

Richmond Hill

2025

Asset Management Plan

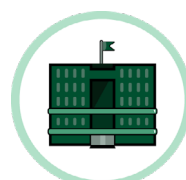




Table of Contents

- Key Definitions** ii
- Acronyms** iii
- Executive Summary** v
- 1.0 Introduction**..... 2
 - 1.1 City Responsibilities, Services and Future Growth 2
 - 1.2 What's New in the 2025 Asset Management Plan? 5
 - 1.3 Advancing Asset Management Planning at the City 7
 - 1.4 Maturing the Enterprise Asset Management System 18
 - 1.5 Scope and Purpose of the 2025 Asset Management Plan 19
 - 1.6 Informing Asset Renewal Needs to Assist Capital Programming 20
 - 1.7 Achieving Asset Management Regulatory Requirements 21
 - 1.8 Supporting the City's Vision and Strategic Priorities 23
- 2.0 State of the Infrastructure**..... 27
 - 2.1 Assessing Asset Inventories, Values, Condition and Age 27
 - 2.2 State of Infrastructure Summary 32
- 3.0 Levels of Service** 35
 - 3.1 Evaluating Levels of Service 35
 - 3.2 Proposed Levels of Service 37
 - 3.3 Technical Levels of Service Summary 39
- 4.0 Asset Management Strategies** 43
 - 4.1 Employing Asset Lifecycle Strategies 43
 - 4.2 Utilizing a Risk-Based Prioritization Framework 47
 - 4.3 Risk Summary 51
 - 4.4 Consideration of Climate Change 53
 - 4.5 Alignment with the City's Affordable Housing Strategy 56
- 5.0 Asset Investment and Financial Strategy** 58
 - 5.1 Financing Service Delivery 58
 - 5.2 Identifying and Forecasting Asset Needs 60
 - 5.3 Forecasting Available Funding 72
 - 5.4 Identifying and Managing Funding Shortfalls 76
 - 5.5 Implementing the Asset Management Plan and Financial Strategy 81
- 6.0 Continuous Improvement**..... 85
 - 6.1 Improving Data, Processes and Evidence-Based Decisions 85
- 7.0 Closing Remarks** 90
- Appendix A: Roadway System** 91
- Appendix B: Active Transportation**.....116
- Appendix C: Water Distribution**136
- Appendix D: Wastewater Collection**155
- Appendix E: Stormwater Management**.....175
- Appendix F: Parks and Outdoor Recreation** 196
- Appendix G: Recreation Facilities**215
- Appendix H: Cultural Services** 235
- Appendix I: Libraries** 252
- Appendix J: Protection Services**271
- Appendix K: Administration Services** 290

Key Definitions

Asset: A physical resource with economic value that a municipality controls with the expectation that it will provide a public service. An asset may include infrastructure, equipment, vehicles, or other resources with a purchase value at or above the City's capitalization threshold. An asset can also include natural and green assets such as trees and natural areas that are measurable.

Asset Management (AM): The coordinated activity of an organization to acquire, construct, maintain, rehabilitate, replace, or dispose of assets for the purpose of providing public service and value to the community.

Asset Management Plan (AM Plan): A plan developed for the management of infrastructure assets, in compliance with *O. Reg. 588/17*, that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specific level of service.

Asset Management Program: The term used to describe the activities, people, and processes that make up Asset Management at the City.

Backlog: The term “backlog” in this Asset Management Plan represents the dollar value of asset state of good repair renewal needs, including asset replacements or rehabilitations, that the City could complete currently or that are overdue. The backlog value is identified through condition assessments and Asset Management analysis.

Current Replacement Value: The cost to replace an existing asset, like for like, at the present time. Current replacement values represent costs including materials, labour, design and project management that are involved in replacing an existing asset with its current equivalent, at current industry pricing.

Estimated Service Life (ESL): The estimated amount of time that an asset is expected to maintain its performance or function.

Funding Shortfall: The amount, in dollars, that the City requires to meet its financial needs associated with achieving its proposed levels of service. A funding shortfall only occurs when the funding available is not enough to meet these financial needs.

Levels of Service (LOS): Levels of service is a qualitative or quantitative description of a service that is being provided. The City evaluates two types of Levels of Service: Community Levels of Service and Technical Levels of Service.

Risk: In an asset management context, risk refers to the probability and consequence (outcome) of potential events that could negatively affect the City's ability to meet its defined levels of service.

Acronyms

AM	Asset Management
AMI	Advanced Metering Infrastructure
AM Plan	Asset Management Plan
AODA	<i>Accessibility for Ontarians with Disabilities Act</i>
BCA	Building Condition Assessment
BCI	Bridge Condition Index
CAM	Corporate Asset Management
CCTV	Closed Circuit Television
CECI	Cultural Equipment Condition Index
CLOS	Customer Level(s) of Service
COF	Consequence of Failure
CPP	Concrete Pressure Pipe
CRV	Current Replacement Value
CSP	Community Stewardship Program
CSP	Corrugated Steel Pipe
EAB	Emerald Ash Borer
EAM	Enterprise Asset Management
ESL	Estimated Service Life
FAO	Financial Accountability Office of Ontario
FCI	Facility Condition Index
FFCI	Frontline Fire Fleet Condition Index
GHG	Greenhouse Gases
GIS	Geographic Information Systems
I&I	Inflow and Infiltration
IAM	Institute of Asset Management
IDF Curve	Intensity-Duration-Frequency Curve
ITCI	IT Condition Index
LECCI	Library Equipment and Collections Condition Index
LID	Low Impact Development
LOF	Likelihood of Failure
LOS	Level(s) of Service
MTD	Manufactured Treatment Device
NFPA	National Fire Protection Association
OSIM	Ontario Structure Inspection Manual

PACP	Pipeline Assessment Certification Program
PPE	Personal Protective Equipment
PQI	Pavement Quality Index
PRCI	Parks and Outdoor Recreation Condition Index
PVC	Polyvinyl Chloride
RECI	Recreation Equipment Condition Index
RHCPA	Richmond Hill Centre for the Performing Arts
RHDDO	Richmond Hill David Dunlap Observatory
SCADA	Supervisory Control and Data Acquisition
SCI	Sidewalk Condition Index
SLOS	Strategic Level(s) of Service
SMCI	Storm Sewermain Condition Index
SME	Subject Matter Expert
SOGR	State of Good Repair
SSCI	Sanitary Sewer Condition Index
SWMF	Stormwater Management Facility
SWMFCI	Stormwater Management Facility Condition Index
TCA	Tangible Capital Assets
TCI	Trail Condition Index
TLOS	Technical Level(s) of Service
TMP	Transportation Master Plan
TRCA	Toronto and Region Conservation Authority
TSS	Total Suspended Solids
UFMP	Urban Forest Management Plan
UMESP	Urban Master Environmental Servicing Plan
WCI	Watermain Condition Index

Executive Summary

Advancing Asset Management Planning in Richmond Hill

The City presents this 2025 Asset Management Plan to comply with the July 1, 2025 milestone of *Ontario Regulation 588/17*. This represents the final major milestone of the regulation. After this milestone, the City will continue to develop AM Plans on a 5-year cycle, as required by the regulation. The City is committed to 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 (AM) 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 requirements of *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure (O. Reg. 588/17)*. 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 2025 Asset Management Plan represents 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.

This 2025 Asset Management Plan includes an assessment of City-owned assets' State of Infrastructure, the City's proposed Levels of Service and associated performance, a summary of the lifecycle activities the City will undertake to achieve proposed levels of service, and a financial strategy that details the City's plan to fund these needs, and how the City will respond to funding shortfalls, manage risks and implement the asset management plan.

The purpose of this 2025 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 2026 Capital Budget and Forecast; and,
- Achieve compliance with the July 1, 2025 *O. Reg. 588/17* requirements.

What's New in the 2025 Asset Management Plan?

The City's 2025 AM Plan maintains alignment with the previous 2024 AM Plan. The data and analysis in this 2025 AM Plan is based on updated data for this year. In addition, some key new elements in this 2025 AM Plan also include an evaluation of proposed levels of service, as well as a financial strategy that compares forecasted infrastructure needs to forecasted revenues.

Due to the milestones related to *Ontario Regulation (O. Reg.) 588/17*, the City is required to produce this 2025 Asset Management Plan (AM Plan) just one year following last year's 2024 Asset Management Plan. As a result, this 2025 AM Plan should be considered an update to the 2024 AM Plan, rather than an independent document. Much of the content remains unchanged from 2024, to ensure alignment with that recent initiative.

The following summarizes the changes that were made for this 2025 AM Plan:

- Asset data and analyses have been updated with the latest data;
- This AM Plan reports on the City's proposed levels of service, which is a new requirement of *O. Reg. 588/17* for 2025;
- New commentary in each of the Appendices is provided to explain why the proposed levels of service are appropriate for the City, which is also a requirement of *O. Reg. 588/17*;
- Financial and performance forecasts of asset needs have been updated to reflect the City's proposed levels of service;
- A new financial strategy section is included in this 2025 AM Plan, which provides additional information and financial analysis, and is aligned with the requirements of *O. Reg. 588/17*;
- The Appendices, which provide detailed analysis and commentary for individual service areas, have been expanded to include commentary on potential lifecycle strategies and mitigation of risks associated with funding pressures and asset needs.

For additional commentary pertaining to what's new in this 2025 Asset Management Plan, please refer to Section 1.2.

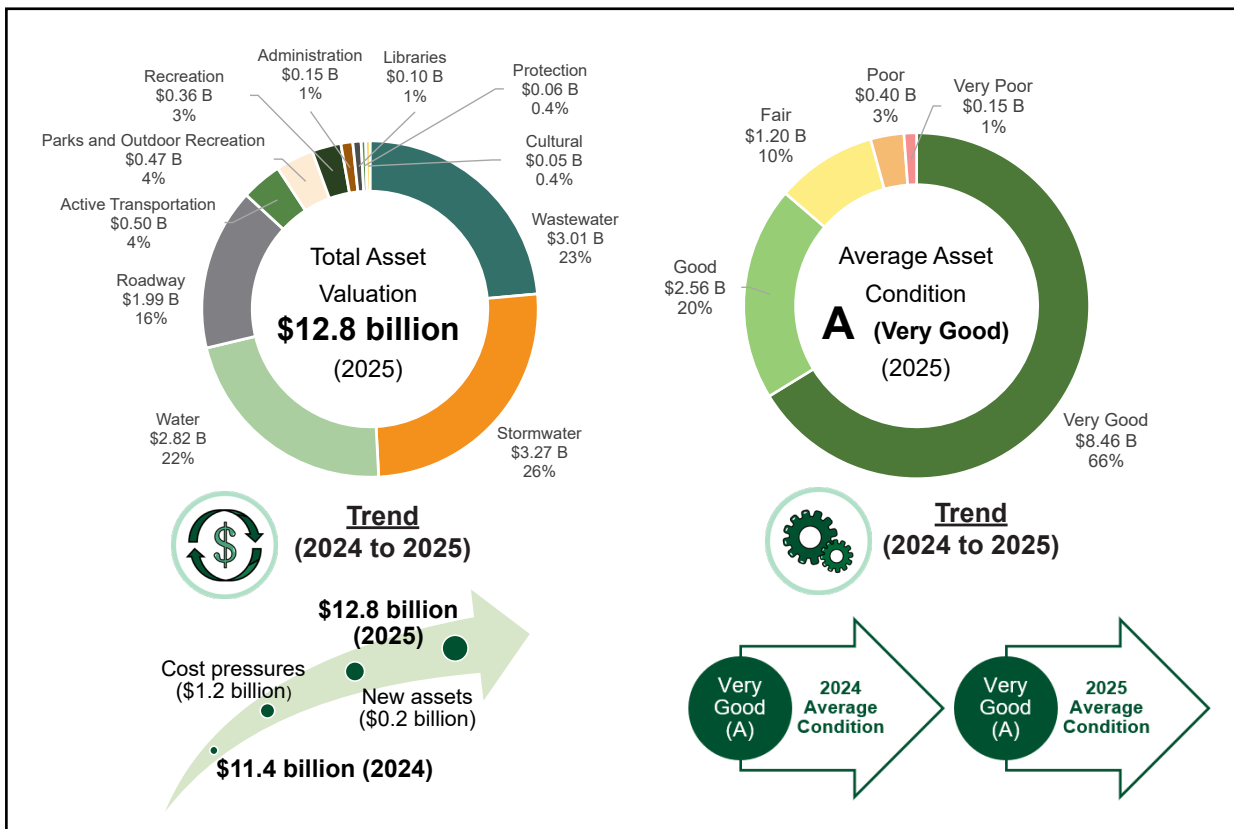
Assessing Asset Inventories, Values, Conditions and Age

The City's assets have an estimated replacement value of \$12.8 billion and are on average in Good to Very Good condition.

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

- Estimated 2025 replacement value of \$12.8 billion, which represents a \$1.4 billion or 12% increase over their 2024 values (\$11.4 billion);
- Overall average asset condition of Very Good (Grade A), which is the same overall average asset condition as in 2024; and,
- Assets on average are generally young. The average age of assets is generally within the first half of their estimated service lives.

Figure E-1: Asset Replacement Value and Condition Profile

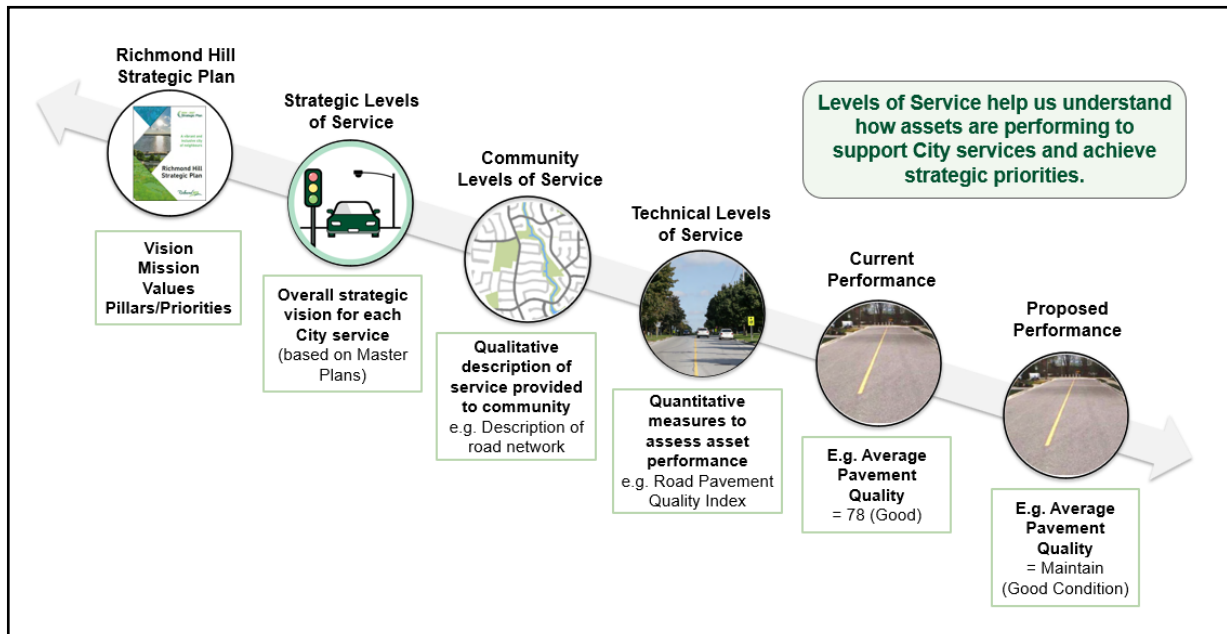


Evaluating Proposed Levels of Service (LOS)

The City's Levels of Service Framework was implemented to monitor current asset performance and to assist in articulating the current levels of service as well as the proposed levels of service that the City plans to provide to the community. Levels of Service are tied to the City's lifecycle strategy to connect service levels to investment needs to inform decision making.

Levels of Service 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, the City's LOS Framework captures the mandated *O. Reg. 588/17* LOS measures, as well as additional City-defined measures that align with other City initiatives, including master plans and other studies. It includes overarching strategic LOS, community-based LOS, technical-based LOS, current measures, current performance and proposed performance. It provides a line of sight from the City's strategic objectives, to the day-to-day activities carried out by staff to manage assets to realize strategic priorities and master plan visions.

Figure E-2: City of Richmond Hill Levels of Service Framework



This 2025 Asset Management Plan includes complete listings and descriptions of the City's key LOS measures along with their current and proposed performance. The current performance results demonstrate that the City's assets are generally performing as intended and are supporting reliable service delivery to the community. The City generally proposes to maintain these levels of service moving forward across all service areas. By reporting the City's current and proposed levels of service in this 2025 Asset Management Plan, the City has achieved compliance with *O. Reg. 588/17*.

Employing Asset Management Strategies

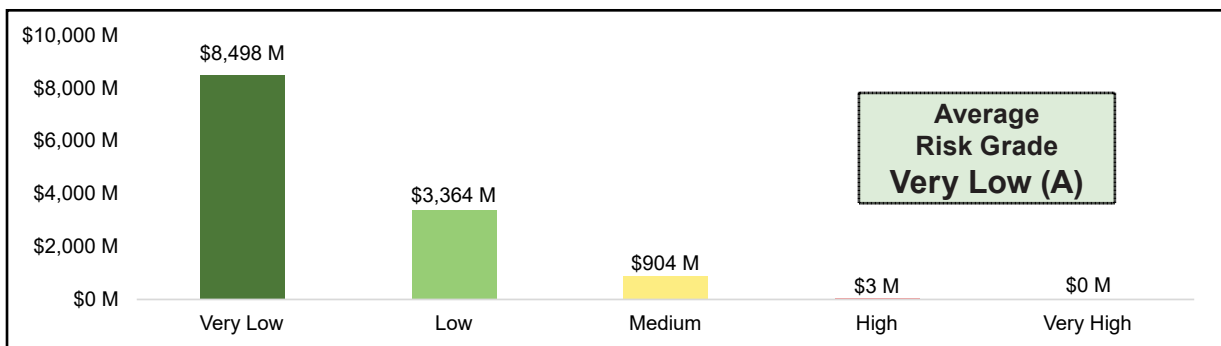
Lifecycle strategies are used by the City to maintain its assets and maximize their value. The prioritization of major capital renewal needs is facilitated by the Corporate Asset Management Risk Framework within the City's Enterprise Asset Management (EAM) system, directing available funding to where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

Asset management strategies are the planned lifecycle activities 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 that they remain in service and continue to provide services to the community. Lifecycle activities also include rehabilitations, reconstructions and replacements of assets which are major capital treatments funded through the City's Capital Budget.

The City proactively undertakes continuous and ongoing technical condition assessments of its assets that identify the required lifecycle-based treatments. Capital-based lifecycle 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 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 lifecycle investment needs given funding constraints. 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 2025 Asset Management Plan reports the lifecycle 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. Furthermore, the City utilizes the recommendations from the EAM analysis to inform the City's 10-Year Capital Budget and Forecast. Included within that analysis is an assessment of asset risk and criticality. By identifying risk/criticality, the EAM supports City staff in ensuring that assets with higher risk are included in the Capital Budget and Forecast.

Asset Investment and Financial Strategy

This 2025 Asset Management Plan completes an evaluation of the financial needs associated with achieving the City's proposed levels of service. It also completes a forecast of available revenues in order to identify if an infrastructure shortfall exists. For areas with an infrastructure shortfall, this AM Plan proposes strategies to mitigate the shortfall and manage any risks.

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

- Currently, the EAM has identified a \$327 million infrastructure backlog of immediate asset renewal needs;
- The EAM has forecasted an annual average of \$86 million of ongoing asset renewal needs from 2025 to 2034 and \$140 million from 2025 to 2051 to achieve proposed levels of service;
- When compared to historic spending patterns, the City would require a phased-in increase in spending of \$5.6 to \$7.0 million per year until 2051 to achieve proposed levels of service; and,
- The City also estimates an additional \$2.5 to \$3.0 million annually to address non-renewal state of good repair (SOGR) needs.

Looking at the upcoming 10-year period, the 2025 AM Plan has identified the following as part of its financial strategy:

- A total 10-year investment of \$998 million for renewal and non-renewal state of good repair (SOGR) needs will be required to achieve proposed levels of service (equivalent annual investment of \$100 million). This includes:
 - \$596 million for non-rate supported services (\$60 million annually);
 - \$276 million for water and wastewater rate supported services based on the Water and Wastewater Financial Plan (\$28 million annually); and,
 - \$126 million for stormwater management rate supported services based on the Stormwater Management Financial Plan (\$13 million annually).
- The City has forecasted total revenues of \$769 million over 10 years (\$77 million annually), which it has available to allocate to capital renewal needs, including:
 - \$356 million for non-rate supported services (\$36 million annually);
 - \$285 million for water and wastewater rate supported services (\$29 million annually); and,
 - \$128 million for stormwater management rate supported services (\$13 million annually).
- When comparing investment needs to forecasted revenues, the City has identified the following for the next 10 years:
 - A total infrastructure shortfall of approximately \$240 million for non-rate supported services (\$24 million annually);
 - No shortfall for water and wastewater rate supported services; and,
 - No shortfall for stormwater management rate supported services.

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

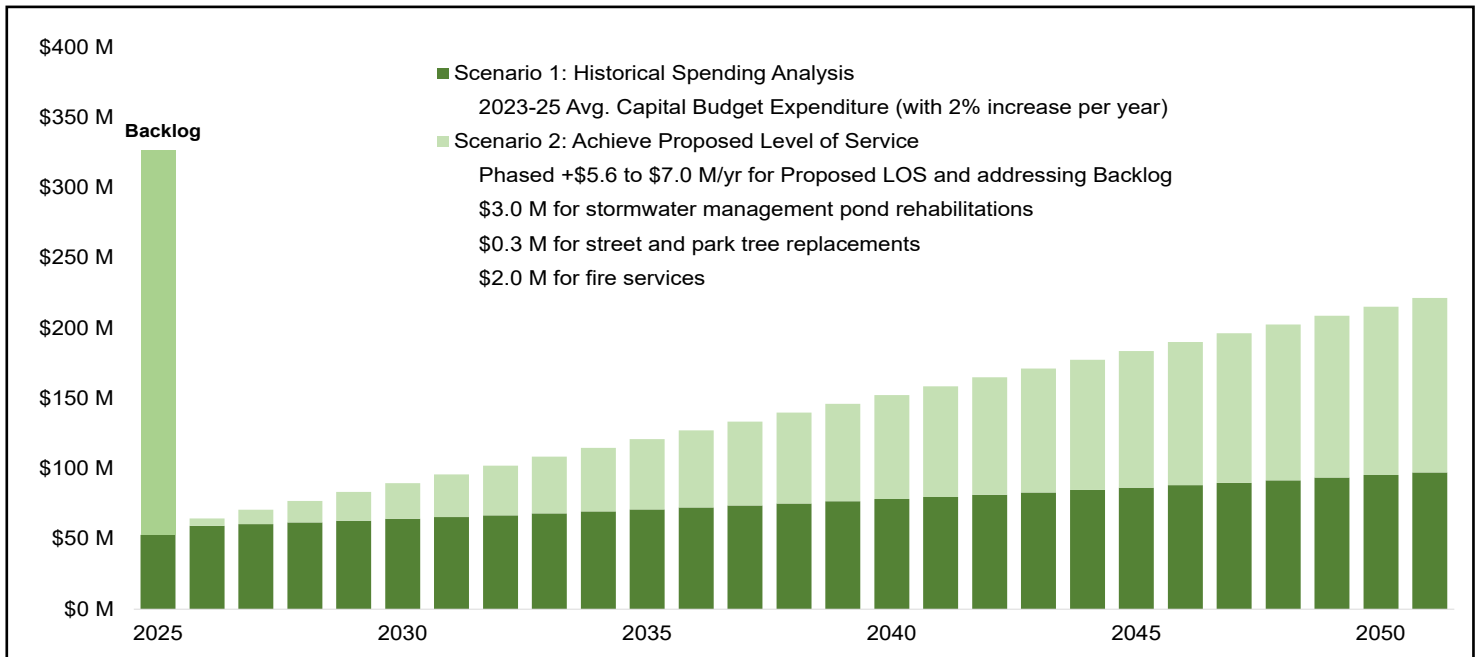


Table E-1: Summary of the Suggested SOGR Asset Investment Strategy by Service (\$ millions)

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Roadway	84.2	14.7	+2.8 to 3.3	284.6	28.5	1,468.5	54.4
Active Transportation	14.2	0.1	+0.5 to 0.7	27.9	2.8	213.0	7.9
Water	88.2	13.3	+0.5 to 0.7	159.6	16.0	568.7	21.1
Wastewater							
Stormwater ¹	72.7	5.4	+0.7 to 1.0	118.8	11.9	520.8	19.3
Parks ²	27.1	3.1	+0.25 to 0.30	45.6	4.6	186.8	6.9
Recreation	15.4	7.9	+0.30 to 0.35	93.8	9.4	327.7	12.1
Culture	1.0	0.1	+0.20 to 0.25	10.9	1.1	81.2	3.0
Libraries	10.2	2.5	+0.13 to 0.15	31.2	3.1	116.4	4.3
Protection ³	4.2	0.4	+0.05 to 0.07	24.8	2.5	84.2	3.1
Administration	9.8	5.5	+0.15 to 0.16	62.4	6.2	204.0	7.6
Total	\$326.9	\$52.9	+\$5.6 to \$7.0	\$859.6	\$86.0	\$3,771.3	\$139.7

- \$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.
- \$2.0 M for Protection Services to align with historical average spending for this service area would be required annually.

Figure E-5: Comparison of Needs and Funding (2025-2034) - Non-Rate Supported Services

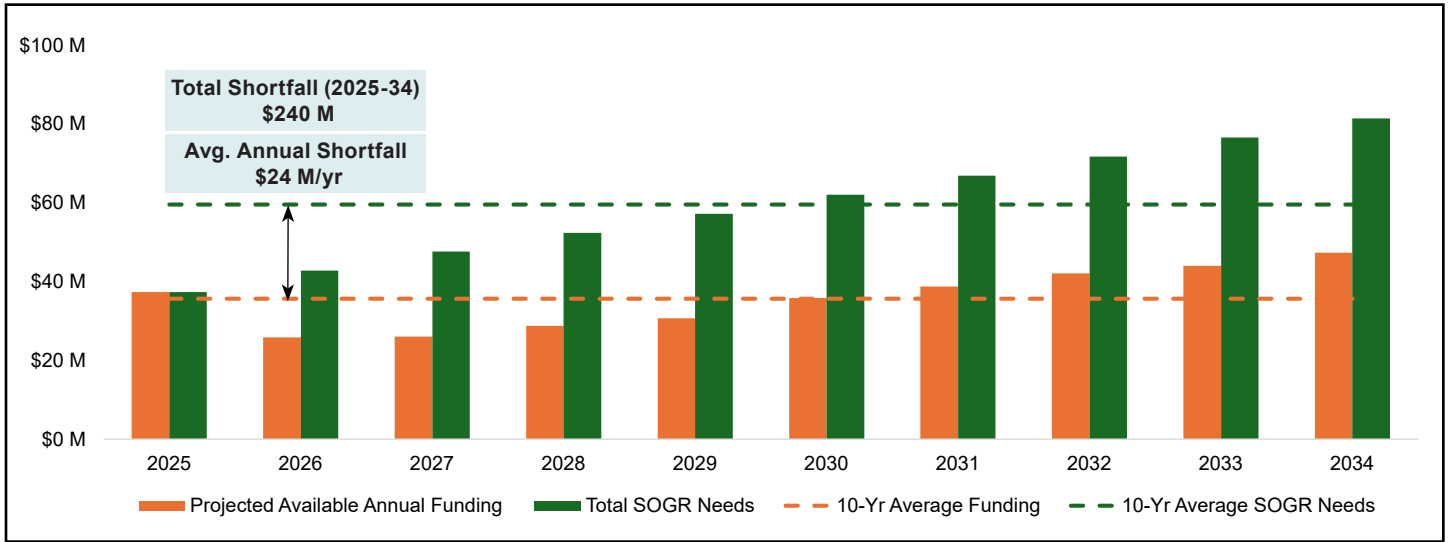


Figure E-6: Comparison of Needs and Funding (2025-2034) - Water and Wastewater Rate Supported Services

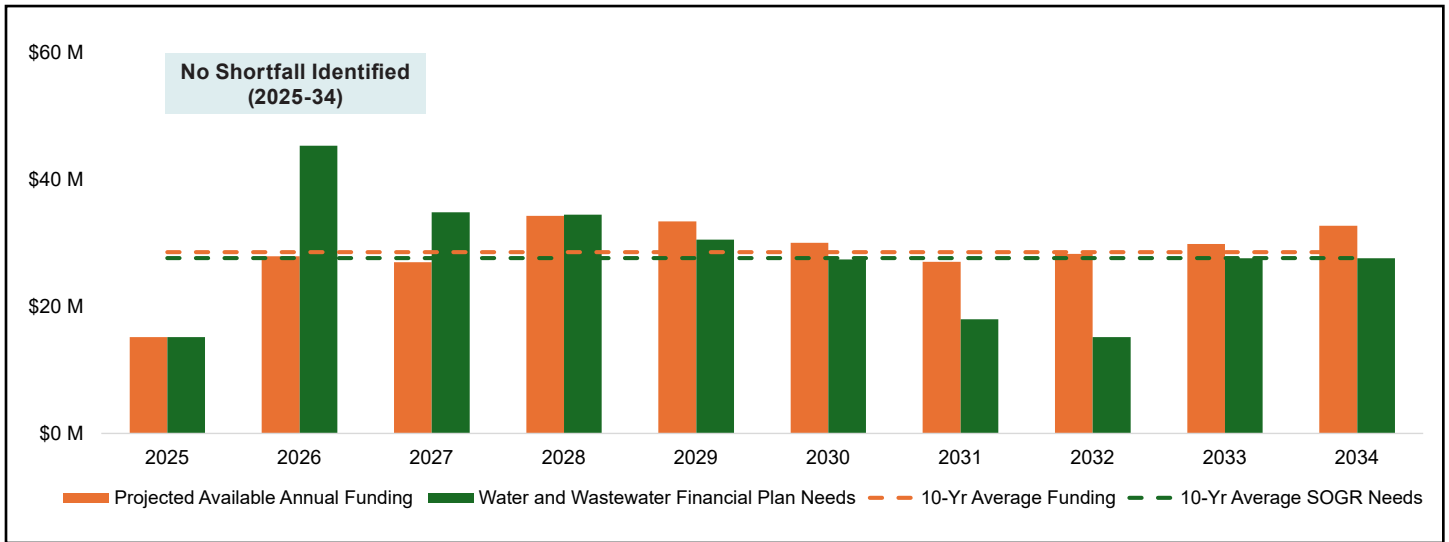
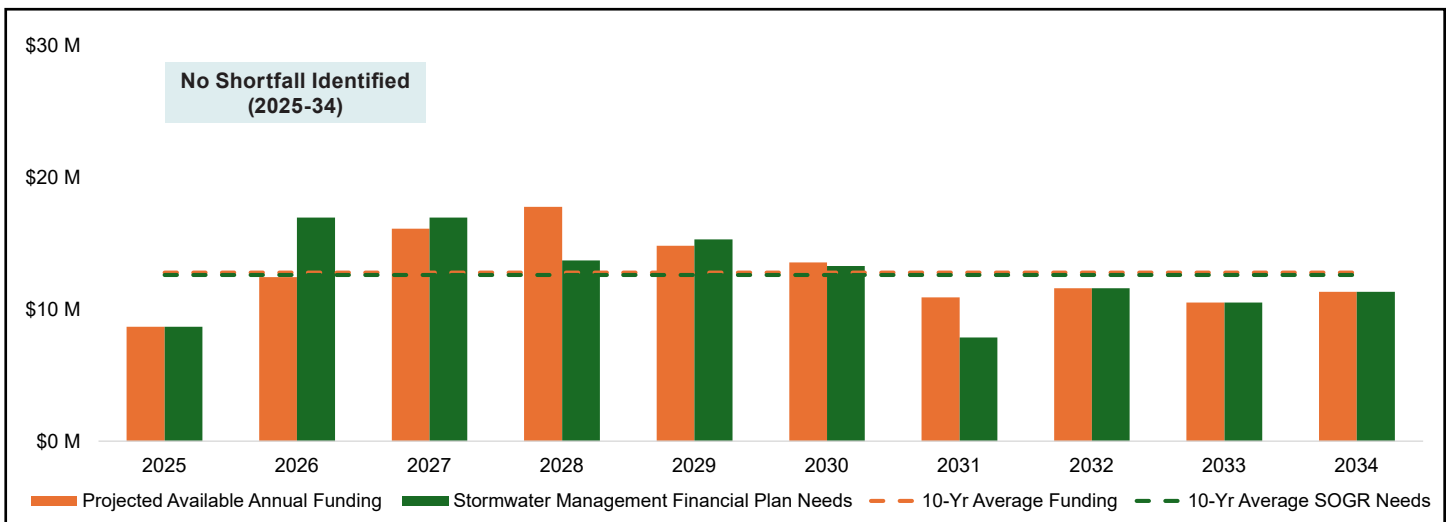


Figure E-7: Comparison of Needs and Funding (2025-2034) - Stormwater Management Rate Supported Services



To manage shortfalls, the City can enact a number of strategies. These include:

- Adjusting lifecycle strategies to modify the timing of required investments in areas that will support this without taking on additional risks;
- Adjusting asset performance expectations or levels of service within a threshold that is acceptable to the community;
- Increasing funding either through modest increases to taxation and/or user rates, by seeking grant funding, by drawing from available reserves, or through debt financing; and/or,
- Managing risks by focusing efforts on areas of high risk and by keeping assets in service through various operating activities.

Implementing the Asset Management Plan and Financial Strategy

This 2025 Asset Management Plan is primarily implemented via its integration into the City's Capital Budgeting process. The asset management analysis completed in this AM Plan aids in suggesting state of good repair asset renewal needs and helps 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 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 2025 Asset Management Plan. This approach ensures that all capital project requests are developed using a holistic evidence-based approach from a corporate-wide perspective to achieve strategic priorities.

The suggested financial strategy from this 2025 Asset Management Plan will benefit the upcoming 2026 and future Capital Budgeting processes by supporting the identification of state of good repair needs and 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 enables this Asset Management Plan to be implemented through the City's Capital Budget and Forecast.

Continuous Improvement

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 2025 Asset Management Plan. These form the basis for the next phase of the City's ongoing corporate asset management journey to not only meet ongoing 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.

Closing Remarks

The City is relatively young and assets are overall in Good condition. As the City continues to age, it expects additional financial pressures to continue to ensure it provides levels of service that the community expects. The City has an advantage that since it is relatively young, it has begun to assess these issues proactively through its Asset Management program and will continue to do so into the future.

The City's asset portfolio is on average in Good to Very Good condition, which is in part due to its relatively young age, but also a reflection of the City's success in managing its assets to date. The City's current backlog was assessed at 2.5% of its asset portfolio's current replacement value, which is low compared to municipal infrastructure in the province as a whole. Most municipalities operate with a level of backlog, and the average backlog for municipalities in Ontario was reported as 10.8% of asset replacement value in 2021 by the Financial Accountability Office of Ontario (FAO).¹

This AM Plan has identified a current funding shortfall to achieve the City's proposed levels of service. As the City's assets continue to age, it will be difficult to continue to achieve service levels if funding shortfalls are not addressed. This AM Plan has also identified that financial pressures in the long term will be significant compared to today. In the face of these challenges, the City has a significant advantage, as it has begun to respond proactively, while it is still relatively young.

This AM Plan has provided recommendations on options to address funding shortfalls, including increasing funding. Other options include adjusting asset lifecycle strategies and adjusting asset performance expectations. The City's forthcoming asset management work will focus on better understanding the balance of these options that will result in a path forward that ensures costs are balanced with service levels, while risks are mitigated for the long term.

¹ Financial Accountability Office of Ontario (FAO) (2021). Municipal Infrastructure: A Review of Ontario's Municipal Infrastructure and an Assessment of the State of Repair.



Chapter 1

Introduction



Richmond Green Sports Centre and Park

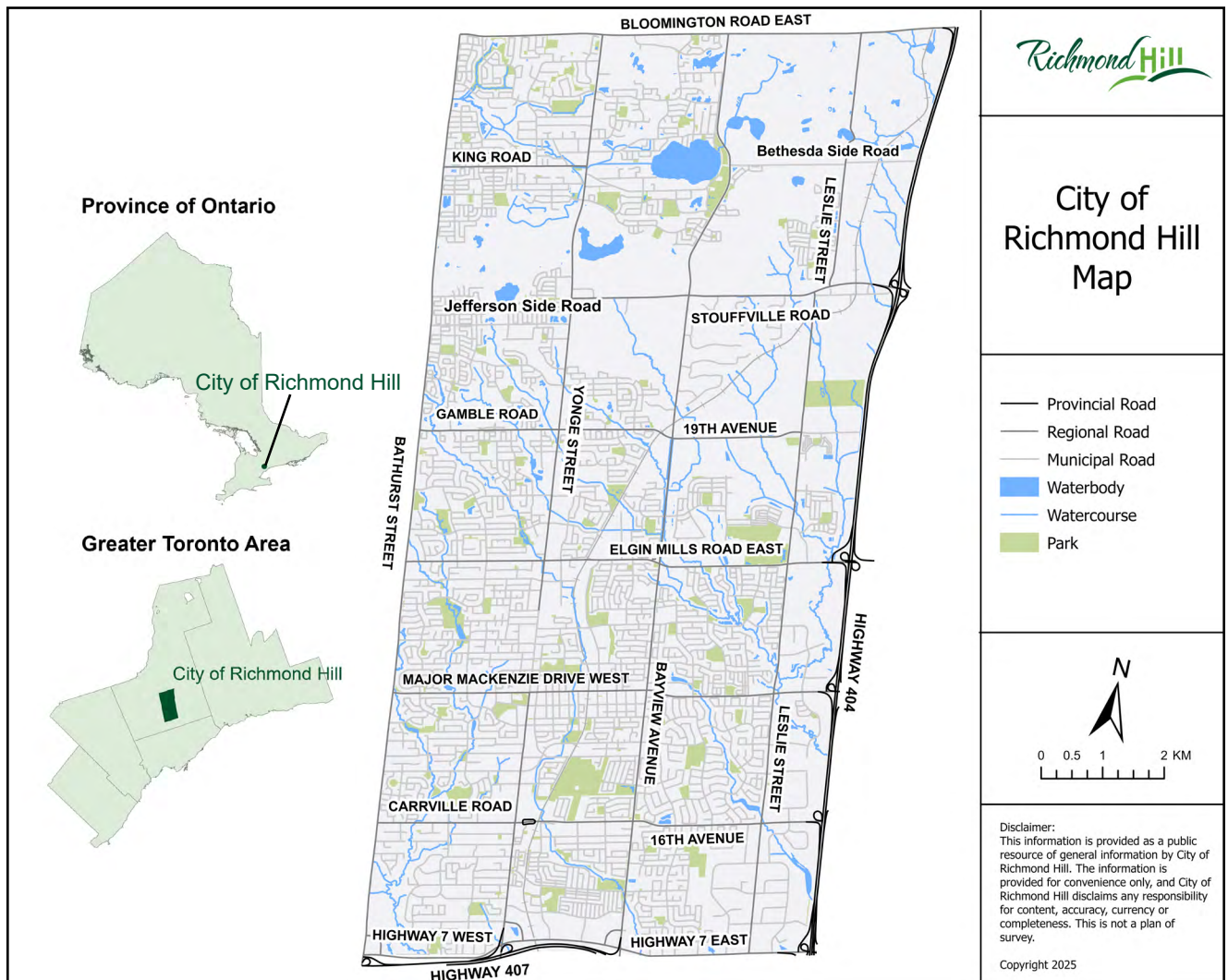
1.0 Introduction

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: the 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 population of approximately 217,060 and employment of 81,584 jobs.² The City has experienced significant development since the early 1980s and as a result, new infrastructure has been built and existing assets have been 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 its diverse community. The City categorizes its services in this plan as follows.



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



Active Transportation: 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;



Water Distribution: an underground network of linear water pipes and associated assets that provide a safe and reliable distribution of water;



Wastewater Collection: a collection of sanitary sewer assets such as underground sewer pipes and pumping stations for the collection of wastewater;



Stormwater Management: storm sewers, culverts, stormwater management ponds, manufactured treatment devices 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: facilities and equipment, including community centres and arenas that provide accessible recreation programs for all interests and ages;



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



Libraries: library facilities as well as physical and digital collections that provide knowledge, experiences and resources for the community;



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

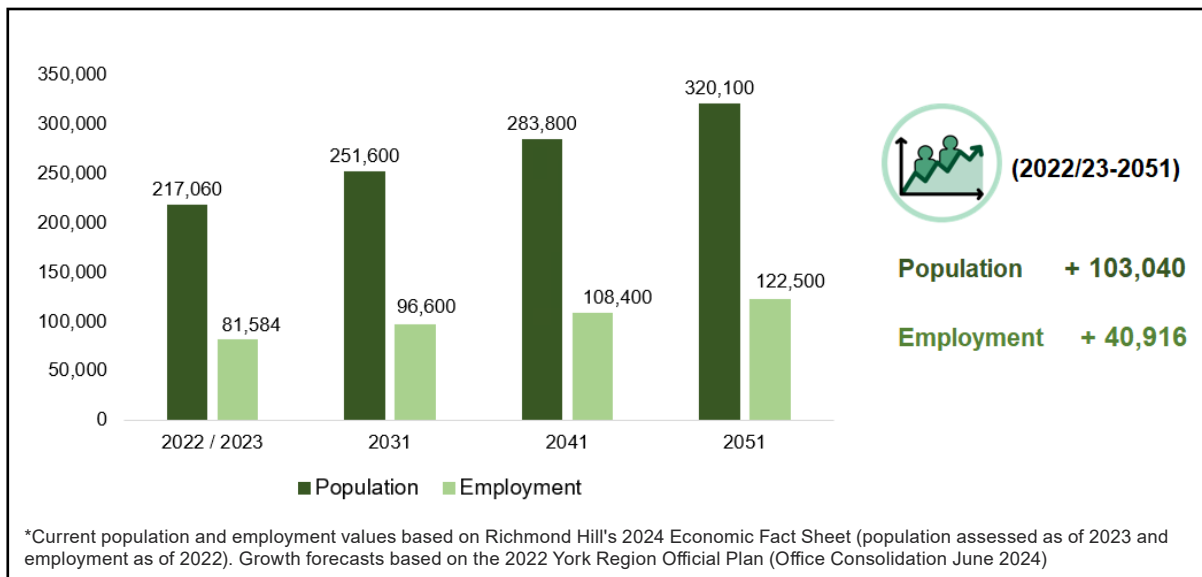


Administration Services: facilities, fleet and equipment that support City services.

As Richmond Hill is a lower-tier municipality in York Region, it must adhere to 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.

York Region’s 2022 Official Plan projects the Region’s population and employment will reach an estimated 2.06 million people and 989,200 jobs respectively by 2051. Within that, Richmond Hill’s population is forecast to reach an estimated 320,100 people while employment is estimated to be 122,500 jobs by 2051.³

Figure 2: City of Richmond Hill Population and Employment 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 2025 Asset Management Plan outlines the growth-related capital expenditures identified through the City’s 2025 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.

3 2022 York Region Official Plan (Office Consolidation June 2024)

1.2 What's New in the 2025 Asset Management Plan?

The City's 2025 AM Plan maintains alignment with the previous 2024 AM Plan. The data and analysis in this 2025 AM Plan is based on updated data for this year. In addition, some key new elements in this 2025 AM Plan also include an evaluation of proposed levels of service, as well as a financial strategy that compares forecasted infrastructure needs to forecasted revenues.

Due to the milestones related to *O. Reg. 588/17*, the City is required to produce this 2025 AM Plan just one year following last year's 2024 AM Plan. The City's previous 2024 AM Plan provided an overview of the City's entire service and asset portfolio, which is presented again in this 2025 AM Plan.

Because of the short timeline between these two recent AM Plans, this 2025 plan was deliberately developed to align closely and ensure continuity with the format, structure, and analysis that was completed just a year ago in 2024. As a result, much of the content within this document remains unchanged from the 2024 AM Plan. The development of this 2025 AM Plan is considered an update or refresh of the previous 2024 AM Plan, rather than an entirely new exercise. Nevertheless, a number of changes were made for this 2025 AM Plan, including refreshed asset data, new asset management analysis, and the incorporation of additional new content to meet the requirements of the 2025 milestone of *O. Reg. 588/17*. The following provides a summary of the changes that are included in this 2025 AM Plan:

- All asset data has been updated and refreshed for 2025. Inventories have been updated, replacement costs have been updated or inflated to today's dollars, and condition data has been updated where new information has become available.
- Levels of service for each asset group have been updated to include the City's proposed levels of service. Proposed levels of service were established over a 27-year time horizon (i.e. to 2051), which is over and above the 10-year time horizon specified in *O. Reg. 588/17*. This longer time horizon was chosen to align with the analysis completed in last year's 2024 AM Plan, which was in turn chosen to align with the time horizons of the City's Master Plans and related studies. Asset investment and performance needs for each year of the 27-year forecast is presented in figures and commentary within the AM Plan and each of the Appendices. This ensures that reporting for each of the forthcoming 10 years is included herein, to align with the requirements of *O. Reg. 588/17*.
- The Levels of Service section in each Appendix is reorganized for each service area to reflect major asset themes. Both customer and associated technical levels of service are presented together under the heading for each theme. Examples of themes include asset scope and asset condition.
- New commentary in each of the Appendices entitled "Establishing Proposed Levels of Service" is included to provide an assessment of why the included proposed levels of service are appropriate for the City. This section is provided to align with the requirements of *O. Reg. 588/17*.

- The forecasts completed to identify asset needs have been revised to align with the requirements to forecast proposed levels of service. The first forecasted scenario is newly entitled “historical spending analysis”. This analysis forecasts performance associated with continuing recent spending trends into the future. This is intended to provide a baseline understanding of the change in asset performance associated with recent spending trends, projected forward. This is most closely aligned with a similar analysis completed in 2024. The second forecast is now entitled “achieve proposed levels of service”. This forecast models the financial needs associated with achieving the City’s proposed levels of service targets into the future, including eliminating backlog by 2051. This analysis is similar to the City’s “maintain levels of service” analysis that was completed in 2024.
- A new financial strategy section is included in this 2025 AM Plan and aligns with the requirements of *O. Reg. 588/17*. This section replaces the “Asset Investment Strategy” section developed in the 2024 AM Plan. The strategy goes beyond the previous asset investment plan by:
 - Detailing the different funding sources available to the City;
 - Projecting available funding over the next 10 years;
 - Comparing projected funding to asset needs required to achieve proposed levels of service and identifying shortfalls (if any);
 - Providing strategies to address asset shortfalls, including strategies to adjust lifecycle activities and mitigate risks associated with funding shortfalls;
 - Detail the City’s approach to implementing this AM Plan, and monitoring it annually; and,
 - Discussing the risks associated with the implementation of this AM Plan.
- Each Appendix provides commentary related to specific lifecycle strategies and mitigating risks associated with potential funding shortfalls. This commentary is provided at a more granular level and addresses the specific needs and details of each group of assets by type. While the financial strategy discusses these issues at a high level, the Appendices provide details that are tailored to each major asset class/ type.

1.3 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.

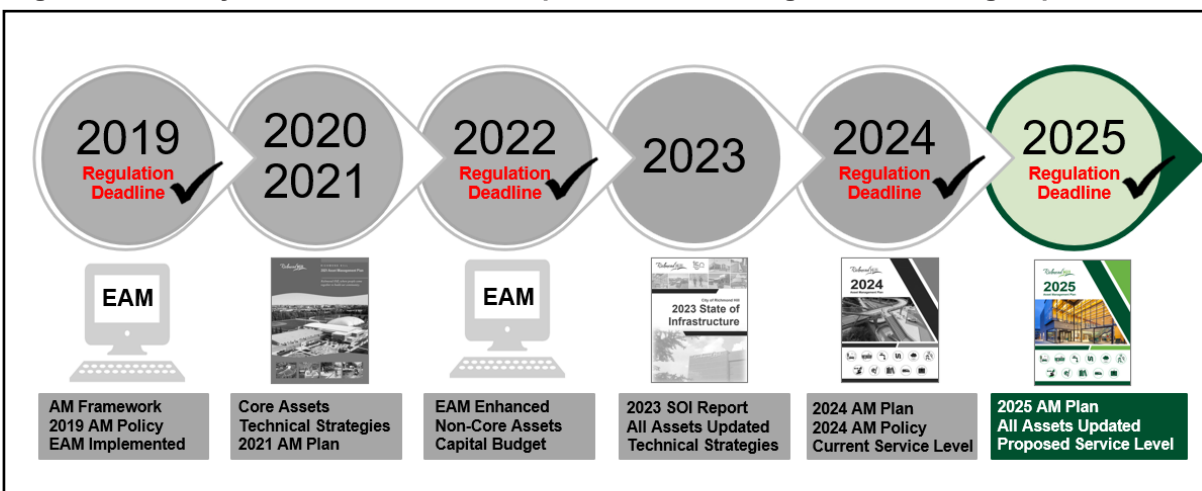
The City's asset management journey has focused on leveraging innovative technologies and processes, utilizing the best available data through studies and assessments, and implementing continuous improvements. This approach has advanced the City's evidence-based asset management capabilities to support 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 Strategy and Governance Framework**, which are internal documents that define the City's approach to asset management and its Asset Management System, as well as identify 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 tool that aggregates various sources of asset data, 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, which is built into the EAM and aligns the City's assets with the services they support;

5. The three **Technical Strategies: Lifecycle Management, Risk Management 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 assets (Core and Non-Core);
8. The City's **2024 Asset Management Plan**, which provided an updated long-term plan for managing the City's assets; and,
9. This **2025 Asset Management Plan**, which provides an update on the 2024 AM Plan, and introduces the City's proposed levels of service and a financial strategy into asset management analyses and long-term planning.

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



1.3.1 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 lifecycle 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 was approved 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 City's 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 Policy also achieves compliance with *O. Reg. 588/17*.



Richmond Hill David Dunlap Observatory

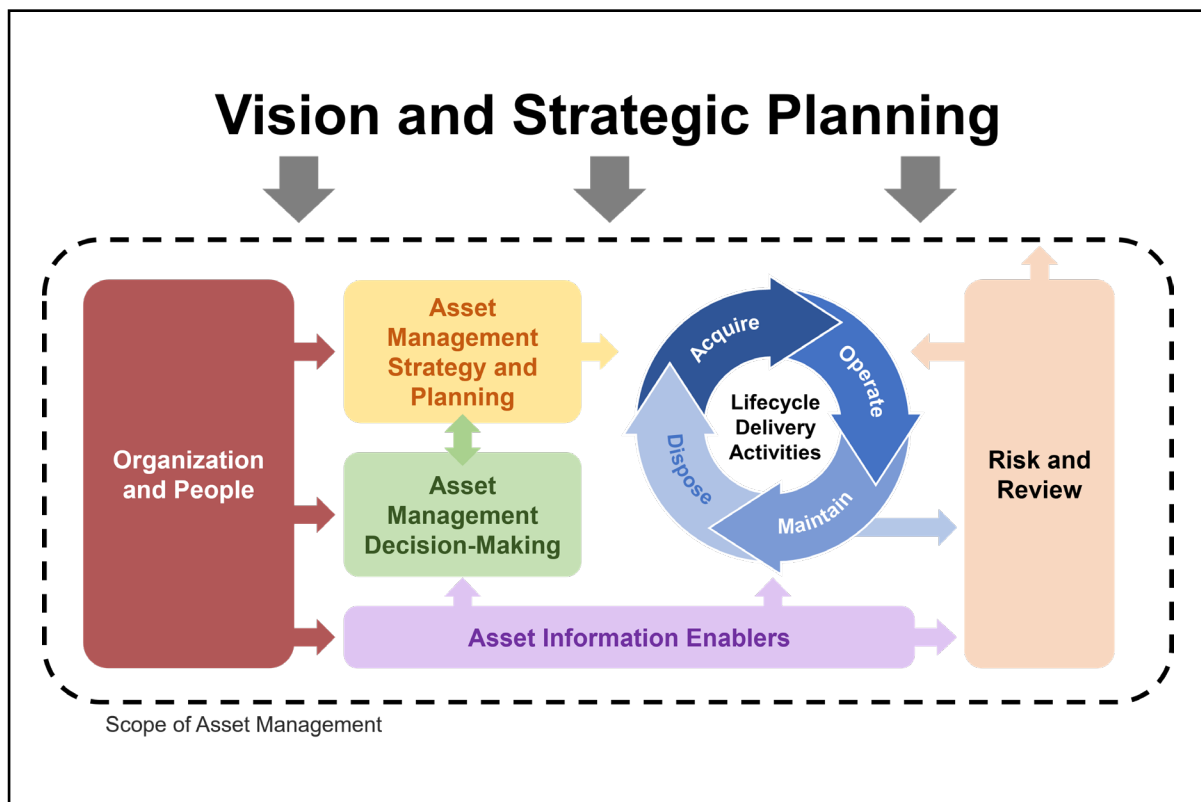
1.3.2 Asset Management Strategy and Governance Framework

The City's Asset Management Strategy and Governance Framework were first implemented in 2019. These strategic documents define the City's Corporate Asset Management program, and detail the internal corporate structure for guiding, implementing and delivering that program.

The City's Asset Management Strategy articulates the City's commitments and principles defined in the Asset Management Policy and describes the specific approaches that the City will enact to build out its Asset Management System. It also introduces the City's Asset Management Framework, which illustrates the key processes of asset management at the City.

The following figure illustrates the City's Asset Management Framework. This Framework is a visual representation of the processes that make up the key aspects and scope of asset management at the City. The City's Asset Management Framework was adapted from the Institute of Asset Management (IAM) – an international professional body dedicated to asset management.

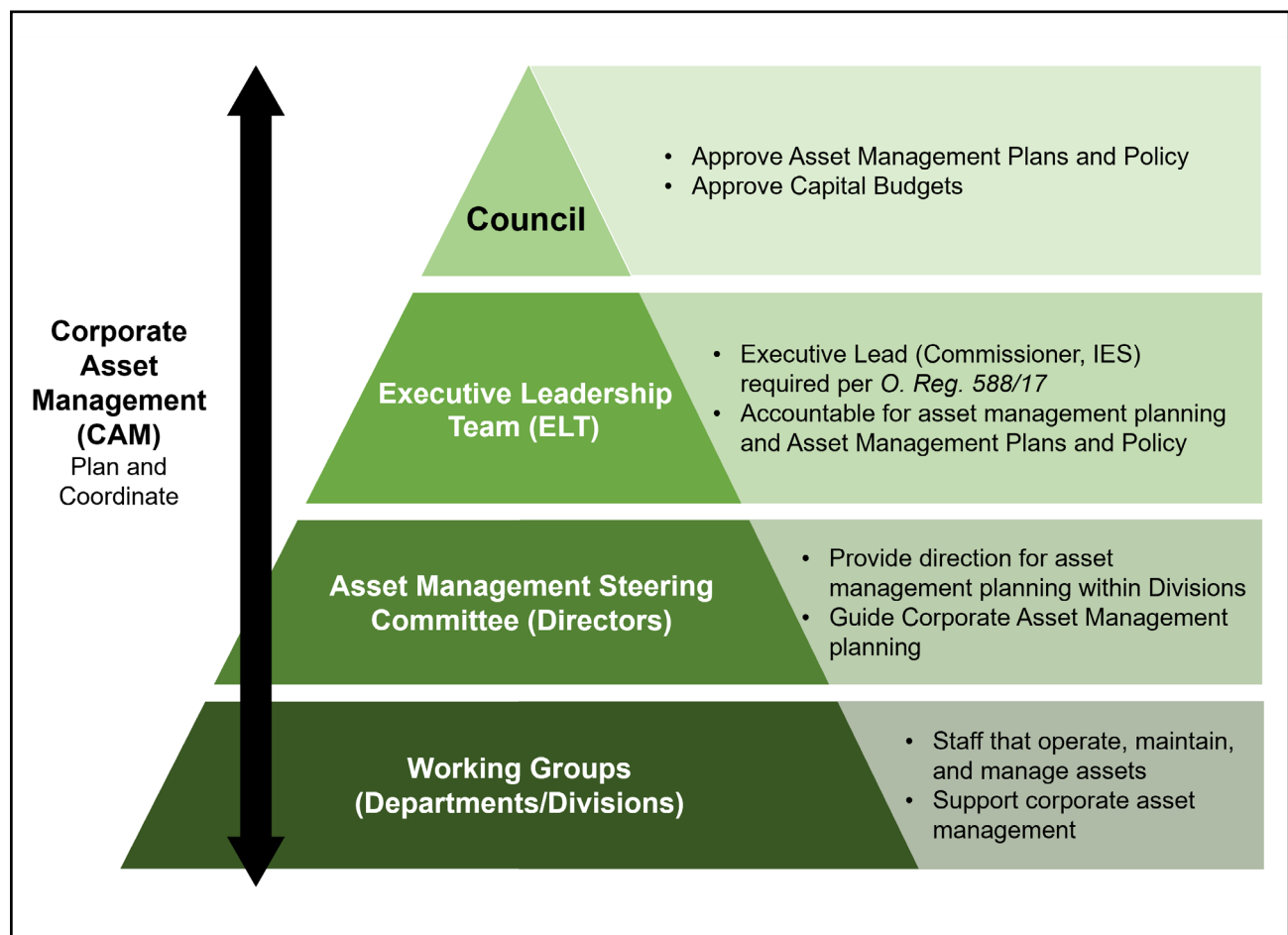
Figure 4: Asset Management Framework



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 are identified in the City's Asset Management Governance Framework, which is illustrated below. Richmond Hill's Executive Lead, which *O. Reg. 588/17* requires all municipalities to appoint, is the Commissioner of Infrastructure and Engineering Services.

Figure 5: Asset Management Governance Framework



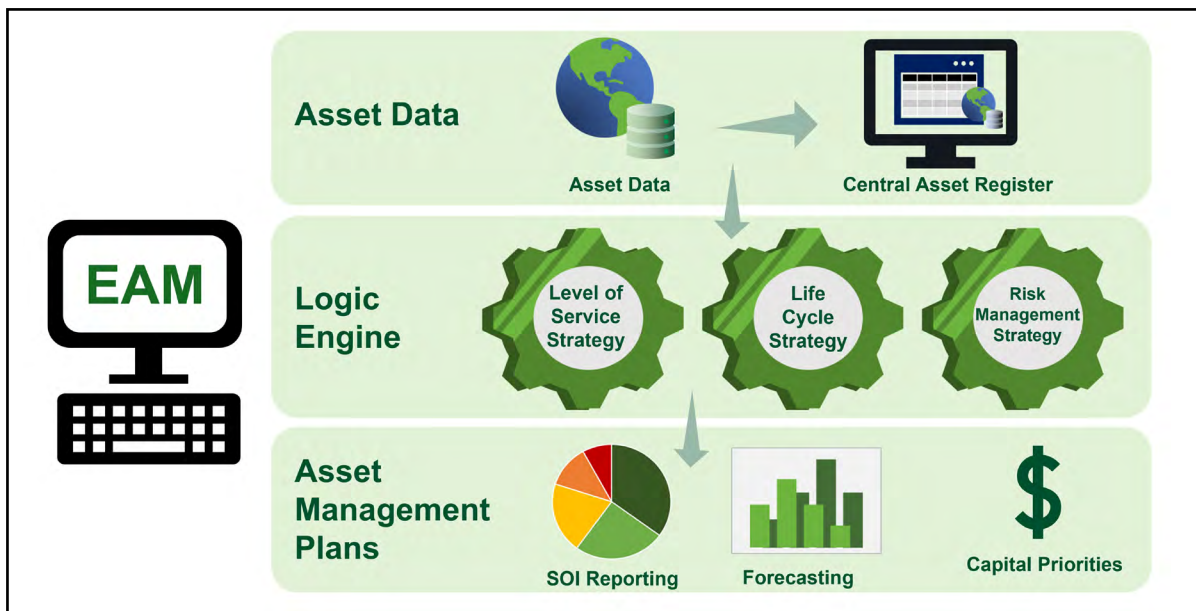
1.3.3 Implementation of the City's Enterprise Asset Management System (EAM)

In 2020, the City first developed and implemented its Enterprise Asset Management System (EAM). The City's EAM is an application that was designed and functions as a decision support software tool 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);
- Technical logic, related to the City's three technical strategies of Lifecycle Management, Levels of Service and Risk Management. This logic is utilized by the EAM to complete various data analytics and forecasting analyses to support various asset management processes within the City, including this AM Plan; and,
- Exporting and reporting functions to produce state of infrastructure reporting, investment forecasting and capital priorities based on risk.

Figure 6: The City's EAM Decision Support Software Program



The EAM is an important foundational component 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 behaviour;
- Approaches to optimize asset lifecycles;
- Recommendations of appropriate investment needs;
- Long-term forecasting of asset needs and financial impacts;
- 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 1.4.

The EAM was instrumental in the development of this 2025 Asset Management Plan as well as the preceding 2024 Asset Management Plan, 2023 State of Infrastructure Report and the 2021 Asset Management Plan.

The EAM is a Decision Support System that utilizes asset data from various sources and applies the technical strategies (lifecycle, 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 the requirements of *O. Reg. 588/17*.

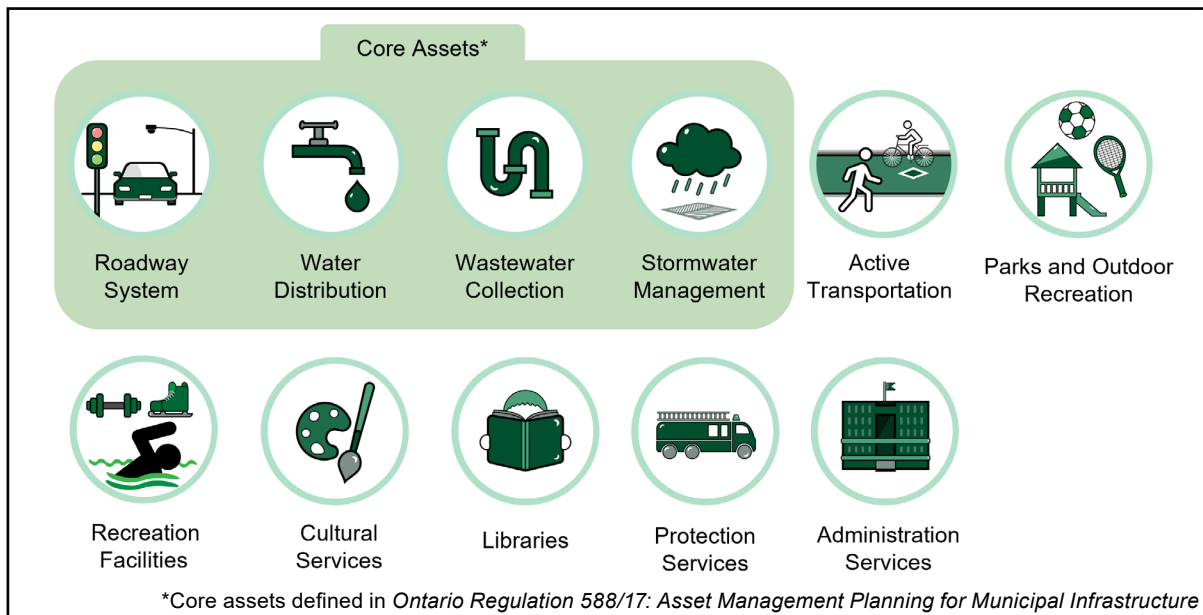
1.3.4 Development of the Asset Hierarchy and Incorporation of State of Infrastructure Asset Data into the EAM

The City maintains a variety of distinct asset inventories 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, the City's Computerized Maintenance Management System (IBM's Maximo), and other expert systems. Data is also collected and organized from other technical asset data sources including, for example, from condition assessment studies (e.g. inspection databases or other Microsoft Excel files containing relevant asset information).

The EAM draws important asset information from all these source systems and centralizes them into an **Asset Register**. To facilitate asset management 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 aid in linking investments in assets to their impact on services for the community. The Asset Hierarchy has categorized the City's assets into 11 primary services as illustrated in Figure 7. The City's assets are further classified as Core and Non-Core as per the definitions provided by *O. Reg. 588/17*.

Figure 7: City-owned Assets by Service (Asset Hierarchy)



In 2020, the EAM was populated with City-owned asset information for Core assets. This was crucial for the development of the 2021 Asset Management Plan that met the July 1, 2022 O. Reg. 588/17 reporting deadline. 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 Core and Non-Core assets consolidated into one report. Since then, the Non-Core asset data has also been updated and populated 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 condition data to the City's lifecycle models, to identify the impact of lifecycle treatments on Levels of Service within the EAM. This has allowed for the development of this 2025 Asset Management Plan and to support the City's Capital Budgeting process by providing a line of sight between asset renewals and their impacts on community services.

1.3.5 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 **Lifecycle 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 Lifecycle Strategies are in Chapter 4 as well as in the Appendices.
- The **Risk Management Strategy** includes frameworks that evaluate assets' likelihood of failure over time and the potential consequences (i.e. criticality) should that asset fail. This strategy supports the prioritization of lifecycle 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 a 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 lifecycle strategies by forecasting the resultant impact on LOS from the prioritized asset renewal actions. Further details on the City’s LOS Strategy are provided in Chapter 3 and related asset performance is reported in the Appendices.

Figure 8: Technical Strategies Interactions



These strategies were developed through a series of 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.

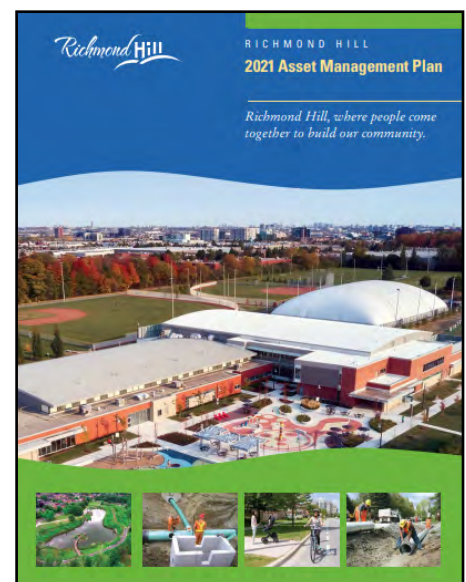
The three technical strategies: Lifecycle Management, Risk Management and LOS, empower the EAM to formulate evidence-based asset renewal recommendations that strike the appropriate balance between maintaining LOS, minimizing risk, and considering costs and limited financing. These strategies were instrumental in allowing the City to produce this 2025 Asset Management Plan to achieve compliance with *O. Reg. 588/17* and support the City’s Capital Budgeting process through assisting capital programming.

1.3.6 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 standardized understanding of the City’s Core infrastructure assets (state of infrastructure), details on the lifecycle activities that the City undertakes to manage those assets (lifecycle strategies), reporting on how well those actions are working (LOS), and a long-term forecast of the financial needs related to maintain the assets to provide City services (capital investment forecasting, risk and gaps).

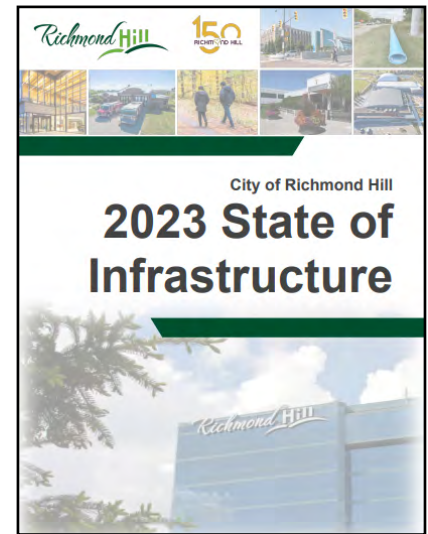
The Core assets assessed included City-owned roads, structures, water distribution, wastewater collection and stormwater management assets. The City also included active transportation assets and recreation facilities in the scope. The 2021 Asset Management Plan along with the EAM, assisted the City’s 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.



1.3.7 2023 State of Infrastructure Report

The City's inaugural 2023 State of Infrastructure Report, which was approved by Council in June 2023, was the next advancement 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 estimated service lives (ESL). This report facilitated an improved line of sight of how asset condition, lifecycle 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.



1.3.8 2024 Asset Management Plan

In June of 2024, City Council approved Richmond Hill's 2024 Asset Management Plan in alignment with the July 1, 2024 milestone of *Ontario Regulation 588/17*.

The City's 2024 Asset Management Plan reported on the City's entire portfolio of infrastructure assets (i.e. Core and Non-Core assets) in an AM Plan for the first time. This plan built on the work that was done to the City's asset data and internal systems to produce a financial forecast that articulated the costs to maintain current levels of service into the long term.

Much of the work completed for the 2024 Asset Management Plan laid the foundation for this 2025 Asset Management Plan. The two documents are aligned closely, and many of the methodologies and analysis used for 2024 have carried into this 2025 AM Plan.

The analysis completed for the 2024 AM Plan assisted the City in developing its 2025 Capital Budget and Forecast, and set the stage for continued integration of asset management planning and capital budget development/forecasting moving forward. This underpins the City's continual commitment to data-driven and evidence-based decision-making.

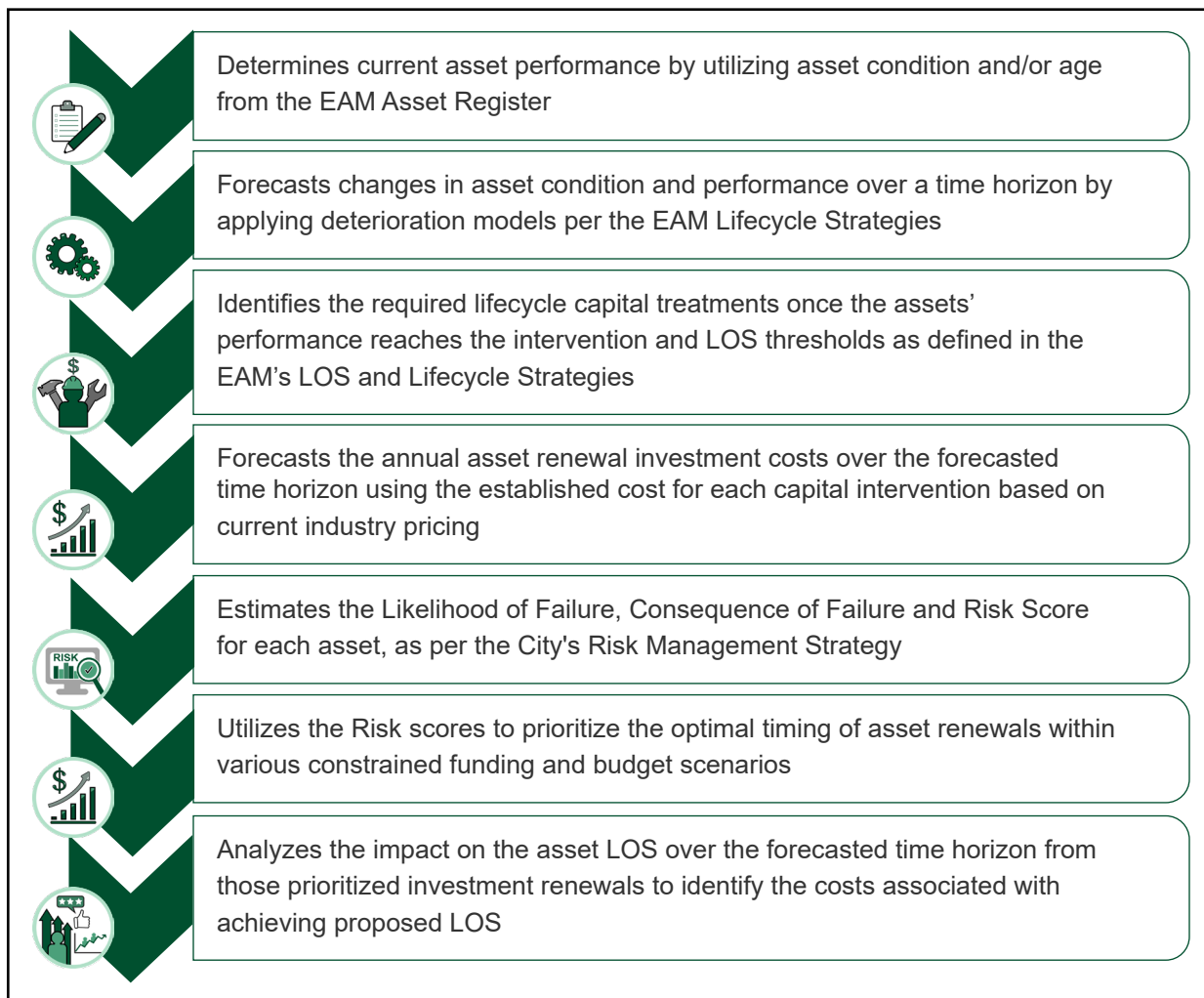


1.4 Maturing the Enterprise Asset Management System

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 the recent improvements to the City's asset management data, processes and systems as previously described, the EAM has been further maturing and progressing towards realizing its full potential. The EAM was instrumental in identifying the funding needs associated with providing the proposed levels of service identified in this 2025 AM Plan. The asset forecasting built into the EAM enables the City to assess the effects of changing funding on proposed service levels, to aid in developing a lifecycle and financial strategy that can assist in making the most efficient use of available funding. The EAM's general process is described in the figure below.

