed LOS target in the annual update to Council on the progress of implementing the AMP, which is a requirement of the regulation after 2025.

Lifecycle Management

The lifecycle management strategies, documented for the purposes of this AMP, outline and establish a set of planned actions, based on best practices that will ensure the City's assets can provide a sustainable LOS to residents, while managing risk at the lowest possible lifecycle cost. The City has documented all lifecycle activities and strategies to maintain the City's assets. The costs associated with these strategies have been assessed through different scenarios to determine the cost of these strategies and are further outlined in the asset chapters.

Lifecycle management activities are categorized to summarize the various lifecycle activities that asset owners complete during the lifecycle of an asset. For the purposes of this plan, the lifecycle categories are as follows:

Disposal Activities: Associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed by the municipality.

Growth Activities: Planned activities required to extend services to previously unserved areas or expand services to meet growth demands to maintain LOS.

Non-Infrastructure Solution: Actions or policies that can lower costs and contribute to the management of assets.

Operations & Maintenance Activities: Including regulatory scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events.

Renewal/Replacement Activities: Significant repairs designed to extend the life of the asset, or activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehab is no longer an option.

Service Improvement: Planned activities to improve LOS. Example, an asset's capacity, quality, or system reliability. Not driven by growth needs.

These lifecycle categories define all the activities that are required throughout an asset's life. By documenting these strategies, and the cost of them, the City can more effectively plan for the true cost of their assets.

Financial Strategy

The financial strategy in this AMP is based on the City of Welland's 2023 budget to determine the funding available to support infrastructure needs. All forecasted dollars are presented in 2023 dollars, and no inflationary measure has been included in the needs. This financial strategy provides an analysis of the average annual funding available, the funding required to maintain current LOS, as well as to meet infrastructure needs based on the lifecycle strategies identified throughout this plan.

The infrastructure renewal, rehabilitation, and replacement needs were determined based on Scenario 1 and Scenario 3, as described below. Scenario 2 (Current Budget) was used within the asset category chapters to analyze the impact of the current budget, as well as to compare the budget available in comparison to Scenario 1 and 3.

Scenario 1: Maintain Current Level of Service maintain the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

Scenario 2: Current Budget reviews the current budget available to fund lifecycle activities, including renewals, rehabilitations, and replacements.

Scenario 3: Infrastructure Needs as Per Lifecycle Management Strategies prioritizes a proactive approach to infrastructure investment by considering lifecycle management strategies developed with staff and based on best practices, rather than being restricted by available funding. This approach recognizes that focusing solely on immediate budget constraints may lead to short-term fixes that could prove more costly in the long run. By adopting lifecycle management strategies and best practices, the City can prioritize investments in infrastructure renewal, rehabilitation, and replacement activities in a way that maximizes efficiency, reliability, and longevity.

The results of the analysis have been broken out to rate supported and tax supported assets to reflect the different sources of revenue of these asset categories, as well as compiled for information purposes.

Rate Supported Infrastructure Gap

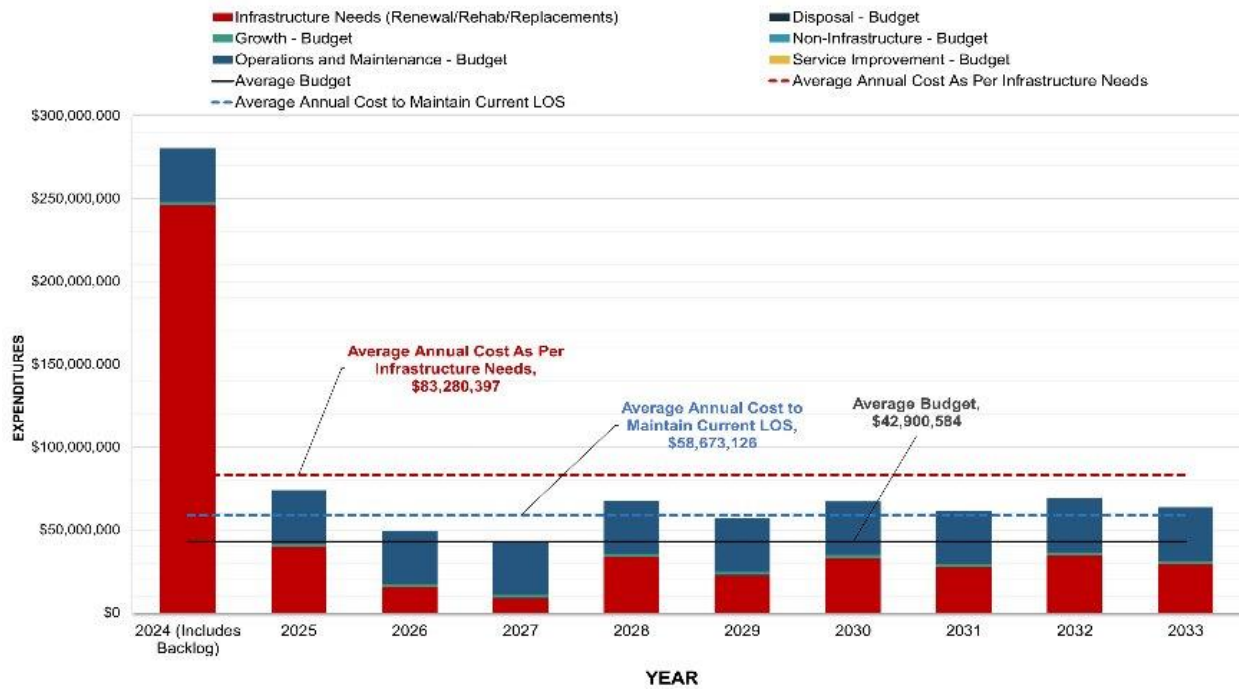


Figure 0-4. Lifecycle Expenditures –Rate Supported

Table 0-1. Rate Supported Lifecycle Activity Investments & Annual Average Infrastructure Gap

Lifecycle Activity	Annual Average Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$150,000	\$150,000	\$150,000
Growth	\$1,689,714	\$1,689,714	\$1,689,714
Non-Infrastructure	\$135,000	\$135,000	\$135,000
Operations & Maintenance	\$32,274,044	\$32,274,044	\$32,274,044
Renewal, Rehabilitation & Replacement	\$8,651,826	\$24,424,368	\$49,031,639
Service Improvement	\$0	\$0	\$0
Total	\$42,900,584	\$58,673,126	\$83,280,397
Annual Average Funding Gap		\$15,772,542	\$40,379,813
% Increase Required to Address Gap		37%	94%

Tax Supported Infrastructure Gap

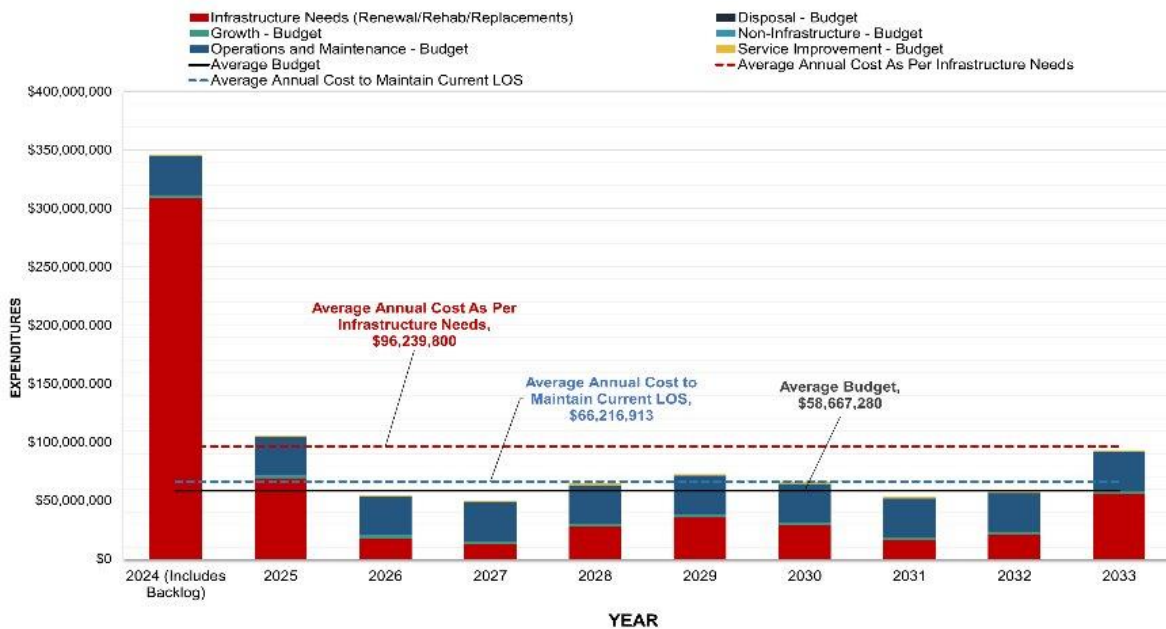


Figure 0-5. Lifecycle Expenditures –Tax Supported

Table 0-2. Tax Supported Lifecycle Activity Investments & Annual Average Infrastructure Gap

Lifecycle Activity	Annual Average Budget	Average Annual Cost to Maintain Current LOS	Average Annual Cost of Infrastructure Needs as Per Lifecycle Strategies
Disposal	\$0	\$0	\$0
Growth	\$2,001,562	\$2,001,562	\$2,001,562
Non-Infrastructure	\$598,250	\$598,250	\$598,250
Operations & Maintenance	\$33,166,097	\$33,166,097	\$33,166,097
Renewal, Rehabilitation & Replacement	\$21,675,036	\$29,224,669	\$59,247,556
Service Improvement	\$1,226,335	\$1,226,335	\$1,226,335
Total	\$58,667,280	\$66,216,913	\$96,239,800
Annual Average Funding Gap		\$7,549,633	\$37,572,520
% Increase Required to Address Gap		13%	64%

Overall Infrastructure Gap

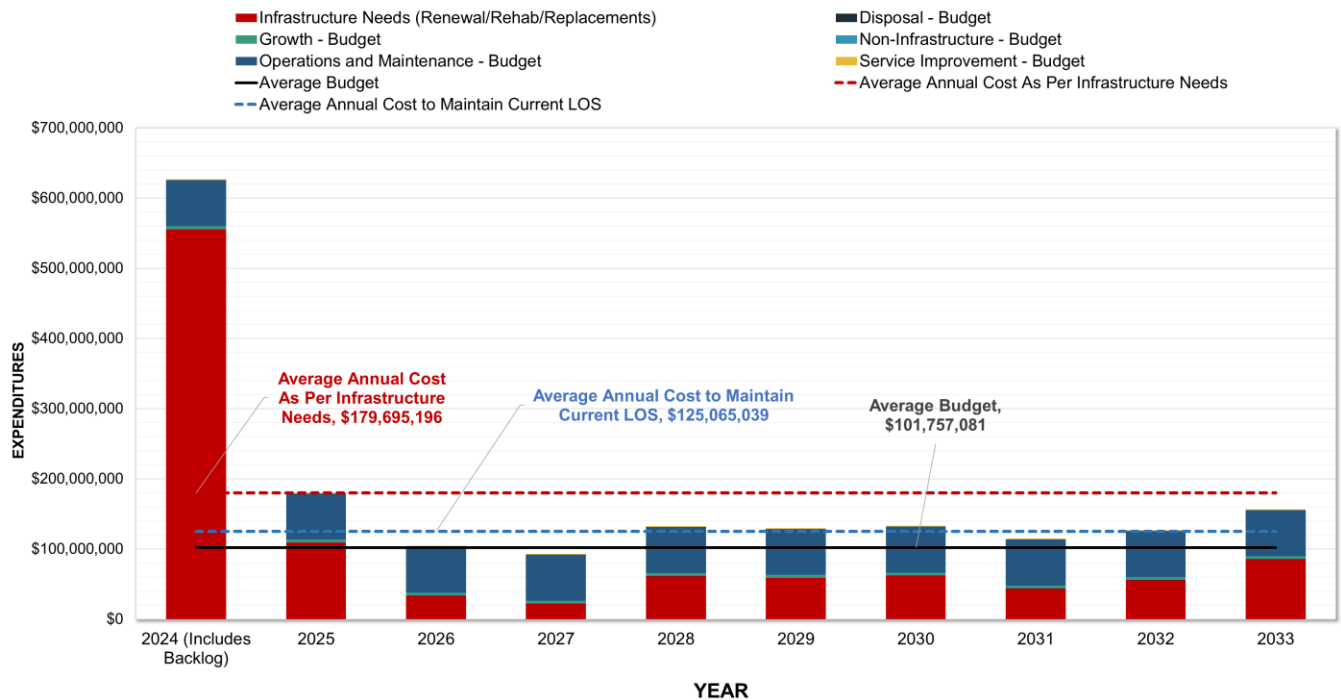


Figure 0-6. Lifecycle Expenditures – All Assets

This asset management plan has identified an overall funding gap of \$23.5M in order to maintain levels of service for all asset categories and a gap of \$78.1M following infrastructure needs as per lifecycle activities as described in this AMP. Lifecycle expenditures for all assets is shown in Figure 0-6 and Table 0-3. The breakdown for asset categories can be found in each asset chapter. Asset management planning and funding the infrastructure gap will allow the City to continue to maintain and provide services for the community in the long term for the betterment of the community.

The overall infrastructure gap is summarized in Table 0-3. Funding for capital budgets is the average of approved budgets (as of 2023) for the 2023-2033 fiscal years. Table 0-3 also shows the expenditures for each lifecycle activity, and the renewal, rehabilitation, and replacement expenditures for the annual budget, to maintain LOS and to follow infrastructure needs as per lifecycle strategies.

This AMP provides both financial and non-financial strategies to close the gap. By maintaining robust asset management practices and implementing a diverse range of strategies tailored to community needs, the City can effectively meet its long-term objectives. Addressing the gap is not achievable in the short term, but by implementing strategies now, the City ensures it can continue to provide services to the community both now and in the future.

Table 0-3. Lifecycle Activity Investments & Annual Average Infrastructure Gap

Lifecycle Activity	Average Annual Budget	Average Annual Cost to Maintain Current LOS	Average Annual Cost of Infrastructure Needs as Per Lifecycle Strategies
Disposal	\$150,000	\$150,000	\$150,000
Growth	\$3,691,276	\$3,691,276	\$3,691,276
Non-Infrastructure	\$733,250	\$733,250	\$733,250
Operations & Maintenance	\$65,440,141	\$65,440,141	\$65,440,141
Renewal, Rehabilitation & Replacement	\$30,516,079	\$53,824,037	\$108,454,194
Service Improvement	\$1,226,335	\$1,226,335	\$1,226,335
Annual Average Total Expenditure	\$101,567,864	\$125,065,039	\$179,695,196
Average Annual Funding Gap		\$23,497,175	\$78,127,332
Percentage Increase Required to Address Gap		23%	77%

The risks of not closing the infrastructure gap and following recommended asset lifecycle strategies can be significant and long-term. The risks associated with not maintaining the City's assets can be found within the Financial Strategy section of the AMP. Significant infrastructure gaps are common throughout municipalities, as they struggle with the many pressures faced by asset owners, including inflation,

increased construction costs, competing priorities, and limited funding. To address these issues, many strategies will need to be employed to ensure the City can provide safe and reliable services to residents.

Improvement and Monitoring

Continual improvement in asset management is essential for the City to enhance efficiency, effectiveness, and sustainability of its infrastructure and to be able to continue to provide services to the community. Many improvements have been made since the 2021 AMP Update thanks to the tremendous efforts of City staff to implement the recommendations from the previous plan. The 2024 AMP provides an overview of the legislated requirements, improvements since the 2021 AMP Update, as well as other opportunities for improvement.

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1.0 Introduction

1 Introduction

The City's assets provide the foundation upon which the City delivers services essential to the health and well-being of its residents and businesses. The City currently owns and operates approximately \$2.6B in assets which contribute to community enjoyment and satisfaction and enables the City's future growth. By integrating various asset management strategies such as planning investments, operating, maintaining, renewing, and replacing assets efficiently, the City can optimize its resources and enhance community satisfaction.

The Asset Management Plan describes the rationale used to deliver programs to design, construct, maintain, operate, and renew City assets to strike a balance between:

- The service provided by the asset,
- The costs associated with asset ownership, and
- The risks inherent in owning large critical networks of infrastructure.

This document was a collaborative effort among Asset Leads and staff, ensuring that diverse perspectives are considered in the decision-making process. This collaborative approach leads to more comprehensive and effective asset management strategies. This 2024 Asset Management Plan (AMP) represents the City's commitment to compliance and best practices in asset management by linking organization objectives, with service levels, required work on assets and associated costs. The AMP provides a transparent and rational framework for decision-making, enabling the City to prioritize investments effectively.

This AMP has been developed as an update to the 2021 AMP Update to add applicable requirements from Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure and the City's Asset Management Policy. Upon endorsement of the executive lead of the municipality, and approval by Council resolution, this plan will be made available on the City's website. Any background information and reports used to inform the state of the infrastructure may which are not public available may be requested through the City's clerk's office.

A glossary of terms can be found in Appendix A.

1.1 Purpose and Regulation

1.1.1 Asset Management Plan Purpose

The purpose of this plan is to:

- Ensure compliance with AMP regulatory requirements.

- Provide a summary of the City assets, including valuation, condition, and average age.
- Provide recommendations regarding future AMP regulatory requirements and enhanced AM practices.
- Describe current levels of service.
- Identify the ways in which assets can fail and describe the lifecycle management options applied to mitigate the failure.
- Forecast expenditures required to sustain current levels of service for the next 10 years.
- Support the line of sight between Council approved plans and initiatives, and asset investment needs.
- Provide increased transparency related to the City’s AM practices, challenges and opportunities.

1.1.2 Ontario Regulation 588/17 Overview

On January 1, 2018, Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure (O.Reg.588/17) came into effect. The regulation sets out requirements for municipal asset management planning to help municipalities better understand their infrastructure needs and inform infrastructure planning and investment decisions. The regulation is being phased in over six years and in 2025 will culminate in the development of an Asset Management Plan that addresses the future investment needs for all infrastructure assets owned by the City. Key legislative deadlines for all Ontario municipalities are shown in Table 1-1.

Table 1-1. Legislative Milestones

Date	Milestone	Status
July 1, 2019	Prepare and publish a strategic asset management policy.	Complete – June 2019
July 1, 2022	Develop enhanced AMP that includes the cost to maintain current service levels covering core infrastructure assets.	Complete – June 2022
July 1, 2024	Expand enhanced AMP that includes the cost to maintain current service levels covering all infrastructure assets.	Complete – through this AMP upon endorsement
July 1, 2025	Expand AMP to provide further details on all infrastructure assets, including proposed service levels and the revenue and expenditure plan to achieve the proposed service levels.	Under development

This AMP is focused on compliance to the July 1, 2024 requirements, and also builds a foundation towards compliance to the July 1, 2025 requirements.

1.2 Asset Management Program in the City of Welland

1.2.1 Asset Management Stakeholders Roles & Responsibilities

The following roles and responsibilities for asset management for the City of Welland are outlined in the City's Asset Management Policy are as follows:

Council and Committees of Council are responsible for approving the Asset Management Policy and approving budgetary decisions, and are the overall authority for policy approvals, and budgetary decisions as defined in the Municipal Act. Council has the authority to make asset management decisions related to investment, design, construction, acquisition, operation, maintenance, renewal, replacement and decommissioning of infrastructure assets.

The Chief Administrative Officer is responsible for establishing and endorsing the Asset Management Policy and the Asset Management Plan. The CAO has the authority to execute or delegate the duties defined above, and the authority to make asset management decisions related to investment, design, construction, acquisition, operation, maintenance, renewal, replacement and decommissioning of infrastructure assets.

The Director of Infrastructure Services is responsible for ensuring the Asset Management Policy and Plan is relevant, suitable, adequate, reviewed and updated as required. This role is responsible for communicating land-use or master plans, forecasts, policies and other planning or financial commitments related to municipal infrastructure assets. This role is also responsible for coordinating with the Directors to align asset management planning with budgets, land-use or master plans, forecasts, policies and other planning or financial commitments. Appropriate authority to carry out these responsibilities is assigned.

Asset Leads are responsible for, and assigned the authority for, making asset recommendations related to assigned portfolios, in adherence with the Asset Management Policy and Plan. Asset Leads have the authority to make asset management decisions related to investment, design, construction, acquisition, operation, maintenance, renewal, replacement and decommissioning of infrastructure assets.

1.3 Alignment to the City of Welland's Strategic Goals

1.3.1 Alignment with Welland's Strategic Plan

This AMP sits among the City's other significant planning documents, including the City's 2023-2026 Strategic Plan. This AMP aligns with the 4 values outlined in the Strategic Plan:

Efficiency: The AMP helps to formalize and communicate the strategies used to manage assets efficiently.

Resiliency: The AMP is a forward-looking document to help the City prepare to address future challenges.

Innovation: AM at the City is continuously evolving to drive improvements to service delivery.

Integrity: The AMP is a tool to communicate and share information about the City's core assets, providing transparency, building trust, and demonstrating the good work done by City's Council and staff.

The AMP plays a role in the City's capital and operating budget development process – as it identifies the cost associated with completing all the work required on assets to deliver a defined level of service. While AM practices are rooted in financial efficiency and achieving the lowest cost of asset ownership, the AMP (unlike the capital and operating budget process) is not constrained in its financial analysis. It identifies all asset costs associated with all asset needs, not just those the City can afford to address. The purpose of this type of analysis is to demonstrate that the City is aware of the gap between what is needed in terms of asset investment and what is currently budgeted.

City Asset Managers provide their expertise on asset and service requirements, and in collaboration with staff in Finance and Council, are committed to finding solutions that will enable the City to continue to sustainably provide valuable services to the community.



1.3.2 Alignment with Welland’s Strategic Asset Management Policy

This AMP was developed in accordance with the City’s Strategic AM Policy (2019). The Policy is required to be reviewed and updated every 5 years. The Policy will be updated in 2025 to align with the full AMP update.

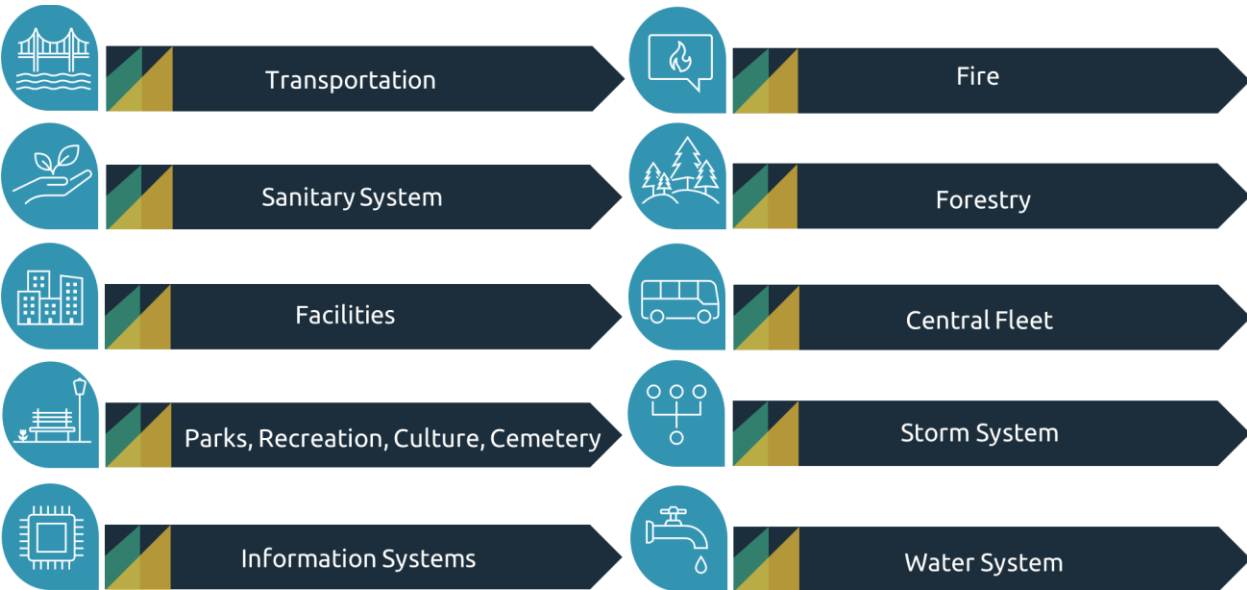
As part of its asset management planning processes for municipal infrastructure, the City is committed to considering the following as outlined by the Policy:

- Opportunities for input from municipal residents and other interested parties.
- Coordinating asset management planning for assets that are interrelated with neighbouring municipalities and other agencies such as Welland Hydro, Enbridge Gas, Bell, and the Niagara Region.
- Considering climate change.

1.4 Development & Methodology of the Asset Management Plan

1.4.1 Asset Management Plan Scope

This Asset Management Plan (AMP) includes all the City’s “core” and “non-core” assets, as defined in O.Reg. 588/17. This includes the following services:



1.4.2 Asset Management Plan Structure & Methodology

The AMP is divided into chapters for each asset group listed above in Section 1.4.1 Asset Management Plan Scope. Each chapter outlines the State of the Infrastructure, Levels of Service, Lifecycle Management, and Data Confidence and Improvement

Plan. The chapters are followed by the Financing Strategy and Improvement and Monitoring Plan for the City.

The methodology for each section is described below.

State of the Infrastructure

The State of the Local Infrastructure section provides a quantitative assessment of the infrastructure owned by the City. The primary objective is to provide a high-level inventory and insights into the overall age, condition, replacement value, and key metrics of the assets owned by the City, as per O.Reg. 588/17. The information is developed based on provided datasets and documents that were assessed for data confidence and discussed with Asset Leads.

1.4.3 Asset Register

The asset register, or inventory, was developed by City staff. Data was pulled from multiple sources to compile the required information for asset management planning. Required information includes:

- Asset Identifier
- Install Date
- Current Replacement Value
- Estimated Useful Life
- Condition
- Asset type specific information

The resulting register provides the basis for the analysis completed for the asset management plan, including State of the Infrastructure, Levels of Service, and Lifecycle Management Strategies.

1.4.4 Current Replacement Value

The Current Replacement Value (CRV) of an asset refers to the cost that would be incurred to replace the asset with a similar one. It represents the current market value of the asset, considering factors such as inflation and changes in market conditions and includes all costs required to replace and/or construct an asset with a comparable asset. Where required, these costs may include engineering and design, project management, materials, and labour. There is no growth, technology change, or enhancement assumptions included in these costs (unless identified).

Determining the current replacement value is important for asset management purposes, as it helps the City assess the financial implications of asset replacement and plan for future capital expenditures.

City staff have undergone a lengthy process to review, assess and update CRVs across all asset categories for the purposes of this AMP. To update these values,

several strategies have been leveraged, including market assessment, analyzing recent contracts of similar assets, staff expertise, engineering estimates and professional appraisals. This is an on-going effort, which will be continually improved upon for asset management purposes.

CRVs used in this AMP represent the best available information during the development of this document and will continue to be evaluated. Current market conditions have been reflected in this AMP, and in some cases are dramatically different than those provided in the previous AMP.

1.4.5 Estimated Service Life

Estimated Service Life in asset management planning refers to the anticipated duration over which an asset is expected to remain operational and provide its intended function. This estimate may be based on various factors such as design specifications, historical performance data, maintenance practices, environmental condition, and technological advancements. The purpose of estimating service life for asset management planning is to enable organizations to allocate resources for maintenance, repairs, replacements, and new acquisitions over the asset's lifecycle. It allows for budgeting long-term capital expenditures through replacement planning, risk management, optimizing maintenance and performance evaluation.

For the purposes of this AMP, staff reviewed and assessed estimated service lives to ensure appropriate values were used to ensure accurate forecasting for infrastructure spending needs.

1.4.6 Asset Condition

Assigning condition ratings to assets across each asset category using a consistent rating scale is a crucial step in asset management. By using standardized scales, the City of Welland can facilitate benchmarking with other Canadian municipalities and gain insights into the overall condition of its assets, regardless of asset category. The condition rating scale consists of a numerical or categorical value that represents the condition of the assets.

Within this AMP, condition ratings were assigned based on numerous methods, and then standardized into a condition rating scale of Very Poor to Very Good. Where condition assessment data was available, these condition values were used and input into the condition rating scale, which are described in the category chapters.

Where assessed condition was not available, the condition estimate was based on its remaining life as estimated by comparing its age and estimated service life. This assessment involves categorizing the percentage of remaining life into different condition categories, as outlined in Table 1-2.

Table 1-2. Condition Rating Scale

Condition	Age/ESL	Description
Very Good	>80% life remaining	The asset is fit for the future. It is well maintained, in good condition, new or recently rehabilitated.
Good	60-80% life remaining	The asset is adequate. It is acceptable and generally within the mid-stage of its expected service life.
Fair	40-60% life remaining	The asset requires attention. The asset shows signs of deterioration, and some elements exhibit deficiencies.
Poor	20-40% life remaining	There is an increasing potential for its condition to affect the service it provides. The asset is approaching the end of its service life, the condition is below the standard and a large portion of the system exhibits significant deterioration.
Very Poor	0-20% life remaining	The asset is unfit for sustained service. It is near or beyond its expected service life and shows widespread signs of advanced deterioration. Some assets may be unusable.
Unknown		Not enough data exists to determine condition.

Please note, the condition rating scale has been changed from the 2021 Asset Management Plan Update. The previous plan where age/ESL determined condition, assets were not considered in very poor condition until after estimated service life. This has been updated to be more consistent with other condition assessment values used within this plan, and to be in line with best practices.

Levels of Service

Levels of Service (LOS) are measures of what the City, through its assets, provides to its customers, residents, and visitors. They support the organization’s strategic goals and are derived from customer needs and expectations, Council objectives, City policies, legislative and regulatory requirements, standards, and the financial capacity of the municipality to deliver those LOS.

The LOS section provides key performance indicators that support the provision of services for each service area. O.Reg. 588/17 has prescribed LOS for water, sewer, storm, road, bridge and culvert assets (considered “core” assets within the regulation), and the remaining asset’s LOS were developed by City staff.

The LOS sections for each service area provide the following information:

Level of Service Statement

A brief description presented in plain language for public understanding of the service provided by each asset category to residents based upon the City's core values and mission.

Key Service Attribute

Categorizes the LOS metrics to specific areas of customer interest which are recognizable to the customer/public. These attributes are tied to the City's strategic objectives. See

Table 1-3 for the City's Key Service Attributes and their alignment to the City's Strategic Values and Priorities.

Table 1-3. Level of Service Attributes Alignment to City's Strategic Priorities

City's Strategic Values	Efficiency	Innovation	Integrity	Resiliency
Strategic Priorities	Economic Growth	Environmental Stewardship	Healthy & Well-being	Livability
AMP LOS Attributes	I have access to services when I need them.	My City is considerate of the environment.	Services are safe to use. My property is protected	I have quality services. My City maintains what it owns.

Levels of Service Metric

A statement that describes quantifiable metrics of the service delivery outcomes from the perspective of the customer and service provider, expressed in terms that can be easily understood by customer.

This AMP assesses the current performance of the City using these levels of service metrics. The 2025 AMP will provide the proposed or target performance of these metrics and evaluate the City's ability to afford the proposed levels of service.

Lifecycle Management

The Lifecycle Management Strategy defines the set of planned actions taken on an asset throughout its entire lifecycle from installation/construction to decommissioning. When managed effectively, these strategies enable the assets to provide their desired level of service in a sustainable way while mitigating risks and reducing costs throughout their life. The goal of this assessment is to capture the activities that are required to sustain the assets within each service area. For the purposes of this plan, the lifecycle activity categories are as follows:

1.4.7 Lifecycle Management Activities

Lifecycle management activities are categorized to summarize the various lifecycle activities that asset owners complete during the lifecycle of an asset. For the purposes of this plan, the lifecycle categories are as follows.

Disposal Activities: Associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed by the municipality.

Growth Activities: Planned activities required to extend services to previously unserved areas or expand services to meet growth demands to maintain LOS.

Non-Infrastructure Solution: Actions or policies that can lower costs and contribute to the management of assets.

Operations & Maintenance Activities: Including regulatory scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events.

Renewal/Replacement Activities: Significant repairs designed to extend the life of the asset, or activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehab is no longer an option.

Service Improvement: Planned activities to improve LOS. Example, an asset's capacity, quality, or system reliability. Not driven by growth needs.

The lifecycle activities for each asset class are detailed in the individual asset category chapters. These activities are aligned with the asset hierarchies and includes the frequency at which they are performed in terms of the assets' Estimated Service Life. Each asset type is unique in the needs for the activities that are completed within the assets' lifecycle.

Funding Lifecycle Activities

This section outlines the estimated future funding requirements for the City's assets and determines if there is a gap in funding to meet these requirements.

The condition of each asset was forecasted using the current condition (or age where condition information was not available) and the estimated degradation of that condition over time based on the estimated service life of the asset. Once an asset reached a certain target condition estimate, the associated lifecycle intervention was assumed to take place and that cost was tracked. The forecast of expenditures was calculated from the sum of all the interventions in each year.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. Predictor is a capital planning software that provides asset lifecycle prediction modeling. The benefits of using this tool include:

- Ability to predict asset life based on asset specific, condition-based degradation profiles.
- Comparison of various funding scenarios to compare the impact on asset condition.
- Tailor made project planning pulling together information from various sources to include asset data and condition information.
- Repeatable asset lifecycle prediction modeling that can be leveraged for capital planning and budgeting purposes.

The City will continue to leverage this tool in the future, and further enhance the inputs to the data and lifecycle strategies which will provide reliable forecasts for infrastructure expenditure requirements to meet the communities needs and expectations of services. This tool has been used for the analysis of the scenarios outlined below.

To complete this analysis, the infrastructure renewal needs for each service area were determined by forecasting the condition of assets over a 25-year time period, factoring in interventions such as rehabilitation and replacement based on the asset's defined lifecycle strategies. The scenario comparison and expenditure requirements have been analyzed for a 10-year period, as per O.Reg. 588/17 requirements.

This AMP includes three main forecasted scenarios:

Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. Over the forecast, the backlog of work does not increase. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City's 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment. Typically, these are assets that are beyond their identified service life. This scenario is not constrained by a budget, so any work that was planned based on the asset's lifecycle strategies are completed in the year it was triggered.

By comparing these scenarios, City staff are able to determine if there is a gap in the funding needed to address future infrastructure needs. This information can then support decision-making on how to address this gap, which may include reducing these needs through changes to lifecycle management strategies and/or the level of service being provided or finding ways to increase funding.

Data Confidence and Improvement Plan

Each section will provide information on the data confidence and improvement plan specific to that service area. This section will provide further information on the sources used to develop the asset register and provide a data quality grade based on the criteria outlined below in Table 1-4. Improvements for the data included in the chapter will then be provided.

Table 1-4. Data Confidence Rating Scale

Grade		Criteria
A	Very Good	No assumptions, with available condition data from a reliable data source, and age and current replacement value are known.
B	Good	Minor assumptions are made for condition, age, or replacement values (e.g. most of condition, age, and replacement values are known). Data sources are reliable.
C	Fair	Assumptions are made for condition, age, or replacement values from moderately reliable sources.
D	Poor	Data comes from significantly out of date documents, data sources are moderately reliable, or values are unknown or unreliable.

Financing Strategy

The financial discussion and strategy of an AMP sets out the approach to ensuring that the appropriate funds are available to support the delivery of infrastructure services. The financing strategy in this AMP is rooted in the 2024 financial state of the City of Welland. The financing strategy is continually reviewed and adjusted to reflect changing pressures and priorities across the community.

This financing strategy starts by providing an overview of the future forecasted financial situation prior to discussing the options for addressing the infrastructure funding gap.

The long-term financing strategy forecast was prepared so that it can be used in conjunction with the annual budget process. Figure 1-1 provides a visual representation of how various financing methods can be used for both initial asset purchases, as well as asset replacements.

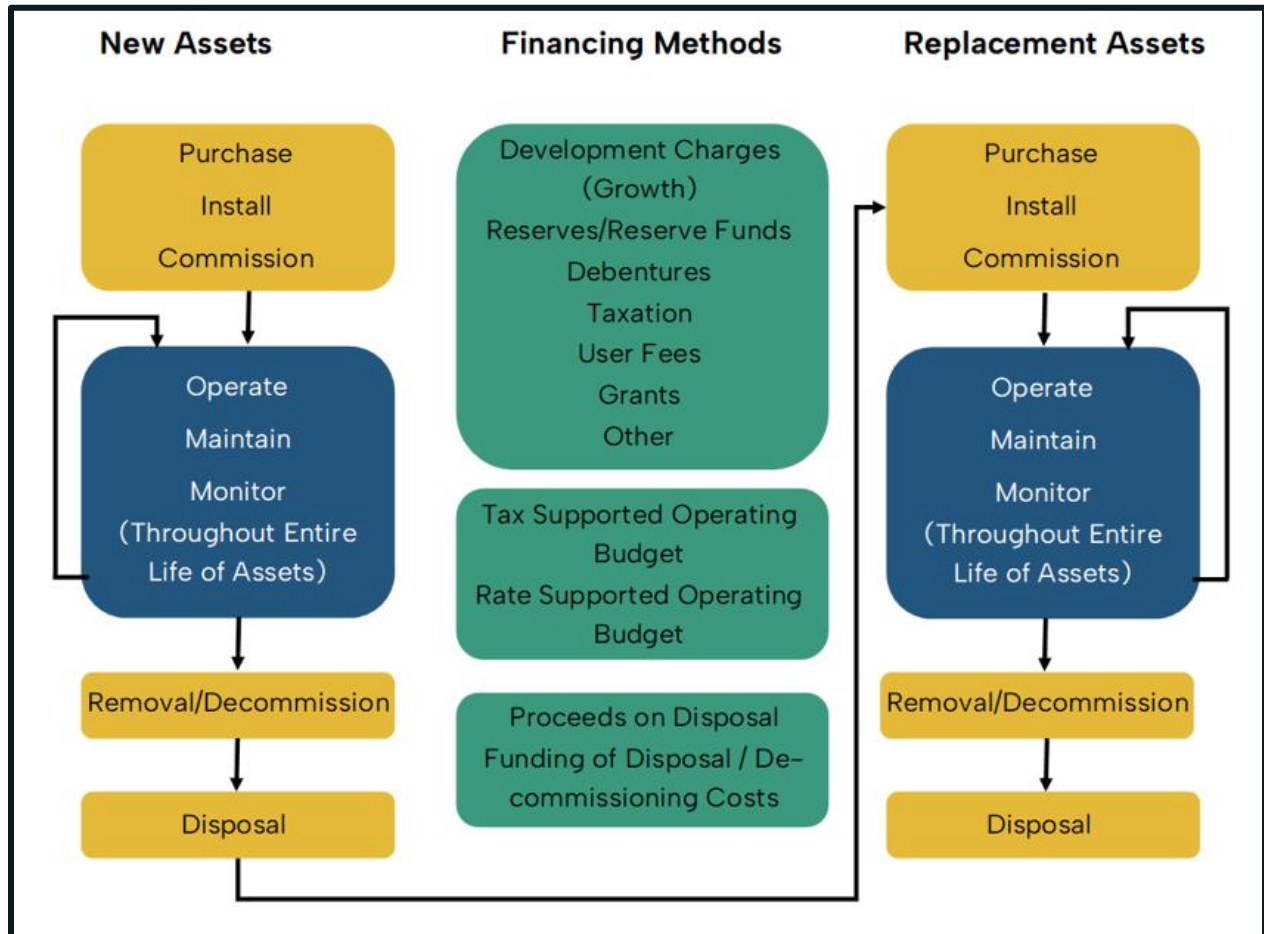


Figure 1-1: Financing Methods of Lifecycle Activities

Improvement and Monitoring Plan

As the City matures in their Asset Management journey, the processes for Asset Management Planning will continue to evolve and improve. Within the service area chapters, the data confidence and improvement plan provide service area specific opportunities for improvements, while the Improvement and Monitoring Plan will speak to the opportunities for maturity on a city-wide or program level.

1.5 Asset Management Plan Assumptions and Limitations

This Asset Management Plan was developed based on the best available information and by employing professional judgement and assumptions to address gaps where necessary. Asset specific assumptions are recorded in the service area chapters.

Where gaps or opportunities were identified, they have been included in the improvement plan.

Assumptions:

- The scope of this AMP covers the assets directly owned by the City of Welland.
- All costs (including in the financial forecast) are presented in 2023 dollars, unless specified otherwise.
- Capital costs required for growth (identified by expenditures funded from development charges) have been identified within the lifecycle activities required for each asset category.
- Service improvement to an asset is generally not included in replacement costs. Some exceptions include if it is standard practice to upgrade infrastructure such as replacing a cast iron pipe with PVC.
- The City has not implemented an asset risk management strategy that goes beyond legislative requirements for all assets. This is recommended to be reviewed for future iterations of this AMP.
- It is assumed that the projected capital budgets and expected available reserve funds will occur as planned over the period of analysis.
- This AMP assumes that the current budgets are sufficient to meet current needs for non-infrastructure, operations and maintenance, growth, and service improvement activities to maintain current levels of service.

1.6 Asset Management Pressures

The management of public assets faces various pressures that can impact its operations, strategies, and overall success. Some of these pressures include:

Market Volatility: Asset managers must navigate constantly changing market conditions, including fluctuations in asset prices, and interest rates. Market volatility can make it challenging to appropriately plan for future asset needs.

Regulatory Changes: Municipalities are often subject to a wide range of regulations that can vary by jurisdiction. Changes in regulations, such as those related to reporting requirements, can require asset managers to adapt their processes and systems.

Budget Constraints & Funding Options: Municipalities often operate within tight budget constraints, limiting their ability to invest in infrastructure maintenance, upgrades, and new projects. Balancing competing priorities within limited budgets.

Municipalities must explore various funding and financing options to support asset management initiatives, and other infrastructure needs. Identifying sustainable funding sources and securing financing on favourable terms can be challenging.

Population Growth and Urbanization: Growing populations and urbanization place increased strain on municipal infrastructure and services. Municipalities must manage the demands for housing, transportation, utilities, and public amenities while ensuring sustainable development, and balancing the current asset portfolios.

Aging Infrastructure: Many municipalities face aging infrastructure. Maintaining and upgrading this infrastructure requires significant investment, but funding may be insufficient to address all needs.

Environmental Regulations: Municipalities must comply with environmental regulations related to air, water quality, waste management and land use. Meeting these regulations often requires investment in infrastructure upgrades and environmental mitigation measures. There is also significant staff time required for data tracking and reporting to ensure compliance.

Climate Change and Natural Disasters: Climate change poses significant challenges for municipal asset management, including increased risk of extreme weather events such as floods and storms. Municipalities must invest in resilience measures to protect infrastructure and communities from climate-related risks.

Limited Human Resources: Municipalities may face challenges in recruiting and retaining qualified staff with expertise.

Political and Public Pressure: Asset management decisions are often subject to political and public scrutiny. Balancing the needs and preferences of various stakeholders, including elected officials, residents, and businesses can be complex and contentious.

Data Management and Technology Adoption: Effective asset management relies on accurate data collection, analysis, and decision-making. This requires reliable asset data, and implementing systems and processes that leverage technology to optimize asset performance.

Resilience and Sustainability Goals: There are increasingly greater pressures to prioritize resilience and sustainability in asset management practices. This includes incorporating green infrastructure, renewable energy, and sustainable transportation solutions into asset planning and management.

Overall, municipal asset management requires navigating a complex landscape of financial, regulatory, environmental, and social pressures to effectively manage infrastructure and deliver services to residents.

1.7 Growth and Climate Change

1.7.1 Growth

As the demand for infrastructure services grows, the City may focus on expanding the capacity of existing assets to accommodate increased usage. This could involve adding lanes to roadways, increasing the capacity of public transportation systems, or expanding the capacity of water treatment plants. We can efficiently plan for new infrastructure as well as the upgrade or disposal of existing infrastructure by monitoring the key growth drivers. Population and employment forecasts aid in estimating the fluctuating need on the infrastructure. Development charges (DC) are a means of financing projects that arise from population growth. Asset planning is also informed, where available, by demographic estimates since the community’s demand for our services may fluctuate.

1.7.1.1 Population and Employment Forecast

The City of Welland’s current population as per the 2021 Census is 55,750, which is over a 6% increase since the 2016 Census. As per O.Reg. 588/17, municipalities with populations of 25,000 or more within the Greater Golden Horseshoe growth area plan (but do not have employment forecasts set out in Schedule 3 or 7), are required to report on the portion of the forecasts allocated to the municipality in the official plan of the upper-tier municipality it is a part of. The Niagara Official Plan (November 2022) forecasted minimum growth for population and employment. The high-level minimum population and employment forecasts from the Niagara Official Plan are shown in Table 1-5.

Table 1-5. Population Forecasts, Niagara Official Plan

Forecast	2021 ¹	2051
Population	55,750	83,000
Households	23,656	37,540
Employment		28,790

According to the Niagara Official Plan, the City will see a rise in population (approximately 49%) in 30 years (by 2051). To accommodate this growth, the City of Welland with Niagara Region has established a residential intensification target of 75%. This intensification target is to be accommodated within the built-up area in the City. Downtown Welland has been identified as a Regional Growth Centre, as

¹ City of Welland 2021 Census, statcan.gc.ca

such there is a particular focus on intensification in this area for significant population and employment growth.

The City of Welland completed a DC Background Study (August 2022) and Housing Needs Assessment (September 2022), which projects higher population growth in comparison to the Regional forecasts. These numbers are shown in Table 1-6.

Table 1-6. Population Forecasts, Welland DC Background Study

	Current Population (2024)	2021 ²	2041	2051
Population	57,933	55,750	105,975	129,525
Dwelling Units			22,420	33,035

The DC Background Study forecasted growth until 2041. The 2051 numbers for population and dwelling units were calculated using the same per year growth rate. These numbers are much higher in comparison to the Niagara Official Plan minimum forecasts, with a population increase of 85% in 20 years (to 2041), compared to an increase of 49% in 30 years (to 2051, as projected in the Niagara Official Plan). The City feels that the numbers from the DC Background Study are more representative of the actual and projected growth.

Our population is expected to increase, affecting services such as emergency, transportation, recreation, water, wastewater, and stormwater. Intensification in built-up areas will put further pressures on existing infrastructure. It is important to ensure that existing infrastructure can support intensification, and plan for upgrades where necessary to accommodate for increased wastewater capacity or increased fire-flow as needed. Development charges are one way the City can help fund upgrades to existing assets or new assets. With this information, the City can plan for upgrades throughout the City to ensure that demand can be met.

1.7.1.2 Assessing Growth-Related Asset Needs

Growth triggers the need for more assets, and the need for additional funds to maintain these new assets, to allow us to continue to maintain our current levels of service that the community experiences. Planning for forecasted population growth may require the expansion of the existing asset portfolio and services, and the addition of new assets.

These capital and operating needs for growth-related infrastructure projects are already forecasted in our most recent DC Background Study (2022) and are referred

² City of Welland 2021 Census, statcan.gc.ca

to within this AMP. The following conclusions included within the report show the impact of these new assets on our future funding needs:

- The total accumulative 10-year increase in operating costs is estimated to be approximately \$134.8 million, with \$77.2 million being funded from future taxpayers, and \$57.6 million being funded from future rate payers.
- The total 10-year accumulative increase in capital costs (not funded by development charges due to deductions) is estimated to be approximately \$108.5 million, with tax supported services estimated to be \$68.9 million and rate supported services approximately \$39.6 million.

1.7.2 Climate Change

Climate change can have a substantial impact on asset's lifespan, durability, and performance, posing significant challenges to infrastructure asset management. We must efficiently prepare our communities and infrastructure for climate-related hazards including flooding, rising temperatures, and extreme weather events.

To address the issue, we are currently in the process of finalizing the Corporate Climate Adaptation Plan (CCAP). The draft CCAP includes actions that the City of Welland will undertake to adapt to climate change. These actions correspond to six high-level goals with high-level intentions that the City will undertake as it implements the CCAP.

The goals that will guide the City of Welland include,

Goal 1: Integrate climate change thinking and response.

Goal 2: Protect and maintain public health and safety.

Goal 3: Reduce risk to buildings and property by strengthening infrastructure resilience.

Goal 4: Protect biodiversity of natural landscapes and enhance ecosystem functions.

Goal 5: Reduce community service disruptions.

Goal 6: Increase knowledge and skills to build community resilience.

This AMP creates an avenue to implement this plan successfully. Decisions and recommendations that are developed through the Corporate Climate Adaptation Plan will be incorporated into asset management planning processes and be reflected in future iterations of this plan. Using the adjusted framework of this AMP, staff will continue to define levels of service measures that will begin to reflect effort, effects, or resiliency related to climate change, and be able to discuss information about resulting impacts, risks, costs, and lifecycle adjustments related to climate change and sustainability.



