Richmond Hill

# 2024

## Asset Management Plan

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# Executive Summary

## Advancing Asset Management Planning at the City

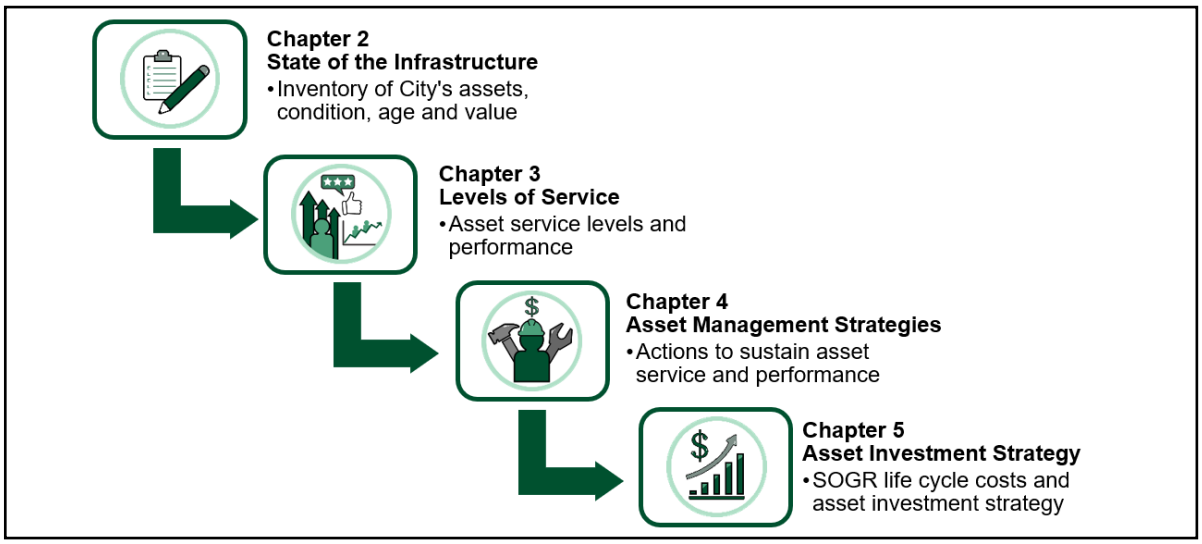
**The City is continuously improving its evidence-based asset management planning capabilities to ensure proactive maintenance and strategic investments in assets, thereby supporting reliable services for the community.**

The City recognizes the vital role its infrastructure assets play in delivering essential services to the community. Managing these infrastructure assets requires robust asset management processes, systems and plans that are focused on understanding and planning for timely renewals through informed investment decisions. The City's asset management journey has focused on leveraging innovative technologies and processes, utilizing the best available data through studies and assessments, and implementing continuous improvements. As part of this, the City has been continually enhancing the condition assessments of its assets and proactively investing in them to ensure they provide reliable services for the community. Since 2018, the City has also been advancing its corporate asset management planning capabilities to support best business practices, as well as to comply with the ongoing *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure* requirements. One of the most significant advancements has been the continual enhancement of the City's Corporate Asset Management Enterprise Asset Management (EAM) System. The EAM system is supported by and works in tandem with other City asset management source systems and data. This 2024 Asset Management Plan is the result of the City's advancements in asset management planning capabilities and the culmination of these various source systems, data and technical studies working collaboratively.

**The 2024 Asset Management Plan includes an assessment of the City assets that achieves compliance with *O. Reg. 588/17* and supports the City's Capital Budgeting Process and strategic priorities.**

This 2024 Asset Management Plan includes an assessment of City-owned assets' State of Infrastructure, their Levels of Service and performance, the prioritized asset renewal actions through the Asset Management Strategies, and an Asset Investment Strategy.

**Figure E-1: Scope of the 2024 Asset Management Plan**



The purpose of this 2024 Asset Management Plan is to:

- Support the long-term stewardship of the City's assets while contributing to furthering the City's strategic priorities and vision for the community;
- Assist with capital programming for the development of the City's upcoming 2025 Capital Budget and Forecast; and
- Achieve compliance with the July 1, 2024 *O. Reg. 588/17* requirements.

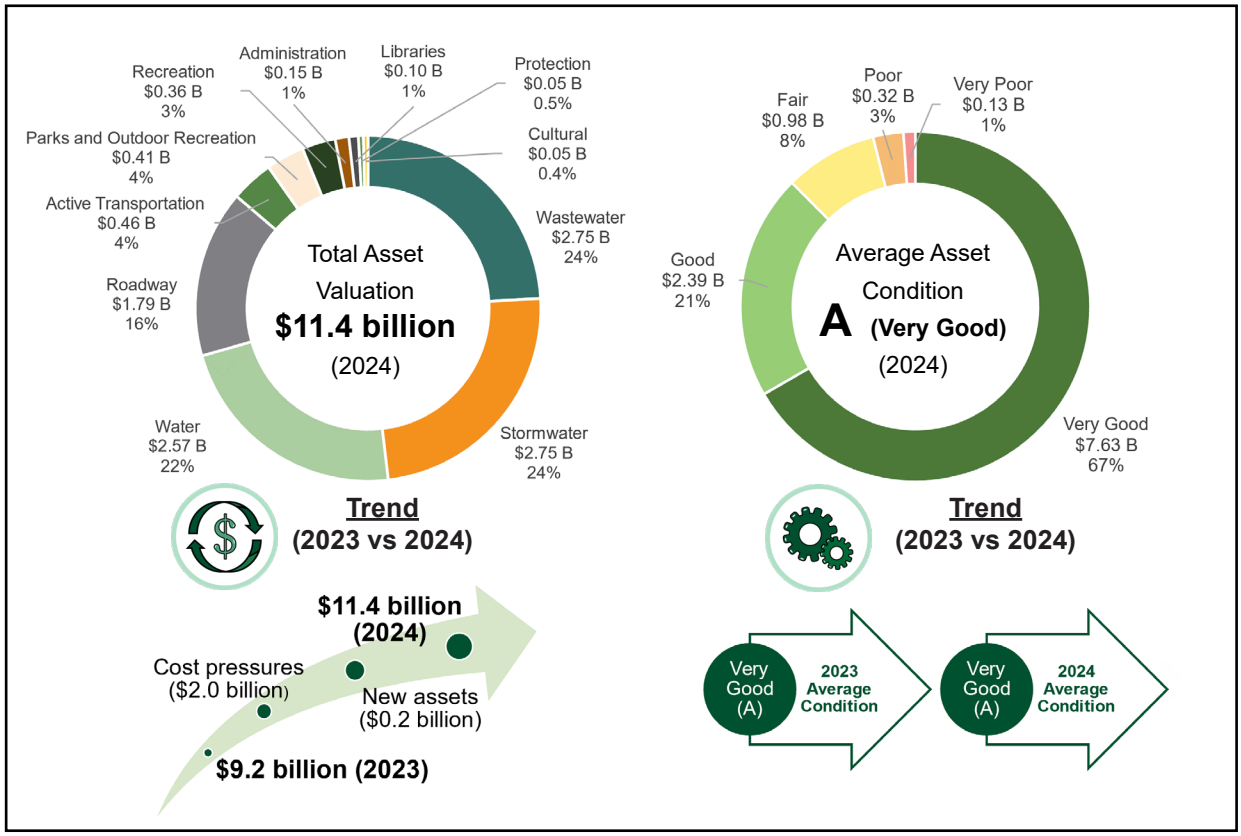
## Assessing Asset Inventories, Values, Conditions and Ages

**The City's assets have an estimated replacement value of $11.4 billion and are on average in Good to Very Good condition, but will require ongoing investments to maintain them.**

In compliance with *O. Reg. 588/17*, the assessment of the City's assets included updating asset inventories, current replacement values, their refined condition, and average ages and estimated service lives. Based on this assessment, the City's infrastructure assets have an:

- Estimated 2024 replacement value of $11.4 billion, which represents a $2.2 billion or 24% increase over 2023 ($9.2 billion);
- Overall average asset condition of Very Good (Grade A), which is the same overall average asset condition as in 2023; and
- Younger age profile when compared to their estimated service lives.

**Figure E-2: Asset Replacement Value and Condition Profile**



## Evaluating Asset-Based Levels of Service (LOS)

**A Corporate Asset Management Level of Service (LOS) Framework was developed which shows that the City's assets are generally performing as intended in support of reliable community services. Proposed LOS will be developed and included in the 2025 Asset Management Plan.**

Levels of Service (LOS) are key business drivers that play an important role in asset management planning. Understanding how assets are performing and the impact on the services they are supporting can inform important investment decisions. In response to *O. Reg. 588/17* and evolving City services, a Corporate Asset Management LOS Framework was developed which captures the mandated *O. Reg. 588/17* LOS measures, and the City's operational business needs and the vision for Richmond Hill derived from master plans and studies. It includes overarching strategic LOS, community-based LOS, technical-based LOS and current measures and performance. It attempts to provide that line of sight from the LOS that the City intends to deliver through to the day-to-day activities carried out by staff to manage assets to realize strategic priorities and master plan visions.

This 2024 Asset Management Plan includes complete listings and descriptions of the City's key LOS measures along with their current performance. The current performance results demonstrate that the City's assets are generally performing as intended and are supporting reliable services to the community. With these reported LOS in this 2024 Asset Management Plan, the City has achieved compliance with *O. Reg. 588/17*. LOS measures will be updated and proposed performance will be developed for the 2025 Asset Management Plan.

## Employing Asset Management Strategies

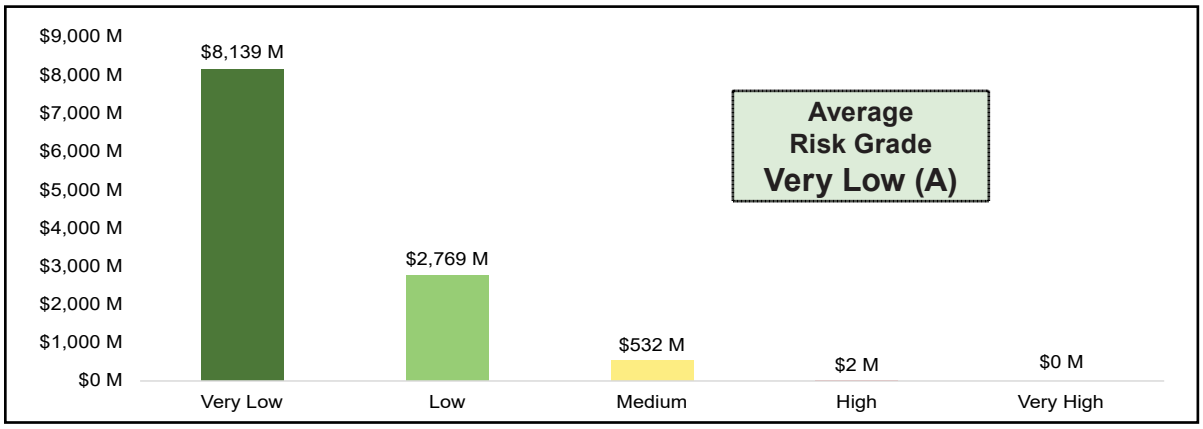
**Life cycle strategies are used by the City to maintain its assets and maximize their value. The prioritization of major capital renewal needs is facilitated by the Corporate Asset Management Risk Framework within the Enterprise Asset Management (EAM) system, directing available funding to where it is needed the most.**

Asset management strategies are the planned life cycle-based actions that Richmond Hill uses to maintain and manage its infrastructure assets. There are many different scheduled inspections, maintenance actions, and repair activities that continually occur to ensure that Richmond Hill's assets perform reliably. These actions help to maintain the City's assets so they do not fail prematurely and continue to perform well throughout their service life. Life cycle activities also include rehabilitations, reconstructions and replacement of assets which are major capital treatments funded through the City's Capital Budget and Forecast.

The City proactively undertakes continuous and ongoing technical condition assessments of its assets that identify the required life cycle-based treatments. Capital-based life cycle models were also developed and incorporated into the City's EAM that describe the deterioration of assets over their life and the required treatments and costs to address them. These models reflect the City's current practices as well as recommended treatments informed by the technical condition assessments, expert engineering principles and industry best practices. This enabled the EAM to forecast suggested capital interventions and their impacts on estimated future investment levels and LOS. The Corporate Asset Management Risk Framework estimates the risk criticality of the City's assets using specific metrics related to likelihood and potential consequences if assets were to prematurely fail.

This framework supports the prioritization of these asset life cycle investment needs to where they are needed the most given limited funding. Overall, the Corporate Asset Management risk profile for the City's assets is on average Very Low (Grade A) as follows:

**Figure E-3: Corporate Asset Management Risk Profile for the City's Assets**




This 2024 Asset Management Plan reports the life cycle strategies for the City's assets, along with their relative criticality based on the EAM Risk Framework. This satisfies the *O. Reg. 588/17* requirements and also assists with capital programming for the development of the Capital Budget and Forecast to move the City's strategic priorities and vision forward.

## A Recommended Phased-In Asset Renewal Investment Strategy

**The 2024 Asset Management Plan proposes a phased-in increase in annual investments for asset maintenance, starting from 2025 to 2051. This approach aims to gradually address infrastructure backlogs over time, ensuring that assets are maintained at acceptable levels while promoting financial sustainability.**

By utilizing the state of the City's infrastructure (e.g. condition), life cycle strategies (e.g. treatments), levels of service (e.g. performance) and risk framework (e.g. prioritization), the EAM estimates that there is:

- Currently a $284 million infrastructure backlog of immediate asset renewal needs;
- There is approximately an annual average of $80 to $87 million of ongoing asset needs from 2024 to 2033 and $145 to $173 million from 2034 to 2051. This analysis was supplemented by the City's 2024 Capital Budget and Forecast.

Given the significant financial challenges that addressing this need immediately would pose, this 2024 Asset Management Plan suggests:

- Phasing-in SOGR asset investment expenditure levels over time (2024 to 2051) to align with the City's master plans and studies. The initial SOGR expenditure is suggested to increase from $57 million in 2024 by an estimated annual average of **$4.6 to $6.1 million** (**$0.4 to $0.6 million** rate-supported for water and wastewater, **$0.5 to $0.8 million** rate-supported for stormwater management, and **$3.7 to $4.7 million** for non-rate supported). There is also $3.0 million for stormwater management pond rehabilitations and $0.3 million for street and park tree replacements.
- Will maintain asset condition-based LOS by 2051, with slight fluctuations as assets deteriorate and are renewed over their life cycle. This assessment is compliant with the *O. Reg. 588/17* requirements.

**Figure E-4: Suggested SOGR Asset Investment Strategy – All Services ($ millions)**


**Table E-1: Summary of the Suggested SOGR Asset Investment Strategy by Service ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Roadway | 81.0 | 12.7 | +2.5 to 3.0 | 24.0 to 26.2 | 0 to 12.3 | 59.0 to 68.2 | 0 to 49.8 |
| Active Transportation | 16.0 | 0.5 | +0.4 to 0.7 | 2.3 to 3.7 | 0 to 3.1 | 7.9 to 13.5 | 0 to 12.7 |
| Water<br>Wastewater | 79.3 | 16.7 | +0.4 to 0.6 | 18.5 to 19.4 | 0 to 1.1 | 24.1 to 27.8 | 0 to 3.6 |
| Stormwater | 55.7 | 2.7 | +0.5 to 0.8* | 7.7 to 9.0 | 0 to 6.0 | 15.0 to 20.5 | 0 to 16.6 |
| Parks | 25.7 | 4.0 | +0.15 to 0.20** | 4.9 to 5.2 | 0 to 0.8 | 7.1 to 8.0 | 0 to 2.2 |
| Recreation | 5.4 | 9.0 | +0.25 to 0.30 | 10.1 to 10.4 | 0 to 0.5 | 13.6 to 14.6 | 0 to 1.5 |
| Culture | 1.0 | 0.1 | +0.10 to 0.15 | 0.6 to 0.8 | 0 to 0.7 | 2.0 to 2.9 | 0 to 2.7 |
| Libraries | 9.3 | 3.4 | +0.09 to 0.11 | 3.8 to 3.9 | 0 to 0.2 | 5.1 to 5.4 | 0 to 0.5 |
| Protection | 5.9 | 2.7 | +0.05 to 0.09 | 2.9 to 3.1 | 0 to 0.1 | 3.6 to 4.4 | 0 to 0.4 |
| Administration | 4.8 | 4.9 | +0.13 to 0.17 | 5.5 to 5.6 | 0 to 0.3 | 7.3 to 8.0 | 0 to 1.0 |
| **Total** | **$284.1** | **$56.7** | **+$4.6 to $6.1** | **$80.3 to $87.2** | **$0 to $25.1** | **$144.6 to $173.2** | **$0 to $91.0** |

*$3.0 M for stormwater management pond rehabilitations would be required annually

**$0.3 M for street and park tree replacements due to storm events and invasive species would be required annually

This suggested strategy provides for the base minimum “like for like” to address renewal needs for the City’s existing assets. If new growth assets and/or enhancements to the City’s existing assets are required (e.g. achieving net zero emissions for City Facilities by 2050), these would be additional investments needed over and above this base minimum “like for like” approach. Also, if it is desired for the infrastructure backlog to be addressed sooner or stretched out further, and/or for LOS to be changed, there would be additional or less infrastructure investment expenditures needed.

## Supporting the City’s Annual Capital Budget Process

**This 2024 Asset Management Plan aids the City’s Capital Budgeting process by proposing necessary state of good repair asset renewal and assisting in prioritizing them within the Corporate Asset Management Risk Framework.**

The City of Richmond Hill follows a rigorous and reiterative year-round annual budgeting process that includes the development and approval of the Operating Budget and the Capital Budget. The City’s Capital Budget and Forecast is a comprehensive financial plan that identifies the infrastructure investment needs and the required funding for the renewal of existing infrastructure as well as for new or expansion growth assets.

The development of capital projects for the City’s Capital Budget and Forecast are informed by the various technical studies and condition assessments completed by the City’s departments and supported by the suggested asset renewal needs from the EAM and this 2024 Asset Management Plan. This approach ensures all capital project requests are developed using a full holistic evidence-based approach from a corporate-wide perspective to achieve strategic priorities.

The suggested infrastructure investment strategy from this 2024 Asset Management Plan will benefit the upcoming 2025 and future Capital Budgeting processes by assisting with supporting state of good repair needs, project priorities and forecasting condition service levels for different funding scenarios. Also, aligning the City’s Capital Budget and Forecast with the Corporate Asset Management asset hierarchy provides a clear line of sight from how the investments made into assets impact the community services they provide. The prioritization of capital projects for the development of the City’s Capital Budgeting process is based on the EAM’s Asset Management Risk Framework, achieving the City’s strategic priorities, and addressing any regulatory needs. Therefore, utilizing the EAM’s suggested infrastructure renewal strategy and risk prioritization framework assists and supports the City’s Capital Budget and Forecast.

## Informing the Capital Sustainability Steering Committee

**The suggested infrastructure investment strategy in this 2024 Asset Management Plan will be presented to the City's Capital Sustainability Steering Committee for consideration in developing the 2025 Capital Budget and Forecast and a Financial Sustainability Strategy.**

The City's Capital Sustainability Steering Committee has been reinstated to consider the financial impacts from various long-term master plans and studies, the legislative changes impacting developer funding, and the state of good repair investment needs identified in this 2024 Asset Management Plan.

Given the magnitude of the projected infrastructure backlog ($284 million) and the forecasted upcoming annual state of good repair asset needs (+$4.6 to $6.1 million), financing and other mitigation strategies will need to be developed to manage the financial pressures from these expenditures. As a result, the suggested phased-in infrastructure investment forecasts for the City's existing state of good repair assets in this 2024 Asset Management Plan will be presented to the Capital Sustainability Steering Committee for consideration in the development of the upcoming 2025 Capital Budget and Forecast. Key considerations will include balancing the infrastructure backlog needs, evolving asset conditions over time, identifying the appropriate service levels, managing cost pressures, factoring available sources of financing, minimizing risks and furthering the desired vision for Richmond Hill.

## Improvement Plan Moving Forward

**A five-year continuous improvement plan has been developed to further enhance corporate asset management data and processes to better support evidence-based infrastructure investment decisions and regular reporting.**

Throughout the City's corporate asset management journey, a number of improvements were implemented that advanced the City's corporate asset management capabilities and helped the City achieve past and current regulatory reporting requirements. Moving forward, a five-year continuous improvement plan has been developed to further enhance the quality of asset data, strengthen asset management processes, and progress annual monitoring and reporting for incorporation into the City's EAM. This plan includes practical actionable tasks, timing and outcomes to be achieved, which are detailed in this 2024 Asset Management Plan. These form the basis for the next phase of the City's ongoing corporate asset management journey to not only meet upcoming regulatory requirements, but more importantly, to mature corporate asset management planning at the City. Continued collaboration will be a key focus of the five-year continuous improvement plan.

## Chapter 1

# Introduction

*Ed Sackfield Arena and David Hamilton Park*

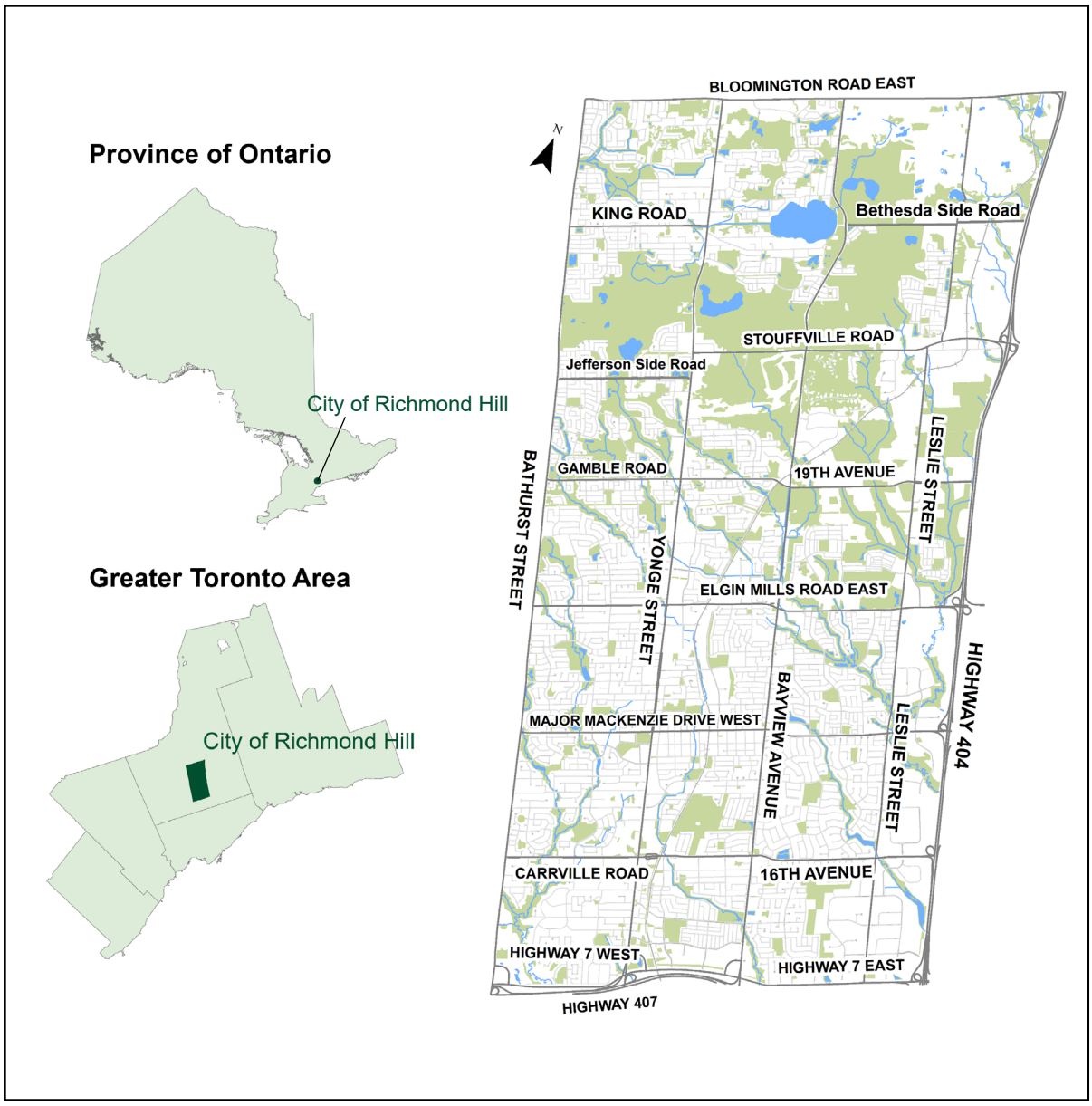
# 1.0 Introduction

## 1.1 City Responsibilities, Services and Future Growth

**The City provides an array of essential services to the diverse and growing community that are supported by its reliable infrastructure.**

The City of Richmond Hill is a lower-tier municipality within the Regional Municipality of York (York Region) that spans 101 square kilometres and shares borders with five neighbouring municipalities: City of Vaughan, City of Markham, Township of King, Town of Aurora, and Town of Whitchurch-Stouffville.

**Figure 1: Map of the City of Richmond Hill**



Richmond Hill is a diverse community with a 2022 population of approximately 215,018 and employment of 81,584 jobs.[1] The City experienced significant development since the early 1980s and as a result, new infrastructure was built and existing assets were expanded to service that growth in alignment with Richmond Hill's vision for the community.

The City owns and maintains a wide array of assets that support the delivery of essential services to the diverse community including:

Local roads, bridges, traffic signals and streetlights within the City-owned road right of way for the provision of transportation services;

Active transportation assets including sidewalks, on-road cycling facilities, and walkways within the road right of way, as well as trails and multi-use paths in parks and natural areas to support multiple modes of transportation;

An underground network of linear water pipes that provide a safe and reliable distribution of water;

A collection of sanitary sewer assets like linear sewer pipes and pumping stations for the collection of wastewater;

Stormwater management assets including storm sewers, culverts, stormwater management ponds and low impact development infrastructure that manage and improve stormwater runoff;

Parks and outdoor recreation assets that provide various amenities such as sporting, recreation and leisure as well as trees and natural areas that support a variety of ecological services;

Recreation facilities and equipment, including community centres and arenas that provide accessible recreation programs for all interests and ages;

Cultural facilities and equipment including the Richmond Hill Centre for the Performing Arts, that provide a variety of arts and cultural opportunities and experiences;

A system of library facilities and physical and digital collections that provide knowledge, experiences and resources for the community;

Fire fleet, facilities and equipment that provide emergency response and fire protection services to the community; and,

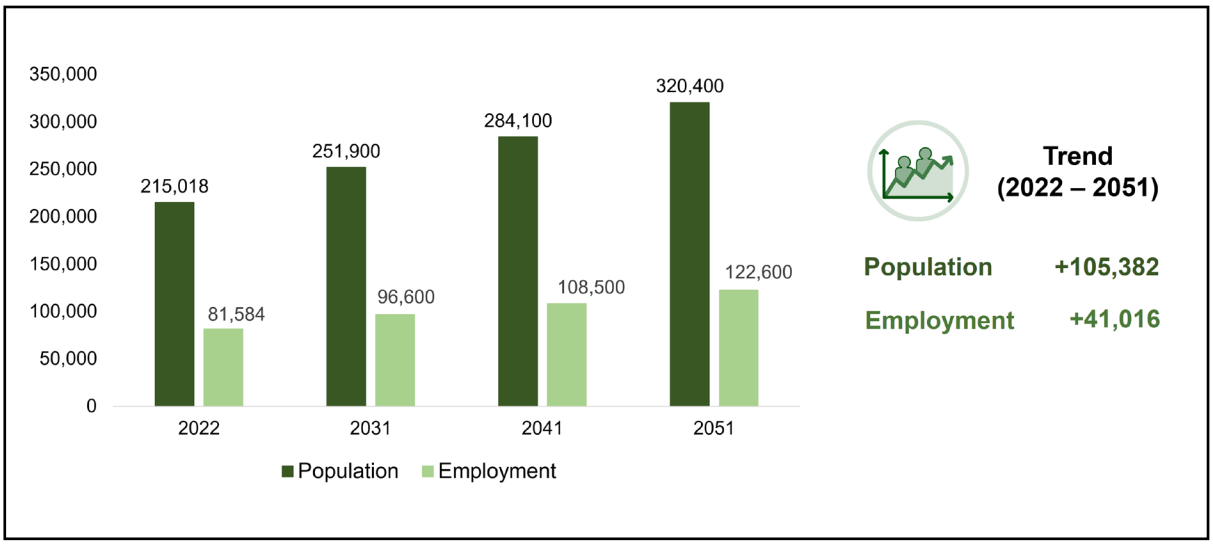
An assortment of administrative facilities, fleet and equipment that support these City services.

1 Richmond Hill's 2023 Economic Fact Sheet

Looking at the City's future growth, Richmond Hill as a lower-tier municipality in York Region must adhere to the Provincial Growth Plan and York Region's Official Plan. The City's Official Plan is currently being revised. It will provide an updated future vision for Richmond Hill to 2051 that will accommodate population and employment growth and guide land use and development over the long term. This update will continue to help transform the community to serve the needs of all residents, businesses and visitors to Richmond Hill.

Based on the Provincial Growth Plan, York Region's 2022 Official Plan projects the Region's population and employment will reach an estimated 2.09 million and 990,600 respectively by 2051. Within that, Richmond Hill's population is forecast to reach an estimated 320,400 while employment is estimated to be 122,600 by 2051.[2]

**Figure 2: City of Richmond Hill Population and Growth Forecasts**




These growth projections and land use development policies that are part of the City's Official Plan update are informing the City's various master plans, technical studies and Development Charges Background Study. These provide the long-term plans and growth-related infrastructure needs to implement the City's vision for the community. The City's 10 Year Capital Budget and Forecast then identifies the costs and timing for the required infrastructure from these studies.

This 2024 Asset Management Plan outlines the growth-related capital expenditures identified through the City's 2024 Capital Budget and Forecast to realize Richmond Hill's vision for the community from master plans and studies. This aligns with *O.Reg. 588/17* reporting requirements and achieves compliance. As new assets are built, they will require future renewal as they deteriorate over time. This will place pressure on future state of good repair capital budgets and financing needs that will be considered through this plan as well as long-term asset management planning.

2 2022 York Region Official Plan (Office Consolidation June 2023)

## 1.2 Advancing Asset Management Planning at the City

**The City is continuously improving its evidence-based asset management planning capabilities to ensure proactive maintenance and strategic investments in assets thereby supporting reliable services for the community.**

The City of Richmond Hill recognizes the vital role its infrastructure assets play in delivering essential services to the community. Managing the City's infrastructure assets requires a robust asset management system, processes and plans focused on understanding and planning for the timely renewals of them through informed investment decisions.

The City has been advancing its asset management system and processes as part of best business practices aimed at maintaining the reliability of its assets at the lowest costs to support community services. This has included improving asset condition technical assessments, asset data collection and source systems around the City. Also in 2018, the Province of Ontario introduced *O.Reg. 588/17: Asset Management Planning for Municipal Infrastructure*. This regulation requires municipalities to have Council approved asset management plans that achieve specific reporting requirements by stipulated phased deadlines.

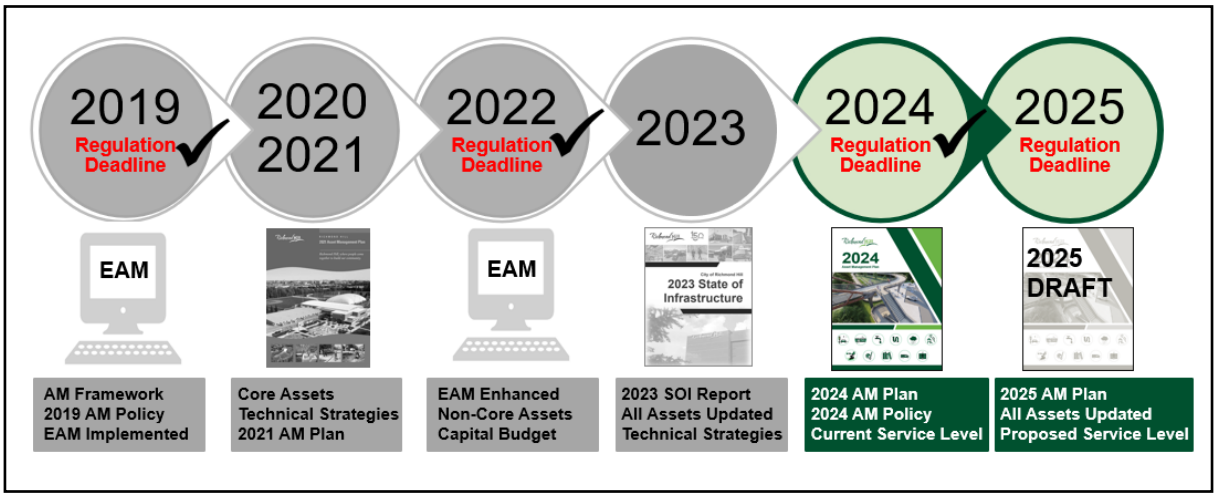
The City's asset management journey has focused on leveraging innovative technologies and processes, utilizing the best available data through studies and assessments, and implementing continuous improvements. This approach has advanced the City's evidence-based asset management capabilities to support infrastructure investment planning for service delivery while satisfying *O. Reg. 588/17* regulatory reporting requirements.

Since 2018, advancements in the City's corporate asset management planning capabilities have included implementing the following key foundational components:

1. The **Strategic Asset Management Policy**, which outlines the City's principles and commitments to asset management planning guided by Richmond Hill's overarching strategic plans, priorities and policies;
2. The **Asset Management Governance Framework**, which is an internal document that identifies the roles and responsibilities of staff groups within the City's Asset Management System;
3. The **Enterprise Asset Management (EAM) System**, which is an internally developed and maintained Decision Support System that supports forecasting infrastructure investment needs and provides asset management reporting analytics to satisfy regulatory reporting requirements;
4. The **Asset Hierarchy** and **State of Infrastructure** asset data into the EAM, which aligns the City's assets with the services they support;

5. The three **Technical Strategies of Life Cycle, Risk and Levels of Service**, which enable an evidence-based approach to forecasting infrastructure renewal needs;
6. The City's **2021 Asset Management Plan**, which provided a long-term plan for managing the City's Core assets;
7. The City's inaugural **2023 State of Infrastructure Report**, which assessed the City's Core and Non-Core assets; and
8. This **2024 Asset Management Plan**, which provides an updated long-term plan for managing the City's Core and Non-Core assets.

**Figure 3: The City's Advancements in Corporate Asset Management Planning Capabilities**




### 1.2.1 The Updated 2024 Strategic Asset Management Policy

The City first approved its Strategic Asset Management Policy in May 2019 as an initial foundational step. It established Richmond Hill's commitments and principles for corporate asset management planning. This policy achieved compliance with the first phase of *O.Reg. 588/17* requiring municipalities to have an asset management policy by July 1, 2019.

In 2024, the Strategic Asset Management Policy was updated to reflect Richmond Hill's improved and evolving business processes, policies, and plans. Per the updated 2024 Policy, the City of Richmond Hill's corporate asset management planning will be guided by these principles:

1. **Integrate asset management planning considerations with the City's Strategic Plan, Official Plan and Master Plans/Studies** to ensure the continued alignment between asset decision-making and achieving the City's strategic priorities, desired Levels of Service, and servicing growth.
2. **Manage municipal infrastructure assets using an integrated business approach** that delivers the desired community services by planning and investing in infrastructure to ensure asset reliability and minimizing risks.
3. **Maximize the value of the City's infrastructure** through prudent life cycle activities while considering financial affordability and sustainability.

4. **Enable residents, businesses, and other interested parties** to provide input in asset management planning.
5. **Coordinate planning for management of assets shared with other governmental agencies,** including the Regional Municipality of York, neighbouring municipalities, and the Conservation Authorities.
6. **Align asset management planning activities with water and wastewater financial plans** to support these critical municipal services are appropriately funded over the long term.
7. **Commit to consider the Asset Management Plan's forecasted asset investment needs** when developing municipal budgets and long-term financial plans.
8. **Commit to consider risks and vulnerabilities, including those related to climate change,** when undertaking asset management planning and reporting needs.

This updated policy is pending approval by Council along with the 2024 Asset Management Plan in June 2024, thereby satisfying the *O.Reg. 588/17* requirement that each municipality must update their Strategic Asset Management Policy at least once every five years.

The updated 2024 Strategic Asset Management Policy guides the City's corporate asset management planning through the integration and alignment with business processes, policies and priorities into fundamental principles to be followed. The updated Policy also achieves compliance with *O.Reg. 588/17*.

*Richmond Green Sports Centre and Park*

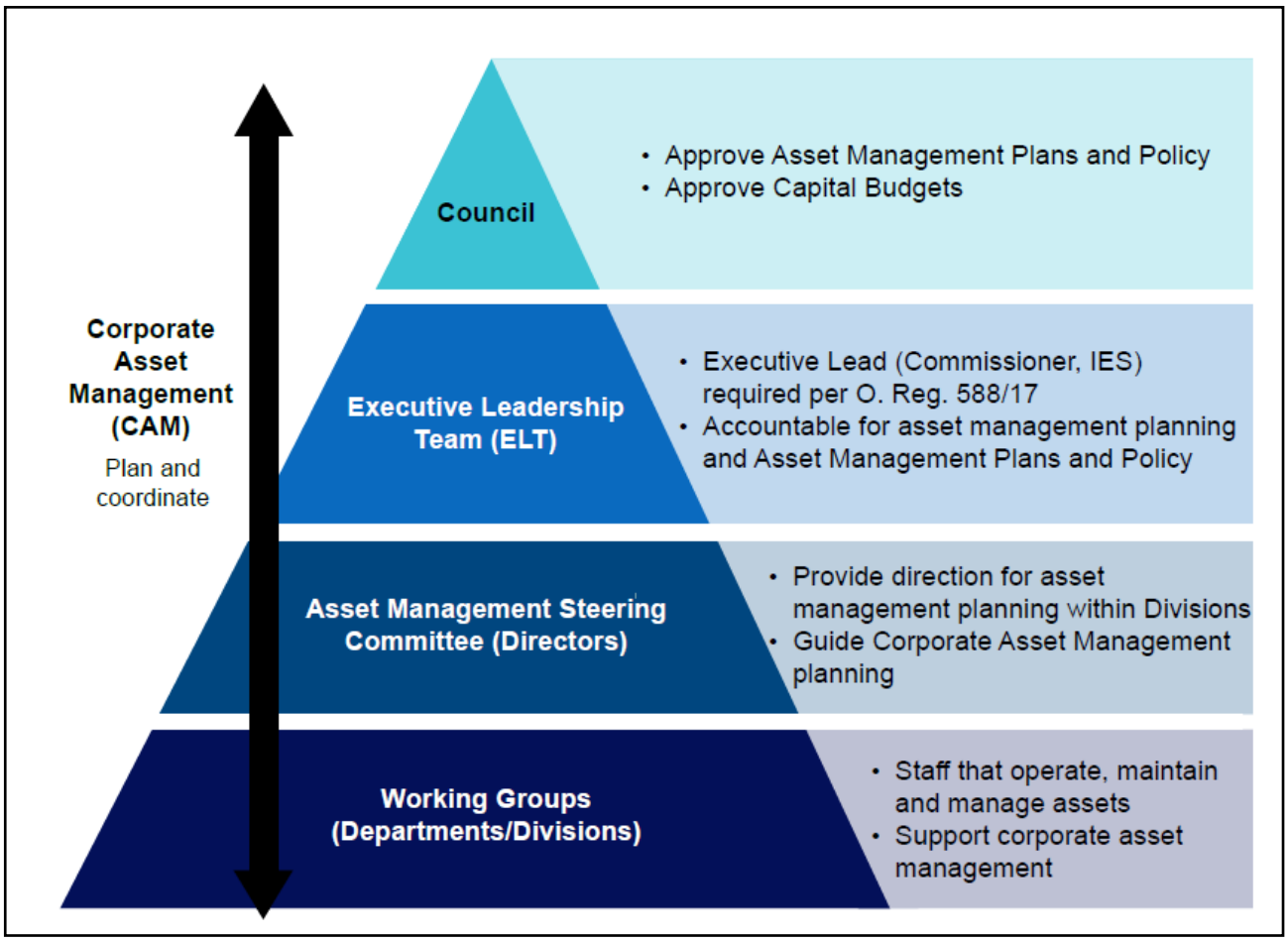
### 1.2.2 Asset Management Governance Framework

The City's Asset Management Governance Framework was first implemented in 2019 and is regularly reviewed and updated to capture any changes to roles and responsibilities. The framework details the internal corporate structure for guiding, implementing and delivering the City's Corporate Asset Management program.

The City's Asset Management Governance Framework provides a consistent, transparent and accountable internal staff working approach that has been instrumental in progressing the City's asset management program forward. It facilitates the effective management of assets by identifying the roles and responsibilities of the key stakeholders involved in the City's asset management program.

A summary of the key processes, roles and responsibilities of the various stakeholders involved in the City's asset management planning process as identified in the framework are as follows below. It is important to note that Richmond Hill's Executive Lead, which *O. Reg. 588/17* requires all municipalities to appoint, is the Commissioner of Infrastructure and Engineering Services.

**Figure 4: Asset Management Governance Framework**



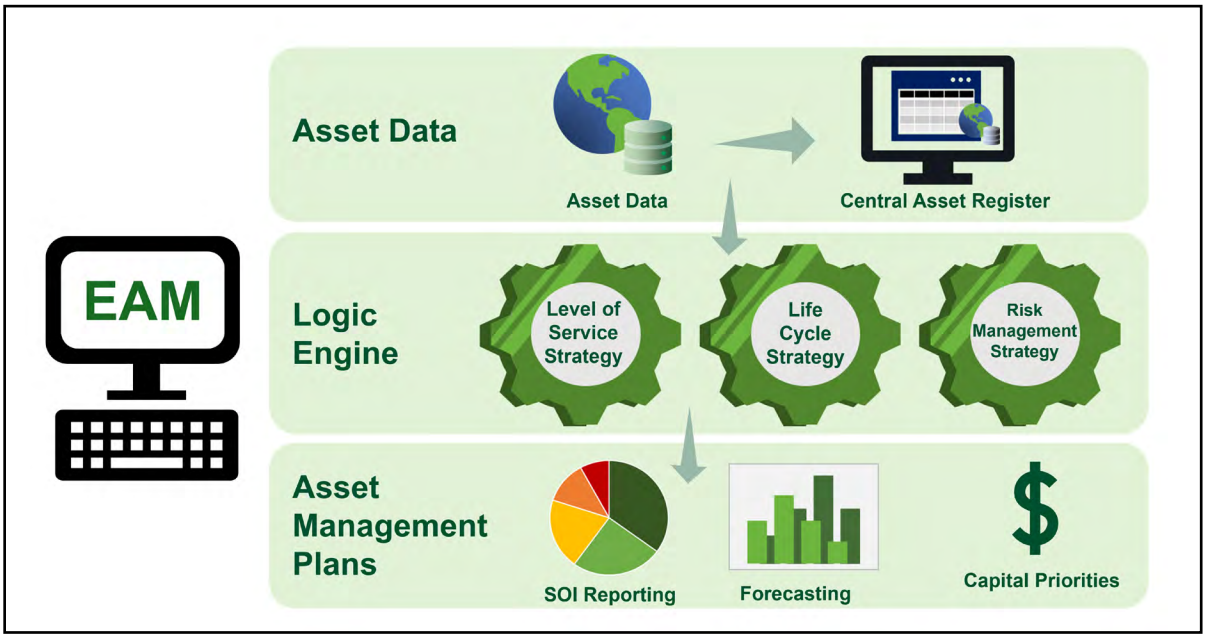
### 1.2.3 Implementation of the City's Enterprise Asset Management System (EAM)

In 2020, the City first developed and implemented its Enterprise Asset Management System (EAM). The City's EAM was designed and functions as a decision support software program to help advance the City's evidence-based asset management investment planning and reporting capabilities. The EAM was internally developed and continues to be updated and maintained by City staff to enhance its functionality.

The EAM includes:

- An asset register, which consolidates City-owned asset data including their key attributes (e.g. condition, age, material, size, location, replacement values) from other Richmond Hill source systems (e.g. GIS, Maximo, VFA);
- The three technical strategies of Life Cycle, Levels of Service and Risk, which provides the logics so the EAM can compute complex asset management-related data analytics; and
- Exporting and reporting functions to produce state of infrastructure reporting, investment forecasting and capital priorities based on risk criticality.

**Figure 5: The City's EAM Decision Support Software Program**




The EAM is one of the most important foundational components of the City's Corporate Asset Management program. It leverages innovative technological solutions and best available information from technical studies to compute and provide:

- A deeper understanding of asset behaviours;
- Approaches to optimize asset life cycles;
- Recommendations of appropriate investment needs;

- Impacts on levels of service; and
- Risk considerations of asset failures.

Since the initial deployment of the EAM in 2020, the City has been advancing the EAM's capabilities through a number of recent improvements. These improvements, which are maturing the City's EAM, are detailed in Section 1.3.

The EAM was instrumental in the development of this 2024 Asset Management Plan as well as the 2023 State of Infrastructure Report and the 2021 Asset Management Plan.

The EAM is a Decision Support System that utilizes asset data from the register and applies the technical strategies (life cycle, levels of service, and risk) to complete analyses on the state of the City's infrastructure and forecast capital renewal needs to support asset investment decisions. The EAM also provides reporting capabilities to meet regulatory and other asset management related reporting requirements. It played a critical role in facilitating the completion of Asset Management Plans to meet O. *Reg. 588/17* requirements.

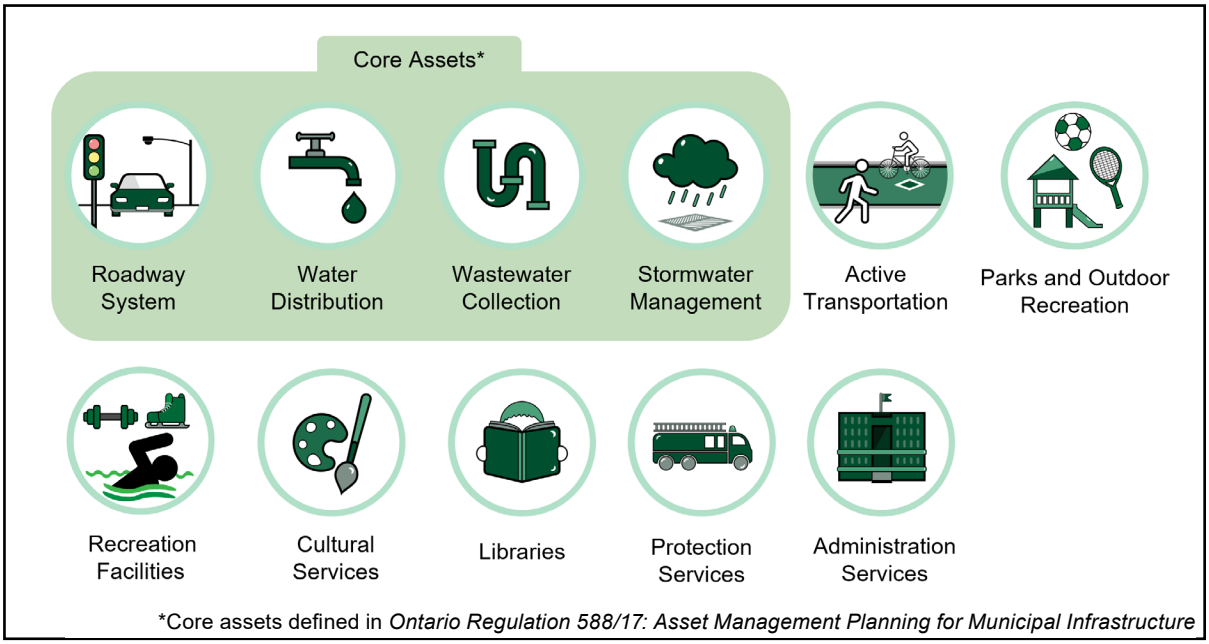
### 1.2.4 Development of the Asset Hierarchy and Incorporation of State of Infrastructure Asset Data into the EAM

The City maintains a variety of distinct asset inventories and maintenance management systems tailored to the uniqueness of the various type of assets and business requirements of the divisions that manage them. These are referred to as the **Source Systems** and include, for example, the City's GIS system, Maximo, and VFA. There are also a whole host of other technical asset data sources including, for example, from condition assessment studies (e.g. OSIM), databases and Microsoft Excel files.

The EAM draws important asset information from all these source systems and centralizes them into its **Asset Register**. To facilitate asset analysis, the **Asset Register** tracks both common and specific asset type attributes. Common asset attributes such as Asset ID, condition, replacement value and construction date provide standardized asset information. Specific asset type attributes such as size (e.g. length, width), material and location are associated with specific asset types.

To understand the relationship between the City's assets and the services they provide, an **Asset Hierarchy** was developed. The Asset Hierarchy aligned the City's assets to the services they support to understand how investments in assets positively impact services for the community. The EAM grouped the City's assets into the following 11 services as shown in Figure 6 as defined by the City's Asset Hierarchy. The City's assets are further classified as Core and Non-Core to align with the asset definitions in *O. Reg. 588/17*.

**Figure 6: City-owned Assets by Service (Asset Hierarchy)**




In 2020, the EAM was populated with City-owned Core asset information. This was crucial for the development of the 2021 Asset Management Plan that met the July 1, 2022 *O. Reg. 588/17* reporting deadlines. Since then, the Core asset data has been updated annually into the EAM to reflect new asset additions, disposals, updated condition results, and refreshed replacement values to current standards.

In 2022, the City's Non-Core assets were captured from the various source systems and incorporated into the EAM. This was integral to creating the inaugural 2023 State of Infrastructure Report, which was the first time the City reported Non-Core assets consolidated into one report on a consistent basis. Since then, the Non-Core asset data has been updated annually into the EAM.

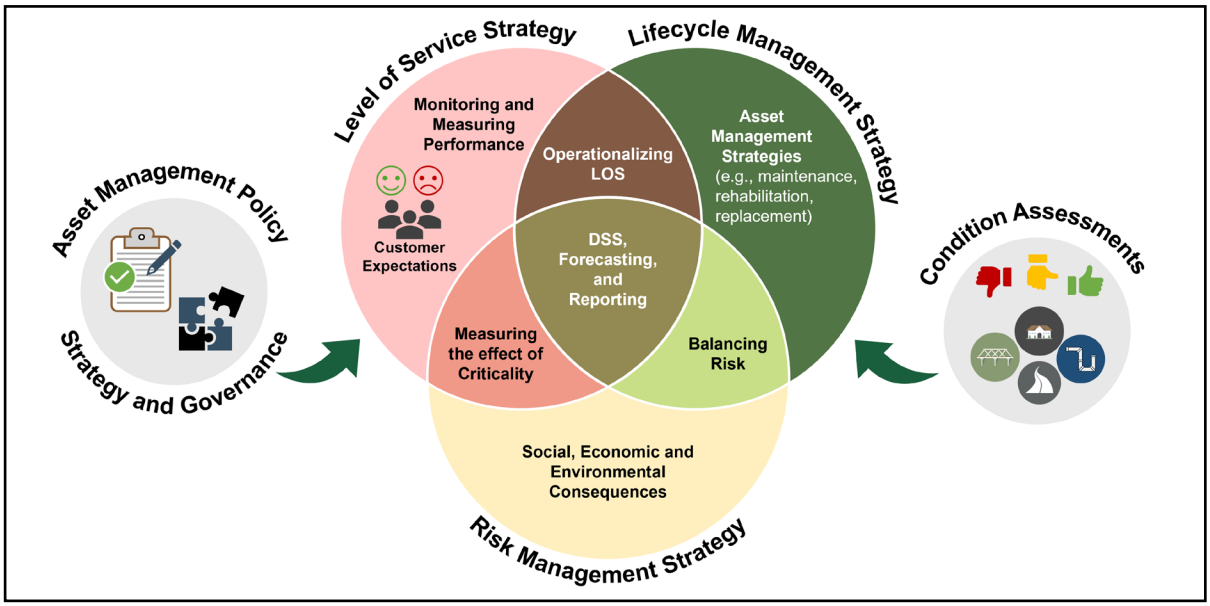
The development of the Asset Hierarchy and annual updates to asset data within the EAM established a standardized corporate framework for the consistent tracking, analysis and reporting of assets across multiple services. It also provided the foundation for connecting updated asset conditions to the required Life Cycle treatments, to their impacts of Levels of Service within the EAM. This has allowed for the development of this 2024 Asset Management Plan and to support the City's Capital Budgeting process by providing that line of sight from asset renewals to community services.

### 1.2.5 Development and Implementation of the Three Technical Strategies for Assets into the EAM

Another fundamental step in the City advancing its Corporate Asset Management program was the development and implementation of the following three key asset management technical strategies:

- The **Life Cycle Strategies** model asset deteriorations over their life and forecast the types, timing and estimated costs of treatments that should be performed to maintain their condition and reliability to meet the City's defined Levels of Service (LOS). Further details on the City's Life Cycle Strategies are in Chapter 4 as well as in the Appendices.
- The **Risk Management Strategy** includes a framework that estimates assets' likelihood of failure over time and the potential consequences (i.e. criticality) should that asset fail. This strategy supports the prioritization of life cycle asset investment decisions when funding is limited to promote a balance between LOS, risk, and budget constraints. Further details on the City's Risk Management Strategy and framework are in Chapter 4 as well as in the Appendices.
- The **Levels of Service (LOS) Strategy** formalized the asset-based performance metrics to be evaluated and tracked (e.g. pavement quality of the City's roads) that impact the City's overall level of service. This strategy provided that line of sight from the LOS that the City intends to deliver through to the day-to-day activities carried out by staff to manage assets. It influences the life cycle strategies by forecasting the resultant impact on LOS from the prioritized asset renewal actions. Further details on the City's LOS Strategy are in Chapter 3 along with the actual asset performances reported in the Appendices as well.

**Figure 7: Technical Strategies Interactions**



The development of these strategies was based on results from workshops with the City's working group of technical subject matter experts (SMEs) and engineering consultants providing best industry practices.

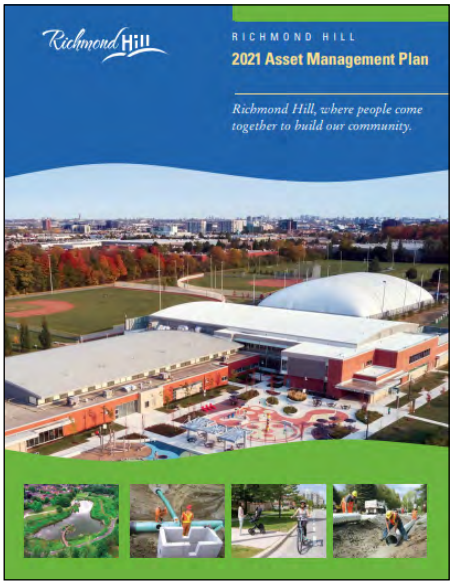
These three technical strategies were implemented into the EAM for Core assets in 2020 and for Non-Core assets in 2022. Together, they formed the foundation, or the "logic engine" for the EAM to forecast suggested asset investment renewals and rehabilitation decisions.

The three technical strategies of Life Cycle, Risk Management and LOS empower the EAM to formulate evidence-based asset renewal recommendations that strike the appropriate balance between maintaining LOS, minimizing risk, and considering costs and limited financing. These strategies were instrumental in allowing the City to produce this 2024 Asset Management Plan to achieve compliance with *O. Reg. 588/17* and support the City's Capital Budgeting process through assisting capital programming.

### 1.2.6 2021 Asset Management Plan

In June 2021, City Council approved Richmond Hill's 2021 Asset Management Plan, one year ahead of the July 1, 2022 deadline in *Ontario Regulation 588/17*.

This plan represented a significant advancement of the City's corporate asset management capabilities. It provided a long-term in-depth understanding of the City's Core infrastructure assets (state of infrastructure), how the City manages them (life cycle strategies), how well those actions are working (service levels), and how much it would cost to maintain them to provide City services (capital investment forecasting, risk and gaps).

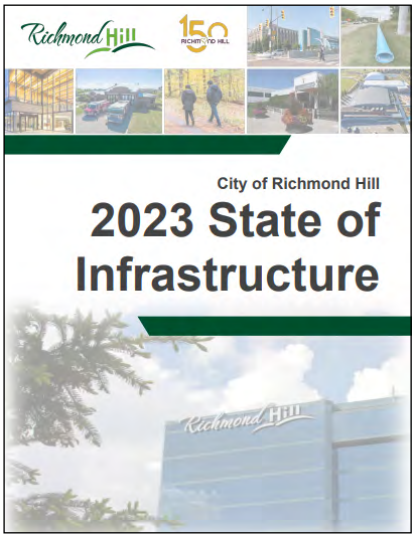



The Core assets assessed included City-owned roads, structures, water distribution, wastewater collection, stormwater management, active transportation and recreation facilities. This 2021 Asset Management Plan along with the EAM assisted the City's 2022 Capital Budget and Forecast through suggesting Core infrastructure investment needs for the development of state of good repair capital projects. This advanced the City's evidence-based corporate asset management planning approaches and established a base for future improvements and continuous learning to build from.

### 1.2.7 2023 State of Infrastructure Report

The City's inaugural 2023 State of Infrastructure Report, which was approved by Council in June 2023, represented the next development of the City's corporate asset management capabilities.

This State of Infrastructure Report provided an assessment of City-owned Non-Core assets into one report for the first time, along with an updated summary of the City's Core assets. This included updated asset inventories, replacement values, conditions, and ages relative to service lives. This report facilitated an improved line of sight of how asset conditions, life cycle investments, and service levels evolve over time from the addition of new assets, deterioration of existing assets, and prior capital renewals. The updated asset information in this Report and the EAM also assisted the City's 2024 Capital Budget by providing refreshed evidence-based data to support infrastructure investment needs.




The 2023 State of Infrastructure Report was a precursor to this 2024 Asset Management Plan by establishing a full state of infrastructure for City-owned assets.

## 1.3 Maturing the Enterprise Asset Management System

**Since the EAM's initial deployment in 2020, the City's corporate asset management journey has included consistently advancing the EAM as a top priority to improve its evidence-based decisions and reporting capabilities.**

With all the recent improvements to the City's asset management data, processes and systems as previously described, the EAM is now starting to mature and progress towards realizing its full potential. The EAM utilizes the high-quality asset data from around the City and the three technical strategies (Life Cycle, Risk and LOS) to suggest evidence-based asset state of good repair expenditure needs, condition forecasting over time, and the impacts on LOS and risk profile. The EAM also assists in determining if current funding is adequate to maintain or improve asset performance now and into the future and supports the development of financial strategies that make the most efficient use of available funding.

The EAM's general process is described in the figure below.

**Figure 8: The EAM's Asset Management Logic**

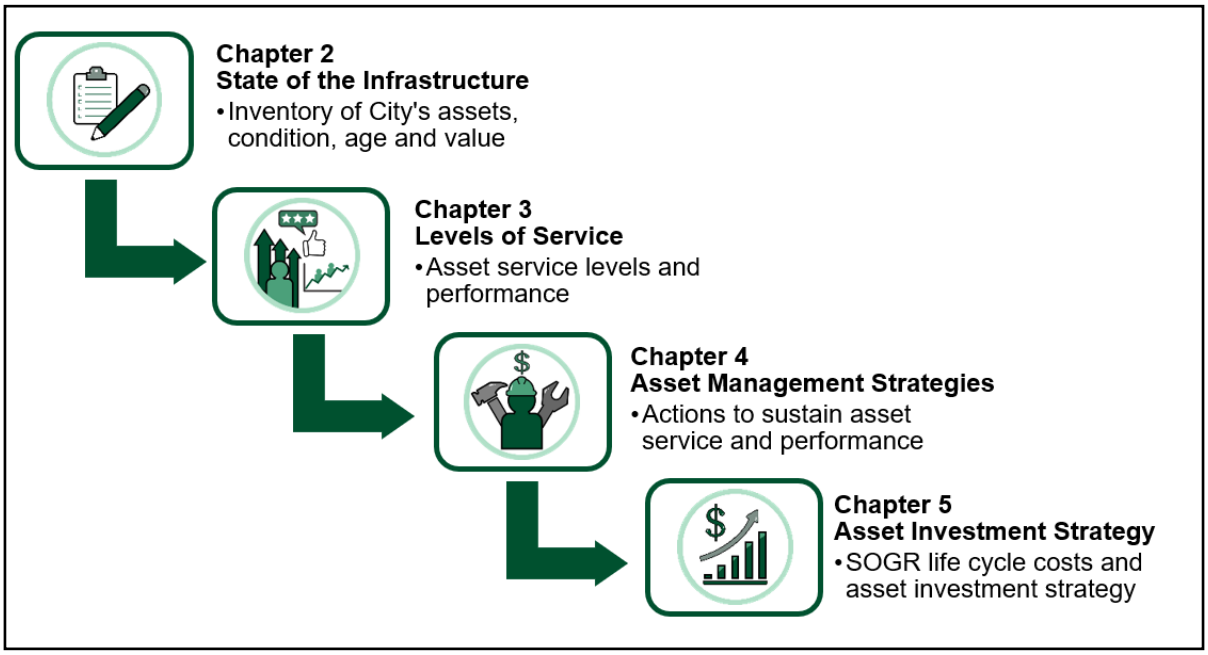

The EAM's advanced data-driven infrastructure analytics forms the foundation of this 2024 Asset Management Plan and contributes towards supporting the City's annual Capital Budgeting process and corporate goals and priorities.

## 1.4 Scope and Purpose of the 2024 Asset Management Plan

**The 2024 Asset Management Plan includes an assessment of Core and Non-Core assets that achieves compliance with *O. Reg. 588/17* and will support the 2025 Capital Budget Process and the City's strategic priorities.**

The scope of this plan includes an assessment of City-owned assets called the State of the Infrastructure, their Levels of Service and performance, the prioritized actions through the Asset Management Strategies and a subsequent infrastructure investment forecast through an Asset Investment Strategy. A five-year continuous improvement plan has been developed and is also part of this Plan.

**Figure 9: Scope of the 2024 Asset Management Plan**




The purpose of this 2024 Asset Management Plan is to:

- Support the long-term stewardship of the City's assets while contributing to the City's strategic priorities and vision for the community;
- Inform capital programming for the City's upcoming 2025 Capital Budget and Forecast development; and
- Achieve compliance with the July 1, 2024 *O. Reg. 588/17* requirements.

## 1.5 Informing Asset Renewal Needs to Assist Capital Programming

**The updated asset information outlined in the 2024 Asset Management Plan will support the City's 2025 Capital Budgeting process. This will be achieved by forecasting up-to-date evidence-based infrastructure investment requirements, thereby aiding in effective capital programming.**

The City proactively undertakes a wide range of ongoing condition assessments of its assets using various technical approaches that are specific to each asset's function and characteristics. Generally, condition assessments involve monitoring and inspecting assets to determine the degree of deterioration and/or deficiencies, the functioning of the asset relative to its design, any potential impacts to service, and age relative to its estimated service life. Examples would include inspecting roads with technology that collects field data to analyze and rate pavement condition, closed circuit television inspections of sanitary and storm sewer pipes to identify structural defects and Building Condition Assessments for the City's facilities.

After the condition assessments are completed, the appropriate life cycle treatments such as maintenance, repair, rehabilitation and/or replacement needs, costs and timing are identified. This ensures there is a proactive plan for the renewal of assets so they can continue to provide services to the community.

Understanding the most up-to-date condition, projected deterioration over time, and the appropriate life cycle activity needs of the City's assets allows for the development of an investment plan. All this information is also stored in the City's source systems and the EAM.

This 2024 Asset Management Plan reflects the most up-to-date asset condition assessment results. Updating the City's asset information regularly and using that information to proactively inform capital programming is an asset management best practice.

The City's EAM includes life cycle models that generally reflect the currently practiced capital activities by the City as well as recommended treatments based on the technical condition assessments and engineering principles. As a result, the EAM can forecast suggested capital investment needs that are reflective of these for the 2024 Asset Management Plan. This information along with the technical asset assessments from consultant reports, assists in developing capital projects for the City's annual Capital Budgets. The EAM then relates the suggested asset investments into key outcomes such as the updated infrastructure backlog of needs, the amount of assets in poor and very poor condition, impacts to condition-based service levels (e.g. changes in road pavement quality), and the degree of improvement in asset functionality for service reliability.

This 2024 Asset Management Plan represents the next advancement of the City's corporate asset management planning capabilities. By including an estimated long-term asset renewal forecast, it can assist with the development of capital programming and capital budgets, which is a best business practice that places it among leading municipalities.

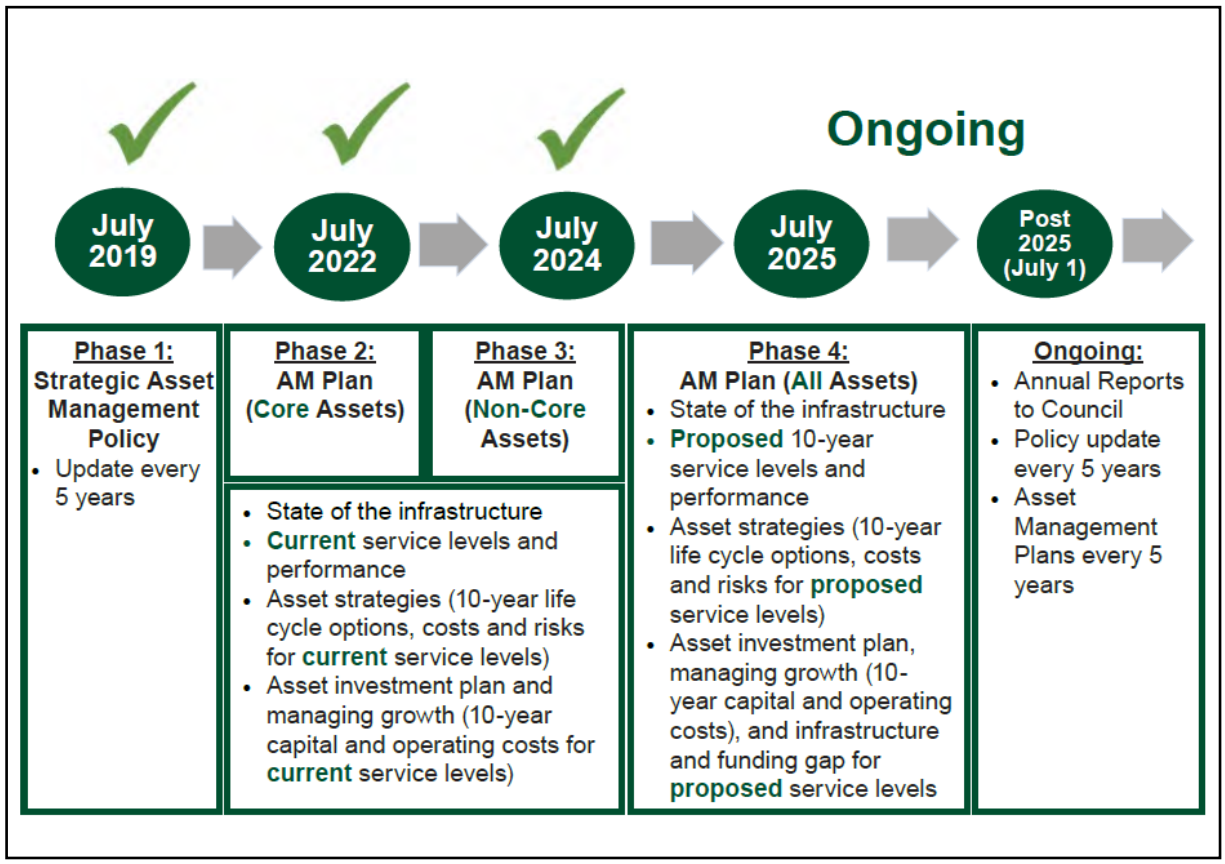
## 1.6 Achieving Asset Management Regulatory Requirements

**This 2024 Asset Management Plan achieves compliance with the July 1, 2024 *O. Reg. 588/17* requirements as well as is the precursor for the City's 2025 Asset Management Plan to achieve the next July 1, 2025 *O. Reg. 588/17* requirements. This plan also supports the City's upper-level government funding requests as they require approved municipal asset management plans.**

The Province of Ontario enacted two major legislative requirements that gave rise to the need for Ontario municipalities to develop Council approved Asset Management Plans:

- The first was the *Infrastructure for Jobs and Prosperity Act, 2015*, which came into effect in 2015. This required Ontario municipalities to have approved Asset Management Plans in order to receive provincial funding. It also set the stage for the upcoming regulation that standardized asset management reporting requirements for Ontario municipalities; and
- The second was *O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure*, which came into effect on January 1, 2018. This regulation outlined a set of standardized asset management reporting requirements to be achieved through Council approved municipal Asset Management Plans.

**Figure 10: Overview of O. Reg. 588/17 Requirements and Timeline**



As highlighted in the figure above, the City's robust asset management processes and systems allowed the City to produce a Council approved Asset Management Policy and Plans that achieved compliance with the phases of the *O.Reg.588/17* requirements:

- The City's initially approved Asset Management Policy (in May 2019) met the *O. Reg. 588/17* requirement to have a council approved policy by July 1, 2019. Per *O. Reg. 588/17*, every municipality must review and update their policy at least once every five years. The City's updated 2024 Asset Management Policy was approved by Council at the same time as this 2024 Asset Management Plan (June 2024);
- The City's approved 2021 Asset Management Plan (in June 2021) achieved compliance one year ahead of the July 1, 2022 phase 2 requirements in *O. Reg. 588/17*; and
- This 2024 Asset Management Plan achieves compliance with all the requirements stipulated in phase 3 of the July 1, 2024 *O. Reg. 588/17* deadline.

The City of Richmond Hill is committed to transparency and considering feedback from residents and stakeholders. The City's 2024 Asset Management Plan is accessible and available through the City of Richmond Hill's website (RichmondHill.ca). Supporting documents, such as the Council approved Asset Management Policy, are also publicly available on the City's website as per *O. Reg. 588/17*.


*City of Richmond Hill Municipal Offices*

## 1.7 Supporting the City's Vision and Strategic Priorities

**Richmond Hill's asset management planning process and this 2024 Asset Management Plan play a contributing role in helping the City achieve its strategic priorities and vision for the community.**

Since the approval of the City's previous Council Strategic Priorities for 2020-2022, a new term of Council was elected in 2022 along with the emergence of new challenges, opportunities and strengths that warranted an updated Strategic Plan. In February 2024, City Council approved Richmond Hill's new 2024-2027 Strategic Plan, which established the vision, mission and values followed by three pillars and a set of priorities and actions that formed the roadmap for the City to achieve a collective vision for Richmond Hill.

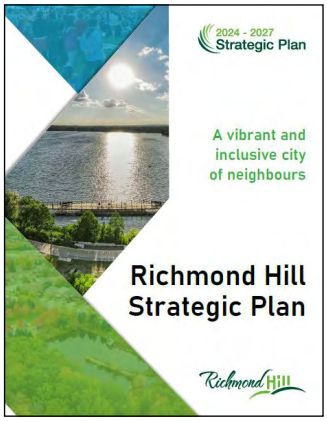



**Figure 11: Richmond Hill's 2024-2027 Strategic Plan Pillars and Priorities**

**Pillar 1: Growing a Livable, Sustainable Community**

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change mitigation and adaptation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

**Pillar 2: Focusing on People**

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.
- Build a workforce for tomorrow to ensure that expertise and continuity is in place to deliver on the City's aspirations for the future.

**Pillar 3: Strengthening our Foundations**

- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

This 2024 Asset Management Plan aligns directly with Pillar 3 by enabling evidence-based capital investment decisions based on best asset management planning practices while considering financial sustainability. It provides the set of practical tools and the roadmap for how the recommended investment renewals into the City's infrastructure are supporting Richmond Hill's provision of services and the three pillars of the new Strategic Plan.

*Meander Park*

In addition to supporting these three strategic pillars, this 2024 Asset Management Plan also aligns with and complements other strategic objectives from master plans and studies that have implications for the City's assets and the services they support. Implementing and sustaining the consolidated vision for Richmond Hill requires a prudent long-term plan to manage the City's infrastructure assets, which this 2024 Asset Management Plan provides.

The table on the following page summarizes how this 2024 Asset Management Plan aligns with these other master plans and studies, while more detailed descriptions are included in each of the 11 service appendices.

**Table 1: Alignment of the 2024 Asset Management Plan with Master Plans and Studies**

| City Document | Alignment with the 2024 Asset Management Plan |
|---|---|
| Official Plan | The Official Plan focuses on land use and contains policies to manage the growth of the community to 2051. Together with the Master Plans and Development Charges Background Study, the Official Plan informs the future demands on the City's infrastructure to accommodate the projected growth, which are necessary inputs for asset management planning. The City is currently updating its Official Plan. |
| Climate Change Framework (2020) | The Climate Change Framework guides Richmond Hill's climate change mandate and ensures a coordinated approach to taking climate action. Among the six climate goals outlined in the framework is one which pertains to applying a climate change lens to asset management planning. The 2024 Asset Management Plan integrates actions associated with this goal, with more progress to come. |
| Service Area Specific Master Plans and Strategies | There are a series of approved service area master plans and studies that outline their respective strategic objectives and recommended asset investment requirements to achieve them. These are considered in asset management planning. Some of the key master plans and studies include:<br>• Transportation Master Plan;<br>• Urban Master Environmental Servicing Plan;<br>• Parks Plan;<br>• Urban Forest Management Plan;<br>• Environment Strategy;<br>• Community Energy and Emissions Plan;<br>• Recreation and Culture Plan;<br>• Fire Master Plan; and<br>• Richmond Hill Public Library Strategic Plan. |
| Water and Wastewater Financial Plan (2024) | Financial Plans for Water and Wastewater services are a requirement under the *Safe Drinking Water Act* and provide details on the financial self-sustainability of the systems. The Financial Plan informs the development of the operating budget and capital forecast along with the funding strategies for Water and Wastewater assets. The 2024 Asset Management Plan supports and aligns with the City's 2024 Water and Wastewater Financial Plan. |
| Development Charges Background Study (2024) | The City's Development Charges Background Study details Richmond Hill's growth-related infrastructure expansion needs that are supported by Official Plan and service area-specific master plans and studies. The 2024 Asset Management Plan includes the growth-related infrastructure requirements, and their future ongoing renewal needs. |
| Financial Sustainability Strategy (2020) | The Financial Sustainability Strategy outlines the City's approach to managing its capital program and provides a financing plan to sustain its infrastructure in a prudent manner that is affordable. The 2024 Asset Management Plan informs and is a key contributor to the development of the Financial Sustainability Strategy. |
| Tangible Capital Assets (TCA) Policy (2017) | The City's TCA Policy defines the capitalization policies, approach, and thresholds where resources would be considered a capital asset that are reported on its financial statements in compliance with PSAB 3150. The 2024 Asset Management Plan includes capital assets that are defined and aligned with the City's TCA Policy. |

Chapter 2

# State of the Infrastructure


*Oak Ridges Community Centre*

# 2.0 State of the Infrastructure

## 2.1 Assessing Asset Inventories, Values, Conditions and Ages

**The City's assets have an estimated replacement value of $11.4 billion and are on average in Good to Very Good condition but will require ongoing investments to maintain them to sustain reliable services.**

Since the early 1980s, Richmond Hill has experienced significant growth. To accommodate that growth, infrastructure such as roads, structures, active transportation, parks, buildings (e.g. community centres, arenas, libraries and fire stations), and underground networks that carry drinking water, stormwater and wastewater were all constructed. Other supporting assets such as fleet and equipment were also acquired to support service delivery.

As a result, the City of Richmond Hill owns and manages a wide range of complex assets that deliver an array of services to the community. As these infrastructure assets age and deteriorate over time, they will need ongoing renewal to ensure they continue to provide reliable community services. Given these infrastructure renewals can be costly, the first step of asset management planning is understanding what infrastructure the City owns and manages, its condition, replacement value, age and expected service life. This represents the 'State of the Infrastructure'.

*Ed Sackfield Arena and David Hamilton Park*

In compliance with *O. Reg. 588/17*, the following State of Infrastructure information for City-owned assets categorized by the services they support are highlighted in this section along with their report card summaries. Further details are included in each of the service Appendices:

- The inventory of City-owned assets;
- The current replacement values of the assets;
- The condition of the assets; and
- The average ages and estimated service lives of the assets.

## Inventory

The inventory of the City's assets is consolidated into the Asset Register within the EAM from the various source systems across the City. Each asset is assigned to its appropriate category in the Asset Hierarchy based on the service it supports, along with all its important attributes including count, size, length, material, location, etc. This allows the City to report the inventory of City-owned assets associated with each service.

## Current Replacement Value (CRV)

The replacement value (CRV) of the City's assets is based on the estimated cost to replace them at their current price based on industry contract pricing. For linear assets such as roads, active transportation and watermains for instance, the replacement value is based on unit cost by their size (length, diameter, width) and material. The replacement values for other assets such as facilities are derived from the sum of building system-level items, while for fleet and equipment, their value is based on acquisition purchase cost. Estimates for soft costs (e.g. design, contingency) are also included in the replacement values.

## Average Age and Estimated Service Life (ESL)

The ages of the City's assets are based on when they were constructed, installed and/or purchased. These are included in the City's EAM Asset Register. The average ages of the City's assets by service are weighted by their replacement values. These average ages are then compared to their weighted average service life based on each asset's unique characteristics to provide an estimate of how much longer they may last.

## Condition

The City uses a variety of different technical condition assessments to assess the condition of assets that are appropriate for their unique characteristics and function. When technical condition assessments are not feasible, the City uses the asset age and remaining service life to determine condition. The condition assessment results are then assigned into one of five (5) standard Corporate Asset Management condition categories with an associated Letter Grade (from A to F).

**Table 2: Corporate Asset Management Condition Rating System**

| Condition Category | Letter Grade | Asset Condition Characteristics |
|---|---|---|
| **Very Good** | **A** | "Fit for the Future": New or recently rehabilitated. Very low risk of failure. |
| **Good** | **B** | "Good for Now": Minimal signs of deterioration. Low risk of failure. |
| **Fair** | **C** | "Adequate for Now but May Require Attention": Additional signs of deterioration. Some failures could potentially occur. |
| **Poor** | **D** | "Declining Condition": Probability of asset failures increasing. Reduced ability to provide the service. |
| **Very Poor** | **F** | "At Risk": Assets have exceeded their service life and require attention and appropriate life cycle treatment. |

The City's approach for assessing the state of its infrastructure provides a common and transparent understanding of City-owned assets so they can be analyzed, compared, and reported consistently across all services.

Using this approach, the City's infrastructure assets have an estimated 2024 replacement value of $11.4 billion, which represents a $2.2 billion or 24% increase over 2023 ($9.2 billion) due to:

- Cost pressures related to price escalations and market challenges ($2.0 billion); and
- Net new assets added to the City's inventory ($0.2 billion).

The overall average condition of the City's infrastructure assets in 2024 remained in Very Good (letter grade A), which is the same overall average condition as in 2023. The City's assets are also generally newer when compared to their estimated service lives.

Although the majority of the City's assets are in Good to Very Good condition and are relatively young, ongoing investments will be required to maintain them as they deteriorate over time. Assets in Fair, Poor, and Very Poor will require rehabilitation and/or replacement. As new asset inventories grow over time and yearly inflationary pressures continue, the future renewal needs will increase over time. Understanding the City's State of Infrastructure is the first step in developing asset management plans and investment strategies.

**Figure 12: Asset Replacement Value**

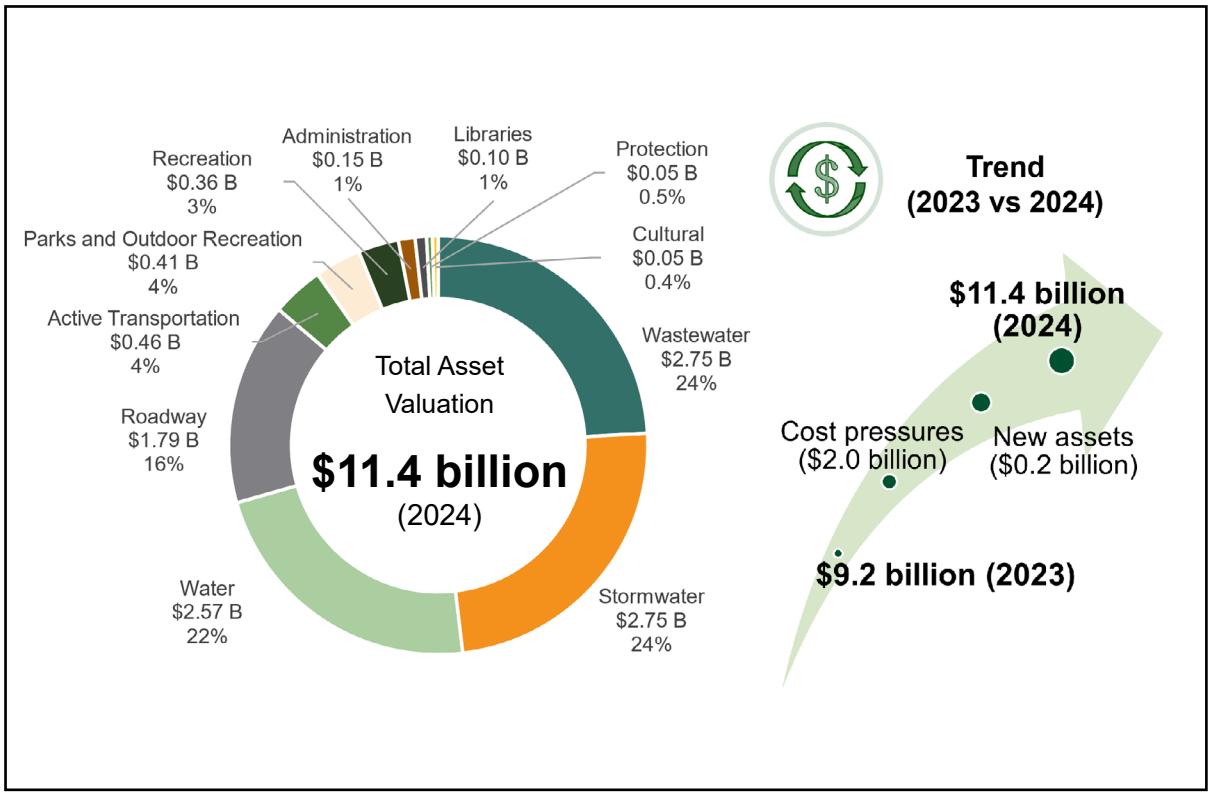


**Figure 13: Asset Condition Profile**

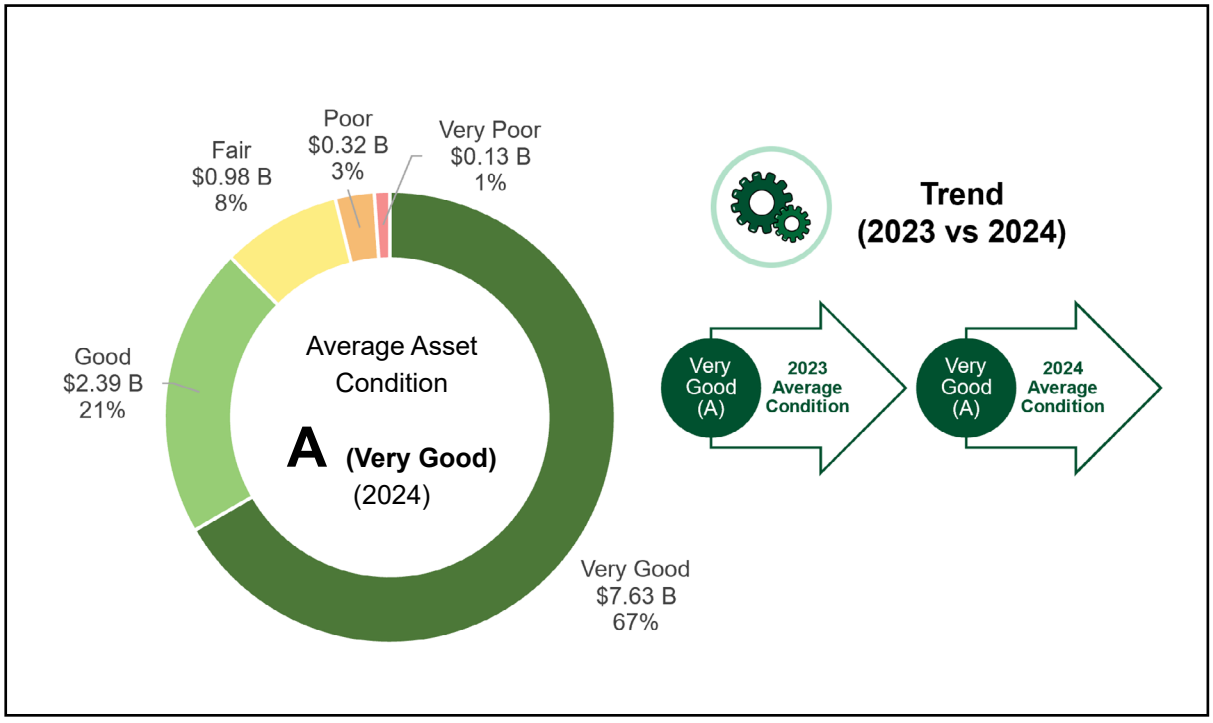



**Figure 14: Asset Condition by Service**

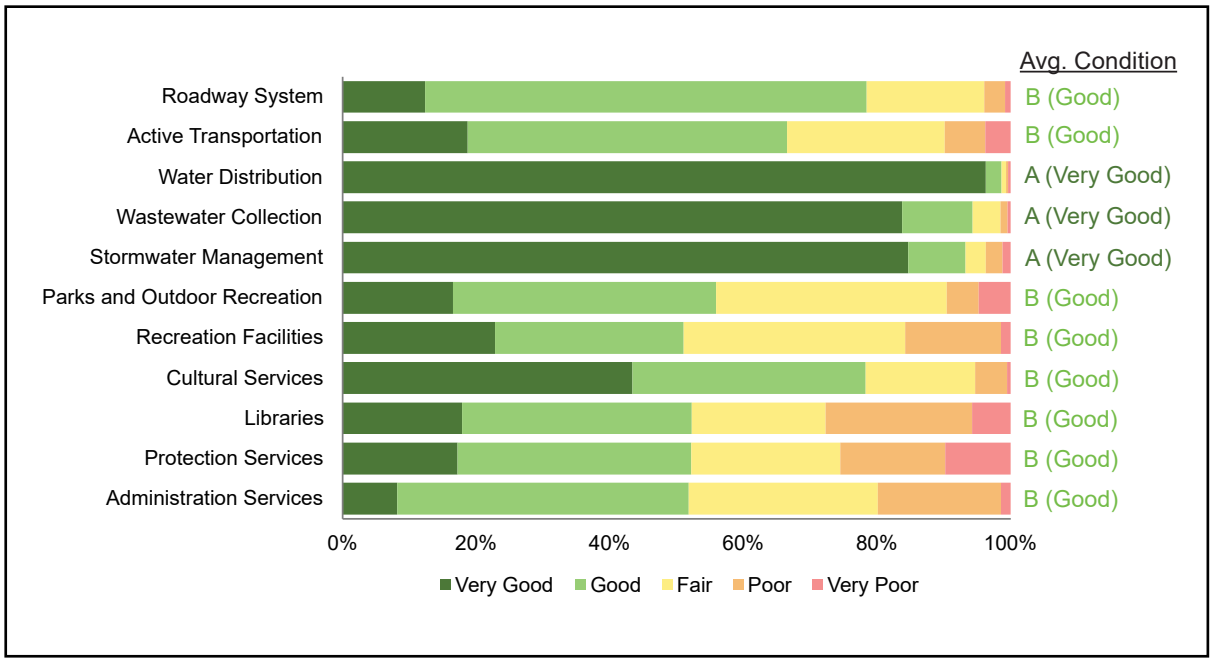
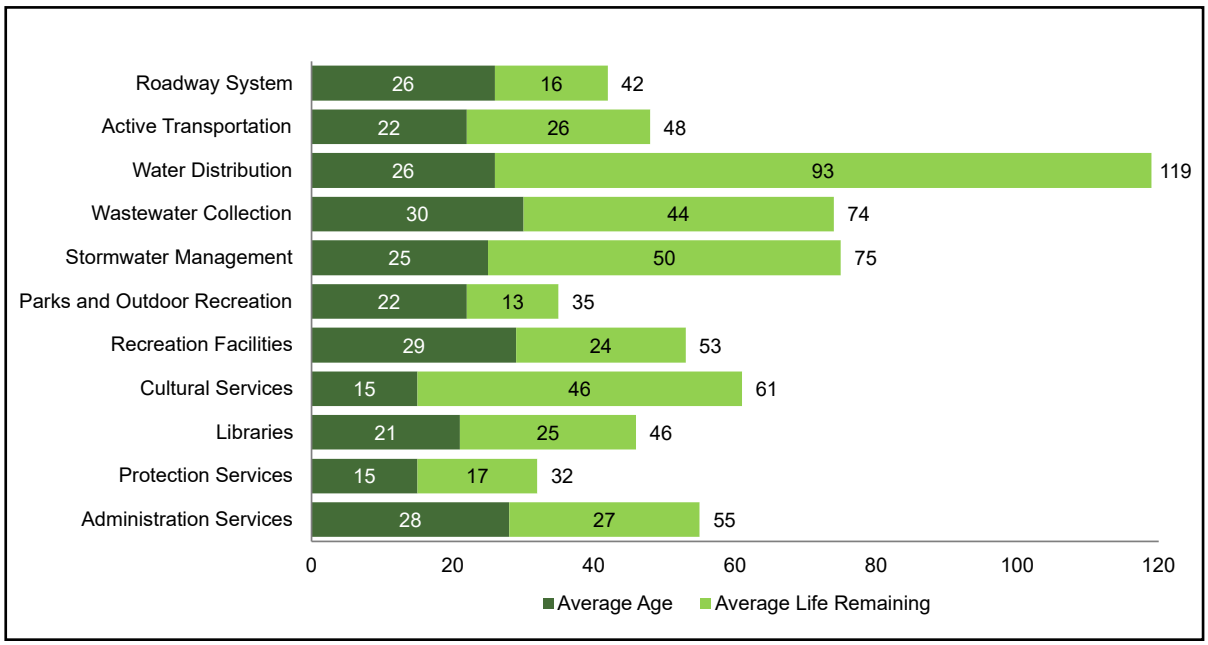


**Figure 15: Asset Average Age and Remaining Service Life (Years)**




*Silver Stream Park*

## 2.2 State of Infrastructure Report Card Summary

**Roadway System**

1,215 lane-km Roads
14,193 Streetlights
32 Traffic Signals and Beacons
63 Bridges and Road Culverts
A mix of Fleet and Equipment

**Average Condition**

**B**
(Good)

**Replacement Value**

$1.79 Billion

**Average Age and Service Life**

| 26 | 16 |
|---|---|

**Active Transportation**

172 km Bicycle Lanes/Cycle Tracks
718 km Sidewalks/Walkways
16 km Multi-Use Paths
137 km Trails
3 km (114) Outdoor Crossings

**Average Condition**

**B**
(Good)

**Replacement Value**

$0.46 Billion

**Average Age and Service Life**

| 22 | 26 |
|---|---|

**Water Distribution**

667 km Watermains
52,507 Water Meters / AMI Collectors
A mix of Fleet and Equipment

**Average Condition**

**A**
(Very Good)

**Replacement Value**

$2.57 Billion

**Average Age and Service Life**

| 26 | 93 |
|---|---|

**Wastewater Collection**

613 km Sanitary Sewers
6 Pumping Stations

**Average Condition**

**A**
(Very Good)

**Replacement Value**

$2.75 Billion

**Average Age and Service Life**

| 30 | 44 |
|---|---|

**Stormwater Management**

614 km Storm Sewers
1,146 Storm Culverts
107 Stormwater Management Facility
91 Low Impact Developments
A mix of Fleet and Equipment

**Average Condition**

**A**
(Very Good)

**Replacement Value**

$2.75 Billion

**Average Age and Service Life**

| 25 | 50 |
|---|---|

**Parks and Outdoor Recreation**

170 Parks
528 Outdoor Recreation Amenities
8 Supporting Recreation Facilities
26 Parking Lots and Illumination
73,731 Street and Park Trees
889 ha Natural Areas
A mix of Fleet and Equipment

**Average Condition**

**B**
(Good)

**Replacement Value**

$0.41 Billion

**Average Age and Service Life**

| 22 | 13 |
|---|---|

## Recreation Facilities

11 Community Centres
5 Arenas
1 Public Education / Outreach Facility
13 Supplemental Facilities
20 Parking Lots and Illumination
A mix of Recreation Equipment
A mix of Fleet and Equipment

**Average Condition**

**B**
(Good)

**Replacement Value**

$0.36 Billion

**Average Age and Service Life**

| 29 | 24 |
|---|---|

## Cultural Services

1 Theatre
1 Museum/Heritage Centre
1 Art Gallery
4 Parking Lots and Illumination
A mix of Equipment

**Average Condition**

**B**
(Good)

**Replacement Value**

$0.05 Billion

**Average Age and Service Life**

| 15 | 46 |
|---|---|

## Libraries

4 Library Facilities
4 Parking Lots and Illumination
A mix of Library Equipment
A mix of Library Collections

**Average Condition**

**B**
(Good)

**Replacement Value**

$0.10 Billion

**Average Age and Service Life**

| 21 | 25 |
|---|---|

## Protection Services

6 Fire Stations
6 Parking Lots and Illumination
46 Fire Fleet
A mix of Fire Equipment

**Average Condition**

**B**
(Good)

**Replacement Value**

$0.05 Billion

**Average Age and Service Life**

| 15 | 17 |
|---|---|

## Administration Services

2 Office Buildings
8 Other Buildings
6 Parking Lots and Illumination
A mix of IT
A mix of Fleet and Equipment

**Average Condition**

**B**
(Good)

**Replacement Value**

$0.15 Billion

**Average Age and Service Life**

| 28 | 27 |
|---|---|

## Chapter 3

# Levels of Service

*Richmond Green Sports Centre and Park*

# 3.0 Levels of Service

## 3.1 Evaluating Levels of Service

**A Level of Service Framework was implemented to monitor current asset performance to ensure they are performing as intended, as well as future proposed levels of service to support City services and inform where potential investments are needed.**

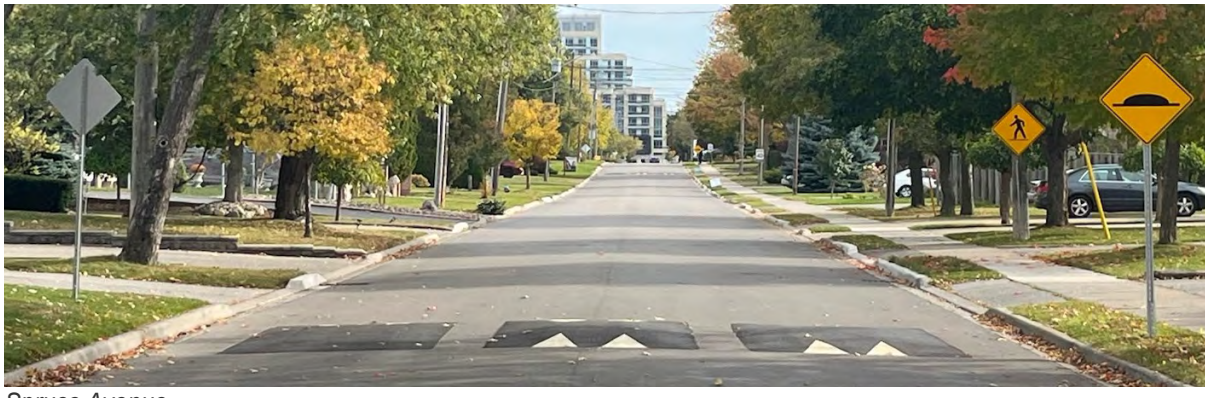
Levels of Service (LOS) are key business drivers that play an important part in asset management planning. Understanding how assets are performing and the impact on the services they are providing to the community inform asset life cycle investment decisions to ensure they continue to deliver expected service levels.