Figure 9: The EAM's Asset Management Logic



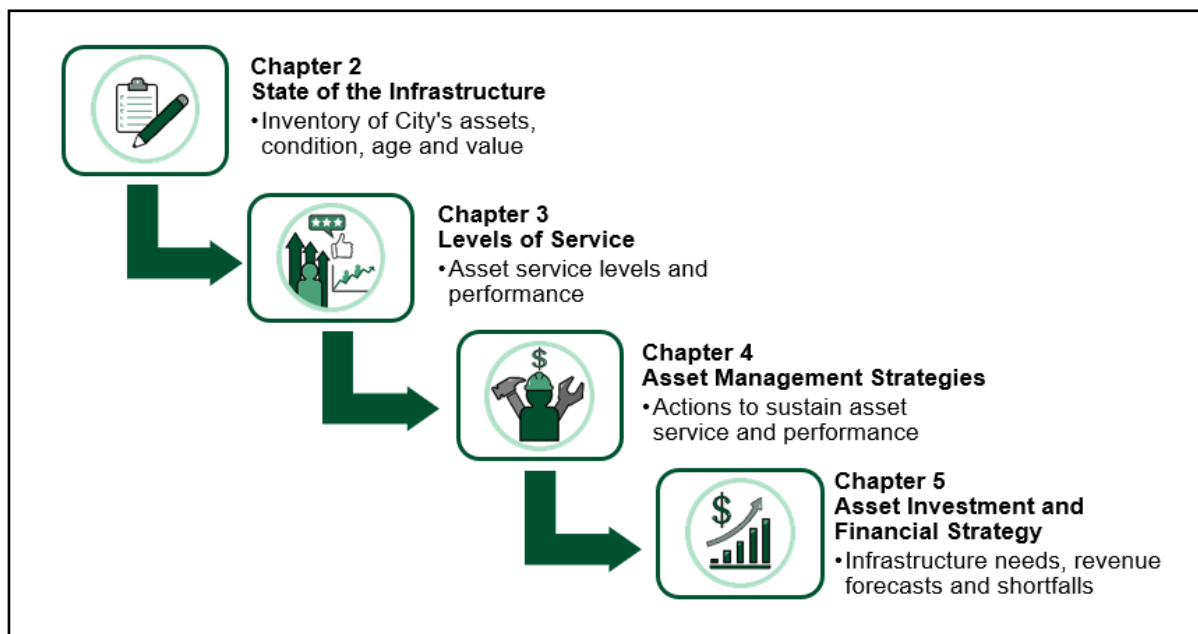
The EAM's data-driven infrastructure analytics forms the foundation of this 2025 Asset Management Plan and contributes towards supporting the City's annual Capital Budgeting process and corporate goals and priorities.

1.5 Scope and Purpose of the 2025 Asset Management Plan

The 2025 Asset Management Plan includes an assessment of Core and Non-Core assets that achieves compliance with the July 1, 2025 milestone of O. Reg. 588/17 and will support the 2026 Capital Budget Process and the City's strategic priorities.

The scope of this AM Plan includes an assessment of City-owned assets called the State of the Infrastructure; an assessment of the City's current Levels of Service and associated performance; established proposed levels of service; the lifecycle activities required to achieve proposed levels of service; and, an Asset Investment and Financial Strategy that forecasts investment needs to achieve proposed levels of service, assesses infrastructure shortfalls and details how the City will implement this Asset Management Plan. As part of last year's 2024 AM Plan, the City developed a five-year continuous improvement plan, which is also included herein.

Figure 10: Scope of the 2025 Asset Management Plan



The purpose of this 2025 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 2026 Capital Budget and Forecast development; and,
- Achieve compliance with the July 1, 2025 O. Reg. 588/17 requirements.

1.6 Informing Asset Renewal Needs to Assist Capital Programming

The updated asset information outlined in this 2025 Asset Management Plan will support the City’s 2026 Capital Budgeting process. This will be achieved by forecasting up-to-date evidence-based infrastructure investment requirements, tied to proposed levels of service, 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; completing closed circuit television inspections of sanitary and storm sewer pipes to identify structural defects; and, completing building condition assessments for the City’s facilities.

After the condition assessments are completed, the appropriate lifecycle 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 lifecycle activity needs of the City’s assets allows for the development of an investment plan and financial strategy. All this information is also stored in the City’s source systems and the EAM.

This 2025 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 lifecycle models that generally reflect predicted asset deterioration 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 2025 Asset Management Plan, including those that would achieve the City’s proposed levels of service identified within this AM Plan. This information, underpinned by 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 that are not meeting the City’s performance objectives, 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 2025 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 tied to proposed levels of service, it will assist with the development of capital programming and capital budgets, which is a best business practice that places the City among leading municipalities.

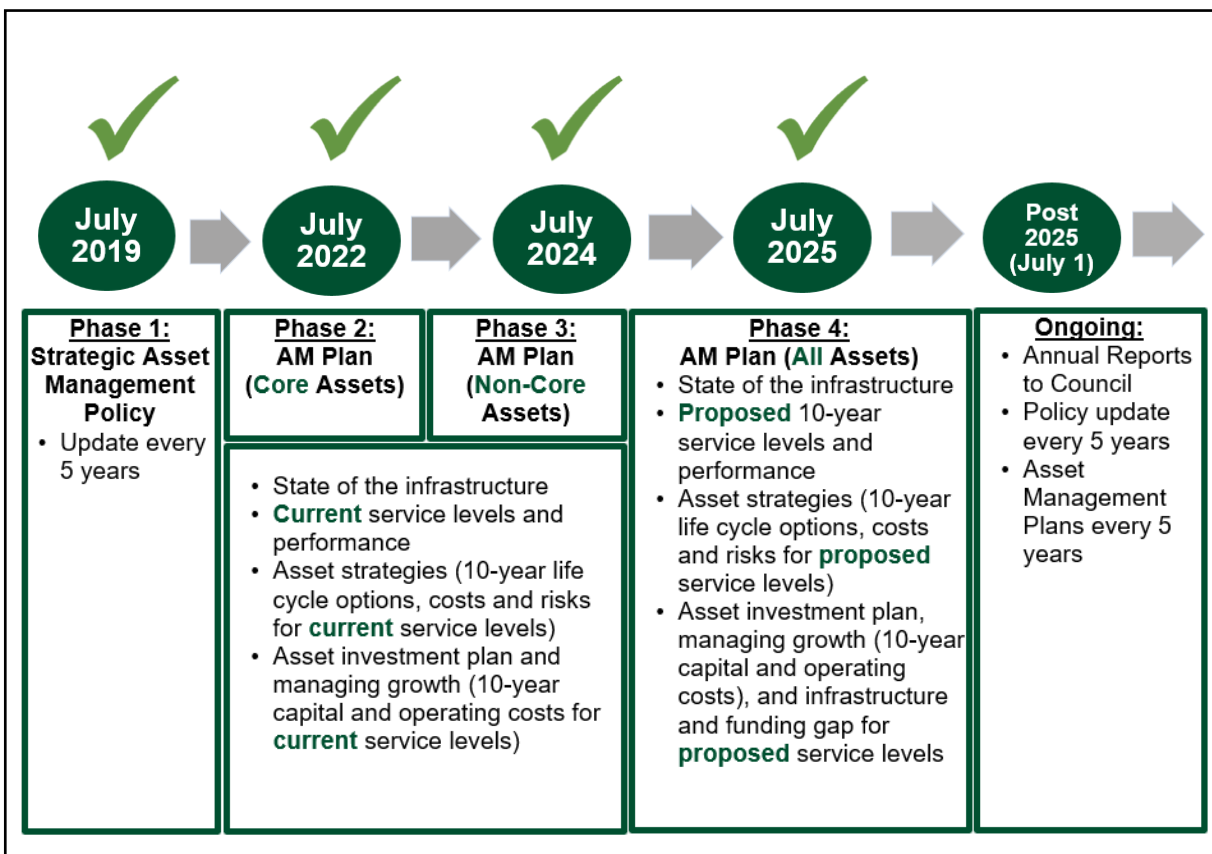
1.7 Achieving Asset Management Regulatory Requirements

This 2025 Asset Management Plan achieves compliance with the July 1, 2025 milestone of *O. Reg. 588/17*. It 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:

1. 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.
2. *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 11: Overview of *O. Reg. 588/17* Requirements and Timeline



As highlighted in Figure 11 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 in June of 2024 in line with this requirement;
- The City's approved 2021 Asset Management Plan (in June 2021) achieved compliance one year ahead of the July 1, 2022 milestone of *O. Reg. 588/17*;
- The City's 2024 Asset Management Plan achieved compliance with the requirements of the July 1, 2024 milestone of *O. Reg. 588/17*; and,
- This 2025 Asset Management Plan achieves compliance with the requirements of the July 1, 2025 milestone of *O. Reg. 588/17*.

The City of Richmond Hill is committed to transparency and considering feedback from residents and stakeholders. This 2025 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, as well as past Asset Management Plans are also publicly available on the City's website as per *O. Reg. 588/17*.



Main Municipal Offices

1.8 Supporting the City's Vision and Strategic Priorities

Richmond Hill's asset management planning process and this 2025 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 road map for the City to achieve a collective vision for Richmond Hill.

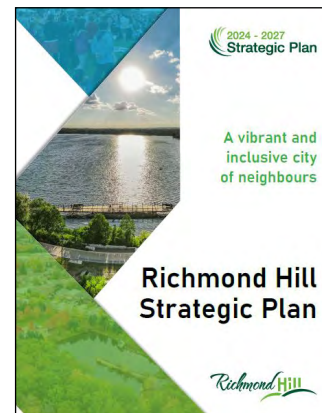
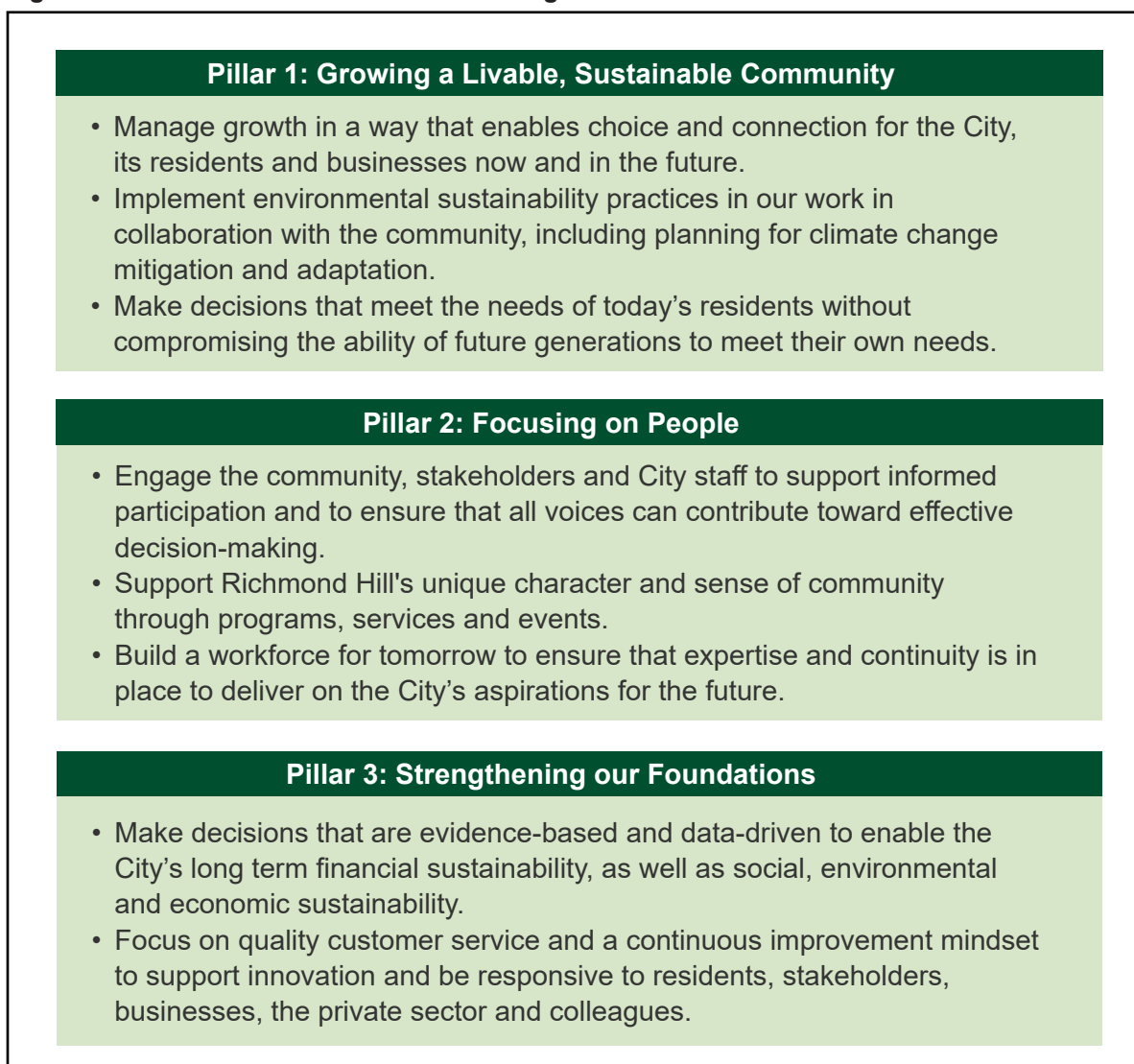


Figure 12: Richmond Hill's 2024-2027 Strategic Plan Pillars and Priorities



This 2025 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 road map 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 most recent Strategic Plan.



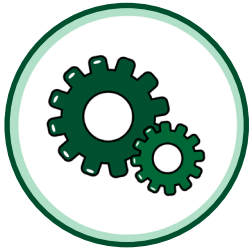
Russell Farm Park

In addition to supporting these three strategic pillars, this 2025 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 2025 AM Plan provides.

The table on the following page summarizes how this 2025 Asset Management Plan aligns with other master plans and studies, while more granular descriptions are included in each of the 11 service Appendices.

Table 1: Alignment of the 2025 Asset Management Plan with Master Plans and Studies

City Document	Alignment with the 2025 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. This 2025 Asset Management Plan integrates actions associated with this goal, with more progress to come.
Service Area-Specific Master Plans and Strategies	<p>The City has completed 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:</p> <ul style="list-style-type: none"> • Transportation Master Plan; • Urban Master Environmental Servicing Plan; • Parks Plan; • Urban Forest Management Plan; • Environment Strategy; • Community Energy and Emissions Plan; • Recreation and Culture Plan; • Fire Master Plan; • Richmond Hill Public Library Strategic Plan; and, • Richmond Hill Public Library Facilities Master Plan.
Water and Wastewater Financial Plan (2024)	Financial Plans for Water and Wastewater services are a requirement under the <i>Safe Drinking Water Act</i> 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. This 2025 Asset Management Plan supports and aligns with the City's 2024 Water and Wastewater Financial Plan and incorporates results from that plan into its financial strategy.
Stormwater Management Financial Plan (2024)	The Stormwater Management Financial Plan was updated to revise the City's stormwater management rates for properties within the City, reflecting upcoming operating and capital needs for Stormwater Management assets. The 2025 Asset Management Plan supports and aligns with the City's 2024 Stormwater Management Financial Plan and incorporates results from that plan into its financial strategy.
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. This 2025 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. This 2025 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. This 2025 Asset Management Plan includes capital assets that are defined by and aligned with the City's TCA Policy.



Chapter 2

State of the Infrastructure



2.0 State of the Infrastructure

2.1 Assessing Asset Inventories, Values, Condition and Age

The City's assets have an estimated replacement value of \$12.8 billion and are on average in Good to Very Good condition; however, they will require ongoing investments to maintain them in a state of good repair and 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 constructed. Other supporting assets such as fleet and equipment were also acquired to support service delivery.

Presently, 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 require ongoing renewal to ensure that they continue to provide reliable service to the community. The first step towards better understanding these needs, is to develop an understanding of the present state of these assets. This includes understanding their replacement costs, condition, age and expected service life. This is referred to in the asset management discipline as the 'State of the Infrastructure'.



Ed Sackfield Arena

In compliance with *O. Reg. 588/17*, the City reports the State of Infrastructure for its asset portfolio, which includes the following information. This information is grouped by major service area within the following section, and also provided in more detail in each of the service Appendices.



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 of its important attributes, which may include quantity, size, length, material type, location, etc. This allows the City to report the inventory of City-owned assets associated with each service.



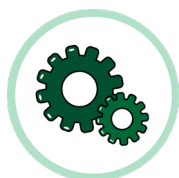
Current Replacement Value (CRV)

The current 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 that is dependent on relevant asset attributes such as size (length, diameter, width) and material. The replacement values for other assets like facilities are derived from the sum of building system-level items. For fleet and equipment, replacement costs are based on acquisition purchase costs of a new asset. Estimates for soft costs (e.g. design, contingency) are also included in the replacement values, ensuring that CRV for assets best represents the costs the City would experience to acquire or replace an existing asset with a new one.



Average Age and Estimated Service Life (ESL)

The ages of the City's assets are based on when these assets were constructed, installed and/or purchased. These values are paired to asset data and included in the City's EAM Asset Register. To calculate the average age of a group of the City's assets, the City weights the individual asset age values by their replacement values. To supplement reporting on age, the City also reports on the estimated service lives of its assets. When looking at a group of assets, the City also calculates a weighted average estimated service life, which it compares to asset age, to provide a general understanding of how much life is consumed and is expected to remain for a group of assets.



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 available, 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 lifecycle 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 2025 replacement value of \$12.8 billion, which represents a \$1.4 billion or 12% increase over 2024 (\$11.4 billion) due to:

- Cost pressures related to price escalations and market challenges (\$1.2 billion); and
- Net new assets added to the City’s inventory (\$0.2 billion).

Cost pressures were established using a combination of analyses, including updating replacement costs using recent pricing references available to the City, or inflating past replacement costs using construction cost price indices. It is important to note that inflation in the City’s replacement cost is not reflective of general consumer price inflation, as it is reflective of changes in costs that are specific to the materials, labour and other costs related to construction work and/or the procurement of the specific assets the City owns.

The overall average condition of the City’s infrastructure assets in 2025 remained Very Good (letter grade A), which is relatively unchanged from 2024. The City is a relatively young municipality, and therefore its assets are on average, typically in the earlier stages of their life.

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 condition will require rehabilitation and/or replacement. As new asset inventories grow over time and yearly inflationary pressures continue, the future renewal needs are anticipated to increase over time. Understanding the City’s State of Infrastructure is the first step in understanding these renewal needs and developing the corresponding asset management plans and investment strategies.

Figure 13: Asset Replacement Value

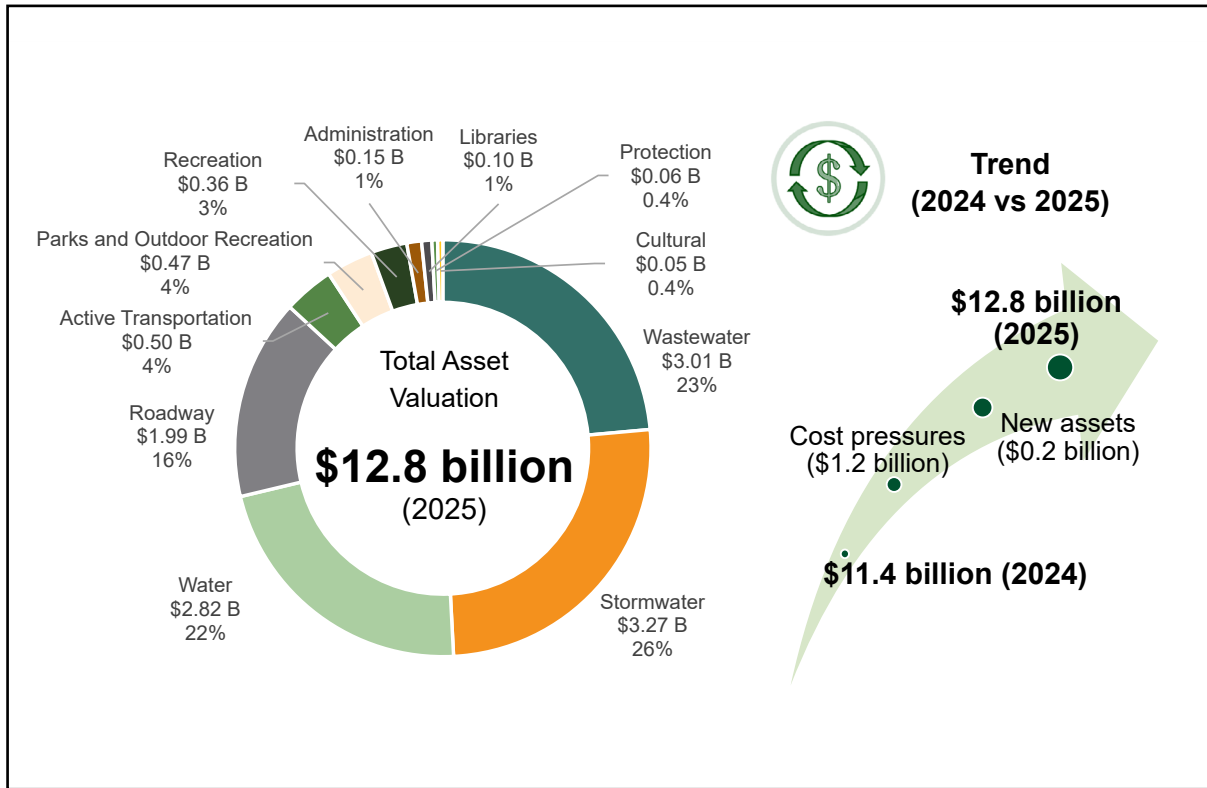


Figure 14: Asset Condition Profile

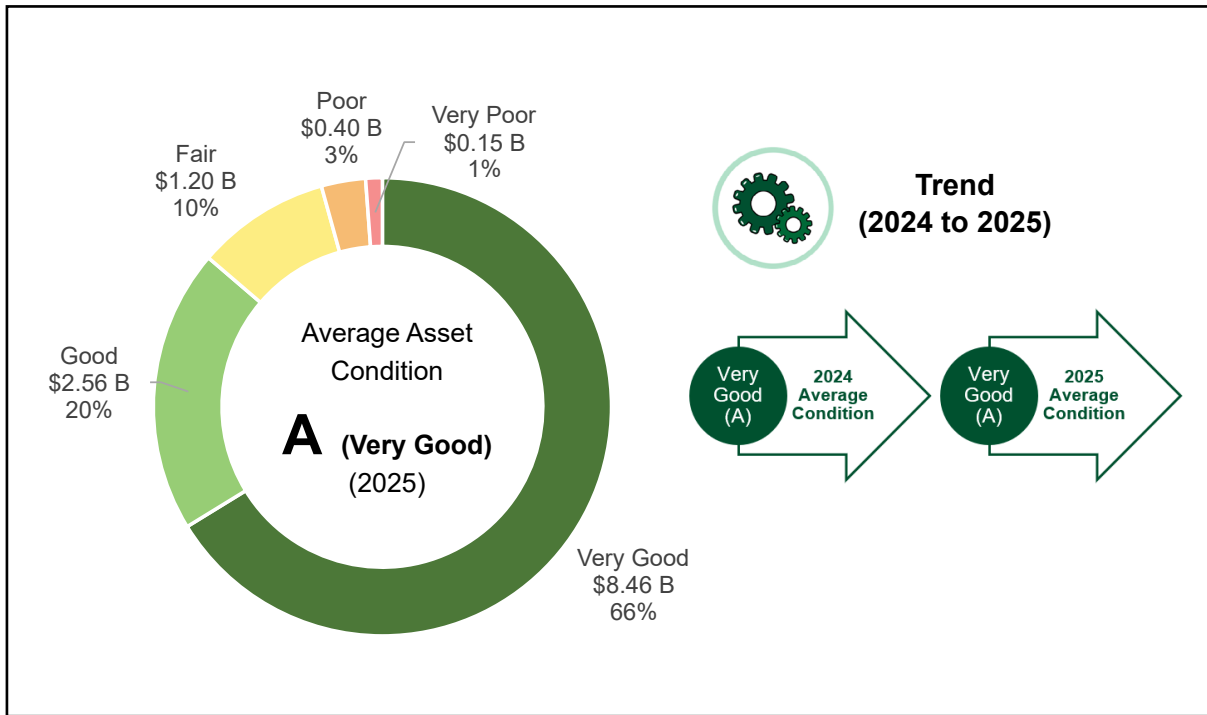


Figure 15: Asset Condition by Service

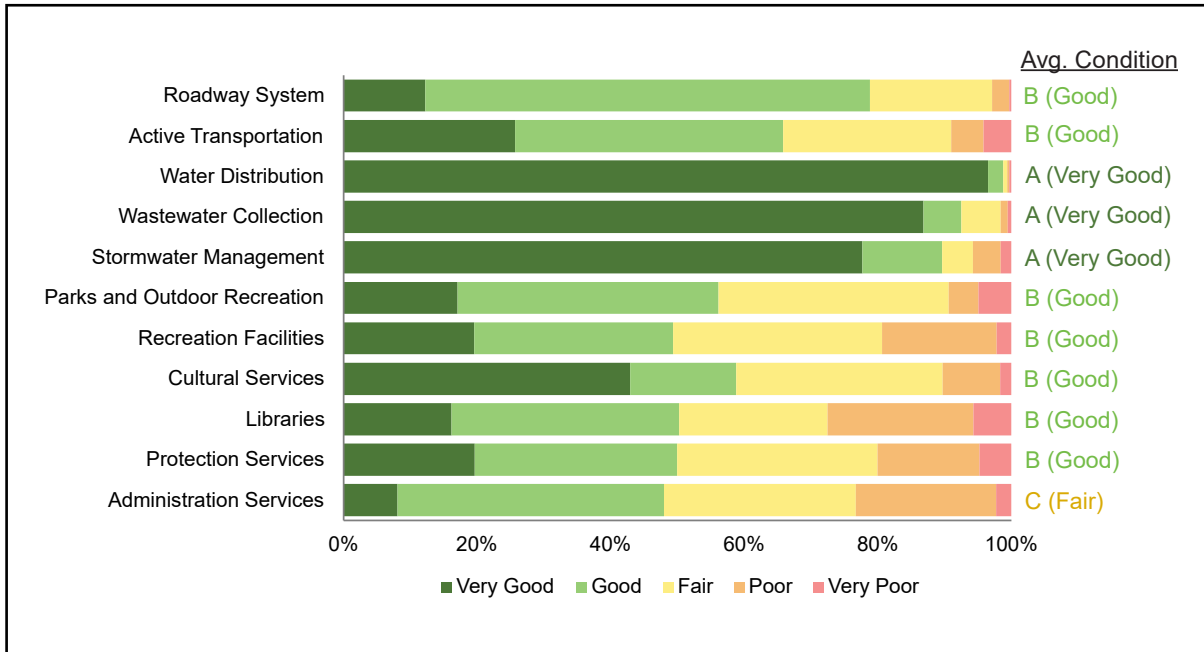
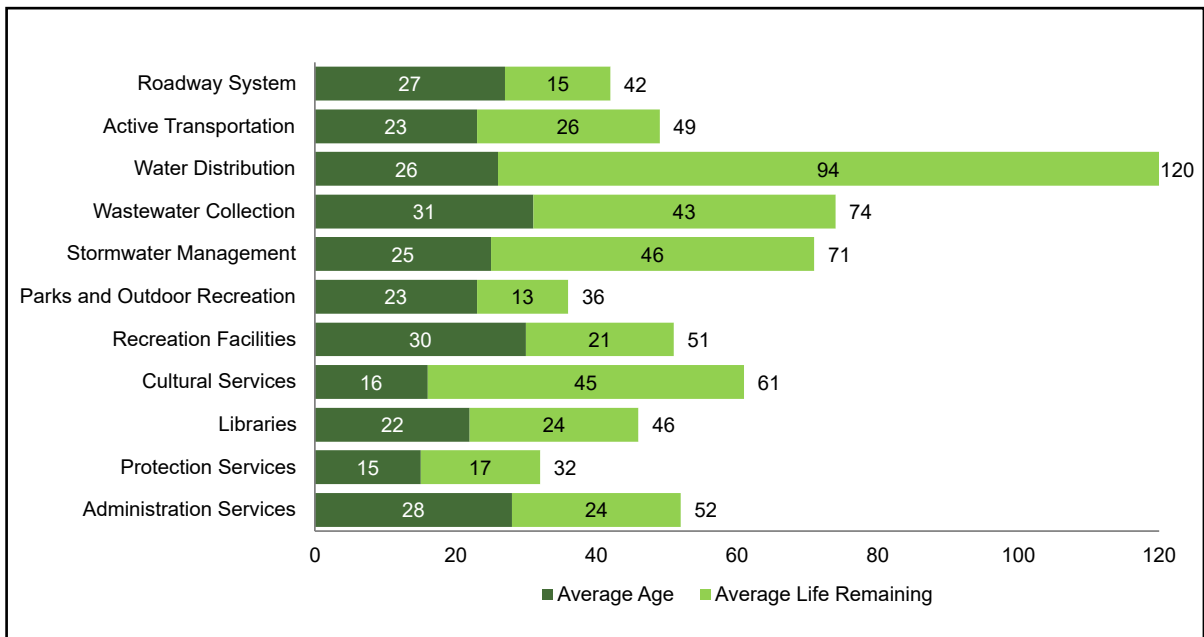



Figure 16: Asset Average Age and Remaining Service Life (Years)



2.2 State of Infrastructure Summary



Roadway System

- 1,225 lane-km Roads
- 14,134 Streetlights
- 32 Traffic Signals and Beacons
- 57 Bridges and Road Culverts
- A mix of Fleet and Equipment

Average Condition


B
(Good)

Replacement Value

\$1.99 Billion

Average Age and Service Life

27	15
----	----



Active Transportation

- 175 km Bicycle Lanes/Cycle Tracks
- 709 km Sidewalks/Walkways
- 16 km Multi-Use Paths
- 140 km Trails
- 3 km (116) Outdoor Crossings

Average Condition


B
(Good)

Replacement Value

\$0.50 Billion

Average Age and Service Life

23	26
----	----



Water Distribution

- 676 km Watermains
- 53,296 Water Meters / AMI Collectors
- A mix of Fleet and Equipment

Average Condition


A
(Very Good)

Replacement Value

\$2.82 Billion

Average Age and Service Life

26	94
----	----



Wastewater Collection

- 619 km Sanitary Sewers
- 6 Pumping Stations

Average Condition


A
(Very Good)

Replacement Value

\$3.01 Billion

Average Age and Service Life

31	43
----	----



Stormwater Management

- 623 km Storm Sewers
- 1,145 Storm Culverts
- 108 Stormwater Management Facilities
- 118 Manufactured Treatment Devices
- 90 Low Impact Developments
- A mix of Fleet and Equipment

Average Condition

A
(Very Good)

Replacement Value

\$3.27 Billion

Average Age and Service Life

25	46
----	----



Parks and Outdoor Recreation

- 171 Parks
- 528 Outdoor Recreation Amenities
- 8 Supporting Facilities
- 28 Parking Lots and Illumination
- 73,199 Street and Park Trees
- 889 ha Natural Areas
- A mix of Fleet and Equipment

Average Condition

B
(Good)

Replacement Value

\$0.47 Billion

Average Age and Service Life

23	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



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



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



Protection Services

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

Average Condition

B
(Good)

Replacement Value

\$0.06 Billion

Average Age and Service Life



Administration Services

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

Average Condition

C
(Fair)

Replacement Value

\$0.15 Billion

Average Age and Service Life





Chapter 3

Levels of Service



Canyon Hill Avenue

3.0 Levels of Service

3.1 Evaluating Levels of Service

The City's Levels of Service Framework was implemented to monitor current asset performance and to assist in articulating the current levels of service as well as the proposed levels of service that the City plans to provide to the community. Levels of Service are tied to the City's lifecycle strategy to connect service levels to investment needs to inform decision-making.

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 providing to the community inform asset lifecycle investment decisions to ensure that the City continues to deliver expected service levels.

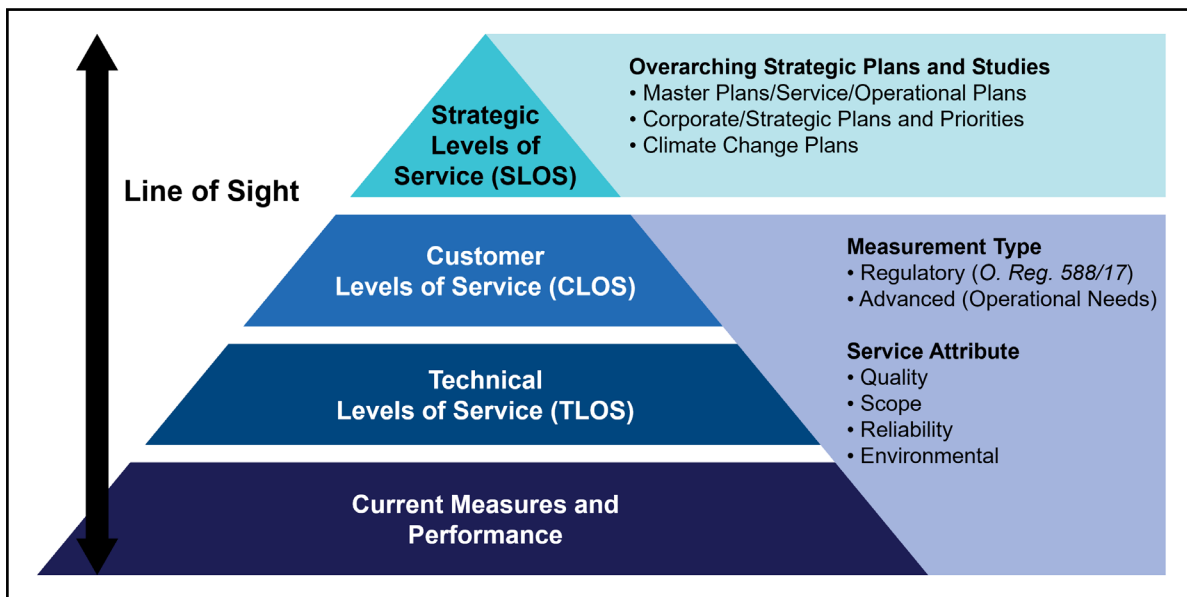
This Chapter provides an overview of the City's Corporate Asset Management LOS framework and summarizes the asset-based community and technical LOS metrics and their current performance. It answers the question, 'how are the City's assets performing?'

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*. The regulation contains several levels of service that are prescribed for Core assets. The City has also included additional levels of service and performance measures that capture operational business needs and the vision for the community derived from master plans and studies. The City's LOS framework provides a line of sight between the service levels that the City proposes 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. The levels of service are subdivided into two main types. The first – Community LOS – are intended to inform both the City and the general public's understanding of the services provided by the City's infrastructure. The second – Technical LOS – articulate the technical performance measures that the City monitors to help in managing that infrastructure.

The Corporate Asset Management LOS framework measures current asset performance, and defines and identifies the point where assets or systems are no longer meeting their expected LOS. By defining asset LOS performance in this manner, targets or thresholds can be used to tie to lifecycle strategies and recommended asset renewals. These are described in the upcoming chapters of this 2025 Asset Management Plan.

Figure 17 illustrates the City's Corporate Asset Management LOS framework.

Figure 17: 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.
- **Service Attribute:** This describes the area of focus that each performance measure is addressing. Service Attributes are developed for both customer and technical LOS measures, and help connect them to the strategic LOS by using common simple themes. The Service Attributes include attributes such as: Quality, Scope, Reliability and Environmental.
- **Community LOS:** These are the qualitative service measures that describe 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 facilities is the average Facility Condition Index.

- **Current Measures and Performance:** These are descriptions of the individual measures along with the current performance values, which form the basis of the City's technical levels of service. Each of the City's 11 services has developed 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 an average Pavement Quality Index of 78, which represents an average asset condition 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 City-defined 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.

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 an understanding of the current performance of the City's assets, relative to its strategic service goal. It also informs evidence-based decisions and lifecycle investment strategies that are required to achieve the City's proposed LOS over the next 10 years, in compliance with the July 1, 2025 milestone of *O. Reg. 588/17*.

3.2 Proposed Levels of Service

The City's assets are performing as intended and are supporting reliable services to the community. The City's strategy in selecting proposed levels of service is to ensure it continues to provide services to the level that the community is used to and expects.

An important new provision in this 2025 Asset Management Plan is the City's inclusion and assessment of proposed levels of service. In preparation for the development of this AM Plan, the City reviewed all service-level measures that were reported in its most recent 2024 Asset Management Plan and established proposed service levels for these measures that represent its commitment to provide services that continue to meet the community's expectations.

Going beyond the requirements of *O. Reg. 588/17*, the City has detailed the service levels that it proposes to provide over the next 27 years (i.e. to 2051) in this AM Plan. The regulation requires reporting for the next 10 years only. Note that the City's proposed levels of service for the next 10 years are also provided in this AM Plan, through the various performance forecast asset investment needs figures that accompany the asset management and forecasting analysis for each service area. These can be found for each service area in the Appendices.

The City's proposed service levels were established based on an assessment of the following:

- **Long-term sustainability:** the City has selected levels of service that are intended to ensure that services can be provided and assets can be maintained in a sustainable manner in both the near and long term.
- **Minimizing Risk:** the City has proposed levels of service that ensure that risks are mitigated and kept low.
- **Achievability:** the City has proposed levels of service that it is able to achieve.
- **Affordability:** the City has considered the affordability in the context of its proposed levels of service. In some instances, the City has identified that a funding gap exists. As a result, the City's financial strategy, as well as each Appendix, discusses options to balance affordability with the other factors mentioned above, and provides an assessment of strategies that the City can evaluate moving forward.

Additional detail pertaining to these factors is provided in the Appendices to this AM Plan. Each Appendix contains a section entitled "Future Outlook - Establishing Proposed Levels of Service", which explores in detail the assessment of proposed levels of service and why they are appropriate for the City of Richmond Hill based on the aforementioned factors.

The following section provides a summary of select service level measures, the City's current performance, and proposed levels of service. Additional measures and detail on service-specific levels of service are provided in the Appendices.



Avenue Road and Merrylynn Drive

3.3 Technical Levels of Service Summary



Roadway System

Current LOS:

- Average Pavement Quality Index (PQI) above 75
- Percentage of assets in Fair or better condition is high (most asset categories above 95%)
- 100% of bridges and culverts Fair or better condition and no structures contain loading restrictions
- Greater than 75% of streetlights equipped with LED fixtures

Proposed LOS:

- Maintain condition of most assets
- Increase number of assets according to master plans



Active Transportation

Current LOS:

- Percentage of assets within service life above 90%
- Sidewalks and trails are in Good condition
- Pedestrian bridges are on average in Very Good condition

Proposed LOS:

- Maintain condition of most assets
- Increase number of assets according to master plans



Water Distribution

Current LOS:

- Percentage of assets in Fair or better condition is high (greater than 95%)
- Watermains on average in Very Good condition
- No boil water advisories
- Service outages are generally low
- 4.9 watermain breaks per 100 km
- 33 watermain breaks in 2024

Proposed LOS:

- Maintain condition of assets
- Decrease service outage times
- Decrease watermains breaks



Wastewater Collection

Current LOS:

- No wastewater backups
- Percentage of sewers in Fair or better condition or within service life is high (all assets above 95%)
- 76% of sanitary sewers inspected

Proposed LOS:

- Maintain condition of assets
- Increase percentage of sanitary sewers inspected



Stormwater Management

Current LOS:

- 57% of properties resilient to 100-year storm
- 73% of storm system resilient to 5-year storm
- Greater than 95% of storm sewers in Fair or better condition
- Approx. 70% of storm culverts and SWMF in Fair or better condition
- 36% of storm sewers inspected

Proposed LOS:

- Maintain condition of storm sewers and culverts
- Improve condition of SWMF
- Increase percentage of storm sewers inspected



Parks and Outdoor Recreation

Current LOS:

- 15.6 square metres of parkland per person in the City
- 30% urban forest canopy cover
- Greater than 85% of parks site and amenities assets within service life
- Supporting facilities in Fair condition on average

Proposed LOS:

- Maintain urban forest canopy cover
- Maintain condition of parks site and amenities assets
- Maintain supporting facilities in Good condition on average



Recreation Facilities

Current LOS:

- 97 facility amenities/spaces provided to the community
- Facilities in Good condition on average
- Greater than 75% of equipment within service life

Proposed LOS:

- Increase facility amenities/spaces in alignment with master plan
- Maintain facilities in Good condition on average
- Maintain equipment condition



Cultural Services

Current LOS:

- Facilities in Good condition on average
- Approx. 50% of cultural equipment within service life

Proposed LOS:

- Maintain facilities in Good condition on average
- Increase condition of equipment



Libraries

Current LOS:

- 0.57 square feet of library space per capita
- Libraries in Good condition on average
- Greater than 80% of library equipment and collections within service life

Proposed LOS:

- Increase library space in alignment with master plan
- Maintain libraries in Good condition on average
- Maintain/improve library equipment collections condition



Protection Services

Current LOS:

- Fire stations in Good condition on average
- Greater than 90% of all fire fleet and equipment within service life
- 100% of frontline fire fleet within service life
- 100% of PPE within service life

Proposed LOS:

- Maintain fire stations in Good condition on average
- Maintain condition of fire fleet and equipment
- Maintain 100% frontline fire fleet and PPE within service life



Administration Services

Current LOS:

- Office buildings in Good condition on average
- Greater than 70% of IT assets within service life

Proposed LOS:

- Maintain office buildings in Good condition on average
- Increase the percentage of IT assets within service life



Chapter 4

Asset Management Strategies



Bayview Hill Park (under construction)

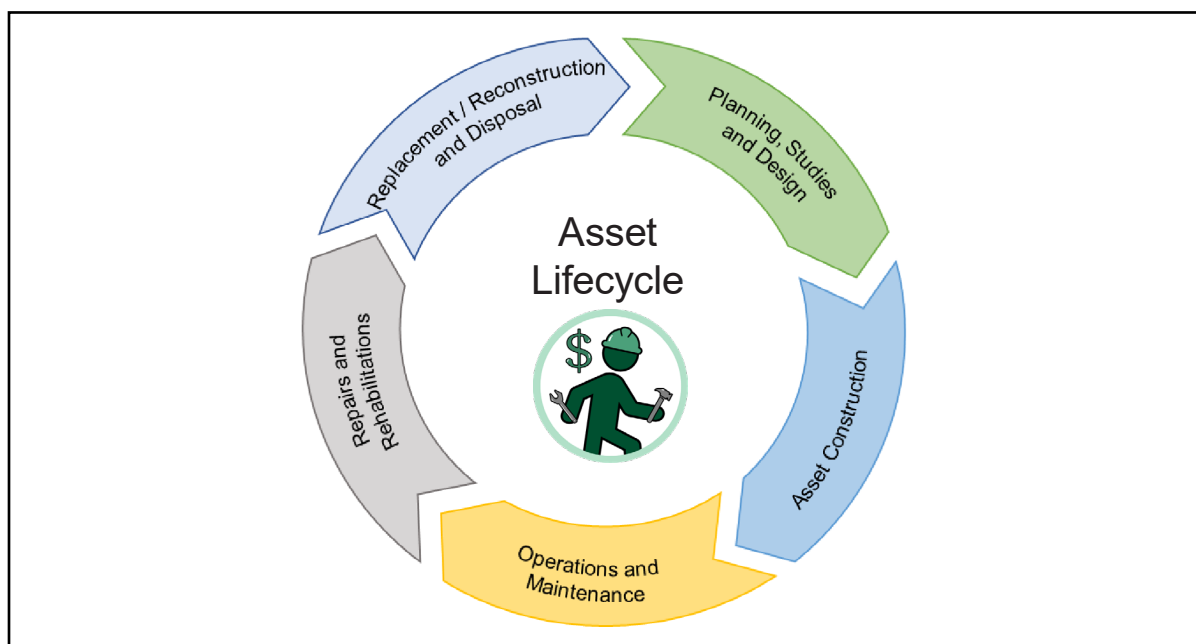
4.0 Asset Management Strategies

4.1 Employing Asset Lifecycle Strategies

The City's lifecycle strategies ensure assets are maintained and renewed at 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 lifecycle. Lifecycle strategies are the planned actions used to maintain infrastructure to meet defined performance standards and support service delivery. Effective lifecycle 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 cost-inefficient as opposed to replacing it. The typical stages of an asset lifecycle are highlighted below.

Figure 18: Typical Asset Lifecycle



The City's lifecycle strategies for its portfolio of assets describe the planned set of actions that the City undertakes to manage its assets throughout their life. Once assets are designed and constructed, they undergo a series of scheduled inspections, maintenance actions and repair activities that the City undertakes on an ongoing basis 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 performing to an acceptable level. These represent the multifaceted collection of ongoing studies and inspections (non-infrastructure solutions); proactive maintenance initiatives and timely repairs (maintenance activities); eventual rehabilitations/replacement (renewals); and, disposal activities illustrated in the figure above.

Based on these strategies, lifecycle capital renewal models were developed and incorporated into the City's EAM. These models generally reflect the currently practiced lifecycle capital renewal activities by the City as well as recommended lifecycle capital actions from technical condition assessments and those that should be undertaken as part of best engineering principles and asset management practices. Utilizing these lifecycle models, the EAM can forecast 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 Lifecycle Strategies include the planned actions that the City proposes to undertake to achieve its proposed levels of service and associated asset performance. They allow the City to predict upcoming asset treatment activities and plan for the forecasted investment requirements to achieve proposed levels of service. The City's EAM incorporates logic associated with these lifecycle capital renewal strategies and pairs it to the City's asset inventory data to forecast investment needs associated with achieving the City's proposed levels of service to 2051. These capital lifecycle forecasts are produced to understand the costs associated with the lifecycle activities required to achieve proposed service levels, and to develop the associated financial strategy required to achieve compliance with *O. Reg. 588/17*.

Further details on the general types of lifecycle strategies employed by the City are highlighted below, while the Appendices describe the specific lifecycle strategies for each grouping of assets. The City has included these strategies within this 2025 Asset Management Plan in order to achieve compliance with *O. Reg. 588/17* reporting requirements.

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.

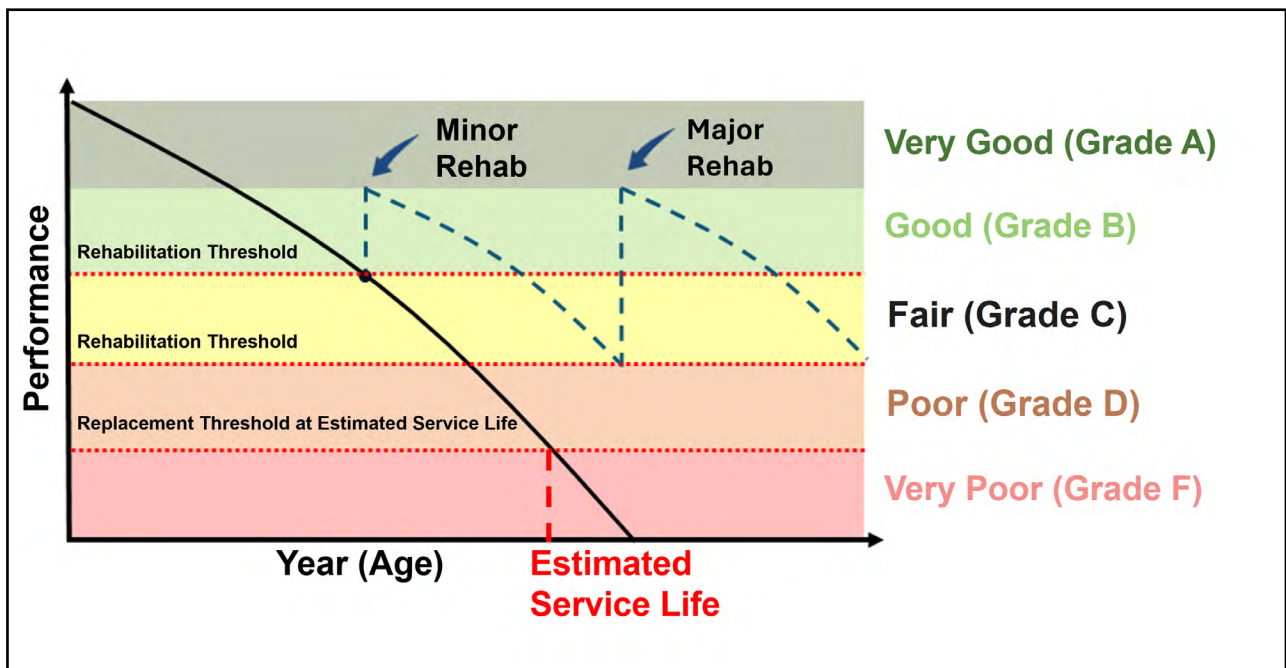
4.1.3 Rehabilitation Activities

As assets age and deteriorate over time, they reach the latter stages of their lifecycle 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 lifecycle strategies and logic programmed into the EAM can model these behaviours, including 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 rehabilitation or replacement/reconstruction. 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 rehabilitation 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, after which it resumes its degradation.

4.1.4 Replacement Activities

At a certain point in an asset's lifecycle, 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 watermains and sanitary sewers begin to fail, the City opts to replace the road, while bundling below-ground 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 19: Asset Lifecycle 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 lifecycle 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 Improvements

Growth and service improvements are the planned activities to extend services to new areas, to upgrade existing services and/or to accommodate evolving demands including from intensification. This can include activities such as 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. The City's Environment Strategy is also a guiding document that assists in improving services to meet environmental and climate change challenges. 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.



Blackforest Drive

4.2 Utilizing a Risk-Based Prioritization Framework

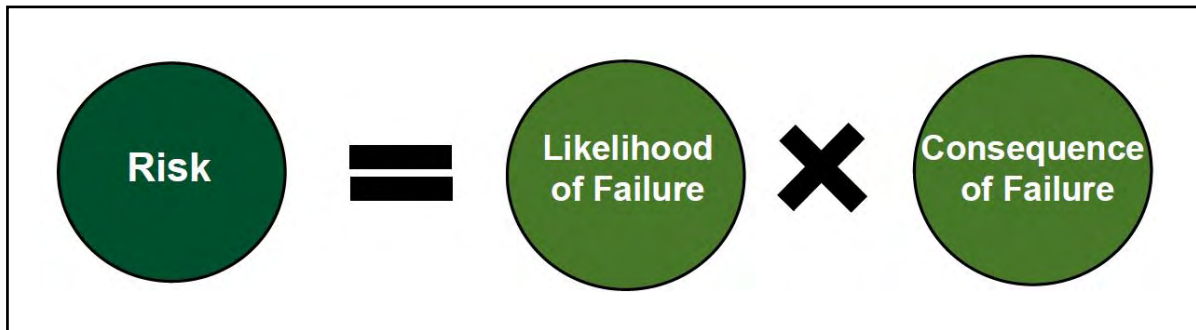
The Corporate Asset Management Risk Framework supports the prioritization of asset investment needs and capital projects to where they are needed the most while considering available financial resources.

The Corporate Asset Management Risk Framework assesses and quantifies the potential likelihood of asset failures and the consequence of failure 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 20: Corporate Asset Management Risk Framework



Failure Events and Likelihood of Failure (LOF)

There are two distinct failure events used in this framework to assess asset risk: condition-based failure; and, capacity-based failure.

Condition-based failure represents the physical degradation of an asset over time to a point where it could potentially fail or be inadequate to remain in service. The probability of an asset failing from its condition-based failure event is understood through the asset's 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, condition metrics such as watermain breaks can help to understand the likelihood of condition-based failure of the assets. Failure would be defined as a certain threshold of breaks, and a likelihood of failure could be measured depending on current state of the asset's condition relative to that threshold.

Capacity-based asset failure can be understood by evaluating the effect of increased demand for usage due to growth against the ability of the asset to meet those demands. The assessment of likelihood of failure for capacity is based on 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)

An asset’s consequence of failure estimates the potential adverse impacts that could be experienced should that asset fail and no longer be in service. It provides an understanding of asset criticality based on the repercussions that would be experienced should the asset reach its condition or capacity-based failure. The City’s risk management framework assesses consequence of failure using a triple bottom line approach to evaluate the following categories:

- 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.

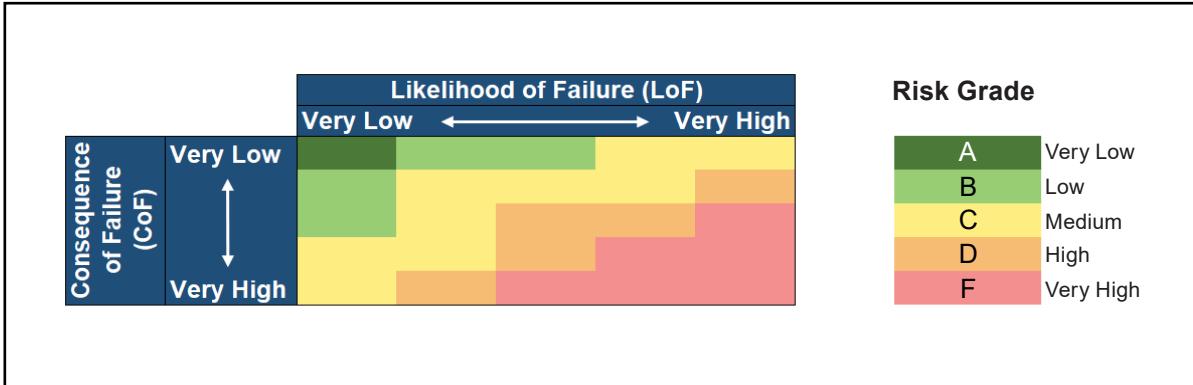
Each of these categories is further subdivided into subcategories that represent the various aspects of asset failure. Individual qualitative and quantitative metrics are used to approximate the score for each of the specific subcategories below. For example, traffic volumes (AADT counts) and road classification are used to understand the community impact of an asset failing. Features such as land use are used to understand the types of buildings or areas that an asset services – some more critical than others. A list of these categories and subcategories is provided in Table 3 below.

Table 3: Consequence of Failure Framework Categories and Subcategories

Direct Financial	Social	Environmental
<ol style="list-style-type: none"> 1. Capital Expenditure (Replacement of assets) 2. Revenue loss due to service closure or other direct cost not related to asset repair (Operating) 	<ol style="list-style-type: none"> 1. Health and Safety 2. Legal Liability 3. City Reputation 4. Service Disruption 5. Customer Impact 	<ol style="list-style-type: none"> 1. Environmental Objectives and Compliance 2. Environmental Impact

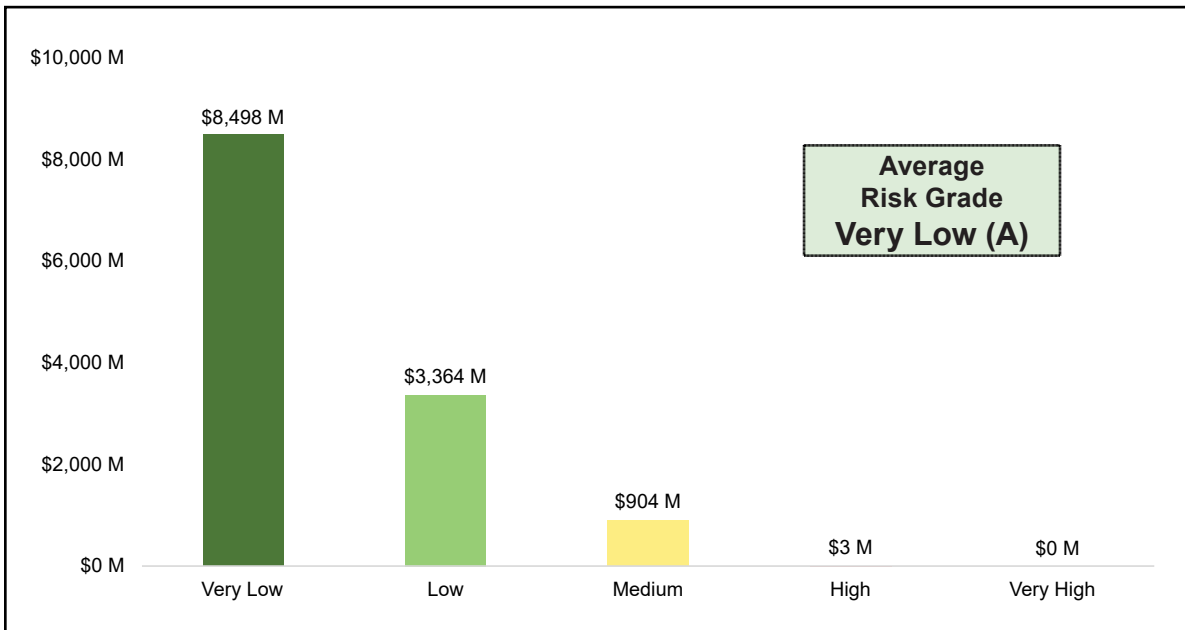
Using the evaluation developed by the City’s Corporate Asset Management Risk Framework, the EAM computes a total risk score for each asset based on both the likelihood and consequence of an asset failing. Combinations of LOF and COF can be categorized as either Very Low, Low, Medium, High or Very High potential risk. A letter grade is associated with each of these five risk rating categories as summarized below. 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 21: 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 22: Corporate Asset Management Risk Profile for the City's Assets



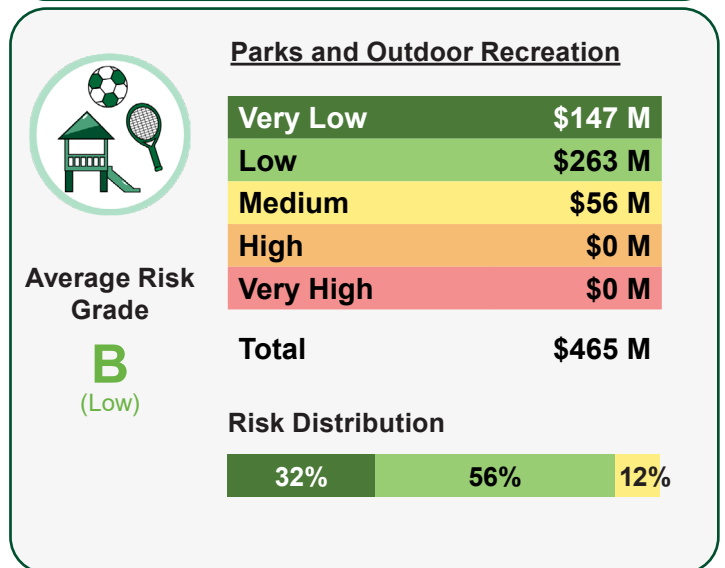
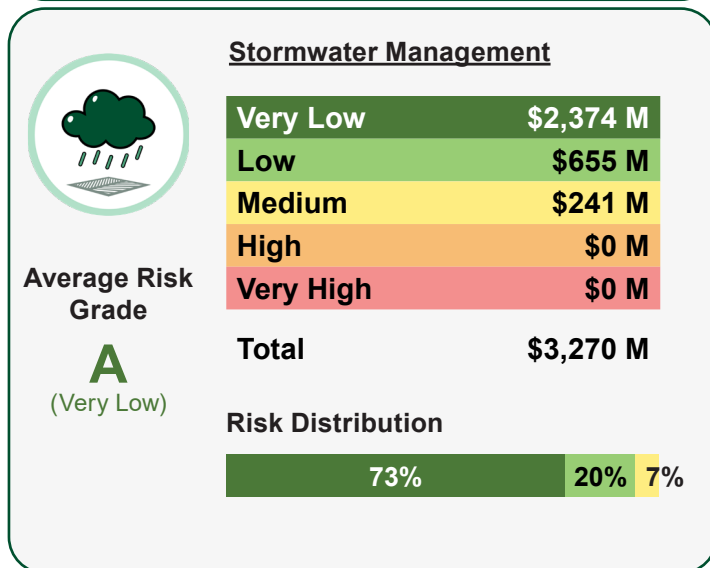
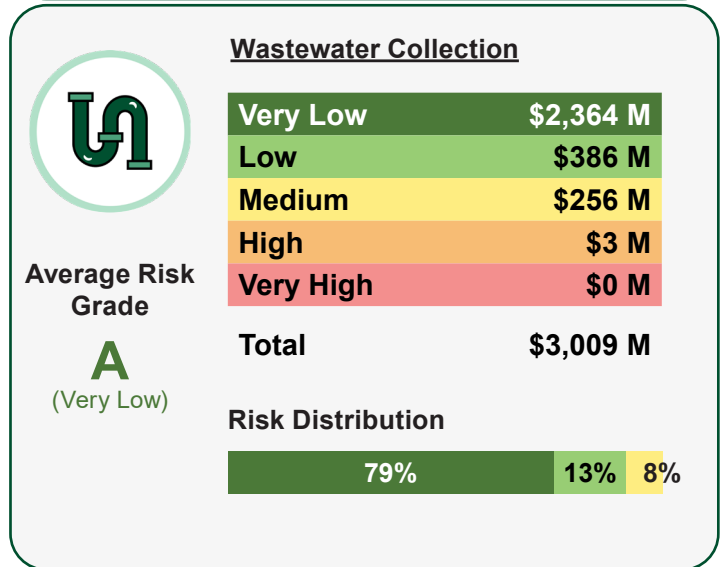
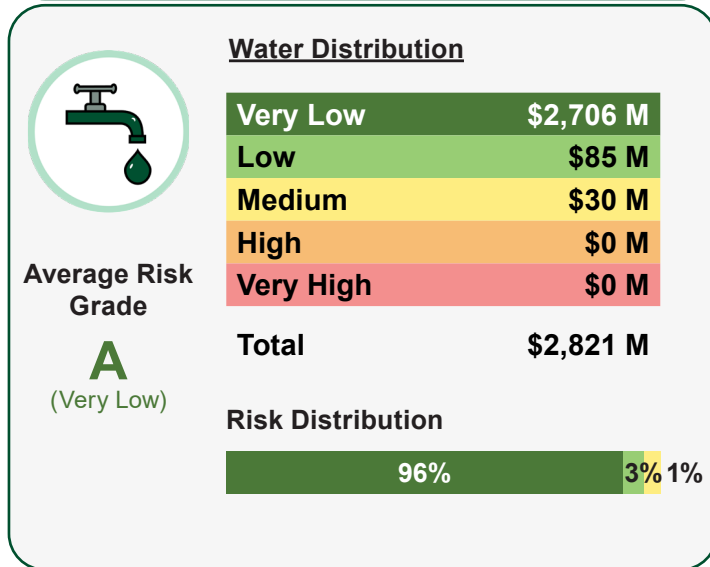
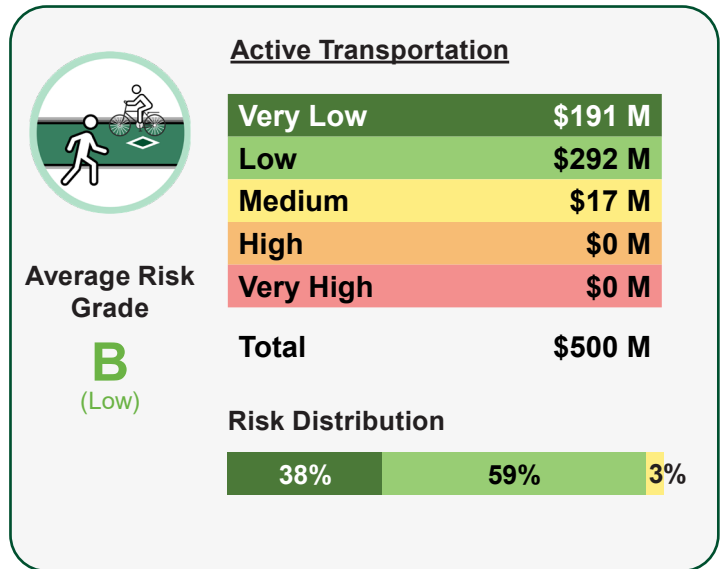
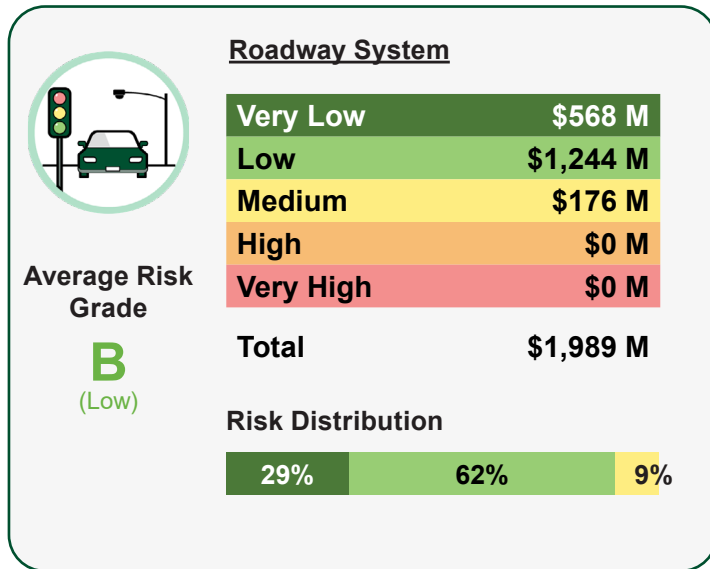
The City's EAM used this Corporate Asset Management risk framework, tied to the lifecycle strategies described in the previous section, to forecast projected prioritized lifecycle investment needs under varying funding scenarios for each of the City's service areas. These prioritized lifecycle investment forecasts are summarized in each of the Appendices and in Chapter 5 of this 2025 Asset Management Plan. This framework is also used to assist with the prioritization of capital projects as part of the City's annual Capital Budget and Forecast process.

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 lifecycle investment requirements within constrained funding levels. It also helps guide asset renewals to ensure that risks can be minimized under financial or other constraints. The recommended lifecycle investment forecasts in this 2025 Asset Management Plan achieve compliance with *O. Reg. 588/17*. This framework will also be used to assist with the prioritization of the 2026 Capital Budget and Forecast.



Harding Park

4.3 Risk Summary



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



Recreation Facilities

Very Low	\$76 M
Low	\$223 M
Medium	\$59 M
High	\$0 M
Very High	\$0 M

Average Risk Grade

B
(Low)

Total \$359 M

Risk Distribution



Cultural Services

Very Low	\$24 M
Low	\$25 M
Medium	\$3 M
High	\$0 M
Very High	\$0 M

Average Risk Grade

B
(Low)

Total \$51 M

Risk Distribution



Libraries

Very Low	\$20 M
Low	\$61 M
Medium	\$20 M
High	\$0 M
Very High	\$0 M

Average Risk Grade

B
(Low)

Total \$101 M

Risk Distribution



Protection Services

Very Low	\$12 M
Low	\$31 M
Medium	\$14 M
High	\$0 M
Very High	\$0 M

Average Risk Grade

B
(Low)

Total \$57 M

Risk Distribution



Administration Services

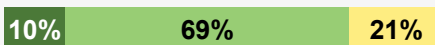
Very Low	\$15 M
Low	\$100 M
Medium	\$31 M
High	\$0 M
Very High	\$0 M

Average Risk Grade

B
(Low)

Total \$146 M

Risk Distribution



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

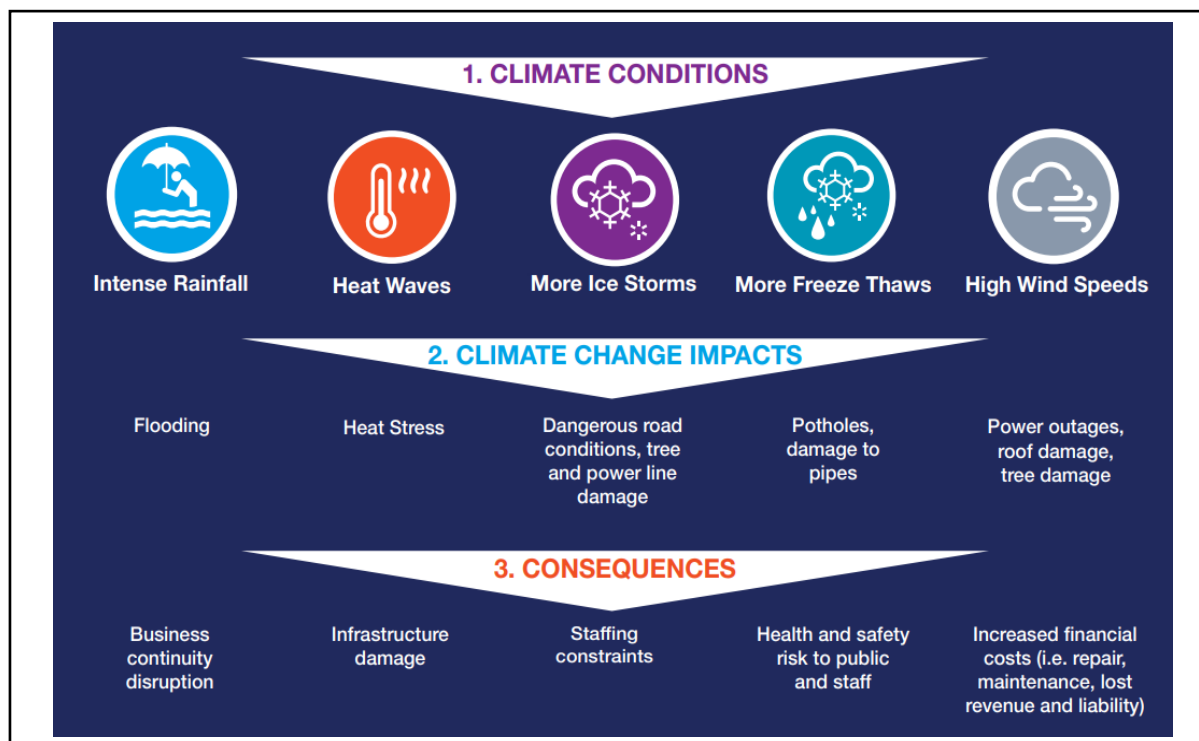
4.4 Consideration of Climate Change

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 lifecycle 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 23: The City’s 2020 Climate Change Framework – Climate Trends and Consequences

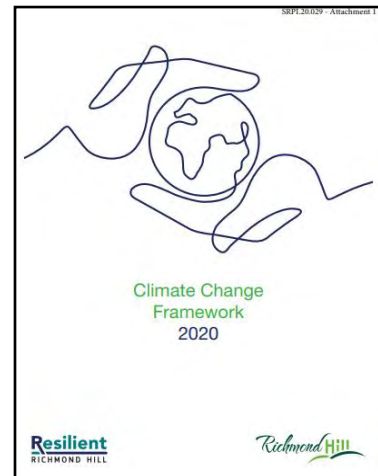


In an effort to take a proactive response on climate change and plan for its impacts, the City developed a series of actions and goals in climate-related plans, strategies, policies and frameworks. One of those key actions was to apply a climate change lens to the City's asset management planning processes,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

4.4.2 The City's Strategic Asset Management Policy

The 2024 update to the City's 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 lifecycle. 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 (lifecycle and risk) and annual capital budgeting and forecasting process to seek funding as required.

4.4.3 The City's Environment Strategy Update (2022)

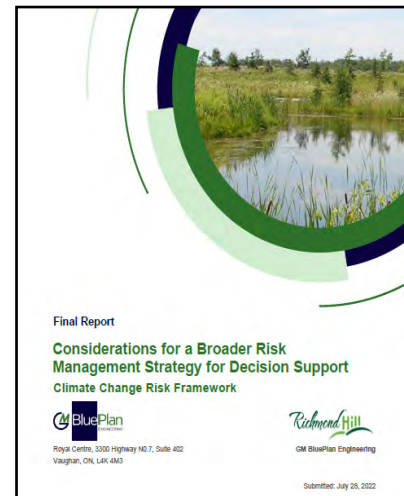
The Council-approved 2022 update to the Environment Strategy included a number of actions focused around ten themes to further improve the City's environmental performance. Many of the recommended actions are related to infrastructure and as such, continue to be integrated with the City's asset management 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 consider 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.

4.5 Alignment with the City's Affordable Housing Strategy

In June 2024, Richmond Hill Council approved the City's updated Asset Management Policy, which outlines the City's goals and commitments to corporate asset management planning through defined principles and processes to ensure the alignment and integration of asset management into strategic planning processes. Included in this policy is the identification of principles that enable the consideration of affordable housing on City-owned lands, through integration of asset management planning into Richmond Hill's guiding documents, including the Affordable Housing Strategy.

The City's Affordable Housing Strategy sets out various actions the City will undertake to deliver on the City's affordable housing priorities. Included in the suite of actions is to "identify surplus or underutilized City-owned land or buildings for the purpose of developing affordable housing" and "consider options to re-develop/use City land to include affordable housing on these sites where appropriate."

As the City's Asset Management planning capability evolves, the opportunity to locate affordable housing on properties with existing City-owned facilities and infrastructure shall be further explored. The 2025 Asset Management Plan update acknowledges the future opportunity for Richmond Hill to consider options for the location or co-location of affordable housing on City-owned sites, resulting from a review of overall City-owned facility service level needs in consideration of facility investment needs.





Chapter 5

Asset Investment and Financial Strategy



Old Langstaff Bridge (under construction)

5.0 Asset Investment and Financial Strategy

5.1 Financing Service Delivery

This 2025 Asset Management Plan completes an evaluation of the financial needs associated with achieving the City’s proposed levels of service. It also completes a forecast of available revenues in order to identify if an infrastructure shortfall exists. For areas with an infrastructure shortfall, this AM Plan proposes strategies to mitigate the shortfall and manage any risks.

Understanding the relationships between asset lifecycles, service levels, risks and required funding are imperative to developing an Asset Management Plan and financial strategy that provides a proactive approach to ensure that services are provided to the community in the most efficient and effective way possible.

To finance service delivery and the management of its assets, the City collects revenue from various sources, which it uses to fund the required activities that form part of service delivery. Those activities are generally separated into two budgets: 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 non-rate 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.

The City of Richmond Hill follows a rigorous and iterative year-round annual budgeting process that involves the development and approval of the Operating Budget and the Capital Budget. The analysis supported by the EAM, which informs the Capital Budget and Forecast is also used to inform this AM Plan and financial strategy.