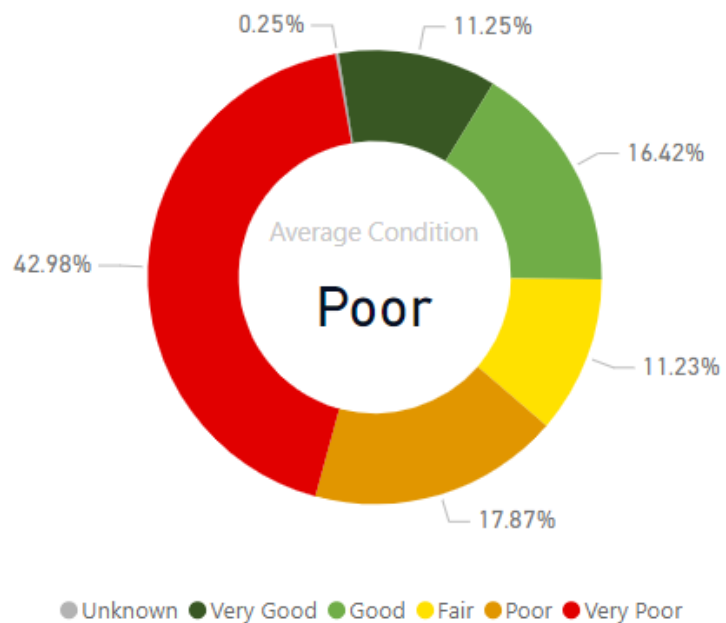
Sanitary System



Replacement Value

\$650,739,844 M

Overall Average Asset Condition



Quick Facts

The Sanitary System has:

- 2 Sanitary Pump Stations
- 241 km of Sanitary Sewers

2 Sanitary System

2.1 State of the Infrastructure

Welland’s sanitary system is made up of the sewers and pump stations used to transmit wastewater from individual properties to a treatment facility. The sanitary sewers include all appurtenances that are included in the sanitary system including services, and manholes. Table 2-1 below shows the full inventory and estimated replacement cost for this system.

Table 2-1. Inventory and Current Replacement Value – Sanitary System

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Sanitary Pump Station	2	Each	\$3,500,000 ³
Sanitary Sewer	241	Km	\$650,239,844
Total			\$653,739,843

2.1.1 Asset Condition

Overall, the sanitary system’s assets are in Poor Condition.

Condition for the Sanitary System was assigned based on Table 2-2. The Lincoln Pump Street pump station was assessed as a whole facility (not componentized), based on the age and service life of the facility. Condition ratings (PACP ratings from CCTV data) for the sanitary sewers were applied where available, based on the likelihood of failure score on the pipe structural. Where condition information was not available, age and service life were used to assess the condition of the pipes.

³ Replacement Value is for only one pump station. Fitch Street Pump Station is planned to be decommissioned and has not been assessed for replacement value or condition within this AMP.

Table 2-2. Condition Rating – Sanitary System

Condition	Age/ESL	Sewers – Assessed Condition Rating
Very Good	>80% life remaining	1: Failure unlikely in foreseeable future (RSL=35)
Good	60–80% life remaining	2: Pipe unlikely to fail for at least 20 years RSL = 25)
Fair	40–60% life remaining	3: Pipe may fail in 10–20 years / Grade 3 (RSL = 15)
Poor	20–40% life remaining	4: Pipe will probably fail in 5–10 years (RSL = 7)
Very Poor	0–20% life remaining	5: Pipe failed or likely to fail within 5 years (RSL = 2)
Unknown		

A breakdown of the condition distribution based on asset value is shown in Figure 2-1 and Figure 2-2 below. As these figures demonstrate, most of the asset value falls at or below Fair condition.

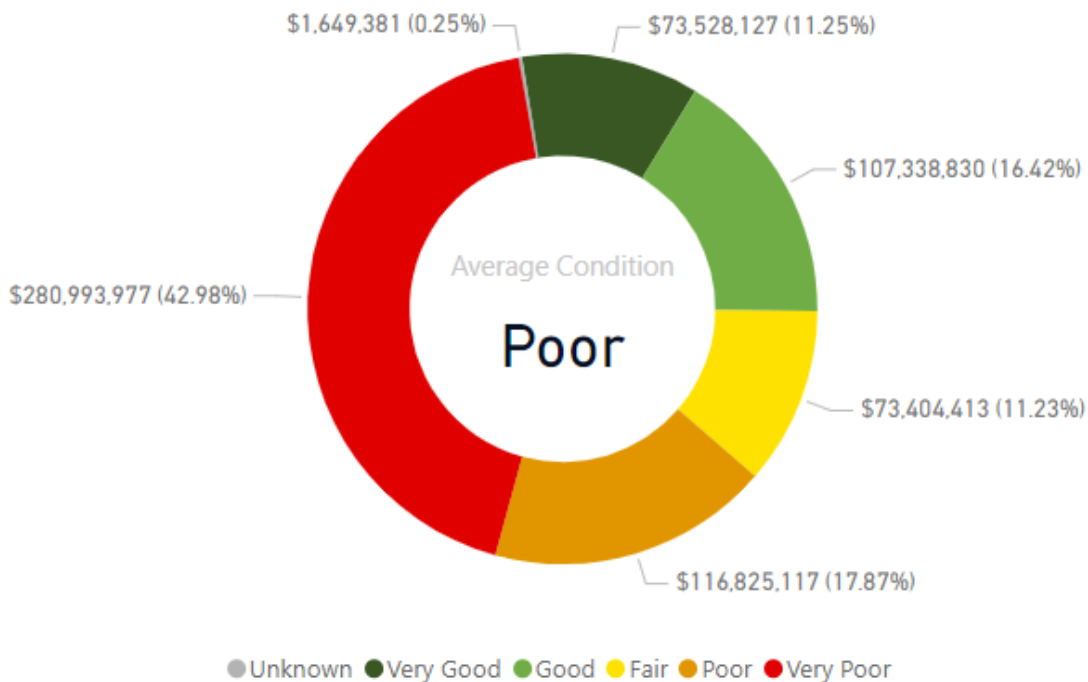


Figure 2-1. Sanitary System Condition Distribution (By Replacement Value) – Overall

The percentage of sanitary sewers in poor and very poor condition has increased from the 2021 AMP as a result of the methodology used to assign condition to the pipes has changed. The previous AMP took an overall condition rating from the

PACP ratings, which were not assessed for likelihood of failure, and used all available ratings available (regardless of how old the information was). The methodology to assign condition for this AMP were adjusted to provide a more accurate assessment, which includes the following key points:

- Condition assessments were only used where data was no more than 5 years old.
- Likelihood of failure was calculated based on NASSCO methodology from structural score, which provides an assessed remaining life (which differs from actual age and remaining life). Age-ESL was then applied as per Table 2-2.
- Estimated Service Lives were updated to reflect the variances in pipe material for how long pipes typically last.
- Condition mapping was updated so that assets with 20% or less of life remaining are very poor to follow best practices and be in line with other asset classes (the previous AMP did not consider an asset in very poor condition until after it was past its service life).

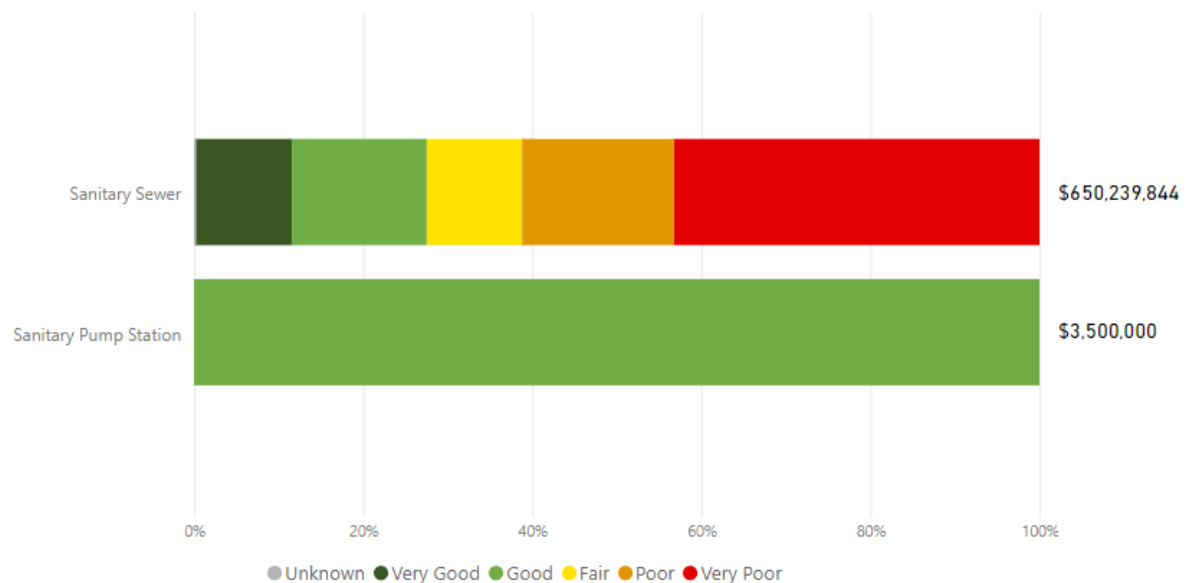


Figure 2-2. Sanitary System Condition Distribution (By Replacement Value) – Asset Category Breakdown

The Sanitary System assets include sewers (which includes all appurtenances), and the sanitary pump stations. The sanitary pump station is only considering Lincoln Street Pump station, as Fitch Street Pump Station is planned to be decommissioned in the upcoming years. All other Sanitary facilities within Welland are owned and operated by the Niagara Region, and therefore not included within the scope of this plan.

2.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 2-3. As this figure demonstrates, on average, sanitary system assets are nearing the end of their ESL.

It should be noted that estimated service life has been updated since the previous version of the AMP. The previous AMP assumed one service life for all pipe types and materials. This has been updated to reflect real-world conditions for the various pipe materials. This was an important update for this AMP, as materials like PVC (which is now used for new pipes), last much longer than pipe materials that historically were used. This update was required to ensure accurate forecasting for future replacements and expenditures.

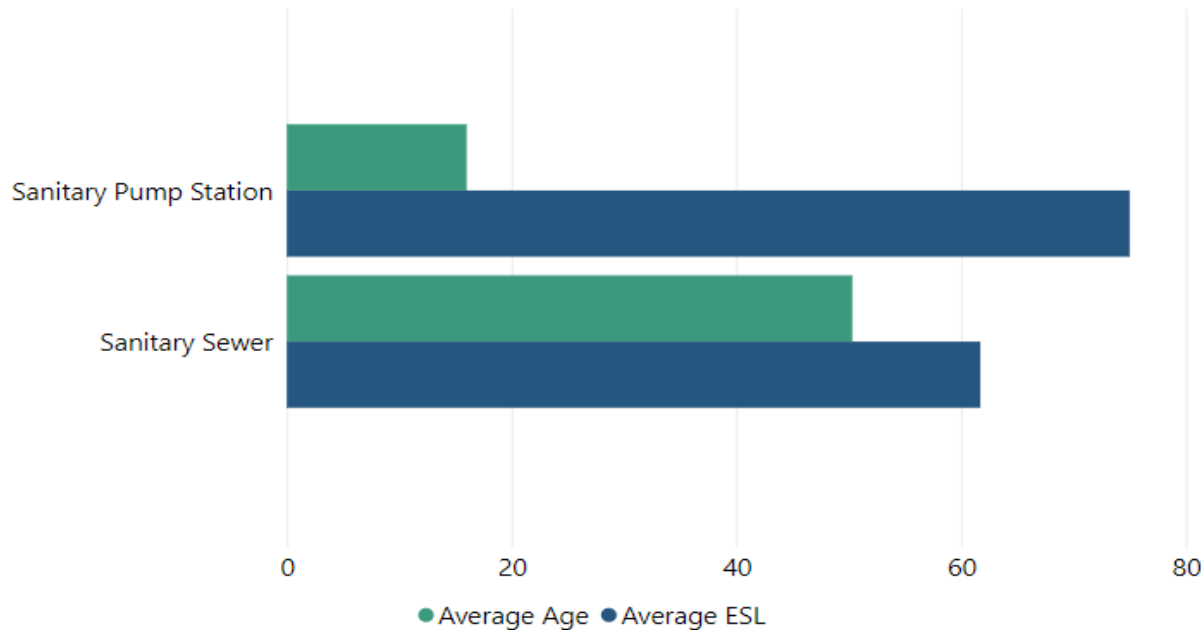


Figure 2-3. Sanitary System Average Age vs. ESL – Asset Category Breakdown

2.2 Levels of Service

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed in Table 2-3 and Table 2-4. Proposed, or target LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.

Table 2-3. Community Level of Service – Sanitary System

Key Service Attribute	Performance Measure	Current Performance (2024)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.*	Sanitary & Combined Sewer Network Map (Appendix B)
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes.*	The City no longer constructs combined sewers. To avoid basement flooding and backups into homes, existing combined sewers have a sewer system overflow to provide system relief. Sewer overflows exist to prevent Wastewater sewer backup into basements by instead relieving overloaded Wastewater sewers into an adjacent storm sewer or receiving water body. Sewer overflows exist on both combined sewer locations and on otherwise separated sewer locations. Many have been retroactively installed after basement flooding experiences. The design varies greatly among the many overflow locations. The frequency varies from site to site but are largely triggered by wet weather (rainfall) events or snow melt. Welland has a Pollution Prevention and Control Plan (PPCP) which details all the overflow locations, along with characterizing each overflow site and setting priorities/strategies for remediation.
Reliability	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.*	40 events in 2023 Volume: 141.8 (ML)

Key Service Attribute	Performance Measure	Current Performance (2024)
Reliability	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.*	Infiltration and inflow into Wastewater sewers may be from groundwater and surface runoff, both of which are not intended to be in Wastewater system. Infiltration can enter through a variety of sources (cracks in pipes and maintenance holes), and inflow may enter through direct connections of storm outlets into the system, such as weeping tile connections or cross connections with storm outlets or downspouts. This excess and unplanned flow can overwhelm the Wastewater system.
Reliability	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described in paragraph 3 (see O.Reg. 588/17).*	To minimize sewage overflow into streets or backup into homes, the City has established design standards to convey flows under ultimate conditions, design sheets for capacity needs that include infiltration inflow.
Reliability	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.*	N/A – Niagara Region Responsibility
My City maintains what it owns	Current reinvestment rate	0.34%
My City maintains what it owns	Cost per household	\$960.63

*O.Reg. 588/17 Requirement

Table 2-4. Technical Level of Service – Sanitary System

Key Service Attribute	Performance Measure	Current Performance (2024)
I have quality services	Percentage of properties connected to the municipal wastewater system.*	91% (20,205)
My property is protected from flooding	The number 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.*	40 events in 2023 Volume: 141.8(ML)
My property is protected from flooding	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.*	237 private drain cleaning (sewer rodding) orders
My City is considerate of the environment [4]	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.*	None
My City maintains what it owns	Percent of sewer mains maintained in conformance with defined lifecycle strategies.*	54.81%
My City is considerate of the environment	Km of combined sewers.	5.6 km
I have quality services	Percentage of total replacement cost of assets in good to very good condition.	27.67%

*O.Reg. 588/17 Requirement

2.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City strives to coordinate rehabilitation and replacement projects across asset groups where opportunities exist. This may result in asset strategies being delayed or advanced to accommodate the overall benefit of coordinated work.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

2.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for the Sanitary System are outlined in Table 2-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 2.4. Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Sanitary System assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 2-5. Lifecycle Management Activities – Sanitary

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> • Disconnecting downspouts to manage sewer demand 	<ul style="list-style-type: none"> • On-going
<ul style="list-style-type: none"> • Weeping tile disconnection to manage sewer demand (SWAP Program) 	<ul style="list-style-type: none"> • On-going
<ul style="list-style-type: none"> • Use of CSOs for demand management 	<ul style="list-style-type: none"> • On-going
<ul style="list-style-type: none"> • Inspection of Sanitary networks using CCTV & Zoom inspection 	<ul style="list-style-type: none"> • Annual
<ul style="list-style-type: none"> • Flow and level monitoring 	<ul style="list-style-type: none"> • Annual
<ul style="list-style-type: none"> • GIS for record management 	<ul style="list-style-type: none"> • On-going
<ul style="list-style-type: none"> • Inflow and infiltration reduction monitoring 	<ul style="list-style-type: none"> • On-going
<ul style="list-style-type: none"> • Wastewater Master Plan and Pollution Prevention Control Plan 	<ul style="list-style-type: none"> • 5 years
Operations & Maintenance Activities	
<ul style="list-style-type: none"> • Maintenance and inspection programs (cleaning and flushing, minor repairs, and maintenance hole repairs) 	<ul style="list-style-type: none"> • Regularly (unscheduled or unplanned emergency activities)
<ul style="list-style-type: none"> • Maintenance hole adjustments and minor sewer repairs 	<ul style="list-style-type: none"> • Regularly (unscheduled or unplanned emergency activities)
Renewal/Replacement Activities	
<ul style="list-style-type: none"> • Replacement of clay pipe 	<ul style="list-style-type: none"> • Annual, priority program
<ul style="list-style-type: none"> • Replacement of sewers 	<ul style="list-style-type: none"> • Annual, as identified
Disposal Activities	
<ul style="list-style-type: none"> • Pipe removal or abandonment, in line with replacements 	<ul style="list-style-type: none"> • As required

Asset Management Practices / Planned Actions	Frequency
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> • Separation of combined sewers into independent sanitary and stormwater sewers 	<ul style="list-style-type: none"> • Coordinated with ROW work
<ul style="list-style-type: none"> • New assets to accommodate growth 	<ul style="list-style-type: none"> • As needed
<ul style="list-style-type: none"> • Asset upgrades to meet capacity as identified in studies 	<ul style="list-style-type: none"> • As identified

2.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 2.3 to plan work and determine future expenditure needs for Sanitary System assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 2.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588/17.

2.4.1 Scenario 1: Maintain Current Levels of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for Sanitary System assets was determined to be approximately \$15.9M. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution to maintain LOS can be seen below in Figure 2-4. Overall asset condition does improve slightly in this scenario with assets in poor to very poor condition decreasing to around 40% at

the end of the 25-year forecast period. To maintain current LOS in the Sanitary System there is an annual funding gap of approximately \$12.7M compared to current anticipated funding levels.

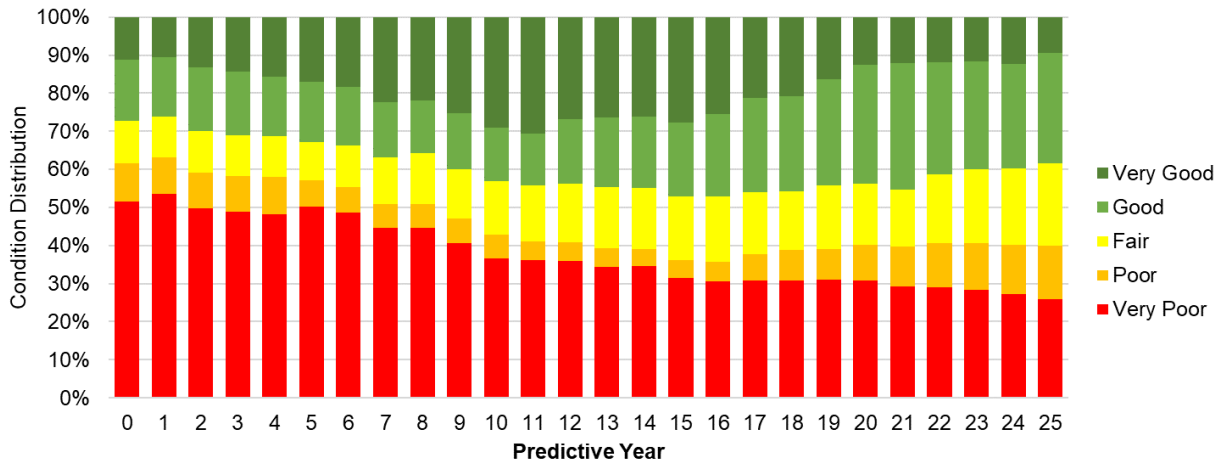


Figure 2-4. Sanitary System Performance Forecast to Maintain Current Levels of Service

2.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Sanitary System assets is approximately \$3.2M. The condition distribution for the Sanitary System forecast with current anticipated funding is shown below in Figure 2-5. The condition distribution shows that with current funding levels assets in good to very good condition decreases to below 20% and assets in poor to very poor condition increases over the 25-year forecast period. As the Sanitary System already has a high portion of assets in very poor condition (42%), the current funding allocations will not allow the City to decrease this proportion of assets. This highlights the difficulties the City will have in maintaining its infrastructure assets with the current budget allocations. This budget may not be sufficient to keep up with infrastructure needs over time, leading to a further overall decline in asset condition, which could impact the level of service the City can provide to residents.

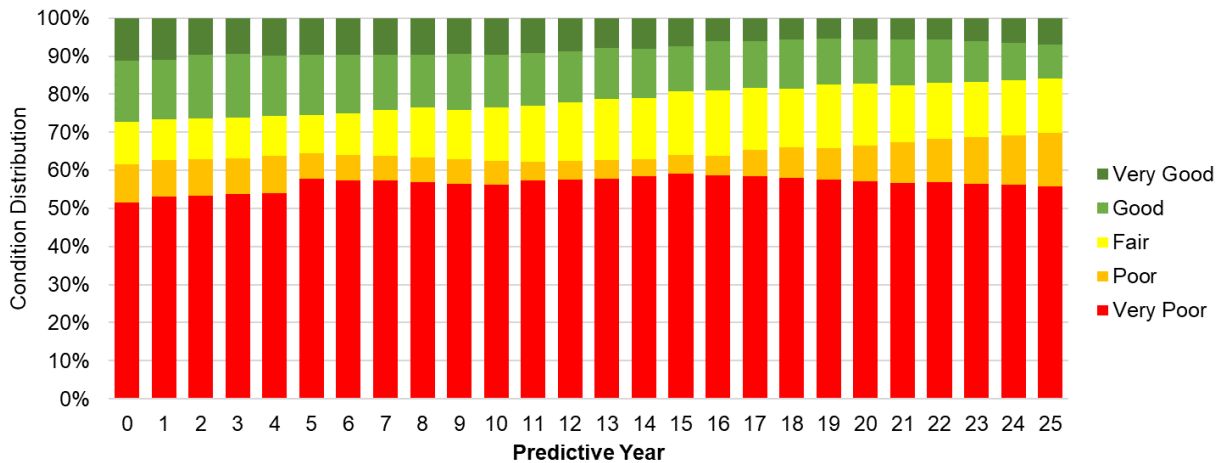


Figure 2-5. Sanitary System Performance Forecast with Current Funding

2.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

The anticipated annual budget needed for this scenario was determined to be \$31.7M. This is a funding gap of approximately \$28M compared to the current budget allocation. The Sanitary System performance forecast condition distribution with infrastructure needs as per lifecycle strategies is below in Figure 2-6. The condition distribution shows that assets in very poor condition decreases with this forecast scenario, and assets in good to very good condition increases slightly. Following the lifecycle strategies discussed in Section 2.3, the overall condition of assets in the Sanitary System increases. This is a huge improvement in overall asset condition compared to the other two forecast scenarios. This further highlights the challenges the City will face if average annual investments in Sanitary System assets stays similar to the current anticipated allocation.

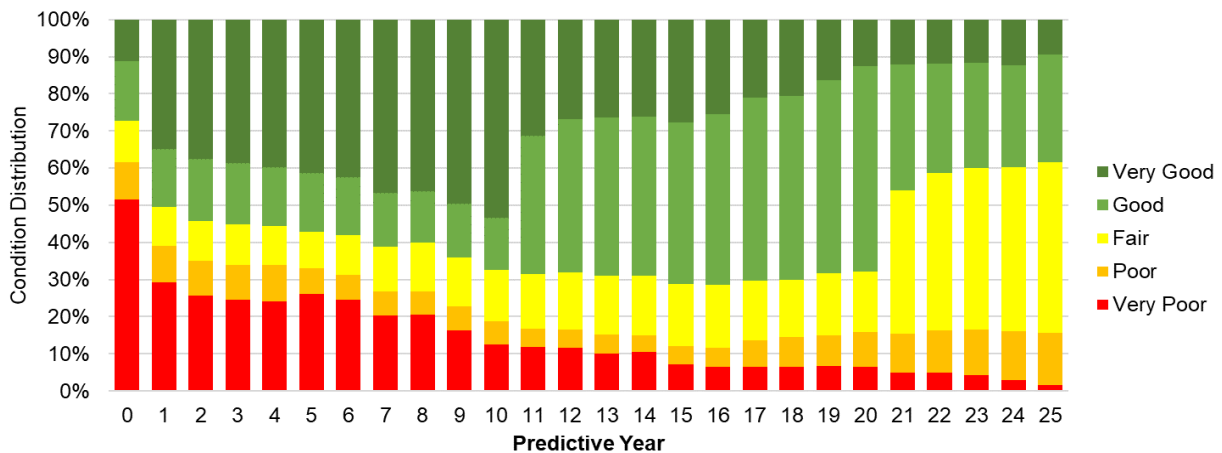


Figure 2-6. Sanitary System Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

2.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff are able to determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 2-7 and Table 2-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City’s 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates that the Sanitary System is facing an annual gap of \$12.7M to maintain the current levels of service. If the City aims to optimize performance of their assets and adhere to lifecycle strategies, there is a significant annual funding gap of \$28M. These funding gaps underscore the challenge the City faces in adequately funding the necessary renewal, rehabilitation, and replacement activities for Sanitary System assets.

Figure 2-7 also highlights the backlog in the year 2024 for Sanitary System assets. The backlog represents renewal, rehabilitation, and replacement activities that have been identified as necessary but have not yet been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk in not achieving intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to significantly higher operational and maintenance costs, affecting the

availability of services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

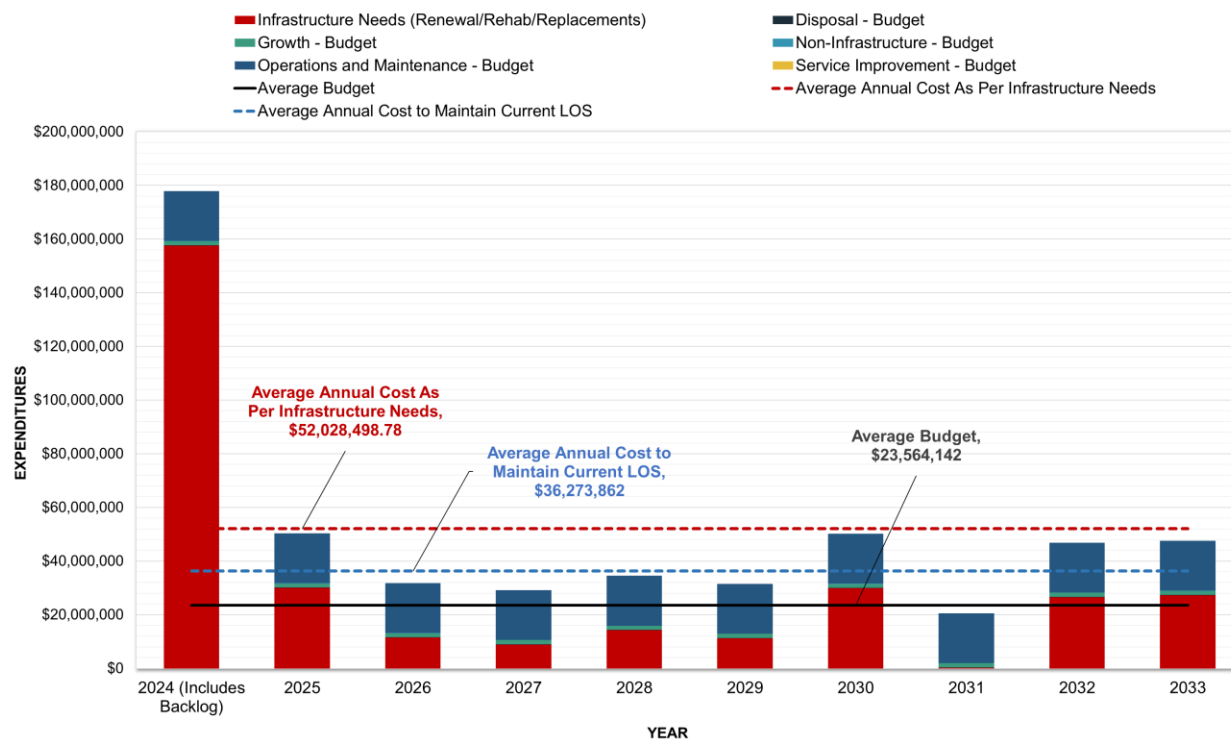


Figure 2-7. Sanitary System Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

2.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 2-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023-2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies to ensure the long-term sustainability and reliability of the Sanitary System infrastructure network for current and future generations.

Table 2-6. Current and Optimal Capital Funding and Funding Gap – Sanitary System

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$150,000	\$150,000	\$150,000
Growth	\$1,488,714	\$1,488,714	\$1,488,714
Non-Infrastructure	\$95,000	\$95,000	\$95,000
Operations & Maintenance	\$18,558,152	\$18,558,152	\$18,558,152
Renewal, Rehabilitation & Replacement	\$3,272,276	\$15,981,996	\$31,736,633
Service Improvement	\$0	\$0	\$0
Annual Average Total Expenditure	\$23,564,142	\$36,273,862	\$52,028,499
Average Annual Funding Gap		\$12,709,720	\$28,464,357
Percentage Increase Required to Address Gap		54%	121%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

2.5 Data Confidence and Improvement Plan

Table 2-7 shows the main data sources and data confidence for Sanitary System assets.

Table 2-7. Data Confidence – Sanitary Systems

Asset Type	Data Source	Data Confidence
Sanitary Pump Stations	GIS, Spreadsheet	A
Sanitary Sewer	GIS, CCTV Condition Assessments	A

2.5.1 Recommendations for Improvements

The following recommendations for the Sanitary System include:

Pump Stations

- Break down Pump Station to components to better understand the infrastructure needs of this station.

Sewers

- Continue efforts to fill in gaps to CCTV/PACP scores where updated information is not available.
- Assess data derived from CCTV data and continue to develop lifecycle strategies based on assessments completed. – put these strategies into predictor.



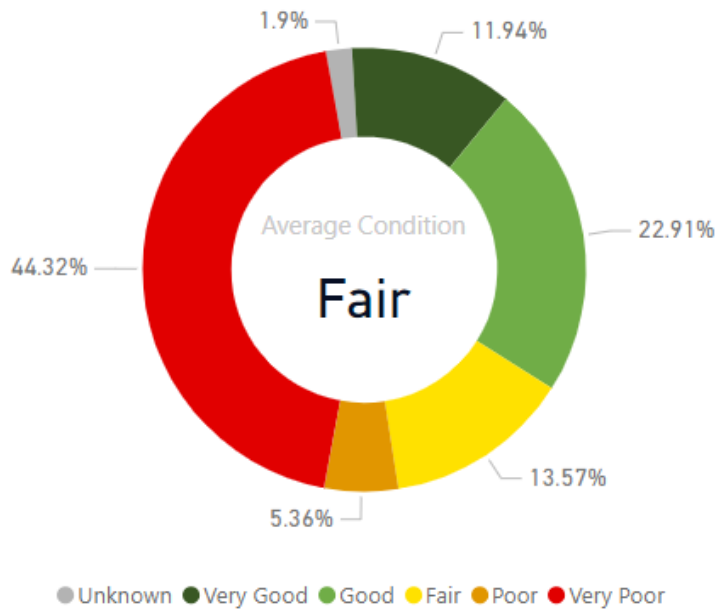
Water System



Replacement Value

\$453,593,217 M

Overall Average Asset Condition



Quick Facts

The Water System includes:

- Approximately 18,000 water meters
- 292 km of distribution water mains
- Booster Pumping Station

3 Water System

3.1 State of the Infrastructure

The Water System is a critical component of the City’s infrastructure, supporting public health, safety, economic prosperity, and environmental sustainability. Welland’s water system is made up of the watermains, which are a network of pipes used to distribute water from the treatment plant to individual properties, water meters used to track usage and a booster pumping station, which helps to maintain consistent pressure and provide adequate flow throughout the system. The water distribution system plays a crucial role in supporting public health, economic development, fire protection, and overall quality of life in communities. Table 3-1 below shows the full inventory and estimated replacement cost for this system.

Table 3-1. Inventory and Current Replacement Value – Water System

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Water Meter	17,975	Each	\$18,699,150
Water Main (includes all appurtenances, including valves, hydrants, etc)	292	Km	\$431,894,067
Water Booster Pumping Station	1	Each	\$3,000,000
Total			\$453,593,217

3.1.1 Asset Condition

Overall, the water system’s assets are in Fair Condition.

A breakdown of the condition distribution based on asset value is shown below in Figure 3-1 and Figure 3-2 below. As these figures demonstrate, most of the asset value falls at or below Fair condition. Watermain, and water meter assets are currently assessed for condition based on age and estimated service life. The condition rating scale is shown below in Table 3-2.

Table 3-2. Condition Rating – Water System

Condition	Age/ESL
Very Good	>80% life remaining
Good	60–80% life remaining
Fair	40–60% life remaining
Poor	20–40% life remaining
Very Poor	0–20% life remaining
Unknown	

Water meter assets were pooled together for approximate installation. Very minimal conditions are missing for the water system, with less than 2% of assets missing installation dates.

As seen in the Sanitary and Storm categories, there has been a significant increase since the last AMP in the amount of watermains in very poor condition. This is a result of similar factors which include:

- This AMP has updated the service lives of the pipes for different types/materials to be more reflective of real-world conditions.
- The condition categories have been changed to be in line with other asset categories with assessed conditions, and best practices.

The breakdown of condition distribution based on asset value is shown below in Figure 3-1 and Figure 3-2 below.

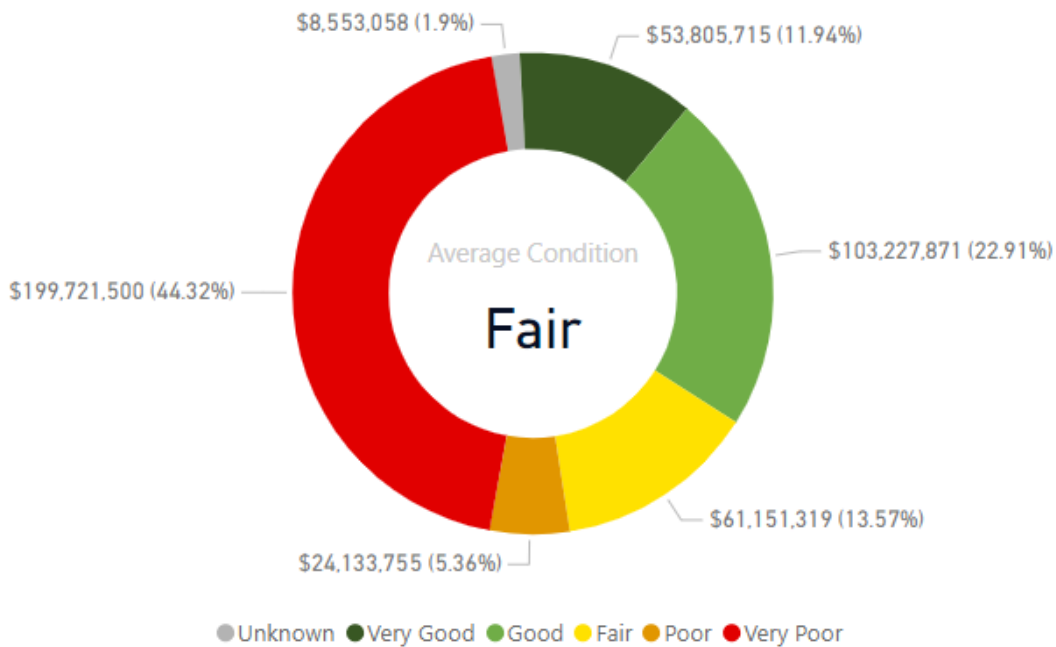


Figure 3-1. Water System Condition Distribution (By Replacement Value) – Overall

Although a large portion of the assets are in very poor condition (approximately 44% of the watermains), as a result of the portions of assets in fair or better condition (approximately 48%), the average condition of the system is in fair condition.

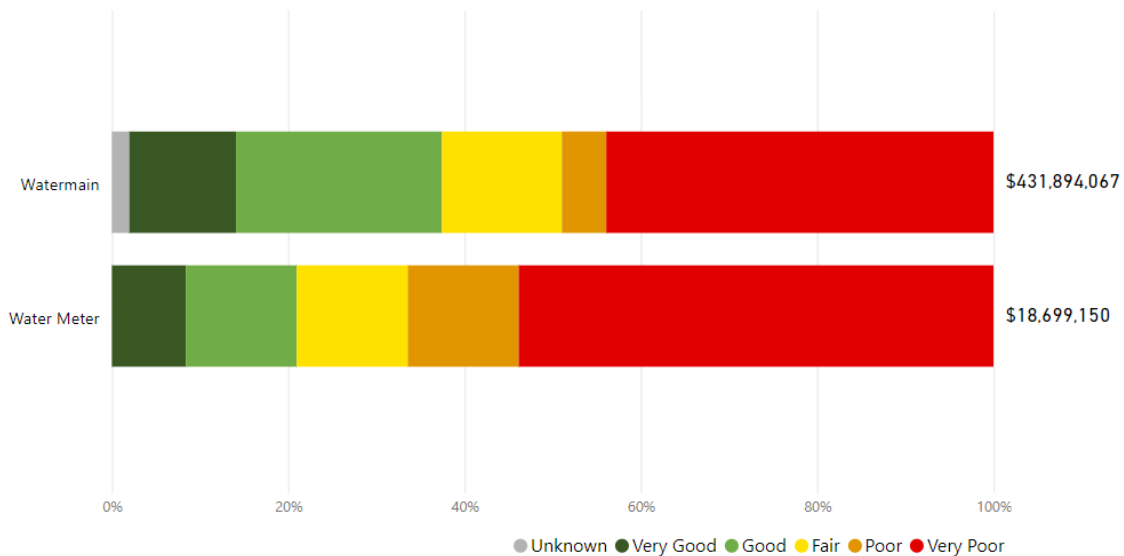


Figure 3-2. Water System Condition Distribution (By Replacement Value) – Asset Category Breakdown

3.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 3-3. As this figure demonstrates, on average, watermains and water meters have not reached the end of their service life.

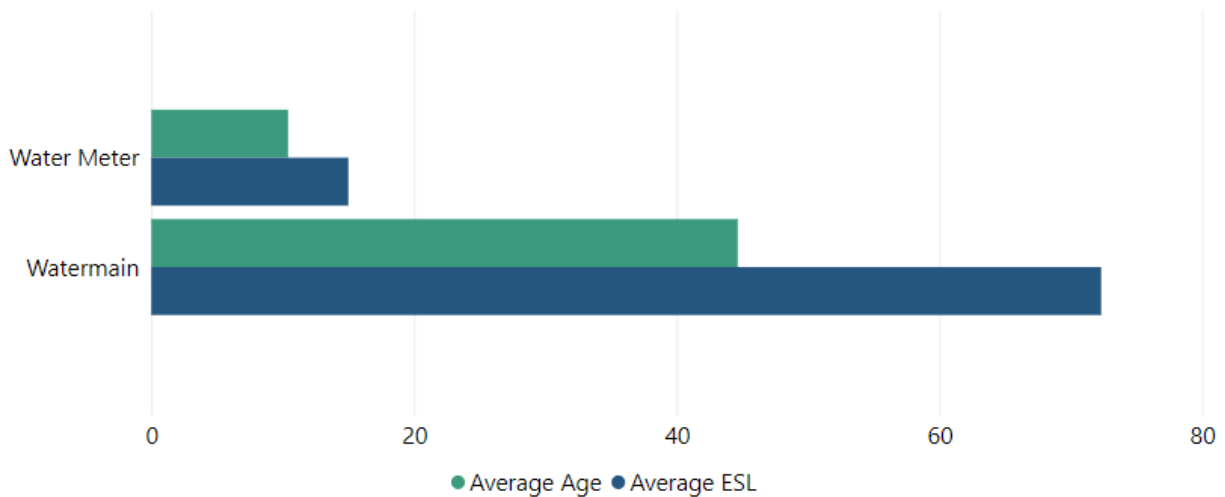


Figure 3-3. Water System Average Age vs. ESL – Asset Category Breakdown

3.2 Levels of Service

The water distribution system plays a crucial role in supporting public health, economic development, fire protection, and overall quality of life in communities.

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed Table 3-3 and Table 3-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.

Table 3-3. Community Level of Service – Water System

Key Service Attribute	Performance Measure	Current Performance (2024)
I have quality services	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system.*	Water Network Map (Appendix FC)
My property is protected	Description, which may include maps, of the user groups or areas of the municipality that have fire flow.*	Water Hydrant Network Map (Appendix D)
I have quality services	Description of boil water advisories and service interruptions.*	The City is proactive in preventing unplanned service disruptions during watermain replacement projects by ensuring contractors obtain accurate locates of existing infrastructure before construction, and by requiring through the contract that contractors resolve any service disruptions ASAP using DWQMS guidelines.
My City maintains what it owns	Current reinvestment rate	0.96%
My City maintains what it owns	Cost per household	\$788.28

*O.Reg. 588/17 Requirement

Table 3-4. Technical Level of Service – Water System

Key Service Attribute	Performance Measure	Current Performance (2024)
I have quality services	Percentage of properties connected to the municipal water system.*	92.4%
My property is protected	Percentage of properties where fire flow is available.*	90.76%
I have access to services when I need them	The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.*	293
I have quality services	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.*	0
My City maintains what it owns	Percent of watermains maintained in conformance with defined lifecycle strategies	84.79%
I have quality services	Boil water advisories issued	0
I have quality services	Percentage of total replacement cost of assets in good to very good condition	34.84%
My City maintains what it owns	Percent of water meters (residential) maintained in conformance with defined lifecycle strategies	100%
My City maintains what it owns	Percent of water meters (commercial) maintained in conformance with defined lifecycle strategies	100%

*O.Reg. 588/17 Requirement

3.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City strives to coordinate rehabilitation and replacement projects across asset groups where opportunities exist. This may result in asset strategies being delayed or advanced to accommodate the overall benefit of coordinated work.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

3.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for the Water System are outlined in Table 3-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 2.4. Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Water System assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 3-5. Lifecycle Management Activities – Water System

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> Water Master Plan 	<ul style="list-style-type: none"> 5 years
<ul style="list-style-type: none"> DWQMS Risk Assessment 	<ul style="list-style-type: none"> Annual
Operations & Maintenance Activities	
<ul style="list-style-type: none"> Fire flow prevention; hydrant watermain preventative measure. Monitoring with hydrant flow tests for fire flow/hydrants 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> DWQMS Infrastructure Maintenance Procedure, Repair Procedure, and Infrastructure Review Procedure. Monitor other watermain-related items 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> Preventive tasks and repairs for breaks and breakdowns 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> Valve exercising program 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Hydrant flow and code program 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> Dead end flushing program 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> Maintenance hole adjustments for chambers 	<ul style="list-style-type: none"> As required
Renewal/Replacement Activities	
<ul style="list-style-type: none"> Refurbishment of booster station components, valves, and hydrants 	<ul style="list-style-type: none"> As identified
<ul style="list-style-type: none"> Replacement of old cast iron watermains 	<ul style="list-style-type: none"> Annual
Disposal Activities	
<ul style="list-style-type: none"> Pipe removal or abandonment, in line with replacements 	<ul style="list-style-type: none"> As required
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> New watermains to accommodate growth 	<ul style="list-style-type: none"> As needed

3.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 3.3 to plan work and determine future expenditure needs for Water System assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 3.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588/17.

3.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for the Water System assets was determined to be approximately \$8.4M. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution for Water System assets can be seen below in Figure 3-4. Assets in very poor condition decrease, while assets in very good condition decrease significantly over the 25-year forecast

period. To maintain LOS in the Water System there is currently a funding gap of \$3M.

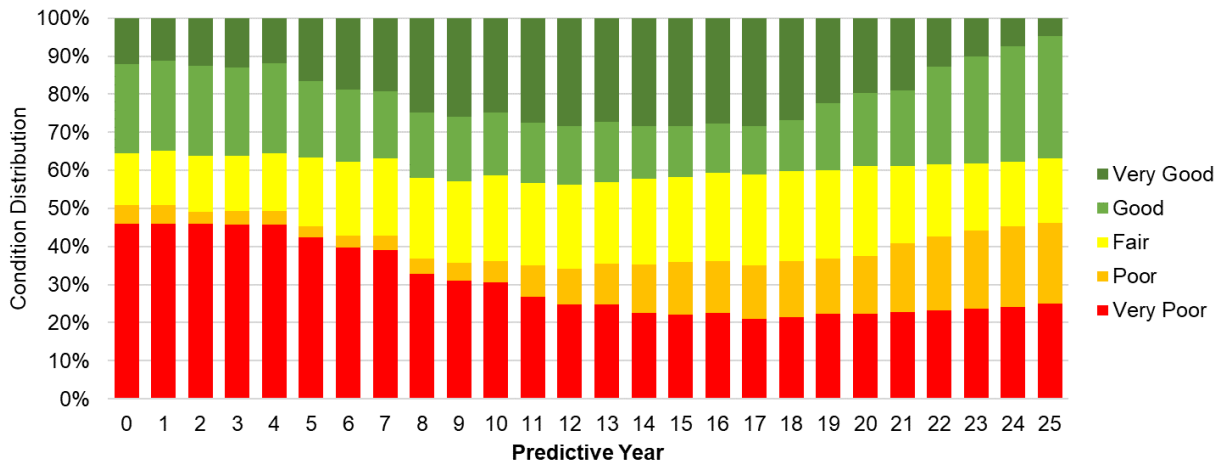


Figure 3-4. Water System Performance Forecast to Maintain Current Levels of Service

3.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Water System assets is approximately \$5.3M. Figure 3-5 shows the performance forecast with current funding for the Water System. The condition distribution shows that with current funding levels assets increase slightly in condition over the 25-year forecast period. Assets in very poor condition decreases to just over 20% at the end of the forecast. The forecast suggests that with the current anticipated budget allocations, assets in the Water System are currently funded to slightly increase the condition of assets over time.

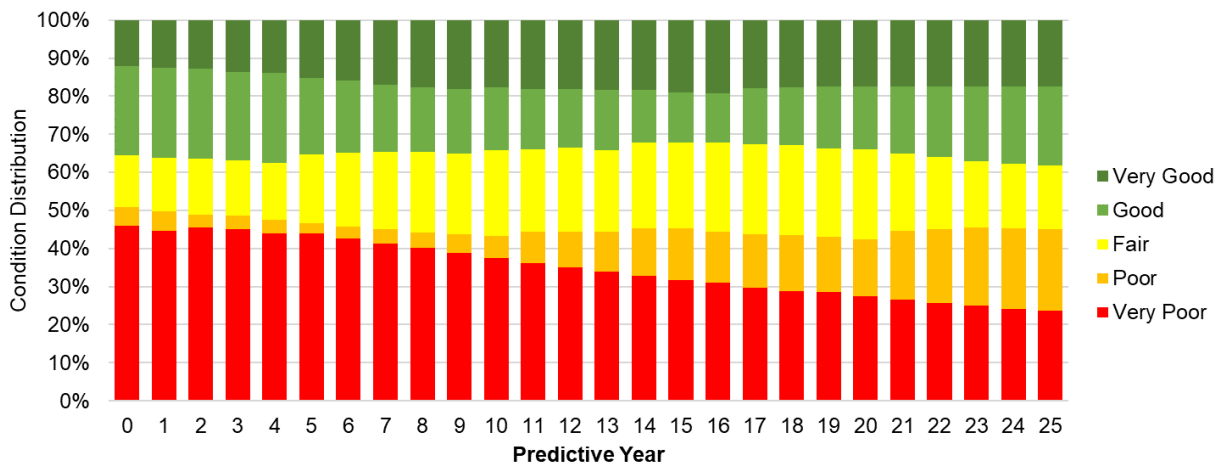


Figure 3-5. Water System Performance Forecast with Current Funding

3.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

The anticipated annual budget needed for this scenario was determined to be \$17.2M. There is an anticipated funding gap of \$11.9M compared to the current budget allocation. The condition distribution for Water System assets with infrastructure needs as per lifecycle strategies is in Figure 3-6. In this forecast condition distribution, assets in very poor condition decrease significantly and assets in good to very good condition increase. Following the infrastructure needs as per the lifecycle strategies discussed in Section 3.3, the overall condition of assets in the Water System increases. This scenario forecast shows the biggest improvement in asset condition over the 25-year forecast period, and further highlights the challenges the City may face in keeping up with infrastructure needs with the current anticipated annual investments.

