2023
Facilities Asset Management Plan

KINGSTON

Foreword

The City of Kingston acknowledges that it is situated on the traditional homeland of the Anishinaabe, Haudenosaunee and the Huron-Wendat, and thanks these nations for their care and stewardship over this shared land. Today, the City is committed to working with Indigenous peoples and all residents to pursue a united path of reconciliation.

The City of Kingston was amalgamated in 1998 and today serves a population of approximately 136,600 residents as well as more than 30,000 students attending local post-secondary institutions, typically between September and May. The City is uniquely situated between Toronto, Ottawa and Montreal with easy access to all three by Highway 401. In its picturesque location along the shores of Lake Ontario, at the mouth of the Cataraqui River and start of the St. Lawrence River, Kingston is surrounded by natural beauty that enhances life for its residents.

Kingston's diverse economy encompasses vibrant culture and arts, global industry sectors that are creating new jobs and driving innovation, as well as numerous public institutions including Queens University, the Royal Military College of Canada, St. Lawrence College, Kingston Health Sciences Centre, Correctional Services Canada and CFB Kingston. The City has also played a unique role in the Nation's history, being the First Capital of a United Canada in 1841. Today you can see this reflected in its historical downtown and monuments.

Over time, the City has established asset management practices for its infrastructure assets; however, more recent efforts have been made to formalize those practices within an Asset Management Framework in accordance with Ontario Regulation, O. Reg. 588/17, "Asset Management Planning for Municipal Infrastructure". This framework already includes the following elements:

- 2019 Strategic Asset Management Policy (Report #19-091), which defines the expectations, key principles, and overall governance framework for the practice of asset management throughout the corporation.
- 2022 Asset Management Plan (AMP) for Core Assets (Transportation and Stormwater infrastructure).

Water & Wastewater infrastructure, also defined as a Core Asset under O. Reg. 588/17, is managed by Utilities Kingston and captured in their AMP, originally created in 2017 and recently updated in 2021 (Council Report #21-234).

The advancement of the City's Asset Management Framework will result in improved decision-making abilities and sustainable financial practices. The AMPs are living documents that present the City's asset portfolio in terms of what is owned, the levels of service provided, required life cycle management activities and financial strategies. The policy, AMPs and other documents related to asset management, are also developed to be in alignment with Council's Strategic Plan as well as other important planning documents.

Council has established priorities for the current term, up to 2026. These priorities are in multiple ways supported by the City's infrastructure, thus improvements to the management of that infrastructure will support the achievement of these priorities.

Executive Summary

Located along the beautiful shores of eastern Lake Ontario, the City of Kingston offers a stable and diversified economy that includes global corporations, advanced healthcare facilities, world-class educational institutions, affordable living, and vibrant entertainment and tourism activities. With a population of approximately 136,000 residents and 30,000 post-secondary students between September and May, City of Kingston staff are responsible for delivering a wide array of services that support the quality of life and prosperity of the community. With the goal of delivering the services to the quality and level expected by the community, the City has made a commitment to asset management planning with the goal of balancing expenditures, services, and risk across the diverse asset portfolios.

This Asset Management Plan (AMP) includes all municipal facilities which support a wide range of services that are provided to the Kingston community within the following categories:

- Administration & Offices
- Airport
- Ambulance Services
- Aquatic Centres
- Arenas
- Arts & Culture
- Community Centres
- Fire & Emergency Services
- Fleet Services
- Housing & Social Services
- Large Venue Entertainment Centre
- Leased
- Libraries
- Long Term Care
- Marinas
- Parks
- Police Services
- Public Works & Solid Waste
- Transit
- Utilities
- Other

The City's Facilities Management & Construction Services (FMCS) department is responsible for maintenance and renewals in accordance with best practices. The goal is to ensure a high level of performance and reliability for all City facilities.

For the purposes of this AMP, facilities assets consist of buildings, grounds or site elements, as well as electric vehicle (EV) charging stations. The replacement cost for the entire facilities portfolio is approximately $1.3 billion as outlined below in Table ES 1. This plan excludes airport airside infrastructure, parking structures and surface lots, aquatic facility filtration and treatment infrastructure, as well as arena refrigeration plants.

The overall facility condition index (FCI) was used to determine the performance of the Facilities asset portfolio. For each facility, FCI is determined by taking the annual percentage of facility components requiring investment as a proportion of the total facility replacement value. The categorization of FCI into applicable condition ratings is provided in Table ES 2. Facilities with a FCI greater than 30% are not meeting relevant performance or level of service (LOS) objectives.

Table ES 1. Facilities Asset Portfolio - Replacement Values

Category	Count	Replacement Value (M)
Administration & Offices	6	$197.2
Airport	4	$30.9
Ambulance Services	2	$1.2
Aquatic Centres	2	$25.5
Arenas	6	$167.5
Arts & Culture	5	$77.7
Community Centres	2	$30.3
Fire & Emergency Services	25	$55.0
Fleet Services	2	$32.4
Housing & Social Services	4	$30.1
Large Venue Entertainment Centre	1	$81.0
Leased	13	$76.3
Libraries	5	$66.2
Long Term Care	1	$74.9
Marinas	3	$28.7
Parks	31	$78.4
Police Services	2	$81.0
Public Works	16	$47.1
Transit	4	$27.6
Utilities	2	$47.1
Other	11	$36.0
Total Facilities Management	147	$1,294

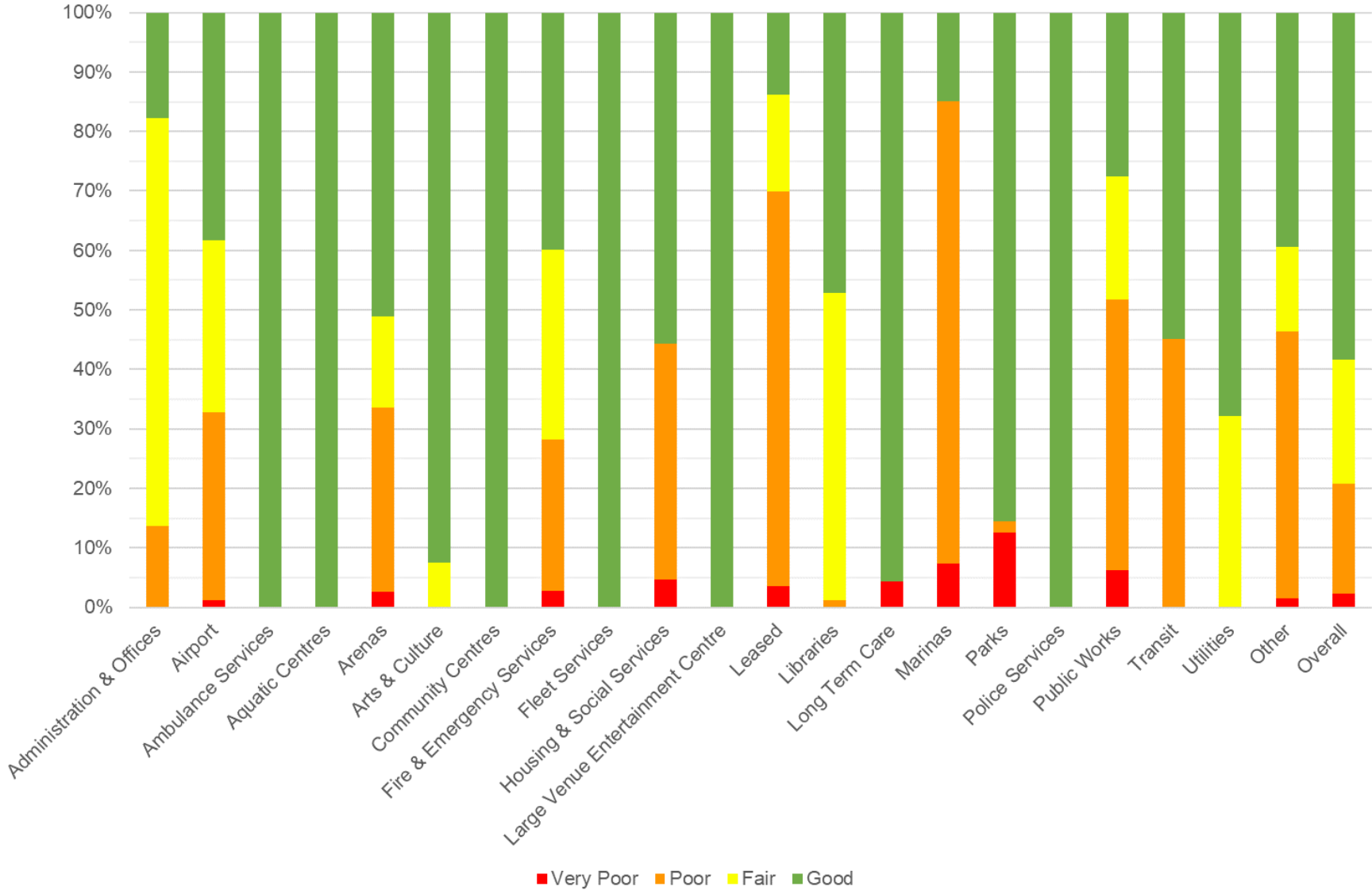
Table ES 2. Asset Condition Rating

Condition Rating	Definition	Facilities: FCI
Very Good	The asset is fit for the future. It is in excellent condition, new or recently rehabilitated	N/A[1]
Good	The asset is adequate. It is well maintained, acceptable and generally within the mid-stage of its expected service life	0% to 5%
Fair	The asset requires attention. The asset shows signs of deterioration, and some elements exhibit deficiencies.	5% to 10%
Poor	There is an increasing potential for its condition to affect the service it provides. The asset is approaching the end of its service life, the condition is below the standard and a large portion of the system exhibits significant deterioration.	10% to 30%
Very Poor (Critical)	The asset is un-fit for sustained service. It is near or beyond its expected service life and shows signs of advanced deterioration. Elements may be unusable.	>30%

[1] FMCS does not differentiate between good and very good with respect to FCI.

The breakdown of the assets within each condition rating category is shown in Figure ES 1. As can be seen in the figure, a large proportion of the assets are in the Good to Fair categories.

Figure ES 1. Current Condition of Facilities Assets in Each Category – Distribution by Replacement Value



The City of Kingston has developed this Asset Management Plan (AMP) to address the requirements of Ontario Regulation 588/17. In order to support the AMP, a comprehensive Level of Service (LOS) Framework has been developed. This framework will help establish a relationship between the levels of service being provided by the City's facilities and the associated operating and capital expenditures required to achieve the LOS. The LOS Framework for the facilities portfolio is outlined as follows in Table ES 3 to Table ES 6.