The financial strategy presented herein was developed through the following steps:

- The City completed detailed asset management analyses and forecasting through its EAM system to establish the needs (i.e. costs) required to achieve proposed LOS targets to 2051. Needs were identified by service area (refer to the Appendices for details regarding each service area).
- The first 10 years of needs from the EAM forecast were utilized for the financial strategy. Utilizing a 10-year horizon for this financial strategy aligns with timelines the City uses to forecast revenue, and also aligns with the requirements of *O. Reg. 588/17*.
- The identified needs were categorized into three groups: State of Good Repair (capital); Growth (capital); and, Operating Expenditures (operating), which aligns with the reporting requirements of *O. Reg. 588/17*. The SOGR needs from the EAM analysis were further supplemented with additional non-renewal needs obtained from the Capital Budget and Forecast (e.g. studies, service improvements, etc.)
- Needs were aggregated into three higher-level portfolios for the purposes of this financial strategy. These portfolios were developed to align with major funding sources, and include:
 1. Rate Supported (Water/Wastewater): This portfolio includes all Water Distribution and Wastewater Collection assets, which are funded primarily based on water user rates charged to users of these services.
 2. Rate Supported (Stormwater): This portfolio includes all Stormwater Management assets, which will gain additional funding from the City's newly updated stormwater management user rate in addition to other sources.
 3. Non-Rate Supported: This portfolio includes all remaining assets (e.g. roads, facilities, equipment), which are primarily funded by property tax revenues in addition to other sources.
- An analysis of various funding sources available to the City, as well as the funding projected to be available was completed over the 10-year horizon of the financial strategy.
- Funding available for SOGR needs was separated from the total available funding pool. The financial strategy assumes that operating forecasts as well as growth forecasts are funded over the 10-year horizon and focuses on SOGR needs and funding.
- The first 10 years of SOGR needs to achieve proposed levels of service were compared to available SOGR funding to identify funding shortfalls in each portfolio (if any).
- An analysis of potential lifecycle activities and risks was completed for portfolios where shortfalls were identified. Strategies for adjusting lifecycle activities and mitigating risks were evaluated.

- An assessment on implementing this financial strategy was completed, which includes the actions the City will undertake to monitor asset needs and service levels annually, as well as its reporting and updating on progress of this AM Plan. This assessment will also provide an overview of additional risks and mitigations associated with the implementation of the AM Plan and financial strategy.

5.2 Identifying and Forecasting Asset Needs

This 2025 Asset Management Plan aligns with the analysis method completed by the City in the preceding 2024 Asset Management Plan by completing an analysis of needs based on a phased-in annual increase of state of good repair investments until 2051. This phased-in approach was selected to gradually address the infrastructure backlog and meet proposed condition-based Levels of Service over time.

5.2.1 State of Good Repair (Capital)

In order to forecast state of good repair needs, the City's EAM uses asset inventory data, the existing state of the City's infrastructure (e.g. condition), lifecycle strategies (e.g. capital interventions and degradation), levels of service (e.g. performance metrics) and the risk framework (e.g. prioritization) to analyze and forecast future prioritized capital investment needs under varying scenarios.

The objective of the analysis was to identify a suggested state of good repair infrastructure investment plan that could be phased in annually that would meet the City's proposed service levels while gradually addressing the infrastructure backlog over time.

The scope and parameters of the scenario analysis were as follows:

- The analysis was completed to 2051 (i.e. over a 27-year time horizon). This was done to align with the same planning forecast as the City's various master plans and studies including the 2024 AM Plan, Official Plan, Transportation Master Plan, Urban Master Environmental Servicing Plan, etc.;
- The analysis identified the infrastructure backlog of asset needs, which represents the past overdue and current year (2025) renewal needs (i.e. major rehabilitations and replacements);
- The analysis was completed to achieve levels of service targets using an approach that phases in annual asset investments to 2051. This was selected to emulate a plausible approach that the City could employ to increase spending gradually over time to eliminate the backlog and meet needs;
- The needs analysis also completed a review of projected spending trends, based on the City's last three (3) years of approved Capital Budgets, including approved capital projects. This provided historical context that was used to anticipate spending trends and support the baseline (historical spending) analysis; and,
- The analysis incorporated the City's recently approved 2025 Capital Budget and Forecast, including the state of good repair approved capital projects. This was used to illustrate the starting level (i.e. 2025) of asset investments, to ensure that the AM Plan aligns with the current approved budget.

The EAM can analyze the effects of various scenarios given certain funding or performance constraints. The two scenarios analyzed through the EAM using these parameters are as follows.

Table 4: SOGR Asset Investment Strategy Scenarios

Scenario	Description
<p>Scenario 1: Historical Spending Analysis</p>	<p>The first scenario projects forward historical spending trends to understand their effects on asset performance. 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 to better emulate real-world decisions related to spending. To complete this analysis, the EAM utilizes the average of the past three years of budget spending (2023 to 2025) as an input and applies a 2% annual increase to reflect estimated growth in spending that may be anticipated. For certain services, anomalies were removed from the trend analysis. The starting year (i.e. 2025) illustrates the current 2025 budget.</p> <p>This analysis was completed to provide a baseline of spending in order to understand the changes in asset performance levels of service over time should current spending trends continue. It was also completed to show consistency with the City's 2024 Asset Management Plan. This Historical Spending Analysis scenario is closely aligned with the analysis completed in the 2024 AM Plan, which projected forward 2024's initial SOGR expenditure. Rather than projecting from a single year, this AM Plan utilizes the past three-years' average of spending to establish a trend for projections.</p>
<p>Scenario 2: Achieve Proposed Level of Service</p>	<p>This scenario first calculates the total asset need over the 27-year forecast period to identify the funding required to achieve all proposed levels of service and eliminate backlog over the forecast period. Then, using this total financial need, the EAM applied a gradual, phased-in annual increase in spending to achieve the City's proposed levels of service by the end of the forecast period. The decision was made to complete this analysis with phased-in investments to more closely emulate a plausible scenario whereby the City could increase spending to achieve proposed levels of service, in an attempt to model a realistic outcome that maximizes the potential for affordability.</p> <p>This scenario most closely emulates the "Maintain Level of Service" scenario that was completed for the City's 2024 AM Plan. Note that the City has elected to maintain or improve the majority of its service levels into the future, therefore the analysis completed in 2024 to maintain levels of service is closely aligned with this 2025 analysis to achieve proposed levels of service.</p>

The scenario analysis and identification of spending requirements to achieve proposed levels of service were developed under the following assumptions:

- The condition-based forecasted renewal needs were primarily based on the consideration of a “like-for-like” replacement/rehabilitation of existing assets using current costs to replace a similar asset. Where information was available, additional funding was included in the forecasted needs to represent anticipated enhancements or other service improvements to assets. This additional need is detailed on the forecast figures where applicable.
- The EAM forecasted asset needs do not consider the bundling of assets where applicable. When the City plans capital projects, it often bundles assets in similar geographical locations (such as sewers, watermains and roads in the same street) to take advantage of efficiencies and minimize impacts to the communities. The City’s EAM does not yet include the full capability to forecast bundled assets, therefore assets were analyzed in isolation.

The outcomes from the EAM scenario analysis are presented 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 **\$327 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 increase from **\$53 million** in 2025 by an estimated increasing annual average of approximately **\$5.6 to \$7.0 million**, in current dollars. Of this, it is estimated that **\$0.5 to \$0.7 million** would be rate supported for water and wastewater; **\$0.7 to \$1.0 million** would be rate supported for stormwater management, and **\$4.4 to \$5.3 million** would be for non-rate supported services.
- Note that there is an additional provision of \$3.0 million for stormwater pond rehabilitations, \$0.3 million for street and park tree replacements due to storms and invasive species, and \$2.0 million for protection services to align with the historical average spending for this service area;
- The City also estimates an additional \$2.5 to \$3.0 million annually to address non-renewal SOGR needs, based on the last approved capital budget. These needs include items such as non-infrastructure activities (i.e. studies and plans) and repairs to some assets; and,
- This suggested annual increase of state of good repair investment levels are established to achieve proposed levels of service to 2051. This is described further in Section 5.3.

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

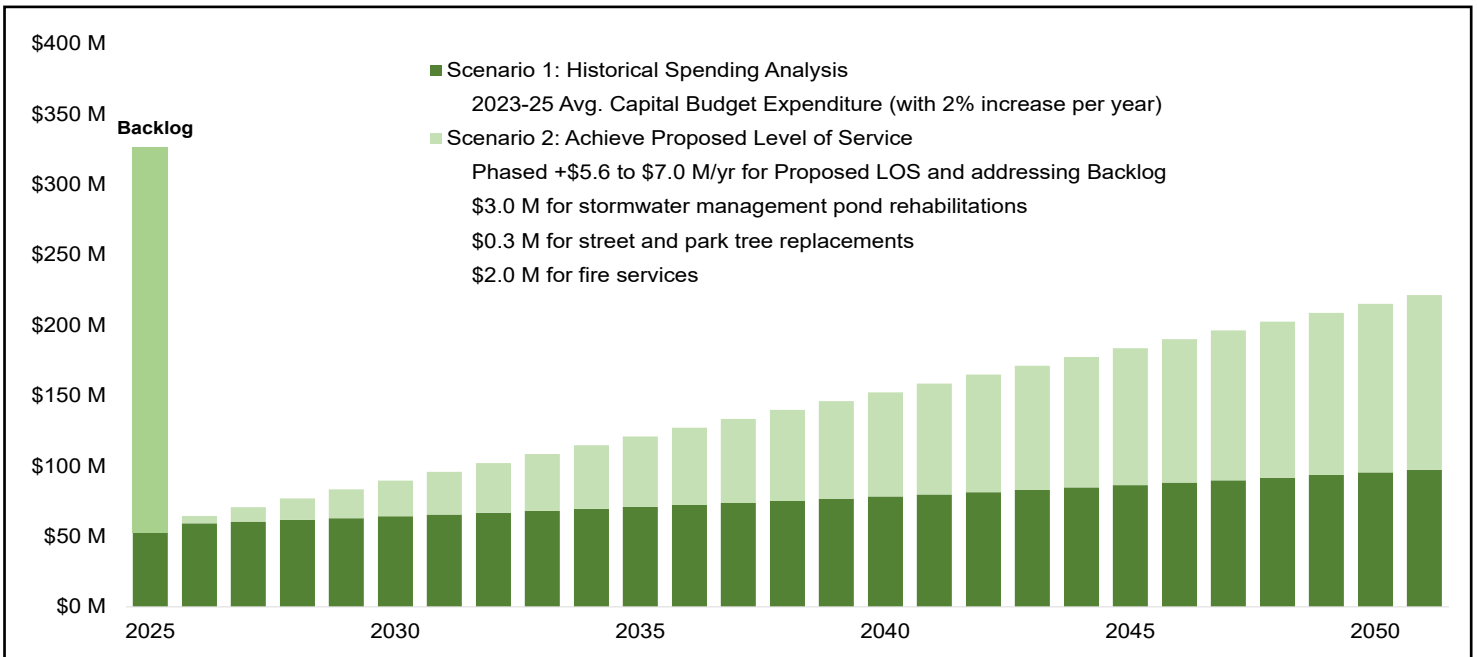


Table 5: Summary of the Suggested SOGR Asset Investment Strategy by Service (\$ millions)

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Roadway	84.2	14.7	+2.8 to 3.3	284.6	28.5	1,468.5	54.4
Active Transportation	14.2	0.1	+0.5 to 0.7	27.9	2.8	213.0	7.9
Water	88.2	13.3	+0.5 to 0.7	159.6	16.0	568.7	21.1
Wastewater							
Stormwater ¹	72.7	5.4	+0.7 to 1.0	118.8	11.9	520.8	19.3
Parks ²	27.1	3.1	+0.25 to 0.30	45.6	4.6	186.8	6.9
Recreation	15.4	7.9	+0.30 to 0.35	93.8	9.4	327.7	12.1
Culture	1.0	0.1	+0.20 to 0.25	10.9	1.1	81.2	3.0
Libraries	10.2	2.5	+0.13 to 0.15	31.2	3.1	116.4	4.3
Protection ³	4.2	0.4	+0.05 to 0.07	24.8	2.5	84.2	3.1
Administration	9.8	5.5	+0.15 to 0.16	62.4	6.2	204.0	7.6
Total	\$326.9	\$52.9	+\$5.6 to \$7.0	\$859.6	\$86.0	\$3,771.3	\$139.7

- \$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.
- \$2.0 M for Protection Services to align with historical average spending for this service area would be required annually.

Figure 25: Suggested SOGR Asset Investment Strategy - Non-Rate Supported Services

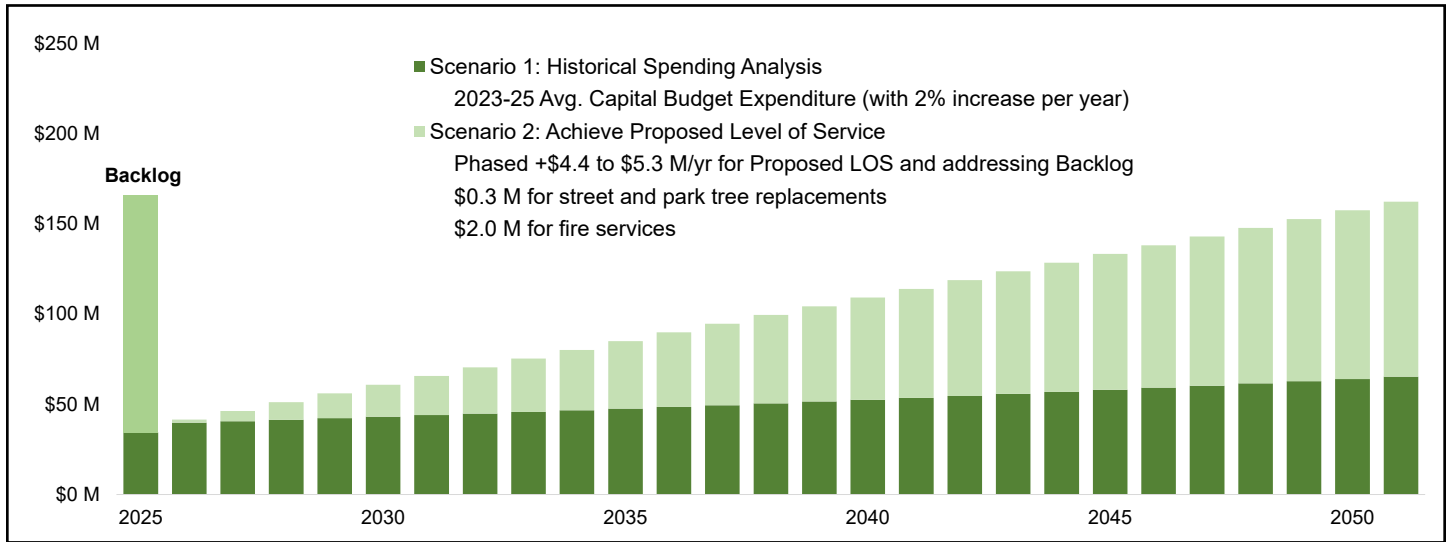


Figure 26: Suggested SOGR Asset Investment Strategy - Water and Wastewater Rate Supported Services

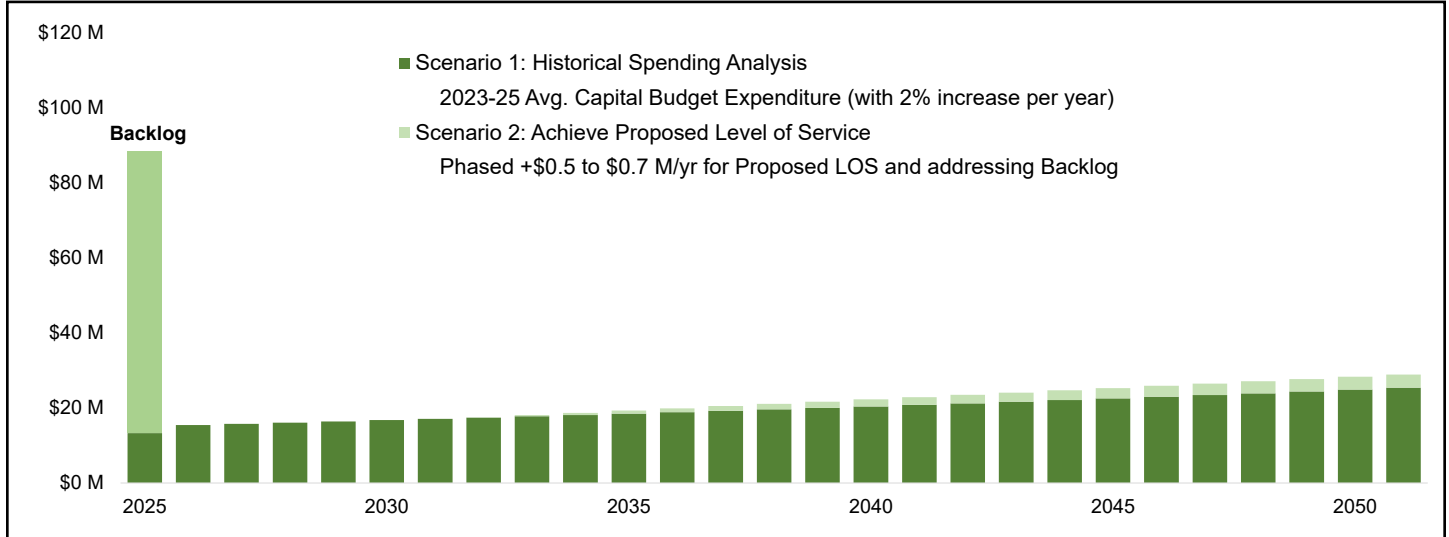
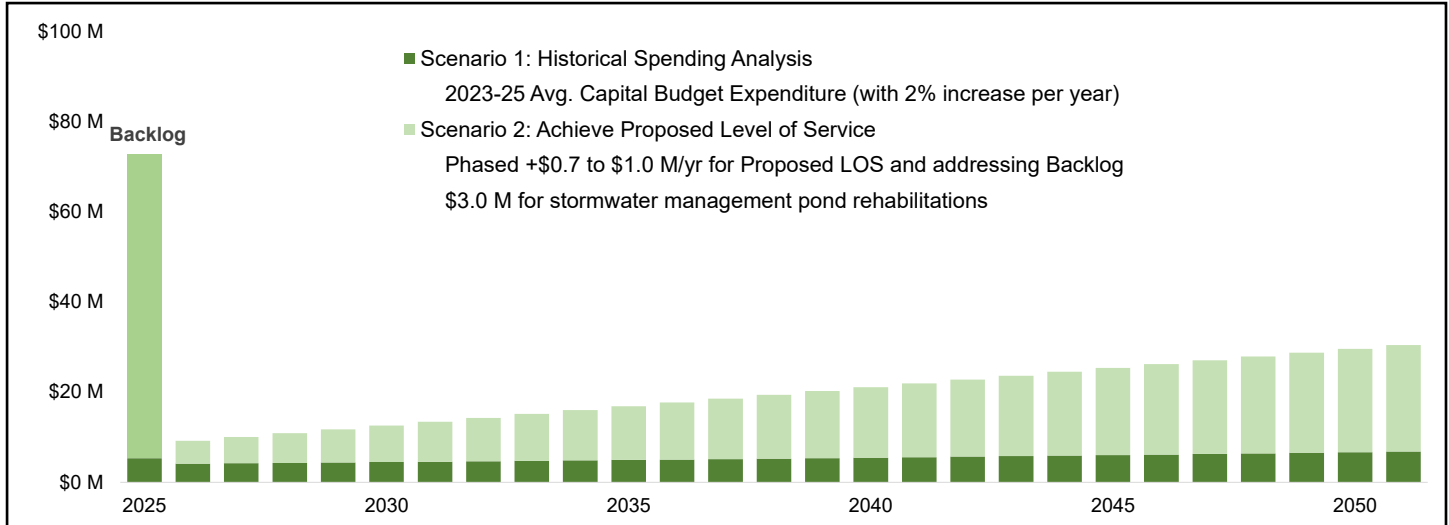


Figure 27: Suggested SOGR Asset Investment Strategy - Stormwater Management Rate Supported Services



5.2.2 Identifying Additional State of Good Repair Needs (Capital) for Water Distribution, Wastewater Collection and Stormwater Management Services

The forecasted SOGR needs presented in this AM Plan represent the needs associated with achieving the proposed condition-based levels of service for the City's assets. The analysis completed to forecast these needs was completed by the City's EAM system and the outputs from this analysis are provided to the City's subject matter experts to assist them in developing the Capital Plan and Forecast each year.

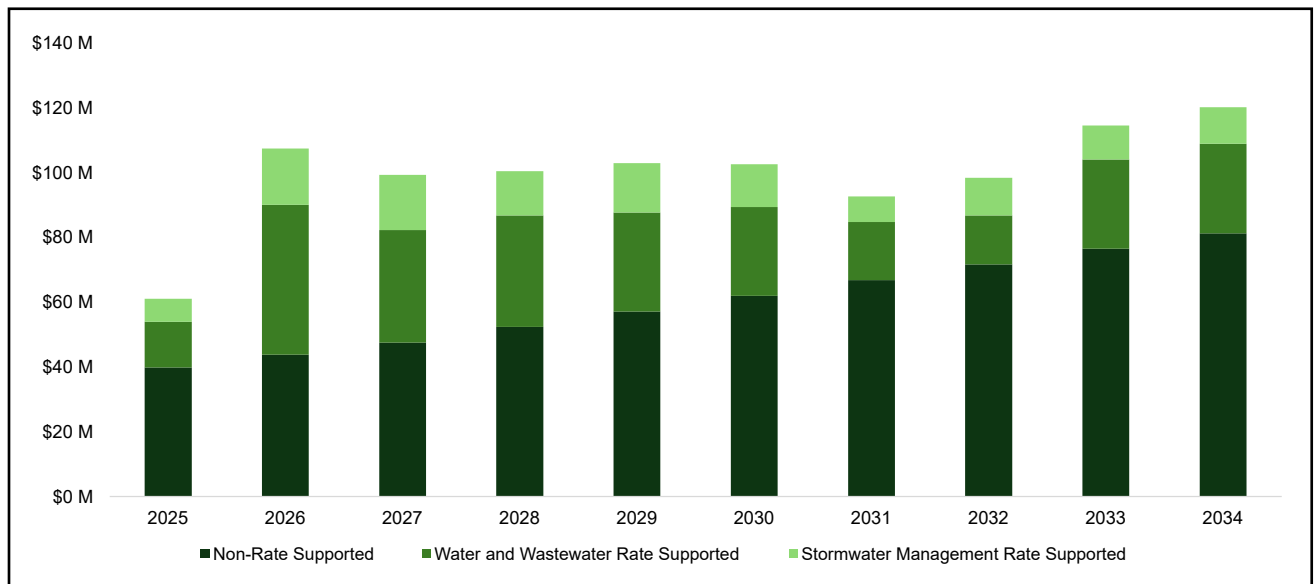
In 2024, the City completed financial plans for its Water Distribution, Wastewater Collection and Stormwater Management services. The City's past capital forecasts for these service areas were utilized to understand asset needs to support their respective financial plans. The financial strategy in this 2025 AM Plan has supplemented the needs identified by the City's EAM with additional needs identified in the 2024 financial studies for these three service areas.

Appendix C, Appendix D, and Appendix E provide additional commentary for the Water Distribution, Wastewater Collection and Stormwater Management service areas related to the needs identified as part of their respective financial plans. Furthermore, these Appendices also provide a comparison of the EAM-forecasted and financial plan needs for each of these service areas.

5.2.3 Total Forecasted State of Good Repair Needs (Capital)

Figure 28 below provides a summary of all forecasted SOGR needs used for this 2025 AM Plan's financial strategy. These needs incorporate the additional needs identified from the Water Distribution, Wastewater Collection and Stormwater Management financial plans.

Figure 28: Total State of Good Repair Needs (2025-2034) - All Services

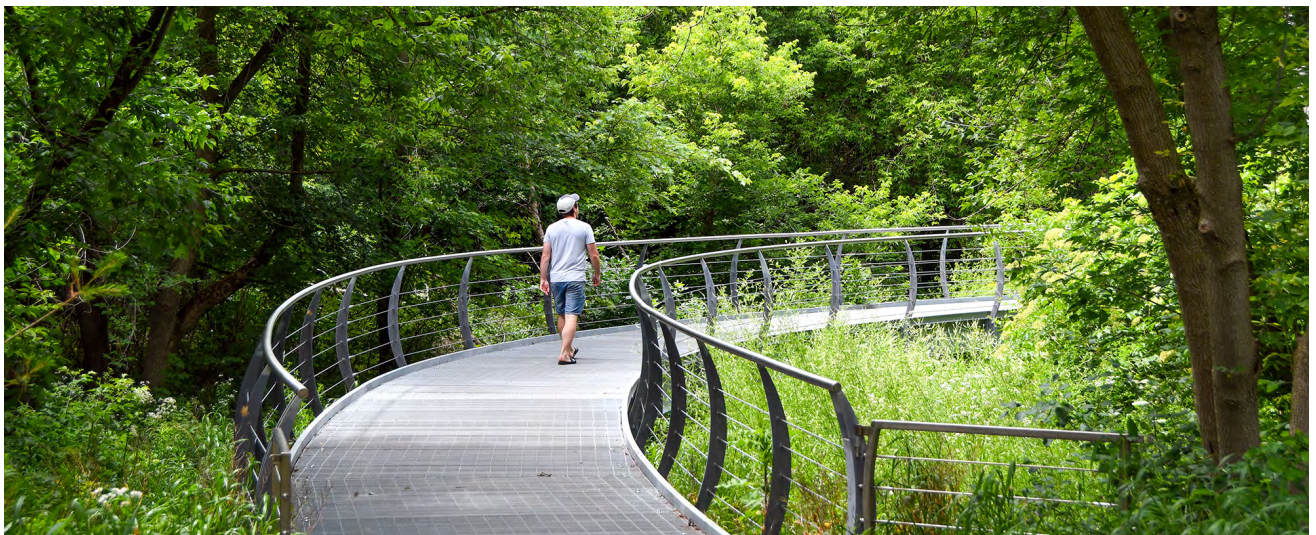
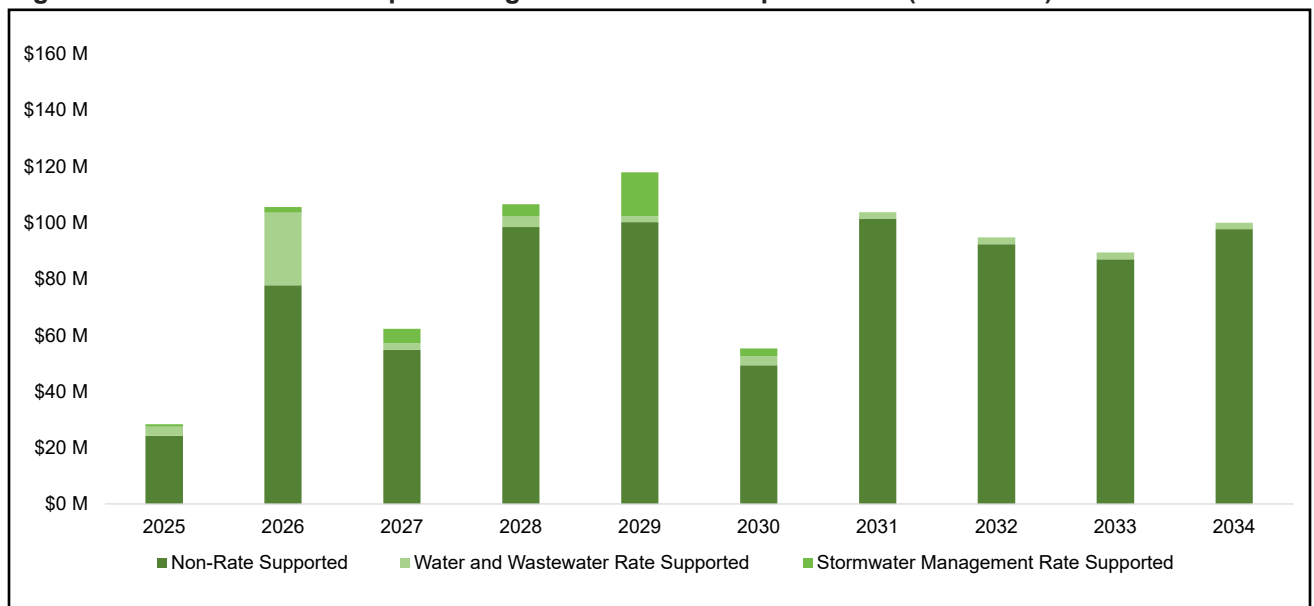


5.2.4 Growth (Capital)

Growth needs projections are developed by 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). These plans study changing growth needs, emerging priorities and external circumstances. The master planning 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.

Projected growth needs from master plans are integrated into the City's 10-Year Capital Budget and Forecast. The data from that forecast is provided below. Growth projections by service are also provided in the Appendices.

Figure 29: Growth-Related Capital Budget and Forecast Expenditures (2025-2034) - All Services



Trans Richmond Trail

Figure 30: Growth-Related Capital Budget and Forecast Expenditures (2025-2034) - Non-Rate Supported Services

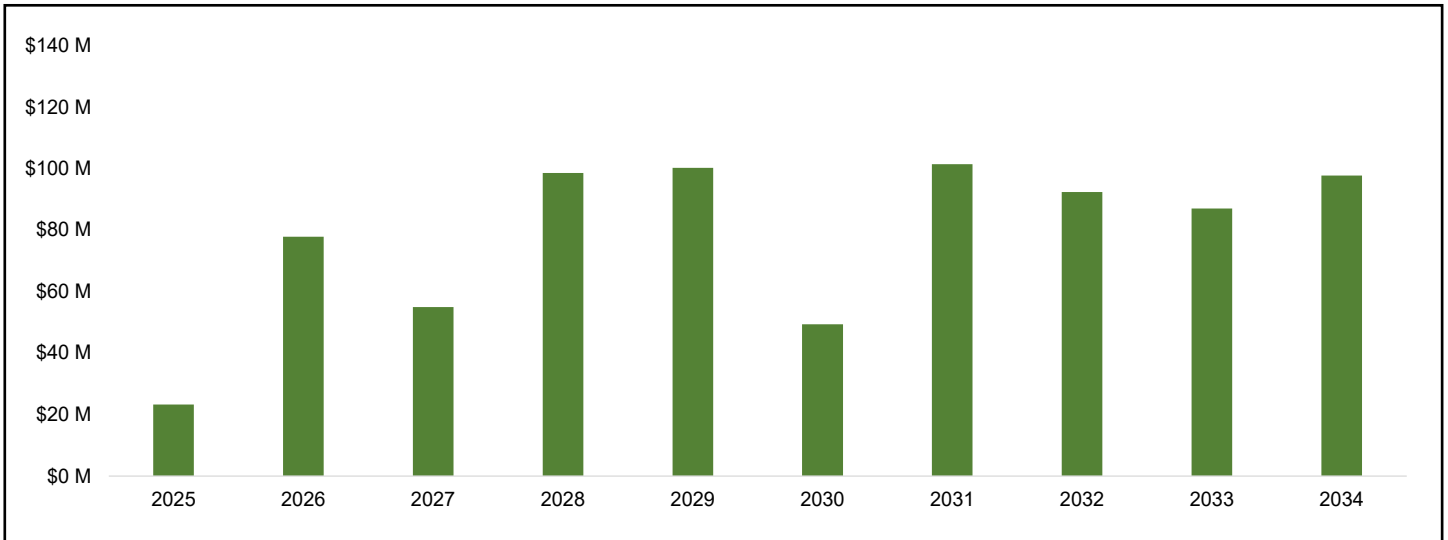


Figure 31: Growth-Related Capital Budget and Forecast Expenditures (2025-2034) - Water and Wastewater

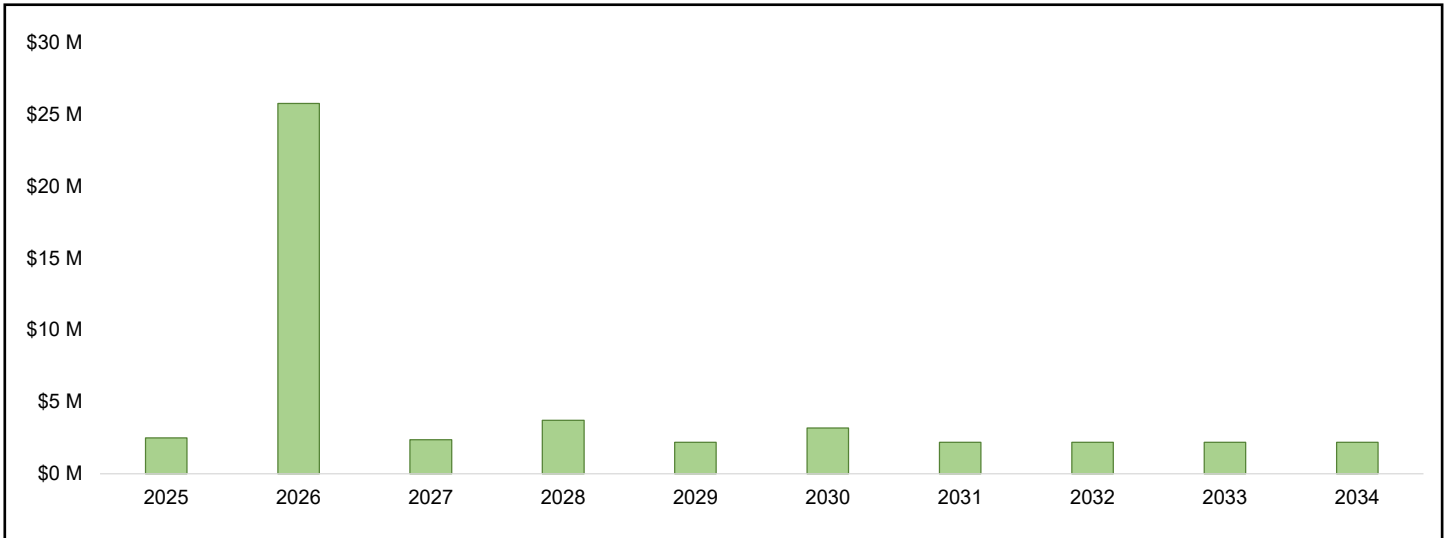
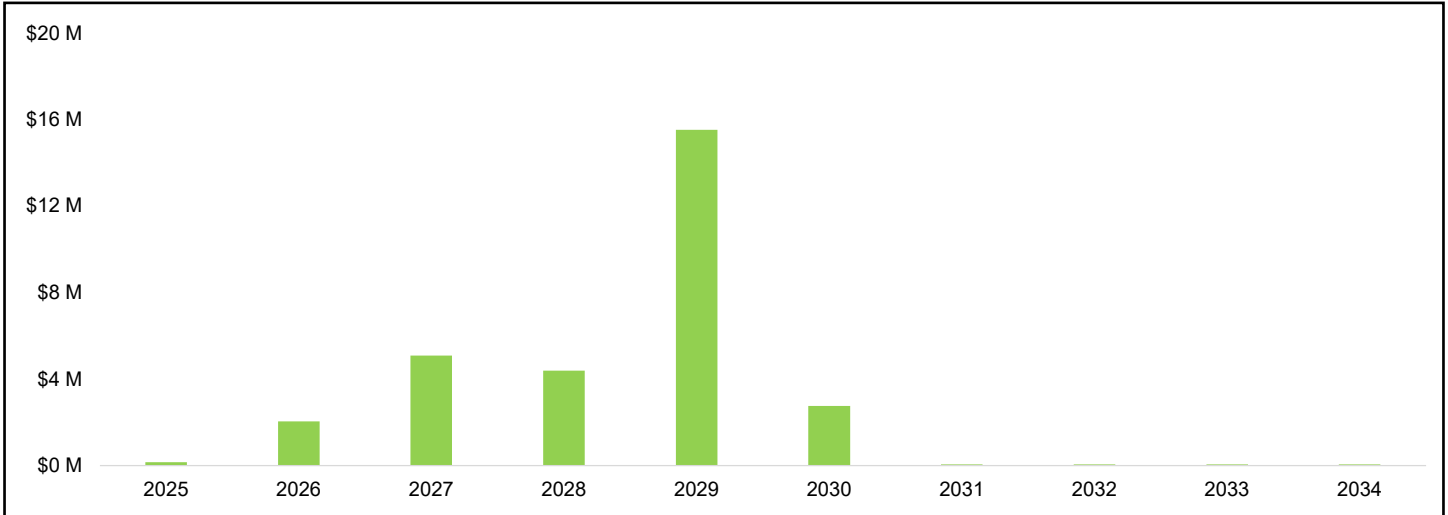


Figure 32: Growth-Related Capital Budget and Forecast Expenditures (2025-2034) - Stormwater Management



5.2.5 Operating Expenditures

The City's operating budget needs were forecasted over a 10-year time horizon for this 2025 AM Plan. The City currently enacts a process whereby it sets its operating budgets annually, and produces a 3-year forecast in the operating budget. The forecasts were extended to 10 years for this AM Plan to meet the requirements of *O. Reg. 588/17*.

The operating budget forecast was completed by trending forward the City's current operating budget. Furthermore, proportional increases were applied, corresponding to the increase in capital needs projected by the City's 10-year growth forecasts. This represents estimated increases in the operating budget associated with population and employment growth as well as the resulting increase in capital growth-related needs.

In the cases of certain service areas, preliminary opinions by subject matter experts have shed light on pressures to the operating budget that may be experienced by these services. For example, an increase in intensification to some residential areas may result in more traffic on local roads, and a need for additional road maintenance. While these factors are understood by the City's subject matter experts, additional analysis may be required before they can be quantified and built into forecasts. The Appendices to this AM Plan provide detail on some expected operating budget pressures in the narrative associated with operating budget forecasts.

Figure 33: Operating Expenditures Forecast (2025-2034) - All Services

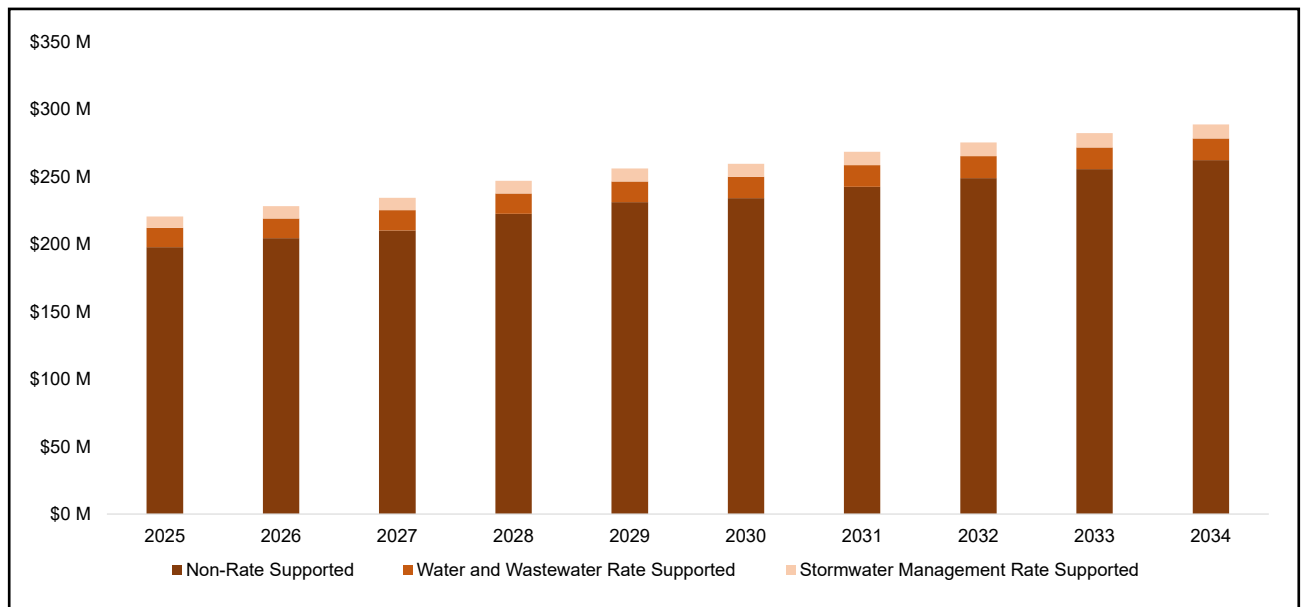


Figure 34: Operating Expenditures Forecast (2025-2034) - Non-Rate Supported Services

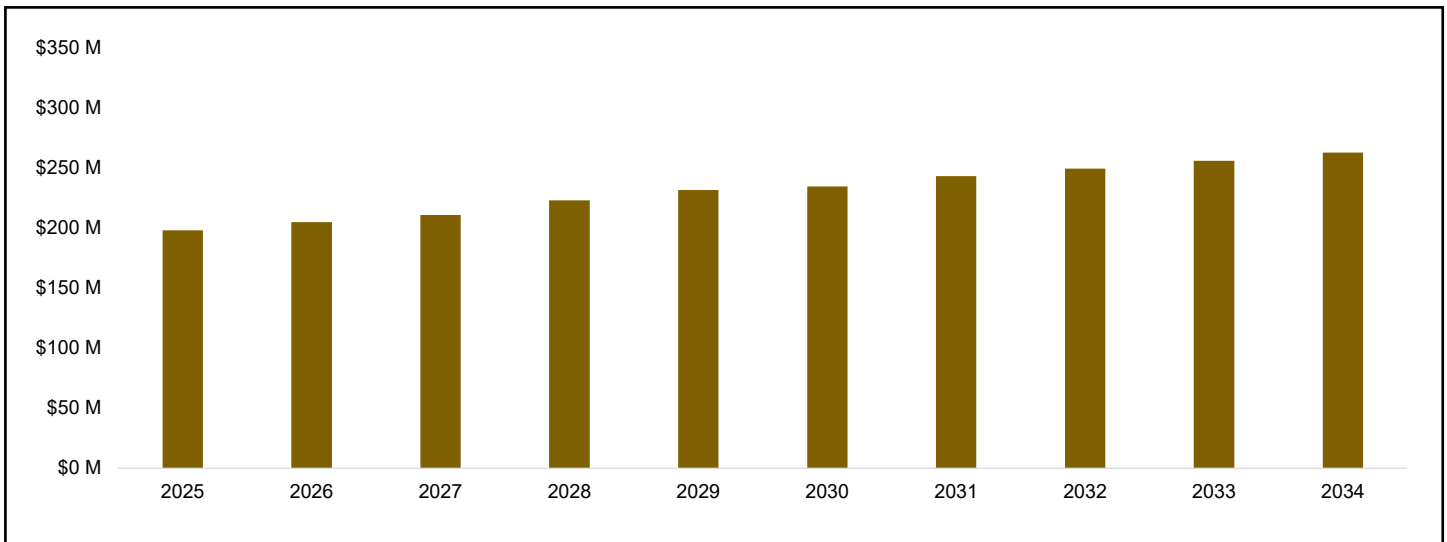


Figure 35: Operating Expenditures Forecast (2025-2034) - Water and Wastewater Rate Supported Services

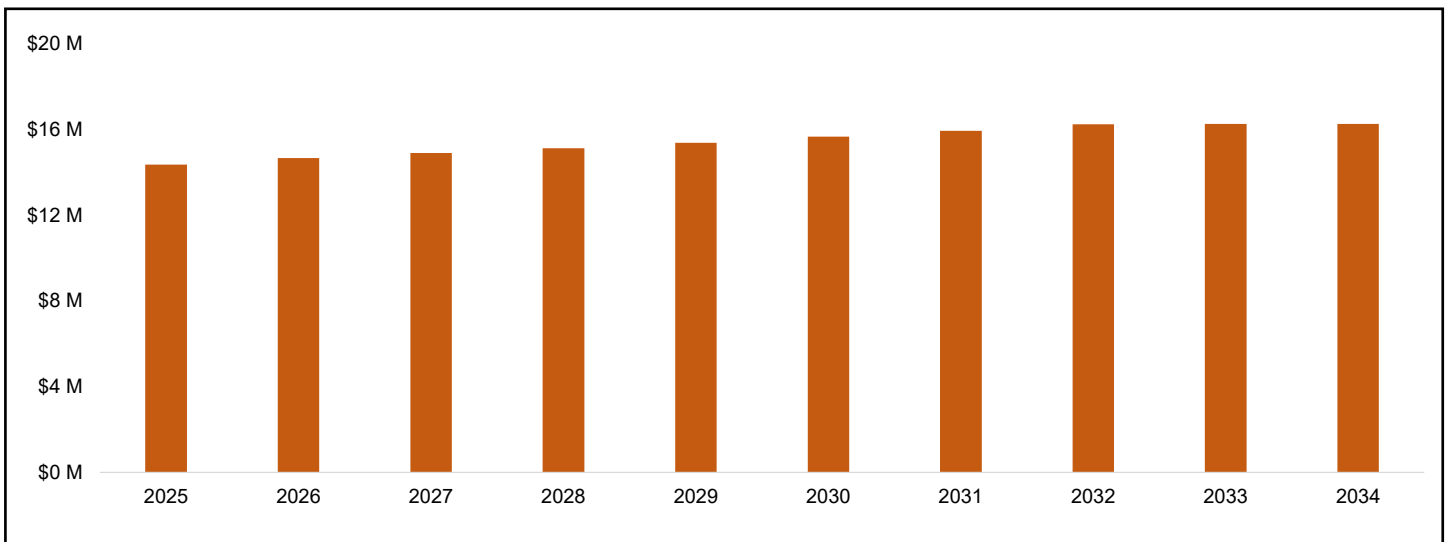
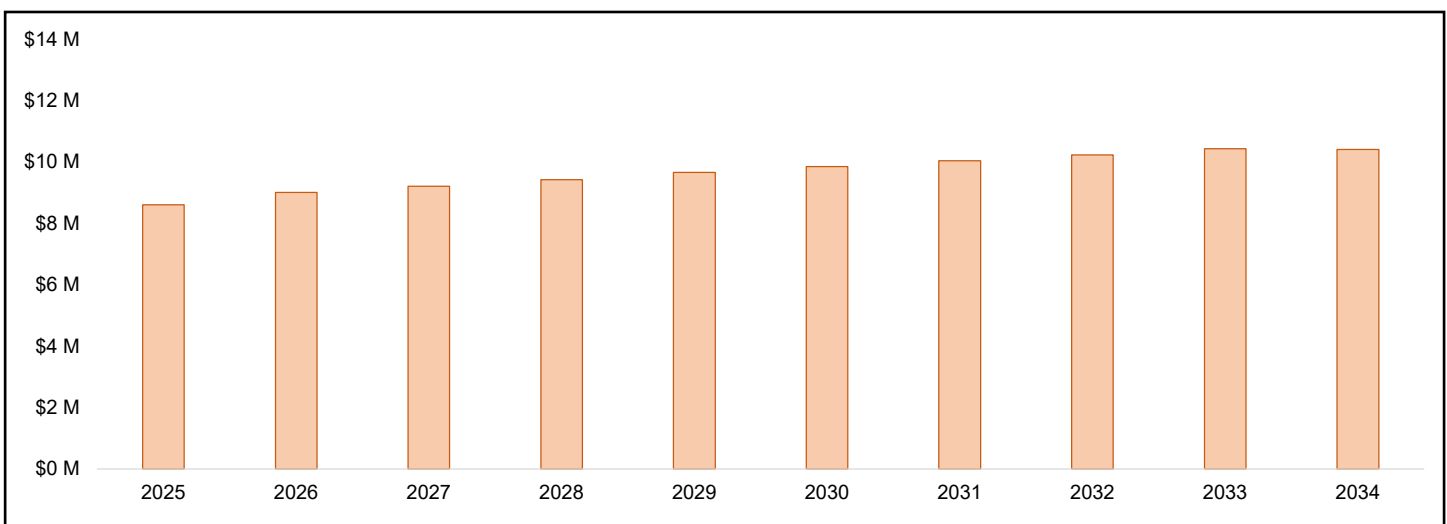


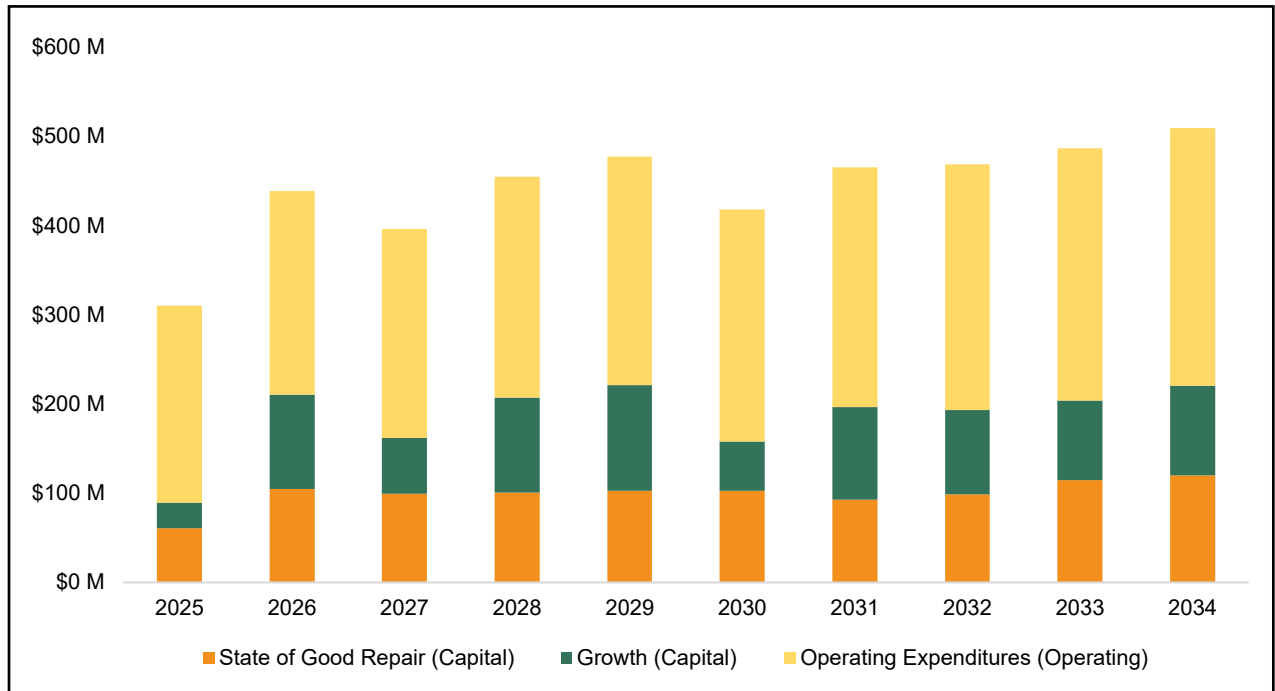
Figure 36: Operating Expenditures Forecast (2025-2034) - Stormwater Management Rate Supported Services



5.2.6 Total Projected Asset Needs

The City's total projected asset needs over 10 years is illustrated in the following figures.

Figure 37: Total Projected Asset Needs (2025-2034)



Bethesda Side Road

Figure 38: Total Projected Asset Needs (2025-2034) - Non-Rate Supported Services

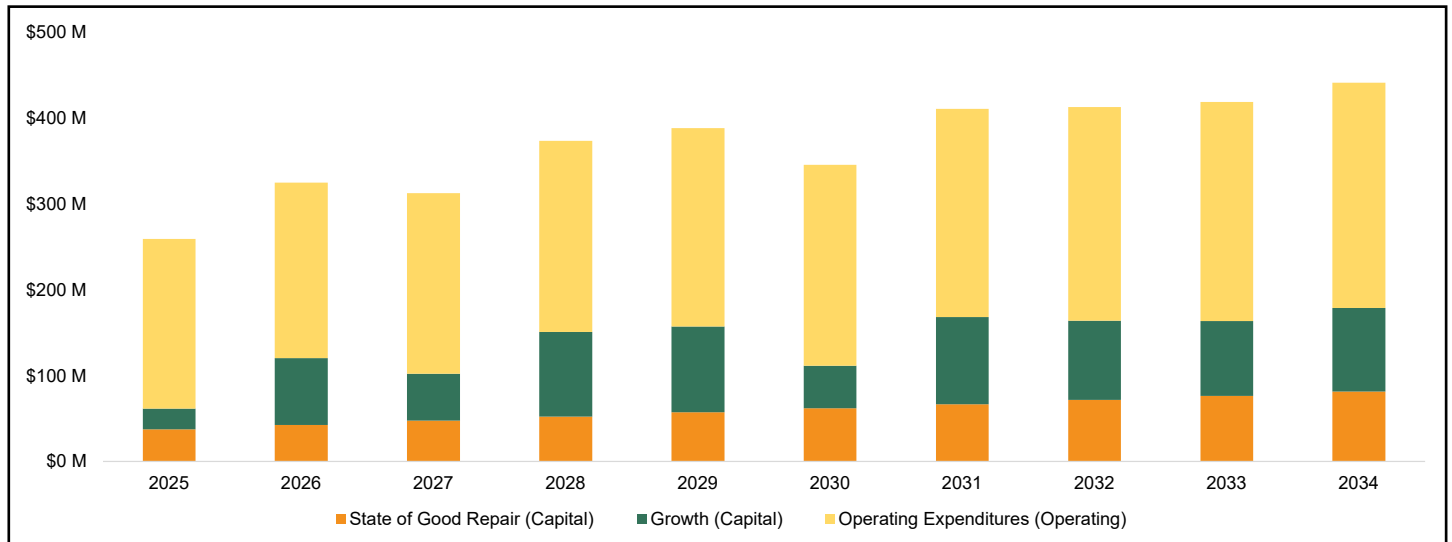


Figure 39: Total Projected Asset Needs (2025-2034) - Water and Wastewater Rate Supported Services

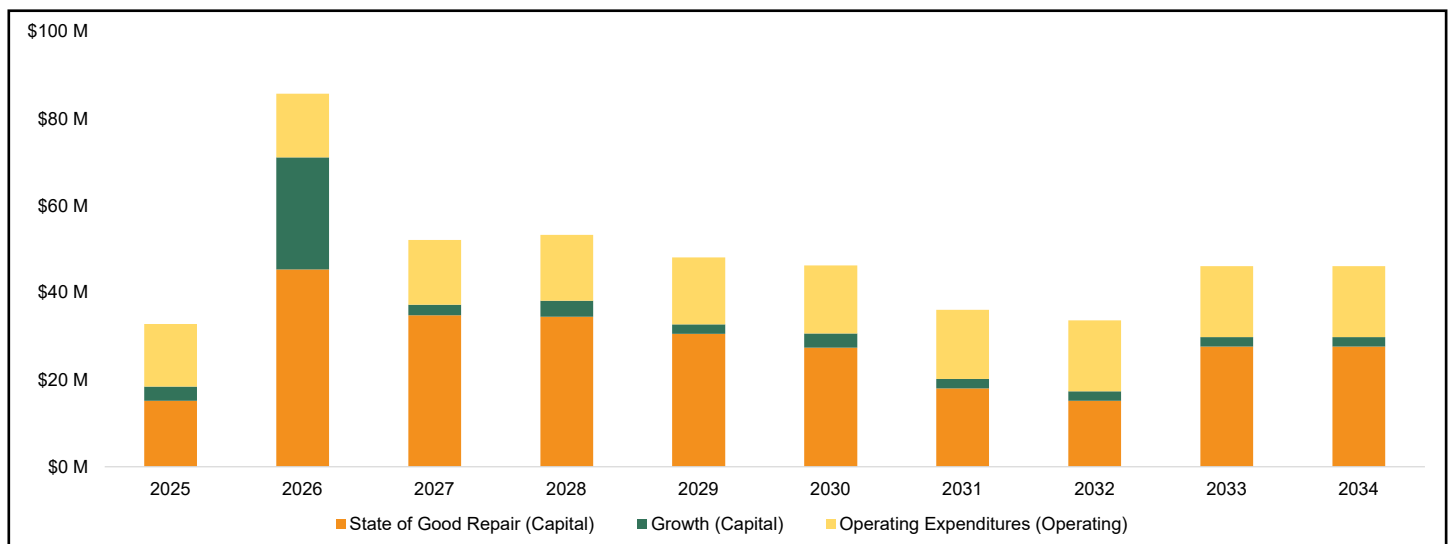
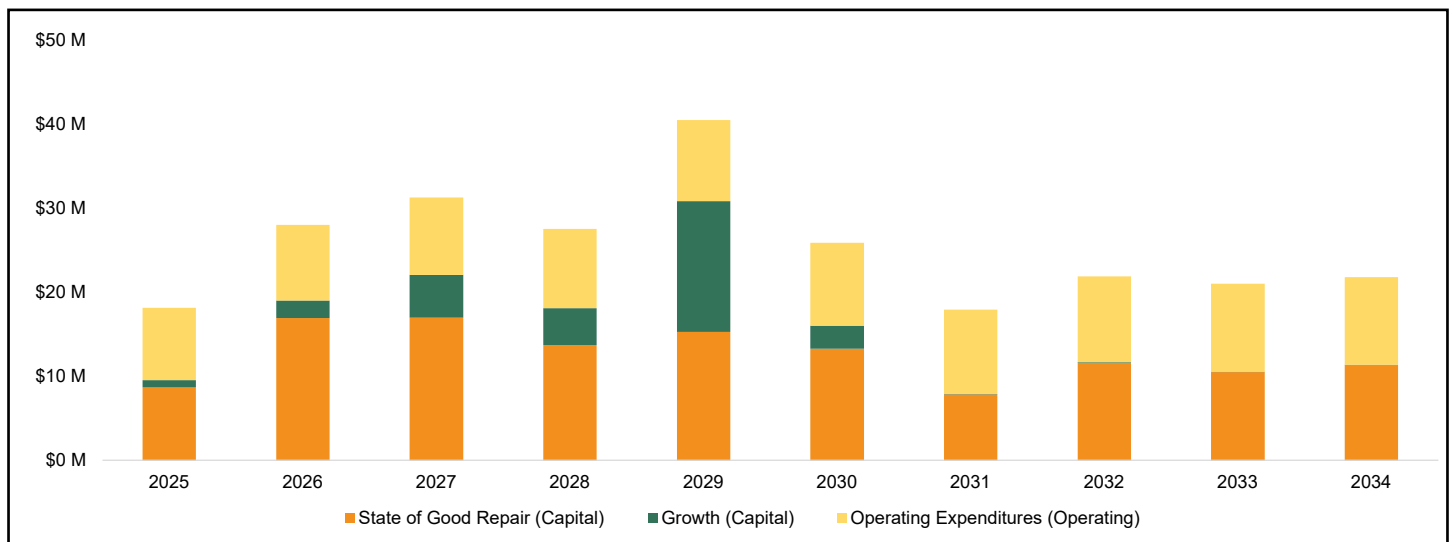


Figure 40: Total Projected Asset Needs (2025-2034) - Stormwater Management Rate Supported Services



5.3 Forecasting Available Funding

Projections of funding available to the City assist in identifying an infrastructure shortfall to meet the needs identified to achieve its proposed levels of service.

A key consideration of this financial strategy, and a new element in this 2025 Asset Management Plan, is an analysis and forecast of the funding that the City projects to be available to address the needs associated with achieving proposed levels of service.

The City receives funding from a variety of revenue sources. This revenue is collected to fund the various operations and other activities that the City enacts to deliver services to the community. The following funding sources are available to the City.

Taxes: Funds received from taxes are used for rehabilitation of the City's existing infrastructure to maintain them in a state of good repair, fund infrastructure renewal projects and various strategic priorities. It is also used to fund the City's share of growth projects for any benefit to existing development.

Water and Wastewater Rates: Water and Wastewater services rely on user rates and fees to cover service costs. The Water and Wastewater Budget reflects the costs and revenues associated with the maintenance of the Water Distribution and Wastewater Collection systems and is mainly funded through water and wastewater consumption rates.

Stormwater Management Rate: Stormwater Management in Richmond Hill is a City-wide service to protect the environment, water quality and community. Stormwater is comprised of rain or melting snow that flows into the storm sewers or stormwater management ponds in all areas of the City. The Stormwater Management Rate funds the ongoing maintenance and rehabilitation of Richmond Hill's stormwater facilities.

Development Charges (DCs): Development charges are fees collected by the City for new development and redevelopment of land. Collecting development charges is the City's primary revenue tool for funding growth-related capital costs. This reduces the overall burden on the taxpayer.

Canada Community Building Fund (CCBF): Introduced in 2005, the Canada Community Building Fund (formerly known as Federal Gas Tax) provides Ontario municipalities with a source of stable, predictable, and long-term funding towards environmentally sustainable municipal infrastructure. Recent changes to the Canada Community Building Fund expanded the list of eligible capital uses that allow for greater funding towards the City's strategic priorities.

Other Sources: The City has other reserves and reserve funds which are used to fund capital projects. This would include Cash-in-Lieu of Parkland (which is used to fund the purchase and development of new parkland) as well as a collection of various internal sources that are used to fund specific assets (e.g. Theatre Repair and Replacement, Terrestrial Natural Area Restoration, Non-Growth).

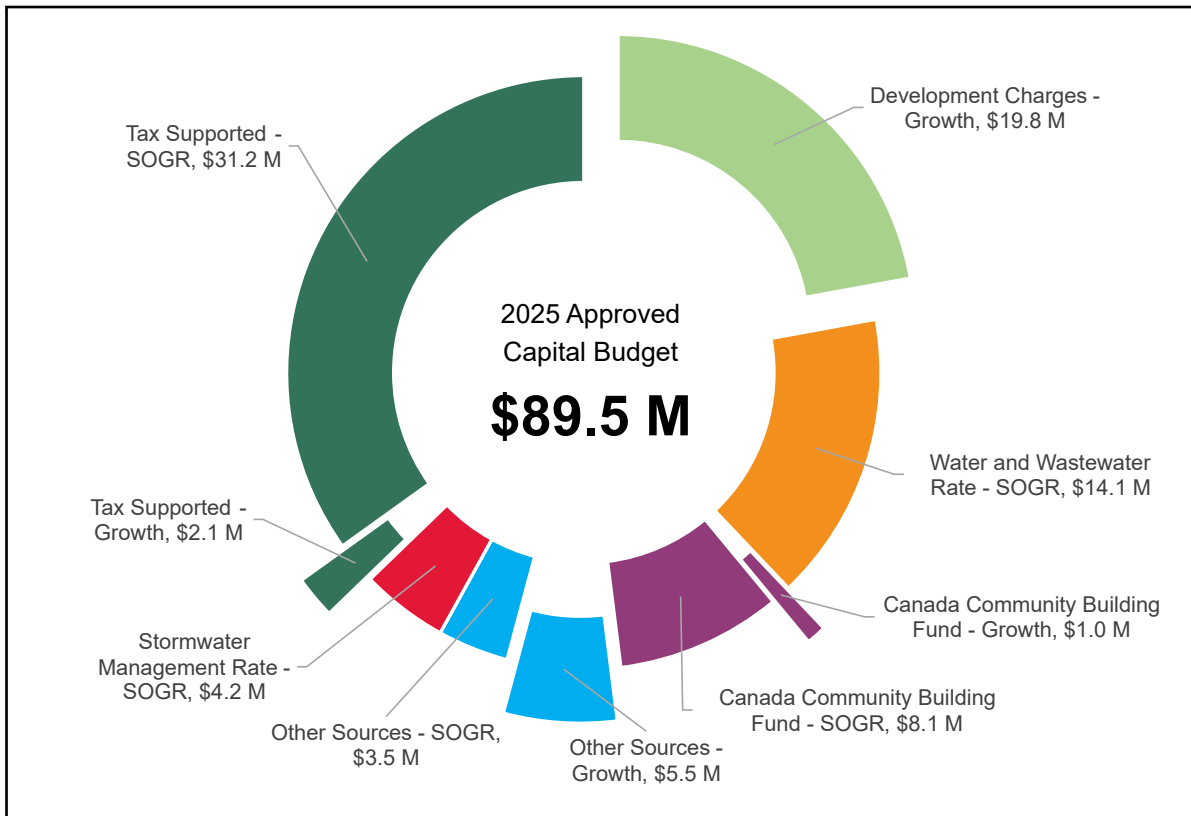
Other funding sources that are potentially available to the City but are not necessarily included within this analysis include the following.

Grant Funding: Funding may be provided by other levels of government in the form of grants. This funding source was not considered in the City’s analysis except in certain instances where it has already been secured by the City.

Debt Financing: a loan that is issued to the City, which must be repaid with interest. The City does not typically elect to use debt financing and only relies on it when absolutely necessary, and therefore, it is not considered in this analysis except in certain instances when it has already been approved by the City.

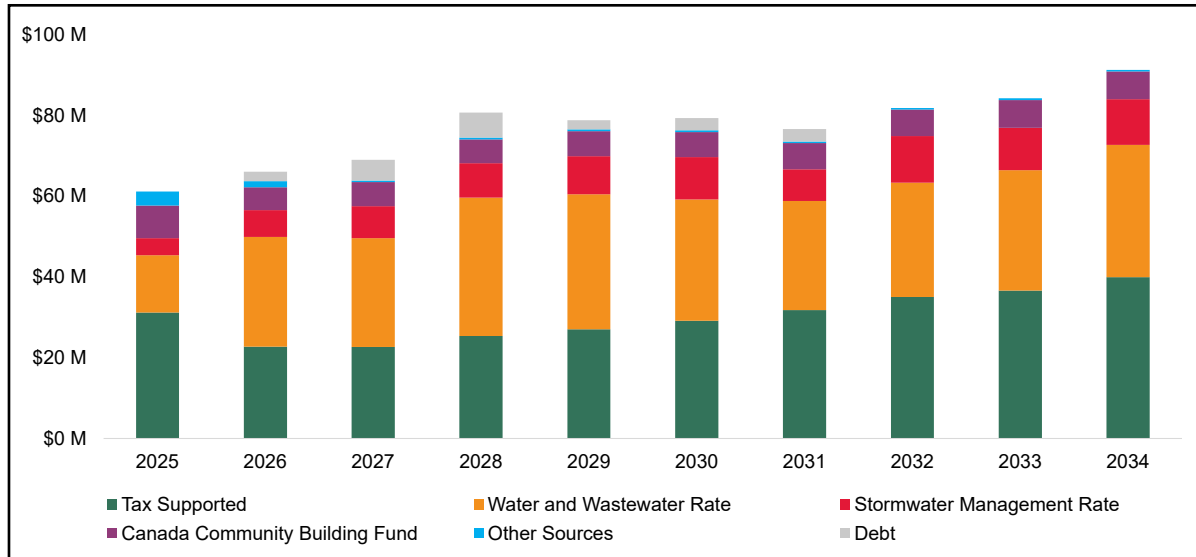
These various funding sources are used to finance the City’s operating and capital budgets. The City’s operating budget must be fully funded each year. As a result, funding allocated towards operating expenditures has not been considered in this funding forecast and only funding related to capital expenditures has been considered. The following figure provides a breakdown of the City’s capital funding for its 2025 budget, by source. The figure illustrates the division of each funding source between growth and SOGR.

Figure 41: 2025 Capital Budget Funding Breakdown



Funding that is allocated towards growth needs, such as development charges, cannot be used to fund state of good repair needs. This funding is based on the City’s capital growth forecasts. As a result, this AM Plan utilizes the assumption that “growth pays for growth”, and therefore growth projections are fully funded. Therefore, this financial strategy analyzes infrastructure shortfalls for state of good repair needs only. The following figures illustrate the City’s revenue forecasts for state of good repair needs, by source. Note that it includes debt in some years, which has been approved to assist in funding state of good repair needs for stormwater assets.

Figure 42: State of Good Repair Revenue Forecast (2025-2034) - All Services



Palmer Park

Figure 43: State of Good Repair Revenue Forecast (2025-2034) - Non-Rate Supported Services

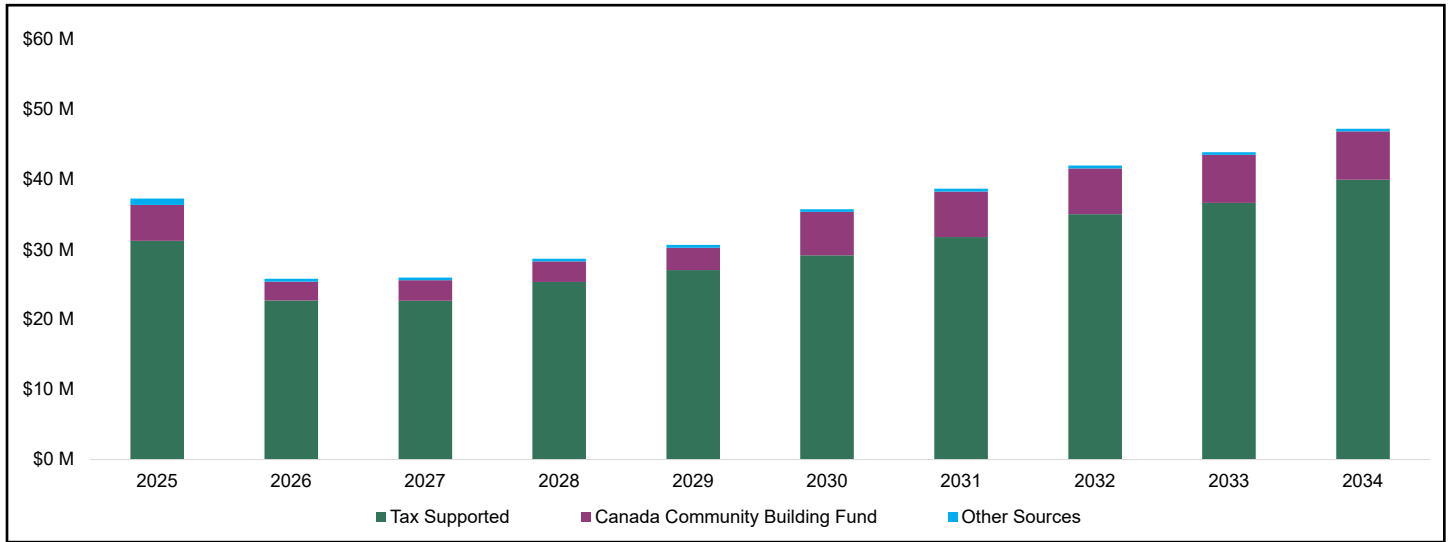


Figure 44: State of Good Repair Revenue Forecast (2025-2034) - Water and Wastewater Rate Supported Services

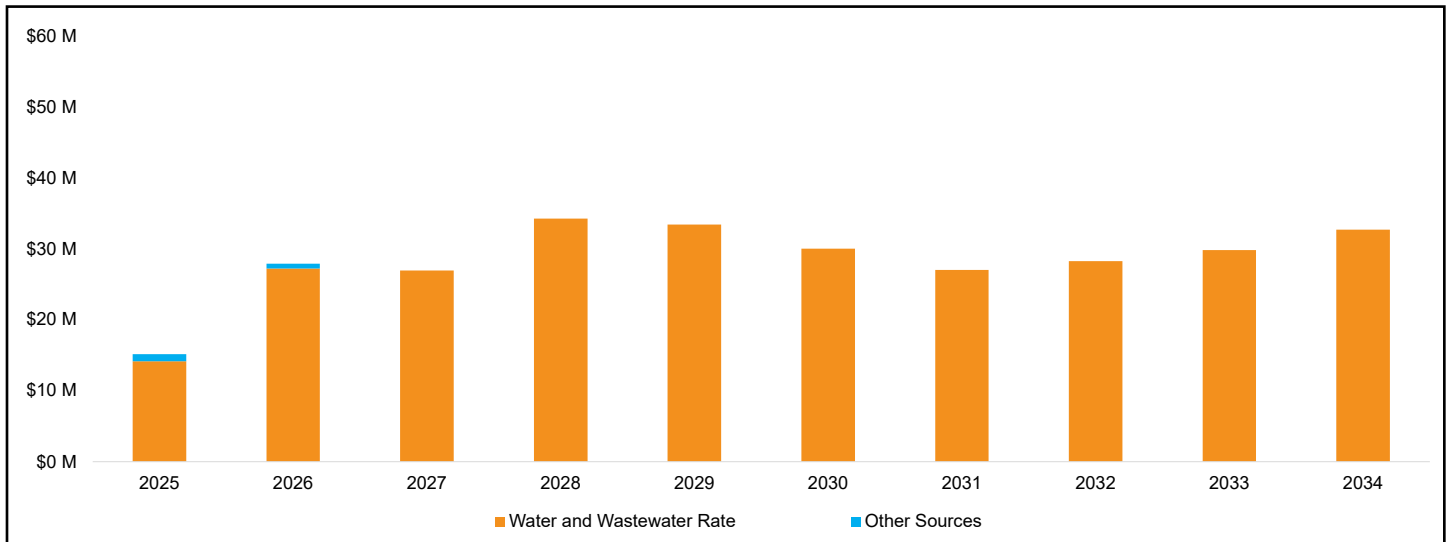
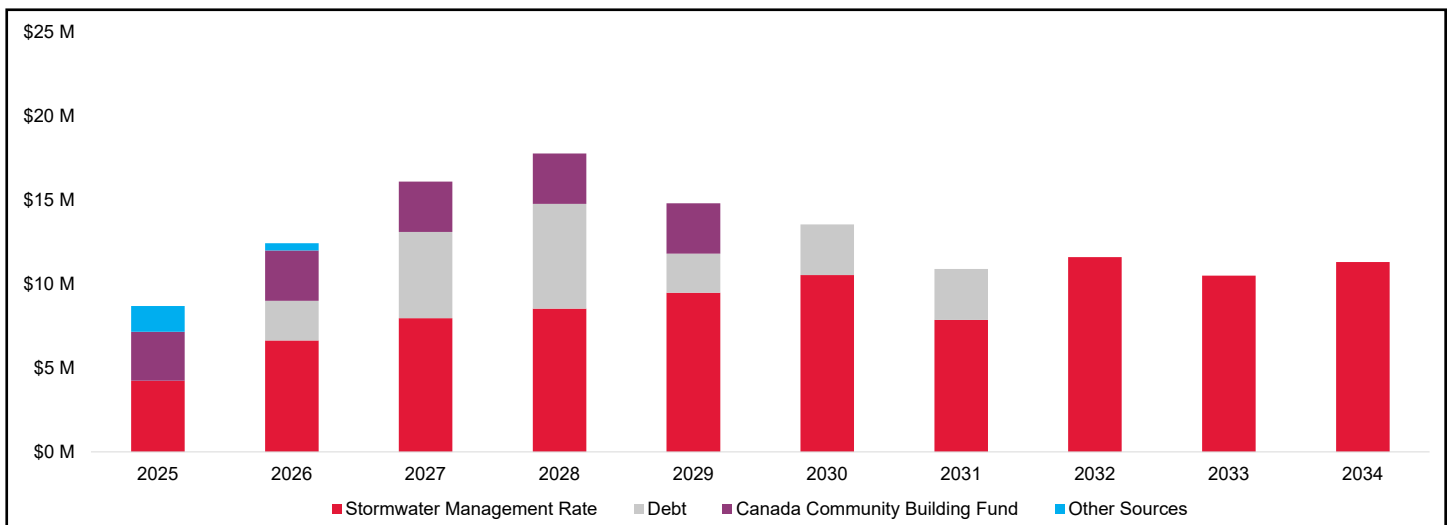


Figure 45: State of Good Repair Revenue Forecast (2025-2034) - Stormwater Management Rate Supported Services



*Based on the approved Stormwater Management Financial Plan, \$3 M in Canada Community Building Fund (CCBF) funding will be used annually for the first five years, and \$22 M of debt will be issued to smooth stormwater management rate increases.