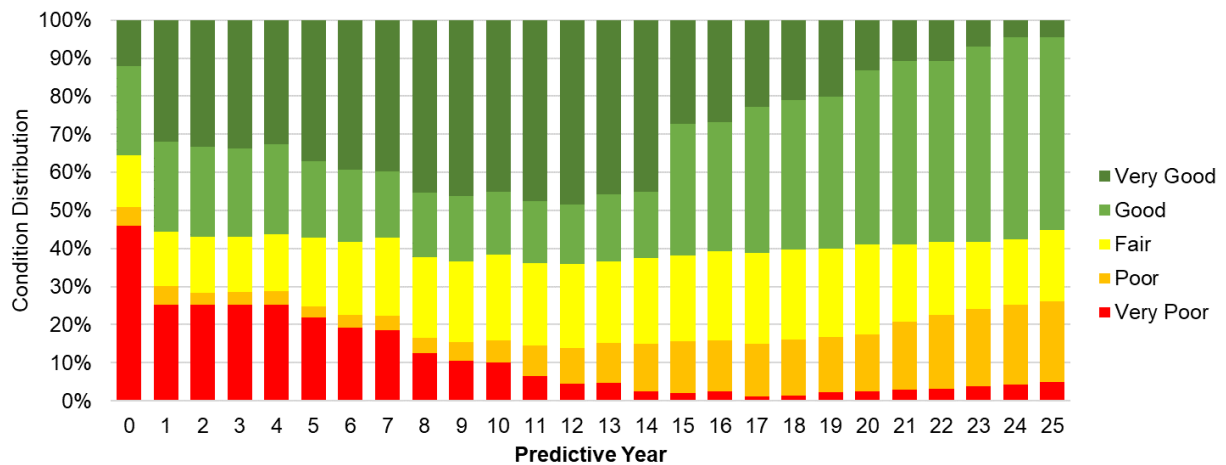


Figure 3-6. Water System Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

3.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff are able to determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 3-7 and Table 3-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City’s 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates that the Water System has a gap of \$3M to maintain the current levels of service. If the City aims to increase the condition of assets and optimize performance while adhering to lifecycle strategies, there is a significant annual funding gap of \$11.9M. This funding gap underscore the challenge the City faces in adequately funding the necessary renewal, rehabilitation, and replacement activities for Water System assets.

Figure 3-7 also highlights the substantial backlog in the year 2024 for Water System assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk in not achieving intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also

lead to significantly higher operational and maintenance costs, affecting the availability of services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

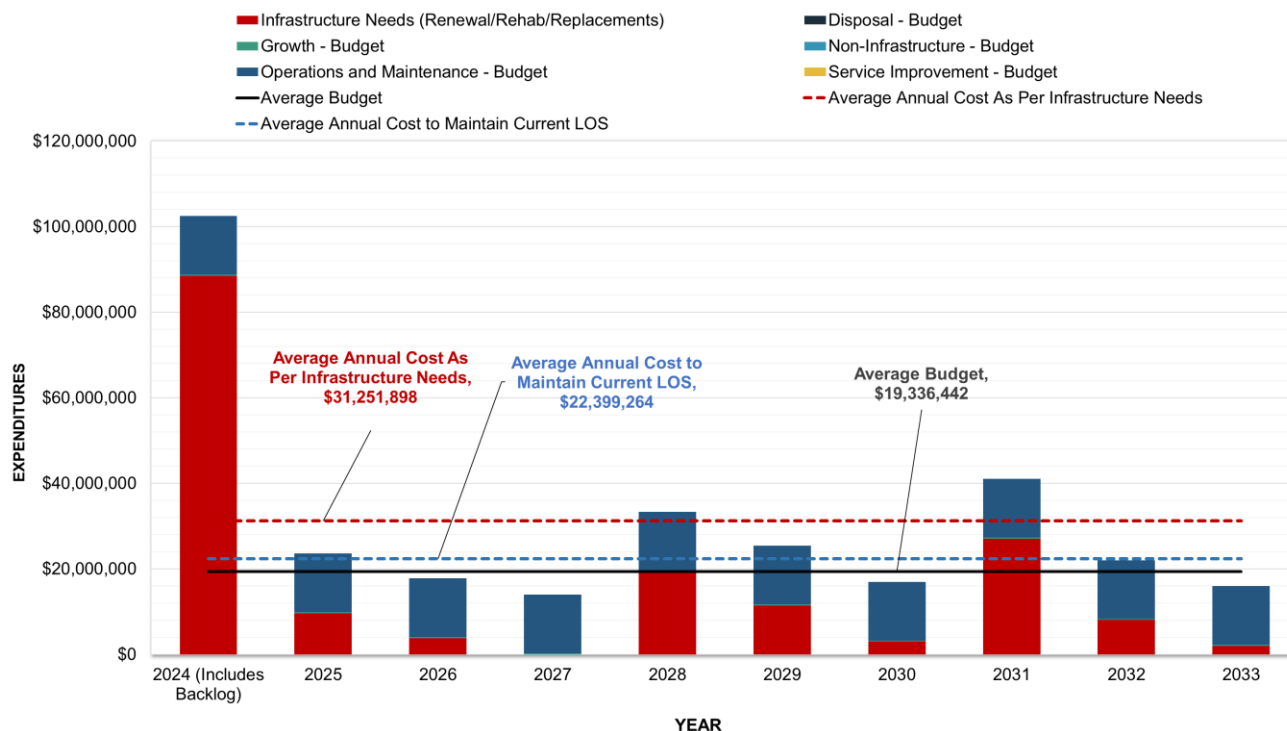


Figure 3-7. Water System Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

3.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 3-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023-2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies to ensure

the long-term sustainability and reliability of the Water System infrastructure network for current and future generations.

Table 3-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Water System

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$201,000	\$201,000	\$201,000
Non-Infrastructure	\$40,000	\$40,000	\$40,000
Operations & Maintenance	\$13,715,892	\$13,715,892	\$13,715,892
Renewal, Rehabilitation & Replacement	\$5,379,550	\$8,442,372	\$17,295,006
Service Improvement	\$0	\$0	\$0
Annual Average Total Expenditure	\$19,336,442	\$22,399,264	\$31,251,898
Average Annual Funding Gap		\$3,062,822	\$11,915,456
Percentage Increase Required to Address Gap		16%	62%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

3.5 Data Confidence and Improvement Plan

The main data sources and overall data confidence for Water System assets is in Table 3-7.

Table 3-7. Data Confidence – Water System

Asset Segment	Data Source	Data Confidence
Water Meter	GIS, Spreadsheet from staff	C
Watermain	GIS	B

3.5.1 Recommendations for Improvements

Opportunities for improvement for the Water System include:

Water Meter

- Review current data sources for water meters and update information for historical records of water meters that have been removed.
- Update process for tracking water meter data to ensure updated register of water meters is maintained for current status.

Watermain

- Fill any remaining gaps on watermain system data (install date)
- Although age and estimated service life is commonly used to determine condition for watermains, develop more in-depth process to assign condition of watermains that takes into account other factors such as watermain breaks, capacity, fire flow, etc.

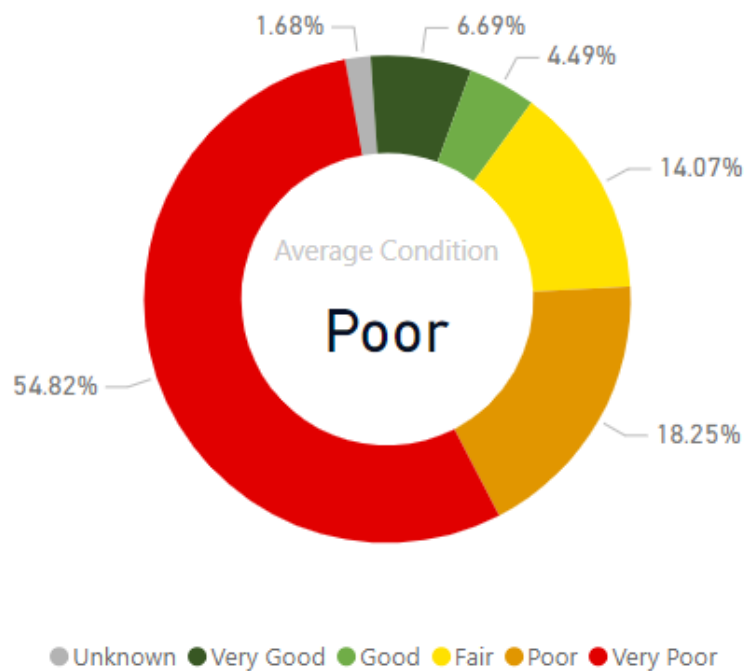


Storm System



\$547,856,281 M

Overall Average Asset Condition



Quick Facts

The Storm System has:

- 182 km of storm sewer & 16 km of culverts throughout the urban area boundary
- 15 storm water management ponds

4 Storm System

4.1 State of the Infrastructure

The City’s stormwater system is designed to mitigate flooding risks to both private and public properties. By effectively managing stormwater through infrastructure like culverts, ponds and sewers, the City can minimize risks of property damage and maintain the overall safety and functioning of urban areas during heavy rainfall events. Welland’s storm system is made up of the storm culverts and sewers which collect and transmit rain run-off, as well as the oil and grit separators (OGS) and stormwater ponds that store and improve the quality of this runoff. Table 4-1 below shows the full inventory and estimated replacement cost for this system.

Table 4-1. Inventory and Current Replacement Value – Sanitary System

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Oil and Grit Separator	16	Each	\$800,000
Storm Culvert	16	Km	\$6,970,500
Storm Pond	15	Each	\$7,500,000
Storm Sewer	182	Km	\$532,594,781
Total			\$547,865,281

4.1.1 Asset Condition

Overall, the storm system’s assets are in Poor Condition.

Condition for the Storm System was assigned based on Table 4-2. Similar to the changes referenced in the Sanitary System State of the Infrastructure, the same methodology was applied to the Storm System. Condition ratings (PACP ratings from CCTV data) for the were applied where available, based on the likelihood of failure score on the pipe structural ratings (approximately 52% of the system). Where condition information was not available, age and service life were used to assess the condition of the pipes (approximately 48% of the storm sewers, as well as for OGS, ponds). Culverts were assessed for condition using a 1-10 rating and applied to the condition rating scale, which can be seen below.

The City has made many efforts to improve the accuracy of the information for this AMP since the previous version, which has led to more accurate forecasts of needs, so that the City is better able to plan for the future to support infrastructure that provides services to residents.

Table 4-2. Condition Rating – Storm

Condition	Age/ESL	Storm Sewer Assessed Condition Rate	Storm Culverts
Very Good	>80% life remaining	1: Failure unlikely in foreseeable future (RSL=35)	=10->8
Good	60-80% life remaining	2: Pipe unlikely to fail for at least 20 years (RSL = 25)	=8->6
Fair	40-60% life remaining	3: Pipe may fail in 10-20 years / Grade 3 (RSL = 15)	=6->4
Poor	20-40% life remaining	4: Pipe will probably fail in 5-10 years (RSL = 7)	=4->2
Very Poor	0-20% life remaining	5: Pipe failed or likely to fail within 5 years (RSL = 2)	=2->0
Unknown			

A breakdown of the condition distribution based on asset value is shown in Figure 4-1 and Figure 4-2 below. As these figures demonstrate, the majority of the asset value falls at or below Fair condition, based largely on the condition of the storm sewers.

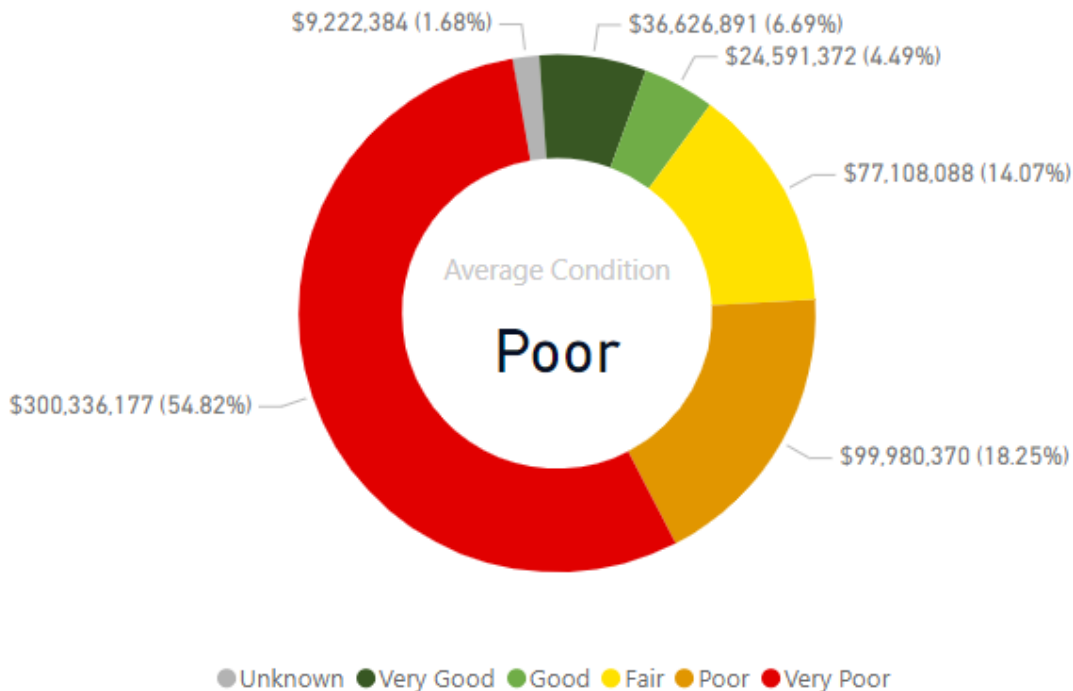


Figure 4-1. Storm System Condition Distribution (By Replacement Value) – Overall

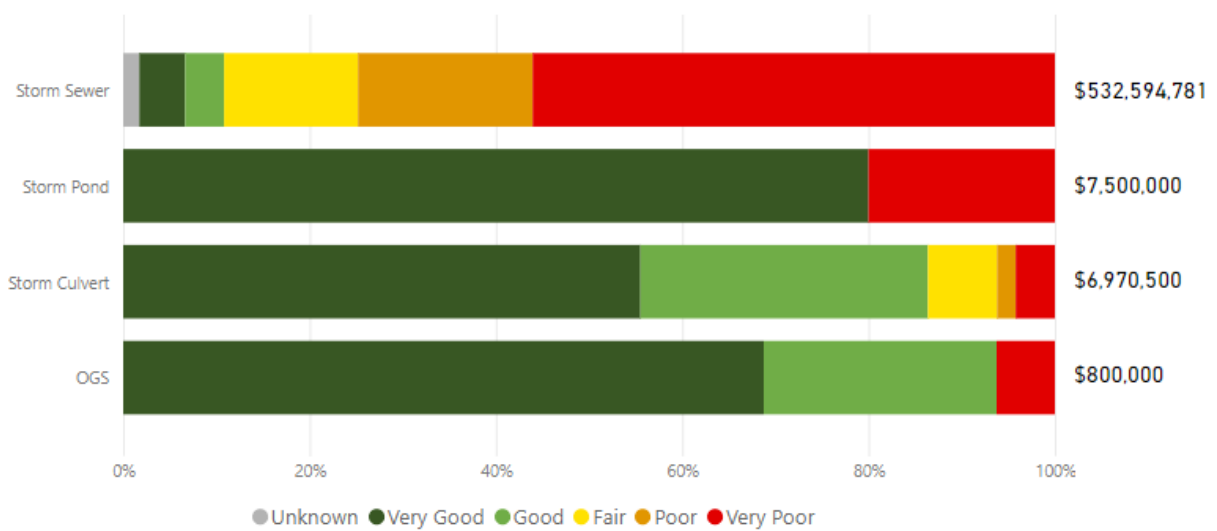


Figure 4-2. Storm System Condition Distribution (By Replacement Value) – Asset Category Breakdown

Storm sewers has approximately 2.6% of its assets missing a condition value (this is a result of not having an assessed condition, or information regarding installation). The City is only missing 1.68% of condition information for the storm system, which highlights the concerted efforts that have been made to collect and maintain up-to-date condition information on their assets, as this is an asset class that typically has large gaps of information in most municipalities.

4.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 4-3. As this figure demonstrates, on average, the storm sewers are nearing the end of their ESL, while the OGS are relatively new. The stormwater ponds ESL was determined to be 40 years to account for the approximate time until ponds will be required to be dredged/cleaned out. This will continue to be evaluated and improved upon in future iterations of the AMP.

No age data is available for the storm culverts, but all culverts have an assessed condition to improve planning and forecasting for these assets.

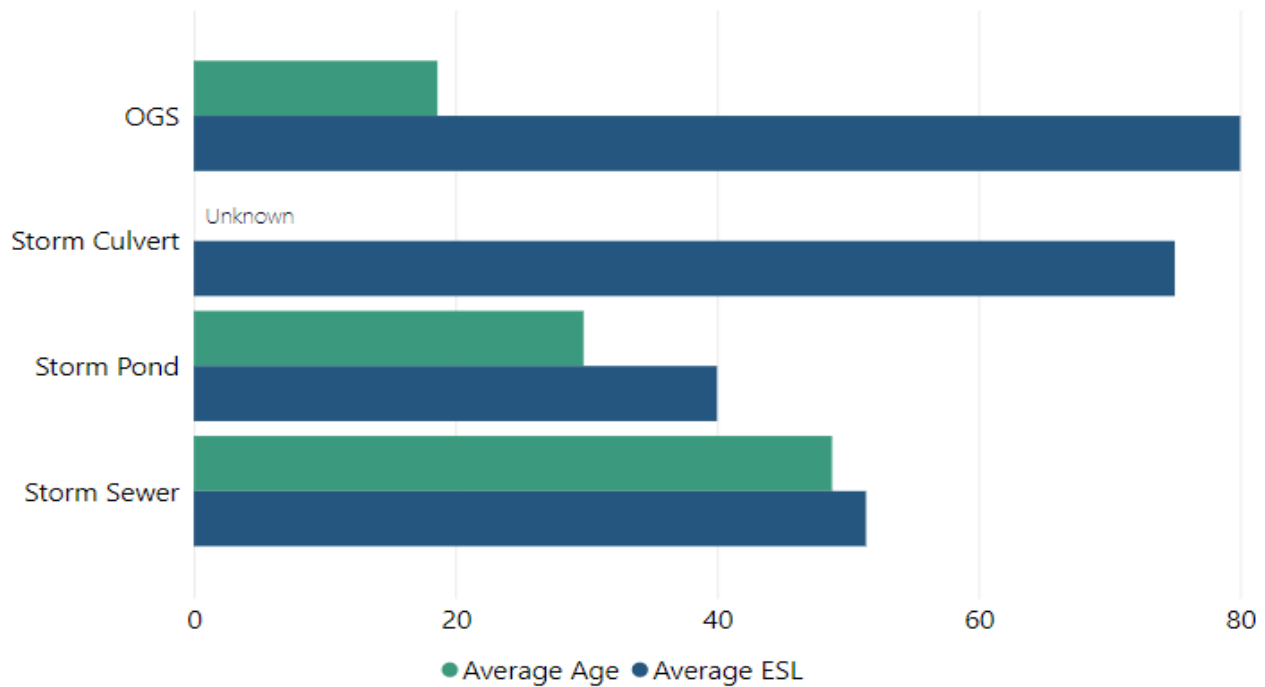


Figure 4-3. Storm System Average Age vs. ESL – Asset Category Breakdown

4.2 Levels of Service

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed Table 4-3 and Table 4-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve these targets.

Table 4-3. Customer/Council Focused Level of Service Requirements – Storm System

Key Service Attribute	Performance Measure	Current Performance (2024)
My property is protected from flooding	Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.*	Storm Sewer Network Map (Appendix E)
My City maintains what it owns	Current reinvestment rate	0.38%
My City maintains what it owns	Cost per household	\$114.02

*O.Reg. 588/17 Requirement

Table 4-4. Technical Level of Service – Storm System

Key Service Attribute	Performance Measure	Current Performance (2024)
My property is protected from flooding	Percentage of properties in municipality resilient to a 100-year storm.*	12.1%
My property is protected from flooding	Percentage of the municipal stormwater management system resilient to a 5-year storm.*	8.12%
My City maintains what it owns	Percent of storm mains maintained in conformance with defined lifecycle strategies.	60.86%
I have quality services	Percentage of total replacement cost of assets in good to very good condition.	11.18%

*O.Reg. 588/17 Requirement

4.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City strives to coordinate rehabilitation and replacement projects across asset groups where opportunities exist. This may result in asset strategies being delayed or advanced to accommodate the overall benefit of coordinated work.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

4.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for the Storm System are outlined in Table 4-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 4.4. Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Storm System assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 4-5. Lifecycle Management Activities – Storm System

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> • Inspection of storm networks using movable and stationary (zoom) televised inspection 	<ul style="list-style-type: none"> • Annual
<ul style="list-style-type: none"> • Flow and level monitoring 	<ul style="list-style-type: none"> • Ongoing
<ul style="list-style-type: none"> • Storm pond sediment surveys and inspections 	<ul style="list-style-type: none"> • Annual
<ul style="list-style-type: none"> • Ditch and culvert data collection 	<ul style="list-style-type: none"> • Ongoing
<ul style="list-style-type: none"> • OGS inspections 	<ul style="list-style-type: none"> • Annual
<ul style="list-style-type: none"> • Storm Subwatershed Studies 	<ul style="list-style-type: none"> • As required
Operations & Maintenance Activities	
<ul style="list-style-type: none"> • OGS and catch basin flushing/cleaning 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Storm system flushing 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Ditch cleaning 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Storm pond dredging / cleaning 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Maintenance to address erosion 	<ul style="list-style-type: none"> • As identified
<ul style="list-style-type: none"> • Maintenance hole adjustments 	<ul style="list-style-type: none"> • As needed
Renewal/Replacement Activities	
<ul style="list-style-type: none"> • Lining and trenchless technologies 	<ul style="list-style-type: none"> • As identified
<ul style="list-style-type: none"> • Replacement of sewers 	<ul style="list-style-type: none"> • As identified
Disposal Activities	

Asset Management Practices / Planned Actions	Frequency
<ul style="list-style-type: none"> • Pipe removal or abandonment, in line with replacements 	<ul style="list-style-type: none"> • As required
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> • New assets to accommodate growth 	<ul style="list-style-type: none"> • As needed
<ul style="list-style-type: none"> • Expansion of pipes to address climate change impacts of increased frequency of severe weather 	<ul style="list-style-type: none"> • As identified

4.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 4.3 to plan work and determine future expenditure needs for Storm System assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 4.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588/17.

4.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for the Storm System assets was determined to be approximately \$14M. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution to maintain current LOS can be seen below in Figure 4-4. Based on this scenario, the Storm System has an annual funding gap of approximately \$11.7M compared to current anticipated

funding levels. To maintain the current backlog, by the end of the scenario, the overall condition profile of storm assets does improve.

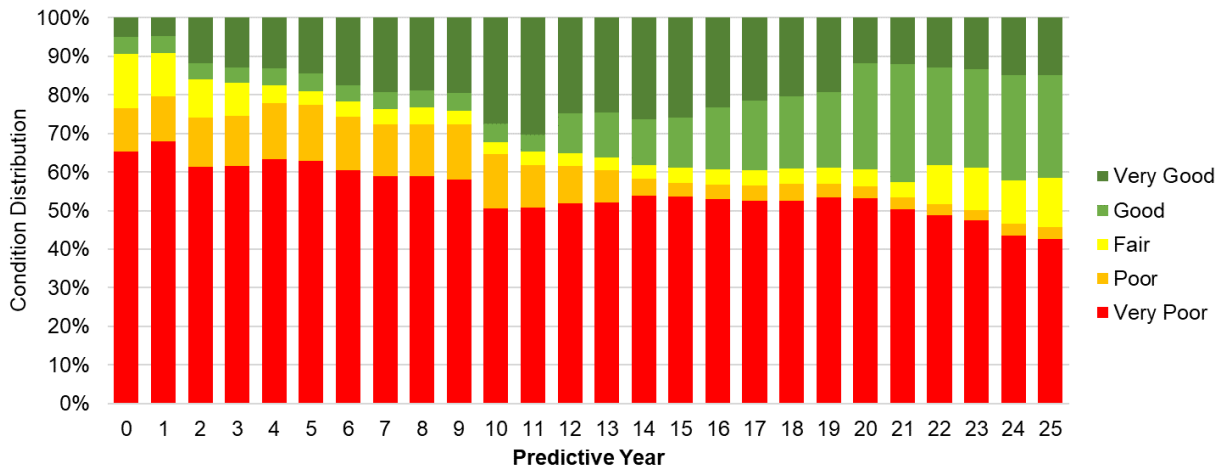


Figure 4-4. Storm System Performance Forecast to Maintain Current Levels of Service

4.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Storm System assets is approximately \$2.4M. Figure 4-5 shows the performance forecast for Storm System assets with current anticipated funding. The Storm System currently has 52% of assets in very poor condition. The condition distribution shows that with current funding levels assets in poor to very poor condition increases over the 25-year forecast period. The forecast suggests that with the current budget allocations, the City will have difficulties in maintaining its Storm System infrastructure assets. This budget may not be sufficient to keep up with infrastructure needs over time, leading to an overall decline in asset condition.

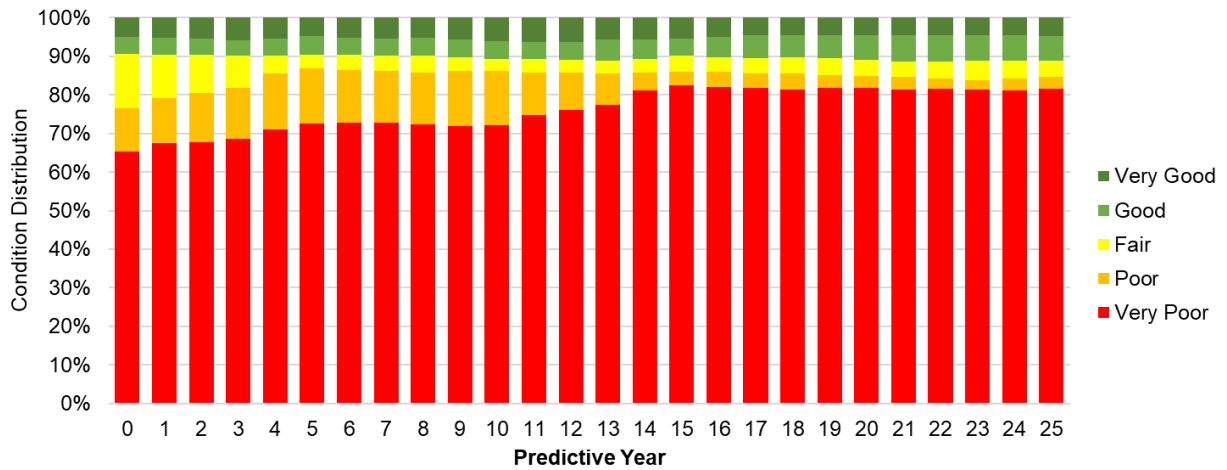


Figure 4-5. Storm System Performance Forecast with Current Funding

4.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

-The anticipated annual budget needed for this scenario was determined to be \$35.57M. This is a funding gap of approximately \$32.9M compared to the current budget allocation. Figure 4-6 shows the condition profile for Storm System assets with infrastructure needs as per lifecycle strategies. Following the lifecycle strategies as discussed in Section 4.3, assets in very poor condition decreases in this forecast scenario, and assets in good to very good condition increases. This scenario shows the biggest increase in overall asset condition compared to the other two forecast scenarios. This further highlights the challenges the City will face if average annual investments in Storm System assets stays similar to the current anticipated allocation.

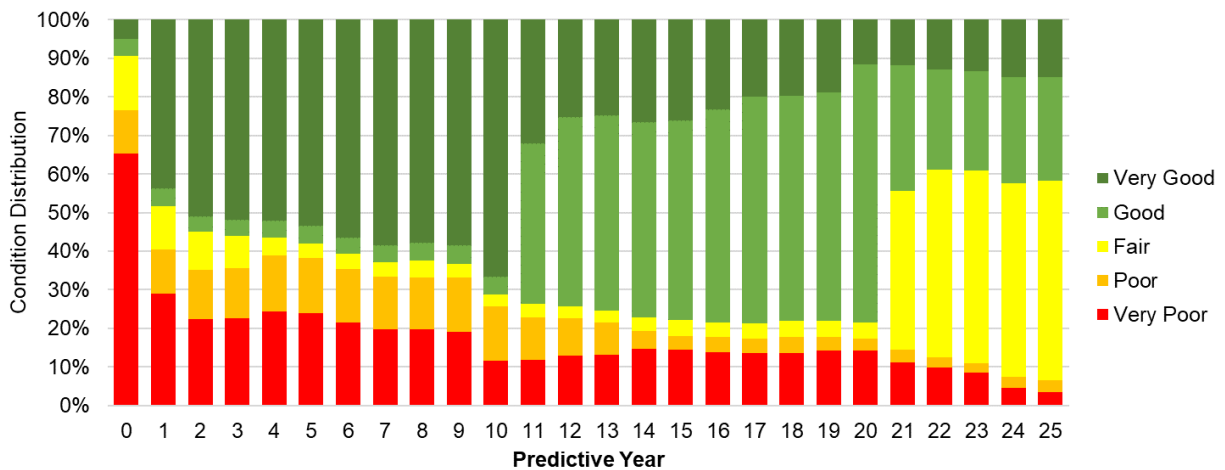


Figure 4-6. Storm System Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

4.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff are able to determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 4-7 and Table 4-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City's 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates that the Storm System is facing an annual gap of \$11.7M to maintain the current levels of service. If the City aims to optimize performance of their assets and adhere to lifecycle strategies, there is a significant annual funding gap of \$32M. These funding gaps underscore the challenge the City faces in adequately funding the necessary renewal, rehabilitation, and replacement activities for Storm System assets.

Figure 4-7 also highlights the substantial backlog in the year 2024 for Storm System assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk to not achieve intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to

significantly higher operational and maintenance costs, affecting the availability of services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

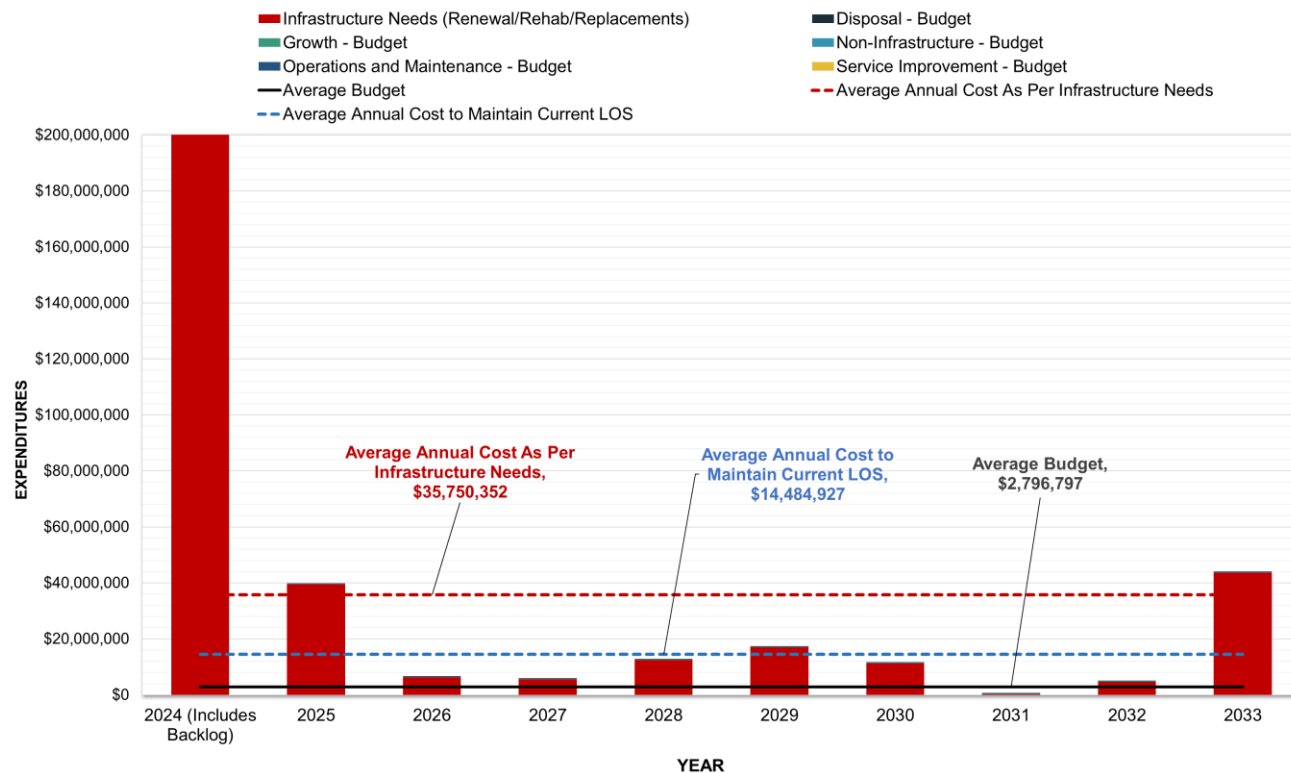


Figure 4-7. Storm System Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

4.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 4-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023-2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations,

prioritize maintenance and replacement projects, and develop strategies to ensure the long-term sustainability and reliability of the Storm System infrastructure network for current and future generations.

Table 4-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Storm System

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$82,750	\$82,750	\$82,750
Non-Infrastructure	\$46,250	\$46,250	\$46,250
Operations & Maintenance	\$262,547	\$262,547	\$262,547
Renewal, Rehabilitation & Replacement	\$2,405,250	\$14,093,380	\$35,358,805
Service Improvement	\$0	\$0	\$0
Annual Average Total Expenditure	\$2,796,797	\$14,484,927	\$35,750,352
Average Annual Funding Gap		\$11,688,130	\$32,953,555
Percentage Increase Required to Address Gap		418%	1,178%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

4.5 Data Confidence and Improvement Plan

Table 4-7 shows the main data sources and overall data confidence for Storm System assets.

Table 4-7. Data Confidence – Storm System

Asset Type	Data Source	Data Confidence
Oil Grit Separators	GIS	A
Storm Culvert	GIS	B
Storm Pond	GIS	B
Storm Sewer	GIS	B

4.5.1 Recommendations for Improvements

Overall the City's information on the Storm system, but there are some opportunities for improvements. Recommendations for the Storm System data include:

- Continue to fill gaps in assessed condition for the storm sewers, where age is currently being used.
- Assess data derived from CCTV data and continue to develop lifecycle strategies based on assessments completed.

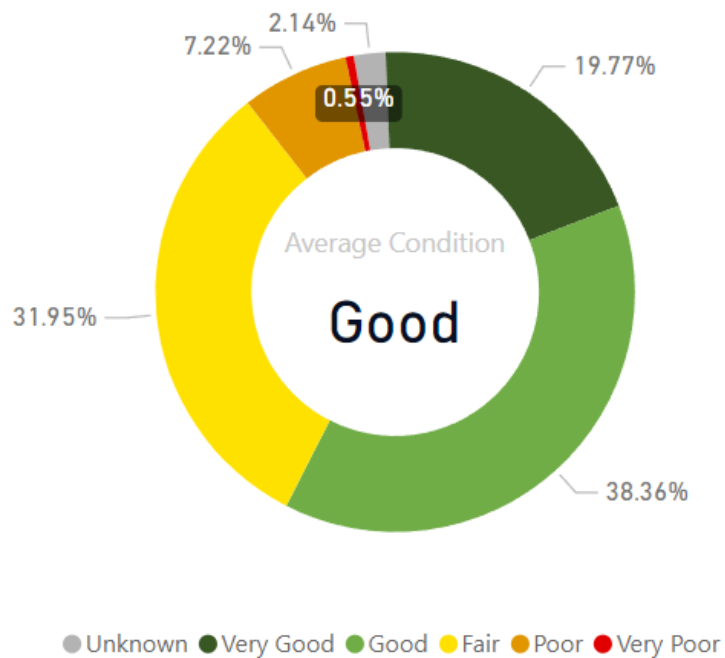


Transportation

Replacement Value

\$549,957,399 M

Overall Average Asset Condition



Quick Facts

Transportation maintains:

- 303 km of roadway & 345 km of sidewalk throughout the City
- Supporting assets including sign posts, street lights and poles, traffic signs and signals

5 Transportation

5.1 State of the Infrastructure

Welland’s Transportation service area is made up of the roads, sidewalks, signs and traffic assets that support the safe conveyance of people and goods throughout the City. It also includes structural assets such as bridges, culverts and canal walls, as well as parking pay & display machines. Table 5-1 below shows the full inventory and estimated replacement cost for this service area.

Table 5-1. Inventory and Current Replacement Value – Transportation

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Bridge and Culvert	11	Each	\$20,226,750
Canal Wall	1,293	M	Unknown
Parking Pay & Display Machines	3	Each	\$30,000
Roadway	303	Km	\$445,329,210
Sidewalk	345	Km	\$58,672,565
Sign Post	7,228	Each	\$722,800
Street Light	6,929	Each	\$3,291,275
Street Pole	3,275	Each	\$8,187,500
Traffic Sign	9,549	Each	\$1,909,800
Traffic Signal	23	Each	\$11,587,500
Total			\$549,957,399

As a result of the nature of the canal walls, a replacement value has not been assessed for this asset. The replacement of this asset is not feasible due to the constructability of the asset. However, they are inspected and rehabilitated as required.

5.1.1 Asset Condition

Overall, transportation assets are in Good Condition.

Conditions were assigned to the condition categories for the Transportation system based on Table 5-2. Condition assessment ratings for roads, bridges and culverts were used to assess condition. Where assessment values were not available, age and estimated service life were used to assign condition.

Table 5-2. Condition Rating – Transportation

Condition	Age/ESL	Roads	Bridges & Culverts	Sidewalks
Source		2023 Roads Needs Study	2023 OSIM Inspections	2023 Staff Assessment
Very Good	>80% life remaining	PCI 100→85	BCI 100→80	=10→8
Good	60–80% life remaining	PCI 85→70	BCI 80→60	=8→6
Fair	40–60% life remaining	PCI 70→55	BCI 60→40	=6→4
Poor	20–40% life remaining	PCI 55→40	BCI 40→20	=4→2
Very Poor	0–20% life remaining	PCI 40→0	BCI 20→0	=2→0
Unknown				

A breakdown of the condition distribution based on asset value is shown in Figure 5-1 and Figure 5-2 below.

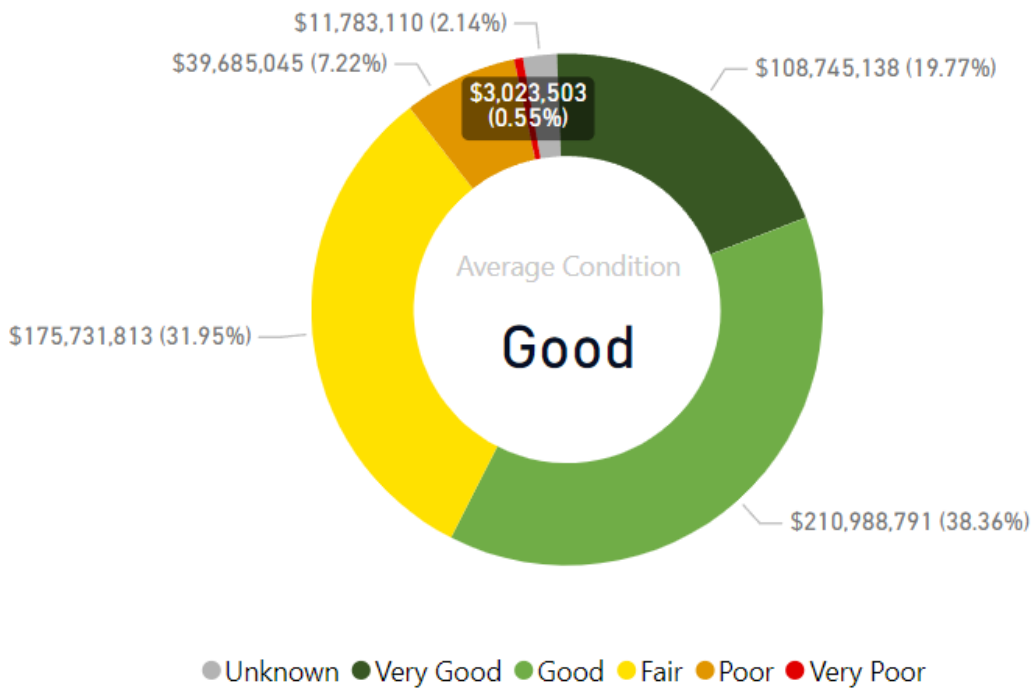


Figure 5-1. Transportation Condition Distribution (By Replacement Value) – Overall

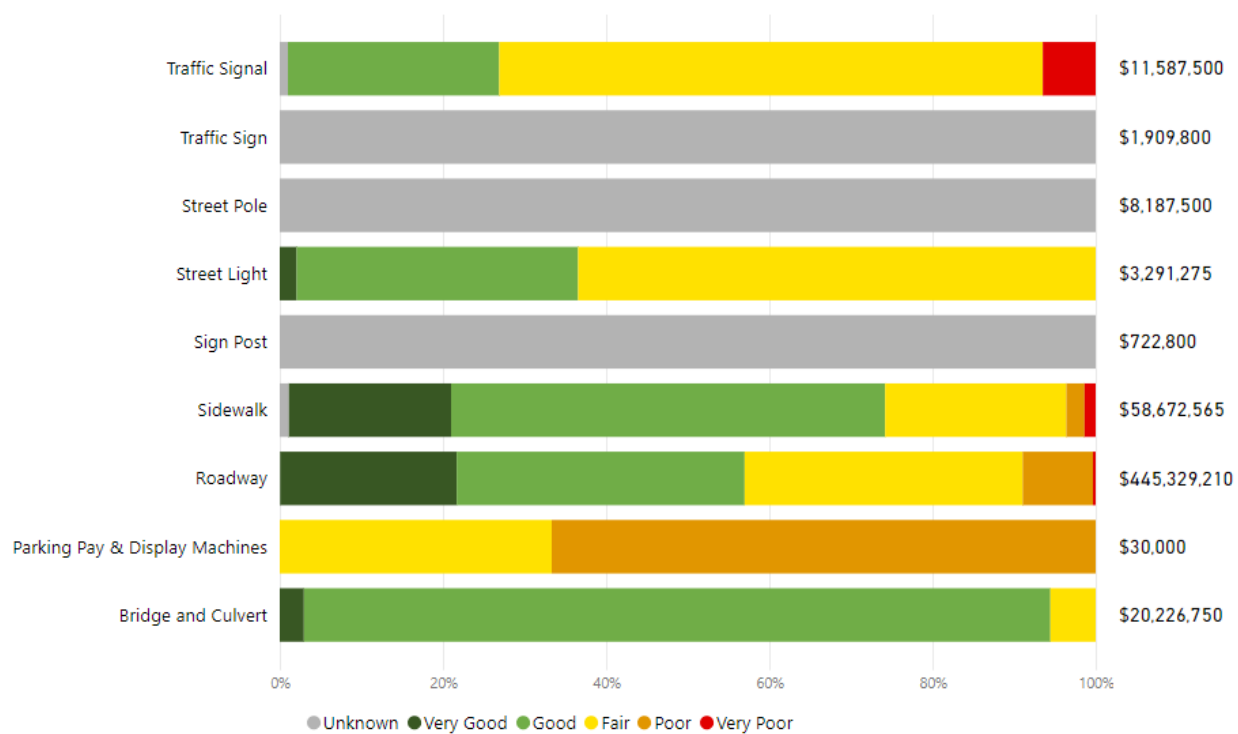


Figure 5-2. Transportation Condition Distribution (By Replacement Value) – Asset Category Breakdown

As these figures demonstrate, the majority of the asset value falls into Good condition or above. However, there is no condition data for traffic signs, street poles, and signposts, as well as for gravel roads. Signs, signposts, and street poles, are replaced as required/identified, typically through operations and maintenance, so their condition has not been evaluated as part of this AMP. These assets are reviewed regularly by operations staff during road patrols for minimum maintenance standards deficiencies and are addressed as needed. These assets infrastructure needs are addressed through operating and maintenance expenditures.

Unpaved roads were not assessed as part of the 2023 roads needs study. For these roads, condition values were derived from the previous roads needs study and the condition was degraded to reflect a current condition.

5.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 5-3. As this figure demonstrates, on average, transportation assets have not passed their ESL.

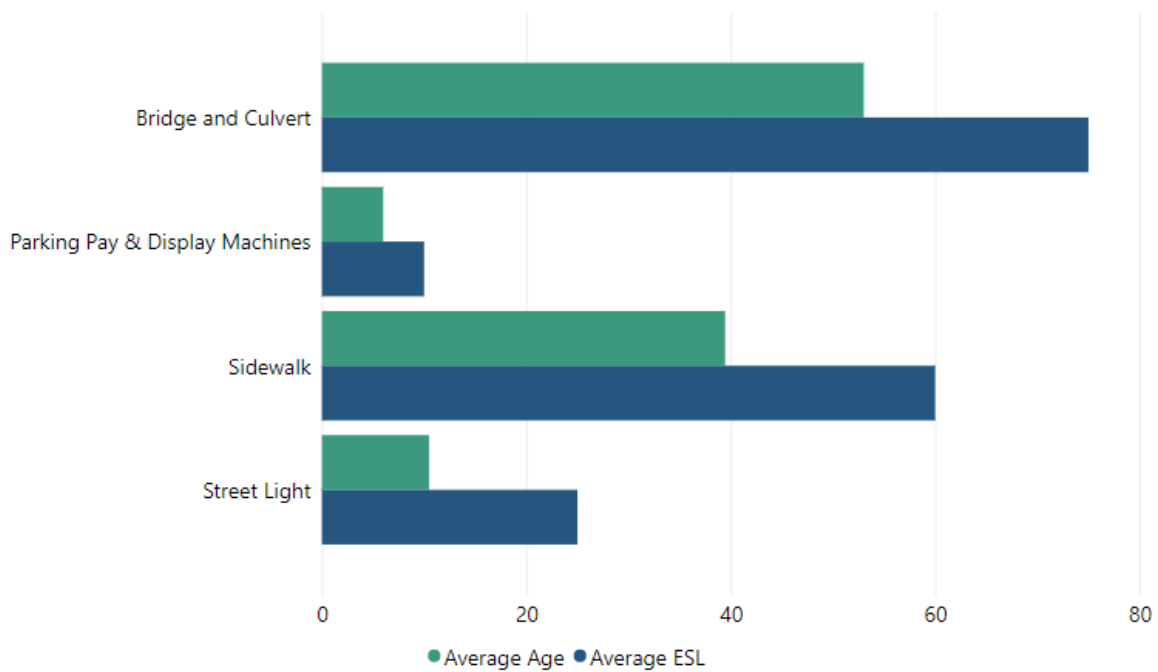


Figure 5-3. Transportation Average Age vs. ESL – Asset Category Breakdown

No age data is available for traffic signals and signs, street poles, sign posts, and roadways. Age is not typically tracked for roads since these assets are continually resurfaced and reconstructed as required based on current condition (Pavement Condition Index) and other factors to determine needs.

5.2 Levels of Service

Transportation assets support many of the objectives outlined for the City’s Strategic Priorities of Economic Growth, Environmental Stewardship, Health and Well-being, and Livability. These assets enable people and goods to move efficiently and safely throughout the community and to connecting region.

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed in Table 5-3 and Table 5-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP along with a financial strategy to achieve the targets.