Table ES 3. Customer LOS for Accessibility

Performance Measure	2023 Performance	Proposed Performance
Description of facilities and level of accessibility	City facilities support a diverse range of services and are accessible to people using mobility devices. New construction and renovations are implemented according to best practices as well as the Ontario Building Code and City's Facility Accessibility Design Standards (FADS).	Incorporate and support relevant initiatives associated with the City's Inclusion, Indigenization, Diversity, Equity and Accessibility (IIDEA) journey.

Table ES 4. Customer LOS for Quality

Performance Measure	2023 Performance	Proposed Performance
Percentage of facilities assets in fair or better condition (FCI of 10% or lower/better)	79%	Future[2]
Average Facility Condition Index (FCI) value for all facilities	10% and projected to be 19% at end of 10-year horizon based on anticipated budget	10% or less (fair or better condition) sustained over 10-year horizon

[2] Facilities are currently managed by maintaining average FCI. This accounts for facilities that have low utilization. A proposed performance can be set once the facilities are further classified.

Table ES 5. Technical LOS for Reliability

Performance Measure	2023 Performance	Proposed Performance
Percentage of planned maintenance events as a proportion of total maintenance activities (i.e. planned vs. reactive)	47%	60%

Table ES 6. Technical LOS for Climate Leadership

Performance Measure	2023 Performance	Proposed Performance
Greenhouse gas (GHG) emissions (equivalent emissions from all energy sources)	6,843 tonnes CO2e	19% reduction below 2018 emissions by 2026 (per Facilities Energy & Asset Management Plan), 30% reduction by 2030 and carbon neutrality (net zero energy) by 2040 (per Climate Leadership Plan)

The lifecycle strategy describes the set of planned actions that the City undertakes to sustain levels of service while managing risk at the lowest possible lifecycle cost. The types of lifecycle activities are shown in Table ES 7.

Table ES 7. Lifecycle Activities

Lifecycle Activity	Description
Non-Infrastructure	Actions or policies that can lower costs or extend asset life
Maintenance	Regularly scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events
Renewal / Rehabilitation	Significant repairs designed to extend the life of the asset.
Replacement / Construction	Activities that are expected to occur once an asset has reached the end of its useful life and renewal / rehabilitation is no longer an option.
Disposal	Activities associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed by the municipality.
Expansion / Growth / Service Improvements	Planned activities required to extend services to previously un-serviced areas or expand services to meet growth demands.

The Lifecycle Strategy has been combined with the LOS and Risk Management frameworks in a decision support system (DSS) model, which allows the City to run various forecasting scenarios. The following scenarios focused on renewal spending were analyzed for each asset class:

Scenario 1: Anticipated Budget:

Evaluates asset performance under the current 10-year capital plan that the City anticipates to allocate towards that asset class. The current budgets were obtained from the City's 2023 financial plan. This illustrates the change in LOS under anticipated conditions and is also used as a baseline scenario to assess the other scenarios analyzed.

Scenario 2: Maintain Levels of Service

This scenario determines the cost that would be required to maintain current LOS over a 10-year forecast period. Understanding the cost to maintain current LOS is a requirement of the July 1, 2024 milestone of O.Reg. 588/17. Individual facilities are meeting LOS if they have an FCI of 10% or lower and average FCI of the portfolio was used to determine the cost to maintain LOS.

Scenario 3: Achieve Proposed Levels of Service

This scenario determines the costs and associated asset performance to achieve the proposed LOS over a 10-year forecast period. These targets generally apply to the reliability and condition-based LOS that the City has established. The proposed LOS for this AMP is the same as Scenario 2 to maintain the average FCI over the 10-year period.

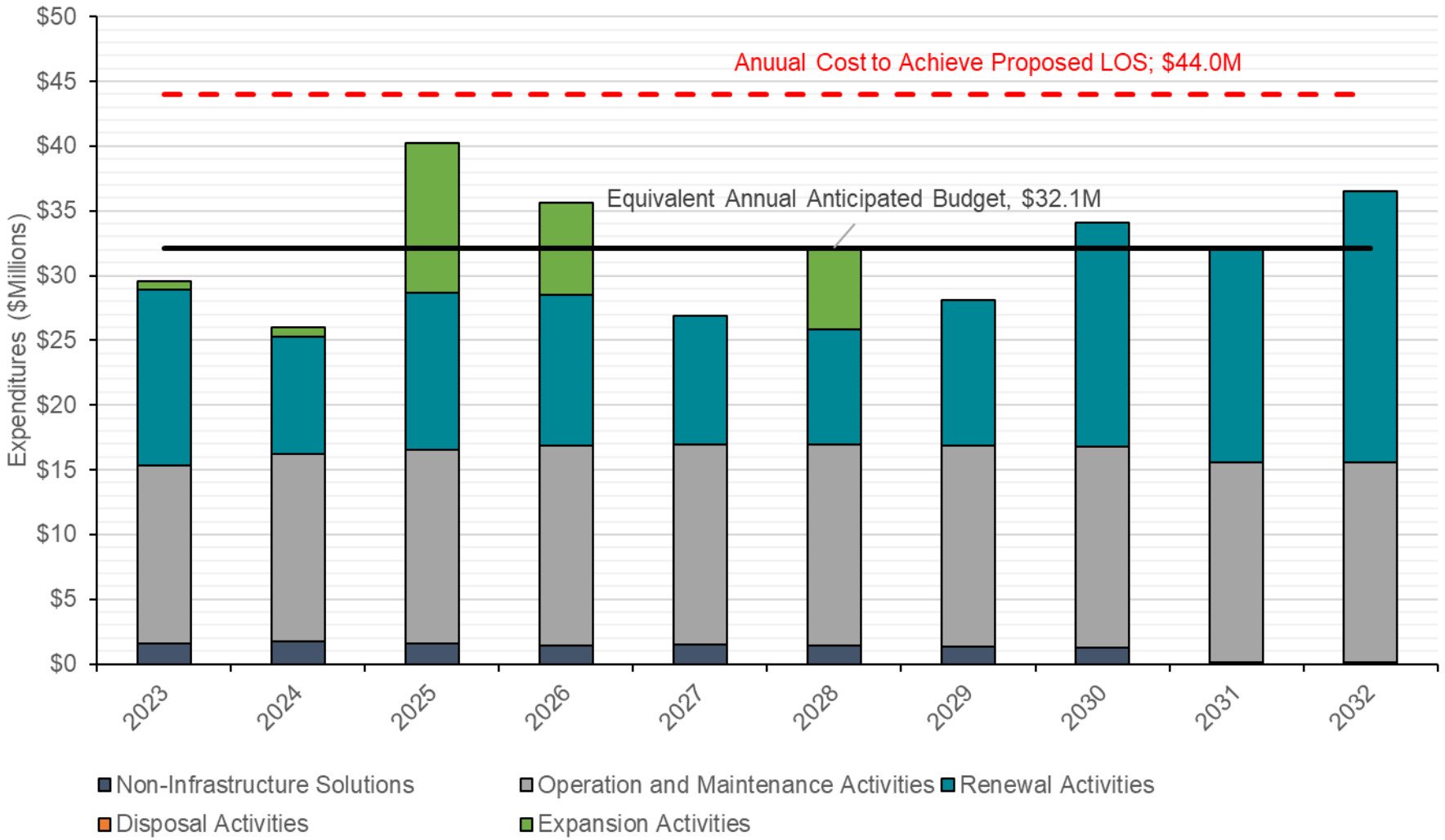
The results of the scenario analyses and financial plan are illustrated in Table ES 84 and Figure ES 2. The Asset Management analyses were conducted under the assumption that non-infrastructure, operating and maintenance, disposal and expansion expenditures will remain the same for all scenarios and are fully accommodated under the City's existing budget. Since the lifecycle models were developed around renewal interventions, the forecasting analysis provided a comparison of capital needs against anticipated capital funding. The annual funding gap to achieve the proposed LOS is $10.8M.

Table ES 8. Facilities Management Average Annual Lifecycle Activity Investments

Lifecycle Activity	Anticipated Budget	Achieve Proposed LOS[3]
Non-Infrastructure Solutions	$1,205,500	$1,205,500
Operation and Maintenance Activities	$15,166,203	$15,166,203
Disposal Activities	$0	$0
Expansion Activities	$2,633,929	$2,633,929
Renewal Activities	$13,134,739	$25,000,000
Total	**$32,140,371**	**$44,005,632**
Annual Funding Gap	Not Applicable	**$11,865,261**

[3] The proposed LOS is to maintain average FCI of 10%.

Figure ES 2. Facilities Management Scenario Comparison



This asset management plan is intended to be a living document that is updated at recurring intervals. A key component of asset management is ensuring the continuous improvement of asset management practices. The final section of the plan outlines strategies for enhancing the asset management plan, as well as overall improvements to the asset management program at the City.

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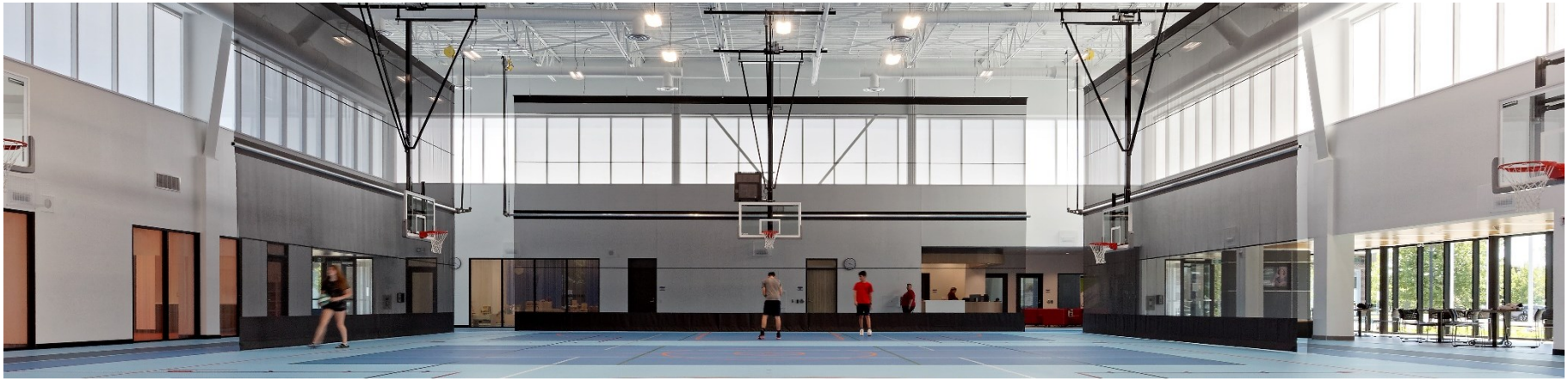

Figure 1. New Kingston East Community Centre

1.0 Introduction

Located along the beautiful shores of eastern Lake Ontario, the City of Kingston offers a stable and diversified economy that includes global corporations, advanced healthcare facilities, world-class educational institutions, affordable living, and vibrant entertainment and tourism activities. With a population of approximately 136,000 residents and 30,000 post-secondary students between September and May, City of Kingston staff are responsible for delivering a wide array of services that support the quality of life and prosperity of the community. With the goal of delivering the services to the quality and level expected by the community, the City has made a commitment to asset management planning with the goal of balancing expenditures, services, and risk across the diverse asset portfolios.