The City's revenue forecasts will be compared to the state of good repair asset needs to identify funding shortfalls. The revenue forecasts presented herein were developed under the following assumptions:

- Revenue forecasts are based on an assumption that population growth is aligned with the City's Official Plan.
- The tax revenue forecasts include an implemented Capital Asset Sustainability (CAS) levy of 1.5%. It was assumed that this levy will remain constant over the 10-year forecast period.
- Revenue from reserve fund balances have generally not been included in these forecasts. Reserve allocations are determined annually as part of the City's Capital Budget and Forecast process. The City strives to maintain a healthy balance of reserve funds, to ensure that they are available to address needs when required.
- This strategy was developed under the assumption that growth needs and operating expenditures will be funded in full moving forward. The funding shortfall analysis is therefore focused on state of good repair projections.

5.4 Identifying and Managing Funding Shortfalls

5.4.1 Identifying Funding Shortfalls for State of Good Repair

The City has identified a funding shortfall for non-rate supported assets. This financial plan discusses strategies to address this shortfall, as well as to manage the risks associated with the shortfall.

The City's state of good repair needs were compared to projected revenue for the three major groupings in this financial strategy: non-rate supported services, water/wastewater rate supported services, and stormwater management rate supported services. The forecasts were aggregated into these categories to represent the funding envelopes that are tied to specific assets (i.e. water/wastewater and stormwater) and cannot be utilized across other asset portfolios. The following figures illustrate the comparison of state of good repair needs to projected revenue.

Figure 46: Funding Shortfall (2025-2034) - All Services

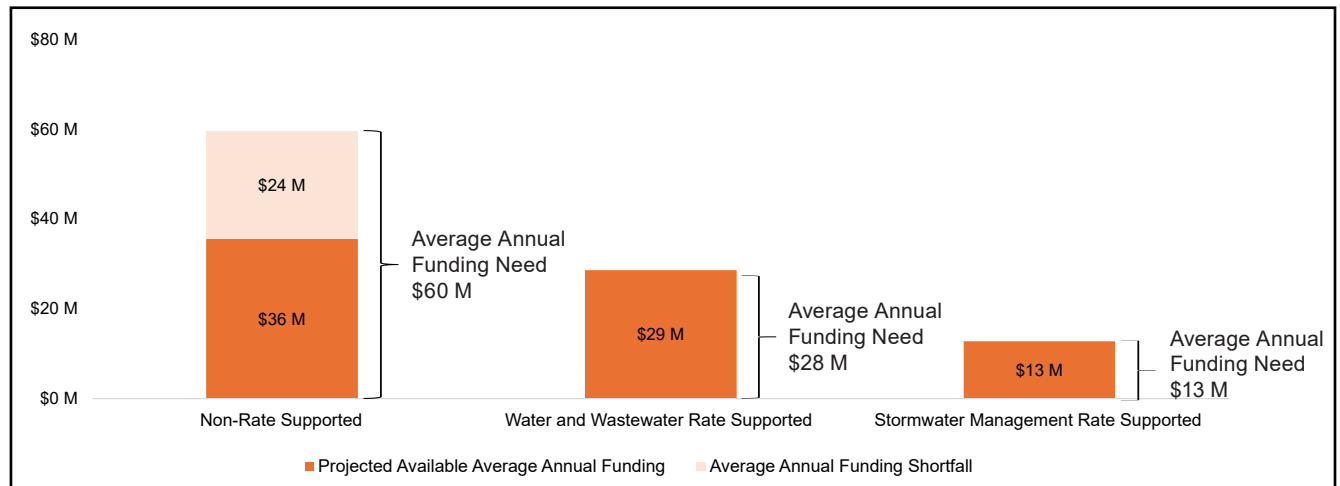


Figure 47: Comparison of Needs and Funding (2025-2034) - Non-Rate Supported Services

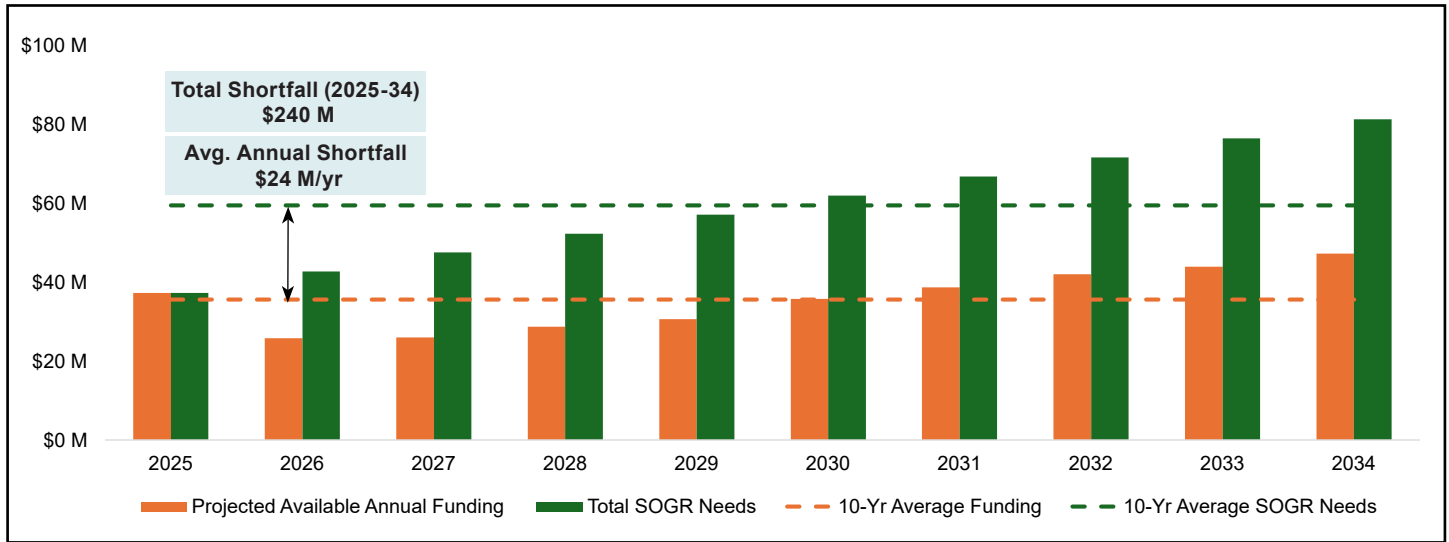


Figure 48: Comparison of Needs and Funding (2025-2034) - Water and Wastewater Rate Supported Services

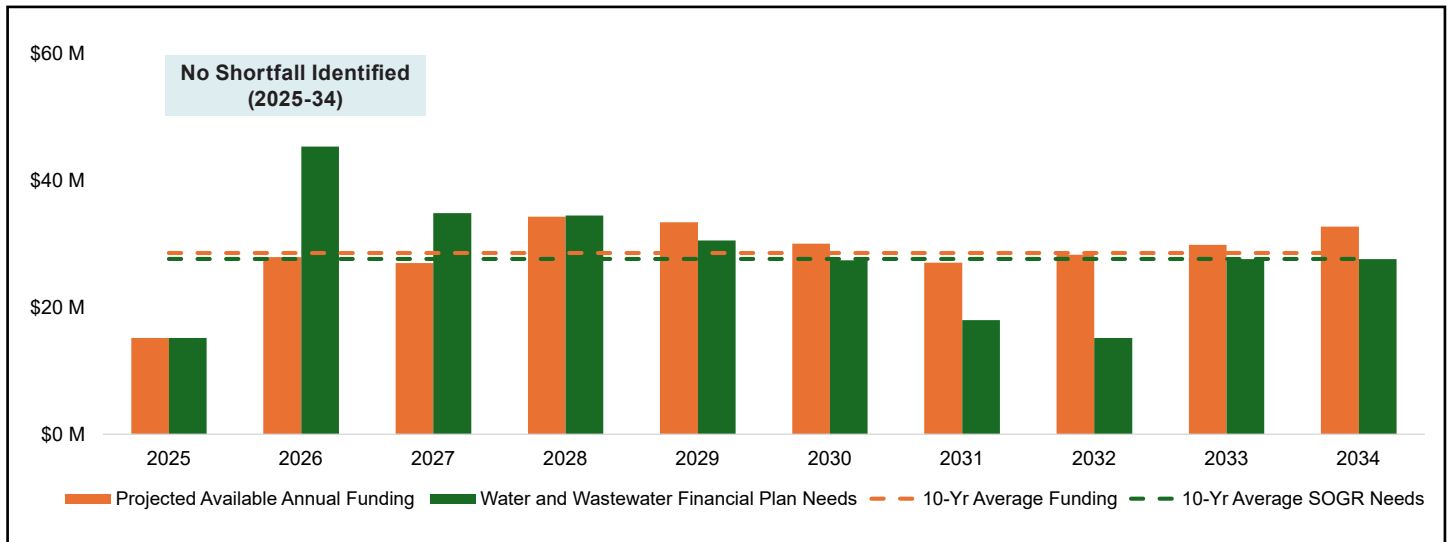
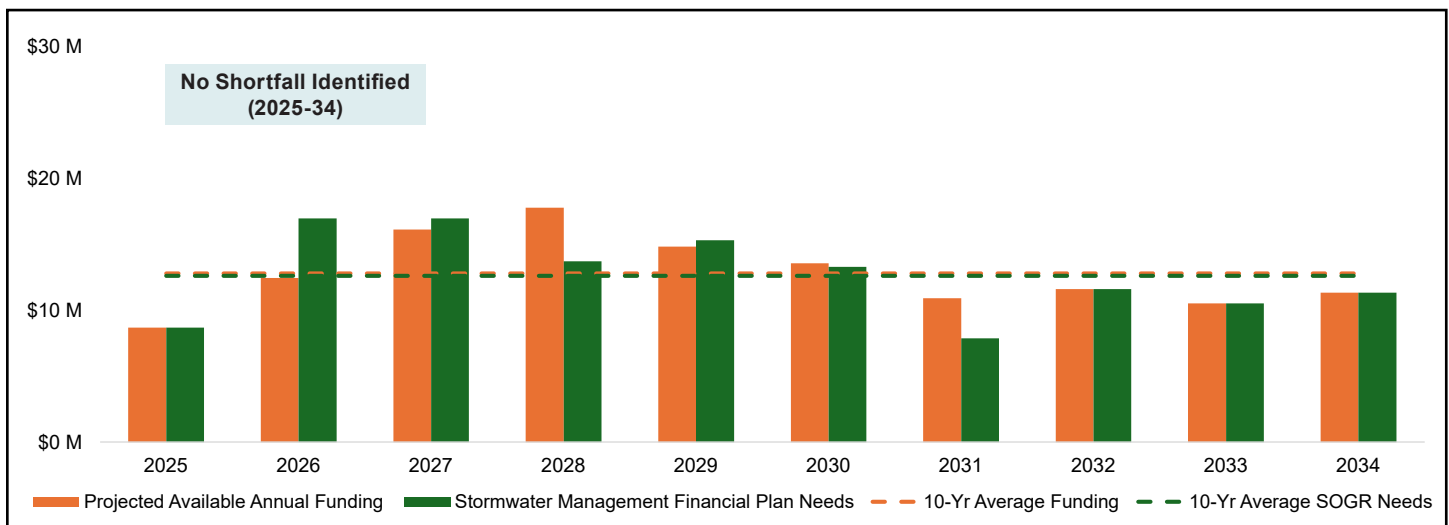


Figure 49: Comparison of Needs and Funding (2025-2034) - Stormwater Management Rate Supported Services



5.4.2 Managing the Shortfall

Non-rate supported services have identified a shortfall of approximately \$240 M over 2025-2034, or an average of approximately \$24 M/yr. The needs for non-rate supported services are projected to increase steadily over the next 10 years, which is a function of the phased-in approach to achieving proposed service levels that the City has used to identify needs. Revenues are also projected to steadily increase over the next 10 years, however, the rate of increase of needs is larger, resulting in a shortfall of approximately \$240 M total from 2025 to 2034. Note that this shortfall is identified for the City's portfolio of non-rate supported services as a whole. The City can allocate funding towards the various assets within this group as needed to fund projects depending on need and risk.

Water/wastewater and stormwater management rate funded services have not identified a shortfall. Excesses in revenue should be contributed to reserves for this asset group, which will assist the City in managing longer-term pressures beyond the 10-year time horizon of this financial strategy.

This financial strategy explores two facets related to the identification of a shortfall in non-rate supported assets. First, it explores several options for mitigating the shortfall, which are organized under three headings: adjusting lifecycle strategies, adjusting asset performance expectations, and increasing funding. Second, it explores the City's approach to managing risks while operating under a shortfall or enacting these strategies. The following subsections provide this commentary for the City as a whole. In addition to this, in each of the Appendices, a section entitled "Future Outlook - Managing Lifecycle Needs and Mitigating Risks" provides additional commentary specific to each service area.

5.4.2.1 Options for Managing the Shortfall

This Asset Management Plan presents the following strategies for managing the shortfall identified for the asset groups noted above. Each of these strategies should be carefully considered to ensure that the City is supporting its data-driven decisions that balance the financial needs, service level priorities and risks to the community. The following discusses these strategies in more detail.

Adjusting Lifecycle Strategies

Within this AM Plan, the City has identified the lifecycle strategies and projected performance that it will enact to meet its proposed levels of service objectives. To mitigate funding gaps, the City can consider adjusting lifecycle strategies, which may include the options provided below. Additional detailed strategies that apply to individual service areas are also detailed in the Appendices.

- **Extend asset service life:** the City could extend its planned service life for certain asset groups that will not take on risk by doing so. The City should consider the implications of this strategy on asset maintenance, and should strive to balance maintenance and renewal costs to ensure it is replacing assets at the most financially optimal time.

- Adopt new rehabilitation or renewal lifecycle strategies for applicable assets: assets that are traditionally replaced could instead be rehabilitated or refurbished to extend asset life at a potential lower cost. The benefits of rehabilitation/refurbishment as opposed to replacement should be evaluated on a case-by-case basis to ensure that the City is taking the most financially prudent approach to lifecycle planning.
- Shift renewal focus to high-risk/critical assets: when assets have competing priority amongst limited funding, renewal work for low risk/low criticality assets could be deferred to ensure that high priority assets are maintained. This should have the effect of maximizing service levels to the community and minimizing risks.
- Re-evaluate the City's approach to backlog: the City is currently operating with a level of backlog that is equal to approximately 2.5% of its total asset replacement value. Furthermore, the City has adopted the approach in this AM Plan analysis of striving to eliminate backlog over a 27-year forecast period. The City can consider adapting its lifecycle strategies to maintain a safe and low-risk level of backlog into the future. In order to do this, it is recommended that the City expand its levels of service strategies to include additional measures that report on the health of the assets/service areas to ensure that services are not materially impacted while backlog exists.
- Adopt dynamic lifecycle strategies based on criticality: presently, the City has proposed the same lifecycle strategies for similar assets, independent of their criticality. The City could investigate and adopt strategies that allow less critical assets to remain in service longer than assets of the same type with higher criticality. This would assist in easing financial pressures while keeping risks low.

Adjusting Asset Performance Expectations

The City's current proposed levels of service are established with the intent of maintaining the City's current high performance in delivering services via assets to the community. The City has also benefited from the fact that it is relatively young, and that many assets (particularly the more expensive ones) are in the early or mid-stages of their service life. As assets continue to age, the City may need to adjust asset performance expectations and operate at a lower level of service while mitigating risks. Best practices would be to engage the community to evaluate their willingness to pay against service levels and asset performance.

Increasing Funding

Where funding gaps are identified, the City can seek additional funding to increase spending and undertake additional capital renewal works. The following options are possible to increase funding.

- Modest increases to property taxation and/or user rates: the City can increase taxes or rates above baseline revenue increases to generate more revenue.
- Seek grant funding: the City can seek grant funding from the federal and/or provincial governments. The City has done so in the past on a case-by-case basis and can employ this strategy again moving forward.

- Increase the CAS levy: the City can increase the CAS levy (currently at 1.5%) to generate more revenue.
- Draw from reserves: available reserves can be used to balance near-term shortfalls and excesses. Currently, the City has identified a funding shortfall for non-rate-supported service areas. It can utilize a portion of its remaining reserve fund balances to address the shortfall; however, it should be noted that the balance is not large enough to address the entire 10-year shortfall identified in this financial strategy. Reserves are intended to be allocated in times where there are larger needs. Therefore, reserve funds can be utilized to address short-term pressures, but the City should strive to keep reserves healthy and in balance in the long term.
- Consider debt financing: the City generally attempts to avoid debt financing wherever possible, but may utilize it to address short-term gaps in funding. Note that the City has already approved some near-term debt financing related to state of good repair needs for its stormwater management assets.

Each of the abovementioned options can assist the City in managing the identified shortfall; however, a balance of these strategies will likely provide the most effective solution. As a result, this 2025 AM Plan is recommending that the City move forward with a more detailed analysis of these possible options. This will help the City determine the effect of each option (or combinations of the options) that provides an appropriate balance of risks, levels of service and costs. The City's Corporate Asset Management Team will continue to work with the various City stakeholders to complete this analysis in the coming years. The City will report its progress to Council on its continued asset management work through annual updates—a requirement of *O. Reg. 588/17*.

5.4.2.2 Managing Risks Associated with the Shortfall

Where funding shortfalls and backlogs exist, the City is not always able to complete capital renewal works to all assets that are currently in need. It is important to note that this does not necessarily mean that the City is exposing the community to risk in doing so. The City constantly ensures that assets are in service and operating well to preserve community safety and maximize service delivery. It achieves this through a number of approaches, including:

- Prioritizing high risk/critical assets for renewals: the City enacts a robust risk management evaluation of its capital projects each year to support the development of its capital budget. It uses a standardized and common prioritization system that incorporates the City's Risk Management strategy and framework to assist in project selection. By doing this, it ensures that high-risk projects are prioritized.
- Increasing maintenance activities: assets that are in need of renewals will likely experience increased maintenance to ensure that they remain performing well and to ensure that risks remain low.
- Increasing monitoring: assets in need of renewals may have increased monitoring/inspection frequencies to ensure that they remain in service and performing as intended. Increasing monitoring/inspection frequencies allows the City to intervene at an appropriate time to ensure risks to the community remain low.

5.5 Implementing the Asset Management Plan and Financial Strategy

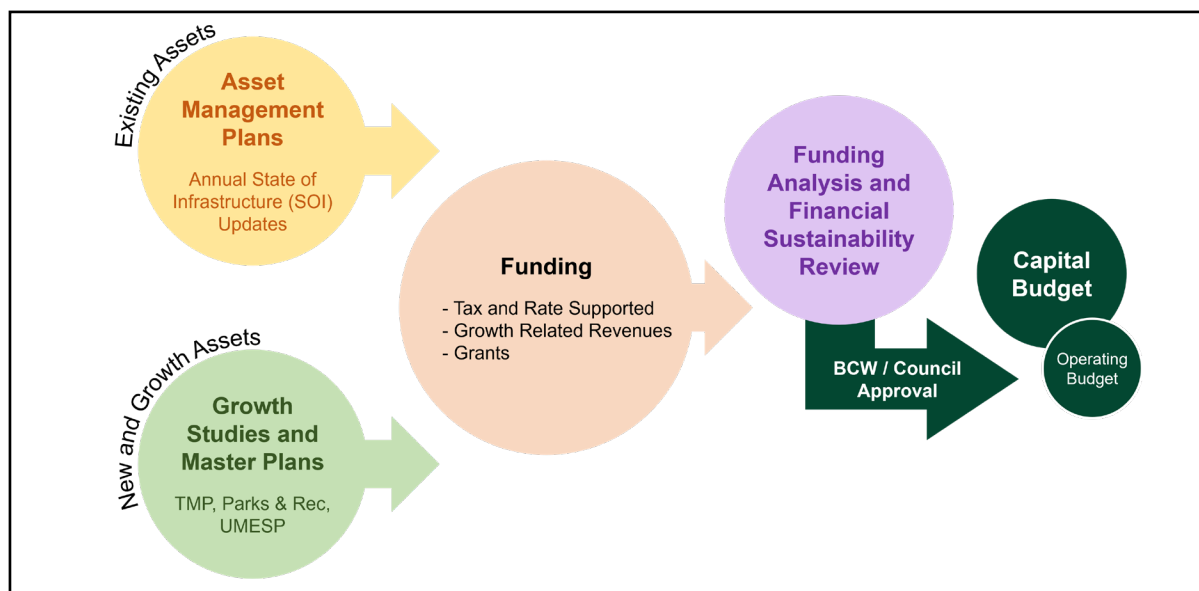
5.5.1 Supporting the City's Annual Capital Budgeting Process

This 2025 Asset Management Plan is primarily implemented via its integration into the City's Capital Budgeting process. The Asset Management analysis completed in this AM Plan aids in suggesting state of good repair asset renewal needs and helps guide their priority through the Corporate Asset Management Risk Framework.

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, lifecycle 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.

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.

Figure 50: 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), or new/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 financial strategy presented herein in the City's 2025 Asset Management Plan utilizes the asset management analysis completed for this AM Plan, which combines the State of the Infrastructure (Chapter 2), LOS (Chapter 3), and Asset Management Strategies (Chapter 5) to identify long-term asset needs that enable the City to achieve proposed levels of service for its assets. The results of this analysis will be implemented by supporting the City's 2026 capital budgeting process. This will assist the City's understanding of its state of good repair needs, project priorities and the resulting effects on performance into the long term.

The City will monitor the implementation of the asset management plan through annual reports to Council. This is not only a requirement of *O. Reg. 588/17*, but also part of a best practice that the City endeavours to continue. In 2023, the City developed its inaugural State of the Infrastructure Report for all assets. The City will continue to develop this report annually, which will form part of its annual reporting on the implementation of the AM Plan to Council. This report will be supplemented by other pertinent information as needed to inform Council on the progress of implementing this AM Plan and will capture any progress or changes that may occur year over year.

5.5.2 Risks to Implementation

The implementation of this 2025 AM Plan could face several risks. An understanding of these risks and an assessment of potential mitigations is a requirement of *O. Reg. 588/17*. The following details these risks and potential mitigations.

Data Confidence: The City collects detailed asset data including inventories and condition data that support the analysis completed for this AM Plan. The confidence of that data is correlated to the accuracy of the results presented herein. The City's data confidence is generally considered to be good on the whole; however, at present the City has not applied a data confidence framework to its asset data to provide a detailed and common framework for reporting its data confidence.

To mitigate this risk, the City can develop a data confidence framework and identify areas for data improvement to assist in improving future asset management analyses. Note that a change in data confidence may result in a change in the forecasting and financial analysis presented herein.

Climate Change: Climate change poses a significant risk to the City. The effects of climate change could have significant and costly impacts on the City's lifecycle management strategies for certain asset classes to ensure that they remain able to provide high quality services to the community. For example, increased precipitation events could produce flooding or accelerated deterioration to certain assets.

In response to this risk, the City has been proactively planning to address climate change through a series of initiatives. Refer to Section 4.4 in this AM Plan for further details on the City's efforts to date. The City will continue to advance its climate change initiatives to proactively respond to climate change.

Economic Climate: The economic climate of the City and Canada as a whole has been impacted by several economic factors in recent years. Recent bouts of high inflation have contributed to increased cost pressures on asset lifecycle activities such as procurement, maintenance and renewals. Furthermore, at the time of writing of this AM Plan, the United States has imposed tariffs on Canadian exports, and Canada has responded with counter-tariffs, which are likely to have financial impacts on the cost of delivering capital projects. In the face of economic uncertainty and/or increased cost pressures, the City's financial strategy and the implementation of this AM Plan could be affected.

To mitigate these concerns, the City assesses impacts to its current capital plan on an ongoing basis. It will continue to complete asset management analyses and detailed capital planning and prioritization exercises annually or as needed to rapidly adapt to changing situations in the economic climate, in order to ensure that the City responds appropriately and effectively.

Regulatory Environment: Changes in the regulatory environment occur from time to time, which may have impacts on the City's asset portfolio. Regulation changes may result in a need to modify, upgrade or replace certain assets ahead of schedule or for a different cost compared to the analysis that was completed in this AM Plan.

Through annual monitoring of the implementation of this AM Plan, as well as the City's annual capital planning process, the City can adapt and respond to these changes. This will allow the City to react accordingly and ensure that it can respond to changes as proactively as possible.

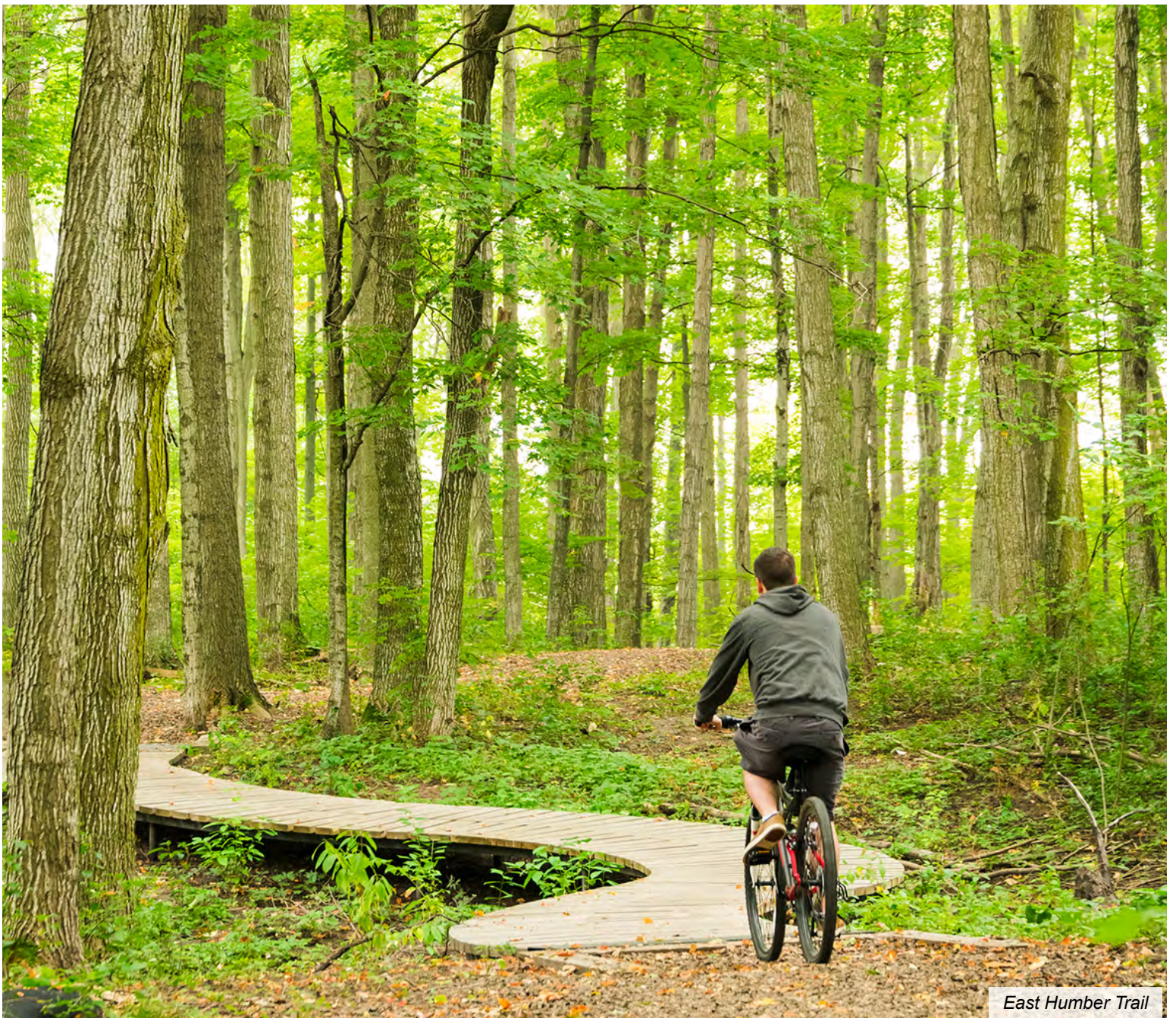
Change in Council Priorities: As Councils change over time, sometimes a change in priorities of elected officials has an impact on the priorities which affect the City's current capital planning processes.

City staff remain focused on delivering the best possible services to the community and will continue to do so through any changes in priorities. In the same manner as regulatory changes, the City will utilize its annual capital planning process to respond to these changes over time. Integration between this AM Plan and the capital planning process is integral to ensure that the City remains focused and able to respond proactively to change.



Chapter 6

Continuous Improvement



East Humber Trail

6.0 Continuous Improvement

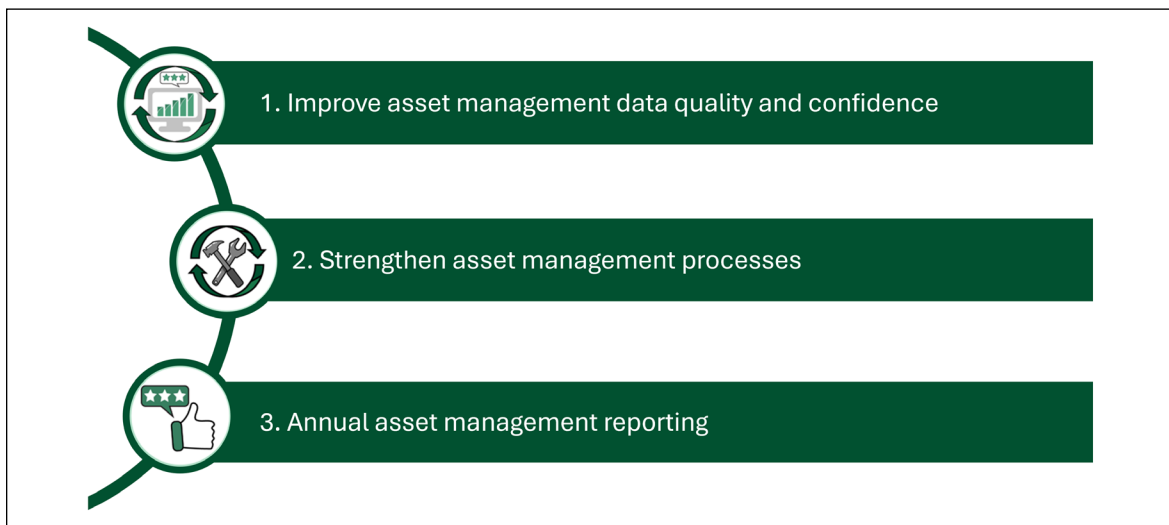
6.1 Improving Data, Processes and Evidence-Based Decisions

Corporate Asset Management is committed to continuous improvement 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 improvement. 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 51: 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. 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 2025 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)
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 lifecycle technical strategies.	2026 – 2029
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 lifecycle strategies and forecasting of future operating and maintenance costs as new assets come into service.	2027 – 2029
Refresh lifecycle 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 lifecycle activities.	2029



Oak Ridges Library

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 Lifecycle, 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 lifecycle 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



Mill Pond

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 lifecycle strategies. Updating the State of Infrastructure annually will also allow the City to meet its upcoming *O. Reg. 588/17* regulatory requirements related to annual progress reporting on the implementation of the City’s Corporate Asset Management plan.

Table 8: Continuous Improvement Plan for Annual Asset Management Reporting

Actions	Timeline (2025 – 2029)
Annually update the City’s State of Infrastructure Report, including asset inventories, replacement values, condition, ages and service life.	2026 – 2029
Annual reports to Council on the implementation of the City’s AM Plan and AM program.	2026 – 2029



Oak Ridges Community Centre

Chapter 7

Closing Remarks



Lake Wilcox

7.0 Closing Remarks

The City of Richmond Hill has presented this 2025 AM Plan, detailing its present state of infrastructure, current and proposed levels of service, lifecycle strategies and a financial strategy to achieve its proposed levels of service over the next 10 years. The City's asset portfolio is worth \$12.8 billion and the average age of most service areas in the asset portfolio is below 30 years, which is relatively young. The City's asset portfolio is mostly in Good and Very Good condition, which is in part due to its relatively young age, but also a reflection of the City's success in managing its assets.

In 2021, the Financial Accountability Office of Ontario (FAO) released a report entitled, "Municipal Infrastructure: A Review of Ontario's Municipal Infrastructure and an Assessment of the State of Repair."⁴ In this report, the FAO identified a total municipal infrastructure backlog of \$52.1 billion for a total asset portfolio value of \$484 billion. This represents a backlog of renewal needs of 10.8% of the total replacement value of the municipal infrastructure in the province (in 2021). In contrast, the City's current backlog of renewal needs has been assessed at approximately 2.5% of the total current replacement value. By comparison, the City's backlogged needs (by percentage of replacement value) are well below the average value for municipalities in the province, further reinforcing that the City's assets are performing well.

Given their young age, as well as future needs, the City is forecasting financial pressures into the long term, particularly related to tax-funded assets, where a current funding shortfall has been identified. As the City's assets continue to age, it will be difficult to continue to achieve service levels if funding shortfalls are not addressed. This AM Plan has also identified that financial pressures in the long term will be significant compared to today. In the face of these challenges, the City has a significant advantage, as it has begun to respond proactively, while it is still relatively young.

This AM Plan has provided recommendations on options to address funding shortfalls, including increasing funding. Other options include adjusting asset lifecycle strategies and adjusting asset performance expectations. The City's forthcoming asset management work will focus on better understanding the balance of these options that will result in a path forward that ensures costs are balanced with service levels, while risks are mitigated for the long term.

Through the asset management program, the City will continue to work towards a better understanding of the challenges and strategies pertaining to managing its assets and delivering services now and into the future. Asset Management remains a key initiative that the City can leverage to inform data-driven decisions and support the City's various subject matter experts and key stakeholders in this effort.

4 Financial Accountability Office of Ontario (FAO) (2021). Municipal Infrastructure: A Review of Ontario's Municipal Infrastructure and an Assessment of the State of Repair.



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 (which include bridges and culverts greater than 3 metres in span), streetlights and traffic signals. The Roadway System is also supported by operational fleet and equipment that is used to maintain the City's roadway infrastructure.



Roads

Richmond Hill's road network spans a total of 1,225 lane-kilometres and is mostly comprised of urban roads, which are roads that contain curbs and storm drainage. Greater than 99% of the City's road network is paved in asphalt and less than 0.5% of the network is paved with gravel. Roads are classified as arterial (19 lane-km), collector (265 lane-km), and local roads (941 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 managing road infrastructure considers future growth, changing demographics and integration with active transportation assets. The City's road network is designed to be capable of accommodating increasing traffic and evolving transportation trends over time.



Bridges and Culverts

Municipal structures include the City's bridges and road culverts that are greater than 3 metres in span. Two thirds of the City's bridges follow a similar construction style, consisting of a bridge deck supported by beams referred to as "I-beam/girder bridges". Approximately 80% of the City's road culverts are constructed of precast or cast-in-place concrete, and the remaining are comprised of corrugated plate steel. The City's bridges and culverts are strategically located to support traffic over openings, and facilitate smooth vehicular and pedestrian movement within and throughout the City. Culverts also facilitate 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 network of streetlights is comprised of over 14,000 City-owned poles. This streetlight network plays a crucial role in the City's commitment to public safety by illuminating transportation routes. They also contribute to the City's urban aesthetic. Greater than 85% of City-owned streetlight poles are constructed of concrete. Other materials for poles include steel and aluminum. The comprehensive network of streetlights in Richmond Hill is regularly maintained to ensure optimal performance and energy efficiency. The City has converted the majority of its 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 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.



Transportation 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 vehicles such as 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
\$1,989 M

Average Condition
B (Good)

Average Age / ESL
27 / 42 (years)

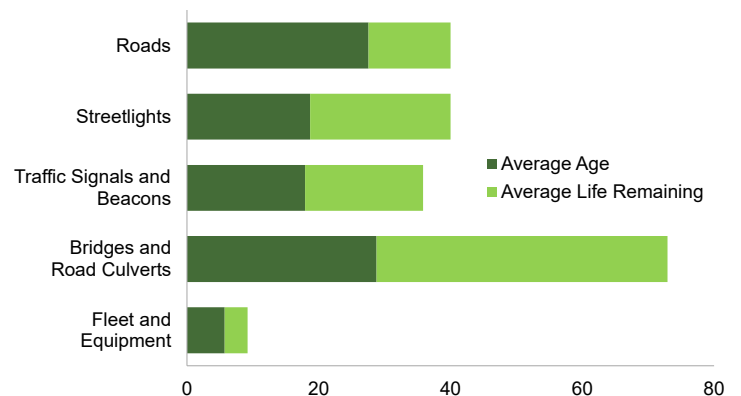


Asset Portfolio Summary

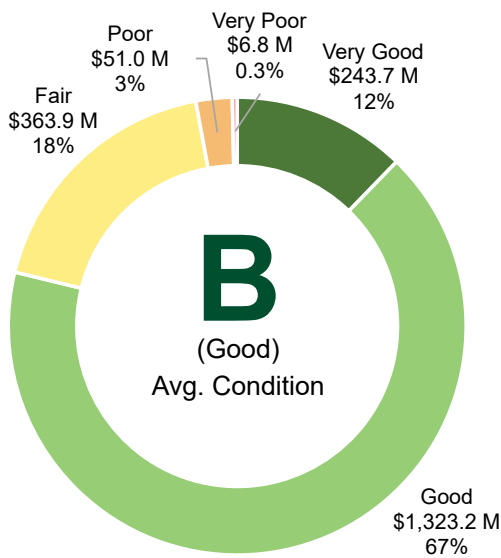
Asset	Quantity	Replacement Value
Roads	1,225 lane-km	\$1,700.1 M
Streetlights	14,134 ea.	\$106.0 M
Traffic Signals/Beacons	32 ea.	\$4.9 M
Bridges/Road Culverts	57 ea.	\$158.3 M
Barriers	6,094 m	
Retaining Walls	1,496 m ²	
Fleet and Equipment	A mix	\$19.2 M



Age Profile



Condition Profile



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

- The City assesses its entire road network in a 3-year cycle (one third per year). Pavement distresses including cracks, degradation and other defects are inspected and translated into a Pavement Quality Index (PQI) rating, which measures overall road condition using a 100-point condition rating scale.
- The City is required by legislation to inspect its network of bridges and road culverts every two (2) years, in accordance with the Ontario Structure Inspection Manual (OSIM). The City retains a consultant to complete these assessments. Bridge defects are documented and are translated into an overall Bridge Condition Index (BCI) rating, which communicates condition using a 100-point condition rating scale.
- Streetlight condition is based on technical assessments and age/estimated service life. Traffic signal condition is based on age/estimated service life.
- The condition of fleet and equipment is based on utilization (km), age and estimated service life.

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



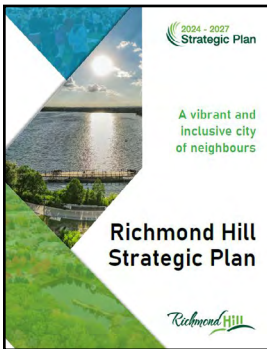
Levels of Service

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

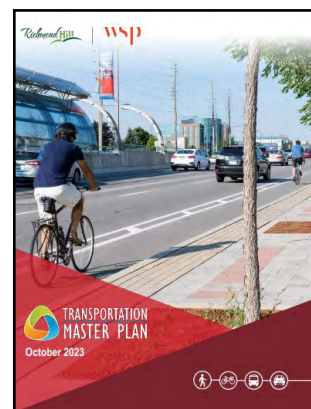
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents,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

Level of Service Theme: Road Network Connectivity

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description, which may include maps, of the road network in the municipality and its level of connectivity.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Entire Road Network

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 series of 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 neighbourhoods, city centers, commercial zones, industrial areas, and the wider regional road framework. Provincial Highways 404 and 407, which flank the City's eastern and southern boundaries, further promote goods movement and connect commuters within Richmond Hill and to neighbouring municipalities. The figure on the following page provides a map of the City's road connectivity. The City's road network, including roads, municipal structures and other roadway assets, is anticipated to expand over time in response to projected growth and evolving community needs, through the construction of new and enhanced infrastructure. These needs are addressed through the City's Transportation Master Plan.

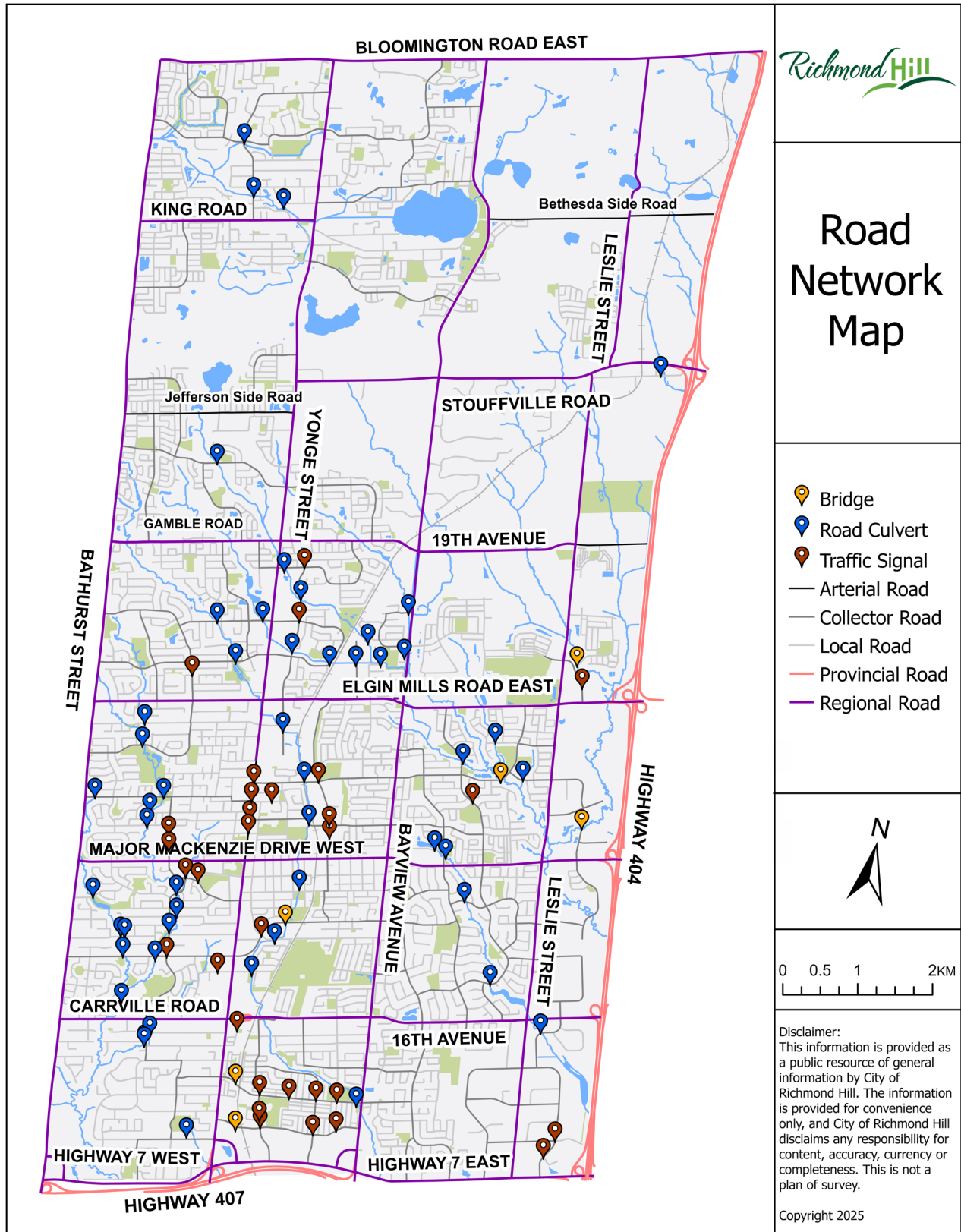
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	# of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the municipality	Regulatory (O. Reg. 588/17)	0.2	Increase in alignment with the City's Transportation Master Plan
Scope	# of lane-kilometres of collector roads as a proportion of square kilometres of land area of the municipality	Regulatory (O. Reg. 588/17)	2.6	Increase in alignment with the City's Transportation Master Plan
Scope	# of lane-kilometres of local roads as a proportion of square kilometres of land area of the municipality	Regulatory (O. Reg. 588/17)	9.3	Increase in alignment with the City's Transportation Master Plan



Levels of Service

Level of Service Theme: Road Network Connectivity





Levels of Service

Level of Service Theme: Municipal Structures Network Status

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Municipal Structures (Bridges and Road Culverts)

The City's structural bridges are designed to support transport vehicles, motor vehicles, 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.

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	Percentage of bridges in the municipality with loading or dimensional restrictions	Regulatory (O. Reg. 588/17)	0%	Maintain at 0%



High Tech Road Bridge



Levels of Service

Level of Service Theme: Condition of Road Network

Community Levels of Service




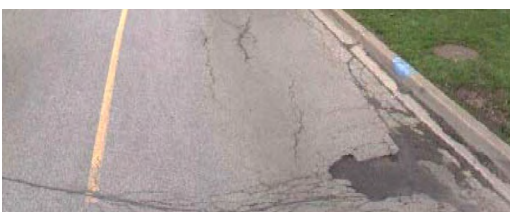
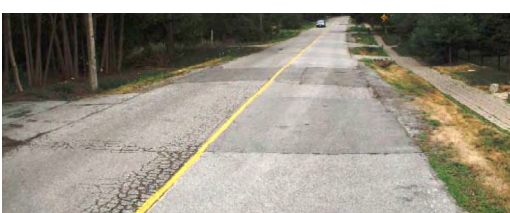
Service Attribute: Quality

Performance Measure: Description or images that illustrate the different levels of road class pavement condition.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Entire Road Network

The following images illustrate the road condition in various condition states, as well as the corresponding PQI score.

<p>Very Good (PQI = >90 to 100)</p>	
<p>Good (PQI = >70 to 90)</p>	
<p>Fair (PQI = >45 to 70)</p>	
<p>Poor (PQI = >20 to 45)</p>	
<p>Very Poor (PQI = 0 to 20)</p>	



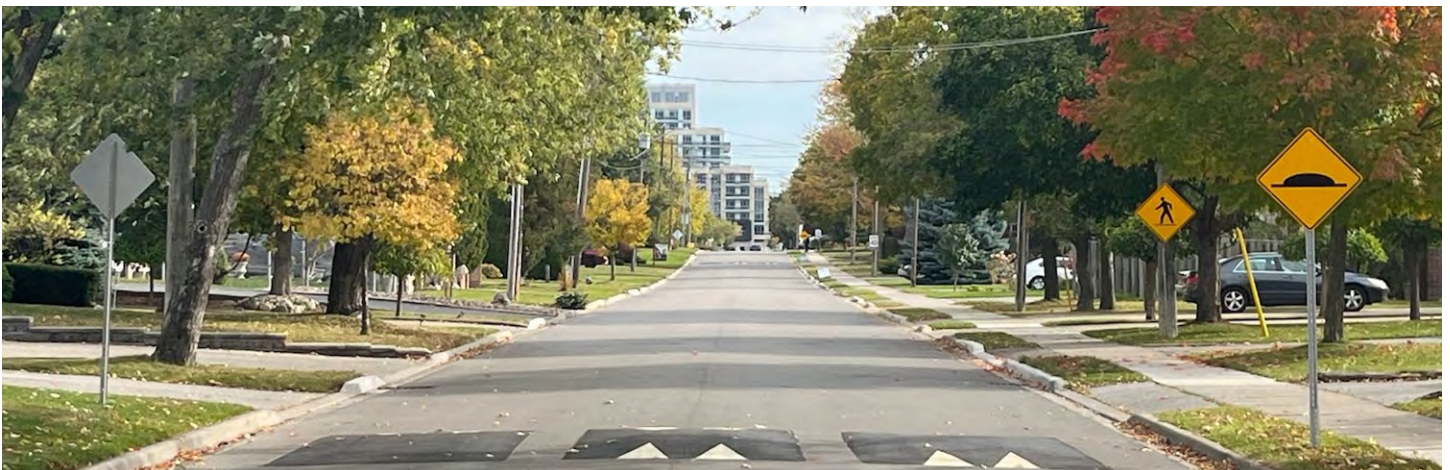
Levels of Service

Level of Service Theme: Condition of Road Network

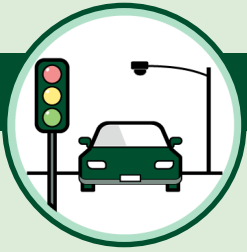
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Quality	Average pavement condition index value for paved roads	Regulatory (O. Reg. 588/17)	78 (Good)	Maintain (Good condition)
Quality	Average surface condition (e.g. excellent, good, fair or poor) for unpaved roads	Regulatory (O. Reg. 588/17)	Fair	Maintain
Reliability	Percentage of roads in Fair or better condition	City-Defined	97%	Maintain (+/- 5% range)
Reliability	Percentage of traffic signals in Fair or better condition	City-Defined	80%	Maintain (+/- 5% range)
Reliability	Percentage of streetlights in Fair or better condition*	City-Defined	97%	Maintain (+/- 5% range)

*The condition of streetlights is based on a previous assessment, and represents the City's best understanding of condition to date. The City plans to re-evaluate the condition assessment approach and LOS measures for streetlights as needed, which will be updated in future versions of the AM Plan.



Spruce Avenue



Levels of Service

Level of Service Theme: Condition of Municipal Structures

Community Levels of Service

Service Attribute: Quality

Performance Measure: Description or images of the condition of bridges and how this would affect use of the bridges; Description or images of the condition of culverts and how this would affect use of the culverts.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Municipal Structures (Bridges and Road Culverts)

The following images illustrate bridge and culvert condition in various condition states, as well as the corresponding BCI score.

<p>Very Good (BCI = >80 to 100)</p>	
<p>Good (BCI = >70 to 80)</p>	
<p>Fair (BCI = >50 to 70)</p>	
<p>Poor (BCI = >35 to 50)</p>	
<p>Very Poor (BCI = 0 to 35)</p>	



Levels of Service

Level of Service Theme: Condition of Municipal Structures

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Quality	For bridges in the municipality, the average bridge condition index value	Regulatory (O. Reg. 588/17)	75 (Good)	Maintain (Good condition)
Quality	For structural culverts in the municipality, the average bridge condition index value	Regulatory (O. Reg. 588/17)	73 (Good)	Maintain (Good condition)
Reliability	Percentage of bridges in Fair or better condition (BCI score)	City-Defined	100%	Maintain (+/- 5% range)
Reliability	Percentage of culverts in Fair or better condition (BCI score)	City-Defined	100%	Maintain (+/- 5% range)



Boake Trail Culvert



Levels of Service

Level of Service Theme: Other

The City has developed a suite of additional LOS measures for some of its assets, that it utilizes to understand, monitor and report on various aspects of the service. It expects to expand and enhance these over time, as it continues to improve its LOS framework and performance measures.

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Environmental	Percentage of streetlights with LED or low energy fixtures	City	77%	Increase*

*The City replaces streetlight fixtures with LED as they age and require replacement. As a result, this number is expected to increase over time as the City continues to renew this infrastructure as part of its anticipated lifecycles and replacement programs.



Augustine Avenue and Kingshill Road



Asset Management Lifecycle Strategies

Lifecycle Activities

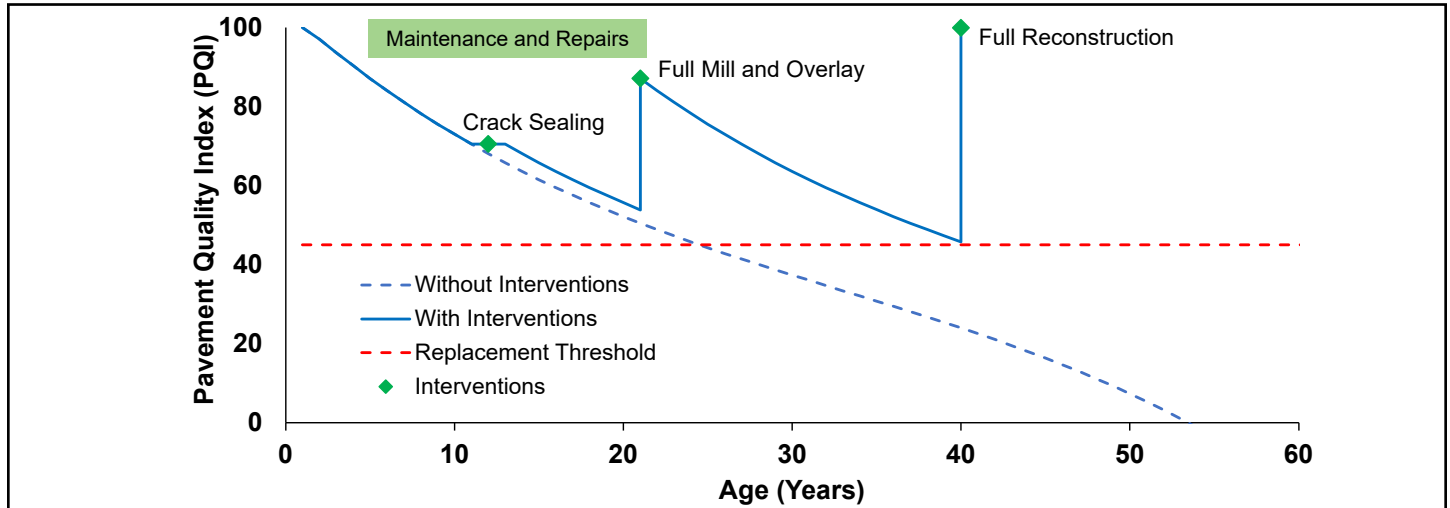
Lifecycle Activity	Description of Activities Practiced by the City
Non-Infrastructure	<ul style="list-style-type: none"> The City makes continuous improvements in operations as well as other initiatives related to improving asset data capture, utilization of IT systems (e.g. pavement management system), etc. Ongoing studies and assessments of asset condition and functionality (e.g. bridges, culverts and road inspections)
Maintenance	<ul style="list-style-type: none"> The City performs routine maintenance for its roads and structures (per <i>O. Reg. 239/02: Minimum Maintenance Standards for Municipal Highways</i>) such as street sweeping, pothole patching, utility cut repairs, expansion joint cleaning, regular municipal structure maintenance, snow and ice removal, etc. The City performs testing, inspections and maintenance on traffic signals and their components, and street lighting and luminaires. Fleet and equipment are maintained per recommended standards.
Rehabilitation	<ul style="list-style-type: none"> 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 lifecycle. Bridge and culvert rehabilitations are based on inspection recommendations from inspections, and can include minor and/or major rehabilitations. 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. Fleet and equipment are not typically rehabilitated, but are traditionally replaced at end of life.
Replacement	<ul style="list-style-type: none"> 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 watermains, sanitary sewers, storm sewers and/or streetlights, to minimize costs and impact to residents. Structural bridges and culverts are generally replaced based on recommendations from inspections and their observed condition, age, and ESLs. 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	<ul style="list-style-type: none"> Roadway, bridge, and culvert material disposals are in line with best practices and regulations. Traffic signal assets, streetlights and fleet and equipment are disposed at the end of their life.
Growth / Service Improvement	<ul style="list-style-type: none"> 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. 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. Urbanization of roads is considered and balanced with state of good repair renewal needs. 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 Lifecycle Strategies

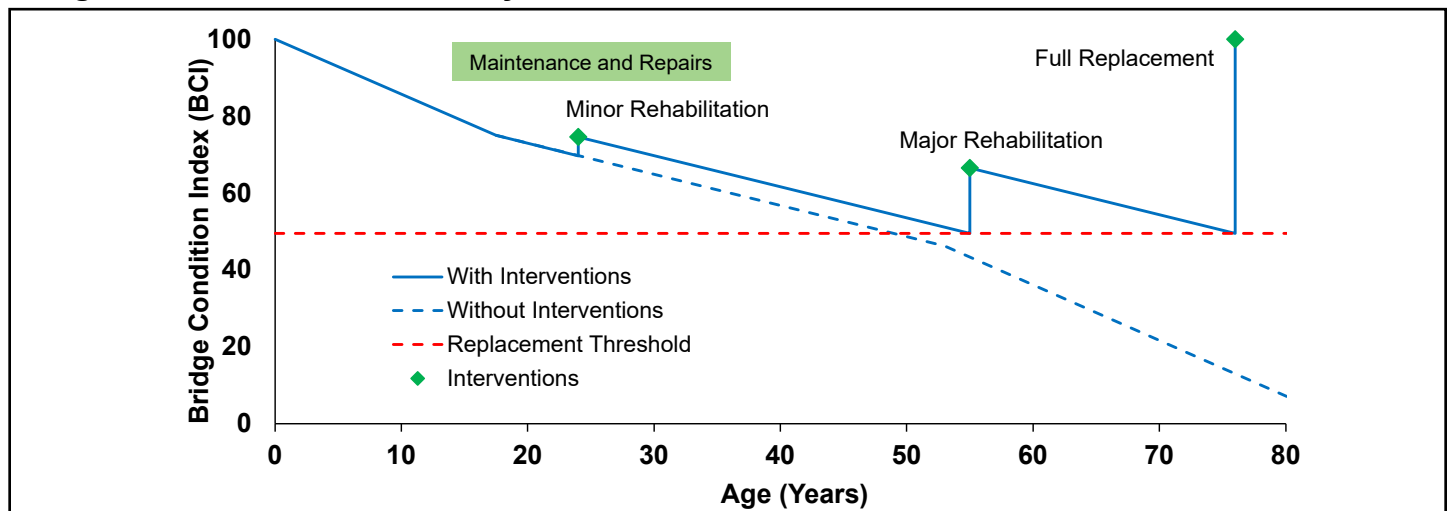
Capital Treatments

Roads Lifecycle



The City's roads lifecycle 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 lifecycle and deterioration model is based on the thickness of the surface, the strength of the base, and traffic volumes.

Bridges and Road Culverts Lifecycle



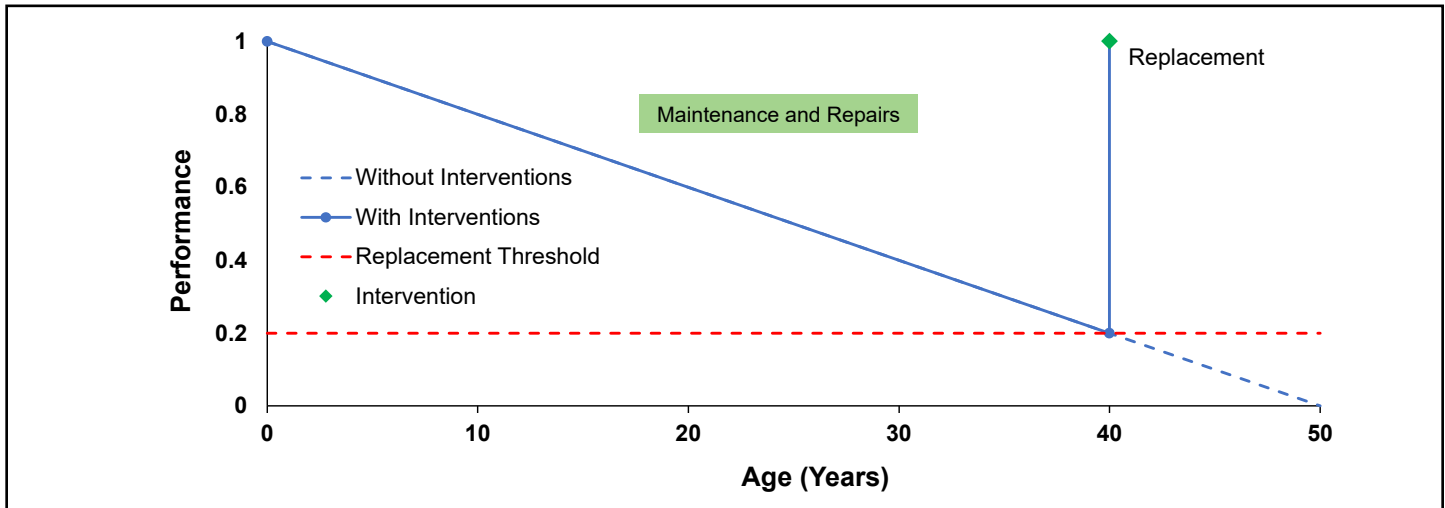
The City's lifecycle strategies for structures are based on the findings and recommendations from biennial OSIM inspections and industry best practices. This approach is designed to support general lifecycle interventions with the recommendations in the OSIM biennial inspections for more specific capital 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 Lifecycle Strategies

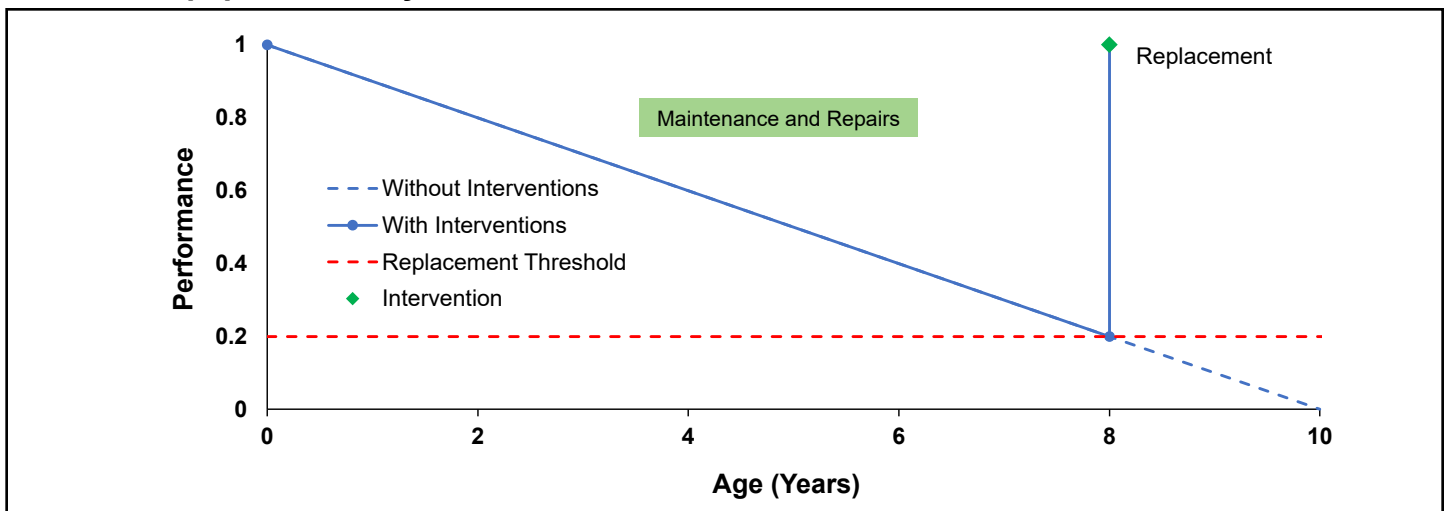
Capital Treatments

Traffic Signals and Streetlights Lifecycle



For traffic signals and streetlights, the City's lifecycle model forecasts that 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 Lifecycle



The City's lifecycle model forecasts that fleet and equipment would typically be replaced at the end of their service life. While fleet and equipment 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.