Table 5-3. Customer/Council Focused Level of Service Requirements – Transportation

Key Service Attribute	Performance Measure	Current Performance (2024)
I can get around the city without restrictions	Description, which may include maps, of the road network in the municipality and its level of connectivity.*	Road Network Service Level Map (Appendix F)
I can get around the city in a reasonable amount of time	Description or images that illustrate the different levels of road class pavement condition.*	Road Network PCI Map (Appendix G)
I can get around the city without restrictions	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).*	All types including heavy transport vehicles, motor vehicles, emergency vehicles, cyclists, and pedestrians
I can get around the city without restrictions	Description or images of the condition of bridges and how this would affect use of the bridges.*	Bridge Network Map (Appendix H)
Services are safe to use	Description or images of the condition of culverts and how this would affect use of the culverts.*	Bridge Network Map (Appendix H)
My City maintains what it owns	Current reinvestment rate	1.37%
My City maintains what it owns	Cost per household	\$719.39

*O.Reg. 588/17 Requirement

Table 5-4. Technical Level of Service – Transportation

Key Service Attribute	Performance Measure	Current Performance (2024)
I can get around the city without restrictions	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality.*	Arterial = 32.26 km Collector = 18.2 km Local = 256.85 km
I can get around the city in a reasonable amount of time	For paved roads in the municipality, the average pavement condition index value.*	74
I can get around the city without restrictions	For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).*	29
I can get around the city without restrictions	Percentage of bridges in the municipality with loading or dimensional restrictions.*	0
Services are safe to use	For bridges in the municipality, the average bridge condition index value.*	66
Services are safe to use	For structural culverts in the municipality, the average bridge condition index value.*	80
I have quality services	Percentage of total replacement cost of assets in good to very good condition	54.57%
My City maintains what it owns	Percent of roads maintained in conformance with defined lifecycle strategies	100%
I have quality services	Pavement condition by road class	Arterial = 74 Collector = 79 Local = 73
I have quality services	Km of roads have PCI < 60	36.22 km PCI under 60
My City maintains what it owns	Percent of bridges and culverts maintained in conformance with defined lifecycle strategies	72.73%
I have quality services	Percent of sidewalks at least 1.5m wide	24.30%

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Percent of traffic signals maintained in conformance with defined lifecycle strategies	100%
My City maintains what it owns	Percent of streetlight maintained in conformance with defined lifecycle strategies	100%
My City maintains what it owns	Percent of sidewalks maintained in conformance with defined lifecycle strategies	88.14%
Services are safe to use	Percent of sidewalks that meet accessibility standards	N/A
I have quality services	Average condition of sidewalks	Good condition

*O.Reg. 588/17 Requirement

5.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City strives to coordinate rehabilitation and replacement projects across asset groups where opportunities exist. This may result in asset strategies being delayed or advanced to accommodate the overall benefit of coordinated work.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

5.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for the Transportation System are outlined in Table 5-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 5-115.4. Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage the Transportation assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2.

Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 5-5. Lifecycle Management Activities – Transportation

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> Overweight/load permit process for demand management 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> Half load season on rural roads to manage roadway deterioration 	<ul style="list-style-type: none"> Seasonal
<ul style="list-style-type: none"> Pavement condition assessments, Roads Need Study 	<ul style="list-style-type: none"> 5 years
<ul style="list-style-type: none"> Ditch inspection 	
<ul style="list-style-type: none"> Scheduled inspections and patrols 	<ul style="list-style-type: none"> As defined by Minimum Maintenance Standards (MMS)
<ul style="list-style-type: none"> OSIM inspections (Bridge and Large Culvert) 	<ul style="list-style-type: none"> Bi-Annual, as defined by provincial regulations
<ul style="list-style-type: none"> Inspection of Sidewalk 	<ul style="list-style-type: none"> Annual as per MMS
<ul style="list-style-type: none"> Transportation Master Plan 	
Operations & Maintenance Activities	
<ul style="list-style-type: none"> Pothole repair 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> Street sweeping 	<ul style="list-style-type: none"> Ongoing
<ul style="list-style-type: none"> Salting and snow removal 	<ul style="list-style-type: none"> Seasonal
<ul style="list-style-type: none"> Pavement marking 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Planned routine maintenance 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Sidewalk grinding and minor cold patch repairs 	<ul style="list-style-type: none"> Annual

Asset Management Practices / Planned Actions	Frequency
Renewal/Replacement Activities	
<ul style="list-style-type: none"> Roads: Crack sealing, resurfacing (urban and semi-urban single lift, rural-expanded asphalt, urban and semi-urban double lift) 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Roads: Surface grinding and full depth asphalt removal/repaving 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Bridges: Structural reinforcement inspection 	<ul style="list-style-type: none"> Bi-annual
<ul style="list-style-type: none"> Replacement/reconstruction of roads and bridges 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Replace sidewalk panel 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Integrate replacement of all ROW assets 	<ul style="list-style-type: none"> As identified
Disposal Activities	
<ul style="list-style-type: none"> Dispose of assets in line with replacements 	<ul style="list-style-type: none"> As required
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> New assets to accommodate growth 	<ul style="list-style-type: none"> As needed
<ul style="list-style-type: none"> New assets as part of service improvement 	<ul style="list-style-type: none"> As identified in studies

5.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 2.3 to plan work and determine future expenditure needs for Transportation assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 5.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588.17.

5.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for Transportation assets was determined to be approximately \$5.9M. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution for Transportation assets to maintain current LOS can be seen below in Figure 5-4. The condition distribution shows that although assets in very poor condition increases slightly, and

assets in very good condition increases over the 25-year forecast period. To maintain the current LOS (maintain backlog), Transportation is currently not facing an infrastructure gap.

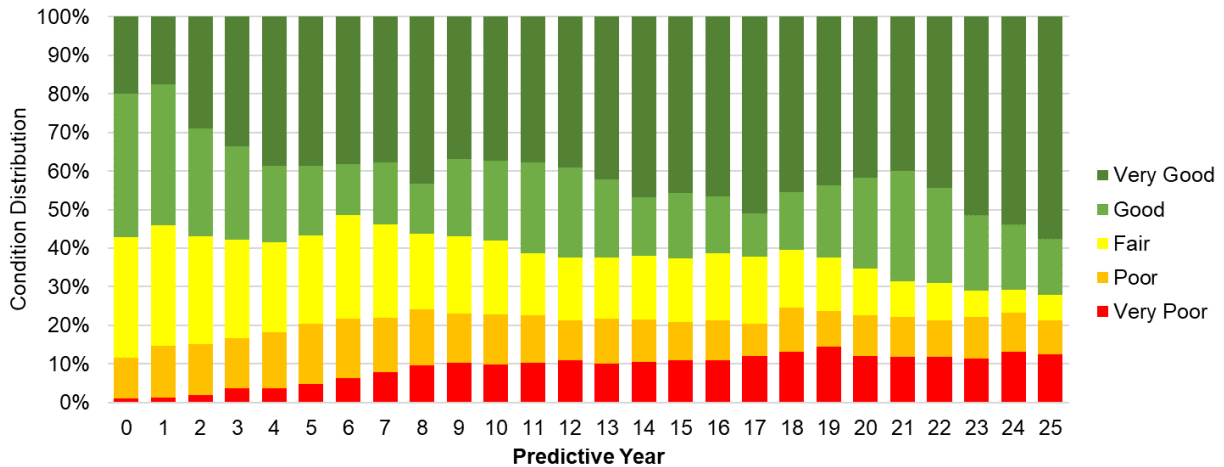


Figure 5-4. Transportation Performance Forecast to Maintain Current Levels of Service

5.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Transportation assets is approximately \$11.4M. Figure 5-5 shows the condition distribution for Transportation assets with current funding. Although Transportation is currently well-funded, the condition distribution shows that with current funding levels assets in very poor condition increases to just over 20% over the 25-year forecast period.

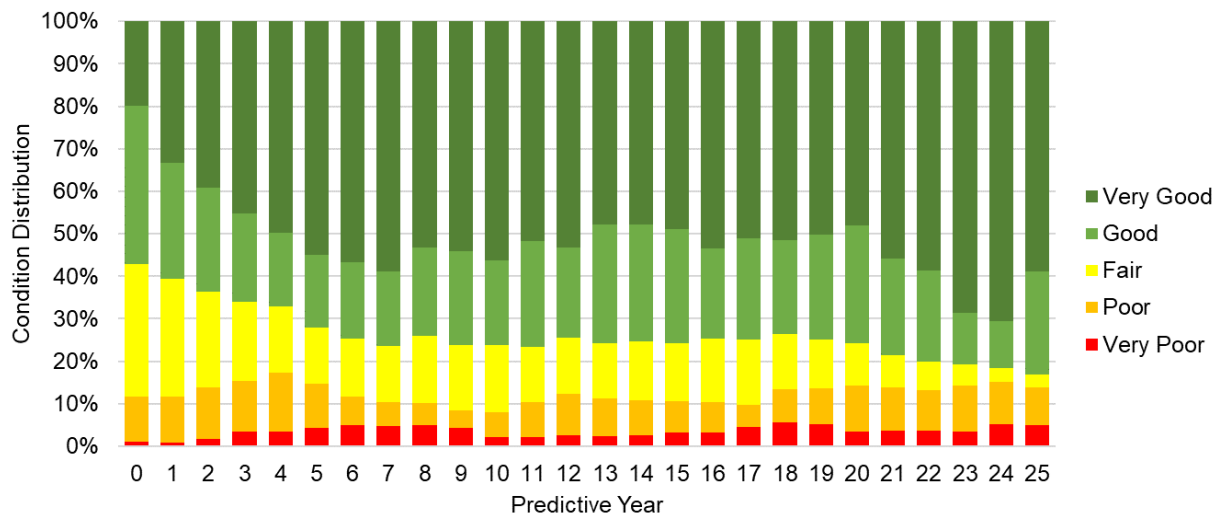


Figure 5-5. Transportation Performance Forecast with Current Funding

5.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

The anticipated annual budget needed for this scenario was determined to be \$10.6M. There is no funding gap compared to the current budget allocation. The Transportation assets performance forecast with infrastructure needs as per lifecycle strategies is shown below in Figure 5-6. In this forecast condition distribution, assets in fair condition decrease and assets in good to very good condition increase. Following the infrastructure needs as per the lifecycle strategies discussed in Section 5.3, the overall condition of Transportation assets increases. This scenario forecast shows the biggest improvement in asset condition over the 25-year period.

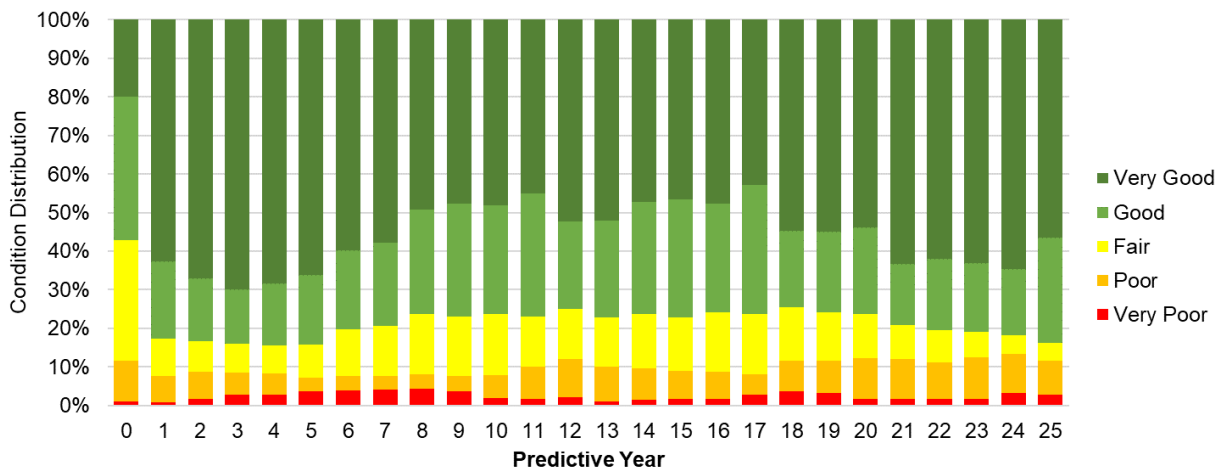


Figure 5-6. Transportation Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

5.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff are able to determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 5-7 and Table 5-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City's 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates that Transportation is facing no gap to maintain the current levels of service or to optimize performance of their assets and adhere to lifecycle strategies.

Figure 5-7 highlights the substantial backlog in the year 2024 for Transportation assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk to not achieve intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to significantly higher operational and maintenance costs, affecting the availability of services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

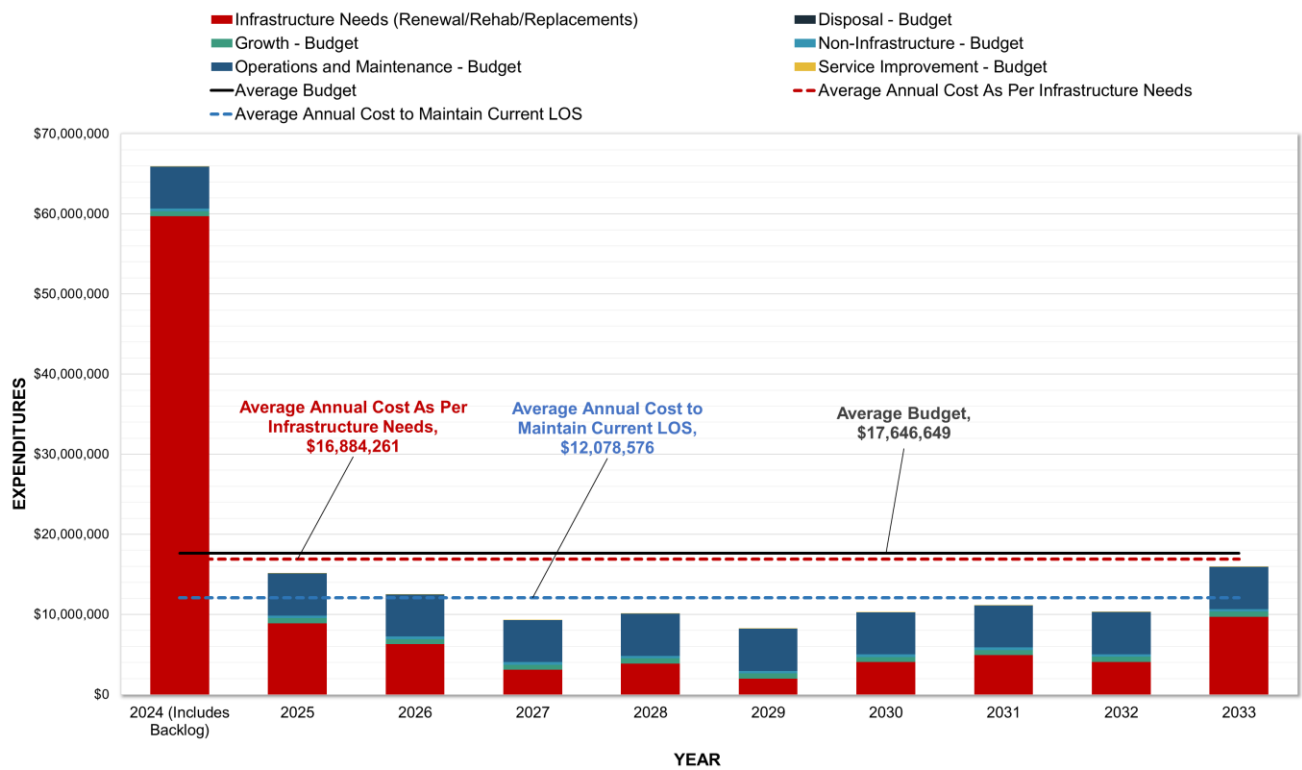


Figure 5-7. Transportation Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

5.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 5-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023-2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies to ensure the long-term sustainability and reliability of the Transportation infrastructure network for current and future generations.

Table 5-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap –
Transportation

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$632,113	\$632,113	\$632,113
Non-Infrastructure	\$327,000	\$327,000	\$327,000
Operations & Maintenance	\$5,264,599	\$5,264,599	\$5,264,599
Renewal, Rehabilitation & Replacement	\$11,419,937	\$5,851,864	\$10,657,549
Service Improvement	\$3,000	\$3,000	\$3,000
Annual Average Total Expenditure	\$17,646,649	\$12,078,576	\$16,884,261
Average Annual Funding Gap		No Gap	No Gap
Percentage Increase Required to Address Gap		No Gap	No Gap

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City's needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

5.5 Data Confidence and Improvement Plan

Table 5-7 shows the main data sources and overall data confidence for Transportation assets.

Table 5-7. Data Confidence – Transportation

Asset Type	Data Source	Data Confidence
Bridges and Culverts	GIS; Bridge Condition Inspections (OSIM)	A
Canal Wall	GIS; Canal Assessment	B
Roadway	GIS; Roads Needs Study	A
Sidewalk	GIS; Staff Condition Assessment	A
Streetlight	GIS	A
Sign Post, Street Pole, Traffic Sign	GIS	C
Traffic Signal	GIS; Condition information provided by the Region	A

5.5.1 Recommendations for Improvements

As roads are highly regulated to assess assets within the right of way, and bridges and culverts, the data for Transportation assets is highly reliable. Opportunities for improvement include:

Signpost, Street Pole, and Traffic Sign

- Condition and installation dates of this asset type is not likely to change the strategies in place for the City on how these assets are managed. But it is good practice to continue to keep the asset register that can be found in the GIS up-to-date and moving forward to collect information like install date.



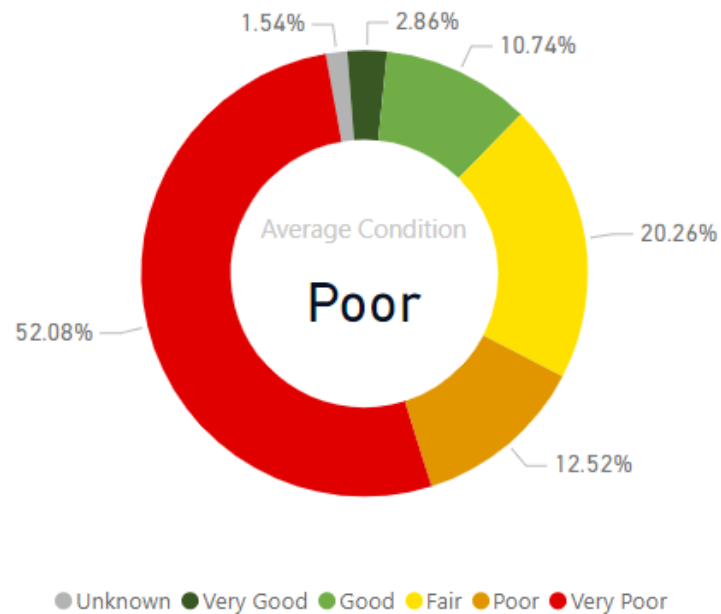
Central Fleet



Replacement Value

\$19,811,200 M

Overall Average Asset Condition



Quick Facts

Central Fleet has:

- 400 pieces of Equipment & 49 pieces of Heavy Equipment supporting various service delivery groups throughout the City
- 76 Fleet vehicles maintained daily to ensure high quality services are delivered throughout the community

6 Central Fleet

6.1 State of the Infrastructure

Welland’s central fleet service area is made up of the vehicles, boats and equipment used to support City services. The Central Fleet assets assist in delivering essential services, maintaining infrastructure, and supporting municipal operations. All fleet and equipment for the City is included in this chapter, with the exception of fire fleet and equipment which has been included in Section 8. Table 6-1 below shows the full inventory and estimated replacement cost for this system.

Table 6-1. Inventory and Current Replacement Value – Central Fleet

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Boat	31	Each	\$510,000
Equipment	400	Each	\$5,538,800
Fleet	76	Each	\$4,496,400
Heavy Equipment	49	Each	\$9,266,000
Total			\$19,811,200

6.1.1 Asset Condition

Overall, central fleet assets are in Poor Condition.

Conditions were assigned to Central Fleet assets based on age and estimated service life. The condition rating scale is shown in Table 6-2.

Table 6-2. Condition Rating – Central Fleet

Condition	Age/ESL
Very Good	>80% life remaining
Good	60-80% life remaining
Fair	40-60% life remaining
Poor	20-40% life remaining
Very Poor	0-20% life remaining
Unknown	

A breakdown of the condition distribution based on asset value is shown in Figure 6-1 and Figure 6-2 below. Condition of Central Fleet assets is based on age, not the actual condition of the asset. As these figures demonstrate, the majority of the asset value falls at or below Fair condition. Although there are many assets in poor to very poor condition, assets in Central Fleet are inspected regularly to ensure that they are in safe working condition.

Approximately 40% of fleet assets are beyond their estimated service life, which is contributing the large portion of assets with Very Poor condition. Timely replacement of fleet assets balance safety, efficiency, costs and environmental impact, ultimately benefiting the organization, as well as the community. These assets support all levels of the City to provide services to the residents.

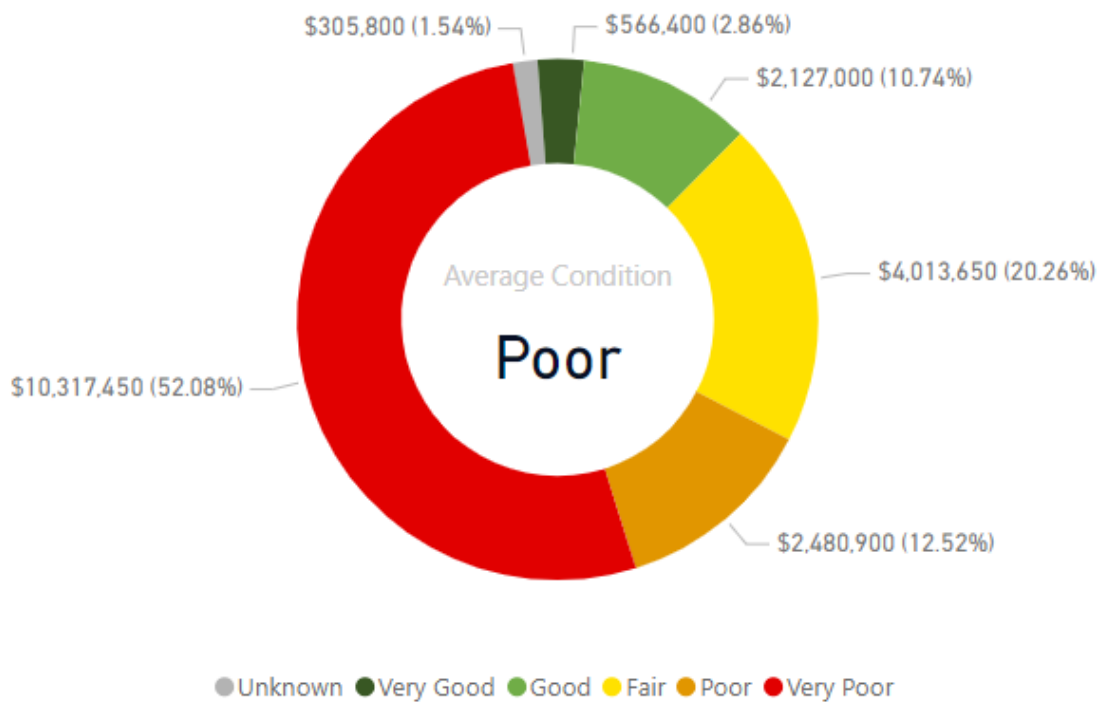


Figure 6-1. Central Fleet Condition Distribution (By Replacement Value) – Overall

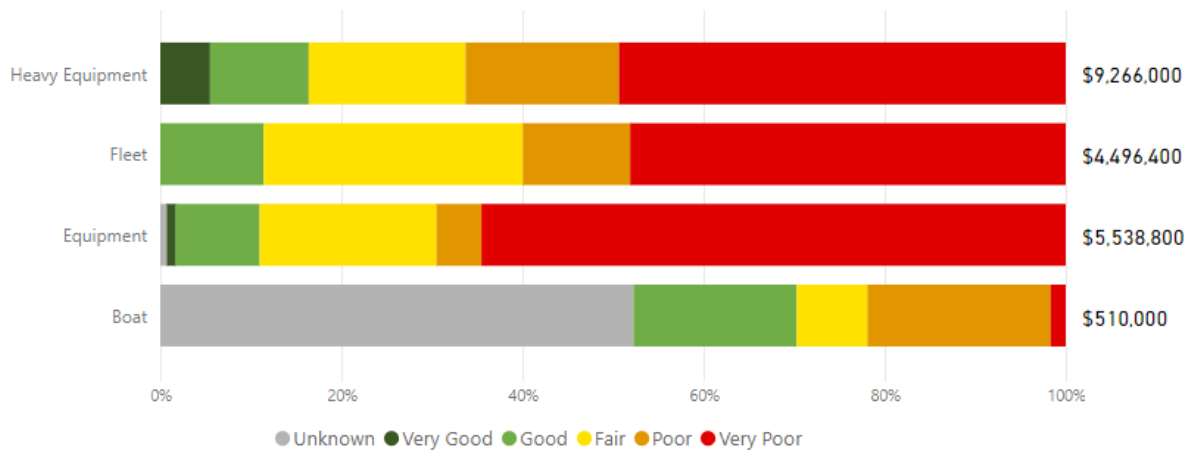


Figure 6-2. Central Fleet Condition Distribution (By Replacement Value) – Asset Category Breakdown

Approximately half of the boats have unknown install dates, so the condition of these assets is unknown. It is recommended the City fill this minor gap in the asset data. Heavy Equipment, Fleet and Equipment all have significant portions of the asset category in very poor condition.

6.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 6-3. As this figure demonstrates, on average, equipment assets have surpassed their ESL, while the fleet, boats and heavy equipment are still within their life expectancy.

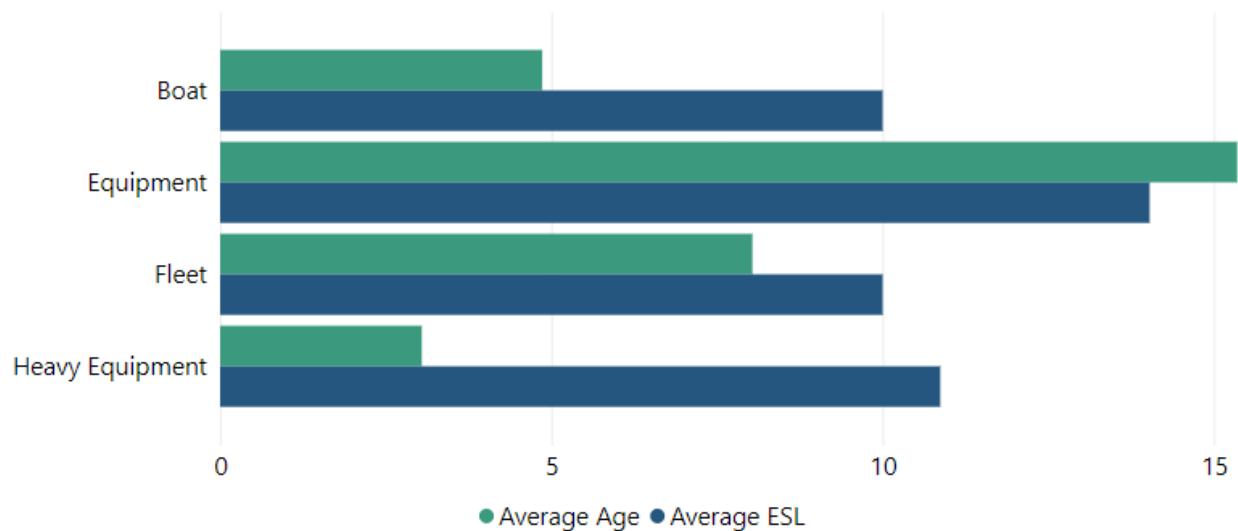


Figure 6-3. Central Fleet Average Age vs. ESL – Asset Category Breakdown

6.2 Levels of Service

The assets under Central Fleet play a crucial role in delivering essential services, maintaining infrastructure, and supporting municipal operations.

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed in Table 6-3 and Table 6-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.



Table 6-3. Community Level of Service – Central Fleet

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Current reinvestment rate	7.44%
My City maintains what it owns	Cost per household	\$149.17

Table 6-4. Technical Level of Service – Central Fleet

Key Service Attribute	Performance Measure	Current Performance (2024)
I have quality services	Percentage of total replacement cost of assets in good to very good condition	13.6%
My City maintains what it owns	Percent of fleet vehicles in conformance with lifecycle strategy	60.25%
My City is considerate of the environment	Number of public charging stations	2

6.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

6.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for the Central Fleet are outlined in Table 6-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 6.4.

Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Central Fleet assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 6-5. Lifecycle Management Activities – Central Fleet

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> Ministry of Transportation inspections 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Fuel management 	<ul style="list-style-type: none"> Monthly
Operations & Maintenance Activities	
<ul style="list-style-type: none"> Preventative maintenance 	<ul style="list-style-type: none"> As scheduled
<ul style="list-style-type: none"> Reactive maintenance (damage, accidents, breakdowns, etc.) 	<ul style="list-style-type: none"> As needed
<ul style="list-style-type: none"> Spraying of vehicles 	<ul style="list-style-type: none"> Annual
<ul style="list-style-type: none"> Cleaning 	<ul style="list-style-type: none"> Daily
Renewal/Replacement Activities	
<ul style="list-style-type: none"> Vehicle refurbishments 	<ul style="list-style-type: none"> As needed
<ul style="list-style-type: none"> Replacement at end of life 	<ul style="list-style-type: none"> As required
Disposal Activities	
<ul style="list-style-type: none"> Keep vehicle for spare parts (small equipment only) 	<ul style="list-style-type: none"> Opportunistically
<ul style="list-style-type: none"> Sell/Auction 	<ul style="list-style-type: none"> Opportunistically
<ul style="list-style-type: none"> Dispose of asset in environmentally friendly manner 	<ul style="list-style-type: none"> Opportunistically
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> Vehicle/Equipment Upgrade 	<ul style="list-style-type: none"> As identified
<ul style="list-style-type: none"> New Vehicles & Technology 	<ul style="list-style-type: none"> As identified

6.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 6.3 to plan work and determine future expenditure needs for Central Fleet assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 6.4.4 which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588.17.

6.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for Central Fleet assets was determined to be approximately \$1M. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution can be seen below in Figure 6-4. Central Fleet assets current performance currently has a large portion of assets in very poor condition. Currently, the City is not facing a gap to maintain

current LOS for Central Fleet assets, although under this scenario the amount of assets in very poor condition increases by the end of the scenario, and the overall condition of the assets does not improve.

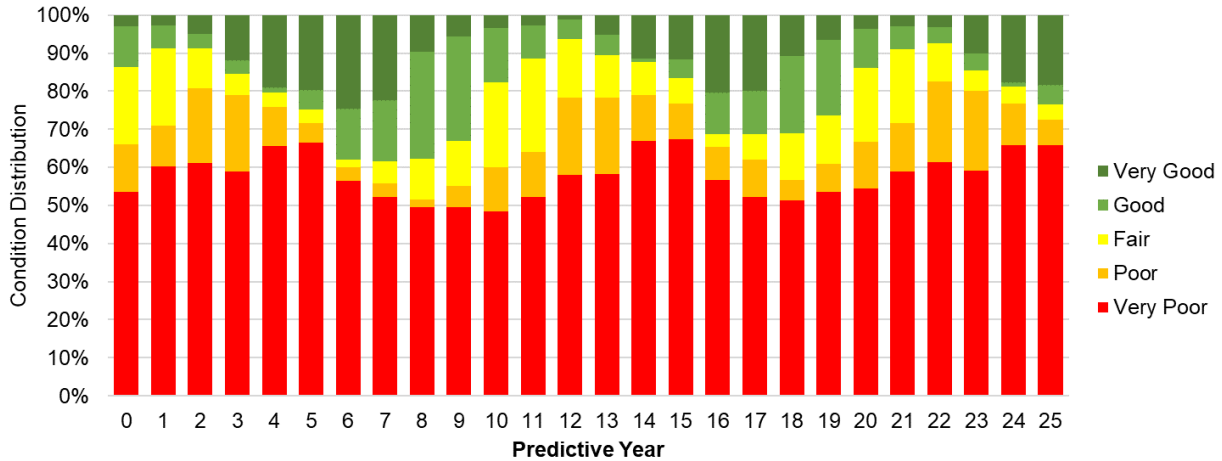


Figure 6-4. Central Fleet Performance Forecast to Maintain Current Levels of Service

6.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Central Fleet assets is approximately \$1.4M. Figure 6-5 shows the condition distribution for Central Fleet assets with current anticipated funding. The condition distribution shows that with current funding levels overall asset condition increases slightly over the 25-year forecast period, but there is still a large portion of assets in poor to very poor condition.

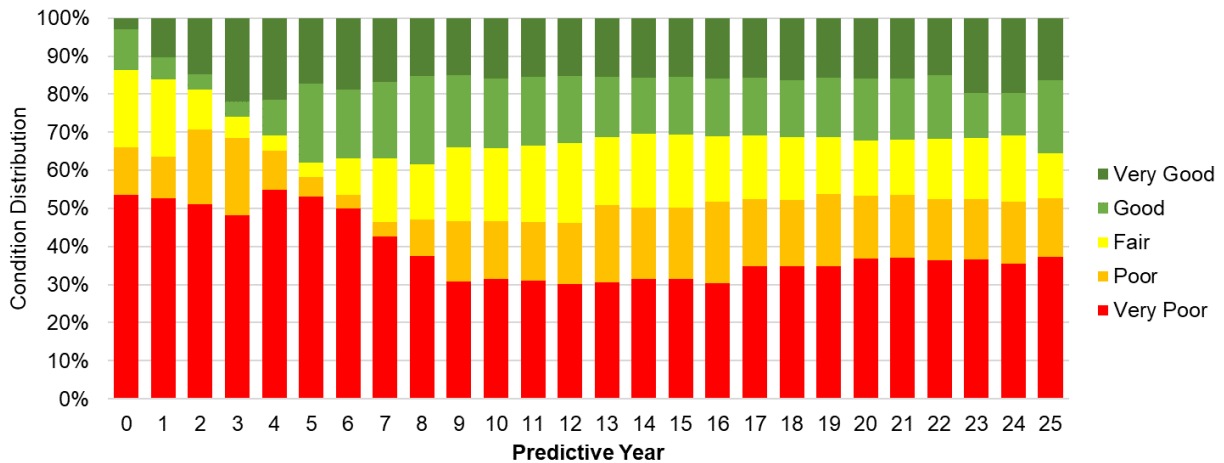


Figure 6-5. Central Fleet Performance Forecast with Current Funding

6.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

-The anticipated annual budget needed for this scenario was determined to be \$1.9M. There is an anticipated funding gap of \$461,000 compared to the current budget allocation. Central Fleet condition distribution for the forecast period with infrastructure needs as per lifecycle strategies is shown below in Figure 6-6. In this forecast condition distribution, assets in very poor to poor condition decrease. Following the infrastructure needs as per the lifecycle strategies discussed in Section 6.3, the overall condition of assets in Central Fleet increases. This scenario forecast shows the biggest improvement in asset condition over the 25-year forecast period. This further highlights the challenges the City may face in keeping up with infrastructure needs with the current anticipated annual investments.

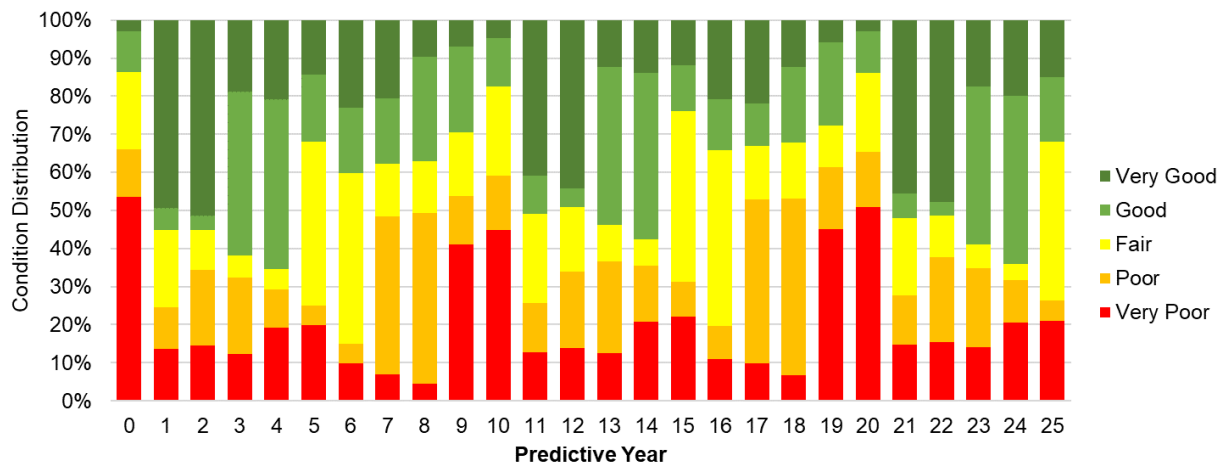


Figure 6-6. Central Fleet Performance Forecast with Infrastructure Needs as per Lifecycle Strategy

6.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff are able to determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 6-7 and Table 6-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City’s 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates that Central Fleet is facing no gap to maintain the current levels of service. If the City aims to optimize performance of their assets and adhere to lifecycle strategies, there is an annual funding gap of \$461,000. This funding gap underscores the challenge the City faces in adequately funding the necessary renewal, rehabilitation, and replacement activities for Central Fleet assets.

Figure 6-7 also highlights the substantial backlog in the year 2024 for Central Fleet assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk in achieving intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to significantly higher operational and maintenance costs, affecting the availability of

services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

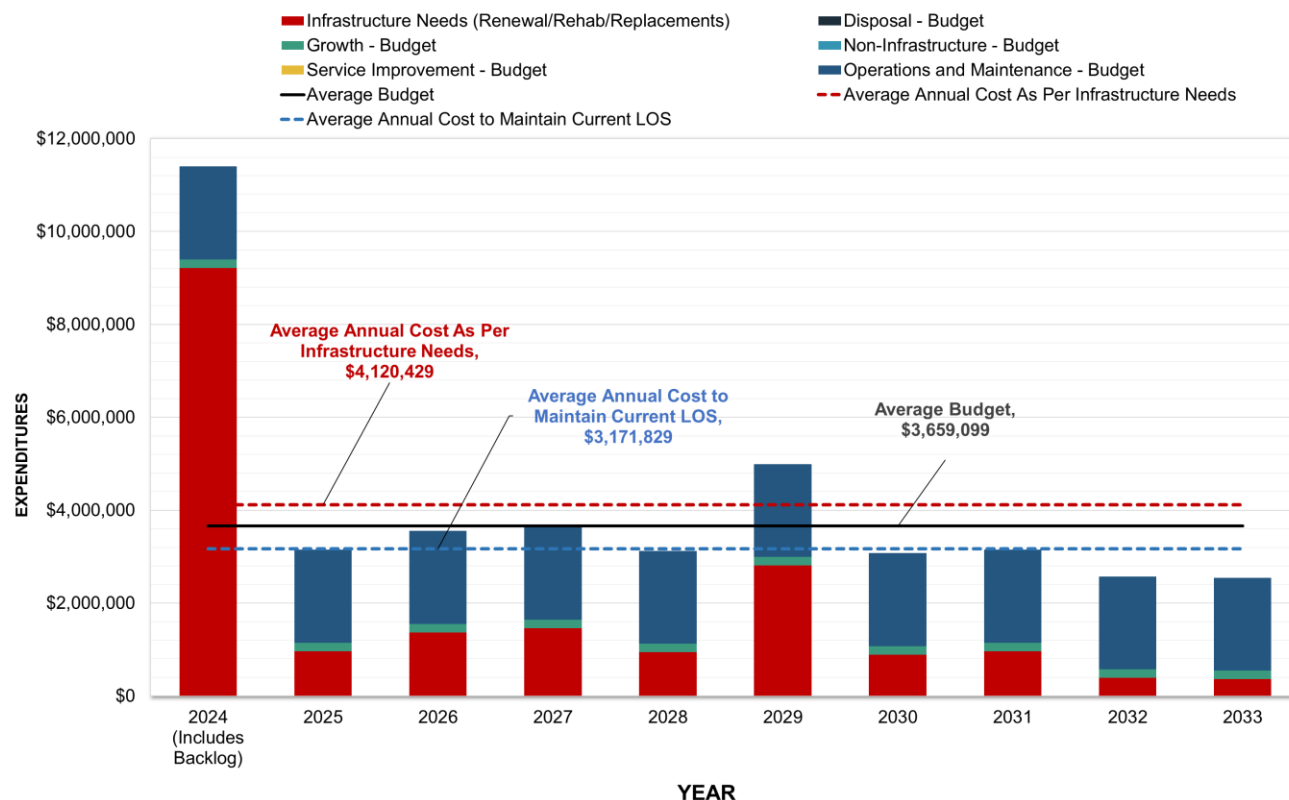


Figure 6-7. Central Fleet Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

6.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 6-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023-2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies to ensure

the long-term sustainability and reliability of the Central Fleet for current and future generations.

Table 6-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Central Fleet

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$184,450	\$184,450	\$184,450
Non-Infrastructure	\$0	\$0	\$0
Operations & Maintenance	\$2,000,799	\$2,000,799	\$2,000,799
Renewal, Rehabilitation & Replacement	\$1,473,850	\$986,580	\$1,935,180
Service Improvement	\$0	\$0	\$0
Annual Average Total Expenditure	\$3,659,099	\$3,171,829	\$4,120,429
Average Annual Funding Gap		No Gap	\$461,330
Percentage Increase Required to Address Gap		No Gap	13%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

6.5 Data Confidence and Improvement Plan

The main data sources and overall data confidence for Central Fleet assets is in Table 6-7.

Table 6-7. Data Confidence – Central Fleet

Asset Type	Data Source	Data Confidence
All	Spreadsheet	A

6.5.1 Recommendations for Improvements

Opportunities for improvement for Central Fleet Data:

- Document source of information for asset register
- Continue to maintain asset register
- Fill minor gaps in data

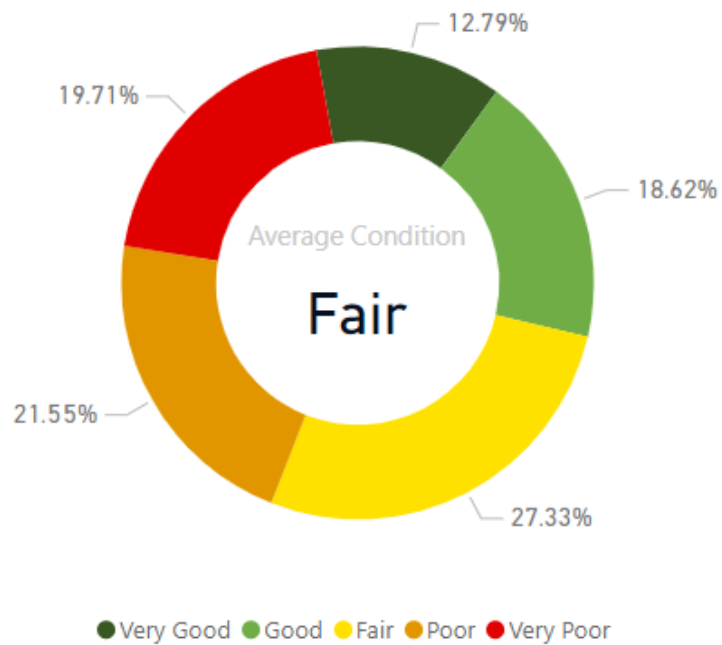


Facilities

Replacement Value

\$268,102,907 M

Overall Average Asset Condition



Quick Facts

Facilities asset category maintains:

- 55 different Facilities support various service delivery groups in the City



7 Facilities

7.1 State of the Infrastructure

Welland's facilities is made up of 55 buildings supporting Community Services, Corporate Services and Infrastructure Services. Table 7-1 below shows the full inventory and estimated replacement cost for this service area.

Table 7-1. Inventory and Current Replacement Value – Facilities

Service Group	Facility	FCI	2023 Estimated Replacement Value
Community Services	Burgar Park: Change house & Canteen	43.4%	\$1,327,850
	Burgar Park: Gatehouse	32.9%	\$45,000
	Canal Terrace	4.6%	\$756,000
	Chippawa Park: Community Centre	3.9%	\$2,081,250
	Chippawa Park: Equipment Storage & Lunch Room	11.6%	\$1,120,000
	Chippawa Park: Lawn Bowling Clubhouse	17.9%	\$572,250
	Chippawa Park: Lawn Bowling Storage	16.2%	\$23,750
	Chippawa Park: Pavilion 1	3.1%	\$207,000
	Chippawa Park: Pavilion 2	6.5%	\$207,000
	Community Sports Complex – Welland Baseball Stadium	21.0%	\$10,447,500
	Cook Mills Park: Community Hall	57.9%	\$927,000
	Cook Mills Park: Storage and Change Rooms	75.0%	\$480,000
	Doans Ridge Cemetery: Garage/Storage	19.9%	\$57,000
	Electrical Building 1	52.2%	\$480,000
	Electrical Building 2	53.5%	\$480,000
	Glenwood Park: Storage Building	1.8%	\$652,500

Service Group	Facility	FCI	2023 Estimated Replacement Value
Community Services	Glenwood Park: Washroom and Maintenance/Storage Building	4.0%	\$250,000
	Hooker Tennis Club and Community Hall Building	19.5%	\$2,592,000
	Jack Ballantyne Memorial Arena	29.0%	\$14,080,000
	Main City Arena	9.3%	\$28,996,550
	Maple Park: Change house and Pool Building	28.7%	\$2,673,000
	Memorial Park: Fountain Pumphouse	42.3%	\$138,000
	Memorial Park: Mechanical and Filtration Building	6.0%	\$387,750
	Memorial Park: Pavilion 1	67.8%	\$483,000
	Memorial Park: Pavilion 2	22.2%	\$243,000
	Memorial Park: Pavilion 3	0%	\$97,500
	Memorial Park: Pavilion 4	0%	\$97,500
	Memorial Park: Pavilion 5	1.0%	\$97,500
	Plymouth Park: Change house	30.0%	\$2,870,000
	Plymouth Park: Gatehouse	46.1%	\$378,000
	Rosie Smith: Change house and Pool	16.3%	\$2,460,500
	South Course Timing Tower	8.9%	\$880,000
	St George Park: Pavilion 1	86.6%	\$189,000
	St George Park: Pavilion 2	95.2%	\$172,500
	WCWC Pavilion 1	4.6%	\$86,250
	WCWC Pavilion 2	6.3%	\$86,250
	WCWC Pavilion 3	5.2%	\$86,250
	Welland Boat Rentals – Container Facilities (2)	13.5%	\$1,360,000
	Welland Community Boathouse	7.0%	\$1,800,000
Welland Community Wellness Complex	8.4%	\$21,900,000	

Service Group	Facility	FCI	2023 Estimated Replacement Value
Community Services	WIFC Main Building	2.1%	\$7,242,000
	WIFC Timing Tower	1.4%	\$6,400,000
	Woodlawn Cemetery: Garage/Storage/Washroom	14.4%	\$238,500
	Youngs Sportsplex	5.4%	\$46,116,000
Corporate Services	Civic Square, City Hall	3.4%	\$39,187,500
	Courthouse	5.5%	\$82,875,000
	Market Building (New)	21.0%	\$2,447,500
	Market Building (Original/Heritage)	14.1%	\$3,957,250
	Welland Museum	15.5%	\$9,832,500
Infrastructure Services	330 Prince Charles Drive Pumping Station	0.8%	\$225,000
	Commercial St Pump Station	11.1%	\$205,000
	Cover All Storage	19.4%	\$480,000
	Fitch St Pump Station	1.3%	\$320,000
	Municipal Service Centre – PW Building	10.2%	\$34,298,100
	Doans Ridge Cemetery: Fill Station Building	18.5%	\$100,000
Total			\$336,193,500

Table 7-1 above summarizes the condition and replacement value of the City's facilities based on the 2022 building condition assessments Facility Condition Index (FCI) and Cost to Build (Yardsticks). It should be noted that the conditions provided in the valuation table are evaluated based on the FCI of the facility which is calculated based on aggregating the total cost of any outstanding needs in relation to the total replacement value of the facility, and FCI ranges fall into the categories below in Table 7-2.

Table 7-2. FCI Rating – Facilities

Condition	FCI Range
Good	0-5%
Fair	5-10%
Poor	10-20%
Very Poor	>20%

This information has been provided to have a complete view of the overall facility, and the following sections analyze the facilities components.

7.1.1 Asset Condition

Overall, Welland’s facilities are in Fair Condition.

The building condition assessment provided the City with the overall facility information and replacement values, but also assessed the individual components of each facility, which the following information is based upon. Conditions were assigned to Facilities in the City of Welland based on age and an assessed estimated remaining service life. The condition rating scale is shown in Table 7-3.

Table 7-3. Condition Rating – Facilities

Condition	Age/ESL
Very Good	>80% life remaining
Good	60-80% life remaining
Fair	40-60% life remaining
Poor	20-40% life remaining
Very Poor	0-20% life remaining
Unknown	

A breakdown of the condition distribution based on asset value is shown in Figure 7-1 and Figure 7-2 below. As these figures demonstrate, the majority of the asset value falls at or below Fair condition.

The City has continued to update asset information and condition data through expert studies and documents, which provides the basis for the analysis of the needs for this plan. Condition for facilities assets was collected through building condition assessments. This information provided a full inventory of components and will allow the City to plan for the needs of the facilities more comprehensively. It

is recommended that this inventory continue to be maintained and updated as work and projects are carried out based on the recommendations.