1.1 Purpose of the Asset Management Plan

An asset management plan (AMP) is a crucial component of any asset management framework, and thus its development and implementation will greatly improve the City's current efforts in Asset Management. The Federation of Canadian Municipalities (FCM) defines an asset management plan as, "a plan developed for the management of one or more infrastructure assets that combines multidisciplinary management techniques (including technical and financial) over the life cycle of the asset in the most cost-effective manner to provide a specified level of service". This AMP will focus on the City's Facility assets and build upon work completed for the City's Transportation and Stormwater AMP, approved by Council on June 21, 2022. Water & Wastewater services which are managed by Utilities Kingston have been captured in their Asset Management Plan, originally created in 2017, then updated and subsequently approved by Council on October 19, 2021.

A significant component of the Asset Management Framework is the Asset Management Policy, which was adopted by Council in 2019. The AM objectives as outlined in the Asset Management Policy are listed below:

- Establish an asset management system that integrates strategic planning, budgeting, service levels, and risk;
- Provide service levels that balance customer expectations with financial means and risk;
- Enhance transparency and accountability of the decision-making process;
- Ensure asset investment is considered through a holistic approach to maximize the lifecycle of the assets as well as included in the planning for new assets;
- Provide justification of investment decisions related to infrastructure assets by linking these decisions to long-term consequences;
- Prepare long-term financial plans to ensure sustainable funding for rehabilitation, replacement or decommissioning of assets;
- Ensure that the addition of new assets or enhancements of existing consider the City's ability to fund the required additional maintenance and future upgrades within a sustainable plan; and
- Define the processes for future decision makers within the City, while maintaining corporate knowledge.

1.2 Scope of Assets

This AMP includes all municipal facilities which support a wide range of services that are provided to the Kingston community. These assets are managed and maintained by the Facilities Management & Construction Services (FMCS) department. Below is the list of Facility Categories included:

This Asset Management Plan (AMP) includes all municipal facilities which support a wide range of services that are provided to the Kingston community within the following categories:

- Administration & Offices
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- Arts & Culture
- Community Centres
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- Libraries
- Long Term Care
- Marinas
- Parks
- Police Services
- Public Works & Solid Waste
- Transit
- Utilities
- Fleet Services
- Other

1.3 Alignment with the City's Vision, Mission and Strategic Goals

One of the foundational concepts of asset management is ensuring there is a clear line of sight between organizational objectives, asset management objectives and any activities related to asset management. Therefore, when determining the purpose and desired outcomes of AM for the City, it is important to first consider the City's broad goals and overall strategic direction.

The City of Kingston's Mission and Vision statements broadly define what the City strives to provide for its citizens and how they intend to do so. In June of 2024, this was updated after feedback and collaboration from Council and city employees across the corporation. The City redefined its path with a clear Vision, inspiring Mission, and updated core Values.

Mission

We embrace innovation, foster collaboration, respect the environment, and provide exceptional services that reflect the needs of a diverse community.

Vision

Vibrant. Sustainable. Inclusive. Elevating our communities together.

In addition to these broad goals, each term, City Council approves a Strategic Plan that defines a Vision and priorities for the next four years. Most recently, in May 2023, Council approved the 2023-2026 Strategic Plan, which is designed to help the community build more together, move better together, and grow faster together.

Figure 2. Line of Sight between Strategic Objectives and Asset Management

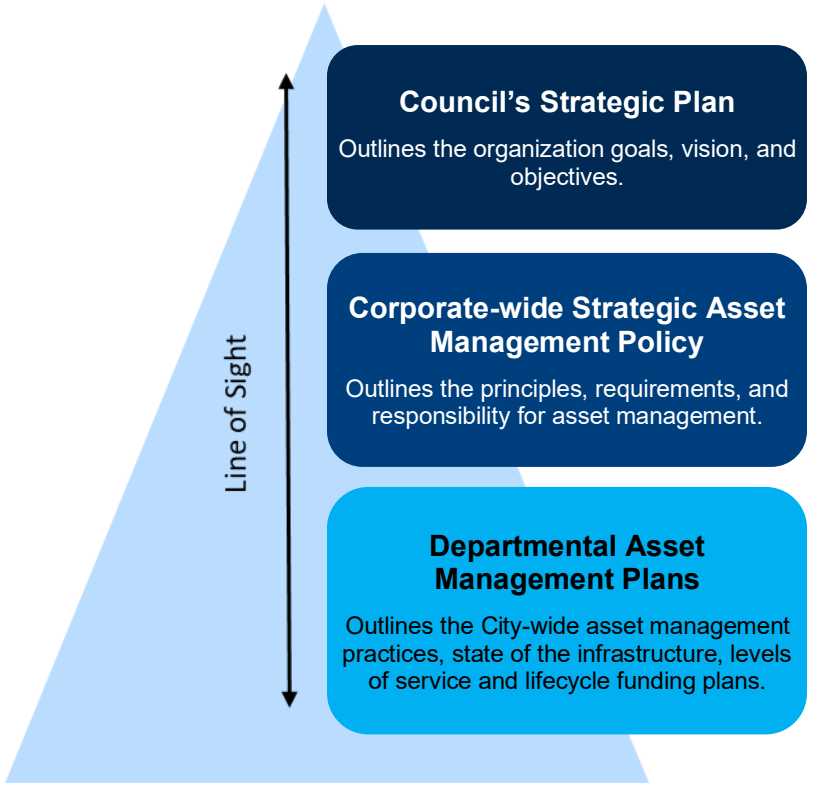


Figure 3. City of Kingston 2023-2026 Strategic Priorities

1. Support Housing Affordability

- Promote increased supply and affordability of housing.
- Promote increase in purpose-built rental housing.
- Increase supply of new-build not-for-profit and co-op housing and ensure sustainability and quality of existing stock.
- Improve service to unhoused and precariously housed.

2. Lead Environmental Stewardship and Climate Action

- Reduce carbon footprint of City operations.
- Support climate action and sustainability for residents, businesses and partners.
- Maintain the City's natural heritage and environmental assets.

3. Build an Active and Connected Community

- Expand parks and recreation opportunities and participation.
- Beautify City streets and spaces.
- Improve public transit and active transportation options.
- Improve road condition, performance and safety.

4. Foster a Caring and Inclusive Community

- Enhance community safety and well-being.
- Help address food insecurity and sustainability.
- Increase access to healthcare professionals and services.
- Celebrate and enable civic engagement.
- Promote and support diversity.

5. Drive Inclusive Economic Growth

- Ensure ab adequate supply of "ready-to-go" employment.
- Evaluate policies, programs and services to support the use of the airport.
- Diversify Kingston's economic base.
- Support Kingston's economic competitiveness.
- Continue to enhance Kingston as a tourist destination.
- Consider Opportunities to enhance sports tourism.
- Foster culture, history, education, arts and recreation (CHEAR).
- Ensure the downtown remains vibrant.

In addition, Council has identified Foundational Principles that will help to build the City's organizational resilience, capacity, and culture to deliver on the City's Strategic priorities and asset management practices. These include:

- Invest in the organization's capacity.

- Invest in process improvement.
- Maintain financial sustainability.
- Advance Indigenization, Inclusion, Diversity, Equity and Accessibility (IIDEA) in the corporation.
- Continue to advance community partnerships and advocacy with other levels of government.

The City's Key Principles for Asset Management

The City's Asset Management Policy has defined some key principles to be used in support of the City's organizational goals as they relate to asset management. These are summarized below in Table 1.

Table 1. The City of Kingston's Key Principles for Asset Management

Principle	Definition
Holistic	Take a comprehensive approach that looks at the "big picture" (i.e. the combined implications of managing all aspects rather than a compartmental approach). This includes the functional interdependencies and contributions of assets within asset systems and the different management of assets across all lifecycle phases.
Systematic	Take a methodical approach (i.e. formal, repeatable, and consistent) to the management of assets.
Systemic	Make asset investment decisions in an asset system context, not just to optimize the individual asset itself.
Risk-based	Manage asset risk associated with attaining levels of service and focusing resources, expenditures, and priorities based on risk and associated cost/benefit.
Optimal	Make asset investment decisions based on trade-offs between competing factors of service level (including asset performance), risk and cost.
Sustainable	Take a long-term, lifecycle-based approach in estimating asset investment and activities, thus developing effective asset management strategies for the long term.
Integrated	Coordinate the above principles to ensure the delivery of justified services and well-defined outcomes.
Aligned	Ensure that the asset management system complements the strategic objectives of the City, as well as other key business systems, legislation, and regulation.

1.4 Governance and Relationships to Other Planning Documents

In support of the effort to achieve line of sight between Asset Management and other planning initiatives at the City, it is necessary to integrate this AMP and any future iterations with other documents that set out how the City operates. Table 2 summarizes some of these key documents.

Table 2. City of Kingston Strategic Documents

Strategic Document	Purpose
Kingston's Strategic Plan	Sets out the strategic vision and priorities for the current Council term.
The Official Plan	Sets out land-use planning goals and policies that guide physical development, protection of natural and cultural heritage, resource management, and necessary supporting infrastructure.
Climate Leadership Plan (CLP)	Updated in 2021, this plan is an integrated corporate and community change management strategy which outlines the impacts of ongoing initiatives, objectives, and actions to chart a path of achieving the City's target of carbon neutrality by 2040.
Emergency Management Plan	In the event of an emergency, the plan assigns responsibilities and guides the actions of key officials.
Utilities Kingston Asset Management Plan	Provides an overview of the state of the infrastructure, levels of service, lifecycle management strategies and financial strategies for water, wastewater assets, as well as other assets operated by Utilities Kingston.
Multi-year Accessibility Plan	Outlines the strategies in place to prevent and remove barriers and meet the requirements under the Accessibility of Ontarians with Disabilities Act (AODA) and the Integrated Accessibility Standards Regulation. Applies to Customer Service, Employment, Transportation, Information and Communication, and Design of Public Spaces.
Multi-year Capital Plan	Sets out 15-year capital expenditures for infrastructure replacement and renewal and other capital priorities.
Multi-year Financial Plan	4-year operating budget to fund day-to-day operations.
City of Kingston Accessibility Standards	Provides the overarching framework to guide the review and development of the City of Kingston policies, standards, procedures, by-laws and guidelines to comply with O.Reg. 191/11, the Integrated Accessibility Standards Regulation developed under the AODA.
City of Kingston Annual Report	An overview of the progress made on the priorities outlined in Council Strategic Plans.
Corporate Master Plans	Several plans that recommend the preferred long-term strategies for the infrastructure or program in question. For example: Transportation Master Plan, Active Transportation Master Plan, Waterfront Master Plan, Parks and Recreation Master Plan, Archeological Master Plan, 10-Year Housing and Homelessness Plan, Kingston Culture Plan, Public Art Master Plan.