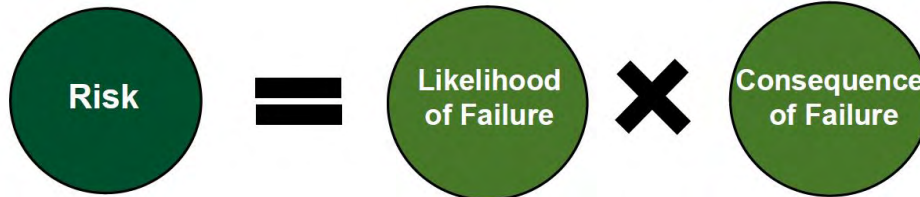


Risk Prioritization

Average Risk Grade
Low (B)

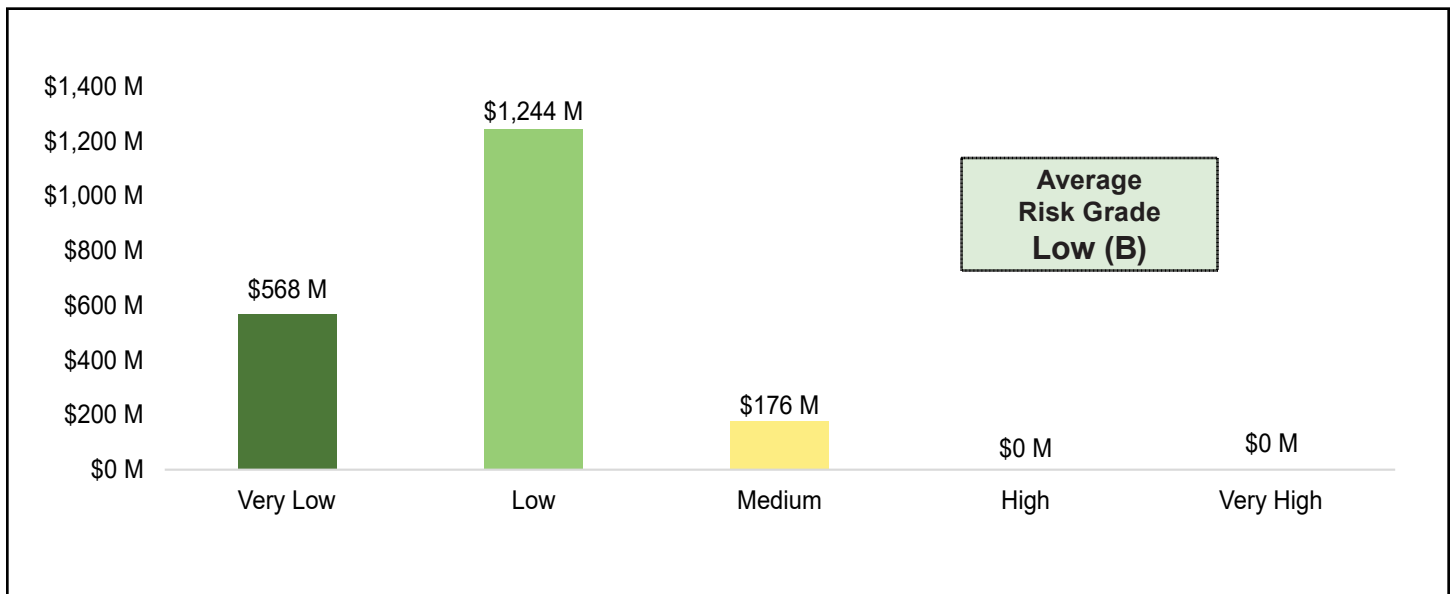


Risk Framework



Asset	Likelihood of Failure		Consequence of Failure		
	Condition	Capacity	Financial	Social	Environmental
<ul style="list-style-type: none"> Roads Bridges/Culverts Streetlights Traffic Signals Fleet/Equipment 	<ul style="list-style-type: none"> Current and deteriorating condition 	<ul style="list-style-type: none"> Current capacity Future expansion/new need identified in budget, plan or study 	<ul style="list-style-type: none"> Capital replacement cost Operating cost/revenue 	<ul style="list-style-type: none"> Traffic counts Road classification Land use Type/function 	<ul style="list-style-type: none"> Environmental compliance Impact to surrounding area

Summary of Asset Inventories by Risk



Climate Change Considerations

- The Transportation Master Plan; and, the 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
\$84.2 M

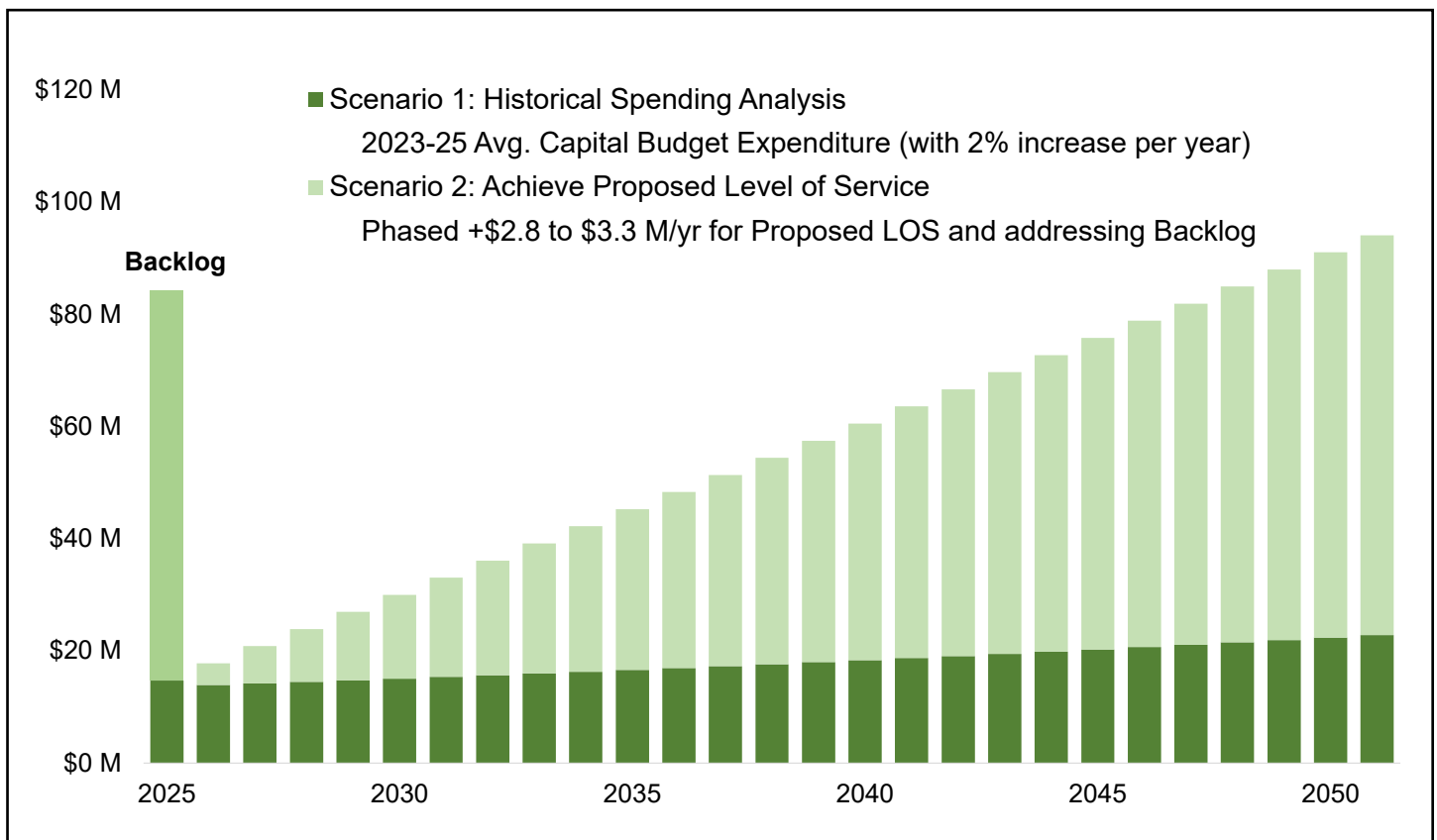
Proposed LOS
+\$2.8 to \$3.3 M/yr



Investment Approach

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

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Roadway	84.2	14.7	+2.8 to 3.3	284.6	28.5	1,468.5	54.4



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

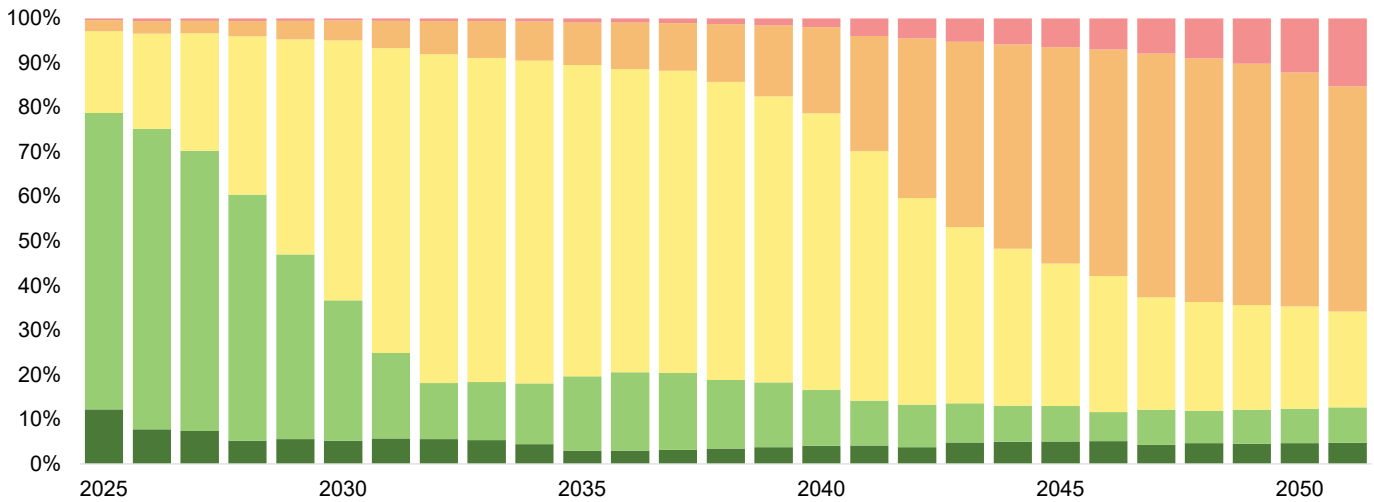


Asset Investment Strategy

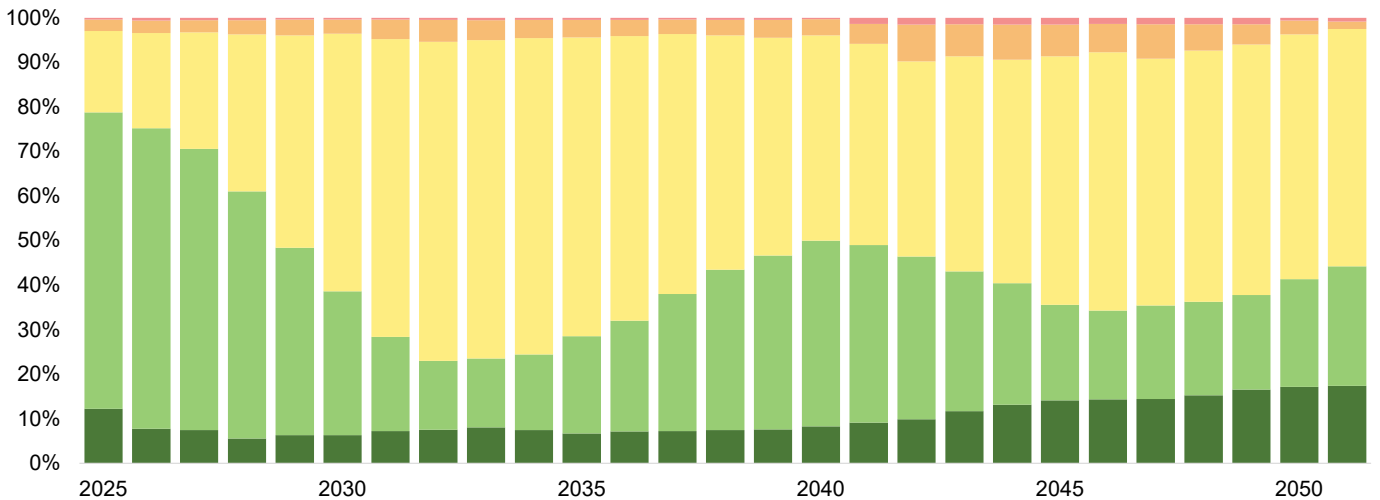
Impact on Levels of Service

Roadway System (All)

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

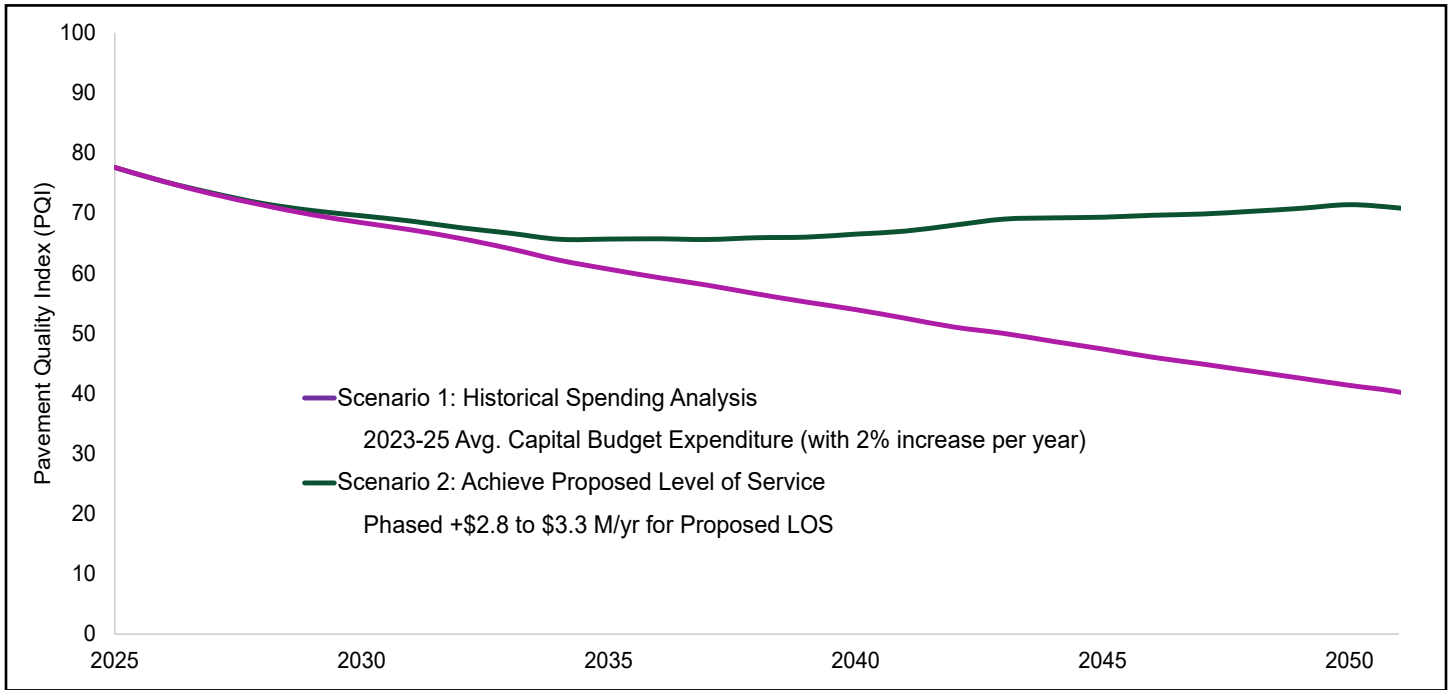


Asset Investment Strategy

Impact on Levels of Service

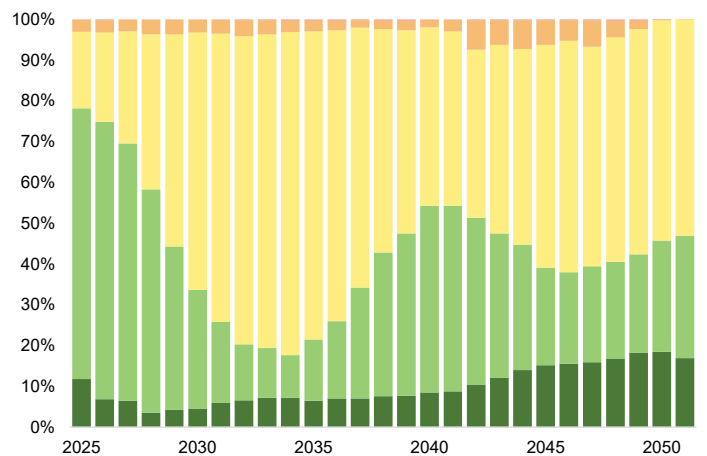
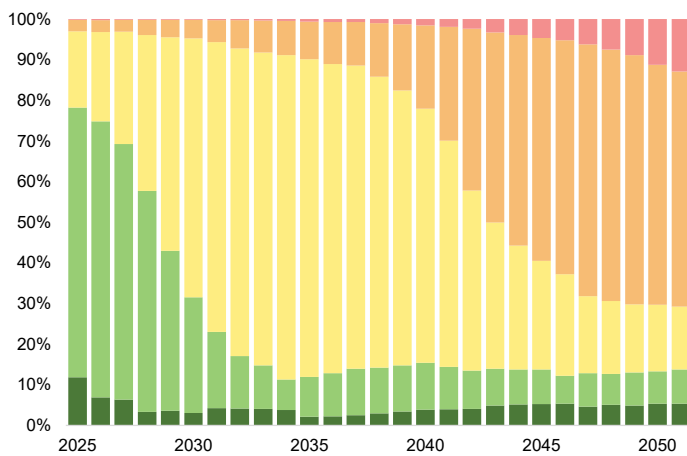
Roads

Pavement Quality Index (PQI) over time



Scenario 1: Historical Spending Analysis

Scenario 2: Achieve Proposed Level of Service



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

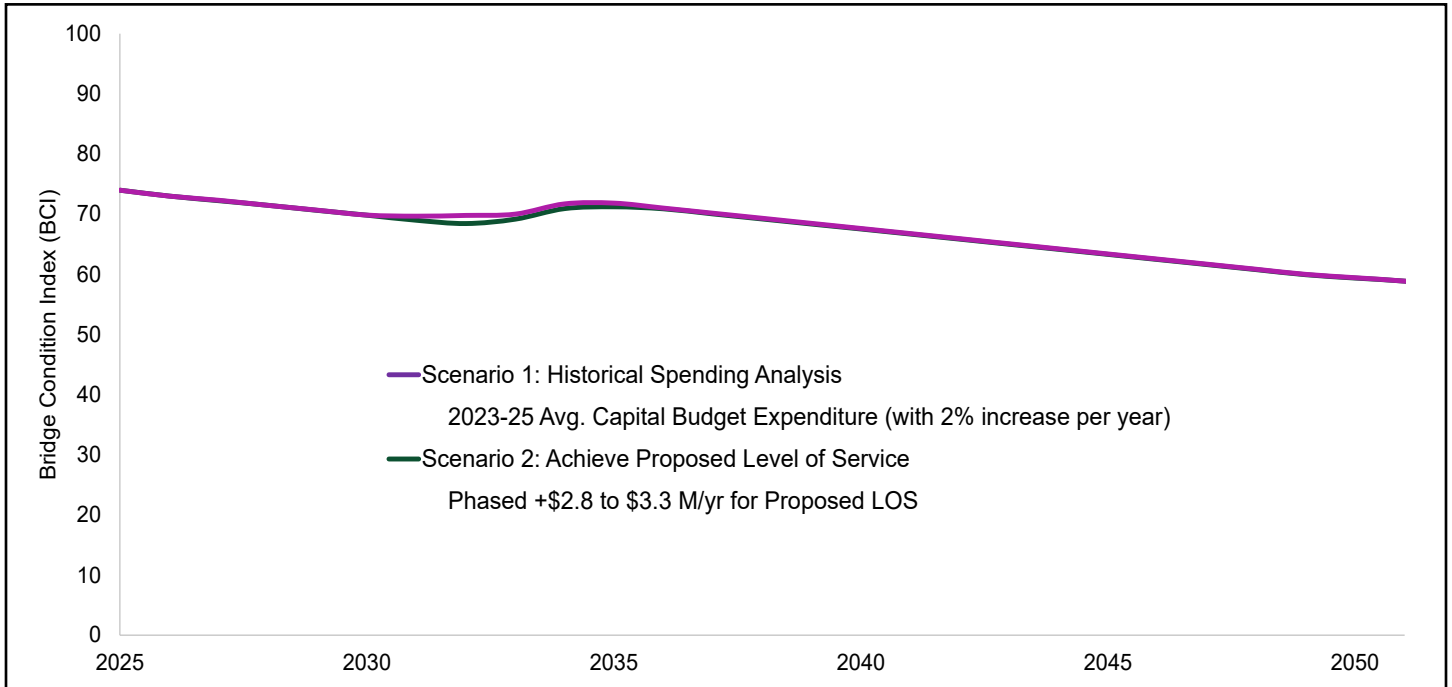


Asset Investment Strategy

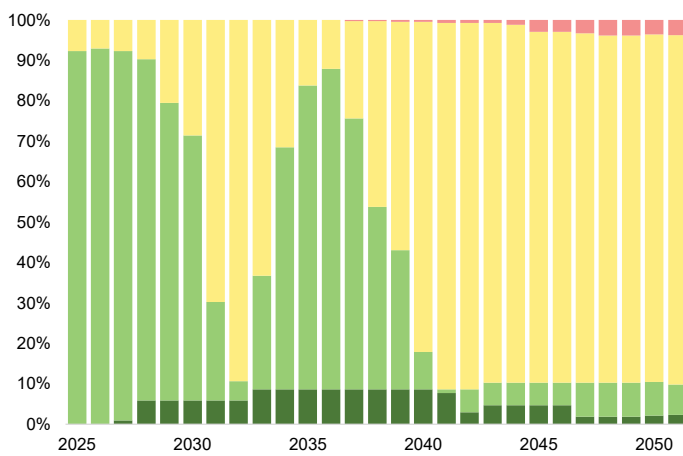
Impact on Levels of Service

Bridges and Culverts

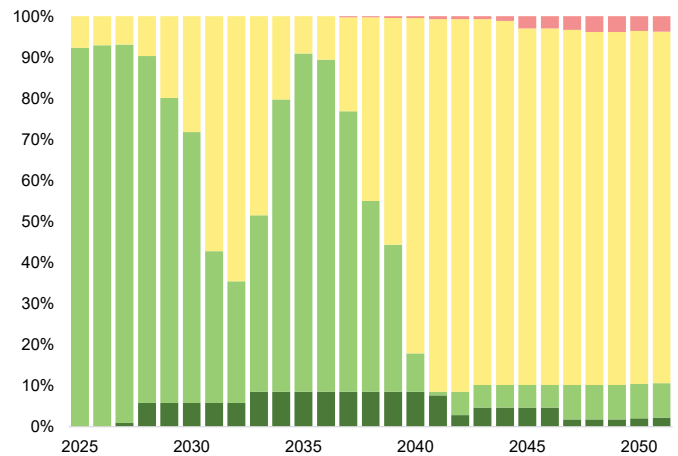
Bridge Condition Index (BCI) over time



Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

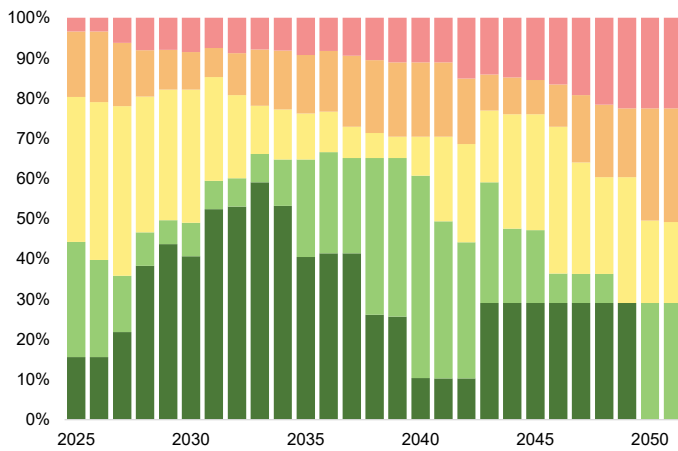


Asset Investment Strategy

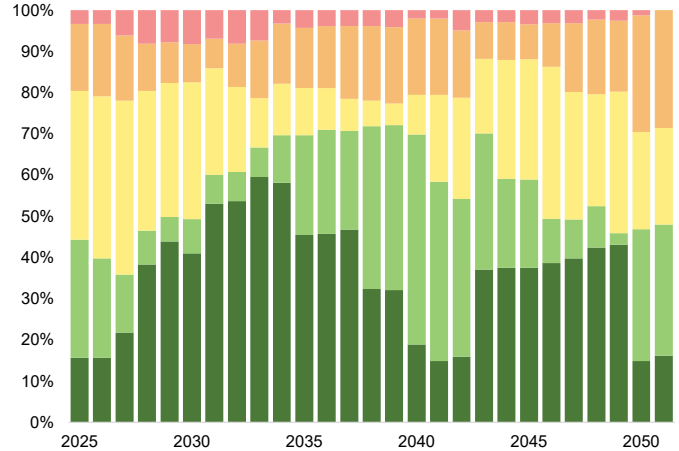
Impact on Levels of Service

Traffic Signals

Scenario 1: Historical Spending Analysis

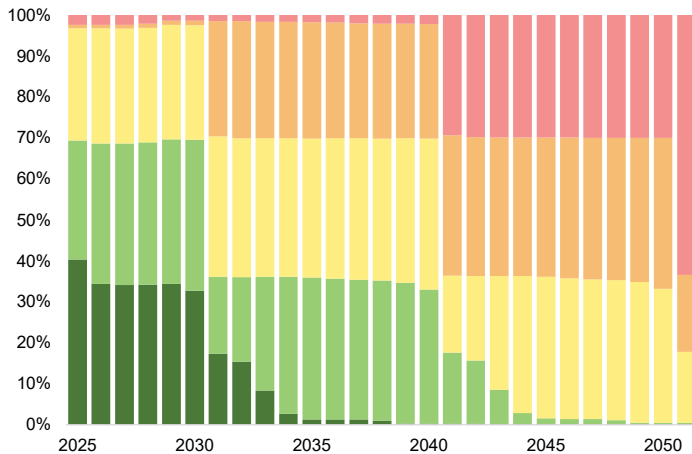


Scenario 2: Achieve Proposed Level of Service

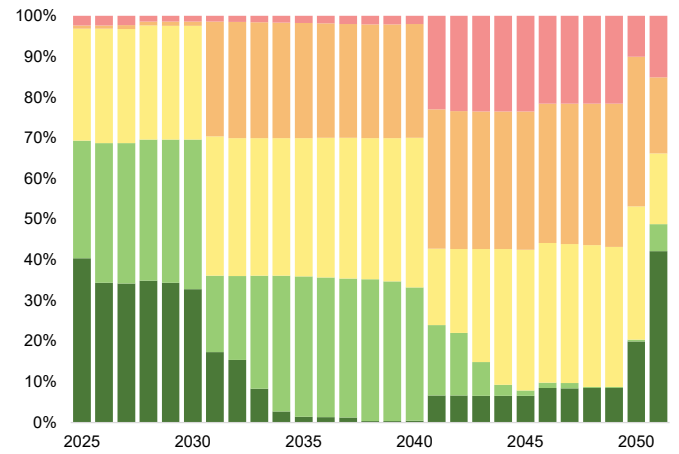


Streetlights

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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



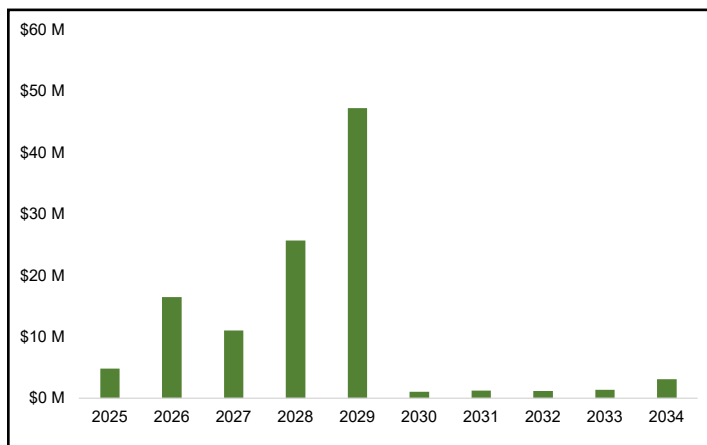
Asset Investment Strategy



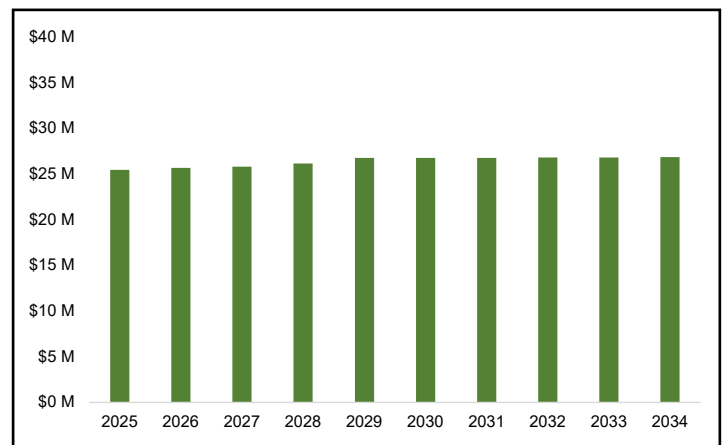
Growth Capital and Operating Forecast

The City’s Transportation Master Plan recommends a balanced future transportation network that will service the increasing travel demand from projected growth. It also provides 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 2025 Asset Management Plan identifies that significant investment into renewal of the City’s existing transportation network would be required to achieve proposed service levels. These two plans will inform the City’s 10-Year Capital Budgets and Forecasts.

2025 Growth Capital Budget and Forecast



Preliminary Estimated Operating Cost Forecast



Richmond Hill’s Roadway System remains a top priority in the City’s 10-Year Capital Budget and Forecast, with continued transformative upgrades planned over the next decade. These projects, guided by the recommendations of the Transportation Master Plan, are focused on expanding road capacity, reducing congestion, improving traffic flow, and enhancing connectivity. The most substantial investments include East and West Beaver Creek Road Improvements at \$43.1 million, Newkirk Road Improvements at \$18.5 million, High Tech Road Improvements at \$9.8 million, and Vogell Road – Rouge River Bridge Contribution at \$4.5 million. Additional investments include Annual Traffic Improvements (\$3.9 million) and other traffic-related enhancements to further improve safety and efficiency throughout Richmond Hill’s roadway network.

The estimated operating and maintenance costs to service the maintenance of existing and new growth-related capital roadway assets are forecasted to steadily increase over the next 10 years. It is projected to grow from around \$25 million in 2025 to around \$27 million by 2034 (excluding future inflationary pressures), reflecting incremental increases annually. These projections are based on the assumption that growth-related road expansion projects will be constructed as planned over the next 10 years.



Future Outlook

Findings and Insights

Establishing Proposed Levels of Service

The City has selected proposed levels of service and performance targets to ensure long-term sustainability and minimize community risk. Based on asset needs forecasts over the next 27 years, the City has identified major financial challenges in providing the proposed level of service required to maintain high-quality services for the community. These financial pressures are mostly related to the roads asset class, which makes up greater than 85% of the value of the City's Roadway System portfolio.

The financial pressures associated with other asset classes in this portfolio, including municipal structures, streetlights, traffic signals, and fleet and equipment are minimal in comparison to roads, and providing the City's proposed levels of service for these asset classes is anticipated to be both achievable and affordable for the City.

The primary issue that the City will face in the coming years will be to balance affordability and service levels for its roads, which are among the most expensive assets to maintain within the City. The forecasts produced for this AM Plan have indicated that additional funding would be needed to achieve the City's proposed LOS for roads. Note that in the short to medium term, service levels should not decline substantially, should current funding trends continue. Under this scenario, service levels are expected to decline minimally within the next 5 years. By the 10-year mark, they are expected to decline further, but still can be maintained within an acceptable range. Beyond 10 years, the City is forecasted to experience a significant drop in service levels unless additional spending is allocated towards roads.

Managing Lifecycle Needs and Mitigating Risks

The City has identified a shortfall for non-rate supported assets. In the near and medium term, the City is focusing its efforts on better understanding and developing a response to these long-term pressures for roads. Several options can be considered, including the following:

- **Balancing road condition with funding:** the City must ensure that service levels are maintained within an acceptable range, but should investigate pursuing a lower level of service (in the long term) that does not compromise safety, risk and long-term sustainability. This could be balanced against increasing investment in roads to achieve a middle ground, where services can still be provided to an acceptable standard, for an acceptable cost.
- **Investigate alternate approaches to addressing backlog:** the City is currently operating with a level of backlog in its road network assets. Furthermore, it is likely that backlogs have always existed, even before they were measured and reported regularly. Even with backlogs, the City has managed to provide a high level of service for its road network assets. The City will investigate the effects of continuing to operate with a sustainable, and manageable level of backlog. This can be achieved by monitoring additional aspects of asset performance to ensure that service levels remain high, even with continued backlogs in the network, while ensuring overall system functionality and keeping risk low.
- **Prioritize high risk roads for rehabilitations and replacements:** the City will focus its renewal efforts on roads that are higher risk, to ensure risks are minimized under funding constraints. The City's risk management strategy and framework supports this endeavour by providing a systematic approach to identifying risks and prioritizing projects based on risk.



Future Outlook

Findings and Insights

- Increase maintenance activities when necessary: should road network condition decline, which is anticipated to occur simply through the natural aging of these assets, the City will ensure high levels of service by continuing to provide maintenance and operating activities that ensure the overall community experience remains high. Activities including crack sealing, filling potholes and other localized repairs can keep roads maintained and operating to the level that the community is used to.
- Pursue alternate renewal strategies: the City can investigate focusing its efforts on renewals that reduce the most risk for dollars spent, such as resurfacing high risk roads that are still in good condition before they fall out of their available window to resurface. These types of strategies may provide a more efficient way of stretching budget dollars and ensuring that in the long term, the overall performance of the road network is maintained to a higher level in the most efficient manner.

In addition to the above-mentioned strategies, the City plans to continually improve its analysis, forecasting, and data to ensure the forecasts in plans like the AM Plan are as accurate as possible. Some such activities include:

- Improving asset data: the City can investigate filling in asset data gaps or collecting additional types of performance data to better understand asset lifecycle needs and system performance.
- Calibrate lifecycle models: the City's lifecycle models have been developed using expert knowledge coupled with insight on the City's road network. Through its asset management program, the City has been collecting data regularly in a consistent and repeatable process. As the City collects more and more data, it can use that data to calibrate its forecasting models to ensure they are better representative of what is happening to the City's road network. This can give the City a better understanding of financial needs moving forward.



Bethesda Side Road



Appendix B

Active Transportation





Overview of Active Transportation

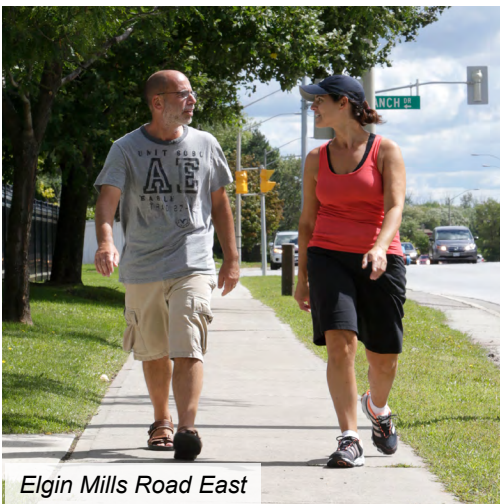
The City of Richmond Hill's Active Transportation network is comprised of sidewalks, bicycle lanes, multi-use paths and trails. Together, these assets provide accessible, reliable and sustainable modes of travel to the community.



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 consist of a variety of types, including those shared with motor vehicles (on-road bike lanes), those that utilize the roadway shoulder (paved shoulder), and those that 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 700 kilometres, are a key aspect of the City's Active Transportation network within the road right of way. The sidewalks are primarily constructed of concrete, a choice reflecting the City's focus on durability and year-round accessibility. Asphalt and unit paver-style walkways are also constructed in smaller quantities and provide enhanced aesthetics and functionality in select areas. The City's walkways include concrete, asphalt and unit paver construction types. 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

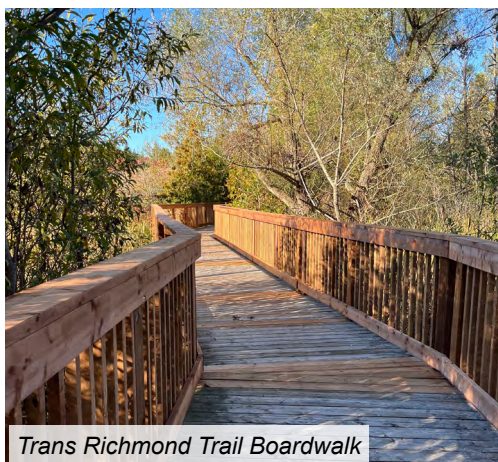
Richmond Hill's multi-use paths currently span approximately 16 kilometres and are part of the City's Lake to Lake Trail Route, which is an important element of its Active Transportation network. A portion of the Lake to Lake Trail Route has been completed, with progress continuing to further develop the trail. These asphalt-paved paths offer a robust, versatile route for pedestrians and cyclists alike, connecting key north-south 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.



RHDDO Park Trail

Trails

Trails in Richmond Hill are an integral part of the City's Active Transportation Network outside the right of way. Extending approximately 140 kilometres, these trails are located primarily within parks and open spaces and offer a diverse range of user experiences such as walking and cycling. They are alternately referred to as recreational trails, off-road trails, park pathways and walkways. 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 are constructed of various materials, including asphalt, concrete, unit pavers, crushed limestone, granite, and some natural surfaces catering to various recreational and transportation needs. Various stair structures are also included as part of the City's trail inventory. 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 116 pedestrian structures comprising of boardwalks (44), bridges (68), 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 as well as enhancing pedestrian accessibility. These structures 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
\$500 M

Average Condition
B (Good)

Average Age / ESL
23 / 49 (years)



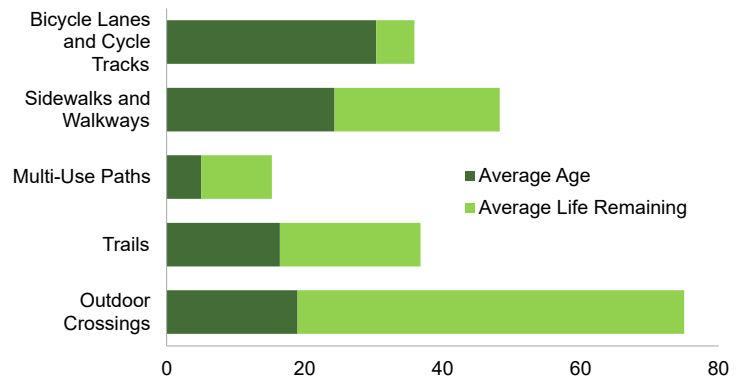
Asset Portfolio Summary

Asset	Quantity	Replacement Value
Bicycle Lanes/Cycle Tracks	175 km	\$67.1 M
Sidewalks/Walkways	709 km	\$270.3 M
Multi-Use Paths	16 km	\$8.7 M
Trails*	140 km	\$75.4 M
Outdoor Crossings	3 km	\$78.9 M
	116 ea.	

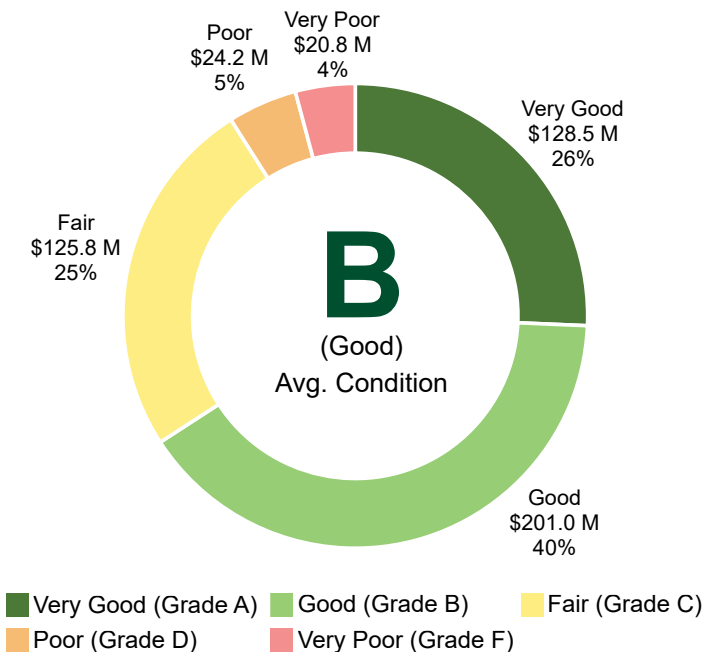
*This asset group captures trail surfaces. Retaining walls associated with trails are captured in the Parks and Outdoor Recreation Service.



Age Profile



Condition Profile



- 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/estimated service life.
- The condition for on-road bicycle lanes is based on the Pavement Quality Index (PQI) of the road identified through the City's road inspection program.
- Trails are inspected for deficiencies annually. Any deficiencies identified are corrected. The condition rating for trails is based on a combination of the number and type of deficiencies, and age/estimated service life.
- The condition of multi-use paths and cycle tracks are based on age and estimated service life.
- The City is required by legislation to inspect outdoor crossings every two (2) years in accordance with the Ontario Structure Inspection Manual (OSIM). The City retains a consultant to complete these condition assessments. Defects are documented and translated into a Bridge Condition Index (BCI) rating.

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



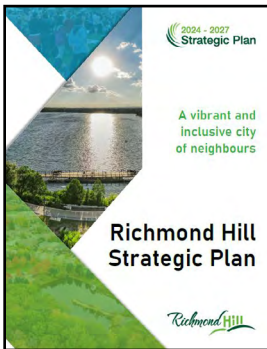
Levels of Service

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

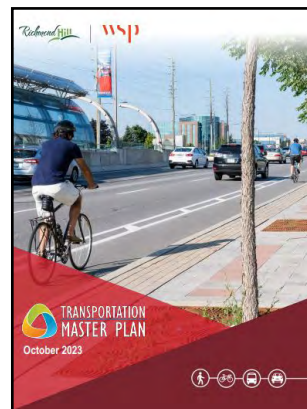
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents,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

Level of Service Theme: Active Transportation Network Connectivity

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description and map of the active transportation network in the municipality and its level of connectivity.

Measure Type: City-Defined

Applicable Assets: 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 neighbourhoods 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. The City's Active Transportation network is anticipated to expand over time in response to projected growth and evolving community needs, through the construction of new and enhanced infrastructure. These needs are addressed through the City's Transportation Master Plan.

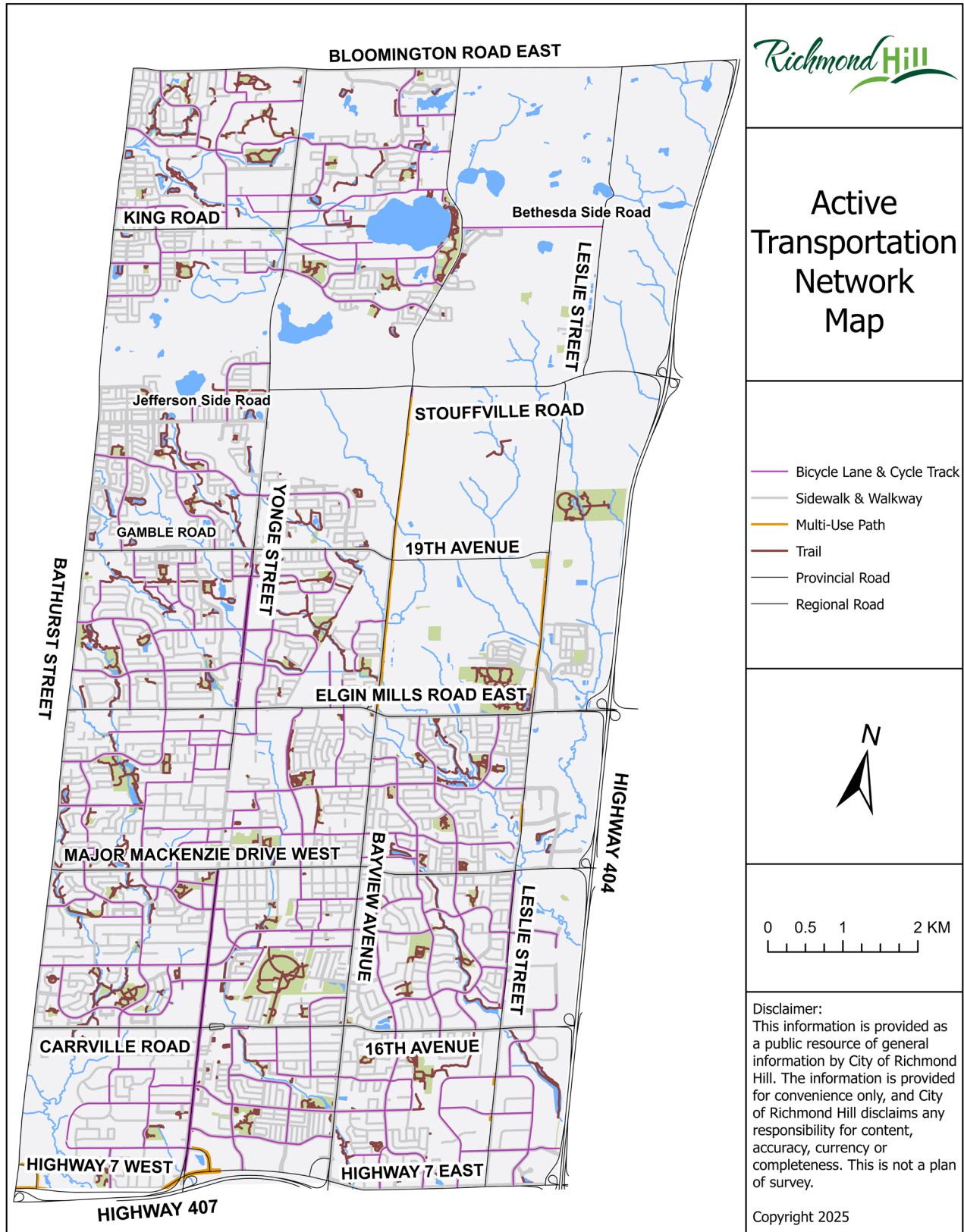
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	Km of bicycle lanes to sq. km of land area	City-Defined	1.7	Increase in alignment with the City's Transportation Master Plan
Scope	Km of trails/multi-use paths to sq. km of land area	City-Defined	1.5	Increase in alignment with the City's Transportation Master Plan
Scope	Km of sidewalks/walkways to sq. km of land area	City-Defined	7.0	Increase in alignment with the City's Transportation Master Plan



Levels of Service

Level of Service Theme: Active Transportation Network Connectivity





Levels of Service

Level of Service Theme: Active Transportation Network Condition

Community Levels of Service

Service Attribute: Quality, Reliability

Performance Measure: Description of how the condition of Active Transportation Assets is measured and reported.

Measure Type: City-Defined

Applicable Assets: Active Transportation Network

The City undertakes formal condition assessments of sidewalks and trails 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 estimated service life to determine a performance score from 0 to 100, which are categorized into condition ranges illustrated 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)



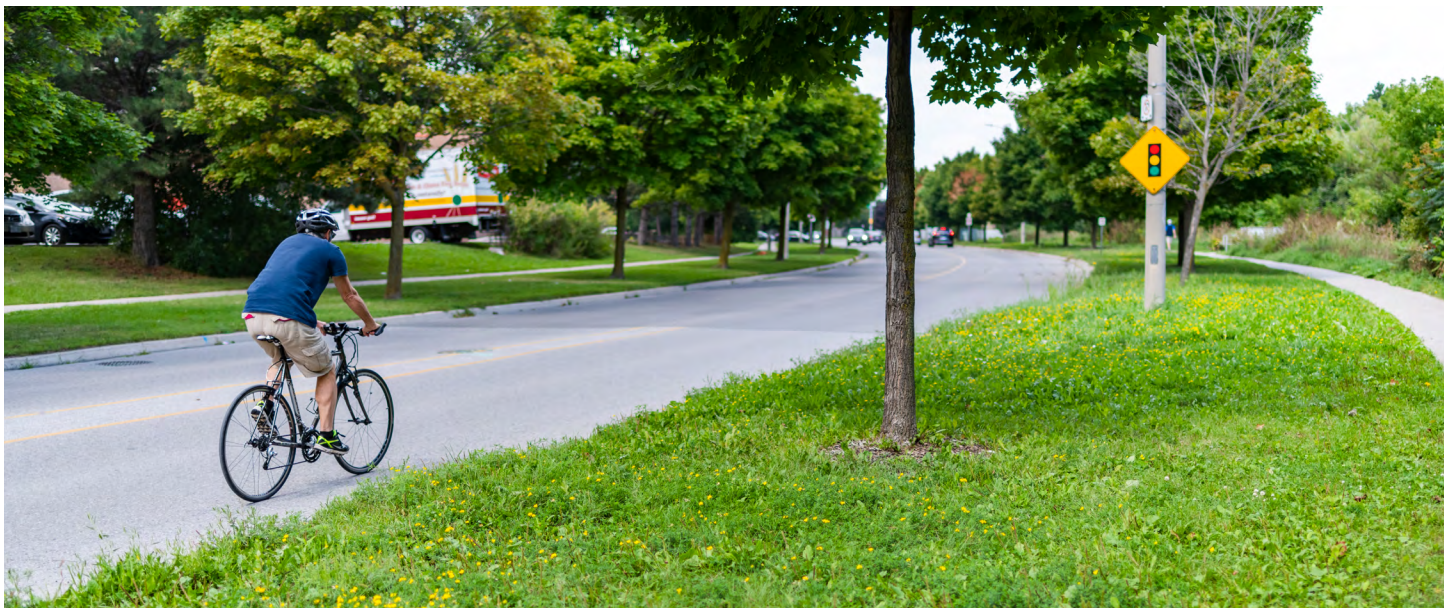


Levels of Service

Level of Service Theme: Active Transportation Network Condition

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Quality	Average Sidewalk Condition Index (SCI)	City-Defined	62 (Good)	Maintain (Good condition)
Quality	Average Trail Condition Index (TCI)	City-Defined	61 (Good)	Maintain (Good condition)
Quality	Average Bridge Condition Index (BCI) - outdoor crossings	City-Defined	82 (Very Good)	Maintain (Good or better condition)
Reliability	Percentage of sidewalks within service life	City-Defined	95%	Maintain (+/- 5% range)
Reliability	Percentage of cycling facilities within service life	City-Defined	93%	Maintain (+/- 5% range)
Reliability	Percentage of trails within service life	City-Defined	94%	Maintain (+/- 5% range)





Asset Management Lifecycle Strategies

Lifecycle Activities

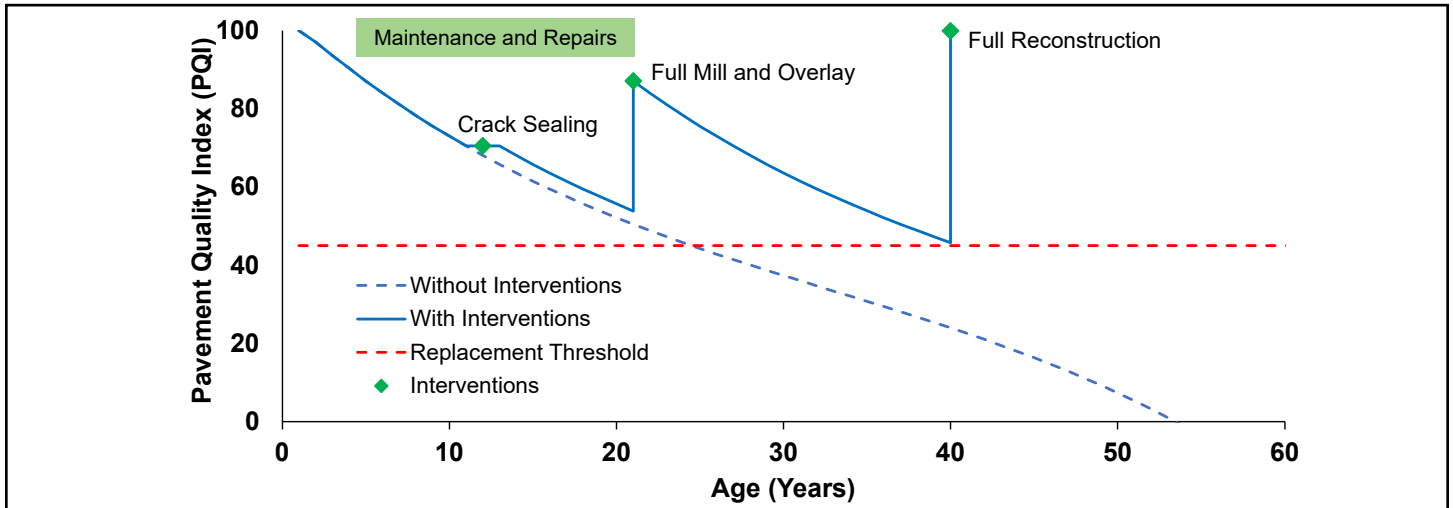
Lifecycle Activity	Description of Activities Practiced by the City
Non-Infrastructure	<ul style="list-style-type: none"> • The City makes continuous improvements in operations as well as other initiatives related to improving asset data capture, utilization of IT systems (e.g. Maximo), employee capabilities, etc. • Ongoing studies and assessments of asset conditions and functionality are undertaken (e.g. annual sidewalk, annual trail inspections, biennial OSIM inspection of outdoor crossing structures). • The City also undertakes planning-related studies (e.g. Transportation Master Plan)
Maintenance	<ul style="list-style-type: none"> • 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. • 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. • Outdoor crossings are inspected, maintained and repaired as required.
Rehabilitation	<ul style="list-style-type: none"> • 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 their 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 lifecycle. • 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. • Outdoor crossings undergo minor and/or major rehabilitation based on results from biennial OSIM inspections.
Replacement	<ul style="list-style-type: none"> • On-road bicycle facilities are typically reconstructed as part of the road reconstruction. • 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. • 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. • Outdoor crossings are replaced when their condition warrants it and/or have reached end of life.
Disposal	<ul style="list-style-type: none"> • Disposals are typically coordinated with the asset reconstructions and/or replacements.
Growth / Service Improvement	<ul style="list-style-type: none"> • Enhanced and new Active Transportation network improvements are planned through the Transportation Master Plan, which details upgraded cycling facilities, trails and sidewalks. • New and expanded active transportation assets are also identified through technical analyses as part of plans completed to support new developments. • 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 Lifecycle Strategies

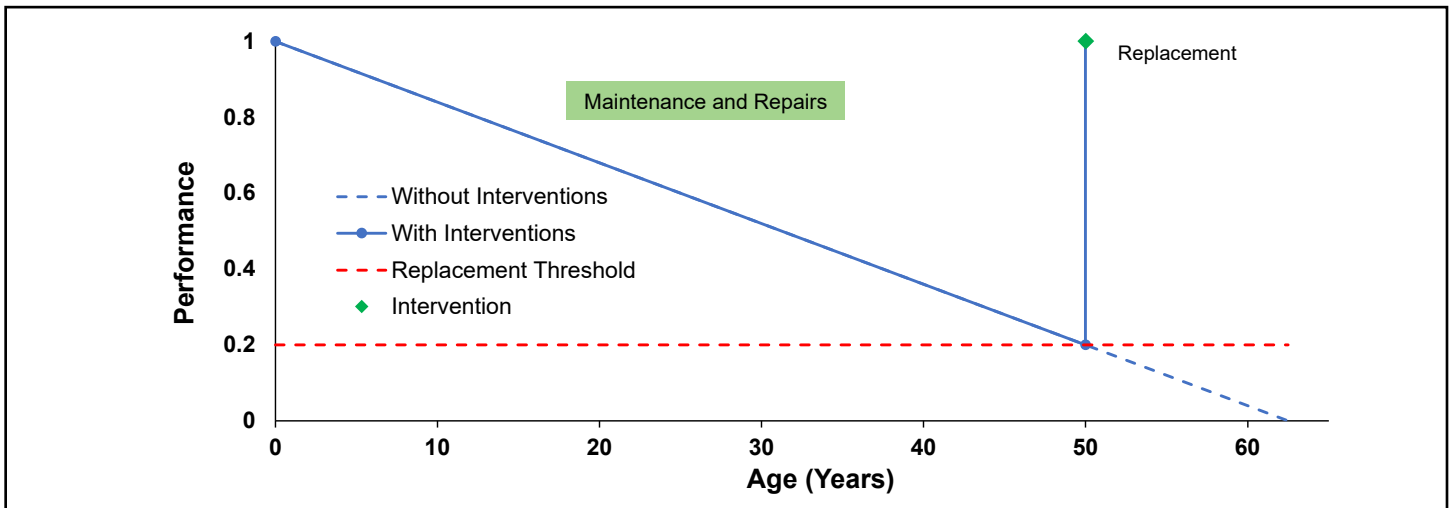
Capital Treatments

On-Road Cycling Facility Lifecycle



The lifecycle of on-road cycling amenities is tied to roads. The City's roads lifecycle 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 lifecycle and deterioration model is based on the thickness of the surface, the strength of the base, and traffic volumes.

Concrete Sidewalk Lifecycle



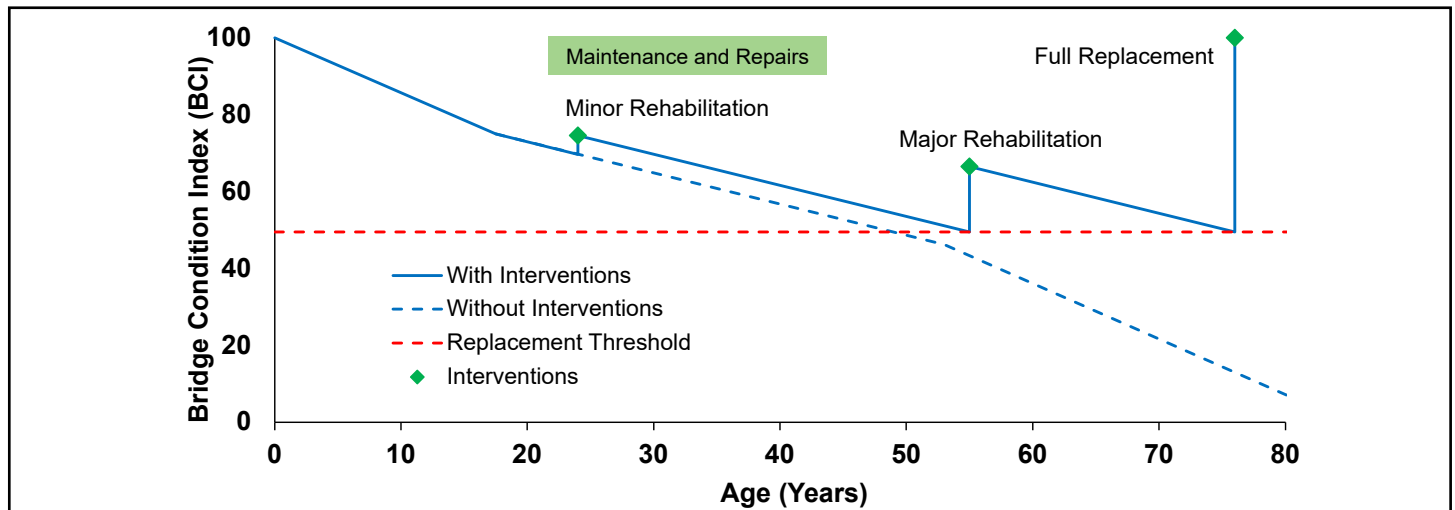
The City's lifecycle strategies for sidewalks are generally based on reconstruction when their condition has deteriorated and/or they are at the end of their service life (typically 50 years). The timing of sidewalk replacements can vary as their reconstruction could be coordinated with the road reconstruction 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 Lifecycle Strategies

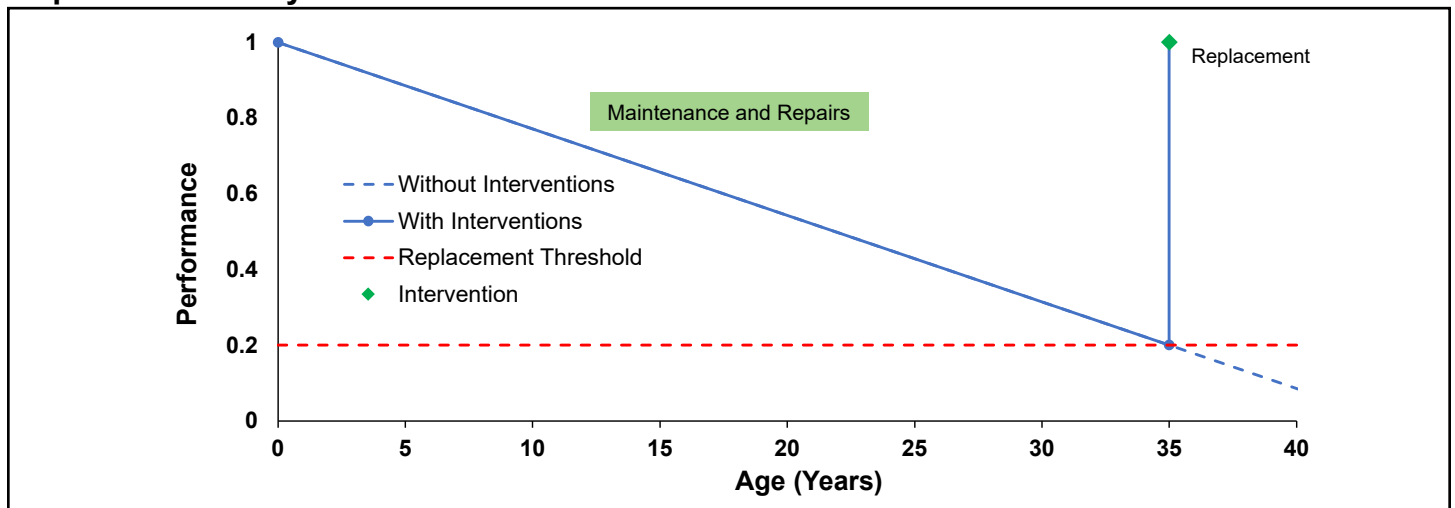
Capital Treatments

Outdoor Crossings Lifecycle



The City's lifecycle 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 lifecycle 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 Lifecycle



For trails outside the right of way (e.g. in parks or open spaces), the City's lifecycle 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)

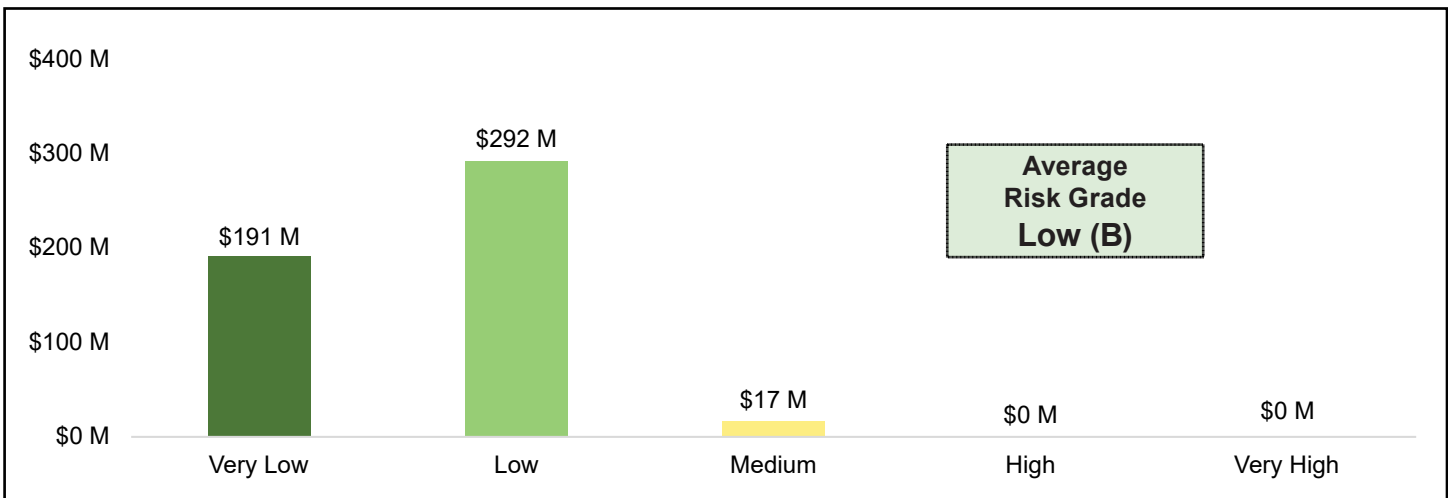


Risk Framework



Asset	Likelihood of Failure		Consequence of Failure		
	Condition	Capacity	Financial	Social	Environmental
<ul style="list-style-type: none"> Bicycle Lanes/ Cycle Tracks Sidewalks Multi-Use Paths Trails Outdoor Crossings 	<ul style="list-style-type: none"> Current and deteriorating condition 	<ul style="list-style-type: none"> Current capacity Future expansion/new need identified in budget, plan or study 	<ul style="list-style-type: none"> Capital replacement cost Operating cost/revenue 	<ul style="list-style-type: none"> Traffic counts Road classification Land use Park classification Asset type/function 	<ul style="list-style-type: none"> Environmental compliance 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 annual Sidewalk Program.
- Collaborate 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 the Smart Commute workplace program
- Monitoring emerging sustainable transportation trends and technologies, and exploring an Electric Vehicle Strategy



Asset Investment Strategy

Backlog
\$14.2 M

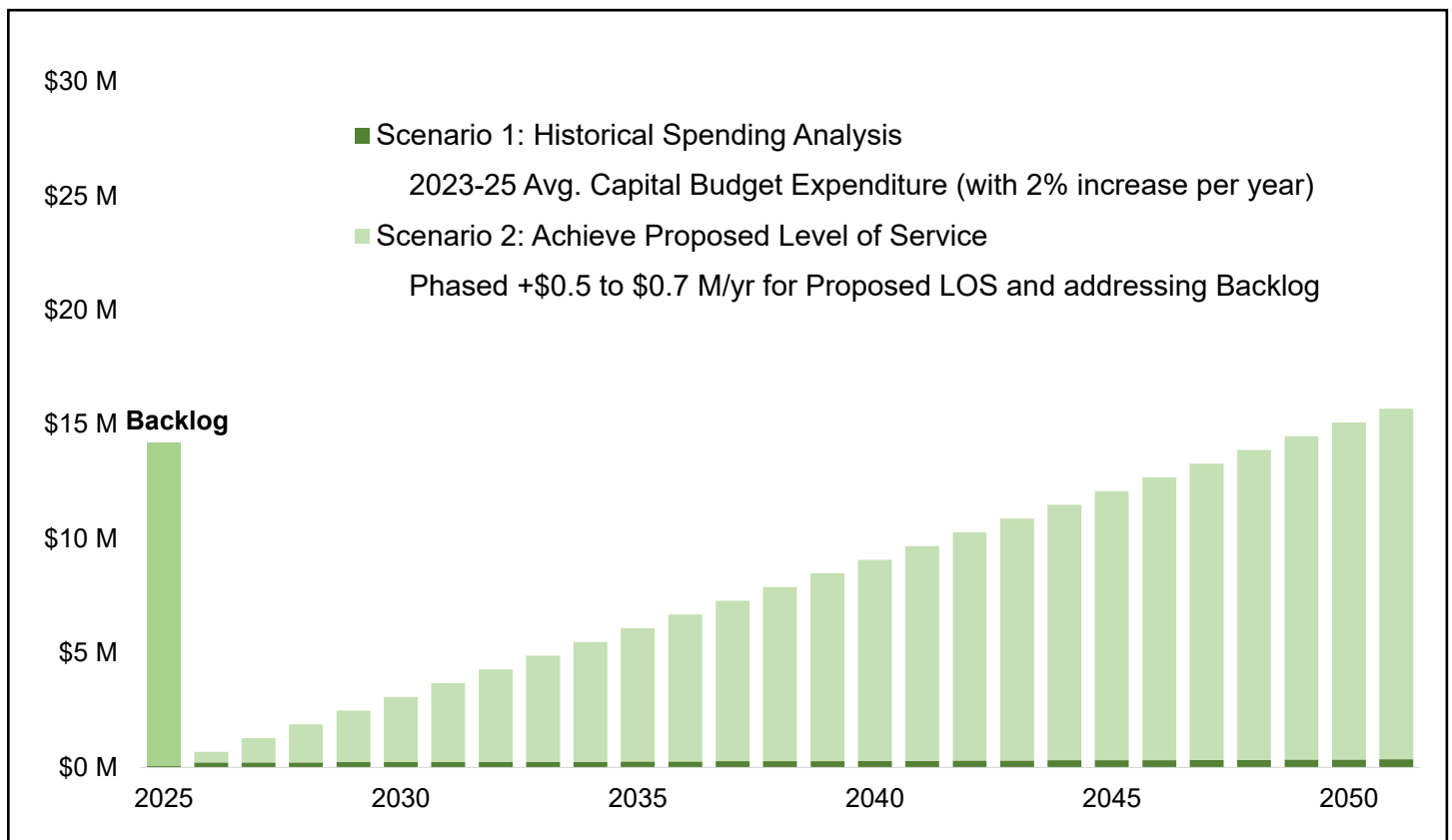
Proposed LOS
+ \$0.5 to \$0.7 M/yr



Investment Approach

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

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Active Transportation	14.2	0.1	+0.5 to 0.7	27.9	2.8	213.0	7.9



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

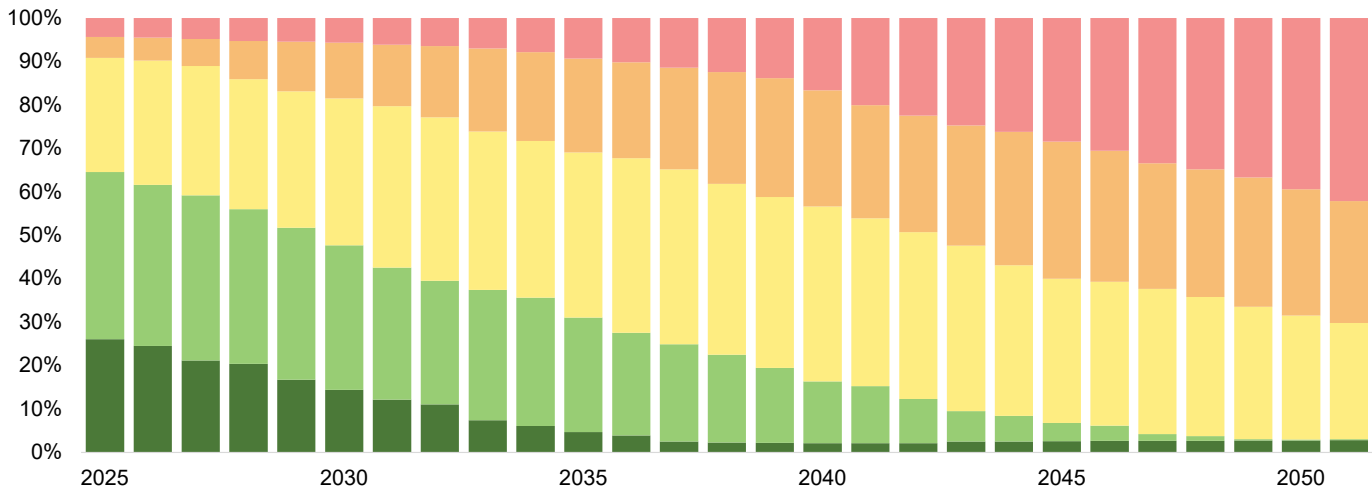


Asset Investment Strategy

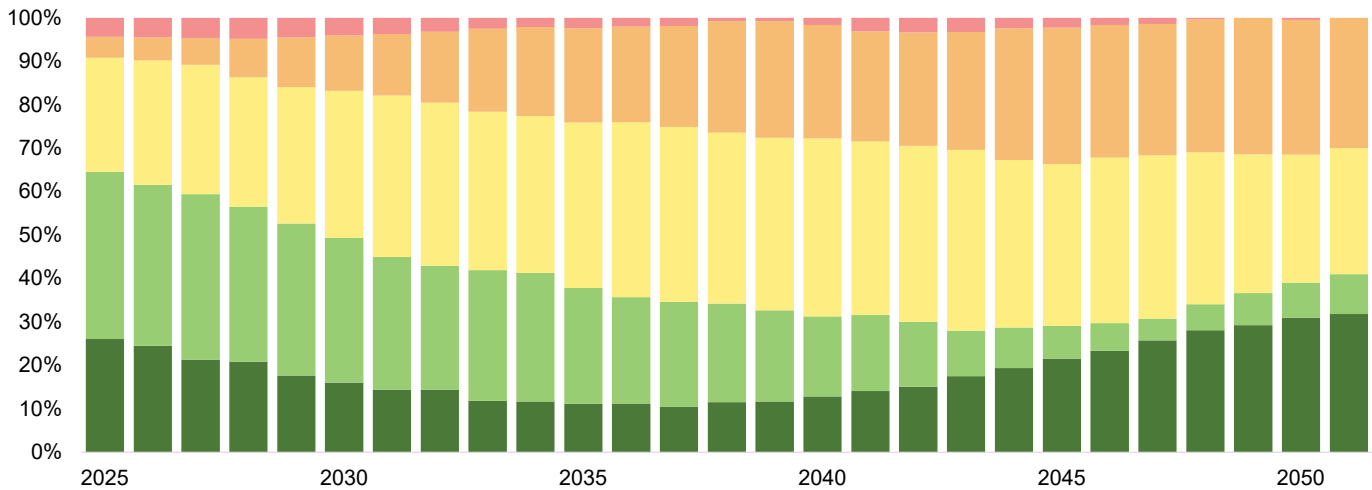
Impact on Levels of Service

Active Transportation (All)

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

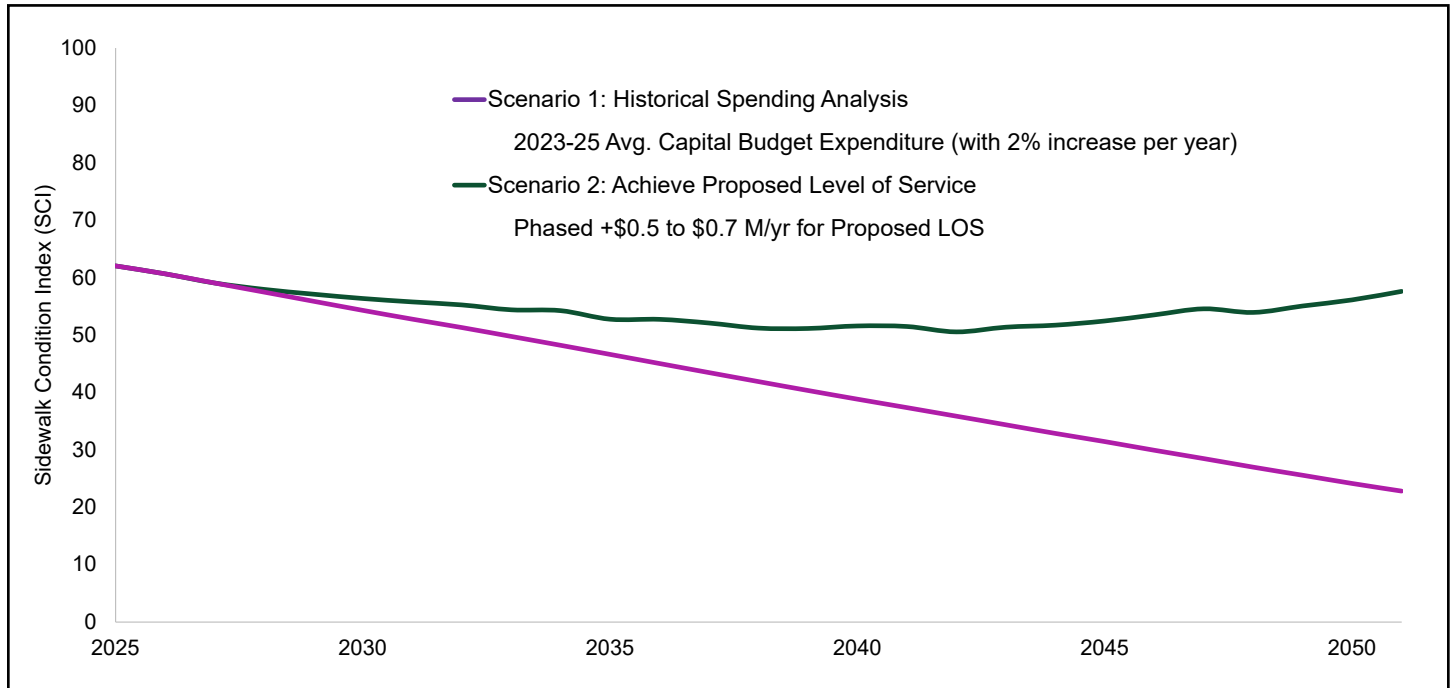


Asset Investment Strategy

Impact on Levels of Service

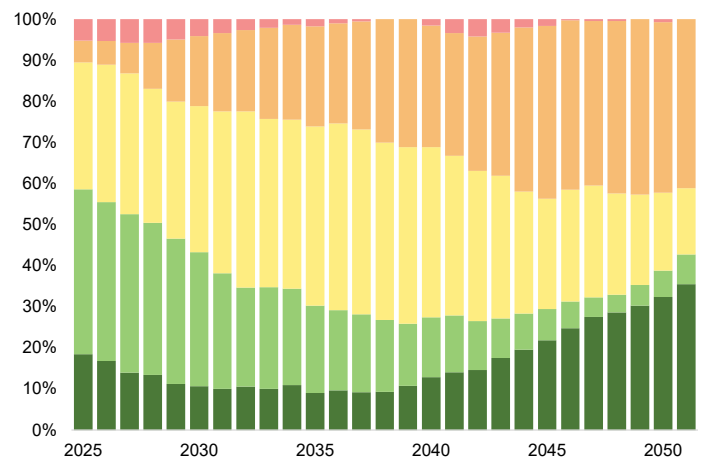
Sidewalks

Sidewalk Condition Index (SCI) over time



Scenario 1: Historical Spending Analysis

Scenario 2: Achieve Proposed Level of Service



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

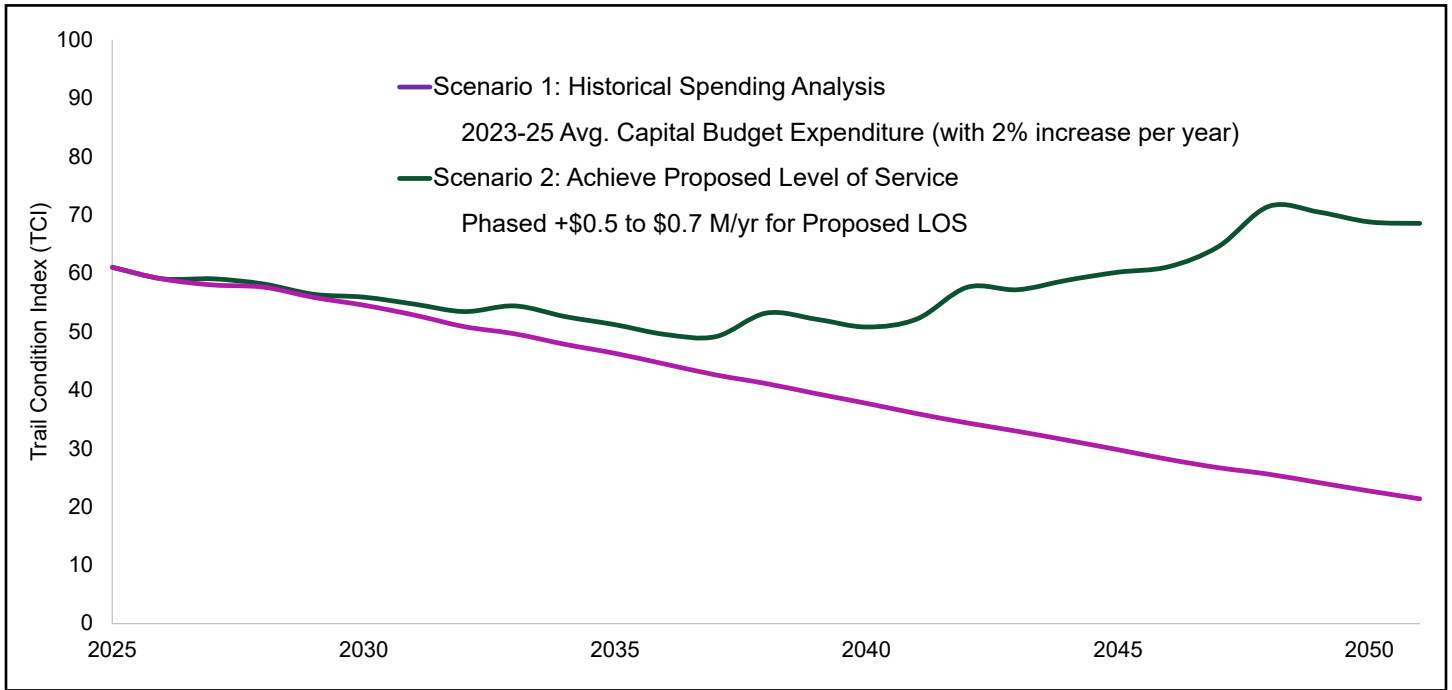


Asset Investment Strategy

Impact on Levels of Service

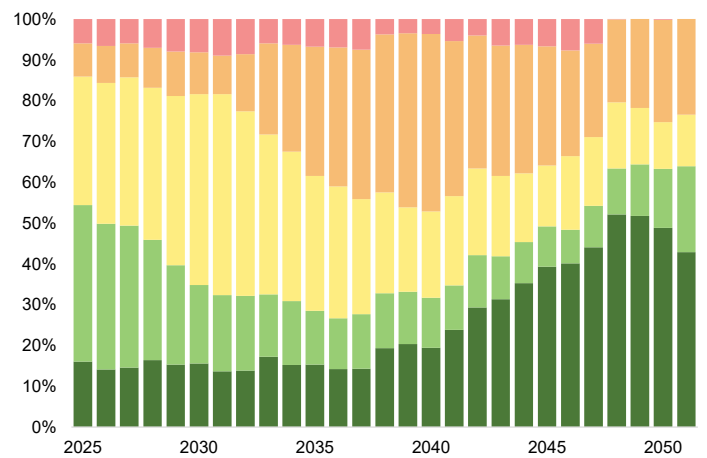
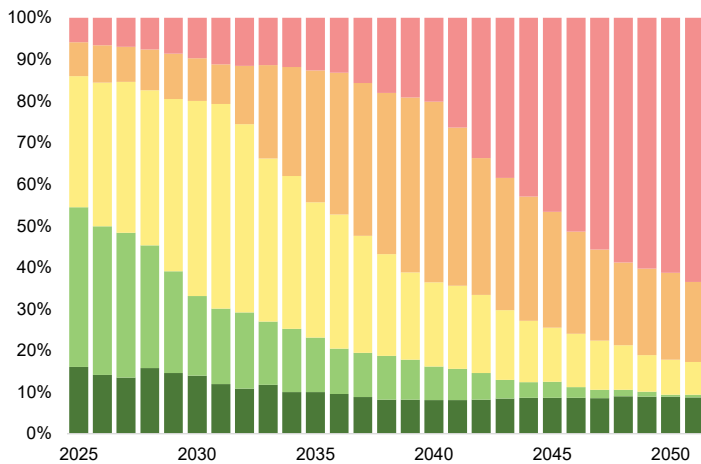
Trails

Trail Condition Index (TCI) over time



Scenario 1: Historical Spending Analysis

Scenario 2: Achieve Proposed Level of Service



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

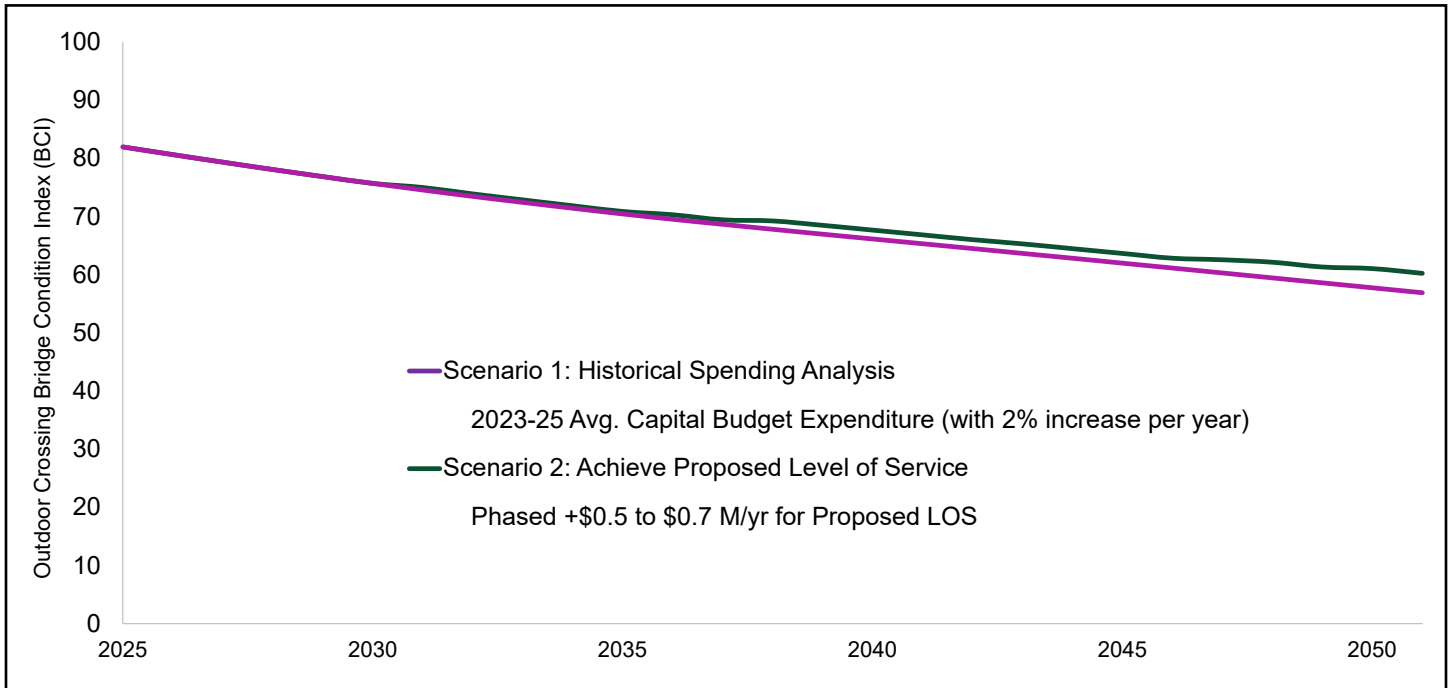


Asset Investment Strategy

Impact on Levels of Service

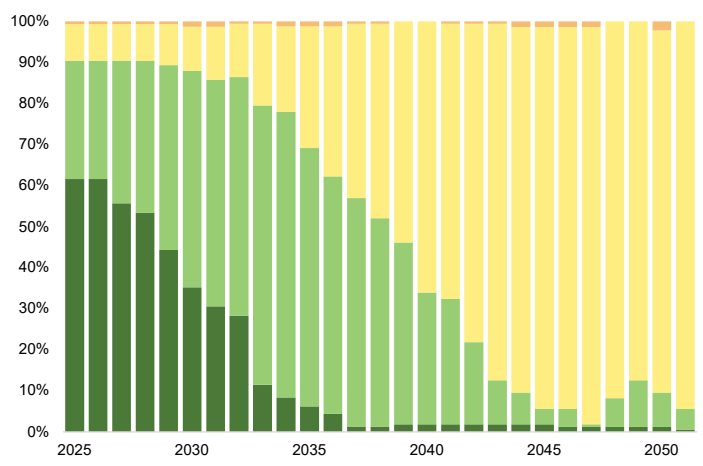
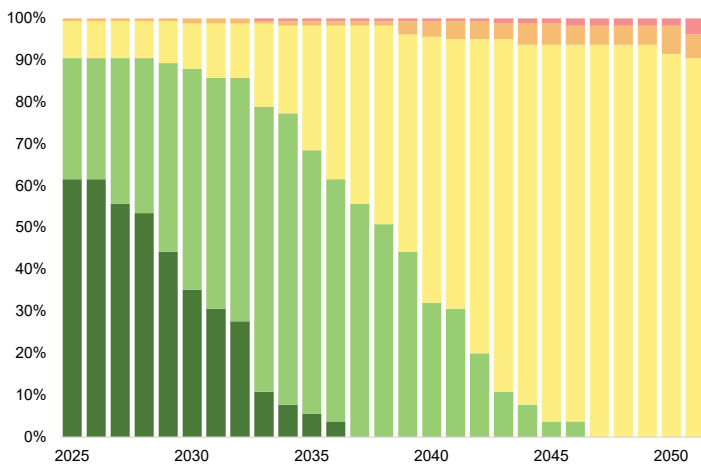
Outdoor Crossings

Bridge Condition Index (BCI) over time



Scenario 1: Historical Spending Analysis

Scenario 2: Achieve Proposed Level of Service



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



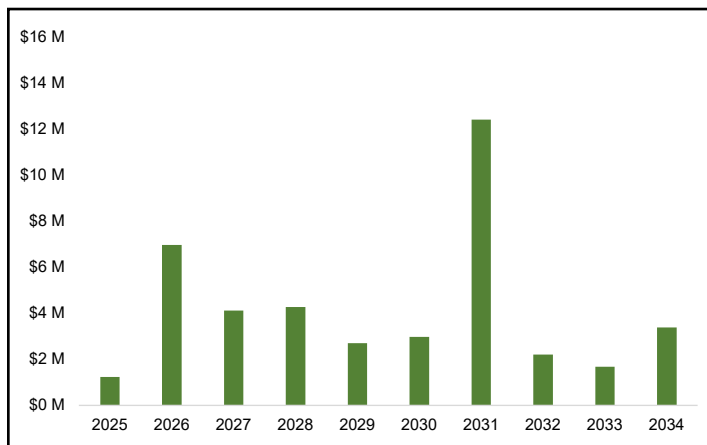
Asset Investment Strategy



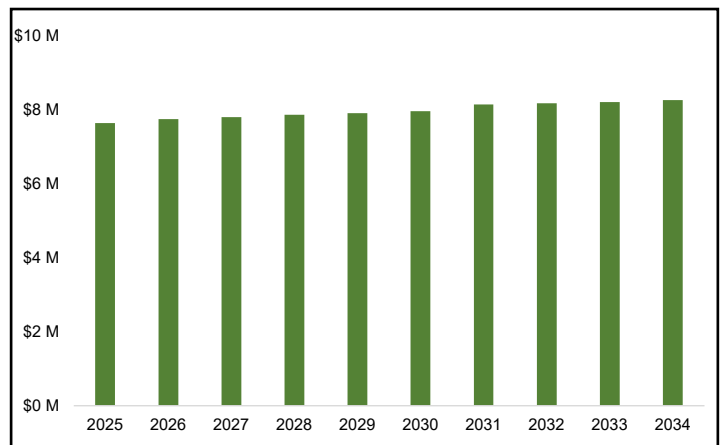
Growth Capital and Operating Forecast

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 2025 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.