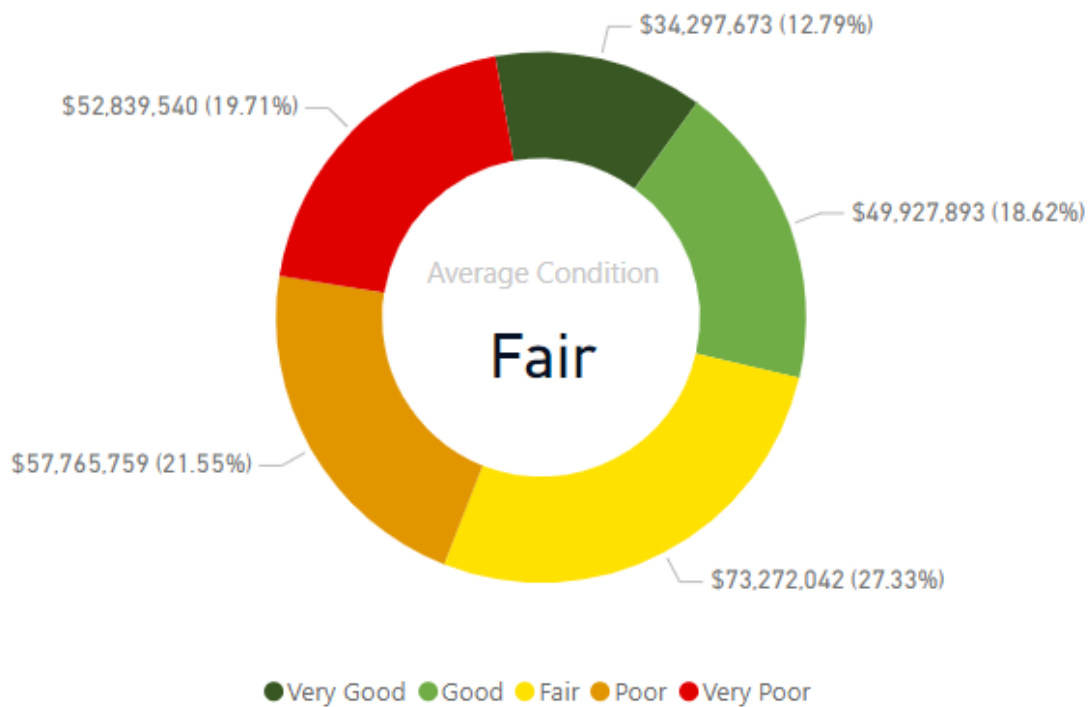


Figure 7-1. Facility Condition Distribution (By Replacement Value) – Overall

Approximately 69% of the City's facility components are in fair to very poor condition. Facilities delivers a wide range of services to the public, as well as corporate facilities to support corporate functions and provide essential workspaces for City staff to carry out their duties efficiently and effectively.

If the City facilities continue to deteriorate without investments to bring them to good condition, the City could increase their risks of:

- Service Disruptions because of infrastructure failures.
- Endangering public safety.
- Decreased Quality of Life for those that have come to rely on the services provided by the City's facility assets.
- Financial Strain as emergency/reactive repairs are more costly and unplanned.

Figure 7-2 shows a further breakdown of the condition the facility assets based on replacement value. The City must prioritize infrastructure maintenance and renewals to ensure public safety, quality of life, and sustainable growth. The consequences of neglecting facilities can be far-reaching and detrimental to the community.

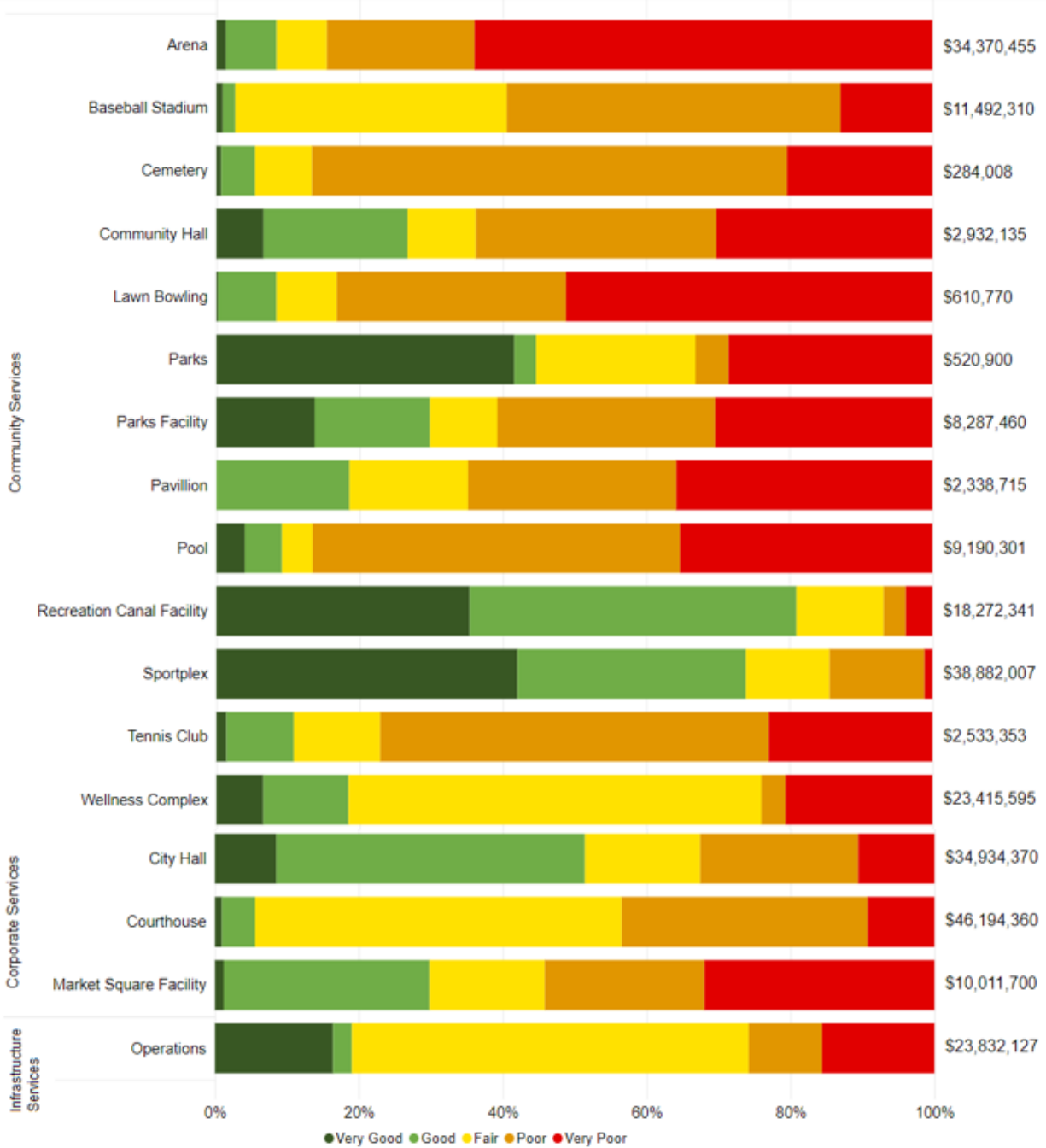


Figure 7-2. Facility Condition Distribution (By Replacement Value) – Asset Category Breakdown

7.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 7-3. As this figure demonstrates, on average, the facilities have not yet reached their ESL.

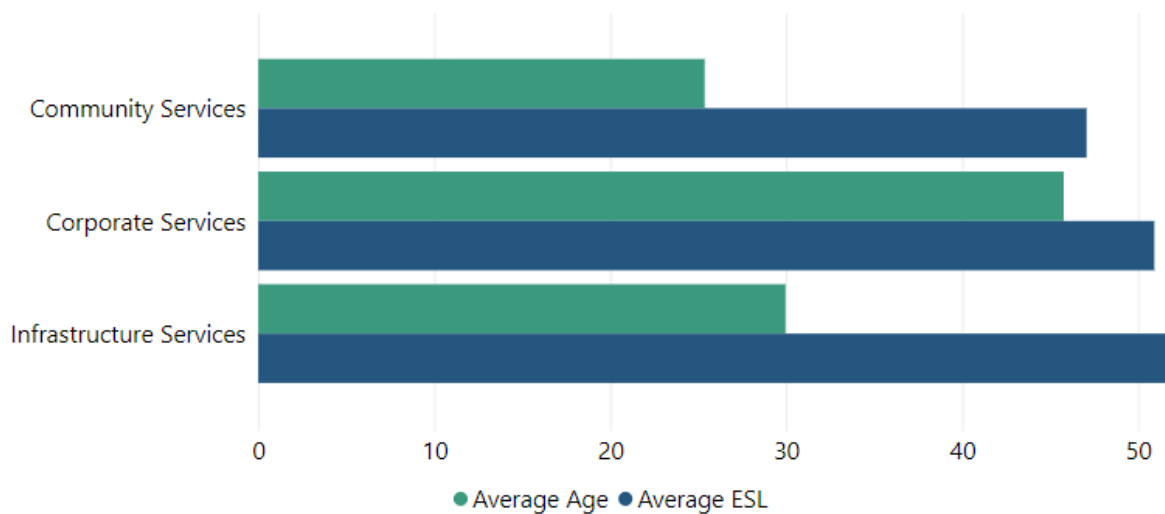


Figure 7-3. Facility Average Age vs. ESL – Asset Category Breakdown

Although the community services and infrastructure services facilities are only around half of their life, or just beyond, the condition of the facilities seems much worse than expected. The corporate services facilities on average are reaching the end of their service life.

7.2 Levels of Service

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics. The LOS metrics and the current performance are detailed in Table 7-4 and Table 7-5. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.

Table 7-4. Community Level of Service – Facilities

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Current reinvestment rate	0.99%
My City maintains what it owns	Cost per household	\$487.74

Table 7-5. Technical Level of Service – Facilities

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Percent of facilities in conformance with defined lifecycle strategies	90.41%
My City maintains what it owns	Buildings below "good" FCI condition	56%
I have quality services	Percentage of total replacement cost of assets in good to very good condition	34.51%
My City is considerate of the environment	Annual electric energy consumption per square foot	\$1.22
My City is considerate of the environment	Annual natural gas consumption per square foot	\$0.41
My City is considerate of the environment	Annual water consumption per square foot	\$0.48

7.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

7.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for the Facilities are outlined in Table 7-6. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 7.4.

Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Facility assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 7-6. Lifecycle Management Activities – Facilities

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> • Building Condition Assessment 	<ul style="list-style-type: none"> • 5 years
Operations & Maintenance Activities	
<ul style="list-style-type: none"> • Reactive maintenance 	<ul style="list-style-type: none"> • As required
Renewal/Replacement Activities	
<ul style="list-style-type: none"> • Replacement of major components 	<ul style="list-style-type: none"> • As needed based on condition
<ul style="list-style-type: none"> • Renewal/rehabilitation of facilities 	<ul style="list-style-type: none"> • As per BCA
Disposal Activities	
<ul style="list-style-type: none"> • Selling, auctioning, salvaging, repurposing, destroying or other actions 	<ul style="list-style-type: none"> • As per scheduled renewals
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> • Expansion / new facilities to accommodate growth 	<ul style="list-style-type: none"> • As identified (through DC studies, feasibility studies or staff identified requirements) and as funding allows
<ul style="list-style-type: none"> • New technology 	<ul style="list-style-type: none"> • As identified (through internal reviews)
<ul style="list-style-type: none"> • AODA Compliance 	<ul style="list-style-type: none"> • As identified

7.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 7.3 to plan maintenance and repair work and determine future expenditure needs for Facilities. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 7.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588.17.

7.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for the Facilities assets was determined to be approximately \$6.2M. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution can be seen below

in Figure 7-4. To maintain current performance in Facilities there is an annual funding gap of approximately \$3.6M compared to current anticipated funding levels.

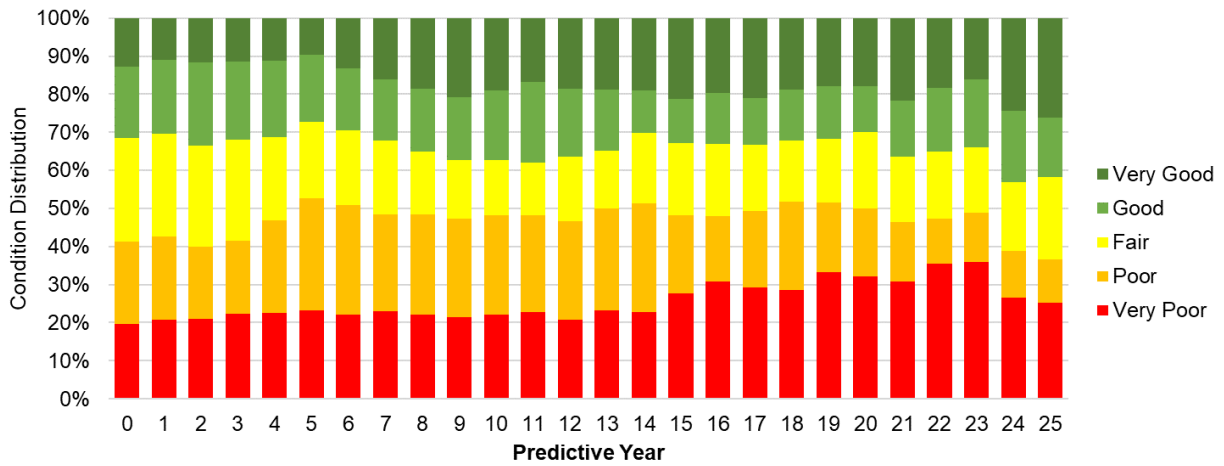


Figure 7-4. Facilities Performance Forecast to Maintain Current Levels of Service

7.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Facilities is approximately \$2.6M. Figure 7-5 shows the Facilities condition distribution with current anticipated funding. The condition distribution shows that with current funding levels assets in very poor condition increases over the 25-year forecast period. The forecast suggests that with the current budget allocations, the City may have difficulties in maintaining its infrastructure assets in good or better condition, and struggle to keep up with the current level of service. This budget may not be sufficient to keep up with infrastructure needs over time, leading to an overall decline in asset condition.

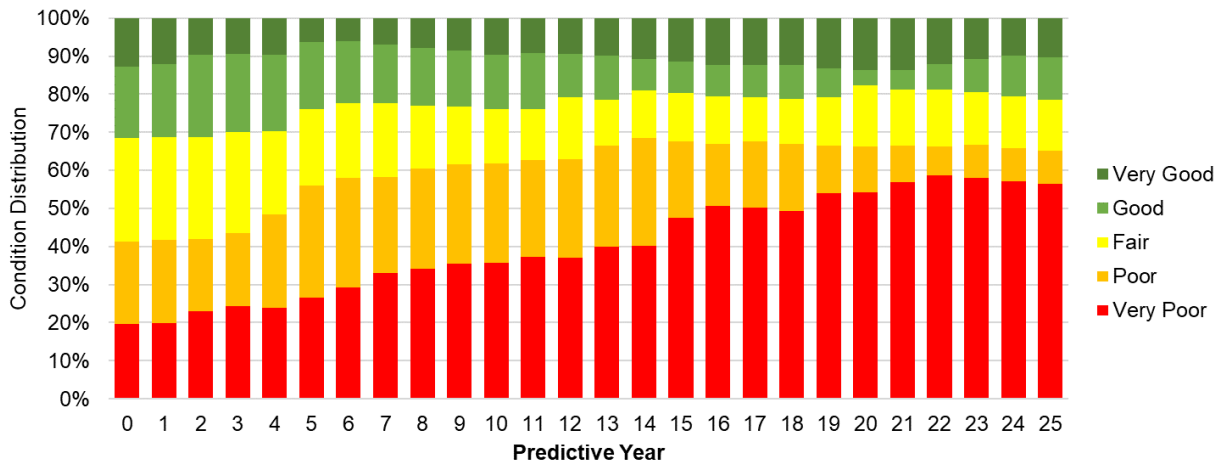


Figure 7-5. Facilities Performance Forecast with Current Funding

7.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

--The anticipated annual budget for the Facilities infrastructure needs assessment was determined to be \$7.3M. This is a funding gap of approximately \$4.6M compared to the current anticipated budget allocation. The performance forecast with infrastructure needs as per lifecycle strategies is shown below in Figure 7-6. Following the lifecycle strategies as discussed in Section 7.3, assets in very poor to poor condition decreases from over 40% to just over 30%, and assets in good to very good condition increases. This scenario shows a slightly higher increase in overall asset condition compared to the other two forecast scenarios. This further highlights the challenges the City will face if average annual investments in Facilities assets stays similar to the current anticipated allocation.

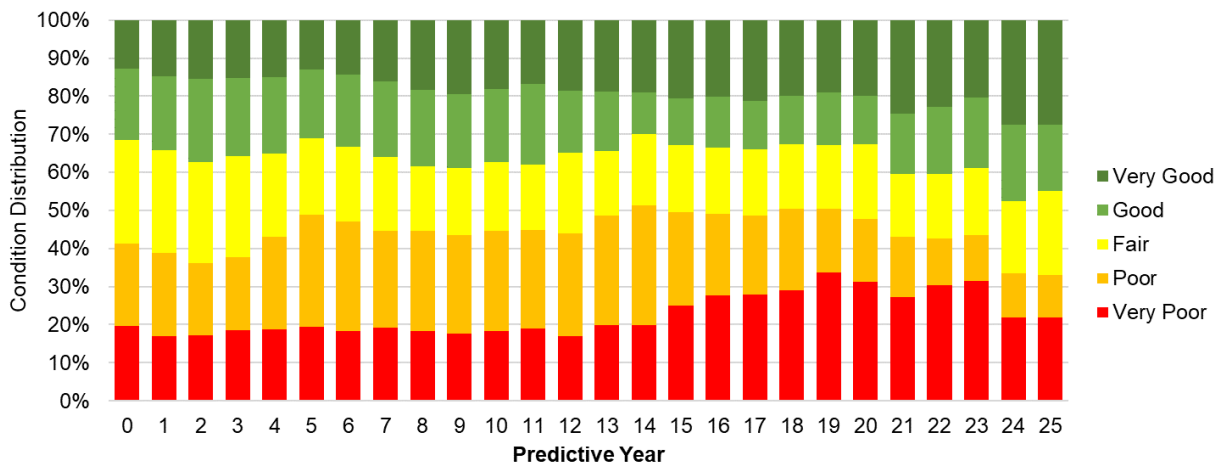


Figure 7-6. Facilities Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

7.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff can determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 7-7 and Table 7-7 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City’s 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates Facilities has a gap of \$3.6M to maintain the current levels of service. If the City aims to increase the condition of assets and optimize performance while adhering to lifecycle strategies, there is an annual funding gap of \$4.6M. This funding gap underscore the challenge the City faces in adequately funding the necessary renewal, rehabilitation, and replacement activities for Water System assets.

Figure 7-7 also highlights the backlog in the year 2024 for Facilities assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk to not achieve intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to

significantly higher operational and maintenance costs, affecting the availability of services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

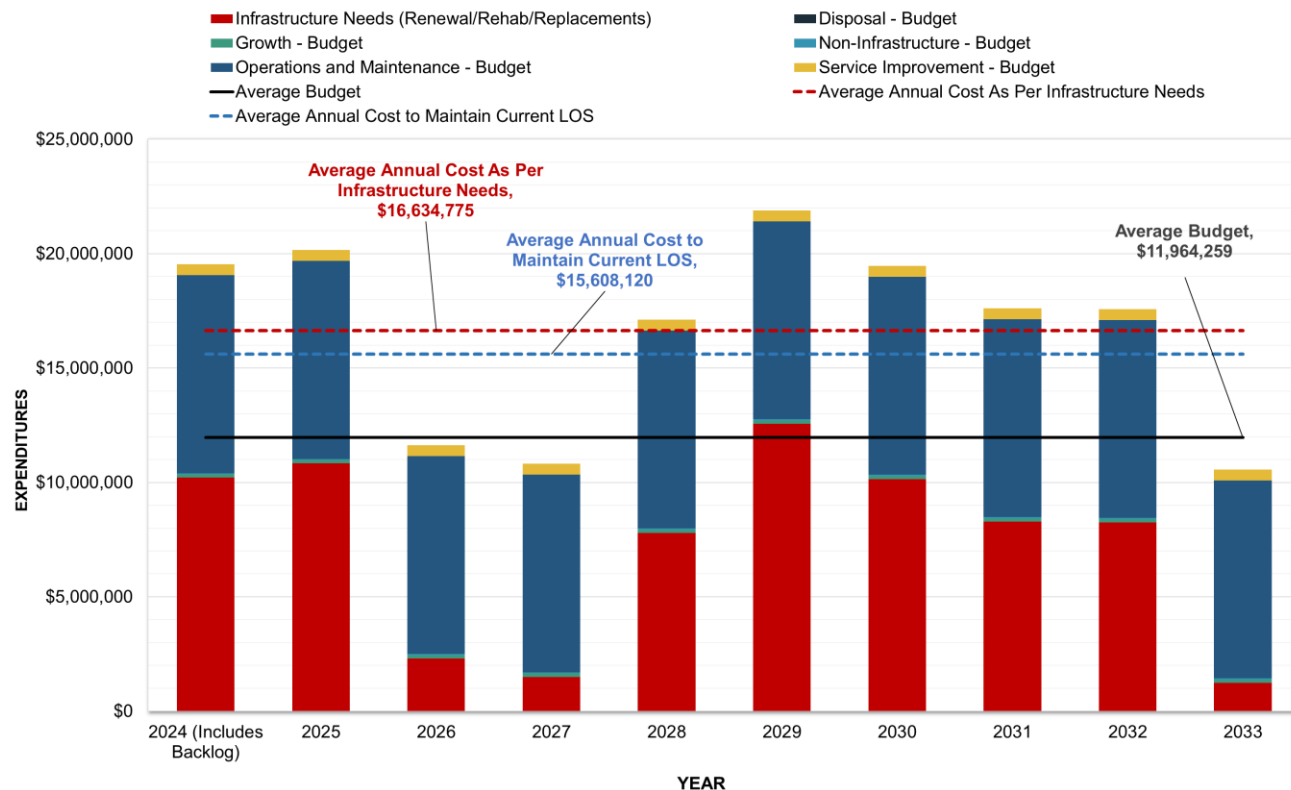


Figure 7-7. Facilities Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

7.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 7-7. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023–2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations,

prioritize maintenance and replacement projects, and develop strategies to ensure the long-term sustainability and reliability of Facilities for current and future generations.

Table 7-7. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Facilities

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$147,527	\$147,527	\$147,527
Non-Infrastructure	\$50,000	\$50,000	\$50,000
Operations & Maintenance	\$8,648,459	\$8,648,459	\$8,648,459
Renewal, Rehabilitation & Replacement	\$2,640,973	\$6,284,834	\$7,311,489
Service Improvement	\$477,300	\$477,300	\$477,300
Annual Average Total Expenditure	\$11,964,259	\$15,608,120	\$16,634,775
Average Annual Funding Gap		\$3,643,861	\$4,670,516
Percentage Increase Required to Address Gap		30%	39%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

7.5 Data Confidence and Improvement Plan

The main data source and overall data confidence for Facilities assets is in Table 7-8.

Table 7-8. Data Confidence – Facilities

Asset Type	Data Source	Data Confidence
All	Building Condition Assessment (Spreadsheets)	A

7.5.1 Recommendations for Improvements

Opportunities for improvement for the Facilities include:

- Inventory/Asset Register – add into a repository for asset registers to track work against this inventory, keep up to date.
- Document processes, regular intervals for condition assessments.
- Develop and implement an inspection and preventative maintenance program across all assets and evaluate the effectiveness and suitability of interventions.
- As work is completed, review cost estimates for their accuracy, continue to update information as new/improved information becomes available.



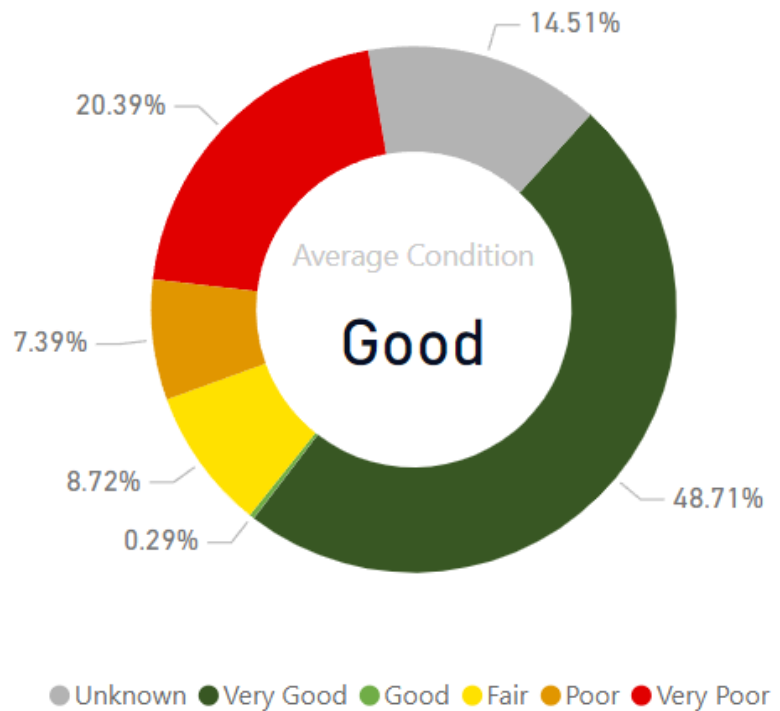
Fire



Replacement Value

\$45,441,900 M

Overall Average Asset Condition



Quick Facts

Fire has:

- Over 2,000 pieces of equipment and 23 fleet that is maintained for safe use
- 3 Fire Facilities providing service throughout the City of Welland

8 Fire

8.1 State of the Infrastructure

Welland’s Fire service area is made up of the facilities, fleet and equipment used to support the City’s fire fighting services. Table 8-1 below shows the full inventory and estimated replacement cost for this service area.

Table 8-1. Inventory and Current Replacement Value – Fire

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Equipment	2,334	Each	\$6,714,725
Facilities	3	Each	\$25,700,000
Fleet	23	Each	\$13,367,900
Total			\$45,782,625

City staff worked together to compile data on Fire assets from Fire’s reporting system, as well as to fill any gaps in the information provided.

8.1.1 Asset Condition

Overall, Fire assets are in Good Condition.

Fire assets were assigned conditions based on age and estimated service life. The condition ratings scale is in Table 8-2.

Table 8-2. Condition Rating – Fire

Condition	Age/ESL
Very Good	>80% life remaining
Good	60-80% life remaining
Fair	40-60% life remaining
Poor	20-40% life remaining
Very Poor	0-20% life remaining
Unknown	

A breakdown of the condition distribution based on asset value is shown in Figure 8-1 and Figure 8-2 below. As these figures demonstrate, almost half of the asset value is in Very Good condition.

Condition information is not available for most fire equipment assets, as a result of missing install dates for the assets provided. It is recommended that this information continue to be filled out on an on-going basis. Although there are no gaps in Facilities and Fleet for fire, it is recommended that the facilities be broken down further by component similar to other City facilities.

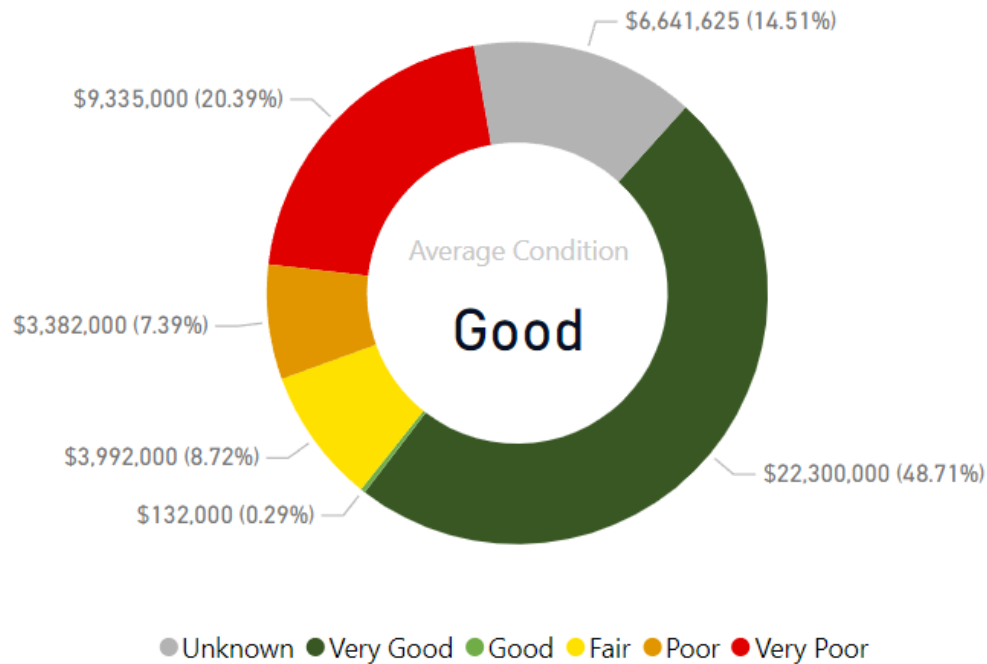


Figure 8-1. Fire Condition Distribution (By Replacement Value) - Overall

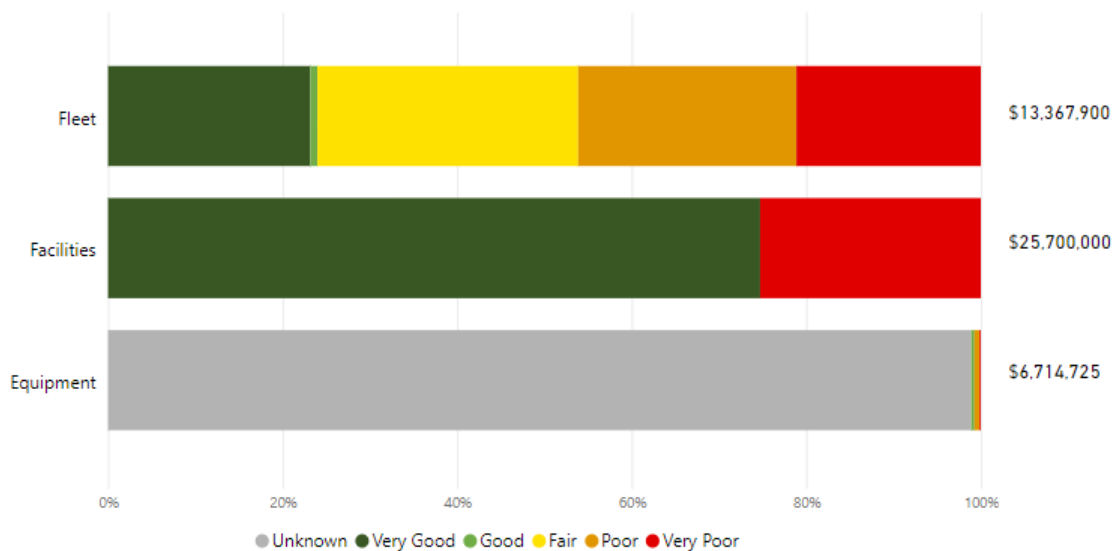


Figure 8-2. Fire Condition Distribution (By Replacement Value) - Asset Category Breakdown

Two of three fire facilities were recently installed in 2022, which is reflected in the asset's very good condition. The fire facilities have been assessed as one asset. It is

recommended that these assets be broken down by component while they are in very good condition, and that the information be maintained on an ongoing basis. If the City wishes to maintain these assets in a state of good repair and prolong the life of these assets it is essential that planning start at the beginning of their life to ensure appropriate maintenance procedures are being completed and tracked against these assets.

8.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 8-3. As this figure demonstrates, on average, Fire assets have not yet reached their ESL. Fleet assets are close to half life remaining, which is also reflected in the condition of these assets. It should be noted the average age of assets for equipment only includes known values. The City should continue their efforts to fill in gaps in this asset category.

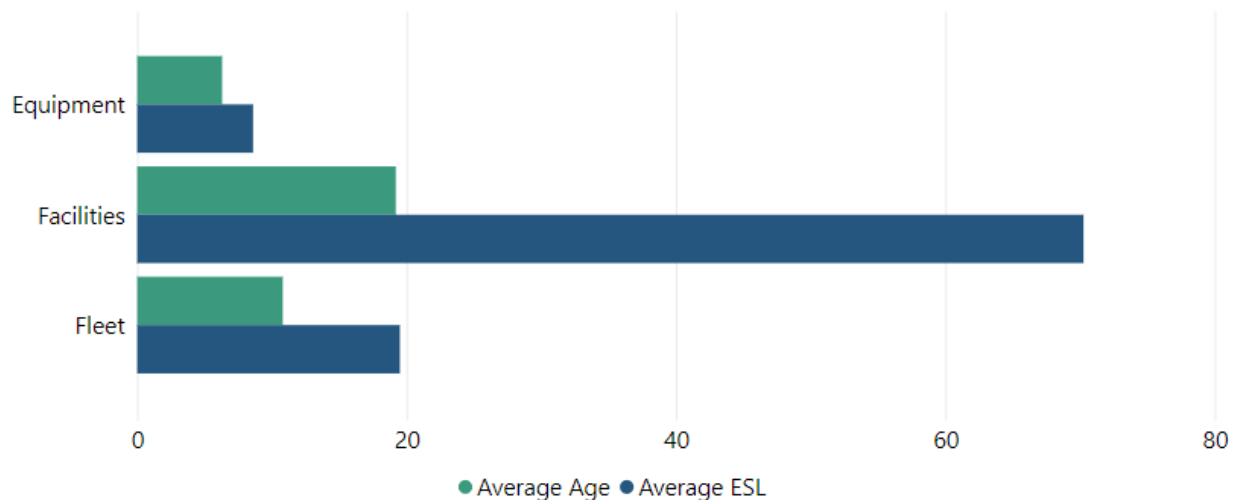


Figure 8-3. Fire Average Age vs. ESL – Asset Category Breakdown

8.2 Levels of Service

Fire plays a crucial role in safeguarding communities during crises and disasters, as well as provide public education. Services that Fire provides the community include coordination and response to emergencies, infrastructure protection, public safety and security, disaster preparedness and planning, as well as public education and fire prevention.

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are

described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed in Table 8-3 and Table 8-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.

Table 8-3. Community Level of Service – Fire

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Current reinvestment rate	3.58%
My City maintains what it owns	Cost per household	\$775.78

Table 8-4. Technical Level of Service – Fire

Key Service Attribute	Performance Measure	Current Performance (2024)
I have quality services	Percentage of total replacement cost of assets in good to very good condition	49.39%
My City maintains what it owns	Percent of fire assets in conformance with lifecycle strategy	99.78%
I have access to services when I need them	Demand on service delivery	2613
I have access to services when I need them	Overall incident response time average, percentage of responses that fell below 5-minute arrival of 4 firefighters.	34%

8.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

8.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for Fire are outlined in Table 8-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 8.4.

Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Fire assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 8-5. Lifecycle Management Activities – Fire

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> Condition assessments (buildings and fleet) 	<ul style="list-style-type: none"> As scheduled
Operations & Maintenance Activities	
<ul style="list-style-type: none"> Planned maintenance 	<ul style="list-style-type: none"> As required
<ul style="list-style-type: none"> Reactive maintenance 	<ul style="list-style-type: none"> As required
<ul style="list-style-type: none"> Equipment inspections 	<ul style="list-style-type: none"> As scheduled
<ul style="list-style-type: none"> Purchase of personal protective and rescue equipment, small equipment, and materials 	<ul style="list-style-type: none"> As required
Renewal/Replacement Activities	
<ul style="list-style-type: none"> Replacement 	<ul style="list-style-type: none"> As scheduled
<ul style="list-style-type: none"> Spare fire fleet replacement 	<ul style="list-style-type: none"> As required
Disposal Activities	
<ul style="list-style-type: none"> Sell-off vehicles, fleet and equipment 	<ul style="list-style-type: none"> As required
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> New assets to accommodate growth 	<ul style="list-style-type: none"> As required
<ul style="list-style-type: none"> New assets as a part of increased service requirements 	<ul style="list-style-type: none"> As identified

8.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 8.3 to plan work and determine future expenditure needs for Fire assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 8.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588/17.

8.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for Fire assets was determined to be approximately \$1.1M. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution for the cost to maintain current LOS can be seen below in Figure 8-4. Compared to the current anticipated budget, there is no gap to maintain LOS. This suggests that with the current anticipated

funding levels, the City will be able to increase the overall condition of Fire assets over the 25-year period.

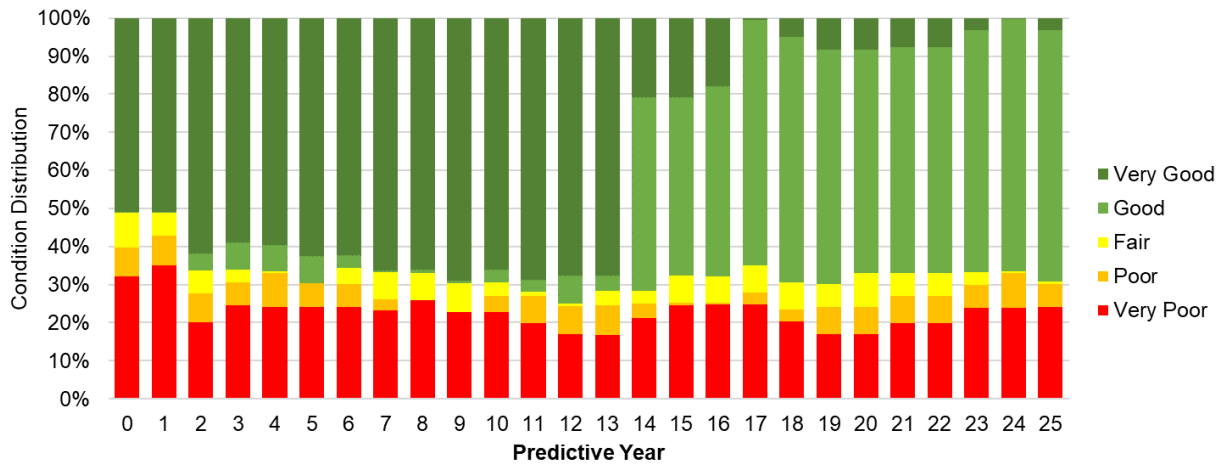


Figure 8-4. Fire Performance Forecast to Maintain Current Levels of Service

8.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. The 2023 budget for fire was adjusted through to remove the spending for the fire hall, as this is not representative of the typical funding available for fire assets. This scenario is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Fire assets is approximately \$1.6M. Figure 8-5 shows the condition distribution for Fire assets over the forecast period with current funding. The condition distribution shows that with current funding levels assets in good condition increase while assets in very poor to poor condition decrease over the 25-year forecast period, but the number of assets in very good condition significantly decreases.

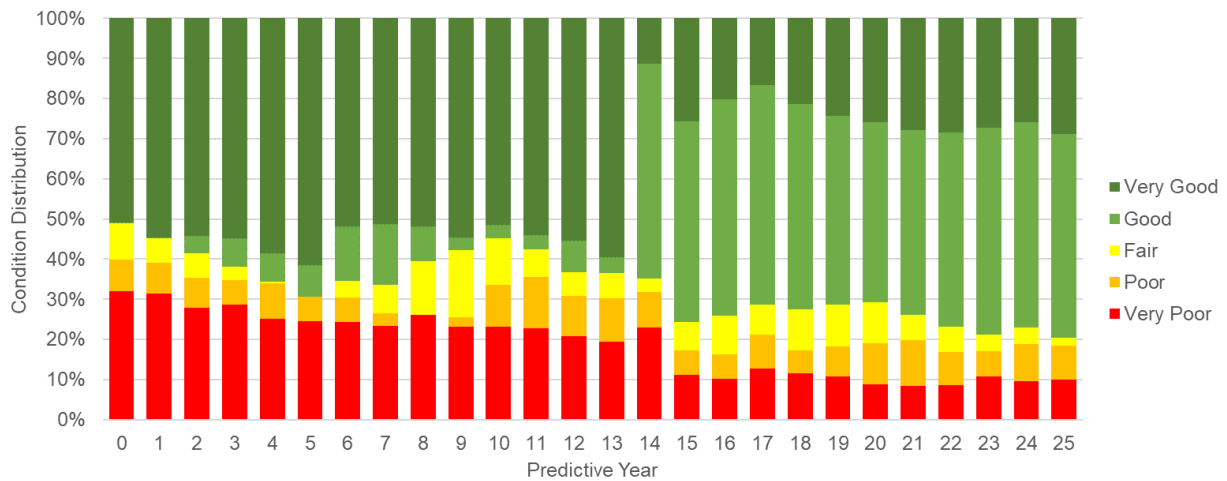


Figure 8-5. Fire Performance Forecast with Current Funding

8.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

The anticipated annual budget for the Fire assets infrastructure needs assessment was determined to be \$1.9M. This is no funding gap compared to the current anticipated budget allocation. The performance forecast with infrastructure needs as per lifecycle strategies for Fire assets is in Figure 8-6. Following the lifecycle strategies as discussed in Section 8.3, assets in very poor to poor condition decreases, and assets in good to very good condition increases. This scenario shows a similar increase in overall asset condition to the current funding scenario.

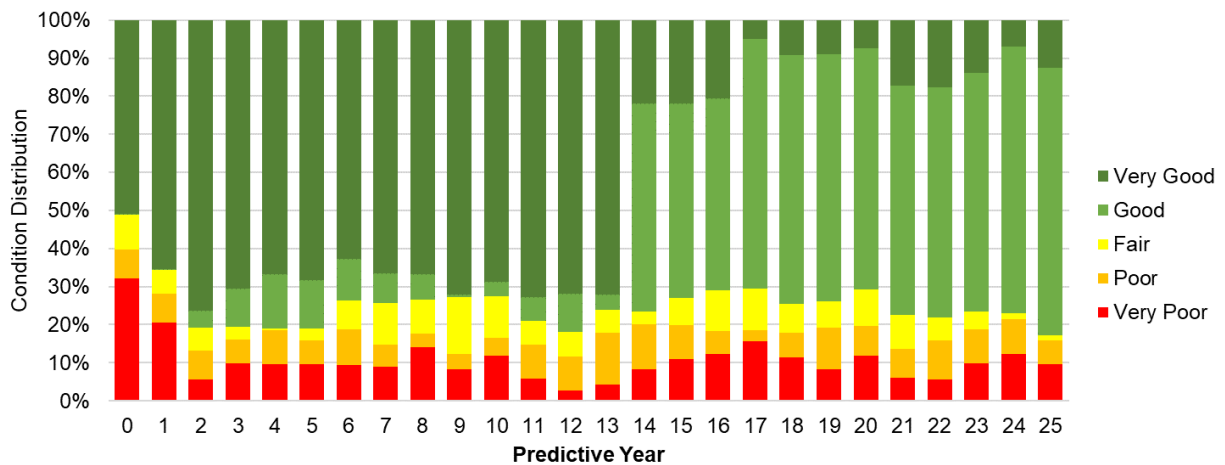


Figure 8-6. Fire Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

8.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff are able to determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 8-7 and Table 8-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City’s 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates Fire does not have a funding gap to maintain the current levels of service but faces an approximate annual gap of \$330K to increase the condition of assets and optimize performance while adhering to lifecycle strategies.

Figure 8-7 highlights the backlog in the year 2024 for Fire assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Deferring renewal works can put the City of Welland at risk to not achieve intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to significantly higher operational and maintenance costs, affecting the availability of services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

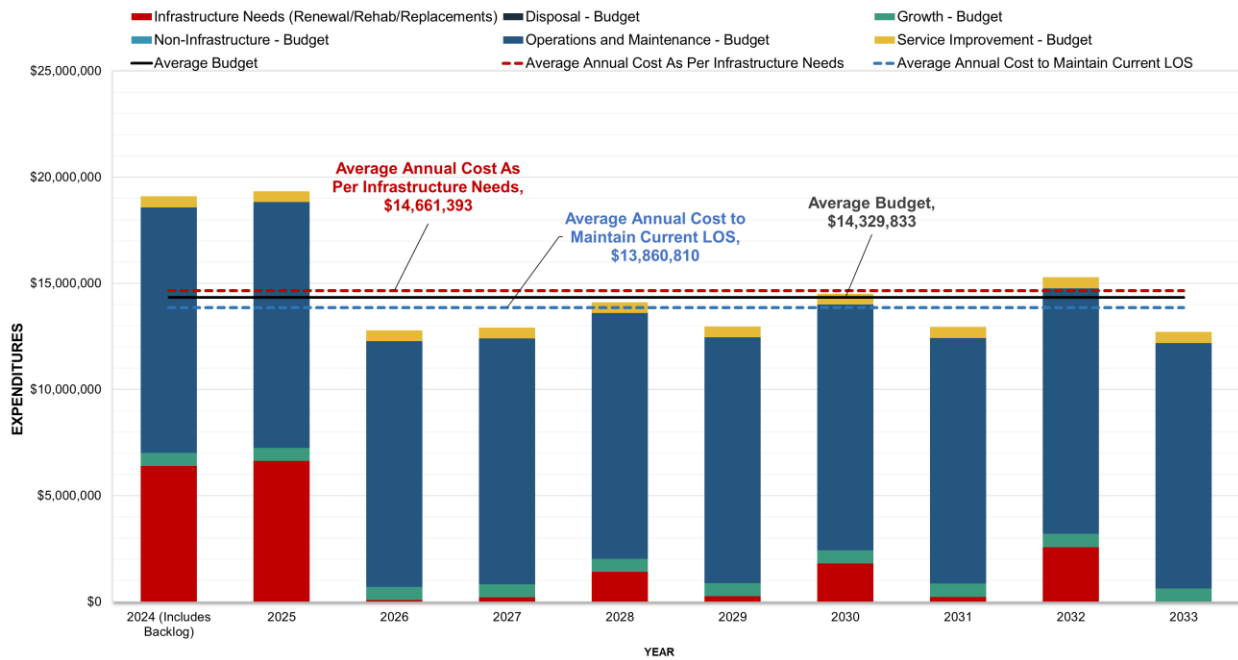


Figure 8-7. Fire Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

8.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 8-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023-2033 fiscal years. For the fire budget, the expenditures from the 2023 budget for the new fire hall were removed, as they were not representative of the typical budget available for renewal and replacements. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies to ensure the long-term sustainability and reliability of the Fire Department for current and future generations.

Table 8-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Fire

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$624,162	\$624,162	\$624,162
Non-Infrastructure	\$0	\$0	\$0
Operations & Maintenance	\$11,569,833	\$11,569,833	\$11,569,833
Renewal, Rehabilitation & Replacement	\$1,624,803	\$1,155,780	\$1,956,363
Service Improvement	\$511,035	\$511,035	\$511,035
Annual Average Total Expenditure	\$14,329,833	\$13,860,810	\$14,661,393
Average Annual Funding Gap		No Gap	\$331,560
Percentage Increase Required to Address Gap		No Gap	2%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

8.5 Data Confidence and Improvement Plan

The main data sources and overall data confidence for Fire assets is in Table 8-7.

Table 8-7. Data Confidence – Fire

Asset Type	Data Source	Data Confidence
Equipment	Spreadsheet Emergency Reporting Staff	B
Facilities	Spreadsheet	C
Fleet	Spreadsheet	B

8.5.1 Recommendations for Improvements

Opportunities for improvement for the Fire assets include:

- Inventory/Asset Register
 - Document sources of information used to inform this AMP.
 - Continue to maintain and enhance asset register.
 - Facilities – complete condition assessment and break down facilities by major components as per Unifomat, and in line with other City facility assets to provide a more accurate reflection of the assets, as well as for more accurate forecasting.



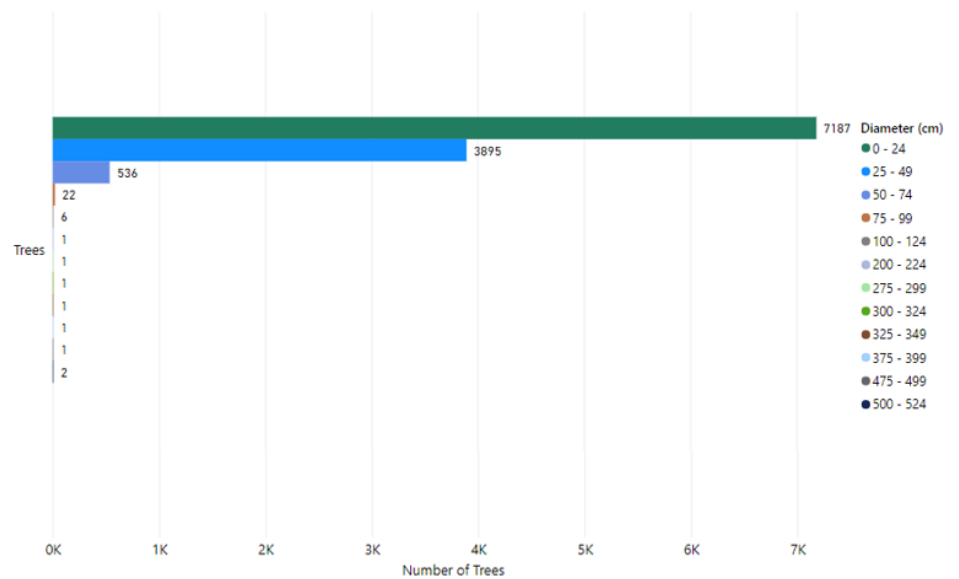
Forestry



Replacement Value

\$8,740,500 M

Tree Distribution by Diameter



Quick Facts

Forestry has

- Over 11,000 trees including street and memorial trees planted within our inventory
- Various native and non-native species planted throughout the City

9 Forestry

9.1 State of the Infrastructure

Welland’s Forestry service area is made up of the trees planted and maintained by the City. The inventory currently includes street trees and memorial trees. Many trees are not included in the current inventory as there has not been any data collected for them. Examples of additional trees that have not been included in the inventory are trees in parks, cemeteries, woodlots, and trails. The City expects that the total inventory will at least double once information is collected for these additional trees. Table 9-1 below shows the current inventory and estimated replacement cost for this service area.