This Chapter provides an overview of the City's Corporate Asset Management LOS framework and summarizes the asset-based community and technical LOS metrics and their current performance. It answers the question, 'how are the City's assets performing?'

In response to *O. Reg. 588/17*, the City first developed its Corporate Asset Management LOS framework in 2020 as part of the three foundational technical strategies as detailed in Chapter 1. The City's LOS Framework is based on the requirements of *O. Reg. 588/17*, with additional advanced metrics also developed to capture operational business needs and the vision for the community derived from master plans and studies. This framework essentially provided that line of sight from the LOS that the City intends to deliver through to the day-to-day activities carried out by staff to manage assets to realize strategic priorities and master plans. This framework also included specific LOS performance measures that could be quantified, monitored and tracked consistently over time. It informs both the City and the general public's understanding of the services provided by the City's infrastructure (the Community LOS) and the technical performance measures of managing that infrastructure (the Technical LOS).

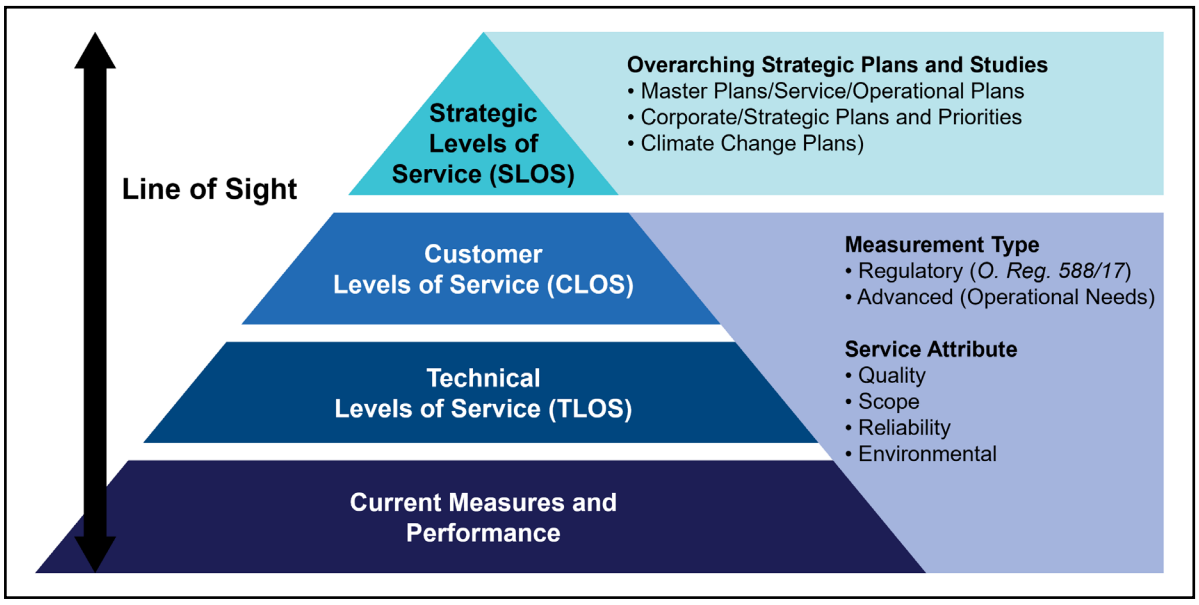
As a result, the Corporate Asset Management LOS framework measures current asset performance and defines and identifies the point where each asset is no longer meeting its expected LOS. By defining asset LOS performance in this manner, targets or thresholds can be used to inform life cycle strategies and recommended asset renewals. These are described in the upcoming chapters of this 2024 Asset Management Plan.

Figure 16 illustrates the City's Corporate Asset Management LOS framework.



*Spruce Avenue*

**Figure 16: Level of Service Framework**




The key components of this LOS framework operate as follows to provide that holistic understanding of how the assets are performing in support of City services:

- **Strategic LOS:** This represents the overarching strategic service vision for each of the City's 11 services. They were developed from the program-specific master plans, studies, and policies as well as are aligned with the City's Strategic Plan (2024-2027) and Climate Change Framework (2020). For example, the City's Roadway System's Strategic LOS is to provide a well-connected, sustainable, multi-modal and inclusive network for all users including motorists, pedestrians and cyclists.
- **Community LOS:** These are the qualitative service measures that describes the services being provided to the community in support of the overall Strategic LOS. *O. Reg. 588/17* prescribes specific community LOS for Core assets that municipalities must include in their asset management plans. For Non-Core assets, municipalities can develop any custom community LOS tailored to their respective visions. For example, one of the Community LOS measures for the City's Roadway System is a description of the road network and its level of connectivity for commuters.
- **Technical LOS:** These represent the quantitative measures applied at the asset level to assess the performance of assets in support of the Community LOS. Similar to Community LOS, *O. Reg. 588/17* outlines specific Technical LOS for Core assets. For Non-Core assets, municipalities can develop any Technical LOS they prefer. For example, one of the Technical LOS measures for the City's Roadway System is the average Pavement Quality Index for roads.
- **Current Measures and Performance:** These are the individual measures along with the current performance values as of year-end 2022. Each of the City's 11 services has a collection of these measures along with their current performance. These are used for assessing how the City's individual assets may be performing in support of Technical and Community LOS. For example, the City's Roadway System has a current Pavement Quality Index of 76 (out of 100), representing an asset condition performance of Good.

- **Measurement Type:** There are two types of performance measures. The first are those that are required by *O. Reg. 588/17* for Core assets. The second type are Advanced measures which are meant to capture the operational business needs to assist the City's decision-making process. Both types of performance measures are identified in each of the 11 service appendices.
- **Service Attribute:** This describes the area of focus that each performance measure is assessing. A range of performance measures are used to allow for a broader and deeper understanding of asset behaviours on LOS. The Service Attributes include: Quality, Scope, Reliability and Environmental.

The City's Corporate Asset Management LOS framework aligns the strategic service goals developed from master plans and studies with individual asset-based LOS performance measures for each of the 11 services. This allows for understanding how the current performance of the City's individual assets can sustain the strategic service goal. It also informs evidence-based decisions and life cycle investment strategies needed to support the delivery of the desired LOS. The framework achieves compliance with the July 1, 2024 *O. Reg. 588/17* LOS reporting requirements.

## 3.2 Servicing a Diverse and Growing Community

**The City's assets are performing as intended and are supporting reliable services to the community, as evaluated through the Corporate Asset Management LOS framework.**

*O. Reg. 588/17* requires municipalities to report their current LOS performance in their asset management plans for Core assets by July 1, 2022, and for Non-Core assets by July 1, 2024. The regulation requires the City to report on certain mandated LOS for Core assets, as well as other LOS that the City has established for its Non-Core assets.

The complete descriptions and listing of all asset management LOS measures including the Strategic LOS, Community LOS and Technical LOS, along with their current performance, are detailed in each of the 11 service appendices. A summary of the key technical LOS measures are highlighted in the report card summaries (Section 3.3). The current performance results are based on the most recently available information.

With the LOS reported in this 2024 Asset Management Plan, the City has achieved compliance with the *O. Reg. 588/17* reporting requirements. In addition, the current performance results in this 2024 Asset Management Plan also clearly demonstrate that the City's assets are generally on average performing as intended and are supporting reliable services to the community.

**Proposed levels of service will be developed and included in the 2025 Asset Management Plan to help guide the required investments to achieve the future performance of assets.**

As part of Corporate Asset Management's 5-year continuous improvement plan (detailed in Chapter 6), LOS measures will be updated and proposed performance will be developed in 2024 to be included in the 2025 Asset Management Plan. This will provide further insight into how much asset investments will be needed to sustain and achieve the City's desired LOS. Also, developing proposed LOS performance will ensure the City's 2025 Asset Management Plan achieves compliance with the next phase of the *O. Reg. 588/17* requirements by July 1, 2025. As such, proposed LOS are not included in this 2024 Asset Management Plan but will be further developed and reported in the City's upcoming 2025 Asset Management Plan.

It is important to note that the City's ability to achieve its intended service levels can be impacted by external pressures and emerging issues. As these changes occur, updates to future Asset Management Plans and annual progress reports to Council will consider their impacts on LOS, which may also affect life cycle strategies and asset investment costs.

- **Demographic and Social Factors:** Population and employment changes (i.e. growth) can impact the intensity and frequency of infrastructure use, resulting in assets that could deteriorate more quickly or reach capacity sooner than expected. Shifts in customer expectations for City services as a result of changing demographics can further impact patterns of infrastructure use. These could require additional and more frequent asset management strategy-based investments. Increases in environmentally conscious behaviour and attitudes among residents and businesses (e.g. LEED-certified buildings, reductions in vehicle use, water and energy conservation) can lead to infrastructure that lasts longer and is more efficient.
- **Technological Factors:** Changes in technology or asset construction, operation and maintenance methods may lead to the replacement of obsolete equipment, provide longer or shorter asset life, and/or achieve higher quality and greater efficiencies.
- **Economic Factors:** Inflationary cost pressures of input variables (e.g. cost of power, fuel, materials), supply change disruptions, and labour shortages can impact the costs to deliver services as well as to maintenance, operating and rehabilitation/ replacement asset activities.
- **Regulatory Factors:** As a lower-tier municipality, the City is subject to the various policies, programs, and legislative decisions issued by other levels of government (i.e. federal, provincial, and regional). Legislative changes can impact the City's strategic direction and asset maintenance and renewal activities. They can also impact the availability of external funding (e.g. federal and provincial infrastructure programs), which can in turn affect the infrastructure improvement activities
- **Environmental Factors:** Municipalities like Richmond Hill are experiencing the impacts of climate change (e.g. flooding, changing weather patterns), which in most cases leads to infrastructure failing prematurely and requiring repair or replacement much earlier than the estimated life of the asset. Enhancing asset resiliency to climate change is a growing need, and can be costly and impact life spans and future renewal needs.

## 3.3 Technical Levels of Service Report Card Summary

### Roadway System

- **76** Pavement Quality Index (PQI)
- **0.2** Arterial Road lane km/m² land area
- **2.6** Collector Road lane km/m² land area
- **9.2** Local Roads lane km/m² land area
- **96%** Roads: Fair or better condition
- **84%** Traffic Signals: Fair or better condition
- **97%** Streetlights: Fair or better condition
- **76%** Streetlights with LED
- **73** Bridge Condition Index (BCI) (bridges)
- **73** Bridge Condition Index (BCI) (culverts)
- **1.6%** Structures with Loading Restrictions
- **96%** Bridges: Fair or better condition
- **99%** Culverts: Fair or better condition

### Active Transportation

- **61** Sidewalk Condition Index
- **63** Trail Condition Index
- **75** Pedestrian Bridge Condition Index (BCI)
- **1.7** Bicycle lane km/m² land area
- **1.5** Trails/MUP km/m² land area
- **7.1** Sidewalks km/m² land area
- **87%** Sidewalks: Fair or better condition
- **97%** Cycling Lanes: Fair or better condition
- **87%** Trails: Fair or better condition

### Water Distribution

- **93%** Properties Connected to Water System
- **93%** Properties with fire flow
- **0** Connection days with Boil Water Advisory
- **0.00084** Connection days due to breaks
- **98** Watermain Condition Index
- **98%** Water assets: Fair or better condition
- **7.2** Watermains breaks per 100 km of pipe
- **48** Annual watermain breaks

### Wastewater Collection

- **93%** Properties connected to wastewater
- **0.00163** Connection days due to backups
- **0.00012** Effluent violations due to discharge
- **92** Sanitary Sewer Condition Index
- **0.01794** Mainline Blockages per km of pipe
- **71%** Sewers inspected
- **98%** Sewers: Fair or better condition
- **92%** Pumping Stations: Fair or better condition

### Stormwater Management

- **57%** Properties resilient to 100-year storm
- **73%** Storm system resilient to 5-year storm
- **90** Storm Sewer Condition Index
- **63** SWMF Condition Index
- **98%** Storm sewers: Fair or better condition
- **66%** Culverts: Fair or better condition
- **67%** Storm Ponds**:** Fair or better condition
- **28%** Storm sewers inspected
- **95%** LID not exceeded service life

### Parks and Outdoor Recreation

- **62** Parks and Outdoor Condition Index
- **0.15** Avg. Facility Condition Index (FCI)
- **15.6** Parkland provision in sq. m. per person
- **30%** Urban Forest Canopy Cover
- **71%** Park site assets: Fair or better condition
- **82%** Outdoor facilities: Fair or better condition

## Recreation Facilities

- **0.19** Avg. Facility Condition Index (FCI)
- **64** Eqpt. Condition Index
- **38,316** Recreation program participants
- **97** Facility amenities
- **4,455** Recreation programs offered
- **67%** Eqpt.: Fair or better condition
- **84%** Community Ctrs.: Fair or better condition
- **86%** Arenas: Fair or better condition
- **207.7** Hydro (kWh) per $m^2$ (community centers)
- **29.1** Gas ($m^3$) per $m^2$ (community centers)
- **17.2** Water ($m^3$) per $m^2$ (community centers)
- **189.4** Hydro (kWh) per $m^2$ (arenas)
- **25.8** Gas ($m^3$) per $m^2$ (arenas)
- **8.6** Water ($m^3$) per $m^2$ (arenas)

## Cultural Services

- **43** Eqpt. Condition Index
- **0.10** Avg. Facility Condition Index (FCI)
- **120** Theatre events offered
- **42,390** Theatre tickets sold
- **42%** Eqpt.: Fair or better condition
- **96%** Facilities: Fair or better condition
- **179.8** Hydro (kWh) per $m^2$ (theatre)
- **21.5** Gas ($m^3$) per $m^2$ (theatre)
- **0.4** Water ($m^3$) per $m^2$ (theatre)

## Libraries

- **43** Eqpt. and Collections Condition Index
- **0.18** Avg. Facility Condition Index (FCI)
- **800,000+** In-Person visits
- **59,790** Active cardholders
- **2.2 M** physical and digital collections
- **58%** Eqpt./Collections: Fair or better condition
- **148.5** Hydro (kWh) per $m^2$ (libraries)
- **12.9** Gas ($m^3$) per $m^2$ (libraries)
- **1.4** Water ($m^3$) per $m^2$ (libraries)

## Protection Services

- **64** Fire Fleet Condition Index
- **0.19** Avg. Facility Condition Index (FCI)
- **0%** Major frontline fleet beyond service life
- **7 yrs.** Avg. age of major frontline fire fleet
- **12%** Fire Eqpt. beyond service life
- **65%** Fleet/Eqpt.: Fair or better condition

## Administration Services

- **52** IT Condition Index
- **0.17** Avg. Facility Condition Index (FCI) (office)
- **63%** IT Assets: Fair or better condition
- **81%** Facilities: Fair or better condition
- **157.2** Hydro (kWh) per $m^2$ (office buildings)
- **12.9** Gas ($m^3$) per $m^2$ (office buildings)
- **20.5** Water ($m^3$) per $m^2$ (office buildings)

Chapter 4

# Asset Management Strategies

*Bethesda Sideroad*

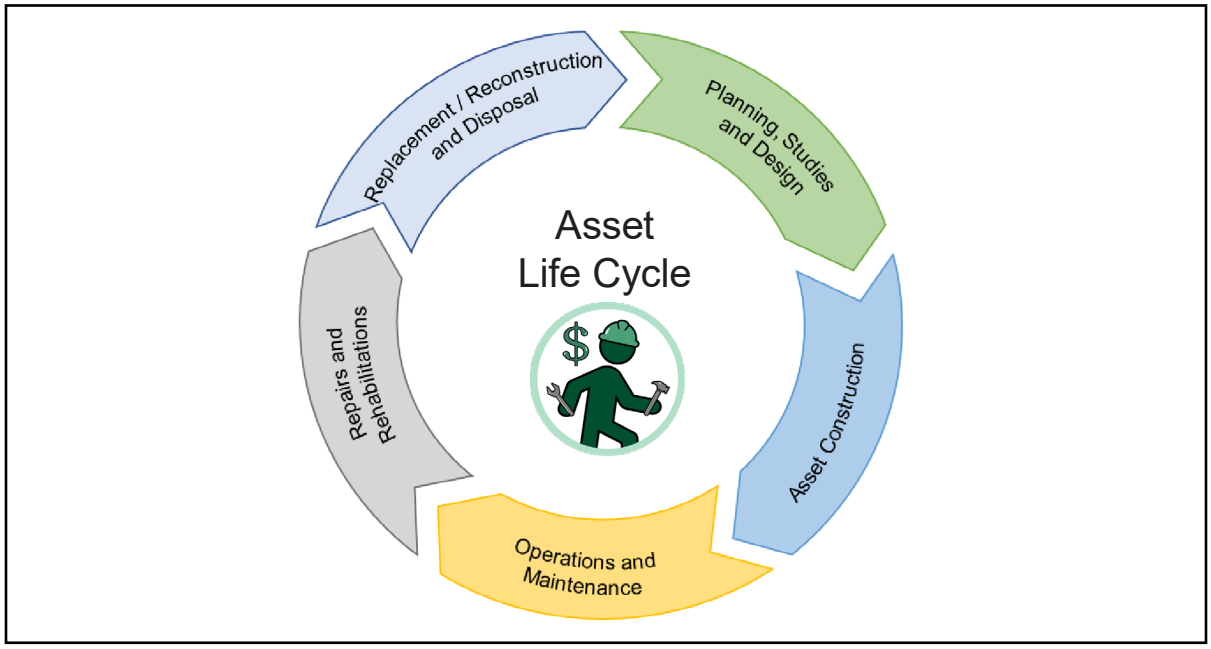
# 4.0 Asset Management Strategies

## 4.1 Employing Asset Life Cycle Strategies

**The City's life cycle strategies ensure assets are maintained and renewed at the optimal times to support reliable services while maximizing their value.**

Every infrastructure asset evolves through a series of stages during its service life. This is called the asset's life cycle. Life cycle strategies are the planned actions used to maintain infrastructure to meet defined performance standards and support service delivery. Effective life cycle strategies use various treatment options, assess the cumulative costs and consider potential risks to determine the most optimal cost-effective approach. For instance, an initial up-front cost-saving on an asset acquisition may be rendered uneconomical if its increased maintenance or shorter lifespan results in higher overall costs than a more durable alternative. Similarly, persistently maintaining an aging asset with reduced reliability might be costlier than replacing it. The typical stages of an asset life cycle are highlighted below.

**Figure 17: Typical Asset Life Cycle**




The City's life cycle strategies for its portfolio of assets describes the planned set of actions that the City undertakes to manage its assets throughout their life. Once assets are designed and constructed, there are numerous different scheduled inspections, maintenance actions and repair activities that the City continually undertakes to ensure they perform reliably. The City also completes rehabilitations, reconstructions and/or replacements when assets have reached the end of their life and/or are no longer functioning. These represent the multifaceted collection of ongoing studies and inspections (non-infrastructure solutions), proactive maintenance initiatives and timely repairs (maintenance activities), and eventual rehabilitations, replacement and disposal activities as shown in the figure above.

Based on these strategies, life cycle capital models were developed and incorporated into the City's EAM. These models generally reflect the currently practiced life cycle capital activities by the City as well as recommended life cycle capital actions from technical condition assessments and those that should be undertaken as part of best engineering principles and asset management practices. Utilizing these life cycle models, the EAM can chart asset deterioration over time and plan for the requisite capital treatment activities, timing and cost as well as the impacts on levels of service, risk, and investment requirements.

The City's Life Cycle Strategies include all the planned actions that the City undertakes to sustain asset performance. It allows the City to predict upcoming asset treatment activities and plan for the forecasted investment requirements to ensure reliable services to the community. The City's EAM, which utilizes these Life Cycle capital strategies, forecasted investment needs for City assets to 2051 as detailed in Chapter 5. These capital life cycle forecasts achieve compliance with *O. Reg. 588/17* reporting requirements.

Further details on the general types of life cycle strategies employed by the City are highlighted below, while the Appendices describe the specific life cycle strategies for different asset types. By inclusion of these into this 2024 Asset Management Plan, the City has achieved compliance with the *O. Reg. 588/17* reporting requirements of life cycle strategies.

### 4.1.1 Non-Infrastructure Solutions

Non-infrastructure solutions encompass a wide range of actions that can improve asset function, reduce costs and/or extend asset longevity. These can include studies, design standards, by-laws, policies, procedures, process enhancements, public education, and/or demand reduction programs such as water and energy conservation. For instance, educating residents about water conservation and proper disposal practices can prolong the life of the City's water and sanitary sewer systems. Other examples include the City evaluating vendors based on criteria guided through the Procurement By-law to provide the best value and ensuring that the assets acquired comply with its approved design and construction standards.

### 4.1.2 Maintenance Activities

An essential asset management strategy is the regular inspection and proactive maintenance of assets to sustain their function, pre-empt potential failures and defer more costly downstream maintenance activities. In Richmond Hill, these actions encompass a wide and varied range of activities across multiple assets such as street sweeping, winter maintenance, catch basin cleaning, flushing of sewer and watermains, regular fleet and equipment servicing, and parks maintenance among many others.

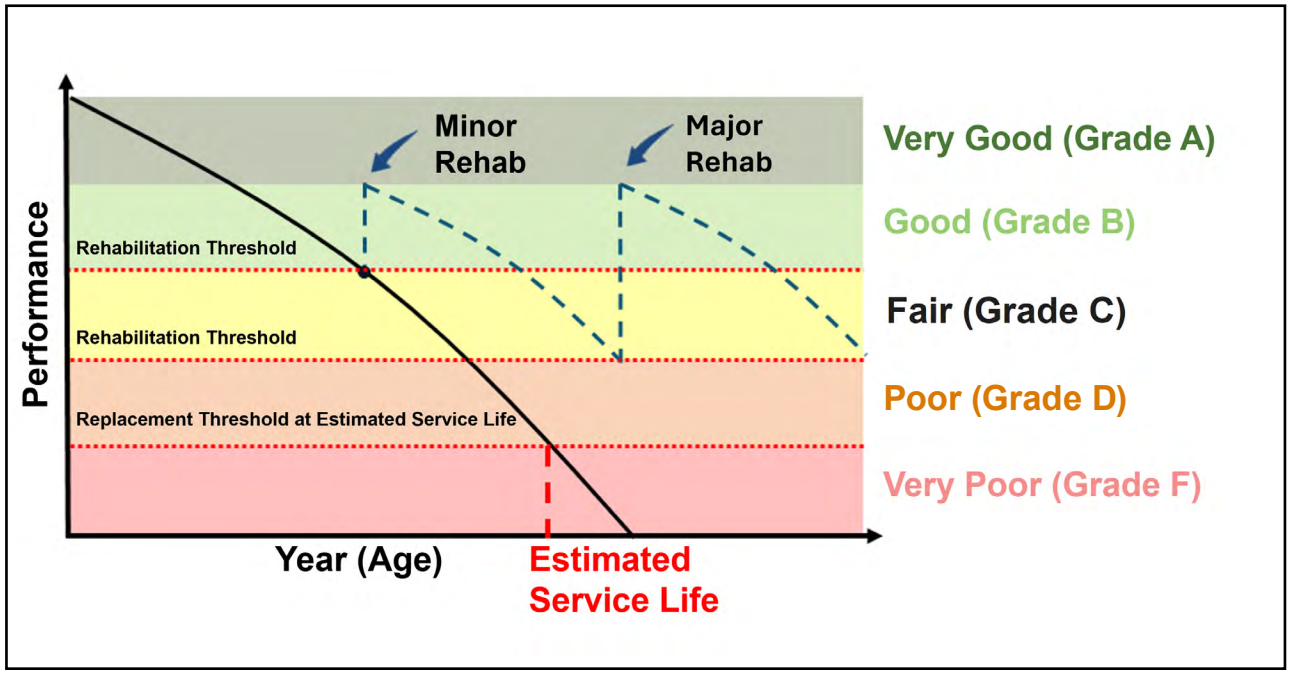
### 4.1.3 Rehabilitation Activities

As assets age and deteriorate over time, they reach the latter stages of their life cycle where a significant capital treatment may be required to renew them. Condition assessments and studies play a crucial role in identifying these needs. In addition, the City's life cycle models in the EAM define specific thresholds (i.e. triggers) for each asset which identifies when a capital intervention may be required and the type and cost of that treatment. These capital interventions include either rehabilitation, reconstruction or replacement. Strategically rehabilitating infrastructure assets can extend their lifespan and may prove more cost-effective than replacing assets that have reached their end-of-life. Examples of these activities include sewer relining and road resurfacing programs. Once the asset receives one of these major capital treatments, the asset's function and condition improves and resumes its degradation trajectory.

### 4.1.4 Replacement Activities

At a certain point in an asset's life cycle, replacement becomes the most appropriate capital intervention, especially when continuous repairs or rehabilitations are no longer viable. For instance, when a road's surface and base deteriorate and the underlying water and sanitary sewer transmission pipes fail, the City often bundles multiple asset replacements into one capital project to realize cost savings and minimize impacts to residents. An asset might also be replaced if it no longer aligns with the City's service standards, regulatory requirements and/or design and construction standards.

**Figure 18: Asset Life Cycle Rehabilitations and Replacements**



### 4.1.5 Disposal Activities

Most assets have some end-of-life disposal costs that can range from minimal to substantial. For instance, disposal costs for Information Technology and fleet and equipment can be minimal while disposal costs for Core infrastructure and facility assets can be more substantial and include demolition and land restoration. It is imperative to include disposal and decommissioning costs into the total life cycle calculations and municipal asset management protocols. A paramount consideration is minimizing financial, environmental, and social implications during asset disposal.

### 4.1.6 Growth and Service Improvement

Growth and service improvements are the planned activities to extend services to new areas and/or to accommodate evolving demands including from intensification. This can include the acquisition and construction of new assets, or expanding the capacity of existing assets, e.g. upsizing water and sanitary sewer linear pipes. Richmond Hill follows a comprehensive and collaborative approach for servicing future growth expansions that utilizes a number of key guiding documents like master plans and studies, servicing models, the Official Plan, and Development Charges Background Study forecasts. These documents assess options and include recommendations for servicing the projected growth. These recommendations are considered for approval through the City's Capital Budget and Forecast.

*Bethesda Sideroad*

## 4.2 Utilizing a Risk-Based Prioritization Framework

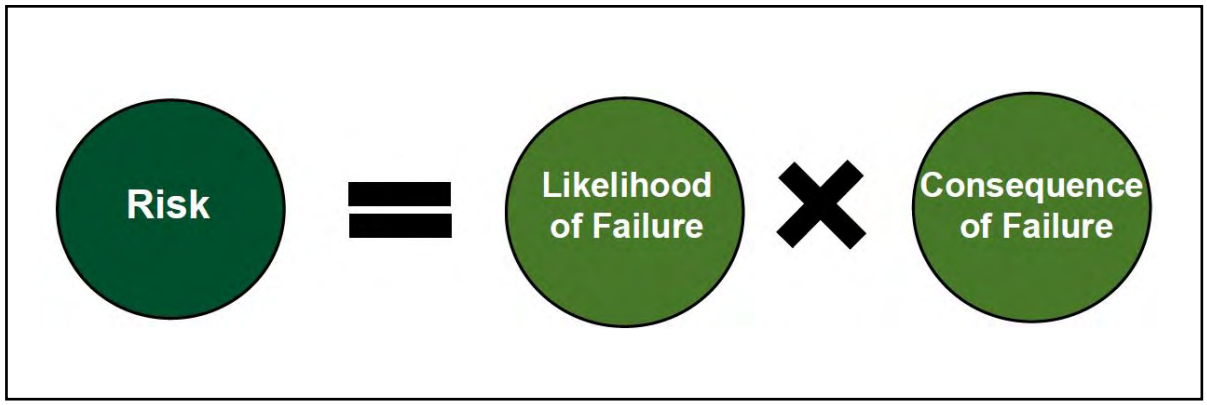
**The Corporate Asset Management Risk Framework supports the prioritization of asset investment needs and capital projects to where they are needed the most while considering available financial resources.**

The Corporate Asset Management Risk Framework assesses and quantifies the potential likelihood of asset failures and asset criticality to estimate the risk exposure of the City's assets using a series of specific qualitative and quantitative metrics. The EAM applies this framework to provide important information to assist with:

- Guiding the prioritization of capital intervention investment decisions at the individual asset level, within service areas, and across multiple service areas;
- Objectively comparing multiple capital interventions;
- Estimating the potential risks of delaying interventions on assets;
- Identifying the best risk mitigation given funding constraints; and
- Supporting aligning interventions across proximal assets (e.g. roads, watermains, and sewers) to provide cost and implementation efficiencies.

The asset management risk framework is summarized as follows:

**Figure 19: Corporate Asset Management Risk Framework**




### Likelihood of Failure (LOF) Events

There are two distinct failure events used in this framework to assess the likelihood of an asset's failure. These are a condition-based failure and a capacity-based failure.

The condition-based failure measures the physical degradation of an asset over time to a point where it could potentially fail. It essentially evaluates the probability of failure using its current inspected condition and projected deterioration. In the absence of this inspected condition data, the asset's age and estimated service life serve as a proxy for condition and rate of deterioration. For instance, watermain breaks signify a condition-based failure. Interventions would be initiated through the life cycle strategies once the specified threshold of breaks is reached, with the watermain replacement that has the higher risk score being prioritized over other watermain replacement candidates with lower criticality.

The capacity-based asset failure can potentially arise when increased demand for usage due to growth renders the asset unable to fulfil the additional capacity requirements. The assessment of capacity uses modelling results (e.g. Water, Wastewater, and Stormwater Computer Models) and/or identification of when assets should be expanded through master plans, studies, development charge forecasts and capital budgets.

### Consequence of Failure (COF)

The consequence of failure estimates the potential adverse impacts from an asset failing. It essentially provides an understanding of asset criticality and the repercussions if an asset fails. The consequence of failure is assessed in this framework using a triple bottom line approach:

- Financial: Direct capital and operating costs to the City in the event of failure;
- Social: Direct and indirect impacts to the community, customer and the City; and
- Environmental: Effects on the local ecosystem and the City's environmental objectives.

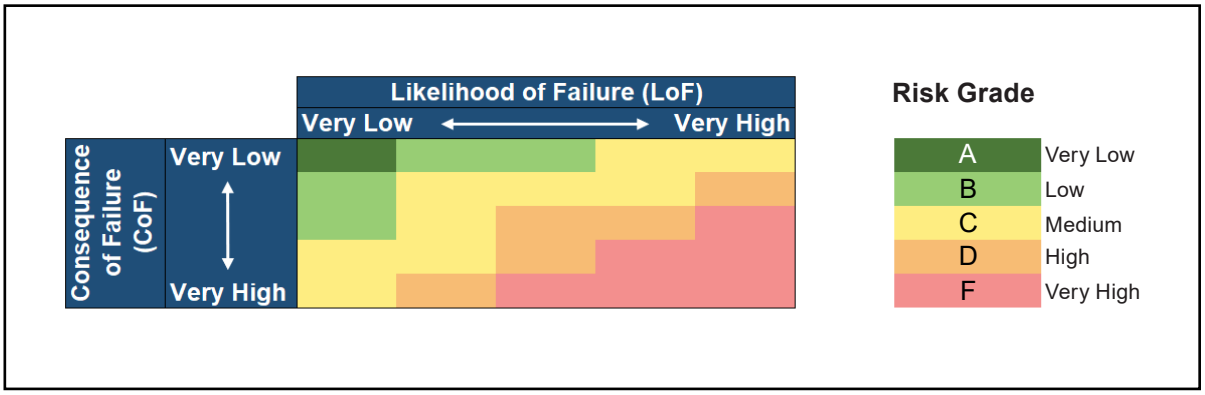
Each of these triple bottom line categories includes specific subcategories that are used to estimate the consequence of a potential failure. Individual qualitative and quantitative metrics are used to approximate the score for each of the specific subcategories below. For example, traffic volumes (AADT counts), road classification and land use are used to estimate the social consequences if a road were to no longer function as intended or fail. A description of these applicable metrics is below.

**Table 3: Consequence of Failure Framework Categories and Subcategories**

| Direct Financial | Social | Environmental |
|---|---|---|
| 1. Capital Expenditure (Replacement of assets)<br>2. Revenue loss due to service closure or other direct cost not related to asset repair (Operating) | 1. Health and Safety<br>2. Legal Liability<br>3. City Reputation<br>4. Service Disruption<br>5. Customer Impact | 1. Environmental Objectives and Compliance<br>2. Environmental Impact |

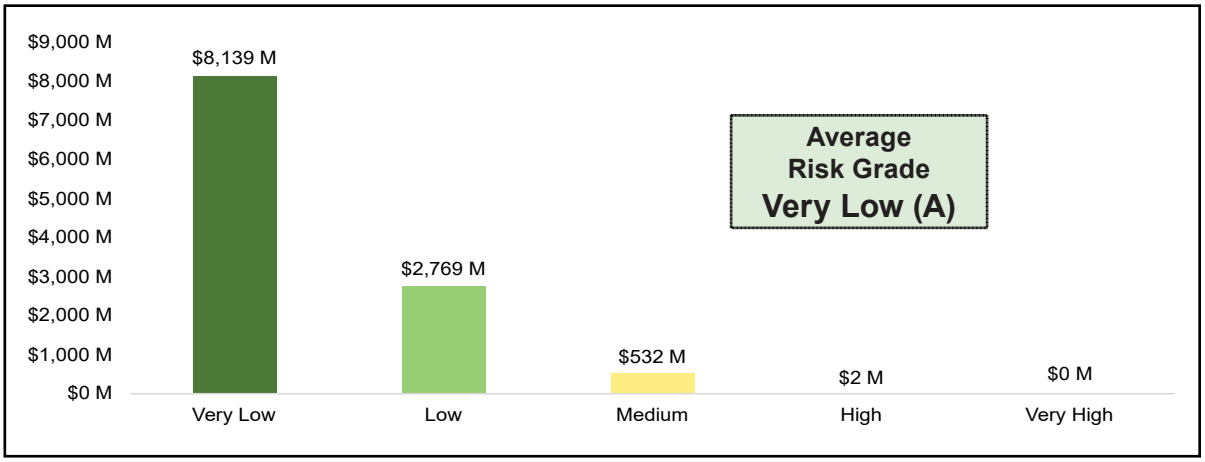
Through this Corporate Asset Management risk framework, the EAM computes a total risk score for all assets and identifies them as either Very Low, Low, Medium, High or Very High potential risk. A letter grade is associated with each of these five risk rating categories as summarized on the following page. An overall average risk grade was assigned to each of the City's 11 services as described in the appendices to better understand the risk profile and potential risk exposure.

**Figure 20: Corporate Asset Management Risk Map**




Overall, the Corporate Asset Management risk profile for City-owned assets is on average Very Low (Grade A), and is distributed as follows.

**Figure 21: Corporate Asset Management Risk Profile for the City's Assets**




The City's EAM used this Corporate Asset Management risk framework along with the life cycle strategies described in the previous section, to forecast projected prioritized life cycle investment needs under varying funding levels for each of the City's service areas. These prioritized life cycle investment forecasts are summarized in each of the Appendices and in Chapter 5 of this 2024 Asset Management Plan. This framework was also used to assist with the prioritization of all capital projects for the 2024 Capital Budget and Forecast.

The Corporate Asset Management Risk Framework quantifies and standardizes risk scores for all assets in the EAM. This allows for the consistent evaluation and comparison of City assets to support the prioritization of forecasted life cycle investment requirements within constrained funding levels. It also helps guide asset renewals to where they are needed the most to support financial sustainability. The recommended life cycle investment forecasts in this 2024 Asset Management Plan achieves compliance with *O. Reg. 588/17*. This framework will also be used to assist with the prioritization of the 2025 Capital Budget and Forecast.

## 4.3 Risk Report Card Summary

### Roadway System

Average Risk Grade

**B**
(Low)

| | |
|---|---|
| Very Low | $860 M |
| Low | $842 M |
| Medium | $91 M |
| High | $0 M |
| Very High | $0 M |
| Total | $1,793 M |

Risk Distribution

48% | 47% | 5%

### Active Transportation

Average Risk Grade

**B**
(Low)

| | |
|---|---|
| Very Low | $153 M |
| Low | $291 M |
| Medium | $13 M |
| High | $0 M |
| Very High | $0 M |
| Total | $457 M |

Risk Distribution

34% | 64% | 2%

### Water Distribution

Average Risk Grade

**A**
(Very Low)

| | |
|---|---|
| Very Low | $2,463 M |
| Low | $80 M |
| Medium | $24 M |
| High | $0 M |
| Very High | $0 M |
| Total | $2,567 M |

Risk Distribution

96% | 3% | 1%

### Wastewater Collection

Average Risk Grade

**A**
(Very Low)

| | |
|---|---|
| Very Low | $2,096 M |
| Low | $475 M |
| Medium | $182 M |
| High | $2 M |
| Very High | $0 M |
| Total | $2,755 M |

Risk Distribution

76% | 17% | 7%

### Stormwater Management

Average Risk Grade

**A**
(Very Low)

| | |
|---|---|
| Very Low | $2,201 M |
| Low | $441 M |
| Medium | $110 M |
| High | $0 M |
| Very High | $0 M |
| Total | $2,752 M |

Risk Distribution

80% | 16% | 4%

### Parks and Outdoor Recreation

Average Risk Grade

**B**
(Low)

| | |
|---|---|
| Very Low | $133 M |
| Low | $229 M |
| Medium | $48 M |
| High | $0 M |
| Very High | $0 M |
| Total | $410 M |

Risk Distribution

32% | 56% | 12%

Very Low (Grade A) | Low (Grade B) | Medium (Grade C) | High (Grade D) | Very High (Grade F)

## Recreation Facilities

Average Risk Grade

**B**
(Low)

| | |
|---|---|
| Very Low | $125 M |
| Low | $205 M |
| Medium | $27 M |
| High | $0 M |
| Very High | $0 M |
| **Total** | **$358 M** |

Risk Distribution


## Cultural Services

Average Risk Grade

**A**
(Very Low)

| | |
|---|---|
| Very Low | $29 M |
| Low | $20 M |
| Medium | $1 M |
| High | $0 M |
| Very High | $0 M |
| **Total** | **$50 M** |

Risk Distribution


## Libraries

Average Risk Grade

**B**
(Low)

| | |
|---|---|
| Very Low | $31 M |
| Low | $55 M |
| Medium | $15 M |
| High | $0 M |
| Very High | $0 M |
| **Total** | **$100 M** |

Risk Distribution


## Protection Services

Average Risk Grade

**B**
(Low)

| | |
|---|---|
| Very Low | $16 M |
| Low | $25 M |
| Medium | $11 M |
| High | $0 M |
| Very High | $0 M |
| **Total** | **$52 M** |

Risk Distribution


## Administration Services

Average Risk Grade

**B**
(Low)

| | |
|---|---|
| Very Low | $32 M |
| Low | $106 M |
| Medium | $9 M |
| High | $0 M |
| Very High | $0 M |
| **Total** | **$147 M** |

Risk Distribution


Very Low (Grade A) Low (Grade B) Medium (Grade C) High (Grade D) Very High (Grade F)

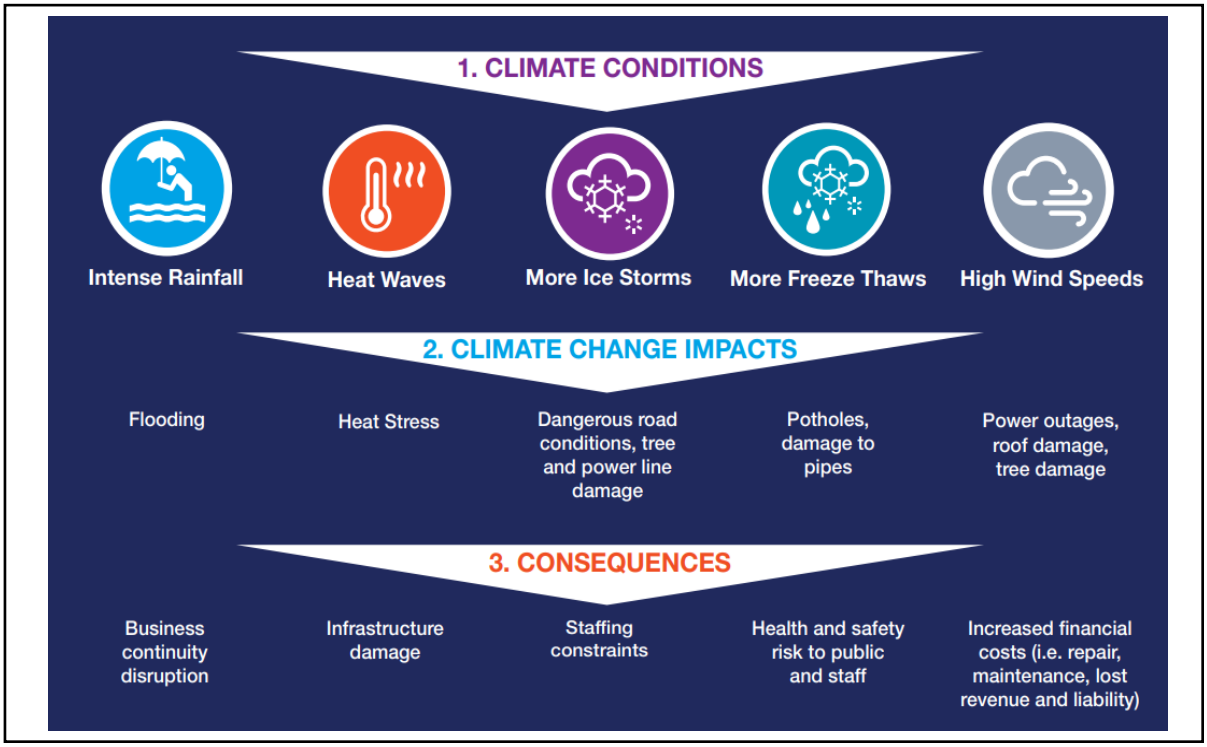
## 4.4 Consideration of Climate Change

**The incorporation of climate change considerations into the City's asset management strategies allows for their effects on infrastructure to be identified and planned for to improve their resiliency to support City services.**

Climate change is expected to continue to impact the condition of City assets, their deterioration and life cycle needs. Addressing the impacts of climate change especially at the municipal asset management level is an important consideration since the effects on local infrastructure can negatively influence the delivery of community services they support.

In 2018, the City conducted a Corporate Climate Change Risk Scan which identified the climate conditions that had the potential for the greatest frequency and severity on municipal operations. These included occurrences of intense rainfall, heatwaves, ice storms, freeze-thaw cycles and high wind speeds. These extreme weather events can expedite the wear and tear of certain assets, as well as potentially cause premature failure, which could accelerate the need for more frequent and ongoing maintenance, repair, and replacement efforts. Such climatic influences can also decrease certain assets' capacity to deliver services at the desired level as well as increase the risk of asset failure. Given these implications, strengthening the City's asset management planning approaches to consider the effects of climate change is crucial to maintaining community infrastructure.

**Figure 22: The City's 2020 Climate Change Framework – Climate Trends and Consequences**



In an effort to take a proactive response on climate change and plan for its impacts, the City developed a series of actions and goals in climate related plans, strategies, policies and frameworks. One of those key actions was to apply a climate change lens to the City's asset management planning processes, which were entrenched in:

- The City's Climate Change Framework (2020);
- The City's Strategic Asset Management Policy (2024 update);
- The City's Environment Strategy Update (2022); and
- The Corporate Asset Management Climate Change Risk Management Strategy for the EAM and Asset Management (2022).

### 4.4.1 The City's Climate Change Framework (2020)

In 2020, the City developed its Climate Change Framework to provide a coordinated approach to taking climate action. It utilized the climate events, impacts and consequences from the 2018 Climate Change Risk Scan to delineate six specific goals. Being cognizant of the significant effects climate can have on the City's infrastructure assets, one of those goals in this framework was to apply a climate change lens to asset management to increase asset resiliency (i.e. adaptation) and reduce greenhouse gas emissions (i.e. mitigation) while maintaining financial sustainability. Under this goal, there were a number of recommended short-, medium- and long-term actions identified.


Since 2020, some of these recommended actions to enhance infrastructure to accommodate climate change resiliency and mitigation have been completed, while others are in progress. A summary of these specific activities associated with each of the 11 services the City provides are included in the Appendices. The alignment of the key goals in this framework that are linked to each of the specific 11 services are also outlined in the Appendices as well.

### 4.4.2 The City's Strategic Asset Management Policy

The 2024 update to the City' Strategic Asset Management Policy enhances the consideration of climate change as part of asset management planning. It enshrines the City's commitment to factor in climate change implications at each stage of an asset's life cycle. It also reaffirms that climate change is part of the City's Corporate Asset Management Risk Framework and highlights that infrastructure should be designed to be resilient to climate events and consequences through:

- Identifying potential vulnerabilities of the City's assets from climate change;
- Considering the costs to address those vulnerabilities;

- Considering adaptation opportunities that may be undertaken to manage the vulnerabilities; and
- Incorporating these into the City's asset management strategies (life cycle and risk) and annual capital budgeting and forecasting process to seek funding as required.

### 4.4.3 The City's Environment Strategy Update (2022)

The Council approved 2022 update to the Environment Strategy included a number of actions focused around ten themes to further improve the City's environmental performance. Many of the recommended actions are related to infrastructure and as such, continue to be integrated with the City's asset management objectives, practices and procedures. While some of the actions identified in this plan have been completed, there are others that are in progress.


A sample of the recently completed and ongoing actions from this Strategy related to each of the 11 services the City provides are summarized in the Appendices under Climate Change Considerations.

### 4.4.4 The Corporate Asset Management Climate Change Risk Management Strategy for the EAM and Asset Management (2022)

In 2022, the City completed a study entitled "Considerations for a Broader Risk Management Strategy for Decision Support: Climate Change Risk Framework". This comprehensive study recommended an approach for assessing the vulnerabilities of the City's assets to the effects of climate change and determining their criticality within the existing Corporate Asset Management Risk Framework in the EAM. By implementing this innovative enhancement, the EAM will be able to generate more dynamic risk prioritization rankings that also considers climate change. This initiative represents a significant step forward in further understanding and integrating the effects of climate change on the City's infrastructure to develop mitigation-based asset management strategies.


The consideration of climate change into the City's asset management strategies ensures that its effects on infrastructure can be identified and proactively planned for to maintain the well-being of community infrastructure. This is exemplified through everyday asset management practices and procedures as well as through various plans, policies, and frameworks. This is not only a best business practice to sustain community services, but also complies with *O. Reg. 588/17* requirements to consider climate change as part of asset management.

Chapter 5

# Asset Investment Strategy

# 5.0 Asset Investment Strategy

## 5.1 Supporting the City's Annual Capital Budget Process

**This 2024 Asset Management Plan supports the City's Capital Budgeting process by suggesting state of good repair asset renewal needs and helping guide their priority through the Corporate Asset Management Risk Framework.**

The City of Richmond Hill follows a rigorous and reiterative year-round annual budgeting process that involves the development and approval of the Operating Budget and the Capital Budget.

The Operating Budget consists of expenses that cover the day-to-day activities or operations to provide services, including items such as staffing, utilities, materials, program supplies, and contract costs. The rate supported operating budget allocations cover costs for the operations and maintenance of water, wastewater and stormwater assets. The tax supported operating budget allocations primarily fund the operations and maintenance requirements for all other infrastructure assets such as roads, parks, buildings, fleet, and information technology.

The City's Capital Budget and Forecast is a comprehensive financial plan that identifies the infrastructure investment needs and the required funding for the state of good repair of existing infrastructure as well as for new or expansion growth assets. Due to the long-term nature of capital projects, the City's capital planning horizon covers a ten-year period, which includes an annual Capital Budget and a nine-year Forecast that is reviewed annually to re-assess the timing, scope, and estimated costs. The annual Capital Budget approves funds for the capital projects in the current year while the nine-year Capital Forecast is a long-term plan identifying priority projects so these pressures can be proactively planned and addressed in a financially sustainable manner. These capital investments are essential to ensure the effective delivery of services that is envisioned for Richmond Hill now and into the future. The Capital Budget and Forecast is one of the mechanisms to secure investments and funding to achieve the City's commitment to providing exceptional public service to the community.

In 2021, the City undertook a "Lean" review of its Capital Budgeting process. One of the key outcomes from that review was to continue to enhance the integration of the City's asset management planning function into the Capital Budgeting process. Since then, a number of enhancements to the City's Capital Budgeting process to achieve this have occurred, including:

- Utilizing the EAM as an evidence-based approach for forecasting suggested state of good repair infrastructure renewal needs as supplemental data to assist in the development of capital project requests;
- Aligning the City's Capital Budget and Forecast with the Corporate Asset Management Asset Hierarchy to provide a clear picture of the investments made into assets and the impact on the community services they provide; and

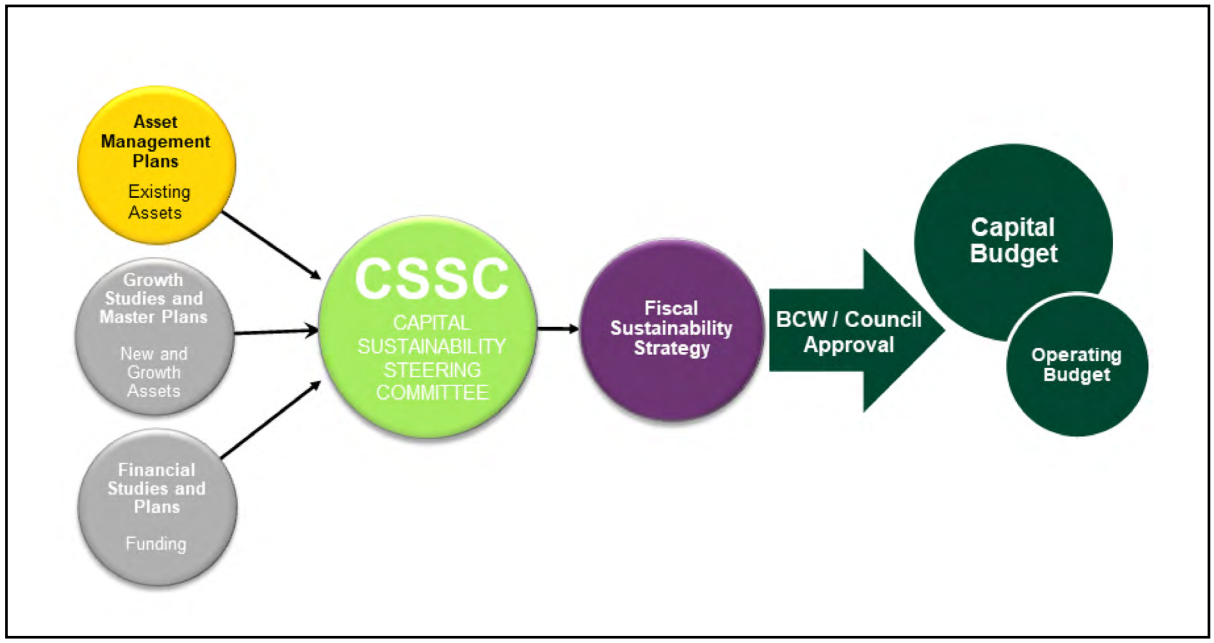
- Utilizing the EAM's Corporate Asset Management Risk Framework in addition to other capital project scoring measures to support the prioritization and final approval of the City's Capital Budget and Forecast.

Since 2021, the development of capital projects for the City's Capital Budget and Forecast have been the result of staff analyzing all relevant information (e.g. plans, studies, and condition assessments), utilizing the suggested asset renewal forecasts from the EAM, and collaborating closely with relevant departments and stakeholders.

For the development of growth-related capital projects, the City's long-term master plans (e.g. Transportation Master Plan, Parks Plan, Fire Master Plan, Recreation and Culture Plan, Development Charges Background Study), are used to reflect changing growth needs, emerging priorities and external circumstances. This process enables the City to prioritize growth-related capital projects, allocate resources efficiently, and make informed decisions that support a growing, evolving and developing community.

The development of state of good repair capital projects are informed through technical studies and condition assessments (from the various divisions and departments) and the suggested asset renewal needs from the EAM and Asset Management Plans. State of good repair projects address existing asset needs that are due for rehabilitations and replacements to ensure reliability and performance through alignment with the City's asset management practices. As detailed in prior chapters, the EAM uses important asset data (e.g. asset condition) and then applies asset level of service metrics, life cycle activities, and risk score considerations to produce suggested asset investment needs to assist staff in developing state of good repair capital project decisions. The development of state of good repair capital projects is also supported and determined through individual asset condition studies and assessments completed by various departments and divisions.

**Figure 23: Supporting the City's Capital Budget and Forecast**



The prioritization of capital projects has been enhanced and is based on the EAM's Asset Management Risk Framework, achieving the City's strategic priorities, and addressing any regulatory needs. The funding source is dependent on the type of infrastructure investment, being either state of good repair (existing assets) and new or growth assets. Projects with both elements are funded based on the proportionate share.

The City's robust Capital Budgeting process results in an evidence-based optimal prioritization of infrastructure needs and capital funding allocation. This approach ensures all capital project requests are developed using a full holistic evidence-based approach from a corporate-wide perspective to achieve strategic priorities. The City's EAM and asset management planning helps inform the City's Capital Budgeting process for state of good repair.

The suggested SOGR Asset Investment Strategy in this 2024 Asset Management Plan combines the State of the Infrastructure (Chapter 2), LOS (Chapter 3), and Asset Management Strategies (Chapter 4) to suggest the long-term management of the City's assets. Moving forward, this suggested investment strategy will benefit the upcoming 2025 and future Capital Budgeting processes by assisting with better defining state of good repair needs, project priorities and forecasting condition service levels for different funding scenarios.


*Bathurst Street*

## 5.2 Forecasting Asset Investment Needs and Gaps

**This 2024 Asset Management Plan suggests a phased-in annual ramping up of state of good repair investments from 2025 to 2051 to gradually address the infrastructure backlog over time and maintain condition-based Levels of Service while considering financial affordability.**

By utilizing the existing state of the City's infrastructure (e.g. condition), life cycle strategies (e.g. capital interventions), levels of service (e.g. performance metrics) and the risk framework (e.g. prioritization), the EAM can analyze and forecast future prioritized capital investment needs under varying scenarios. This Section details the results of that EAM analysis including the approach, outcomes and suggested strategy.

The objective of the analysis was to identify a suggested state of good repair infrastructure investment plan that could be phased in annually over time that would maintain service levels and gradually address the infrastructure backlog over time, while considering financial sustainability given limited funding.

The scope and parameters of the scenario analysis included:

- Focusing solely on existing state of good repair infrastructure needs. Growth expenditures, which are discussed in Section 5.6, were not part of this analysis since these are completed and funded based on the rate of actual growth as it occurs and are predominantly funded by Development Charges as they are received;
- Conducting the analysis from 2024 to 2051 (i.e. over a 28-year time horizon), so all existing assets would be compared over the same planning forecast as the City's master plans and studies such as the Official Plan, Transportation Master Plan, Urban Master Environmental Servicing Plan, etc. This allows for a consistent analysis for facilitating a long-term strategy for City assets;
- Identifying the infrastructure backlog of asset needs, which represents the past overdue and current year (2024) rehabilitation and replacement life cycle asset needs;
- A phased in annual asset investment plan that would maintain their current condition-based Levels of Service by 2051 as they are today;
- Consideration of the City's recently approved 2024 Capital Budget and Forecast, including the state of good repair approved capital projects and their scope, timing and costs. This was used to approximate an appropriate starting level (i.e. 2024) of asset investment expenditures from which the rest of the EAM projected asset investments would build from; and
- Estimating the potential infrastructure gap, which is the difference between the EAM's suggested annual phased-in infrastructure investment needs as compared to the approximate 2024 asset investment starting level determined from the City's approved 2024 Capital Budget.

This analysis excluded the consideration of using any alternative funding sources such as debt and/or other revenue sources. The development of a financing strategy is outside the scope of this EAM analysis. The funding requirements associated with the EAM suggested phased-in asset investment plan will be considered by the Capital Sustainability Steering Committee as part of the development of future Capital Budgets and Forecasts and a Financial Sustainability Strategy.

The two scenarios analyzed through the EAM using these parameters are as follows:

**Table 4: SOGR Asset Investment Strategy Scenarios**

| Scenario | Description |
|---|---|
| **Unconstrained** | The EAM's unconstrained scenario forecasts how much investment would be needed annually to address all asset renewal needs as required per their life cycle-based capital timing and costs. This scenario is optimal in that all asset renewal needs are identified when they are required regardless of available funding. The infrastructure backlog, which are the past overdue and current year (i.e. 2024) capital life cycle asset needs, is determined using this scenario. Given the significant funding required to address the backlogs and ongoing annual needs under this scenario, an alternative scenario was developed, being to maintain the condition-based levels of service over time to evaluate lower investment levels and understand their impacts. |
| **Maintain Condition Based Levels of Service** | This scenario leverages the EAM's capabilities to apply funding constraints and show the impacts on assets. It prioritizes the asset investment needs with the highest risk criticality first to ensure those assets are addressed in a timely manner. Essentially, it can forecast the estimated asset investment levels needed to maintain their condition-based levels of service over a specified time period. As described above, this scenario was refined in the EAM to assess a phased-in annual asset investment plan that would maintain their current condition-based Levels of Service by 2051 as they are today. This approach would gradually address the estimated infrastructure backlog over time as well as the upcoming annual needs concurrently. This scenario started with using an approximated 2024 asset investment expenditure level from the City's approved 2024 Capital Budget from which the annual phased-investment levels ramped up from. |

Based on the scope and objectives of the analysis, the key outcomes from the EAM are summarized in Table 5 and Figure 24. Further details on the results of the analysis for each of the City's services are described in the Appendices. The key highlights from the EAM's analysis are as follows:

- There is currently an estimated infrastructure backlog of **$284 million** of immediate renewal needs for the City's existing assets;
- To gradually address this estimated infrastructure backlog and the ongoing annual asset renewals concurrently moving forward, the state of good repair asset investment expenditure levels should ramp up from **$57 million** in 2024 by an estimated annual average of approximately **$4.6 to $6.1 million**, in today's dollars. Of this, it is estimated that **$0.4 to $0.6 million** would be rate-supported for water and wastewater and **$0.5 to $0.8 million** for stormwater management, with the remainder **($3.7 to $4.7 million)** being for non-rate supported. There is an additional provision of $3.0 million for stormwater pond rehabilitations, and $0.3 million for street and park tree replacements due to storms and invasive species; and

- This suggested annual ramping up of state of good repair investment levels should maintain asset condition-based Level of Service by 2051 as they are today. This is described further in Section 5.3.

It is important to note that this suggested approach provides for the base minimum “like for like” to address renewal needs for existing assets. If enhancements to the City’s existing assets are required, this would be an additional investment over and above this base minimum “like for like”. If existing assets need to be enhanced to meet new or changing regulations, design standards, improve their function, and/or be more energy efficient, these would be additional expenditure needs. For example, the municipal Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA) requires that road reconstructions meet extensive stormwater management requirements including water balance, water quality and water quantity controls rather than just a replacement of the existing storm sewer system.

Also, the bundling of infrastructure assets into capital projects to realize cost efficiencies and minimize impacts to residents can also affect the timing and costing of the suggested phased-in investment approach.

Last, the timeline to address the infrastructure backlog and the degree of the appropriate condition-based Levels of Service to be achieved can also impact this suggested phased-in investment approach. If it is desired for the infrastructure backlog to be addressed sooner or stretched out further, and/or for LOS to be changed, there would be additional or less infrastructure investment expenditures needed. The exploration of an appropriate proposed Level of Service for the City of Richmond Hill’s assets will be examined later this year and will be included in the 2025 Asset Management Plan, along with a fully updated infrastructure investment plan that reflects this.

The suggested phased-in state of good repair investment approach presented in this plan is estimated to gradually address the infrastructure backlog over time and maintain condition-based Levels of Service by 2051. The associated funding requirements for this approach will be considered by the Capital Sustainability Steering Committee as part of the development of future Capital Budgets and a Financial Sustainability Strategy. Including this state of good repair asset investment approach that maintains the condition-based Level of Service achieves compliance with *O. Reg. 588/17* requirements.


*West Beaver Creek Pond*

**Figure 24: Suggested SOGR Asset Investment Strategy - All Services ($ millions)**


**Table 5: Summary of the Suggested SOGR Asset Investment Strategy by Service ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Roadway | 81.0 | 12.7 | +2.5 to 3.0 | 24.0 to 26.2 | 0 to 12.3 | 59.0 to 68.2 | 0 to 49.8 |
| Active Transportation | 16.0 | 0.5 | +0.4 to 0.7 | 2.3 to 3.7 | 0 to 3.1 | 7.9 to 13.5 | 0 to 12.7 |
| Water<br>Wastewater | 79.3 | 16.7 | +0.4 to 0.6 | 18.5 to 19.4 | 0 to 1.1 | 24.1 to 27.8 | 0 to 3.6 |
| Stormwater | 55.7 | 2.7 | +0.5 to 0.8* | 7.7 to 9.0 | 0 to 6.0 | 15.0 to 20.5 | 0 to 16.6 |
| Parks | 25.7 | 4.0 | +0.15 to 0.20** | 4.9 to 5.2 | 0 to 0.8 | 7.1 to 8.0 | 0 to 2.2 |
| Recreation | 5.4 | 9.0 | +0.25 to 0.30 | 10.1 to 10.4 | 0 to 0.5 | 13.6 to 14.6 | 0 to 1.5 |
| Culture | 1.0 | 0.1 | +0.10 to 0.15 | 0.6 to 0.8 | 0 to 0.7 | 2.0 to 2.9 | 0 to 2.7 |
| Libraries | 9.3 | 3.4 | +0.09 to 0.11 | 3.8 to 3.9 | 0 to 0.2 | 5.1 to 5.4 | 0 to 0.5 |
| Protection | 5.9 | 2.7 | +0.05 to 0.09 | 2.9 to 3.1 | 0 to 0.1 | 3.6 to 4.4 | 0 to 0.4 |
| Administration | 4.8 | 4.9 | +0.13 to 0.17 | 5.5 to 5.6 | 0 to 0.3 | 7.3 to 8.0 | 0 to 1.0 |
| **Total** | **$284.1** | **$56.7** | **+$4.6 to $6.1** | **$80.3 to $87.2** | **$0 to $25.1** | **$144.6 to $173.2** | **$0 to $91.0** |

*$3.0 M for stormwater management pond rehabilitations would be required annually

**$0.3 M for street and park tree replacements due to storm events and invasive species would be required annually

**Figure 25: Suggested SOGR Asset Investment Strategy Forecast – Roadway System**

- $81.0 M Backlog
- $12.7 M 2024 Initial SOGR Expenditure
- +$2.5 to $3.0 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 M to $12.3 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 M to $49.8 M/yr if maintain 2024 expenditure

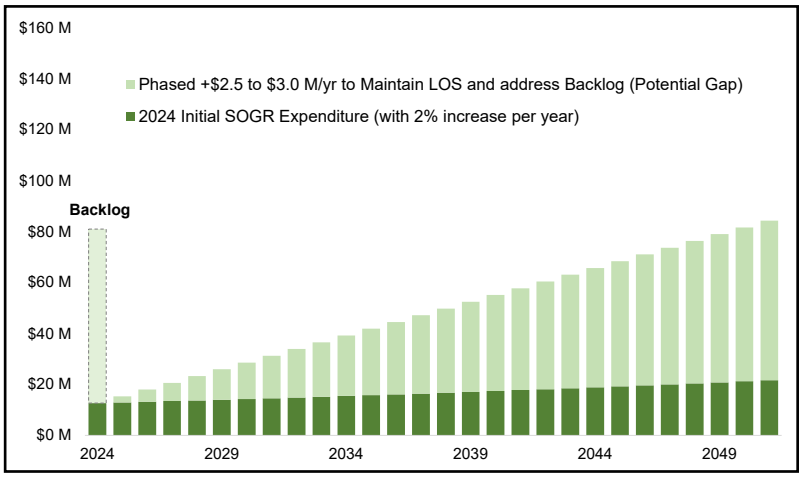



**Figure 26: Suggested SOGR Asset Investment Strategy Forecast – Active Transportation**

- $16.0 M Backlog
- $0.5 M 2024 Initial SOGR Expenditure
- +$0.4 to $0.7 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $3.1 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $12.7 M/yr if maintain 2024 expenditure

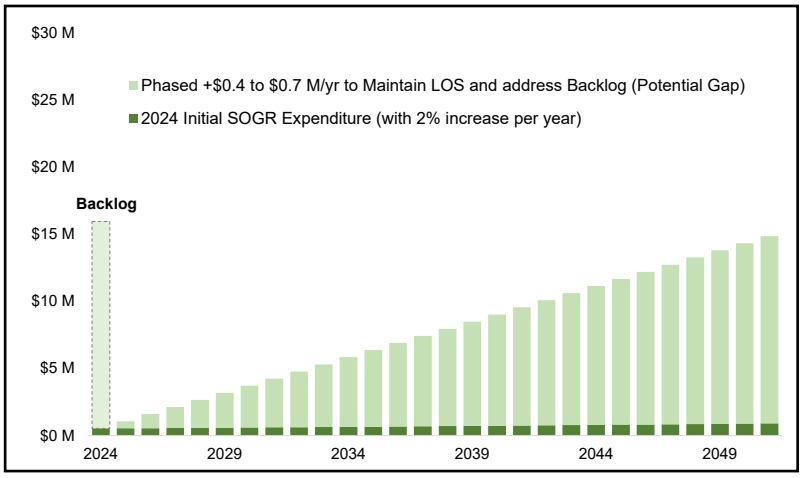



**Figure 27: Suggested SOGR Asset Investment Strategy Forecast – Water and Wastewater**

- $79.3 M Backlog
- $16.7 M 2024 Initial SOGR Expenditure
- +$0.4 to $0.6 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $1.1 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $3.6 M/yr if maintain 2024 expenditure

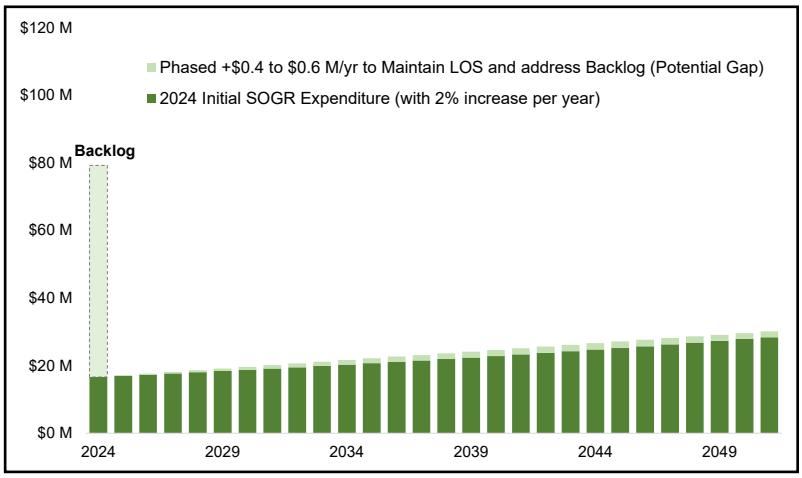


**Figure 28: Suggested SOGR Asset Investment Strategy Forecast – Stormwater Management**

- $55.7 M Backlog
- $2.7 M 2024 Initial SOGR Expenditure
- +$0.5 to $0.8 M/yr phased-in SOGR
- $3.0 M for stormwater pond rehabilitations
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $6.0 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $16.6 M/yr if maintain 2024 expenditure

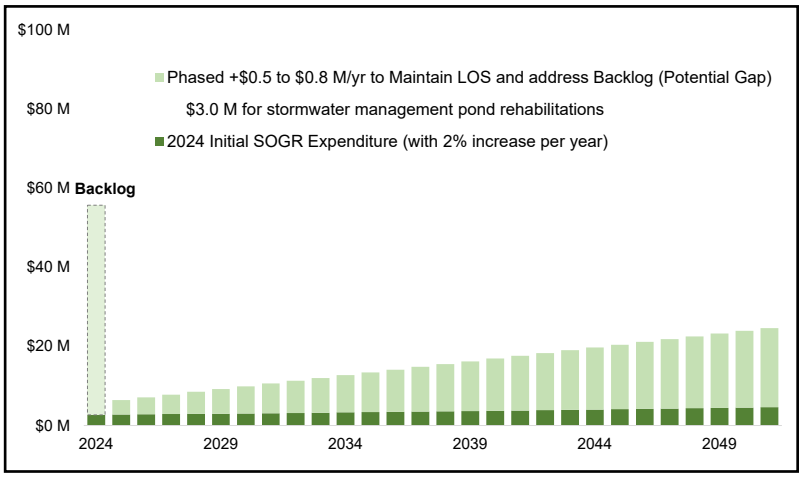



**Figure 29: Suggested SOGR Asset Investment Strategy Forecast – Parks and Outdoor Recreation**

- $25.7 M Backlog
- $4.0 M 2024 Initial SOGR Expenditure
- +$0.15 to $0.20 M/yr phased-in SOGR
- $0.3 M for street/park tree replacements
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $0.8 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $2.2 M/yr if maintain 2024 expenditure

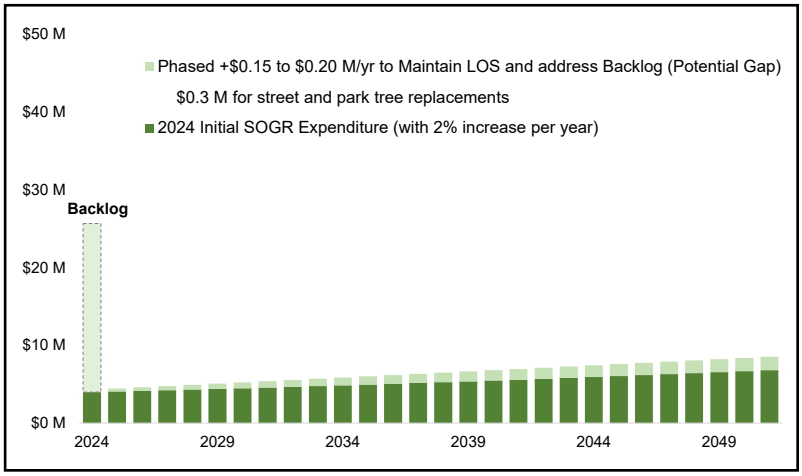



**Figure 30: Suggested SOGR Asset Investment Strategy Forecast – Recreation Facilities**

- $5.4 M Backlog
- $9.0 M 2024 Initial SOGR Expenditure
- +$0.25 to $0.30 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $0.5 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $1.5 M/yr if maintain 2024 expenditure

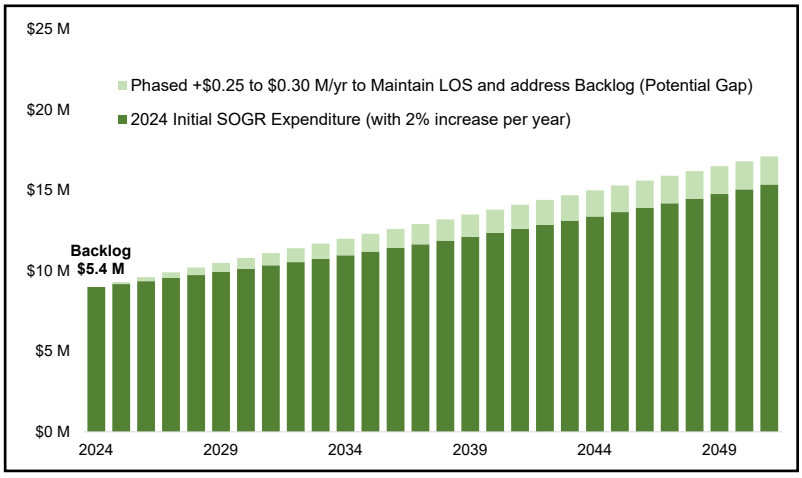


**Figure 31: Suggested SOGR Asset Investment Strategy Forecast – Cultural Services**

- $1.0 M Backlog
- $0.1 M 2024 Initial SOGR Expenditure
- +$0.10 to $0.15 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $0.7 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $2.7 M/yr if maintain 2024 expenditure

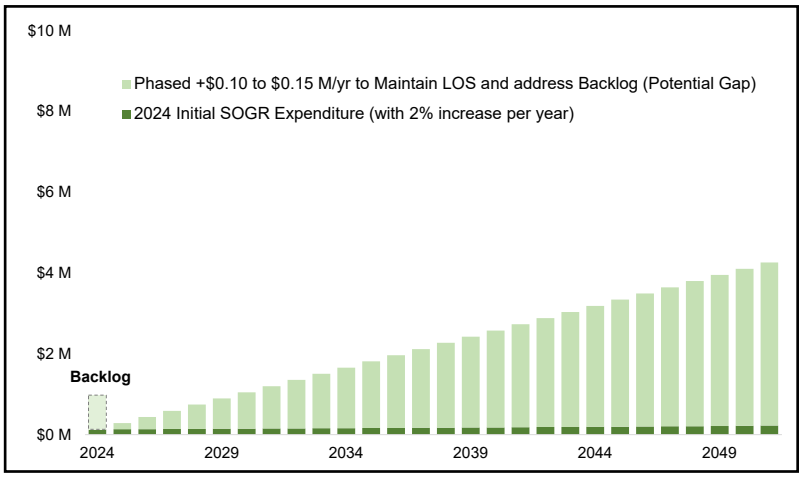



**Figure 32: Suggested SOGR Asset Investment Strategy Forecast – Libraries**

- $9.3 M Backlog
- $3.4 M 2024 Initial SOGR Expenditure
- +$0.09 to $0.11 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $0.2 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $0.5 M/yr if maintain 2024 expenditure

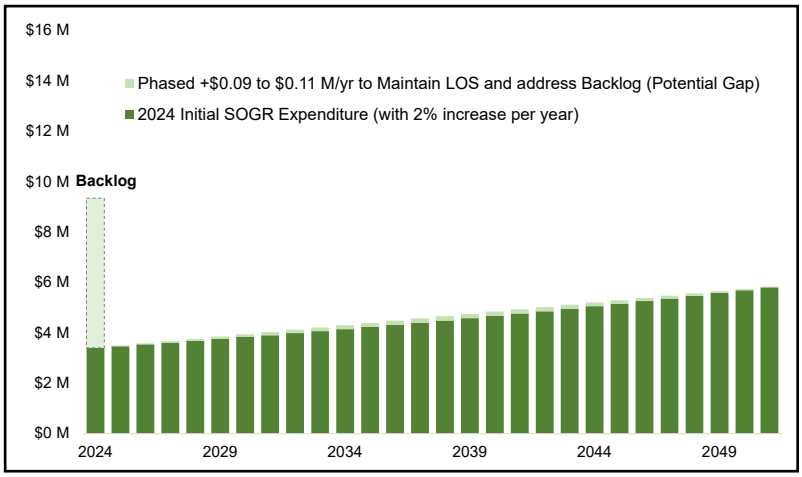



**Figure 33: Suggested SOGR Asset Investment Strategy Forecast – Protection Services**

- $5.9 M Backlog
- $2.7 M 2024 Initial SOGR Expenditure
- +$0.05 to $0.09 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $0.1 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $0.4 M/yr if maintain 2024 expenditure

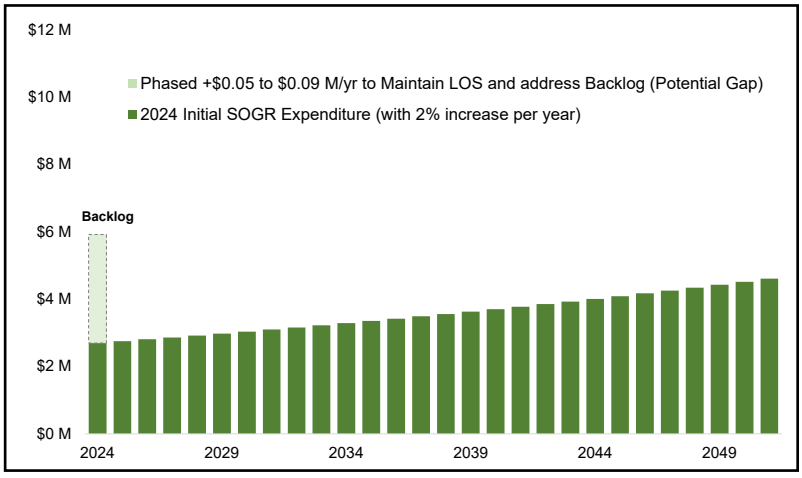
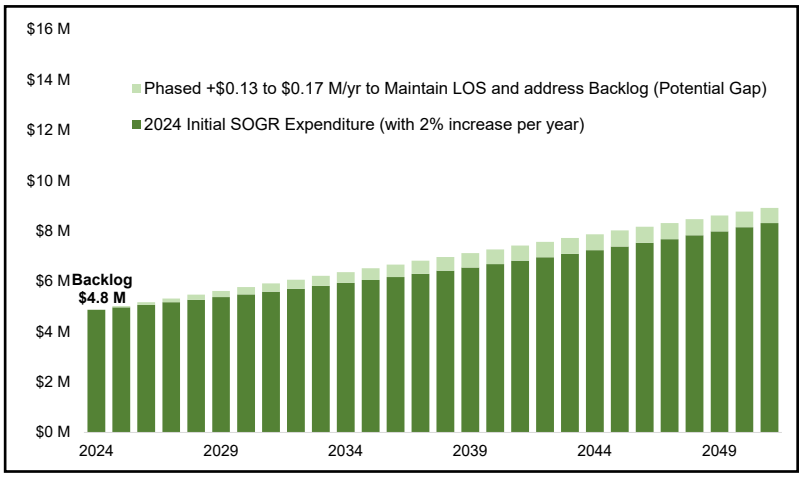


**Figure 34: Suggested SOGR Asset Investment Strategy Forecast – Administration Services**

- $4.8 M Backlog
- $4.9 M 2024 Initial SOGR Expenditure
- +$0.13 to $0.17 M/yr phased-in SOGR
- Potential Gap:
  - $0 M if funded phase-in Maintain LOS
  - 2024 to 2033: $0 to $0.3 M/yr if maintain 2024 expenditure
  - 2034 to 2051: $0 to $1.0 M/yr if maintain 2024 expenditure




*Minthorn Park*

## 5.3 Projecting Impacts on Asset-Based Levels of Service

**The EAM is projecting that condition-based Levels of Service for the City's existing assets can be maintained if the suggested state of good repair capital investment strategy in this 2024 Asset Management Plan is generally implemented.**

Based on the suggested phased-in annual ramping up of capital investment expenditures detailed in the previous section, the EAM is estimating that the condition-based Levels of Service (LOS) for the City's existing assets can be maintained by 2051 as they currently are today. This would ensure the City's assets can continue to provide reliable services to the community, now and into the future.

If investment levels moving forward fall below the suggested capital expenditure plan, the EAM is forecasting that the condition-based Levels of Service would gradually decline, and the infrastructure backlog could slowly grow over time. This would be exacerbated if the currently approved 2024 Capital Budget expenditure and funding levels were maintained over the future forecasted time horizon. The EAM is estimating that under this situation, the condition-based Levels of Service would worsen, and the backlog could grow substantially over time. This detailed analysis for each of the City's 11 services are included in the Appendices. A summary of the key impacts on Levels of Service is below.

It is important to note that even under the suggested phased-in annual investment approach for the City's assets, their condition-based Levels of Service fluctuate over time as they evolve through their life cycle. This is because assets need to deteriorate to a point where their condition would warrant a renewal treatment based on the appropriate phase of their life cycle. Once that life cycle renewal treatment is completed, then the asset's condition improves along with its condition-based Levels of Service. For instance, a road that is currently being used by the community would gradually degrade over time and once that road's condition reaches Fair, a resurfacing would be the appropriate treatment activity. After that road receives a resurfacing treatment, its condition along with its condition-based Level of Service (pavement riding quality) would improve. This describes why the condition-based Levels of Service analysis shows degradation and improvement over time but by 2051, are generally maintained in the same condition as they are today.

Asset risk criticality as determined through the EAM's Corporate Asset Management Risk Framework also impacts how individual assets are addressed over time, which in turn, influences the condition-based Levels of Service forecasting. Under the suggested phased-in annual investment approach, the individual assets that have a higher risk criticality are identified by the EAM to be addressed first, so other lower risk priority assets would be addressed after. The condition of these lower risk priority assets would worsen as a result, but eventually they return to their current condition by 2051.

The other key consideration is identifying the appropriate service level envisioned for the City's infrastructure and the community services they support. *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure* requires municipalities to produce a 2024 Asset Management Plan based on current levels of service, and then a 2025 Asset Management Plan based on proposed levels of service. The suggested capital investment strategy in this 2024 Asset Management Plan is based on maintaining the City's current condition-based Levels of Service. During 2024, proposed Levels of Service will be explored including completing a benchmarking of other municipalities and industry best practices. A 2025 Asset Management Plan, which will be based on proposed Levels of Service, will be brought forward in 2025 for Council approval and will also be provided to the Capital Sustainability Steering Committee for consideration.

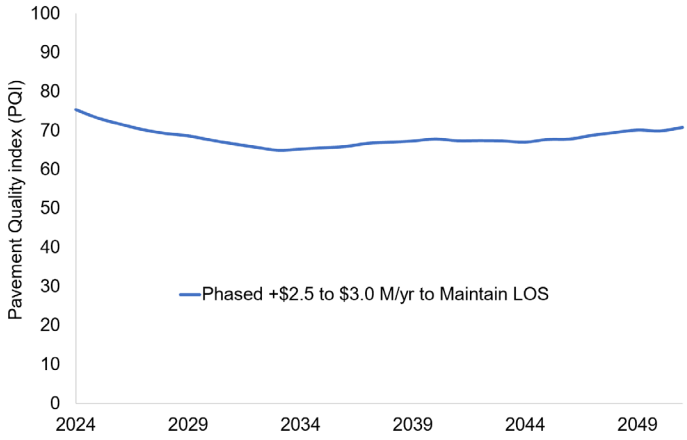
Putting this all together, the condition-based Levels of Service profiles for the City's assets that support the 11 services are detailed in the Appendices, with a summary of the key results in Figures 35 to 45 on the following page.

The suggested phased-in capital investment strategy in this 2024 Asset Management Plan is forecasted by the City's EAM to maintain the current condition-based Levels of Service by 2051. By including this analysis, the 2024 Asset Management Plan complies with *O. Reg. 588/17*.