2025 Growth Capital Budget and Forecast



Preliminary Estimated Operating Cost Forecast



The City's Active Transportation network is poised for advancement through projects outlined in the 10-Year Capital Budget and Forecast, aligned with the Transportation Master Plan. The CN Rail Overpass (Linear Park to Subway) project, with an investment of \$8.7 million, remains a cornerstone for enhancing pedestrian and cyclist connectivity. A Sidewalk Infill Program, with a total allocation of \$5.4 million through 2034, continues to support City-wide infrastructure improvements. Projects such as the Princeton/Via Renzo and Vogell/Mural (Business Parks) Active Transportation projects, each with over \$1 million in funding, highlight a commitment to active transportation within commercial areas. Additionally, several trail and pathway enhancements such as Humberview Pond trail address local and regional connectivity priorities.

The estimated operating and maintenance costs to support the existing and planned growth-related expansion of the City's Active Transportation infrastructure show steady and consistent growth from 2025 to 2034. These costs are projected to range from over \$7 million in 2025 to over \$8 million by 2034 (excluding future inflationary pressures), with incremental increases each year. The City is also anticipating to add some additional operating activities for this asset group, which it has not experienced in the past (e.g. proactive trail inspections, large-scale replacement of signage). It is possible that this could impact the operating forecast, however the City is not yet in a position to quantify these impacts for this AM Plan.



Future Outlook

Findings and Insights

Establishing Proposed Levels of Service

Proposed Levels of Service for the Active Transportation network have been selected to ensure the long-term sustainability of service provision for these assets.

At present, most sidewalks, cycling facilities and trails are not past their service lives; and, outdoor crossings are on average in Very Good condition. The City proposes to maintain these condition-based service levels to ensure that active transportation routes remain safe for all types of traffic.

Maintaining these levels of service represents a continuation of the same levels of service that the City is currently providing to the community, which the City has deemed to be achievable.

It is noted that historical funding is low relative to forecasted asset needs, which is indicative of the relatively good condition of these assets. The forecasting analysis indicates that additional spending (relative to historic) would be necessary to achieve proposed levels of service to 2051.

The phased-in approach to increasing spending in the forecasts was established to illustrate a methodology that attempts to gradually increase spending to maximize the potential for affordability while ensuring that risks and service levels are balanced into the long term.

Managing Lifecycle Needs and Mitigating Risks

The forecasting analysis completed for active transportation assets illustrates that historical spending has been relatively low when compared to forecasted asset needs. This generally reflects that assets such as trails have not yet undergone major rehabilitation or replacement cycles, which are anticipated to occur in the future. Historic data that was used for this analysis illustrated that the assets within this portfolio were generally not in need of capital interventions in the recent past. This is expected to change as these assets age further and require rehabilitations and replacements.

Without additional spending, levels of service are anticipated to decline modestly in the near-term, gradually in the medium-term, and then significantly in the later years of the forecast period. The City should consider a proactive approach to managing these assets in the near to medium term in order to minimize the long-term impacts that are identified in this analysis.

The City is aware that these assets will require renewal pressures, and is enacting a number of initiatives to address them proactively, such as completing proactive trail inspection programs, and more recently beginning to focus on planning rehabilitations and replacements of areas of its Active Transportation network.

Should spending not be increased for these assets, the condition of these active routes may decline to a point where some users, for example, cyclists, may be affected differently than other users. Due to the higher speeds and sensitivity inherent in cycling, rough active transportation route surfaces may affect cyclists more than users like pedestrians.



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 of the network include water meters, hydrants, valves, and fleet and equipment assets to support and maintain water infrastructure.



Watermains

Richmond Hill's watermains are an extensive network of underground linear infrastructure that provide the efficient delivery of water throughout the City. This network includes approximately 676 kilometres of watermains. Greater than 80% of the City's watermain network is constructed of Polyvinyl Chloride (PVC) material. Other materials present in the network include metallic pipes (ductile iron and cast iron) and Concrete Pressure Pipes (CPP). The diameters of these pipes vary in size, from 100 mm to 750 mm, which allows for the versatile distribution of water to meet different demands across the City. Greater than 95% of the network consists of pipes with a diameter of 400 mm or less. The City also has over 12,000 valves, over 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 53,000 water meters that are installed in residential, commercial, industrial, and institutional properties to track precise readings of water consumption, which enables both the City and the consumers to monitor usage effectively. Complementing these meters are 24 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 and generators. 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
\$2,821 M

Average Condition
A (Very Good)

Average Age / ESL
26 / 120 (years)

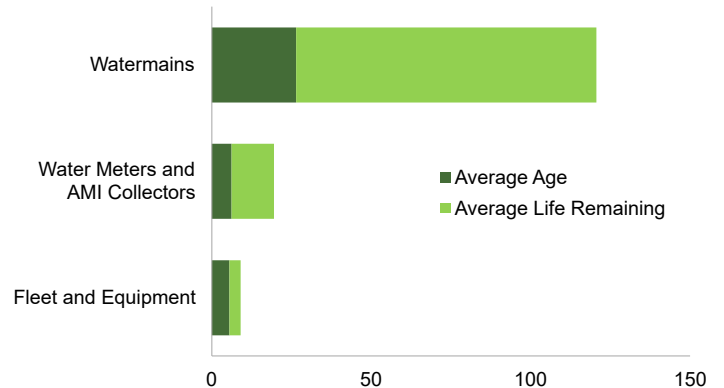


Asset Portfolio Summary

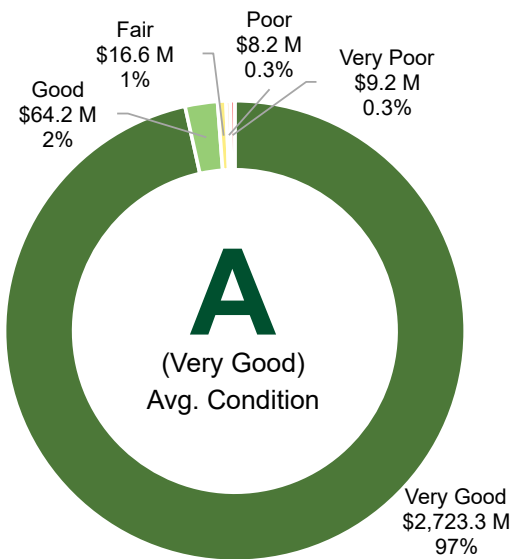
Asset	Quantity	Replacement Value
Watermains	676 km	\$2,796.3 M
Valves	12,391 ea.	
Hydrants	4,863 ea.	
Service Connections	47,966 ea.	
Chambers	5,564 ea.	
Water Meters/AMI Collectors	53,296 ea.	\$21.4 M
Fleet and Equipment	A mix	\$3.6 M



Age Profile



Condition Profile



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

- The condition of watermains is based on a combination of the number of breaks and asset age relative to remaining service life. Watermain breaks are recorded in the City's maintenance management system and paired to the City's asset inventory data to understand the overall number of breaks on each watermain segment (and therefore its condition).
- The condition of ancillary assets (valves, hydrants, service connections and chambers) is tied to the condition of the associated watermain. Watermain replacements drive the asset lifecycle strategies for ancillary assets; therefore, these assets are grouped together in the asset management analyses.
- The condition of water meters and Advanced Metering Infrastructure (AMI) collectors is based on age and estimated service life.
- The condition of fleet and equipment is based on utilization (km), age and estimated service life.

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



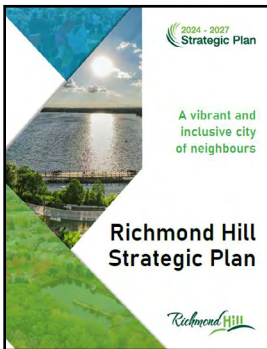
Levels of Service

Strategic Level of Service: Richmond Hill's Water Distribution 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

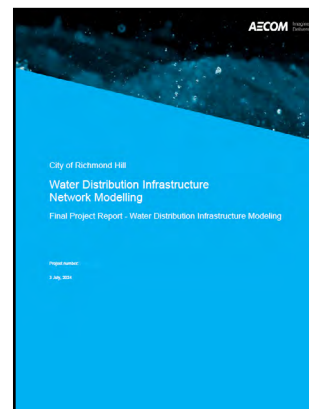
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents,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

Water Computer Model



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



Levels of Service

Level of Service Theme: Connection to the Municipal Water System

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Water Distribution Network

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 water from York Region and then distributes it to Richmond Hill residential, commercial, industrial and institutional users through its 676 km long network of watermains. Approximately 93% of the City's properties are connected to the Water Distribution system. The 7% of properties not connected are located on 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. The City's water distribution network is anticipated to expand over time in response to projected growth and evolving community needs, through the construction of new and enhanced infrastructure. As the network grows, more properties will become connected to the system. Note that this does not necessarily indicate that the City has plans to connect existing properties that are not yet connected; rather, newly constructed properties are expected to be connected to the system, thus increasing the overall percentage of properties connected.

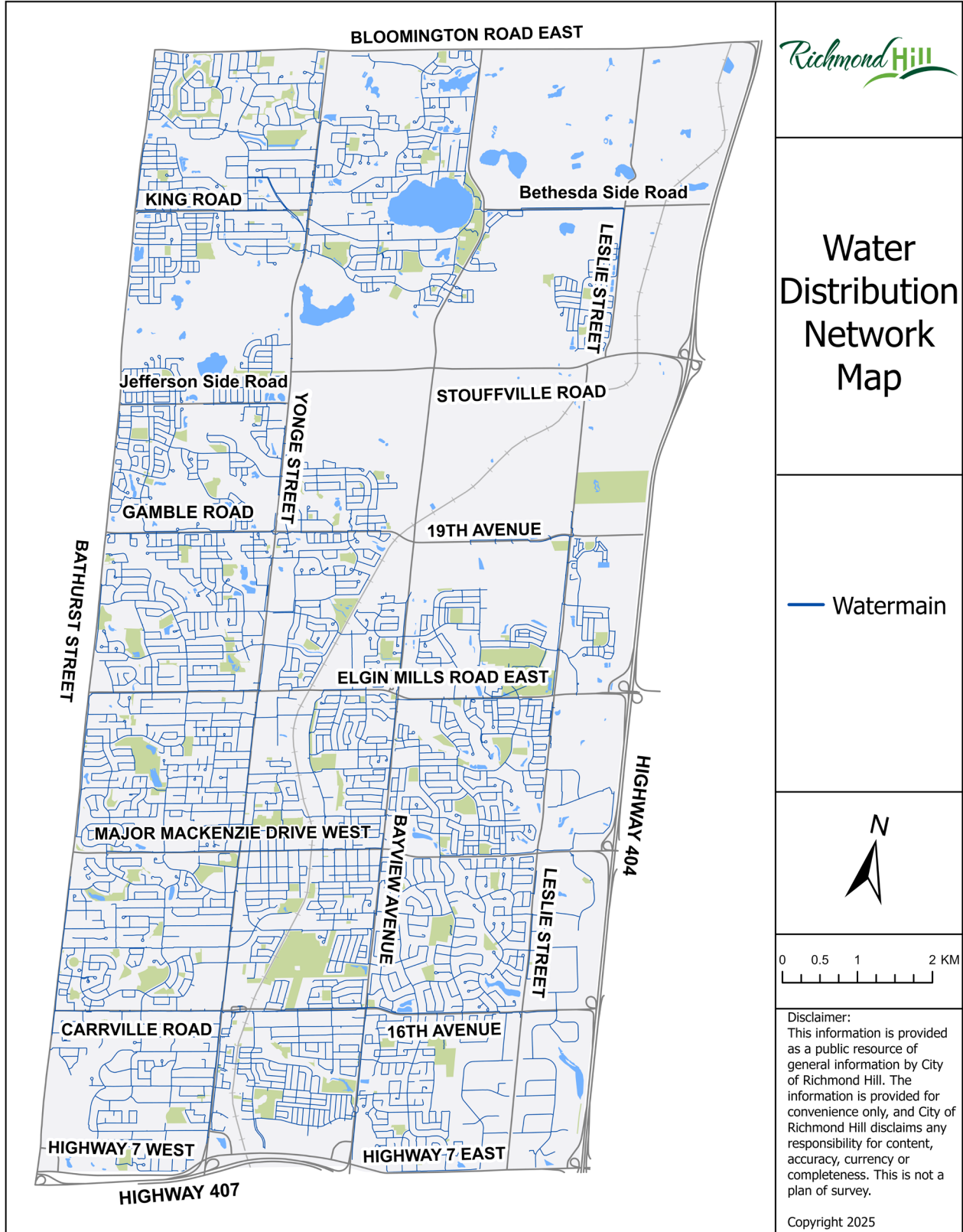
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	Percentage of properties connected to the municipal water system.	Regulatory (O. Reg. 588/17)	93%	Increase in alignment with growth planning



Levels of Service

Level of Service Theme: Connection to the Municipal Water System





Levels of Service

Level of Service Theme: Fire Flow Availability

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description, which may include maps, of the user groups or areas of the municipality that have fire flow.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Water Distribution Network

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 generally have a spacing of 75 metres in non-residential areas and 150 metres in residential areas. As detailed in the Technical Levels of Service table below, 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. These properties still receive fire protection services through alternative firefighting coverage methods. The City will continue to ensure that fire flow is available to existing and newly constructed properties to support emergency response requirements.

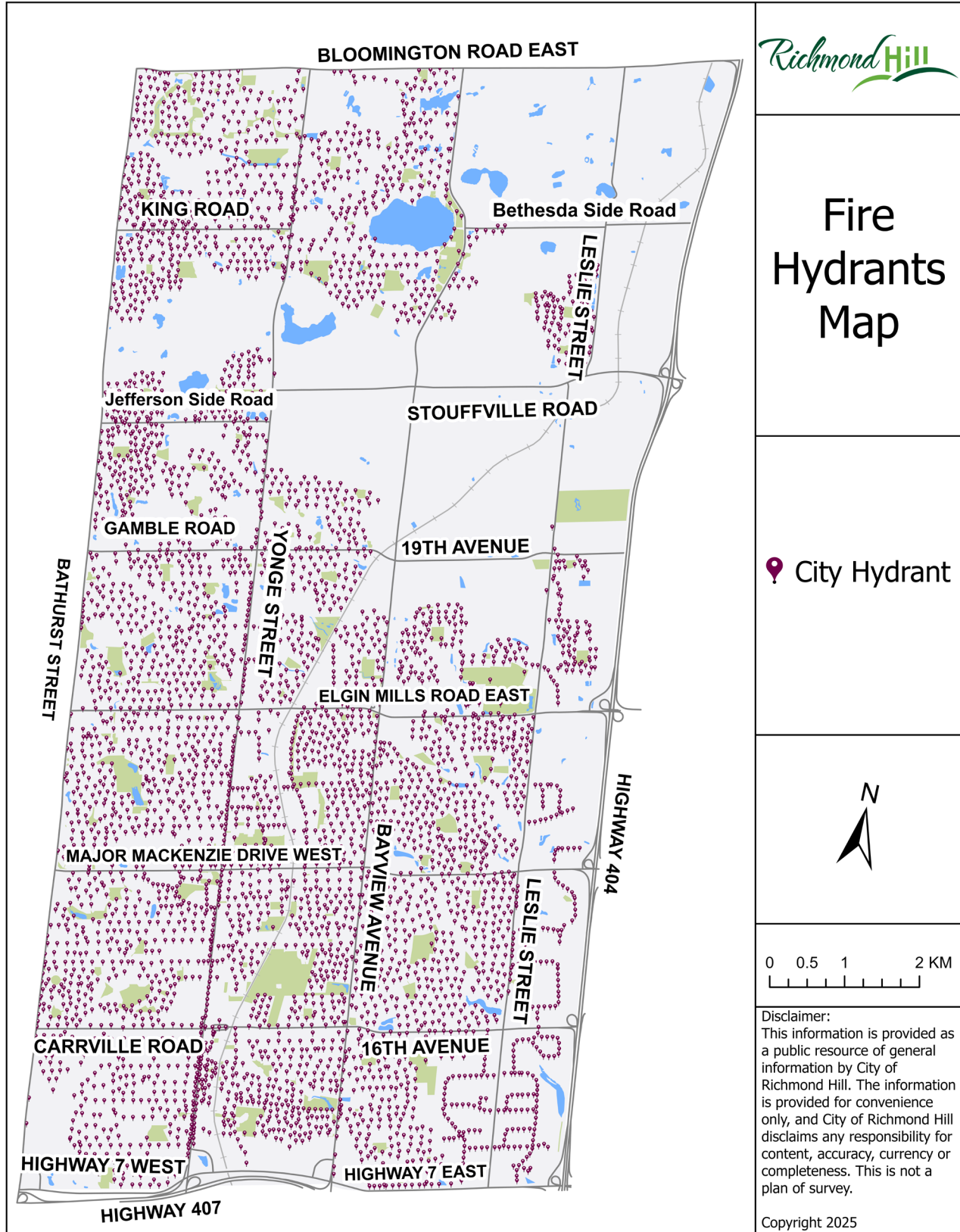
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	Percentage of properties where fire flow is available	Regulatory (O. Reg. 588/17)	93%	Increase in alignment with growth planning



Levels of Service

Level of Service Theme: Fire Flow Availability





Levels of Service

Level of Service Theme: Boil Water Advisories and Service Disruptions

Community Levels of Service

Service Attribute: Reliability

Performance Measure: Description of boil water advisories and service interruptions.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Water Distribution Network

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 when water is shut down to repair a watermain break. The duration and number of customers affected by these service disruptions are tracked by the City. Watermain breaks are repaired to continue the provision of reliable service to the community. The City will continue to take all necessary measures to mitigate any disruptions that may impact the quality and availability of drinking water, ensuring a reliable and safe water supply for the community.

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Reliability	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	Regulatory (O. Reg. 588/17)	0 per 51,550 properties	Maintain at 0 (where under the City's purview)
Reliability	The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system	Regulatory (O. Reg. 588/17)	121 connection-days per 51,550 properties	Decrease (Improve)



Levels of Service

Level of Service Theme: Watermain Condition

Community Levels of Service

Service Attribute: Quality, Reliability

Performance Measure: Description of how condition of the watermain network is measured and reported.

Measure Type: City-Defined

Applicable Assets: Watermains

The City maintains a detailed database and maintenance management system that records watermain breaks. Breaks are logged with work order data every time new breaks occur and are repaired. 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, such as replacement or rehabilitation. The City also utilizes its condition data to report on a Watermain Condition Index (WCI), which is a 100-point rating scale used to communicate watermain condition.

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Quality	Average watermain condition index (WCI)	City-Defined	98 (Very Good)	Maintain (Good or better Condition)
Reliability	Percentage of watermain assets in Fair or better condition	City-Defined	99%	Maintain (+/- 5% range)
Reliability	Annual number of watermain breaks per 100 km	City-Defined	4.9	Decrease (Improve)
Reliability	Annual number of watermain breaks	City-Defined	33	Decrease (Improve)



Asset Management Lifecycle Strategies

Lifecycle Activities

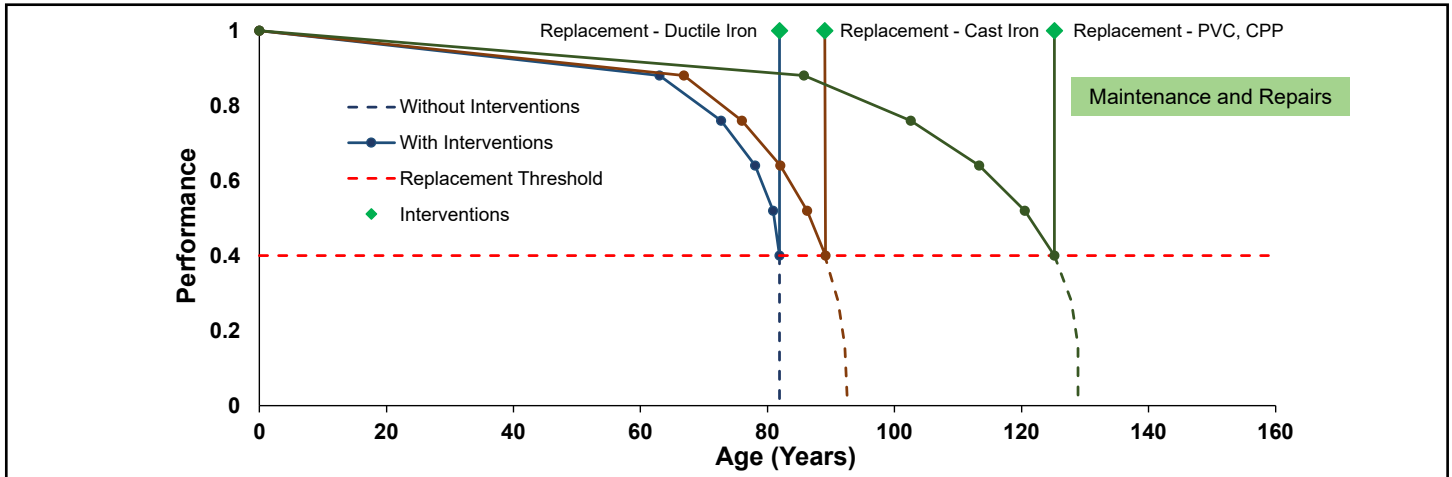
Lifecycle Activity	Description of Activities Practiced by the City
Non-Infrastructure	<ul style="list-style-type: none"> • The City encourages the conservation of water and energy through policies, procedures and public outreach (e.g. promoting leak detection education) • The City’s Drinking Water Quality Management System Operational Plan. • Continuous improvements in utilizing IT systems for tracking and maintenance (e.g. Maximo) • The City’s approved Design and Construction Guidelines. • Regular water sampling, testing and monitoring conducted.
Maintenance	<ul style="list-style-type: none"> • The City completes ongoing scheduled maintenance, repair and emergency activities of watermains and the associated ancillary assets. These are tracked through Maximo. • The City performs testing, maintenance and repairs of water meters and AMI collector units to ensure proper functioning and accuracy. • Fleet and equipment are inspected and maintained per recommended standards.
Rehabilitation	<ul style="list-style-type: none"> • The City currently plans for replacement of watermain assets, instead of relining. • 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. • 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	<ul style="list-style-type: none"> • 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. • Water meters and AMI Collector units are replaced when they have reached the end of their service life and/or are not functioning. • 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	<ul style="list-style-type: none"> • 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. • Fleet and equipment are generally disposed when the new replacement arrives. • Water meters and AMI collector units are generally disposed by the vendor when replaced.
Growth / Service Improvement	<ul style="list-style-type: none"> • The City’s approved Urban Master Environmental Servicing Plan (UMESP) set guidelines for water infrastructure needed to support the City’s growth areas, including intensification. Building on this, the City’s Water Computer Model is updated as development conditions change and will be used to undertake the City’s Water Master Plan in 2025 to identify upgrades and/or expansions required for future growth. • 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. • The City’s Development Charges Background Study provides recommendations to upgrade and/or expand the Water Distribution System. • New and/or larger assets are also identified through technical analysis as part of servicing plans completed to service new developments and growth. • 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 Lifecycle Strategies

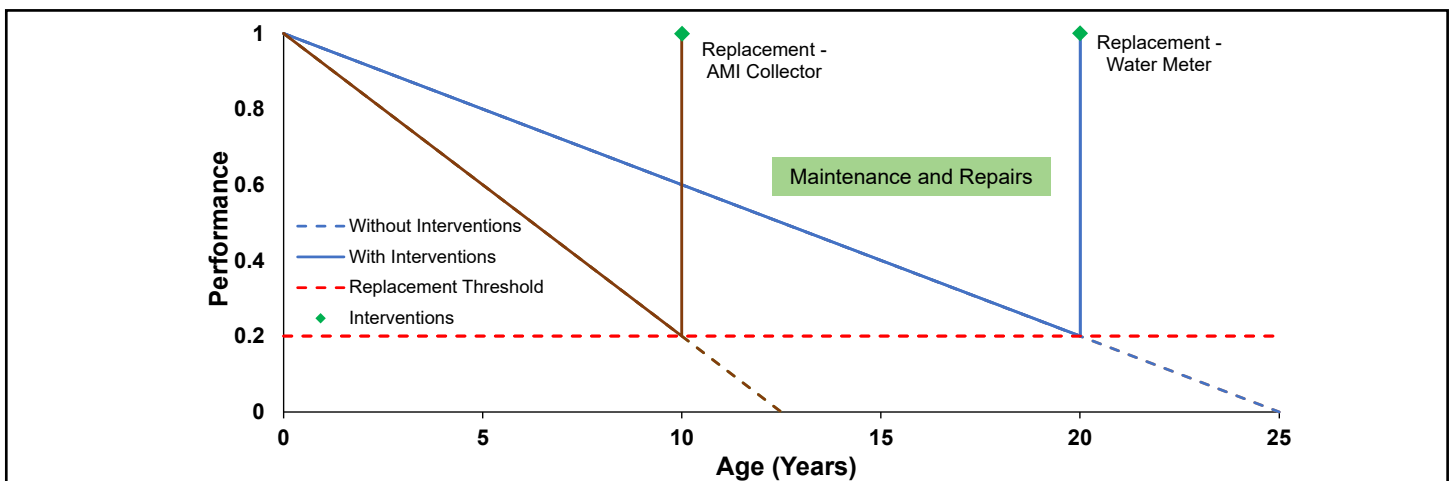
Capital Treatments

Watermains Lifecycle



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 lifecycle 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 Lifecycle



The City's lifecycle 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.

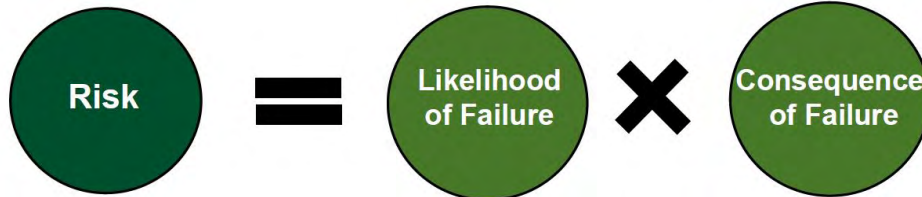


Risk Prioritization

Average Risk Grade
Very Low (A)

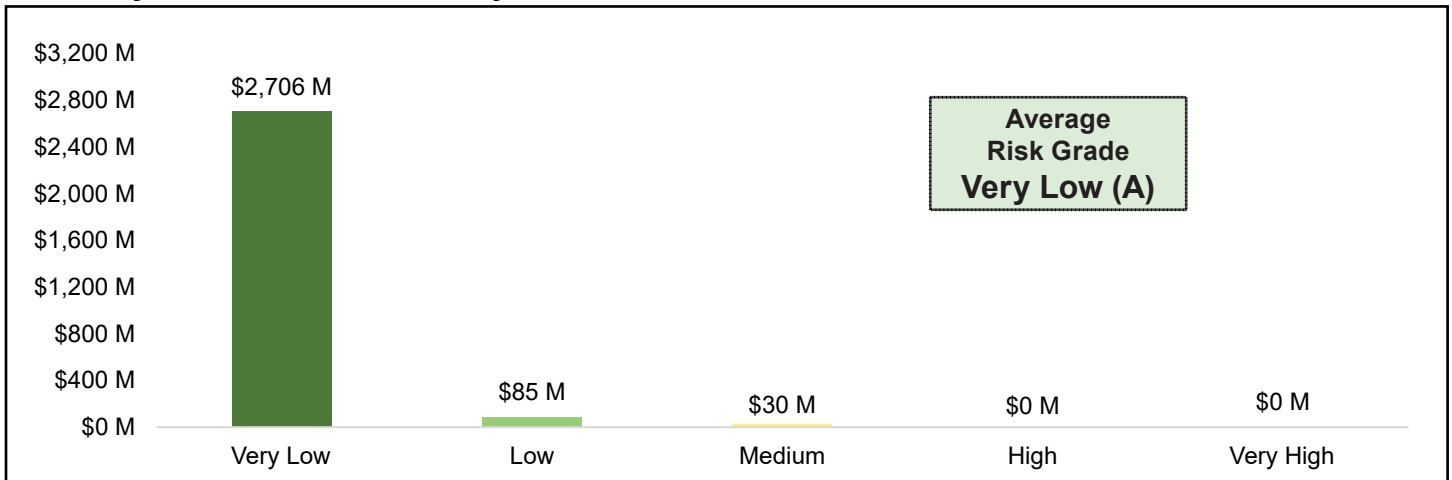


Risk Framework



Asset	Likelihood of Failure		Consequence of Failure		
	Condition	Capacity	Financial	Social	Environmental
<ul style="list-style-type: none"> Watermains Valves Hydrants Chambers Service Connections Water Meters/AMI Collectors Fleet/Equipment 	<ul style="list-style-type: none"> Current and deteriorating condition 	<ul style="list-style-type: none"> Current capacity Future expansion/new need identified in budget, plan or study 	<ul style="list-style-type: none"> Capital replacement cost Operating cost/revenue 	<ul style="list-style-type: none"> Traffic counts Road classification Land use Asset size, type, function and material 	<ul style="list-style-type: none"> Environmental compliance and asset type 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
\$88.2 M

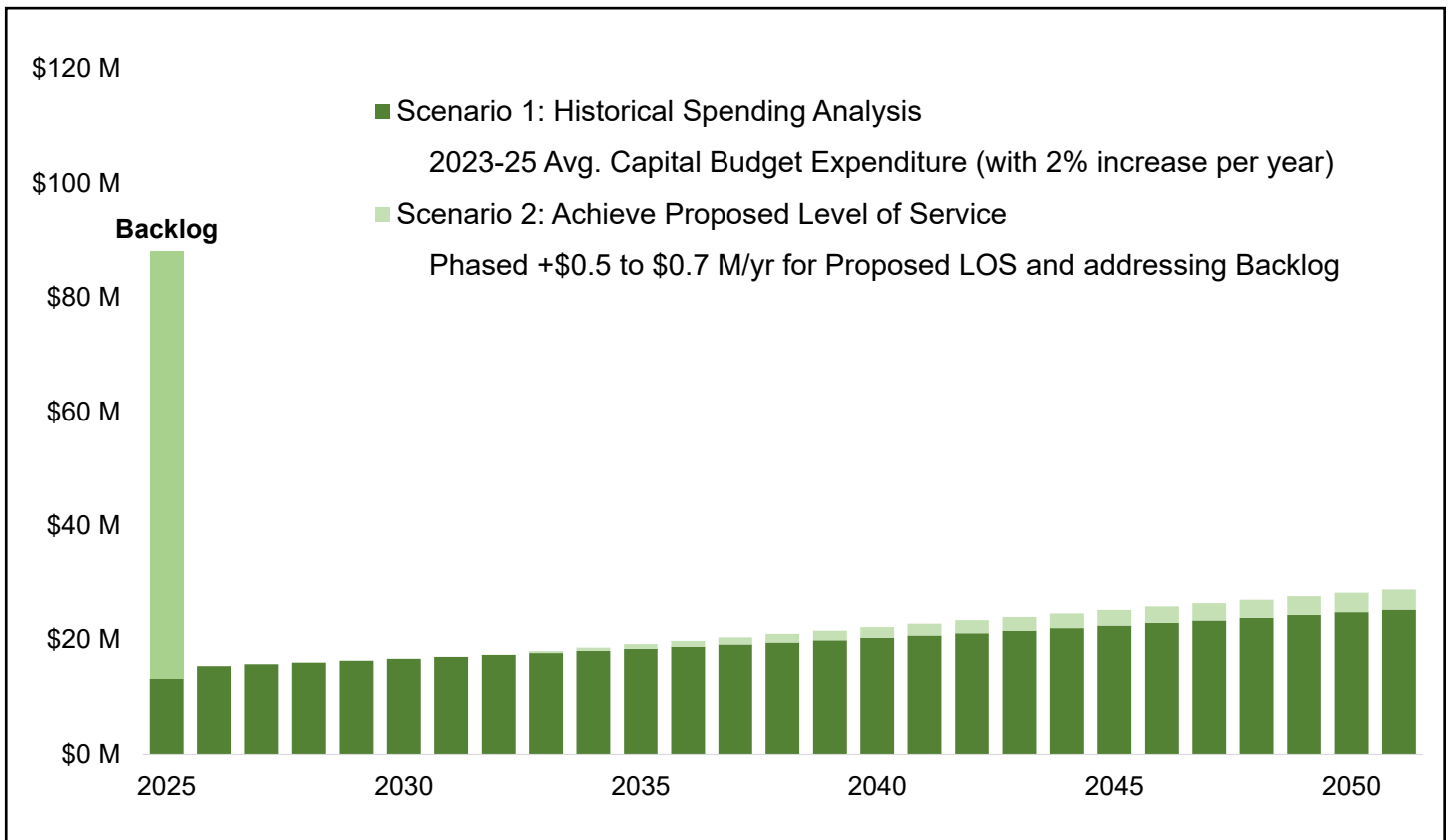
Proposed LOS
+\$0.5 to \$0.7 M/yr



Investment Approach

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

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Water	88.2	13.3	+0.5 to 0.7	159.6	16.0	568.7	21.1
Wastewater							



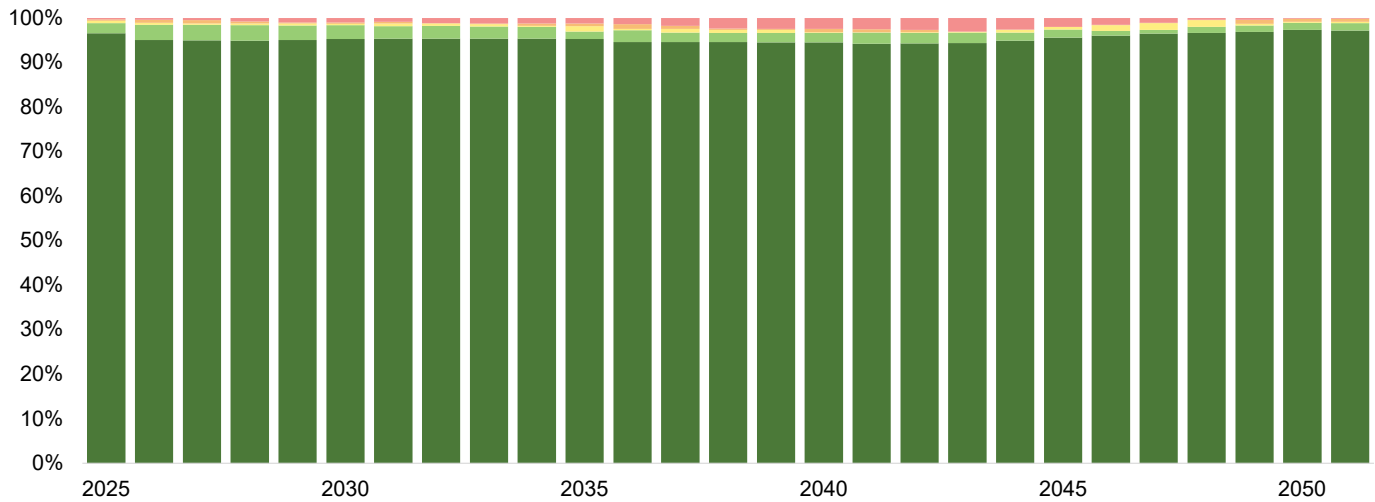


Asset Investment Strategy

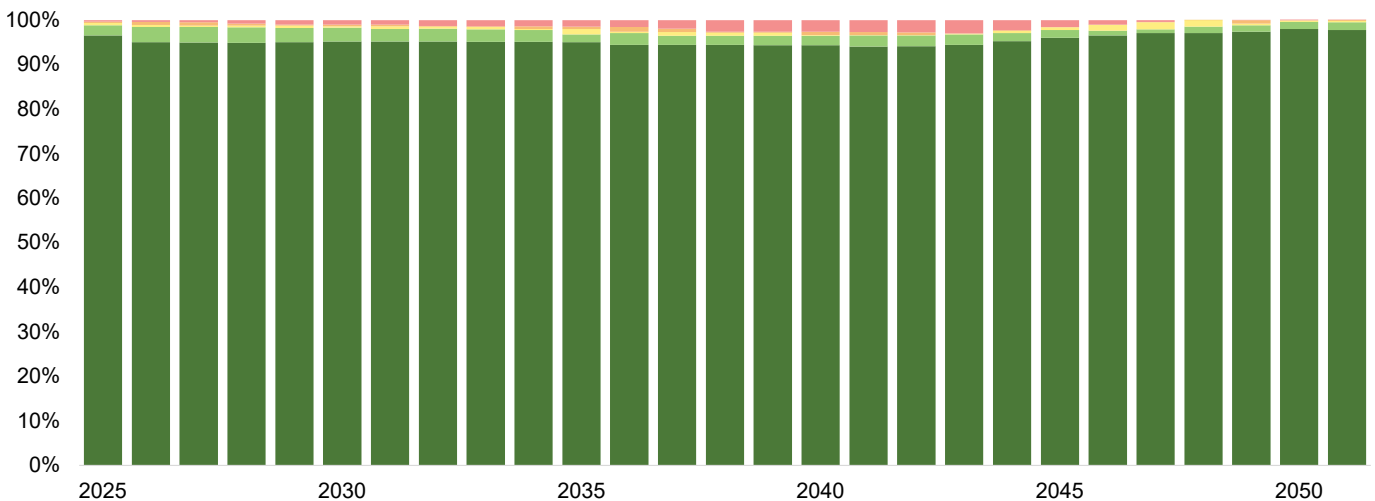
Impact on Levels of Service

Water Distribution (All)

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

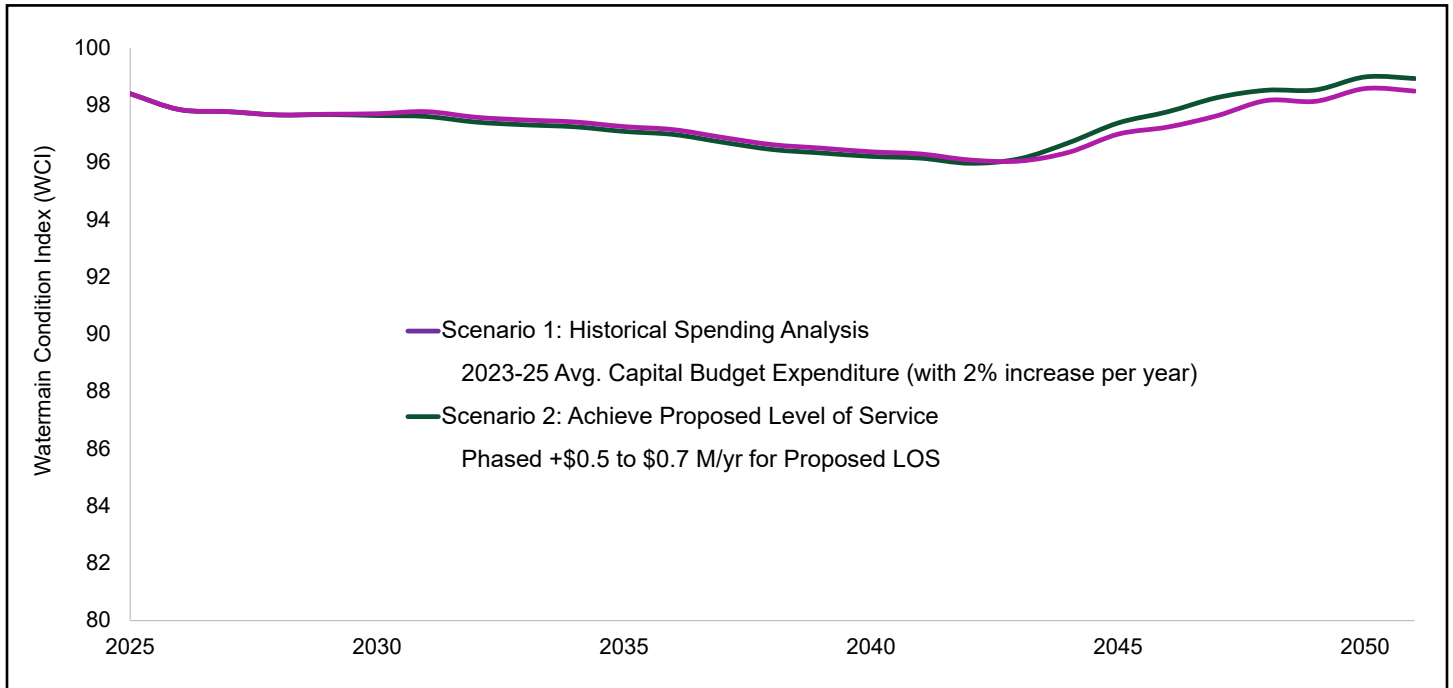


Asset Investment Strategy

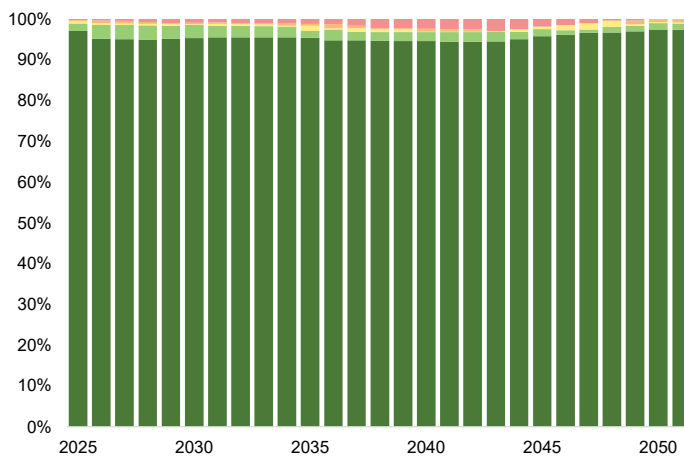
Impact on Levels of Service

Watermains

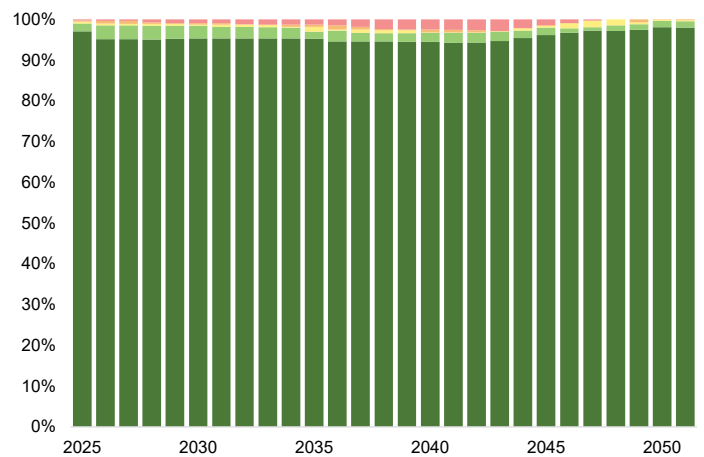
Watermain Condition Index (WCI) over time



Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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



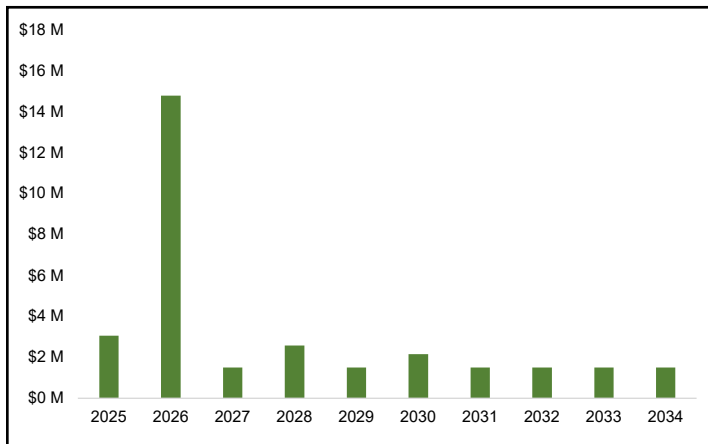
Asset Investment Strategy



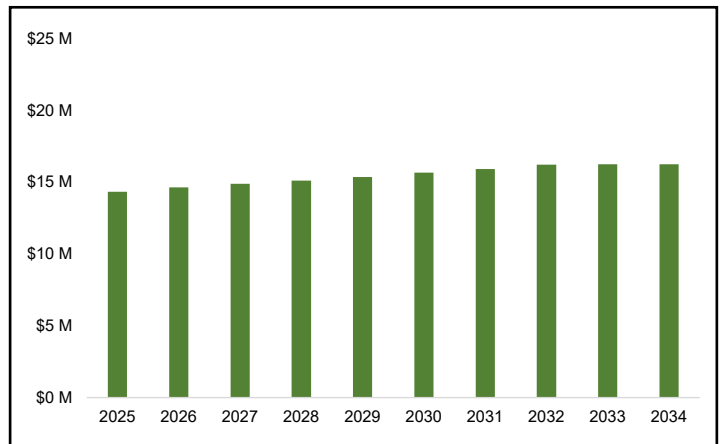
Growth Capital and Operating Forecast

The City’s approved Urban Master Environmental Servicing Plan (UMESP) and now the City’s Water Computer Model set guidelines for water infrastructure that are needed to support development in the City’s growth areas, including intensification to the year 2051. The City’s Water Computer Model identified a number of water improvement projects that will help ensure Richmond Hill can continue to accommodate growth. The City-wide Water Computer Model also 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 2025 Asset Management Plan will inform future infrastructure investments through the City’s 10 Year Capital Budget and Forecast.

2025 Growth Capital Budget and Forecast



Preliminary Estimated Operating Cost Forecast



Richmond Hill’s Water Distribution system is subject to development pressures of which the required works have been identified within the Urban Master Environmental Servicing Plan and the City’s Water Computer Model. Further refinements to the growth-related projects are expected to occur as a result of the Water Master Plan. The 10-Year Capital Budget includes \$30.7 million in growth-related projects. Key collaborations with York Region include the Bathurst Street Reconstruction (\$6.7 million), Elgin Mills Road West Reconstruction (\$4.3 million), and Yonge Street Watermain Improvement (\$1.1 million), ensuring vital infrastructure enhancements. City-wide water improvements, with \$7.6 million allocated across various locations, and new water meter installations totaling \$5.4 million, further support the system’s expansion. These initiatives aim to deliver a reliable, high-quality water supply to meet the needs of the growing community while enhancing service efficiency.

Operating forecasts for Water Distribution and Wastewater Collection were developed as part of the City’s 2024 Water and Wastewater Financial Plan. Per the Financial Plan, Richmond Hill’s Water and Wastewater services are estimated to experience steady increases in operating and maintenance costs over the next 10 years for both existing and new growth assets if they are constructed as identified in the City’s 10-Year Capital Budget and Forecast. These forecasted operating costs are projected to grow from approximately \$14 million in 2025 to over \$16 million by 2034 (excluding future inflationary pressures), reflecting incremental increases annually.



Asset Investment Strategy

Identifying Additional Needs

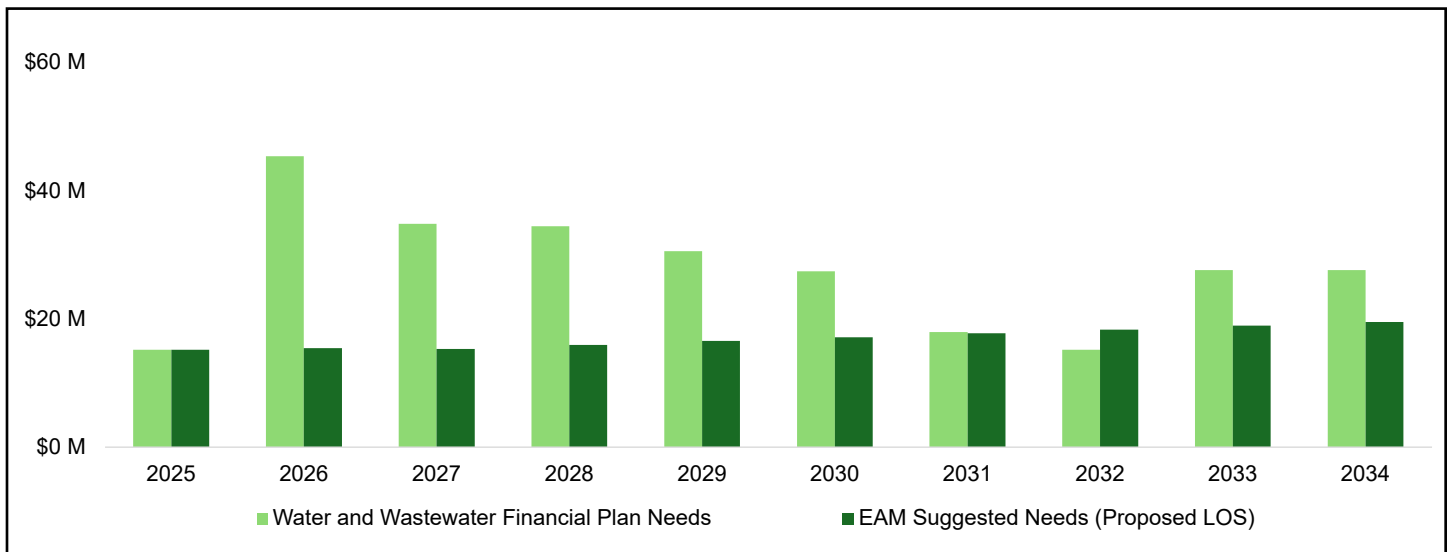
The Water and Wastewater financial forecasts presented in this Appendix represent the needs associated with achieving the proposed condition-based levels of service for these assets. The analysis to forecast these needs was completed by the City's EAM system and the outputs from this analysis are provided to the City's subject matter experts annually, to assist them in developing the Capital Plan and Forecast each year. The City's subject matter experts then balance the EAM's recommendations on asset condition-based needs with additional projects related to additional needs, including the bundling of assets within the municipal right of way and other performance-related needs.

The replacement of watermains tends to be both expensive and disruptive to the community due to the amount of work associated with excavating the right of way to replace these assets. As a result, the City typically plans watermain work to coincide with works to the associated road and other nearby underground linear assets (such as sanitary/storm sewers), which is referred to as corridor bundling. This minimizes disruption to the community. When the City develops its capital plan and forecast, it includes bundled corridor projects, which may include watermain assets that are not identified in the initial EAM analysis.

In addition, the City has more recently incorporated a performance-based approach to understanding its water distribution assets. It uses the results of its water models to identify these performance-based needs including issues where pressure is low or additional capacity is needed. These needs can also be reflected in the City's Capital Budget and Forecast. In 2024, the City completed a water and wastewater rate study, which was informed by its condition, performance and corridor bundling needs identified through the capital planning and forecast process.

To supplement the condition-based forecasts provided in this Appendix, the City has also included needs identified as part of the Water and Wastewater Financial Plan below. These represent the additional needs identified as part of that study, which include project bundling activities as well as performance-based needs.

EAM Suggested Needs (Proposed LOS) vs. Water and Wastewater Financial Plan Needs





Future Outlook

Findings and Insights

Establishing Proposed Levels of Service

The City has selected proposed levels of service and performance targets that align with its objectives to ensure long-term sustainability and minimize risk to the community. Currently, watermain condition-based levels of service are high, and are expected to be so over the next 10 and 27 years. This ensures that risks remain low moving forward, from a condition perspective.

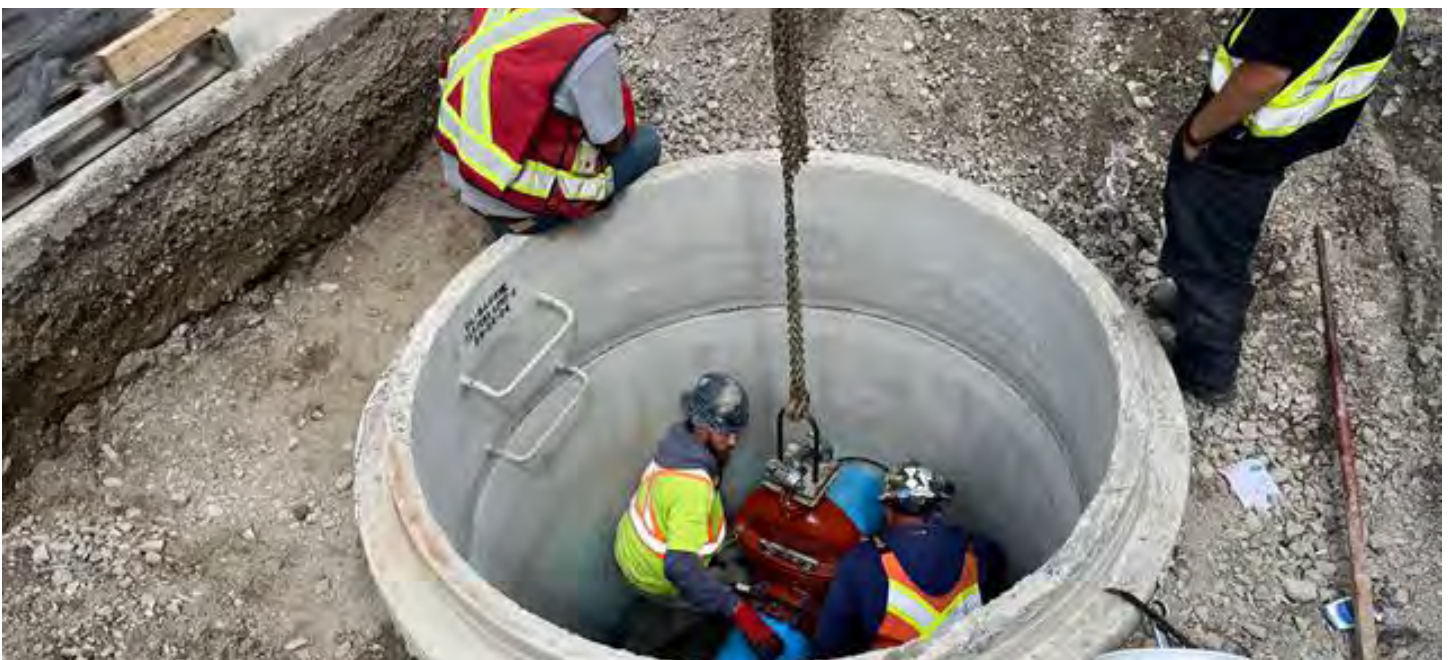
The levels of service presented in this AM Plan are focused on the condition-based service level measures that have been developed by the City. In addition, the City has identified other needs, including those associated with project bundling, as well as performance-based needs. These additional needs have been incorporated into its annual Capital Plans and Forecasts, described previously in this Appendix.

The City has put forward an achievable and affordable plan to address its Water Distribution network-related needs over the next 10 years as part of its 2024 Water and Wastewater Financial Plan. This includes needs associated with achieving its condition-based levels of service, as well as other considerations, such as project bundling and performance-based needs. That study recommended user rate increases that were in line with the City's forecasted needs, ensuring that the City is able to fund its needs over the next 10 years.

Managing Lifecycle Needs and Mitigating Risks

The forecasting analysis completed herein identifies spending needs associated with achieving the City's condition-based proposed levels of service. Furthermore, additional needs identified through the City's 2024 Water and Wastewater Financial Plan represent other needs identified by the City's subject matter experts.

Given the results of the forecasting analysis, it is expected that condition-based levels of service will remain high into the future. Furthermore, performance and project bundling issues can also be addressed through the City's Capital Plan and Forecast, ensuring that water distribution services can be provided to the community to meet their needs. Furthermore, the City continues to further enhance its performance-based analysis of the Water Distribution network, which will result in a better understanding of performance-based needs that will be reflected in future asset management analyses and future AM Plans.





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 pumping 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 619 kilometres. Approximately 74% of these pipes are constructed of PVC and approximately 15% are constructed of concrete. Other material types include vitrified clay and metallic pipes. The diameters of these pipes vary in size, ranging from 150 to 1,350 mm, and are each selected based on their ability to accommodate different wastewater flow rates and volume demands across the City. Integral to this network are the over 9,700 maintenance holes and over 47,500 service connections. Note that the City does not have any combined sewers. As a result, certain legislated community and technical levels of service related to combined sewers are not applicable to the City and are not reported herein. Furthermore, since wastewater is treated by the Region, additional legislated levels of service related to treatment plants are also not applicable and not reported herein.



Invar Pumping Station

Pumping Stations

Wastewater primarily flows through the City's wastewater collection network using gravity; however, in some cases, a pumping station is required to pump wastewater from lower elevations to higher ones. These facilities are generally comprised of a building, internal process equipment, and a forcemain, which is a wastewater sewer pipe that is constructed to withstand pressure flow from the pump station. 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 collection/treatment process. The process equipment within pumping stations includes pumps, valves, generators, heaters, safety grates and other components.



State of the Infrastructure

Replacement Value
\$3,009 M

Average Condition
A (Very Good)

Average Age / ESL
31 / 74 (years)

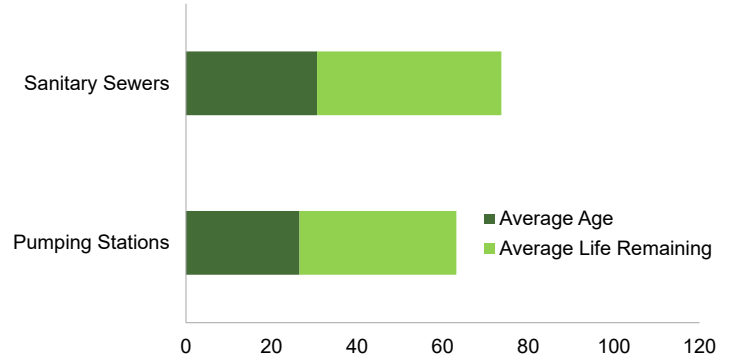


Asset Portfolio Summary

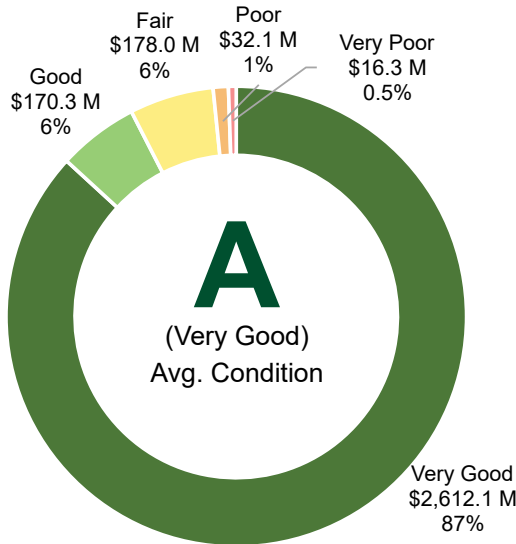
Asset	Quantity	Replacement Value
Sanitary Sewers	619 km	\$2,982.0 M
Maintenance Holes	9,716 ea.	
Service Connections	47,549 ea.	
Pumping Stations	6 ea.	\$26.9 M



Age Profile



Condition Profile



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

- The condition of sanitary sewers is based on structural defects that are identified through closed circuit television (CCTV) inspections. Using a standardized methodology, these defects are converted into a PACP rating, which describes the pipe's condition. The City maintains a five-year inspection cycle and to date, approximately 76% of the network has received a CCTV inspection and a PACP condition score. The City uses the asset's age and estimated service life as a proxy for condition for the remaining 24% of the network.
- The condition for the ancillary assets (maintenance holes, service connections) is tied to the condition of the sanitary sewer.
- For pumping station buildings, their condition is based on Building Condition Assessments completed in 2022/2023. 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 pumping station equipment, condition is based on condition assessments and age/estimated service life.

Condition Category	Letter Grade	Sanitary Sewers: PACP Score	Pumping Station Facilities: Building Condition Assessments	Pumping Station Equipment: Condition Assessments and Age/ESL
Very Good	A	0 or 1	>0.8 to 1.0	>0.8 to 1.0
Good	B	2	>0.6 to 0.8	>0.6 to 0.8
Fair	C	3	>0.4 to 0.6	>0.4 to 0.6
Poor	D	4	>0.2 to 0.4	>0.2 to 0.4
Very Poor	F	5	>0 to 0.2	>0 to 0.2



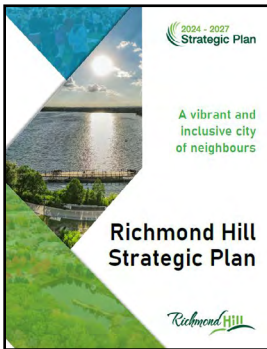
Levels of Service

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

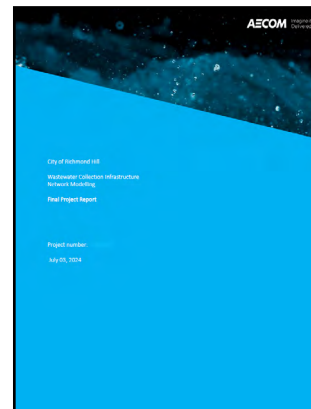
- Make decisions that are evidence-based and data-driven to enable the City’s long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents,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

Wastewater Computer Model



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



Levels of Service

Level of Service Theme: Connection to the Municipal Wastewater Collection System

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Wastewater Collection Network

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's wastewater collection system is anticipated to expand over time in response to projected growth and evolving community needs, through the construction of new and enhanced infrastructure. As the network grows, more properties will become connected to the system. Note that this does not necessarily indicate that the City has plans to connect existing properties that are not yet connected; rather, newly constructed properties are expected to be connected to the system, thus increasing the overall percentage of properties connected.

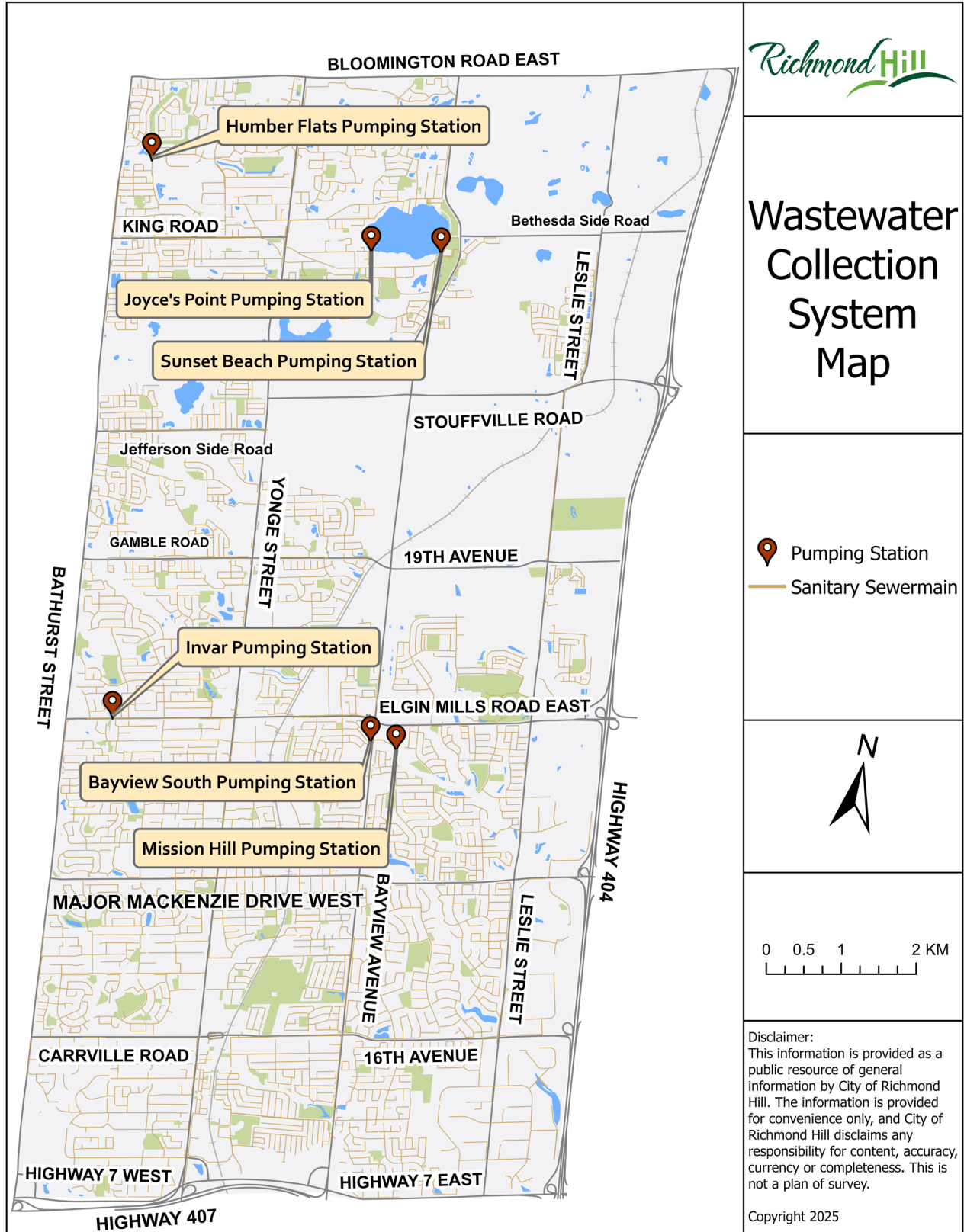
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	Percentage of properties connected to the municipal wastewater system.	Regulatory (O. Reg. 588/17)	93%	Increase in alignment with growth planning



Levels of Service

Level of Service Theme: Connection to the Municipal Wastewater Collection System





Levels of Service

Level of Service Theme: Inflow & Infiltration and Wastewater System Resilience

Community Levels of Service

Service Attribute: Reliability

Performance Measure: Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Wastewater Collection Network

Inflow and Infiltration (I&I) is the terminology used to describe the seepage of water 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; could cause basement flooding; and, could 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 occur from a number of sources, including 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. The City does not own any combined sewers.

Service Attribute: Reliability

Performance Measure: Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events related to stormwater inflow and infiltration.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: Wastewater Collection Network

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.



Levels of Service

Level of Service Theme: Inflow & Infiltration and Wastewater System Resilience

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.

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Reliability	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	Regulatory (O. Reg. 588/17)	0 per 51,550 properties	Maintain at 0
Reliability	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.*	Regulatory (O. Reg. 588/17)	N/A	N/A

*The City does not own or operate wastewater treatment facilities. Wastewater treatment is provided by York and Durham Regions.