1.5 Provincial Asset Management Planning Requirements

The 'Building Together: Guide for Municipal Asset Management Plans' was published by the Province of Ontario in 2012 to encourage municipalities in Ontario to develop AMPs in a consistent manner. The guide outlines sections that should be included and the content that should be found within each one, including: State of Local Infrastructure, Levels of Service, Asset Lifecycle Management Strategies, and Financing Strategies. To further encourage municipalities to develop AMPs, Provincial and Federal governments made them a pre-requisite to access capital funding grants.

In 2015, Ontario passed the *Infrastructure for Jobs and Prosperity Act* which affirmed the role that municipal infrastructure systems play in supporting the vitality of local economies. The first regulation made under this act was Ontario Regulation 588/17 – Asset Management Planning for Municipal Infrastructure. O. Reg. 588/17 further expands on the Building Together Guide, mandating specific requirements for municipal AM Policies and AMPs, phased in over a five-year period.

Below is a summary of timelines and general requirements of O. Reg. 588/17. This AMP is intended to be compliant with the July 1, 2024, requirements only for facilities.

July 1, 2019 ✓

The City requires an AM policy that articulates specific principles and commitments that will guide decisions around when, why and how money is spent on infrastructure systems.

July 1, 2022 ✓

The City requires an AMP that documents the current levels of service being provided and the costs to sustain them for the City's water, wastewater, stormwater, roads and bridges infrastructure systems (i.e. 'core' assets per O.Reg. 588/17).

July 1, 2024 ✓

The City requires an AMP that documents the current levels of service being provided and costs to sustain them for all infrastructure systems in the City.

July 1, 2025 (To Be Completed)

The City requires an AMP that documents the current levels of service being provided, the costs to sustain the current levels of service, the desired levels of service, the costs to achieve the desired levels of service, and the financial strategy to fund the expenditures necessary to achieve the desired levels of service for all infrastructure systems in the City.

1.6 Developing the Facilities Asset Management Plan

Developing, implementing, and updating an AMP is a large undertaking that requires buy-in and support from various levels of the City's organization. FMCS has been implementing reliability centered maintenance and asset management activities along with the ongoing transition to a corporate-wide shared services model. This work has been critical in establishing a program to maintain assets in a way that ensures elements will meet their expected service lives. FMCS maintains a comprehensive facilities asset inventory within the Ameresco AssetPlanner system, a web-based relational database which integrates information from reactive and planned maintenance, energy management, and asset planning. The system's central registry contains relevant asset inventory data, current age and physical condition ratings for various facility elements, recommended timing and estimated costs for required life cycle activities, work order level details, as well as priority scoring for applicable actions based on a customized internal risk management framework.

The shared services approach along with AssetPlanner application are also being leveraged to support asset management (non-core assets) within other departments and boards across the corporation.

Table 3 identifies the roles and responsibilities of the key stakeholders involved.

Table 3. Asset Management Plan Stakeholders

Key Stakeholder	Roles and Responsibilities
City Council	• Approve the Asset Management policy and Corporate Asset Management Plan. • Serve as representatives of stakeholder and community needs particularly as it relates to determining the services and service levels to be provided. • Approve funding levels for both capital and operating budgets developed through the Asset Management Framework. • Support ongoing efforts to continuously improve and implement asset management plans.
Corporate Management Team (CMT)	• Endorse corporate asset management plans and policy. • Participate in the process of aligning asset management strategies and plans with organizational strategies and objectives. • Communicate the vision of asset management at a corporate level, encourage engagement with the processes and provide the guidance necessary to ensure alignment and integration across the organization.
Asset Management Steering Committee	• Implement the Asset Management policy. • Provide input on needs of department, current status of assets, and current levels of service. • Support and comply with data collection requirements. • Participate in the regular review of all documentation, data, and asset measurement tools to ensure continued relevance and applicability of existing policies and practices.

Key Stakeholder	Roles and Responsibilities
Asset Management Steering Committee (Continued)	• Document the alignment of Asset Management Plans with the priorities established and projects requested through the budget process. • Participate in the development of the corporate asset management work plans pertaining to their areas of expertise.
Chief Financial Officer & Treasurer	• Ensure alignment between the City's asset management financing plan and the City's long-term financial plan.

For the creation of this AMP, initial steps included data collection and compilation, developing an analysis tool, and meeting with the City's subject matter experts to discuss, review and provide feedback on each component of the AMP. Key tasks included:

- Inventory Assessment and Gap Analysis
- Level of Service Analysis
- Evaluation of Lifecycle Management Strategy
- Financial Analysis
- Performance and Investment Needs Forecasting and Analysis
- Submission of the Final AMP and Presentation to Council

A detailed process, workflow and resource analysis was also undertaken during a previous stage of the project. The FMCS department uses the Ameresco AssetPlanner system, which contains relevant facilities asset inventory information and lifecycle data.

The development of this AMP is also defined and supported by several legislated requirements, policies and guidelines including:

- Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure
- Infrastructure for Jobs and Prosperity Act, 2015
- Building Together – Guide for Municipal Asset Management Plans
- The ISO 55000 series of standards for asset management
- International Infrastructure Management Manual
- Federation of Canadian Municipalities, Asset Management Readiness Scale
- Institute of Asset Management, Asset Management – an Anatomy
- Reliability Centered Maintenance Best Practices

Figure 4. New Fleet Maintenance Garage Under Construction

1.7 Continually Improving the Asset Management Plan

The future of asset management in municipalities has a large data and analytical component. This approach has the advantage of providing a progressive system that can help the City operationalize the processes over the coming years, while being able to continually improve its structure.

In future iterations, this AMP will evolve to further reflect the City's Strategic Plan and advances made to the City's Asset Management Policy. This will enable the City to develop more sophisticated AMPs to accompany future budgets, Official Plans and Infrastructure Master Plans. Table 4 below outlines components of the AM Framework that should be continually updated and the necessary timelines to do so.

Table 4. Timeframes and Update Frequency of Asset Management Planning Documents

Document	Frequency
Asset Management Policy	• Reviewed by the Asset Management Steering Committee annually and following any updates to the Strategic Plan • Full re-evaluation every 5 years
Asset Management Plans	• Annual update to data • Full update every 5 years to be approved by Council
Capital and Operating Budget	• Annual development process • Multi-year budgets specific to some asset classes

Figure 5. New Kingston East Community Centre

Figure 6. City Hall Mechanical Room

1.8 Climate Change and Asset Management

Climate change is one of the most complex challenges facing municipalities today. In recent years, Ontario has experienced a significant number of extreme weather events and adverse impacts such as flooding, ice storms, power outages, and infrastructure damage. As outlined in the City's Climate Leadership Plan, rising average temperatures, shifting historical precipitation patterns along with increased intensity, changes in duration and frequency of storm events and periods of drought, increasing windstorms, and fluctuations in lake levels are all anticipated to continue. Asset Management Plans and future practices must reflect this reality.

The City is in the process of evaluating climate impacts, risks, and vulnerabilities the municipal government currently faces, or is expected to experience in the future. Understanding climate related risks and vulnerabilities that impact the City allows municipal operations, policies, and procedures to best align with the future climate. Positioning adaptation planning throughout the municipal government will also encourage proactive decision-making, climate orientated action and implementation focused on creating a climate responsible and resilient community.

The City has partnered with local experts in climate change and asset management to ensure that the City's policies and practices adapt to reduce both immediate and long-term impacts to municipal infrastructure. By assessing the probability and risk associated with potential climate factors, various design and operational practices can be altered to proactively build resilience into existing systems to help mitigate the impacts from extreme weather. This strategy will ensure that all assets are maintained efficiently.

This AMP does not currently address potential LOS impacts or specific costs related to the greenhouse gas (GHG) reduction targets outlined in the Climate Leadership Plan.

The FMCS department is already implementing several initiatives and programs that incorporate climate change planning as well as energy efficiency and GHG reduction strategies within various projects and ongoing asset management work. Work is also underway to establish a detailed roadmap and costs to achieve specific targets outlined in the Climate Leadership Plan.

1.9 Risk Management Framework

1.9.1 Asset Risk

The FMCS department uses the Ameresco AssetPlanner system, a web-based relational database which integrates information from reactive and planned maintenance, energy management, and asset planning. The system's central registry contains relevant asset inventory data, current age and physical condition ratings for various facility elements, recommended timing and estimated costs for required life cycle activities, work order level details, as well as priority scoring for applicable actions based on a customized internal risk management framework. The system also allows for simulation and modelling of the condition of facilities based on forecasted levels of funding.

FMCS can support effective decision-making and long-term capital planning for facilities by incorporating this detailed, risk-based asset information with the evaluation of needs identified through consultation with other

departments who are providing services directly to members of the community or other internal clients. This work is also now integrating strategic planning that will help to optimize the timing of regular facility renewals within the context of specific GHG reduction targets established within the approved Climate Leadership Plan.

1.9.2 Service Risk

This section summarizes potential risks associated with the lifecycle strategies, funding analyses, and recommendations. Risks are described below, and potential mitigation strategies are also discussed.

Data Confidence

The asset management analyses completed as part of this AMP are reliant on the City's asset and financial data. The confidence of that data affects the confidence of the results of each analysis. Overall, most of the data was provided from reliable sources.

This risk is considered to be low, but the City should continue to invest in keeping data up-to-date.

Funding and Costs

Within the scope of this AMP, the City has conducted comprehensive analyses to identify the asset classes that require additional funding to maintain the LOS. The funding gap exposes the City to the risk of operating at a lower LOS. This could include:

- **Increase to Service Disruptions and Deterioration**: Inadequate funding for asset lifecycle activities could lead to increased instances of asset breakdowns, service interruptions, and accelerated deterioration. This could result in reduced service quality, disruptions to public services, and potential safety hazards.
- **Higher Maintenance Costs**: Neglecting proper lifecycle activities may lead to deferred maintenance, which can escalate future maintenance and repair costs. The longer maintenance is deferred, the more extensive and expensive the repairs become.
- **Unplanned Expenditures:** Insufficient funding for lifecycle activities can result in unexpected and unplanned capital expenditures when assets fail prematurely or require emergency repairs to maintain services.
- **Reduced Longevity**: Assets that do not receive appropriate lifecycle activities are likely to have shorter lifespans, leading to more frequent replacements and associated costs.
- **Increased Liability and Legal Risks**: Assets not maintained according to their lifecycle requirements could pose safety risks to the public, potentially resulting in accidents, injuries, or legal claims against the municipality.
- **Decreased Public Satisfaction:** Service disruptions, deteriorating infrastructure, and reduced service quality can negatively impact public perception and satisfaction with municipal services.
- **Impact on Economic Development**: Infrastructure that does not meet the required lifecycle activities could deter potential investors and businesses, hindering economic growth and development in the municipality.
- **Non-Compliance with Regulations**: Failure to meet lifecycle activities could lead to non-compliance with regulatory standards and requirements, resulting in potential fines, penalties, or loss of funding.