*Red Maple Road*

**Figure 35: Asset Investment Strategy Impact on Maintaining Levels of Service – Roadway System**

**Road Pavement Quality Index (PQI) over time**




**Roadway System Condition Profile over time**

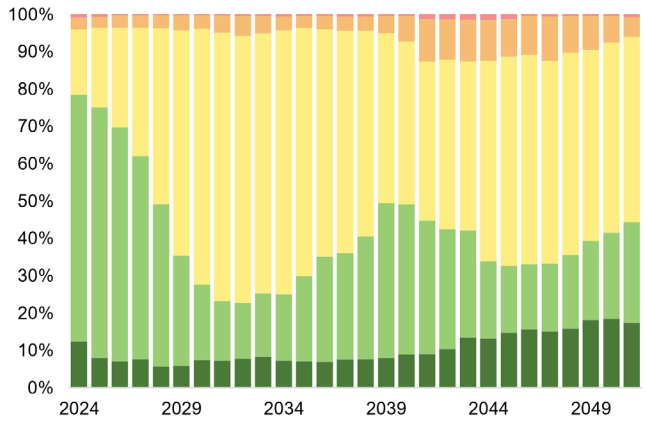
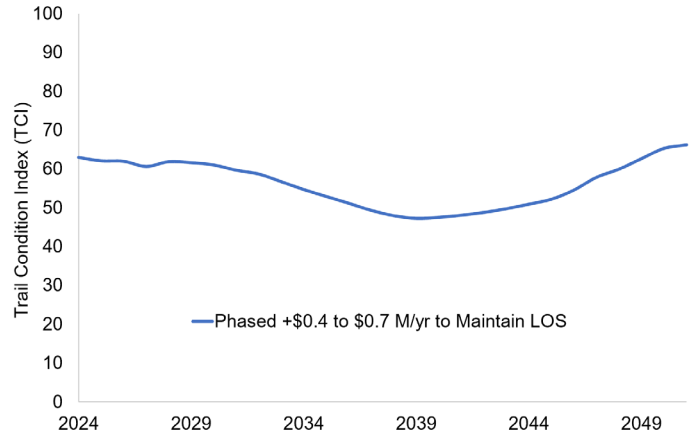



**Figure 36: Asset Investment Strategy Impact on Maintaining Levels of Service – Active Transportation**

**Trail Condition Index (TCI) over time**




**Active Transportation Condition Profile over time**

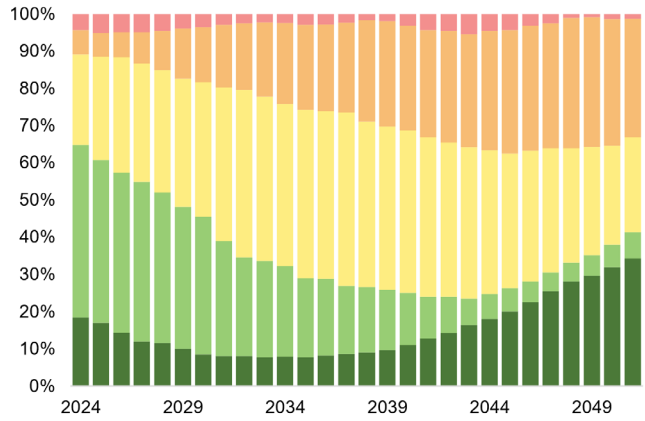
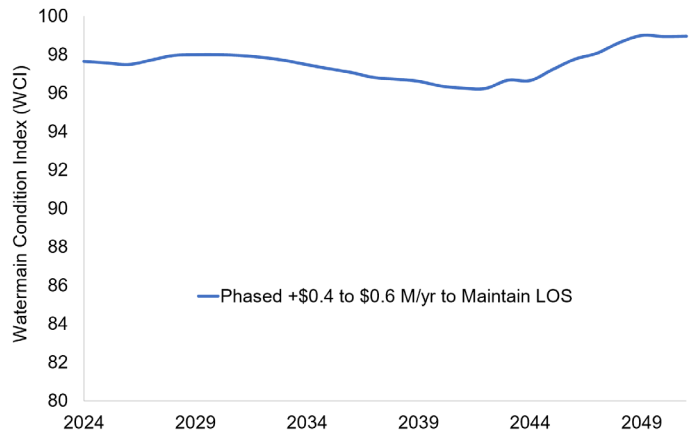
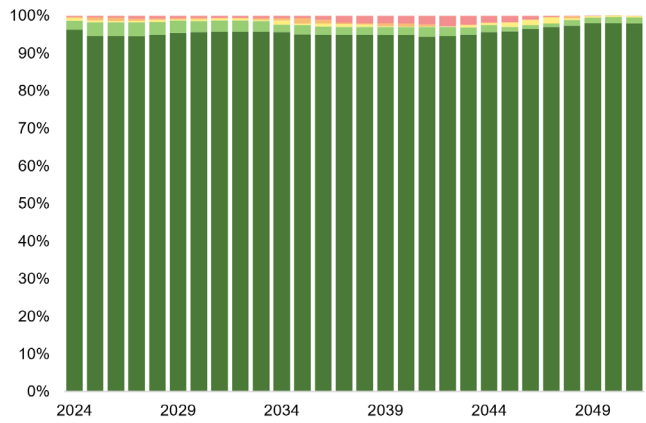



**Figure 37: Asset Investment Strategy Impact on Maintaining Levels of Service – Water Distribution**

**Watermain Condition Index (WCI) over time**



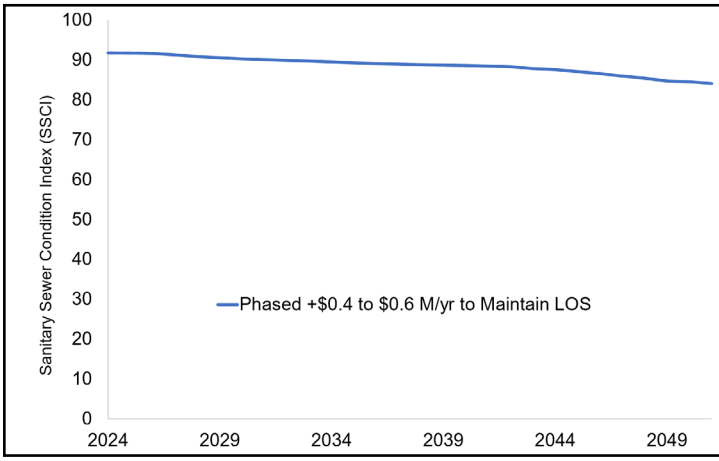

**Water Distribution Condition Profile over time**




Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

**Figure 38: Asset Investment Strategy Impact on Maintaining Levels of Service – Wastewater Collection**

**Sanitary Sewer Condition Index (SSCI) over time**




**Wastewater Collection Condition Profile over time**

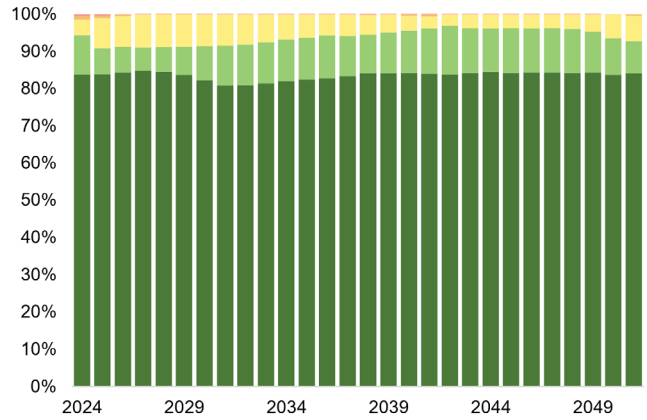
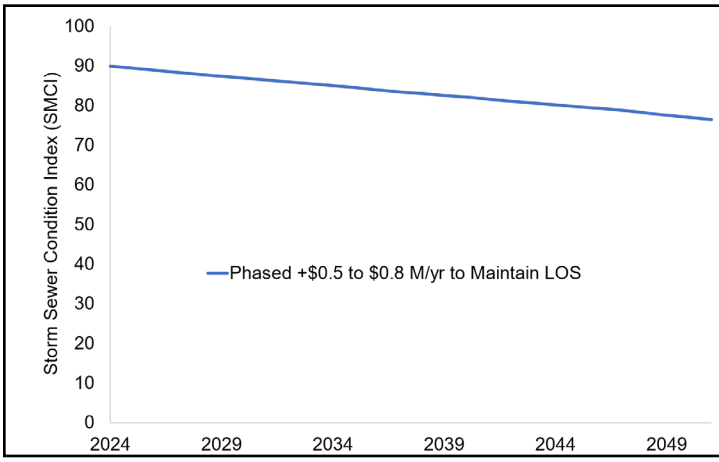



**Figure 39: Asset Investment Strategy Impact on Maintaining Levels of Service – Stormwater Management**

**Storm Sewer Condition Index (SMCI) over time**




**Stormwater Management Condition Profile over time**

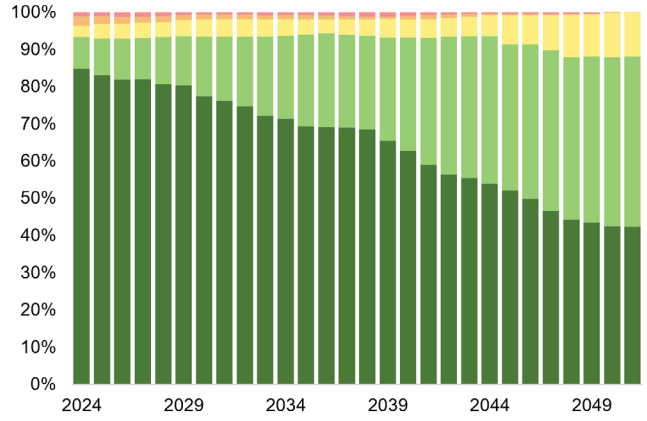
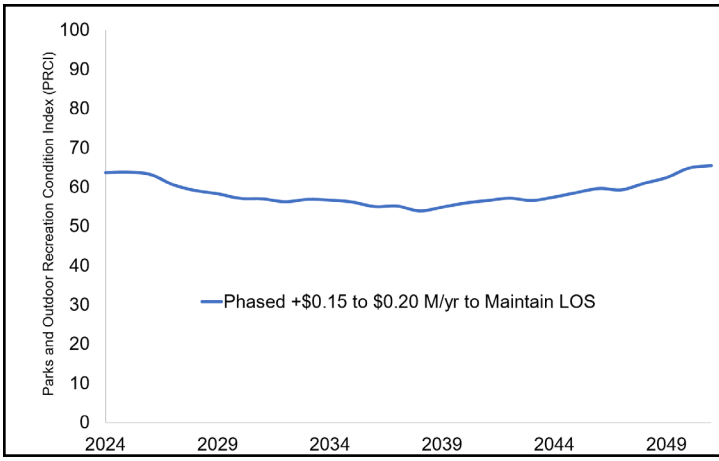
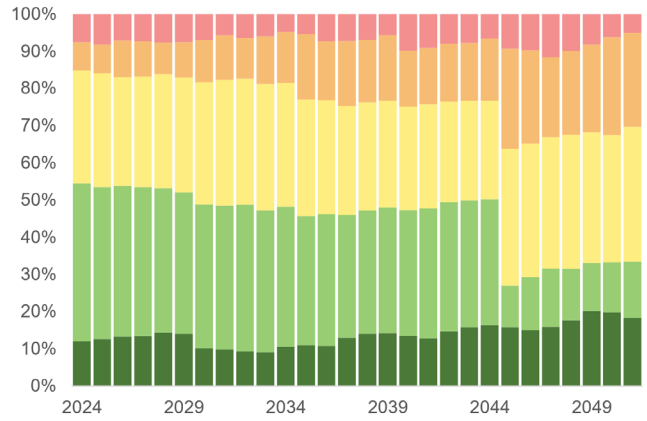



**Figure 40: Asset Investment Strategy Impact on Maintaining Levels of Service – Parks and Outdoor Recreation**

**Parks and Outdoor Recreation Condition Index (PRCI) over time**



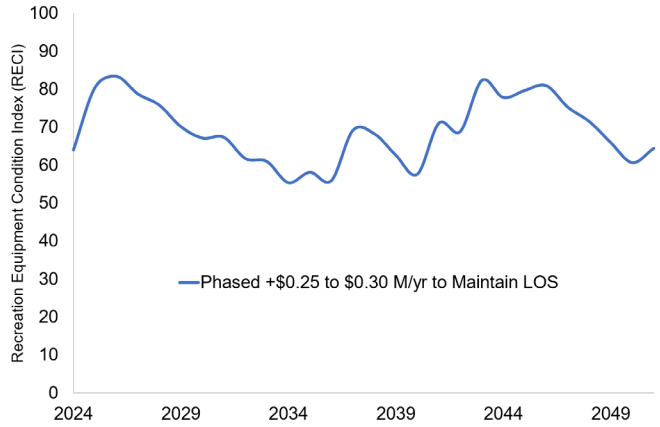

**Parks and Outdoor Recreation Condition Profile over time**




Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

**Figure 41: Asset Investment Strategy Impact on Maintaining Levels of Service – Recreation Facilities**

**Recreation Equipment Condition Index (RECI) over time**




**Recreation Facilities Condition Profile over time**

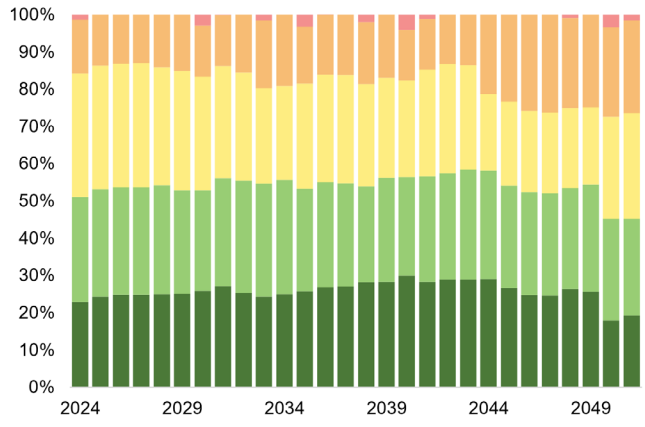
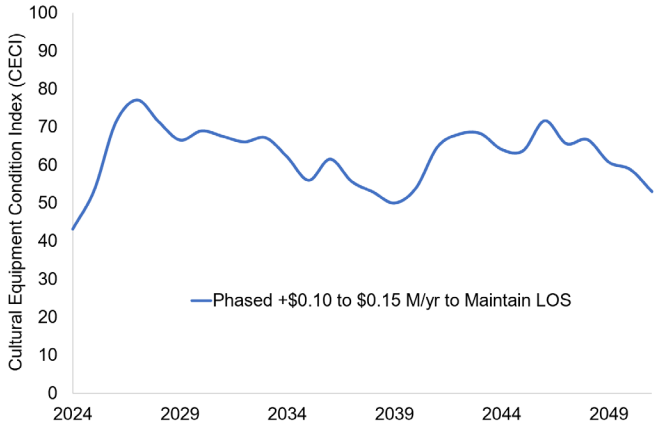



**Figure 42: Asset Investment Strategy Impact on Maintaining Levels of Service – Cultural Services**

**Cultural Equipment Condition Index (CECI) over time**




**Cultural Services Condition Profile over time**

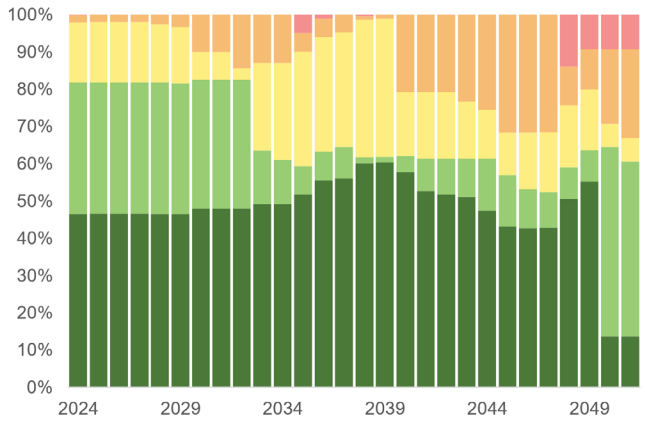
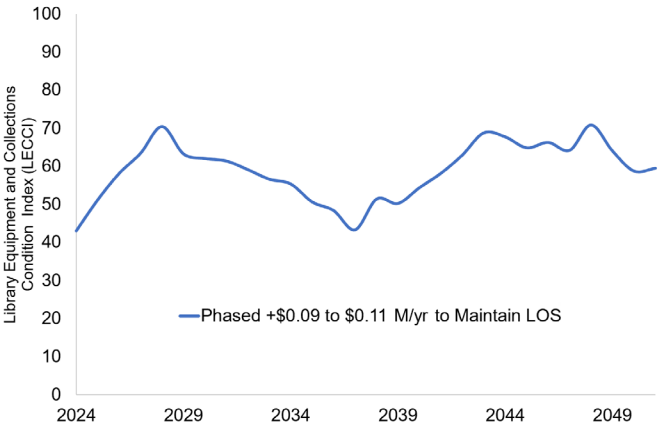
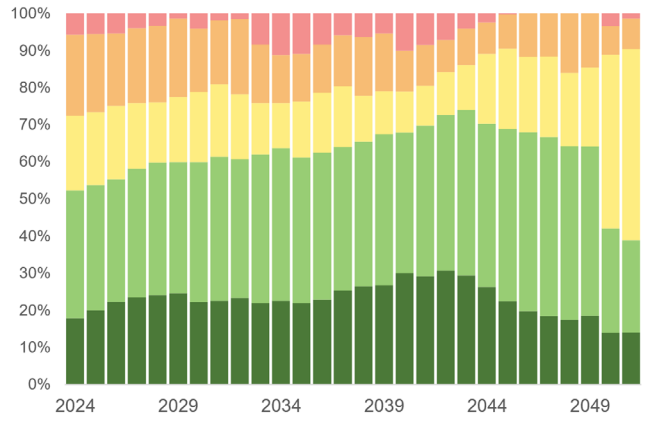



**Figure 43: Asset Investment Strategy Impact on Maintaining Levels of Service – Libraries**

**Library Equipment and Collections Condition Index (LECCI) over time**



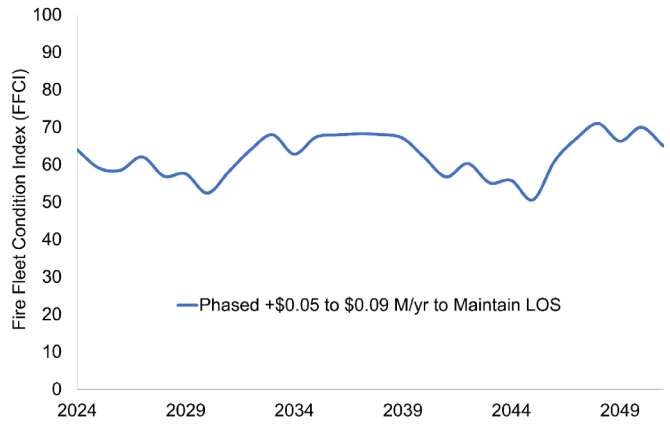

**Libraries Condition Profile over time**




Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

**Figure 44: Asset Investment Strategy Impact on Maintaining Levels of Service – Protection Services**

**Fire Fleet (Frontline) Condition Index (FFCI) over time**




**Protection Services Condition Profile over time**

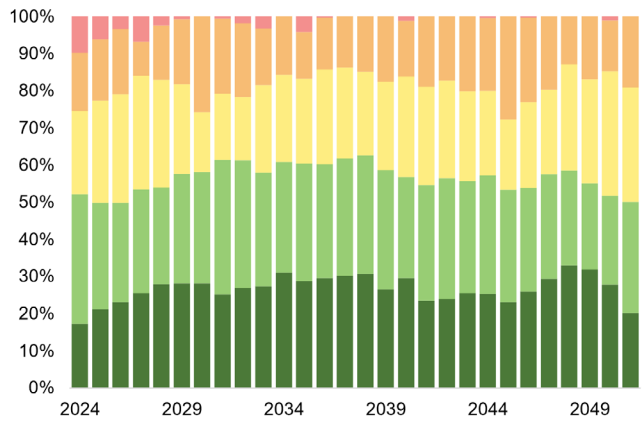
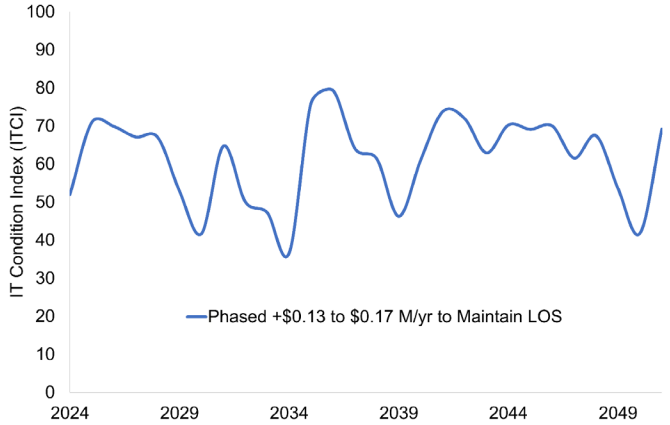
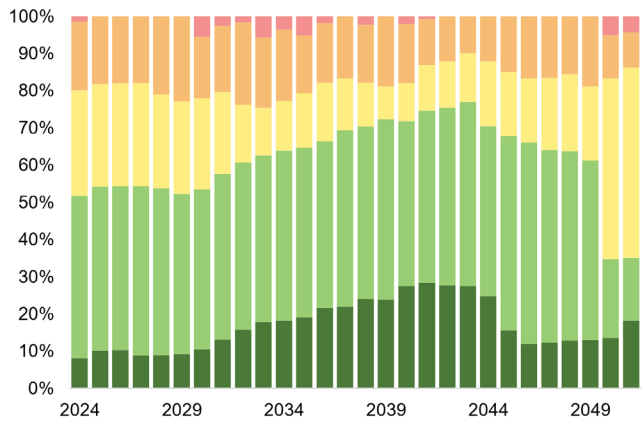



**Figure 45: Asset Investment Strategy Impact on Maintaining Levels of Service – Administration Services**

**IT Condition Index (ITCI) over time**




**Administration Services Condition Profile over time**




Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)


*Raccoon Park*

## 5.4 Asset Investment Report Card Summary

**Roadway System**

**Backlog:** $81.0 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $12.7 M
Post-2024 Phase-in: +$2.5-$3.0 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$12.3 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$49.8 M Avg/yr
Maintain LOS: $0 M

**Active Transportation**

**Backlog:** $16.0 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $0.5 M
Post-2024 Phase-in: +$0.4-$0.7 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$3.1 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$12.7 M Avg/yr
Maintain LOS: $0 M

**Water Distribution**

**Backlog (W&WW):** $79.3 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $16.7 M
Post-2024 Phase-in: +$0.4-$0.6 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$1.1 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$3.6 M Avg/yr
Maintain LOS: $0 M

**Wastewater Collection**

**Backlog (W&WW):** $79.3 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $16.7 M
Post-2024 Phase-in: +$0.4-$0.6 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$1.1 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$3.6 M Avg/yr
Maintain LOS: $0 M

**Stormwater Management**

**Backlog:** $55.7 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $2.7 M
Post-2024 Phase-in: +$0.5-$0.8 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$6.0 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$16.6 M Avg/yr
Maintain LOS: $0 M

**Parks and Outdoor Recreation**

**Backlog:** $25.7 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $4.0 M
Post-2024 Phase-in: +$0.15-$0.20 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$0.8 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$2.2 M Avg/yr
Maintain LOS: $0 M

## Recreation Facilities

**Backlog:** $5.4 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $9.0 M
Post-2024 Phase-in: +$0.25-$0.30 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$0.5 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$1.5 M Avg/yr
Maintain LOS: $0 M

## Cultural Services

**Backlog:** $1.0 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $0.1 M
Post-2024 Phase-in: +$0.10-$0.15 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$0.7 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$2.7 M Avg/yr
Maintain LOS: $0 M

## Libraries

**Backlog:** $9.3M

**Suggested to Maintain LOS**
2024 Initial SOGR: $3.4 M
Post-2024 Phase-in: +$0.09-$0.11 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$0.2 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$0.5 M Avg/yr
Maintain LOS: $0 M

## Protection Services

**Backlog:** $5.9M

**Suggested to Maintain LOS**
2024 Initial SOGR: $2.7 M
Post-2024 Phase-in: +$0.05-$0.09 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$0.1 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$0.4 M Avg/yr
Maintain LOS: $0 M

## Administration Services

**Backlog:** $4.8 M

**Suggested to Maintain LOS**
2024 Initial SOGR: $4.9 M
Post-2024 Phase-in: +$0.13-$0.17 M/yr

**Potential Gap (2024-33)**
2024 Initial SOGR: $0-$0.3 M Avg/yr
Maintain LOS: $0 M

**Potential Gap (2034-51)**
2024 Initial SOGR: $0-$1.0 M Avg/yr
Maintain LOS: $0 M

## 5.5 Informing the Capital Sustainability Steering Committee

**The suggested infrastructure investment strategy in this 2024 Asset Management Plan will be provided to the Capital Sustainability Steering Committee for consideration in the development of the 2025 Capital Budget and Forecast and a Financial Sustainability Strategy.**

With the recent approvals of various long-term master plans and studies, numerous legislative changes impacting developer funding, and the advancements in asset management planning including this 2024 Asset Management Plan, the City's Capital Sustainability Steering Committee has been reinstated to consider the financial impacts from these plans. As approved by Council, the mandate of the committee is to evaluate opportunities to deliver long-term capital investments that are in line with community expectations and fiscal sustainability. In particular, some of the key tasks of the committee are to:

- Inform on the fiscal sustainability of asset management recommendations from asset management plans;
- Review and provide recommendations on the financial impacts of the City's various master plans;
- Approve and amend a fiscally sustainable long-term capital Financial Sustainability Strategy;
- Provide the financial framework for the Development Charges Background Study, Parkland Dedication Charges, Community Benefit Charges, Stormwater Management Rate, Water and Wastewater Rate, Capital Budgets and Forecasts, and Operating Budgets and Outlook; and
- Update the current year and nine-year Capital Forecast.

Assessing fiscal sustainability requires understanding the City's existing assets and state of good repair capital needs, consideration of service levels identified through master plans and studies, and maintaining sufficient capital-related reserve fund balances for sustainable long-term funding.

The suggested phased-in infrastructure investment forecasts for the City's existing state of good repair assets in this 2024 Asset Management Plan will be presented to the Capital Sustainability Steering Committee for consideration as one of the key factors in developing the upcoming Capital Budget and Forecast and a sustainable financing plan.

Given the magnitude of the projected infrastructure backlog and forecasted state of good repair asset needs resulting in the potential for infrastructure gaps, the City's Infrastructure and Engineering Services and Corporate and Financial Services Departments will work collaboratively with the CSSC to develop long-term financial sustainability strategies that balance service levels, costs, and risks.

## 5.6 Projected Growth Capital and Preliminary Estimated Operating Costs

**As asset inventories grow and are expanded to service the projected growth and achieve the vision for the City, there will be a need for increased ongoing renewals and funding to operate and maintain them over time.**

The previous sections outlined the suggested base level of state of good repair investments required to maintain and renew the City's existing assets. With Richmond Hill's population expected to steadily grow to 2051, it is equally as important to ensure that the City's plan to build additional or upgraded assets to meet the ever-increasing demand for services are included in long-term asset management planning.

### 5.6.1 10 Year Growth Capital Budget and Forecast

As detailed in Chapter 1, the City has a number of various growth-related master plans, studies and models that are informing the future vision for the community and the required new and/or expanded infrastructure assets to realize that vision. The City's 10 Year Capital Budget and Forecast then identifies the costs and timing for the required growth-related infrastructure assets from these master plans, studies and modelling results. These include but are not limited to:

- The City's Official Plan;
- Specific service area master plans such as the Transportation Master Plan, Parks Plan, Recreation and Culture Plan, Fire Master Plan and Urban Master Environmental Servicing Plan;
- Development Charges Background Study and By-law;
- Climate Change Framework; and
- Water and Wastewater Computer Models.

The City's approved 2024 Capital Budget and Forecast includes approximately $845 million in growth related infrastructure assets that are planned for the next 10 years to service growth. These were informed by various plans, studies and models that take into account the City's future population and employment conditions. Growth capital projects related to the City's Water Distribution and Wastewater Collection systems were also informed by technical analyses and modelling results.

If these new and/or expanded growth assets were constructed as planned in the City's 10 Year Capital Budget and Forecast, the value of the City's assets would increase by 7% to $12.3 billion from the current valuation of $11.4 billion (in today's dollars). This forecast does not include any estimated costs associated with future assets that are to be assumed as part of the development process.

The figures below summarize the City's total 10 Year growth related 2024 Capital Budget and Forecast expenditures. A further breakdown of the specific growth capital forecasts for each service can be found in the Appendices.

**Figure 46: Growth-Related 2024 Capital Budget and Forecast Expenditures by Service (2024-2033)**

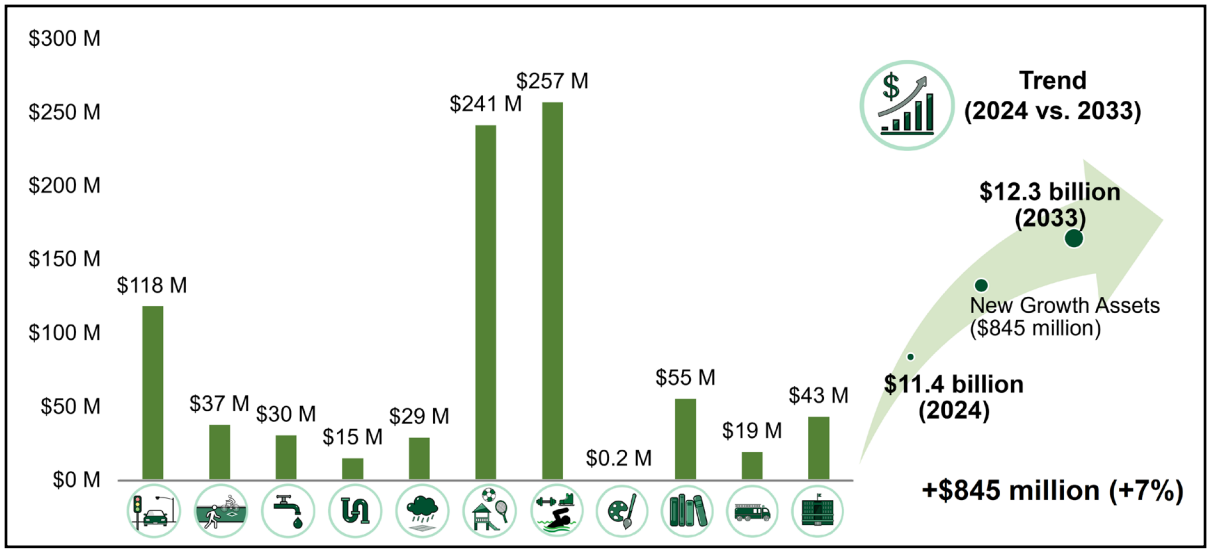
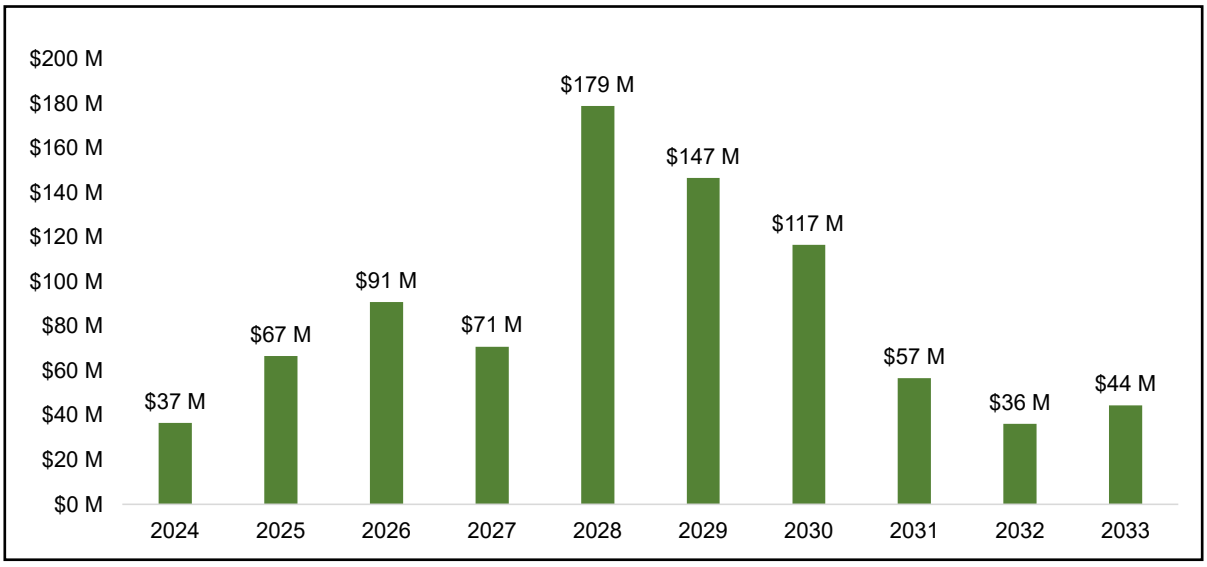



**Figure 47: Growth-Related 2024 Capital Budget and Forecast Expenditures by Year – All Services**



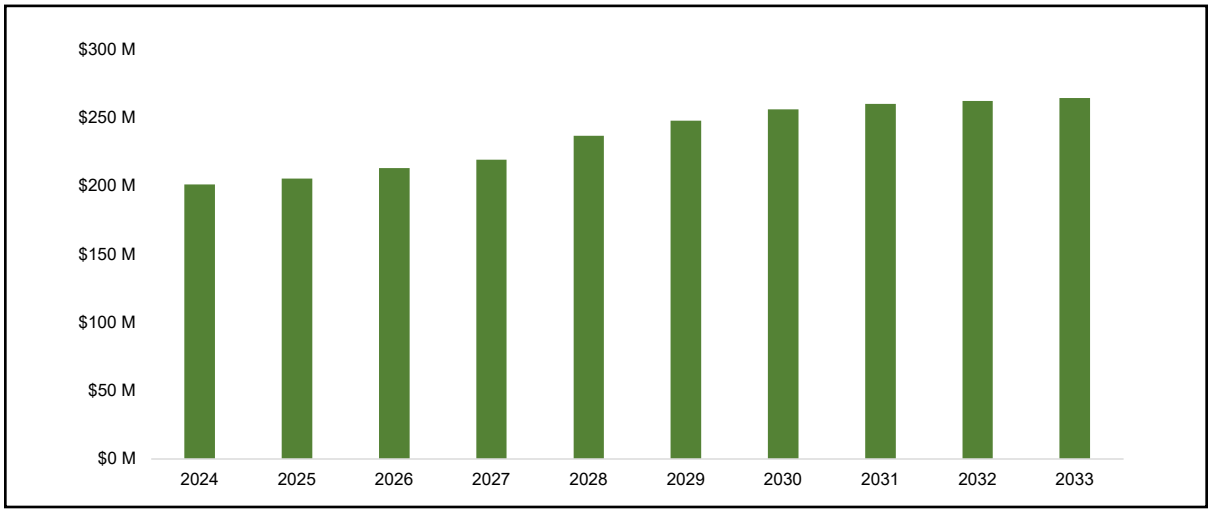

*Ed Sackfield Arena*

### 5.6.2 Preliminary Estimated Operating Costs

Ongoing operational and maintenance costs associated with the planned growth-related capital investments as summarized above will place additional cumulative pressures on the City's annual operating budgets if they are constructed as identified. The preliminary estimated operating cost forecast related to these proposed growth-related assets is summarized in the figure below. A further detailed breakdown of the specific preliminary estimated operating cost forecasts by service can be found in each of the Appendices.

It is estimated in this 2024 Asset Management Plan that the preliminary operating cost forecasts could increase from approximately $200 million in 2024 to over $260 million, or by 32%, over the next 10 years in today's dollars. The preliminary operating cost projection considers only the growth-based value of new capital projects and assumes the same servicing standards and current and past trends as the forecast. The projections do not include any estimated costs associated with future assets that are to be assumed as a part of the development process. As intensification occurs, there could be more operating and maintenance cost pressures. The City will continue to improve its long-term forecasting of operating and maintenance costs.

**Figure 48: Preliminary Estimated Operating Cost Forecast for All Services (2024-2033)**




As new infrastructure is built and existing assets expanded based on master plans, studies and models to service forecasted growth, they will require investments to renew them as they deteriorate over time. This will place pressure on the future state of good repair capital and operating cost requirements as well as other subsequent financing needs. The approval of these future growth projects through the City's annual Capital and Operating Budgeting processes and their impact on financial sustainability will be considered through the Capital Sustainability Steering Committee and an updated Financial Sustainability Strategy. These will also be considered as part of long-term asset management planning and have been summarized in this 2024 Asset Management Plan. Reporting these also achieves compliance with the *O. Reg. 588/17* July 1, 2024 requirements.

Chapter 6

# Continuous Improvement

*Richmond Green Sports Centre and Park*

# 6.0 Continuous Improvement

## 6.1 Improving Data, Processes and Evidence-Based Decisions

**Corporate Asset Management is committed to continuous improvements and has a five-year plan to enhance data and processes for better evidence-based decisions and regular reporting.**

Throughout the City's corporate asset management journey, there were a number of lessons learned and opportunities identified for continuous improvements. Some improvements were implemented that advanced the City's Corporate Asset Management system and helped the City achieve past and current regulatory requirements (detailed in Chapter 1).

There were also a number of other continuous improvement opportunities that were identified for future consideration. Moving forward, the Corporate Asset Management Team is committed to exploring these future enhancement opportunities and has developed a five-year plan to improve the quality of asset data, strengthen asset management processes, and progress annual monitoring and reporting.

**Figure 49: Corporate Asset Management's Five-Year Continuous Improvement Plan**


The subsequent sections detail the specific actions and timelines to achieve these three improvement goals over the next five years. Having an implementation plan for continuous improvement is a cornerstone of asset management best practices.

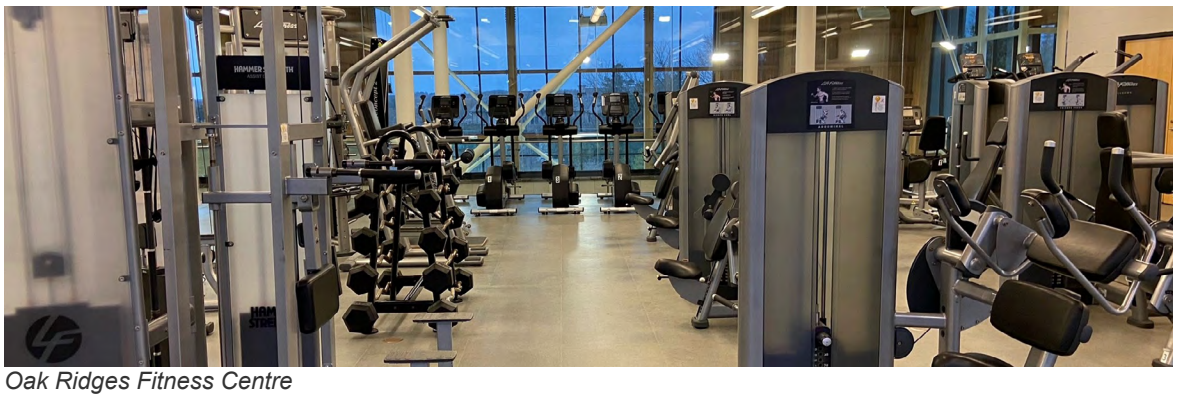
This five-year continuous improvement plan aims to mature the accuracy of the City's evidence-based corporate asset management capabilities and infrastructure renewal forecasting. It will also enable the City to comply with the upcoming *O. Reg. 588/17* requirements. Continued collaboration among the City's various departmental subject matter staff experts and the Corporate Asset Management team will be key to improving the quality of asset data and strengthening asset management processes.

### 6.1.1 Improving Asset Management Data Quality and Confidence

Data is used to understand asset behaviours and feeds into evidence-based asset management analyses for more confident outcomes. The City leveraged its available asset data along with industry best practices to develop this 2024 Asset Management Plan. During that process, a number of opportunities were identified to further improve the quality and reliability of its asset data to be used moving forward. The following specific actions below outline the practical steps to realize this opportunity.

**Table 6: Continuous Improvement Plan for Improving Data Quality and Confidence**

| Actions | Timeline (2025–2029) |
|---|---|
| Expand current Levels of Service measures and develop proposed performance using master plans, studies and policies in preparation for the 2025 Asset Management Plan. A Corporate Asset Management service performance grading system will be developed. | **2025** |
| Utilize results from the City's Water, Wastewater and Stormwater Computer Models to improve reporting on Level of Service measures and increase the maturity of the life cycle technical strategies. | **2025** |
| Collect data to support incorporating climate change adaptation considerations into the asset management EAM Risk Framework. | **2026** |
| Improve corporate asset management condition assessment approaches, methodologies and ratings for all assets to enhance accuracy and confidence of asset condition results. | **2026–2029** |
| Improve understanding of operating and maintenance needs through analysis of available data to refine life cycle strategies and forecasting of future operating and maintenance costs as new assets come into service. | **2027–2029** |
| Refresh life cycle strategies and costs for all assets using the latest technical studies, tender contract pricing, and other available data. | **2028–2029** |
| Incorporate historical asset treatments (e.g. type of treatment, timing and costs) into the EAM to enhance capital forecasting of life cycle activities. | **2029** |



*Oak Ridges Fitness Centre*

### 6.1.2 Strengthening Asset Management Processes

As highlighted in Chapter 1, the City implemented a number of foundational asset management processes since 2018. These included the Life Cycle, Levels of Service and Risk strategies for all assets, which were incorporated into the City's EAM. These have enabled the City to complete asset management reporting and support capital programming through the EAM's ability to forecast infrastructure renewals needs.

As the City's asset management program has advanced, opportunities to strengthen and mature these processes have emerged. The proposed actions in the table below will seek to realize these opportunities.

**Table 7: Continuous Improvement Plan for Strengthening Asset Management Processes**

| Actions | Timeline (2025–2029) |
|---|---|
| Improve the corridor bundling function in the EAM for Core assets based on past pilot results to enhance the accuracy of capital programming. | **2025** |
| Enhance the asset management EAM risk framework by integrating climate change considerations using the climate-related data collected. | **2026** |
| Improve the EAM's reporting capabilities and visualization of outputs, including developing mapping capabilities. | **2026–2027** |
| Extend the corridor bundling function to encompass all Non-Core road right of way assets (e.g. traffic signals and street illumination) and create a bundling function for other assets like parks and facilities. | **2027–2028** |
| Streamline the process of connecting capital and operating costs to enhance the whole life cycle costing approach for both existing and new assets. | **2027–2028** |
| Create a formal Corporate Asset Management Data Strategy that will include protocols for all data and related processes for corporate asset management planning. | **2029** |

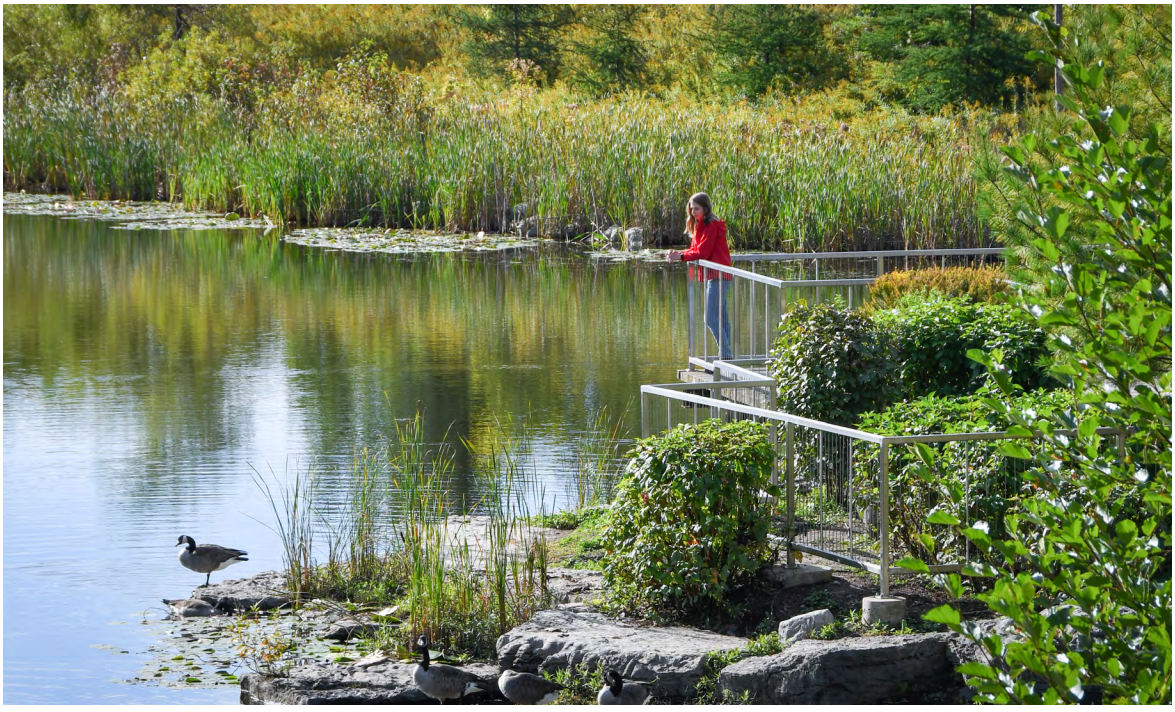
*Mount Pleasant Park*

### 6.1.3 Annual Asset Management Reporting

Updating the City's state of infrastructure data on an annual basis will allow for the most currently available data to be used by the EAM for annual asset management reporting as well as forecasting infrastructure renewal needs. This will improve the accuracy and confidence of the EAM forecasted renewal needs and will be timed to align with supporting the City's annual Capital Budgeting process. These annual updates will also provide insights into year over year asset behavioural trends and will be leveraged to further refine asset life cycles. Updating the State of Infrastructure annually will also allow the City to meet its upcoming *O. Reg. 588/17* regulatory requirements of having a 2025 Asset Management Plan and annual progress reporting on the City's Corporate Asset Management program.

**Table 8: Continuous Improvement Plan for Annual Asset Management Reporting**

| Actions | Timeline (2025–2029) |
|---|---|
| Refresh all of the required asset management data necessary to develop a 2025 Asset Management Plan to meet the July 1, 2025 *O. Reg. 588/17* requirements. | **2025** |
| Annually update the City's State of Infrastructure Report, including asset inventories, replacement values, condition, ages and service life. | **2025–2029** |
| Annual reports to Council on the progress of the City's asset management program and State of Infrastructure Reports. | **2025–2029** |



*Rumble Pond*

## Appendix A

# Roadway System


*East Beaver Creek Road and Norman Bethune Avenue*

# Overview of Roadway System

The City of Richmond Hill's Roadway System consists of roads, municipal structures (bridges and culverts greater than 3 metres in width), streetlights and traffic signals, as well as operational fleet and equipment used to support and maintain roadway infrastructure.

*Mill Street*

## Roads

Richmond Hill's road network spans a total of 1,215 lane-kilometres and is mostly comprised of urban roads, which includes arterial (19 lane-km), collector (264 lane-km), and local roads (932 lane-km). The size of the City's roads range in capacity, and their classification is based on daily average traffic volumes and speed limits. The City's roads conform to urban design standards and are tailored to meet varying transportation needs, including optimizing traffic flow and connectivity, enhancing safety, overall functionality and ensuring a smooth driving experience for all road users. Richmond Hill's approach to road infrastructure also considers future growth, changing demographics and integrating active transportation. The City's road network is designed to be capable of accommodating increasing traffic and evolving transportation trends over time.

*Church Street South*

## Bridges and Culverts

Municipal structures include a collection of structural bridges and culverts that are greater than 3 metres in width. The City's bridges are primarily comprised of three types being box girder bridges, I-beam girder bridges, and a few rigid frame bridges. These bridges span various lengths and are strategically located to facilitate smooth vehicular and pedestrian movement across different areas of the City. The City's structural road culverts include box, rigid frame, arch, and pipe culverts. These culverts are predominantly concrete, but steel is also utilized in the case of corrugated steel plate pipe culverts. The strategic placement of these culverts also aids in effective water management, particularly in managing stormwater runoff and preventing road flooding. This is crucial for maintaining road safety and integrity, especially during adverse weather conditions.

# Overview of Roadway System

*East Wilmot Street*

## Streetlights

Richmond Hill's streetlights, which comprises over 14,000 City-owned poles, play a crucial role in the City's commitment to public safety and urban aesthetics. Approximately 95% of City-owned streetlight poles are constructed with concrete and around 3% of the poles are made of steel. The comprehensive network of streetlights in Richmond Hill are regularly maintained to ensure optimal performance and energy efficiency. The City has converted approximately 12,000 streetlights to LED lights. The City's investment in LED technology reflects a forward-thinking approach to energy conservation and environmental responsibility. These technologies not only reduce energy consumption and costs but also enhance the quality of lighting.

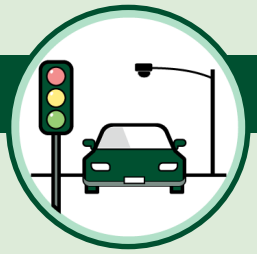
*East Beaver Creek Road*

## Traffic Signals and Beacons

Richmond Hill's Traffic Signals and Beacons are a vital part of the City's transportation infrastructure, ensuring the safe and efficient movement of vehicles and pedestrians. There are approximately 32 locations in the City with traffic signals that consist of four key components: controller and cabinet equipment, specialized signal pole equipment, traffic light pole equipment, and the underground electrical infrastructure. Richmond Hill's traffic signals include a variety of configurations, each tailored to the specific needs of its location. The City regularly inspects traffic signals and ensures they meet stringent standards for brightness, durability, functionality and reliability to contribute to safer roads and intersections.

## Fleet and Equipment

Transportation fleet and equipment are utilized to ensure the effective and efficient operation, maintenance and repairs of the City's roadway infrastructure. The operational fleet, housed at the City's Operations Centre, consists of a variety of specialized vehicles each tailored to support the City's Roadway System. This fleet includes, for example, pickup and dump trucks, plow trucks essential for winter road maintenance, street sweepers for urban cleanliness, and salters critical for de-icing. The diverse nature of this fleet highlights the City's preparedness for a range of urban maintenance tasks, including winter maintenance, spring cleaning, routine upkeep, and emergency response. The transportation operational equipment encompasses a variety of machinery including, for example, generators, tampers and high-efficiency snow and leaf blowers that are essential for winter maintenance and spring seasonal upkeep and ensuring pedestrian safety.



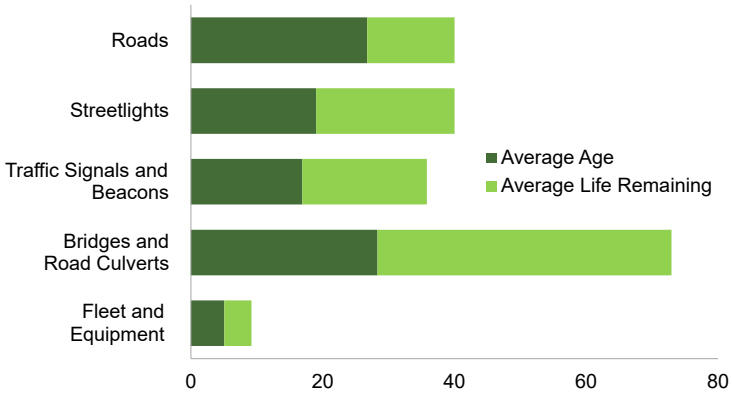
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$1,793 M** | **B (Good)** | **26 / 42 (years)** |

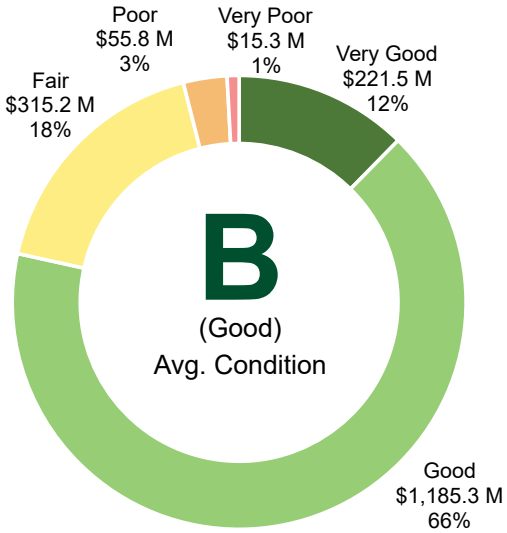
## Asset Portfolio

| Asset | Quantity | Replacement Value |
|---|---|---|
| Roads | 1,215 lane-km | $1,559.9 M |
| Streetlights | 14,193 ea. | $98.1 M |
| Traffic Signals/Beacons | 32 ea. | $4.5 M |
| Bridges/Road Culverts | 63 ea. | $111.4 M |
| Barriers | 6,730 m | |
| Retaining Walls | 1,632 $m^2$ | |
| Fleet and Equipment | A mix | $19.2 M |

## Average Age and Service Life




## Overall Condition




- The condition for roads is based on the PQI calculated from the inspections of the number and type of pavement distresses. The road network is inspected over three years. The PQI ranges from 0 to 100 is are converted to a condition rating.
- The City retains a consultant every two years to complete inspections of bridges and culverts in accordance with OSIM. The inspections provide a condition for structures (BCI), which ranges from 0 to 100 and are converted to a condition rating.
- For street lighting, their condition is based on technical assessments and age while for traffic signals the condition is based on age and life remaining.
- The condition of fleet and equipment is based on utilization (km) and age and life remaining.

Very Good (Grade A) Good (Grade B) Fair (Grade C)
Poor (Grade D) Very Poor (Grade F)

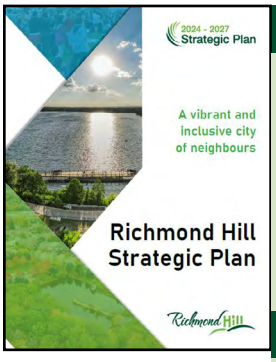
| Condition Category | Letter Grade | Roads: PQI | Streetlights: Condition Assessment and Life Remaining | Traffic Signals: Life Remaining | Bridges and Culverts: BCI | Fleet and Equipment: Utilization and Life Remaining |
|---|---|---|---|---|---|---|
| **Very Good** | **A** | >90 to 100 | >0.8 to 1.0 | >75% to 100% | >80 to 100 | >0.8 to 1.0 |
| **Good** | **B** | >70 to 90 | >0.6 to 0.8 | >50% to 75% | >70 to 80 | >0.6 to 0.8 |
| **Fair** | **C** | >45 to 70 | >0.4 to 0.6 | >25% to 50% | >50 to 70 | >0.4 to 0.6 |
| **Poor** | **D** | >20 to 45 | >0.2 to 0.4 | >0% to 25% | >35 to 50 | >0.2 to 0.4 |
| **Very Poor** | **F** | 0 to 20 | >0 to 0.2 | <0% | 0 to 35 | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** Richmond Hill's Roadway System provides a well-connected, sustainable, multi-modal and inclusive network for all users, including motorists, pedestrians, and cyclists.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change mitigation and adaptation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.

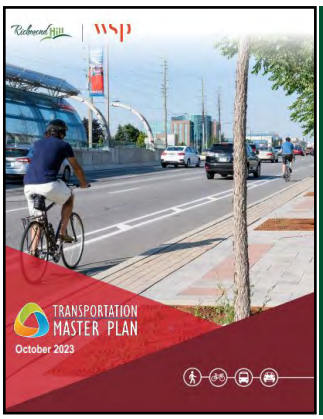
#### Pillar 3: Strengthening our Foundations

- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals


- **Apply Climate Change Lens to Land Use Planning**
- **Apply Climate Change Lens to Asset Management**
- **Formalize Community Risk Mitigation**
- **Leverage Green Infrastructure**
- **Foster Engagement and Innovation**

### Transportation Master Plan




- **Better and enhanced roads**
- **Plan for all modes of travel**
- **Goods Movement**
- **Complete Streets**
- **Transportation Demand Management**

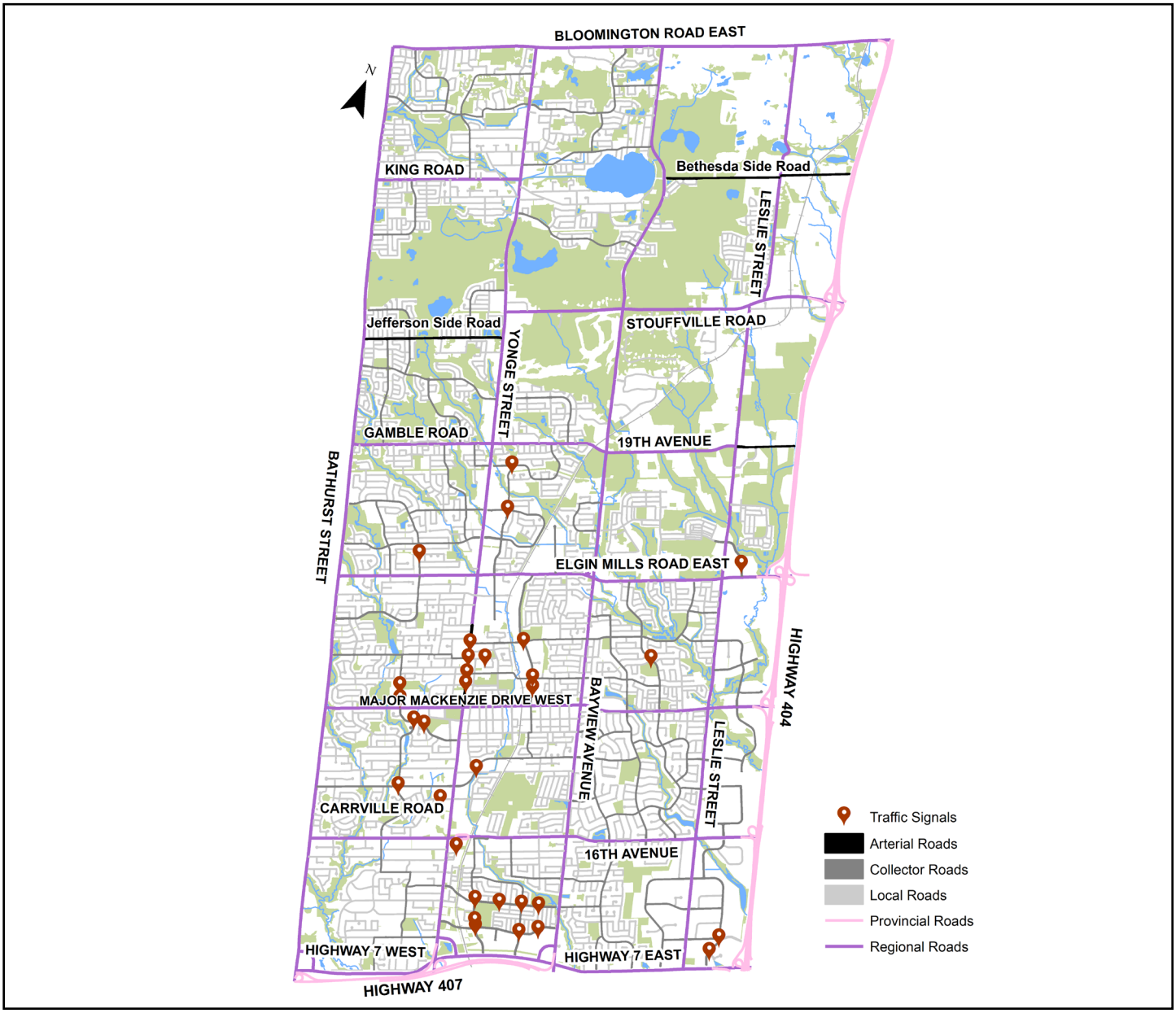
# Levels of Service

## Community Levels of Service – Roads

### Regulatory (Scope): Road Network Connectivity

The City of Richmond Hill is connected by a grid-based road network that encompasses provincial highways, regional roads, and City-owned arterial, collector, and local roadways. The City-owned arterial, collector, and local roads provide important connections that link and support the arterial road system to promote the flow of traffic, people and goods. These roads also facilitate connections between neighborhoods, city centers, commercial zones, industrial areas, and the wider regional road framework. Provincial Highways 404 and 407 that flank the City's eastern and southern boundaries further promote goods movement and connect commuters within Richmond Hill and to neighboring municipalities.

### City of Richmond Hill Road Network



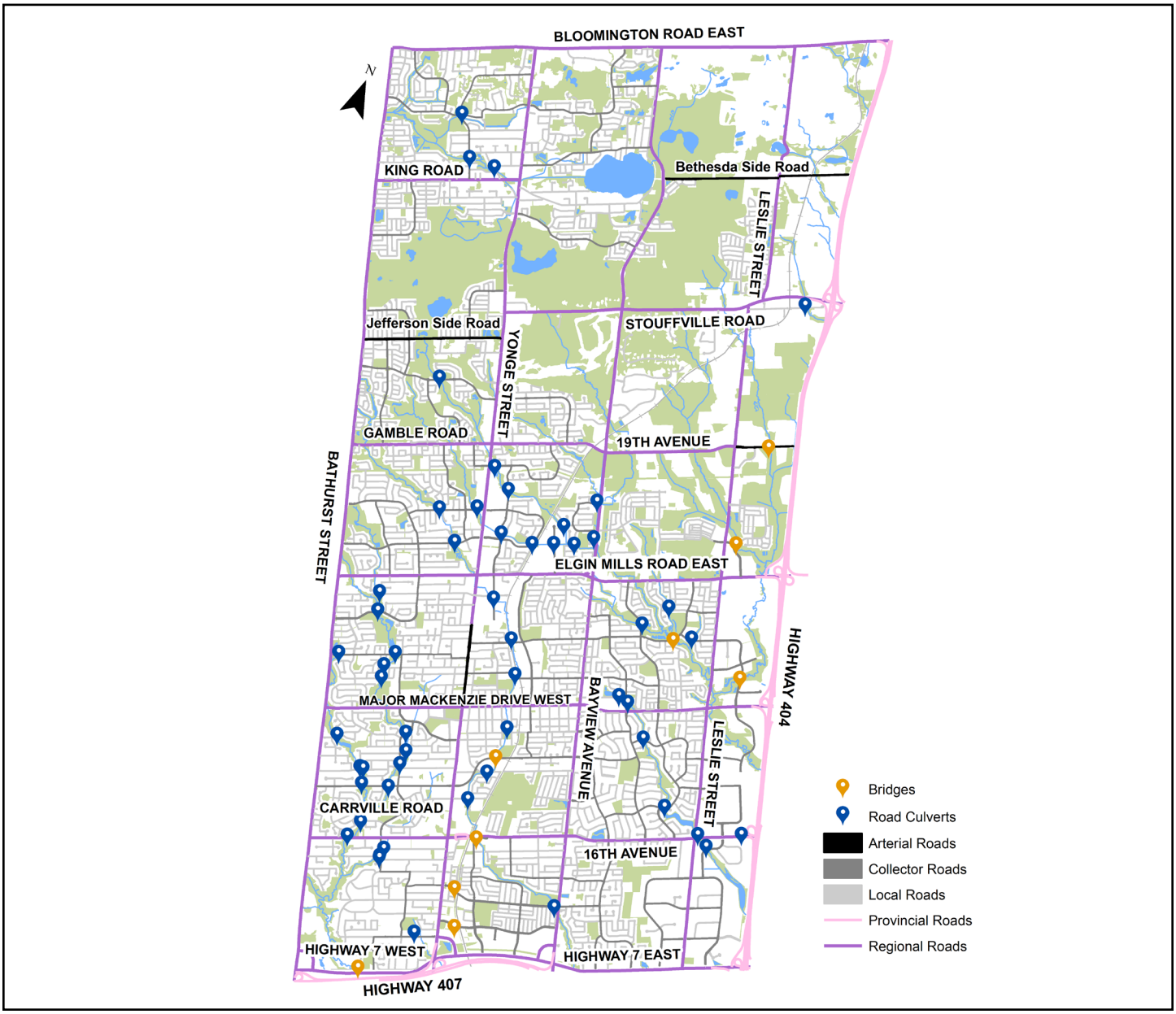
# Levels of Service

## Community Levels of Service – Structures

### Regulatory (Scope): Traffic Supported by Bridges

The City's structural bridges are designed to support transport vehicles, motor and emergency vehicles, cyclists and pedestrians. The ongoing maintenance and renewal of these structures also satisfies the requirements of *O. Reg. 104/97: Standards for Bridges* under the *Public Transportation and Highway Improvement Act (PTHIA)* to ensure they continue to support the different type of traffic users while including any special considerations for ecologically sensitive environmental features. There is only one bridge in the City with a load restriction.

### City of Richmond Hill Bridges and Culverts



# Levels of Service

## Roads

## Technical Levels of Service

| Regulatory (Quality) | |
|---|---|
| **76 (GOOD)** | Average Pavement Quality Index (PQI) |
| **Fair** | Average Condition (Unpaved Roads) |

| Regulatory (Scope) | |
|---|---|
| **0.2** | Arterial roads lane-km to sq. km of land area |
| **2.6** | Collector roads lane km to sq. km of land area |
| **9.2** | Local roads lane km to sq. km of land area |

| Advanced (Reliability) | |
|---|---|
| **96%** | Percentage of roads in fair or better condition |
| **84%** | Percentage of traffic signals in fair or better condition |
| **97%** | Percentage of streetlights in fair or better condition |

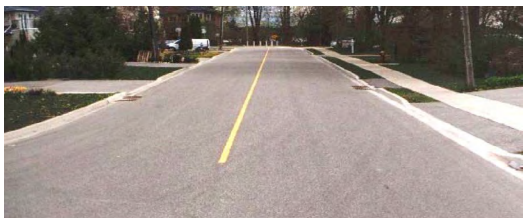
| Advanced (Environmental) | |
|---|---|
| **76%** | Streetlights with LED or low energy fixtures |

## Community Levels of Service

### Regulatory (Quality): Road Pavement Condition

The City collects pavement condition data from the inspections of its entire road network that occurs over a three-year period. PQIs are determined for each road segment from these inspections using an index scale from 0 to 100 which is then divided into the ranges below to assess its asset management condition. Examples of roads in each of the PQI rating categories are below.

**Examples of PQI Condition Rating Categories**

| | |
|---|---|
| **Very Good (PQI = >90 to 100)** |  |
| **Good (PQI = >70 to 90)** |  |
| **Fair (PQI = >45 to 70)** |  |
| **Poor (PQI = >20 to 45)** |  |
| **Very Poor (PQI = 0 to 20)** |  |

# Levels of Service

## Structures

### Technical Levels of Service

| Regulatory (Quality) | |
|---|---|
| **73 (GOOD)** | Average Bridge Condition Index (BCI) – bridges |
| **73 (GOOD)** | Average Bridge Condition Index (BCI) – culverts |

| Regulatory (Scope) | |
|---|---|
| **1.6%** | Structures with loading restrictions |

| Advanced (Reliability) | |
|---|---|
| **96%** | Fair or Better condition (Bridges) |
| **99%** | Fair or Better condition (Culverts) |

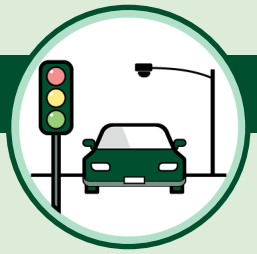
### Community Levels of Service

#### Regulatory (Quality): Bridge and Culvert Condition

The City inspects its bridges biennially as per O. Reg. 104/97 and the Ontario Structural Inspection Manual (OSIM) guidelines to ensure they are in a good state of repair. These inspections are conducted by a professional engineer who assesses their condition and determines a Bridge Condition Index (BCI). The calculated BCI's are scaled from 0 to 100.

**Examples of BCI Condition Rating Categories**

| | |
|---|---|
| **Very Good (BCI = >80 to 100)** |  |
| **Good (BCI = >70 to 80)** |  |
| **Fair (BCI = >50 to 70)** |  |
| **Poor (BCI = >35 to 50)** |  |
| **Very Poor (BCI = 0 to 35)** |  |



# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

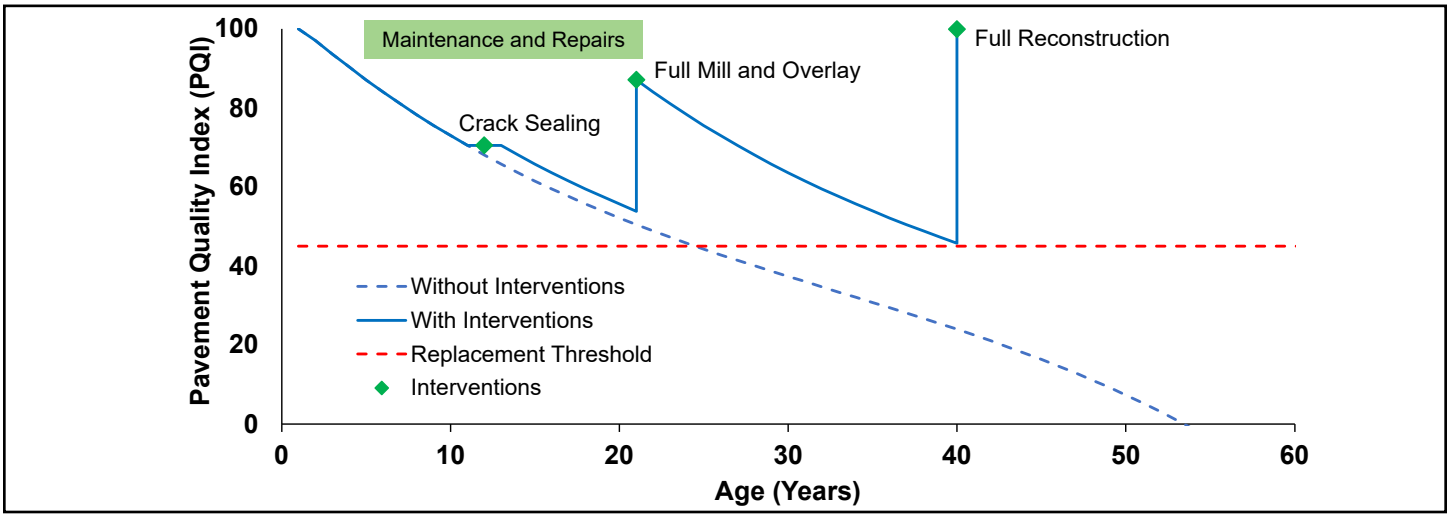
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City makes continuous improvements in operations as well as other initiatives related to improving asset data capture, utilization of IT systems (e.g. pavement management system), etc.<br>• Ongoing studies and assessments of asset conditions and functionality (e.g. OSIM, road inspections) |
| **Maintenance** | • The City performs routine maintenance for its roads and structures (per *O. Reg. 239/02: Minimum Maintenance Standards for Municipal Highways*) such as street sweeping, pothole patching, utility cut repairs, expansion joint cleaning, regular municipal structure maintenance, snow and ice removal, etc.<br>• The City performs testing, inspections and maintenance on traffic signals and their components, and street lighting and luminaires.<br>• Fleet and equipment are maintained per recommended standards. |
| **Rehabilitation** | • The rehabilitation activities for roads are based on the assets' current condition and projected deterioration given its surface thickness, base strength and traffic volumes. Rehabilitation treatment types include crack sealing and resurfacing. The suggested timing of these treatments is identified by the appropriate phase in their life cycle.<br>• Bridge and culvert rehabilitations are based on inspection recommendations using condition and its life cycle, and can include minor and/or major rehabilitations.<br>• Traffic signals and streetlights are rarely rehabilitated but instead replaced when they have reached the end of their service life and/or are not functioning.<br>• Fleet and equipment are not typically rehabilitated, but are traditionally replaced at end of life. |
| **Replacement** | • Roads are reconstructed once rehabilitation options are exhausted. Road reconstructions are considered for bundling with interventions on different assets within their right of way and/or underneath the road such as water, sanitary sewers, storm sewers and/or streetlights, to minimize costs and impact to residents.<br>• Structural bridges and culverts are generally replaced based on recommendations from inspections and their observed condition, age, and ESLs.<br>• Traffic signals, street lighting and fleet/equipment are typically replaced when their condition and/or age indicate they have reached end of life and/or are no longer functioning as intended. |
| **Disposal** | • Roadway, bridge, and culvert material disposals are in line with best practices and regulations.<br>• Traffic signal assets, streetlights and fleet and equipment are disposed at the end of their life. |
| **Growth / Service Improvement** | • The City's Transportation Master Plan and Development Charges Background Study provide recommendations to upgrade and/or expand the road network based on an analysis of future population and employment growth and the evolving vision for the City. New and expanded Roadway assets are also identified through technical analysis as part of servicing plans for new developments.<br>• Assets are identified for replacement to meet current standards and/or implement operational improvements, e.g. streetlights are converted to LED or low energy fixtures.<br>• Urbanization of roads is considered and balanced with state of good repair renewal needs.<br>• Improvement activities may include technologies such as pavement material alternatives and new pavement design processes, e.g. the City's updated design standards. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

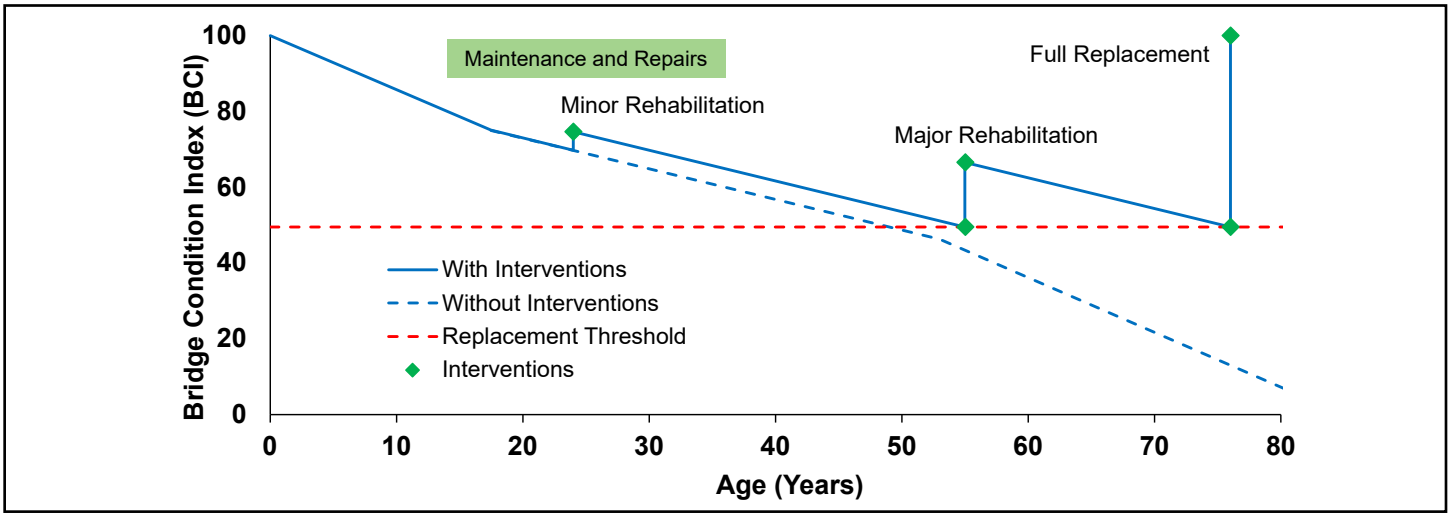
### Capital Treatments

#### Roads Life Cycle




The City's roads life cycle treatments would typically include crack sealing (first 10 to 15 years), mill and overlay (between 20 and 30 years) and full reconstruction sometime after 40 years. The timing for these treatments can vary depending on the rate of deterioration and balancing the need for renewal, improving function and bundling the road work with the underground water, sewer and/or storm main renewals. The City's roads life cycle and deterioration model is based on the thickness of the surface, the strength of the base, and traffic volumes.

#### Bridges and Road Culverts Life Cycle



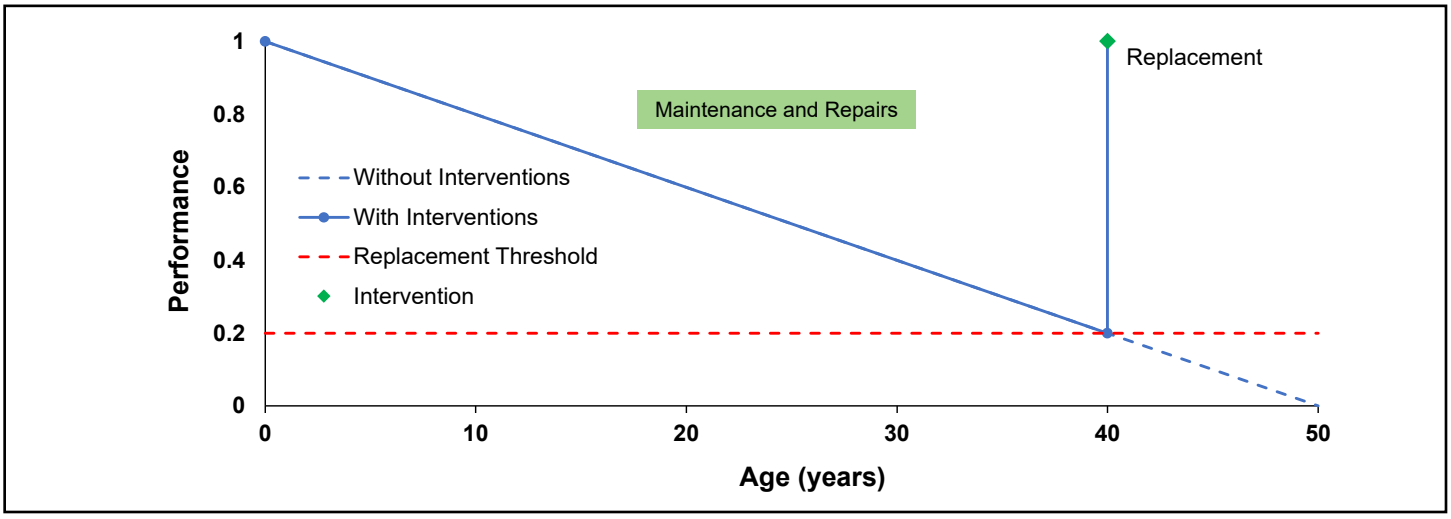

The City's life cycle strategies for structures are based on the findings and recommendations from biennial OSIM inspections and industry best practices. This approach is designed to support general life cycle interventions with the recommendations in the OSIM biennial inspections for more specific capital renewal. The City's model identifies minor (between 20 and 30 years of age) and major (between 50 and 60 years of age) rehabilitations with eventual replacements between 70 and 80 years. The timing of these depends on the structure type, material and shape.

# Asset Management Life Cycle Strategies

## Life Cycle Activities

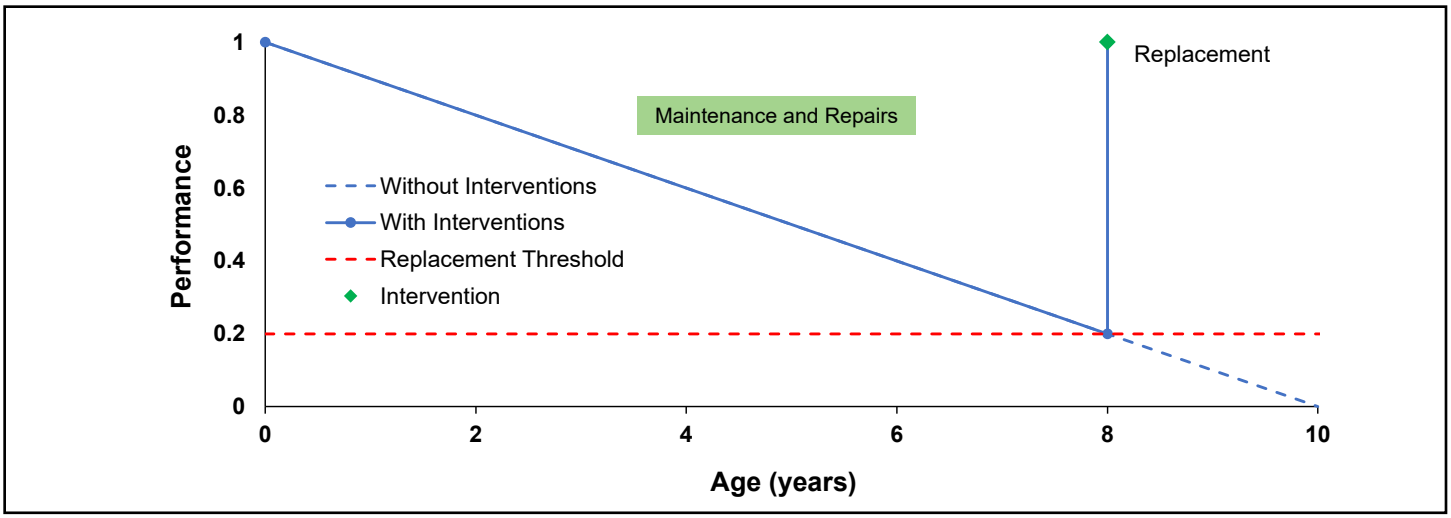
### Capital Treatments

#### Traffic Signals and Streetlights Life Cycle

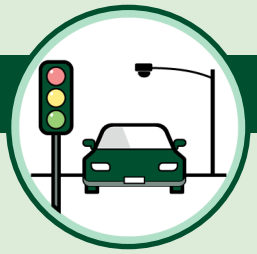



For traffic signals and streetlights, the City's life cycle model forecasts they would typically be replaced at the end of their service life (typically 40 years) or bundled with road reconstruction projects, and would not receive any major rehabilitations. However, these assets may be replaced sooner if they are no longer functioning and/or are damaged due to weather or other events, or may be kept in service longer for operational reasons.

#### Fleet and Equipment Life Cycle




The City's life cycle model forecasts that fleet and equipment would typically be replaced at the end of their service life. While fleet would receive regular ongoing maintenance to ensure they are functioning and reach the end of their service life, they would not typically receive major rehabilitations. These assets may be replaced sooner based on usage and/or premature wear and tear or may be kept in service longer for operational reasons.



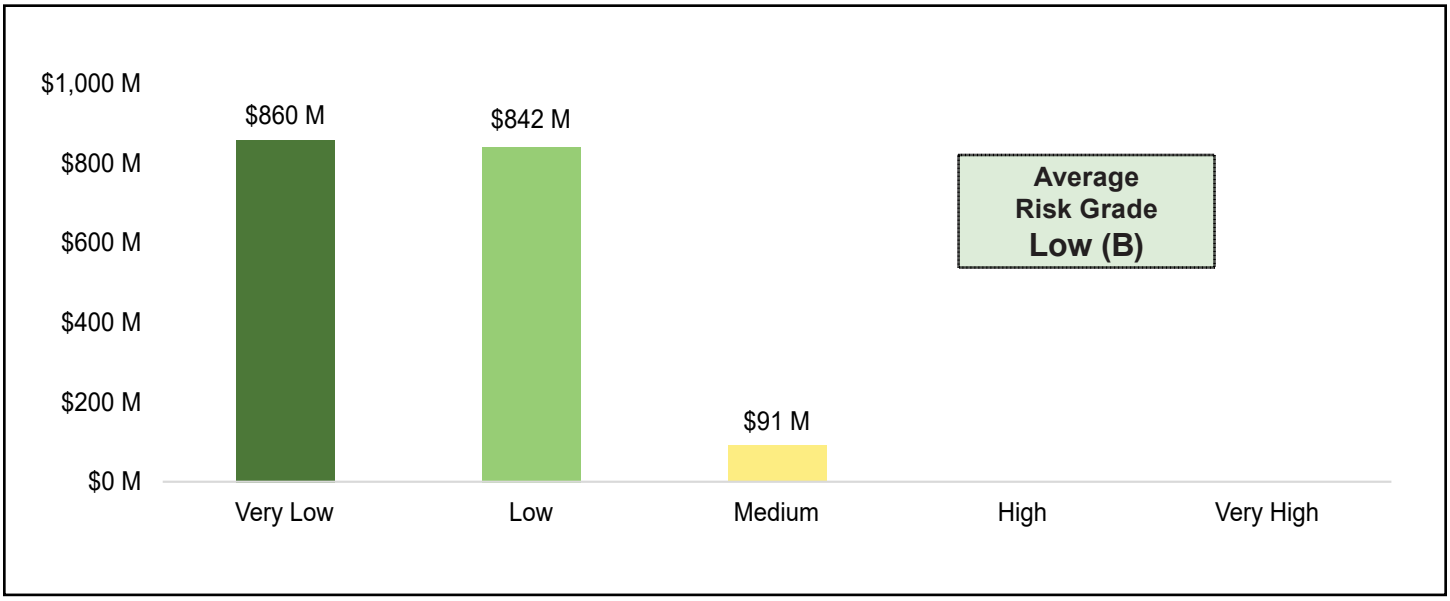
# Risk Prioritization

Average Risk Grade
**Low (B)**

## Risk Framework

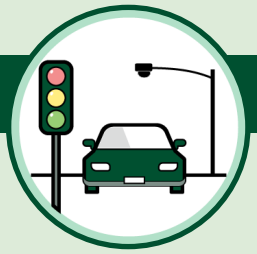

| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Roads<br>• Bridges/Culverts<br>• Streetlights<br>• Traffic Signals<br>• Fleet/Equipment | • Current and deteriorating condition | • Current capacity<br>• Future expansion/ new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Traffic counts<br>• Road classification<br>• Land use<br>• Type/function | • Environmental compliance<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- Transportation Master Plan, City Parking and Transportation Demand Management Strategy provide the appropriate mix of transportation options and exploring alternative modes of transportation (e.g. micromobility) to reduce impact and emissions on the environment.
- Conversion of streetlights to LED or low energy fixtures which require less energy, thus emit less GHG emissions.
- Ongoing inspections and regular maintenance, repair and replacement of roads, structures, streetlights and traffic signals from the effects of climate events.



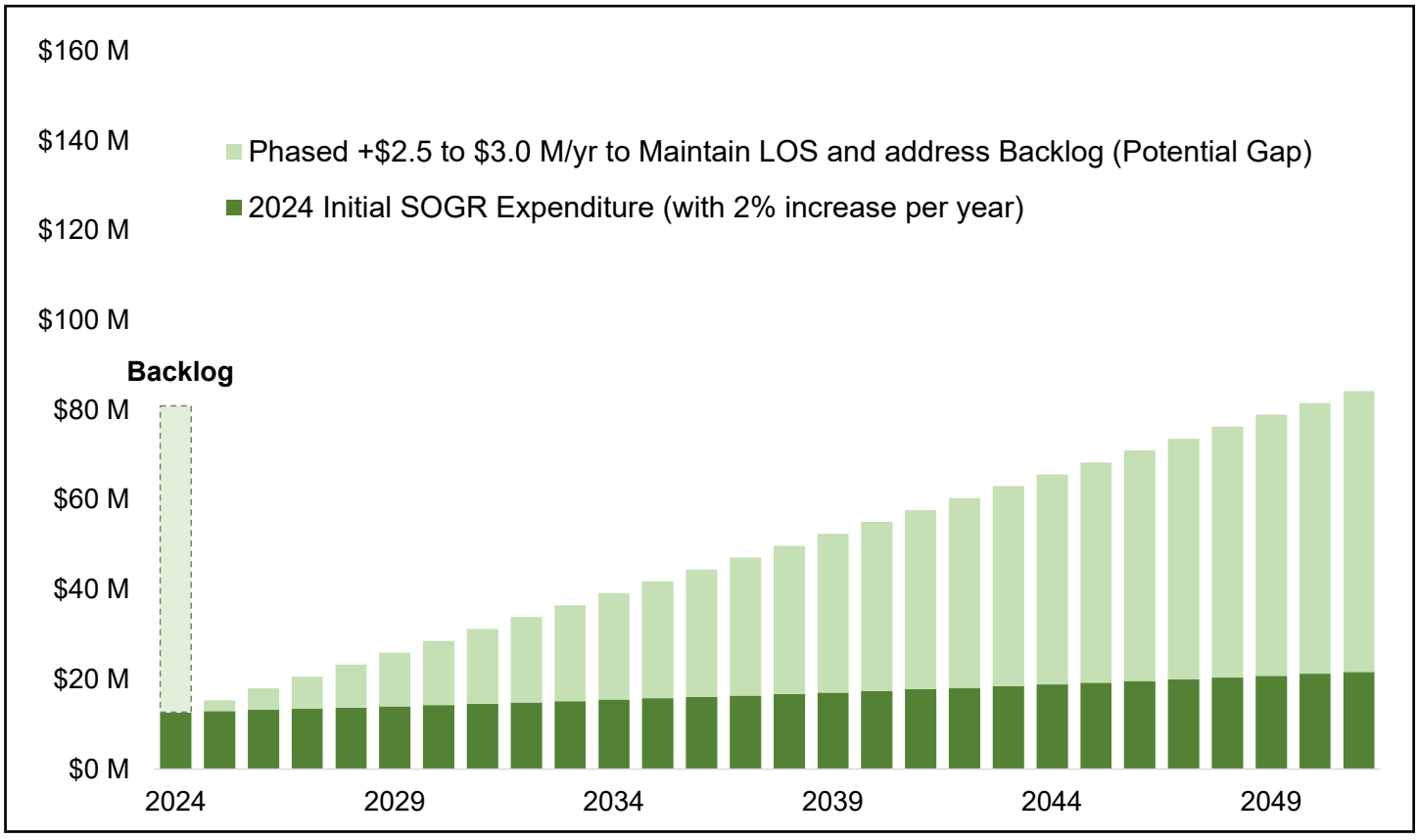
# Asset Investment Strategy

| Backlog | Maintain LOS | Potential Gap |
|---|---|---|
| **$81.0 M** | **+$2.5 to $3.0 M/yr** | **$0 to $49.8 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Roadway System ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Roadway | 81.0 | 12.7 | +2.5 to 3.0 | 24.0 to 26.2 | 0 to 12.3 | 59.0 to 68.2 | 0 to 49.8 |

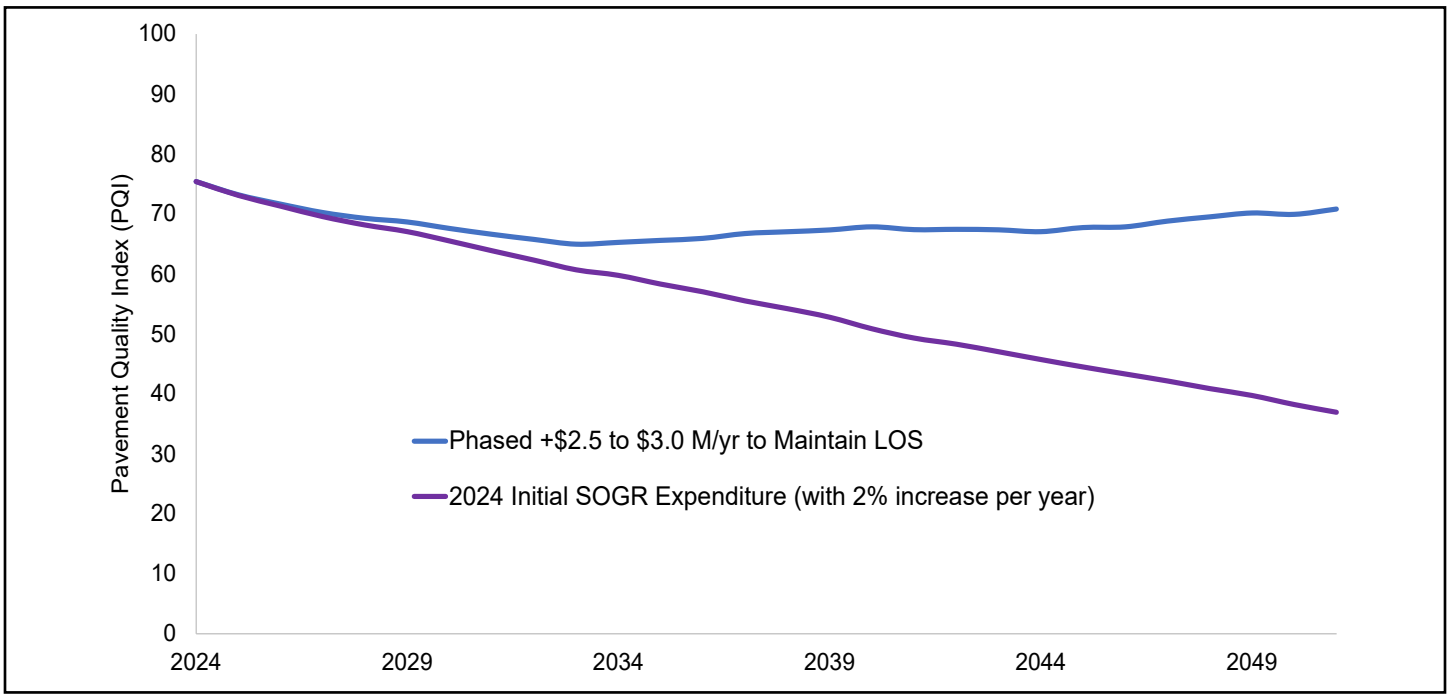



*State of good repair need for on-road cycling facilities (bike lanes) included in Roads

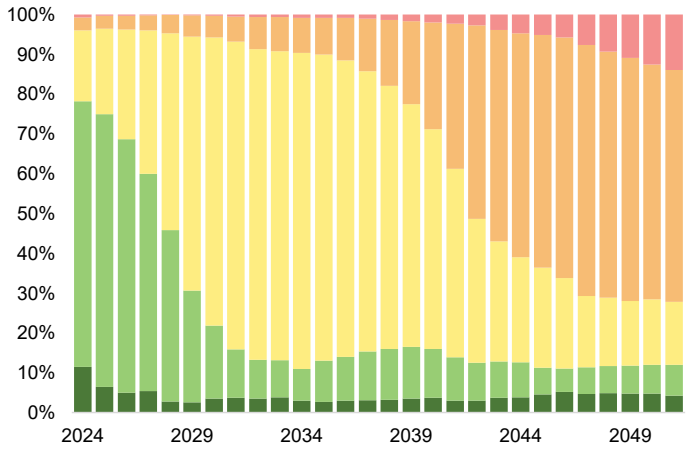
## Impact on Levels of Service

### Roads

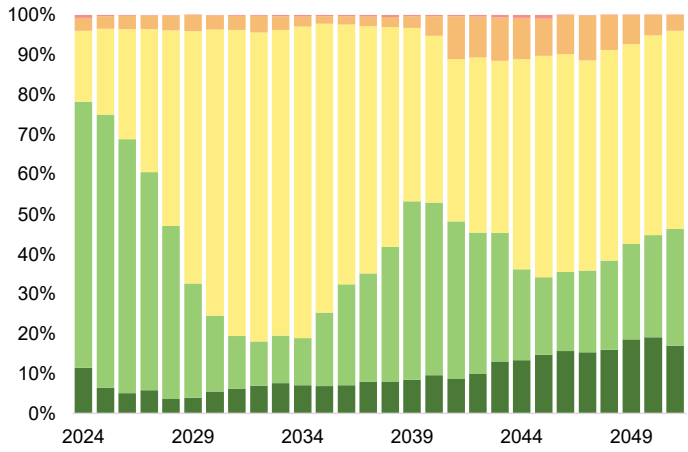
**Pavement Quality Index (PQI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



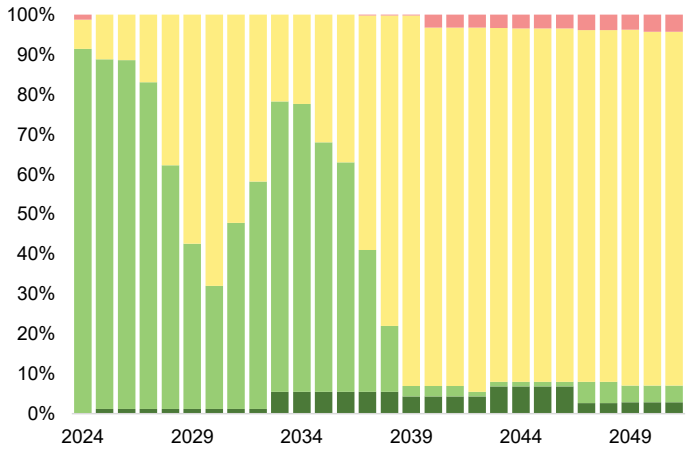

Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

# Asset Investment Strategy

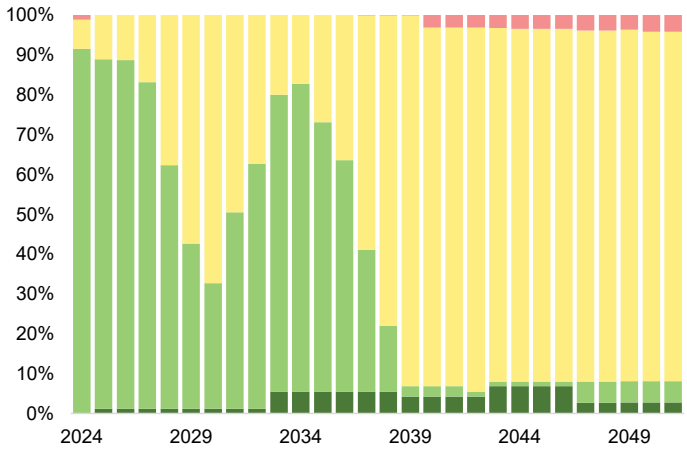
## Impact on Levels of Service

### Bridges and Culverts

**2024 Initial SOGR Expenditure (with 2% increase)**

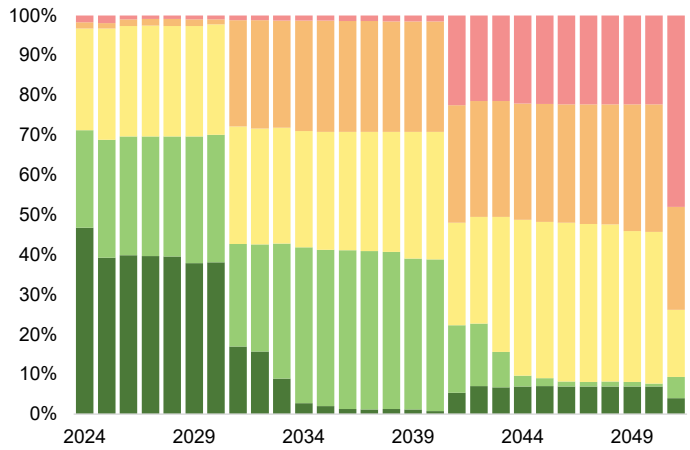



**Maintain Level of Service**

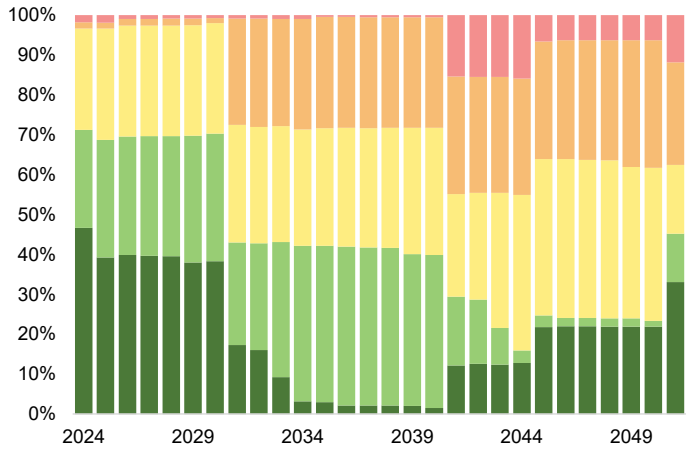



### Streetlights

**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



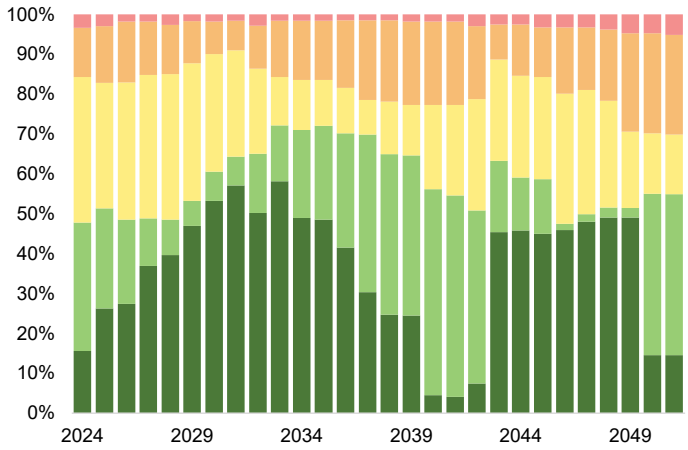

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Asset Investment Strategy

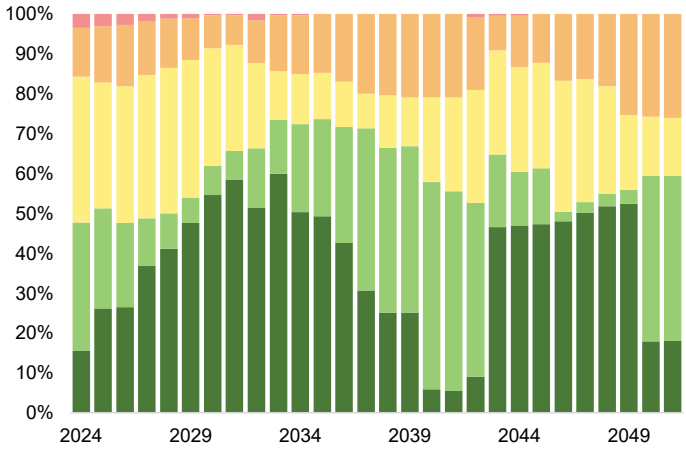
## Impact on Levels of Service

### Traffic Signals

**2024 Initial SOGR Expenditure (with 2% increase)**

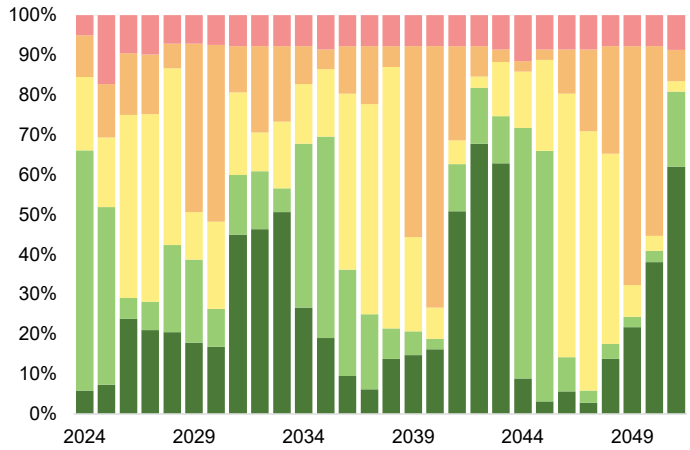



**Maintain Level of Service**

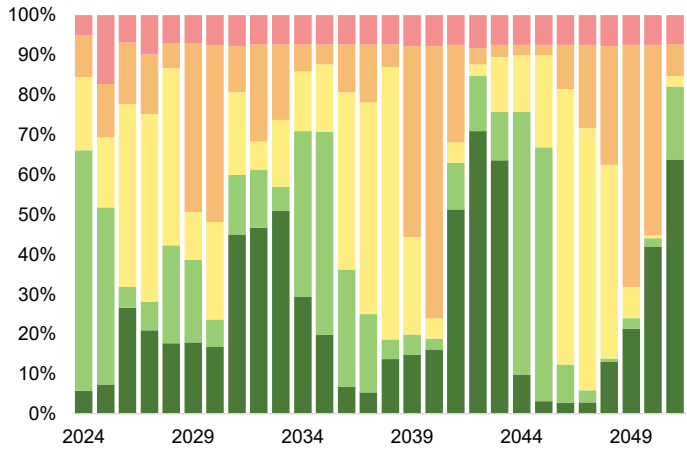


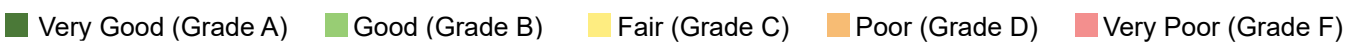

### Fleet and Equipment

**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



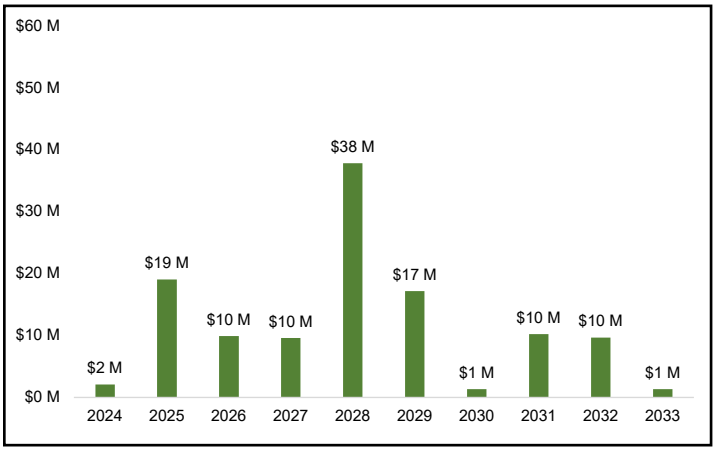



# Growth Capital and Operating Forecast

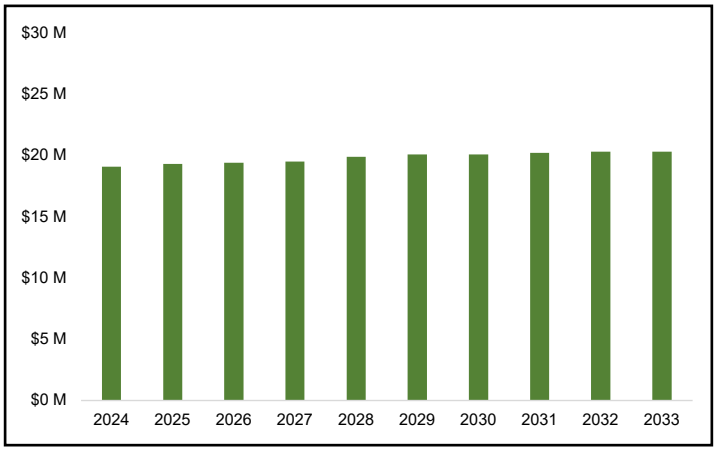
## Future Outlook

The City's Transportation Master Plan recommends a balanced future transportation network that will service the increasing travel demand from projected growth. It also provided policies, transportation and trails initiatives, and recommended new and enhanced transportation infrastructure required to meet the evolving needs of the City phased to 2051. In addition to the recommended new and enhanced transportation infrastructure through the TMP, this 2024 Asset Management Plan identifies that significant renewal of the City's existing transportation network is required to maintain it in a good state of repair. These two plans will inform the City's 10 Year Capital Budgets and Forecasts.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




Richmond Hill's Roadway System is set for a transformative upgrade over the next 10 years with a series of significant projects included in the City's 10 Year Capital Budget and Forecast. These expansions were recommended through the Transportation Master Plan and are aimed at expanding road capacity, reducing congestion, improving traffic flow and enhancing connectivity. The most substantial investments include East and West Beaver Creek Road Improvements at $43.8 million, Newkirk Road Improvements at $18.5 million, High Tech Road Improvements at $9.9 million, Vogell Road Improvements at $8.3 million and the Highway 404 Overpass North of 16th Avenue at $5.4 million. There are also a number of traffic-related improvements ($8.8 million) to ensure enhanced traffic safety and efficiency.