Levels of Service

Level of Service Theme: Wastewater Collection System Condition

Community Levels of Service

Service Attribute: Quality, Reliability

Performance Measure: Description of how condition of the Wastewater Collection system is measured and reported.

Measure Type: City-Defined

Applicable Assets: Sanitary Sewers, Pumping Stations

The condition of sanitary sewers is based on Pipeline Assessment Certification Program (PACP) ratings. These ratings are obtained from Closed Circuit Television (CCTV) inspections of the City's sewer network, and are calculated based on structural defects observed in the sewers. A PACP score ranges from 0 (Very Good) to 5 (Very Poor). The City maintains a 5-year inspection cycle for all sewers. To date, approximately 76% of the sewer network has received a CCTV inspection. The condition of assets within pumping stations is identified through a condition assessment program (for buildings) or through an age-based analysis (for process equipment). The assets' condition or age/ESL is evaluated and allocated to a 5-point condition category scale for reporting within this AM Plan. Interventions are planned when assets have reached or exceeded their estimated service life; or, are identified by the condition assessments.

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

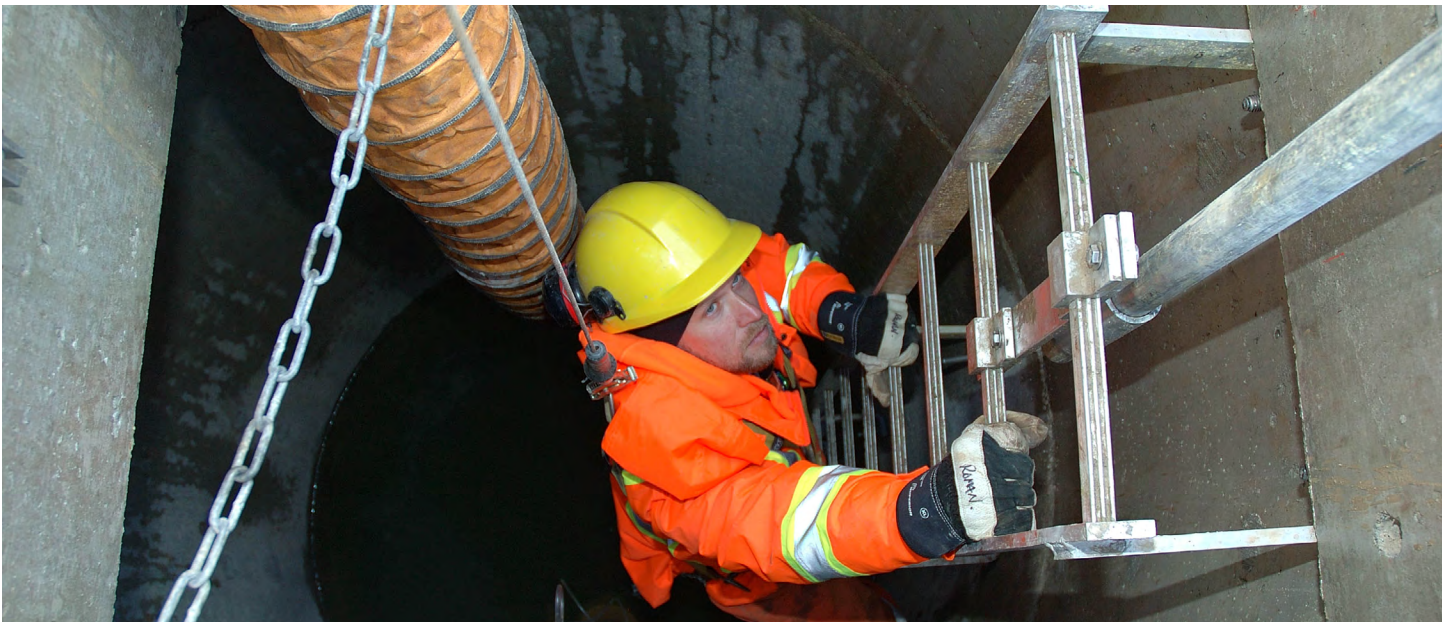


Levels of Service

Level of Service Theme: Wastewater Collection System Condition

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Reliability	Percentage of sanitary sewers in Fair or better condition	City-Defined	98%	Maintain (+/- 5% range)
Reliability	Percentage of pumping station assets within service life	City-Defined	96%	Maintain (+/- 5% range)
Reliability	Number of mainline blockages resulting in backup per km	City-Defined	0	Maintain at 0
Reliability	Percentage of sewers inspected	City-Defined	76%	Increase
Quality	Average Sanitary Sewer Condition Index (SSCI)	City-Defined	93 (Very Good)	Maintain (Good or better condition)





Asset Management Lifecycle Strategies

Lifecycle Activities

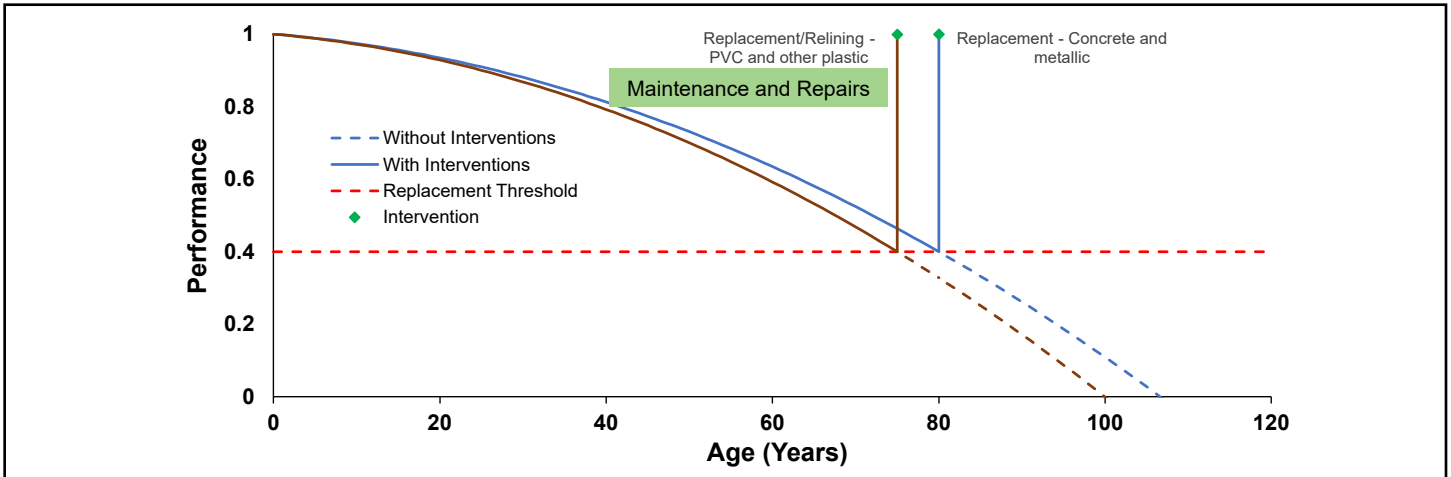
Lifecycle Activity	Description of Activities Practiced by the City
Non-Infrastructure	<ul style="list-style-type: none"> • The City performs studies and has policies such as Inflow and Infiltration Reduction. • The City continues with SCADA to monitor the efficiency and capacity of pumping stations. • 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. • The City's approved Design and Construction Guidelines.
Maintenance	<ul style="list-style-type: none"> • The City completes ongoing scheduled maintenance, repair and emergency activities of sewers and the associated ancillary assets. • 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. • The City performs testing, maintenance and repairs of pumping station equipment.
Rehabilitation	<ul style="list-style-type: none"> • Proposed sanitary sewer candidates for renewal may be relined, if deemed feasible. • Pumping station equipment and building structures may be rehabilitated based on their condition through Building Condition Assessments, outputs from the VFA software program and EAM recommendations.
Replacement	<ul style="list-style-type: none"> • 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. • Pumping Station equipment is typically replaced when its condition is Poor or Very Poor, has reached the end of its service life or is not functioning as intended. • 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	<ul style="list-style-type: none"> • 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. • Pumping station equipment is generally disposed when the new replacement arrives.
Growth / Service Improvement	<ul style="list-style-type: none"> • New and/or larger wastewater assets are identified through technical analysis as part of servicing plans to service new developments and growth. • The City's approved Urban Master Environmental Servicing Plan (UMESP) set guidelines for water infrastructure needed to support the City's growth areas, including intensification. Building on this, the City's Wastewater Computer Model is updated as development conditions change and will be used to undertake the City's Wastewater Master Plan in 2025 to identify upgrades and/or expansions required for future growth. • The City completed a Wastewater Computer Model that assessed the Wastewater Collection system's ability to meet capacity requirements. • The City's Development Charges Background Study provides recommendations to upgrade and/or expand the Wastewater Collection system based on growth. • 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. • Assets are identified for replacement to meet current standards and/or implement operational improvements (e.g. reduce inflow and infiltration, flooding)



Asset Management Lifecycle Strategies

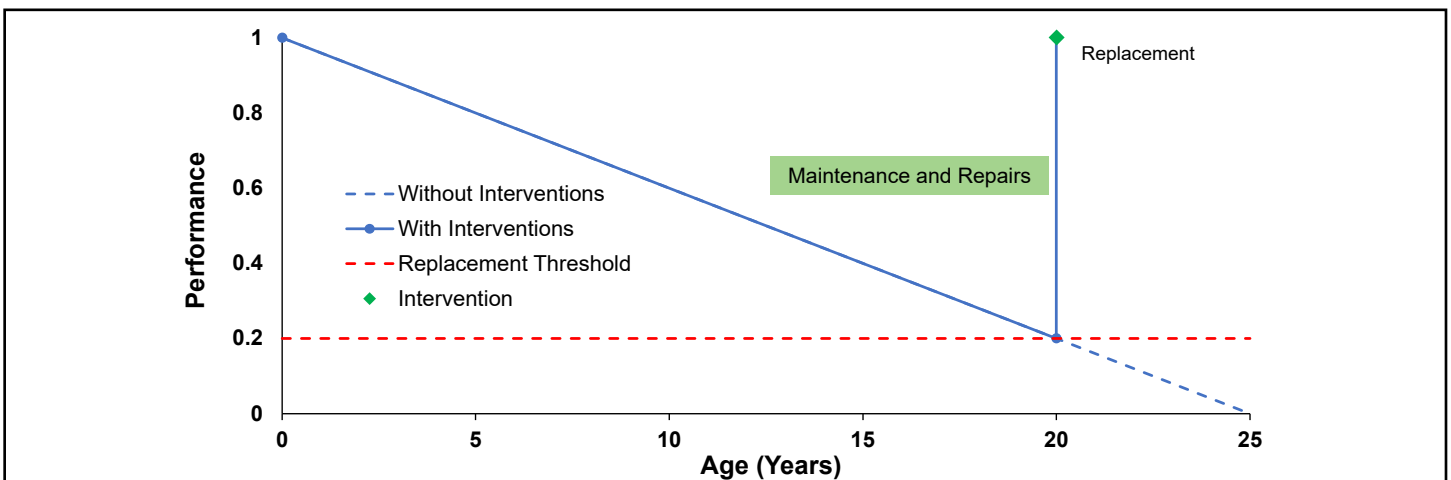
Capital Treatments

Sanitary Sewers Lifecycle



Generally, sanitary sewer pipes have a 70 to 80 year service life. The City's lifecycle model leverages the CCTV inspections and PACP scores of structural defects, along with the age and estimated service 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 sewer candidates for renewal may be relined, if deemed feasible.

Pumping Station Equipment Lifecycle



There is a variety of equipment within the City's pumping stations which generally have a service life of up to 20 years. Wells last up to 50 years. The City performs testing, maintenance and repairs of pumping station equipment as required. The City's lifecycle model forecasts that assets be replaced when they reach the end of their service life; when their condition has reached Poor or Very Poor; or, when they 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.

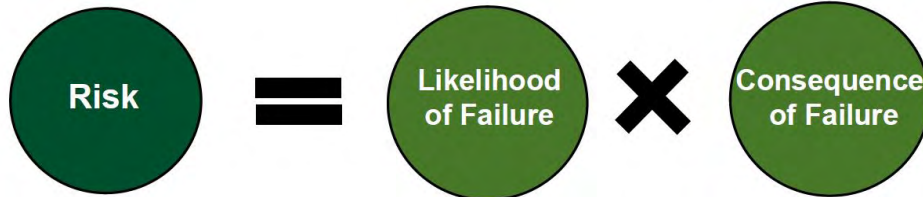


Risk Prioritization

Average Risk Grade
Very Low (A)

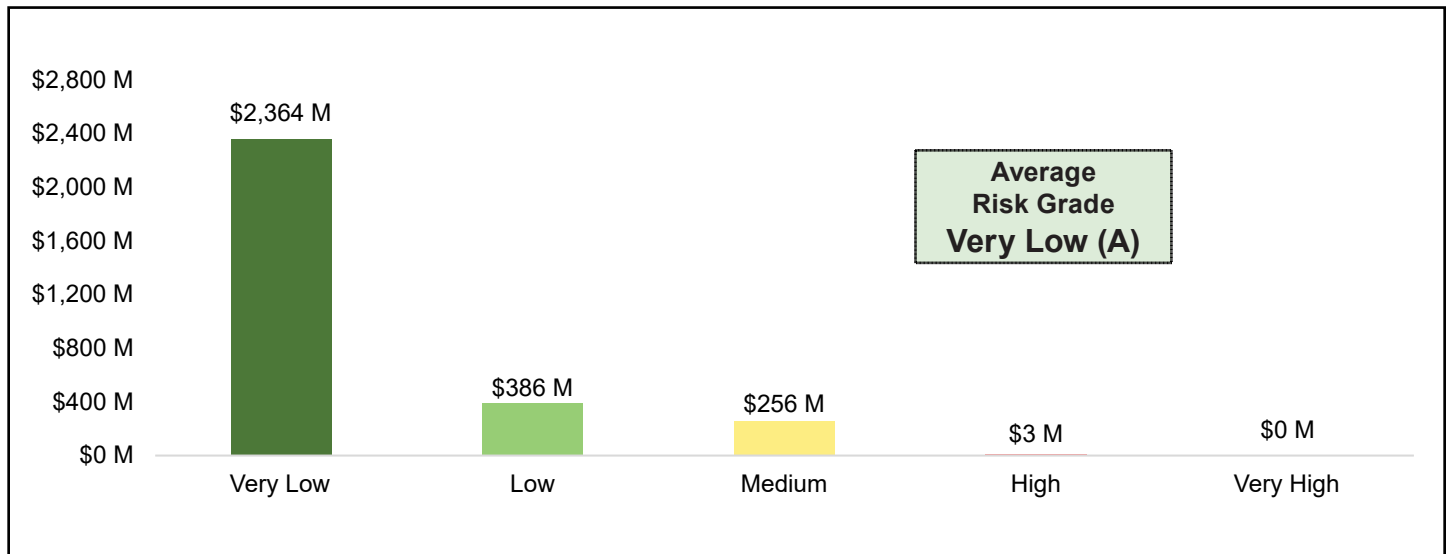


Risk Framework



Asset	Likelihood of Failure		Consequence of Failure		
	Condition	Capacity	Financial	Social	Environmental
<ul style="list-style-type: none"> Sanitary Sewers Maintenance Holes Service Connections Pumping Stations/ Equipment 	<ul style="list-style-type: none"> Current and deteriorating condition 	<ul style="list-style-type: none"> Current capacity Future expansion/new need identified in budget, plan or study 	<ul style="list-style-type: none"> Capital replacement cost Operating cost/revenue 	<ul style="list-style-type: none"> Land use Asset type, size and function 	<ul style="list-style-type: none"> Environmental compliance and asset type Impact to surrounding area

Summary of Asset Inventories by Risk



Climate Change Considerations

- Monitoring and enforcement of the Sewer Use By-law and performing 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
\$88.2 M

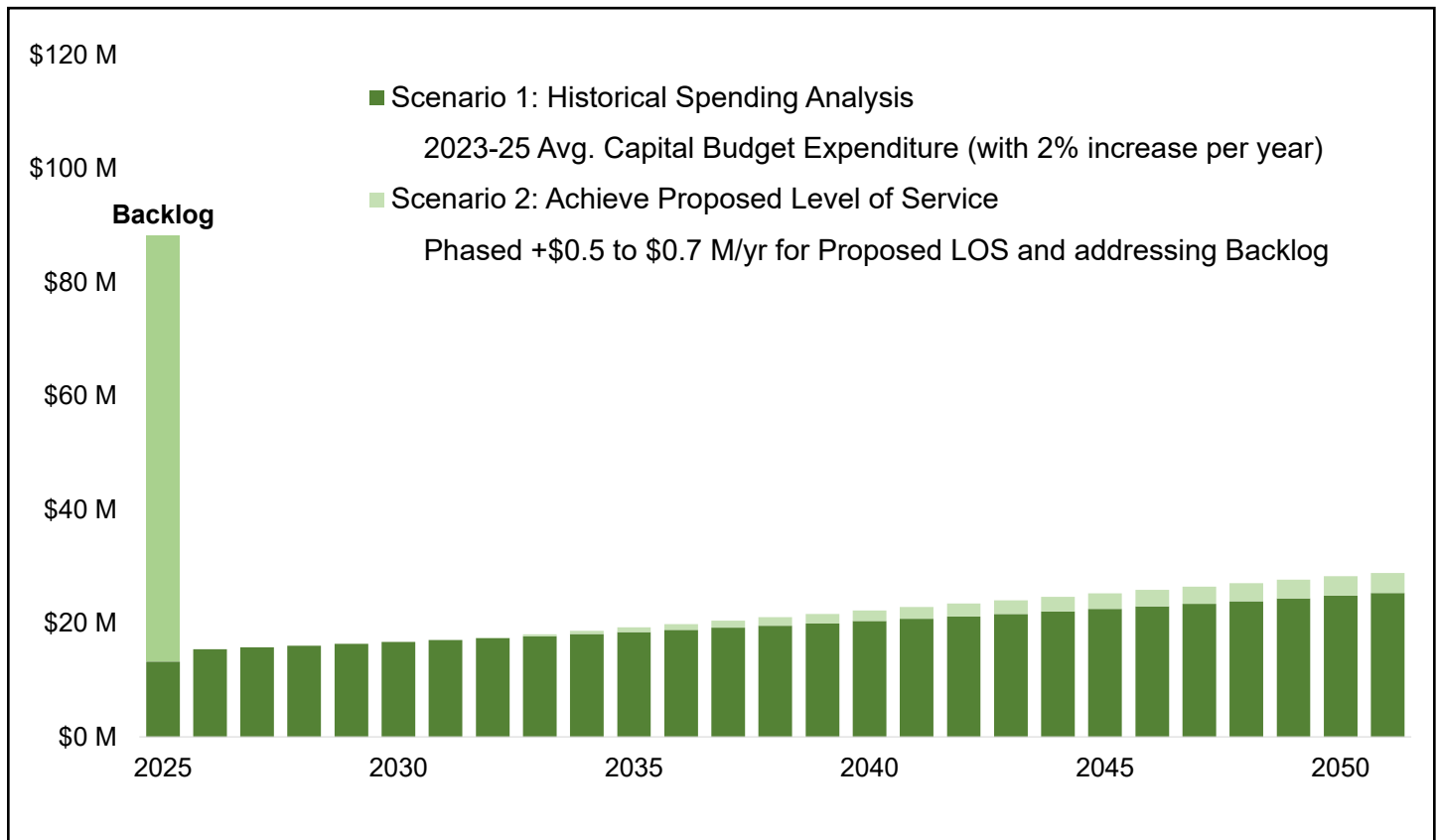
Proposed LOS
+ \$0.5 to \$0.7 M/yr



Investment Approach

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

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Water	88.2	13.3	+0.5 to 0.7	159.6	16.0	568.7	21.1
Wastewater							



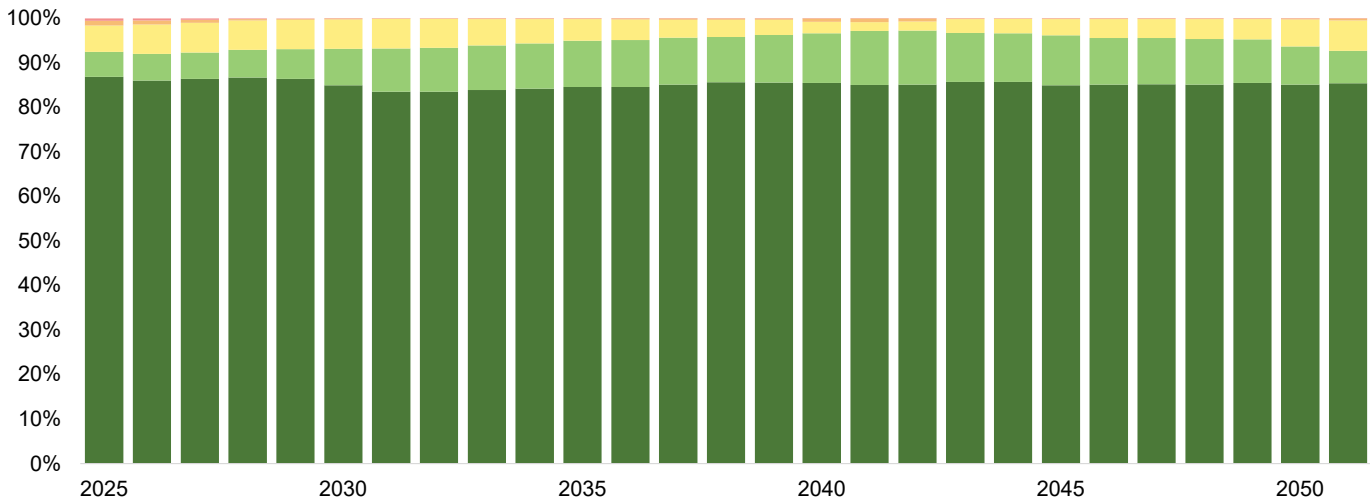


Asset Investment Strategy

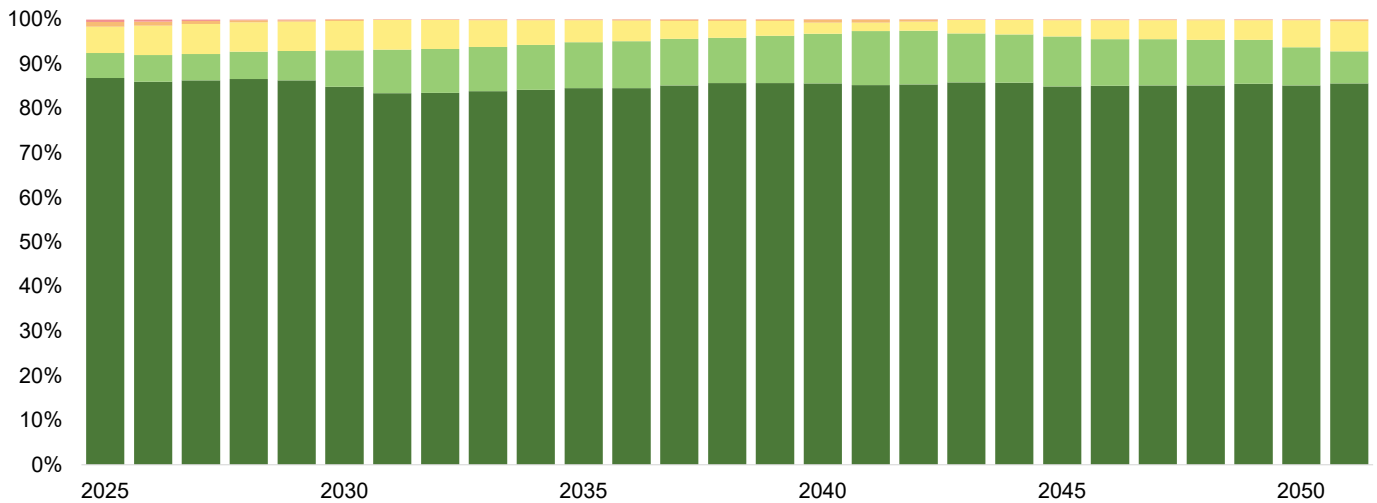
Impact on Levels of Service

Wastewater Collection (All)

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

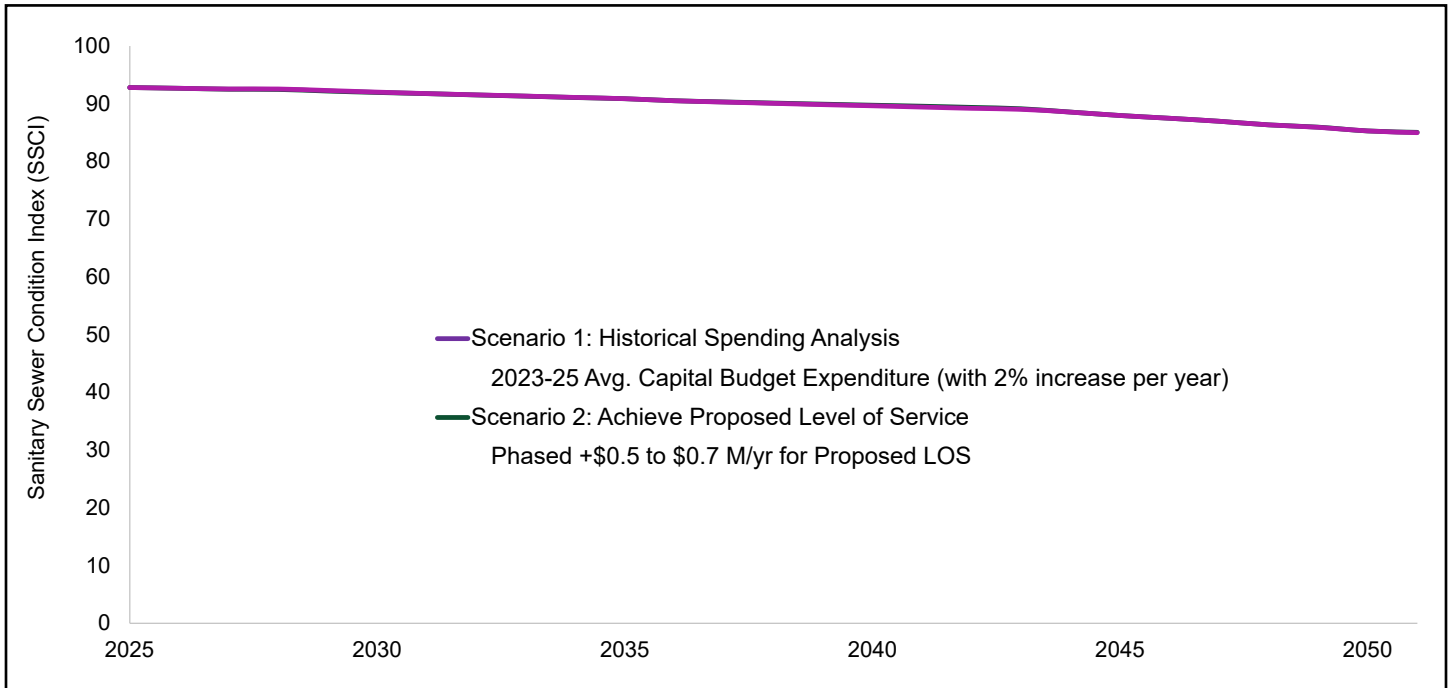


Asset Investment Strategy

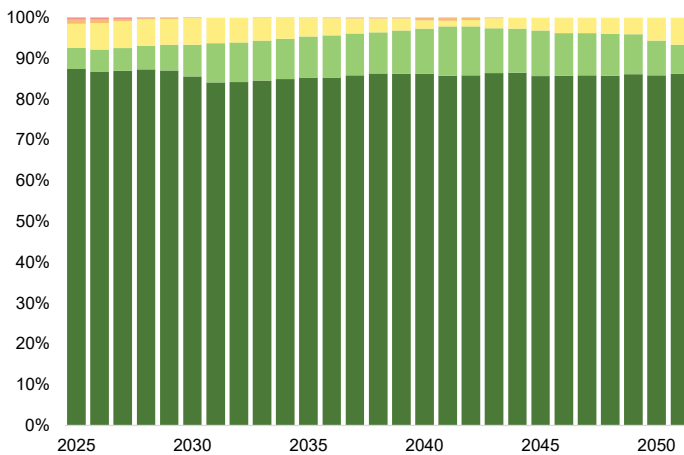
Impact on Levels of Service

Sanitary Sewers

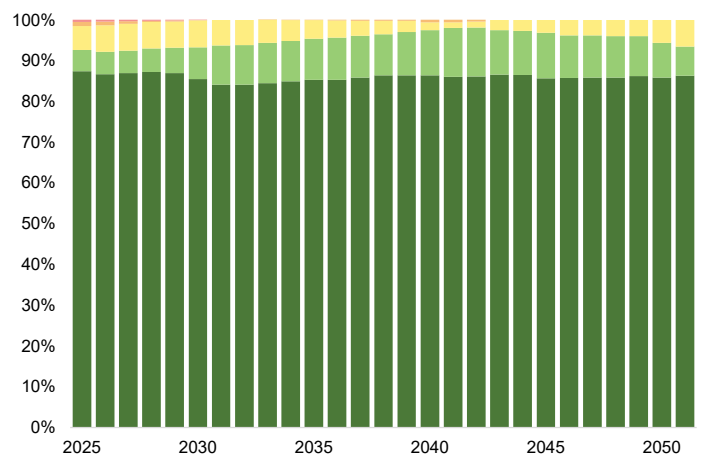
Sanitary Sewer Condition Index (SSCI) over time



Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

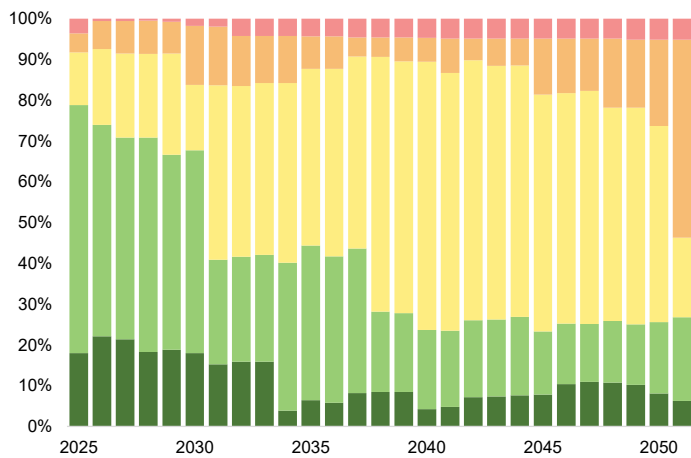


Asset Investment Strategy

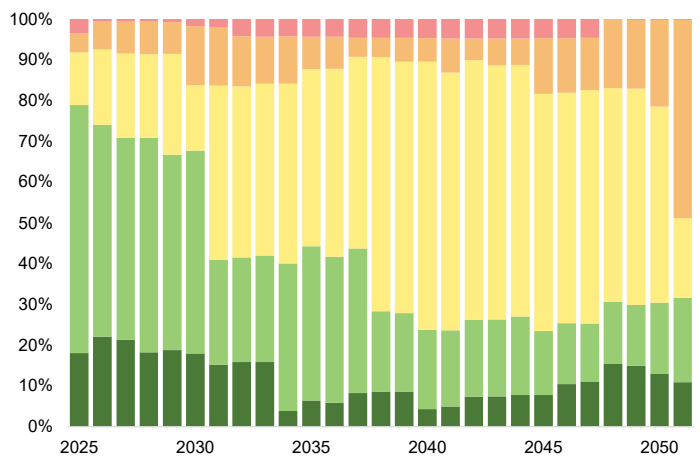
Impact on Levels of Service

Sanitary Pumping Stations

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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



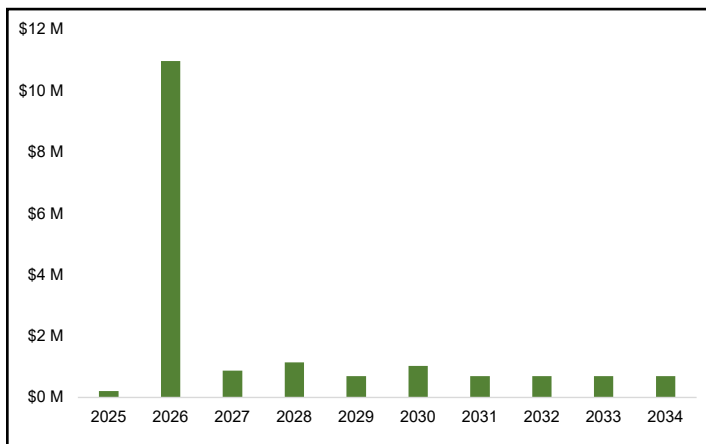
Asset Investment Strategy



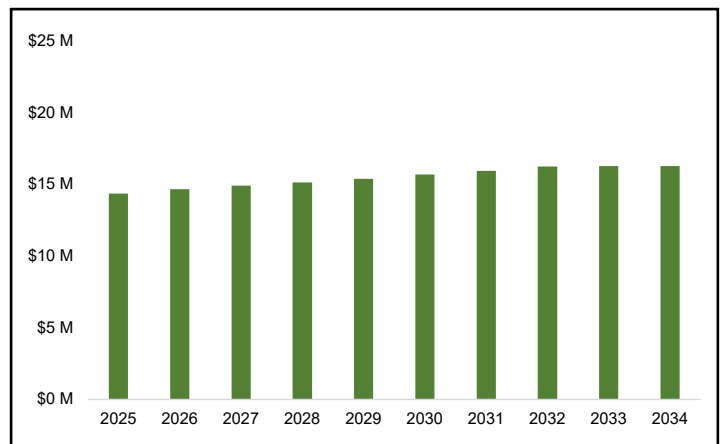
Growth Capital and Operating Forecast

The City's approved Urban Master Environmental Servicing Plan (UMESP) and now the City's Wastewater Computer Model sets guidelines for wastewater infrastructure that are needed to support development in the City's growth areas, including intensification to the year 2051. The City's Wastewater Computer Model identified a number of wastewater improvement projects that will help ensure Richmond Hill can continue to accommodate growth. The City-wide Wastewater Computer Model also identifies areas in the Wastewater Collection system where there are Inflow and Infiltration issues under different rainfall situations. It recommends additional wastewater improvements needed to manage the demands of the community. These major studies, along with the renewal needs for existing infrastructure identified through this 2025 Asset Management Plan, will inform future infrastructure investments through the City's 10 Year Capital Budget and Forecast.

2025 Growth Capital Budget and Forecast



Preliminary Estimated Operating Cost Forecast



Richmond Hill's Wastewater Collection service is slated for significant upgrades over the next 10 years, guided by the Urban Master Environmental Servicing Plan and Wastewater Computer Model results. The City's 10-Year Capital Budget includes \$17.8 million in projects, with \$6.3 million allocated for sanitary improvements across various locations. Notable initiatives include the Sanitary Improvement Project along Addison Street to Weldrick Road (\$1.4 million) and the Denava Gate improvements (\$0.3 million). Key projects also include contributions toward sanitary improvements at Garden Avenue and High Tech Road, on Yonge Street, each with an investment of \$1.1 million, and improvements from Yonge Street to Harding Boulevard (\$3.5 million). These projects reflect a targeted approach to enhancing the efficiency and reliability of wastewater infrastructure to meet the demands of a growing community.

Operating forecasts for Water Distribution and Wastewater Collection were developed as part of the City's 2024 Water and Wastewater Financial Plan. Per the Financial Plan, Richmond Hill's Water and Wastewater services are estimated to experience steady increases in operating and maintenance costs over the next 10 years for both existing and new growth assets if they are constructed as identified in the City's 10-Year Capital Budget and Forecast. These forecasted operating costs are projected to grow from approximately \$14 million in 2025 to over \$16 million by 2034 (excluding future inflationary pressures), reflecting incremental increases annually.



Asset Investment Strategy

Identifying Additional Needs

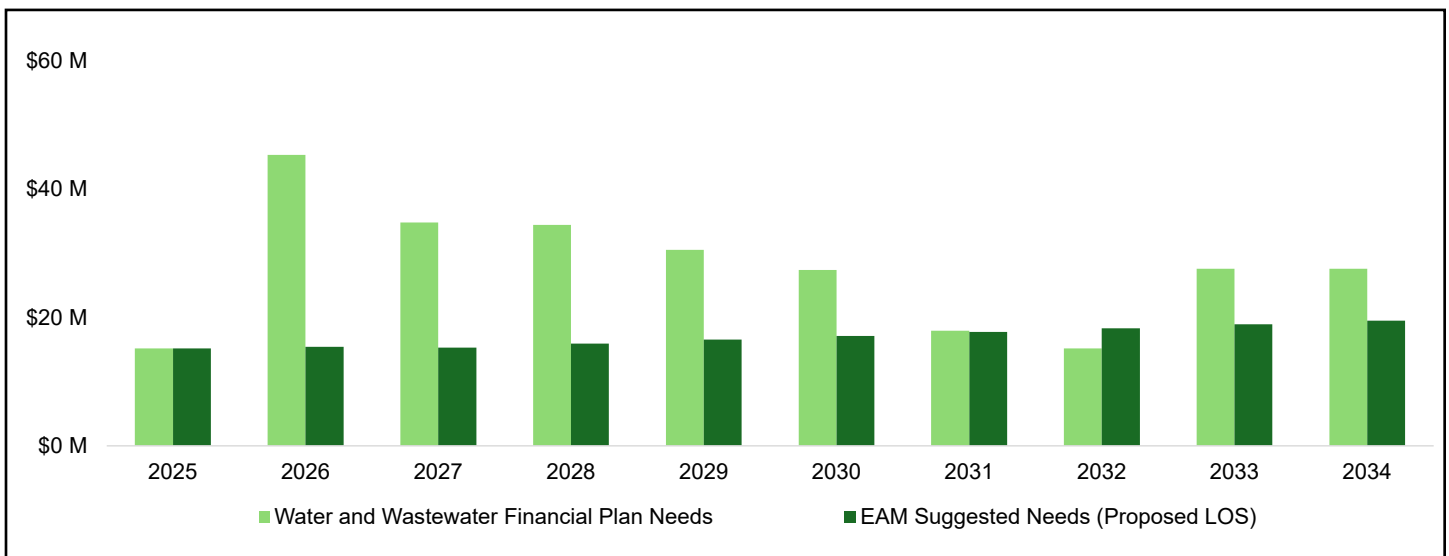
The Water and Wastewater financial forecasts presented in this Appendix represent the needs associated with achieving the proposed condition-based levels of service for these assets. The analysis to forecast these needs was completed by the City's EAM system, and the outputs from this analysis are provided to the City's subject matter experts annually, to assist them in developing the Capital Plan and Forecast each year. The City's subject matter experts then balance the EAM's recommendations on asset condition-based needs with additional projects related to additional needs, including the bundling of assets within the municipal right of way and other performance related needs.

Since sanitary sewers are an underground asset located in the municipal right of way, much like watermains, they can be both expensive and disruptive to the community to replace. The City takes a similar approach to all underground assets within the right of way, which is to look for opportunities to bundle works together to leverage efficiencies and minimize disruption to the community. As a result, the City's capital plan and forecast will include wastewater projects that are identified as part of bundling exercises, that may not be identified in the initial EAM analysis.

In addition, the City has more recently incorporated a performance-based approach to understanding its wastewater collection assets. It uses the results of its wastewater models to identify these performance-based needs, which are included in the City's Capital Budget and Forecast. In 2024, the City completed a water and wastewater rate study, which was informed by its condition, performance and bundling needs identified through the capital planning and forecast process.

To supplement the condition-based forecasts provided in this Appendix, the City has also included needs identified as part of the Water and Wastewater Financial Plan below. These represent the additional needs identified as part of that study, which include project bundling activities as well as performance-based needs.

EAM Suggested Needs (Proposed LOS) vs. Water and Wastewater Financial Plan Needs





Future Outlook

Findings and Insights

Establishing Proposed Levels of Service

The City has selected proposed levels of service and performance targets that align with its objectives to ensure long-term sustainability and minimize risk to the community. The levels of service presented in this AM Plan are focused on the condition-based service level measures that have been developed by the City. In addition, the City has identified other needs, including those associated with project bundling, as well as performance-based needs. These additional needs have been incorporated into its annual Capital Plans and Forecasts, described previously in this Appendix.

For wastewater assets, including sanitary sewers and pumping stations, asset condition is generally high (most assets are in Good and Very Good condition), and assets are relatively young. The financial analysis completed for wastewater assets was combined with water distribution assets. The forecasts have identified that if current spending trends continue, the City will continue to provide these high condition-based levels of service over the next 10 years, and will require a modest average increase to achieve proposed levels of service over a 27-year horizon. This ensures that risks remain low moving forward, from a condition perspective.

The City has put forward an achievable and affordable plan to address its sanitary sewer network-related needs over the next 10 years as part of its 2024 Water and Wastewater Financial Plan. This includes needs associated with achieving its condition-based levels of service, as well as other considerations, such as project bundling and performance-based needs. That study recommended user rate increases that were in line with the City's forecasted needs, ensuring that the City is able to fund its needs over the next 10 years.

Managing Lifecycle Needs and Mitigating Risks

The forecasting analysis completed herein identifies spending needs associated with achieving the City's condition-based proposed levels of service. Furthermore, additional needs identified through the City's 2024 Water and Wastewater Financial Plan represent other needs identified by the City's subject matter experts. As noted previously, the City has more recently begun to incorporate a performance-based approach to understanding its wastewater collection assets into its capital planning and capital forecasting exercises.

As part of this approach, the City has been working with York Region and other municipalities within the Region to better identify and quantify the impact that inflow and infiltration has had on the Wastewater Collection system. Together, the collection of municipalities has identified that the amount of inflow and infiltration (I&I) in their collective wastewater networks is much larger than was originally anticipated, and that the system was originally designed to accommodate. In addition to this, other issues, such as climate change, threaten to test the system's resilience with longer duration and larger intensity rainfall events. The City has acknowledged that these I&I issues are a significant risk and is currently working towards identifying and quantifying those issues better. Recent efforts include improving the City's wastewater models, and working towards identifying areas of risk and concern with regards to system capacity and high levels of I&I. This could manifest in a shift in focus, whereby changing priorities could affect the City's investment and asset renewal strategies moving forward. Examples of areas of focus may include upsizing sewers and targeting areas of high I&I for repair.

At this time, the City is not in a position to quantify the effects of these issues in full. In the coming years, the City will have a better understanding of the needs associated with asset performance for the wastewater system, through such initiatives as the development of a City-wide Water and Wastewater Master Plan that is currently in progress, and those needs will be reflected in future asset management analyses and future AM Plans.



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) assets, 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 623 kilometres, greater than 75% of the City's storm sewers are constructed of concrete. Following that, approximately 17% are comprised of PVC and the remainder are comprised of various other materials. 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. The City's storm sewer network also includes over 18,000 catch basins, over 10,000 maintenance holes and over 47,000 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 (greater than 95%) are cylindrical. Greater than 95% of these assets are constructed of corrugated steel pipe (CSP). Other materials include concrete and PVC. The culverts are sized by design to effectively manage varying volumes of stormwater.



Pioneer Park SWMF

Stormwater Management Facilities (SWMF)

The City's stormwater management facilities (SWMF) include over 100 ponds, whose function is to protect the community and local water bodies through the effective management of stormwater runoff. The City's SWMF generally can have one or two primary functions. The first is to store and manage excess water in the storm network to protect against flooding, which occurs within all the City's stormwater management facilities. The second, is to improve the quality of stormwater runoff, by providing a system to remove debris and sediment. The City classifies its ponds as dry ponds 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.



Overview of Stormwater Management



Manufactured Treatment Devices (MTD)

Richmond Hill's manufactured treatment devices (MTD) assets, which total over 100, provide end of pipe water quality controls and are part of the City's overall stormwater management system. MTDs are located within the City's storm sewer system. These systems can be one of two types: oil grit separators (OGS) or filters. OGS units are structures consisting of one or more chambers that remove sediment, screen debris and separate oil from stormwater. MTD filters are structures consisting of one or more chambers with filtration, media, membranes and/or filtration cartridges that remove solids and debris/trash from runoff.



Green Roof at Oak Ridges CC

Low Impact Development (LID)

Richmond Hill's low impact development (LID) assets are part of the City's progressive approach to sustainable urban development and environmental management. The term "Low Impact Development" describes a type of asset that mimics natural rainwater processes to promote the infiltration of stormwater into the ground instead of onto the urban environment and ultimately into the stormwater collection system. LIDs may have a "green" or biological component to them to assist in this function. The City's 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. Assets like the City's 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
\$3,270 M

Average Condition
A (Very Good)

Average Age / ESL
25 / 71 (years)

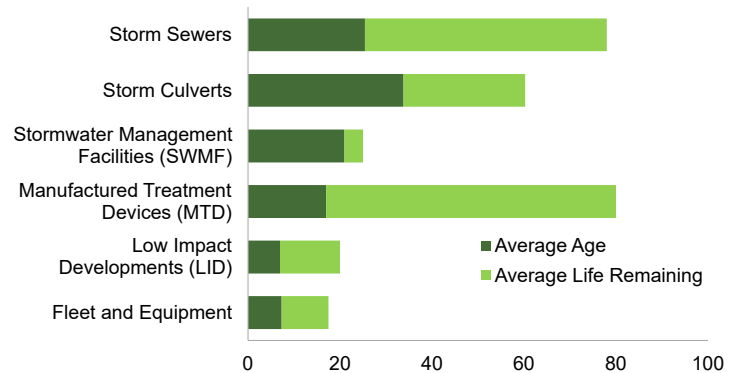


Asset Portfolio Summary

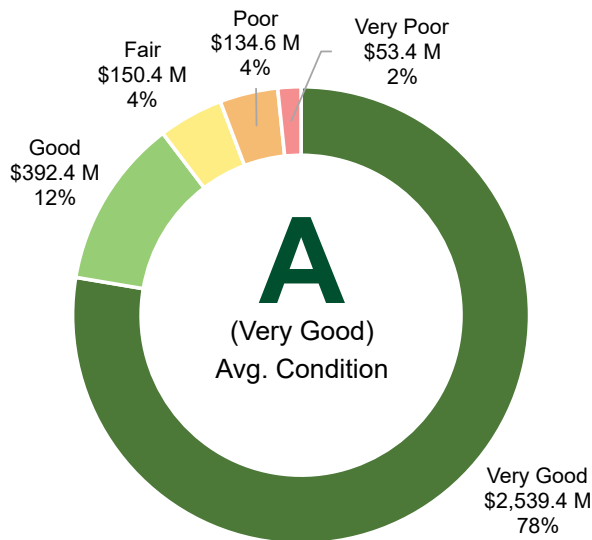
Asset	Quantity	Replacement Value
Storm Sewers	623 km	\$2,781.7 M
Catch Basins	18,271 ea.	
Maintenance Holes	10,789 ea.	
Service Connections	47,468 ea.	
Storm Culverts	1,145 ea.	\$64.2 M
SWMF	108 ea.	\$391.7 M
MTD	118 ea.	\$15.4 M
Low Impact Developments	90 ea.	\$16.4 M
Fleet and Equipment	A mix	\$0.7 M



Age Profile



Condition Profile



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

- Storm sewer condition is based on structural defects from CCTV inspections converted into a PACP score. The City maintains a ten-year inspection cycle and to date, 36% of storm sewers have been inspected. The condition of the remaining sewers is based on age and estimated service life. The condition for the ancillary assets is tied to the condition of the associated storm sewer.
- The City performs sediment surveys for SWMF on a five-year cycle that measure the volume of accumulated sediment. Condition is based on total suspended solids (TSS) removal efficiency compared to the pond's original design. Dry pond condition is based on age compared to sediment removal frequency and inspections.
- For some storm culverts, condition is evaluated as part of the City's biennial OSIM inspections. Other culverts utilize age and estimated service life to understand condition.
- The condition of MTDs and LIDs is derived from their age and estimated service life.
- Fleet/equipment condition is based on the assets' utilization (km), or age and estimated service life.

Condition Category	Letter Grade	Storm Sewers: PACP Score	Storm Culverts: BCI	Storm Culverts: Age/ESL	SWMF: % Below Design TSS Removal	MTD and LID: Age/ESL	Fleet/Equipment: Utilization and Age/ESL
Very Good	A	0 or 1	>80 to 100	0% to 19%	<0.5%	0% to 25%	>0.8 to 1.0
Good	B	2	>70 to 80	>19% to 32%	0.5% to 4%	>25% to 50%	>0.6 to 0.8
Fair	C	3	>50 to 70	>32% to 69%	4% to 5%	>50% to 75%	>0.4 to 0.6
Poor	D	4	>35 to 50	>69% to 91%	5% to 7.5%	>75% to 100%	>0.2 to 0.4
Very Poor	F	5	0 to 35	>91%	>7.5%	>100%	>0 to 0.2



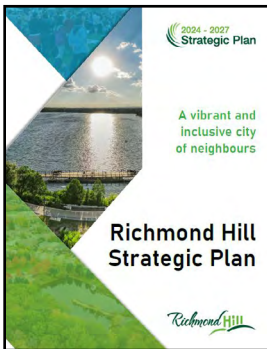
Levels of Service

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.

Pillar 3: Strengthening our Foundations

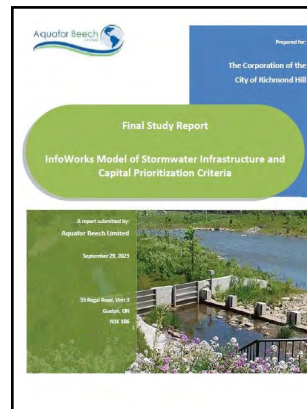
- Make decisions that are evidence-based and data-driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents,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

Level of Service Theme: Protection Provided by the Stormwater Management System

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.

Measure Type: Regulatory (Prescribed by O. Reg. 588/17)

Applicable Assets: 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. The resiliency of the City to storm events is expected to change over time in response to infill and new development. The City will explore opportunities to enhance resiliency as part of future master plans.

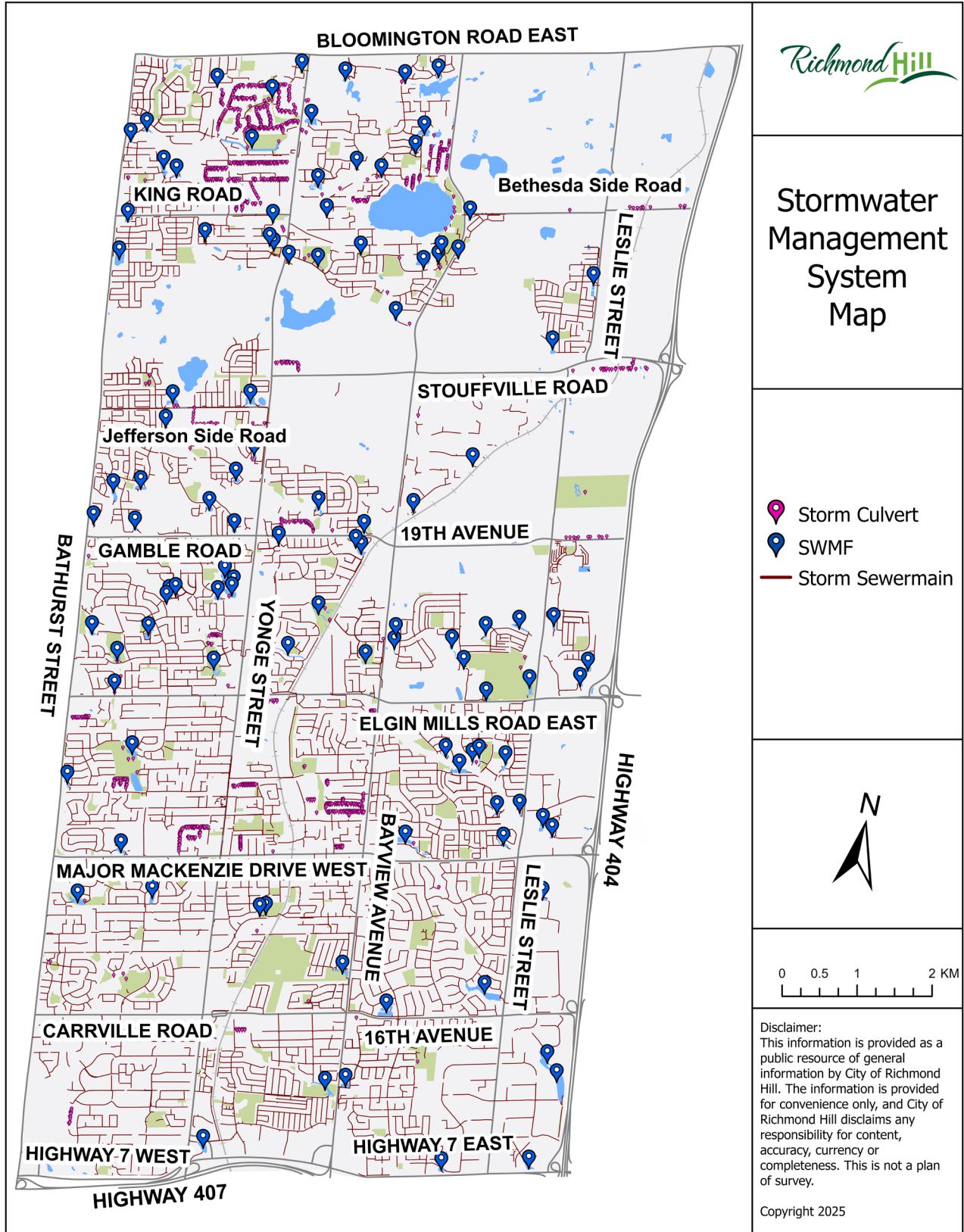
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	Percentage of properties in the municipality resilient to a 100-year storm.	Regulatory (O. Reg. 588/17)	57%	Maintain in alignment with Stormwater Computer Model and forthcoming Master Plans
Scope	Percentage of the municipal stormwater management system resilient to a 5-year storm.	Regulatory (O. Reg. 588/17)	73%	Maintain in alignment with Stormwater Computer Model and forthcoming Master Plans



Levels of Service

Level of Service Theme: Protection Provided by the Stormwater Management System





Levels of Service

Level of Service Theme: Stormwater Management System Condition

Community Levels of Service

Service Attribute: Quality, Reliability

Performance Measure: Description of how condition of the Stormwater Management System is measured and reported.

Measure Type: City-Defined

Applicable Assets: Stormwater Management Assets

The condition of storm sewers is based on Pipeline Assessment Certification Program (PACP) ratings, which are obtained through Closed Circuit Television (CCTV) inspections and calculated based on structural defects observed in the storm sewers. The PACP rating scale ranges from 0 (Very Good) to 5 (Very Poor). The City maintains a 10-year inspection cycle for all storm sewers and to date, approximately 36% of the storm sewer network has received a CCTV inspection and a PACP technical score.

For other stormwater assets, various condition assessment methodologies are used (refer to the State of the Infrastructure section above). The City monitors the percentage of these assets that are in Fair or better condition. Additionally, the City monitors the average condition of SWMF and storm sewers.

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



Levels of Service

Level of Service Theme: Stormwater Management System Condition

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Reliability	Percentage of storm sewers in Fair or better condition	City-Defined	99%	Maintain (+/- 5% range)
Reliability	Percentage of culverts assets in Fair or better condition	City-Defined	71%	Maintain (+/- 5% range)
Reliability	Percentage of SWMF in Fair or better condition	City-Defined	69%	Increase
Reliability	Percentage of storm sewers inspected	City-Defined	36%	Increase
Quality	Average Storm Sewermain Condition Index (SMCI)	City-Defined	90 (Very Good)	Maintain (Good or better Condition)
Quality	Average SWMF condition index (SWMFCI)	City-Defined	59 (Fair)	Increase

*The City is in the process of collecting condition information for some of its stormwater assets. Once it does, it will evaluate and include additional LOS measures herein to report on asset performance. Note that these assets are at present still part of the City's forecasting exercise, and the financial reporting associated with maintaining these assets are incorporated into the findings of this AM Plan.



Asset Management Lifecycle Strategies

Lifecycle Activities

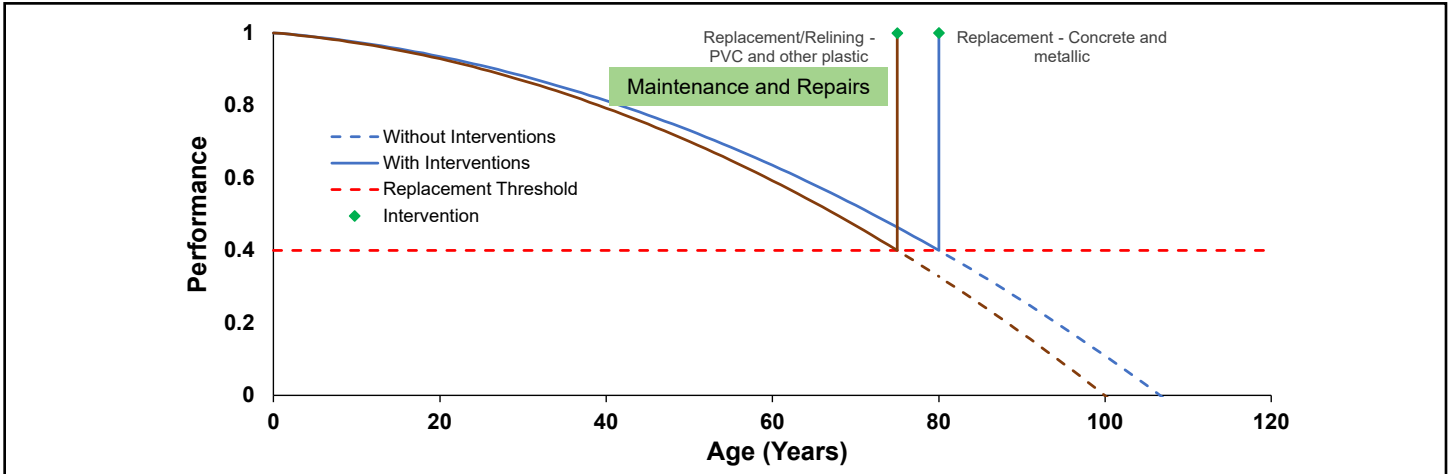
Lifecycle Activity	Description of Activities Practiced by the City
Non-Infrastructure	<ul style="list-style-type: none"> • The City undertakes modeling such as the Stormwater Computer Model to understand the overall stormwater management infrastructure’s capacity and constraints to improve efficiency. • The City completes various studies and updates policies.
Maintenance	<ul style="list-style-type: none"> • 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. • The City completes ongoing scheduled maintenance, repair and emergency activities. • The City undertakes flushing of outlet structures, cleaning of storm culverts and catch basins, and general maintenance of other assets. • Flushing and CCTV inspections of storm sewers are completed proactively across the system. • Fleet and equipment are maintained per the recommended standards.
Rehabilitation	<ul style="list-style-type: none"> • Proposed storm sewer candidates for renewal may be relined, if deemed feasible. • 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	<ul style="list-style-type: none"> • 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. • Stormwater management facilities are not replaced, but rather retrofitted where feasible to improve their function to align with current standards. • Other assets such as low impact development, manufactured treatment devices 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. • Fleet and equipment are replaced when condition, function and age warrant it.
Disposal	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • New and/or larger stormwater management assets are identified through technical analysis as part of servicing plans related to new developments and growth. • 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. • The City’s Development Charges Background Study provides recommendations to upgrade and/or expand the stormwater management assets based on growth. • Stormwater management facilities may be upgraded, and/or expanded to maintain the approved level of service and/or meet higher stormwater objectives, where feasible. • Pipes that do not meet capacity requirements are upsized to increase capacity and can be aligned with road reconstructions to minimize costs.



Asset Management Lifecycle Strategies

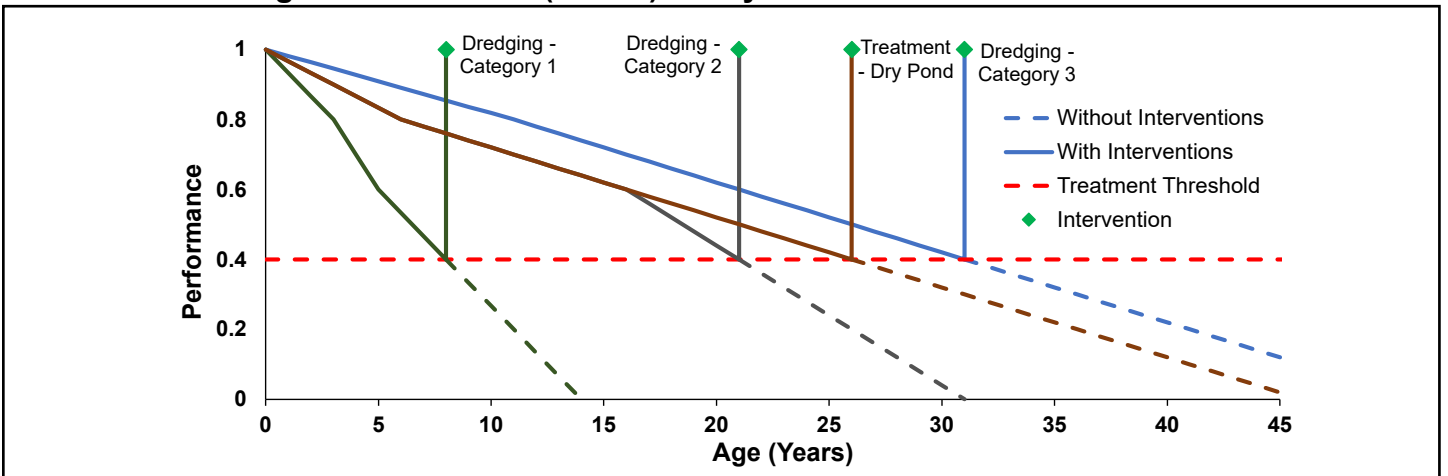
Capital Treatments

Storm Sewers Lifecycle



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 lifecycle model leverages the CCTV inspections and PACP scores of structural defects, along with the age and estimated service 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) Lifecycle



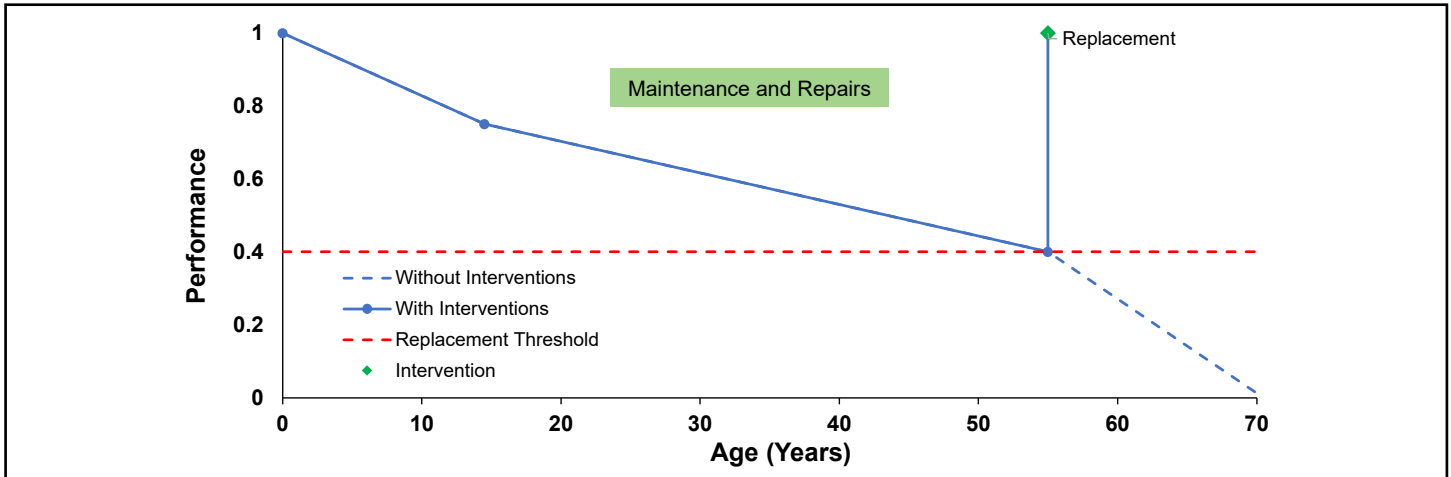
The City manages its stormwater management facilities (ponds) by completing sediment surveys for wet ponds that assess the percentage of total suspended solids (TSS) removal efficiency compared to its design. These survey results inform when sediment removal would be required to improve the function 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 optimized.



Asset Management Lifecycle Strategies

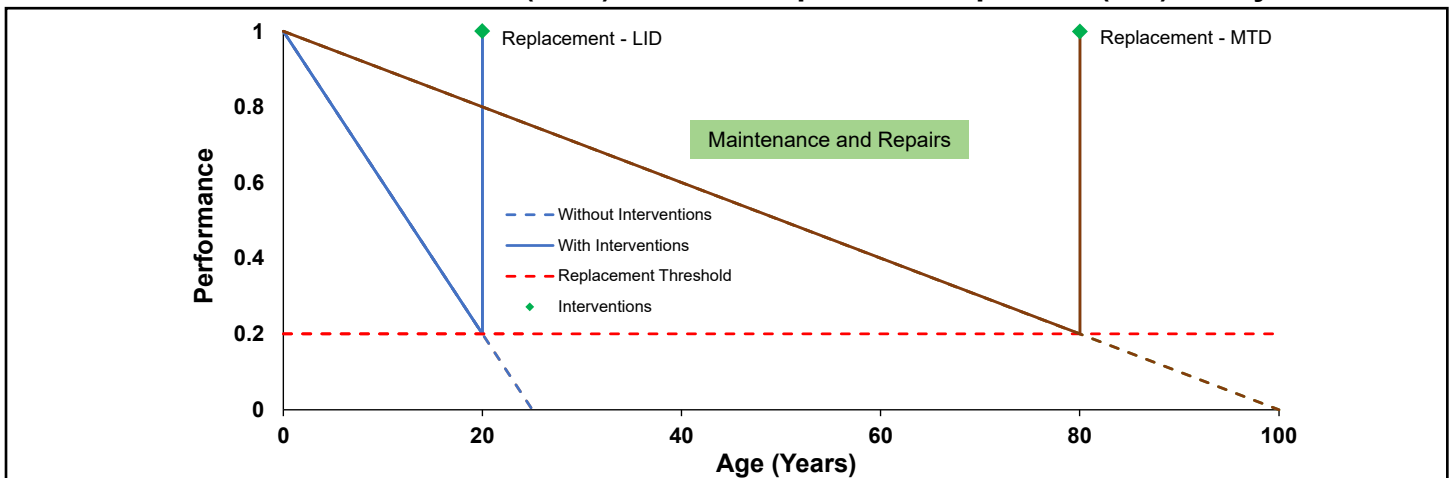
Capital Treatments

Storm Culverts Lifecycle



The City's lifecycle 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.