Table 9-1. Inventory and Current Replacement Value – Forestry

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Trees	11,654	Each	\$8,740,500
Total			\$8,740,500

The City currently has over 11,000 trees in their inventory. As stated above, the City expects that this number will at least double once trees are inventoried throughout other areas of the City. The replacement value has been identified as \$750 per tree. It is recommended the City continues to expand on the information available regarding their trees and evaluate options to assess this asset category. As one strategic priority is Environmental Stewardship, and to expand the canopy, this asset category will continue to be improved upon and expanded as the City works toward their goals.

Canopy analysis should be planned to include trees in wood lots and parks. It is recommended that the City further assess forestry assets to include further details in the 2025 iteration of this plan.

9.1.1 Asset Condition

Condition values for the trees are unknown at this time. The City will continue to look for opportunities on how to accurately assess this increasingly important asset category.

9.1.2 Average Age

Trees differ from all other assets in this asset management plan, as they do not decrease in value as they age. Trees increase in value as they age, as they provide more benefits to the community as they grow larger. Age is not currently collected for trees. It is recommended that the City start collecting age information for newly planted trees. Table 9-2 below shows the count of trees by diameter at breast height measurement to show a distribution of the maturity of urban trees throughout the City of Welland.

Based on this data, the majority of the trees in the City are younger (smaller diameter), as tree diameter can be used to estimate the age of trees, and trees will roughly increase in diameter by 2.5 cm a year.

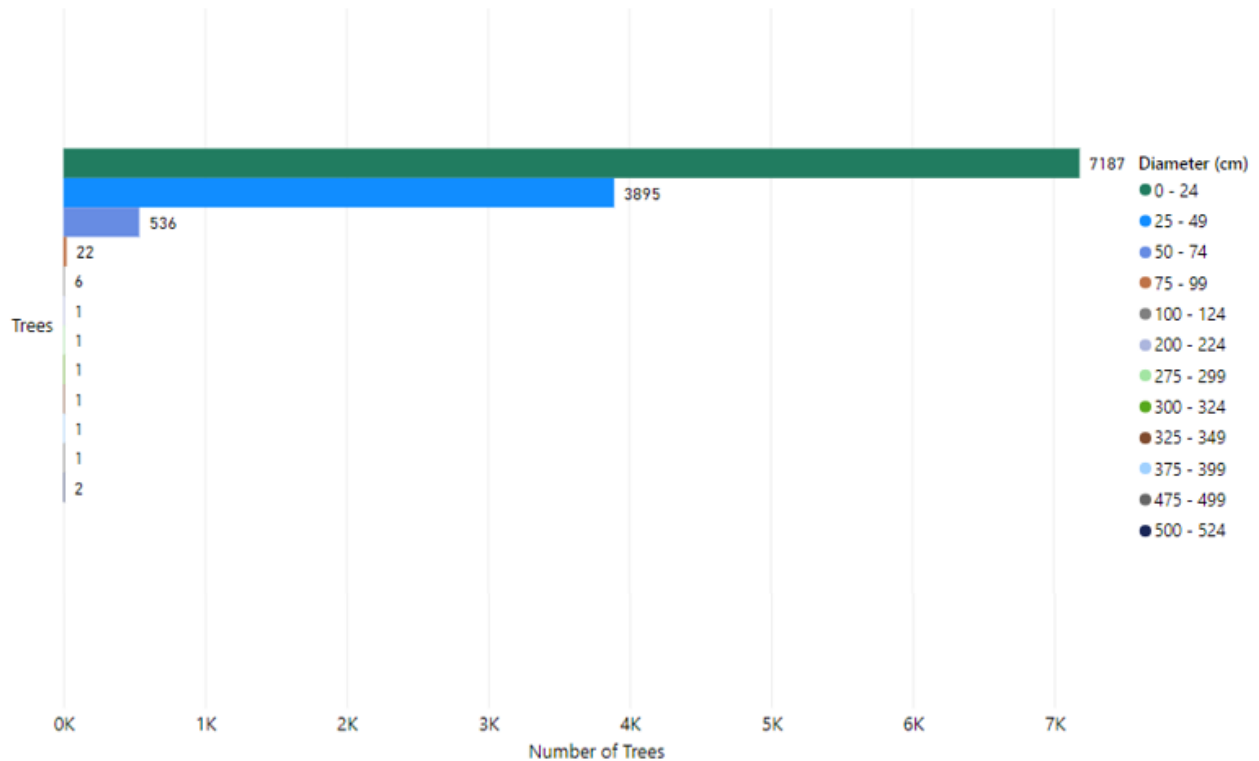


Table 9-2. Count of Trees by Diameter at Breast Height (cm)

9.2 Levels of Service

Trees within the City provide many benefits to the community such as cost savings by integrating natural assets into City planning to reduce the need for expensive engineered infrastructure for flood control, erosion control and flood mitigation, climate resilience, and healthy and well-being.

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely

dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed Table 9-3 and Table 9-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.

Table 9-3. Community Level of Service – Forestry

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Current reinvestment rate	2.4%
My City maintains what it owns	Cost per household	\$34.37

Table 9-4. Technical Level of Service – Forestry

Key Service Attribute	Performance Measure	Current Performance (2024)
I have quality services	Percentage of total replacement cost of assets in good to very good condition	Unknown
My City is considerate of the environment	Percent of canopy coverage	22.1% As per the most recent report by the Niagara Region
My City maintains what it owns	Number of tree inspections per year	332 Inspections were completed in 2023
My City is considerate of the environment	Trees planted per year	357 trees planted by city staff in 2023 (this does not include capital projects or trees planted by outside organizations on city lands)

9.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

9.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for Forestry are outlined in Table 9-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 9.4.

Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Forestry assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 9-5. Lifecycle Management Activities – Forestry

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> • Canopy Coverage Study 	<ul style="list-style-type: none"> • 5 Years
Operations & Maintenance Activities	
<ul style="list-style-type: none"> • Tree inspections 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Planned Tree Maintenance (trimming, pruning, stumping, and road clearance) 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Emergency maintenance (pruning and removal) 	<ul style="list-style-type: none"> • As required
Renewal/Replacement Activities	
<ul style="list-style-type: none"> • Deep root fertigation, propping, cabling 	<ul style="list-style-type: none"> • As identified
<ul style="list-style-type: none"> • Landscape renewal 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • End of life replacement of trees (Street Trees) 	<ul style="list-style-type: none"> • As required
Disposal Activities	
<ul style="list-style-type: none"> • Recycling of removed material 	<ul style="list-style-type: none"> • As required
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> • Street Tree Planting Program (New Development) 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Memorial Tree Planting Program 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Tree Planting initiatives through partnerships and grants 	<ul style="list-style-type: none"> • As identified
<ul style="list-style-type: none"> • Earth Day Give Away Program 	<ul style="list-style-type: none"> • Annual

9.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 9.3 to plan work and determine future expenditure needs for Forestry assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios for Forestry were not run, because there was no condition data for trees. For trees, the lifecycle strategy includes renewing a percentage of the trees every year, which is approximately \$175k required annually. If the City wants to grow the urban canopy to be in line with other municipal leaders, expanding environmental benefits, this number will be required to be increased.

9.4.1 Scenario Comparison & Infrastructure Gap

It is important to determine if there are any gaps in funding to address current infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure for Forestry is presented in Figure 9-1 and Table 9-6 which illustrates a bar graph of renewal, rehabilitation and replacement expenditures which have been informed by the City's 2023 operating and capital budget (these bars have been colour coded by lifecycle activities). The solid and dashed lines represent the equivalent annual average investment needs.

The City of Welland should focus on continued investments in trees and expanded investments in different green infrastructure throughout the municipality. Green infrastructure and natural assets provide many community benefits for current and future generations.

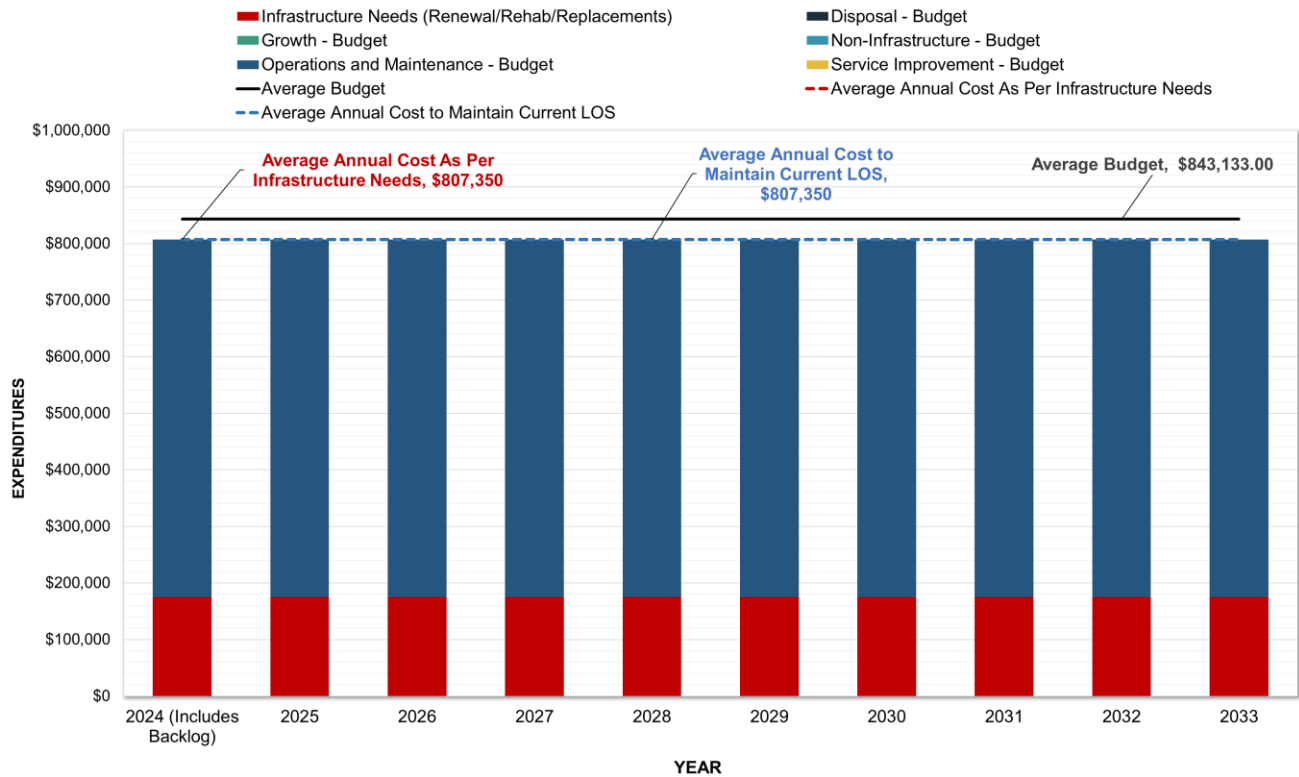


Figure 9-1. Forestry Scenario Comparison

It should be noted that the forestry inventory is not complete and condition information was not available at the time of the development of this AMP, which affects the accuracy of the analysis provided. The needs required to sustain the City's tree canopy should be further evaluated, as currently there are more trees being removed than being planted to keep in line with the City's strategic priority Environmental Stewardship.

The activities and strategies listed within this chapter also provide the City's best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability.

9.4.1.1 Forecasted Infrastructure Gap

Table 9-6 shows current funding for capital budgets presented are the annual average of approved budgets (as of 2023) for the 2023-2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies

to ensure the long-term sustainability of Forestry assets for current and future generations.

Table 9-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Forestry

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$0	\$0	\$0
Non-Infrastructure	\$0	\$0	\$0
Operations & Maintenance	\$632,350	\$632,350	\$632,350
Renewal, Rehabilitation & Replacement	\$210,783	\$175,000	\$175,000
Service Improvement	\$0	\$0	\$0
Annual Average Total Expenditure	\$843,133	\$807,350	\$807,350
Average Annual Funding Gap		Unknown⁴	Unknown
Percentage Increase Required to Address Gap		Unknown	Unknown

Once more information is available on forestry assets, the infrastructure gap will be evaluated.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

⁴ The infrastructure gap for forestry is considered unknown, as there is not enough information to provide an accurate forecast of the needs of this asset type.

Data Confidence and Improvement Plan

The main data source and overall data confidence for Forestry assets is in Table 9-7.

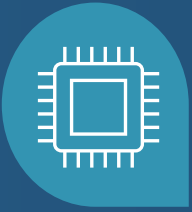
Table 9-7. Data Confidence – Forestry

Asset Type	Data Source	Data Confidence
Trees	GIS	C

9.4.2 Recommendations for Improvements

Opportunities for improvement include:

- Improving the completeness of the tree inventory by collecting data on additional City owned trees in locations such as parks, trails, cemeteries and woodlots.
- Improve the quality of data – collect condition information by completing tree assessments, collect data on diameter to determine approximate age, etc.
- Complete initial assessment on each tree, additional assessments once every 5 years following initial assessment.
- Begin tracking age data for new trees planted.
- Report on the number of trees removed each year.
- Adopt an industry accepted valuation practice for trees such as CTLA or iTree.
- Collect more information on additional types of green infrastructure.
- Develop an Urban Forestry Master Plan.
- Public education and outreach.
- Develop processes to preserve and replace trees for Welland Hydro, Public Works and others as these projects often impacts the tree canopy.
- Evaluating City wide spray programs for pest and disease.
- Develop and implement a park tree inspection program.
- Develop and implement a proactive tree maintenance program.



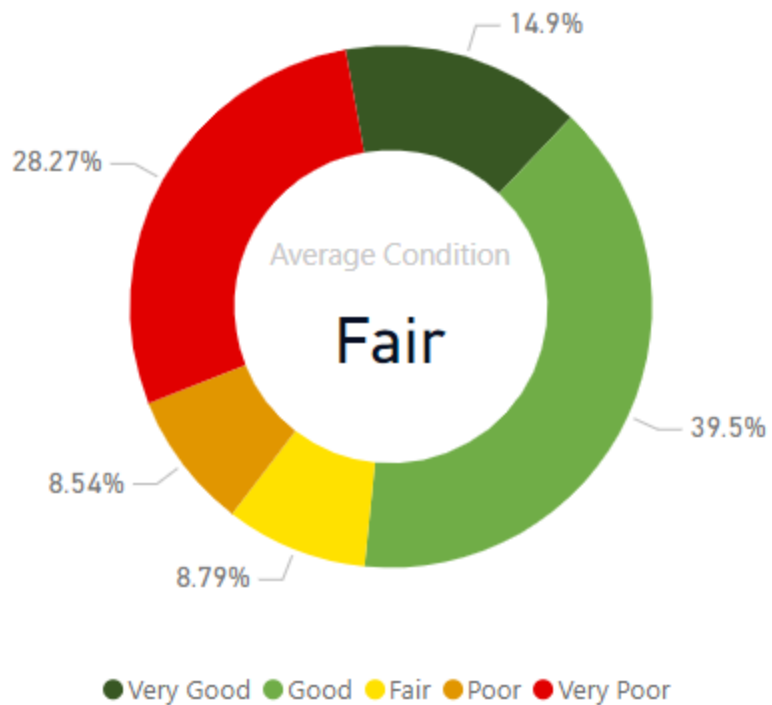
Information Systems



Replacement Value

\$2,547,759 M

Overall Average Asset Condition



Quick Facts

Information Systems:

- Supports all areas of service delivery throughout the City
- Maintains hardware including printers, servers, smartphones, tablets, workstations and fiber network

10 Information Systems

10.1 State of the Infrastructure

Welland’s Information Systems is made up of the electronic devices used to support City services. Information Systems is a unique asset class within the AMP, as the assets have a much shorter lifespan than the majority of the assets within the municipality. They also impact every department in the City and are necessary to support the operation of all other City services. Table 10-1 below shows the full inventory and estimated replacement cost for this service area.

Table 10-1. Inventory and Current Replacement Value – Information Systems

Asset Type	Count	Quantity Unit	2023 Estimated Replacement Value
Printers	54	Unit	\$54,000
Server	24	Unit	\$480,000
Smartphone	176	Unit	\$140,800
Tablet	41	Unit	\$41,000
Workstation	290	Unit	\$690,000
Fiber Network	10	Unit	\$1,141,959
Total			\$2,547,759

At the time of development of this AMP, a list of software for Information Systems was not available. It is recommended the City develop a list of software applications and their values, and expenditure needs, as this is a large operating expenditure for the City. Software is continually evolving and is critical for the effective and efficient deliver of services to residents.

10.1.1 Asset Condition

Overall, Information Systems assets are in Fair Condition.

Condition was assigned to Information Systems assets using age and estimated remaining life. A description of the condition rating scale can be seen in Table 10-2.

Table 10-2. Condition Rating – Information Systems

Condition	Age/ESL
Very Good	>80% life remaining
Good	60–80% life remaining
Fair	40–60% life remaining
Poor	20–40% life remaining
Very Poor	0–20% life remaining
Unknown	

A breakdown of the condition distribution based on asset value is shown in Figure 10-1 and Figure 10-2 below. As these figures demonstrate, the majority of the asset value falls at or above Fair condition. This large percentage in Very Poor condition are due to the age of the City’s servers and smartphones (see the following section).

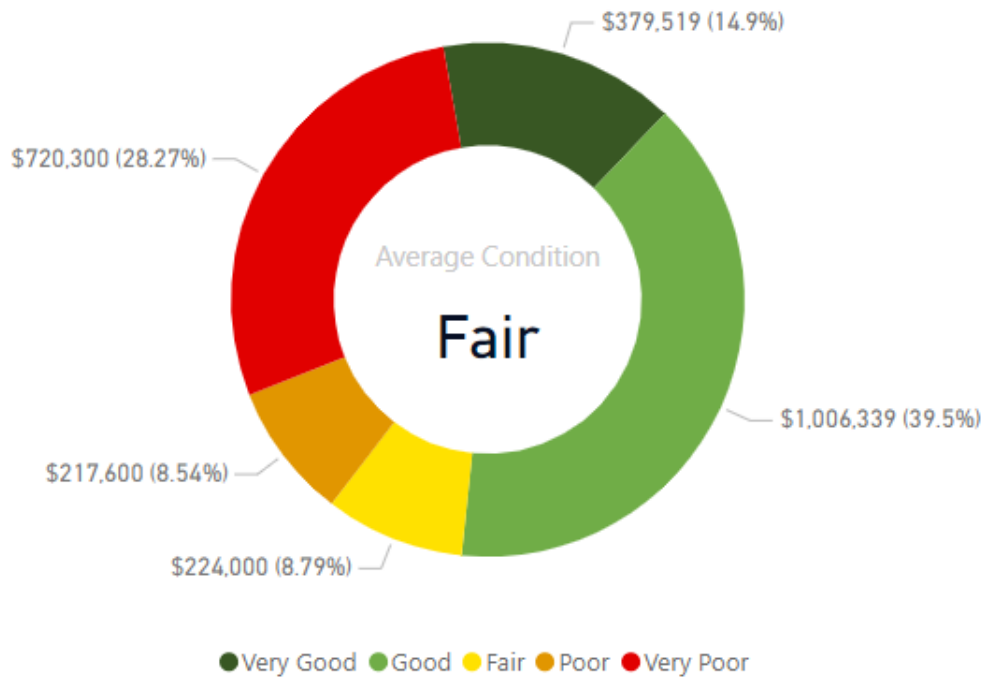


Figure 10-1. Information Systems Condition Distribution (By Replacement Value) – Overall Information systems typically see a range of condition values, as a result of the short estimated service life. These assets are continually being replaced as needed by the City and it is not unexpected to have a large portion in very poor.

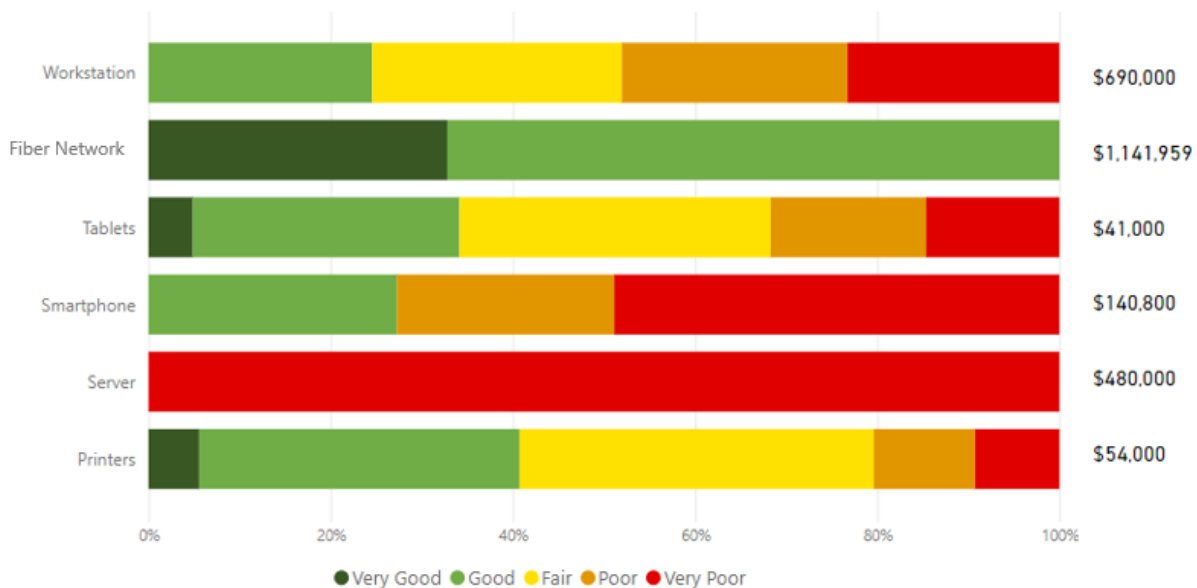


Figure 10-2. Information Systems Condition Distribution (By Replacement Value) – Asset Category Breakdown

As can be seen in Figure 10-3 below, servers are well past their estimated service life, and smart phones are at the end of their service life.

It should be noted that IT faces extreme pressures from a fast-paced environment that is continually evolving with new technology for both hardware and software, and increasingly more sophisticated threats to security. Assets past their service life could potentially increase risks to the City, if these assets are not supported for security updates.

10.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 10-3. As this figure demonstrates, on average, the City’s servers have surpassed their ESL and the City’s smartphones are nearing the end of their ESL. The remaining Information System assets are well within their expected lifespan.

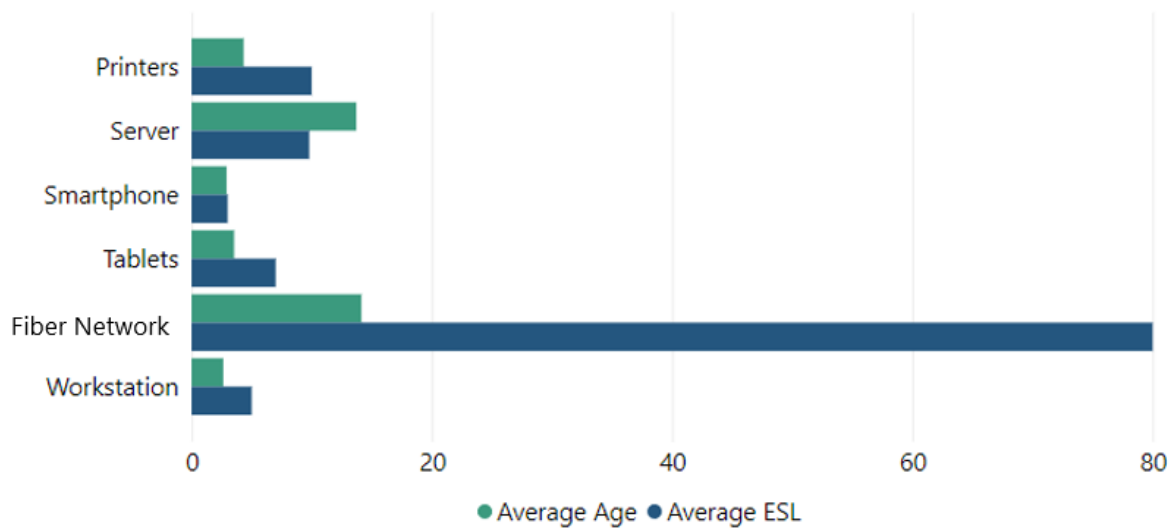


Figure 10-3. Information Systems Average Age vs. ESL – Asset Category Breakdown

10.2 Levels of Service

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed in Table 10-3 and Table 10-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.

Table 10-3. Community Level of Service – Information Systems

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Current reinvestment rate	4.71%
My City maintains what it owns	Cost per household	\$89.12

Table 10-4. Technical Level of Service – Information Systems

Key Service Attribute	Performance Measure	Current Performance (2024)
I have quality services	Percentage of total replacement cost of hardware assets in good to very good condition	54.4%
My City maintains what it owns	Percent of assets maintained in conformance with defined lifecycle strategies	85.71%

10.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

10.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for Information Systems are outlined in Table 10-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 10.4.

Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Information Systems assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. Following the lifecycle activities and strategies will ensure the City can avoid risks associated with asset ownership. These risks are further outlined in Section 12.2.2.

Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 10-5. Lifecycle Management Activities – Information Systems

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> • Strategic Plan 	<ul style="list-style-type: none"> • 5 years
<ul style="list-style-type: none"> • Disaster Recovery Planning 	<ul style="list-style-type: none"> • As required
Operations & Maintenance Activities	
<ul style="list-style-type: none"> • Planned maintenance (PM) – updates on firmware and software 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Alerts for software updates and defective equipment 	<ul style="list-style-type: none"> • Continuous
<ul style="list-style-type: none"> • Software licensing 	<ul style="list-style-type: none"> • Annually
Renewal/Replacement Activities	
<ul style="list-style-type: none"> • Replacement of assets 	<ul style="list-style-type: none"> • As scheduled
Disposal Activities	
<ul style="list-style-type: none"> • Disposals of assets 	<ul style="list-style-type: none"> • As scheduled
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> • New assets to accommodate growth 	<ul style="list-style-type: none"> • Driven by growth and to improve level of service
<ul style="list-style-type: none"> • New assets as a part of increased service requirements 	<ul style="list-style-type: none"> • As identified
<ul style="list-style-type: none"> • New technology 	<ul style="list-style-type: none"> • As identified by IS or other departments

10.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 10.3 to plan work and determine future expenditure needs for Information Systems assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 10.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588.17.

10.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for Information Systems assets was determined to be approximately \$45,000. These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution can be seen below in Figure 10-4. While assets in very poor to poor condition stays

generally the same, assets in fair condition increases and assets in good condition decreases. There is currently no gap to maintain current LOS in Information Systems.

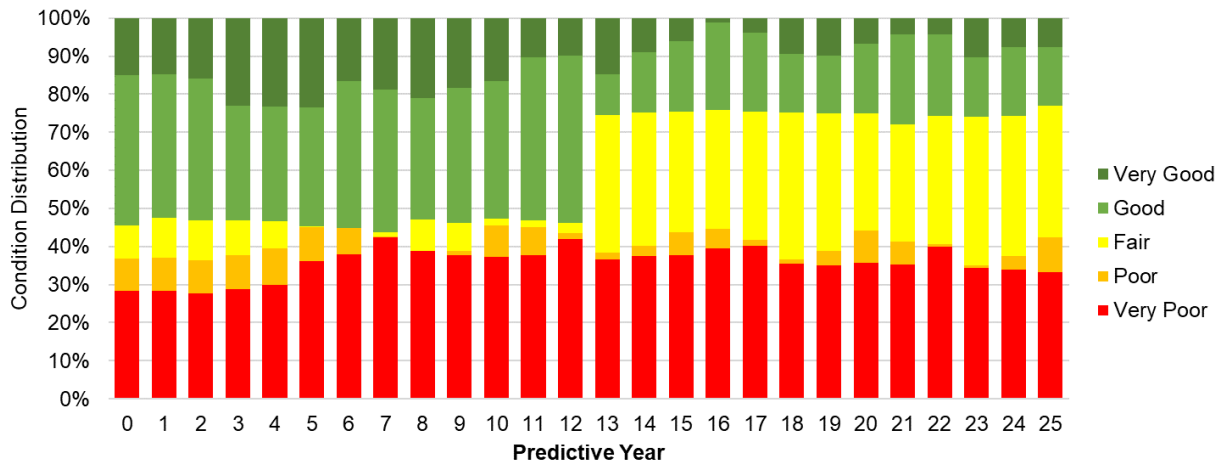


Figure 10-4. Information Systems Performance Forecast to Maintain Current Levels of Service

10.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Information Systems assets is approximately \$120,000. Figure 10-5 shows the condition distribution over the forecast with current anticipated funding. With current anticipated funding levels assets in good condition decrease, while assets in fair condition increase over the 25-year forecast period. The forecast suggests that with the current budget allocations, the City may have difficulties in maintaining its Information Systems assets in good or better condition. This budget may not be sufficient to keep up with growing infrastructure needs over time, leading to an overall decline in asset condition. This may be especially true for Information Systems assets, as technology evolves quickly, and risks increase if technology is unsupported.

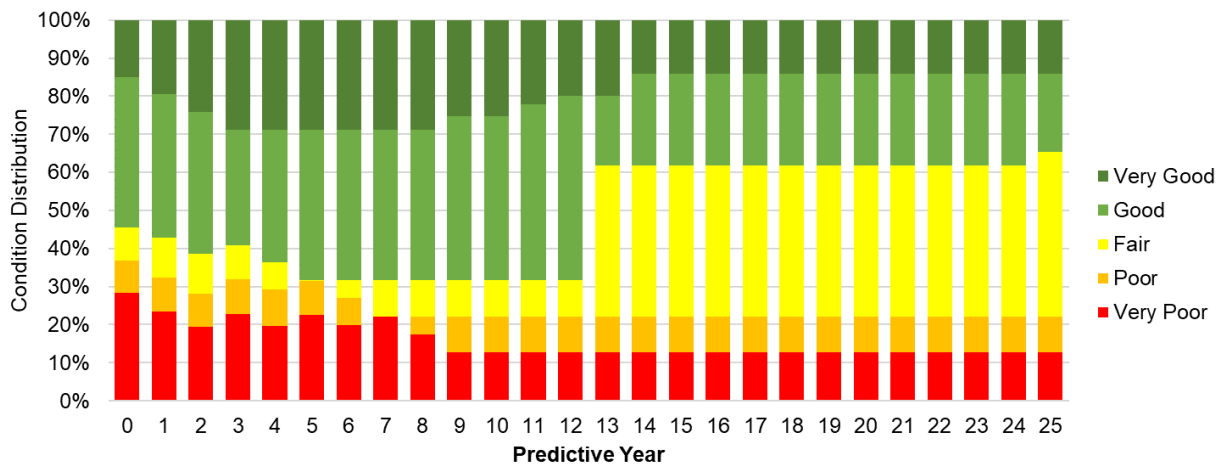


Figure 10-5. Information Systems Performance Forecast with Current Funding

10.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

The anticipated annual budget for the Information Systems assets infrastructure needs assessment was determined to be \$241,000. This is a funding gap of approximately \$120,000 compared to the current anticipated budget allocation. Information systems performance forecast with infrastructure needs as per lifecycle strategies can be seen below in Figure 10-6. Following the lifecycle strategies as discussed in Section 10.3, assets in very poor to poor condition decreases, and assets in good to very good condition increases. This scenario shows the biggest increase in overall asset condition compared to the other two forecast scenarios.

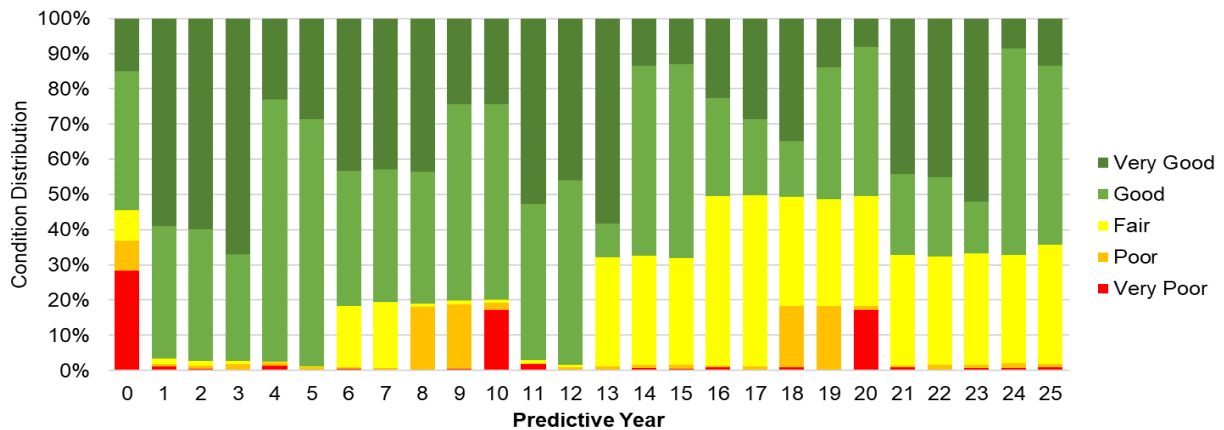


Figure 10-6. Information Systems Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

10.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff can determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 10-7 and Table 10-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City's 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates that Information Systems has no gap to maintain the current levels of service. If the City aims to optimize performance of their assets and adhere to lifecycle strategies, there is an annual funding gap of \$120,000. This funding gap underscores the challenge the City faces in adequately funding the necessary renewal, rehabilitation, and replacement activities for Information Systems assets.

Figure 10-7 also highlights the significant backlog in the year 2024 for Information Systems assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk in achieving intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to significantly higher operational and maintenance costs, affecting the availability of

services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

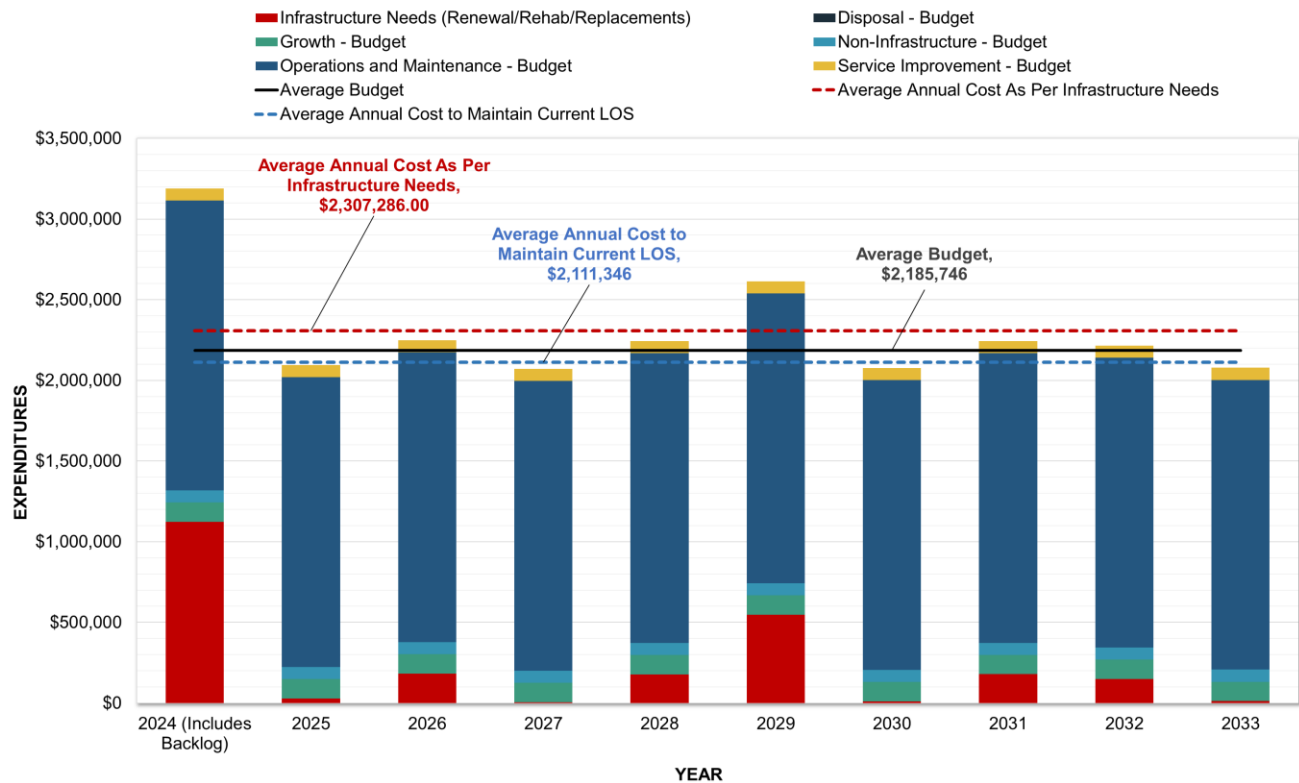


Figure 10-7. Information Systems Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2. The risks of not closing the infrastructure gap and following asset lifecycle strategies can be found below, along with strategies that may be used to close this significant gap. Significant infrastructure gaps are common throughout municipalities, as they struggle with the many pressures faced by asset owners, including inflation, increased construction costs, competing priorities, and limited funding. To address these issues, many strategies will need to be employed to ensure the City can provide safe and reliable services to their residents.

Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments,

the City can enhance the resilience and sustainability of the community while minimizing potential risks and ensuring long-term success.

10.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 10-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and presented as the annual average 2023-2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies to ensure the long-term sustainability and reliability of Information Systems for current and future generations.

Table 10-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Information Technology

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$120,000	\$120,000	\$120,000
Non-Infrastructure	\$75,000	\$75,000	\$75,000
Operations & Maintenance	\$1,795,746	\$1,795,746	\$1,795,746
Renewal, Rehabilitation & Replacement	\$120,000	\$45,600	\$241,540
Service Improvement	\$75,000	\$75,000	\$75,000
Annual Average Total Expenditure	\$2,185,746	\$2,111,346	\$2,307,286
Average Annual Funding Gap		No Gap	\$121,540
Percentage Increase Required to Address Gap		No Gap	6%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the

City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

10.5 Data Confidence and Improvement Plan

The main data sources and overall data confidence for Information Systems assets is in Table 10-7.

Table 10-7. Data Confidence – Information Systems

Asset Segment	Data Source	Data Confidence
Printers, Servers, Smartphone, Tablets, Workstations	Spreadsheet	A
Wired Network	GIS, spreadsheets	B

10.5.1 Recommendations for Improvements

Opportunities for improvement for Information Systems assets include:

- Continue to review and update asset inventory, expand on any assets that may not have been captured within this plan.
- Develop asset register and strategies for software, as this is a large operational, and sometimes capital, expense for the City.

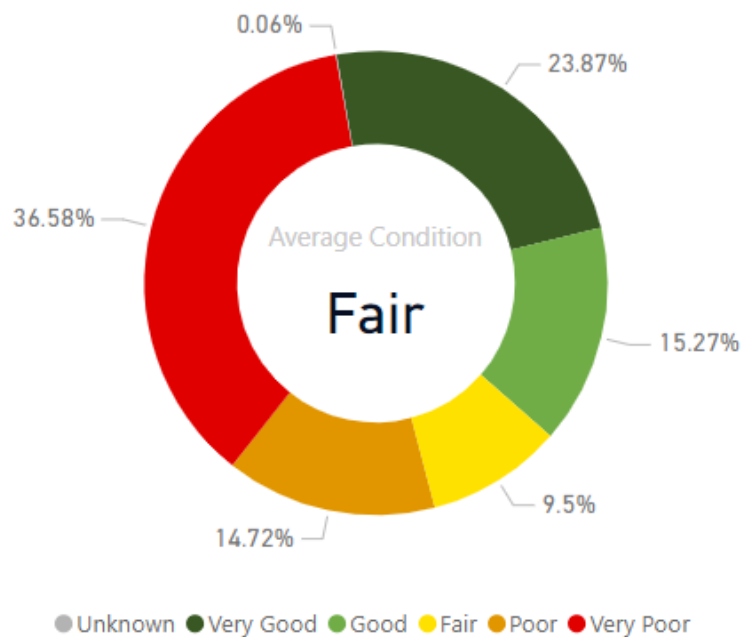


Parks and Cemeteries

Replacement Value

\$40,585,134 M

Overall Average Asset Condition



Quick Facts

Parks and Cemeteries operates and maintains:

- Just over 680 hectares of parklands
- Amenities, parking lots, sidewalks and sports fields and courts throughout 72 parks, parkettes and open spaces and three cemeteries (2 currently active) located within the City of Welland

11 Parks and Cemeteries

11.1 State of the Infrastructure

Welland’s Parks and Cemeteries service area is made up of sports fields, courts and amenities used by residents and includes the supporting parking lots and sidewalks, as well as plot marker foundations in City owned Cemeteries. Table 11-1 below shows the full inventory and estimated replacement cost for this system.

Table 11-1. Inventory and Current Replacement Value – Parks and Cemeteries

Asset Type		Count	Quantity Unit	2023 Estimated Replacement Value
Amenities	Dog Park Fenced	2	Units	\$200,000
	Dog Water Fountain	1	Unit	\$5,000
	Monument	5	Units	\$1,360,000
	Playground	42	Units	\$16,050,000
	Pond	2	Units	\$500,000
	Splash Pad	5	Units	\$2,250,000
Amenities Total				\$20,665,000
Parking Lots		24	Units	\$5,531,000
Sidewalks & Trails		22,171	M	\$3,769,134
Sports Fields & Courts	Baseball Diamonds	20	Units	\$4,700,000
	Basketball Courts	13	Units	\$1,020,000
	Batting Cage	1	Unit	\$40,000
	Beach Volleyball	6	Units	\$350,000
	Cricket Field	1	Unit	\$60,000
	Floor Hockey Rink	2	Units	\$300,000

Asset Type		Count	Quantity Unit	2023 Estimated Replacement Value
Sports Fields & Courts Total	Lawn Bowling	1	Unit	\$200,000
	Pickleball Court	6	Units	\$600,000
	Skateboard Park	1	Unit	\$700,000
	Skating	13	Units	\$450,000
	Soccer	3	Units	\$600,000
	Tennis	7	Units	\$1,600,000
				\$10,620,000
Cemeteries	Plot Marker Foundations	Unknown		Unknown
Grand Total				\$40,585,134

City staff collected information on all parks for the purposes of this AMP and used recent contracts and staff expertise to fill in required information on install years, service life, and replacement values. The City does not currently have a full inventory for monuments or plot marker foundations. Plot marker foundations were not assessed for condition, and do not currently have a replacement value. These assets are typically handled through operating expenses and not the capital replacement program. In 2023 City Council approved funding for monument assessment and repairs for safety reasons. The City is looking to build a complete inventory for monuments and address any safety concerns through on-going funding requests for this purpose. It is recommended that this information is kept as an asset register and kept up to date.

During the development of this AMP, it was found that information was missing for Parks event equipment. An inventory will be developed and included in the 2025 iteration of this plan, including any further improvements and updates to the parks asset inventories identified.

11.1.1 Asset Condition

Overall, Parks and Cemeteries assets are in Fair Condition.

Conditions were assigned to parks assets using age and estimated service life. The condition rating scale is below in Table 11-2.

Table 11-2. Condition Rating – Parks and Cemeteries

Condition	Age/ESL
Very Good	>80% life remaining
Good	60–80% life remaining
Fair	40–60% life remaining
Poor	20–40% life remaining
Very Poor	0–20% life remaining
Unknown	

A breakdown of the condition distribution based on asset value is shown in Figure 11-1 and Figure 11-2 below. As these figures demonstrate, most of the asset value falls at or below Fair condition. Based on the service life and age of the assets, approximately 37% of the assets in this category are in very poor condition.

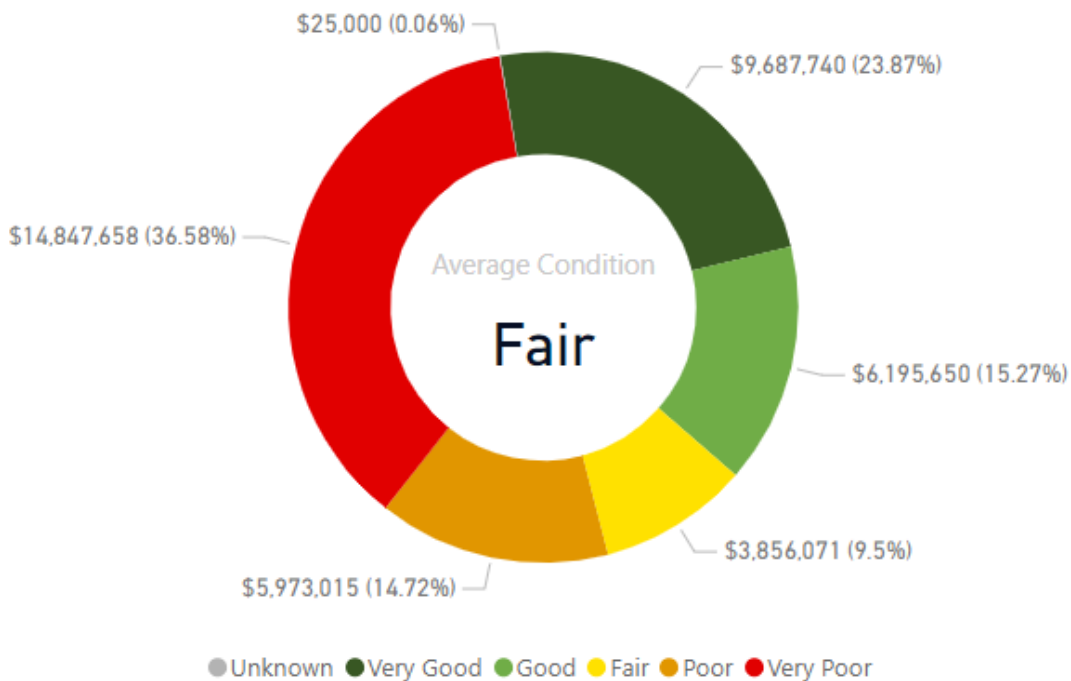


Figure 11-1. Parks and Cemeteries Condition Distribution (By Replacement Value) – Overall

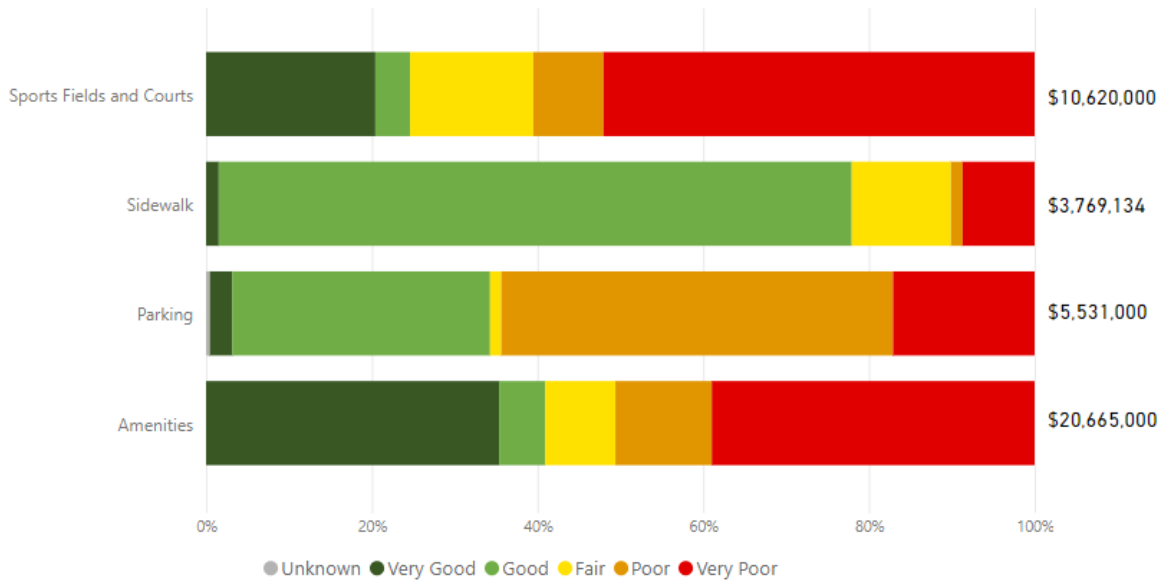


Figure 11-2. Parks and Cemeteries Condition Distribution (By Replacement Value) – Asset Category Breakdown

11.1.2 Average Age

A breakdown of the average age and estimated service life (ESL) per asset category is provided in Figure 11-3. As this figure demonstrates, on average, Parks and Cemeteries assets have not yet reached their ESL. However, sports fields and courts are nearing the end of their ESL.