The estimated operating and maintenance costs to service the maintenance of existing and new growth-related capital Roadway assets is forecasted to steadily increase over the next 10 years. It is projected to generally grow from approximately $19 million to over $20 million in today's dollars (excluding future inflationary pressures) if the growth-related road expansion projects are constructed as planned over the next 10 years. The forecast does not include any estimated capital costs associated with future assets that are to be assumed as a part of the development process.

## Appendix B

# Active Transportation

# Overview of Active Transportation

The City of Richmond Hill's Active Transportation network is comprised of sidewalks, bicycle lanes, multi-use paths and trails. Together, these assets provide accessible, reliable and sustainable modes of travel to the community.

*Norman Bethune Avenue*

## Bicycle Lanes and Cycle Tracks

The City of Richmond Hill's extensive network of bicycle lanes and cycle tracks is a cornerstone of its Active Transportation amenities within the road right of way. Spanning over 170 kilometres, these lanes are shared with motor vehicles (on-road bike lanes), utilize the roadway shoulder (paved shoulder), and are dedicated buffered bike lanes. These allow for seamless integration of cycling into the everyday flow of traffic. The design of these lanes and tracks reflects a deep understanding of cyclists' needs and the City's traffic dynamics, striking a balance between functionality, safety, and environmental stewardship. It is a testament to Richmond Hill's forward-thinking approach to urban planning and its commitment to fostering a green, healthy, and accessible community.

*Elgin Mills Road East*

## Sidewalks and Walkways

The sidewalks and walkways in Richmond Hill, which span over 718 kilometres, are a key aspect of the City's Active Transportation network within the road right of way. The sidewalks (713 kilometres) are primarily concrete, a choice reflecting the City's focus on durability and year-round accessibility. The inclusion of asphalt and interlock in smaller portions enhances both the aesthetic and functional aspects of these pedestrian pathways. The walkways (5 kilometres) reflect either concrete, asphalt, or interlock. These cater to varied pedestrian experiences while seamlessly integrating with the urban landscape. They are strategically designed to improve connectivity within the community, making pedestrian movement more fluid and accessible.

# Overview of Active Transportation

*Lake-to-Lake Route*

## Multi-Use Paths

Richmond Hill's Multi-Use Paths currently span approximately 16 kilometres and are part of the City's Lake to Lake Trail Route, which is an important element of its Active Transportation network. A portion of the Lake to Lake Trail Route has been completed, with progress continuing to further develop the trail. These asphalt-paved paths offer a robust, versatile route for pedestrians and cyclists alike connecting north-south key destinations and communities. This initiative aligns with the City's vision of fostering an inclusive and connected urban environment that enhances the mobility and quality of life for its residents.

*David Dunlap Observatory Park Trail*

## Trails

Trails in Richmond Hill are an integral part of the City's Active Transportation Network outside the right of way. Extending over 139 kilometres, these trails are located primarily within parks and open spaces (also known as recreational trails, off-road trails, park pathways and walkways) and offer a diverse range of user experiences (e.g. walking, cycling). These routes provide residents with opportunities for passive recreation and to escape the City to connect with nature in the City's Greenway System, while protecting and preserving these environmentally sensitive areas. They also serve as a vital connection between different areas of the city, enhancing mobility and accessibility. The City's trails include asphalt, concrete, interlock, crushed limestone, granite, and natural surfaces, catering to various recreational and transportation needs. Richmond Hill's trails are a reflection of the City's dedication to promoting an active, healthy and engaged community.

*Trans Richmond Trail Boardwalk*

## Outdoor Crossings

Outdoor crossings are a network of 114 pedestrian structures comprising of boardwalks (38), bridges (72), and lookouts (4). Outdoor crossings are primarily located in parks and open spaces and play a crucial role in promoting the enjoyment of Richmond Hill's diverse outdoor spaces and enhancing pedestrian accessibility. These structures also serve as integral links in the City's Active Transportation network, fostering environmental sustainability and community engagement. These assets are primarily constructed with timber, complemented by concrete (pre-cast and cast-in-place) and steel to ensure structural integrity and aesthetic harmony with the natural environment.

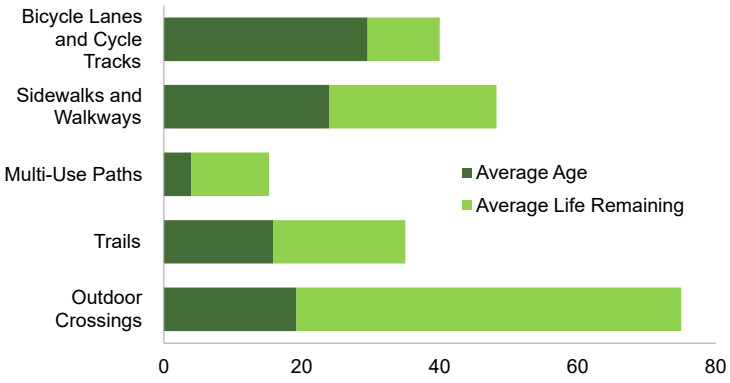
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$457 M** | **B (Good)** | **22 / 48 (years)** |

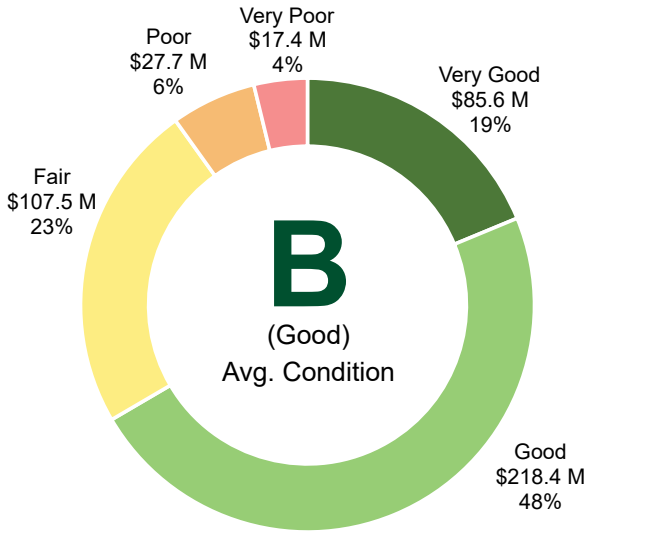
## Asset Portfolio

| Asset | Quantity | Replacement Value |
|---|---|---|
| Bicycle Lanes/Cycle Tracks | 172 km | $61.2 M |
| Sidewalks/Walkways | 718 km | $252.7 M |
| Multi-Use Paths | 16 km | $8.0 M |
| Trails | 137 km | $68.9 M |
| Outdoor Crossings | 3 km<br>114 ea. | $65.8 M |

## Average Age and Service Life




## Overall Condition




Very Good (Grade A) Good (Grade B) Fair (Grade C)
Poor (Grade D) Very Poor (Grade F)

- Sidewalks are inspected for deficiencies on an annual basis. Any deficiencies are corrected. The condition rating for sidewalks is based on a combination of the number and type of deficiencies, and age and life remaining.
- The condition for on-road bicycle lanes is based on the pavement quality index of the road (PQI) identified through the City's road inspection program.
- Trails are inspected for deficiencies twice per year. Any deficiencies identified are corrected. The condition rating for trails is based on a combination of the number and type of deficiencies, and age and life remaining.
- The condition of multi-use paths and cycle tracks are based on age and life remaining.
- The City retains a consultant every two years to complete inspections of outdoor crossings in accordance with OSIM. The inspections provide an overall condition for structures (BCI), which range from 0 to 100.

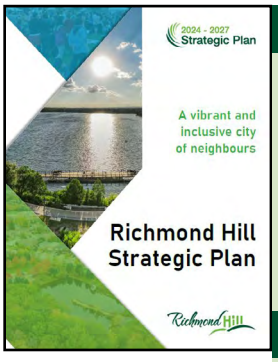
| Condition Category | Letter Grade | Bicycle Lanes: PQI | Cycle Tracks: Life Remaining | Sidewalks: Condition Assessment and Life Remaining | Multi-Use Paths: Life Remaining | Trails: Condition Assessment and Life Remaining | Outdoor Crossings: BCI |
|---|---|---|---|---|---|---|---|
| **Very Good** | **A** | >90 to 100 | >75% to 100% | >0.8 to 1.0 | >75% to 100% | >0.8 to 1.0 | >80 to 100 |
| **Good** | **B** | >70 to 90 | >50% to 75% | >0.6 to 0.8 | >50% to 75% | >0.6 to 0.8 | >70 to 80 |
| **Fair** | **C** | >45 to 70 | >25% to 50% | >0.4 to 0.6 | >25% to 50% | >0.4 to 0.6 | >50 to 70 |
| **Poor** | **D** | >20 to 45 | >0% to 25% | >0.2 to 0.4 | >0% to 25% | >0.2 to 0.4 | >35 to 50 |
| **Very Poor** | **F** | 0 to 20 | <0% | >0 to 0.2 | <0% | >0 to 0.2 | 0 to 35 |

# Levels of Service

**Strategic Level of Service:** Richmond Hill's Active Transportation network enables multiple modes of transportation, including walking and cycling to provide accessible, reliable and sustainable modes of travel to the community.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




**Pillar 1: Growing a Livable, Sustainable Community**

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change mitigation and adaptation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

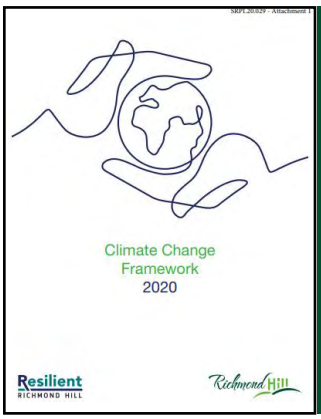
**Pillar 2: Focusing on People**

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.

**Pillar 3: Strengthening our Foundations**

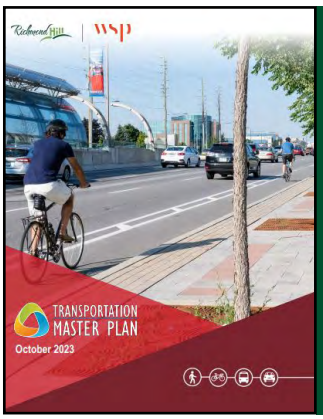
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Land Use Planning**
- **Apply Climate Change Lens to Asset Management**
- **Formalize Community Risk Mitigation**
- **Leverage Green Infrastructure**
- **Foster Engagement and Innovation**

### Transportation Master Plan




- **Build Active Transportation Network**
- **Plan for all modes of travel**
- **Goods movement**
- **Complete Streets**
- **Transportation Demand Management**

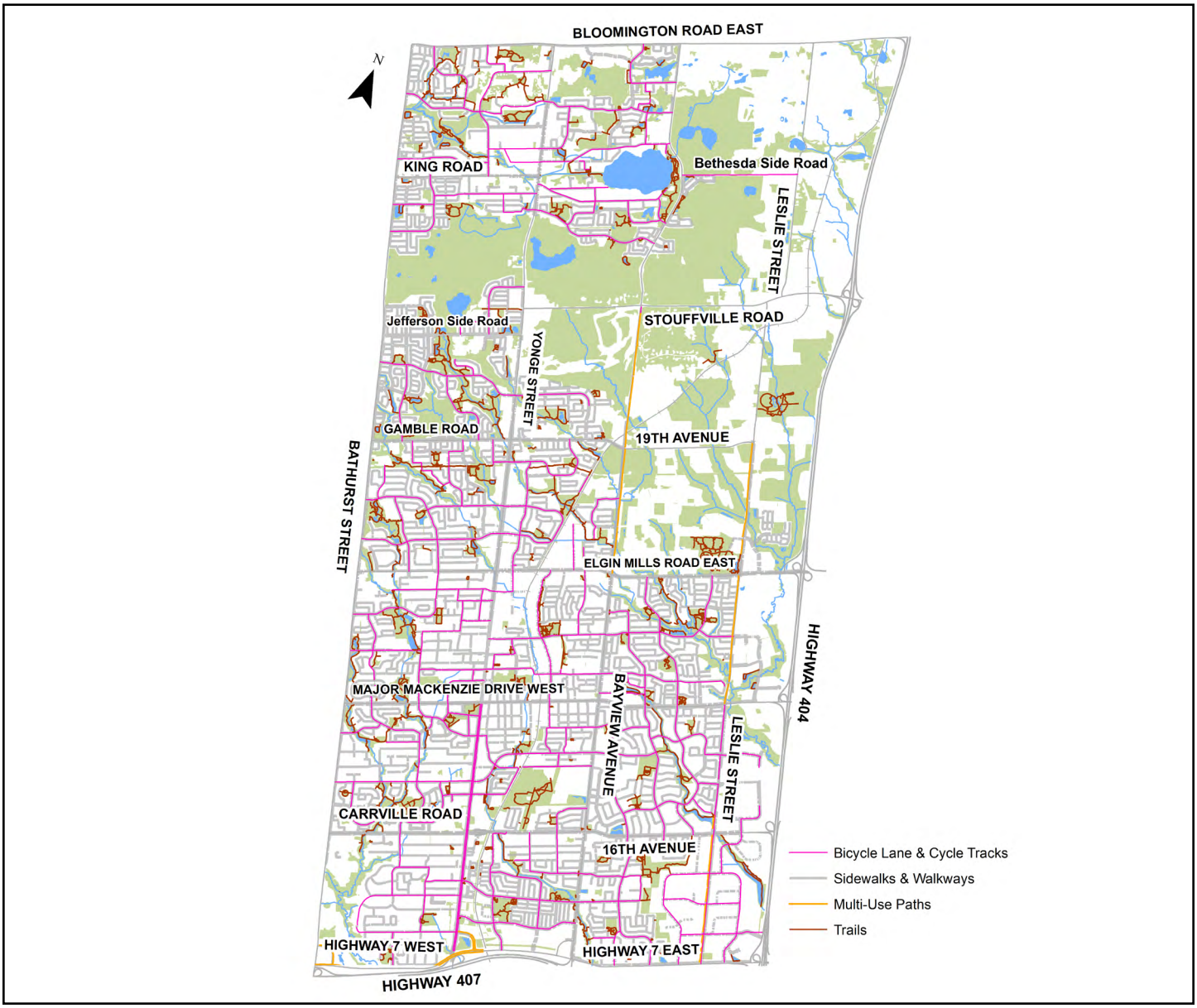
# Levels of Service

## Community Levels of Service

### Advanced (Scope): Active Transportation Network

The City's Active Transportation network provides integrated, reliable, accessible and sustainable travel modes for the community. The City's Active Transportation infrastructure includes a combination of on-road cycling facilities, sidewalks, cycle tracks, multi-use paths, park and natural area trails and pedestrian crossings (bridges, boardwalks and lookouts). These routes aim to connect neighborhoods with a broader transportation spine network that enables pedestrians, cyclists and other users to connect to important destinations in the City. These include community centres, arenas, libraries, commercial areas, transit, parks and natural areas. The Active Transportation network within parks and natural areas also allows residents and visitors to connect with nature in the City's Greenway System, while protecting and preserving these environmentally sensitive areas and promoting a strong sense of community and health.

### City of Richmond Hill Active Transportation Network



# Levels of Service

## Technical Levels of Service

| Advanced (Quality) | |
|---|---|
| **61 (GOOD)** | Average Sidewalk Condition Index (SCI) |
| **63 (GOOD)** | Average Trail Condition Index (TCI) |
| **75 (GOOD)** | Average Bridge Condition Index (BCI) – Outdoor Crossings |

| Advanced (Scope) | |
|---|---|
| **1.7** | km of bicycle lanes to sq. km of land area |
| **1.5** | km trails/multi-use paths to sq. km of land area |
| **7.1** | km sidewalks/walkways to sq. km of land area |

| Advanced (Reliability) | |
|---|---|
| **87%** | Percentage of sidewalks in fair or better condition |
| **97%** | Percentage of cycling facilities in fair or better condition |
| **87%** | Percentage of trails in fair or better condition |

## Community Levels of Service

### Advanced (Quality): Active Transportation Condition

The City undertakes formal condition assessments of sidewalks annually and trails semi-annually. The number and type of surface deficiencies that would be felt by the community are tracked and assessed. These are combined with the age and remaining life to determine a performance score from 0 to 100, which are categorized into condition ranges below.

**Examples of Trail Condition Rating Categories**

| | |
|---|---|
| **Very Good (Performance = >0.8 to 1.0)** |  |
| **Good (Performance = >0.6 to 0.8)** |  |
| **Fair (Performance = >0.4 to 0.6)** |  |
| **Poor (Performance = >0.2 to 0.4)** |  |
| **Very Poor (Performance = >0 to 0.2)** |  |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

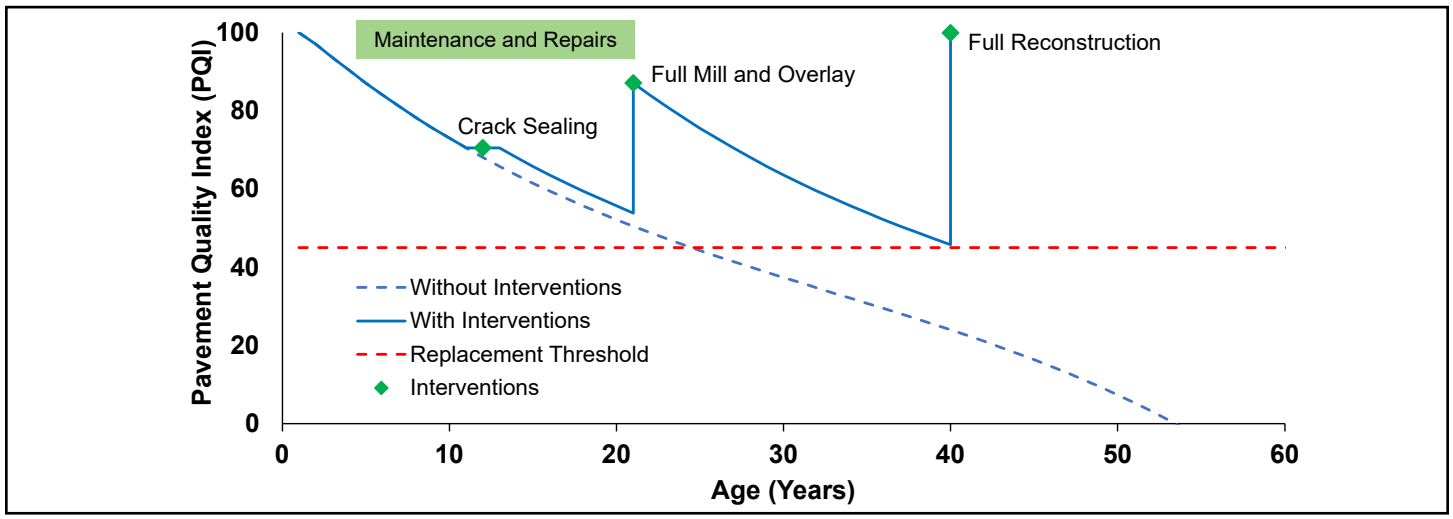
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City makes continuous improvements in operations as well as other initiatives related to improving asset data capture, utilization of IT systems (e.g. Maximo), employee capabilities, etc.<br>• Ongoing studies and assessments of asset conditions and functionality are undertaken (e.g. annual sidewalk, semi-annual trail inspections, biennial OSIM of outdoor crossing structures).<br>• The City also undertakes planning-related studies (e.g. Transportation Master Plan) |
| **Maintenance** | • The City performs regular maintenance of its Active Transportation network such as sweeping/ cleaning, line painting, shrub/tree pruning and snow removal, through inspections, patrol, and complaints.<br>• The City performs sidewalk and trail maintenance to undertake the required infrastructure repairs, soft surface top-ups, hazard tree removal, vegetation clearing, and hard surface repairs.<br>• Outdoor crossings are inspected, maintained and repaired as required. |
| **Rehabilitation** | • The rehabilitation of on-road bicycle facilities would typically be part of the rehabilitation of the roads themselves based on their current condition and projected deterioration given its surface and base strength. Treatment types include crack sealing and resurfacing. The suggested timings of these treatments are identified by the appropriate phase in their life cycle.<br>• For sidewalks and trails, rehabilitation can include a variety of treatments depending on their surface type, e.g. patching, crack sealing, soft surface top up, replacing damaged pavers.<br>• Outdoor crossings undergo minor and/or major rehabilitation based on results from biennial OSIM inspections. |
| **Replacement** | • On-road bicycle facilities are typically reconstructed as part of the road reconstruction.<br>• Sidewalks and other active transportation assets within the road right of way are typically replaced when their condition has deteriorated, and they have reached the end of their service life. These assets are also typically coordinated with the road reconstruction for bundling into capital projects to minimize costs and impacts to residents.<br>• For trails outside the right of way (e.g. in parks), they are typically replaced (concrete and asphalt) and/or have their surfaces topped up (soft surfaces) depending on the surface type.<br>• Outdoor crossings are replaced when their condition warrants it and/or have reached end of life. |
| **Disposal** | • Disposals are typically coordinated with the asset reconstructions and/or replacements. |
| **Growth / Service Improvement** | • Enhanced and new Active Transportation network improvements are planned through the Transportation Master Plan, which details upgraded cycling facilities, trails and sidewalks.<br>• New and expanded active transportation assets are also identified through technical analyses as part of plans completed to support new developments.<br>• Other improvements may include upgrades to active transportation surface materials (e.g. converting a soft surface trail to a hard surface, replacing interlocking sidewalks with concrete) |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

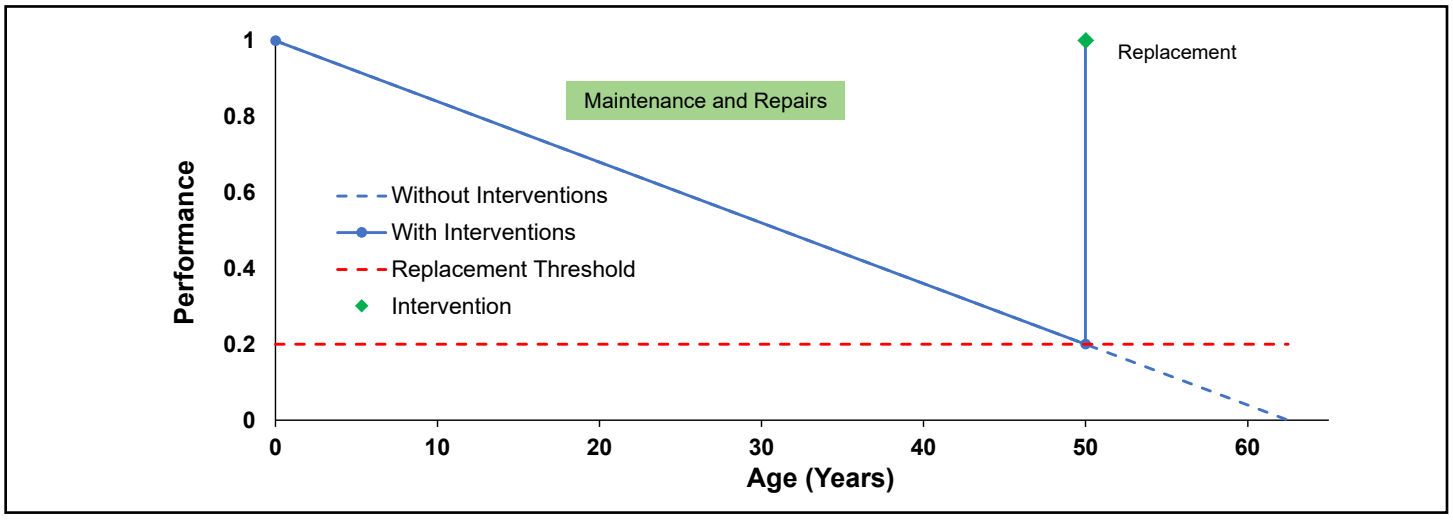
### Capital Treatments

#### On-Road Cycling Facility Life Cycle




The life cycle of on-road cycling amenities is tied to roads. The City's roads life cycle treatments would typically include crack sealing (first 10 to 15 years), mill and overlay (between 20 and 30 years) and full reconstruction sometime after 40 years. The timing for these treatments can vary depending on the rate of deterioration and balancing the need for renewal, improving function and bundling the road work with the underground water, sewer and/or storm main renewals. The City's roads life cycle and deterioration model is based on the thickness of the surface, the strength of the base, and traffic volumes.

#### Concrete Sidewalk Life Cycle



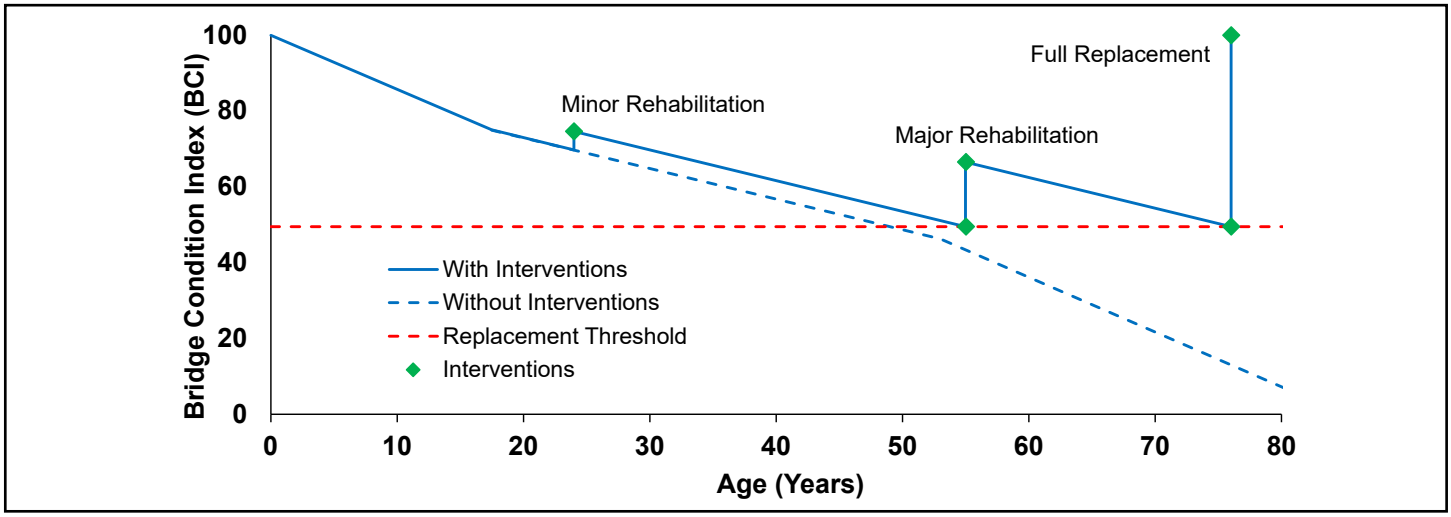

The City's life cycle strategies for sidewalks are generally based on reconstruction when their condition has deteriorated and/or they are at the end of their service life (typically 50 years). The timing of sidewalk replacements can vary as their reconstruction could be coordinated with the road reconstruction and/or other adjacent sidewalks for bundling into capital projects to minimize costs and impacts to residents. These may also be reconstructed sooner if they are no longer functioning and/or have premature damage, or could be kept in service longer if in good condition.

# Asset Management Life Cycle Strategies

## Life Cycle Activities

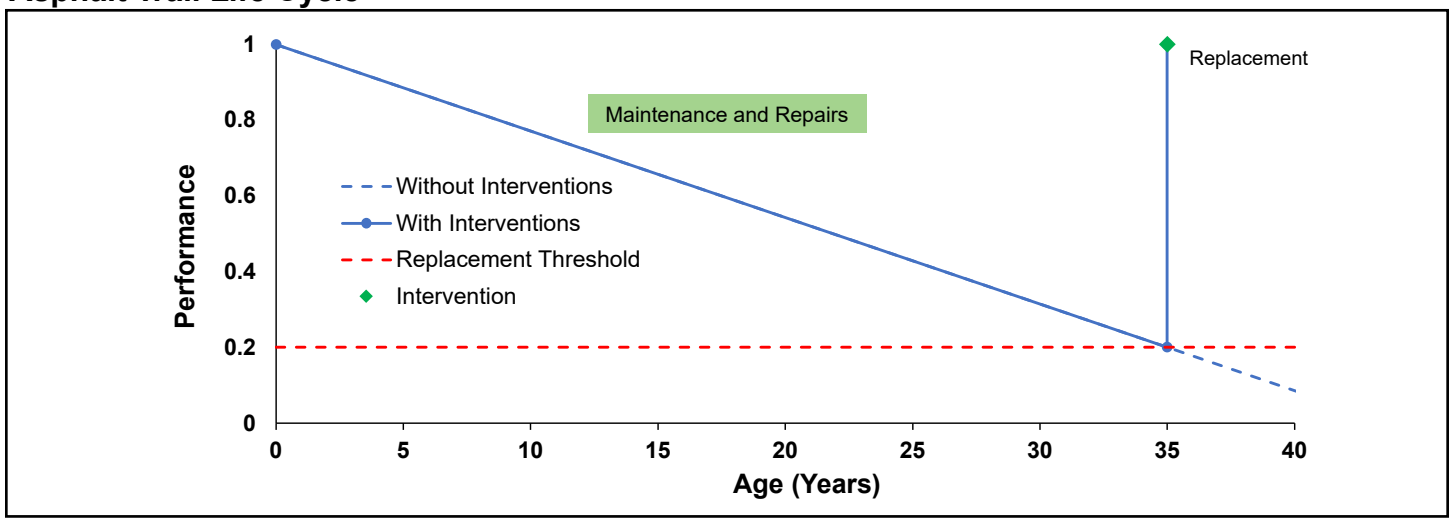
### Capital Treatments

#### Outdoor Crossings Life Cycle




The City's life cycle strategies for outdoor crossings are based on the findings and recommendations from biennial OSIM inspections and industry best practices. This approach is designed to support general life cycle interventions with the recommendations in the OSIM biennial inspections for more specific capital renewal. The City's model identifies minor (between 20-30 years of age) and major (between 50-60 years of age) rehabilitations with eventual replacements between 70-80 years. The timing of these depends on the structure type, material and shape.

#### Asphalt Trail Life Cycle




For trails outside the right of way (e.g. in parks or open spaces), the City's life cycle model forecasts they are typically replaced when their condition has deteriorated whereby they no longer provide a reliable platform and/or are at the end of their service life (depending on material type). The timing can vary as their replacement could be coordinated with nearby work where possible to minimize costs. These may also be replaced sooner if they are no longer functioning and/or have premature damage, or could be kept in service longer if in good condition.

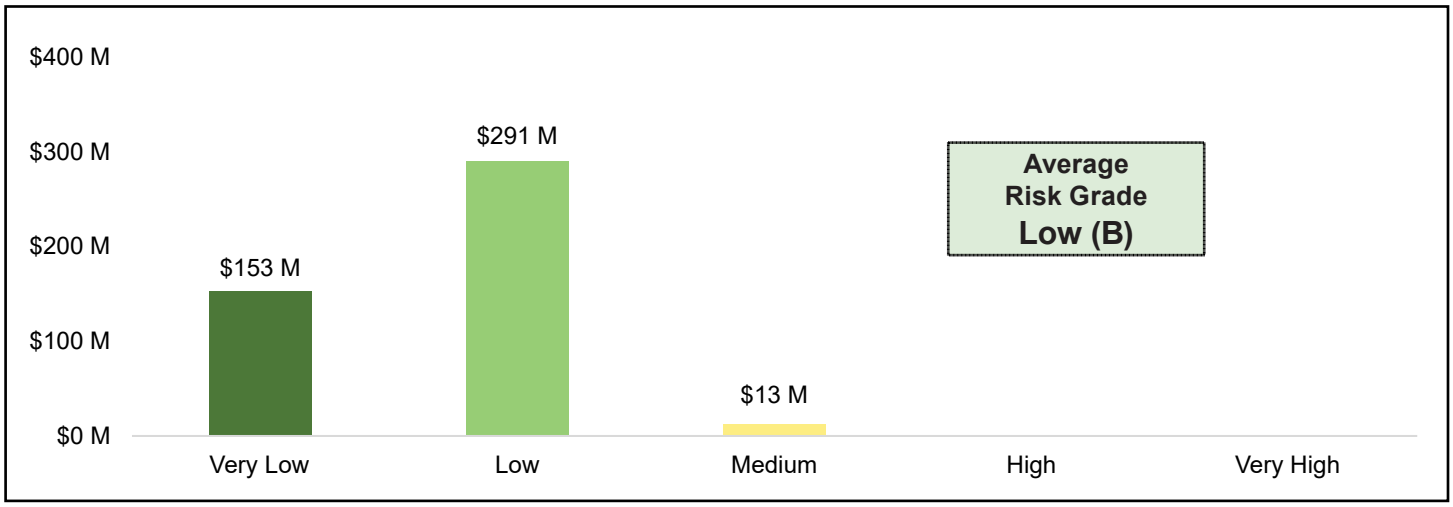
# Risk Prioritization

Average Risk Grade
**Low (B)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Bicycle Lanes/ Cycle Tracks<br>• Sidewalks<br>• Multi-Use Paths<br>• Trails<br>• Outdoor Crossings | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Traffic counts<br>• Road classification<br>• Land use<br>• Park classification<br>• Asset type/ function | • Environmental compliance<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- Advance active and sustainable transportation projects, e.g. Lake-to-Lake Cycling Route, Hwy 404 flyover, DDO Pedestrian/Cyclist Bridge and Recreation Trail project.
- Enhance pedestrian connections and walkability through the 2022 Sidewalk Program.
- Collaborated with all levels of government for the Yonge North Subway Extension project and with York Region on regionally led active transportation projects.
- Completed updates to the City's Standards and Specifications Manual to incorporate active transportation considerations at road cross-sections.
- Educational and outreach efforts through Smart Commute workplace program
- Monitored emerging sustainable transportation trends and technologies, and exploring an Electric Vehicle Strategy

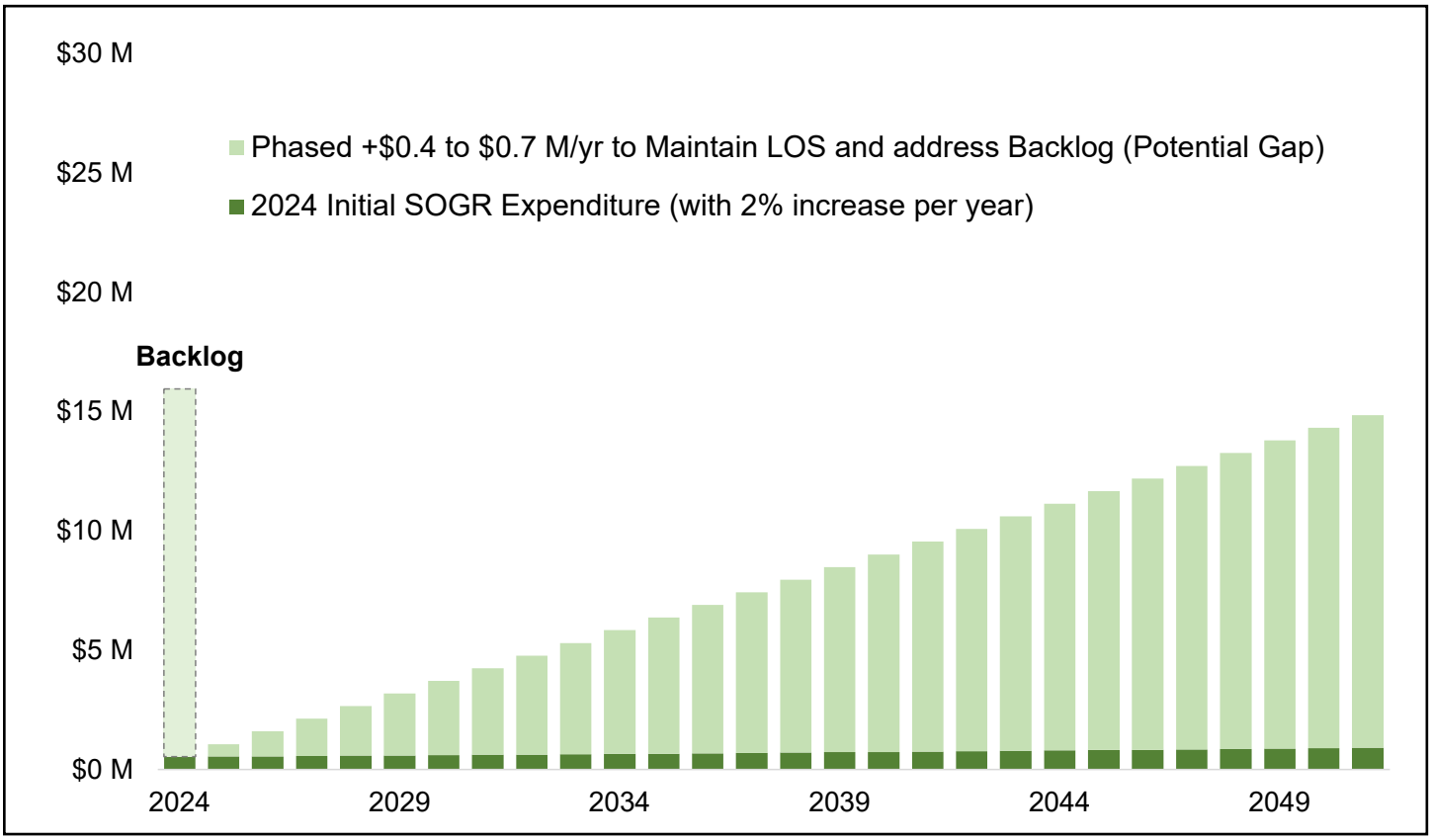
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$16.0 M** | **+$0.4 to $0.7 M/yr** | **$0 to $12.7 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Active Transportation ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Active Transportation | 16.0 | 0.5 | +0.4 to 0.7 | 2.3 to 3.7 | 0 to 3.1 | 7.9 to 13.5 | 0 to 12.7 |

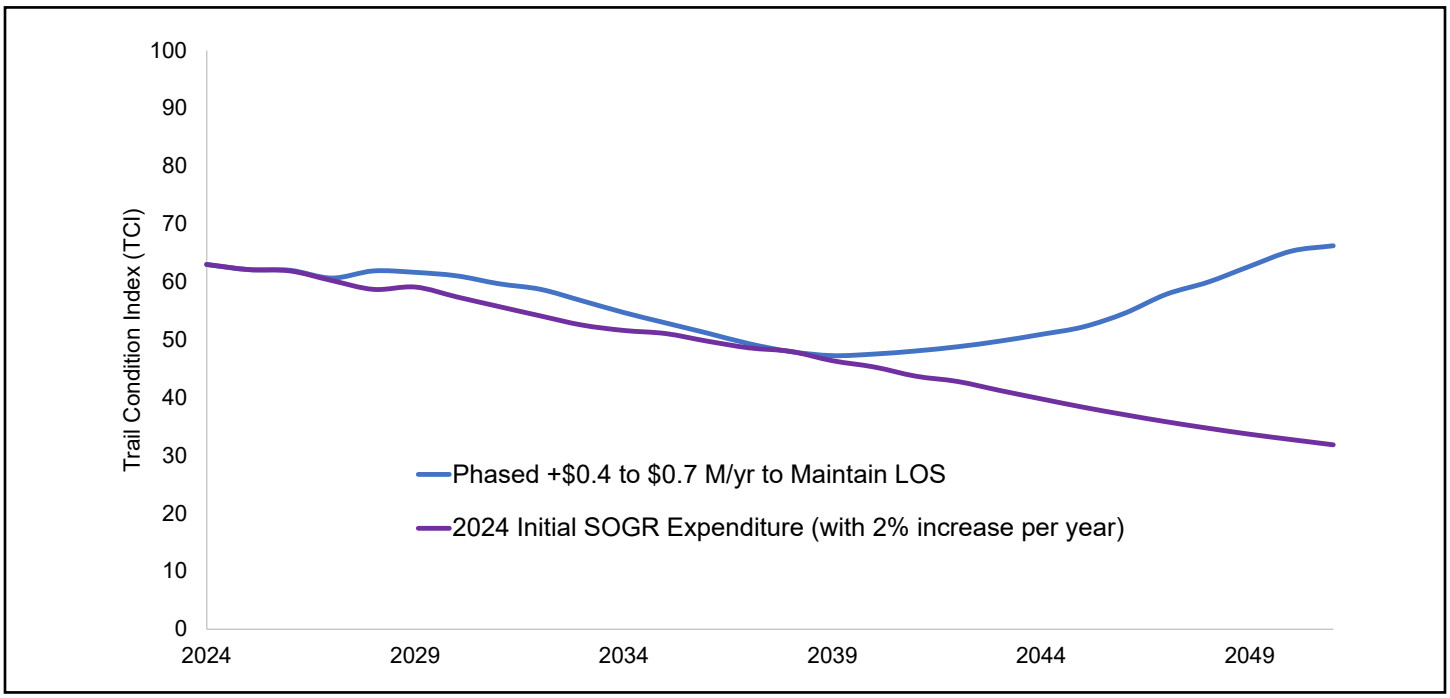



*State of good repair need for on-road cycling facilities (bike lanes) included in Roads

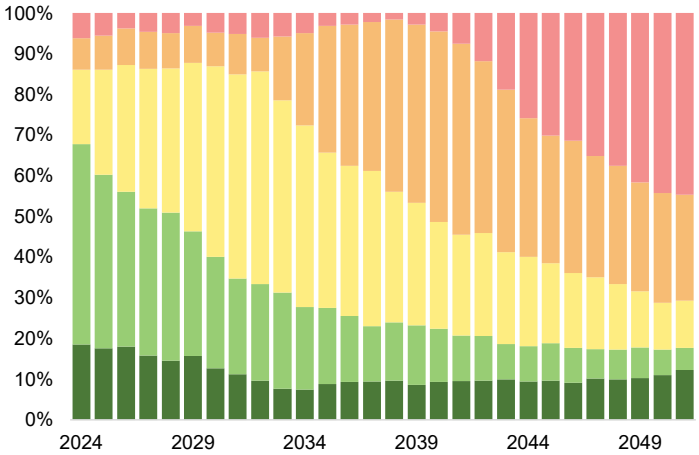
## Impact on Levels of Service

### Trails

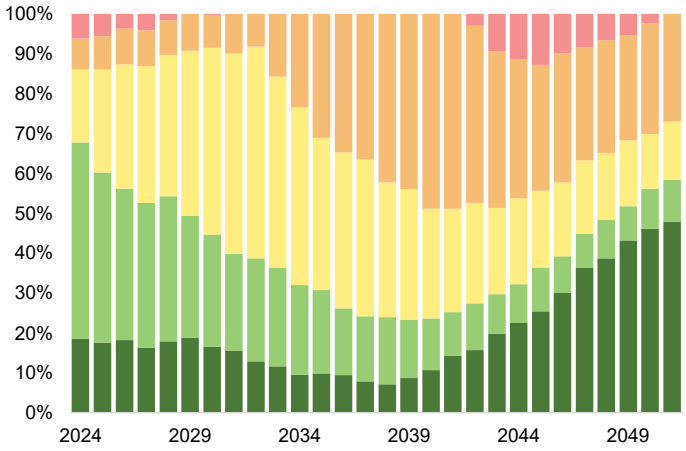
**Trail Condition Index (TCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



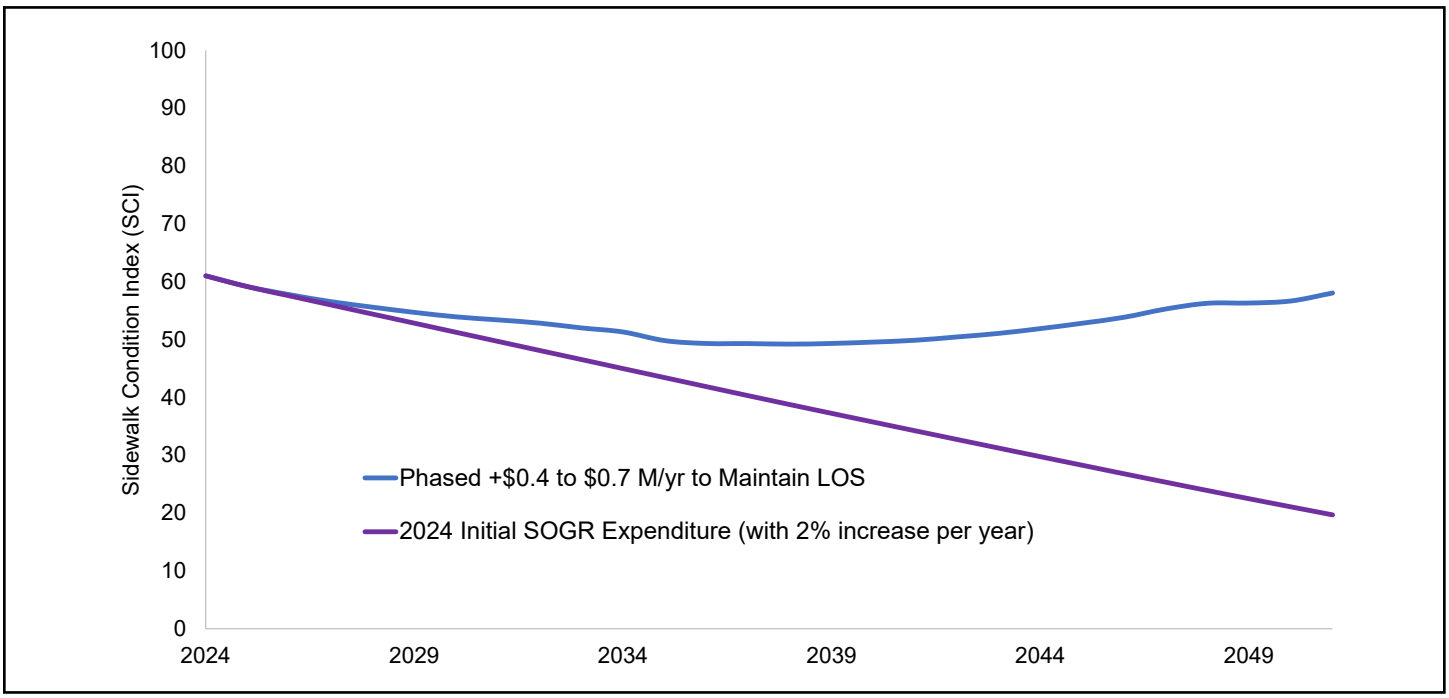

Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

# Asset Investment Strategy

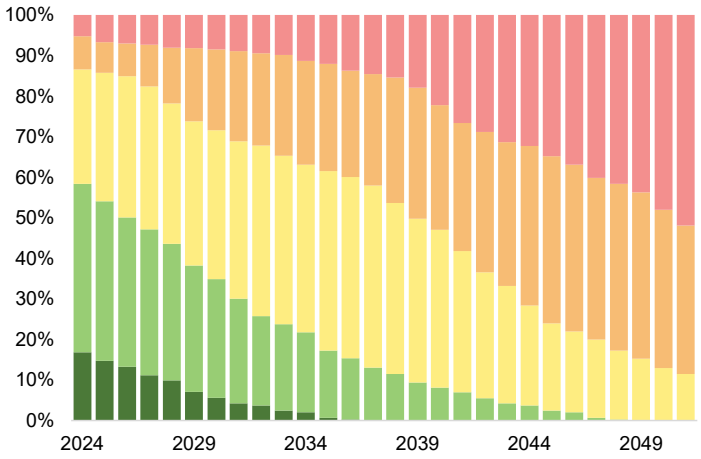
## Impact on Levels of Service

### Sidewalks

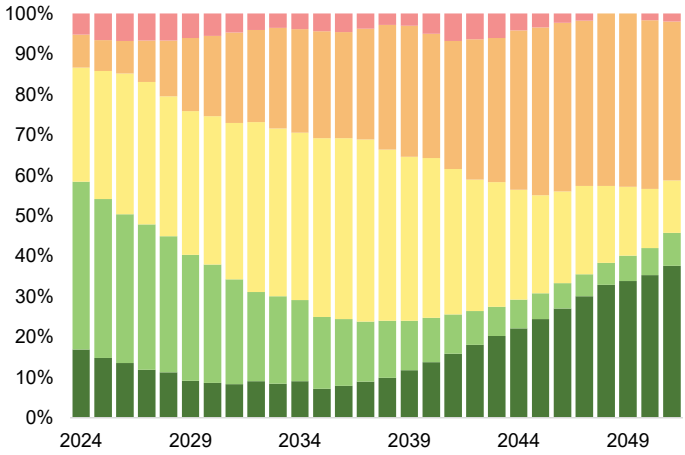
**Sidewalk Condition Index (SCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



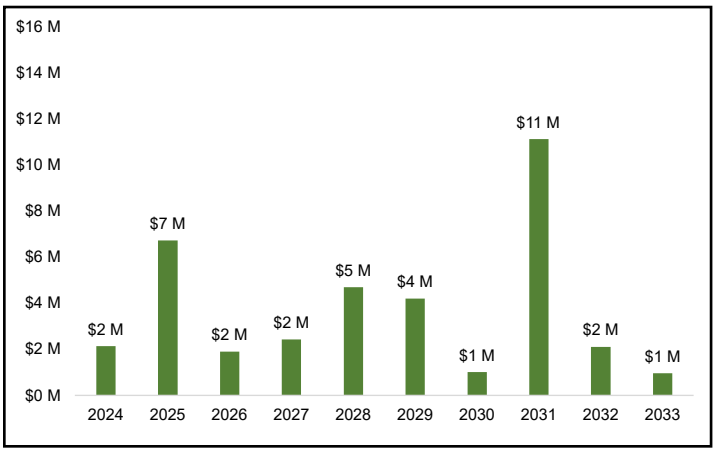

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Growth Capital and Operating Forecast

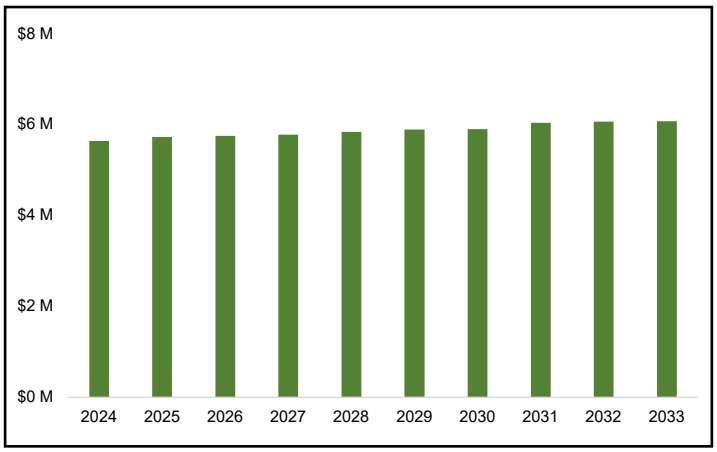
## Future Outlook

The City's Transportation Master Plan recommends an enhanced Active Transportation network to service the increasing travel demand from growth and achieve the desired vision for Richmond Hill. It includes new and expanded active transportation infrastructure to be phased in over time to 2051. In addition to expanding the City's Active Transportation network, this 2024 Asset Management Plan also identifies that renewals of the City's existing active transportation assets are required to maintain them in a good state of repair. These two plans will inform future enhancements and the state of good repair asset renewal investment needs for active transportation through the City's annual 10 Year Capital Budgets and Forecasts.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




The City's Active Transportation network is planned for strategic advancements through an array of projects included in the City's 10 Year Capital Budget that are driven by the Transportation Master Plan. The CN Rail Overpass (linear park to subway) project, with an investment of $8.7 million is expected to serve as a vital link in improving pedestrian and cyclist connectivity to a key destination. A Sidewalk Infill Program is planned at a cumulative investment of $6.5 million through to 2033 to enhance active transportation in the City. The Business Park Spine Route project, estimated at $1.3 million, reflects a strong commitment to the development of sustainable transit solutions within business communities. In addition, there are also a number of individual active transportation enhancements within and outside the right of way (i.e. trails).

The estimated operating and maintenance costs to support the existing as well as the planned growth-related expansion of the City's Active Transportation infrastructure shows steady and consistent growth from 2024 to 2033. On average, these estimated operating costs are forecast to range between $5 million and $6 million per year in today's dollars (excluding future inflationary pressures). The forecast does not include any estimated capital costs associated with future assets that are to be assumed as a part of the development process.

## Appendix C

# Water Distribution

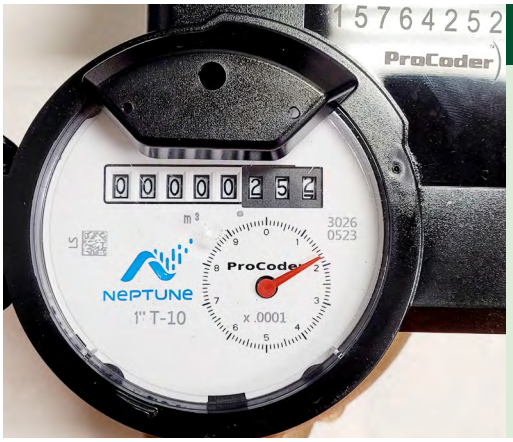
# Overview of Water Distribution

The City of Richmond Hill provides distribution of a safe and consistent supply of drinking water through its network of watermains. Other components include water meters, hydrants, valves, and fleet and equipment assets to support and maintain water infrastructure.

*Bathurst Street*

## Watermains

Richmond Hill's watermains are an extensive network of underground linear infrastructure that provides the efficient delivery of water throughout the City. This network includes approximately 667 kilometres of watermains that are predominantly PVC pipes (83%) followed by a small amount of metallic pipes (ductile iron and cast iron) and Concrete Pressure Pipes (CPP). The diameters of these pipes vary in size with the majority ranging from 100 to 750 millimeters, which allows for the versatile distribution of water to meet different demands across the City. There are over 12,000 valves, nearly 4,800 hydrants, approximately 48,000 service connections, and over 5,500 water chambers.




## Water Meters and Advanced Metering Infrastructure (AMI)

Advanced Metering Infrastructure is a state-of-the-art system that significantly enhances the accuracy of water usage measurement across the City. This system includes over 52,000 water meters that are installed in residential, commercial, industrial, and institutional properties to track precise readings of water consumption that enables both the City and the consumers to monitor usage effectively. Complementing these meters are 17 Advanced Metering Infrastructure (AMI) collectors that are strategically positioned throughout the City to facilitate the seamless transmission of data from the water meters to a central monitoring system.

## Fleet and Equipment

The Water Distribution Services fleet and equipment are essential for ensuring the effective and efficient operation and maintenance of the water infrastructure in the City. The fleet and equipment are housed at the City's Operations Centre, where the inspection, maintenance and repair functions are operated. The fleet is comprised of a variety of specialized vehicles, including SUVs, trucks, and vans among others that each support specific servicing needs. The equipment includes, for example, hydrant pumps, sewage flushers, generators, etc. This diverse and well-managed inventory of fleet and equipment underscores Richmond Hill's preparedness for various tasks ranging from routine maintenance to emergency response.

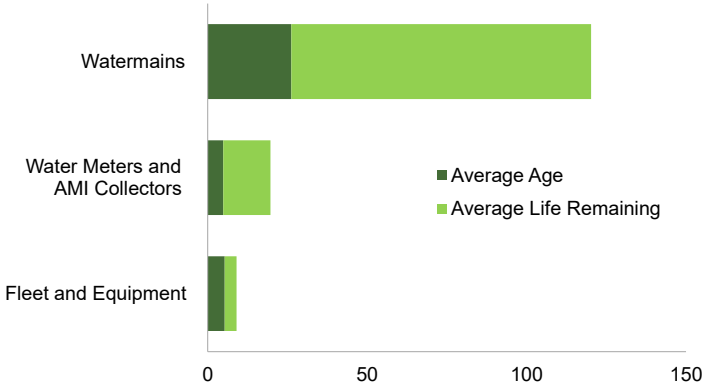
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$2,567 M** | **A (Very Good)** | **26 / 119 (years)** |

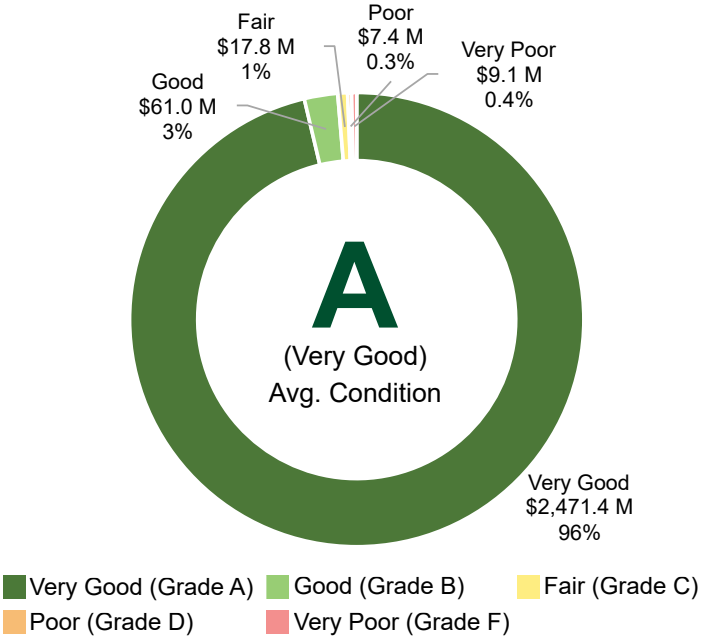
## Asset Portfolio

| Asset | Quantity | Replacement Value |
|---|---|---|
| Watermains | 667 km | $2,543.7 M |
| Valves | 12,315 ea. | |
| Hydrants | 4,799 ea. | |
| Service Connections | 47,943 ea. | |
| Chambers | 5,571 ea. | |
| Water Meters/AMI Collectors | 52,507 ea. | $19.6 M |
| Fleet and Equipment | A mix | $3.4 M |

## Average Age and Service Life




## Overall Condition




- The condition of watermains is based on their number of breaks and age relative to remaining service life, which is a function of their material type.
- For the ancillary assets (e.g. hydrants, valves, connections, chambers), their condition is tied to the condition of the associated watermain.
- For water meters and Advanced Metering Infrastructure (AMI) collectors, their condition is based on age and remaining life.
- The condition of fleet and equipment is based on utilization (km) and age relative to remaining service life.

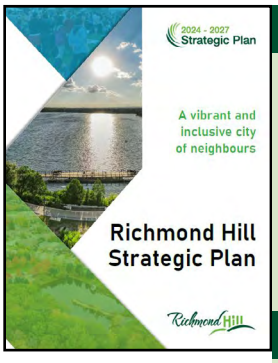
| Condition Category | Letter Grade | Watermains: Number of Breaks, Material and Age | Water Meters and AMI Collectors: Life Remaining | Fleet and Equipment: Utilization and Life Remaining |
|---|---|---|---|---|
| **Very Good** | **A** | >0.76 to 1.0 | >75% to 100% | >0.8 to 1.0 |
| **Good** | **B** | >0.52 to 0.76 | >50% to 75% | >0.6 to 0.8 |
| **Fair** | **C** | >0.4 to 0.52 | >25% to 50% | >0.4 to 0.6 |
| **Poor** | **D** | >0.16 to 0.4 | >0% to 25% | >0.2 to 0.4 |
| **Very Poor** | **F** | 0 to 0.16 | <0% | 0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** Richmond Hill's Water Supply System provides a safe and consistent supply of drinking water to the community through rigorous and proactive water quality monitoring, planning and preventative measures.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change mitigation and adaptation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

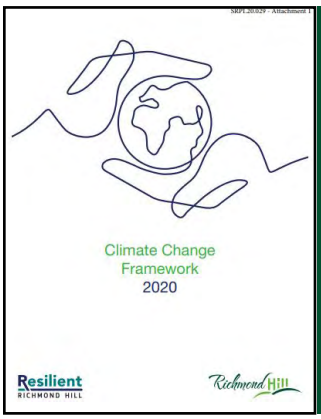
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.

#### Pillar 3: Strengthening our Foundations

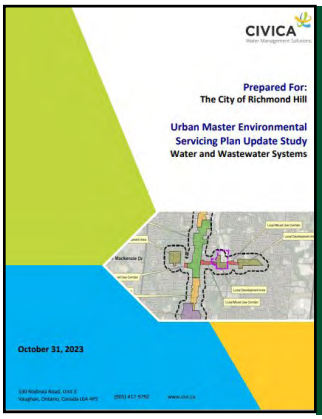
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Asset Management**
- **Formalize Community Risk Mitigation**
- **Foster Engagement and Innovation**

### Urban Master Environmental Servicing Plan and Water Computer Model




- **Evaluate water system capacity**
- **Identify infrastructure improvements**
- **Service existing conditions and future growth**
- **Implementation Plan**

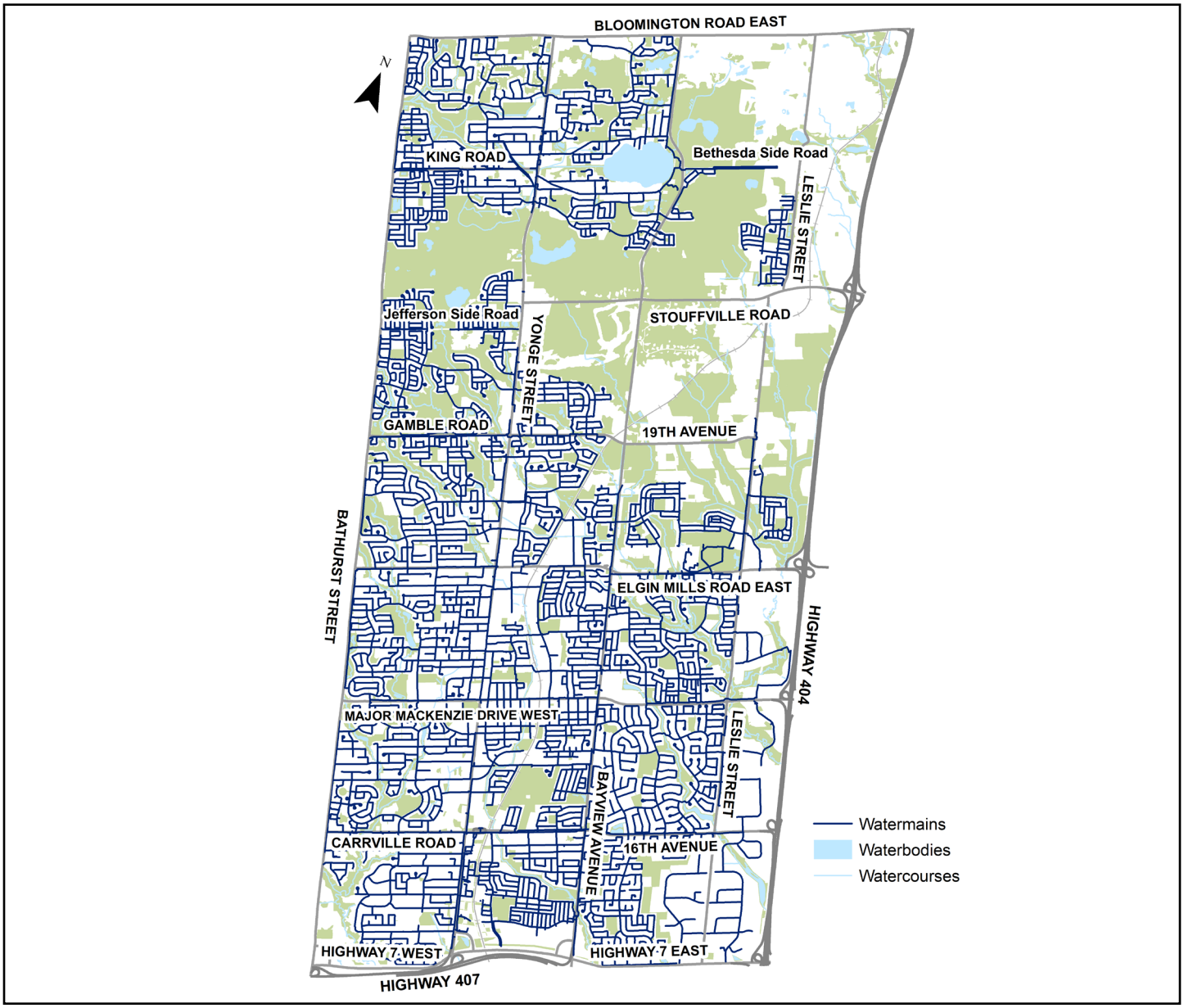
# Levels of Service

## Community Levels of Service

### Regulatory (Scope): Connection to the municipal water system

The City of Richmond Hill provides distribution of a safe and consistent supply of drinking water through its linear network of watermains. York Region treats, stores and distributes water through its vertical water supply plants to Richmond Hill and the other local municipalities. The City purchases it from York Region and then distributes it to Richmond Hill residential, commercial, industrial and institutional users through its 667 km long network of watermains. As detailed in the Technical Levels of Service section, approximately 93% of the City's properties are connected to the Water Distribution system. The properties not connected are open spaces, vacant lands, farmland, conservation land, and parks. The City meets the legislated stringent Provincial requirements for management practices and water quality through testing and its Drinking Water Quality Management System.

### City of Richmond Hill Water Distribution Network



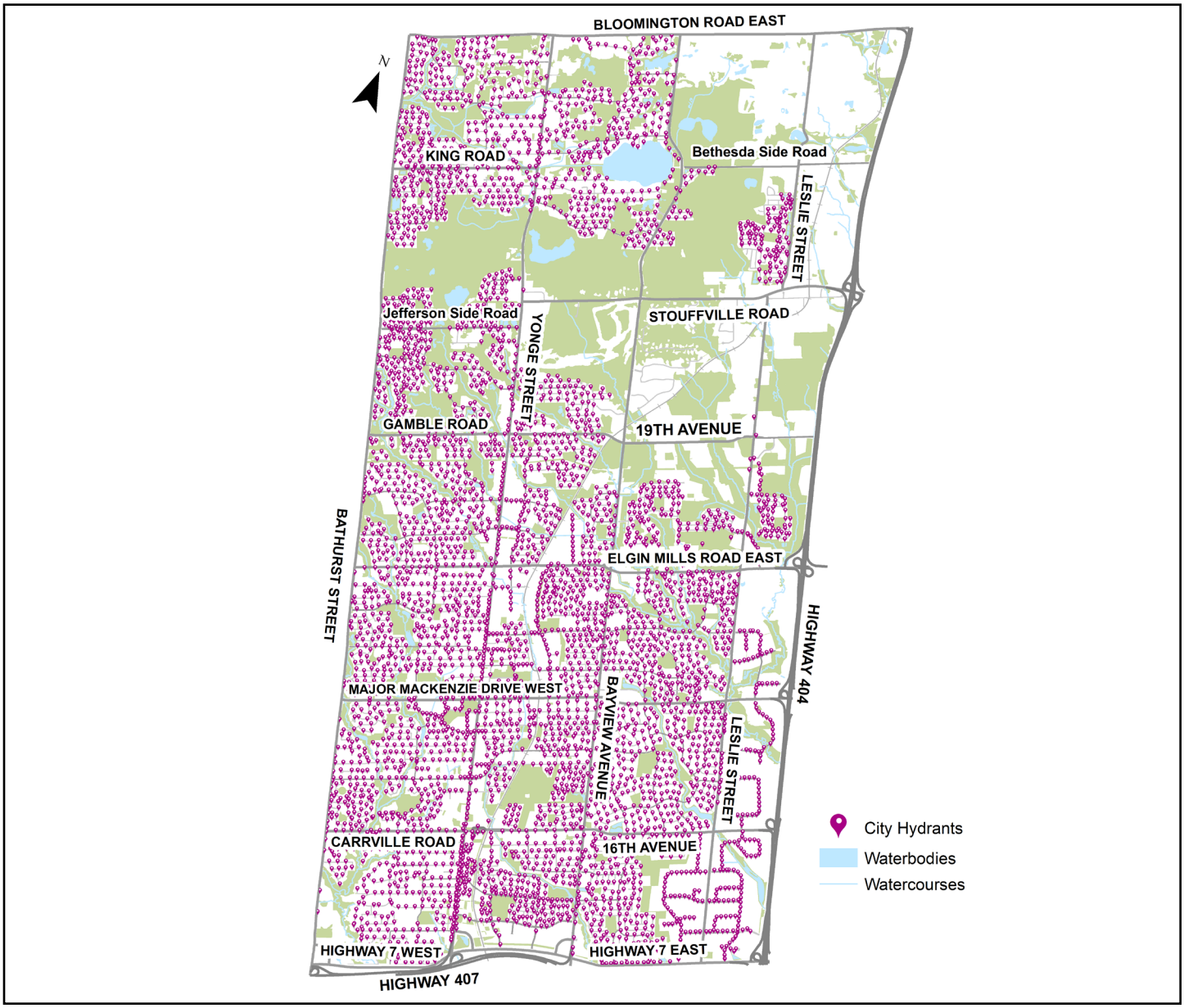
# Levels of Service

## Community Levels of Service

### Regulatory (Scope): Municipality Fire Flow

The City's fire hydrants are key components of the Water Distribution system for providing fire protection services to the community. At the City, there are approximately 4,800 hydrants that are generally spaced at 75 metres in non-residential areas and 150 metres in residential areas. As detailed in the Technical Levels of Service section, approximately 93% of the City's properties are connected to the Water Distribution system and have fire flow. The 7% of properties not connected and without available fire flow are open spaces, vacant lands, conservation land, and parks.

### City of Richmond Hill Fire Flow

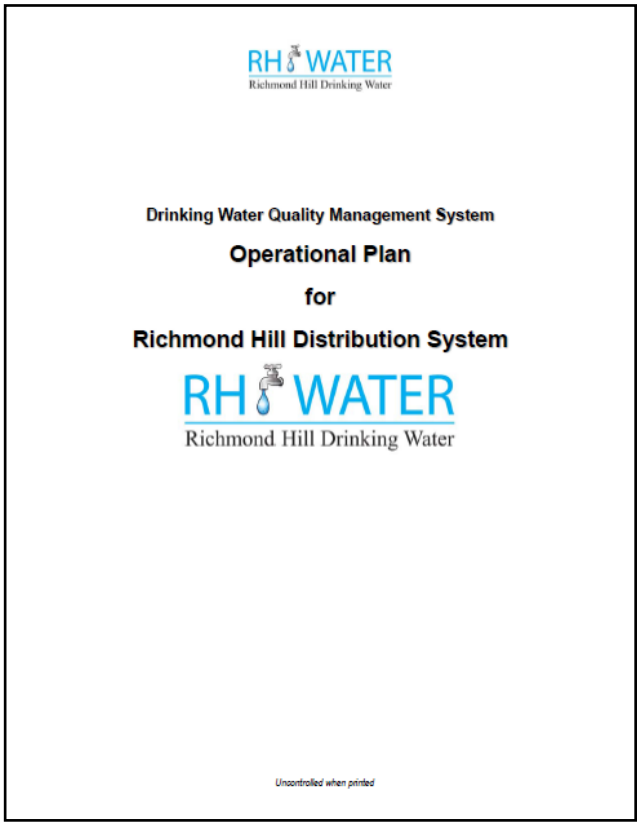


# Levels of Service

## Community Levels of Service

### Regulatory (Reliability): Boil Water Advisories and Service Disruptions

A Drinking Water Quality Management System and Operational Plan are in place in Richmond Hill to ensure that water quality and safety standards are regularly met and that the City provides the community with safe drinking water. York Region also implements a rigorous water quality sampling program to ensure water is safe to drink, and works to identify and correct any situation that poses a threat to the community's drinking water. A Boil Water Advisory or Drinking Water Advisory can be issued if a serious enough contamination is found. However, through the City's regular water testing and annual regulatory reporting of its drinking water system, there were no boil water or drinking water advisories issued. Service disruptions are typically caused by watermain breaks and they are tracked by the City in terms of duration and number of customers affected. Watermain breaks are repaired to minimize service disruptions to the community. Both of these are summarized in the Technical Levels of Service section.


RH WATER
Richmond Hill Drinking Water

Drinking Water Quality Management System

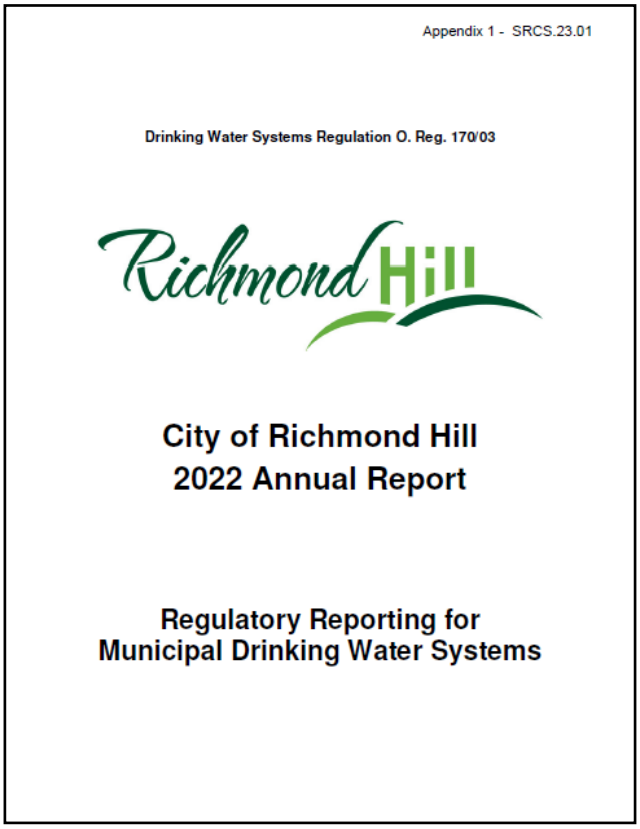
Operational Plan

for

Richmond Hill Distribution System

RH WATER
Richmond Hill Drinking Water

Uncontrolled when printed


Appendix 1 - SRCS.23.01

Drinking Water Systems Regulation O. Reg. 170/03

Richmond Hill

City of Richmond Hill
2022 Annual Report

Regulatory Reporting for
Municipal Drinking Water Systems

# Levels of Service

## Technical Levels of Service

| Regulatory (Scope) | |
|---|---|
| **93%** | Percentage of properties connected to the municipal water system |
| **93%** | Percentage of properties where fire flow is available |

| Regulatory (Reliability) | |
|---|---|
| **0** | 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 |
| **0.00084** | Number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system |

| Advanced (Quality) | |
|---|---|
| **98 (VERY GOOD)** | Average Watermain Condition Index (WCI) |

| Advanced (Reliability) | |
|---|---|
| **98%** | Percentage of assets in fair or better condition |
| **7.2** | Annual number of watermain breaks per 100 km |
| **48** | Annual number of watermain breaks |

## Community Levels of Service

### Advanced (Quality): Watermain Condition Assessment

The City maintains a detailed database and maintenance management system (i.e. Maximo) of watermain breaks. Breaks are logged with work order data every time new breaks occur and a repair is performed. The City records important data related to each break, such as duration and number of customers affected, pipe material and repair performed. Once a given pipe segment has experienced an established number of breaks, it is considered for capital intervention.

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

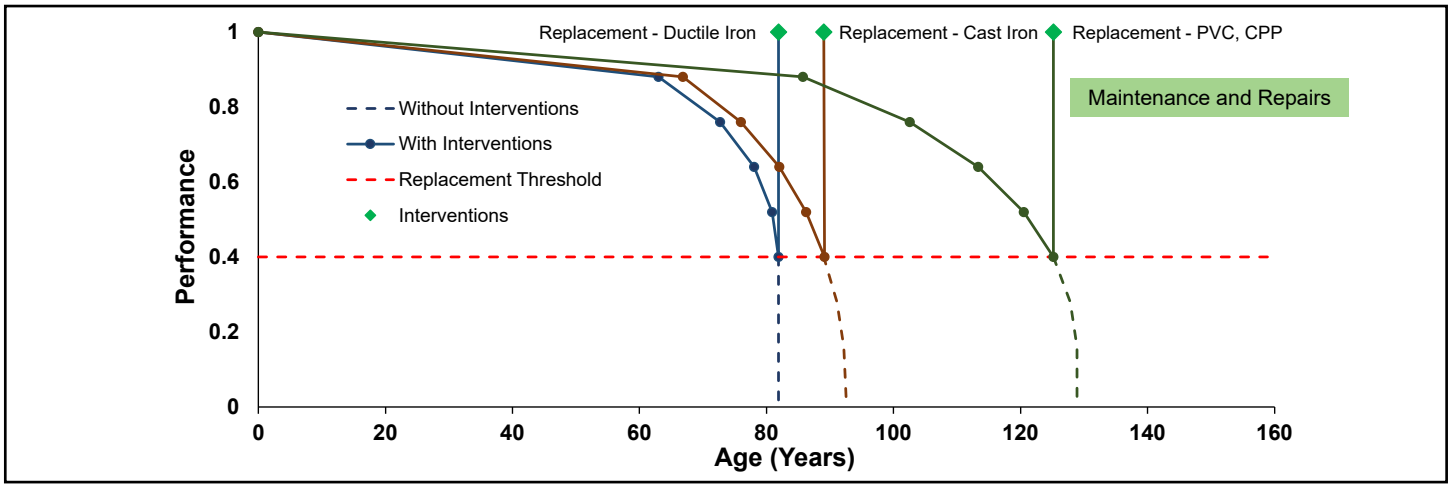
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City encourages the conservation of water and energy through policies, procedures and public outreach (e.g. promoting leak detection education)<br>• The City's Drinking Water Quality Management System Operational Plan.<br>• Continuous improvements in utilizing IT systems for tracking and maintenance (e.g. Maximo)<br>• The City's approved Design and Construction Guidelines.<br>• Regular water sampling, testing and monitoring conducted. |
| **Maintenance** | • The City completes ongoing scheduled maintenance, repair and emergency activities of watermains and the associated ancillary assets. These are tracked through Maximo.<br>• The City performs testing, maintenance and repairs of water meters and AMI collector units to ensure proper functioning and accuracy.<br>• Fleet and equipment are inspected and maintained per recommended standards. |
| **Rehabilitation** | • The City currently plans for replacement of watermain assets, instead of relining.<br>• Water meters and AMI collector units are not rehabilitated but instead replaced when they have reached the end of their service life and/or are not functioning. Sometimes the remote reader on the top of the water meter may be replaced.<br>• Fleet and equipment assets are generally not rehabilitated but are more likely to be replaced at end of their service life and/or based on their condition. |
| **Replacement** | • Watermain assets are typically identified for replacement based on their condition and break history. Watermains are typically replaced when they are bundled with the associated road reconstructions and/or sewer replacements to minimize service disruptions and costs.<br>• Water meters and AMI Collector units are replaced when they have reached the end of their service life and/or are not functioning.<br>• Fleet and equipment assets are replaced when they have reached the end of their service life and/or their condition is poor or very poor, or they are no longer functioning as required. |
| **Disposal** | • Watermains are either removed during renewal construction or are disconnected and abandoned in place depending on the construction circumstances. Abandoned mains are capped and/or grouted to protect other infrastructure.<br>• Fleet and equipment are generally disposed when the new replacement arrives.<br>• Water meters and AMI collector units are generally disposed by the vendor when replaced. |
| **Growth / Service Improvement** | • The City's approved Urban Master Environmental Servicing Plan (UMESP) sets guidelines for water infrastructure needed to support the City's growth areas, including intensification. This sets the initial conditions, but as development conditions change, the City's Water Computer Model will be used to set the guidelines, upgrades and/or expansions required for future growth.<br>• The City completed a Water Computer Model that identifies areas in the Water Distribution system where there are pressure demands and any potential issues due to growth and usage.<br>• The City's Development Charges Background Study provides recommendations to upgrade and/or expand the Water Distribution System.<br>• New and/or larger assets are also identified through technical analysis as part of servicing plans completed to service new developments and growth.<br>• Assets are identified for replacement to meet current standards and/or implement operational improvements, e.g. installation of technologies and equipment that improves water efficiency. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

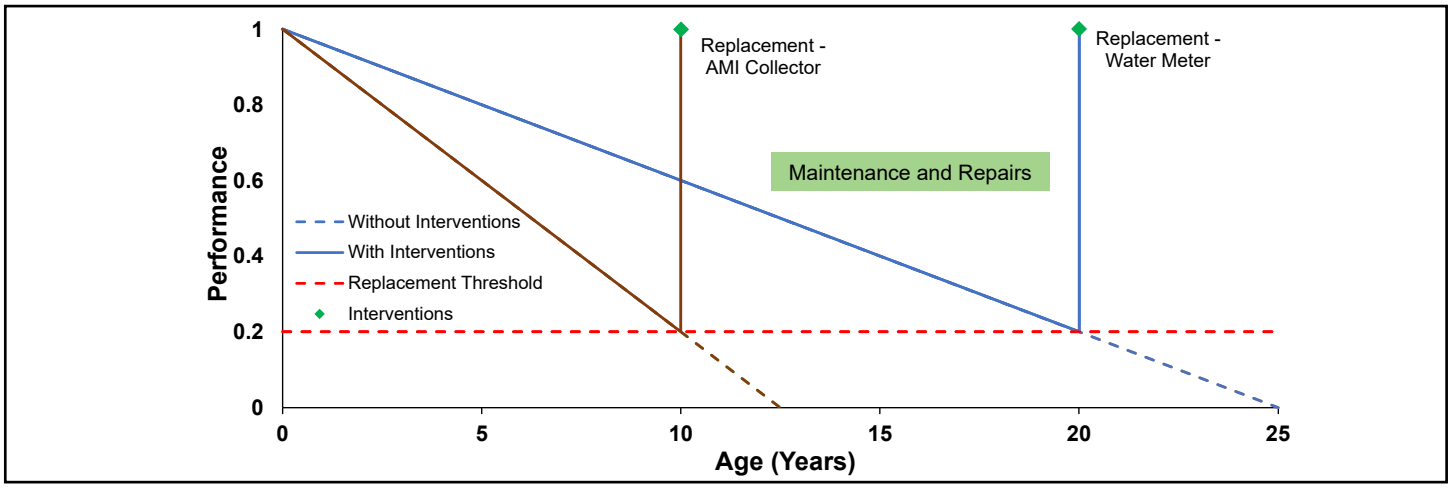
### Capital Treatments

#### Watermains Life Cycle




Generally, metallic pipes have an 80 to 90 year service life while PVC and concrete pipes have an approximate 120-year service life. The City's life cycle model utilizes the number of breaks and material type (i.e. service life) to forecast deterioration of watermains over time and when replacement should be identified. To reduce service disruption and minimize costs, watermains are generally replaced at the same time as road reconstructions through the bundling of linear assets into capital projects. This may alter the timing of when watermains are replaced. Per the City's design standards, metallic pipes are replaced with either PVC or concrete (CPP). Appurtenances such as valves, chambers, and connections are typically replaced at the same time as the watermain.

#### Water Meters and AMI Collectors Life Cycle




The City's life cycle strategies for water meters and AMI collectors includes replacing them at the end of their service life or when their condition has reached poor or very poor. Generally, water meters are forecasted to have a 20-year service life while AMI collector units have a 10-year service life. Water meters and AMI collector units receive testing and ongoing maintenance and repairs as necessary to ensure these assets reach the end of their service life. Typically, multiple water meters and/or AMI collector units would be bundled into capital projects to realize economies of scale and minimize cost.

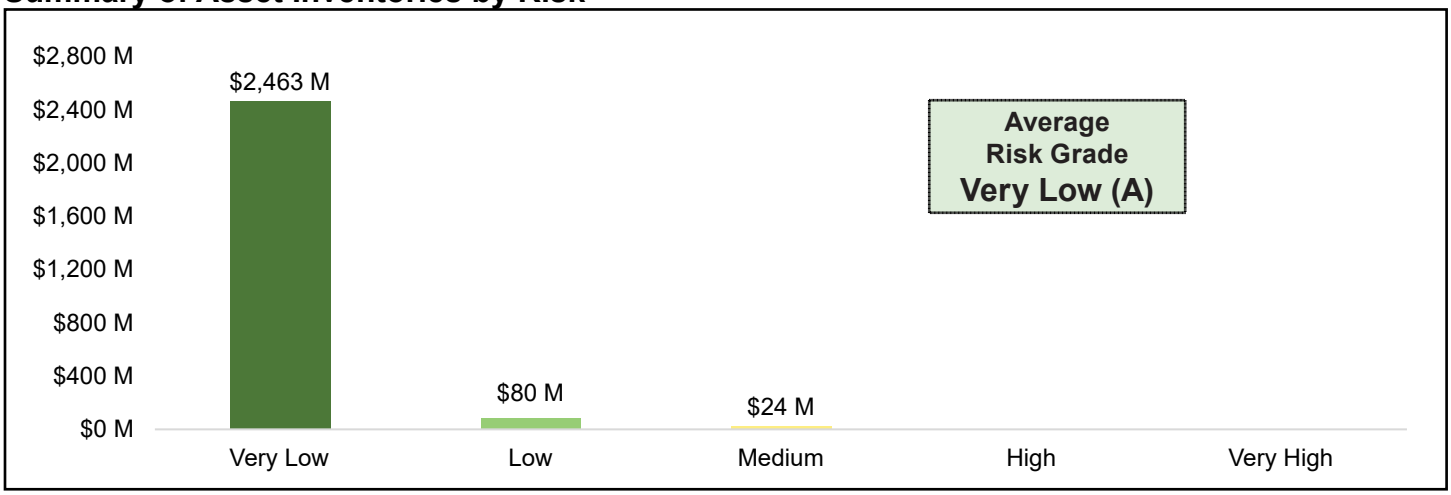
# Risk Prioritization

Average Risk Grade
**Very Low (A)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Watermains<br>• Valves<br>• Hydrants<br>• Chambers<br>• Service Connections<br>• Water Meters/AMI Collectors<br>• Fleet/Equipment | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Traffic counts<br>• Road classification<br>• Land use<br>• Asset size, type, function and material | • Environmental compliance and asset type<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- Installation of equipment that improves water efficiency, e.g. completed replacement of pool filtration system at Bayview Hill Community Centre leading to reduced water consumption and operational costs.
- Partnered with York Region to include an educational insert alongside water bills, promoting early leak detection to save residents water and money
- Completed the development of a City-wide Water Computer Model.
- Successfully completed the Bathurst Street and Major Mackenzie watermain replacement projects using trenchless horizontal directional drilling to minimize environmental impacts.
- The City encouraged local businesses to improve energy and water efficiency by promoting participation in the ClimateWise Business Network's Energy and Water Benchmarking Reporting program.