Manufactured Treatment Devices (MTD) and Low Impact Developments (LID) Lifecycle



There are a variety 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. Manufactured treatment devices (MTD) include oil grit separators and filters, and would typically have an average service life of approximately 80 years. The City's lifecycle model forecasts that these assets 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)

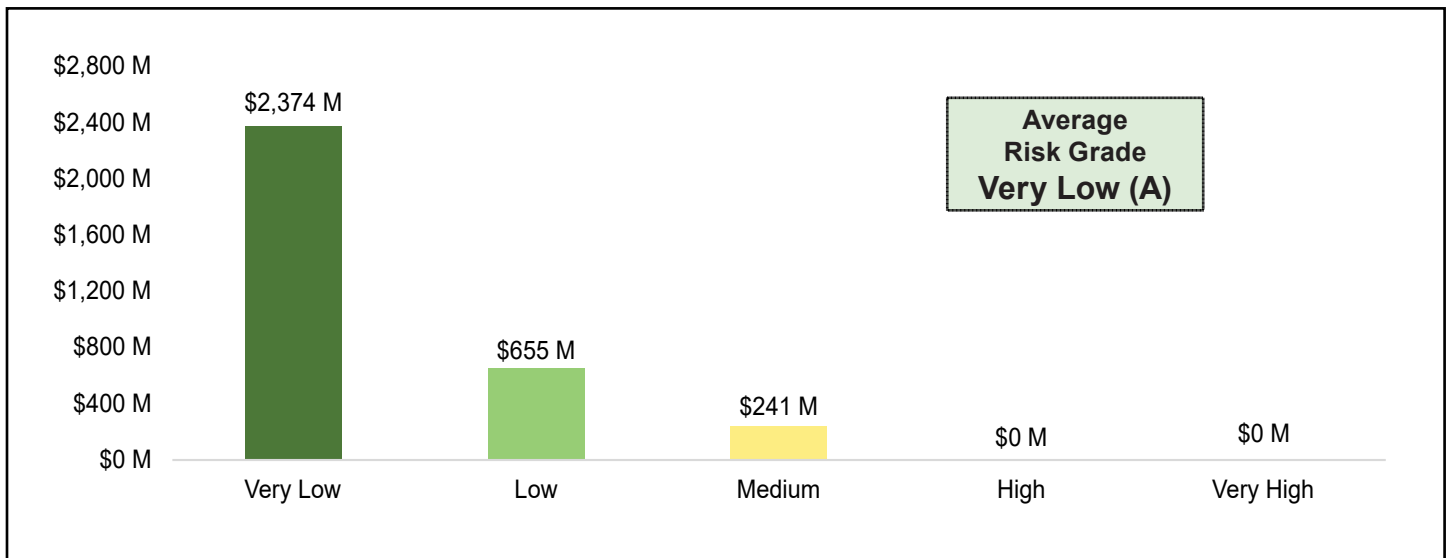


Risk Framework



Asset	Likelihood of Failure		Consequence of Failure		
	Condition	Capacity	Financial	Social	Environmental
<ul style="list-style-type: none"> Storm Sewers Catch Basins Maintenance Holes Service Connections Storm Culverts SWMF MTD LID Fleet/Equipment 	<ul style="list-style-type: none"> Current and deteriorating condition 	<ul style="list-style-type: none"> Current capacity Future expansion/new need identified in budget, plan or study 	<ul style="list-style-type: none"> Capital replacement cost Operating cost/revenue 	<ul style="list-style-type: none"> Traffic counts Road classification Land use Asset type, size and function 	<ul style="list-style-type: none"> Environmental compliance and asset type 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
\$72.7 M

Proposed LOS
+\$0.7 to \$1.0 M/yr

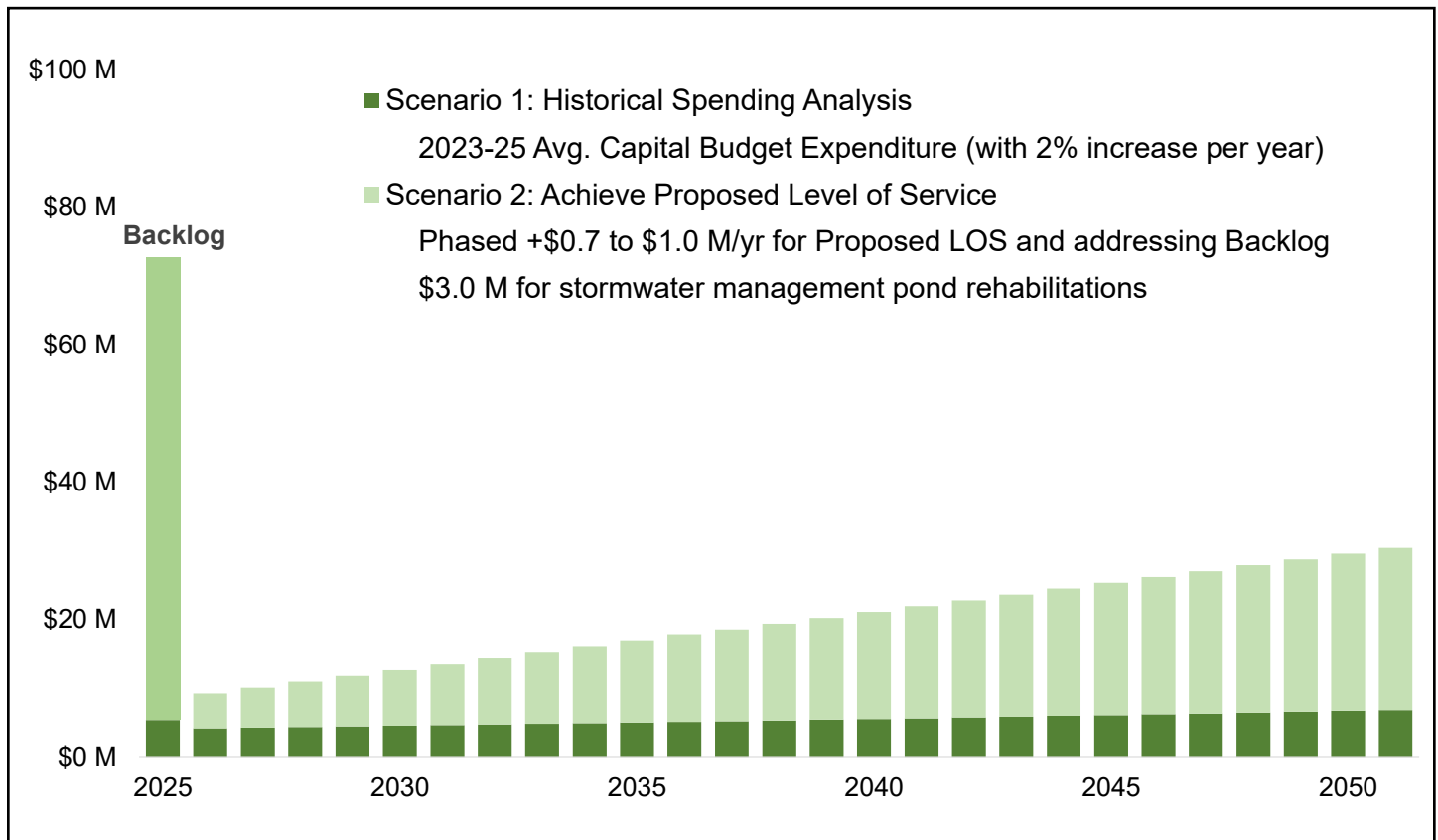


Investment Approach

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

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Stormwater*	72.7	5.4	+0.7 to 1.0	118.8	11.9	520.8	19.3

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



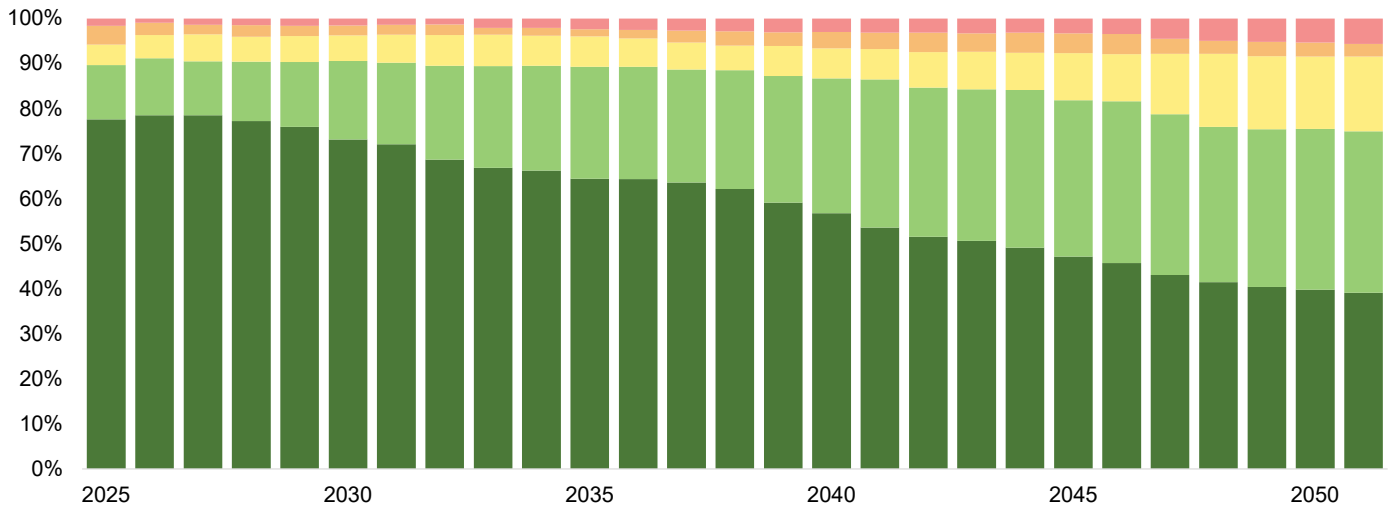


Asset Investment Strategy

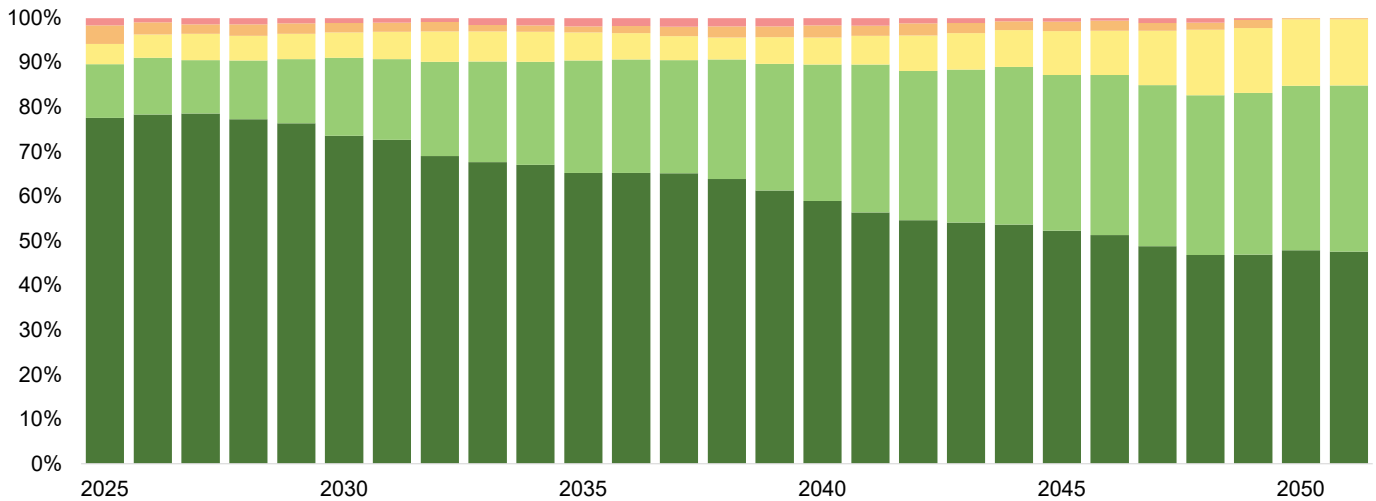
Impact on Levels of Service

Stormwater Management (All)

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

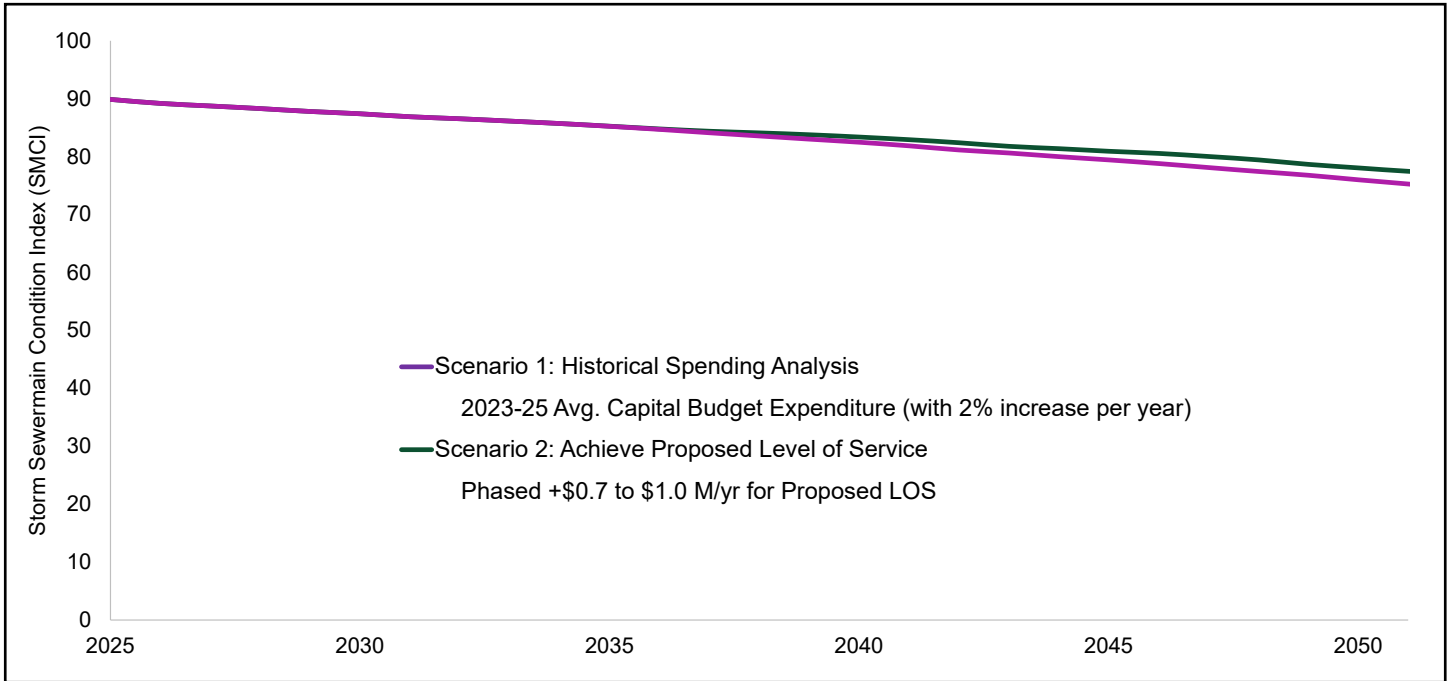


Asset Investment Strategy

Impact on Levels of Service

Storm Sewers

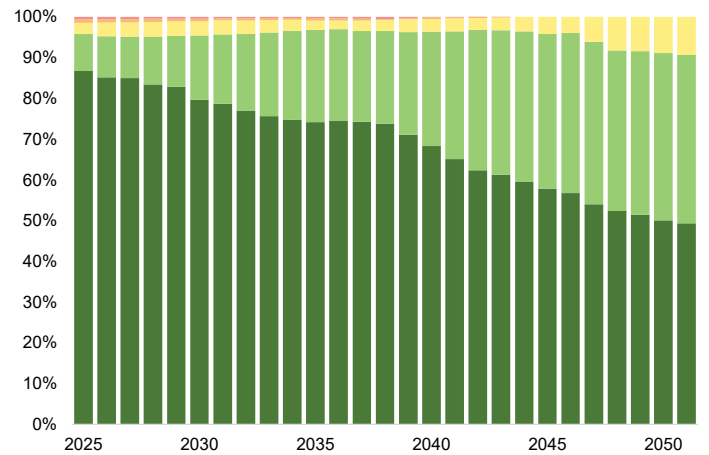
Storm Sewermain Condition Index (SMCI) over time



Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

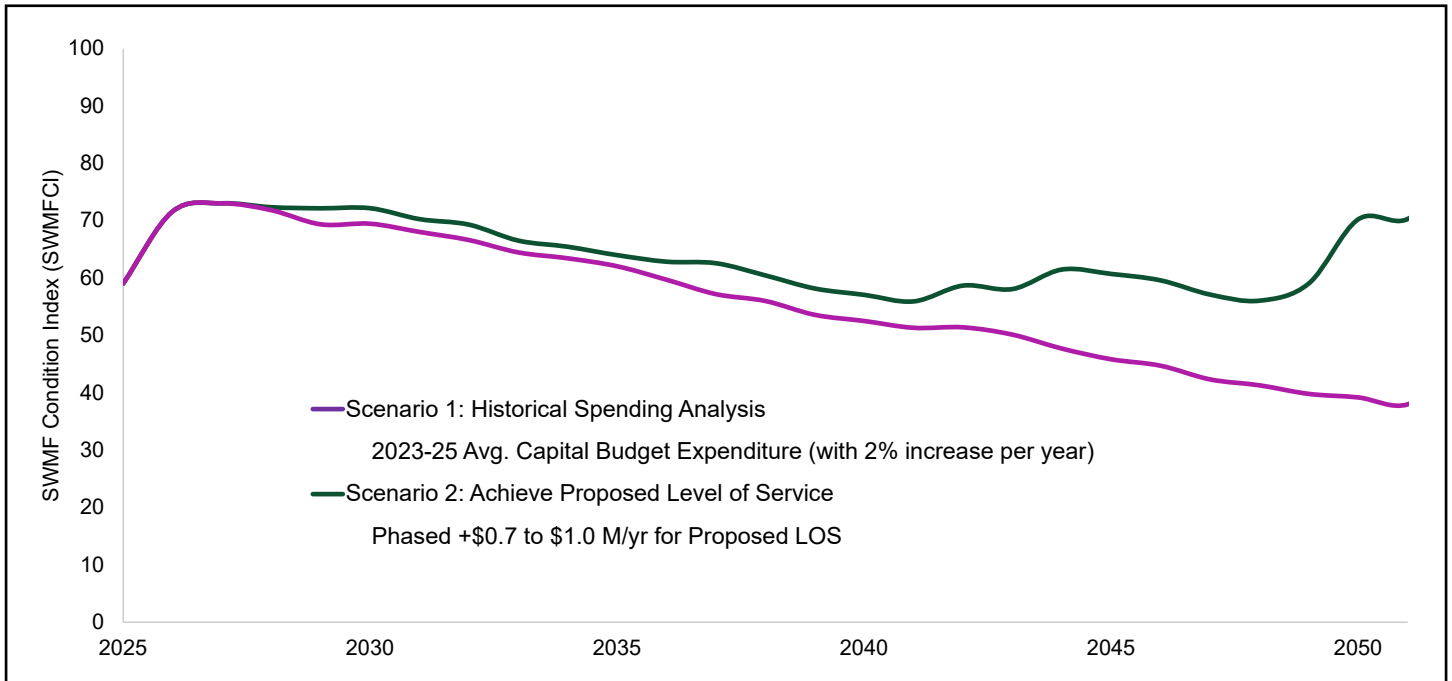


Asset Investment Strategy

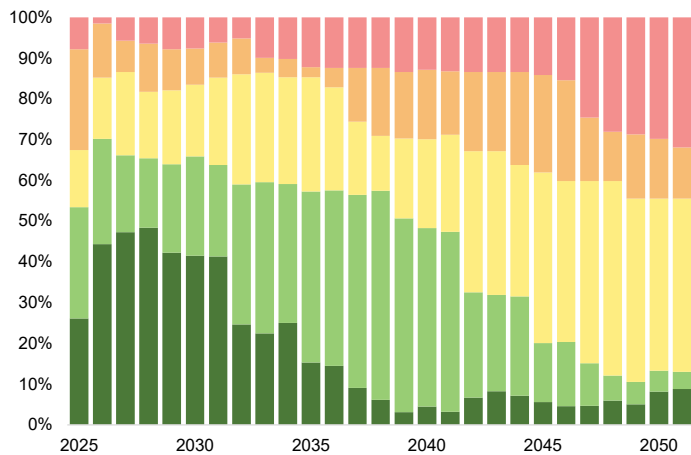
Impact on Levels of Service

Stormwater Management Facilities (SWMF)

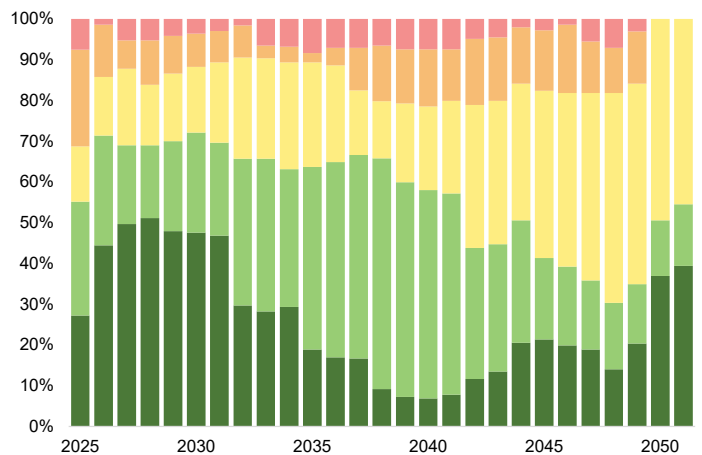
SWMF Condition Index (SWMFCI) over time



Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

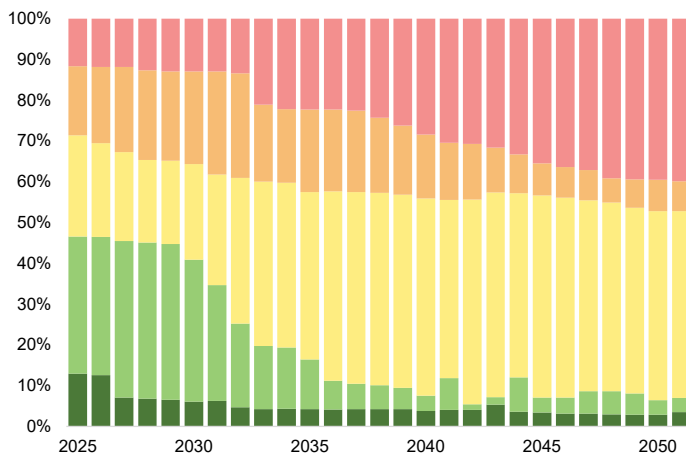


Asset Investment Strategy

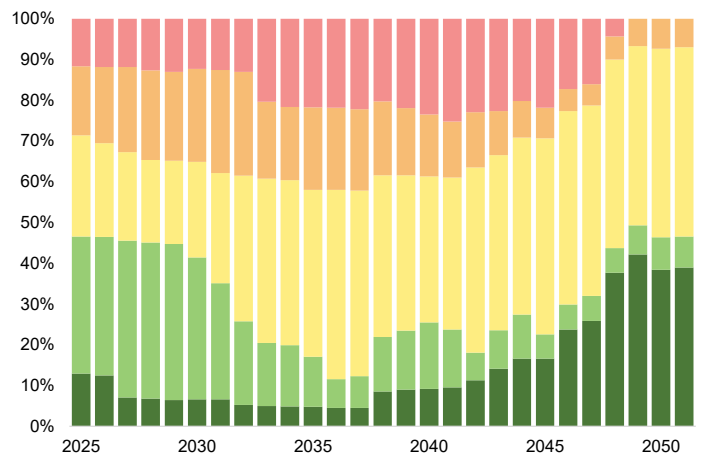
Impact on Levels of Service

Storm Culverts

Scenario 1: Historical Spending Analysis

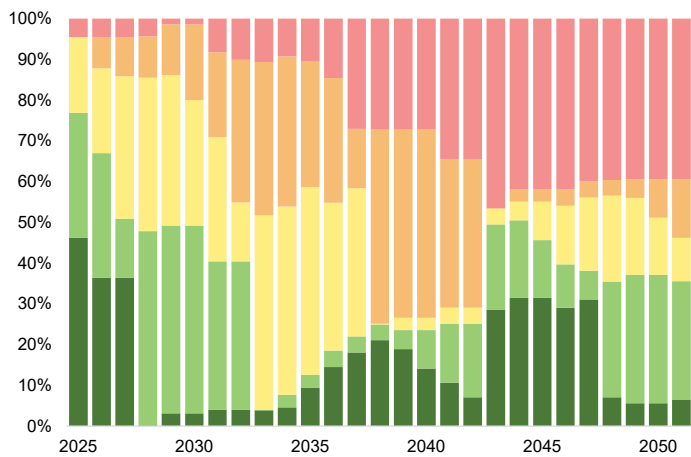


Scenario 2: Achieve Proposed Level of Service

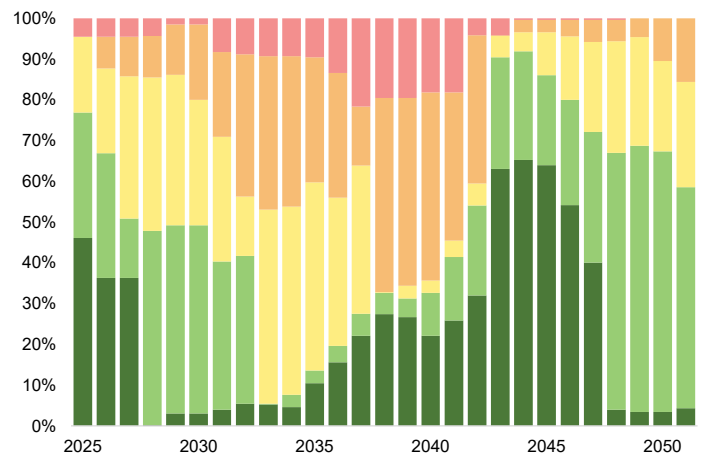


Low Impact Developments (LID)

Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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



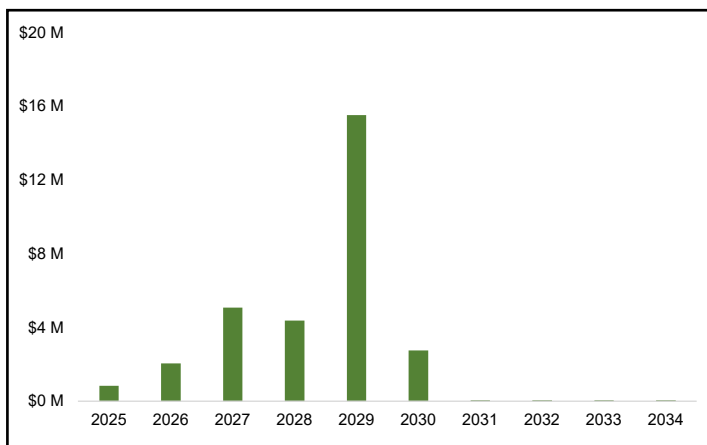
Asset Investment Strategy



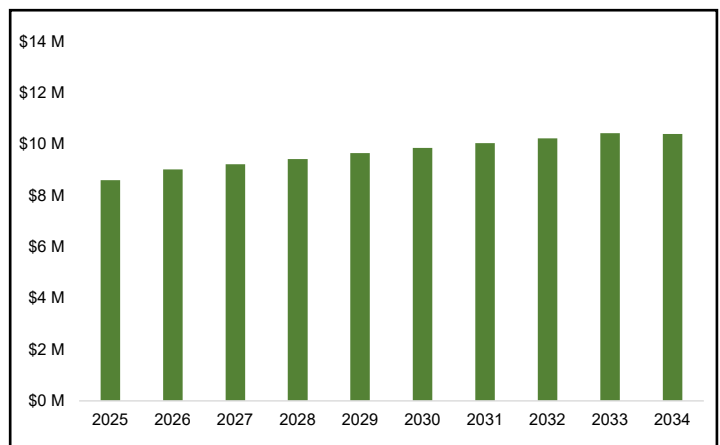
Growth Capital and Operating Forecast

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 2025 Asset Management Plan, will inform future infrastructure investments through the City's 10 Year Capital Budget and Forecast.

2025 Growth Capital Budget and Forecast



Preliminary Estimated Operating Cost Forecast



The capacity of Richmond Hill's Stormwater Management infrastructure is set to expand with several critical projects included in the City's 10-Year Capital Budget, supported by the Stormwater Computer Model results. Key initiatives such as the Mill Pond Park Revitalization (\$8.7 million) will enhance stormwater capacity, mitigate flooding risks, and improve community resilience. Ongoing allocations for stormwater growth vehicles and equipment further support operational efficiency. These projects emphasize the City's proactive approach to building a robust and resilient stormwater management system to address growth and climate change challenges.

An operating forecast for Stormwater Management was developed as part of the City's 2024 Stormwater Management Financial Plan. Per the Financial Plan, Richmond Hill's Stormwater Management operating and maintenance costs associated with existing and new/expanded infrastructure are estimated to increase slightly over the forecast period. These costs are projected to grow from over \$8 million in 2025 to over \$10 million by 2034 (excluding future inflationary pressures), reflecting incremental increases annually.



Asset Investment Strategy

Identifying Additional Needs

The Stormwater Management financial forecasts presented in this Appendix represent the needs associated with achieving the proposed condition-based levels of service for these assets. The analysis to forecast these needs was completed by the City's EAM system, and in the case of stormwater assets, was supplemented with an additional \$3 M annual need that accounts for stormwater management pond rehabilitations, which are not identified in the EAM.

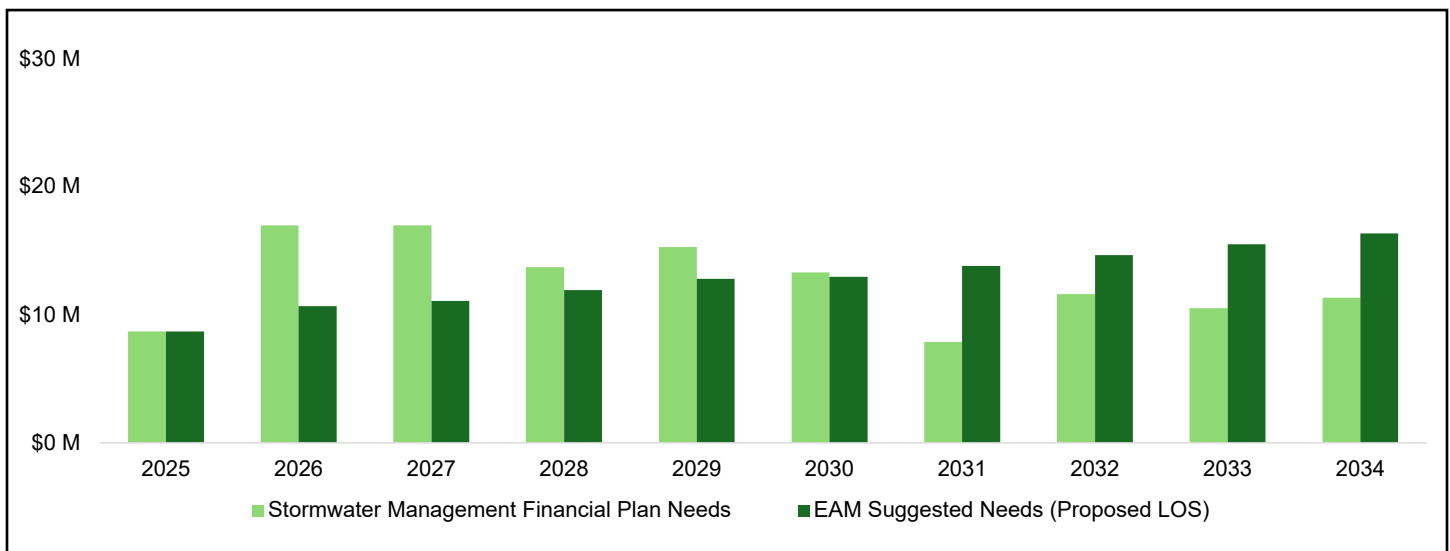
The outputs from this analysis are provided to the City's subject matter experts annually, to assist them in developing the Capital Plan and Forecast each year. In developing the Capital Plan and Forecast, the City's subject matter experts balance the EAM's recommendations on asset condition-based needs with additional projects related to additional needs, including the bundling of assets within the municipal right of way and other performance-related needs, such as sewer upsizing.

Since storm sewers are an underground asset located in the municipal right of way, much like watermains and sanitary sewers, they can be both expensive and disruptive to the community to replace. The City takes a similar approach to all underground assets within the right of way, which is to look for opportunities to bundle works together to leverage efficiencies and minimize disruption to the community. As a result, the City's capital plan and forecast will include storm sewer projects that are identified as part of bundling exercises, that may not be identified in the initial EAM analysis.

In addition, the City has more recently incorporated a performance-based approach to understanding its stormwater management assets. It uses the results of its stormwater models to identify these performance-based needs, which are included in the City's Capital Budget and Forecast. In 2024, the City recently completed a stormwater rate study, which was informed by its condition, performance and bundling needs identified through the capital planning and forecast process.

To supplement the condition-based forecasts provided in this Appendix, the City has also included needs identified as part of the Stormwater Management Financial Plan below. These represent the additional needs identified as part of that study, which include project bundling activities as well as performance-based needs.

EAM Suggested Needs (Proposed LOS) vs. Stormwater Management Financial Plan Needs





Future Outlook

Findings and Insights

Establishing Proposed Levels of Service

The City has selected proposed levels of service and performance targets that align with its objectives to ensure long-term sustainability and minimize risk to the community. The levels of service presented in this AM Plan are mostly focused on the condition-based service level measures that have been developed by the City. In addition, the City has identified other needs, including those associated with stormwater management pond rehabilitations, project bundling and performance-based needs. These additional needs have been incorporated into its annual Capital Plans and Forecasts, described previously in this Appendix.

For stormwater assets, condition is generally high (most assets are in Good and Very Good condition), and assets are relatively young. The financial forecasts completed for stormwater management assets have identified that historical spending trends were insufficient to continue to achieve the City's proposed levels of service moving forward. In light of this, the City has completed a Stormwater Management Financial Plan, which has established a newly updated stormwater management rate to assist it in funding condition and non-condition-based needs over the next 10 years.

Given the anticipated revenues from this rate, the City expects to be able to fund its stormwater management condition and performance-based needs over the next 10 years. As a result, the City has set out a plan for the next 10 years that is both achievable and affordable.

Managing Lifecycle Needs and Mitigating Risks

This AM Plan has identified that the City's stormwater needs for the next 10 years can be funded through the implementation of the City's newly updated stormwater management rate. Beyond the 10-year time horizon, the EAM has identified condition-based needs that are greater than the projected funding. In order to address these needs, the City can seek to obtain more funding in the long term, and/or to re-evaluate its proposed levels of service to seek a balance between costs, risks and service levels.

It should be noted, that in the case of stormwater management assets, the City's understanding of long-term risks and needs is changing. As part of this AM Plan, the City is reporting on the stormwater network's resilience to flooding. As data collection improves, so will the City's understanding of network vulnerabilities and asset needs. A key factor influencing this is climate change. Much of the stormwater infrastructure was built before climate change modeling was incorporated into design. Climate models are evolving as subject matter experts begin to better understand and quantify the effects of climate change on stormwater management assets. As these models evolve, the City remains committed to ongoing updates and continuous improvement in assessing climate impacts.

In the face of changing needs, which could impact the City's plans and ability to afford improvements to its stormwater network, the City will enact several strategies to balance service levels, costs and risks. For example, the City prioritizes addressing high-risk flooding areas and critical assets, ensuring a tactical and data-driven approach to long-term resilience. This prioritization will be formalized in the upcoming Stormwater Master Plan to be completed in 2026. When considering stormwater ponds, the City evaluates all components for capital budget planning; however, the Enterprise Asset Management (EAM) system currently assesses wet and hybrid ponds based on total suspended solids (TSS) removal for legal compliance, while dry ponds are assessed primarily by age, which does not directly correlate to flooding risks. As the City continues to expand its performance-based understanding of assets, future iterations of the City's AM Plan will strive to include these needs in the City's short and long-term forecasts.



Appendix F

Parks and Outdoor Recreation



Meander Park



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. The City also owns supporting assets like fleet and equipment that assist in the maintenance of parks.



Parks

The City of Richmond Hill owns and manages a network of Destination Parks, Community Parks, Neighbourhood 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 such as community centres and arenas and serve as hubs where residents can gather, interact and participate in activities. Neighbourhood Parks (which include local parks and parkettes) cater primarily to residents living nearby and offer various active recreational spaces. 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, fountains, various wall structures, sculptures, fencing, etc.).

Unity 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. 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.

Crosby 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.

Lake Wilcox Park



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 an important role in the City by 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. The City also contains wetlands, which 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
\$465 M

Average Condition
B (Good)

Average Age / ESL
23 / 36 (years)

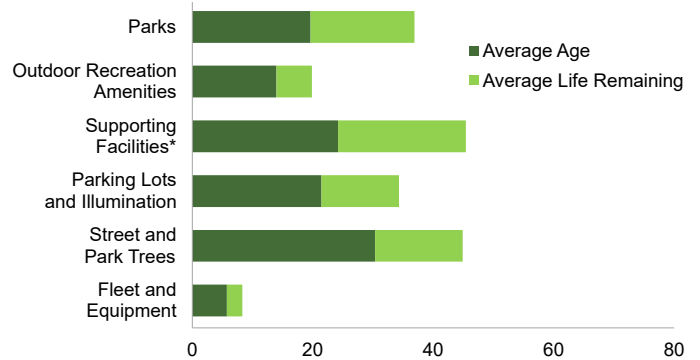


Asset Portfolio Summary

Asset	Quantity	Replacement Value
Parks	171 ea.	\$46.4 M
Outdoor Recreation Amenities	528 ea.	\$68.7 M
Supporting Facilities	8 ea.	\$7.9 M
Parking Lots and Illumination	28 ea.	\$9.7 M
Street and Park Trees	73,199 ea.	\$155.6 M
Natural Areas	889 ha	\$160.9 M
Fleet and Equipment	A mix	\$16.3 M



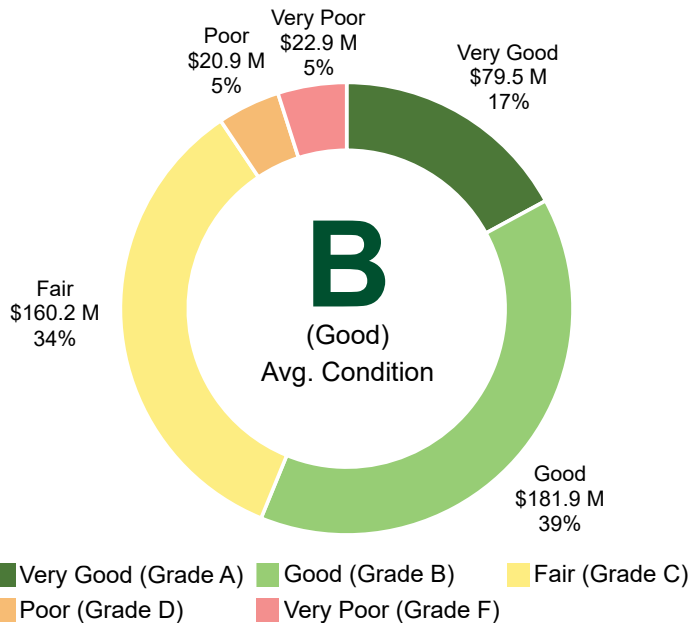
Age Profile



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



Condition Profile



- Park asset condition is based on age/estimated service life.
- The condition of outdoor recreation assets is based on technical and visual assessments as well as age/estimated service life.
- Street and park tree condition is based on visual inspections and age/estimated service life.
- Condition for natural areas is evaluated 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 Building Condition Assessments (BCAs) completed over a three-year cycle.
- The condition of fleet and equipment is based on its utilization (km) as well as age/estimated service life.
- Condition of parking lots is based on visual inspections, and illumination based on age/estimated service life.

Condition Category	Letter Grade	Parks: Age/ESL	Outdoor Amenities: Condition Assessment and Age/ESL	Supporting Facilities: Building Condition Assessments	Trees: Visual Inspections and Age/ESL	Natural Areas: Vegetation Community and Ecosystem	Fleet and Equipment: Utilization and Age/ESL	Parking Lots: Condition Assessment and Age/ESL
Very Good	A	0% to 25%	>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	>25% to 50%	>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	>50% to 75%	>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	>75% to 100%	>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	>100%	0 to 0.2	0 to 0.2	0 to 0.2	0 to 0.2	0 to 0.2	0 to 0.2



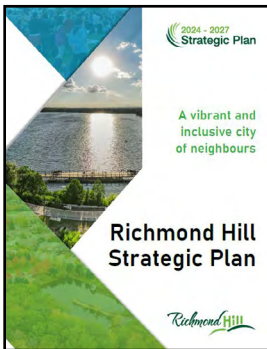
Levels of Service

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

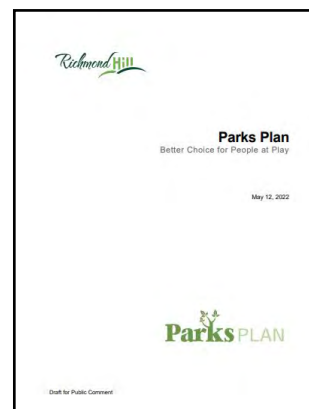
- Make decisions that are evidence based and data driven to enable the City's long term financial sustainability, as well as social, environmental and economic sustainability.
- Focus on quality customer service and a continuous improvement mindset to support innovation and be responsive to residents,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

Level of Service Theme: Availability of Parks and Outdoor Recreation Assets

Community Levels of Service

Service Attribute: Scope

Performance Measure: Description and map of Parks and Outdoor Recreation Amenities located across the municipality. Description of other Parks and Outdoor Recreation Assets.

Measure Type: City-Defined

Applicable Assets: Parks and Outdoor Recreation Assets

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. As outlined in the Parks Plan, the City will continue to expand its park system in Richmond Hill's intensification areas and explore enhancements to the functionality of existing parks to accommodate increased usage and evolving community needs.

The City's current urban forest canopy cover is 30%, based on the City's most recent Urban Forest Study completed in 2022. The City is currently undertaking its Official Plan update, which is considering the possibility of increasing the urban forest canopy cover target from a minimum of 30% to 35% canopy cover. At this time, that update remains in process and is not yet adopted. If adopted, it will be reflected in future asset management plans.

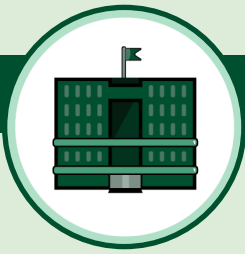
Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Scope	Overall average parkland provision level in square metres per person	City-Defined	15.6	Tracking for Trends
Scope	Urban forest canopy cover (2022 Urban Forest Study)	City-Defined	30%	Maintain (minimum 30% target)



Levels of Service

Level of Service Theme: Availability of Parks and Outdoor Recreation Assets



Levels of Service

Level of Service Theme: Administration Services Asset Condition

Community Levels of Service

Service Attribute: Quality, Reliability

Performance Measure: Description of how condition of Administration Services Assets is measured and reported.

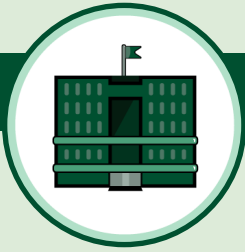
Measure Type: City-Defined

Applicable Assets: Administration Services Assets

The City undertakes continual inspections of its Administration Services facilities and utilizes a computerized maintenance management system (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 the condition of Administration Services facilities. The BCA results are categorized into a Corporate Asset Management condition rating to report in this AM Plan and are also used to inform capital renewals.

For other Administration Services assets, including IT, fleet and equipment, the asset's age and estimated service life are used. IT assets are converted into an IT Condition Index for reporting and forecasting purposes.

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 lifecycle renewals required in the next five years
Poor	30% to <50%	Some service interruptions; major lifecycle renewals required in the next five years
Very Poor	>50%	Required renewal costs approaching building replacement cost; consideration for asset replacement or demolition



Levels of Service

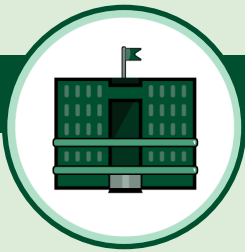
Level of Service Theme: Administration Services Asset Condition

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Quality	IT Condition Index (ITCI)	City-Defined	47 (Fair)	Increase
Quality, Reliability	Weighted average FCI of office buildings	City-Defined	0.18 (Good)	Maintain (Good condition)
Reliability	Percentage of IT assets within service life	City-Defined	73%	Increase



Council Chambers at Main Municipal Offices



Levels of Service

Level of Service Theme: Other

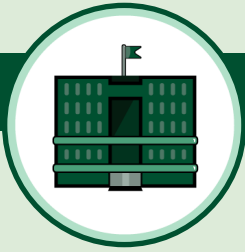
The City has developed a suite of additional LOS measures for some of its assets, that it utilizes to understand, monitor and report on various aspects of the service. It expects to expand and enhance these over time as it continues to improve its LOS framework and performance measures.

Technical Levels of Service

Service Attribute	Performance Measure	Measure Type	Current Performance (2024)	Proposed Performance (2051)
Environmental	Annual hydro consumption (kWh) per square metre (office buildings)	City-Defined	148.6	Tracking for Trends
Environmental	Annual natural gas consumption (m ³) per square metre (office buildings)	City-Defined	10.9	Tracking for Trends
Environmental	Annual water use intensity (m ³) per square metre (office buildings)	City-Defined	0.5	Tracking for Trends



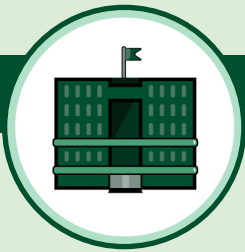
Access Richmond Hill at Main Municipal Offices



Asset Management Lifecycle Strategies

Lifecycle Activities

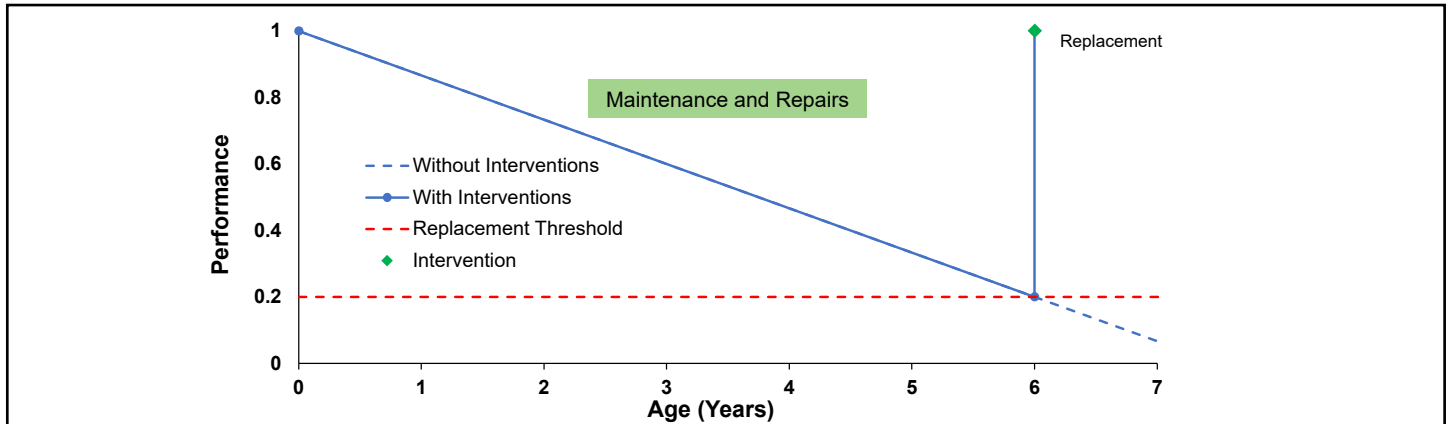
Lifecycle Activity	Description of Activities Practiced by the City
Non-Infrastructure	<ul style="list-style-type: none"> • The City explores opportunities for continuous improvements to enrich client experience when accessing municipal administration-based services. • Policies, plans and studies are completed (e.g. the new City 2024-2027 Strategic Plan) • Buildings conform to Richmond Hill, Provincial and Federal government policies, standards and regulations. • Building Condition Assessments (BCAs) 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.
Maintenance	<ul style="list-style-type: none"> • Scheduled preventive maintenance actions are planned and executed to manage the City's buildings. • Reactive maintenance on buildings is also performed as required. • Richmond Hill uses the Maximo software program to manage the maintenance program of the City's facilities. • Fleet and equipment are maintained per the recommended standards. • Critical IT infrastructure is maintained to ensure it is functioning as intended, including upgrades as required.
Rehabilitation	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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. • 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. • 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	<ul style="list-style-type: none"> • Appropriate and proper disposal occurs when assets are replaced or renewed.
Growth / Service Improvement	<ul style="list-style-type: none"> • 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. • AODA compliance remains achieved through building asset component renewals considered during rehabilitation and/or replacement. • Building assets could be considered for replacement to address energy efficiency, water consumption, and/or technical and regulatory obsolescence.



Asset Management Lifecycle Strategies

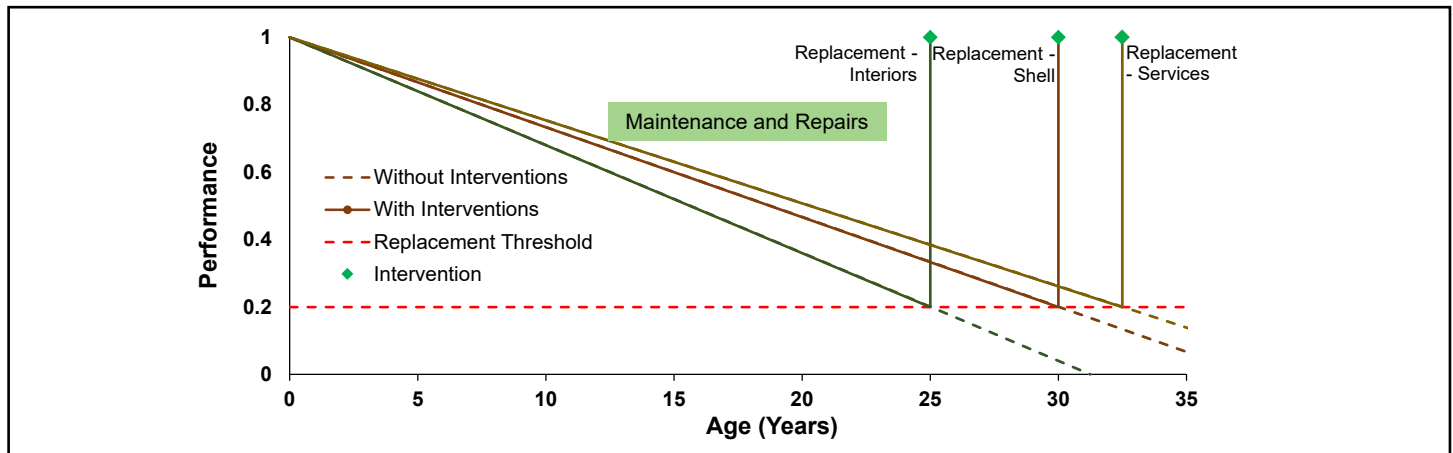
Capital Treatments

Information Technology (IT) Lifecycle

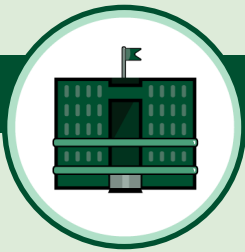


The City owns and manages a wide array of different types of IT assets including IT Hardware, IT infrastructure, audiovisual and telecommunication equipment. These assets have varying service lives given their function, use and warranty periods. The City's lifecycle model forecasts that they would typically 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 Lifecycle



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 lifecycle 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 lifecycle treatments like repairs and rehabilitations.

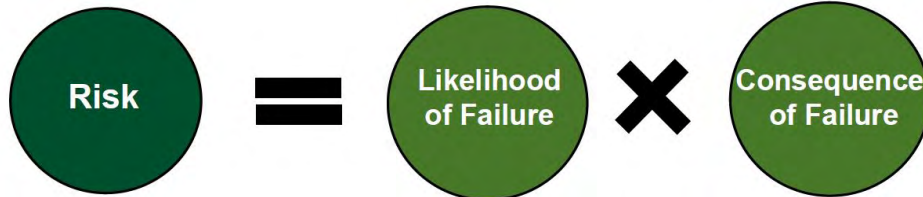


Risk Prioritization

Average Risk Grade
Low (B)

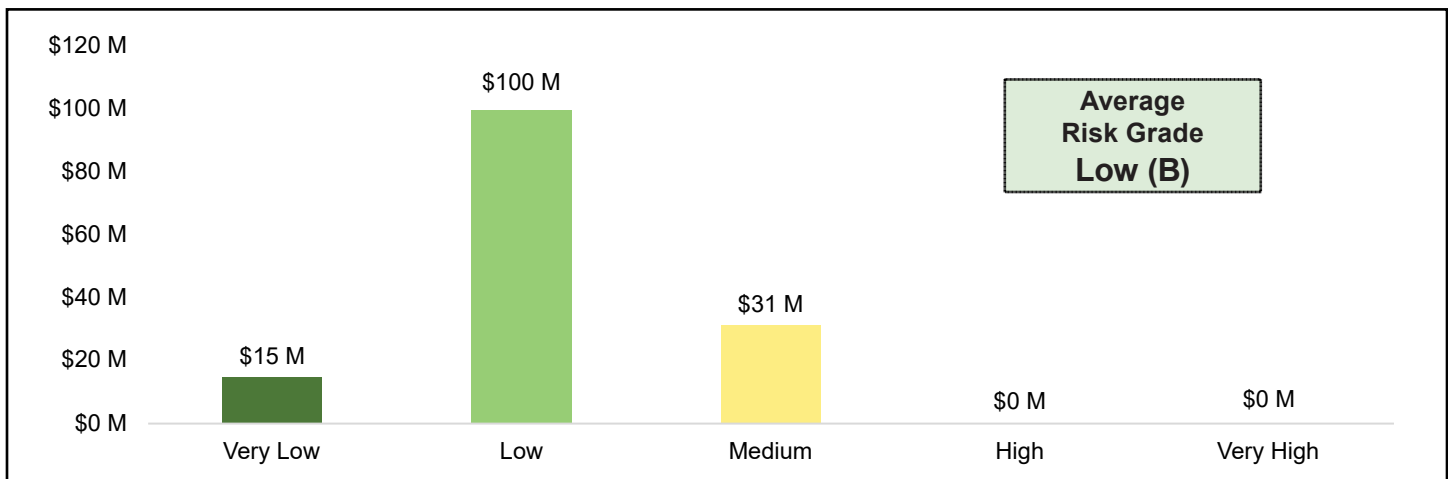


Risk Framework



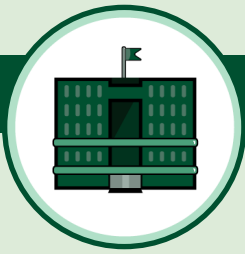
Asset	Likelihood of Failure		Consequence of Failure		
	Condition	Capacity	Financial	Social	Environmental
<ul style="list-style-type: none"> Office Buildings Other Buildings Information Technology (IT) Fleet and Equipment Parking Lots 	<ul style="list-style-type: none"> Current and deteriorating condition 	<ul style="list-style-type: none"> Current capacity Future expansion/new need identified in budget, plan or study 	<ul style="list-style-type: none"> Capital replacement cost Operating cost/revenue 	<ul style="list-style-type: none"> Facility building component type and function Asset type and function 	<ul style="list-style-type: none"> Environmental compliance Asset type 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 and Electrification.
- 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
\$9.8 M

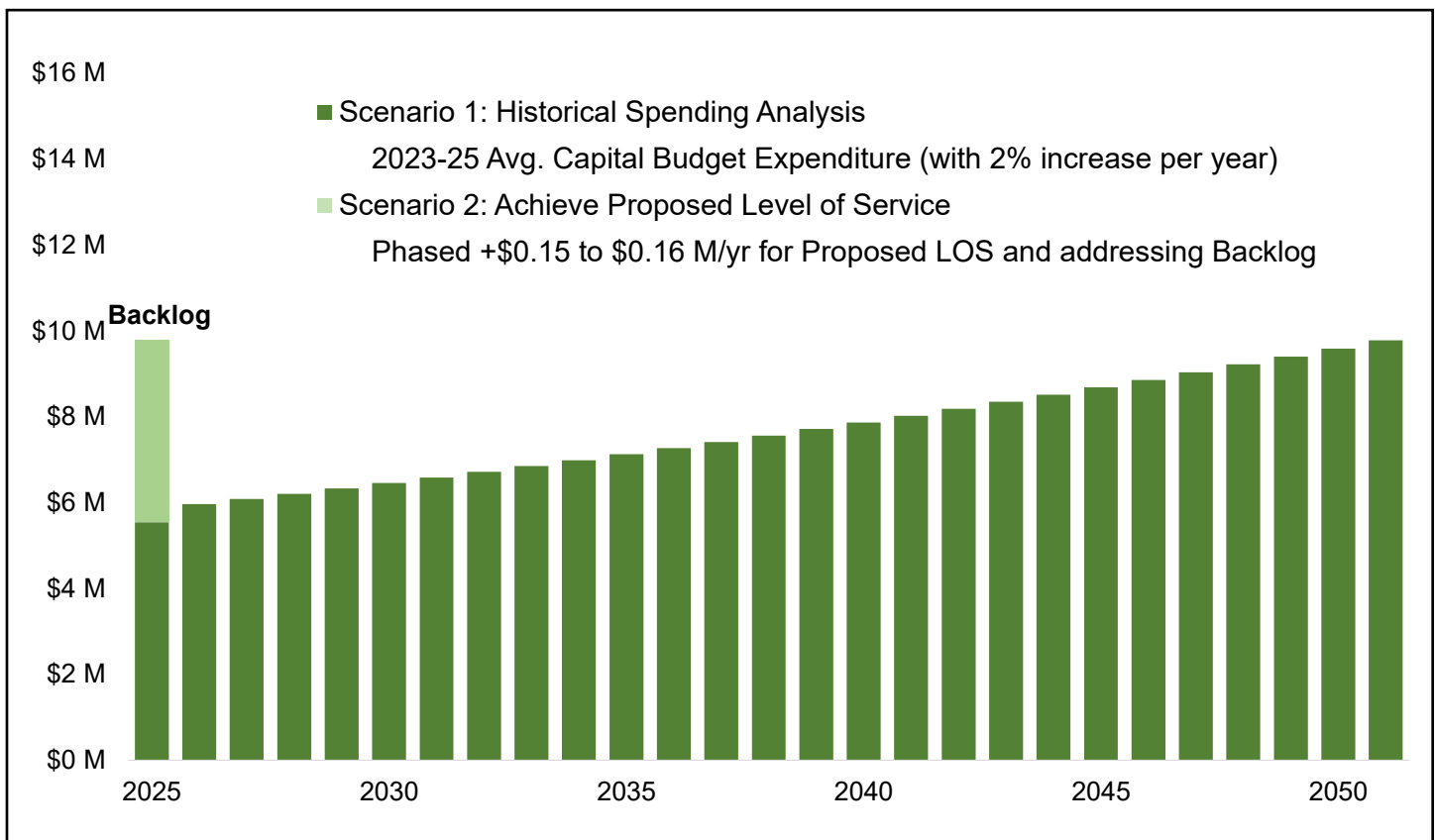
Proposed LOS
+\$0.15 to \$0.16 M/yr

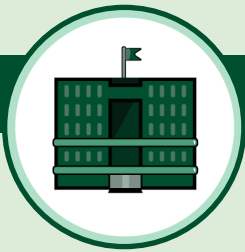


Investment Approach

Suggested SOGR Asset Investment Strategy – Administration Services (\$ millions)

Service	2025 Infrastructure Backlog	2025 Initial SOGR Expenditure	Annual Phased-in SOGR Investment for Proposed LOS	10 Years (2025-2034)		27 Years (2025-2051)	
				Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS	Total SOGR Investment for Proposed LOS	Avg. Annual SOGR Investment for Proposed LOS
Administration	9.8	5.5	+0.15 to 0.16	62.4	6.2	204.0	7.6



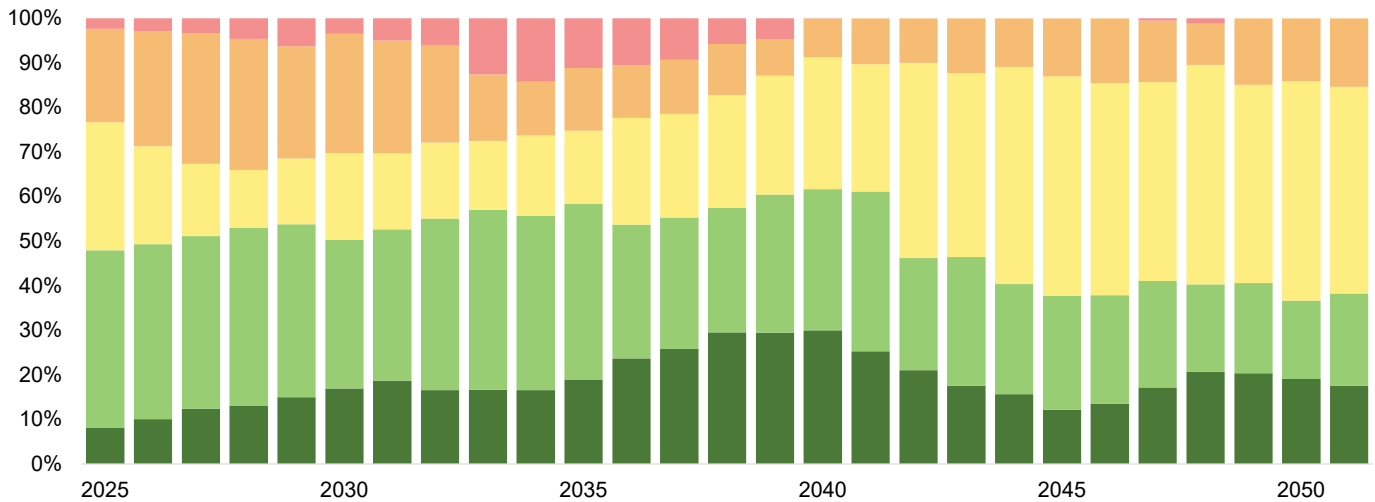


Asset Investment Strategy

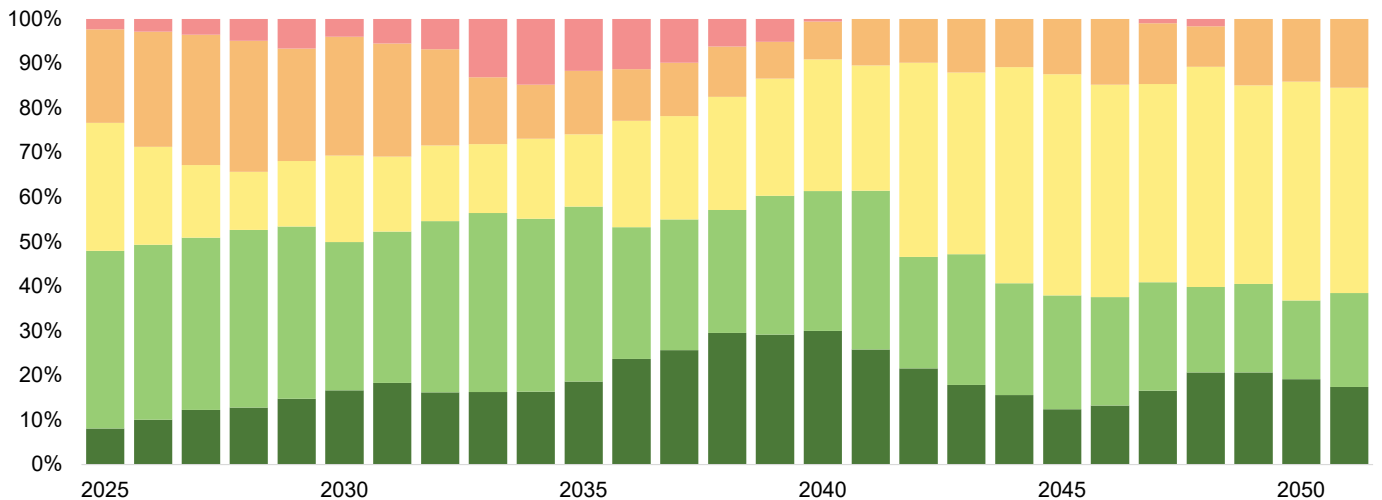
Impact on Levels of Service

Administration Services (All)

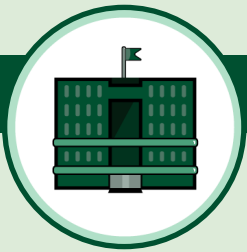
Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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

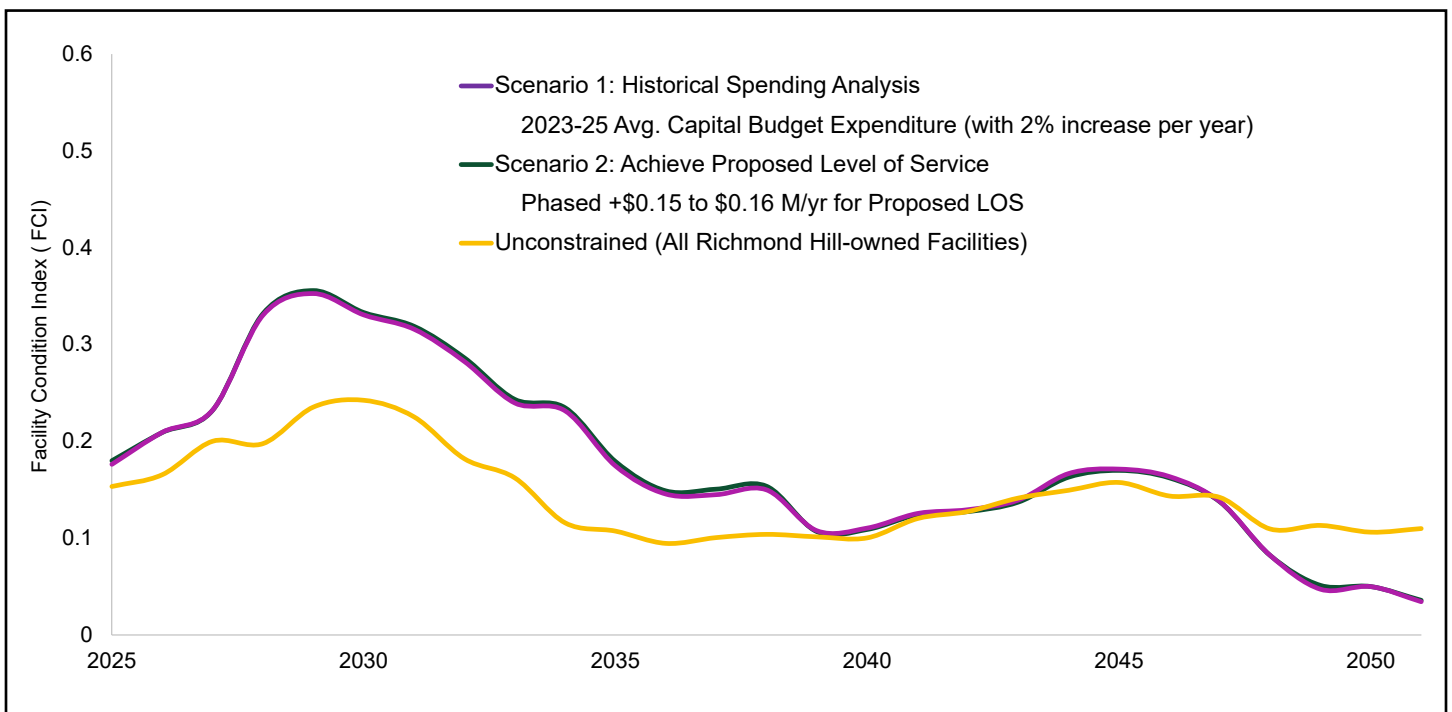


Asset Investment Strategy

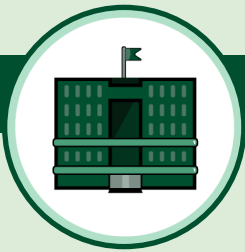
Impact on Levels of Service

Office Buildings

Facility Condition Index (FCI) over time



*The City is proposing to maintain a system-wide average FCI rating of "Good" as its proposed LOS for all facilities assets. The system-wide FCI projections are juxtaposed in this figure against the service-level FCI forecasts, to illustrate the potential FCI that could be achieved if funding is allocated to facilities to fully meet all short and long-term needs.

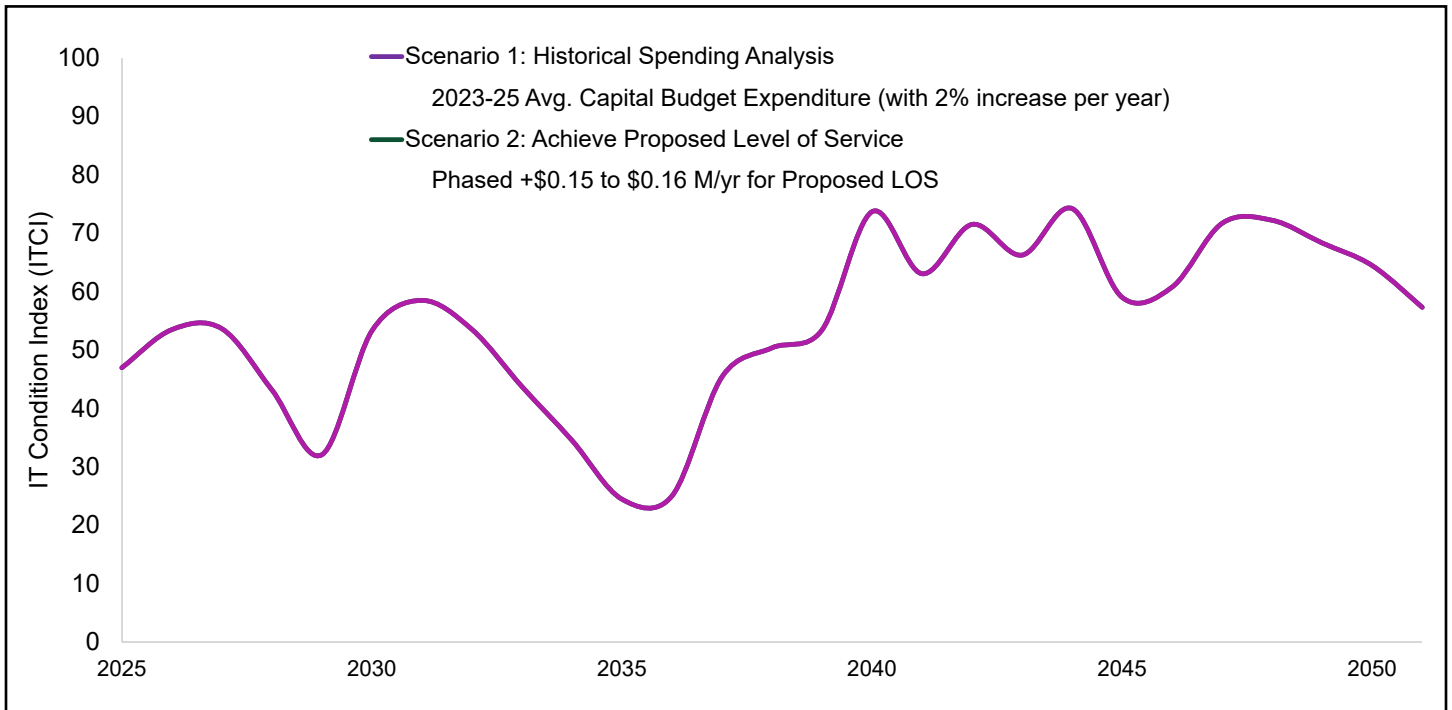


Asset Investment Strategy

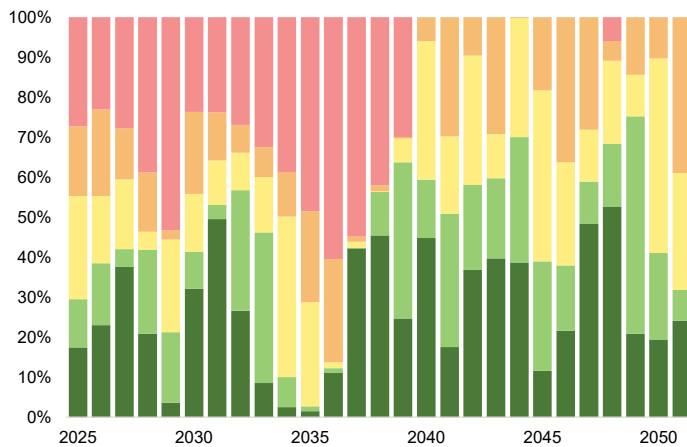
Impact on Levels of Service

Information Technology (IT) Assets

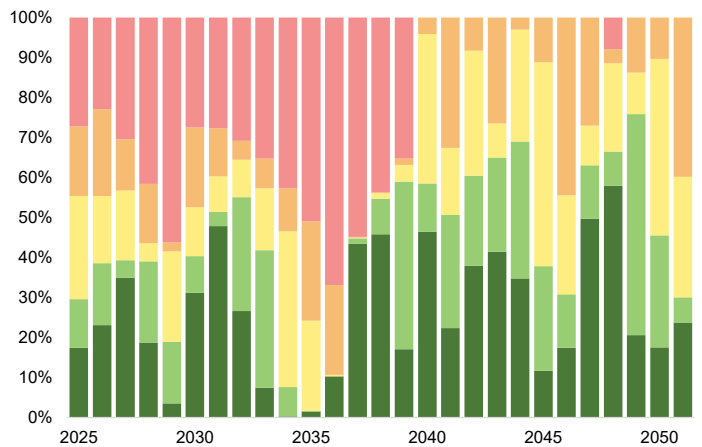
IT Condition Index (ITCI) over time



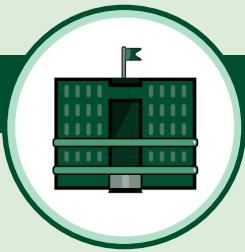
Scenario 1: Historical Spending Analysis



Scenario 2: Achieve Proposed Level of Service



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



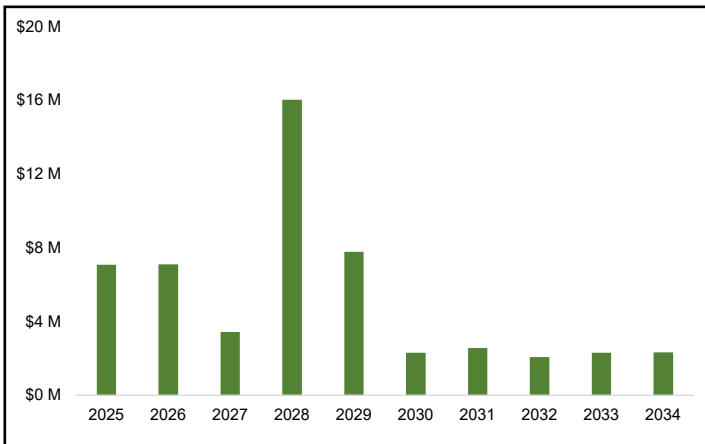
Asset Investment Strategy



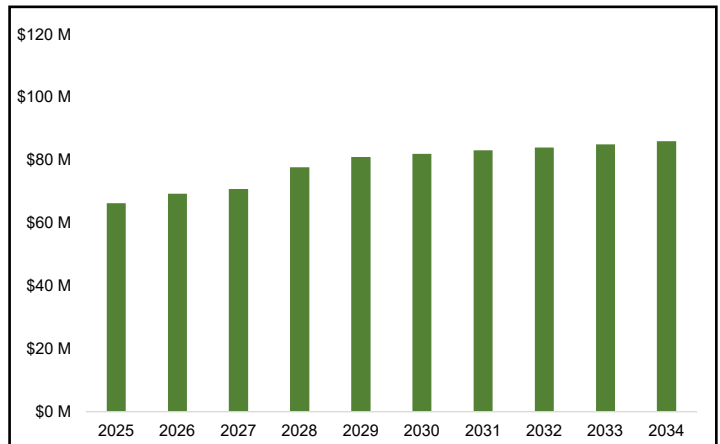
Growth Capital and Operating Forecast

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.

2025 Growth Capital Budget and Forecast



Preliminary Estimated Operating Cost Forecast

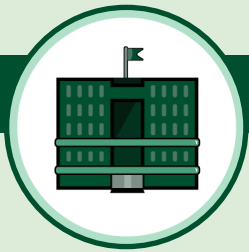


Richmond Hill's Administration Services are set to undergo substantial growth and modernization, as outlined in the City's 10-Year Capital Budget and Forecast. The most significant project is the Operations Centre Yard Expansion and Upgrade, with a total investment of \$20 million, aimed at enhancing municipal operational capabilities.

The CRH Web and Digital Transformation initiative, with a budget of \$7.7 million, will improve digital service delivery and integration across the City.

Other key projects include the North Operations Yard Connor Room Retrofit (\$6.3 million) and the Richmond Hill Centre Subway Project (\$6.0 million), which will contribute to enhanced operational efficiency and public transit infrastructure. Investments in technology and data systems, such as the GIS Program Evolution (\$2.5 million) and Data and Analytics Program Evolution (\$4.0 million), will further enhance service delivery. These initiatives reflect the City's commitment to leveraging technology and infrastructure improvements to support the growing needs of the community.

The Administration Services operating costs are projected to experience a steady increase from approximately \$66 million in 2025 to over \$86 million by 2034. This anticipated rise in operating costs reflects the division's ongoing efforts to manage existing operations and accommodate future expansions. The growth rate, as indicated by the annual growth increase percentages, fluctuates year over year. 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.



Future Outlook

Findings and Insights

Establishing Proposed Levels of Service

Proposed Levels of Service for Administration Services facilities, IT assets and fleet/equipment have been selected to ensure the long-term sustainability of service provision for these assets.

Note that all facilities within this service propose to maintain their average condition (measured through FCI) at a value of “Good”, which is part of a system-wide facilities LOS that takes into account the average FCI for all facilities across all service areas. The City proposes to achieve this value from a system-wide perspective, and as a result, FCIs of individual facilities may vary. To provide context, the FCI forecast presented for Administration Services facilities was juxtaposed against the system-wide FCI forecast given an unconstrained funding scenario. This was done to illustrate the potential FCI that could be achieved if funding is allocated to facilities to fully meet all short and long-term needs. In practice, the City will balance its needs across facilities as required to ensure that it maximizes its ability to achieve its service level targets and minimizes potential risks.

Furthermore, the reliability metric of IT assets indicates that 73% of these assets are within their service lives, and the City is proposing to increase this value. Recent planned capital investments towards IT assets are anticipated, which will achieve this result for the City.

Furthermore, historic spending trends, when projected forward indicate that if the City continues to spend in this manner, funding will be available for both facilities and IT assets to meet proposed service levels to 2051. The phased-in approach to increasing spending in the forecasts was established to illustrate a methodology that attempts to gradually increase spending to ensure that affordability is considered when balancing out risks and service levels in the long term.

Managing Lifecycle Needs and Mitigating Risks

As noted above, the City's facilities-based proposed levels of service were established at the portfolio level for facilities. The financial forecasts generally reveal that for most facilities, financial pressures arise in the near term before subsiding as spending is increased in the later years of the ramped-up forecast scenario.

At the City, facilities are managed by the City's Facility Management Division, which receives a pool of funding and has the ability to allocate it across its entire portfolio of facilities, which span across the City's various service areas. As a result, the City has a mechanism to address short-term needs identified for Administration Services facilities by allocating money as needed in years of high needs. While doing so, in areas where funding cannot be allocated, the City can explore some options:

- It can accept a lower level of service in the short to medium term for given facilities, recognizing that these may resolve in the long term. Under this option, the City will prioritize high-risk projects or facilities and lifecycle activities that do not disrupt the services prioritized to the community. Projects that are not public facing or not critical can be deemed a lower priority when funding pressures are higher and can be addressed in the future when pressures are lower.



Future Outlook

Findings and Insights

- It can explore ways to allocate additional funding in the near term and then decrease it in the long term when needs are anticipated to be lower. This need should be balanced against the City's capacity to deliver projects and available funding.

With respect to IT assets, recent capital budget forecasts indicate that the City is expected to replace some of its IT assets which should reflect an improvement of service levels in the near-term. For the entire Administration Services asset portfolio, IT assets represent a relatively small portion (approximately 7%). As a result, funding should be available to allocate to critical IT assets as needed and ensure that they remain in service.

Note that facilities replacement costs were developed from a costing source integrated into the City's Facilities Management software. Currently, the City is undergoing a process of evaluating and updating these costs. Once this evaluation is complete, updated facilities replacement costs will be reflected in future iterations of the City's AM Plan.



Main Municipal Offices

Richmond Hill