Figure 11-3. Parks and Cemeteries Average Age vs. ESL – Asset Category Breakdown

11.2 Levels of Service

Parks and Cemeteries assets provide many services to the community, including recreation and leisure activities, sports and fitness facilities, community events and social gathering, environmental conservation and aesthetic, culture and economic benefits.

Levels of service refer to specific parameters that describe the extent and quality of services that a municipality provides to its residents. These parameters largely dictate the need for infrastructure, resources, and ultimately the costs associated with providing a service. In the context of this AMP, current LOS are outlined based on legislated metrics, and City defined metrics. These levels of service are described from a community experiential perspective and may include both qualitative and technical metrics.

The LOS metrics and the current performance are detailed in Table 11-3 and Table 11-4. Proposed, or target, LOS are required to be defined by the July 2025 AMP, along with a financial strategy to achieve the targets.

Table 11-3. Community Level of Service – Parks and Cemeteries

Key Service Attribute	Performance Measure	Current Performance (2024)
My City maintains what it owns	Current Reinvestment rate	3.94%
My City maintains what it owns	Cost per household	\$229.99

Table 11-4. Technical Level of Service – Parks and Cemeteries

Key Service Attribute	Performance Measure	Current Performance (2024)
I have access to services when I need them	Hectares of parks per thousand residents	5.45
I have access to services when I need them	Number of parks provided to citizens	72
I have quality services	Number of cemetery plots and cremation plots available	1237 traditional full plots available (Woodlawn Cemetery 669 and Doan's Ridge 568), 789 cremation plots available.
I have access to services when I need them	All Parkland in Municipality as a percent of Total Area of Municipality	2.48%
I have quality services	Percentage of total replacement cost of park assets in good to very good condition	39.14%
My City maintains what it owns	Percent of park assets in conformance with lifecycle strategy	83.89%

11.3 Lifecycle Management Strategy

The objective of the Lifecycle Management Strategy is to outline and establish a set of planned actions, based on best practice that will enable our assets to provide a sustainable level of service, while managing risk at the lowest lifecycle cost.

The City continues to improve its approach to the management of its assets and will continue to put in place processes, procedures, and tools to enable a more consistent approach across the City's Service Areas. Detailed below is a brief overview of some of the current asset management practices in place across the City.

11.3.1 Lifecycle Activities

Specific lifecycle activities, or planned actions, for Parks and Cemeteries are outlined in Table 11-5. These activities have been broken down into the Lifecycle Categories detailed in Section 1.4.7 and detail the activities that take place during the asset's lifecycle. Lifecycle activities ultimately help provide efficiencies and ensure assets can continue providing services at the level required, and at the lowest possible cost. Completing these activities will ensure the expected service function and reliability of the assets.

Renewal, Rehabilitation and Replacement activities have been incorporated into the infrastructure needs forecast scenarios that are included in Section 11.4.

Non-Infrastructure Solutions, Operations and Maintenance, Service Improvement and Growth Activities have been incorporated in the full-lifecycle cost of these assets but have not been analyzed for their adequacy to meet the City's needs.

By implementing these lifecycle activities, the City can effectively manage their Parks and Cemeteries assets, optimize operational efficiency, minimize costs, ensure regulatory compliance, and maximize the value and lifespan of their assets. These activities are also critical for maintaining safe and efficient infrastructure. These risks are further outlined in Section 12.2.2. Implementing the lifecycle activities and strategies in this plan will enhance the resilience and sustainability of infrastructure while mitigating potential risks.

Table 11-5. Lifecycle Management Activities – Parks and Cemeteries

Asset Management Practices / Planned Actions	Frequency
Non-Infrastructure	
<ul style="list-style-type: none"> • Park Recreation & Culture Masterplan 	<ul style="list-style-type: none"> • 5 years
<ul style="list-style-type: none"> • Condition assessments (includes accessibility) 	<ul style="list-style-type: none"> • As needed
<ul style="list-style-type: none"> • Community Trail Strategy 	<ul style="list-style-type: none"> • As needed
Operations & Maintenance Activities	
<ul style="list-style-type: none"> • Planned maintenance (Grooming, grass cutting, line and general field/court maintenance, surface renewal & repair) 	<ul style="list-style-type: none"> • As identified, based on condition report
<ul style="list-style-type: none"> • Condition Inspections 	<ul style="list-style-type: none"> • As needed
<ul style="list-style-type: none"> • Reactive maintenance 	<ul style="list-style-type: none"> • As needed
<ul style="list-style-type: none"> • Special Event Preparation 	<ul style="list-style-type: none"> • As needed
<ul style="list-style-type: none"> • Burial Activities 	<ul style="list-style-type: none"> • As needed
<ul style="list-style-type: none"> • Monument foundation installation 	<ul style="list-style-type: none"> • As needed
Renewal/Replacement Activities	
<ul style="list-style-type: none"> • Replacement of assets 	<ul style="list-style-type: none"> • End of useful life
<ul style="list-style-type: none"> • Renewal activities for sports fields and courts including turf replacement, painting, sealing, pavement repair, resurfacing, etc. 	<ul style="list-style-type: none"> • As required
Disposal Activities	
<ul style="list-style-type: none"> • Dispose of assets in line with replacements 	<ul style="list-style-type: none"> • As required
<ul style="list-style-type: none"> • Where possible, re-purpose materials to limit disposals (use granular from disposals on trails) 	<ul style="list-style-type: none"> • As materials are available

Asset Management Practices / Planned Actions	Frequency
Service Improvement & Growth Activities Planned	
<ul style="list-style-type: none"> • New assets to accommodate growth 	<ul style="list-style-type: none"> • As required or identified in Council approved Master Plans.
<ul style="list-style-type: none"> • New assets as a part of increased service requirements, accessibility improvements 	<ul style="list-style-type: none"> • As identified or required

11.4 Funding the Lifecycle Activities

The City uses the lifecycle management strategies described above in Section 11.3 to plan work and determine future expenditure needs for Parks and Cemeteries assets. These activities, along with the scenarios outlined below provide a comprehensive forecast of expenditures required for managing infrastructure assets and ensuring the City can meet the demands of current services and existing infrastructure.

The scenarios below consider only renewal, rehabilitation and replacement lifecycle activity cost and needs. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been accounted for in the Scenario Comparison, found below in Section 11.4.4, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

The City has implemented Predictor, which is a Decision Support System to continue its efforts to make informed decisions on asset investments. This tool has been used for the analysis of the scenarios outlined below. The condition profiles provide an outlook to the performance of assets for 25 years. For the purposes of this AMP, the scenario comparison and infrastructure gap has only been evaluated for the next 10 years, as required by O.Reg. 588.17.

11.4.1 Scenario 1: Maintain Current Level of Service

Understanding the cost to maintain current levels of service is a requirement of O.Reg. 588/17. For the purposes of this AMP, maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

The average annual expenditure required for Renewals, Rehabilitations and Replacements for Parks and Cemeteries assets was determined to be approximately \$800,000 to maintain current level of service (maintaining the backlog). These activities represent the potential activities required to be undertaken to maintain the current levels of service. The condition distribution can be seen below in Figure 11-4.

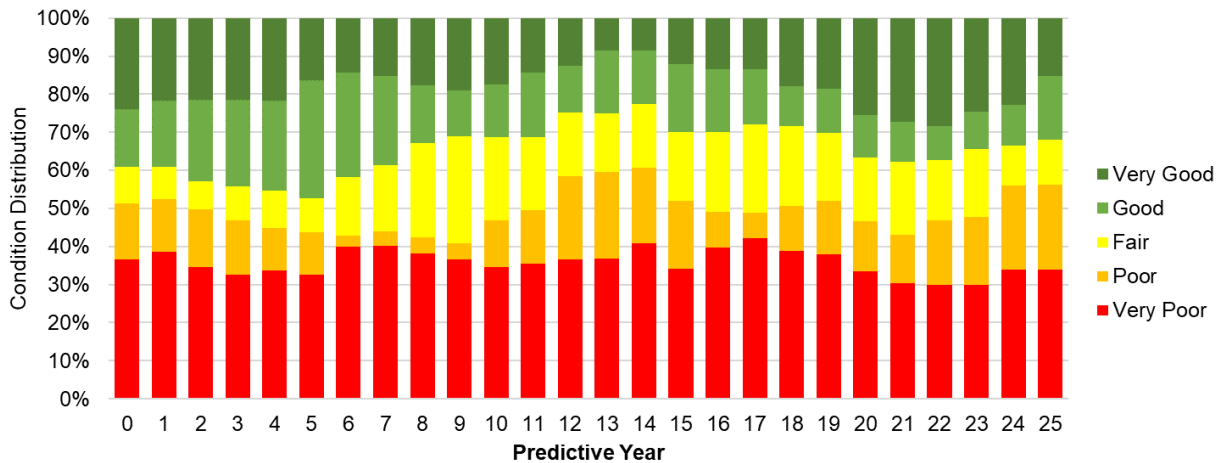


Figure 11-4. Parks and Cemeteries Performance Forecast to Maintain Current Levels of Service

11.4.2 Scenario 2: Current Budget

This scenario evaluates asset performance (condition) under the current funding level that the City anticipates allocating towards each asset category. The current budgets were obtained from the City’s 2023 budget and is used as the average spending for the 10-year forecast. This is used to illustrate the change in performance (condition) under anticipated funding levels. Only renewal, rehabilitation and replacement activities are completed that fit within the current funding allotted to the asset category are completed as part of this forecast.

The anticipated annual funding for Parks and Cemeteries assets is approximately \$1.7M. The condition distribution for the current budget scenario is shown below in Figure 11-5. With current anticipated funding levels assets in good condition decrease, while assets in very poor to poor condition increase over the 25-year forecast period. The forecast suggests that with the current budget allocations, the City may have difficulties in maintaining its infrastructure assets in good or better condition. While condition stays fairly steady over the 25-year forecast, this budget may not be sufficient to keep up with growing infrastructure needs over time, leading to an overall decline in asset condition.

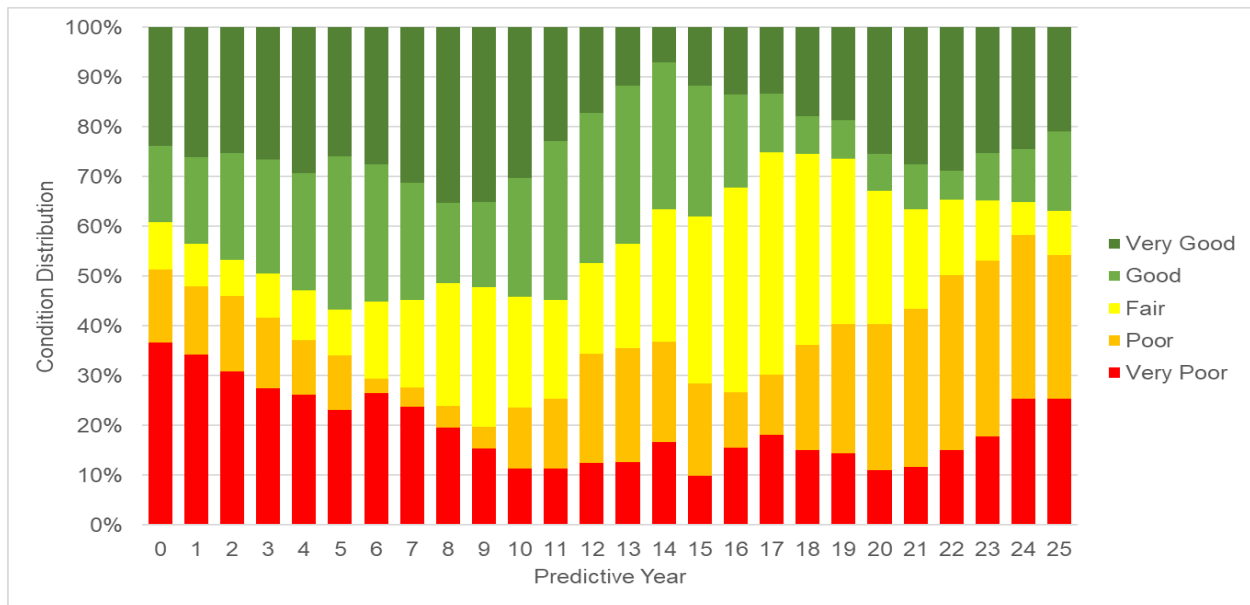


Figure 11-5. Parks and Cemeteries Performance Forecast with Current Funding

11.4.3 Scenario 3: Infrastructure Needs Assessment

This scenario is run to determine the required spending for the 10-year period to address infrastructure needs based on expected/planned rehabilitation, renewals, and replacements of assets as per their defined lifecycle strategy. This scenario also identifies rehabilitation and replacement requirements backlog, which is work that should have already been completed by the time of this assessment.

The anticipated annual budget for Parks and Cemeteries assets infrastructure needs assessment was determined to be \$1.7M. This is a funding gap of approximately \$7,000 compared to the current anticipated budget allocation. Table 11-6 shows the performance forecast with infrastructure needs as per lifecycle strategies. Following the lifecycle strategies as discussed in Section 11.3, assets in very poor condition decreases, and assets in good to very good condition increases. This scenario shows the biggest increase in overall asset condition compared to the other two forecast scenarios.

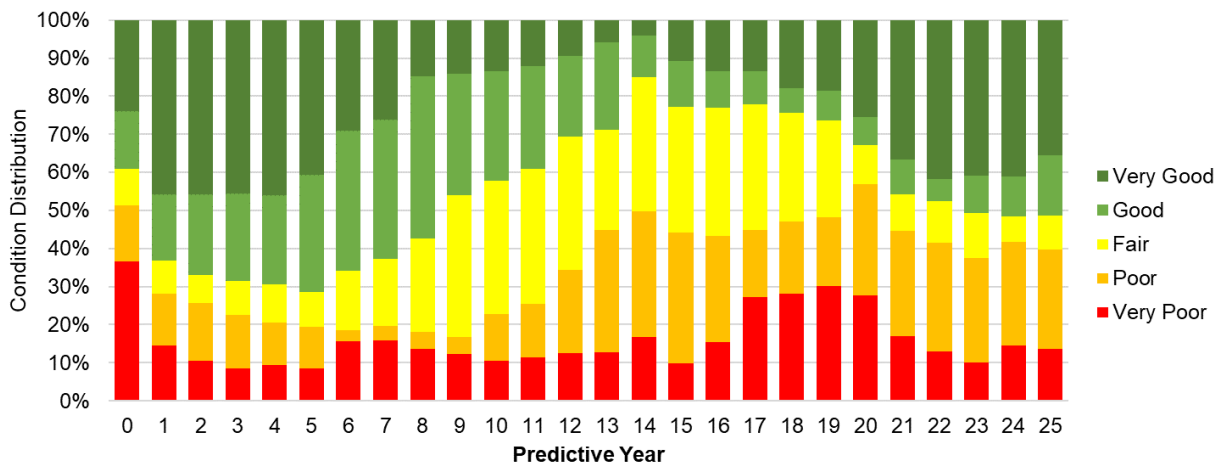


Figure 11-6. Parks and Cemeteries Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

11.4.4 Scenario Comparison & Infrastructure Gap

By comparing the above scenarios, City staff can determine if there are any gaps in funding to address infrastructure needs. This information is intended to support decision-making on how to address any gaps. The compiled expenditure needs under each of the three forecast scenarios are presented in Figure 11-7 and Table 11-6 which illustrates a bar graph of forecasted renewal, rehabilitation and replacement expenditures which is represented as the infrastructure needs based on Scenario 3. The remaining lifecycle expenditures, which have been informed on the City's 2023 operating and capital budget, have been colour coded by lifecycle activities. The solid and dashed lines represent the equivalent annual average investment needs of the three scenarios described above.

The scenario comparison indicates that Parks and Cemeteries has no gap to maintain the current levels of service. If the City aims to optimize performance of their assets and adhere to lifecycle strategies, there is an annual funding gap of \$7,000.

Figure 11-7 highlights the significant backlog in the year 2024 for Parks and Cemeteries assets. The backlog represents renewal, rehabilitation and replacement activities that have been identified as necessary but have not been completed. Continuing to defer renewals creates risks of higher financial costs, potential decreased availability of assets, and potential decreased satisfaction with asset performance.

Continuing to defer renewal works can put the City of Welland at risk in achieving intergenerational equality. Future generations will be unable to maintain the level of service customers currently enjoy. Continued project deferral can also lead to significantly higher operational and maintenance costs, affecting the availability of

services in the future. Properly funded timely renewals can ensure that assets will continue to perform as expected into the future.

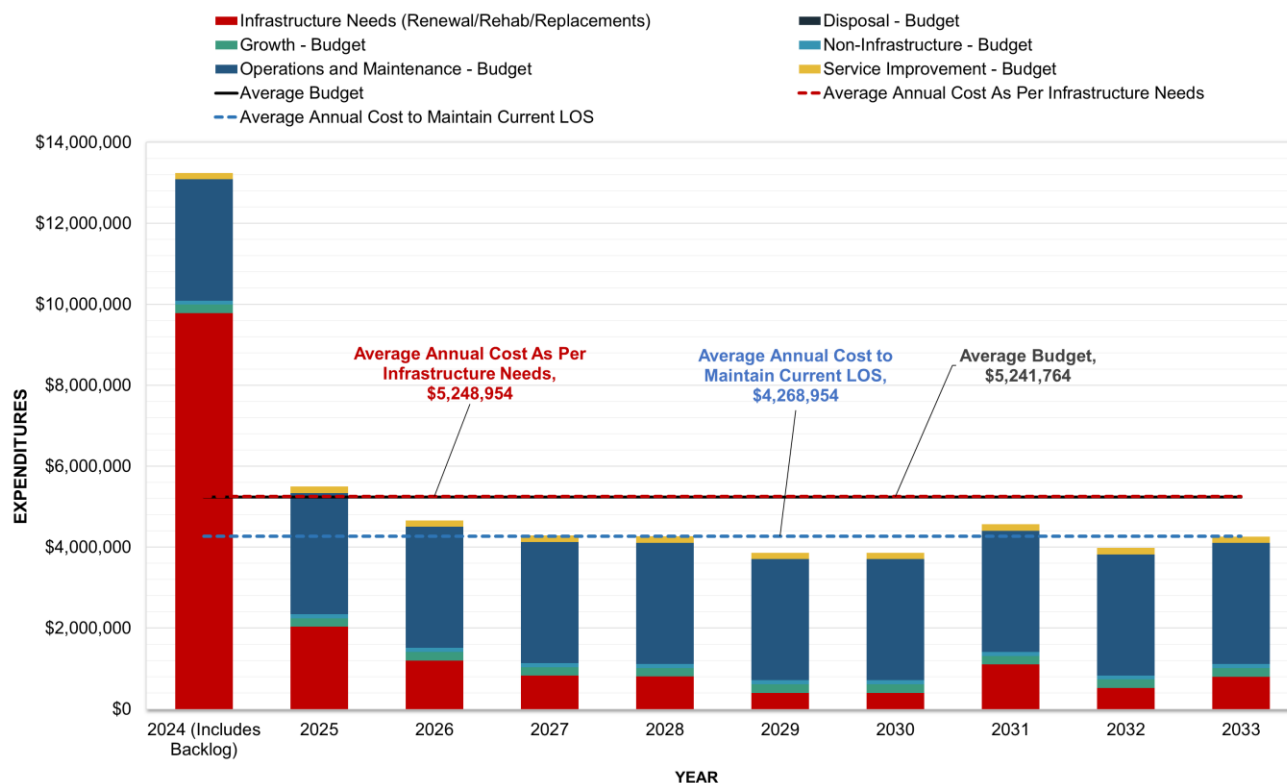


Figure 11-7. Parks and Cemeteries Scenario Comparison

The strategies developed in this AMP represent the comprehensive approach to managing the full lifecycle of assets to meet the current levels of service provided by the City while providing services at the lowest lifecycle cost. This is accomplished by extending their lifespan and mitigating the risk of costly major repairs or premature replacement.

The activities and strategies listed within this chapter also provide the City’s best chance to avoid the risks associated with asset ownership. The risks associated with not following the lifecycle strategies and activities can be significant and wide-ranging, which are further explained in Section 12.2.2 Risk Associated with Lifecycle Strategies. Addressing these risks requires a proactive approach to infrastructure planning, investment, and management. By prioritizing operations and maintenance, asset renewal and strategic investments, the City can enhance the resilience and sustainability of the community while minimizing potential risks and ensuring long-term success.

11.4.4.1 Forecasted Infrastructure Gap

The infrastructure gap is summarized below in Table 11-6. Current funding for capital budgets and operating budgets is based on the approved 2023 budget and

presented as the annual average 2023–2033 fiscal years. With this information, the City can make informed decisions about current and future budget allocations, prioritize maintenance and replacement projects, and develop strategies to ensure the long-term sustainability and reliability of Parks and Cemeteries assets for current and future generations.

Table 11-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap – Parks and Cemeteries

Lifecycle Activity	Average Annual Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$0	\$0	\$0
Growth	\$210,560	\$210,560	\$210,560
Non-Infrastructure	\$100,000	\$100,000	\$100,000
Operations & Maintenance	\$2,991,764	\$2,991,764	\$2,991,764
Renewal, Rehabilitation & Replacement	\$1,779,440	\$806,630	\$1,786,630
Service Improvement	\$160,000	\$160,000	\$160,000
Annual Average Total Expenditure	\$5,241,764	\$4,268,954	\$5,248,954
Average Annual Funding Gap		No Gap	\$7,190
Percentage Increase Required to Address Gap		No Gap	0%

It should be noted that the planned infrastructure spending and needs over the 10-year period are in 2023 dollars, and an inflationary measure has not been applied for future spending requirements.

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

11.5 Data Confidence and Improvement Plan

The main data sources and data confidence for Parks and Cemeteries assets is in Table 11-7.

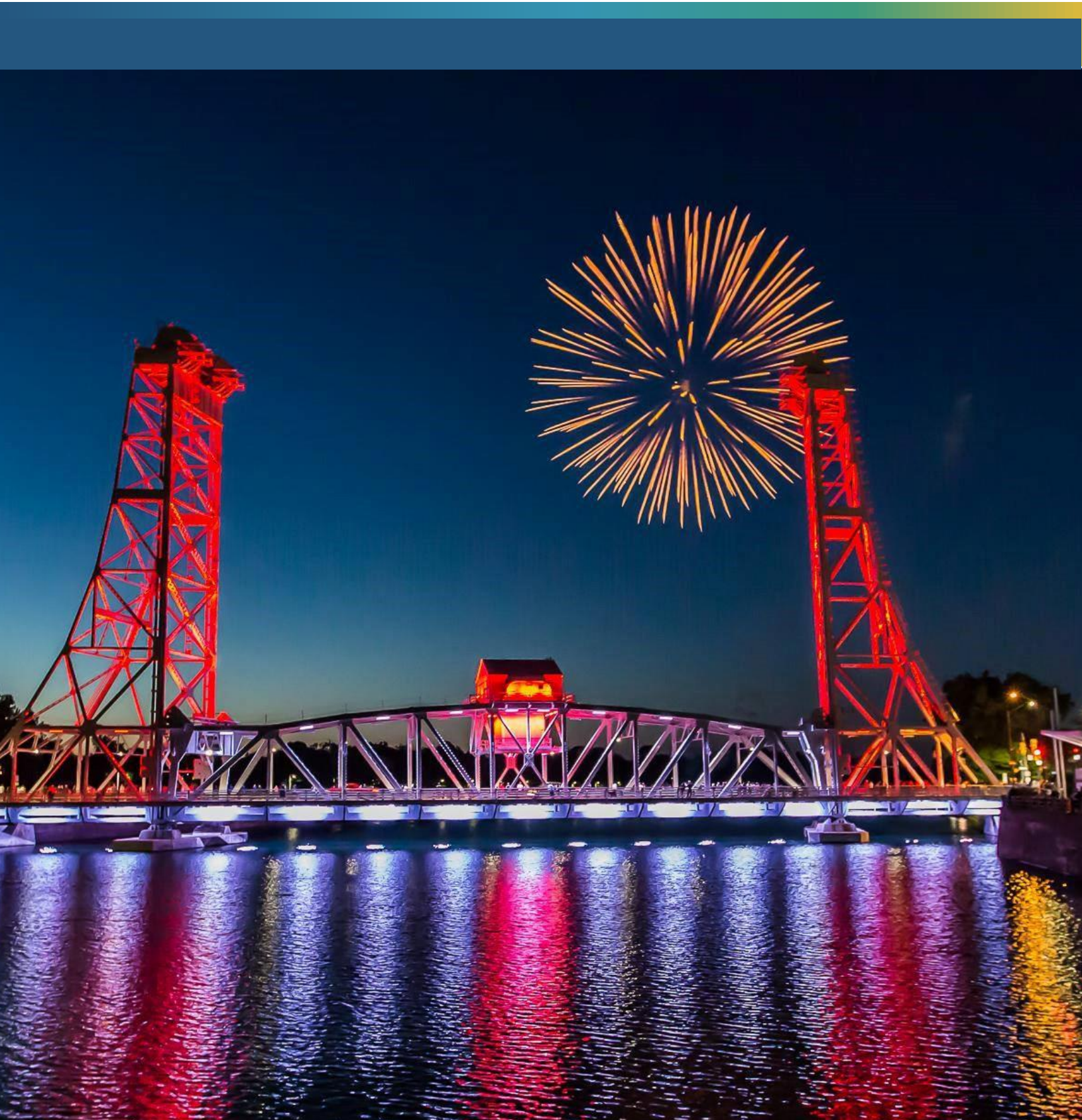
Table 11-7. Data Confidence – Parks and Cemeteries

Asset Segment	Data Source	Data Confidence
Amenities, Sports Fields and Courts	Spreadsheet, Staff Expertise, Recent Contracts	B
Parking	Spreadsheet	B
Sidewalk	GIS	C

11.5.1 Recommendations for Improvements

Opportunities for improvement for Parks and Cemeteries include:

- Inventory/Asset Register: Keep asset inventory as an asset register, continue to improve, keep up to date, add any necessary assets to the list (including signage and gateways), continue to review replacement values. Review any identified discrepancies in asset data compiled for the purposes of this plan.
- Complete a full inventory of monuments and plot marker foundations.
- Develop and implement an inspections and preventative maintenance program for monuments, splash pads, playgrounds, skateparks, courts, etc.
- Prepare park satisfaction survey to expand on LOS metrics for parks.
- Include LOS metrics for park accessibility and percent of properties within 400m of a park.



12.0 Financing Strategy

12 Financing Strategy

The financial strategy in this AMP is based on the City of Welland's 2023 budget to determine the funding available to support infrastructure. All forecasted dollars are presented in 2023 dollars, and no inflationary measure has been included in the needs. This financial strategy provides an analysis of the average annual funding available, the expenditures required to maintain current LOS, as well as the ideal expenditures to meet infrastructure needs based on the lifecycle strategies identified throughout this plan.

For the purposes of this AMP only renewal, rehabilitation and replacement lifecycle activity costs and needs are analyzed. These lifecycle activities ensure infrastructure remains in a state of good repair and can continue to provide services to residents. Further details of the expenditures and funding required for the remaining lifecycle activities (non-infrastructure, service improvements, operations and maintenance, and growth) have been reported on to consider the whole lifecycle cost of the City's assets and services, which are based on the operating and capital budgets for the City. For the purposes of this AMP, these activities, and their costs, are assumed to be enough to meet the community's expectations. This AMP does not provide an analysis on optimizing these activities and costs. Growth needs are captured based on the planned projects that are funded through development charges or are activities to address the growing City population.

12.1 Budget Overview

12.1.1 Planned Expenditures

A summary of the forecasted expenditures for the 10-year period is provided in Table 12-1. Based on the review of this forecast, the average annual expenditures planned for all lifecycle activities listed for rate and tax supported assets is \$43M, and \$63M respectively. The 2023 budget was used as the baseline budget and used as the average for the 10-year period of the analysis. The only exception was for fire, the expenditures for the new fire hall were removed as these costs were not indicative of the average spending for fire assets. The 2025 version of this plan will further assess the average budget.

Table 12-1. Infrastructure Expenditure Summary – Average Annual 2024–2033

Service Category	Disposal	Growth	Non-Infrastructure	Operations & Maintenance	Renewal/Rehabilitation	Replacement	Service Improvement	Grand Total*
Rate Supported								
Sanitary System	\$150,000	\$1,488,714	\$95,000	\$18,558,152	\$1,045,076	\$2,227,200		\$23,564,142
Water System		\$201,000	\$40,000	\$13,715,892	\$1,051,000	\$4,328,550	\$0	\$19,336,442
Total	\$150,000	\$1,689,714	\$135,000	\$34,238,044	\$2,096,076	\$6,555,750	\$0	\$42,900,584
Tax Supported								
Facilities		\$147,527	\$50,000	\$8,648,459	\$2,640,973		\$477,300	\$11,964,259
Fire		\$624,162		\$11,569,833		\$1,624,803	\$511,035	\$14,329,833
Fleet		\$184,450		\$2,000,799		\$1,473,850		\$3,659,099
Forestry				\$632,350	\$210,783			\$843,133
IS		\$120,000	\$75,000	\$1,795,746		\$120,000	\$75,000	\$2,185,746
Parks		\$210,560	\$100,000	\$2,991,764	\$579,440	\$1,200,000	\$160,000	\$5,241,764
Storm System		\$82,750	\$46,250	\$262,547	\$325,000	\$2,080,250		\$2,796,797
Transportation		\$632,113	\$327,000	\$5,264,599	\$3,870,600	\$7,549,337	\$3,000	\$17,646,649
Total	\$0	\$2,001,562	\$598,250	\$33,166,097	\$7,626,796	\$14,048,240	\$1,226,335	\$58,667,280

*Expenditures that were not specific to any asset group but benefited the overall tax/rate supported assets (Ex. Official Plan, Corporate Services, etc.) have not been included in this AMP.

12.2 Infrastructure Expenditure Need

The infrastructure renewal, rehabilitation, and replacement needs were determined based on Scenario 1 and Scenario 3, which have been outlined in the asset category chapters, and have been summarized below in Table 12-1 and Table 12-3. Scenario 2 (Current Budget) was used within the asset category chapters to analyze the impact of the current budget, as well as to compare the budget available in comparison to Scenario 1 and 3.

Scenario 1: Maintain Current Level of Service maintain the current backlog of renewals, rehabilitations, and replacements at the same level. The backlog is calculated by determining the lifecycle activities that should have been completed as per lifecycle strategies. This scenario does not necessarily address improving the performance (condition) as the focus is to ensure that the backlog of work is maintained.

Scenario 2: Current Budget reviews the current budget available to fund lifecycle activities, including renewals, rehabilitations, and replacements.

Scenario 3: Infrastructure Needs as Per Lifecycle Management Strategies prioritizes a proactive approach to infrastructure investment by considering lifecycle management strategies developed with staff and based on best practices, rather than being restricted by available funding. This approach recognizes that focusing solely on immediate budget constraints may lead to short-term fixes that could prove more costly in the long run. By adopting lifecycle management strategies and best practices, the City can prioritize investments in infrastructure renewal, rehabilitation, and replacement activities in a way that maximizes efficiency, reliability, and longevity.

The results have been broken out to rate supported and tax supported assets to reflect the different sources of revenue of these asset categories, as well as compiled for information purposes.

Table 12-2. Rate Supported Cost to Maintain Current Level of Service and Infrastructure Needs As Per Lifecycle Strategies

Service Category	Average Annual Expenditure to Maintain Current LOS Scenario 1	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies Scenario 3
Sanitary	\$15,981,996	\$31,736,633
Water	\$8,442,372	\$17,295,006
Total	\$24,424,368	\$49,031,639

Table 12-3. Tax Supported Cost to Maintain Current Level of Service and Infrastructure Needs As Per Lifecycle Strategies

Service Category	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Facilities	\$6,284,834	\$7,311,489
Fire	\$1,155,780	\$1,956,363
Fleet	\$986,580	\$1,935,180
Forestry	\$175,000	\$175,000
IS	\$45,600	\$241,540
Parks	\$806,630	\$1,786,630
Storm System	\$14,093,380	\$35,358,805
Transportation	\$5,851,864	\$10,657,549
Total	\$29,399,668	\$59,422,556

These expenditures represent the average annual cost of the 10-year forecast based on the identified scenarios. Actual expenditures, and the annual averages can be seen below in Figure 12-1 and Figure 12-2, including the expenditures for all lifecycle activities.

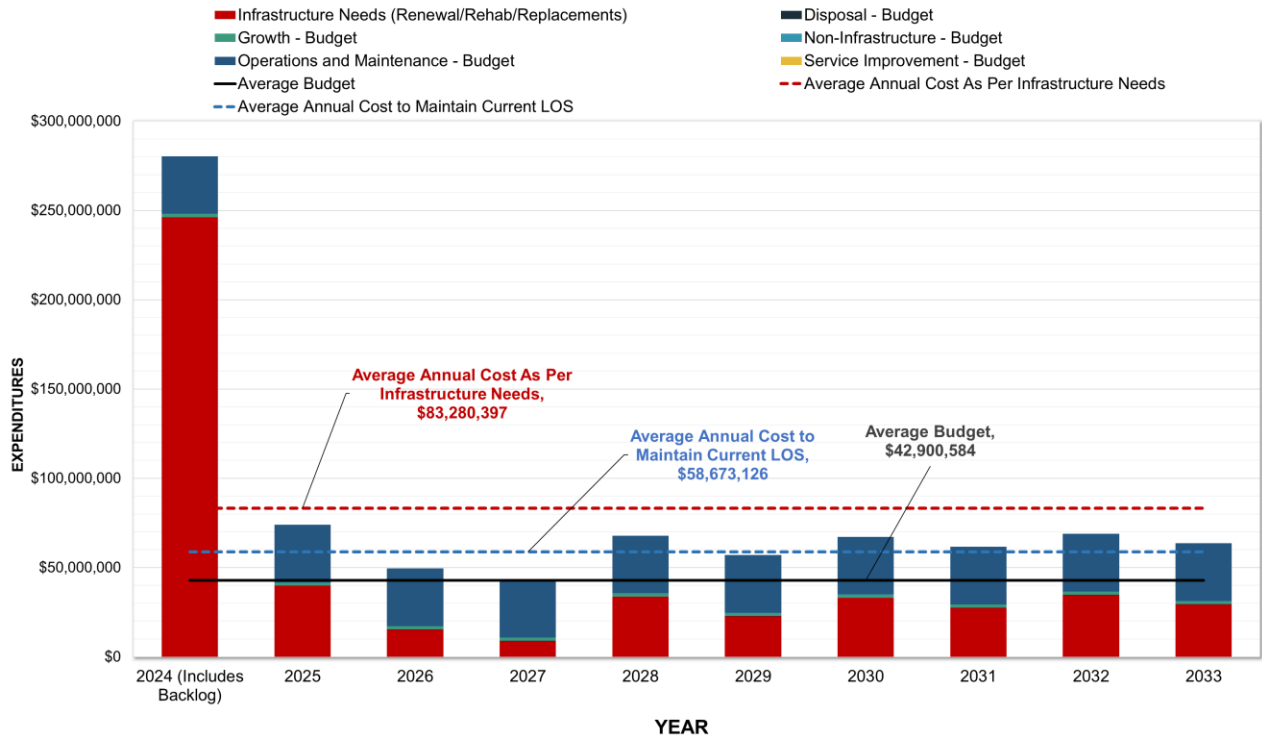


Figure 12-1. Rate Supported Lifecycle Activity Expenditures

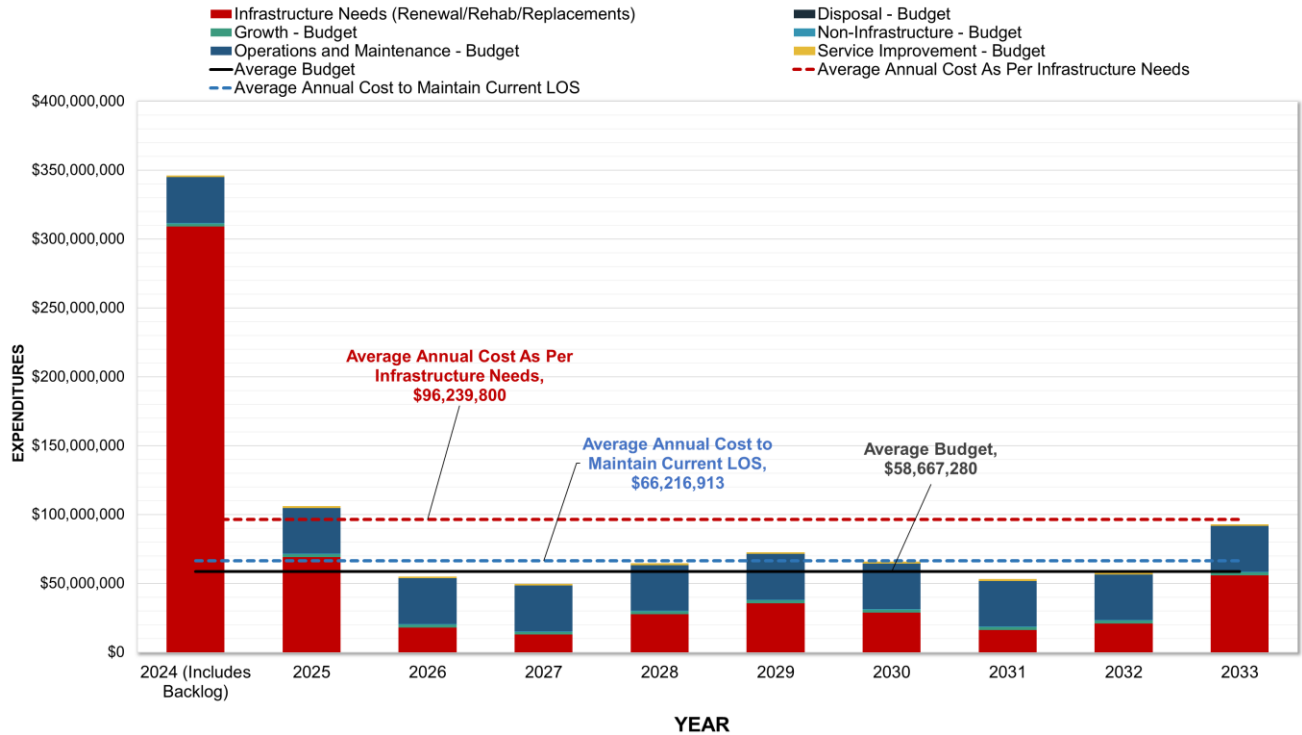


Figure 12-2. Tax Supported Lifecycle Expenditures

Both rate supported and tax supported assets show a significant backlog (represented in 2024) in the Figures above. This backlog represents work that

should have been completed as per the lifecycle strategies defined throughout this AMP.

While acknowledging that funding constraints are a reality, the amount of backlog for rate supported, and tax supported assets, emphasizes the importance of strategic planning and investment to optimize the performance and longevity of critical infrastructure to continue to provide services to the community.

12.2.1 Infrastructure Funding Shortfall

12.2.1.1 Rate and Tax Supported Infrastructure Gap

The City of Welland, like many municipalities, are facing challenges in consistently carrying out rehabilitation and replacement activities for its assets due to funding and resource constraints, as well as competing priorities. This can result in the accumulation of an infrastructure backlog, where necessary work outlined in lifecycle management plans is not completed in a timely manner.

The infrastructure funding shortfall, as described, represents the annual difference between the capital need based on maintaining current levels of service and infrastructure needs, and the capital budget forecast. This shortfall includes allowances for addressing the infrastructure backlog, which is crucial for gradually reducing the backlog and ensuring the continued functionality and safety of assets.

To calculate the infrastructure funding gap, the forecasted replacement and rehabilitation costs for a 10-year period were subtracted from the expenditure needs to maintain current level of service (maintain backlog), and for infrastructure needs based on the lifecycle strategies.

Table 12-4. Rate Supported Annual Average Lifecycle Expenditures and Infrastructure Gap

Lifecycle Activity	Annual Average Budget	Average Annual Expenditure to Maintain Current LOS (Scenario 1)	Average Annual Expenditure for Infrastructure Needs As Per Lifecycle Strategies (Scenario 3)
Disposal	\$150,000	\$150,000	\$150,000
Growth	\$1,689,714	\$1,689,714	\$1,689,714
Non-Infrastructure	\$135,000	\$135,000	\$135,000
Operations & Maintenance	\$32,274,044	\$32,274,044	\$32,274,044
Renewal, Rehabilitation & Replacement	\$8,651,826	\$24,424,368	\$49,031,639
Service Improvement	\$0	\$0	\$0
Total	\$42,900,584	\$58,673,126	\$83,280,397
Annual Average Funding Gap		\$15,772,542	\$40,379,813
% Increase Required to Address Gap		37%	94%

Table 12-5. Tax Supported Annual Average Lifecycle Expenditures and Infrastructure Gap

Lifecycle Activity	Annual Average Budget	Average Annual Cost to Maintain Current LOS	Average Annual Cost of Infrastructure Needs as Per Lifecycle Strategies
Disposal	\$0	\$0	\$0
Growth	\$2,001,562	\$2,001,562	\$2,001,562
Non-Infrastructure	\$598,250	\$598,250	\$598,250
Operations & Maintenance	\$33,166,097	\$33,166,097	\$33,166,097
Renewal, Rehabilitation & Replacement	\$21,675,036	\$29,224,669	\$59,247,556
Service Improvement	\$1,226,335	\$1,226,335	\$1,226,335
Total	\$58,667,280	\$66,216,913	\$96,239,800
Annual Average Funding Gap		\$7,549,633	\$37,572,520
% Increase Required to Address Gap		13%	64%

Addressing infrastructure backlog and closing the funding gap will require strategic planning, prioritization, and potentially exploring alternative funding sources or financing mechanisms. It's essential for the City to develop comprehensive strategies that balance immediate needs with long-term sustainability to ensure the continued provision of essential services to its residents.

12.2.1.2 Overall Asset Infrastructure Gap

The information below is the compiled expenditures and infrastructure gap for all asset categories. The City is facing an annual infrastructure gap of \$23.3M to maintain assets in their current level of service, and an annual gap of \$78.1M to meet the infrastructure needs based on lifecycle strategies. This is a significant gap, that needs to be addressed. By taking a proactive and multifaceted approach to addressing the infrastructure gap, the City of Welland can work towards ensuring the continued functionality, safety, and resiliency of its essential assets for the benefit of residents and businesses.

Scenario 1: Maintain Current Level of Service

Figure 12-3 below shows the performance forecast condition distribution for all assets to maintain current levels of service. It was determined that a budget of \$53.6M is required to maintain levels of service. For the purposes of this AMP,

maintain current level of service is defined as maintaining the current backlog of renewals, rehabilitations, and replacements at the same level. As seen in Figure 12-3, the overall condition of assets improves in this scenario, with assets in good to very good condition starting around 30% and increasing to just under 60% at the end of the forecast period.

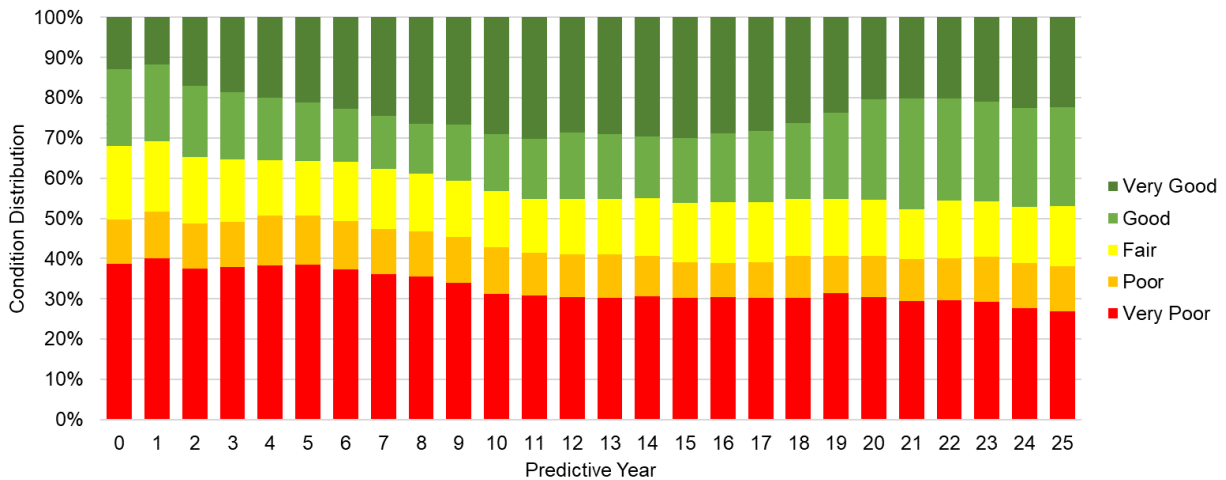


Figure 12-3. All Assets Performance Forecast to Maintain Current Levels of Service

Scenario 2: Current Budget

Figure 12-4 below shows the performance forecast condition distribution for all assets with the current anticipated budget. The current anticipated budget for renewal, rehabilitation and replacement activities for rate and tax assets is \$30.3M. Figure 12-4 shows that asset condition decreases through the forecast period. Assets in poor to very poor condition start at just below 50%, and finish around 55%.

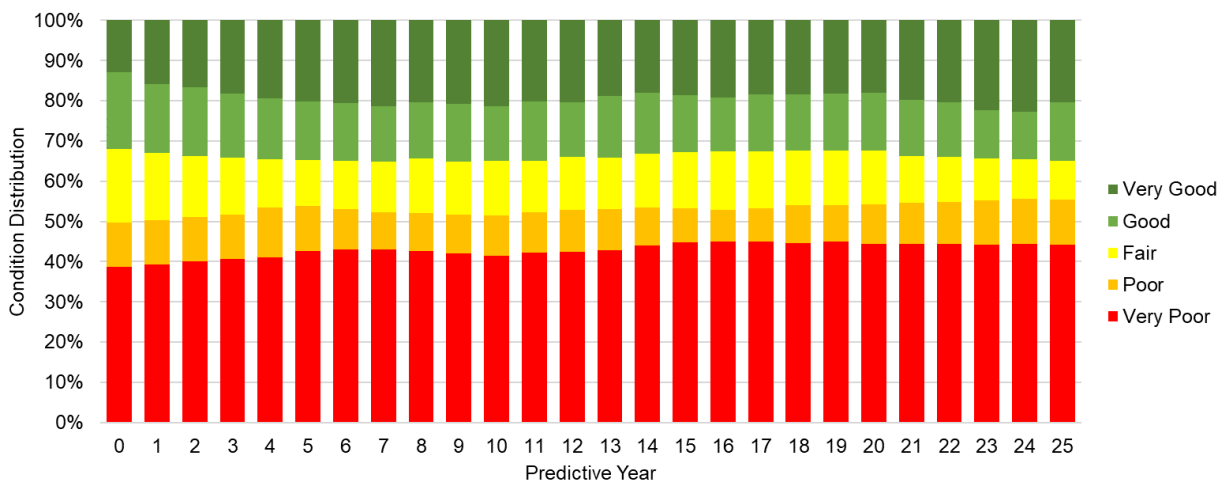


Figure 12-4. All Assets Performance Forecast with Current Funding

Scenario 3: Infrastructure Needs Assessment

Figure 12-5 below shows the performance forecast condition distribution for all assets with infrastructure needs as per lifecycle strategies. It was determined that a budget of \$1.08B is required for infrastructure needs as per lifecycle strategies for all assets. Figure 12-5 shows an increase in the overall condition of assets. Assets in good to very good condition starts at just over 30%, and at the end of the forecast period is over 50%.