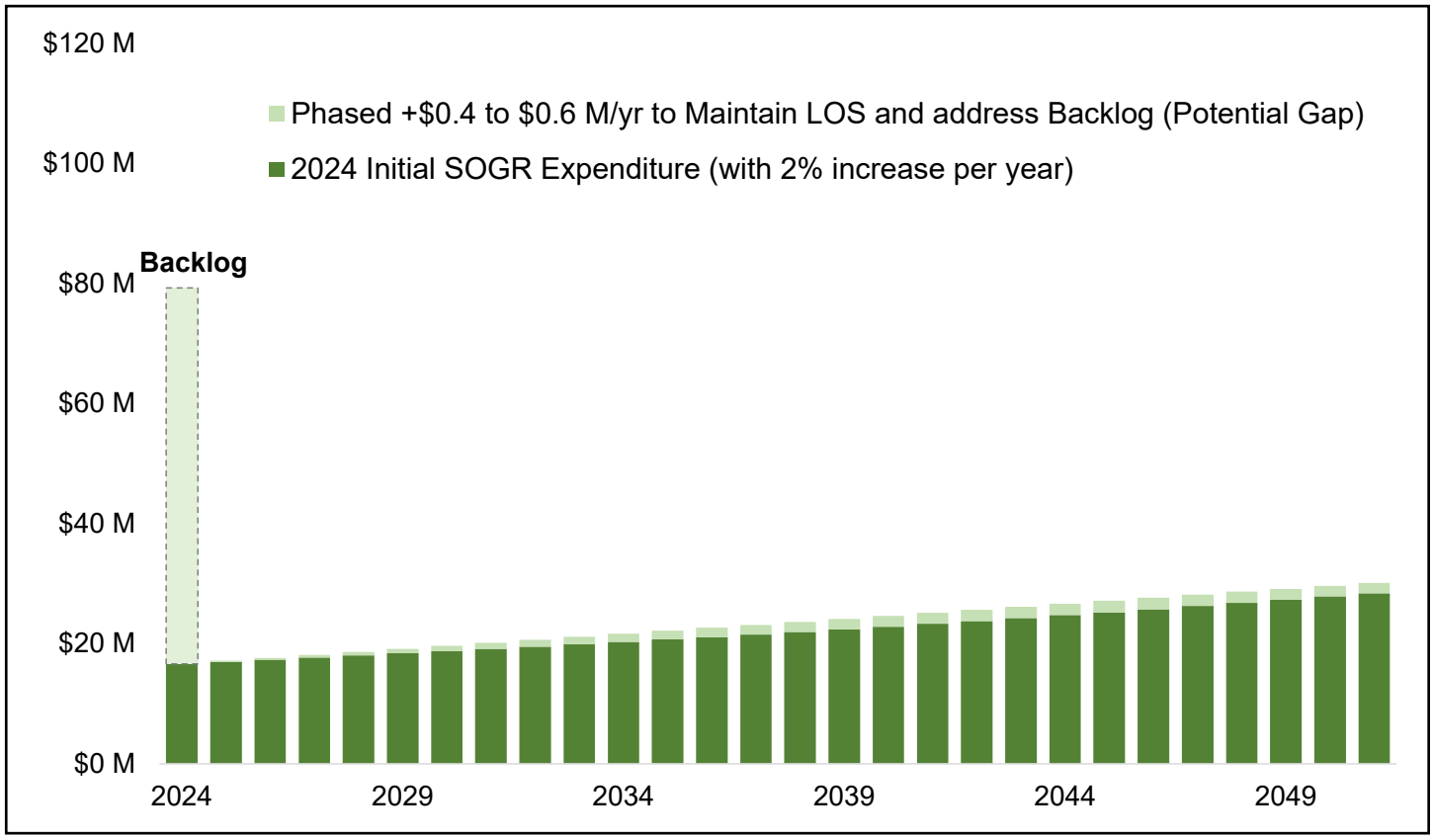
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$79.3 M** | **+$0.4 to $0.6 M/yr** | **$0 to $3.6 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Water Distribution and Wastewater Collection ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Water | 79.3 | 16.7 | +0.4 to 0.6 | 18.5 to 19.4 | 0 to 1.1 | 24.1 to 27.8 | 0 to 3.6 |
| Wastewater | | | | | | | |

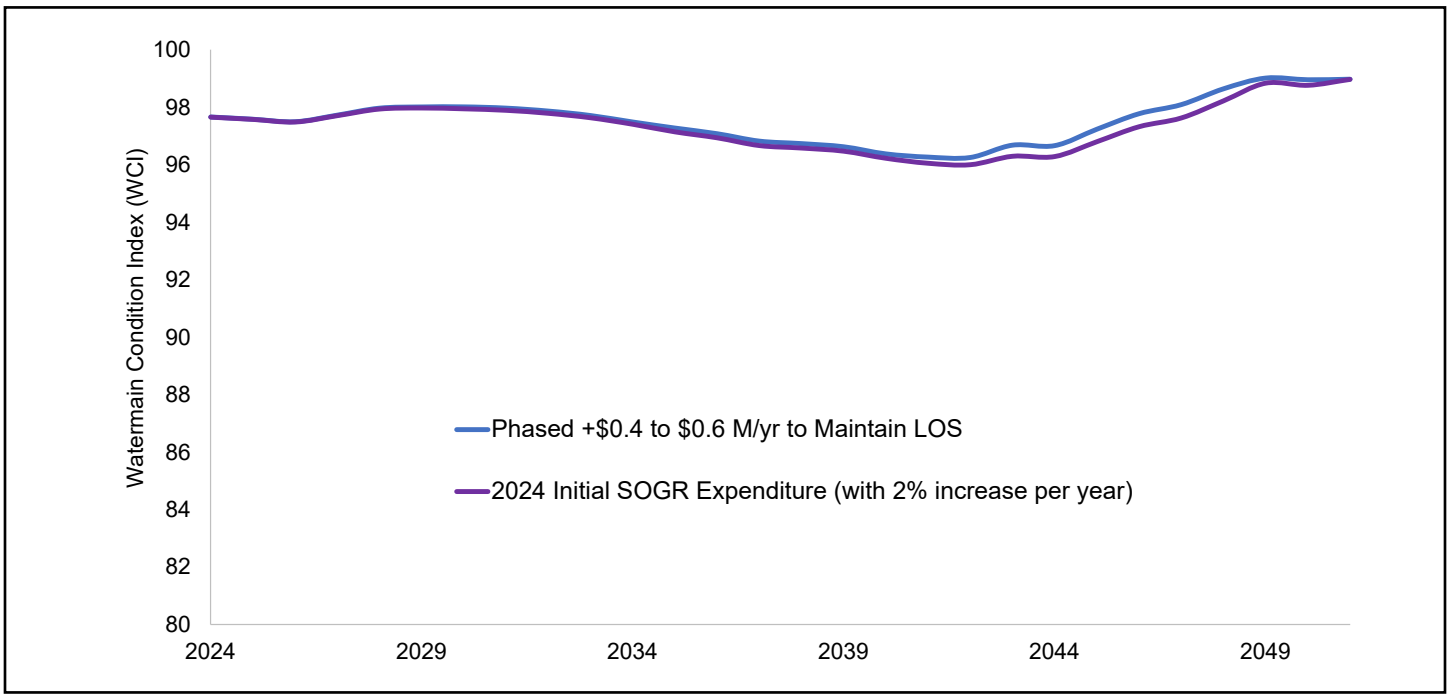


# Asset Investment Strategy

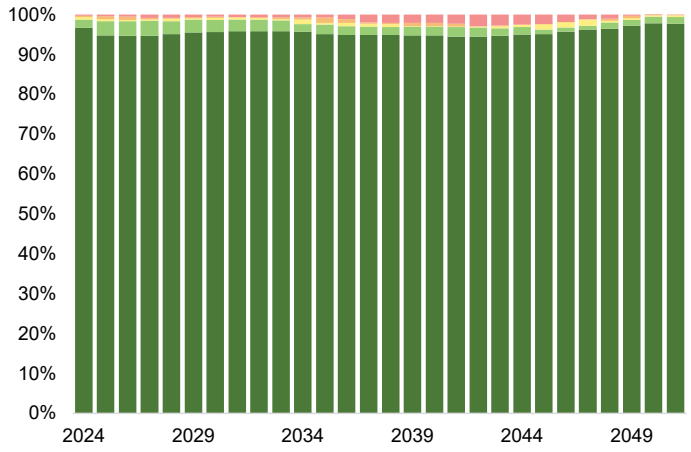
## Impact on Levels of Service

### Watermains

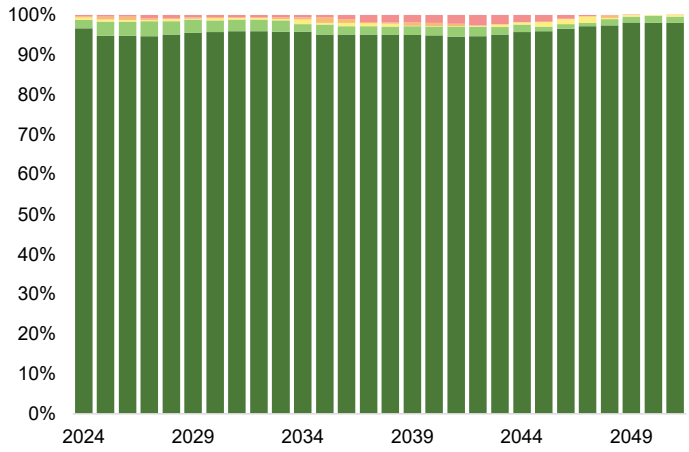
**Watermain Condition Index (WCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



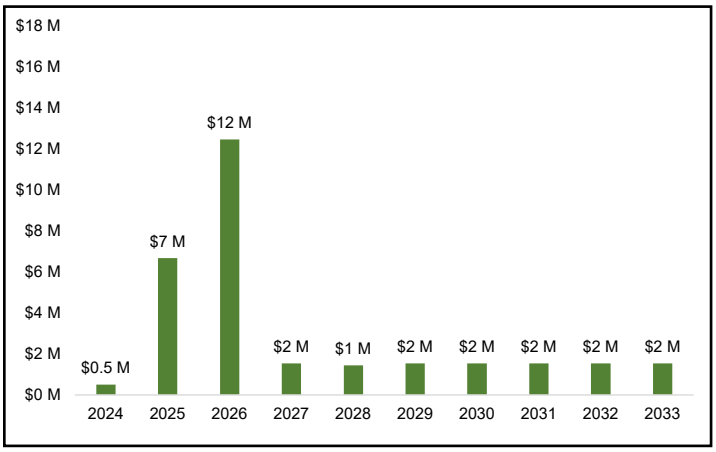

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Growth Capital and Operating Forecast

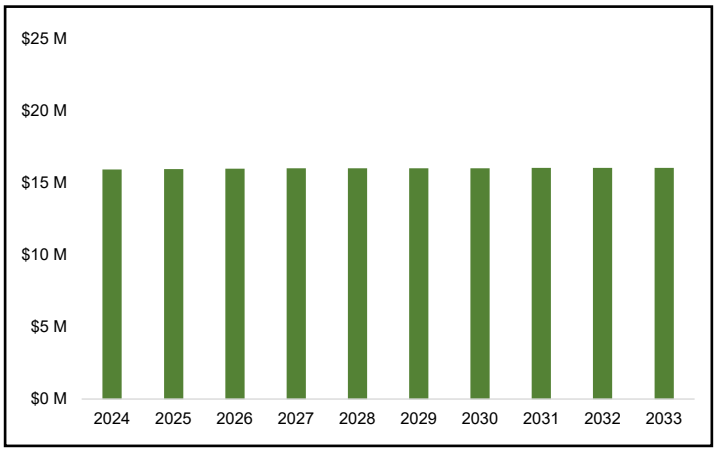
## Future Outlook

The City's approved Urban Master Environmental Servicing Plan (UMESP) sets guidelines for water infrastructure that is needed to support development in the City's growth areas, including intensification to the year 2051. The UMESP recommends a number of water improvement projects that will help ensure Richmond Hill can continue to accommodate growth. The City also completed a City-wide Water Computer Model that identifies areas in the Water Distribution system where there are pressure and/or flow demands and any potential issues under different demand situations. It recommends additional water improvements needed to manage the flow demands of the community. These major studies, along with the renewal needs for existing infrastructure identified through this 2024 Asset Management Plan, will inform future infrastructure investments through the City's 10 Year Capital Budget and Forecast.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




Richmond Hill's linear Water Distribution system is planned to be expanded based on the Urban Master Environmental Servicing Plan and the City's Water Computer Model results. The City's 10 Year Capital Budget includes a series of growth-related water infrastructure projects. Among the most significant is various City-wide water improvements at different locations over 2024 to 2033 at a total investment of $8.4 million. Collaborations with York Region on projects such as the Bathurst Street Reconstruction, Bayview Avenue Reconstruction, Elgin Mills Road West Reconstruction, and Yonge Street Watermain represents a combined investment of $14.7 million. All these water infrastructure improvements will contribute significantly to the overall enhancement of the Water Distribution system and providing a high-quality water supply to service the growing community. Additionally, the installation of new water meters at a budget of $4.9 million over the same period, is integral to expanding water metering infrastructure.

Richmond Hill's Water and Wastewater services are estimated to see operating and maintenance costs steadily increase from 2024 to 2033 for existing assets as well as new growth assets if they are constructed as identified in the City's 10 Year Capital Budget and Forecast. The forecasted operating budget cost projections could range around $16 million per year on average in today's dollars (excluding future inflationary pressures) over the next 10 years. The forecast does not include any estimated capital costs associated with future assets that are to be assumed as a part of the development process.

## Appendix D

# Wastewater Collection

# Overview of Wastewater Collection

The City of Richmond Hill is responsible for providing reliable and efficient collection of wastewater through a network of sewers and sewage pump stations. Other ancillary assets like maintenance holes and service connections support the system.

## Sanitary Sewers

Richmond Hill's Wastewater Collection system includes a complex network of underground sanitary sewers that efficiently transport wastewater from residential, commercial, and industrial areas to York Region's vertical treatment facilities. The City's underground network of these wastewater linear pipes spans approximately 613 kilometres and are predominantly PVC pipes (74%) followed by concrete (15%), with a small number of metallic pipes (ductile iron), concrete pressure pipes (CPP) and high-density polyethylene (HDPE). The diameters of these pipes vary in size ranging from 150 to 1,350 millimeters and are each selected based on their ability to cater different wastewater flow rates and volume demands across Richmond Hill. Integral to this network are the over 9,600 maintenance holes. Additionally, there are also over 47,500 service connections.

*Invar Pumping Station*

## Pumping Stations

Pumping stations manage the flow of wastewater and are comprised of three key elements being the facility building components, the forcemains directly attached underneath and the pumping station equipment within the building. The City owns and manages six pumping station facilities: Bayview South, Humber Flats, Invar, Joyce's Point, Mission Hill and Sunset Beach. Complementing these pumping station facilities are the forcemains, with a combined length of 4,400 metres supporting the transportation of wastewater under pressure from the pumping stations to the subsequent stages of the treatment process. The pumping station equipment includes pumps, valves, generators, heaters, safety grates, and other components.

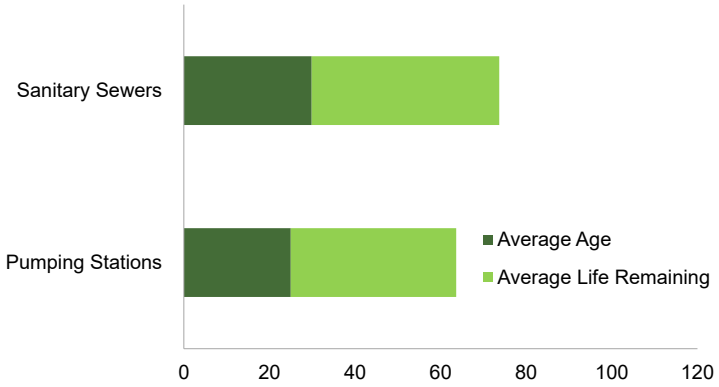
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$2,755 M** | **A (Very Good)** | **30 / 74 (years)** |

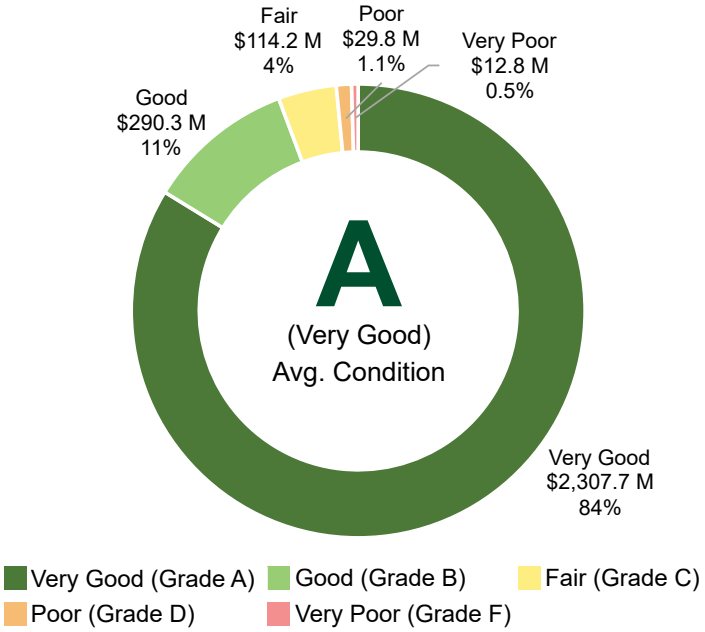
## Asset Portfolio

| Asset | Quantity | Replacement Value |
|---|---|---|
| Sanitary Sewers | 613 km | $2,730.4 M |
| Maintenance Holes | 9,605 ea. | |
| Service Connections | 47,542 ea. | |
| Pumping Stations | 6 ea. | $24.4 M |

## Average Age and Service Life




## Overall Condition




- The condition of sanitary sewers is based on observed structural defects from CCTV inspections. This is converted into a PACP score and condition rating. The City maintains a five-year inspection cycle and to date, approximately 71% has received a CCTV inspection and a PACP condition score. The condition for the remaining 29% of the network is based on age and remaining life.
- The condition for the ancillary assets (maintenance holes, service connections, etc.) is tied to the condition of the sanitary sewer.
- For pumping station buildings, their condition is based on Building Condition Assessments (BCA) completed in 2023. The BCA results are converted into a Corporate Asset Management condition rating. The City completes BCA for all City-owned facilities over a three-year cycle.
- For the pumping station equipment, their condition is based on age and remaining service life.

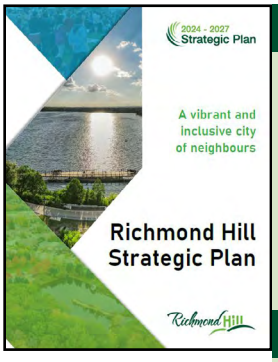
| Condition Category | Letter Grade | Sanitary Sewers: PACP Score | Pumping Station Facilities: Building Condition Assessments | Pumping Station Equipment: Life Remaining |
|---|---|---|---|---|
| **Very Good** | **A** | 0 or 1 | >0.8 to 1.0 | >75% to 100% |
| **Good** | **B** | 2 | >0.6 to 0.8 | >50% to 75% |
| **Fair** | **C** | 3 | >0.4 to 0.6 | >25% to 50% |
| **Poor** | **D** | 4 | >0.2 to 0.4 | >0% to 25% |
| **Very Poor** | **F** | 5 | >0 to 0.2 | <0% |

# Levels of Service

**Strategic Level of Service:** The City of Richmond Hill provides a reliable and efficient Wastewater Collection system that reduces environmental and health risks.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change mitigation and adaptation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

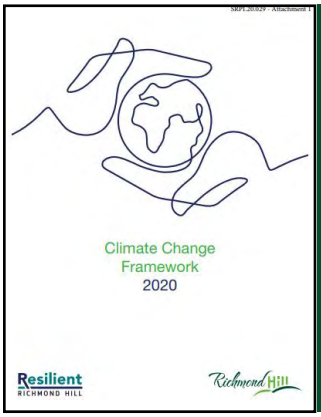
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.

#### Pillar 3: Strengthening our Foundations

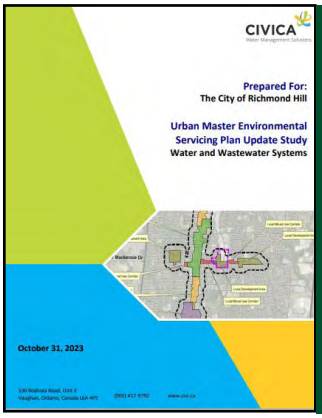
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Asset Management**
- **Formalize Community Risk Mitigation**
- **Foster Engagement and Innovation**

### Urban Master Environmental Servicing Plan and Wastewater Computer Model




- **Evaluate wastewater capacity**
- **Identify infrastructure improvements**
- **Service existing conditions and future growth**
- **Implementation plan**

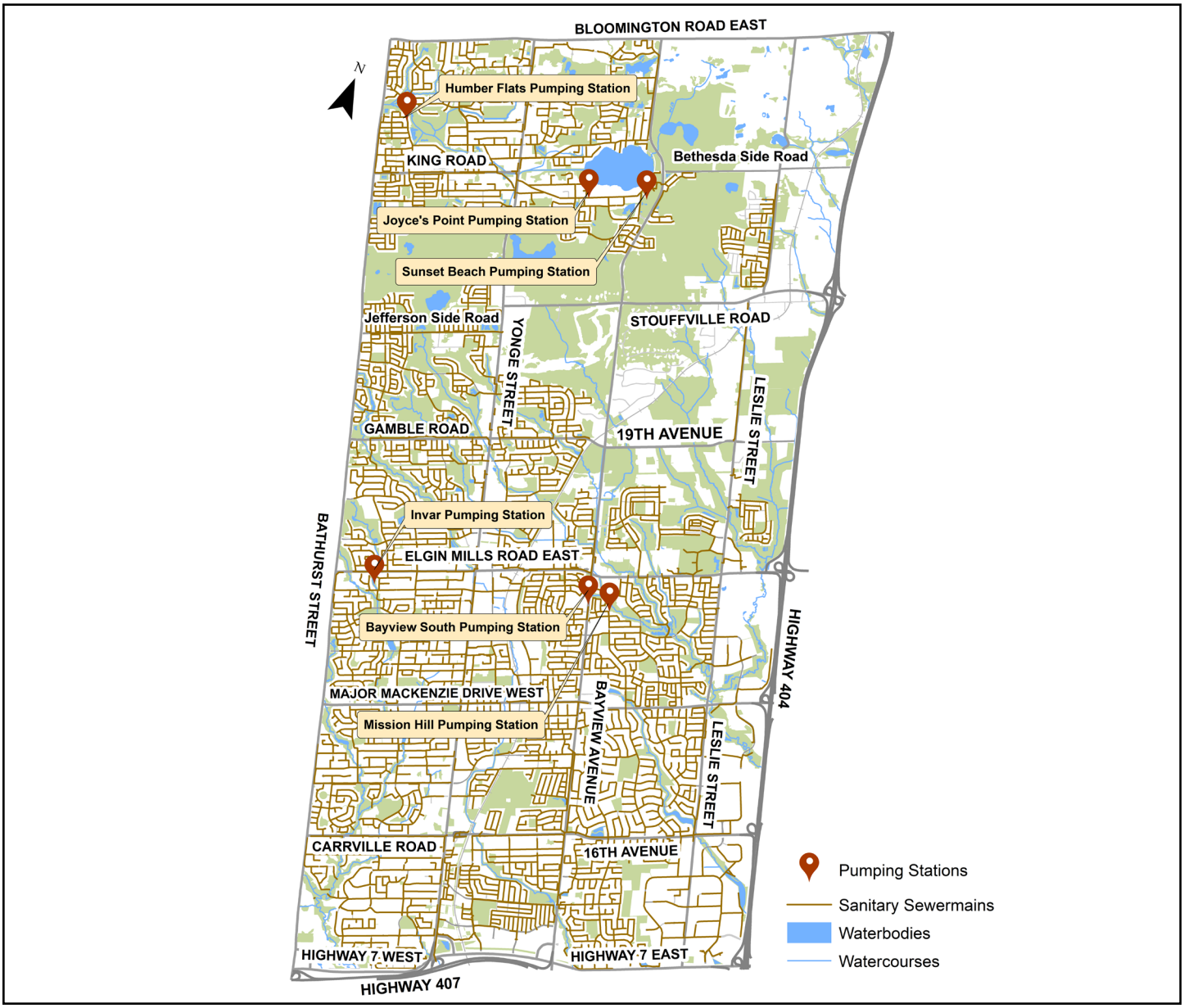
# Levels of Service

## Community Levels of Service

### Regulatory (Scope): Municipal Wastewater Collection System

The City of Richmond Hill provides reliable and efficient collection of wastewater from properties through a network of linear sewer mains and six vertical sewerage pumping stations that are owned and managed by the City. As detailed in the technical levels of service, approximately 93% of the City's properties are connected to the Wastewater Collection system. The properties not connected are open spaces, vacant lands, farmland, conservation land, and parks. These sewage flows from the City's network stream into larger wastewater trunk pipes, owned and operated by York Region, and ultimately to a vertical wastewater treatment plant jointly owned and operated by York Region and Durham Region. The City does not own combined sewers.

### City of Richmond Hill Wastewater Collection System



## Community Levels of Service

### Regulatory (Reliability): Potential Inflow and Infiltration

Inflow and Infiltration is defined as seepage of water and groundwater into the sanitary sewer system. This seepage can consume current sewer capacity needed for existing functioning of the system along with capacity to accommodate future growth. It also increases treatment costs and reduces treatment efficiency. It could also lead to sewage overflows damaging the environment and sensitive ecosystems, cause basement flooding and ultimately increase the overall costs of wastewater infrastructure. During a rainfall event, the infiltration can be caused when the shallow groundwater level exceeds the elevation of the collection system pipes. At this point, the groundwater can enter the collection system through various points of entry. The inflow and infiltration of rainwater entering the sewer system can typically come from faulty roof drains, compromised foundation drains, uncapped cleanouts, leaky maintenance hole covers, defective connections, cracks in the sanitary sewer pipes and punctures induced by nearby vegetation (root intrusion). The volume of rainfall that converts into groundwater relies on various factors, including the moisture levels on the surface, soil type, ground slope, and the intensity and duration of the rainfall occurrence. Given these impacts, York Region and the local municipalities including the City of Richmond Hill have a robust approach in place to minimize I&I.

### Regulatory (Reliability): Wastewater Design Resilience to Overflow

An updated 2021 Inflow and Infiltration (I&I) Reduction Strategy was developed by York Region with input from local municipalities including the City of Richmond Hill. This 2021 updated approach strengthens and prolongs the Region's and City of Richmond Hill's dedication to reducing I&I issues, continuing to meet regulatory obligations, and supporting sustainable growth over the next five to ten years. As one of the local municipalities in York Region, the City of Richmond Hill's contribution and role includes:

- Consideration of the Region's I&I Reduction Design, Construction, Inspection and Testing Standard for Sewers Servicing New Developments in conjunction with the City's standards and specifications;
- Reduction of I&I in the City's local sanitary system and ensuring alignment with plans and initiatives;
- Conducting flow monitoring, camera inspections and rehabilitation studies of City-owned wastewater assets to identify and address sources of I&I;
- Maintaining the City's wastewater system in a good state of repair to minimize I&I;
- Communication and outreach to residents to address private sources of I&I;
- Participating in I&I reduction meetings and workshops liaised through the Region; and
- Ensuring that funding and resources are available to meet local reduction targets and program needs (e.g. the City's Backwater Valve Subsidy Program).

Also, the updated strategy developed a methodology and framework that recommended I&I reduction targets through utilizing sanitary sewer flow and rainfall monitoring data obtained from various locations across the Region. These set targets assist local municipalities in effectively determining the requirements for future I&I reduction programs. It also provides a solid justification for new projects and initiatives. Moreover, these targets allow each of the local municipalities the freedom to devise and implement successful programs that best align with the specific needs of their respective systems.

# Levels of Service

## Technical Levels of Service

| Regulatory (Scope) | |
|---|---|
| **93%** | Percentage of properties connected to the municipal wastewater system |

| Regulatory (Reliability) | |
|---|---|
| **0.00163** | The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system |
| **0.00012** | The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system |

| Advanced (Quality) | |
|---|---|
| **92 (VERY GOOD)** | Average Sanitary Sewer Condition Index (SSCI) |

| Advanced (Reliability) | |
|---|---|
| **0.01794** | Number of mainline blockages resulting in backup per km |
| **71%** | Percentage of sewers inspected |
| **98%** | Percentage of sanitary sewers in fair or better condition |
| **92%** | Percentage of pumping stations in fair or better condition |

**The City does not own combined sewers.*

## Community Levels of Service

### Advanced (Quality): Sanitary Sewer Condition

The condition of sanitary sewers is based on its Pipeline Assessment Certification Program (PACP) scores. This score is obtained from Closed Circuit Television (CCTV) inspections and calculated based on structural defects observed in the sewers. The PACP score ranges from 0 to 5. The City maintains a 5-year inspection cycle for all sewers and to date, approximately 71% of the sewer network has received a CCTV inspection.

**Examples of Sanitary Sewer Condition Categories**

| | |
|---|---|
| **Very Good (PACP Score = 0 or 1)** |  |
| **Good (PACP Score = 2)** |  |
| **Fair (PACP Score = 3)** |  |
| **Poor (PACP Score = 4)** |  |
| **Very Poor (PACP Score = 5)** |  |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

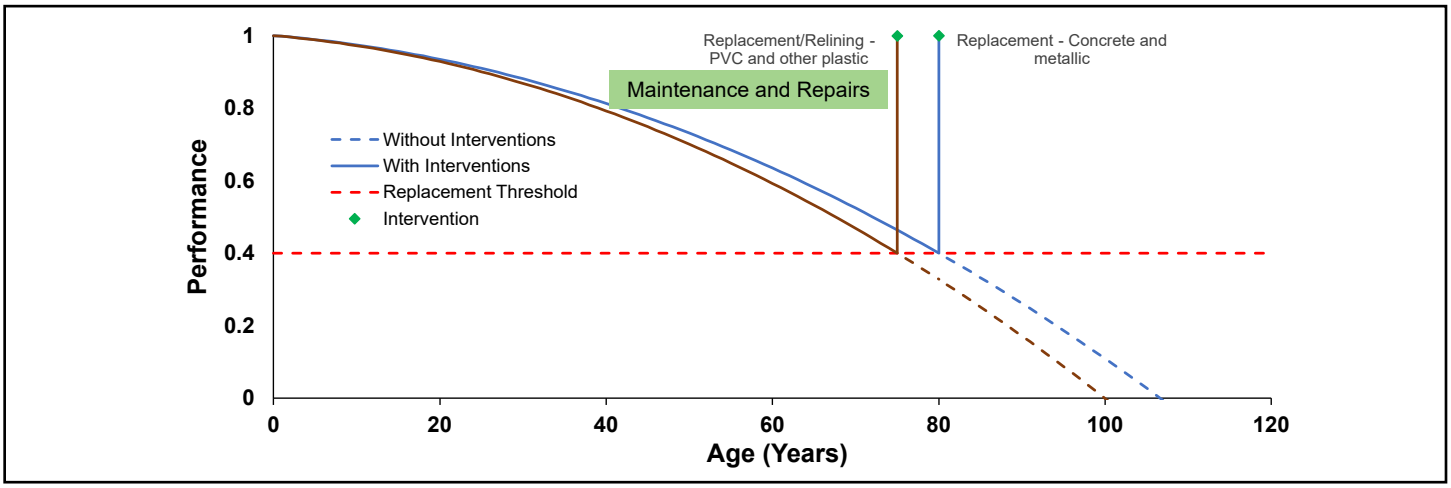
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City performs studies and has policies such as Inflow and Infiltration Reduction.<br>• The City continues with SCADA to monitor the efficiency and capacity of pumping stations.<br>• Education programs for residents on the Sewer Use By-law and discouraging the disposal of certain items down the drain can prevent backups and extend the life of the City's sewers.<br>• The City's approved Design and Construction Guidelines. |
| **Maintenance** | • The City completes ongoing scheduled maintenance, repair and emergency activities of sewers and the associated ancillary assets.<br>• Flushing and CCTV inspections of sewers are completed proactively across the entire system on a 5-year cycle with some targeted areas being inspected more frequently as required.<br>• The City performs testing, maintenance and repairs of pumping station equipment. |
| **Rehabilitation** | • Proposed sanitary sewer candidates for renewal may be relined, if deemed feasible.<br>• Pumping station equipment and building structures may be rehabilitated based on their condition through Building Condition Assessments, and VFA software program and EAM recommendations. |
| **Replacement** | • Sanitary sewer candidates in Poor or Very Poor condition identified through CCTV inspections and PACP scores would be replaced as part of the bundling of associated linear water and/or road reconstruction capital projects.<br>• Pumping Station equipment is typically replaced when its condition is in Poor or Very Poor, has reached the end of its service life or is not functioning as intended.<br>• The replacement of the various building components of the City's pumping stations are determined through the BCAs, EAM and VFA software program, and completed as required. |
| **Disposal** | • Sewers are either removed during renewal or are disconnected and abandoned in place depending on the construction circumstances. Abandoned sewers are capped and/or grouted.<br>• Pumping station equipment is generally disposed when the new replacement arrives. |
| **Growth / Service Improvement** | • New and/or larger wastewater assets are identified through technical analysis as part of servicing plans to service new developments and growth.<br>• The City's approved Urban Master Environmental Servicing Plan (UMESP) sets guidelines for wastewater infrastructure that is needed to support development in the City's growth areas. This sets the initial conditions, but as development conditions change the City's Wastewater Computer Model will be used to set the guidelines, upgrades and/or expansions required for future growth.<br>• The City completed a Wastewater Computer Model that assessed the Wastewater Collection system's ability to meet capacity requirements.<br>• The City's Development Charges Background Study provides recommendations to upgrade and/or expand the Wastewater Collection system based on growth.<br>• Pipes that do not meet capacity requirements are upsized to increase capacity and can be aligned with road reconstructions to minimize costs and impacts to residents.<br>• Assets are identified for replacement to meet current standards and/or implement operational improvements (e.g. reduce inflow and infiltration, flooding) |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

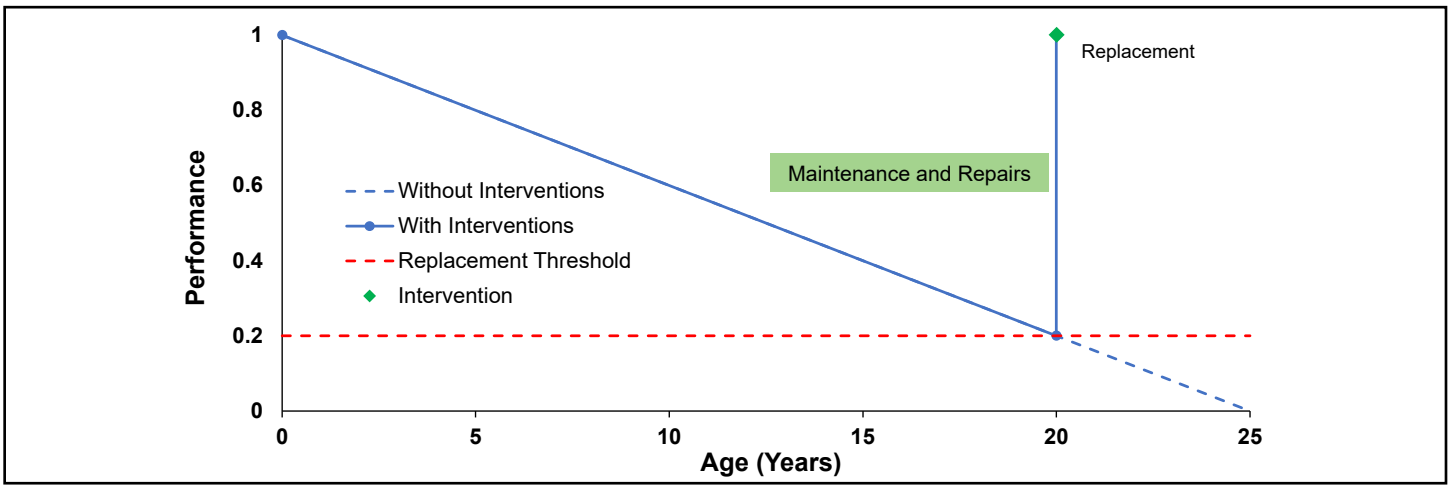
### Capital Treatments

#### Sanitary Sewers Life Cycle




Generally, these pipes have a 70 to 80 year service life. The City's life cycle model leverages the CCTV inspections and PACP scores of structural defects, along with the age and remaining life based on its material type, to forecast when potential replacement should be identified. Sewer replacements are typically completed when it can be bundled with other projects to reduce construction costs and minimize impacts to residents. These considerations alter the timing of when sewers are replaced. Maintenance holes and connections are typically replaced at the same time as the sewer. Proposed sanitary sewers candidates for renewal may be relined, if deemed feasible.

#### Pumping Station Equipment Life Cycle




There is a variety of equipment within the City's pumping stations which generally have a service life of up to 20 years, with the wells lasting up to 50 years. The City performs testing, maintenance and repairs of pumping station equipment as required. The City's life cycle model forecasts that they are generally replaced at the end of their service life or when their condition has reached poor or very poor or are no longer functioning as required. These assets may be replaced sooner based on usage and/or premature wear and tear or may be kept in service longer for operational business continuity needs.

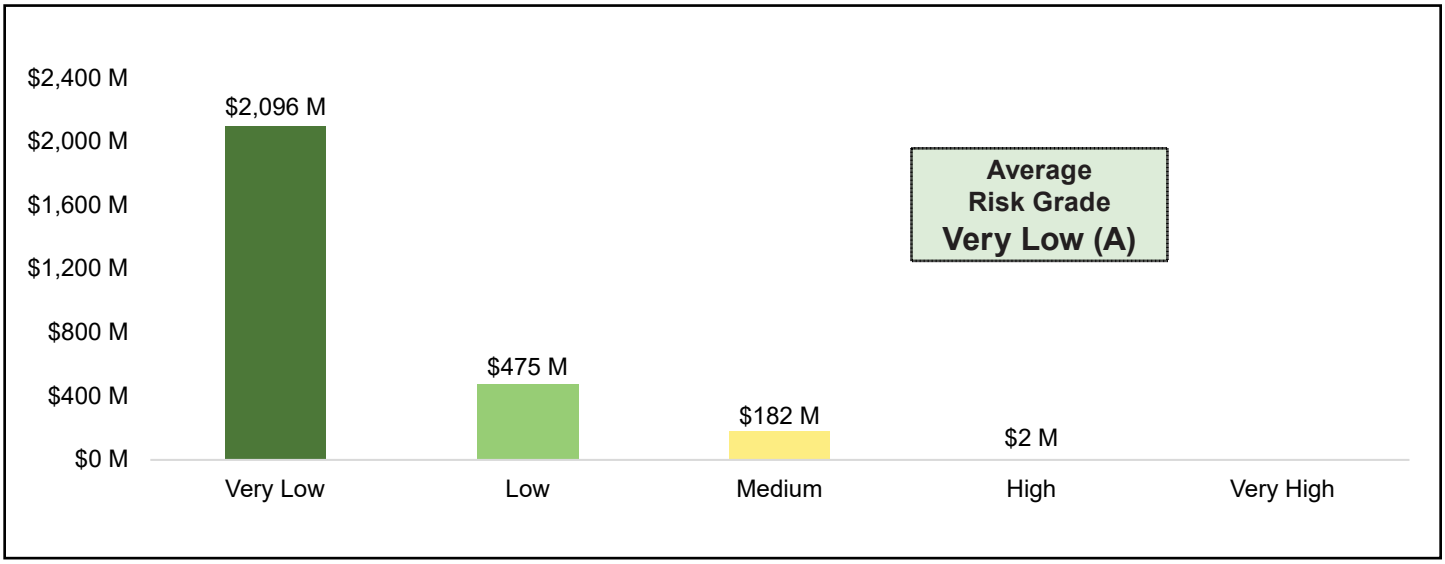
# Risk Prioritization

Average Risk Grade
**Very Low (A)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Sanitary Sewers<br>• Maintenance Holes<br>• Service Connections<br>• Pumping Stations/ Equipment | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Land use<br>• Asset type, size and function | • Environmental compliance and asset type<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- Monitor and enforce the Sewer Use By-law and inspections to address blockages through the sanitary effluent sampling program to reduce potential spills.
- The City's Inflow and Infiltration Program protects the built and natural areas from spills.
- Regular and ongoing CCTV inspections of sanitary sewers
- Backwater Valve Subsidy Program
- Completed the development of a City-wide Wastewater Computer Model

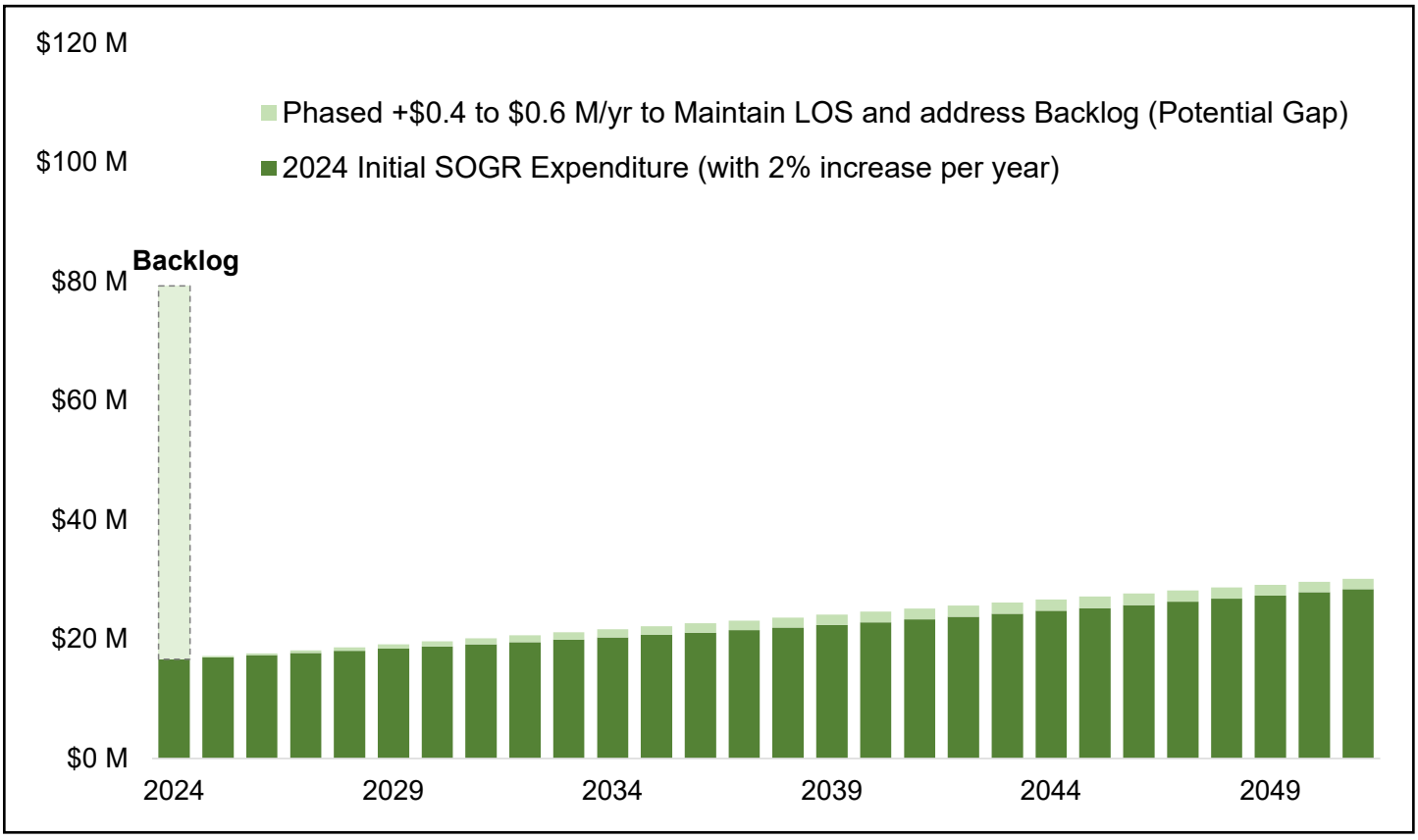
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$79.3 M** | **+$0.4 to $0.6 M/yr** | **$0 to $3.6 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Water Distribution and Wastewater Collection ($ millions)**

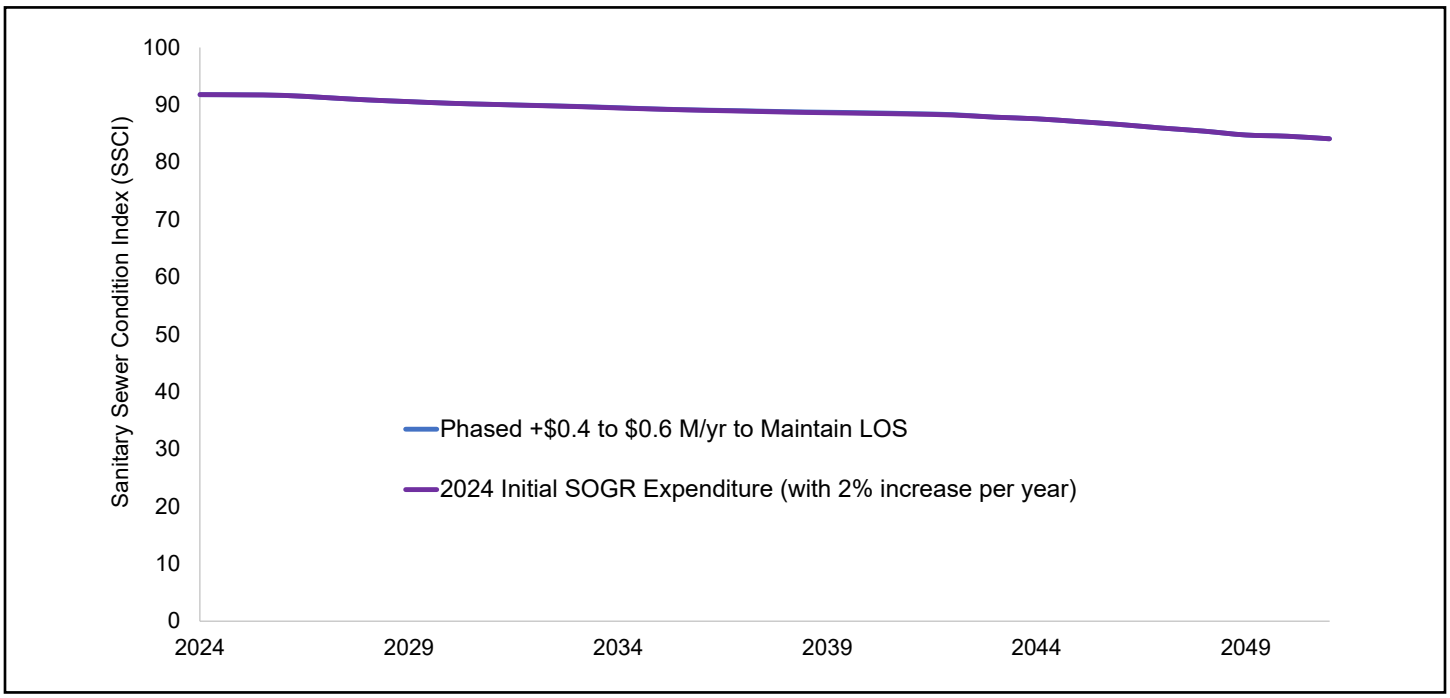
| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Water | 79.3 | 16.7 | +0.4 to 0.6 | 18.5 to 19.4 | 0 to 1.1 | 24.1 to 27.8 | 0 to 3.6 |
| Wastewater | | | | | | | |



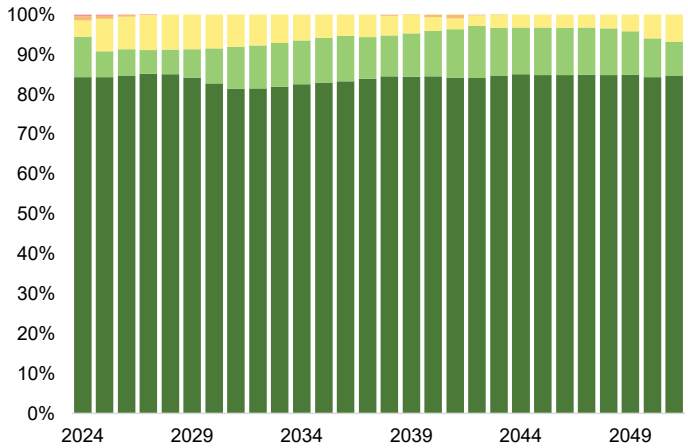
## Impact on Levels of Service

### Sanitary Sewers

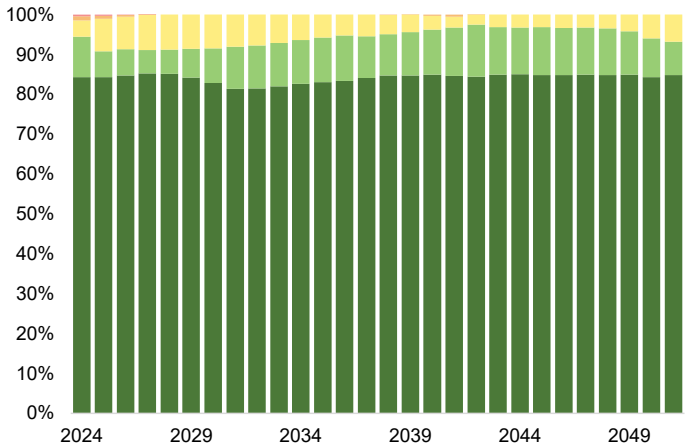
**Sanitary Sewer Condition Index (SSCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



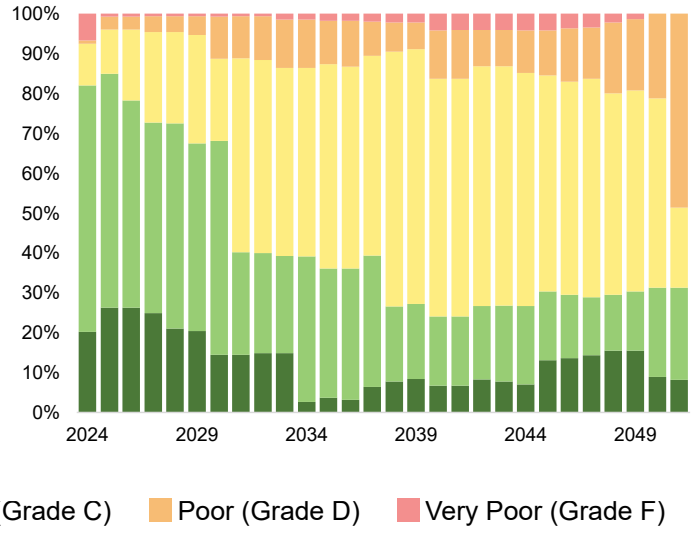

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

## Impact on Levels of Service

### Sanitary Pumping Stations

**2024 Initial SOGR Expenditure (with 2% increase)**


**Maintain Level of Service**



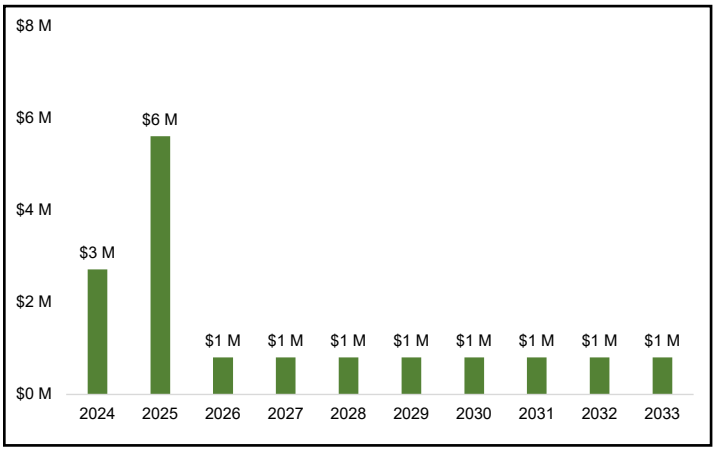

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Growth Capital and Operating Forecast

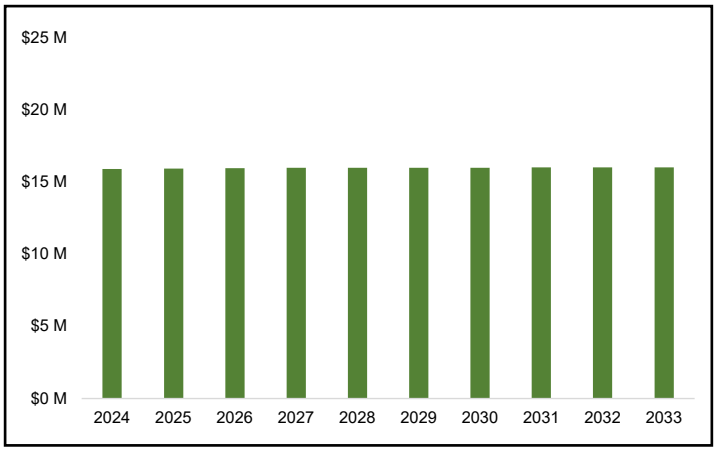
## Future Outlook

The City's approved Urban Master Environmental Servicing Plan (UMESP) sets guidelines for wastewater infrastructure that is needed to support development in the City's growth areas, including intensification to the year 2051. The UMESP recommends a number of wastewater improvement projects that will help ensure Richmond Hill can continue to accommodate growth. The City also completed a City-wide Wastewater Computer Model that assessed the Wastewater Collection system's ability to meet capacity requirements. It recommends additional wastewater improvements needed to manage the capacity needs of the community. These major studies, along with the renewal needs for existing infrastructure identified through this 2024 Asset Management Plan, will inform future infrastructure investments through the City's 10 Year Capital Budget and Forecast.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




Richmond Hill's Wastewater Collection service is poised for improvements over the next 10 years, supported by the Urban Master Environmental Servicing Plan and Wastewater Computer Model results. Among the most notable enhancements are various City-wide sanitary improvements projects at different locations at a cumulative investment of $7.2 million over the next 10 years. Additionally, there are sanitary sewer improvements projects on May Avenue and Weldrick Road West ($2.7 million) and along Yonge Street ($2.6 million). Furthermore, the Bayview Avenue Reconstruction project in collaboration with York Region is estimated at $2.2 million. These projects signify a strategic approach to ensuring the efficiency and reliability of Richmond Hill's expanding wastewater collection services based on projected growth needs.

Richmond Hill's Water and Wastewater services are estimated to see operating and maintenance costs steadily increase from 2024 to 2033 for existing assets as well as new growth assets if they are constructed as identified in the City's 10 Year Capital Budget and Forecast. The forecasted operating budget cost projections could range around $16 million per year on average in today's dollars (excluding future inflationary pressures) over the next 10 years. The forecast does not include any estimated capital costs associated with future assets that are to be assumed as a part of the development process.

## Appendix E

# Stormwater Management

*Rumble Pond*

# Overview of Stormwater Management

The City of Richmond Hill owns and operates Stormwater Management infrastructure including storm sewers, stormwater management ponds, Low Impact Development (LID), and storm culverts. There are also a number of supporting assets to assist in the maintenance of stormwater management assets.

## Storm Sewers

Richmond Hill's storm sewers provide effective stormwater management and environmental protection for the community. Spanning approximately 614 kilometres, the vast majority of the City's storm sewers are concrete (76%) with the remaining being PVC (polyvinyl chloride) pipes (about 18%). These materials offer specific advantages such as flexibility and adaptability to various ground conditions, and in the case of PVC, provide lightweight, cost-effective, and corrosion-resistant properties that have a long service life cycle. This network also includes over 18,000 catch basins, over 10,000 maintenance holes and around 48,000 service connections.

## Above Ground Conveyance (Storm Culverts)

Richmond Hill's above ground conveyance system is a crucial component of the City's stormwater management infrastructure. The City owns and manages over 1,100 storm culverts that are strategically designed and distributed across the municipality's roads to ensure effective water conveyance and reduce the risk of flooding. The majority of these culverts (around 95%) are round in shape and are constructed from corrugated steel pipe (CSP). The widths and diameters of these culverts range in size to effectively manage varying volumes of stormwater.

# Overview of Stormwater Management

*Pioneer Park SWMF*

## Stormwater Management Facilities (SWMF)

The City's stormwater management facilities (SWMF), which includes over 100 ponds, protects the community and local water bodies through the effective management of stormwater runoff. The City's SWMF assets are designed to improve the quality of stormwater runoff and manage the quantity for flood protection. These ponds are a blend of dry and wet ponds. Dry ponds do not store water between storm events while wet ponds maintain a permanent pool which facilitates sediment deposition. The City utilizes all types of ponds to effectively manage stormwater while protecting the ecological integrity of local water bodies.

*Green Roof at Oak Ridges CC*

## Low Impact Development (LID)

Richmond Hill's low impact development (LID) assets, which total over 90, are part of the City's progressive approach to sustainable urban development and environmental management. The diverse array of LID assets includes a collection of exfiltration and infiltration facilities, bioretention areas, green roofs, permeable pavements, and a rainwater cistern. The exfiltration and infiltration facilities help recharge groundwater and reduce stormwater runoff. Bioretention areas are designed to utilize filtration to treat stormwater runoff. Permeable pavement helps reduce water runoff and assists with recharging the groundwater.

*East Humber River*

## Fleet and Equipment

Stormwater management fleet and equipment are specialized assets that are used for the effective monitoring and management of the City's stormwater systems to ensure they function as intended and remain in compliance with provincial requirements. This category includes boats, sensors, rain gauges and multiparameter displays. As an example, the boats enable City personnel to conduct thorough assessments and perform necessary interventions in and around the City's ponds. Level logger sensors record water levels in various parts of the stormwater system to provide data for flood risk assessment and water management strategies. Rain gauges provide accurate measurements of rainfall for understanding and predicting potential impacts on the City's infrastructure.

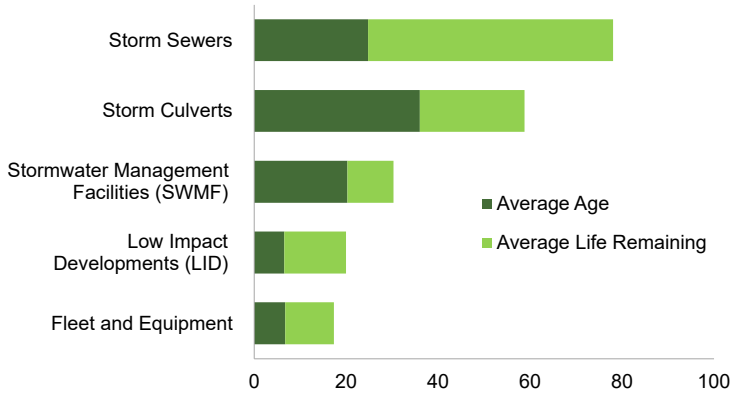
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$2,752 M** | **A (Very Good)** | **25 / 75 (years)** |

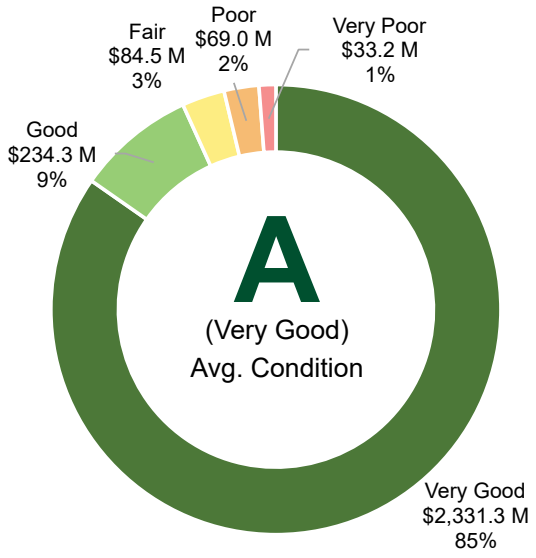
## Asset Portfolio

| Asset | Quantity | Replacement Value |
|---|---|---|
| Storm Sewers | 614 km | $2,525.1 M |
| Catch Basins | 18,215 ea. | |
| Maintenance Holes | 10,706 ea. | |
| Service Connections | 47,464 ea. | |
| Storm Culverts | 1,146 ea. | $40.7 M |
| SWMF | 107 ea. | $177.7 M |
| Low Impact Developments | 91 ea. | $8.2 M |
| Fleet and Equipment | A mix | $0.7 M |

## Average Age and Service Life




## Overall Condition




Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

- The condition of storm sewers is based on structural defects from CCTV inspections converted into a PACP score. The City maintains a ten-year inspection cycle and to date, 28% of storm sewers have received a CCTV inspection and a PACP score. The condition for the remaining 72% are based on age and remaining life.
- The condition for the ancillary assets is tied to the condition of the associated storm sewer.
- For SWMF, the City performs sediment surveys on a five-year cycle that measure the volume of accumulated sediment. The condition is based on the percentage of TSS removal efficiency compared to its original design. For dry ponds, condition is based on age compared to sediment removal frequency and inspections.
- For some storm culverts, their condition is based on biennial OSIM inspections and age and remaining life.
- The condition of LIDs is derived from their age and remaining life and inspections.
- Condition of fleet/equipment is based on age and life.

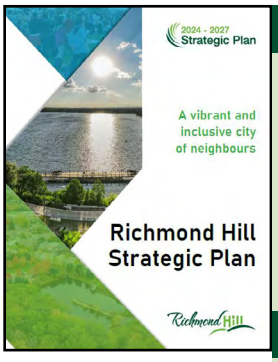
| Condition Category | Letter Grade | Storm Sewers: PACP Score | Storm Culverts: BCI and Life Remaining | SWMF: % Below Design TSS Removal | LID: Life Remaining | Fleet and Equipment: Utilization and Life Remaining |
|---|---|---|---|---|---|---|
| **Very Good** | **A** | 0 or 1 | >0.8 to 1.0 | <0.5% | >75% to 100% | >0.8 to 1.0 |
| **Good** | **B** | 2 | >0.6 to 0.8 | 0.5 to 4% | >50% to 75% | >0.6 to 0.8 |
| **Fair** | **C** | 3 | >0.4 to 0.6 | 4 to 5% | >25% to 50% | >0.4 to 0.6 |
| **Poor** | **D** | 4 | >0.2 to 0.4 | 5 to 7.5% | >0% to 25% | >0.2 to 0.4 |
| **Very Poor** | **F** | 5 | >0 to 0.2 | >7.5% | <0% | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** The City of Richmond Hill's stormwater management infrastructure improves stormwater quality before it is released, provides erosion and flood protection, and reduces environmental, property and human community risks from stormwater.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change mitigation and adaptation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

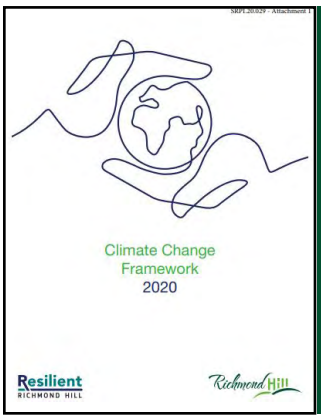
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.

#### Pillar 3: Strengthening our Foundations

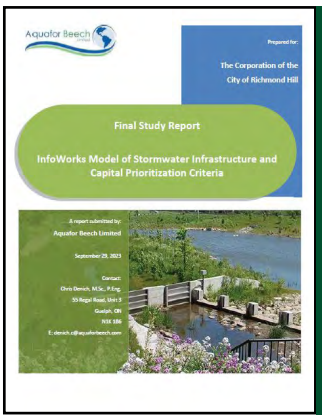
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Asset Management**
- **Formalize Community Risk Mitigation**
- **Leverage Green Infrastructure**
- **Foster Engagement and Innovation**

### Stormwater Computer Model




- **Evaluate stormwater system capacity**
- **Identify climate change implications to existing service levels**
- **Identify infrastructure improvements**

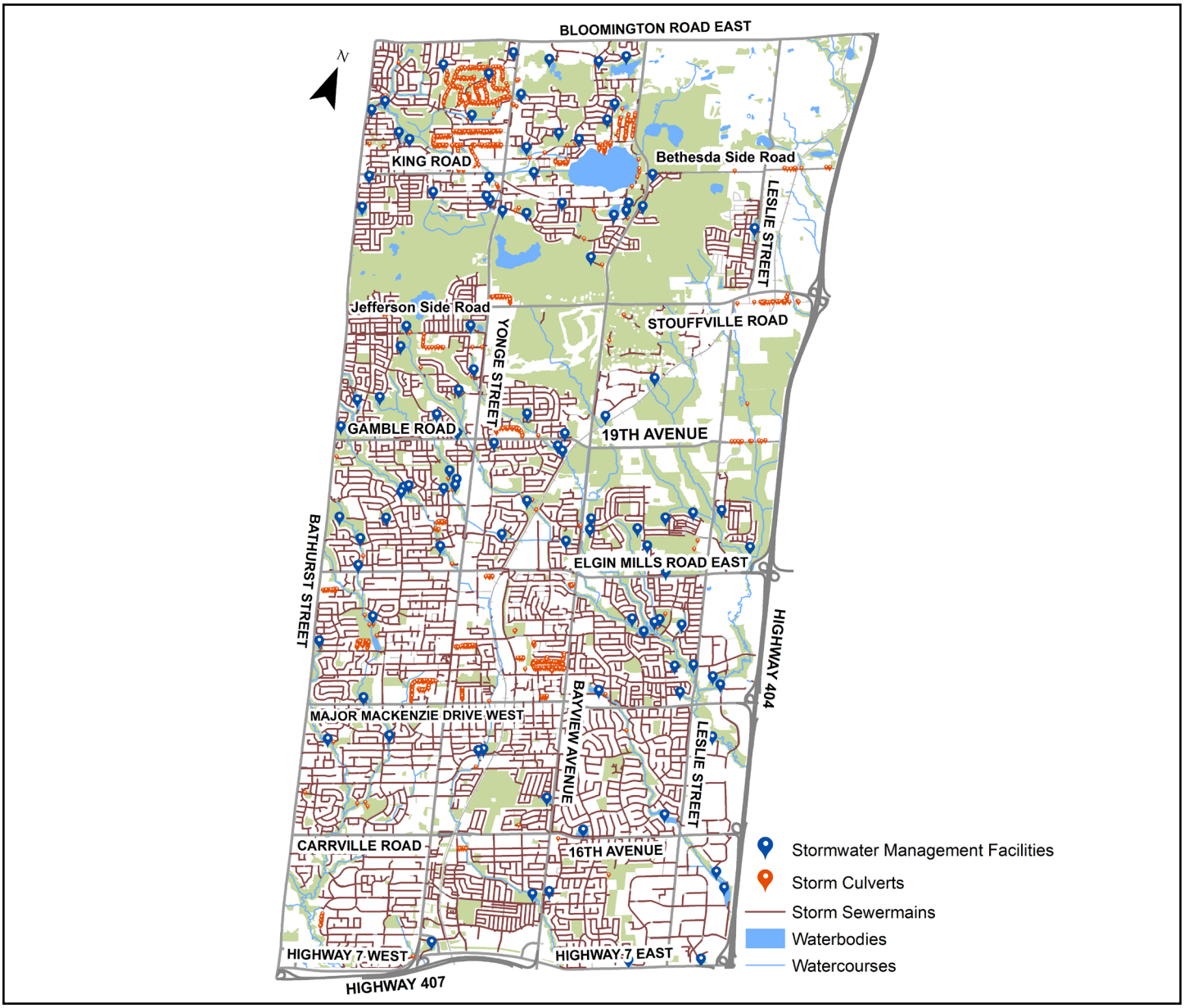
# Levels of Service

## Community Levels of Service

### Regulatory (Scope): Protection Provided by the Stormwater Management System

The City of Richmond Hill owns and operates stormwater management infrastructure including stormwater ponds, low impact development (LID), storm culverts and storm sewers. All of these infrastructure assets work together to protect the community and the surrounding environment from flooding and erosion, and by improving the quality of stormwater before it is released back into the natural environment . In terms of resiliency, approximately 57% of the properties in Richmond Hill are resilient to a 100-year storm event. The stormwater management infrastructure network itself is about 73% resilient to a 5-year storm.

### City of Richmond Hill Stormwater Management System



# Levels of Service

## Technical Levels of Service

| Regulatory (Scope) | |
|---|---|
| **57%** | Percentage of properties in municipality resilient to a 100-year storm |
| **73%** | Percentage of the municipal stormwater management system resilient to a 5-year storm |

| Advanced (Quality) | |
|---|---|
| **90 (VERY GOOD)** | Average Storm Sewer Condition Index (SMCI) |
| **63 (GOOD)** | Average SWMF Condition Index (SWMFCI) |

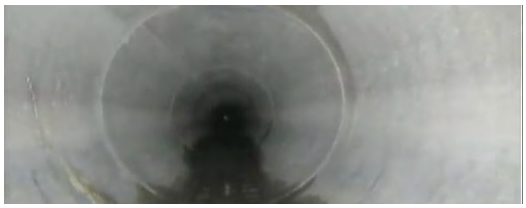
| Advanced (Reliability) | |
|---|---|
| **98%** | Percentage of storm sewers in fair or better condition (PACP Score 0 to 3) |
| **66%** | Percentage of culverts assets in fair or better condition |
| **67%** | Percentage of SWMF in fair or better condition |
| **28%** | Percentage of storm sewers inspected |
| **95%** | Percentage of LID that have not exceeded their ESL |

## Community Levels of Service

### Advanced (Quality): Storm Sewer Condition

The condition of storm sewers is based on its Pipeline Assessment Certification Program (PACP) scores. This score is obtained from Closed Circuit Television (CCTV) inspections and calculated based on structural defects observed in the storm sewers. The PACP score ranges from 0 to 5. The City maintains a 10-year inspection cycle for all storm sewers and to date, approximately 28% of the storm sewer network has received a CCTV inspection and a PACP technical score.

**Examples of Storm Sewer Condition Categories**

| | |
|---|---|
| **Very Good (PACP Score = 0 or 1)** |  |
| **Good (PACP Score = 2)** |  |
| **Fair (PACP Score = 3)** |  |
| **Poor (PACP Score = 4)** |  |
| **Very Poor (PACP Score = 5)** |  |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

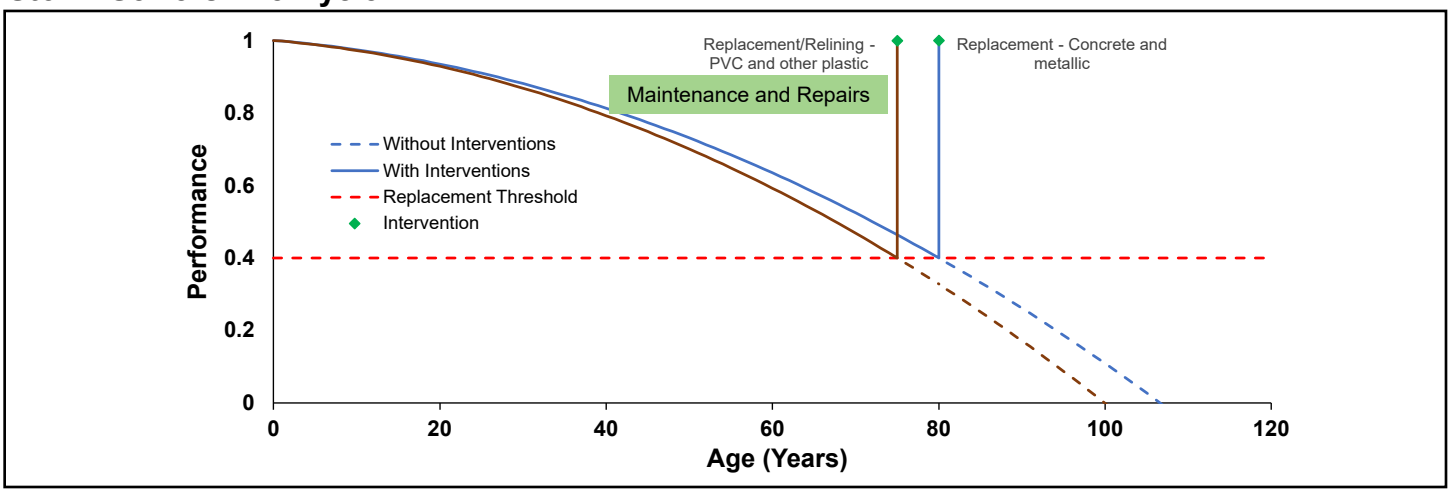
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City undertakes modeling such as the Stormwater Computer Model to understand the overall stormwater management infrastructure's capacity and constraints to improve efficiency.<br>• The City completes various studies and updates policies. |
| **Maintenance** | • The City undertakes condition assessments including, for example, sediment surveys that measure the volume of accumulated sediment within certain pond types, and technical OSIM condition inspections for some storm culverts.<br>• The City completes ongoing scheduled maintenance, repair and emergency activities.<br>• The City undertakes flushing of outlet structures, cleaning of storm culverts and catch basins, and general maintenance of other assets.<br>• Flushing and CCTV inspections of storm sewers are completed proactively across the system.<br>• Fleet and equipment are maintained per the recommended standards. |
| **Rehabilitation** | • Proposed storm sewer candidates for renewal may be relined, if deemed feasible.<br>• Stormwater management facilities (i.e. ponds) are dredged to reduce the sediment volume when their condition assessment indicates they are functioning below standard and/or considered in poor or very poor condition. |
| **Replacement** | • Storm sewer candidates in Poor or Very Poor condition identified through CCTV inspections and PACP scores would be identified for replacement as part of the bundling of associated linear road reconstruction capital projects.<br>• Stormwater management facilities are not replaced, but rather retrofitted where feasible to improve their function to align with current standards.<br>• Other assets such as low impact development and storm culverts would typically be replaced when they are no longer functioning, have reached the end of their service life, or are in poor or very poor condition.<br>• Fleet and equipment are replaced when condition, function and age warrant it. |
| **Disposal** | • Storm sewers are either removed during renewal or are disconnected and abandoned in place depending on the construction circumstances. Abandoned storm sewers are capped and/or grouted to protect other infrastructure. |
| **Growth / Service Improvement** | • New and/or larger stormwater management assets are identified through technical analysis as part of servicing plans related to new developments and growth.<br>• The City has completed a Stormwater Computer Model that can be used to identify opportunities for expanding, improving and/or constructing new growth-related assets as future development or intensification occurs.<br>• The City's Development Charges Background Study provides recommendations to upgrade and/or expand the stormwater management assets based on growth.<br>• Stormwater management facilities may be upgraded, and/or expanded to maintain the approved level of service and/or meet higher stormwater objectives, where feasible.<br>• Pipes that do not meet capacity requirements are upsized to increase capacity and can be aligned with road reconstructions to minimize costs. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

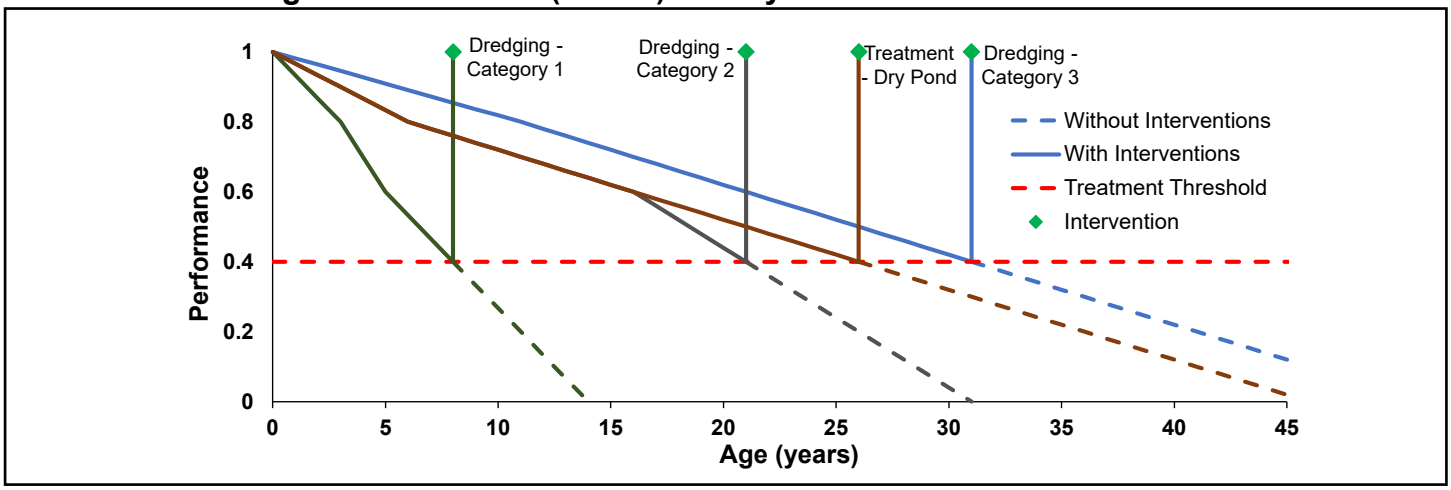
### Capital Treatments

#### Storm Sewers Life Cycle




Most of the City's storm sewers are concrete followed by PVC (polyvinyl chloride) pipes, which generally have a 75 to 80 year service life. The City's life cycle model leverages the CCTV inspections and PACP scores of structural defects, along with the age and remaining life based on its material type, to forecast when potential renewal should be examined. Storm sewers may be relined on an as-needed basis if deemed feasible. The replacement of storm sewers would typically be completed when they can be bundled with other linear assets within a project to reduce construction costs and minimize impacts to residents. Maintenance holes, catch basins and connections are typically replaced at the same time as the storm sewer.

#### Stormwater Management Facilities (Ponds) Life Cycle



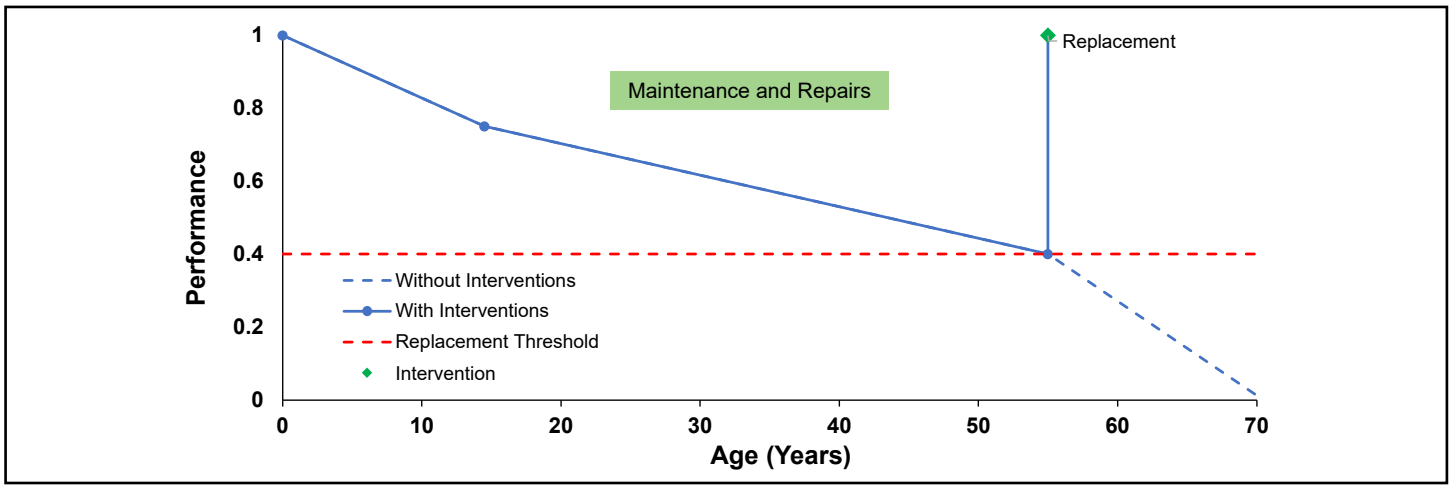

The City manages its stormwater management facilities (ponds) by completing sediment surveys for wet ponds that assess the percentage of total suspended solids (TSS) removal efficiency compared to its design. These survey results inform when sediment removal would be required to improve the function and condition of the pond back to its original design. Generally, the City's ponds have been grouped into one of three categories based on how frequent sediment removal would be required, ranging from less than 10 years (category 1) to upwards of over 30 years (category 3). Major pond retrofits are also completed where feasible to ensure that water quality and quantity objectives and service levels are met.

# Asset Management Life Cycle Strategies

## Life Cycle Activities

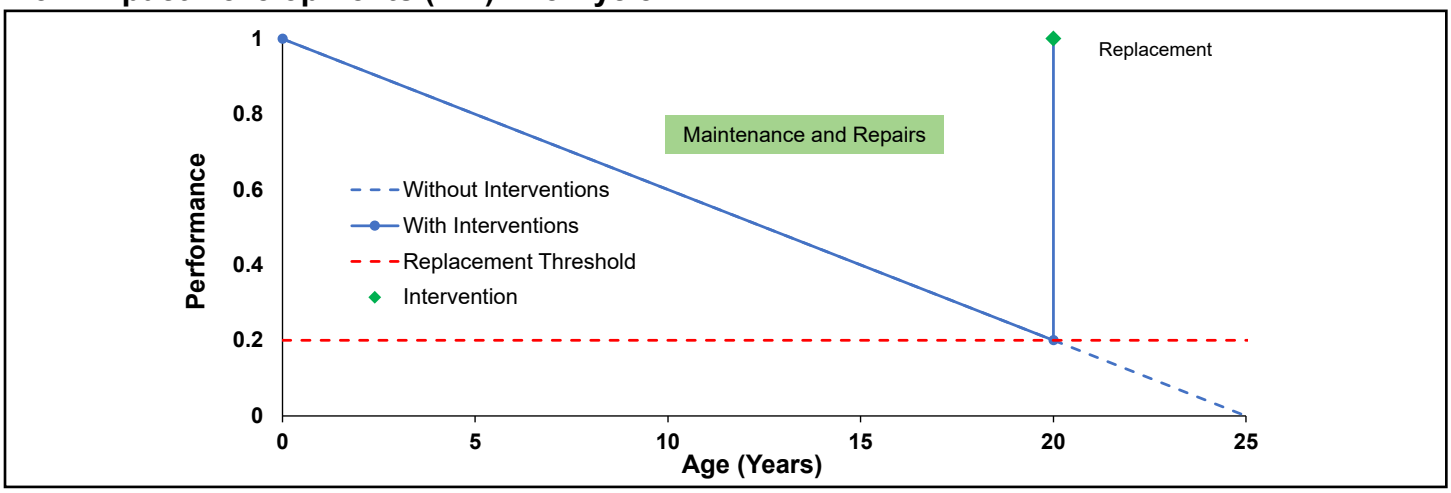
### Capital Treatments

#### Storm Culverts Life Cycle




The City's life cycle strategies for concrete storm culverts are similar to structural road bridges and culverts and would typically include a minor (between 20 and 30 years of age) and major (between 50 and 60 years of age) rehabilitation with eventual full replacement between 70 and 80 years. For those culverts that received an OSIM condition inspection, the recommended capital treatments and timing would be provided through those technical reports. Steel culverts would typically be examined for replacement after 55 years when they have reached the end of their service life and/or condition and function warrant replacement.

#### Low Impact Developments (LID) Life Cycle




There are a variety of different types of low impact development (LID) assets that the City owns and manages, including exfiltration and infiltration facilities, bioretention areas, green roofs, permeable pavements, and a rainwater cistern. These assets would typically have an average service life of approximately 20 years. The City's life cycle model forecasts that they are generally replaced at the end of their service life or when their condition has reached poor or very poor, or are no longer functioning as required. These assets may be replaced sooner or may be kept in service longer depending on their condition and service reliability.

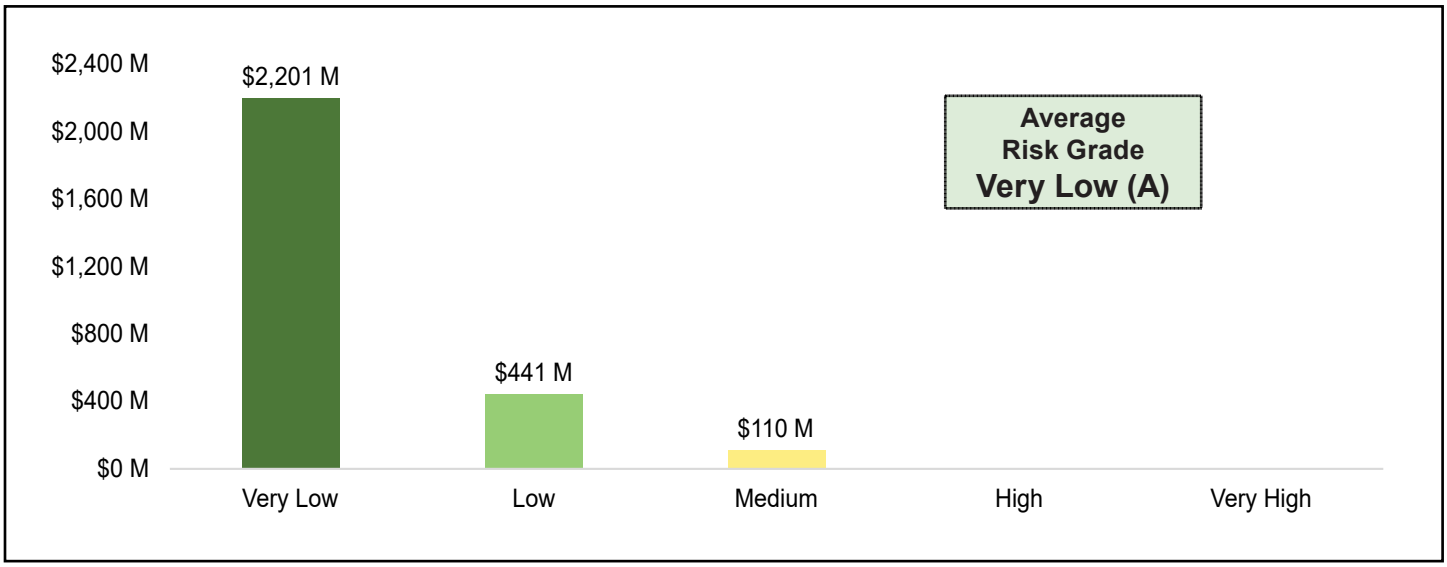
# Risk Prioritization

Average Risk Grade
**Very Low (A)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Storm Sewers<br>• Catch Basins<br>• Maintenance Holes<br>• Service Connections<br>• Storm Culverts<br>• SWMF<br>• LID<br>• Fleet/Equipment | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Traffic counts<br>• Road classification<br>• Land use<br>• Asset type, size and function | • Environmental compliance and asset type<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- Completed the development of the City-wide Stormwater Computer Model.
- Updated the City's Intensity-duration-frequency (IDF) curve to account for a 15% increase in precipitation by 2050 due to climate change.
- Various programs and plans including the stormwater infrastructure monitoring and inspection programs and the City's watershed monitoring program.

# Asset Investment Strategy

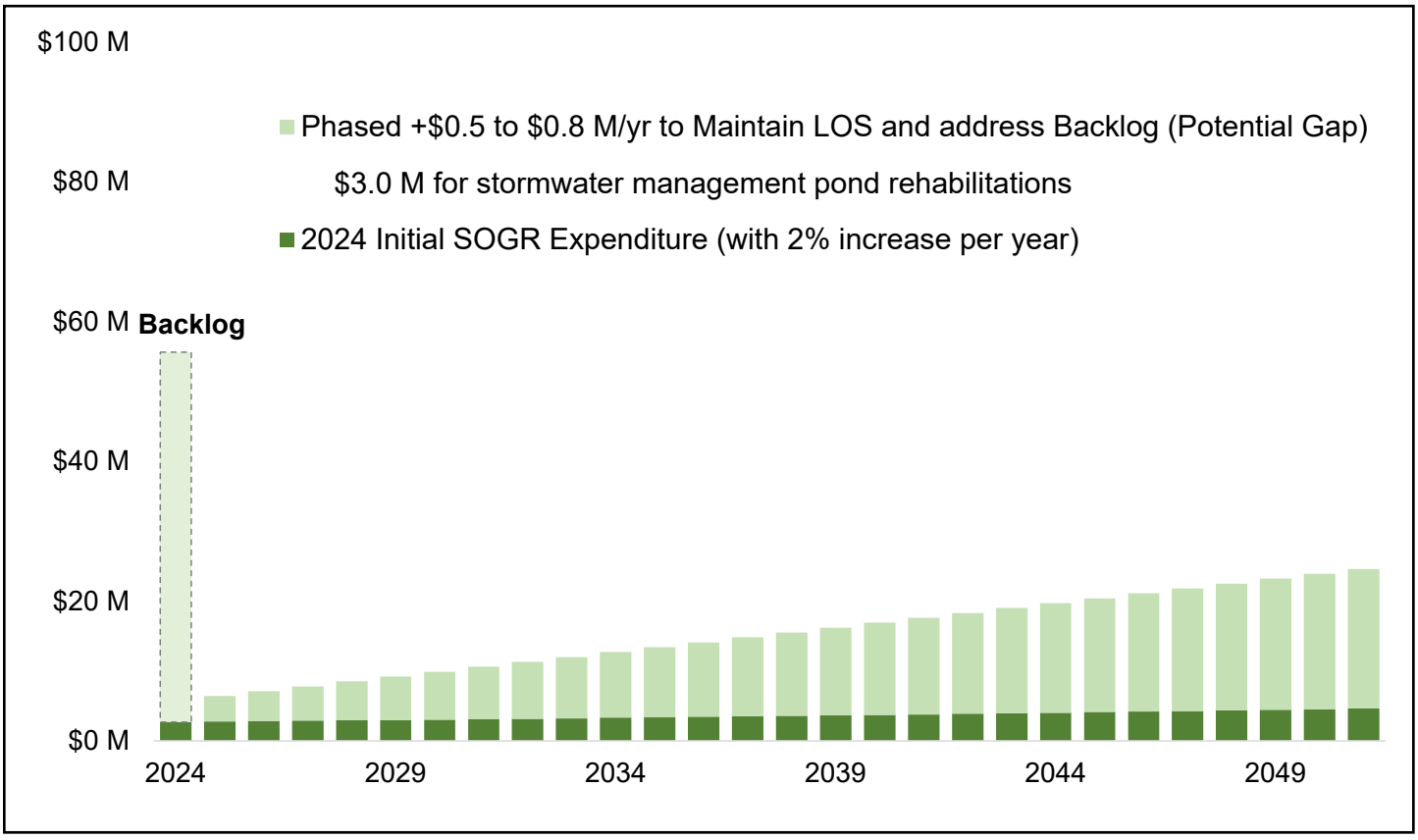
| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$55.7 M** | **+$0.5 to $0.8 M/yr** | **$0 to $16.6 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Stormwater Management ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Stormwater | 55.7 | 2.7 | +0.5 to 0.8* | 7.7 to 9.0 | 0 to 6.0 | 15.0 to 20.5 | 0 to 16.6 |

*$3.0 M for stormwater management pond rehabilitations would be required annually.