It should be emphasized that the improvement to data confidence will have a direct impact to this risk because the expenditure forecasts are directly linked to the data assumptions. The funding gap could increase or decrease depending on improvements to the costing and performance data.

Climate Change

Climate change also poses a significant risk to the City. The effects of climate change could result in impacts to assets that would require additional funding from the City. Impacts could include increased risk of failures, accelerated deterioration, or a reduction in capacity of some assets that are impacted by the effects of climate change. In addition, while FMCS is projecting to be on track to meet short term targets, this AMP does not currently address potential LOS impacts or specific costs related to the long term GHG reduction targets outlined in the Climate Leadership Plan. This is further discussed in Section 1.8.

Regulatory Environment

There are also potential risks associated with a changing business environment. Regulatory changes could impact the way that the City renews and replaces its infrastructure. These risks are generally considered to be low, since the City endeavours to keep current with legislated changes, and incorporate them into its planning, which ensures that assets are up to date within the current regulatory environment. This also means that the City will be adequately equipped to adapt to any future regulatory changes.

1.10 Asset Management Plan Limitations and Assumptions

This AMP was developed based on the best available information and by employing professional judgement and assumptions to address gaps where necessary. Asset specific assumptions are recorded in the following sections. Where gaps or opportunities were identified, they have been included in the continuous improvement plan.

This plan excludes airport airside infrastructure, parking structures and surface lots, aquatic facility filtration and treatment infrastructure, as well as arena refrigeration plants.

Background information and reports related to this AMP are available to the public upon request and will be accessible on the City's website once all non-core Asset Management Plans have been completed.

1.11 Asset Management Plan Structure

This plan has been designed to meet the July 1, 2024, O. Reg. 588/17 requirements, which is an AMP that documents the current levels of service being provided and costs to sustain them for the City's facilities assets. The following subsections will be applied:

1. State of Local Infrastructure
2. Levels of Service
3. Lifecycle Management Strategy
4. Forecasted Lifecycle Activity Costs

The plan is concluded with the Improvement and Monitoring sections. The following describes each of the subsections in detail.

1.11.1 State of Local Infrastructure

The State of Local Infrastructure includes the following information:

- A summary of the asset portfolio along with associated replacement and financial valuation costs.
- Asset age summary, including the average age of assets in each category compared to their average estimated service life.
- Overview of observed condition (e.g. Facility Condition Index–- FCI) or predicted condition based on asset age.
- Data sources used in the analysis, rated for confidence, with any assumptions made clearly documented.

Depending on the method used to determine condition (e.g. age, FCI), scores were converted to condition ratings based on methods that are outlined in the service area Asset Condition sections. For example, condition scores for facilities were based on the Facility Condition Index (FCI), which is the ratio between renewal needs (costs) and the overall total replacement value of the facility. These scores were categorized into the descriptive categories that are provided in Table 5.

Table 5. Asset Condition Rating

Condition Rating	Definition	Facilities: FCI
Very Good	The asset is fit for the future. It is in excellent condition, new or recently rehabilitated	N/A[4]
Good	The asset is adequate. It is well maintained, acceptable and generally within the mid-stage of its expected service life	0% to 5%
Fair	The asset requires attention. The asset shows signs of deterioration, and some elements exhibit deficiencies.	5% to 10%
Poor	There is an increasing potential for its condition to affect the service it provides. The asset is approaching the end of its service life, the condition is below the standard and a large portion of the system exhibits significant deterioration.	10% to 30%
Very Poor (Critical)	The asset is un-fit for sustained service. It is near or beyond its expected service life and shows signs of advanced deterioration. Elements may be unusable.	>30%

[4] FMCS does not differentiate between good and very good with respect to FCI.

Given the reliance that appropriate asset management planning has on data quality, documenting data sources and assessing their quality is an important step in the development of asset management plans. Taking the time to ensure the best available data is being used will result in high quality analysis that builds the foundation for all AMPs moving forward. This practice also provides a level of transparency to understand that some assumptions may have been necessary to fill gaps in the data. The data confidence ratings and their respective criteria is provided in Table 6. This information has been used as a basis to provide recommendations for improvement in future iterations of the plan.

Table 6. Data Confidence Ratings

Data Quality Rating	Definition
High	No concerns identified, and data appears to be very consistent, or further information from staff on the origin of the data has been provided suggesting high confidence.
Medium	Minor or no data concerns identified
Low	Major data concerns identified

1.11.2 Levels of Service

FMCS developed this AMP that follows the Province's structure outlined in the Building Together: Guide for Municipal Asset Management Plans, and also addresses the requirements of Ontario Regulation 588/17. A comprehensive Level of Service (LOS) Framework was developed to support the AMP based on practices that were already in place. These frameworks help establish a relationship between the LOS being provided by the City's infrastructure systems and the associated operating and capital expenditures required to achieve the LOS.

The structure of the LOS tables for the City were developed by leveraging international best practices. The tables were developed in accordance with Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure made under the Infrastructure for Jobs and Prosperity Act, 2015.

The LOS framework for the facilities portfolio consists of the following structure:

1. **Service Attributes** consists of a phrase which describes an important area of focus for each service group. Examples of Key Service Attributes include Cost Efficient, Safe, Reliable, etc. The listed Key Service Attributes are meant to cover all important aspects of the service and be easy for the community to understand and recognize.
2. **LOS Statements** consist of a short sentence, which describes the outputs of the service category. Each LOS Statement corresponds to a Key Service Attribute. Each LOS Statement should clearly state customer standards and be measurable.

3. **Performance Measures** identify specific areas of focus that can be measured to support each Key Service Attribute. One or more performance measures can be listed for each Key Service Attribute. The LOS tables provide two types of Performance Measures: Customer and Technical. Each Performance Measure should be defined to be SMART (specific, measurable, achievable, relevant, and time-based). Each Performance Measure is further subdivided into four components, which are represented as additional columns in the LOS table. These components detail the Performance Measure and Current Performance.

4. **Current Performance** refers to values (for the most recent complete calendar year) that summarize the current performance for each measure.

1.11.3 Lifecycle Management Strategy

The City's lifecycle strategy describes the set of planned actions that the City undertakes to sustain levels of service, while managing risk at the lowest possible lifecycle cost, in alignment with LOS and risk strategies. The types of lifecycle activities are shown in Table 7.

These activities form the basis of the Lifecycle Management Strategy section of the AMP. This will enable the City to establish and report on possible options for which lifecycle activities could potentially be undertaken to maintain the current levels of service as well as the associated risks and costs. This reporting is necessary to meet the requirements of O. Reg. 588/17.

Table 7. Lifecycle Activities

Lifecycle Activity	Description
Non-Infrastructure	Actions or policies that can lower costs or extend asset life
Operations and Maintenance	Costs to deliver the service. Including regularly scheduled inspection and maintenance or more significant repair and activities associated with unexpected events.
Renewal, Rehabilitation and Replacement	Significant repairs designated to extend the life of the asset. Activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehab is no longer an option.
Disposal	Activities associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed by the municipality.
Expansion, Growth and Service Improvements	Planned activities required to extend services to previously un-serviced areas– or expand services to meet growth demands.

1.11.4 Funding the Lifecycle Activities

The costs associated with each lifecycle activity are considered as part of the strategy. A long-term investment forecast has been developed for each asset in scope to illustrate the capital and operational needs to support the current levels of service.

The Lifecycle Strategy has been combined with the City's LOS and Risk Management strategies in a decision support system (DSS) model, which allows the City to run various forecasting scenarios. The following scenarios focused on renewal spending were analyzed for each asset class:

Scenario 1: Anticipated Budget:

Evaluates asset performance under the current 10-year capital plan that the City anticipates to allocate towards that asset class. The current budgets were obtained from the City's 2023 financial plan. This illustrates the change in LOS under anticipated conditions and is also used as a baseline scenario to assess the other scenarios analyzed.

Scenario 2: Maintain Levels of Service

This scenario determines the cost that would be required to maintain current LOS over a 10-year forecast period. Understanding the cost to maintain current LOS is a requirement of the July 1, 2024 milestone of O.Reg. 588/17. Individual facilities are meeting LOS if they have an FCI of 10% or lower and average FCI of the portfolio was used to determine the cost to maintain LOS.

Scenario 3: Achieve Proposed Levels of Service

This scenario determines the costs and associated asset performance to achieve the proposed LOS over a 10-year forecast period. These targets generally apply to the reliability and condition-based LOS that the City has established. The proposed LOS for this AMP is the same as Scenario 2 to maintain the average FCI over the 10-year period.

These scenarios provided analysis and insights into the City's spending needs with respect to asset renewals, rehabilitations, replacements, and disposal. The results also help inform the City's Financial Strategy.

Figure 7. Bishop's House and Kingston Frontenac Public Library Central Branch

Figure 8. Disassembly of Kirkpatrick Fountain for Restoration (Frontenac County Courthouse)

1.11.5 Improvement and Monitoring

The improvement and monitoring section provides the City with prioritized areas for improvement by asset type, as well as suggestions for continual improvement to the AMP in the years to come.

Through the project the City established roles and responsibilities of the various stakeholder groups for monitoring and execution. This is important as it follows the guiding principles of the City's Strategic Plan of ensuring fiscal responsibility and accountability.

The City has taken the suggestions from O. Reg. 588/17 and the Building Together – Guide for Municipal Asset Management Plans to create an integrated and holistic plan that can be continually adjusted and be treated as a "living document". The City of Kingston's Asset Management Policy ensures that to support the City's Strategic Plan a continual review and improvement of the AM framework, practices, strategy, and related processes must occur.

Facilities Management & Construction Services

	Facilities
Total Replacement Value	$1,292,136,000
Overall Average Condition	Fair

2.0 Facilities Management & Construction Services

The Facilities Management & Construction Services (FMCS) department serves to ensure that citizens, employees, elected officials and visitors have safe, comfortable and efficient facilities in which to carry out civic activities. This asset portfolio supports a wide range of services essential for everyday living. Work undertaken by the department is carefully planned to meet client and community needs.

The following internal Mission and Vision statements broadly define what FMCS strives to provide for its 'clients' and how they intend to do so:

Our mission is to provide safe, comfortable and well-maintained facilities for Kingston citizens, City employees, elected officials and visitors by planning and delivering professional facility management and construction services that are sustainable and supportive of service delivery excellence.

As leading professionals in the provision of facility management and construction services, FMCS will provide centralized planning and management resulting in better-maintained, fit-for-purpose, energy-efficient, climate resilient, economically rationalized facilities for which there exists a sustainable long-range funding model.