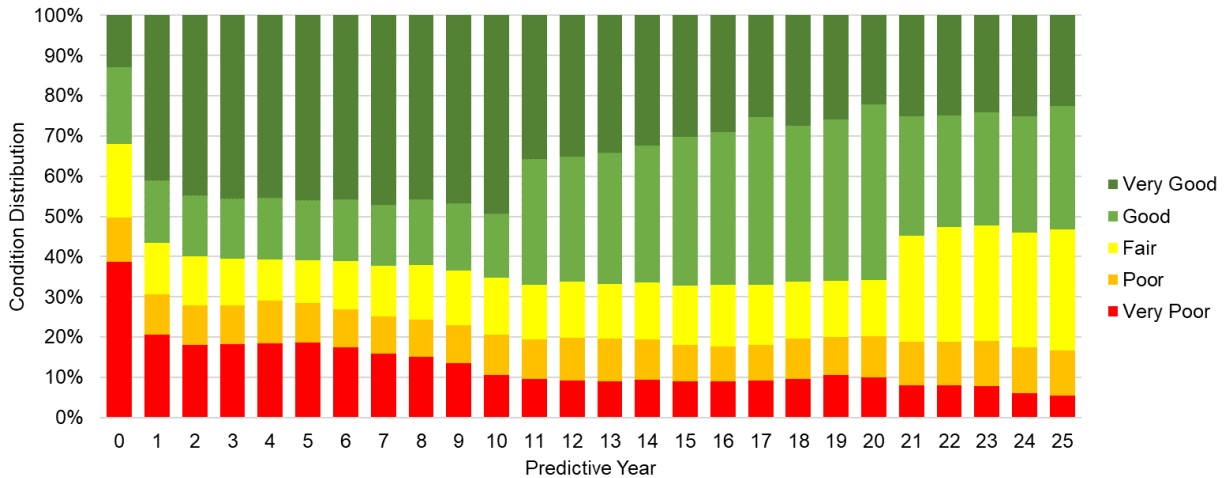


Figure 12-5. All Assets Performance Forecast with Infrastructure Needs as per Lifecycle Strategies

Figure 12-6 below shows the lifecycle expenditures for all assets. As described above, there is a gap of \$23.3M to maintain current levels of service and a gap of \$78.1M with infrastructure needs as per lifecycle strategies. There is a significant backlog shown in the year 2024, this backlog represents work that should have been completed as per the lifecycle strategies defined throughout this AMP.

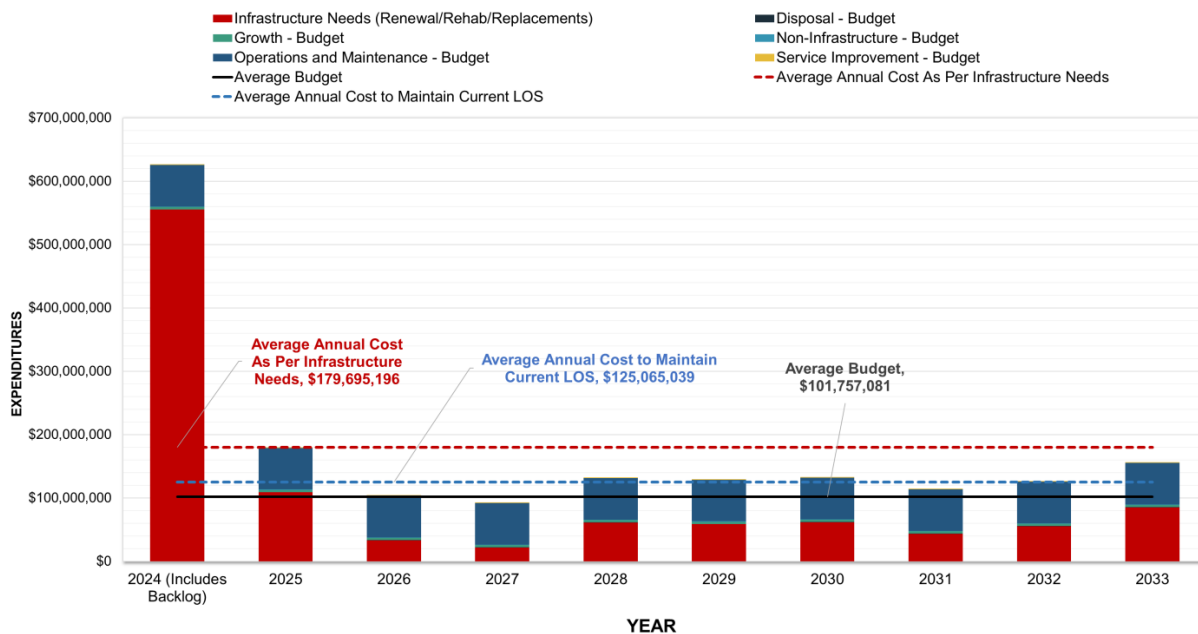


Figure 12-6. Lifecycle Expenditures – All Assets

This AMP focuses on identifying the renewal and replacement need for infrastructure investments, it is important to note that this is not an assessment of the operations and maintenance investments, and these are assumed to be adequate to meet the City’s needs. It is recommended that efforts be made to quantify the true cost and need of operations and maintenance. Optimizing maintenance and leveraging new technologies can enhance operational efficiency and extend the lifespan of assets, ensuring that assets are being provided and maintained at the lowest possible cost.

Table 12-6. Lifecycle Activity Investments & Annual Average Infrastructure Gap

Lifecycle Activity	Average Annual Budget	Average Annual Cost to Maintain Current LOS	Average Annual Cost of Infrastructure Needs as Per Lifecycle Strategies
Disposal	\$150,000	\$150,000	\$150,000
Growth	\$3,691,276	\$3,691,276	\$3,691,276
Non-Infrastructure	\$733,250	\$733,250	\$733,250
Operations & Maintenance	\$65,440,141	\$65,440,141	\$65,440,141
Renewal, Rehabilitation & Replacement	\$30,516,079	\$53,824,037	\$108,454,194
Service Improvement	\$1,226,335	\$1,226,335	\$1,226,335
Annual Average Total Expenditure	\$101,567,864	\$125,065,039	\$179,695,196
Average Annual Funding Gap		\$23,497,175	\$78,127,332
Percentage Increase Required to Address Gap		23%	77%

The risks of not closing the infrastructure gap and following asset lifecycle strategies can be found below, along with strategies that may be used to close this significant gap. Significant infrastructure gaps are common throughout municipalities, as they struggle with the many pressures faced by asset owners, including inflation, increased construction costs, competing priorities, and limited funding. To address these issues, many strategies will need to be employed to ensure the City can provide safe and reliable services to their residents.

12.2.2 Risk Associated with Lifecycle Strategies

Following lifecycle strategies and activities outlined in this AMP are the City’s best way to avoid risk. Ignoring the infrastructure gap, and not completing lifecycle activities and strategies as outlined in this AMP can lead to a range of negative consequences, both immediate and long-term. These risks and their consequences at a high level include:

Deterioration of Infrastructure and Asset Failure: Without proper investments for renewal, rehabilitation and replacement activities, infrastructure assets will deteriorate over time, leading to increased breakdowns, service disruptions, and potentially safety hazards.

Decreased Operational Efficiency: Without proper lifecycle management strategies, infrastructure may become inefficient, leading to increased downtime, delays, and reduced productivity.

Increased Costs: Delaying infrastructure investments leads to higher costs in the long run. Deferred maintenance and rehabilitations can result in more extensive reactive maintenance, or the need for premature asset replacements, which are significantly more expensive than timely maintenance and upgrades. Ultimately by not adequately keeping assets in a good state of repair leads to higher lifecycle cost.

Improper Forecasts: Many non-infrastructure activities such as master plans, asset management planning, provide valuable insights into the infrastructure needs, if these activities are not completed, it can lead to inaccurate estimations for funding requirements and capacity requirements.

Service Disruptions: The deterioration of assets often leads to unplanned and unexpected disruptions to the services the community currently enjoys and relies on through asset failures.

Negative Impact to Quality of Life: Poor infrastructure affects the quality of life for residents, including issues like traffic congestion, inadequate public transportation, sewer backups, basement flooding, or lack of access to services. Assets in poor working order also increase the risk of potential health and safety impacts.

Environmental Impacts: Inefficient infrastructure can have adverse environmental impacts such as increased emissions from old facility or fleet assets, or sewage reaching the environment through leaks in pipes. This also increases the potential risk of not meeting regulatory requirements.

Regulatory Non-Compliance: Many of the assets, in particular Water and Transportation, are highly regulated assets that require assets to be properly maintained and reported on their compliance. Failure to meet regulatory requirements for infrastructure maintenance and safety can result in fines, penalties, legal actions, and possible loss of licenses or permits.

Loss of Public Trust and Confidence: Persistent neglect of infrastructure needs can erode public trust and undermine confidence in the ability of leaders to address pressing challenges.

Negative Economic Impact: Inadequate infrastructure can hinder economic growth because of inefficient and unreliable services to residents and businesses.

Safety Risks: Aging or poorly maintained infrastructure can pose safety hazards to users, workers, and the surrounding community, potentially leading to accidents, injuries, or even fatalities.

Addressing infrastructure needs requires proactive planning, investment, and ongoing maintenance to ensure the resilience and vitality of the community while mitigating the various risks outlined above.

12.2.3 Financing Strategies to Address the Infrastructure Gap

Addressing such a substantial gap will require careful consideration and a combination of strategies, including non-financial and financial. Many of the non-financial strategies are best practices in asset management.

Non-Financial Strategies

- **Levels of Service Targets:** The 2025 iteration of this Plan will allow the City the opportunity to set targets for the levels of service that are reported on in this AMP. It will offer the municipality the opportunity to assess the current performance of the asset categories and consider adjusting objectives against affordability and willingness to pay. The City may need to reduce service levels to meet infrastructure needs.
- **Asset Prioritization:** Identifying critical assets and focusing resources on maintaining those that are most essential for public safety and service delivery.
- **Efficiency Measures:** Implementing measures to optimize asset management processes and reduce operational costs where possible.
- **Long-Term Planning:** Continue to develop long-term financial plans that allocate resources strategically over multiple budget cycles to address both immediate needs and reduce the backlog over time. The City has begun these efforts, and in the final stages of implementing Predictor Decision Support Tool for this purpose.
- **Community Engagement:** Engaging with the community to communicate the importance of infrastructure investment and potentially garner support for additional funding measures. This would also be beneficial when evaluation target performance for levels of service.
- **Advocacy:** Advocating for increased funding support from higher levels of government and seeking partnerships with neighbouring municipalities to share resources and costs.

Financial Strategies

- **Reserves & Reserve Funds:** The City should consider contributing further to reserves and reserve funds each year to save up and create a buffer for years with high expenditures. These reserves are funded by sources such as taxes, user fees, grants, etc.
- **Debt Financing:** The City may leverage loads for building or acquiring assets. This will increase the overall cost, as annual repayment includes interest. The municipality has constraints with the amount that it can borrow.

- **Funding:** Continue to apply and search for opportunities for further grant funding.
- **Revenue Increase & Infrastructure Levy:** Consider revenue increases to fund the infrastructure gap through incremental tax increases, as well as a dedicated Infrastructure Levy.
- **User Fees and Charges:** Implementing or adjusting fees and charges for municipal services to address the gap in renewals and replacements for the systems.
- **Growth:** Increasing density and new developments can provide additional revenue produced from taxes and rates, particularly if new growth is focused in areas where the costs to service the development are less than the additional revenues.
- **Divestitures:** The City may need sell assets, providing revenue from the proceeds, as well as reducing operating and maintenance costs. This option is not possible with many asset types (such as linear infrastructure like watermains).

By adopting a combination of strategies, the City can better address the infrastructure gap, improve service delivery, and enhance the quality of life for residents while ensuring fiscal sustainability and responsible stewardship of public resources.



13.0 Improvement and Monitoring Plan

13 Improvement and Monitoring Plan

The City of Welland is taking a proactive approach to asset management, recognizing the importance of continually improving their forecasting and planning processes. By striving for a full cost recovery approach, the City aims to ensure that infrastructure needs are adequately met within the constraints of available revenues.

The City has made many improvements to the information used to inform this AMP to satisfy the 2024 regulation requirements, which are outlined below, along with opportunities for further improvement. These are provided to guide strategic decisions for the City to continually improve levels of service, asset reporting (valuation and condition), and future iterations of the AMP for their assets.

13.1 2024 O.Reg. 588/17 Requirements

The previous AMP, which met the requirements of the 2022 regulatory requirements, expanded on the list of items that still needed to be complete to meet the 2024 requirements, Table 13-1 outlines these items. This AMP has addressed all tasks outlined in the previous AMP, as well as all requirements of O.Reg. 588/17.

2024 O.Reg. 588/17 Compliance Checklist

- To be compliant for this AMP, the executive lead of the municipality must endorse this plan, as well as approved by a resolution passed by Council.
- The plan must be publicly available on the City's website.
- The regulation also requires the City to review and update their asset management policy every 5 years. As the City's policy was developed in 2019, this policy is due to be reviewed and updated this year.

Table 13-1. 2021 AMP Recommendations to Meet 2024 AMP Regulatory Requirements

Task to Meet 2024 O.Reg. 588/17 AMP Requirements	2024 AMP Status
Average age of non-core assets in each category	Complete
Condition of non-core assets in each category	Complete
Description of municipality's approach to assessing condition of non-core assets in each category	Complete
Current levels of service (qualitative descriptions and technical metrics established by the municipality) for non-core assets, and updated information for core assets, as per Tables 1-5 in regulation, as applicable	Complete
Lifecycle activities needed to maintain current levels of service for non-core assets in each category for 10 years	Complete
Costs of providing lifecycle activities needed to maintain current levels of service for non-core assets in each category for 10 years	Complete
Growth considerations (can be taken from 2021 (Fall) Development Charge update study)	Complete

2024 O.Reg. 588/17 Compliance Checklist

- To be compliant for this AMP, the executive lead of the municipality must endorse this plan, as well as approved by a resolution passed by Council.
- The plan must be publicly available on the City's website.
- The regulation also requires the City to review and update their asset management policy every 5 years. As the City's policy was developed in 2019, this policy is due to be reviewed and updated this year.

13.2 2025 O.Reg. 588/17 Requirements

Following the adoption of this plan by Council, this plan will be further updated to meet the 2025 regulatory requirements, which are outlined below.

2025 O.Reg. 588/17 Compliance Checklist

Asset Management Plan

For core and all other municipal infrastructure assets included in the 2024 plan:

- The levels of service the municipality proposes to provide for each of the 10 years following the year in which all information required is included.

- An explanation of why the proposed levels of service are appropriate for the municipality based on the following:
 - The options for the proposed levels of service and the risks associated with those options to the long-term sustainability of the municipality.
 - How the proposed levels of service differ from the current levels of service.
 - Whether the proposed levels of service are achievable.
 - The municipality's ability to afford the proposed levels of service.
- The proposed performance of each asset category for each of the 10-year period
- A lifecycle management and financial strategy that sets out that includes an assessment of the full lifecycle activities required for 10 years and options, risks, and options to achieve the proposed LOS at the lowest cost.
- An estimate of the annual costs for each of the 10-year period.
- Identification of the annual funding projected to be available.
- Identification and explanation of any funding shortfalls and risks associated with not meeting proposed level of service by performing the required lifecycle activities.

Post 2025 O.Reg. 588/17 Compliance Checklist

- The City will be required to review and update its asset management plan at least every 5 years following the 2025 AMP.
- The City shall conduct an annual review of its asset management progress to Council on or before July 1 in each year and address:
 - The municipality's progress in implementing its asset management plan
 - Any factors impeding the municipality's ability to implement its asset management plan
 - A strategy to address the factors impeding their ability to implement the AMP

13.3 Improvements since 2021 AMP Update

This AMP builds on the successes of the last AMP and provides a more comprehensive and accurate forecast for expenditure needs. The City completed many of the recommendations from the previous plan to ensure the success of this AMP. These improvements include:

- **Asset Registers:** The City has compiled and developed asset registers for all asset categories included in this AMP, where previous information was limited

or non-existent, or where the TCA database was relied on for the source of information.

- Updated Condition Assessments: The City has continued its efforts to acquire updated condition assessments for assets and evaluate accurate ways to assess the condition of its assets.
- Updated Current Replacement Values: All assets were reviewed to refine and update current replacement values to reflect real-world, present-day costs is an invaluable step for achieving accurate forecasts given recent economic conditions.
- Updated Estimated Service Lives: All assets were reviewed to determine accurate and realistic service lives which also help to achieve accurate forecasts.
- Refined Levels of Service: The City has worked to refine levels of service and will continue to review these to ensure they are in-line with Corporate priorities.
- Implementation of Decision Support Tool: The decision support tool implemented by the City has been used to run the analysis provided in this AMP so that the City can continually update and refine this information to better inform infrastructure investments.
- Implementation of Work Management System: Although not complete in time for the development of this AMP, the City has taken important steps to better understand the full lifecycle activities and costs required of all their assets through the implementation of the work management system. This system in the future will also help to make more informed decisions on infrastructure expenditures.

13.4 Opportunities for Improvement

Asset Management is a journey that is continually evolving based on updated information, technology, etc. Throughout the development of this AMP, opportunities for further improvement include:

- Asset Data
 - Document “source of truth” for all asset registers and ensure registers developed for this AMP are kept up-to-date.
 - Develop asset data governance strategy to ensure appropriate roles and responsibilities are documented and assigned for data maintenance.
 - Continue to fill any remaining gaps.

- Continue to review and update current replacement values and service lives.
- Asset Failure
 - All decisions about the refurbishment and replacement of an asset and the timing of these activities should be based on a sound determination of the asset's critical failure mode. Identification of critical failure modes will ensure that the City focuses on the assets and failures that can have the most impact on its ability to deliver services. For example, watermains may fail before or after their estimated service life and require replacement after a specific threshold of watermain breaks has been reached. Although not required by O.Reg. 588/17, it would be a logical next step in the progression of asset management planning, especially as more improved information becomes available with the City's new work management system.
- Lifecycle Strategies
 - Continue to expand and improve on lifecycle management strategies which can further assess the full lifecycle cost of assets, as well as help to enhance lifecycle forecasts.
- Align Budgets to Lifecycle Activities
 - To assist in determining the whole lifecycle cost of assets, and to assess these costs, aligning the budget process with asset management defined lifecycle activities will provide more clarity and tie expenditures to asset management.



Appendix A: Glossary of Terms



Term	Definition
Asset	An item, thing or entity that has potential or actual value or benefit to an organization.
Asset Management	Coordinated activity of an organization to realize value from assets.
Asset Management Plan (AMP)	Long-term plans (usually 10–20 years or more for infrastructure assets) that outline the asset activities and programs for each service area and resources applied to provide a defined level of service in the most cost-effective way.
Asset Management Policy	A high-level statement of an organization’s principles and approach to asset management (IIMM, 2015).
Bridge Condition Index (BCI)	A numerical index generally utilized for the assessment of the condition & structural reliability of bridges and culverts.
Connection Days	The number of properties connected to a municipal system that are affected by a service issue, multiplied by the number of days on which those properties are affected by the service issue.
Estimated Service Life (ESL)	An estimate of the duration of time that an asset is forecasted to be in service.
Infrastructure	The system of fundamental facilities and structures necessary for a public works of a country, state, or region to function. Examples include roads, railway, bridges, tunnels, water supply, sewers, electrical, telecommunications, signs, equipment, fleet, etc.
Level of Service (LOS)	Parameter or combination of parameters, which reflect social, political, environmental, and economic outcomes that the organization delivers. Levels of service statements describe the outputs or objectives an organization or activity intends to deliver to customers.
Lifecycle Activity	An activity undertaken to sustain asset integrity and service levels over the life of an asset, such as demand management or rehabilitation.

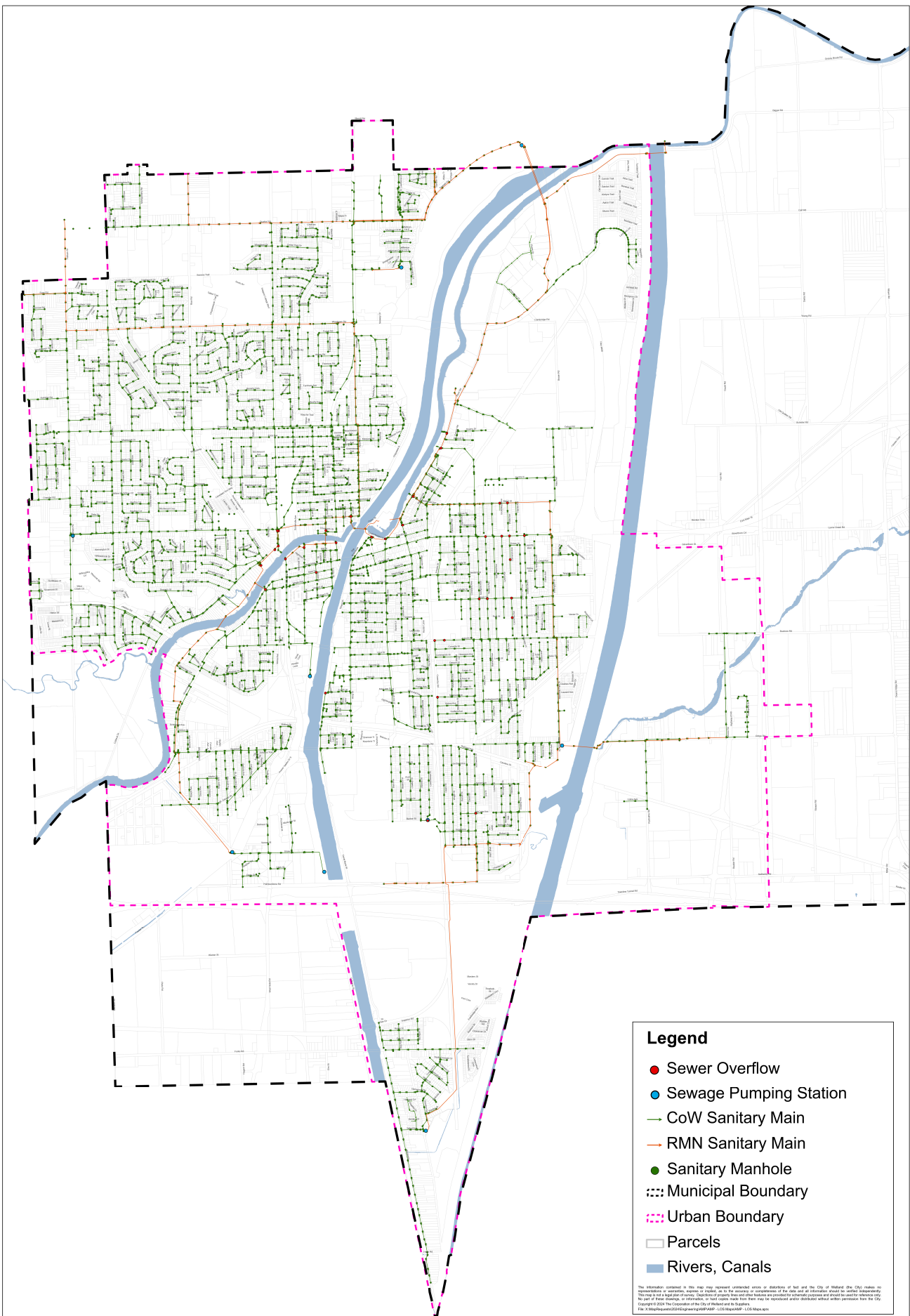
Term	Definition
Lifecycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation, and disposal costs.
Lifecycle Management Strategy	The set of planned actions that will enable the assets to provide the desired levels of service in a sustainable way, while managing risk, at the lowest lifecycle cost.
LOS Framework	A set of tables which outlines the Levels of Service developed for each service category.
Ontario Regulation O.Reg. 588/17	Ontario Regulation 588/17 under the Infrastructure for Jobs and Prosperity Act 2015, as amended. Principles are set out in this regulation by the provincial government to regulate asset management planning for municipalities.
Performance Measure	Parameters / metrics that can be measured and monitored to assess the delivery of a service that is being provided.
Pipeline Assessment and Certification Program (PACP)	A standardized protocol for coding pipeline condition information from CCTV inspection footage.
Replacement Cost/Value	The cost of acquiring an asset to replace an existing asset with a new modern equivalent asset.
Reserves	A reserve is an allocation of accumulated net revenue. The Town's current strategy is to contribute fixed amounts to capital reserves which supports capital spending together with grants, development charges, debt, etc.

Acronym	Definition
AM	Asset Management
AMP	Asset Management Plan
BCA	Building Condition Assessment
BCI	Bridge Condition Assessment

Acronym	Definition
CCTV	Closed Circuit Television Camera
ESL	Estimated Service Life
LOS	Level of Service
OSIM	Ontario Structure Inspection Manual
PACP	Pipeline Assessment and Certification Program
PCI	Pavement Condition Index

Appendix B: Sanitary & Combined Sewer Network Map





Legend

- Sewer Overflow
- Sewage Pumping Station
- CoW Sanitary Main
- RMN Sanitary Main
- Sanitary Manhole
- Municipal Boundary
- Urban Boundary
- Parcels
- Rivers, Canals

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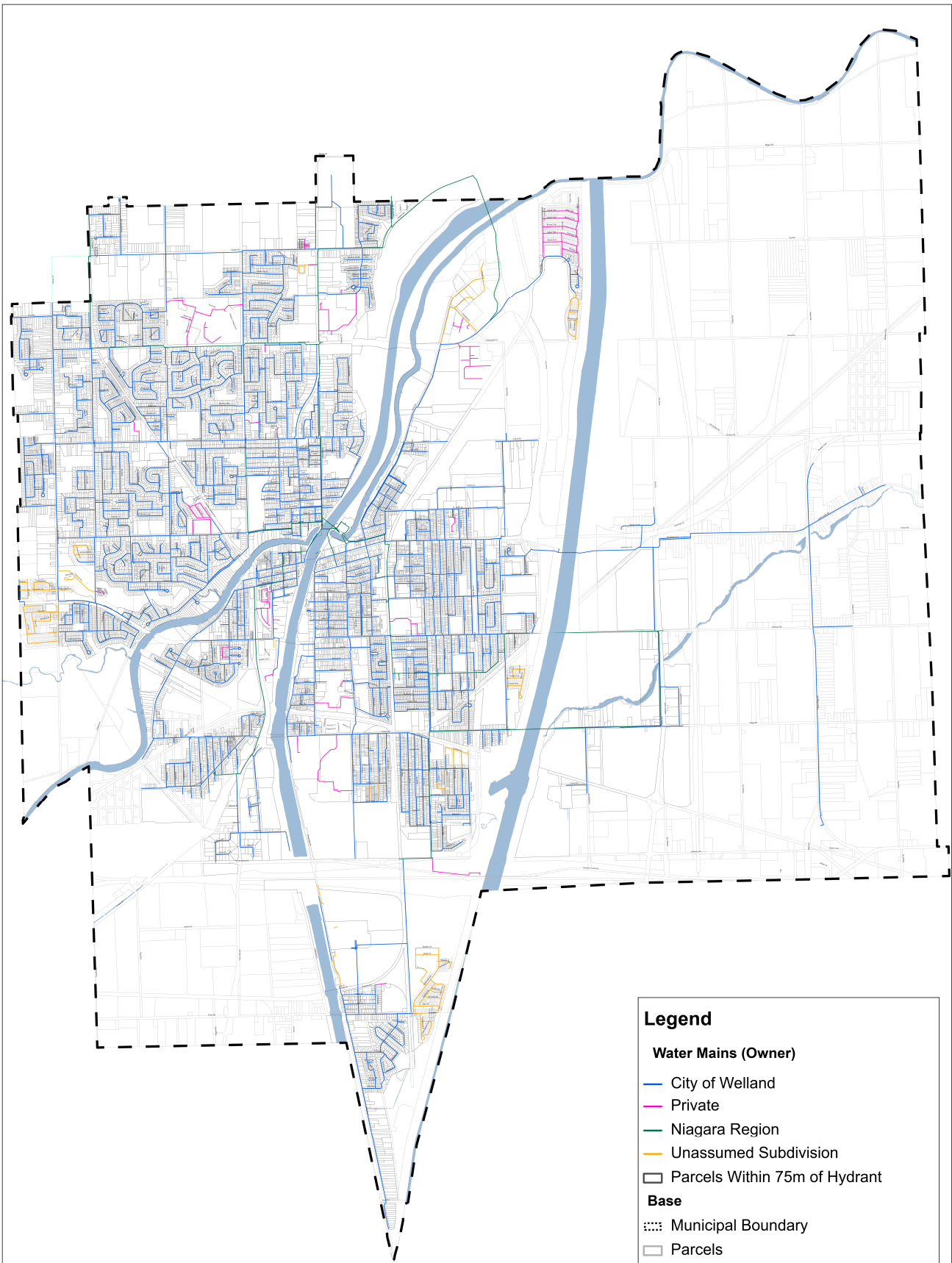


Sanitary & Combined Sewer Network



Appendix C: Water Network Map





Legend

- Water Mains (Owner)**
- City of Welland
 - Private
 - Niagara Region
 - Unassumed Subdivision
- ▭ Parcels Within 75m of Hydrant
- Base**
- ⋯ Municipal Boundary
 - ▭ Parcels
 - ▭ Rivers, Canals

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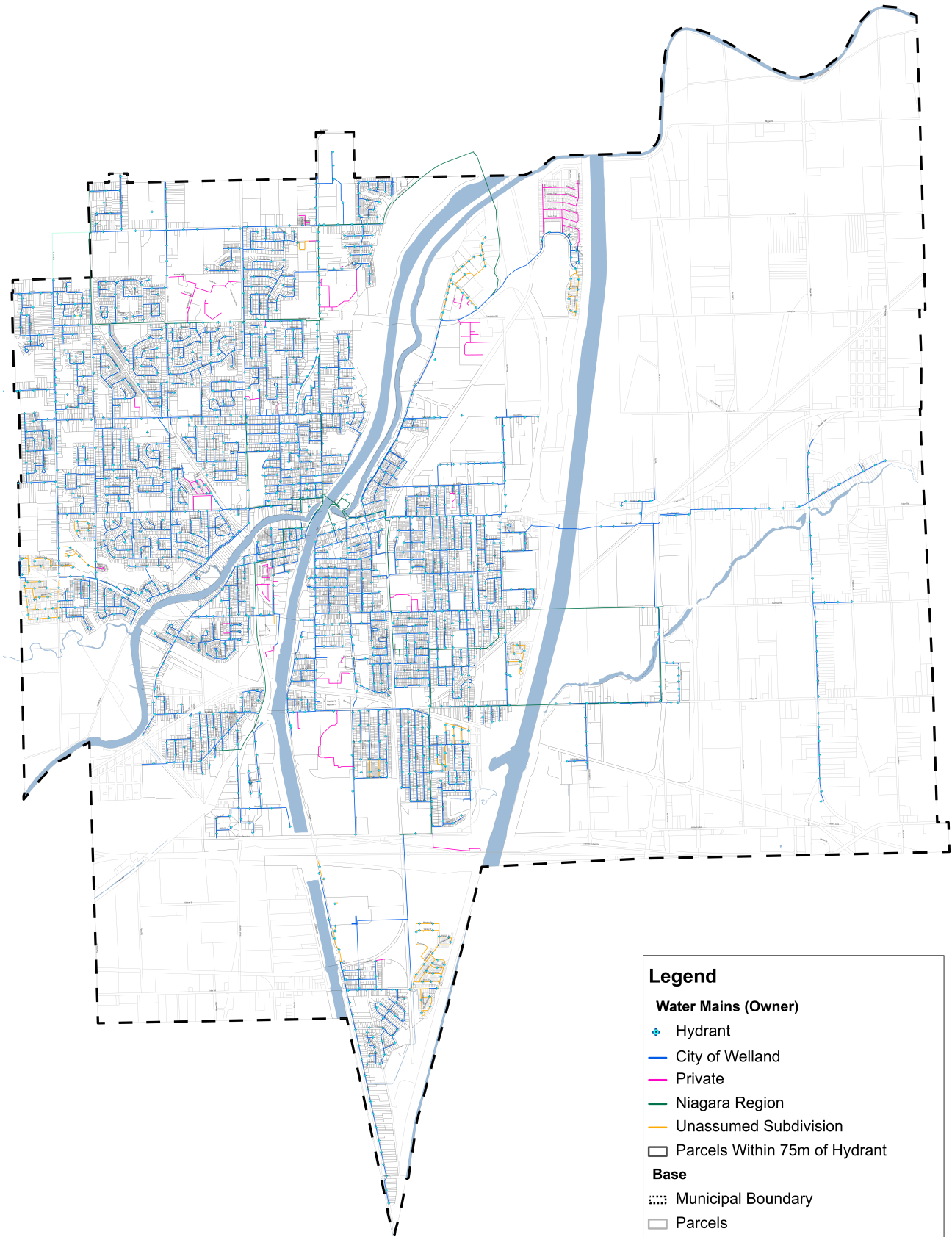


Water Distribution Network



Appendix D: Water Hydrant Network Map





Legend

Water Mains (Owner)

- ◆ Hydrant
- City of Welland
- Private
- Niagara Region
- Unassumed Subdivision
- Parcels Within 75m of Hydrant

Base

- ⋯ Municipal Boundary
- Parcels
- Rivers, Canals

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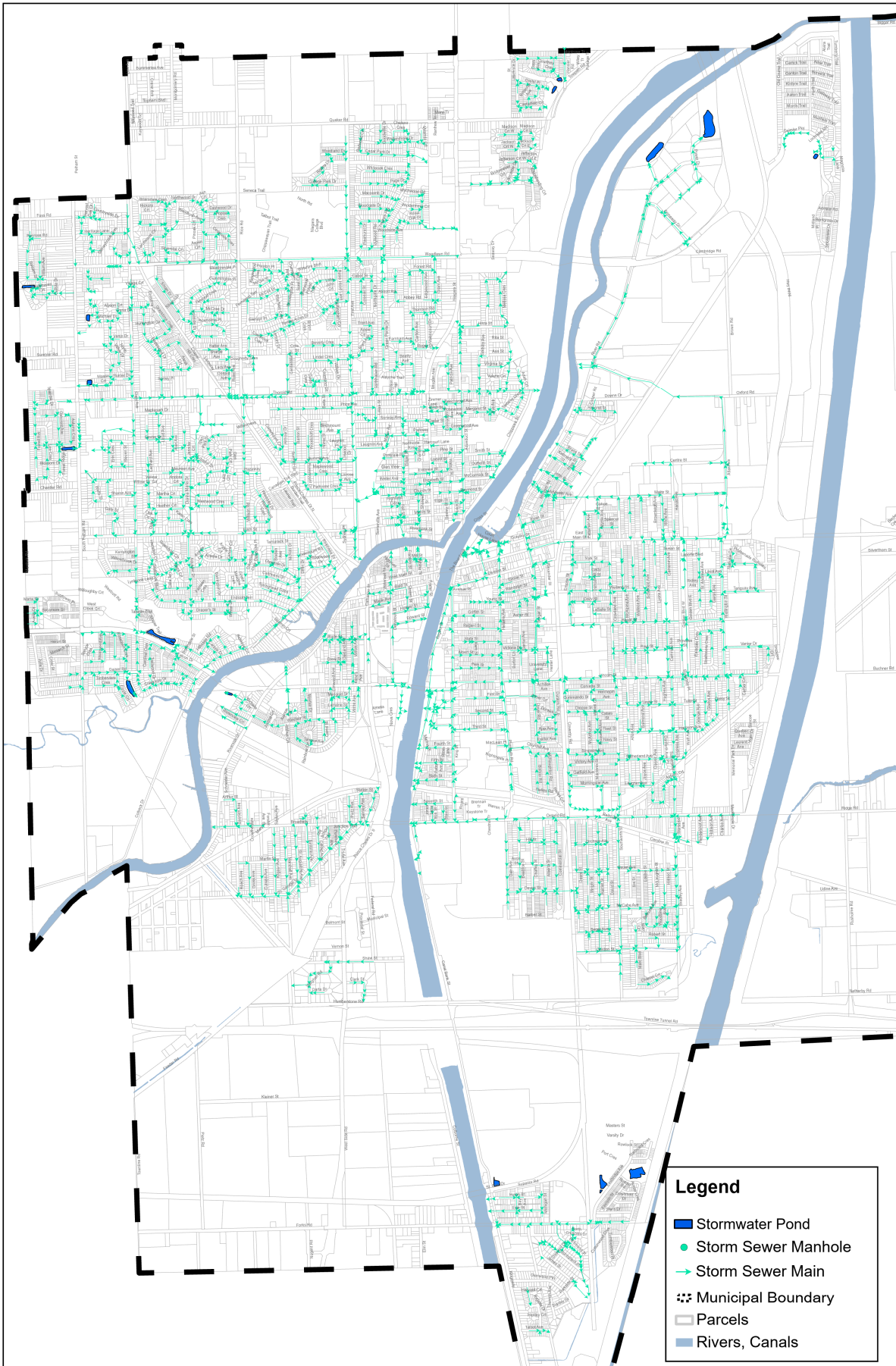


Water Distribution Network & Fire Hydrants



Appendix E: Storm Sewer Network Map





Legend

- Stormwater Pond
- Storm Sewer Manhole
- Storm Sewer Main
- Municipal Boundary
- Parcels
- Rivers, Canals

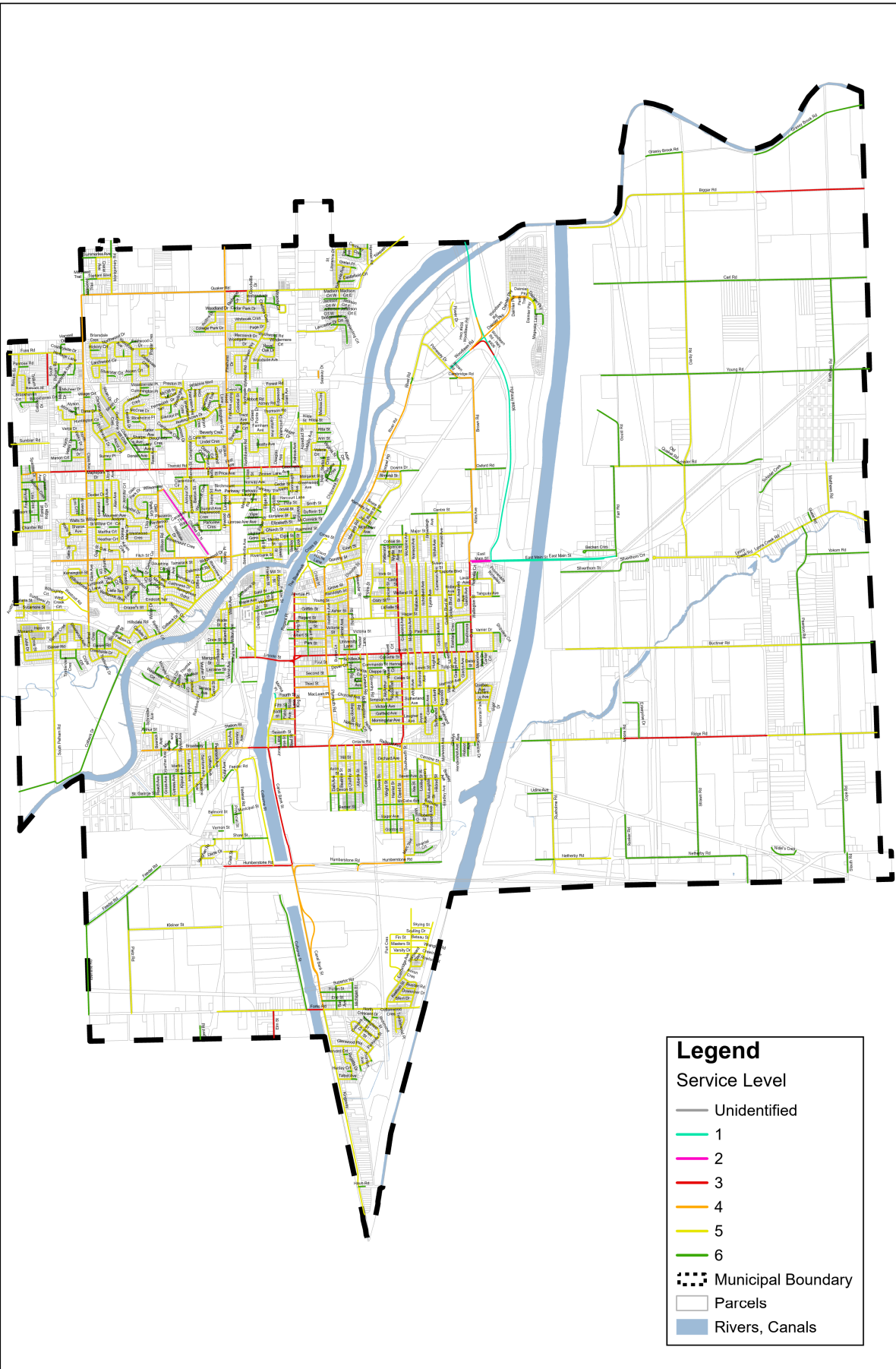


Storm Sewer Network



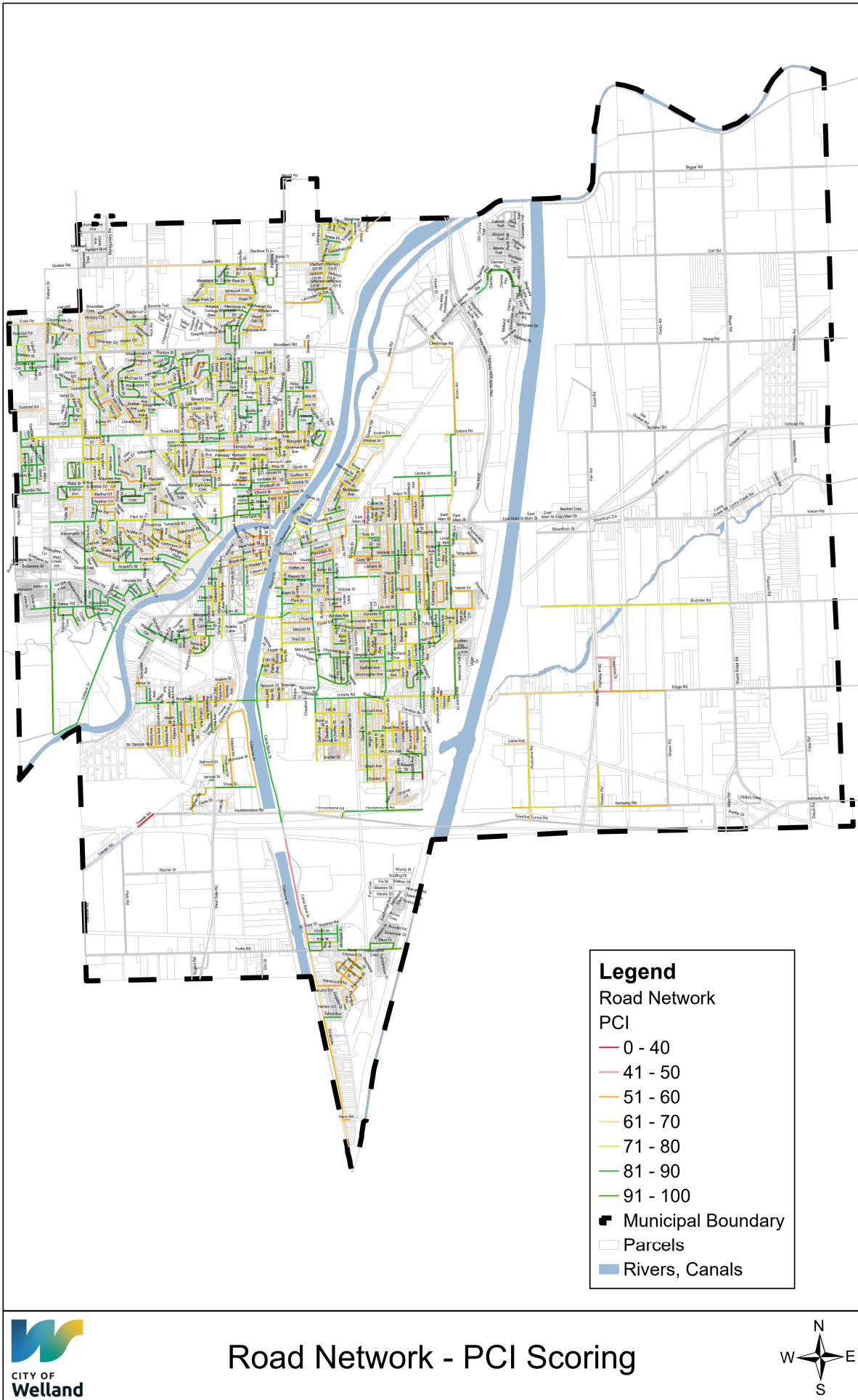
Appendix F: Road Network Service Level Map





Appendix G: Road Network PCI Map





Legend

Road Network
PCI

- 0 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 81 - 90
- 91 - 100

Municipal Boundary
 Parcels
 Rivers, Canals

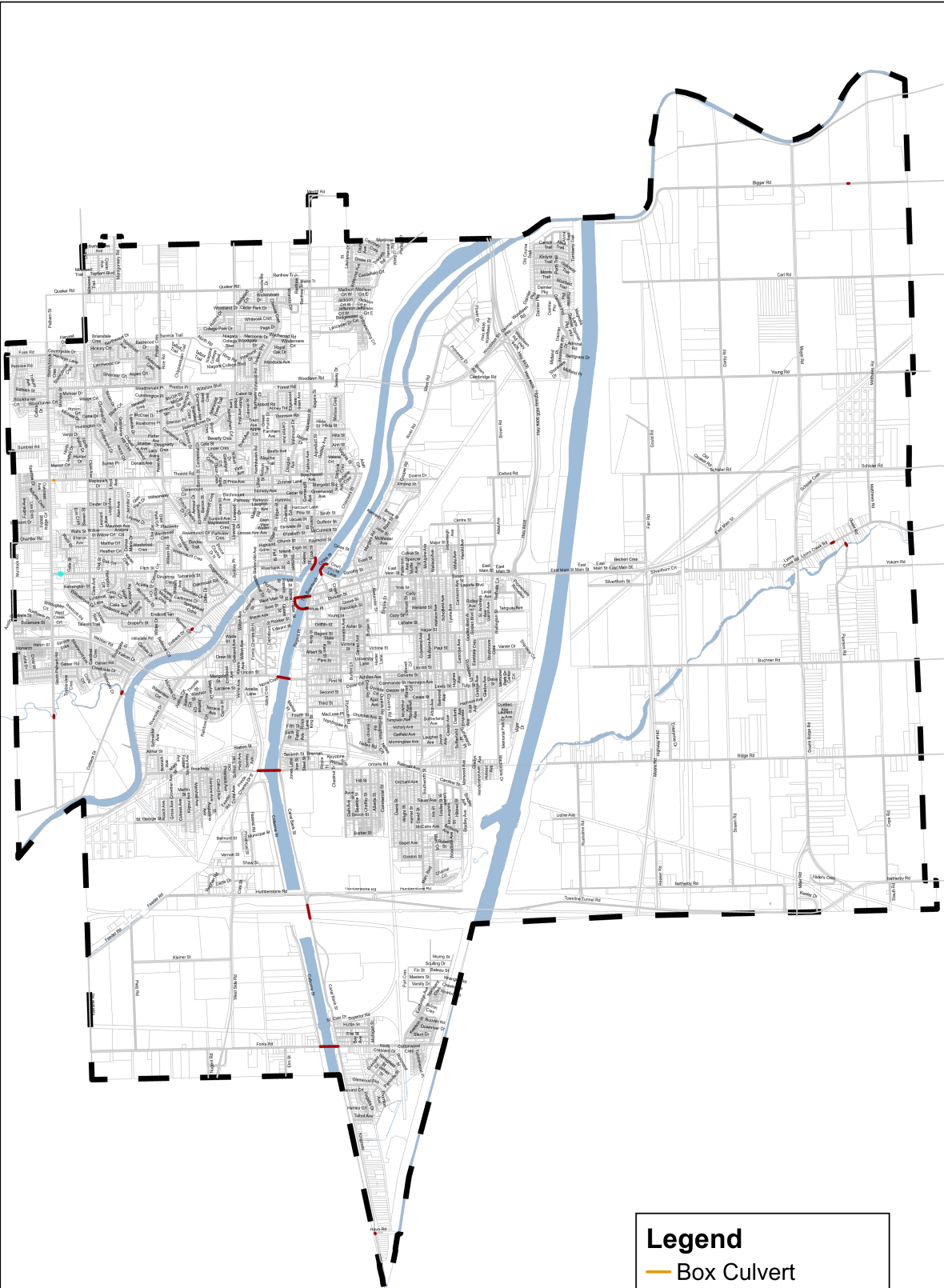


Road Network - PCI Scoring



Appendix H: Bridge Network Map





Legend

- Box Culvert
- Bridge
- Municipal Boundary
- Parcels
- Rivers, Canals



City of Welland Bridges