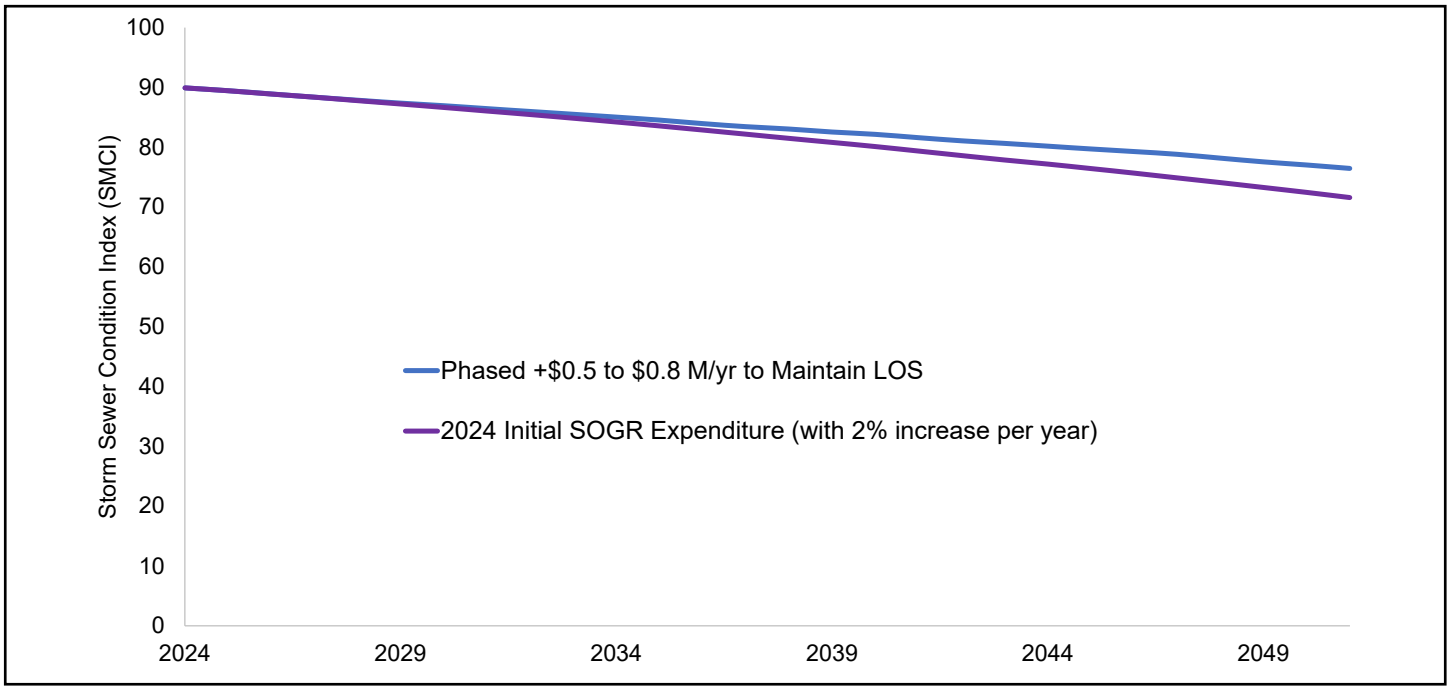


# Asset Investment Strategy

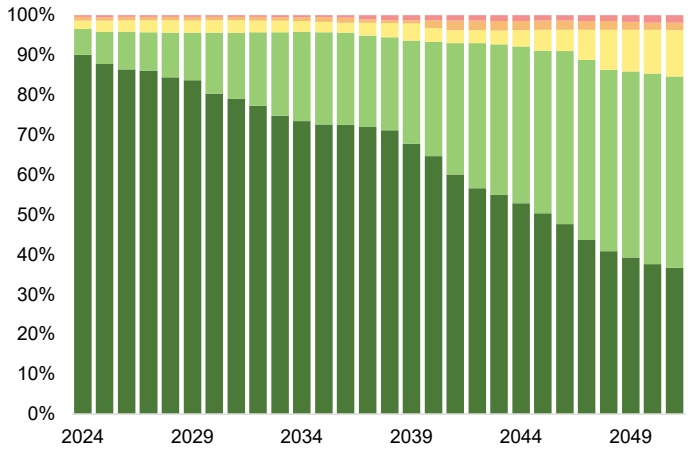
## Impact on Levels of Service

### Storm Sewers

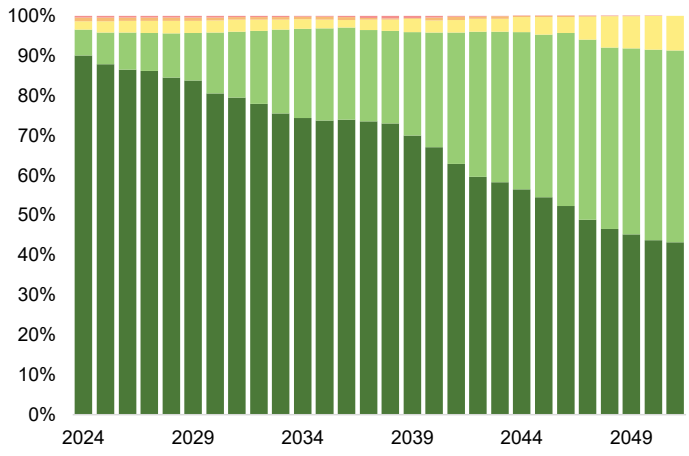
### Storm Sewer Condition Index (SMCI) over time




### 2024 Initial SOGR Expenditure (with 2% increase)




### Maintain Level of Service



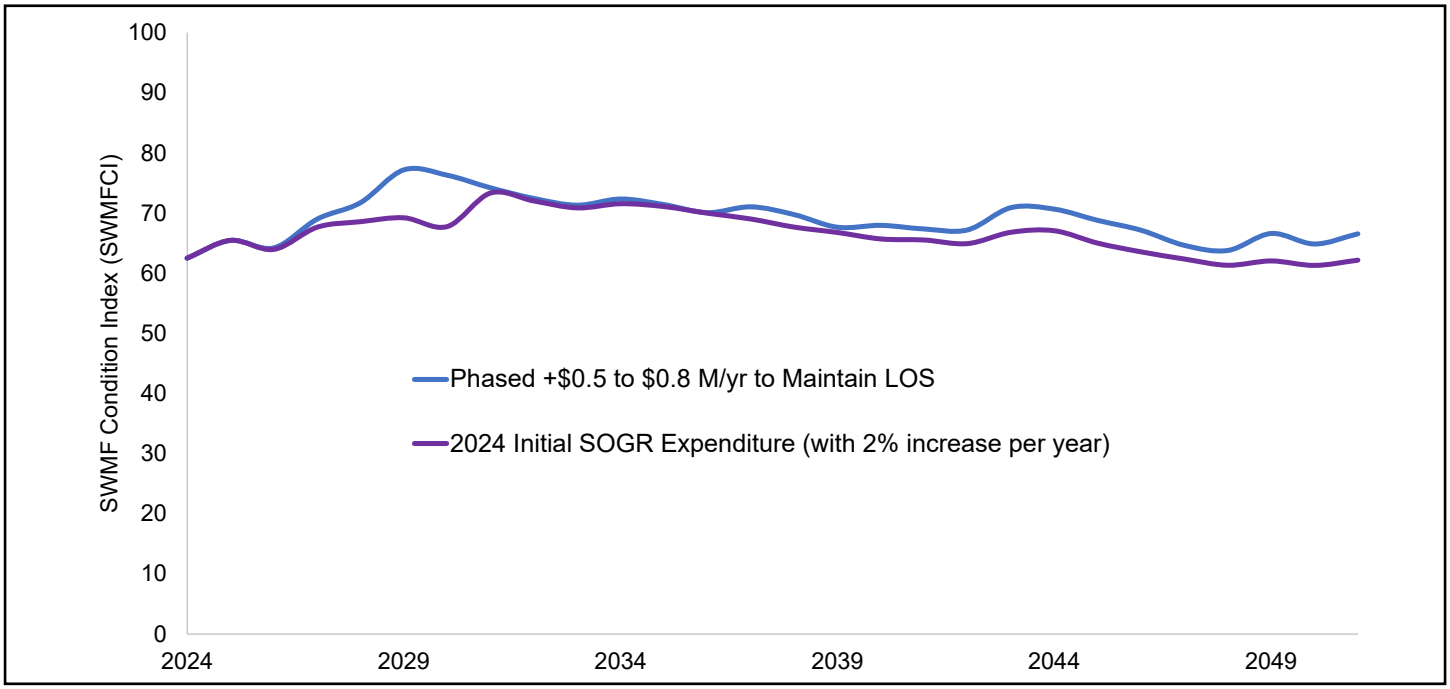

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Asset Investment Strategy

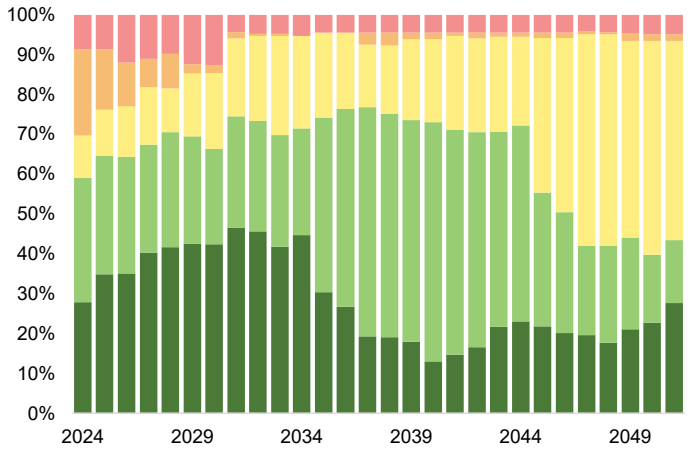
## Impact on Levels of Service

### Stormwater Management Facilities (SWMF)

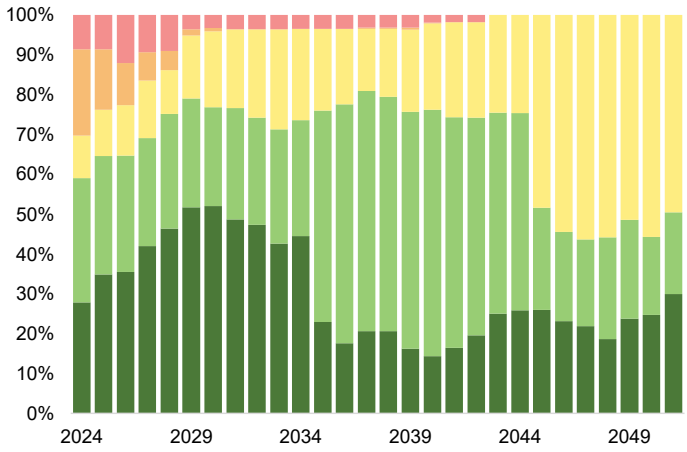
**SWMF Condition Index (SWMFCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



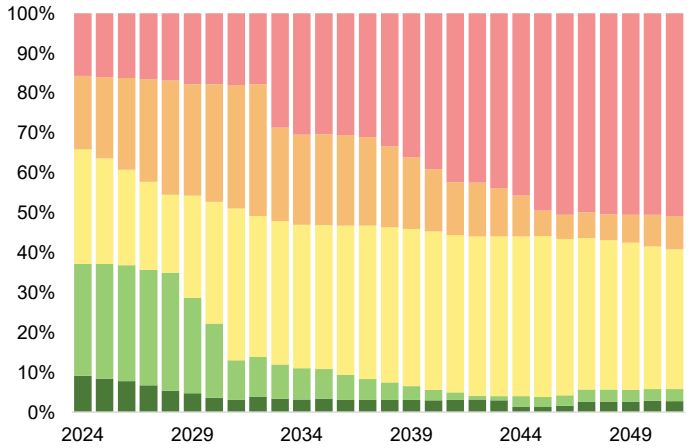

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Asset Investment Strategy

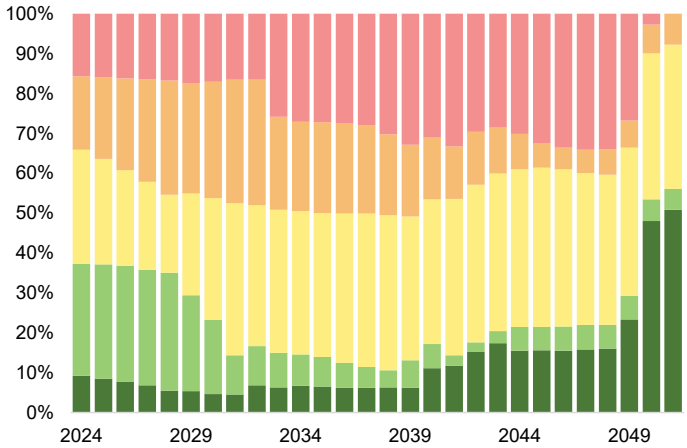
## Impact on Levels of Service

### Storm Culverts

**2024 Initial SOGR Expenditure (with 2% increase)**

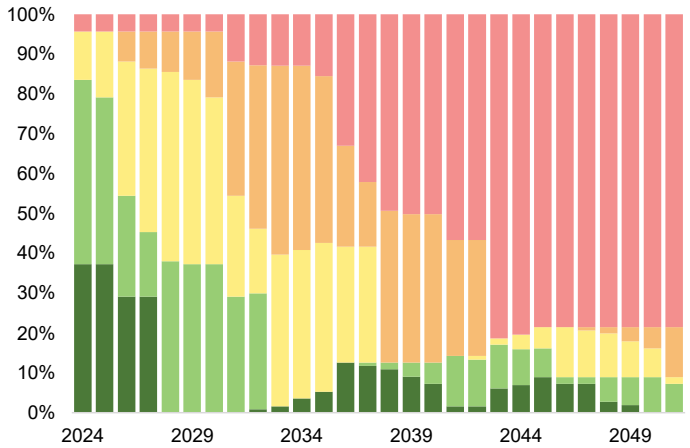



**Maintain Level of Service**

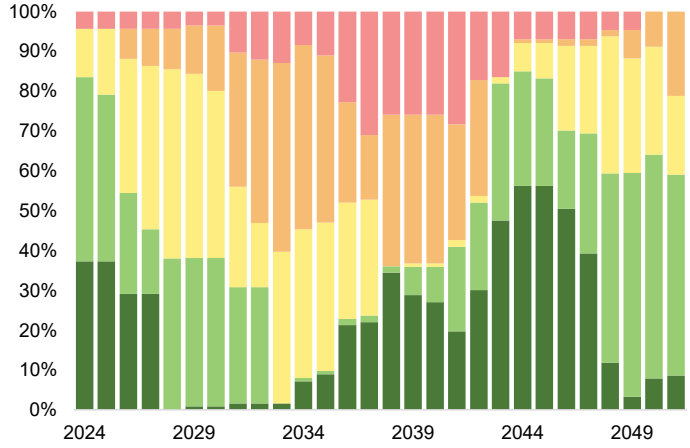



### Low Impact Developments (LID)

**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



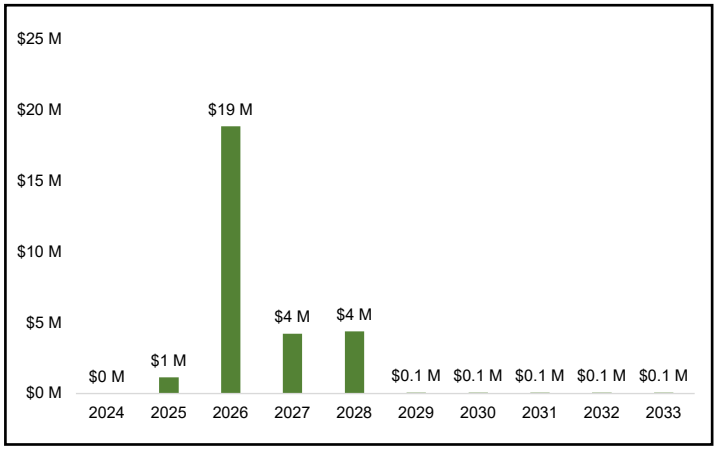

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Growth Capital and Operating Forecast

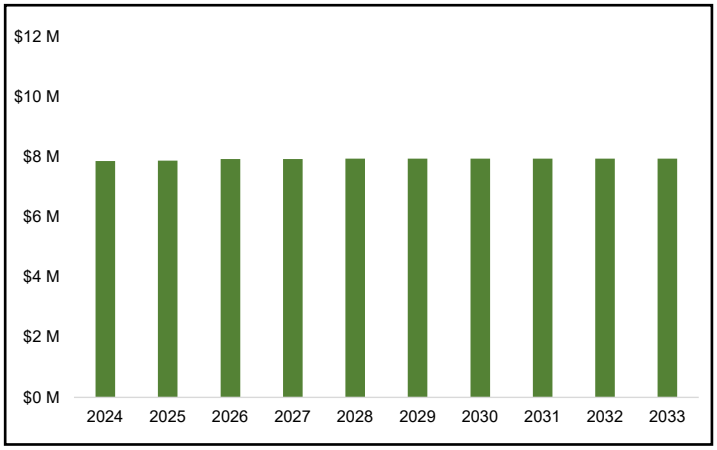
## Future Outlook

The City's Stormwater Computer Model provides an understanding of the overall stormwater management infrastructure's capacity and constraints. It also provides insights and recommendations to optimize and improve the existing system to manage the growing stormwater flows while considering the impacts of new developments and climate change. These modelling results, along with the state of good repair renewal needs for existing infrastructure identified through this 2024 Asset Management Plan, will inform future infrastructure investments through the City's 10 Year Capital Budget and Forecast.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




The capacity of the City's Stormwater Management infrastructure is planned to be expanded through the construction of crucial projects that are supported by the Stormwater Computer Model results. These critically important projects have been included in the City's 2024 Capital Budget and Forecast. The Elgin Mills Culvert ($18.2 million), along with the Mill Pond Park Revitalization ($8.7 million) projects will benefit the community by 2028 by ensuring there is sufficient capacity in these areas to manage stormwater and mitigate potential flooding. These investments emphasize Richmond Hill's dedication to expanding and maintaining robust and resilient stormwater infrastructure due to growth as well as the emerging impacts of climate change.

Richmond Hill's Stormwater Management operating and maintenance costs associated with existing and new/expanded infrastructure are estimated to slightly increase and on average range around $8 million per year from 2024 to 2033. The forecast does not include any estimated capital costs associated with future assets that are to be assumed as a part of the development process.

## Appendix F

# Parks and Outdoor Recreation

*Gapper Park Playground*

# Overview of Parks and Outdoor Recreation

The City of Richmond Hill owns a network of parks that provide a variety of outdoor sporting and leisure amenities, playgrounds and natural areas and trees. There are also supporting assets like fleet and equipment that assist in the maintenance of parks.

*Unity Park*

## Parks

The City of Richmond Hill owns and manages a network of Destination Parks, Community Parks, Neighborhood Parks, Linear Parks and Urban Squares. Destination Parks provide a wide and unique variety of recreational opportunities and are often the sites for major City events. Community Parks are typically located adjacent to indoor recreation facilities like community centers and arenas and serve as hubs where residents can gather, interact and participate in various activities. Neighbourhood Parks (which include local parks and parkettes) cater primarily to residents living nearby and offer various active recreational space. Linear Parks enable safe and comfortable connections for pedestrians and cyclists between community destinations like parks, commercial/retail areas, and schools. Urban Squares are found in densely populated, established city centres and provide spaces for people to converge and interact naturally. The City's parks contain a variety of features and furnishings that provide comfortable and convenient places to relax and engage in leisure activities (e.g. gazebos, water features).

*Crosby Park*

## Outdoor Recreation Amenities

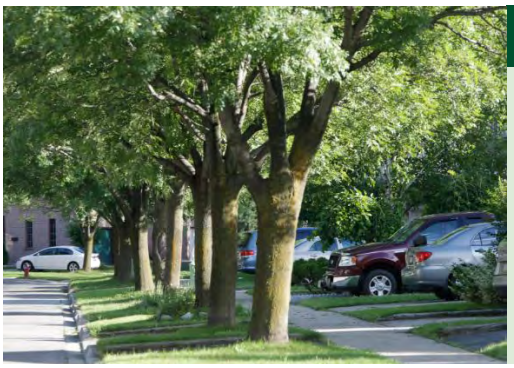
The City of Richmond Hill offers a diverse range of outdoor recreation amenities within its network of parks. Outdoor sporting amenities provide spaces for both organized sport and individual pursuits and offer an environment for physical fitness and social interaction. These include soccer fields, baseball diamonds, tennis courts, basketball courts, bocce and pickle ball courts for example. The incorporation of lighting systems at some of these sports facilities extends their availability beyond daylight hours. The City also owns and maintains outdoor amenities for children, including an extensive inventory of playgrounds and splash pads. Other unique offerings include outdoor skating facilities, skateboard/BMX facilities, and a community garden.

*Lake Wilcox Park*

## Supporting Facilities

Supporting facilities are a collection of eight unique buildings located within parks which support park and outdoor recreation facility users. Some facilities, such as those located in Lake Wilcox Park, Town Park, and Phyllis Rawlinson Park, offer amenities like washrooms and changing rooms. Other buildings like the Crosby Tennis Clubhouse support and enhance organized sports programming by providing a dedicated venue for both seasoned players and beginners alike to engage in training, competitive events and social gatherings.

# Overview of Parks and Outdoor Recreation



## Street and Park Trees

The City owns and maintains over 73,000 individual trees which are primarily located along the boulevards of City-owned roads, as well as in parks and around municipal facilities. The City's trees comprise an array of species (e.g. maple, oak, pine, cedar) that play many important roles such as improving air quality, providing shade, and enhancing the aesthetic appeal and livability of the community.

*Newberry Park Wetland*

## Natural Areas

The City has a network of nearly 890 hectares of natural areas that are rich in biodiversity and function as intricate ecosystems, while also providing spaces for recreational opportunities. Most of the City's natural areas are woodlands, which are treed areas that form a significant component of the City's urban forest canopy. Wetlands also play an integral role in the City's Greenway System by providing numerous ecological benefits, such as improved water quality, erosion control and flood abatement. Other areas like meadows are characterized by grasses and wildflowers and provide crucial habitat for pollinators. Natural areas are strategically managed and preserved in partnership with the Toronto and Region Conservation Authority (TRCA) and other partners to safeguard ecological diversity, protect wildlife, and ensure a sustainable balance between urban development and environmental conservation.

## Fleet and Equipment

The City manages and maintains its parks, outdoor recreation infrastructure and open spaces through a diverse inventory of fleet and equipment. A variety of equipment is used for landscaping as well as maintaining the urban forest canopy (e.g. chainsaws, lawnmowers, trimmers). Specialized equipment used for outdoor sports facilities, such as line markers for fields and baseball diamond draggers, ensure optimal playing conditions for patrons. The City also owns equipment like snowplows, salters, and snowblowers used for winter maintenance of pathways, parking lots and facility entranceways. In addition to equipment, City staff use a variety of vehicles to perform routine inspections and repairs to ensure that the City's parks and outdoor spaces remain useable, accessible and safe for use by the public.

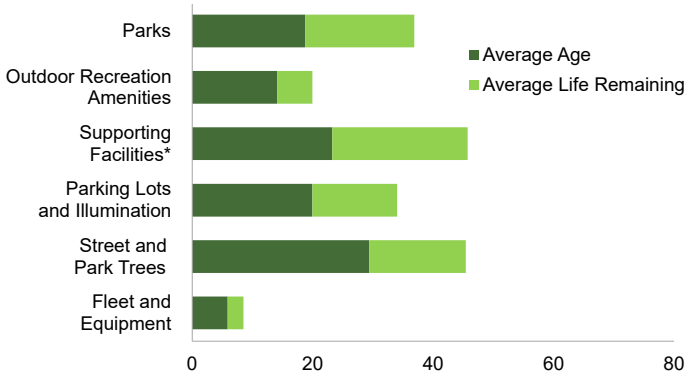
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$410 M** | **B (Good)** | **22 / 35 (years)** |

## Asset Portfolio

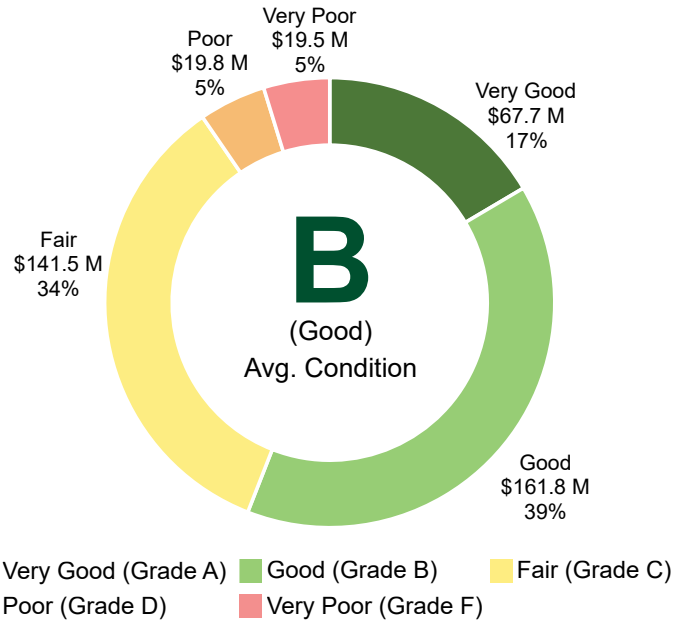
| Asset | Quantity | Replacement Value |
|---|---|---|
| Parks | 170 ea. | $42.8 M |
| Outdoor Recreation Amenities | 528 ea. | $62.3 M |
| Supporting Facilities | 8 ea. | $7.2 M |
| Parking Lots and Illumination | 26 ea. | $8.1 M |
| Street and Park Trees | 73,731 ea. | $128.4 M |
| Natural Areas | 889 ha | $145.6 M |
| Fleet and Equipment | A mix | $15.9 M |

## Average Age and Service Life




**Age and ESL reflects building components, not facility as a whole*

## Overall Condition




- Park asset condition is based on age and remaining life.
- Condition of outdoor recreation assets is based on technical and visual assessments, and age and remaining life.
- Condition of street and park trees is based on visual inspections and remaining life.
- Condition for natural areas is based on the dominant vegetation community type, its frequency on the landscape and geographical requirements of the ecosystem. Natural Areas are formally inspected every 5-10 years, and twice per year for those adjacent to trails.
- Condition of supporting facilities is based on BCAs completed over a three-year cycle.
- Condition of fleet and equipment is based on its utilization (km) as well as age relative to remaining life.
- Condition of parking lots is based on visual inspections, and illumination based on age and remaining life.

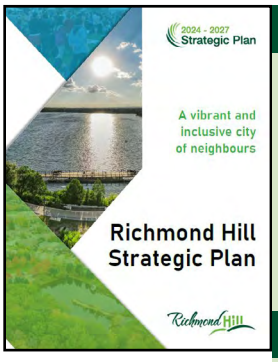
| Condition Category | Letter Grade | Parks: Life Remaining | Outdoor Amenities: Condition Assessment and Life Remaining | Supporting Facilities: Building Condition Assessments | Trees: Visual Inspections and Life Remaining | Natural Areas: Vegetation Community and Ecosystem | Fleet and Equipment: Utilization and Life Remaining | Parking Lots: Condition Assessment and Life Remaining |
|---|---|---|---|---|---|---|---|---|
| **Very Good** | **A** | >75% to 100% | >0.8 to 1.0 | >0.8 to 1.0 | >0.8 to 1.0 | >0.8 to 1.0 | >0.8 to 1.0 | >0.8 to 1.0 |
| **Good** | **B** | >50% to 75% | >0.6 to 0.8 | >0.6 to 0.8 | >0.6 to 0.8 | >0.6 to 0.8 | >0.6 to 0.8 | >0.6 to 0.8 |
| **Fair** | **C** | >25% to 50% | >0.4 to 0.6 | >0.4 to 0.6 | >0.4 to 0.6 | >0.4 to 0.6 | >0.4 to 0.6 | >0.4 to 0.6 |
| **Poor** | **D** | >0% to 25% | >0.2 to 0.4 | >0.2 to 0.4 | >0.2 to 0.4 | >0.2 to 0.4 | >0.2 to 0.4 | >0.2 to 0.4 |
| **Very Poor** | **F** | <0% | >0 to 0.2 | >0 to 0.2 | >0 to 0.2 | >0 to 0.2 | >0 to 0.2 | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** Richmond Hill provides greenspaces (i.e. parks, open spaces, natural areas) and outdoor recreation spaces that are safe, accessible and enjoyable and promote vibrant neighbourhoods, community well-being and belonging.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




**Pillar 1: Growing a Livable, Sustainable Community**

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change mitigation and adaptation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

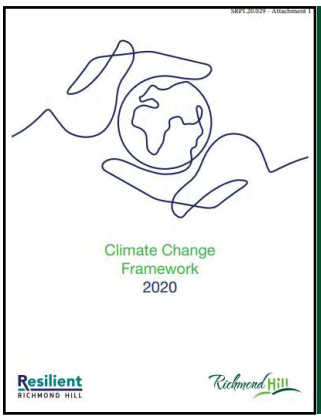
**Pillar 2: Focusing on People**

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.

**Pillar 3: Strengthening our Foundations**

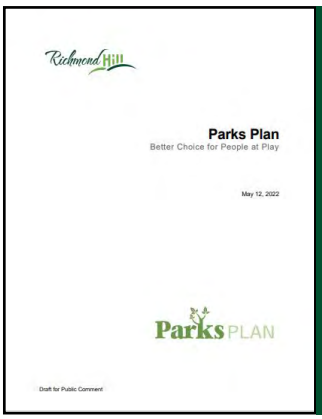
- Make decisions that are evidence based and data driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Land Use Planning**
- **Apply Climate Change Lens to Asset Management**
- **Leverage Green Infrastructure**
- **Foster Engagement and Innovation**

### Parks Plan and Urban Forest Management Plan (UFMP)




- **Expand parks**
- **Improve function of parks**
- **Enhance connectivity of parks, trails and Greenway System**
- **Create flexible multi-use parks for year-round use by all**
- **Strengthen urban forest to increase resilience**

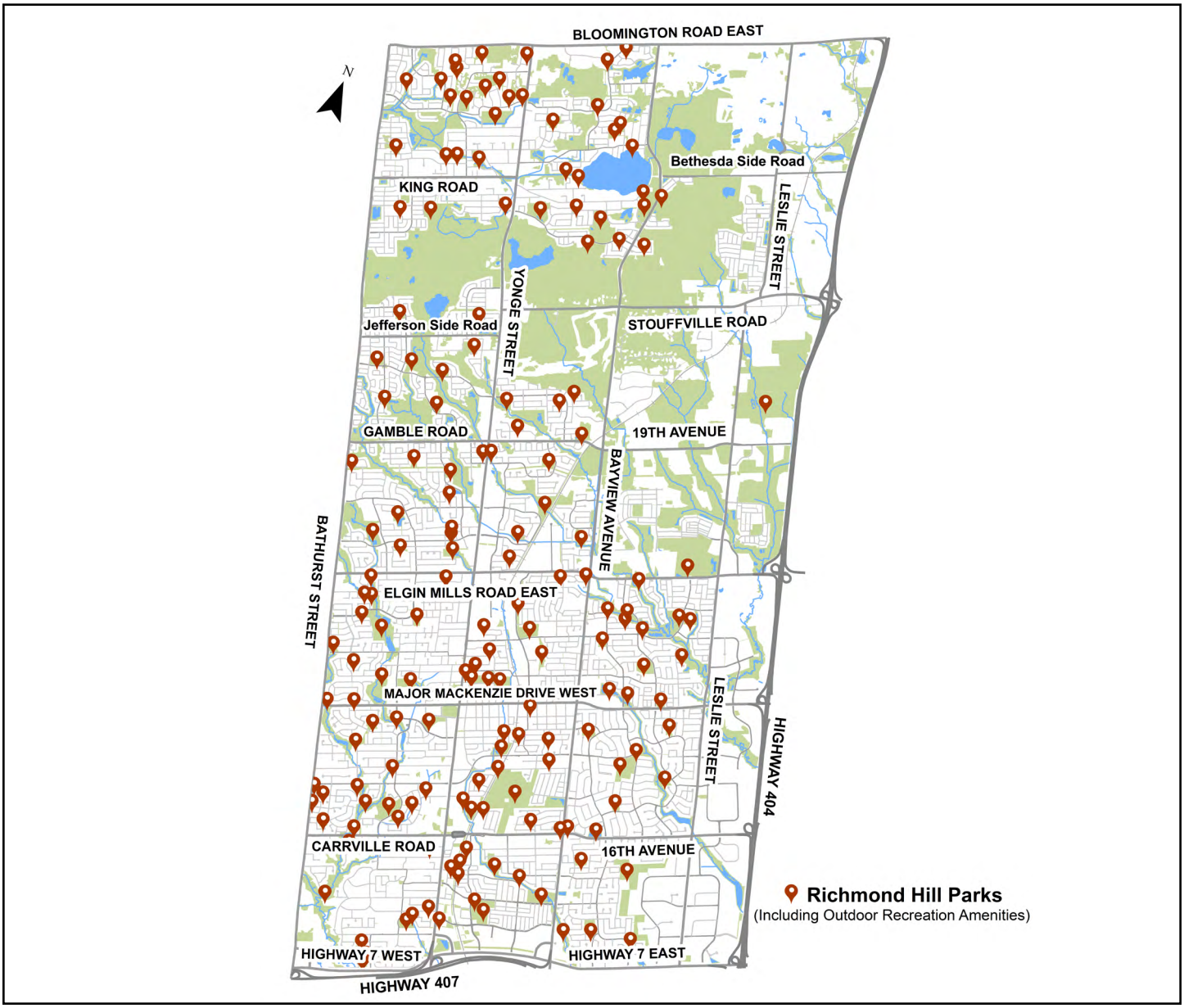
# Levels of Service

## Community Levels of Service

### Advanced (Scope): Parks and Outdoor Recreation

Richmond Hill not only provides outdoor recreational spaces and amenities including sports fields, courts, pickleball, playgrounds, splash pads and outdoor structures among others, but also offers parks and open spaces that contribute to the overall vibrancy of the community. They enhance the quality of life and function as hubs for social, physical, mental health, and environmental connection. This dual focus ensures a comprehensive network that caters to a growing and diverse population, by connecting residents to both new and established parks and to the broader Greenway System. The City of Richmond Hill works towards equitable access for all residents and reaffirms the commitment to making Richmond Hill a greener and more interconnected urban space for both current and future residents.

### City of Richmond Hill Parks and Outdoor Recreation



# Levels of Service

## Technical Levels of Service

| Advanced (Quality) | |
|---|---|
| **62 (GOOD)** | Parks and Outdoor Recreation Condition Index (PRCI) |
| **0.15 (GOOD)** | Weighted Average FCI of supporting facilities |

| Advanced (Scope) | |
|---|---|
| **15.6** | Overall average parkland provision level in square metres per person |
| **30%** | Urban Forest Canopy Cover (2022 Urban Forest Study) |

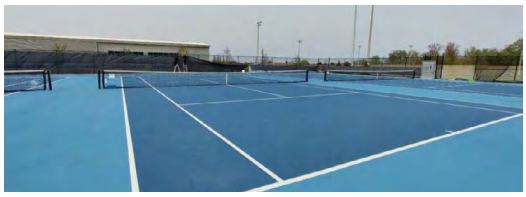
| Advanced (Reliability) | |
|---|---|
| **71%** | Percentage of park site assets in fair or better condition |
| **82%** | Percentage of outdoor recreation amenities in fair or better condition |

## Community Levels of Service

### Advanced (Quality): Park and Outdoor Recreation Condition

The City uses a range of condition assessment approaches suited to the assets' unique function and needs. Hard surface sporting amenities and playgrounds are inspected monthly while splash pads are inspected weekly. Any deficiencies are identified and tracked into the City's maintenance management system (Maximo) and work orders are generated to improve them. These inspections also determine the overall Corporate Asset Management condition. When formal technical assessments are deemed not feasible, age and remaining life are used.

**Examples of Park and Outdoor Recreation Conditions**

| | |
|---|---|
| **Very Good (Performance = >0.8 to 1)** |  |
| **Good (Performance = >0.6 to 0.8)** |  |
| **Fair (Performance = >0.4 to 0.6)** |  |
| **Poor (Performance = >0.2 to 0.4)** |  |
| **Very Poor (Performance = >0 to 0.2)** |  |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

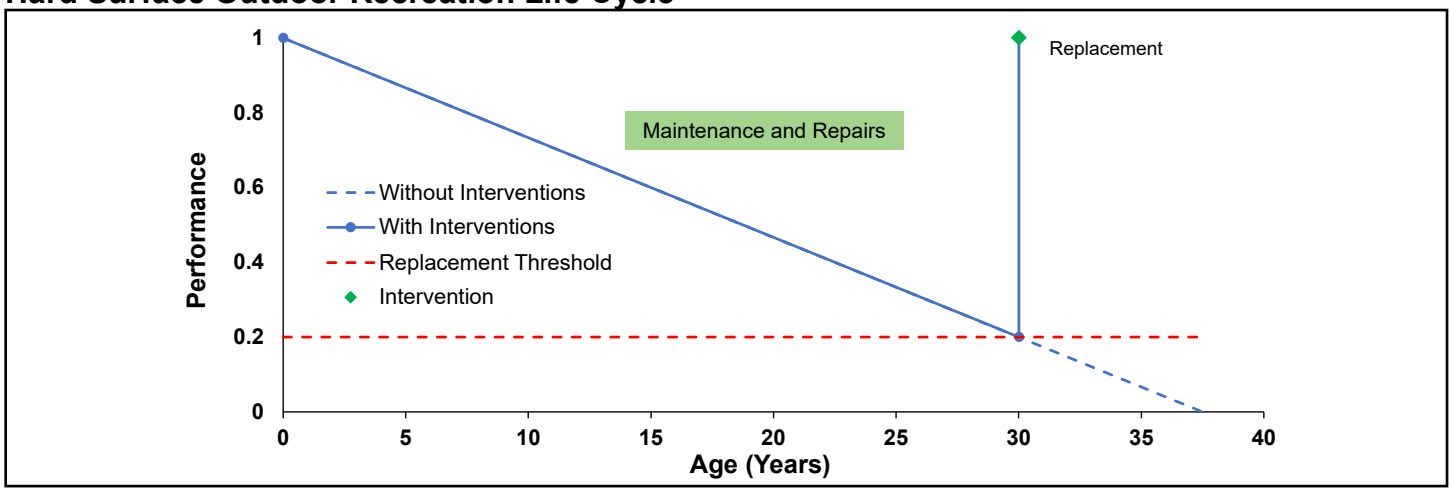
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City makes continuous improvements in operations, utilization of IT systems (e.g. Maximo) and condition assessment approaches for park assets.<br>• Process for regular inspections and assessments of asset functionality and conditions.<br>• Studies, plans, strategies and by-laws such as: the Natural Area Inventory update, Emerald Ash Borer (EAB) Strategy, Ecological Restoration Plans, Parks Plan, Tennis Strategy, Parkland Dedication By-law |
| **Maintenance** | • General inspection of parks assets and grounds maintenance (including litter clean up, grass cutting, etc.) are undertaken daily.<br>• Regular ongoing visual inspections when other work is conducted in the vicinity.<br>• Scheduled maintenance/cleaning is conducted hourly, daily, weekly and monthly.<br>• Reactive maintenance/cleaning and winter maintenance/snow removal are completed.<br>• Hard surface sporting amenities and playgrounds are inspected monthly, while splash pads are inspected weekly when operational during the summer. Maintenance is completed as required.<br>• Other seasonal assets (e.g. irrigation, field lining, nets, tarps) are inspected and commissioned and decommissioned at the beginning and end of the seasons.<br>• Trees are visually inspected, maintained and pruned on a 10-year cycle.<br>• Natural Areas are formally inspected every 5 to 10 years. Through the City's trail inspection program, trees within natural areas adjacent to trails are examined twice per year.<br>• Maximo software program is used to manage the maintenance of buildings.<br>• Fleet and equipment are maintained per the recommended standards. |
| **Rehabilitation** | • Major deficiencies identified through the regular ongoing inspections are prioritized for rehabilitations (e.g. tennis court resurfacing, artificial turf repairs and rehabilitations)<br>• Natural areas undergo restoration based on their condition and other factors such as dominant vegetation community type, as guided by the Emerald Ash Borer (EAB) Management Plan, and in future will be guided by the Natural Heritage Strategy.<br>• Building Condition Assessments (BCA) are completed for all City-owned facilities on a three-year cycle including for park buildings (completed in 2023).<br>• The rehabilitation of buildings is completed as identified through the BCAs, EAM and VFA. |
| **Replacement** | • Park assets are replaced when their condition, function, reliability and/or end of life warrant it.<br>• Trees are replaced due to a natural decline in health or damage from weather events and urban pressures as required.<br>• Natural areas would be restored through the City's ecosystem restoration programming.<br>• Building components are replaced through the BCAs, EAM and VFA software program.<br>• Fleet and equipment are replaced when condition, function and age warrant it. |
| **Disposal** | • Disposals are typically coordinated when the asset is replaced. |
| **Growth / Service Improvement** | • The City's 2022 Parks Plan directs for the location of new parks, park revitalization projects and outdoor recreation amenities to serve the growing population.<br>• As the City receives Site Plan and Subdivision applications, new parks are secured and park revitalization projects are prioritized per the direction in the 2022 Parks Plan.<br>• The annual Capital Budget and Capital Plan forecast identify the timeline for delivering new parks, park revitalization projects and their associated outdoor recreation amenities. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

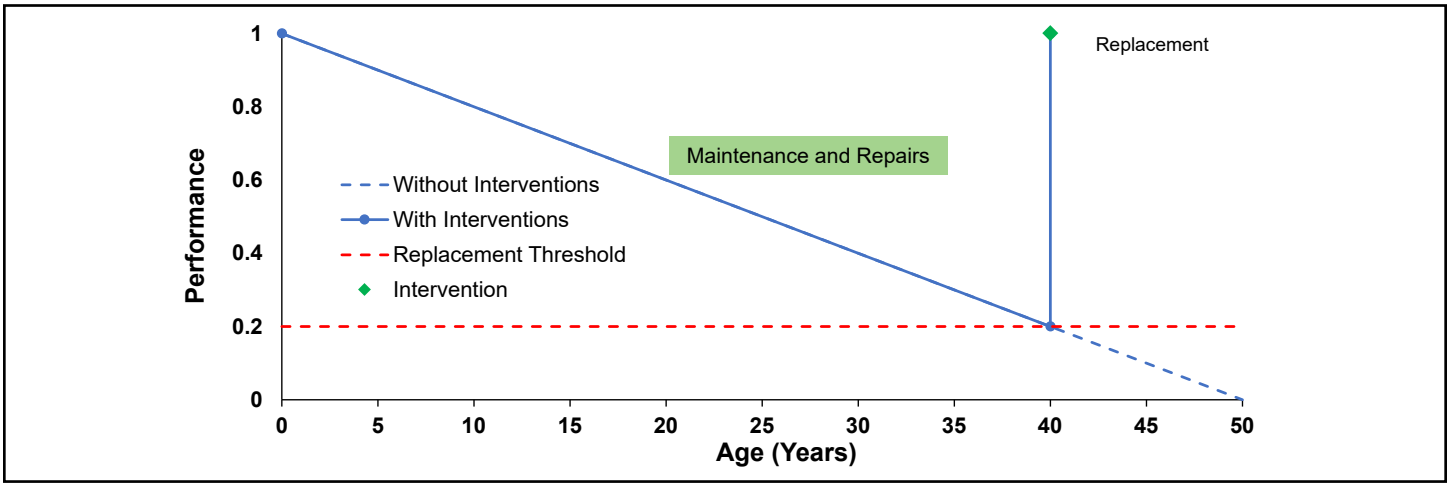
### Capital Treatments

#### Hard Surface Outdoor Recreation Life Cycle




The life cycle treatments for the City's hard surface outdoor sport amenities (e.g. tennis courts) would typically include regular and ongoing maintenance, potential resurfacing of the asphalt if appropriate at mid-life (approximately 10 to 15 years) and then eventual reconstruction sometime after 30 years (based on estimated service life). The timing of these treatments can vary depending on the recommendations from consultant technical assessments and bundling of similar assets together (e.g. fencing and illumination tied to those outdoor recreation amenities.)

#### Park Site Assets Life Cycle




There are a wide range of site assets within the City's parks, including illumination, fencing and structures, among others. These assets are inspected, maintained and repaired as necessary. Typically, these assets would be replaced when their condition has deteriorated where they are no longer functioning (i.e. condition) and/or have reached the end of their life. The timing of these treatments can vary depending on the bundling of similar assets and/or the proximity of other assets in need of renewal. Condition inspection assessments can also determine when these assets should be replaced. They may be kept in service longer if they are reliable or they may be replaced sooner if they are no longer functioning and/or have premature damage.

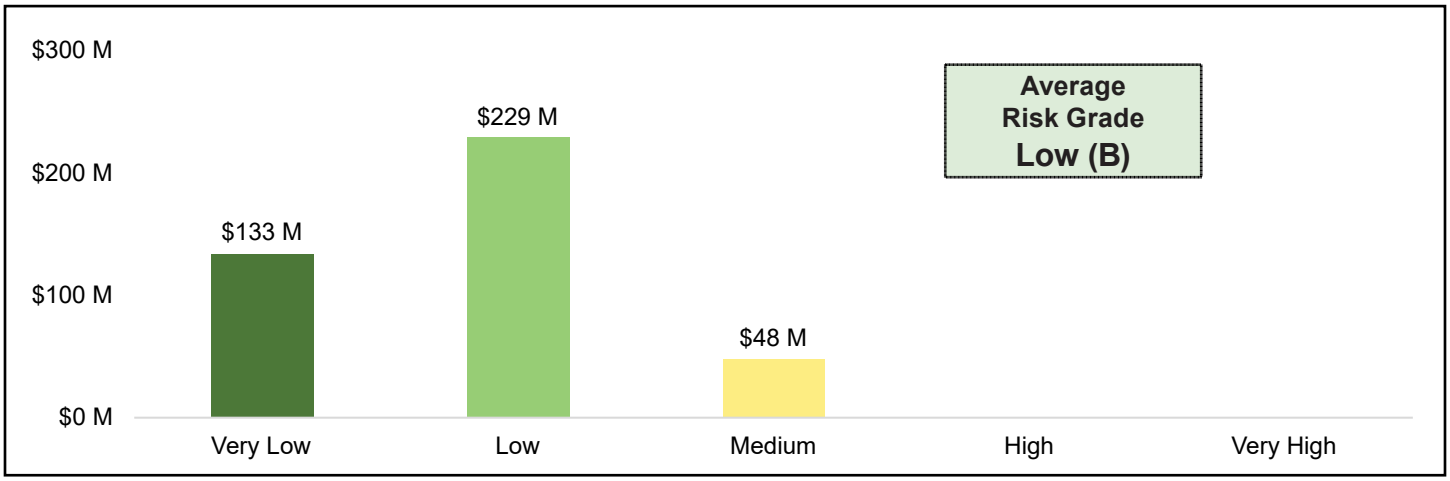
# Risk Prioritization

Average Risk Grade
**Low (B)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Park Site Assets<br>• Outdoor Recreation<br>• Supporting Facilities<br>• Street and Park Trees<br>• Natural Areas<br>• Fleet & Equipment<br>• Parking Lots | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Park classification, type of amenity, facility building component type and function<br>• Asset type, function, size and location | • Environmental compliance<br>• Asset type<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- The Parks Plan included policy direction to plan for resiliency to climate change by applying a “climate change lens” to the overall planning, design, maintenance and operations of the City’s park system.
- The Community Stewardship Program (CSP) continues to work with partners to restore and enhance Richmond Hill’s natural environment.
- The City works with TRCA to conduct ecological restoration and enhancements, such as the creation of meadows, to improve habitat for species at risk flora and fauna.
- Completed an Urban Forest Study to understand urban forest distribution and condition, assess climate vulnerability and quantify ecological services
- Incorporation of sustainable and energy efficient elements in City building designs and construction.

# Asset Investment Strategy

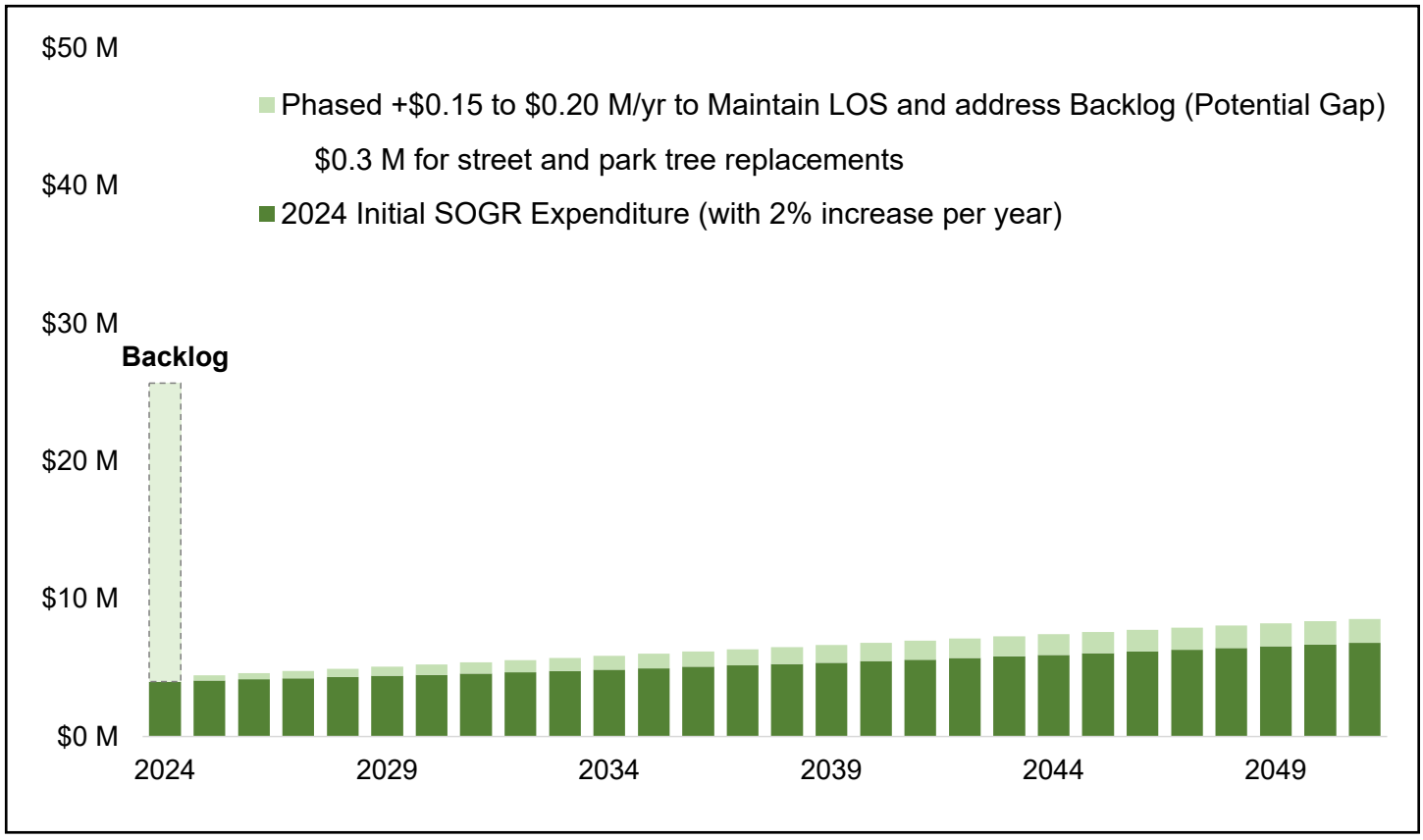
| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$25.7 M** | **+$0.15 to 0.20 M/yr** | **$0 to $2.2 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Parks and Outdoor Recreation ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Parks | 25.7 | 4.0 | +0.15 to 0.20* | 4.9 to 5.2 | 0 to 0.8 | 7.1 to 8.0 | 0 to 2.2 |

*$0.3 M for street and park tree replacements due to storm events and invasive species would be required annually.

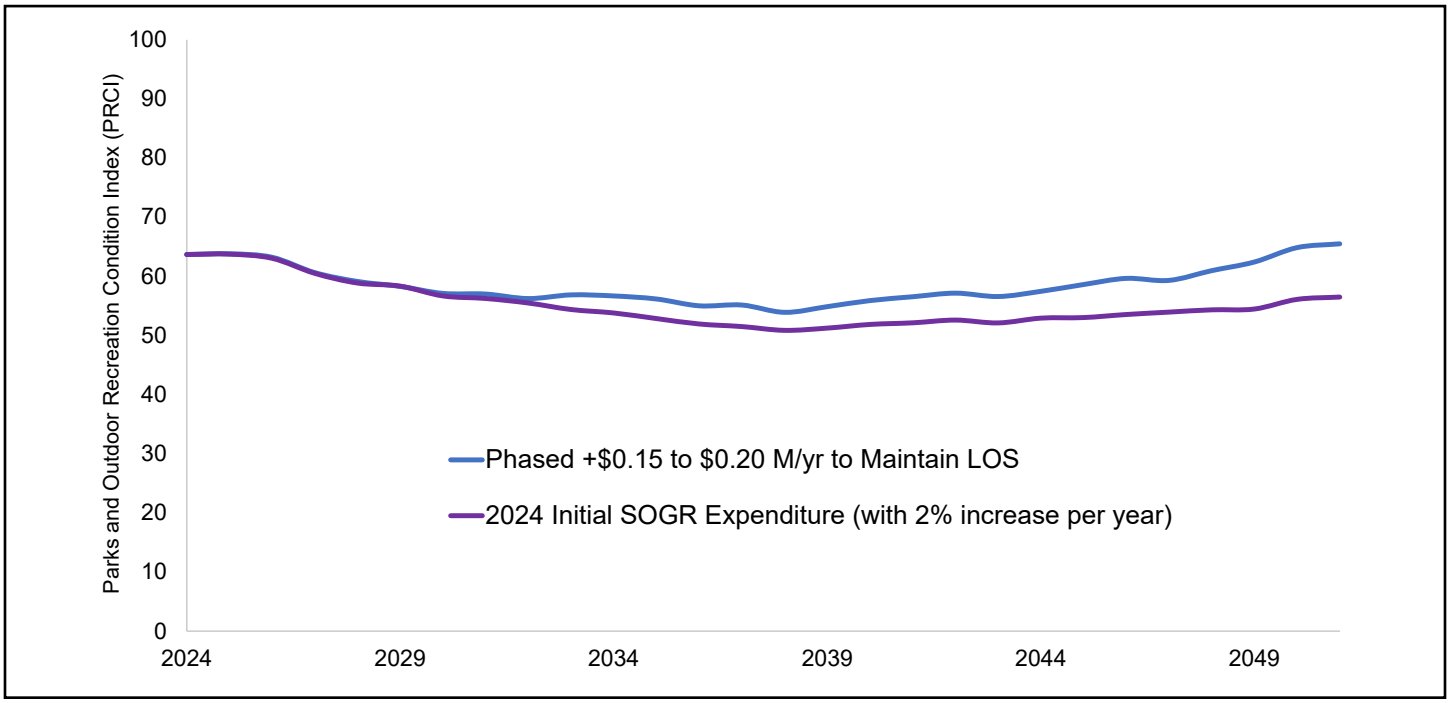


# Asset Investment Strategy

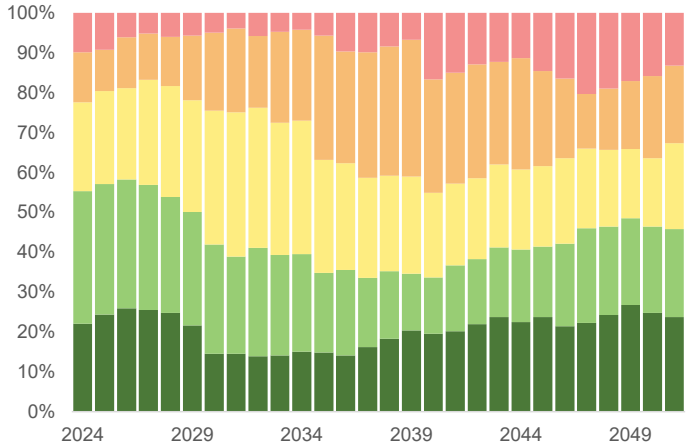
## Impact on Levels of Service

### Parks and Outdoor Recreation

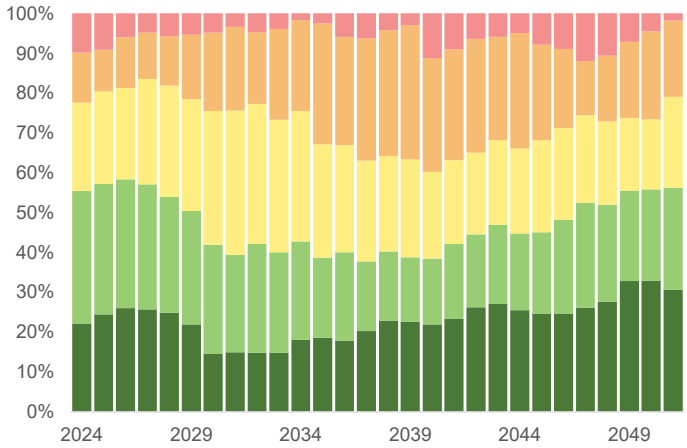
**Parks and Outdoor Recreation Condition Index (PRCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



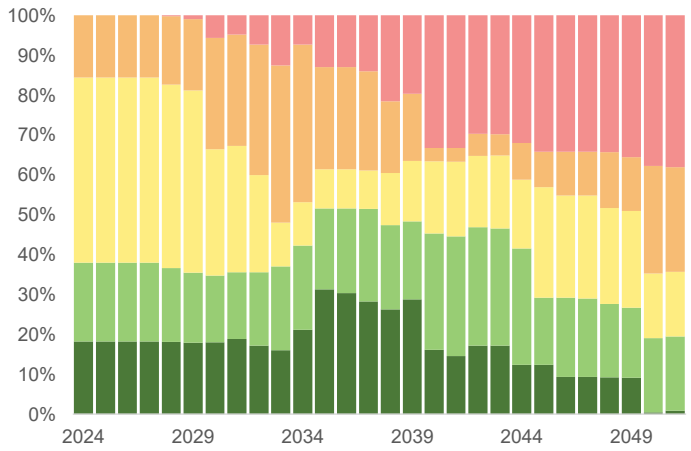

Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

# Asset Investment Strategy

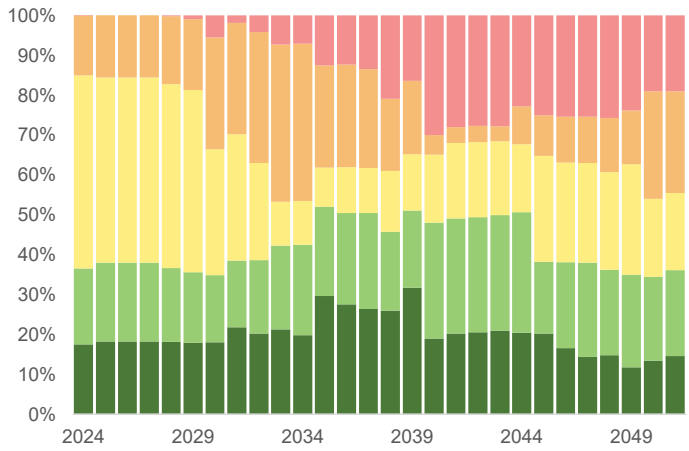
## Impact on Levels of Service

### Supporting Facilities

**2024 Initial SOGR Expenditure (with 2% increase)**

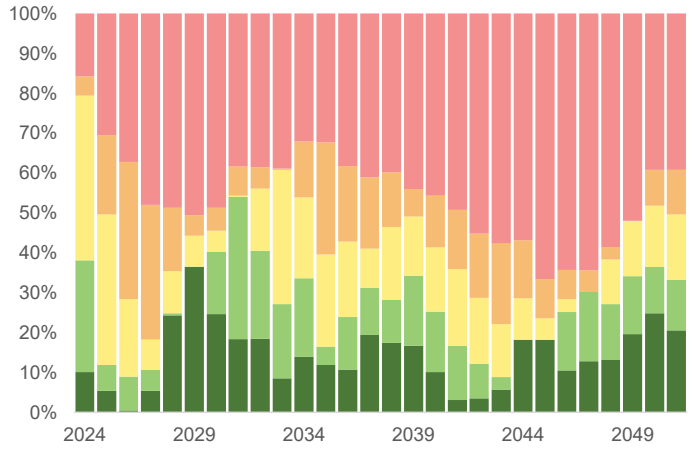



**Maintain Level of Service**

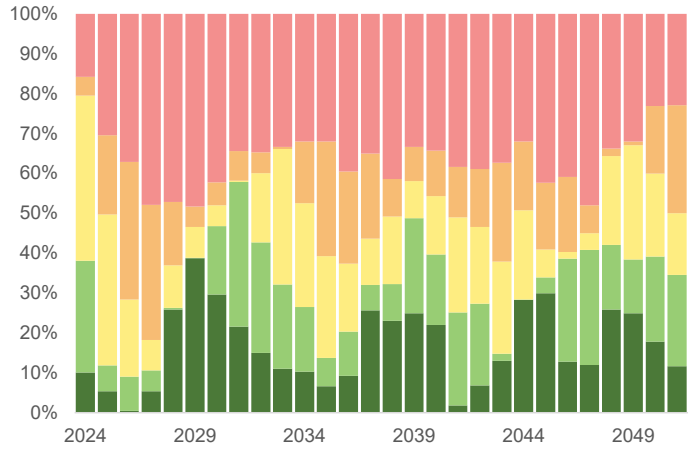



### Fleet and Equipment

**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



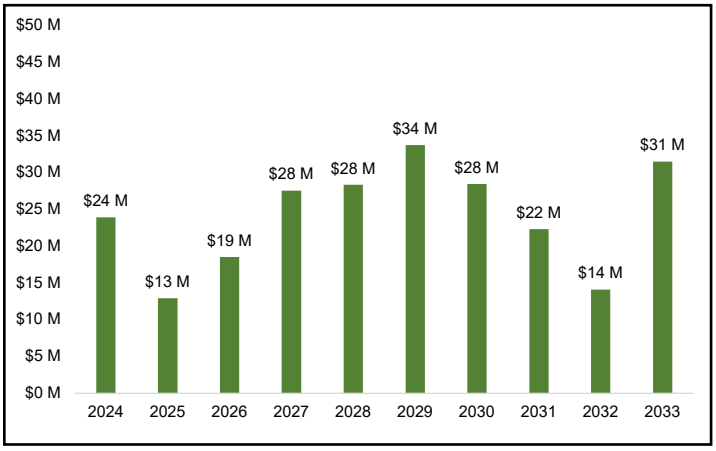

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Growth Capital and Operating Forecast

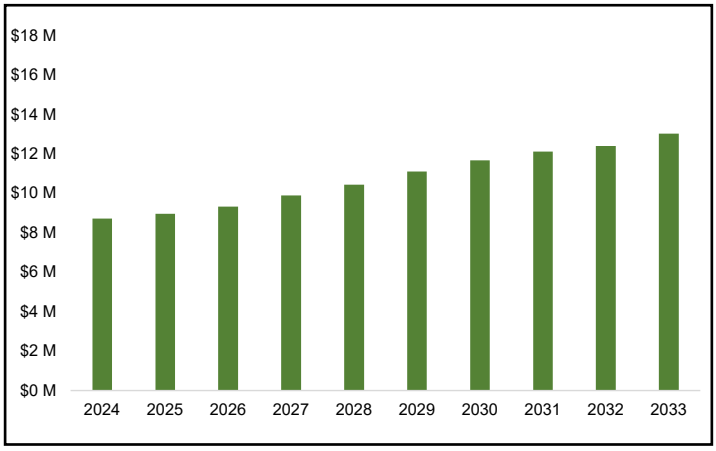
## Future Outlook

The City's Park Plan outlines a comprehensive future vision for Richmond Hill's parks and outdoor recreation services, to service the anticipated population growth and emerging trends. Key strategies in the Plan include expanding and revitalizing the parks system, enhancing the functionality of existing parks, seamlessly connecting parks to trails and the larger Greenway System, and championing flexible, multi-use designs that accommodate year-round outdoor recreational activities. This Parks Plan, together with upcoming Asset Management Plans, will shape the parkland revitalization, expansion, and state of good repair investment decisions made in the City's future 10 Year Capital Budgets and Forecasts. In addition, the forthcoming Natural Heritage Strategy and Invasive Species Management Strategy will provide guidance on future ecological restoration.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




The City's Parks and Outdoor Recreation amenities are proposed to be expanded through a series of projects that will create a more unified interconnected network that serves the public at large. The growth-related projects are informed by the City's Park Plan and are included in the 2024 Capital Budget and Forecast. The RH David Dunlap Observatory Park project, at an estimated cost of $64.3 million, will transform the astronomical park into a state-of-the-art public space adjacent the growing Yonge Street corridor. Other significant growth-related park enhancement projects include the Mill Pond Park Revitalization ($22.0 million), Town Park Revitalization and Unity Park Repair and Replacement ($15.3 million) and Richmond Green Revitalization ($10.2 million). In addition to these, there are also a series of planned park revitalizations that will collectively provide parks and outdoor recreation amenities to serve population growth within the planned City structure.

The estimated operating and maintenance costs to support the existing and future expansion of the City's Parks and Outdoor Recreation infrastructure could increase from around $9 million in 2024 to over $12 million by 2033 in today's dollars (excluding future inflationary pressures).

## Appendix G

# Recreation Facilities


*Oak Ridges Community Centre*

# Overview of Recreation Facilities

The City of Richmond Hill offers a wide variety of accessible recreation programs for all ages and interests. These programs are provided through the City's community centres, arenas, and other supplemental facilities and equipment.

*Bayview Hill Community Centre*

## Community Centres

Richmond Hill's Recreation Facilities includes 11 community centres that span a total of approximately 32,000 square metres. They include Bayview Hill Community Centre, Centennial Pool, Elgin West Community Centre, Lake Wilcox Community Centre, Langstaff Community Centre, Lois Hancey Aquatic Centre (The Wave Pool), M. L. McConaghy Centre, Oak Ridges Community Centre, Richmond Green Sports Complex, Richvale Community Centre, and Rouge Woods Community Centre. These centres collectively offer an array of amenities including, for example, six aquatic centres, nine gymnasiums, a fitness centre, artificial turf and dedicated age-specific facilities. The community centres are strategically located across the City to ensure accessibility and serve as hubs for social interaction, physical activity, and community engagement.

*Tom Graham Arena*

## Arenas

There are five major arenas for use by the community. These facilities include the Ed Sackfield Arena, Elvis Stojko Arena, Tom Graham Arena, Bond Lake Arena and Elgin Barrow Arena. Collectively, these arenas provide a total of over 31,000 square metres of space and include, for example, eight ice pads, an indoor track and a fitness centre. These arenas are central to fostering community engagement in sports and physical activities, particularly ice-based sports like hockey and skating. The location of these arenas provides accessible amenities and caters to the evolving demographic and recreational needs of the community.

*David Dunlap Observatory*

## Public Education and Outreach Facilities

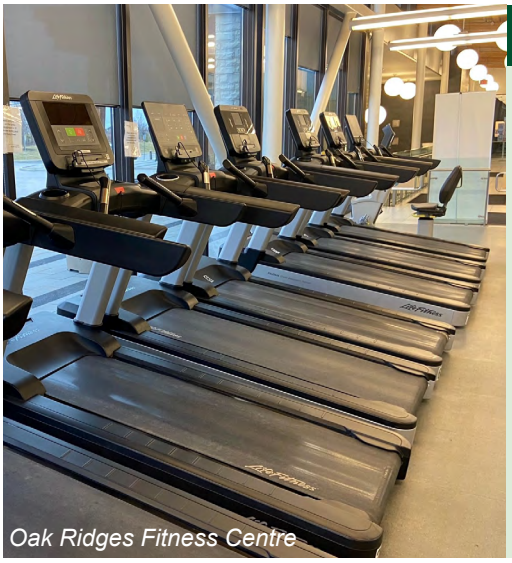
The City's public education and outreach facility is known as the David Dunlap Observatory. This facility encompasses 2,062 square metres and is a world class facility that melds historical astronomical research with public education and outreach. Being one of Canada's National Historical Sites, it houses an optical telescope. The Observatory Dome is protected as a cultural heritage landscape under the *Ontario Heritage Act* and has a unique combination of natural and scientific features and amenities that make it an ideal place for education and public outreach. Currently, the Facility also provides family programs, heritage tours, and lectures.

# Overview of Recreation Facilities


Boynton House

## Supplemental Facilities

Supplemental facilities encompasses a unique collection of 13 buildings. These facilities provide spaces for an array of recreational programming and services (e.g. weaving and pottery), administration services in support of recreation programs, and spaces for events. These supplemental facilities complement and enhance the City's recreation services.


Oak Ridges Fitness Centre

## Recreation Equipment

Recreation equipment is a comprehensive collection of aquatic equipment, fitness equipment, and other major equipment such as water slides and pool UV systems. Aquatic equipment includes assets that support the City's swimming pools and include, for example, public announcement systems, lane ropes, digital displays, and furniture in facilities like Bayview Hill, Centennial, Elgin West, Oak Ridges, Richvale, and the Lois Hancey Aquatic Centre (The Wave Pool). Fitness equipment includes assets such as benches, various cardio machines, and weight and strength-training equipment. These are integral to the fitness studios at Ed Sackfield Arena and Oak Ridges Community Centre and provide residents with access to state-of-the-art fitness equipment that support a variety of workout options.


## Operational Fleet and Equipment

Fleet and equipment consists of a diverse collection of equipment that support the operational needs of the City's recreational spaces. Fleet, for example, includes vehicles such as Zambonis and ice edgers that help provide high-quality and safe ice for recreational skating, hockey games, and ice sports events. Other fleet assets include vans and trailers, which are utilized to support the City's recreational facilities and sites.

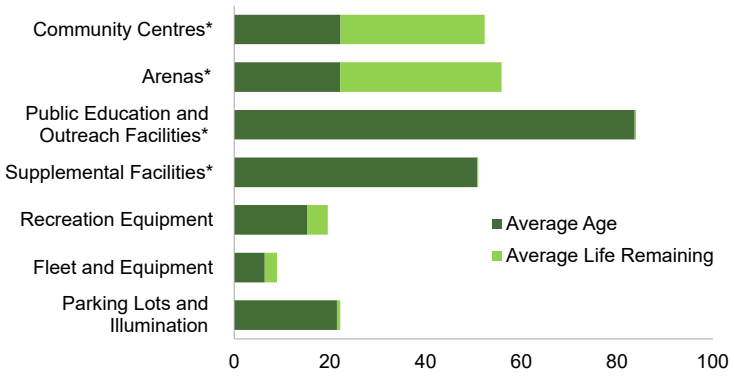
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$358 M** | **B (Good)** | **29 / 53 (years)** |

## Asset Portfolio

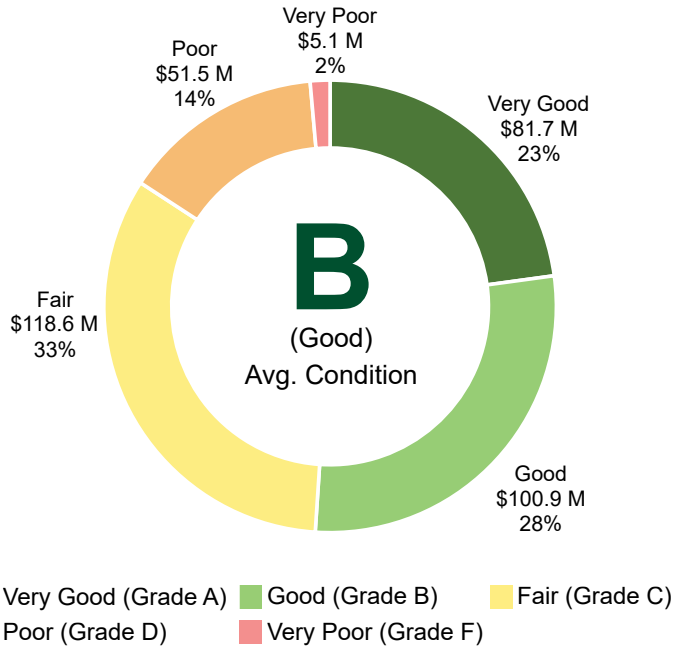
| Asset | Quantity | Replacement Value |
|---|---|---|
| Community Centres | 11 ea. | $158.0 M |
| Arenas | 5 ea. | $123.9 M |
| Public Education and Outreach Facilities | 1 ea. | $30.6 M |
| Supplemental Facilities | 13 ea. | $19.2 M |
| Parking Lots and Illumination | 20 ea. | $18.1 M |
| Recreation Equipment | A mix | $7.0 M |
| Fleet and Equipment | A mix | $0.9 M |

## Average Age and Service Life




**Age and ESL reflects building components, not facility as a whole*

## Overall Condition




- The condition of the recreation facilities is based on their Building Condition Assessments (BCA) completed in 2022/2023. The BCA results are converted into Corporate Asset Management condition ratings. The City completes BCA for all City-owned facilities over a three-year cycle.
- Condition of recreation equipment is based on their age and remaining life. This group of assets includes fitness equipment, aquatic equipment, and other supporting assets.
- For waterslides, their condition is based on formal annual inspections in compliance with *O. Reg. 221/01: Amusement Devices*, which are categorized into a Corporate Asset Management condition rating.
- The condition of the supporting fleet and equipment is based on its utilization (km) and age and remaining life.
- The condition of parking lots is based on visual inspections and illumination is based on age and remaining life.

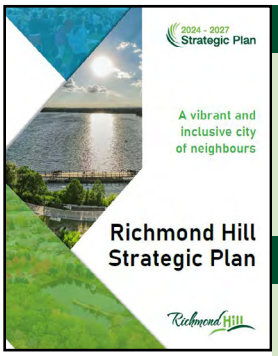
| Condition Category | Letter Grade | Facilities: Building Condition Assessments | Recreation Equipment: Life Remaining | Fleet and Equipment: Utilization and Life Remaining | Waterslides: Condition Assessments | Parking Lots: Condition Assessments and Life Remaining |
|---|---|---|---|---|---|---|
| **Very Good** | **A** | >0.8 to 1.0 | >75% to 100% | >0.8 to 1.0 | >0.8 to 1.0 | >0.8 to 1.0 |
| **Good** | **B** | >0.6 to 0.8 | >50% to 75% | >0.6 to 0.8 | >0.6 to 0.8 | >0.6 to 0.8 |
| **Fair** | **C** | >0.4 to 0.6 | >25% to 50% | >0.4 to 0.6 | >0.4 to 0.6 | >0.4 to 0.6 |
| **Poor** | **D** | >0.2 to 0.4 | >0% to 25% | >0.2 to 0.4 | >0.2 to 0.4 | >0.2 to 0.4 |
| **Very Poor** | **F** | >0 to 0.2 | <0% | >0 to 0.2 | >0 to 0.2 | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** The City offers a broad range of accessible recreation programs for all ages and interests that brings the community closer together and improves residents' quality of life, supports healthy lifestyles, and provides opportunities to connect.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

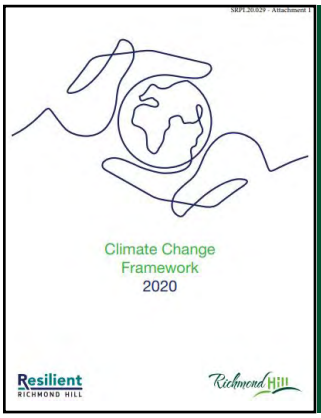
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.
- Build a workforce for tomorrow to ensure that expertise and continuity is in place to deliver on the City's aspirations for the future.

#### Pillar 3: Strengthening our Foundations

- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Asset Management**
- **Apply Climate Change Lens to Corporate Governance**
- **Formalize Community Risk Mitigation**
- **Foster Engagement and Innovation**

### Recreation and Culture Plan


- **Recreation opportunities for all**
- **Community hubs**
- **Facility Service Levels**
- **Equitable Access**
- **Fiscally responsible planning**

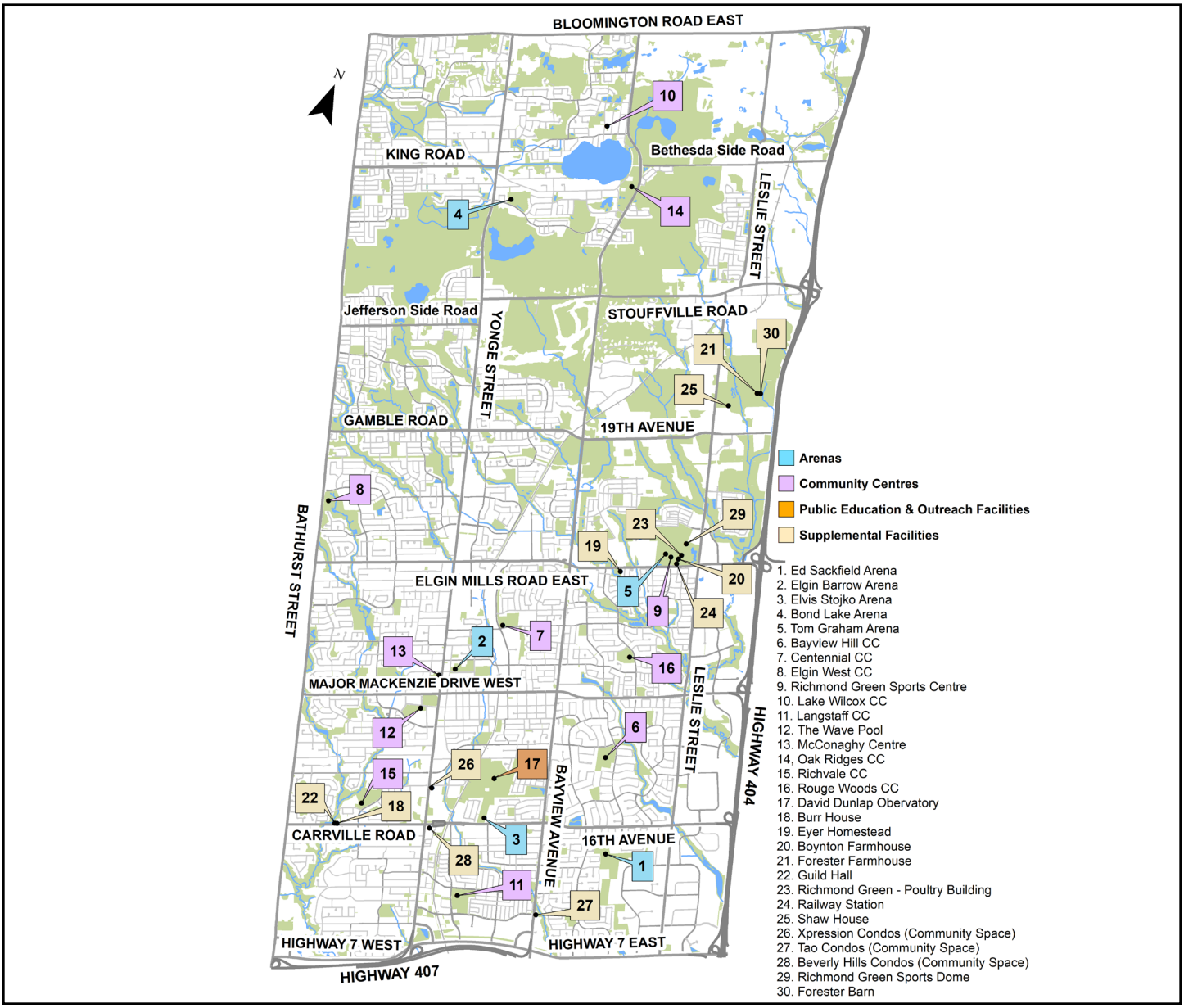
# Levels of Service

## Community Levels of Service

### Advanced (Scope): Richmond Hill Recreation Services

Richmond Hill offers a diverse range of indoor recreation facilities and programs to the community through the arenas and community centres that have aquatic amenities (e.g. pools), gymnasiums, fitness centres, an indoor track and multi-purpose rooms, among others. These facilities cater to all ages, by having spaces designated for youth and adults aged 55+ as well. As Richmond Hill experiences demographic changes and further intensification, there is a strategic focus on adapting these services to meet both current and future needs. The City is particularly responsive to the evolving preferences of its community by ensuring that its recreation services remain accessible, relevant, and sustainable.

### City of Richmond Hill Recreation Facilities



# Levels of Service

## Technical Levels of Service

| Advanced (Quality) | |
|---|---|
| **0.19 (GOOD)** | Weighted Average FCI of community centres and arenas |
| **64 (GOOD)** | Recreation Equipment Condition Index (RECI) |

| Advanced (Scope) | |
|---|---|
| **38,316** | Recreation program participants |
| **97** | Current supply for facility amenities/ spaces |
| **4,455** | Number of recreation programs offered |

| Advanced (Reliability) | |
|---|---|
| **67%** | Percentage of recreation equipment in fair or better condition |
| **84%** | Percentage of community centres in fair or better condition |
| **86%** | Percentage of arenas in fair or better condition |

| Advanced (Environmental) | |
|---|---|
| **207.7** | Annual hydro consumption (kWh) per square metre (community centres) |
| **29.1** | Annual gas consumption ($m^3$) per square metre (community centres) |
| **17.2** | Annual water use intensity ($m^3$) per square metre (community centres) |
| **189.4** | Annual hydro consumption (kWh) per square metre (arenas) |
| **25.8** | Annual gas consumption ($m^3$) per square metre (arenas) |
| **8.6** | Annual water use intensity ($m^3$) per square metre (arenas) |

## Community Levels of Service

### Advanced (Quality): Facility Condition

The City undertakes continual inspections of the Recreation Facilities and utilizes maintenance management in Maximo to track and complete maintenance and repairs. The City also undertakes formal Building Condition Assessments (BCA) on a rotating three-year cycle to assess its condition. The BCA results are categorized into a Corporate Asset Management condition rating and also inform capital renewals.

**Facility Condition Index (FCI) Ranges**

| Condition Category | Condition FCI Range | Condition Range Description |
|---|---|---|
| **Very Good** | <10% | New building or building that has recently undergone a significant degree of renewal |
| **Good** | 10% to <20% | Minimal service interruptions; minor renewals required |
| **Fair** | 20% to <30% | Intermittent service interruptions; minor/major life cycle renewals required in the next five years |
| **Poor** | 30% to <50% | Some service interruptions; major life cycle renewals required in the next five years |
| **Very Poor** | >50% | Required renewal costs approaching building replacement cost; consideration for asset replacement or demolition |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

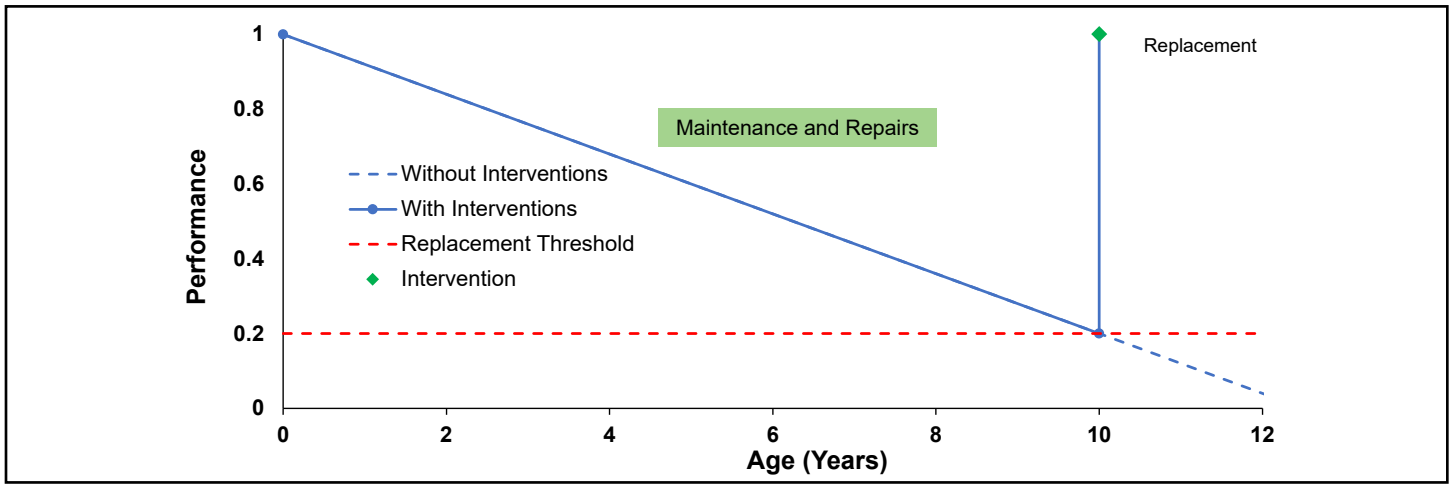
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City makes continuous improvements in operations as well as other asset related initiatives<br>• Recreation buildings conform to Richmond Hill, Provincial and Federal government policies, standards and regulations. |
| **Maintenance** | • Fitness and aquatic recreation equipment is typically inspected daily/weekly/monthly to ensure it is functioning and safe. Preventative maintenance is also undertaken on a regular basis to limit breakdowns and ensure reliability, functionality and safety.<br>• Scheduled preventative maintenance actions are planned and executed to manage the Recreation buildings. Reactive maintenance activities are also performed as required.<br>• Richmond Hill uses Maximo to manage the maintenance program of the City's Recreation facilities. |
| **Rehabilitation** | • Based on the regular inspections of fitness and aquatic equipment, repairs would be completed if required. Typically, these assets would not be rehabilitated, but would be replaced.<br>• For the critical assets like waterslides, these receive daily inspections as well as formal technical assessments once per year in compliance with *O. Reg. 221/01: Amusement Devices*. Any repairs and/or rehabilitations are identified and completed as required.<br>• Inspections and Building Condition Assessments (BCA) are completed for all City-owned facilities on a three-year cycle, including for Recreation buildings, which were completed in 2022/2023.<br>• Building assets are highly varied in type and complexity. They include structural, mechanical and electrical components. The rehabilitation of the various Recreation building components are completed as identified through the BCAs, EAM and VFA software program. |
| **Replacement** | • Most Recreation equipment including fitness and aquatic equipment would typically be replaced either at the end of their service life and/or sooner if the equipment is no longer functioning as intended.<br>• The replacement of the various building components of the City's Recreation facilities are determined through the BCAs, EAM and VFA software program and completed as required. |
| **Disposal** | • Appropriate and proper disposal occurs when assets are replaced or renewed. |
| **Growth / Service Improvement** | • The City's Recreation and Culture Plan recommends service improvements that can lead to the acquisition of new equipment and/or enhancement of building capacity and new facilities (e.g. North Leslie Community Centre).<br>• AODA compliance remains achieved through Recreation building asset component renewals considered during rehabilitation and/or replacement.<br>• Recreation building assets could be considered for replacement to address energy efficiency, water consumption, and/or technical and regulatory obsolescence. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

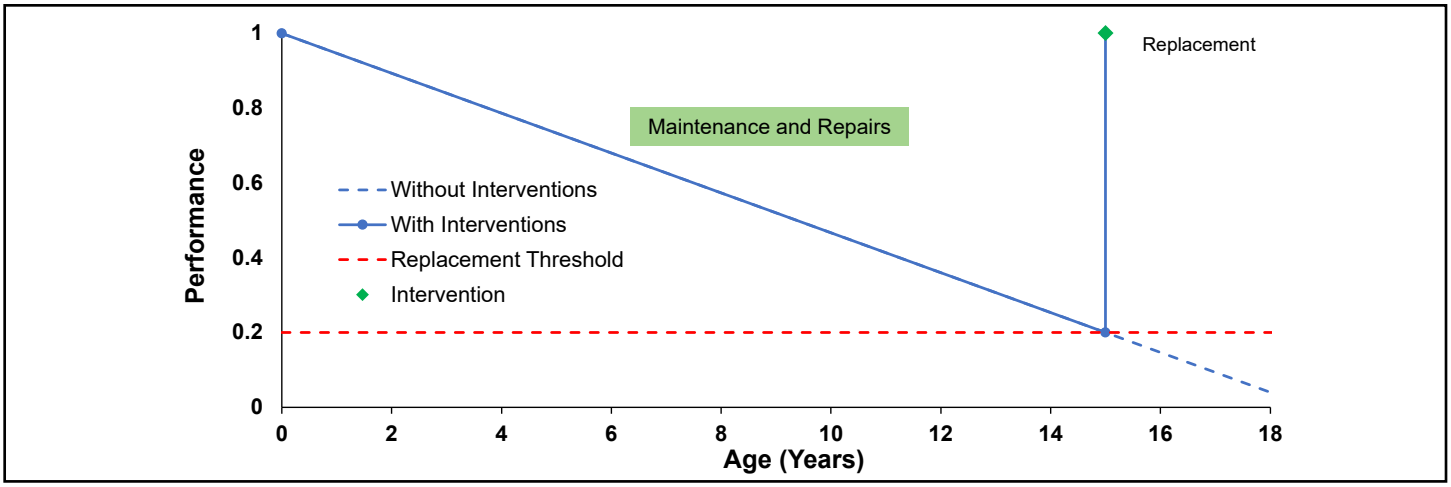
### Capital Treatments

#### Fitness Equipment




The life cycle model for fitness equipment forecasts that they would typically be replaced around the end of their service life, which would be around 5 to 10 years depending on the type of equipment. Fitness equipment is typically inspected daily and preventative maintenance is undertaken on a regular basis, along with any needed repairs to ensure reliability and functionality. These assets may be kept in service longer or could be replaced sooner based on condition, functionality and reliability.

#### Aquatic Equipment



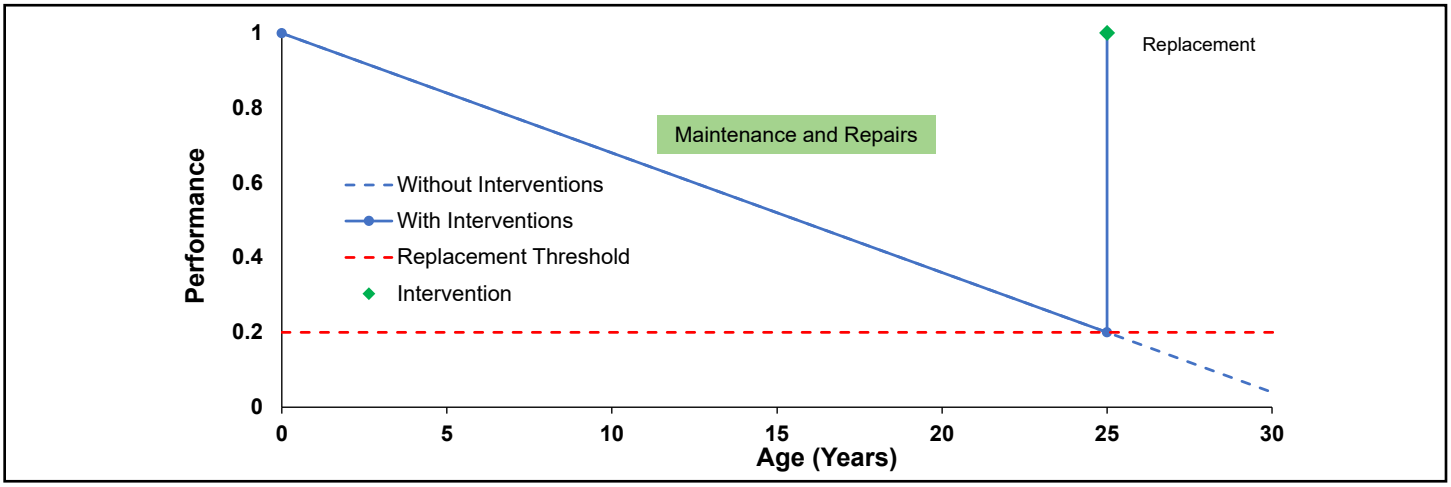

Aquatic equipment includes a variety of assets that support the City's swimming pools. These assets receive daily safety checks and are replaced immediately if required. The life cycle model forecasts that they would be typically replaced around the end of their service life, which can vary between 5 to 15 years depending on the type of equipment. These assets may be replaced sooner or kept in service longer if they are in good working order.