FMCS supports Council initiatives for a range of clients including various City departments, as well as external boards and agencies and their respective employees by:

- Collaborating with strategic partners to conceive, design, construct and renovate facilities that support the needs of various City programs and services.
- Supporting operations and maintaining corporate facility assets at an optimum level of performance and reliability.
- Facilitating corporate planning and priority setting for future developments and expansion of facilities.
- Advancing sustainability initiatives that demonstrate leadership on climate action.

2.1 State of the Local Infrastructure

2.1.1 Asset Inventory and Valuation

The City of Kingston owns and maintains a diverse portfolio of municipal facilities and is responsible for maintaining and renewing them where necessary to meet operational and community objectives. The goal is to consistently provide a high level of performance and reliability for all City facilities.

The replacement cost for the entire facilities portfolio is approximately $1.3 billion. This is shown compared to its financial valuation in Table 8. The financial valuation differs from the replacement valuation as it is based on the historic costs of construction and applies depreciation over time, up until the current year. The replacement valuation that asset management analyses use is the cost to replace the asset with what is needed (not necessarily like-for-like replacement) and in today's dollars. Note that FMCS is the final stages of implementation of a shared services model that is centralizing services related facilities across the corporation, which will increase these values.218 and 206 Concession have been excluded from the 2024 Facilities Asset Management Plan and will be included in the 2025 update. These properties were owned at the end of 2023, their information will be integrated into Asset Planner during the 2025 planning cycle.

Table 8. Financial Accounting Valuation and Replacement Cost Valuation

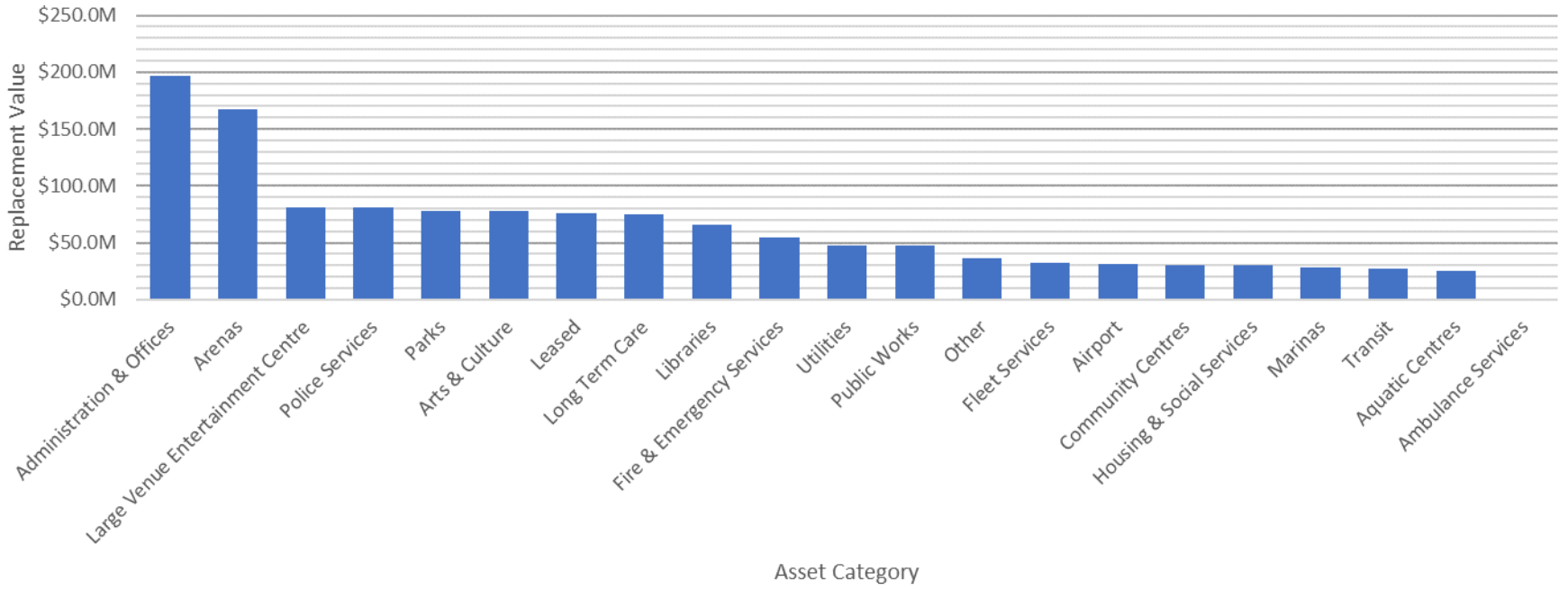
Financial Accounting Valuation	Replacement Valuation
$381,649,343	$1,292,136,214

Table 9 and Figure 9 present the facilities portfolio breakdown by asset categories. The Administration & Offices category comprises the majority of the portfolio and accounts for approximately $197M or 15% of all assets included in this plan.

Table 9. Asset Quantities and Replacement Values

Category	Count	Replacement Value (M)
Administration & Offices	6	$197.2
Airport	4	$30.9
Ambulance Services	2	$1.2
Aquatic Centres	2	$25.5
Arenas	6	$167.5
Arts & Culture	5	$77.7
Community Centres	2	$30.3
Fire & Emergency Services	25	$55.0
Fleet Services	2	$32.4
Housing & Social Services	4	$30.1
Large Venue Entertainment Centre	1	$81.0
Leased	13	$76.3
Libraries	5	$66.2
Long Term Care	1	$74.9
Marinas	3	$28.7
Parks	31	$78.4
Police Services	2	$81.0
Public Works	16	$47.1
Transit	4	$27.6
Utilities	2	$47.1
Other	11	$36.0
Total Facilities Management	147	$1,292

Figure 9. Asset Categories by Replacement Value



2.1.2 Asset Age Summary

Buildings are often not replaced outright, but rather undergo a process of continuous renewal due to a combination of economic, environmental, and practical factors. Replacing entire buildings can be financially burdensome, requiring significant upfront investment and potentially disrupting ongoing critical municipal operations. Moreover, the environmental impact of demolition and construction, including resource consumption and waste generation, encourages a more sustainable approach through refurbishment and renovation. Continuous renewal also allows buildings to adapt to changing needs, incorporating modern technologies, energy-efficient systems, and improved designs while preserving a sense of history and architectural heritage. By incrementally upgrading structures over time, communities can strike a balance between maintaining functional spaces, minimizing ecological footprint, and honoring the past.

Given the wide range of building equipment and systems with unique requirements that may be contained within a particular location, individual facility assets are typically broken down into elements grouped according to ASTM E1557, Standard Classification for Building Elements and Related Sitework – Uniformat II. Major element groups consist of:

- A – Substructure (foundations)
- B – Shell (roofing, cladding, windows, and doors)
- C – Interiors (floor, wall, and ceiling finishes)
- D – Services (mechanical and electrical systems)
- E – Equipment & Furnishings (functional components)
- F – Special Construction (other small structures)
- G – Building Sitework (landscaping, pavement, and site servicing)

The figures presented in this section reflect this classification of facility elements. EV charging stations have been separated into an additional grouping for clarity.

The overall age of facilities in the portfolio ranges from 0 to more than 200 years. Due to heritage and other cultural significance, some of these assets will be maintained indefinitely (infinite lifecycle).

The average age of asset elements within the facilities compared to the average estimated service lives (ESL) of the element group is summarized in Figure 10. The year of last major action was used to determine the age of each component. Presenting the asset portfolio in this manner provides a quick snapshot of where the facility components generally are within their lifecycle, which in turn can provide an idea of overall condition based on age. Based on this data alone, facilities would be expected to be in poor condition since components appear to be past their service lives.

Figure 10. Average Facility Element Age as a Proportion of Average Asset ESL

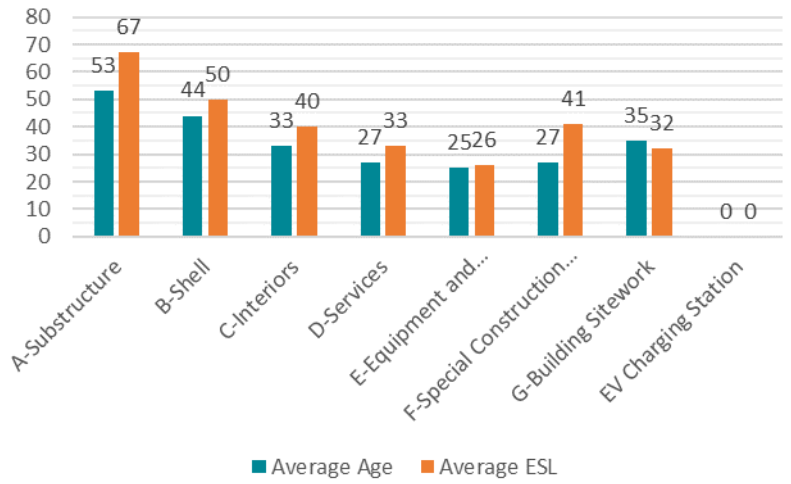


Figure 11. New Kingston East Community Centre

The effective age was also used for comparison and is provided in Figure 12. The effective age was calculated using the anticipated year of renewal relative to the average ESL of all facility elements in the group. This provides a clearer picture of asset needs since it factors in the results of the building condition assessments. Based on this data, facilities would be expected to be in fair condition since the average facility components are meeting their performance objectives but are nearing the end of their service lives.