# Asset Management Life Cycle Strategies

## Life Cycle Activities

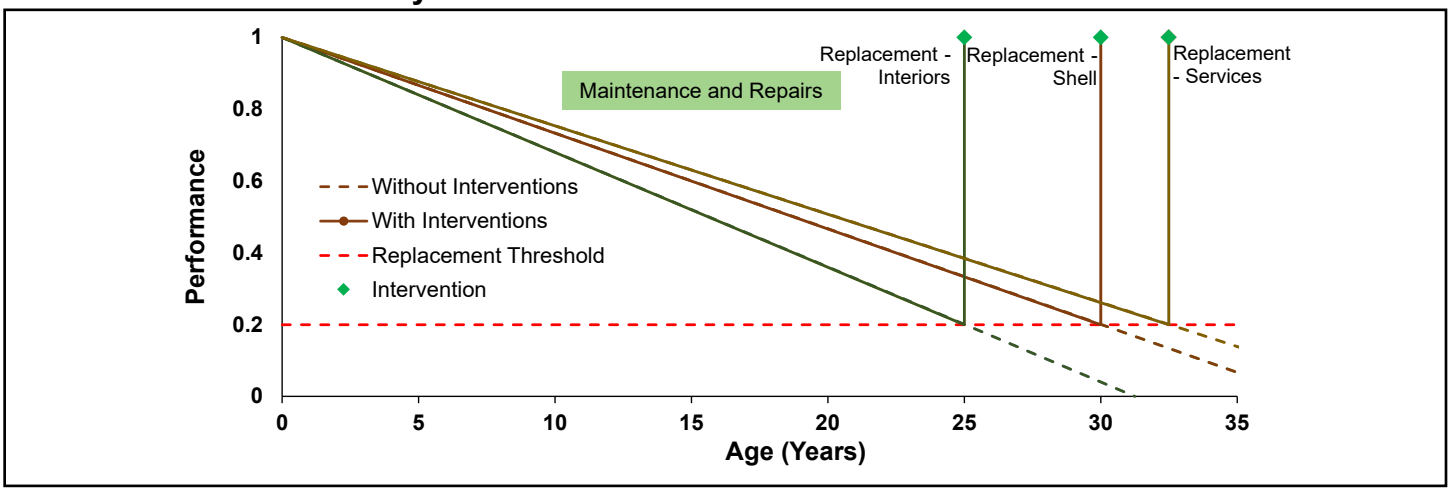
### Capital Treatments

#### Amusement Devices (Waterslides) Life Cycle




Given the importance of the waterslides, they receive daily/weekly/monthly inspections along with annual formal technical condition assessments. They receive regular ongoing maintenance, repairs and/or rehabilitations. While the life cycle model forecasts they should be examined for potential replacement at the end of their service life of 25 years, these assets may be kept in service longer provided they are in good working order and are reliable. They would continue to receive ongoing inspections and maintenance.

#### Recreation Facilities Life Cycle




The Recreation Facilities are composed of a number of different building assets. Structural assets include components like foundations and above-grade structures, which generally do not require renewal over the life of the building. Building shell assets (i.e. roof and exterior walls) have an average estimated service life of around 30 years, although some components, such as metal roofs and window frames, have significantly longer service lives. Service assets (mechanical, plumbing and electrical) can have a 20 to 45 year service life. Interior assets (i.e. wall, flooring, and ceiling) may last 10 to 40 years depending on the material and level of occupancy/traffic volume of the facility. Once the condition of these assets has deteriorated to poor/very poor and/or have reached the end of their life, the City's life cycle model forecasts they would typically be replaced. These assets may be kept in service longer or could be replaced sooner based on criticality, condition, and effectiveness of alternative life cycle treatments like repairs and rehabilitations.

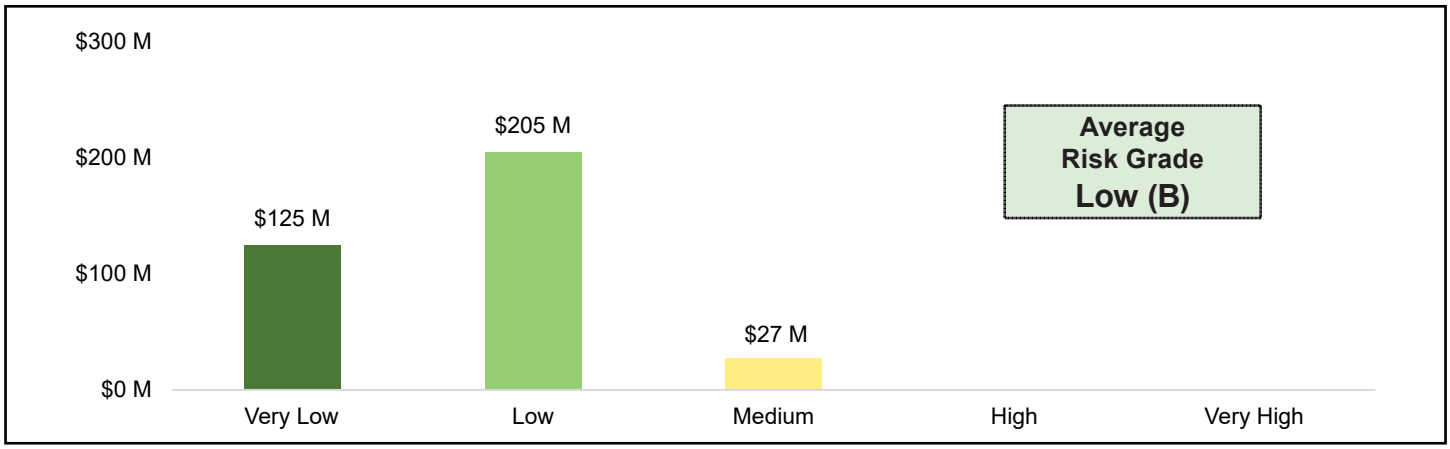
# Risk Prioritization

Average Risk Grade
**Low (B)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Community Centres<br>• Arenas<br>• Public Education/ Outreach Facilities<br>• Supplemental Facilities<br>• Recreation Equipment<br>• Fleet and Equipment<br>• Parking Lots/Illumination | • Current and deteriorating condition | • Current capacity<br>• Future expansion/ new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Equipment/ building component type and function<br>• Asset type and function | • Environmental compliance<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- Installation of equipment that improves water efficiency, e.g. replacement of pool filtration system at Bayview Hill Community Centre leading to reduced water consumption and operational costs.
- Successfully completed equipment replacements at Richmond Green Sports Complex, Elgin West Community Centre, and McConaghy Centre for improved energy and utility savings.
- A 2050 net zero emissions goal for City facilities and the Corporate Energy Plan will continue.
- Recommissioning studies were conducted for five City arenas, and low-emissivity ceilings and over-the-ice LED lighting were installed at Tom Graham and Ed Sackfield Arena.
- Incorporation of sustainable and energy efficient elements in City building designs and construction.
- The City completes mandatory reporting requirements on annual energy consumption and GHG emissions for its facilities to the Ministry of Energy.
- Reducing single-use plastics at City buildings through the Corporate Single-Use Plastics Reduction Policy.

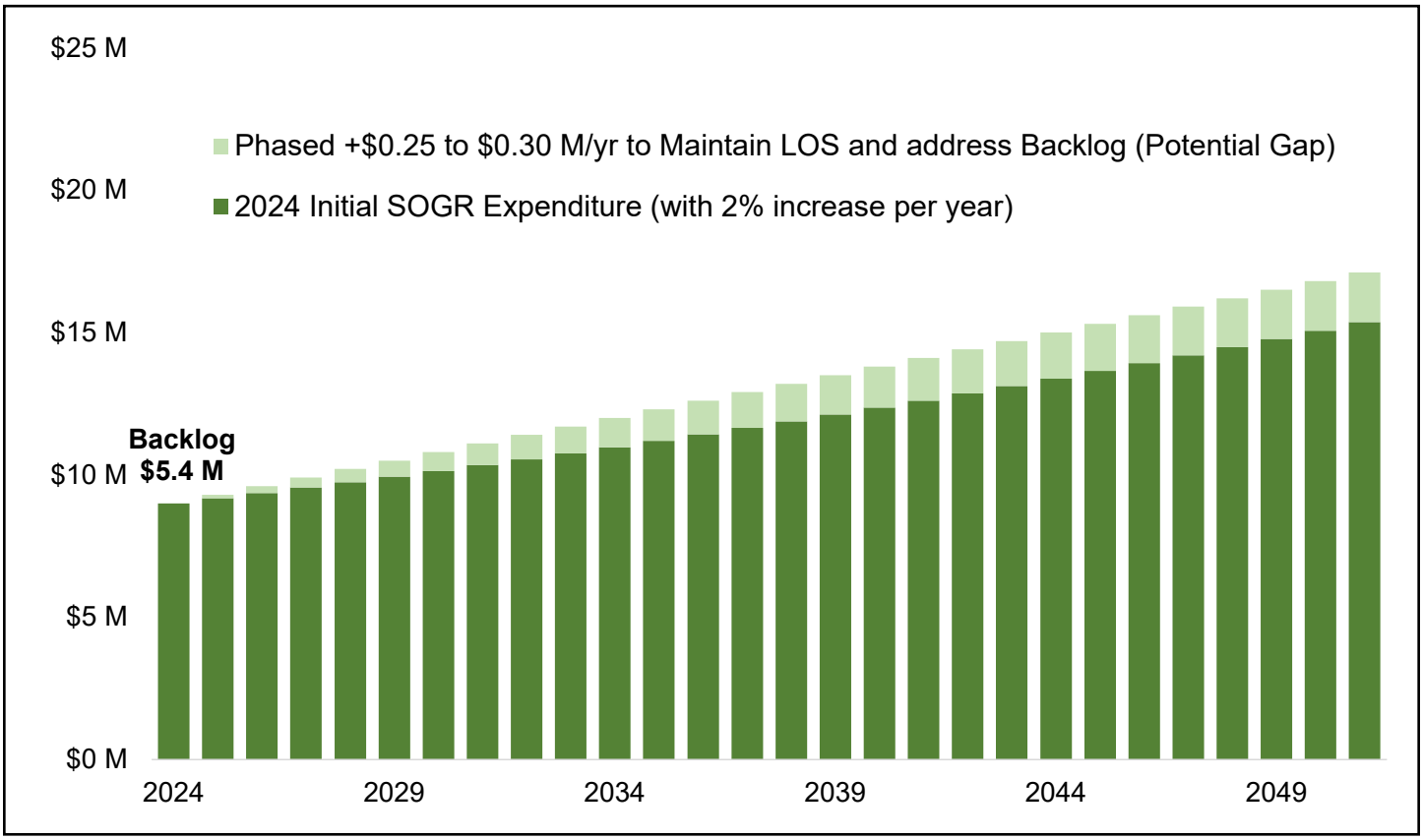
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$5.4 M** | **+$0.25 to $0.30 M/yr** | **$0 to $1.5 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Recreation Facilities ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Recreation | 5.4 | 9.0 | +0.25 to 0.30 | 10.1 to 10.4 | 0 to 0.5 | 13.6 to 14.6 | 0 to 1.5 |

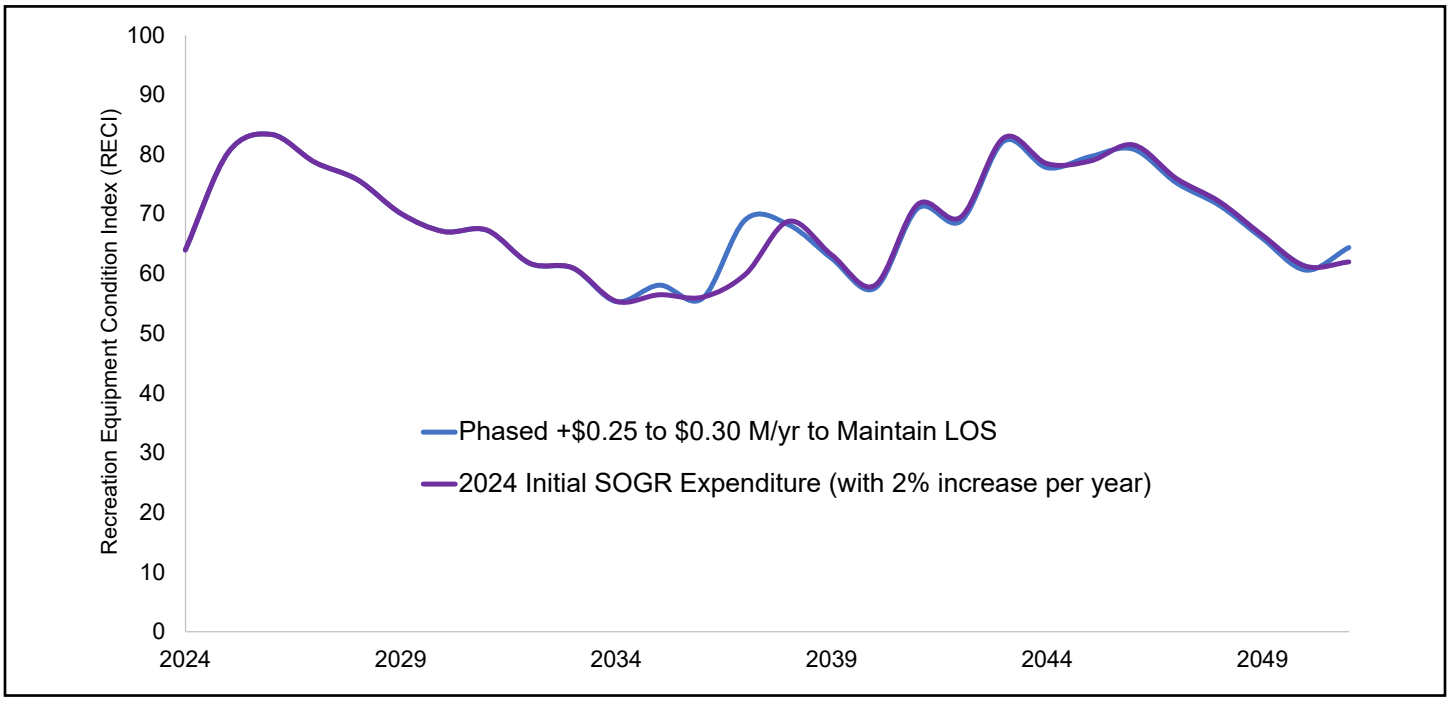


# Asset Investment Strategy

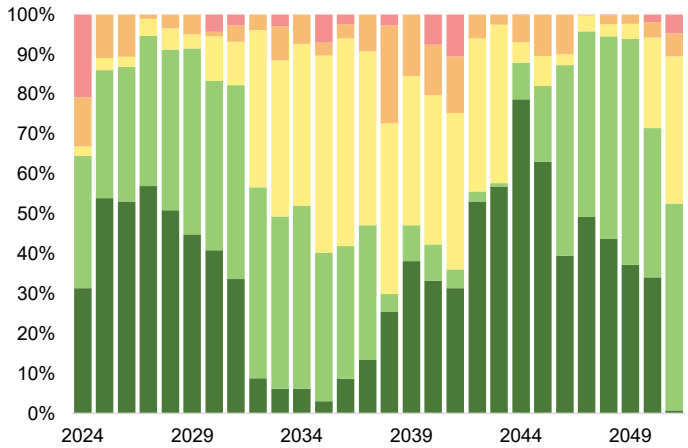
## Impact on Levels of Service

### Recreation Equipment

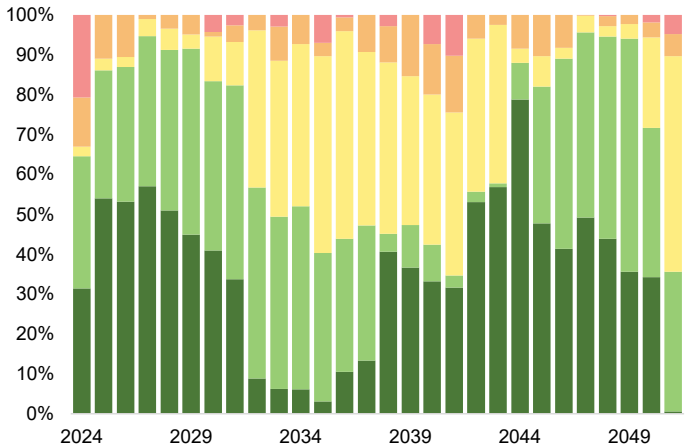
**Recreation Equipment Condition Index (RECI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



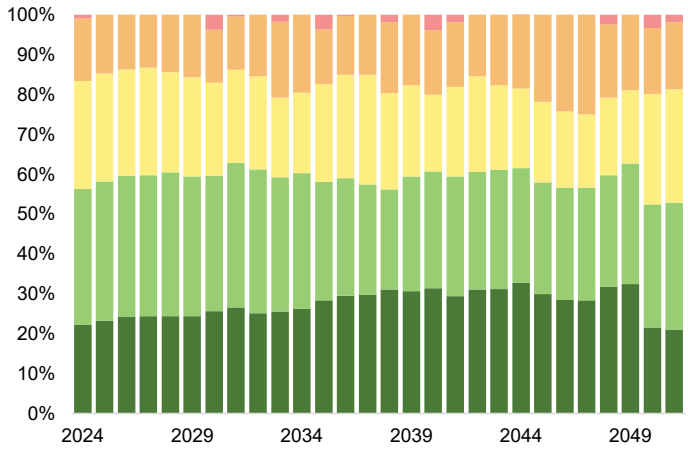

Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

# Asset Investment Strategy

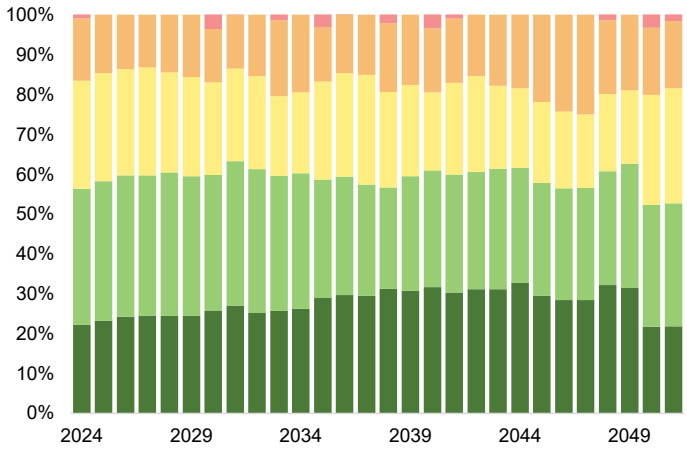
## Impact on Levels of Service

### Community Centres

**2024 Initial SOGR Expenditure (with 2% increase)**

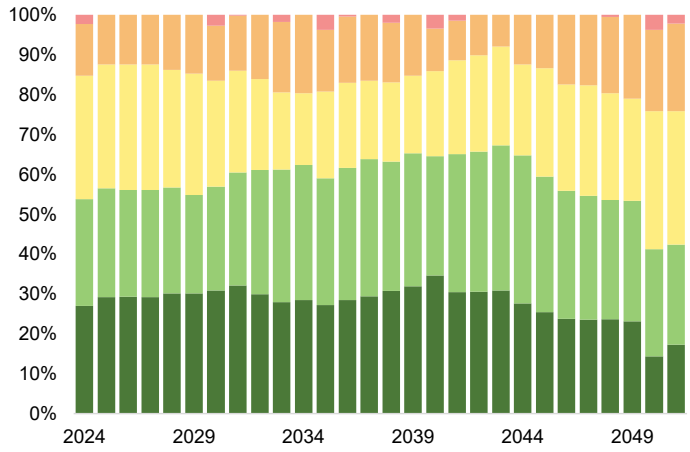



**Maintain Level of Service**

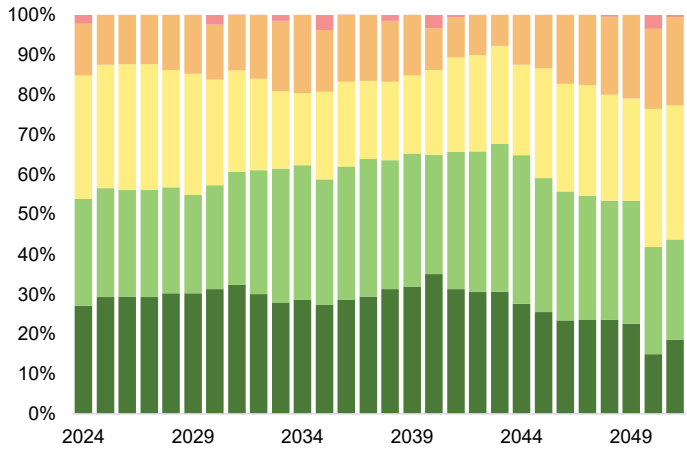



### Arenas

**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



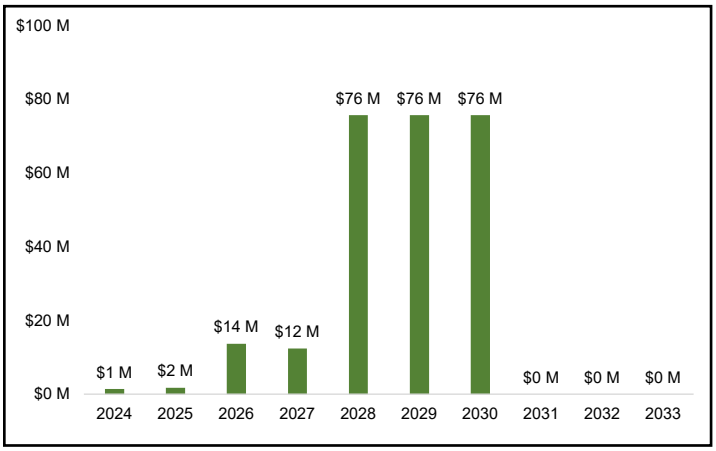

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Growth Capital and Operating Forecast

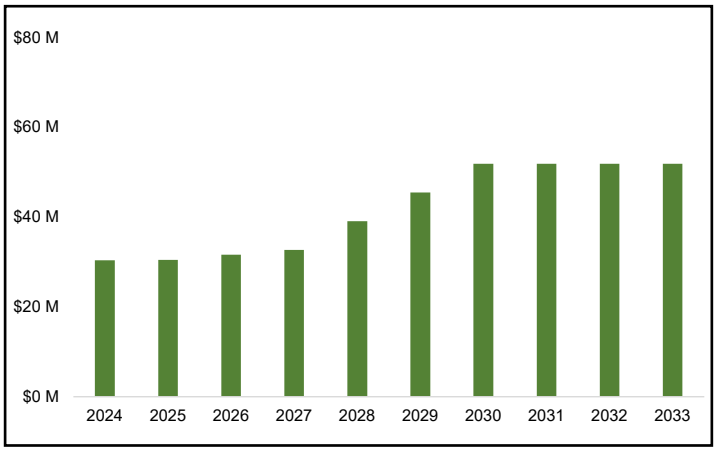
## Future Outlook

Richmond Hill's Recreation and Culture Plan outlines a comprehensive strategy for the evolution of recreation infrastructure in anticipation of population growth, emerging trends like technology integration and ensuring recreation opportunities cater to all ages, abilities, and backgrounds. This plan also emphasizes the changing needs of the community, particularly in relation to the provision of multi-use community hubs, the importance of high-quality and energy-efficient facility design, and the removal of physical barriers for greater inclusivity. The plan includes a number of actionable recommendations over the short term, medium term, and long term to achieve these by 2031. In parallel, the 2024 Asset Management Plan identifies the importance of renewing aging infrastructure. These foundational documents will guide future service enhancements and inform infrastructure needs through the City's 10 Year Capital Budgets and Forecasts.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




Richmond Hill's Recreation and Culture Plan identifies modernizing and expanding community amenities which are included in the City's 2024 Capital Budget and Forecast. The most significant project is the proposed new North Leslie Community Centre at an estimated cost of $253.1 million. There are also other smaller yet impactful enhancements to the City's Recreation facilities that reflect a holistic approach to improving and expanding accessible recreational facilities for all residents and the community.

If this new community centre is built according to the timing identified in the 10 Year Capital Budget and Forecast, the estimated operating and maintenance costs to support the existing recreation facilities as well as this new facility once operational could increase from around $30 million in 2024 to around $50 million by 2033 in today's dollars (excluding future inflationary pressures).

## Appendix H

# Cultural Services

*Richmond Hill Centre for the Performing Arts*

# Overview of Cultural Services

The City of Richmond Hill offers residents and visitors a variety of arts and cultural opportunities and experiences. The City provides these services through the Richmond Hill Centre for the Performing Arts, and art and museum amenities and spaces.

*RHCPA*

## Theatre

The Richmond Hill Centre for the Performing Arts (RHCPA) is a premier cultural venue which opened in 2009 and spans over 5,300 square metres. It is located in the heart of the City's historic downtown, adding to the cultural liveliness of the community. This venue includes a performing arts theatre with stages and seating, gallery space, and varied theatre programming. The RHCPA offers a full season of professional entertainment, showcasing the rich cultural diversity of Richmond Hill and celebrating various cultural heritages.

*Amos Wright House*

## Museum/Heritage Centre

Richmond Hill's Cultural Services includes a museum and heritage centre in the Amos Wright House. This Regency-style cottage is located within the Amos Wright Park area of the City and provides space that engages the community through offering art exhibits, educational programs, and cultural activities. These events provide an opportunity for residents and visitors alike to engage with the City's heritage in a meaningful way, fostering a sense of community and belonging.

*Mill Pond Gallery*

## Art Gallery

The Mill Street House, also known as the Mill Pond Gallery, is owned by the City and leased out to a third party. The gallery includes dedicated spaces for exhibitions and artistic programming, making it a versatile venue for showcasing art and a dynamic environment that fosters creativity and collaboration among artists. Mill Pond Gallery also provides inclusive and accessible educational opportunities to the general community through regular demonstrations, workshops, and visiting artists along with art classes in various media for adults and children throughout the year.

## Equipment

Richmond Hill's Centre for the Performing Arts (RHCPA) is outfitted with a wide array of equipment that contributes to the delivery of theatric productions, performances and shows. The inventory of equipment includes electronics, lighting, specialized music equipment, furniture and an array of miscellaneous equipment which facilitate the production of the various performances. The specialized music equipment, which includes the grand piano, caters to the musical aspects of productions.

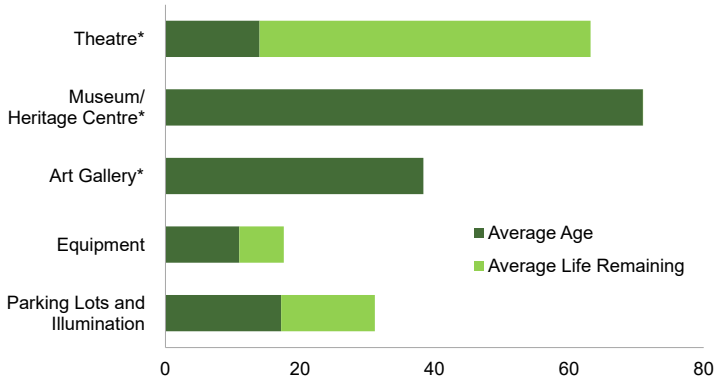
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$50 M** | **B (Good)** | **15 / 61 (years)** |

## Asset Portfolio

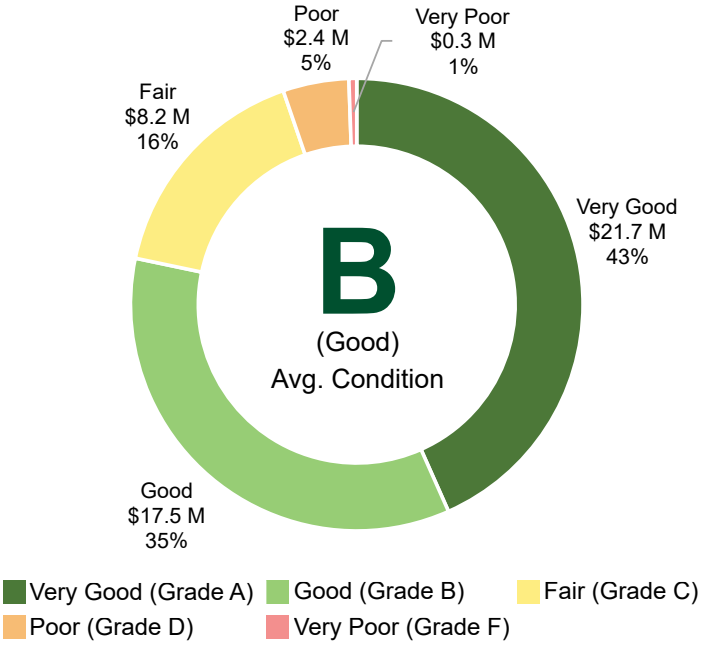
| Asset | Quantity | Replacement Value |
|---|---|---|
| Theatre | 1 ea. | $46.1 M |
| Museum/Heritage Centre | 1 ea. | $1.2 M |
| Art Gallery | 1 ea. | $0.3 M |
| Equipment | A mix | $1.7 M |
| Parking Lots and Illumination | 4 ea. | $0.8 M |

## Average Age and Service Life




**Age and ESL reflects building components, not facility as a whole*

## Overall Condition




- The condition of Cultural facilities is based on their Building Condition Assessments (BCA) completed in 2023. The assessment results from these BCAs are converted into a Corporate Asset Management condition rating. The City completes BCAs for all City-owned facilities over a three-year cycle.
- The condition of cultural equipment is based on their age and remaining life relative to their estimated service life, which varies by the type of equipment. Cultural equipment includes lighting, electronics, furniture and specialized music equipment.
- The condition of parking lots is based on visual technical inspections and the condition of illumination is based on age and remaining life.

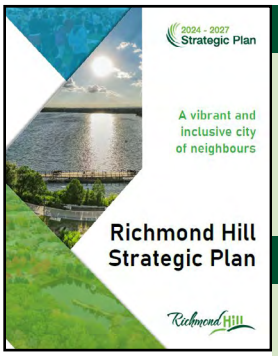
| Condition Category | Letter Grade | Cultural Facilities: Building Condition Assessments | Cultural Equipment: Life Remaining | Parking Lots: Condition Assessments and Life Remaining |
|---|---|---|---|---|
| **Very Good** | **A** | >0.8 to 1.0 | >75% to 100% | >0.8 to 1.0 |
| **Good** | **B** | >0.6 to 0.8 | >50% to 75% | >0.6 to 0.8 |
| **Fair** | **C** | >0.4 to 0.6 | >25% to 50% | >0.4 to 0.6 |
| **Poor** | **D** | >0.2 to 0.4 | >0% to 25% | >0.2 to 0.4 |
| **Very Poor** | **F** | >0 to 0.2 | <0% | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** The City offers a variety of accessible arts and cultural opportunities and experiences to create a vibrant community through the Richmond Hill Centre for the Performing Arts, art gallery and museum amenities.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

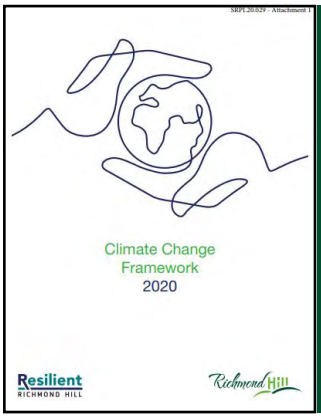
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.
- Build a workforce for tomorrow to ensure that expertise and continuity is in place to deliver on the City's aspirations for the future.

#### Pillar 3: Strengthening our Foundations

- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Asset Management**
- **Apply Climate Change Lens to Corporate Governance**
- **Formalize Community Risk Mitigation**
- **Foster Engagement and Innovation**

### Recreation and Culture Plan


- **Cultural opportunities for all**
- **Community hubs**
- **Facility Service Levels**
- **Equitable Access**
- **Fiscally responsible planning**

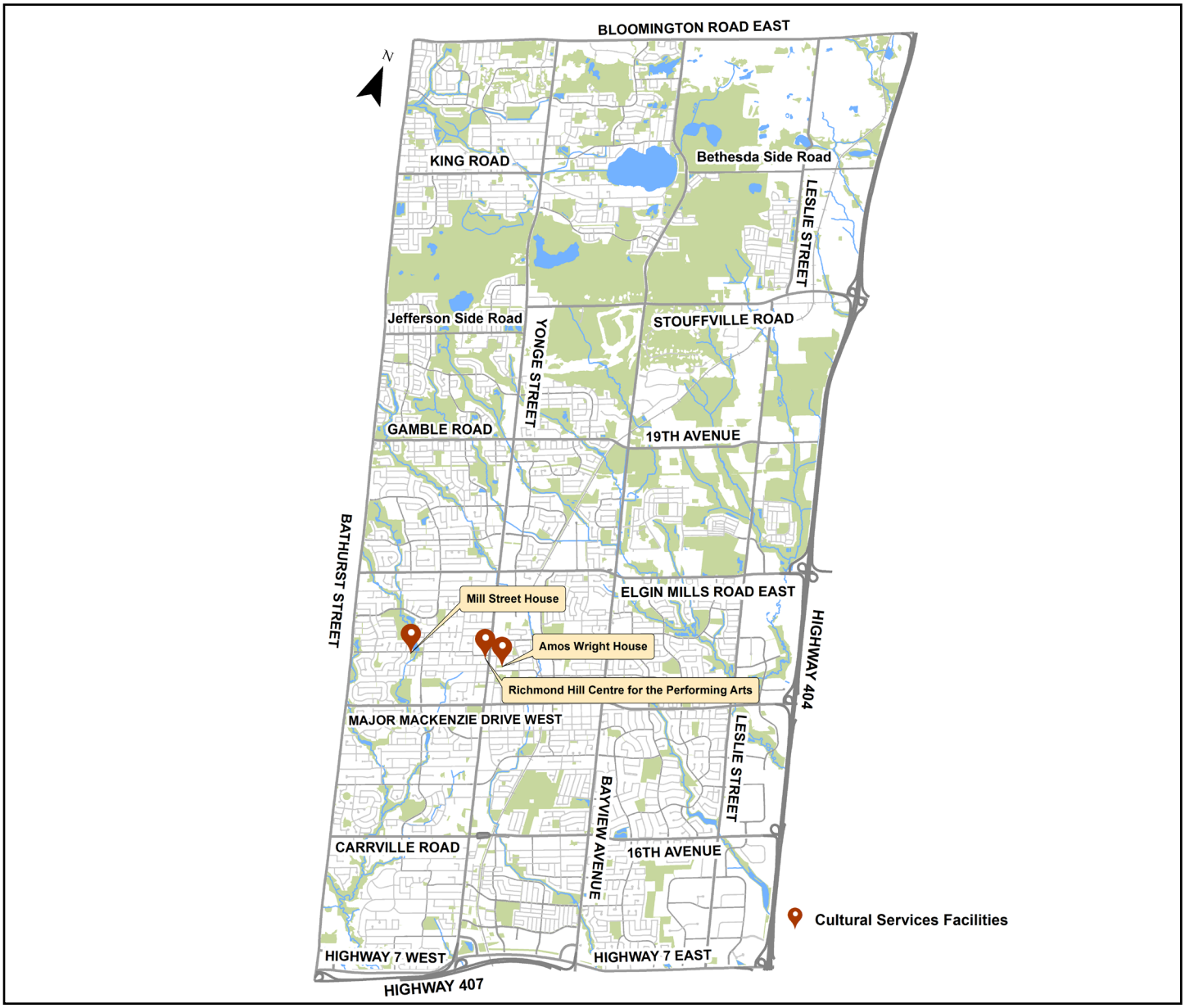
# Levels of Service

## Community Levels of Service

### Advanced (Scope): Richmond Hill Cultural Services

The City of Richmond Hill delivers an array of cultural services and supports the local arts in the community. The City values cultural diversity and creativity and fosters a place where people can celebrate and appreciate the arts. Richmond Hill's approach to cultural planning involves inclusive community consultation, aiming to use local arts and culture to support the development of a vibrant community. The Richmond Hill Centre for the Performing Arts and the various art and museum spaces and amenities are the primary means by which the City provides these cultural services to the community. As a result, culture in Richmond Hill is a vibrant tapestry of arts, heritage, and community activities, reflecting the City's diverse and evolving demographic.

### City of Richmond Hill Cultural Services Facilities



# Levels of Service

## Technical Levels of Service

| Advanced (Quality) | |
|---|---|
| **43 (FAIR)** | Average Cultural Equipment Condition Index (CECI) |
| **0.10 (VERY GOOD)** | Weighted Average FCI of cultural facilities |

| Advanced (Scope) | |
|---|---|
| **120** | Number of theatre events offered |
| **42,390** | Number of theatre tickets sold |

| Advanced (Reliability) | |
|---|---|
| **42%** | Percentage of cultural equipment in fair or better condition |
| **96%** | Percentage of facilities in fair or better condition |

| Advanced (Environmental) | |
|---|---|
| **179.8** | Annual hydro consumption (kWh) per square metre (theatre) |
| **21.5** | Annual natural gas consumption ($m^3$) per square metre (theatre) |
| **0.4** | Annual water use intensity ($m^3$) per square metre (theatre) |

## Community Levels of Service

### Advanced (Quality): Facility Condition

The City undertakes continual inspections of the cultural services facilities and utilizes maintenance management in Maximo to track and complete maintenance and repairs. The City also undertakes formal Building Condition Assessments (BCA) on a rotating three-year cycle to assess its condition. The BCA results are categorized into a Corporate Asset Management condition rating and also inform capital renewals.

**Facility Condition Index (FCI) Ranges**

| Condition Category | Condition FCI Range | Condition Range Description |
|---|---|---|
| **Very Good** | <10% | New building or building that has recently undergone a significant degree of renewal |
| **Good** | 10% to <20% | Minimal service interruptions; minor renewals required |
| **Fair** | 20% to <30% | Intermittent service interruptions; minor/major life cycle renewals required in the next five years |
| **Poor** | 30% to <50% | Some service interruptions; major life cycle renewals required in the next five years |
| **Very Poor** | >50% | Required renewal costs approaching building replacement cost; consideration for asset replacement or demolition |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

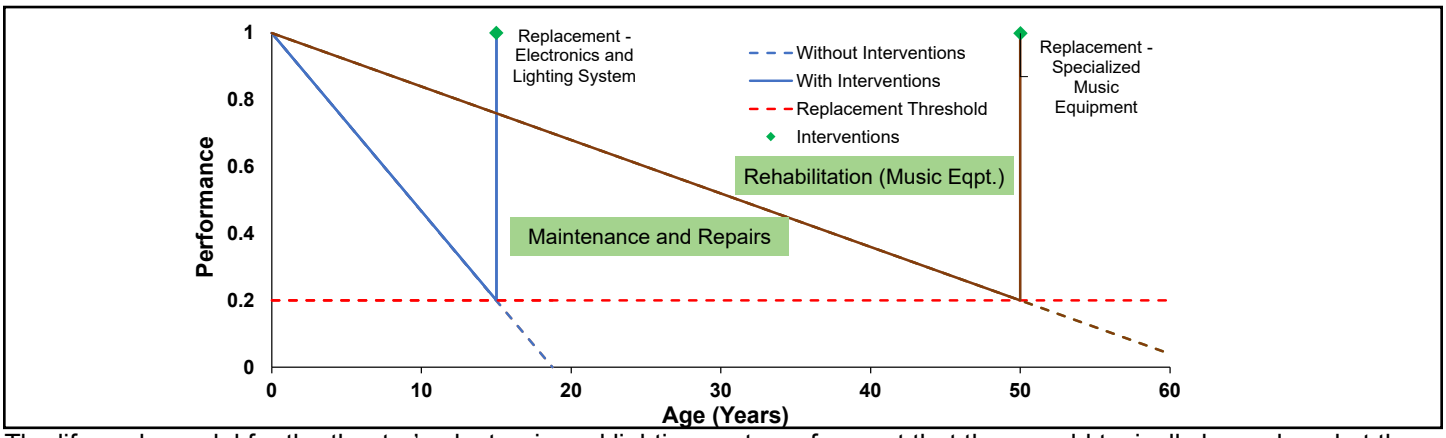
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City makes continuous improvements in operations as well as other asset related initiatives<br>• Cultural buildings conform to Richmond Hill, Provincial and Federal government policies, standards and regulations. |
| **Maintenance** | • Cultural equipment are inspected and receive regular maintenance to ensure they are functioning as intended. This would include the electronic equipment, lighting, and specialized music equipment.<br>• Scheduled preventive maintenance actions are planned and executed to manage the City's Cultural buildings.<br>• Reactive maintenance on Cultural buildings is also performed as required.<br>• Richmond Hill uses the Maximo software program to manage the maintenance program of the City's Cultural facilities. |
| **Rehabilitation** | • Some Cultural equipment are inspected periodically while other more critically important equipment would receive regular inspections as well as annual assessments to ensure they are functioning as intended (e.g. fly system, orchestra lift, specialized music equipment like the piano). Based on these, repairs and/or rehabilitations are completed.<br>• Building Condition Assessments (BCA) are completed for all City-owned facilities on a three-year cycle including for Cultural buildings, which were completed in 2023.<br>• Building assets are highly varied in type and complexity. They include structural, mechanical and electrical components. The rehabilitation of the various building components of the City's Cultural facilities are completed as identified through the BCAs, EAM and VFA software program. |
| **Replacement** | • Cultural-related equipment would typically be replaced at the end of their service life, which varies by the type of equipment.<br>• The replacement of the various building components of the City's Cultural facilities are determined through the BCAs, EAM and VFA software program, and completed as required. |
| **Disposal** | • Appropriate and proper disposal occurs when assets are replaced or renewed. |
| **Growth / Service Improvement** | • The City's Recreation and Culture Plan recommends service improvements that can lead to the acquisition of new equipment and/or enhancement of building capacity and amenities.<br>• AODA compliance remains achieved through Cultural building asset component renewals considered during rehabilitation and/or replacement.<br>• Cultural building assets could be considered for replacement to address energy efficiency, water consumption, and/or technical and regulatory obsolescence. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

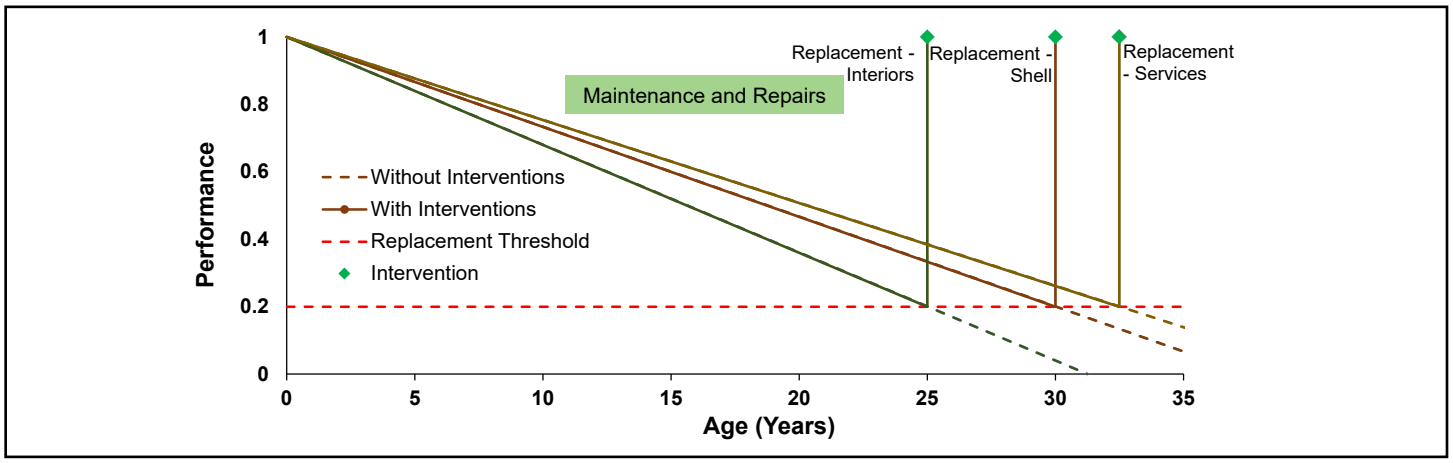
### Capital Treatments

#### Theatre Equipment Life Cycle




The life cycle model for the theatre's electronic and lighting systems forecast that they would typically be replaced at the end of their service life, which can reach up to 15 years. Other equipment such as specialized music equipment assets (e.g. piano) are critically important to the functioning of the theatre, and would receive regular ongoing maintenance and annual formal inspections over their service life (around 50 years). Repairs and/or rehabilitations may be undertaken as needed depending on the results of the inspections. These assets may be kept in service longer or could be replaced sooner based on usage, function and condition. Given they are interconnected and operate together, groups of equipment may be bundled together for replacement all at once to realize cost savings and improve service reliability.

#### Cultural Facilities Life Cycle




The Cultural Facilities are composed of a number of different building assets. Structural assets include components like foundations and above-grade structures, which generally do not require renewal over the life of the building. Building shell assets (i.e. roof and exterior walls) have an average estimated service life of around 30 years, although some components, such as metal roofs and window frames, have significantly longer service lives. Service assets (mechanical, plumbing and electrical) can have a 20 to 45 year service life. Interior assets (i.e. wall, flooring, and ceiling) may last 10 to 40 years depending on the material and level of occupancy/traffic volume of the facility. Once the condition of these assets has deteriorated to poor/very poor and/or have reached the end of their life, the City's life cycle model forecasts they would typically be replaced. These assets may be kept in service longer or could be replaced sooner based on criticality, condition, and effectiveness of alternative life cycle treatments like repairs and rehabilitations.

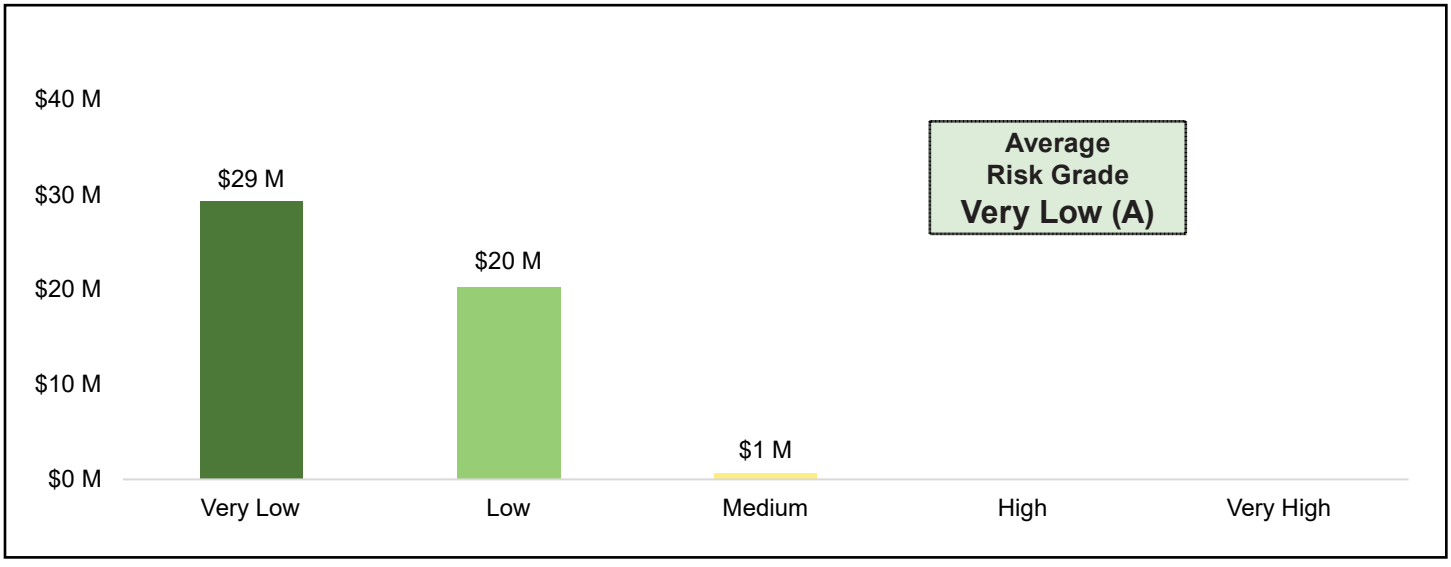
# Risk Prioritization

Average Risk Grade
**Very Low (A)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Theatre<br>• Museum/Heritage Centre<br>• Art Gallery<br>• Equipment<br>• Parking Lots | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Facility equipment and building component type and function<br>• Asset type and function | • Environmental compliance<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- A 2050 net zero emissions goal for City facilities has been identified and the Corporate Energy Plan will continue to be implemented.
- Incorporation of sustainable and energy efficient elements in City building designs and construction.
- The City completes mandatory reporting requirements on annual energy consumption and GHG emissions for its facilities to the Ministry of Energy.
- Reducing single-use plastics at City buildings through the Corporate Single-Use Plastics Reduction Policy.

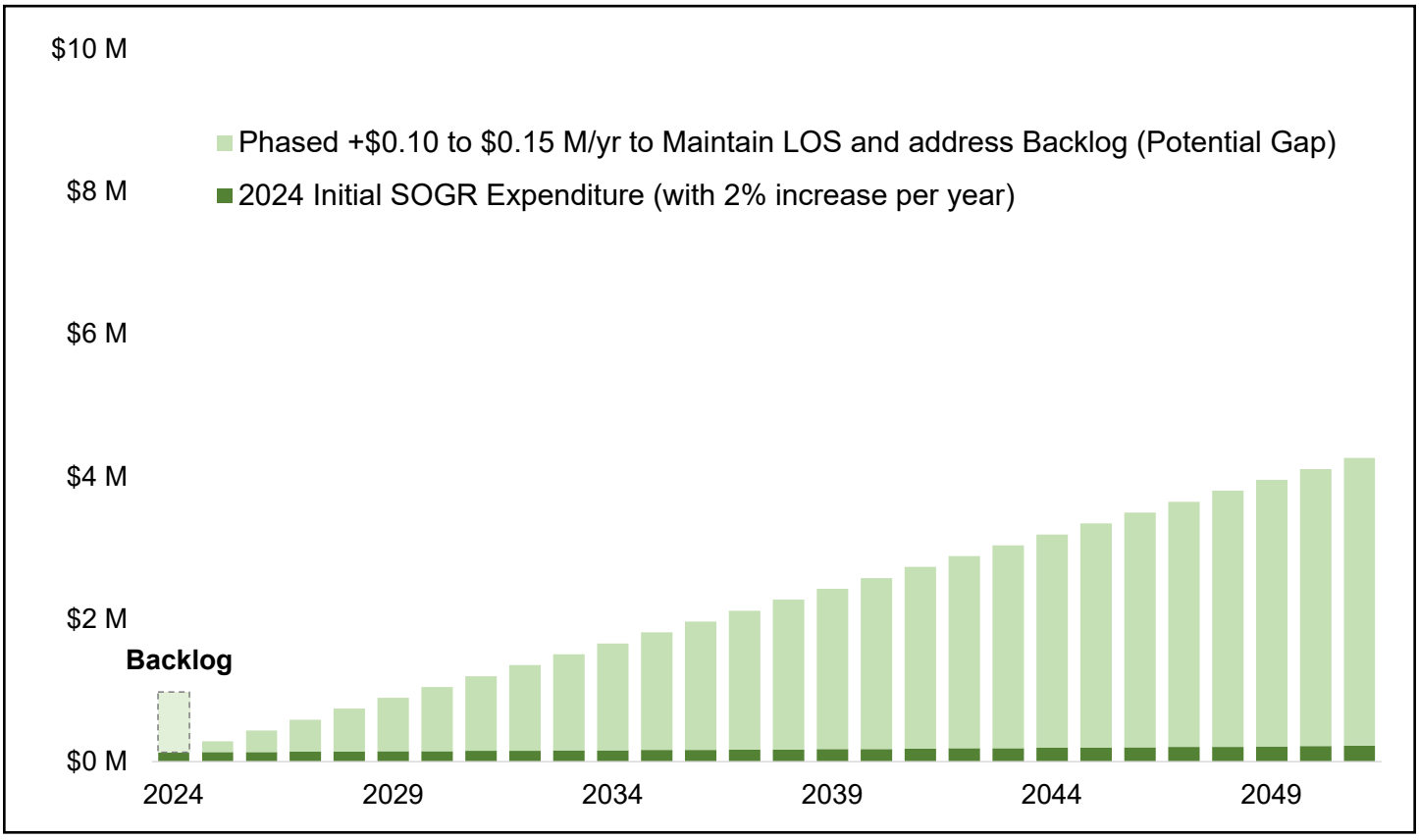
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$1.0 M** | **+$0.10 to $0.15 M/yr** | **$0 to $2.7 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Cultural Services ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Culture | 1.0 | 0.1 | +0.10 to 0.15 | 0.6 to 0.8 | 0 to 0.7 | 2.0 to 2.9 | 0 to 2.7 |

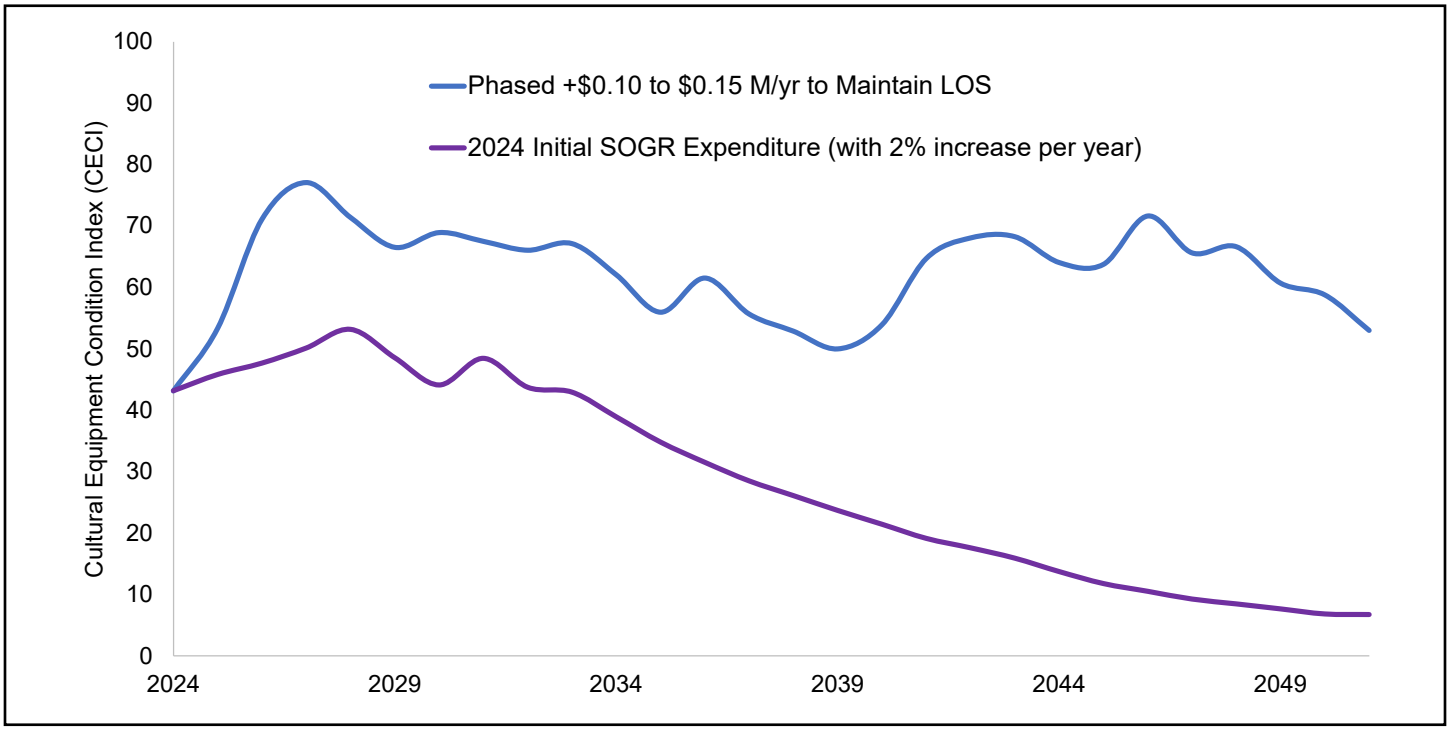


# Asset Investment Strategy

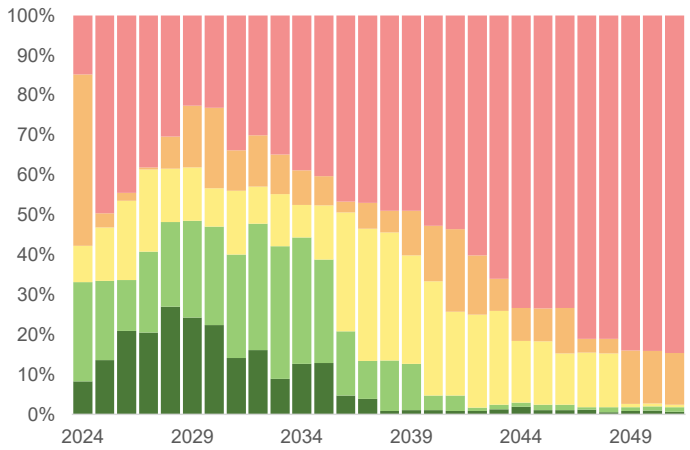
## Impact on Levels of Service

### Cultural Equipment

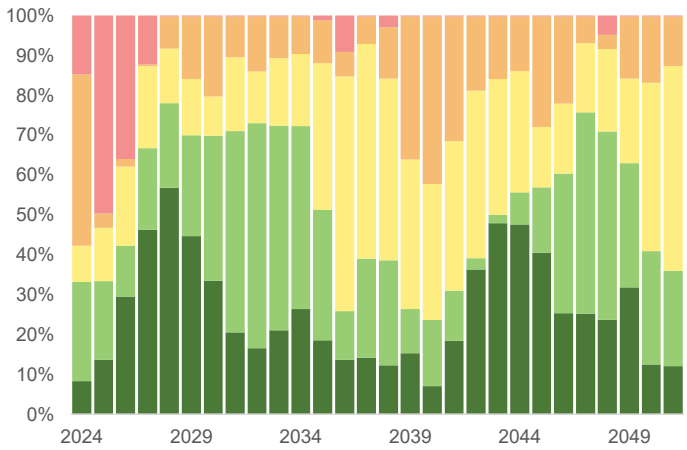
**Cultural Equipment Condition Index (CECI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**

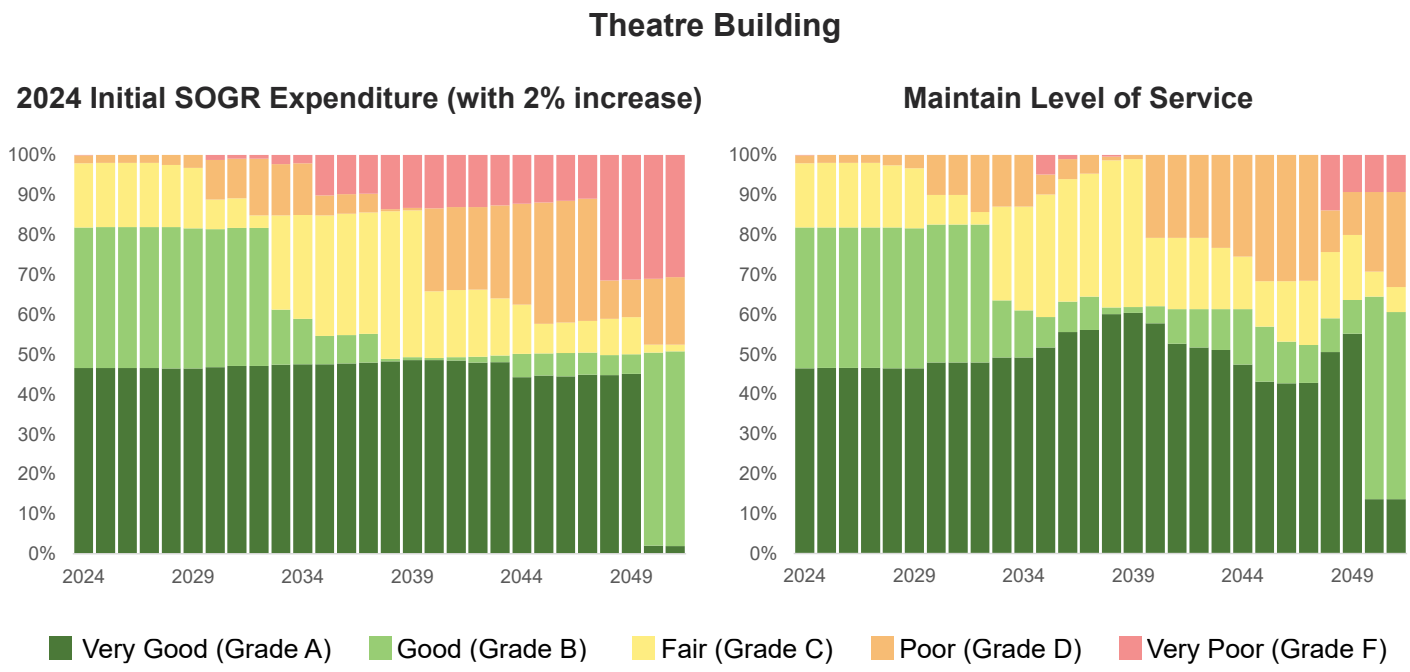



Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Asset Investment Strategy

## Impact on Levels of Service

### Theatre Building



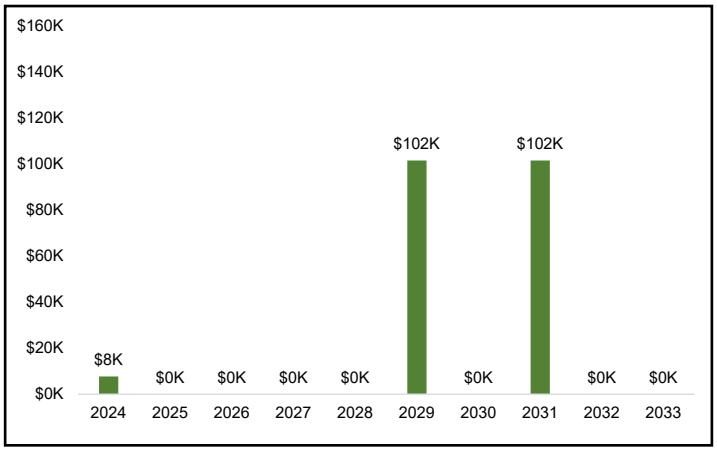

*Richmond Hill Centre for the Performing Arts*

# Growth Capital and Operating Forecast

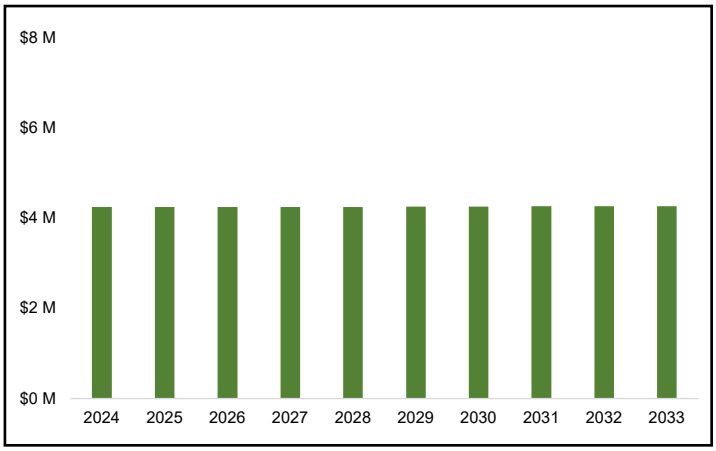
## Future Outlook

The City's Recreation and Culture Plan includes strategic directions and actionable recommendations to create, enhance, and maintain cultural planning and infrastructure like the Richmond Hill Centre for the Performing Arts, museums, art galleries, and digital spaces. These embrace best practices, benchmarking with other municipalities and leveraging emerging trends and opportunities shaping culture. The key recommendations are related to forming cultural districts, embracing places for cultural tactical urbanism, and enhancing digital technologies in arts engagement. The 2024 Asset Management Plan also accentuates the state of good repair investment needs for the City's cultural assets to sustain them in a state of excellence and relevance. These comprehensive plans will guide future enhancements and ensure the continual rejuvenation of cultural assets through informing the City's 10 Year Capital Budgets and Forecasts.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




The proposed growth-related Cultural Service enhancements, which are modest, are included in the City's 2024 Capital Budget and Forecast. They include upgrading the theatre lighting system and installing a water bottle filling station. There is also a provision to undertake a Cultural Plan review, which may lead to the identification of future enhancements needed for the theatre.

The projected operating and maintenance costs to support the existing as well as the modestly planned growth-related capital expansions for the City's Cultural Services shows stable estimates from 2024 to 2033. On average, the estimated operating costs are forecast to be in the $4 million range per year in today's dollars (excluding future inflationary pressures). With minimal growth capital expansion identified in the City's 10 Year Capital Budget and Forecast, future operating costs are projected to remain steady in today's dollars at this point in time.

## Appendix I

# Libraries


*Oak Ridges Library*

# Overview of Libraries

The Richmond Hill Public Library assets include four library facilities, library collections and a mixture of equipment.

*Central Library*

## Library Facilities

The Richmond Hill Public Library system includes four unique libraries that provide over 13,000 square metres of amenities for the community to enjoy. The City's flagship Central Library spans nearly 10,000 square metres making it the largest in the system. The other three libraries are the Oak Ridges Library, Richmond Green Library and Richvale Library. These libraries offer residents access to an expansive set of collections (e.g. books and other resources), and a variety of services, programs and physical spaces that provide knowledge, experiences and resources for the community. Each facility is designed to cater to the diverse needs of its patrons, from quiet study areas to interactive learning spaces.

*Richmond Green Library*

## Library Equipment

Library equipment is housed in the City Library facilities and provide dynamic, inclusive, and technologically equipped library spaces. Library equipment includes furniture, fixtures and other equipment which significantly contribute to the overall functionality and user-friendliness of the library facilities. Furniture and fixtures include various types of seating, shelving, and tables that provide the physical assets to have a comfortable library experience. Other equipment encompasses a wide range of assets such as book sorters, digital kiosks, printers, wireless network infrastructure, and server equipment to ensure that the libraries stay connected and technologically adept.

*Richmond Green Library*

## Library Collections

Collections are the cornerstone of the libraries. Composed of a diverse array of materials, these resources are integral to the library's role as a centre of knowledge, experience and community engagement. The collections include print materials like books, newspapers, magazines and atlases; audiovisual materials like CDs and DVDs; STEAM Kits for children consisting of coding, robotic and engineering toys and technology; and a wide range of Library of Things items, from sewing machines to Wi-fi hotspots. Richmond Hill's Library collections are dynamic and ever-evolving to ensure the relevance and responsiveness to the changing interests and needs of the community.

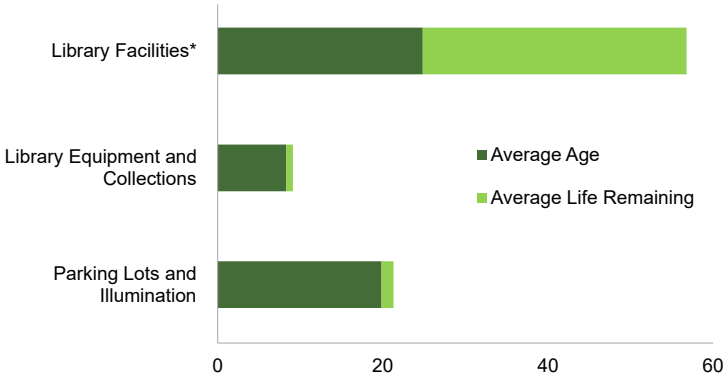
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$100 M** | **B (Good)** | **21 / 46 (years)** |

## Asset Portfolio

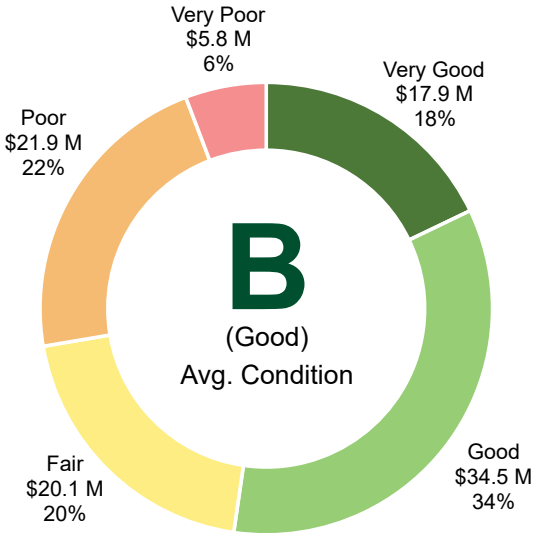
| Asset | Quantity | Replacement Value |
|---|---|---|
| Library Facilities | 4 ea. | $76.2 M |
| Library Equipment | A mix | $10.7 M |
| Library Collections | A mix | $10.0 M |
| Parking Lots and Illumination | 4 ea. | $3.5 M |

## Average Age and Service Life




**Age and ESL reflects building components, not facility as a whole*

## Overall Condition




Very Good (Grade A) Good (Grade B) Fair (Grade C)
Poor (Grade D) Very Poor (Grade F)

- The condition of library facilities is based on the Building Condition Assessments (BCA) completed in 2022/2023. The assessment results from these BCAs are converted into a Corporate Asset Management condition rating. The City completes BCA for all City-owned facilities over a three-year cycle.
- For the libraries' physical collections, their condition is based on their age and remaining life relative to their seven-year service life using the City's Tangible Capital Asset Policy.
- The condition of library equipment is based on their age and remaining life, which varies by type of equipment.
- The condition of parking lots is based on visual technical inspections, and the condition of the associated illumination is based on age and remaining service life.

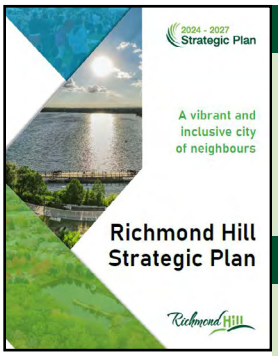
| Condition Category | Letter Grade | Library Facilities: Building Condition Assessments | Library Equipment and Collections: Life Remaining | Parking Lots: Condition Assessments and Life Remaining |
|---|---|---|---|---|
| **Very Good** | **A** | >0.8 to 1.0 | >75% to 100% | >0.8 to 1.0 |
| **Good** | **B** | >0.6 to 0.8 | >50% to 75% | >0.6 to 0.8 |
| **Fair** | **C** | >0.4 to 0.6 | >25% to 50% | >0.4 to 0.6 |
| **Poor** | **D** | >0.2 to 0.4 | >0% to 25% | >0.2 to 0.4 |
| **Very Poor** | **F** | >0 to 0.2 | <0% | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** Richmond Hill's Public Library system provides knowledge, experiences and resources that enable the community to grow capabilities to respond to personal, local, national, and global trends and interests.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

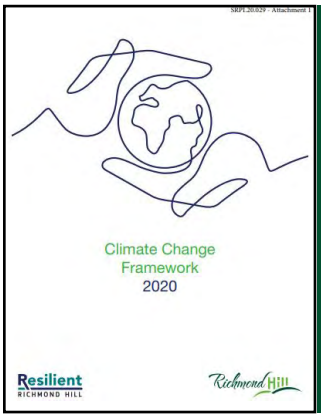
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.
- Build a workforce for tomorrow to ensure that expertise and continuity is in place to deliver on the City's aspirations for the future.

#### Pillar 3: Strengthening our Foundations

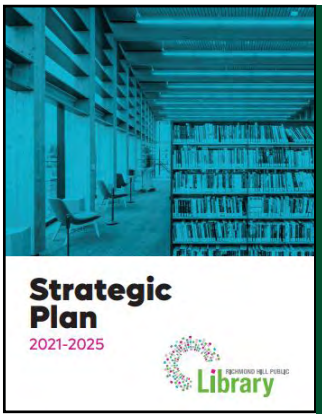
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Asset Management**
- **Apply Climate Change Lens to Corporate Governance**
- **Formalize Community Risk Mitigation**
- **Foster Engagement and Innovation**

### Library Strategic Plan (2021-2025)




- **Inspiring experiences**
- **Digital experiences**
- **Customer focus content**
- **Innovation**
- **IT advancement**

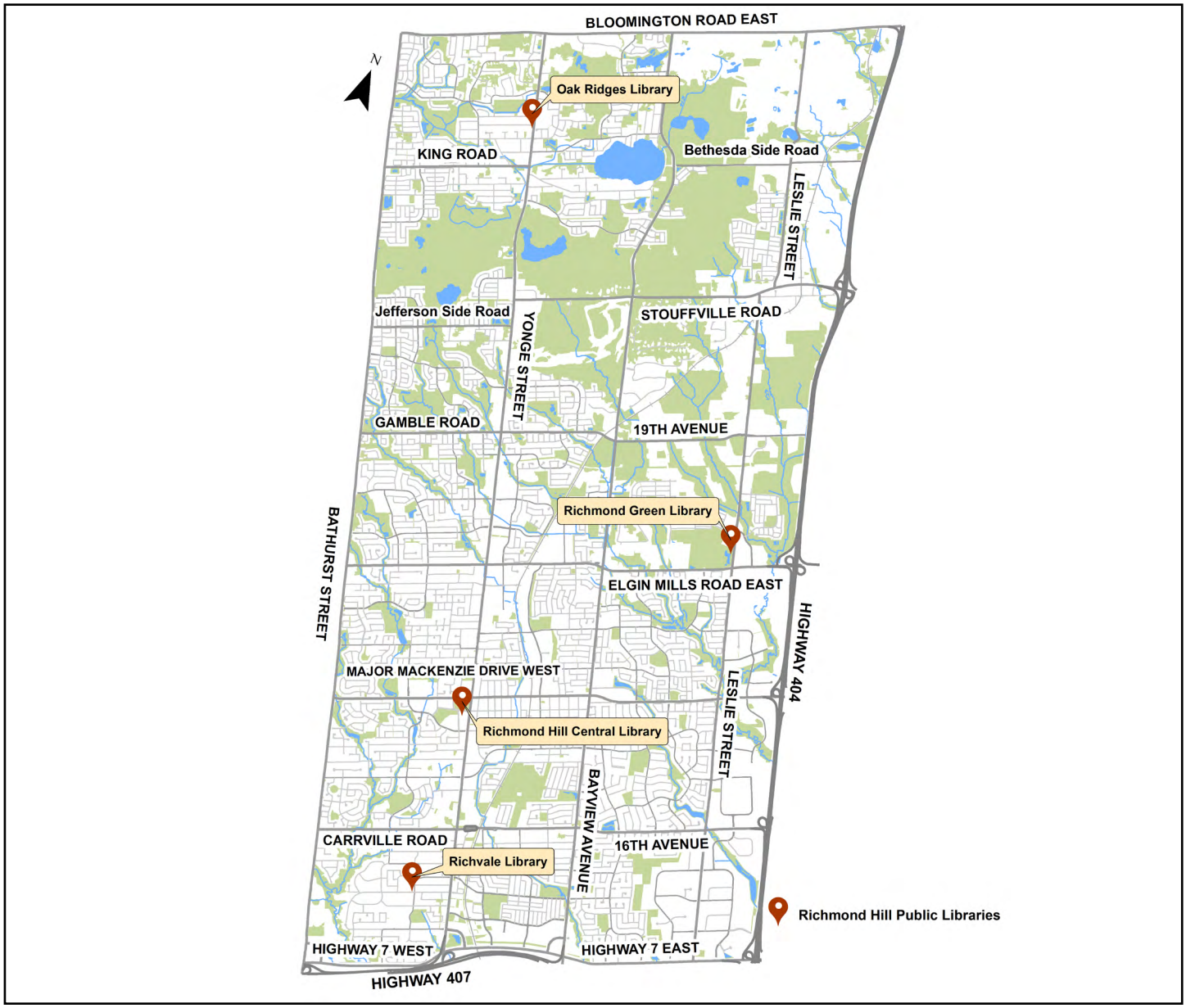
# Levels of Service

## Community Levels of Service

### Advanced (Scope): Richmond Hill Public Libraries

Richmond Hill's Public Library system provides gathering places for the community to learn, connect and collaborate through innovative services and programs. The Library system strives to service the unique needs of customers and fosters an atmosphere where knowledge and creativity flourish, and the community can stay informed and engaged. The City's libraries provide universal access to informational resources through its four buildings and a strong digital presence. An extensive and wide array of physical and digital collections and online resources are available to the community.

### City of Richmond Hill Libraries



# Levels of Service

## Technical Levels of Service

| Advanced (Quality) | |
|---|---|
| **43 (FAIR)** | Library Equipment and Collections Condition Index (LECCI) |
| **0.18 (GOOD)** | Weighted Average FCI of libraries |

| Advanced (Scope) | |
|---|---|
| **800,000+** | In-person visits |
| **59,790** | Number of Active Cardholders |
| **2.2 million** | Amount of collections (physical and digital) |

| Advanced (Reliability) | |
|---|---|
| **58%** | Percentage of library equipment and collections in fair or better condition |

| Advanced (Environmental) | |
|---|---|
| **148.5** | Annual hydro consumption (kWh) per square metre (libraries) |
| **12.9** | Annual natural gas consumption ($m^3$) per square metre (libraries) |
| **1.4** | Annual water use intensity ($m^3$) per square metre (libraries) |

## Community Levels of Service

### Advanced (Quality): Facility Condition

The City undertakes continual inspections of the Library facilities and utilizes maintenance management in Maximo to track and complete maintenance and repairs. The City also undertakes formal Building Condition Assessments (BCA) on a rotating three-year cycle to assess its condition. The BCA results are categorized into a Corporate Asset Management condition rating and also inform capital renewals.

**Facility Condition Index (FCI) Ranges**

| Condition Category | Condition FCI Range | Condition Range Description |
|---|---|---|
| **Very Good** | <10% | New building or building that has recently undergone a significant degree of renewal |
| **Good** | 10% to <20% | Minimal service interruptions; minor renewals required |
| **Fair** | 20% to <30% | Intermittent service interruptions; minor/major life cycle renewals required in the next five years |
| **Poor** | 30% to <50% | Some service interruptions; major life cycle renewals required in the next five years |
| **Very Poor** | >50% | Required renewal costs approaching building replacement cost; consideration for asset replacement or demolition |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

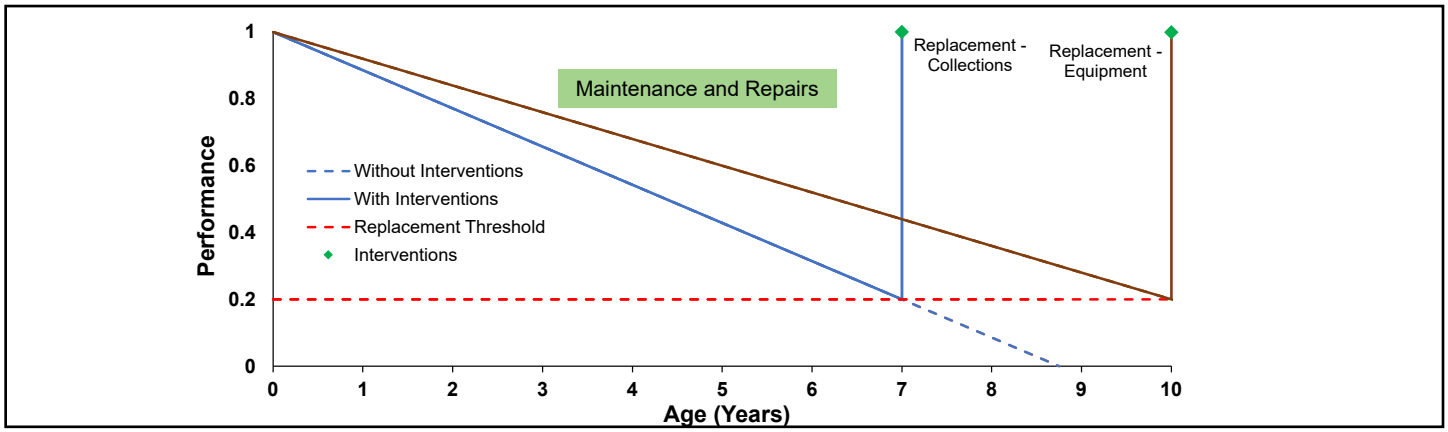
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City makes continuous improvements in operations as well as other asset related initiatives (e.g. collections policy)<br>• Library buildings conform to Richmond Hill, Provincial and Federal government policies, standards and regulations. |
| **Maintenance** | • Scheduled preventive and reactive maintenance actions are completed for Libraries as required.<br>• Richmond Hill uses the Maximo software program to manage the maintenance of the City's Library facilities. |
| **Rehabilitation** | • Building Condition Assessments (BCA) are completed for all City-owned facilities on a three-year cycle including for Libraries, which were completed in 2022/2023.<br>• Building assets are highly varied in type and complexity. They include structural, mechanical and electrical components. The rehabilitation of the various Library building components are completed as identified through the BCAs, EAM and VFA software program. |
| **Replacement** | • Library equipment would typically be replaced at the end of their service life, which varies by the type of equipment.<br>• The Library's physical collections would typically be replenished at the end of their seven-year service life based on the City's Tangible Capital Asset Policy.<br>• Similar to rehabilitation, the replacement of the various building components of the City's Library facilities are determined through the BCAs, EAM and VFA software program and completed as required. |
| **Disposal** | • Appropriate and proper disposal occurs when assets are replaced or renewed. |
| **Growth / Service Improvement** | • The Library strategic and master plans recommend service enhancements that can lead to the acquisition of new equipment and physical collections as well as expansion of building capacity and amenities.<br>• AODA compliance remains achieved through Library building asset component renewals considered during rehabilitation and/or replacement.<br>• Library building assets could be considered for replacement to address energy efficiency, water consumption, and/or technical and regulatory obsolescence. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

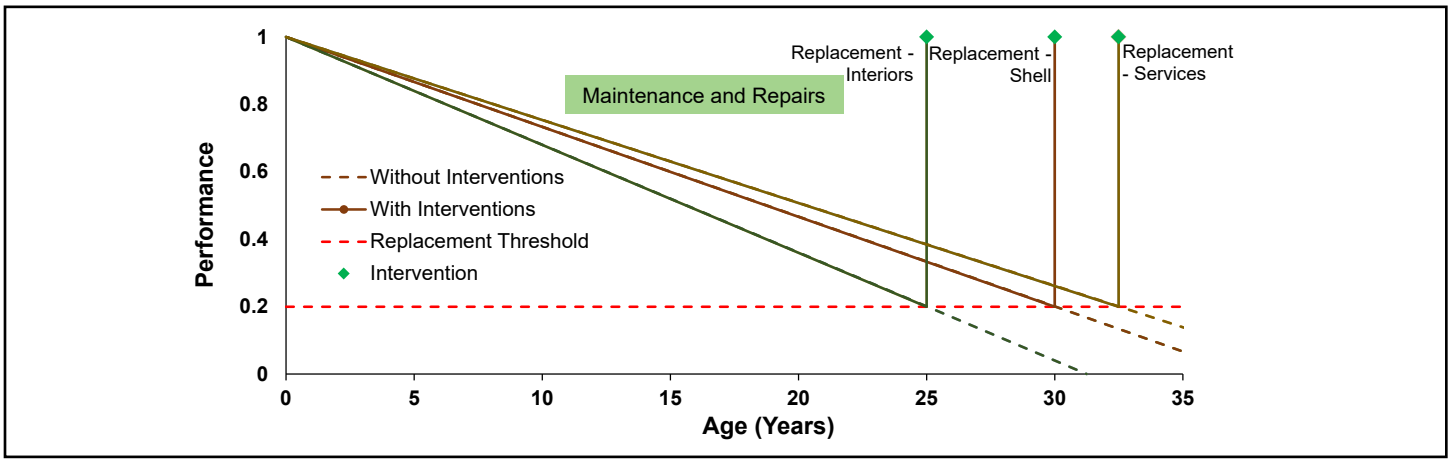
### Capital Treatments

#### Library Equipment and Collections Life Cycle




The City's life cycle model for Library equipment forecasts that they could be replaced at the end of their service life. However, these assets may be kept in service longer or could be replaced sooner based on usage, function and condition. Library equipment includes a variety of different types of IT related assets, furniture and shelving, and other smaller miscellaneous assets. The estimated service lives vary by the type of equipment. For the Library's physical collections, the City's life cycle model forecasts that they should be replenished at the end of their seven-year service life based on the City's Tangible Capital Asset Policy. However, these assets may be replaced sooner or kept in circulation longer depending on demand and their condition and function.

#### Library Facilities Life Cycle




The Library Facilities are composed of a number of different building assets. Structural assets include components like foundations and above-grade structures, which generally do not require renewal over the life of the building. Building shell assets (i.e. roof and exterior walls) have an average estimated service life of around 30 years, although some components, such as metal roofs and window frames, have significantly longer service lives. Service assets (mechanical, plumbing and electrical) can have a 20 to 45 year service life. Interior assets (i.e. wall, flooring, and ceiling) may last 10 to 40 years depending on the material and level of occupancy/traffic volume of the facility. Once the condition of these assets has deteriorated to poor/very poor and/or have reached the end of their life, the City's life cycle model forecasts they would typically be replaced. These assets may be kept in service longer or could be replaced sooner based on criticality, condition, and effectiveness of alternative life cycle treatments like repairs and rehabilitations.

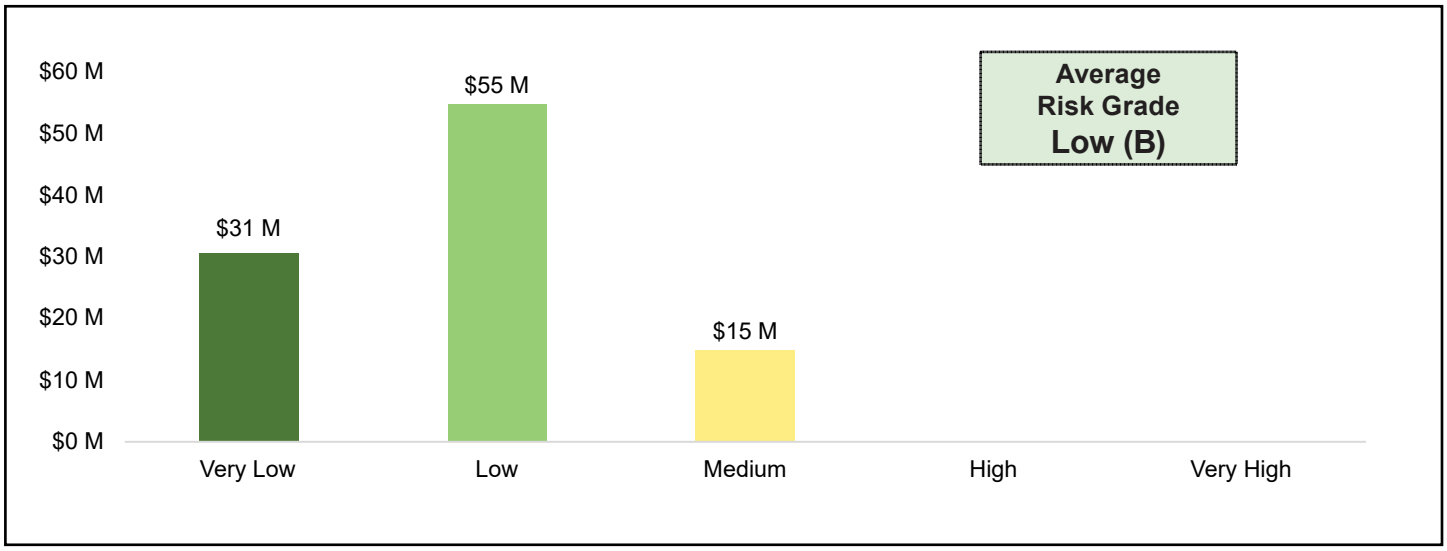
# Risk Prioritization

Average Risk Grade
**Low (B)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Library Facilities<br>• Equipment<br>• Collections<br>• Parking Lots | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/ revenue | • Facility building component type and function,<br>• Asset type and function | • Environmental compliance<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- A 2050 net zero emissions goal for City facilities has been identified and the Corporate Energy Plan will continue to be implemented.
- Incorporation of sustainable and energy efficient elements in City building designs and construction.
- The City completes mandatory reporting requirements on annual energy consumption and GHG emissions for its facilities to the Ministry of Energy.
- Reducing single-use plastics at City buildings through the Corporate Single-Use Plastics Reduction Policy.