Figure 12. Average Facility Element Effective Age as a Proportion of Average Asset ESL

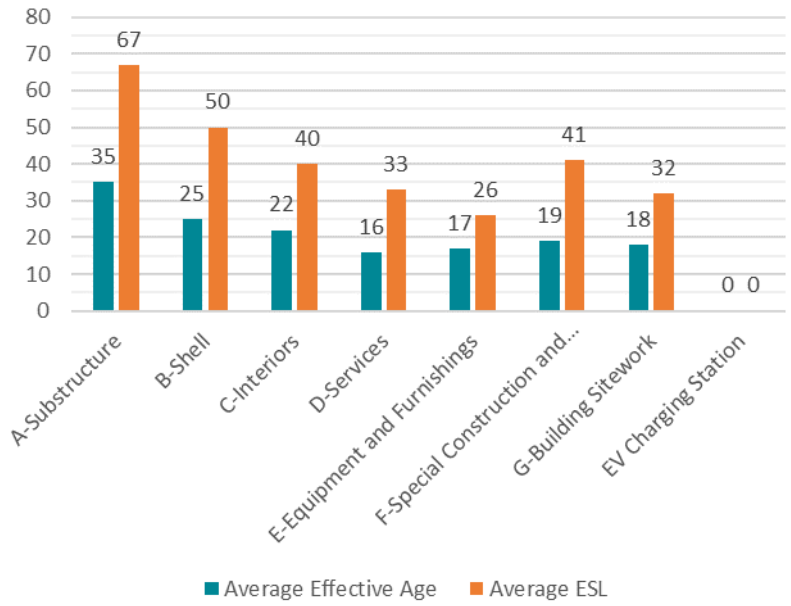
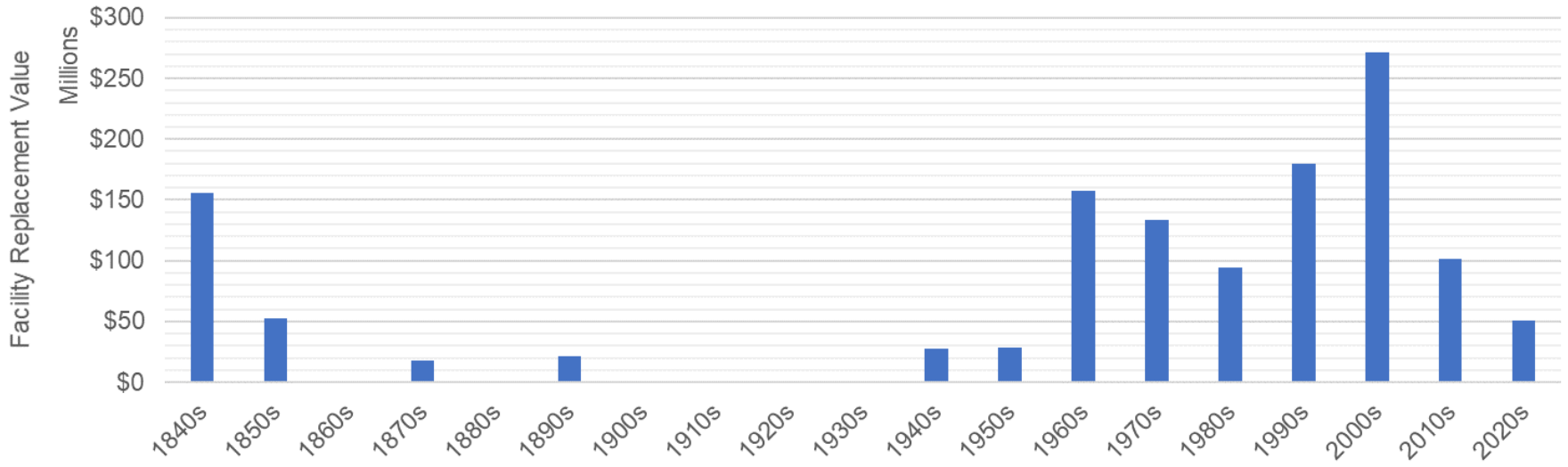


Figure 14 presents the construction decade for facility assets by replacement costs. This also shows that the majority of investment in the facilities occurred in the 1960s and onward. There is approximately $308M in replacement costs which corresponds to designated heritage buildings that were constructed the 1800s. Heritage facilities include locations such as City Hall and Frontenac County Courthouse buildings, among other locations.

Figure 13. PumpHouse Museum Addition

Figure 14. Construction Decade by Facility Replacement Value



2.1.3 Asset Condition

This section outlines the breakdown of assets in each condition category. City facilities are managed and maintained through a centralized reliability-centered maintenance program administered by the City's Facilities Management & Construction Services team. Comprehensive condition assessments are typically performed on a regular basis (e.g. 4-year cycle) with additional interim or specialized assessments as required. Condition can be assessed at the asset element or system level, as well as the overall facility level using the industry standard Facility Condition Index (FCI). The overall facility condition index (FCI) was used for the AMP to determine the performance of the Facilities asset portfolio. Each facility FCI is determined by the annual percentage of facility components requiring investment as a proportion of total facility replacement value. The categorization of FCI to condition ratings is provided in Table 10. Facilities with an FCI greater than 10% are not meeting relevant performance or LOS objectives.

Table 10. Condition Rating Scale and its Asset Condition Values (Facilities)

Condition Rating	Facilities: FCI
Very Good	N/A
Good	0% to 5%
Fair	5% to 10%
Poor	10% to 30%
Very Poor (Critical)	>30%

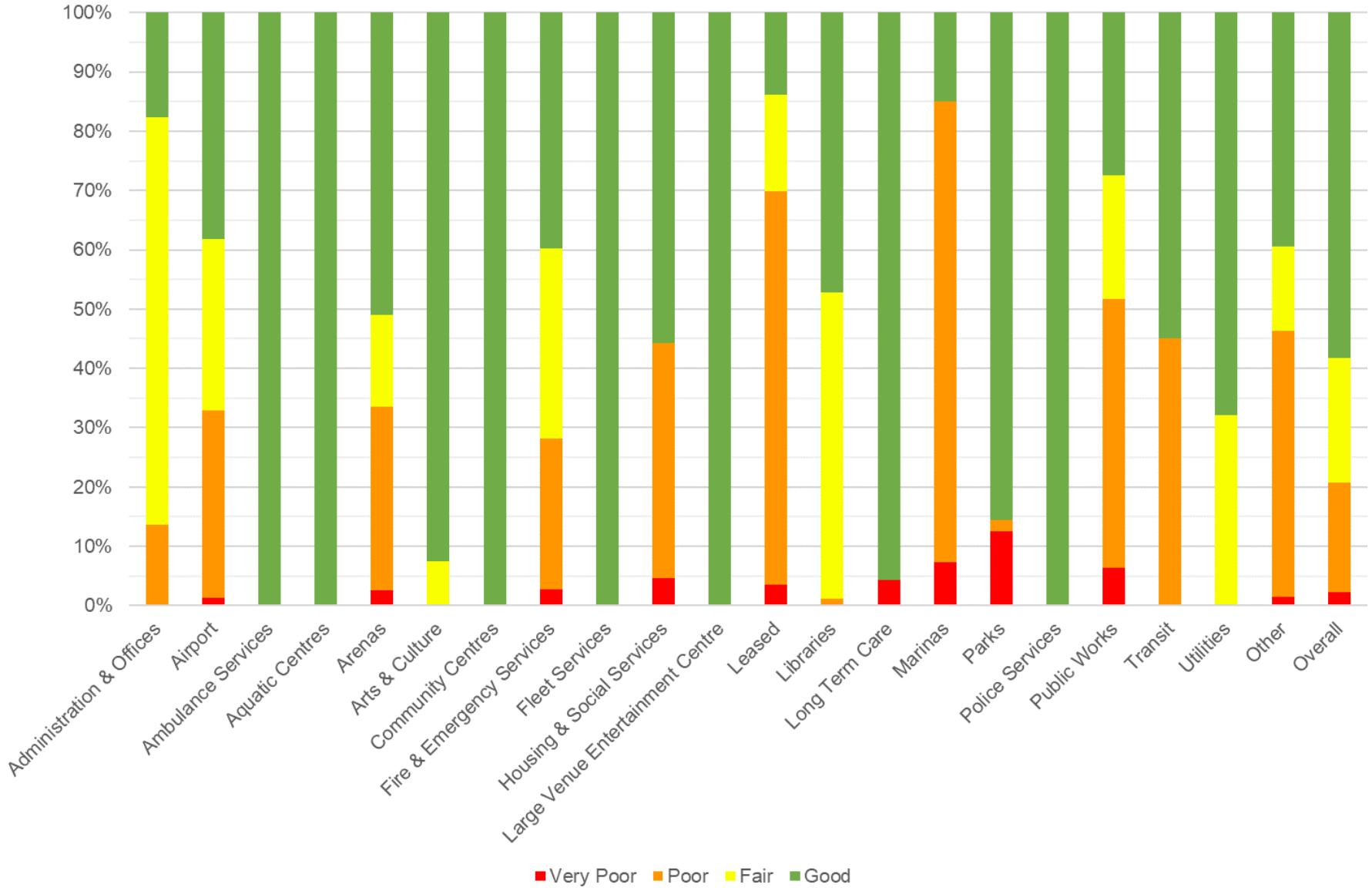
The distribution of facilities in each condition category are provided in Figure 15.

Overall, 79% of the Facilities Management assets are in fair or better condition (based on overall facility replacement value).

Since most facilities assets have condition data obtained during recent condition assessments, the information provided here does not necessarily align with the age-based information presented in the preceding section. This illustrates the importance of having good, timely and reliable condition data to avoid relying solely on age-based condition ratings.

The condition scores, replacement and remediation triggers found within this AMP are presented in the absence of public input, more specifically, tolerability. Customer tolerability studies and surveys present users of the infrastructure systems and residents, with an option for level of service or condition of an asset along with an associated cost. Condition or level of service states and costs are presented in such a way that the customer can connect a given level of service with a corresponding cost and at a scale that they can understand.

Figure 15. Current Condition of Facilities Assets in Each Category - Distribution by Replacement Value



2.1.4 Data Sources and Confidence

FMCS maintains a comprehensive facilities asset inventory within the Ameresco AssetPlanner system, a web-based relational database which integrates information from reactive and planned maintenance, energy management, and asset planning. The system's central registry contains relevant asset inventory data, current age and physical condition ratings for various facility elements, recommended timing and estimated costs for required life cycle activities, work order level details, as well as priority scoring for applicable actions based on a customized internal risk management framework. Table 11 provides the data confidence scores for various facilities asset categories. 95% of Facilities BCA's completed with the remaining locations (small park buildings) to be completed by Q2 2025. Frequency to complete a building BCA to be done every 3 - 5 years based on the criticality of the facility, and internal condition updates are done by FMCS staff throughout the year.

Table 11. Data and Confidence

Asset Category	Confidence Rating	Confidence Comment
All Facilities	High	Information comes from building condition assessments. Few data discrepancies, no data gaps. Performance is based on expected renewal year and replacement costs were reviewed in preparation of this AMP.

Figure 16. Kingston Senior's Association During Roof Replacement

2.2 Levels of Service

Establishing levels of service (LOS) can provide an understanding of the relationship between requirements and costs. It is important to set realistic LOS targets, which support the City's goals and strategic plan. This section will outline the Facilities LOS Framework, to provide a better understanding of what is required to achieve and maintain desired performance.

2.2.1 Ontario's Requirements for Asset Management Planning

O. Reg. 588/17 requires municipalities to report current LOS performance in the AMP for all assets by July 1, 2024. There are two levels required from the regulation:

1. Community – uses **qualitative** parameters to explain the desired LOS.
2. Technical – uses **quantitative** metrics to explain the scope and LOS delivered.

2.2.2 Levels of Service Performance Metrics

The LOS in this AMP have been developed by taking a service-centric approach to AM. This is achieved by identifying the key customer-facing services and sub-services that the City provides and relating them to the assets that support the delivery of those services. Thus, asset-related decisions can be made and understood in the context of key service attributes such as Accessibility, Quality, Safety, Reliability, and Environmental Stewardship (Climate Leadership).