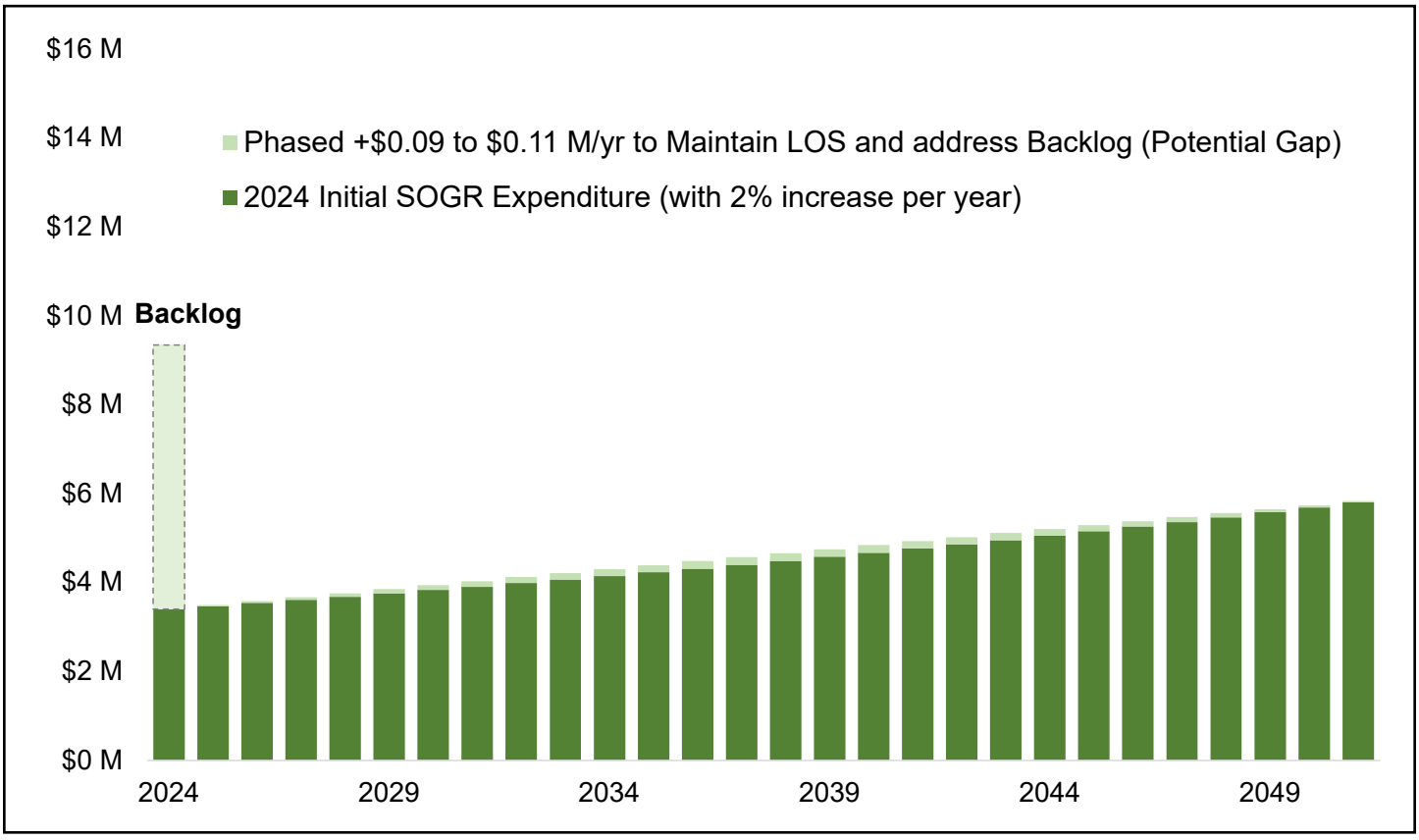
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$9.3 M** | **+$0.09 to $0.11 M/yr** | **$0 to $0.5 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Libraries ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Libraries | 9.3 | 3.4 | +0.09 to 0.11 | 3.8 to 3.9 | 0 to 0.2 | 5.1 to 5.4 | 0 to 0.5 |

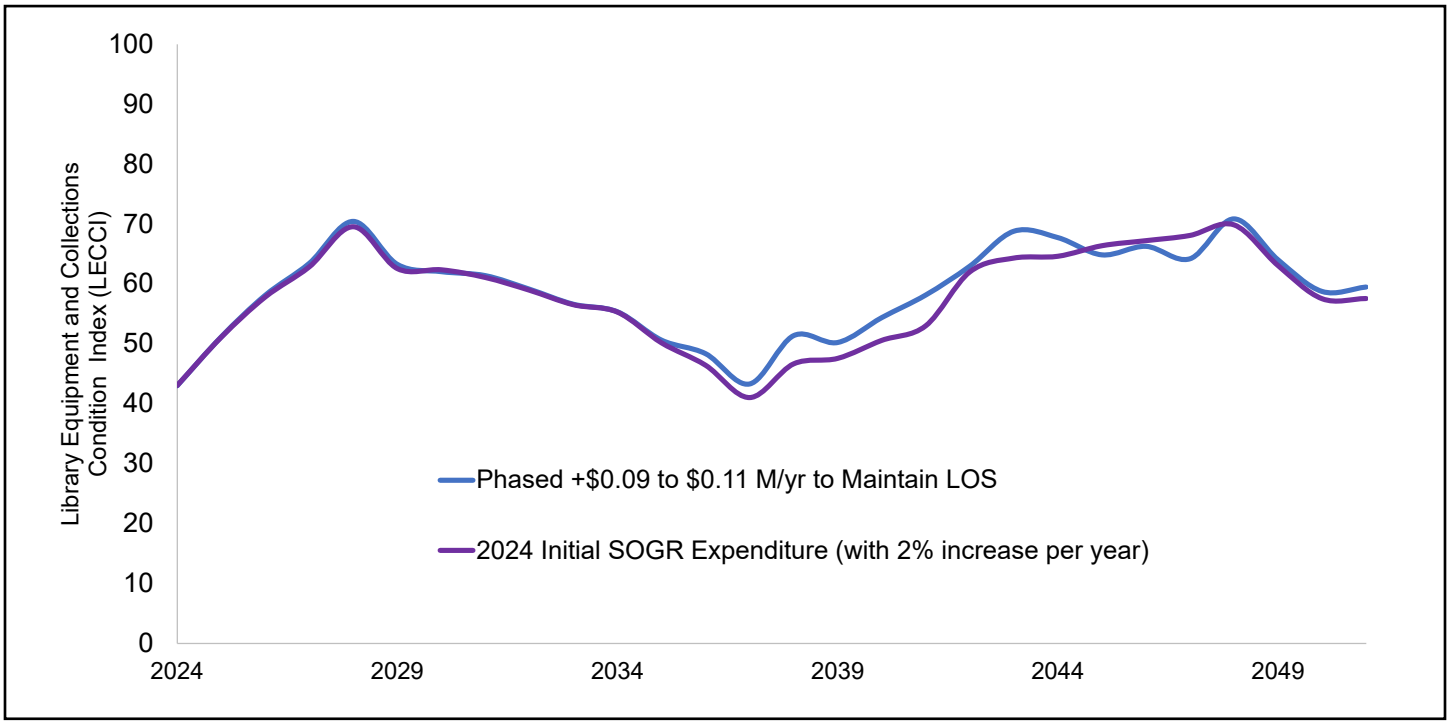


# Asset Investment Strategy

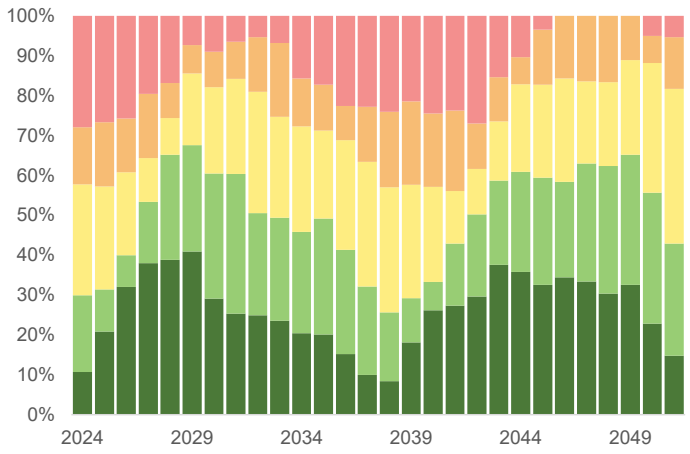
## Impact on Levels of Service

### Library Equipment and Collections

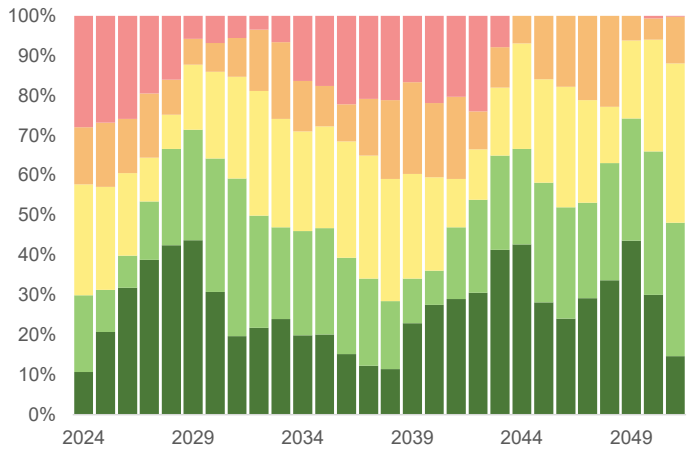
**Library Equipment and Collections Condition Index (LECCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



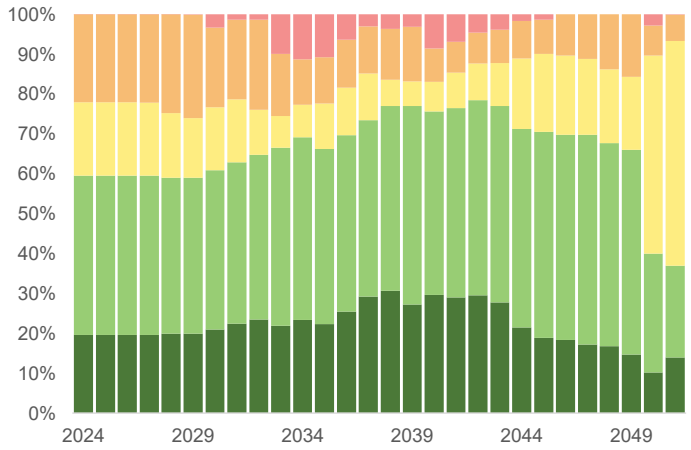

Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

# Asset Investment Strategy

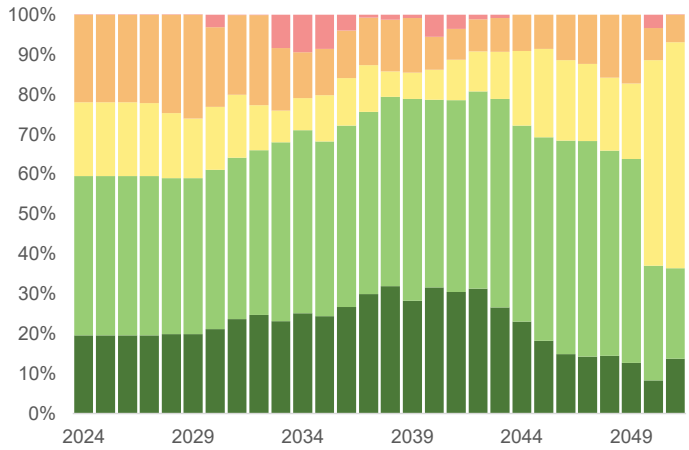
## Impact on Levels of Service

### Library Buildings

**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**




Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

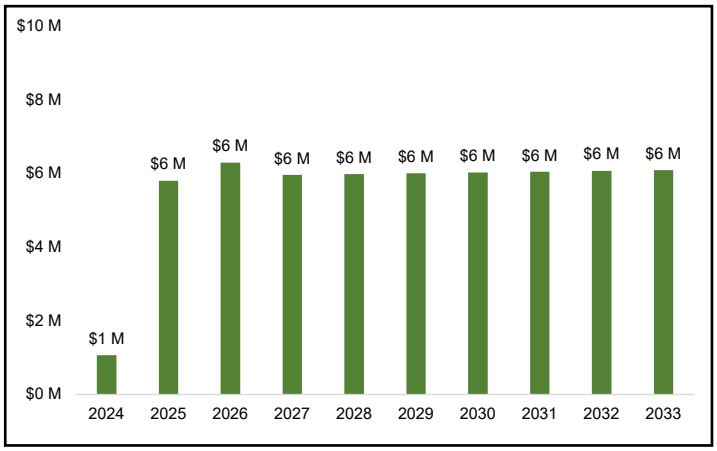
*Richmond Green Library*

# Growth Capital and Operating Forecast

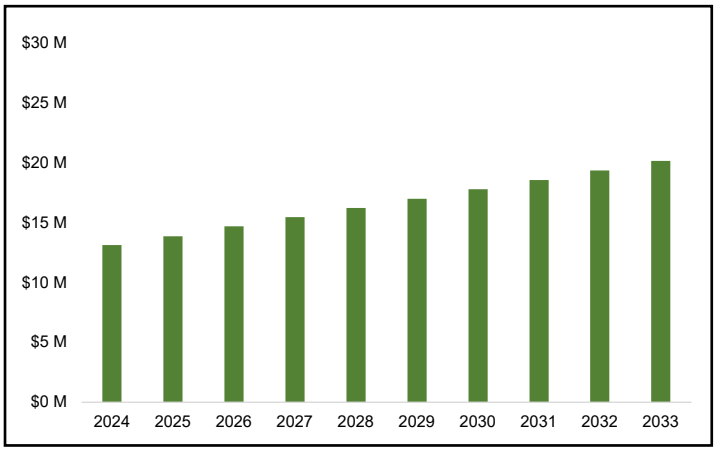
## Future Outlook

The Richmond Hill Public Library 2021-2025 Strategic Plan provides a guiding purpose, vision and mission for the City's library system. The Plan focuses on growth and enhancement opportunities while ensuring continued excellence in operations. The Plan includes nine priorities and 32 strategies to achieve them. This strategic plan, along with the 2024 Asset Management Plan, will inform the future growth and maintenance of existing asset capital investments for the Richmond Hill Public Library system.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




The Richmond Hill Public Library system is embarking on a period of exciting development, marked by a range of projects aimed at enhancing library facilities and services that are supported by the Library Strategic Plan and Master Plan. Among the most significant initiatives included in the City's 2024 Capital Budget and Forecast is the provision for master plan based expansions of the City's Libraries with an allocation of $44.7 million. In addition, the expansion of libraries content materials ($4.5 million) and the Innovation Execution Transformation project ($2.5 million) will drive technological advancements and innovative services within libraries. Other projects include improving furniture and equipment, digital strategy pilots and the Express Branch Pilot which highlight the dedication to improving library amenities and access. These projects collectively contribute to the growth and modernization of library services and to expanding and enriching library's content.

The City's 10 Year Capital Budget and Forecast includes a provision to expand Richmond Hill's Public Library buildings at a projected cost of $44.7 million. If these library facility expansions were to occur as identified in the 10 Year Capital Budget and Forecast, the estimated operating and maintenance costs to support the existing amenities as well as these growth expansions once they are operational could increase from around $13 million in 2024 up to around $20 million by 2033 in today's dollars (excluding future inflationary pressures).

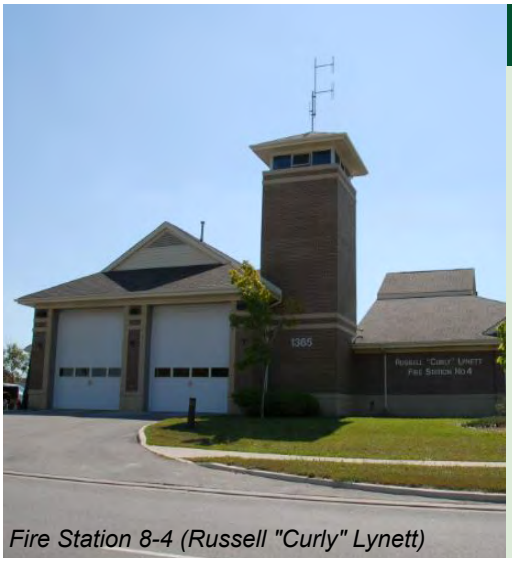
## Appendix J

# Protection Services


*Richmond Hill Fire Station 8-6*

# Overview of Protection Services

Fire and Emergency Service assets include six fire stations, 46 fire and rescue fleet and a mixture of equipment.



*Fire Station 8-4 (Russell "Curly" Lynett)*

## Fire Stations

The City of Richmond Hill's Fire and Emergency Services are delivered through six fire stations that are strategically located across the municipality to optimize response times and coverage. These stations effectively meet the unique fire, emergency response and protection needs of the community. The six stations include Fire Station #8-1 (Major Mackenzie), Fire Station #8-2 (Oak Ridges), Fire Station #8-3 (16th Avenue), Fire Station #8-4 (Elgin Mills), Fire Station #8-5 (Bayview Glen), and Fire Station #8-6 (Gamble Road). Each station is staffed with a dedicated team of firefighters ensuring readiness and rapid response to emergencies. The fire stations accommodate a range of functions, from housing firefighting vehicles and equipment to providing living quarters for the firefighters. The stations are equipped with modern facilities and technologies to support the demanding nature of firefighting and rescue operations.

## Fire Fleet

Richmond Hill's fire fleet is a critical part of the City's fire and emergency response capabilities and includes a diverse array of vehicles to meet various firefighting and rescue needs. The fleet includes approximately 46 vehicles and is comprised of major fire and rescue vehicles and light duty support vehicles. The major fire and rescue vehicles include fire rescue engines, aerial rescue devices, rescue vehicles, mobile water supply tankers and a mobile command centre. The support vehicles include pickup trucks, SUVs, vans and trailers that provide support to the major firefighting and emergency response services.

## Fire Equipment

The City's Fire and Emergency Services has a wide range of critically important equipment that are used by the fire fighters to provide firefighting and emergency response services to the community. The equipment employed includes Personal Protective Equipment (such as bunker gear, breathing apparatus, masks, and facepieces), firefighting equipment (such as hoses and nozzles), rescue equipment (such as air monitoring systems, auto extrication tools, and defibrillators), communication assets (like radio systems) and training equipment (such as training tower equipment).

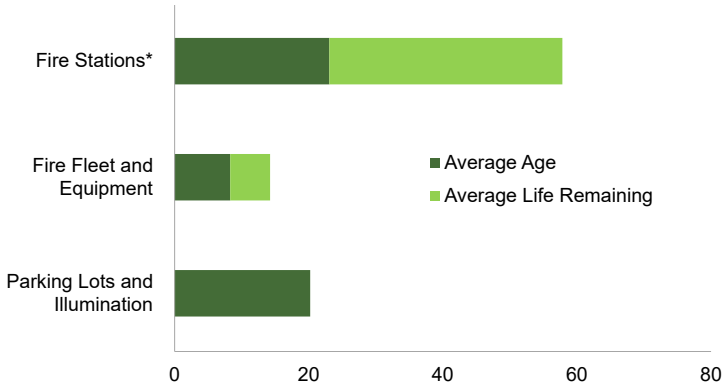
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$52 M** | **B (Good)** | **15 / 32 (years)** |

## Asset Portfolio

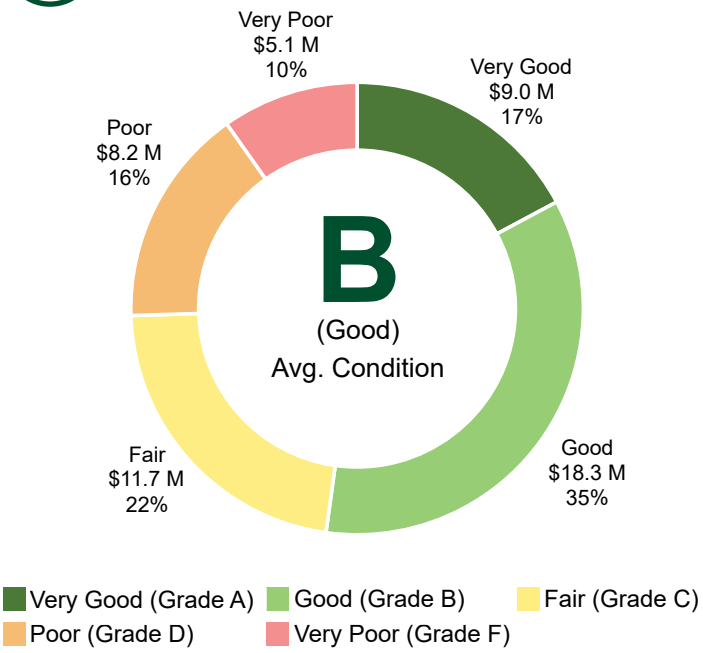
| Asset | Quantity | Replacement Value |
|---|---|---|
| Fire Stations | 6 ea. | $21.6 M |
| Fire Fleet | 46 ea. | $30.0 M |
| Fire Equipment | A mix | |
| Parking Lots and Illumination | 6 ea. | $0.8 M |

## Average Age and Service Life




**Age and ESL reflects building components, not facility as a whole*

## Overall Condition




Very Good (Grade A) Good (Grade B) Fair (Grade C)
Poor (Grade D) Very Poor (Grade F)

- Condition of fire stations are based on their Building Condition Assessments (BCA) completed in 2023. The assessment results from these BCAs are converted into a Corporate Asset Management condition rating. The City completes BCAs for all City-owned facilities over a three-year cycle.
- Condition of fire fleet is based on age and remaining life. Fire fleet includes major fire and rescue vehicles and apparatus, along with supporting vehicles, which have different service lives based on standards and guidelines.
- For fire equipment, condition is based on their age and remaining life, which varies by type of equipment. Standards and guidelines also establish service lives for these assets.
- Condition of parking lots is based on visual technical inspections, and illumination is based on age and remaining life.

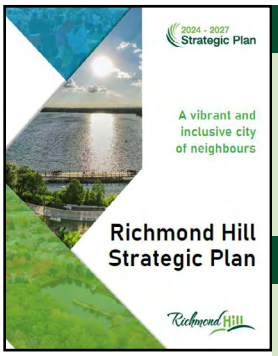
| Condition Category | Letter Grade | Fire Stations: Building Condition Assessments | Fire Fleet: Life Remaining | Fire Equipment: Life Remaining | Parking Lots: Condition Assessments and Life Remaining |
|---|---|---|---|---|---|
| **Very Good** | **A** | >0.8 to 1.0 | >75% to 100% | >75% to 100% | >0.8 to 1.0 |
| **Good** | **B** | >0.6 to 0.8 | >50% to 75% | >50% to 75% | >0.6 to 0.8 |
| **Fair** | **C** | >0.4 to 0.6 | >25% to 50% | >25% to 50% | >0.4 to 0.6 |
| **Poor** | **D** | >0.2 to 0.4 | >0% to 25% | >0% to 25% | >0.2 to 0.4 |
| **Very Poor** | **F** | >0 to 0.2 | <0% | <0% | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** The City of Richmond Hill Fire and Emergency Services protects the lives and property of the community through excellence in prevention, education, training and emergency response.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Manage growth in a way that enables choice and connection for the City, its residents and businesses now and in the future.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

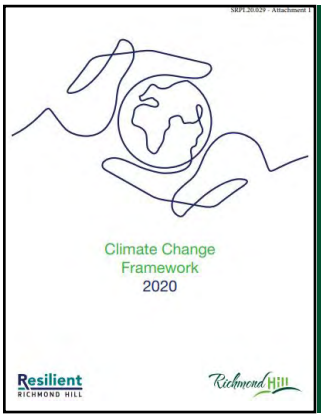
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.
- Build a workforce for tomorrow to ensure that expertise and continuity is in place to deliver on the City's aspirations for the future.

#### Pillar 3: Strengthening our Foundations

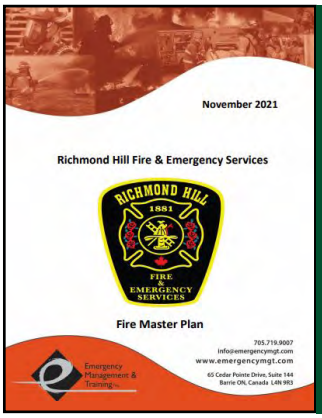
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals




- **Apply Climate Change Lens to Asset Management**
- **Formalize Community Risk Mitigation**
- **Leverage Green Infrastructure**
- **Foster Engagement and Innovation**

### Fire Master Plan (2021)




- **Emergency Response**
- **Education**
- **Risk Assessment**
- **Inspections and Enforcement**

# Levels of Service

## Community Levels of Service

### Advanced (Scope): Richmond Hill Fire and Emergency Services

The Richmond Hill Fire and Emergency Services provides fire protection and emergency response from six strategically placed stations within the community, along with a fleet of major fire and rescue vehicles and a team of fire fighters. Emergency responses span from fire to medical assistance, vehicular accidents, technical rescues, and more. There is also a focus on fire prevention and education, as well as evaluating and identifying present and foreseeable community fire risks. Servicing the unique emergency needs of an intensified urbanized community and the varying nature and volumes of calls while complying with statutory guidelines and requirements are top priorities for the City's Fire and Emergency Services.

### City of Richmond Hill Fire Stations

# Levels of Service

## Technical Levels of Service

| Advanced (Quality) | |
|---|---|
| **64 (GOOD)** | Fire Fleet (Frontline) Condition Index (FFCI) |
| **0.19 (GOOD)** | Weighted Average FCI of fire stations |

| Advanced (Reliability) | |
|---|---|
| **0%** | Percentage of major (frontline) fire and rescue apparatus fleet beyond estimated service life |
| **7 (ESL = 15)** | Average age (years) of major (frontline) fire and rescue apparatus |
| **12%** | Percentage of fire equipment beyond estimated service life |
| **65%** | Percentage of fire fleet and equipment assets in fair or better condition |

## Community Levels of Service

### Advanced (Quality): Facility Condition

The City undertakes continual inspections of the fire stations and utilizes maintenance management in Maximo to track and complete maintenance and repairs. The City also undertakes formal Building Condition Assessments (BCA) on a rotating three-year cycle to assess its condition. The BCA results are categorized into a Corporate Asset Management condition rating and also inform capital renewals.

**Facility Condition Index (FCI) Ranges**

| Condition Category | Condition FCI Range | Condition Range Description |
|---|---|---|
| **Very Good** | <10% | New building or building that has recently undergone a significant degree of renewal |
| **Good** | 10% to <20% | Minimal service interruptions; minor renewals required |
| **Fair** | 20% to <30% | Intermittent service interruptions; minor/major life cycle renewals required in the next five years |
| **Poor** | 30% to <50% | Some service interruptions; major life cycle renewals required in the next five years |
| **Very Poor** | >50% | Required renewal costs approaching building replacement cost; consideration for asset replacement or demolition |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

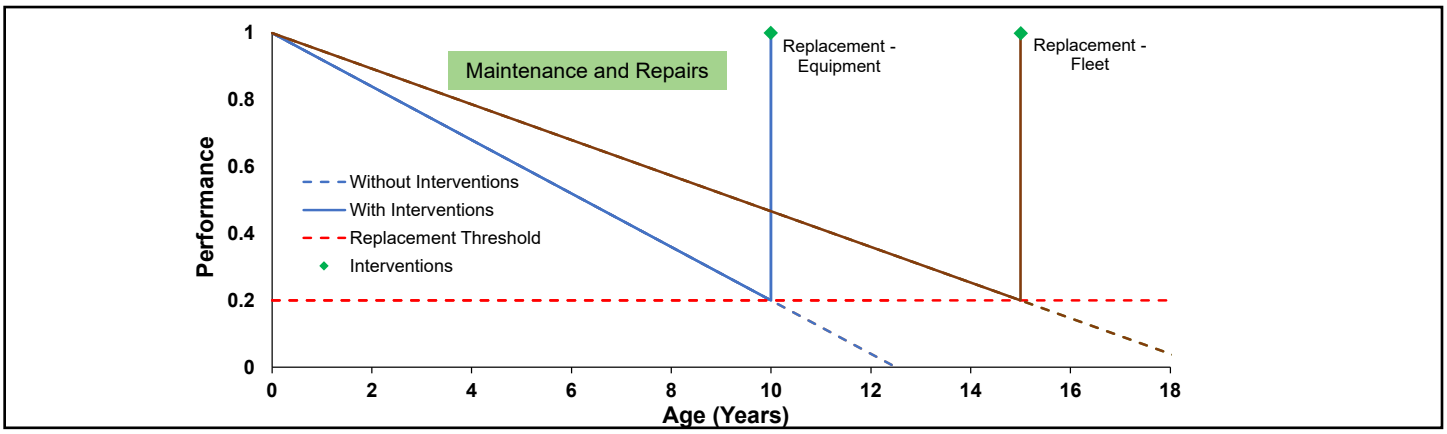
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City's Fire and Emergency Services makes continuous improvements in operations as well as other asset related initiatives (e.g. Firehouse software upgrade)<br>• Fire fleet, equipment and stations conform to Richmond Hill, Provincial and Federal government policies, standards, statutes and regulations. |
| **Maintenance** | • Fire fleet and equipment are cleaned, service tested, repaired and maintained per standards and guidelines.<br>• Building Condition Assessments (BCA) are completed for all City-owned facilities on a three-year cycle including for fire stations, which were completed in 2023.<br>• Scheduled preventive and reactive maintenance actions are completed on fire stations as required.<br>• Richmond Hill uses the Maximo software program to manage the City's fire stations. |
| **Rehabilitation** | • Fire fleet and equipment may be rehabilitated but are more commonly replaced at the end of their service life.<br>• Fire station building components are highly varied in type and complexity. They include structural, mechanical, and electrical components. The rehabilitation of the various Fire Station building components are completed as identified through the BCAs, EAM and VFA software program. |
| **Replacement** | • The Fire administration implemented life cycle strategies for fleet and equipment in line with the National Fire Protection Association (NFPA) Standards.<br>• Fire fleet and equipment should be replaced at the end of their service life based on these standards, recommendations and guidelines. Fire fleet may also see their service role change through their life cycle.<br>• Similar to rehabilitation, the replacement of the fire station's various building components is determined through the BCAs, EAM and VFA software program, and completed as required. |
| **Disposal** | • Appropriate and proper disposal occurs when assets are replaced or renewed. |
| **Growth / Service Improvement** | • The Fire Master Plan recommends a number of enhancements based on servicing growth and regulatory requirements. The acquisition of new fleet, equipment and expansions of building capacity and amenities will be required over time.<br>• Fire station assets could be considered for replacement to address energy efficiency, water consumption, and/or technical and regulatory obsolescence. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

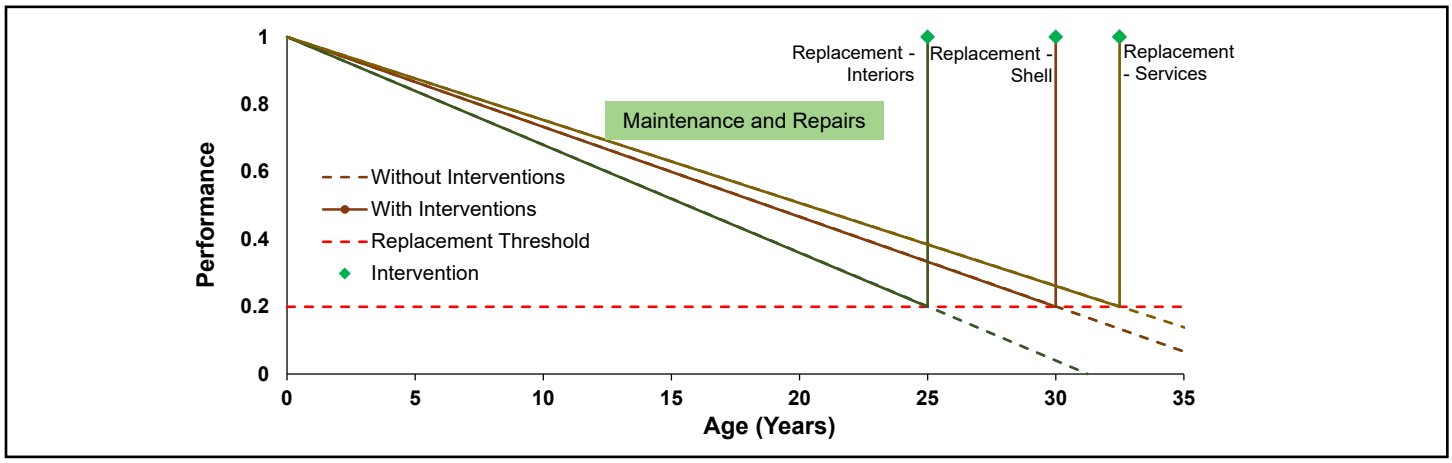
### Capital Treatments

#### Fire Fleet and Equipment Life Cycle




The City's life cycle model for fire fleet forecasts they should be replaced at the end of their service life. The fire fleet includes major fire and rescue vehicles and apparatus (15 year service life), along with supporting vehicles (7 year service life). For fire equipment, the City's life cycle model forecasts they should be replaced at the end of their service life, which varies by type of equipment such as rescue, firefighting, personal protective and communication equipment. The service lives of fleet and critically important equipment are established from standards, guidelines and recommendations (e.g. 7 to 10 year service life for bunker gear). These assets may be kept in service longer with a reduced role (e.g. spare function) or could be replaced sooner based on operational needs, function and condition.

#### Fire Station Facilities Life Cycle




The Fire Stations are composed of a number of different building assets. Structural assets include components like foundations and above-grade structures, which generally do not require renewal over the life of the building. Building shell assets (i.e. roof and exterior walls) have an average estimated service life of around 30 years, although some components, such as metal roofs and window frames, have significantly longer service lives. Service assets (mechanical, plumbing and electrical) can have a 20 to 45 year service life. Interior assets (i.e. wall, flooring, and ceiling) may last 10 to 40 years depending on the material and level of occupancy/traffic volume of the facility. Once the condition of these assets has deteriorated to poor/very poor and/or have reached the end of their life, the City's life cycle model forecasts they would typically be replaced. These assets may be kept in service longer or could be replaced sooner based on criticality, condition, and effectiveness of alternative life cycle treatments like repairs and rehabilitations.

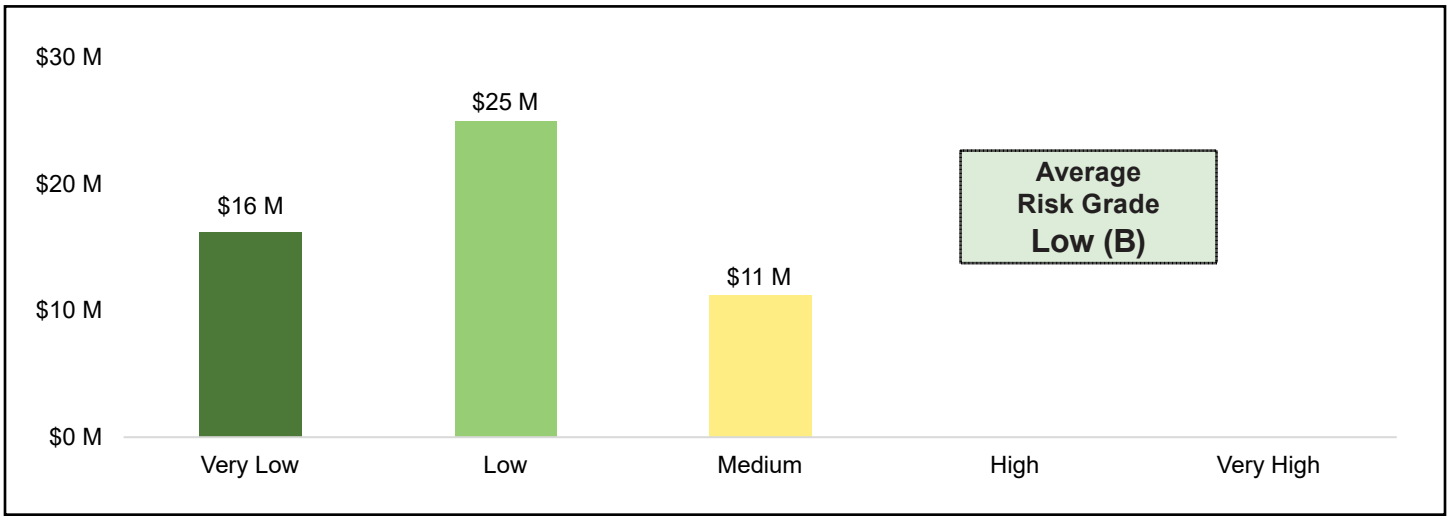
# Risk Prioritization

Average Risk Grade
**Low (B)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Fire Stations (Facilities)<br>• Fire Fleet<br>• Fire Equipment<br>• Parking Lots | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Facility building component type and function<br>• Fleet and equipment asset type and function | • Environmental compliance<br>• Asset type<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- A 2050 net zero emissions goal for City facilities has been identified and the Corporate Energy Plan will continue to be implemented.
- Incorporation of sustainable and energy efficient elements in City building designs and construction.
- The City completes mandatory reporting requirements on annual energy consumption and GHG emissions for its facilities to the Ministry of Energy.
- Reducing single-use plastics at City buildings through the Corporate Single-Use Plastics Reduction Policy.
- Monitoring the feasibility of replacing diesel-powered fire fleet vehicles with electric.
- Switched to eco-friendly firefighting foam.

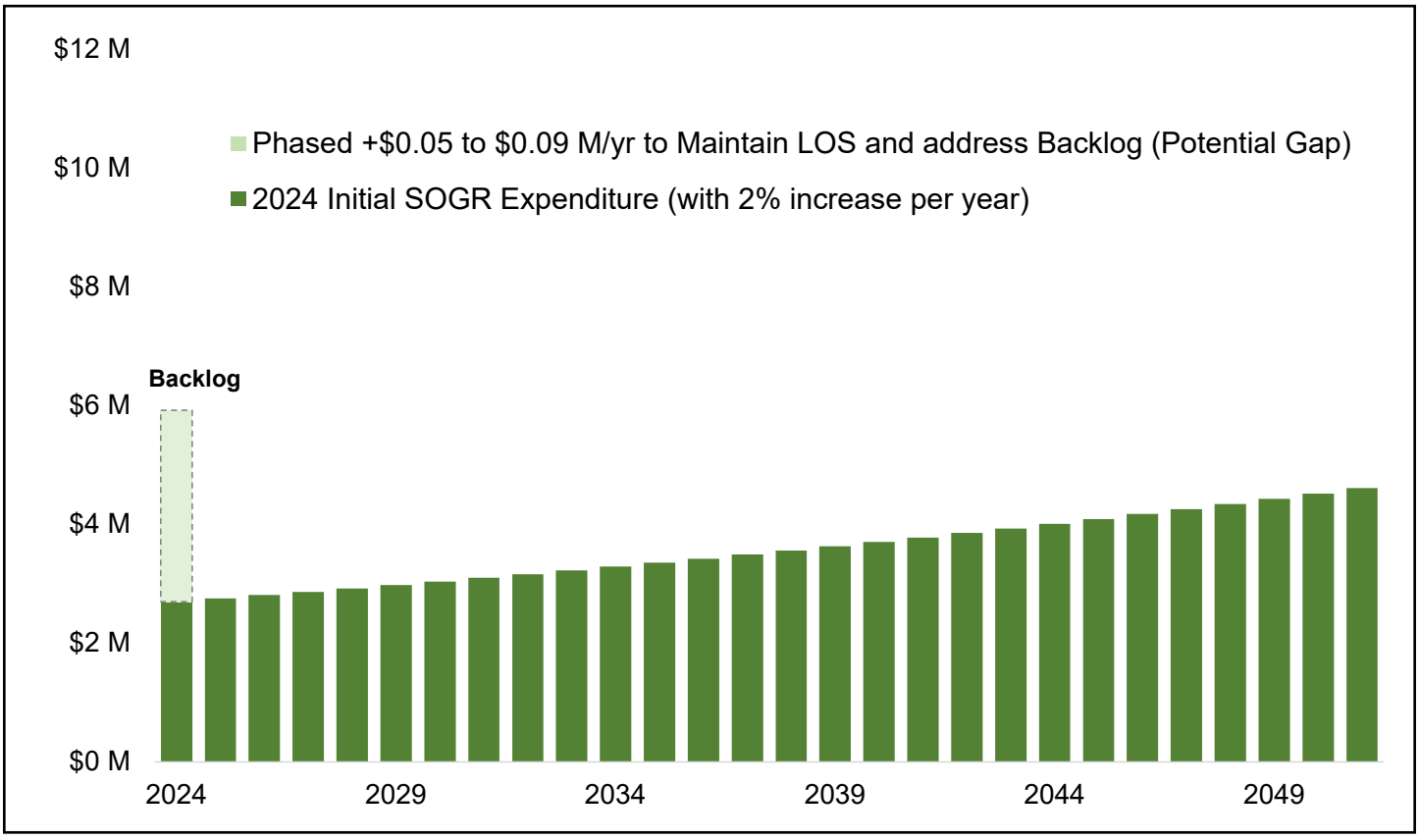
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$5.9 M** | **+$0.05 to $0.09 M/yr** | **$0 to $0.4 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Protection Services ($ millions)**

| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Protection | 5.9 | 2.7 | +0.05 to 0.09 | 2.9 to 3.1 | 0 to 0.1 | 3.6 to 4.4 | 0 to 0.4 |

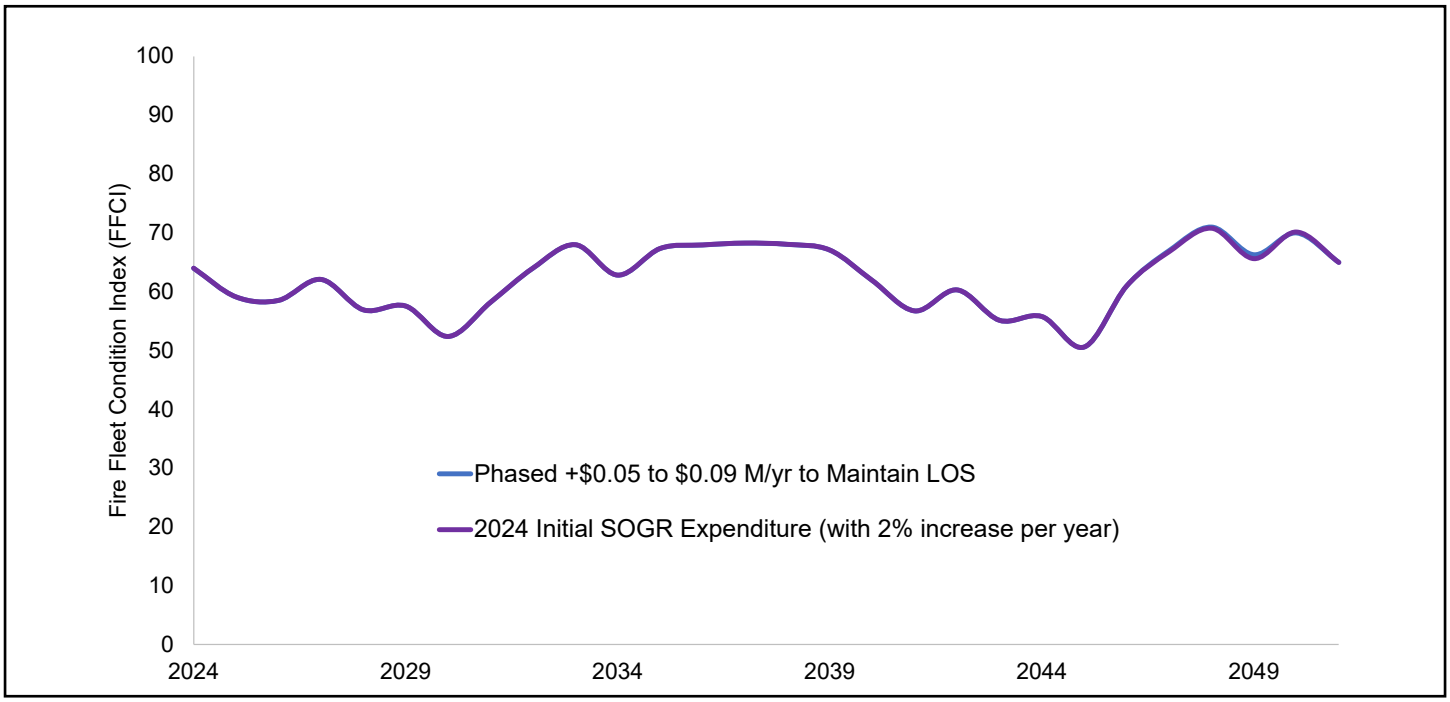


# Asset Investment Strategy

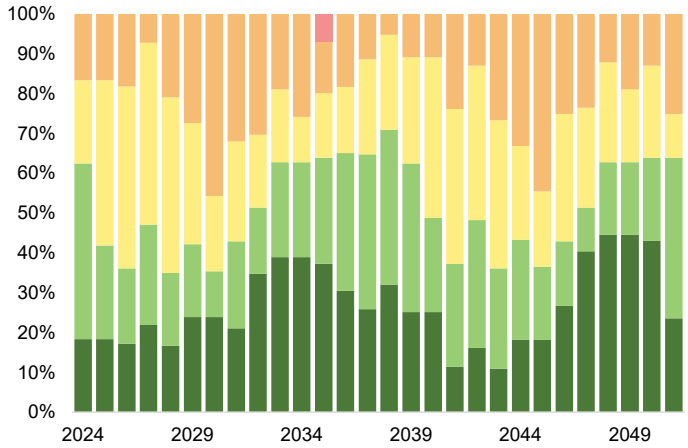
## Impact on Levels of Service

### Fire Fleet

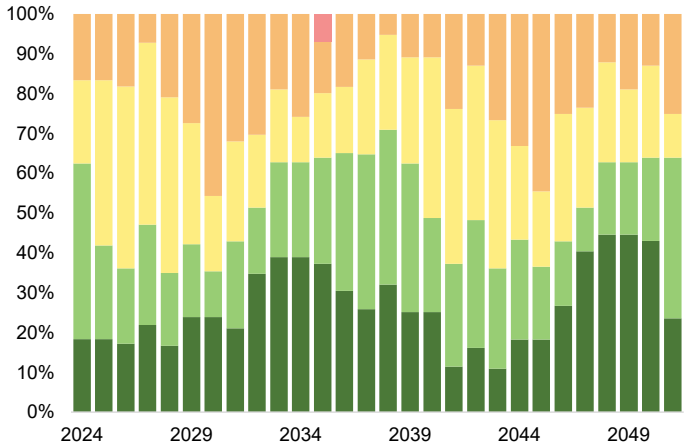
**Fire Fleet Condition Index (FFCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**

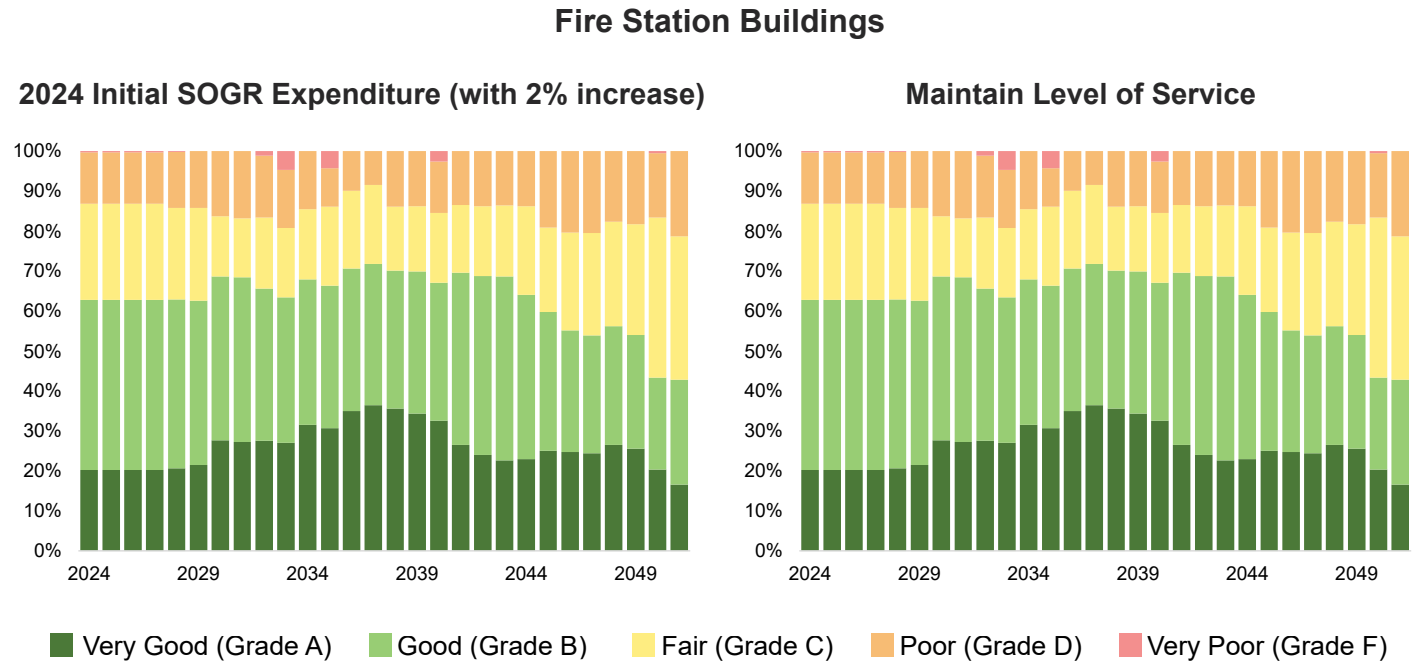



Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Asset Investment Strategy

## Impact on Levels of Service

### Fire Station Buildings





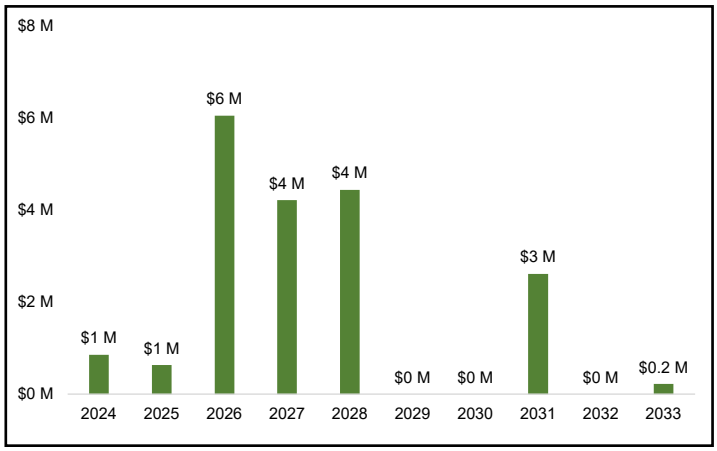
*Fire Station 8-3 (Harold J. Mills)*

# Growth Capital and Operating Forecast

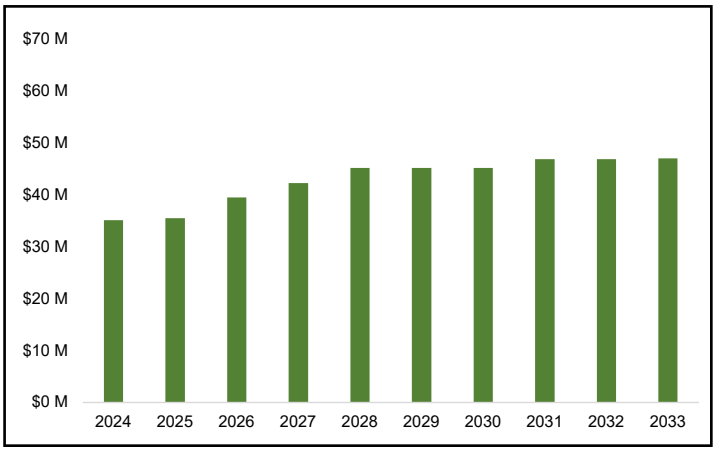
## Future Outlook

The City's 2021 Fire Master Plan outlines a comprehensive strategy to meet future community needs arising from population growth, intensified urban development, anticipated increase in call volumes and types, evolving statutory standards, and expanding focus on all types of emergencies. This strategy includes 46 short (1-3 year), medium (4-6 year), and long-term (7-10 year) recommendations to enhance fleet, equipment, response times, resources, staffing and stations. The synergy of the Fire Master Plan along with future Asset Management Plans will be instrumental in guiding asset investments within the City's 10 Year Capital Budgets and Forecasts.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




Richmond Hill's Fire and Emergency Services are positioned for enhanced services and capital expansions over the next 10 years as identified in the City's 2024 Capital Budget and Forecast. These growth-related enhancements were informed by the City's Fire Master Plan. The most notable planned investment is the construction of a New Station 8-7 at an estimated capital cost of $9.6 million along with the accompanying new state-of-the-art fire fleet and equipment proposed at $4.6 million. Complementing these improvements is the planned enhancement of the Fire Training Centre with a forecasted budget of $4.0 million to advance firefighter training and skills development through to 2026. These major undertakings underscore a strategic and comprehensive investment in the infrastructure and operational excellence of Fire Services. These service enhancements will significantly bolster firefighting and emergency response capabilities.

The estimated operating and maintenance costs to support the existing and future growth-related expansions for the City's Fire and Emergency Services division could increase from around $35 million in 2024 to over $45 million by 2033 in today's dollars (excluding future inflationary pressures). This forecasted increase in operating costs is due to the supporting the operating requirements for the potential new fire station identified to be built by 2028, along with the new fleet and enhancements to the Fire Regional Training Centre. If these are constructed as planned in the City 10 Year Capital Budget and Forecast, there will be a steady growth in the estimated operating costs to support these capital expansions.

## Appendix K

# Administration Services


*City of Richmond Hill Municipal Offices*

# Overview of Administration Services

The City of Richmond Hill owns and operates two primary municipal buildings, as well as six smaller facilities which support civic administration in the provision of services to the community. Other supporting assets, like fleet and equipment, are critical to provide services to residents.

*Operations Centre*

## Office Buildings

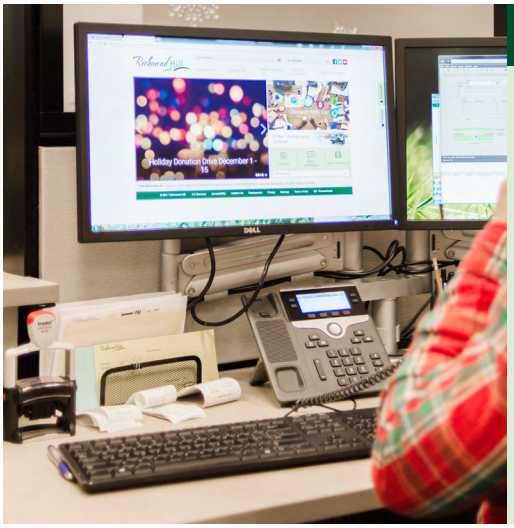
Richmond Hill's collection of office buildings provides over 29,400 square metres of area that serves as the backbone of the City's administrative, governance and operational functions. The Richmond Hill Municipal Offices located at 225 East Beaver Creek Road is a central hub for the City's administrative activities and provides public access to services, a meeting place for City Council, and a venue for public consultations. The Richmond Hill Operations Centre site situated at 1200 Elgin Mills Road East includes four buildings, being the Main Building, the Truck Wash Building, the Salt Shed, and the Fire Training Building. The Main Building is where the city's operational services are coordinated and delivered from. The Truck Wash Building is crucial for the daily operations of various municipal fleet requirements. The Salt Shed plays a vital role in the City's winter road maintenance program. The Fire Training Building is a state-of-the-art facility dedicated to the training of the City's fire services personnel.


*Vanderburgh House*

## Other Buildings

Other buildings within the Administration Services includes eight facilities that are each used for different purposes. These buildings provide an assortment of City administration support, storage capacity, and administration space for utilization. Some examples of these facilities includes the Barn and Fair Storage buildings that are part of the Richmond Green Complex, the Connor Building and the Brodie and Vanderburgh buildings.

# Overview of Administration Services



## Information Technology (IT)

Information Technology (IT) assets are pivotal in supporting municipal operations and electronic services for the community. The City's IT assets encompass a wide array of sophisticated and essential technological tools that are housed and used across all City-owned municipal facilities. These assets include IT Hardware such as computers (desktops, laptops and tablets), printers, and accessories. IT Infrastructure assets are the vital network and server devices that underpin the City's data management and communication systems. They also include the reliable backup power systems that guarantee the continuity and security of municipal operations. Audiovisual and telecommunications equipment includes projectors, TVs, and conference units as well as cell phones, modems, and desktop phones.

## Fleet and Equipment

Richmond Hill's Administrative fleet and equipment play a crucial role in the administrative efficiency and logistical capability of the City's municipal services. The Administrative fleet includes a varied assortment of vehicles, such as SUVs, trucks, and vans. The Administrative equipment is composed of a diverse range of assets such as forklifts and stackers. Together, these fleet and equipment assets ensure smooth logistical operations and support the City's day-to-day administrative and operational functions.

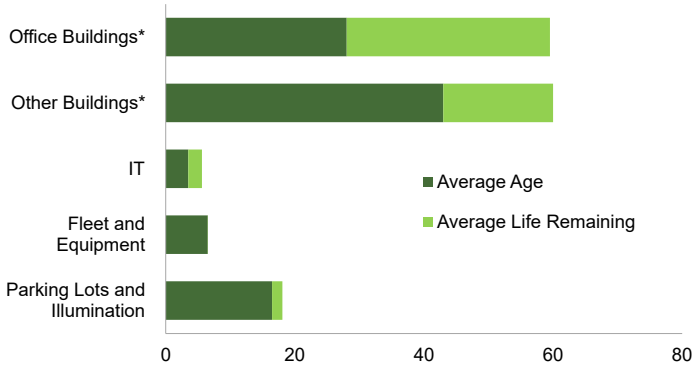
# State of the Infrastructure

| Replacement Value | Average Condition | Average Age / ESL |
|---|---|---|
| **$147 M** | **B (Good)** | **28 / 55 (years)** |

## Asset Portfolio

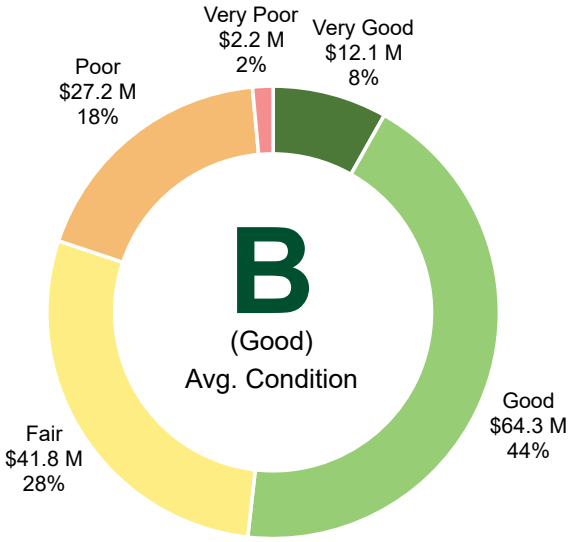
| Asset | Quantity | Replacement Value |
|---|---|---|
| Office Buildings | 2 ea. | $124.0 M |
| Other Buildings | 8 ea. | $9.1 M |
| IT | A mix | $8.3 M |
| Fleet and Equipment | A mix | $1.9 M |
| Parking Lots and Illumination | 6 ea. | $4.1 M |

## Average Age and Service Life




**Age and ESL reflects building components, not facility as a whole*

## Overall Condition




Very Good (Grade A) Good (Grade B) Fair (Grade C)
Poor (Grade D) Very Poor (Grade F)

- Condition of the buildings are based on their Building Condition Assessments (BCA) completed in 2022/2023. The assessment results are converted into a Corporate Asset Management condition rating. The City completes BCA for all City-owned facilities over a three-year cycle.
- For the IT assets, their condition is based on their age and remaining life, which varies by the type of IT equipment. This group of assets includes IT hardware, IT infrastructure, audiovisual and telecommunications.
- The condition of fleet and equipment is based on its utilization (km) as well as age and remaining life.
- The condition of parking lots is based on visual technical inspections, and illumination is based on age and remaining life.

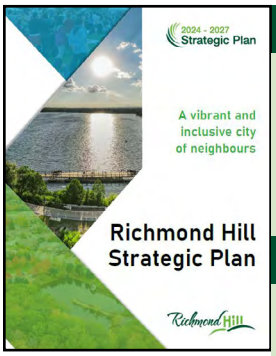
| Condition Category | Letter Grade | Office and Other Facilities: Building Condition Assessments | IT: Life Remaining | Fleet and Equipment: Utilization and Life Remaining | Parking Lots: Condition Assessments and Life Remaining |
|---|---|---|---|---|---|
| **Very Good** | **A** | >0.8 to 1.0 | >75% to 100% | >0.8 to 1.0 | >0.8 to 1.0 |
| **Good** | **B** | >0.6 to 0.8 | >50% to 75% | >0.6 to 0.8 | >0.6 to 0.8 |
| **Fair** | **C** | >0.4 to 0.6 | >25% to 50% | >0.4 to 0.6 | >0.4 to 0.6 |
| **Poor** | **D** | >0.2 to 0.4 | >0% to 25% | >0.2 to 0.4 | >0.2 to 0.4 |
| **Very Poor** | **F** | >0 to 0.2 | <0% | >0 to 0.2 | >0 to 0.2 |

# Levels of Service

**Strategic Level of Service:** Richmond Hill provides efficient and effective administrative, governance and operational support for delivering services to the community, while also providing residents with access to in-person administrative services and venues for community input and engagement.

## Strategic Service Alignment

### 2024-2027 Strategic Plan Pillars and Priorities




#### Pillar 1: Growing a Livable, Sustainable Community

- Implement environmental sustainability practices in our work in collaboration with the community, including planning for climate change adaptation and mitigation.
- Make decisions that meet the needs of today's residents without compromising the ability of future generations to meet their own needs.

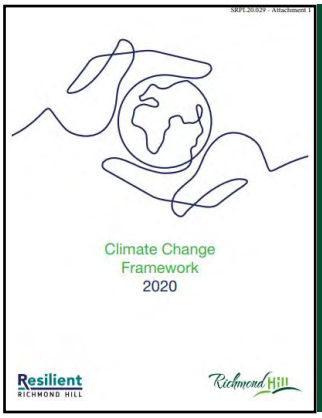
#### Pillar 2: Focusing on People

- Engage the community, stakeholders and City staff to support informed participation and to ensure that all voices can contribute toward effective decision-making.
- Support Richmond Hill's unique character and sense of community through programs, services and events.
- Build a workforce for tomorrow to ensure that expertise and continuity is in place to deliver on the City's aspirations for the future.

#### Pillar 3: Strengthening our Foundations

- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents, stakeholders, businesses, the private sector and colleagues.

### Climate Change Framework Goals



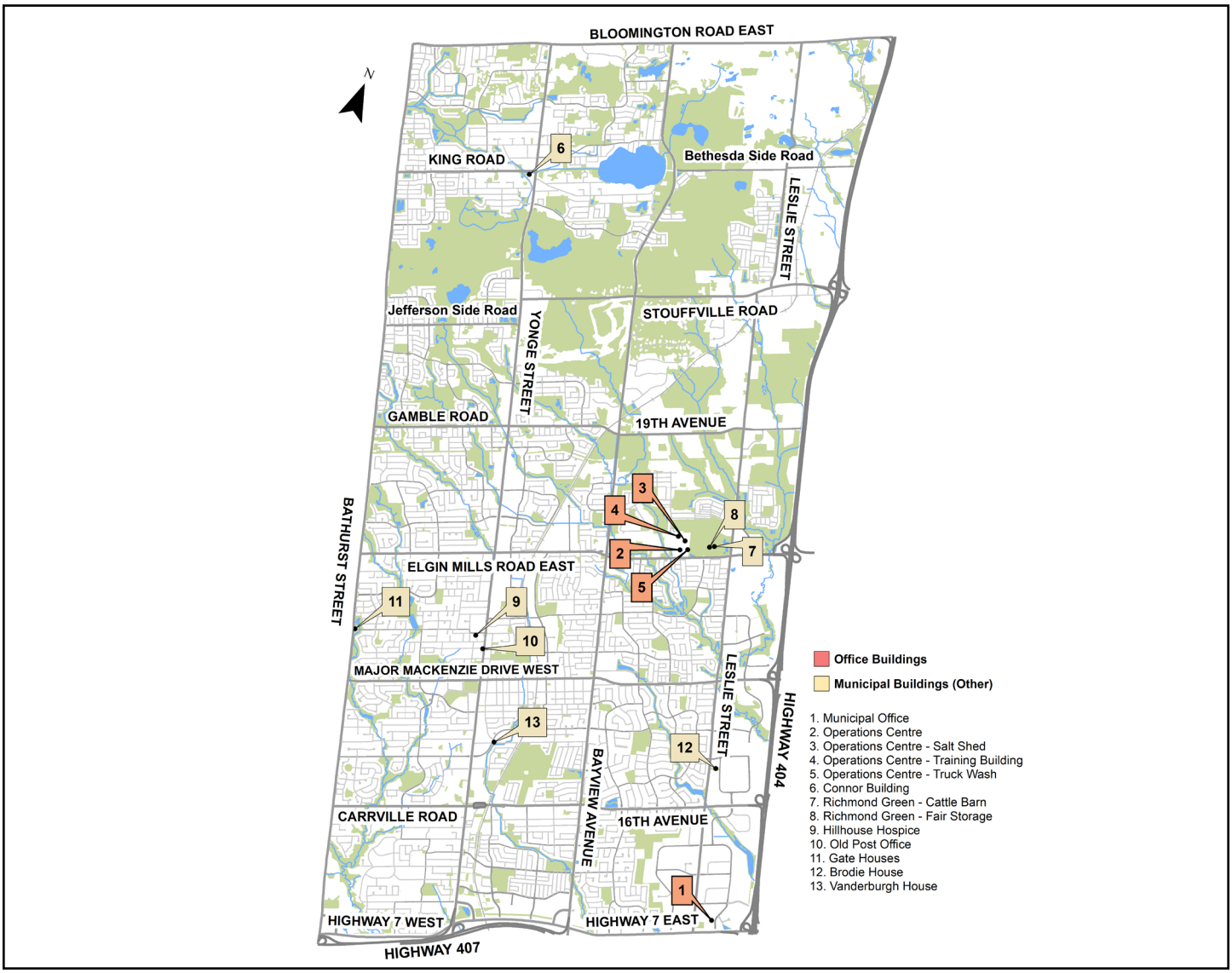

- **Apply Climate Change Lens to Asset Management**
- **Apply Climate Change Lens to Land Use Planning**
- **Apply Climate Change Lens to Corporate Governance**
- **Formalize Community Risk Mitigation**
- **Leverage Green Infrastructure**
- **Foster Engagement and Innovation**

## Community Levels of Service

### Advanced (Scope): Richmond Hill Administration Services

Richmond Hill provides efficient and effective client focused administrative services that are easily accessible for customers such as payment of property taxes and water billing. This focus on client accessibility and ease of use enriches the customer experience. These services are offered to residents in person at one of the City's facilities as well as online through the City's digital presence. The Richmond Hill Municipal Offices located at 225 East Beaver Creek Road is a central hub for these administrative services and provides public access, a meeting place for City Council, and a venue for public consultations. The IT assets are the backbone that support the City's digital presence as well as support staff in the delivery of other essential services to the community. The Richmond Hill Operations Centre site situated at 1200 Elgin Mills Road East, which includes four buildings being the Main Building, the Truck Wash Building, the Salt Shed, and the Fire Training Building, is essential in supporting the City's fleet, winter maintenance program, and management of Fire services.

### City of Richmond Hill Administration Buildings



# Levels of Service

## Technical Levels of Service

| Advanced (Quality) | |
|---|---|
| **52 (FAIR)** | IT Condition Index (ITCI) |
| **0.17 (GOOD)** | Weighted Average FCI of office buildings |

| Advanced (Reliability) | |
|---|---|
| **63%** | Percentage of IT assets in fair or better condition |
| **81%** | Percentage of facilities in fair or better condition |

| Advanced (Environmental) | |
|---|---|
| **157.2** | Annual hydro consumption (kWh) per square metre (office buildings) |
| **12.9** | Annual gas consumption ($m^3$) per square metre (office buildings) |
| **20.5** | Annual water use intensity ($m^3$) per square metre - (office buildings) |

## Community Levels of Service

### Advanced (Quality): Facility Condition

The City undertakes continual inspections of the Administration Services facilities and utilizes maintenance management in Maximo to track and complete maintenance and repairs. The City also undertakes formal Building Condition Assessments (BCA) on a rotating three-year cycle to assess its condition. The BCA results are categorized into a Corporate Asset Management condition rating and also inform capital renewals.

**Facility Condition Index (FCI) Ranges**

| Condition Category | Condition FCI Range | Condition Range Description |
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| **Very Good** | <10% | New building or building that has recently undergone a significant degree of renewal |
| **Good** | 10% to <20% | Minimal service interruptions; minor renewals required |
| **Fair** | 20% to <30% | Intermittent service interruptions; minor/major life cycle renewals required in the next five years |
| **Poor** | 30% to <50% | Some service interruptions; major life cycle renewals required in the next five years |
| **Very Poor** | >50% | Required renewal costs approaching building replacement cost; consideration for asset replacement or demolition |

# Asset Management Life Cycle Strategies

## Life Cycle Approaches

### Life Cycle Activities

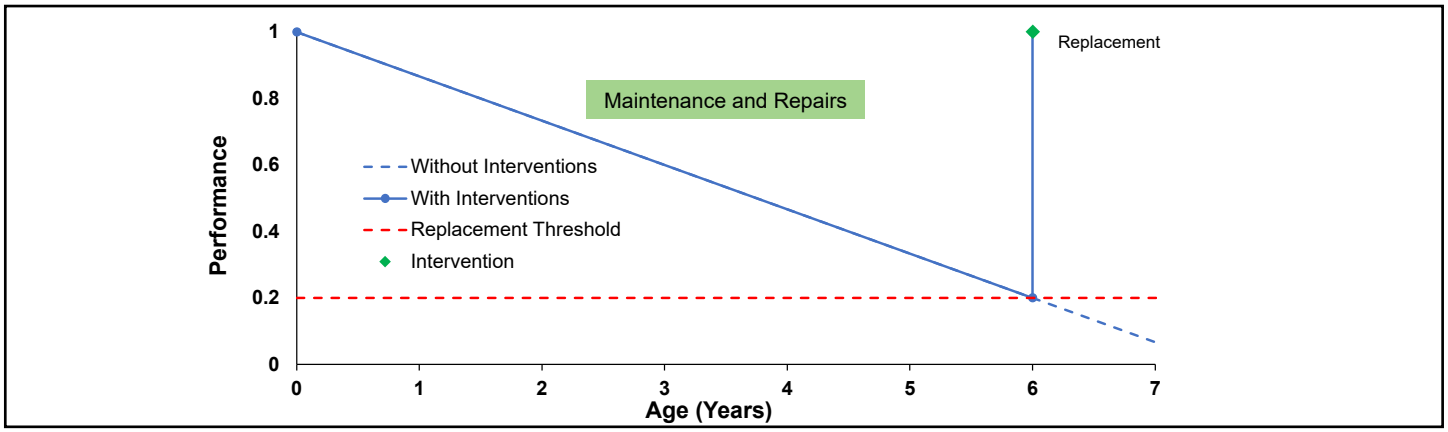
| Life Cycle Activity | Description of Activities Practiced by the City |
|---|---|
| **Non-Infrastructure** | • The City explores opportunities for continuous improvements to enrich client experience when accessing municipal administration based services.<br>• Policies, plans and studies are completed (e.g. the new City 2024-2027 Strategic Plan)<br>• Buildings conform to Richmond Hill, Provincial and Federal government policies, standards and regulations. |
| **Maintenance** | • Scheduled preventive maintenance actions are planned and executed to manage the City's buildings.<br>• Reactive maintenance on buildings is also performed as required.<br>• Richmond Hill uses the Maximo software program to manage the maintenance program of the City's facilities.<br>• Fleet and equipment are maintained per the recommended standards.<br>• Critical IT infrastructure is maintained to ensure it is functioning as intended, including upgrades as required. |
| **Rehabilitation** | • Building Condition Assessments (BCA) are completed for all City-owned facilities on a three-year cycle including for the administration and operations buildings, which were completed in 2022/2023.<br>• Building assets are highly varied in type and complexity. They include structural, mechanical and electrical components. The rehabilitation of the various building components of the City's buildings are completed as identified through the BCAs, EAM and VFA software program. |
| **Replacement** | • Fleet and equipment would typically be examined for replacement at the end of their service life, which varies by the type of fleet and equipment.<br>• The City's IT assets would typically be replaced at the end of their service life. These assets have varying service lives given their type, function, use and warranty periods.<br>• The replacement of the various building components of the City's facilities are determined through the BCAs, EAM and VFA software program and completed as required. |
| **Disposal** | • Appropriate and proper disposal occurs when assets are replaced or renewed. |
| **Growth / Service Improvement** | • Strategic and master plans can identify priorities that can lead to the acquisition of new assets as well as expansion of building capacity, functions and amenities.<br>• AODA compliance remains achieved through building asset component renewals considered during rehabilitation and/or replacement.<br>• Building assets could be considered for replacement to address energy efficiency, water consumption, and/or technical and regulatory obsolescence. |

# Asset Management Life Cycle Strategies

## Life Cycle Activities

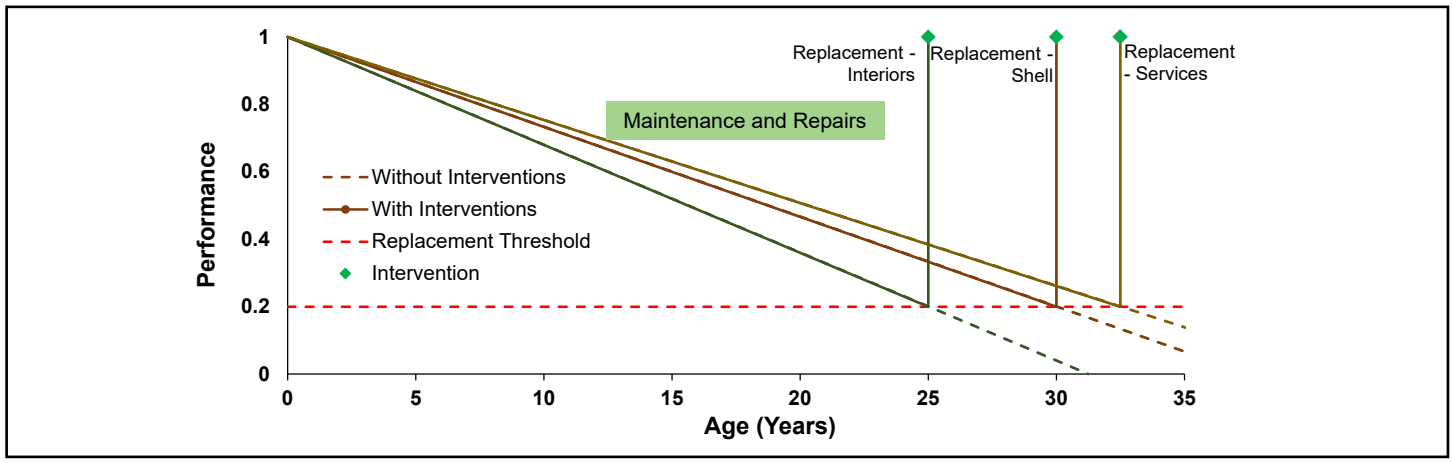
## Capital Treatments

### Information Technology (IT) Life Cycle




The City owns and manages a wide array of different types of IT assets including IT Hardware, IT infrastructure, audiovisual and telecommunication equipment. These assets have varying service lives given their function, use and warranty periods. The City's life cycle model forecasts that they would typically be replaced at the end of their service life. Some of these IT assets would receive testing, inspections and upgrading as required. These assets may be replaced sooner based on usage and/or premature failure or may be kept in service longer for spare use or other operational needs.

### Office Buildings Life Cycle




The office buildings are composed of a number of different building assets. Structural assets include components like foundations and above-grade structures, which generally do not require renewal over the life of the building. Building shell assets (i.e. roof and exterior walls) have an average estimated service life of around 30 years, although some components, such as metal roofs and window frames, have significantly longer service lives. Service assets (mechanical, plumbing and electrical) can have a 20 to 45 year service life. Interior assets (i.e. wall, flooring, and ceiling) may last 10 to 40 years depending on the material and level of occupancy/traffic volume of the facility. Once the condition of these assets has deteriorated to poor/very poor and/or have reached the end of their life, the City's life cycle model forecasts they would typically be replaced. These assets may be kept in service longer or could be replaced sooner based on criticality, condition, and effectiveness of alternative life cycle treatments like repairs and rehabilitations.

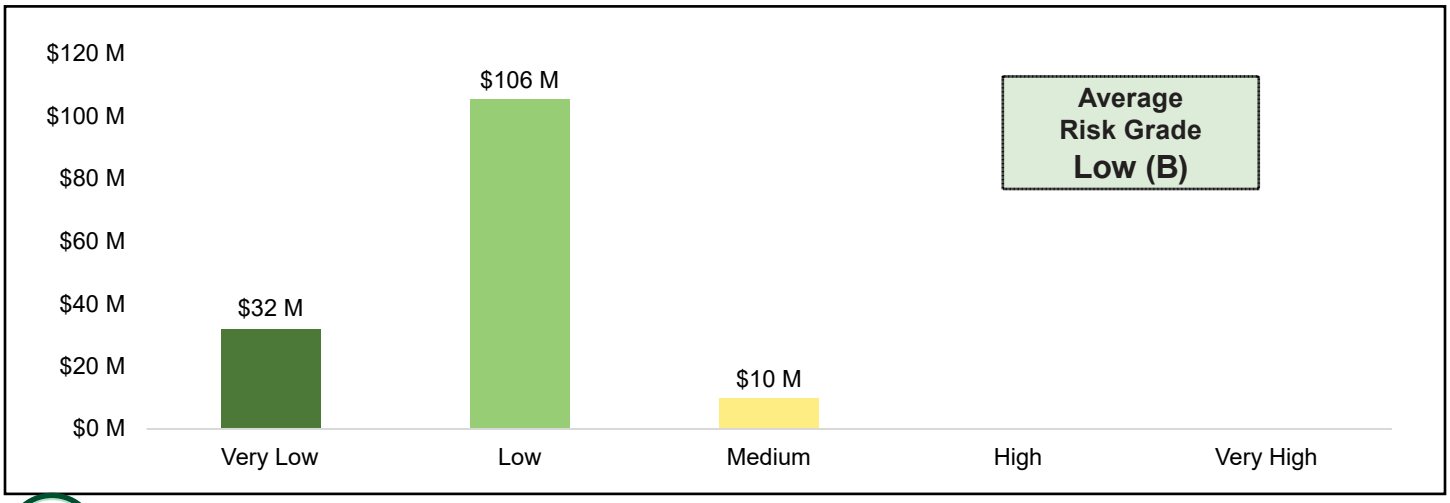
# Risk Prioritization

Average Risk Grade
**Low (B)**

## Risk Framework


| Asset | Likelihood of Failure | | Consequence of Failure | | |
|---|---|---|---|---|---|
| | Condition | Capacity | Financial | Social | Environmental |
| • Office Buildings<br>• Other Buildings<br>• Information Technology (IT)<br>• Fleet and Equipment<br>• Parking Lots | • Current and deteriorating condition | • Current capacity<br>• Future expansion/new need identified in budget, plan or study | • Capital replacement cost<br>• Operating cost/revenue | • Facility building component type and function<br>• Asset type and function | • Environmental compliance<br>• Asset type<br>• Impact to surrounding area |

### Summary of Asset Inventories by Risk




## Climate Change Considerations

- A 2050 net zero emissions goal for City facilities has been identified and the Corporate Energy Plan will continue to be implemented.
- The City completes mandatory reporting requirements on annual energy consumption and GHG emissions for its facilities to the Ministry of Energy.
- The Operations Centre was recognized for energy performance at the Windfall Centre's 2022 Sustainability Awards, as it achieved a 6% reduction in energy use intensity and an 11% reduction in GHG emissions (2020-2021).
- The City initiated replacement of its fuel system to measure fuel efficiency.
- Plan to purchase four electric fleet vehicles and four charging stations.
- Incorporation of sustainable and energy efficient elements in City building designs and construction.
- Reducing single-use plastics at City buildings through the Corporate Single-Use Plastics Reduction Policy.

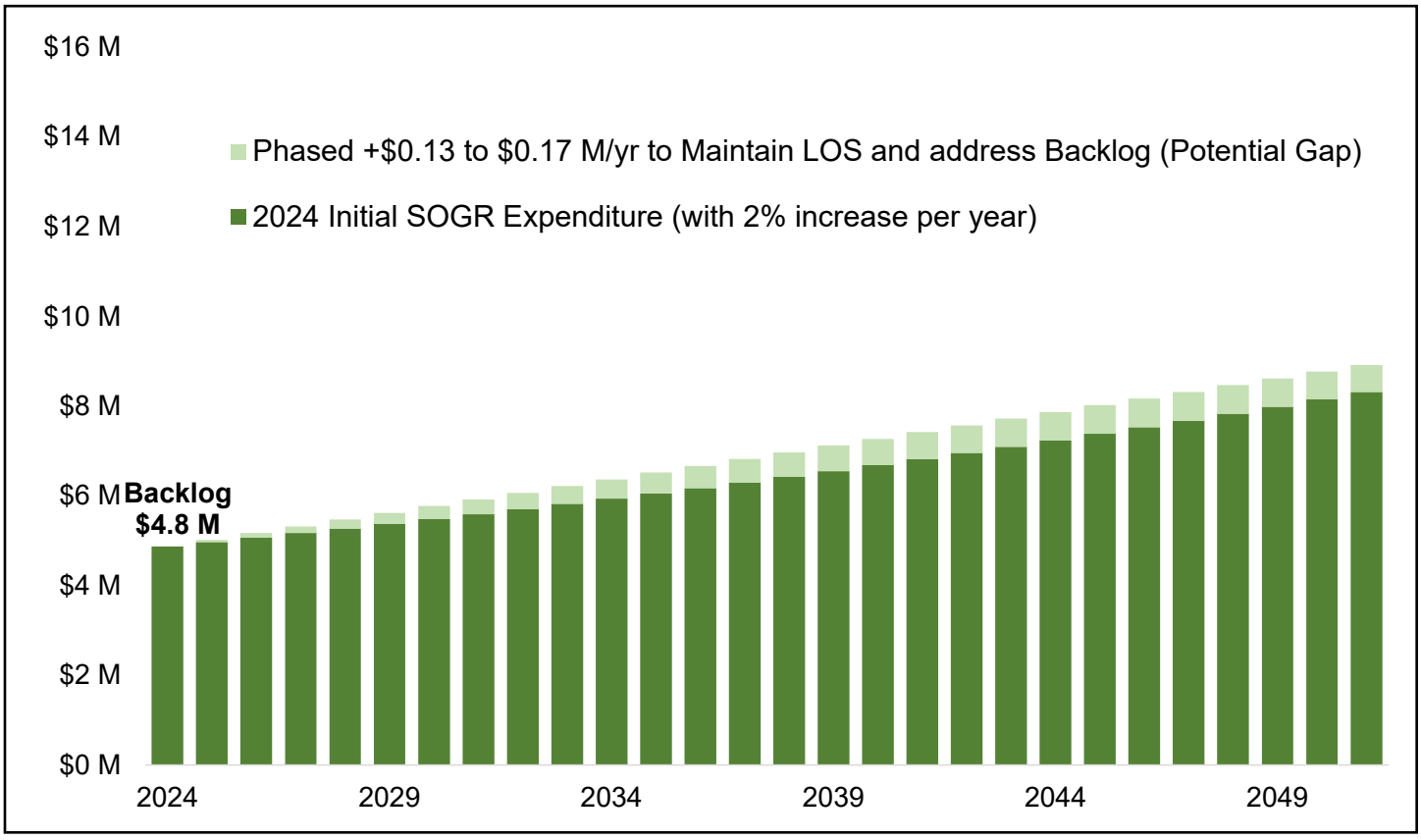
# Asset Investment Strategy

| Backlog | To Maintain LOS | Potential Gap |
|---|---|---|
| **$4.8 M** | **+$0.13 to $0.17 M/yr** | **$0 to $1.0 M/yr** |

## Investment Approach

**Suggested SOGR Asset Investment Strategy – Administration Services ($ millions)**

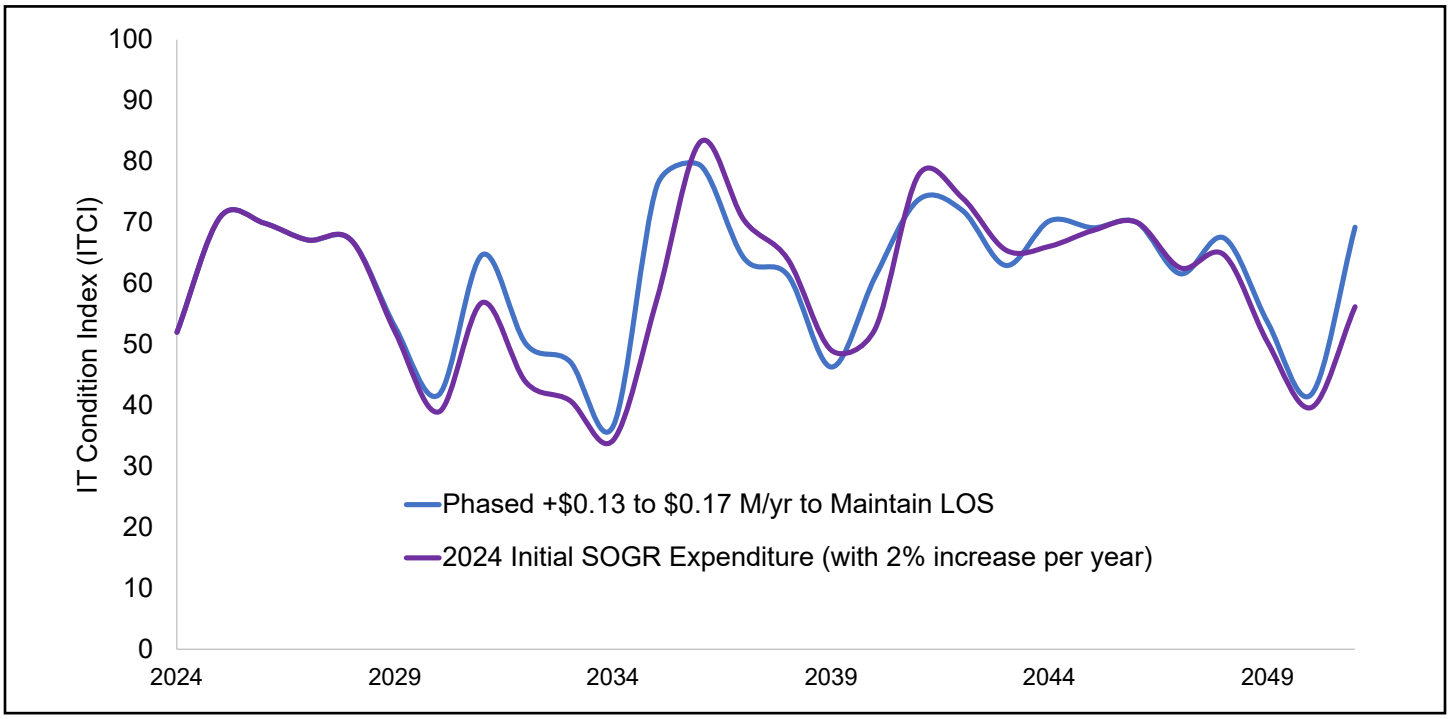
| | | | | 10 Years (2024 to 2033) | | 18 Years (2034 to 2051) | |
|---|---|---|---|---|---|---|---|
| **Service** | **2024 Infrastructure Backlog** | **2024 Initial SOGR Expenditure** | **Annual Phased-in SOGR to Maintain LOS** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** | **Annual Avg. SOGR to Maintain LOS** | **Annual Avg. Potential Infrastructure Gap** |
| Administration | 4.8 | 4.9 | +0.13 to 0.17 | 5.5 to 5.6 | 0 to 0.3 | 7.3 to 8.0 | 0 to 1.0 |



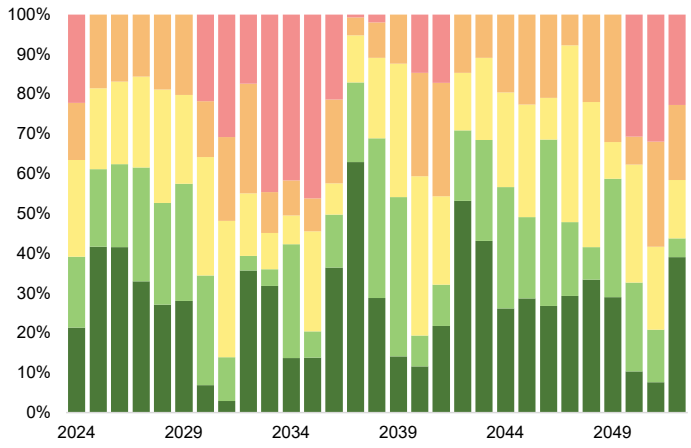
## Impact on Levels of Service

### Information Technology (IT) Assets

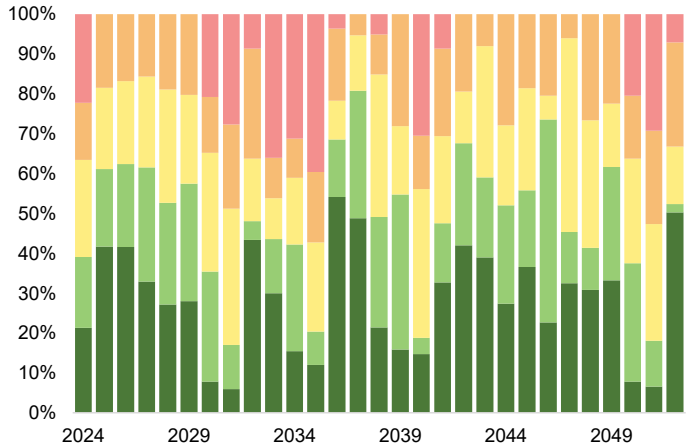
**IT Condition Index (ITCI) over time**




**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



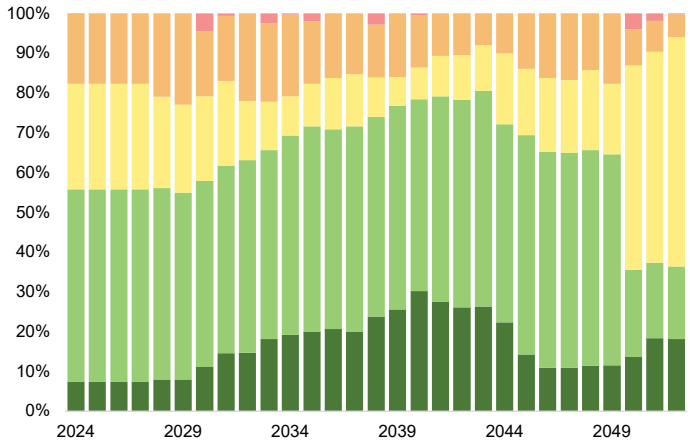

Very Good (Grade A) | Good (Grade B) | Fair (Grade C) | Poor (Grade D) | Very Poor (Grade F)

# Asset Investment Strategy

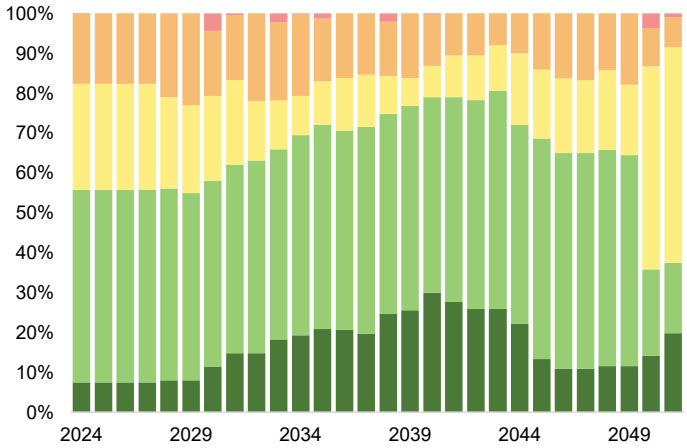
## Impact on Levels of Service

### Office Buildings

**2024 Initial SOGR Expenditure (with 2% increase)**

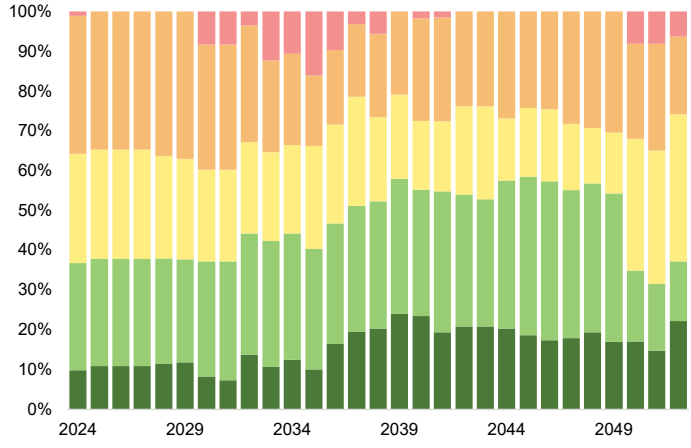



**Maintain Level of Service**

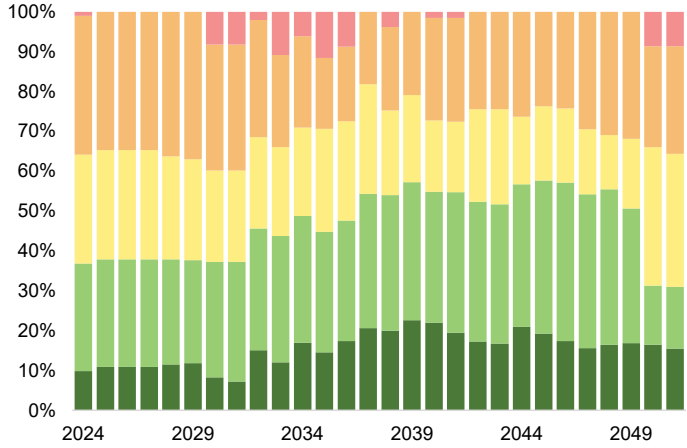



### Other Buildings

**2024 Initial SOGR Expenditure (with 2% increase)**




**Maintain Level of Service**



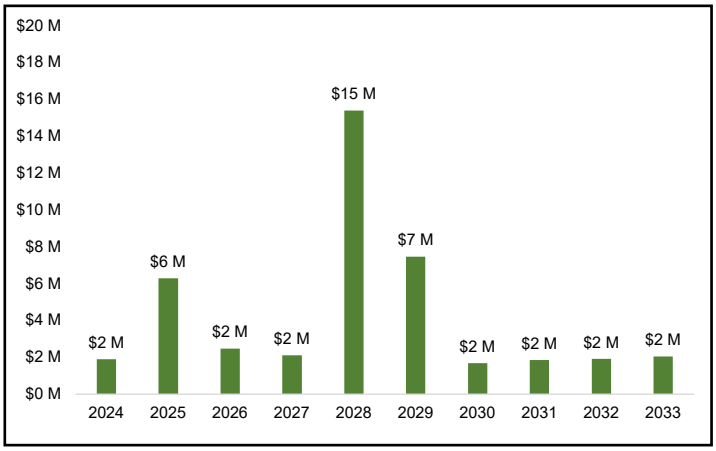

Very Good (Grade A) Good (Grade B) Fair (Grade C) Poor (Grade D) Very Poor (Grade F)

# Growth Capital and Operating Forecast

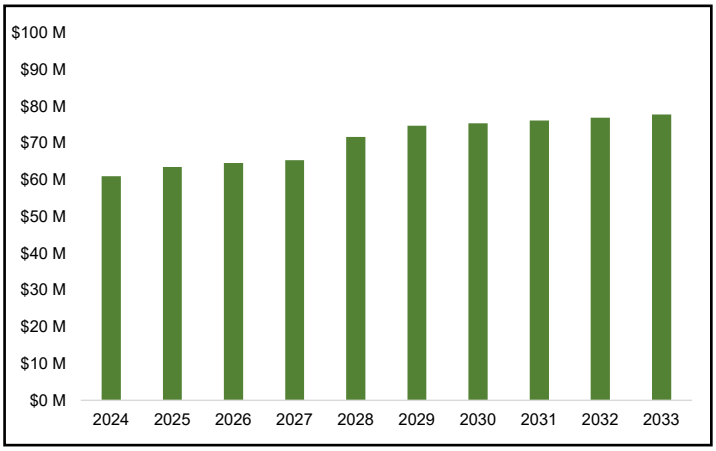
## Future Outlook

The City of Richmond Hill continually explores opportunities for continuous improvements to enhance client focused approaches to delivering government services that will enrich the customer experience, accessibility and ease of use. These ongoing initiatives, along with the state of good repair renewals for the existing assets, will be incorporated into the City's Capital Budget and Forecast to support the future outlook.

### 2024 Growth Capital Budget and Forecast




### Preliminary Estimated Operating Cost Forecast




There are a number of significant growth related projects for Administration Services included in the City's 2024 Capital Budget and Forecast that will enhance operational efficiency and improve service delivery to the community. The most significant of these is the Operations Centre Yard Expansion and Upgrade with an anticipated investment of $20.0 million, marking a major enhancement of municipal operational capabilities by 2029. Another important initiative is the CRH Web and Digital Transformation project at an estimated investment of $7.0 million to be progressively executed by 2033. These projects are critical for streamlining municipal services and providing a more integrated digital experience for citizens. The Richmond Hill Centre Subway Project is also another major project with $5.8 million identified over the next 10 years, which will significantly boost the public transportation framework. Furthermore, the North Operations Yard Connor Room Retrofit at $3.8 million is also a notable development. The forecast also includes Data and Analytics Program Evolution ($1.2 million) and GIS Program Evolution ($1.1 million) to leverage technology to support municipal service delivery in the coming decade.

The Administration Services operating and maintenance costs are projected to experience a steady increase from approximately $61 million in 2024 to around $78 million by 2033. This anticipated rise in operating costs reflects the division's ongoing efforts to manage existing operations and accommodate future expansions. These projections are exclusive of potential inflationary pressures and are based on the current financial outlook and strategic planning initiatives. If the development and enhancements of Administration Services proceed as outlined in the City's 10 Year Capital Budget and Forecast, it can be expected that the operating costs will reflect the necessary investment to support these advancements.