The performance measures for this AMP were selected based on the City's overall strategic goals along with the internal mission and vision for FMCS as outlined above. The following sections outline the customer focused performance measures followed by the technical -focused performance measures.

Customer Service Attribute: Accessibility

LOS Statement: Facilities are accessible for intended use.

Table 12. Customer LOS for Accessibility

Performance Measure	2023 Performance	Proposed Performance
Description of facilities and level of accessibility	City facilities support a diverse range of services and are accessible to people using mobility devices. New construction and renovations are implemented according to best practices as well as the Ontario Building Code and City's Facility Accessibility Design Standards (FADS).	Incorporate and support relevant initiatives associated with the City's Inclusion, Indigenization, Diversity, Equity and Accessibility (IIDEA) journey.

Customer Service Attribute: Quality

LOS Statement: Facilities are at the appropriate level of quality and condition.

Table 13. Customer LOS for Quality

Performance Measure	2023 Performance	Proposed Performance
Percentage of facilities assets in fair or better condition (FCI of 10% or lower/better)	79%	Future[5]
Average Facility Condition Index (FCI) value for all facilities	10% and projected to be 19% at end of 10-year horizon based on anticipated budget	10% or less (fair or better condition) sustained over 10-year horizon

[5] Facilities are currently managed by maintaining average FCI. This accounts for facilities that have low utilization. A proposed performance can be set once the facilities are further classified.

Technical Service Attribute: Reliability

LOS Statement: Facilities are proactively maintained and reliable for intended use.

Table 14. Technical LOS for Reliability

Performance Measure	2023 Performance	Proposed Performance
Percentage of planned maintenance events as a proportion of total maintenance activities (i.e. planned vs. reactive)	47%	60%

Technical Service Attribute: Climate Leadership

LOS Statement: Facilities are energy efficient and demonstrate leadership on climate action.

Table 15. Technical LOS for Climate Leadership

Performance Measure	2023 Performance	Proposed Performance
Greenhouse gas (GHG) emissions (equivalent emissions from all energy sources)	6,843 tonnes CO2e	19% reduction below 2018 emissions by 2026 (per Facilities Energy & Asset Management Plan), 30% reduction by 2030 and carbon neutrality (net zero energy) by 2040 (per Climate Leadership Plan)

2.3 Asset Lifecycle Management Strategy

This section of the Plan outlines the specific activities required to maintain the levels of service previously outlined. Defining a set of preferred lifecycle activities for each asset is important to maintain coordination of investments and optimize the asset lifecycle. The lifecycle strategies for Facility assets were developed based on consultation with City staff and industry best practices and are summarized in the following subsections.

2.3.1 Lifecycle Activities

These activities form the basis of an Asset Management Strategy section of the City's AMP. The development of appropriate and cost-effective strategies is foundational for ensuring service sustainability and reliability. This will enable the City to establish and report on possible options for which lifecycle activities could potentially be undertaken to maintain the current levels of service as well as the associated risks and costs. This reporting is necessary to meet the requirements of O. Reg. 588/17. Table 16 to Table 20 describe the lifecycle management strategies and activities currently completed or planned to be implemented by the City for Facility assets.

Non-Infrastructure Solutions

Actions or policies that can lower costs and extend useful lives.

Table 16. Non-Infrastructure Solutions

Description of Activities Practiced by the City	Frequency
Conservation and Demand Management Plan	5-year cycle (O. Reg. 25/23)
Condition Assessments	4-year cycle, or as required
Space Planning	As required
Municipal Campus Planning	As required
Review of work in process, prioritization of current and upcoming needs, and updating of the 15-year Capital Budget Forecast	Annual cycle
Other technical studies and assessments	As required

Operations and Maintenance Activities

This includes regularly scheduled inspection and maintenance, or more significant repairs and activities associated with unexpected events.

FMCS has been implementing reliability centered maintenance and asset management activities along with the ongoing transition to a corporate-wide shared services model. This work has been critical in establishing a program to maintain assets in a way that ensures elements will meet their expected service lives.

Table 17. Operations and Maintenance Activities

Description of Activities Practiced by the City	Frequency
Planned Maintenance (PM)	According to various PM programs - implemented using Computerized Maintenance Management System (CMMS)
Service Requested Maintenance	As required - requested directly through CMMS
Reactive Maintenance	As required - requested through Facilities Immediate Maintenance Support Hotline
Building Automation System (BAS) monitoring	Daily monitoring of heating, ventilation, and air conditioning systems including response to equipment alarms
Retro-Commissioning of building HVAC systems	4-year cycle, or as required

Renewal, Rehabilitation, Replacement Activities

Significant repairs designed to extend the life of the asset such as roof replacement, heritage masonry restoration, lighting retrofits and mechanical equipment upgrades, etc.

Table 18. Renewal, Rehabilitation, Replacement Activities

Description of Activities Practiced by the City	Frequency
Renewal or Rehabilitation	Varies depending on asset type and potential risk - based on feedback from maintenance services and detailed condition assessments. May involve mid-life or near end-of-life intervention to extend service life.
Building system, equipment or component replacement	As required - when asset elements reach end of service life or are no longer fit for purpose

Disposal Activities

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

Table 19. Disposal Activities

Description of Activities Practiced by the City	Frequency
Building and equipment disposal	Coordinated with asset replacement
Critical equipment kept as spares	As required where possible

Expansion, Growth and Service Improvement Activities

Planned activities required to extend services to previously unserved areas or expand services to meet growth demands.

Table 20. Expansion / Growth / Service Improvement Activities

Description of Activities Practiced by the City	Frequency
New Facilities	As identified through planning and studies
Expansion or major renovation of existing Facilities	As identified through planning and studies
Facility repurposing or change of use	As identified through planning and studies
Interior renovations	As required - to suit various department needs or other changes of use
Enhancements to support Inclusion, Indigenization, Diversity, Equity and Accessibility (IIDEA) initiatives	As identified through planning and studies

2.3.2 Funding the Lifecycle Activities

The City uses the lifecycle strategies described in Subsection 2.3.1 to plan work and determine future expenditure needs. The LOS used in the AM analysis for Facilities assets was defined as the average FCI of the portfolio.

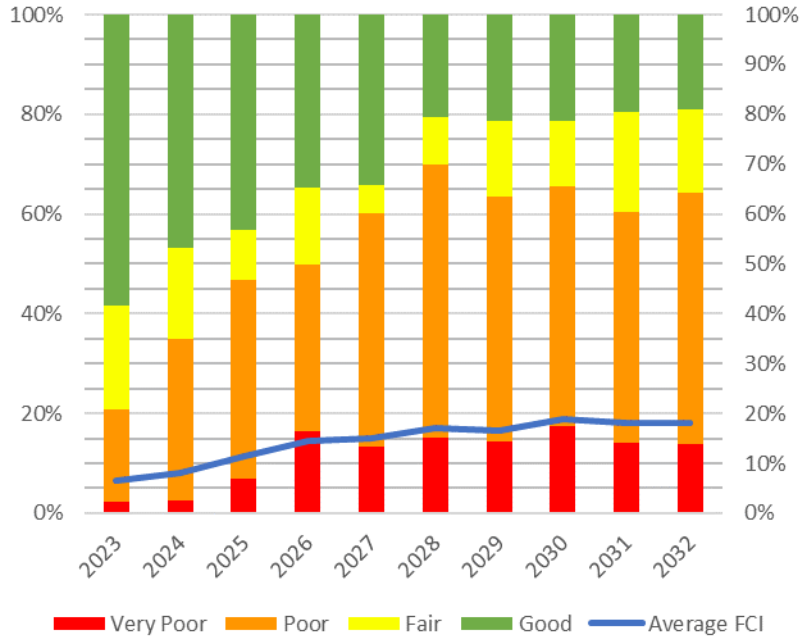
Each of the scenarios considers only the asset renewal needs, further details of the funding required for the remaining lifecycle activities are shown in Section **Error! Reference source not found.**. The scenarios and its purpose in the overall analysis are further explained in Subsection 1.11.4.

Figure 17. Kingston Fire & Rescue Headquarters During Installation of New Cooling Equipment

Scenario 1: Anticipated Budget

The current average anticipated renewal investments of $13M annually, resulted in the performance forecast illustrated in Figure 18. Under this scenario, average FCI reaches 18% by the end of the 10-year forecast period, which is a decrease to LOS.

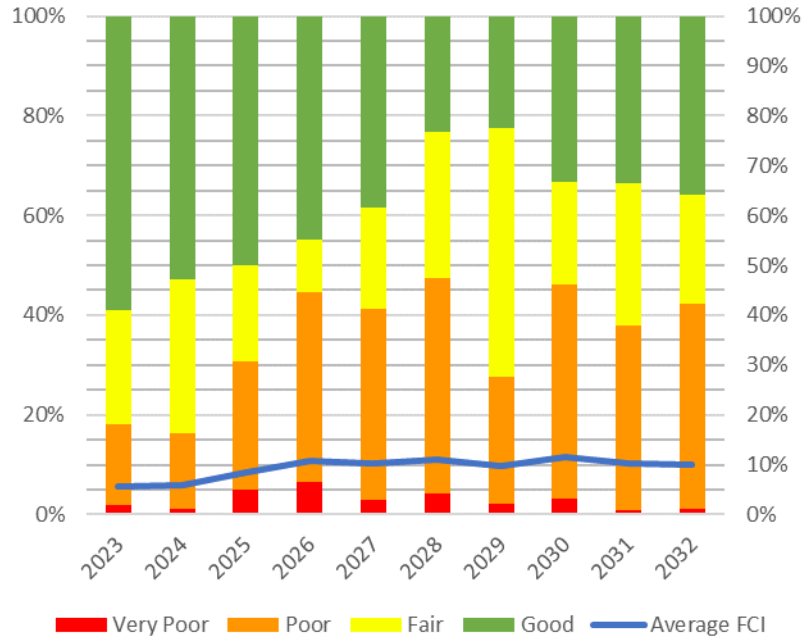
Figure 18. Facilities Management Performance Forecast for Anticipated Budget



Scenario 2: Maintain Levels of Service

The renewal costs required to maintain the existing service levels of 10% FCI was determined to be $25M annually over a 10-year period and resulted in the performance forecast illustrated in Figure 19.

Figure 19. Facilities Management Performance Forecast for Maintain LOS



Scenario 3: Achieve Proposed Levels of Service

The proposed LOS is to maintain an average FCI of 10%. Therefore, the renewal cost required to achieve proposed service levels is the same as Scenario 2 of $25M over a 10-year period.

Figure 20. New Kingston Fire & Rescue Maintenance Garage

3.0 Improvement and Monitoring

This asset management plan is intended to be a living document that is updated at recurring intervals. A key component of asset management is ensuring continuous improvement of asset management practices. This section outlines strategies to be implemented for improving the asset management plan, as well as overall improvements to the asset management program at the City.

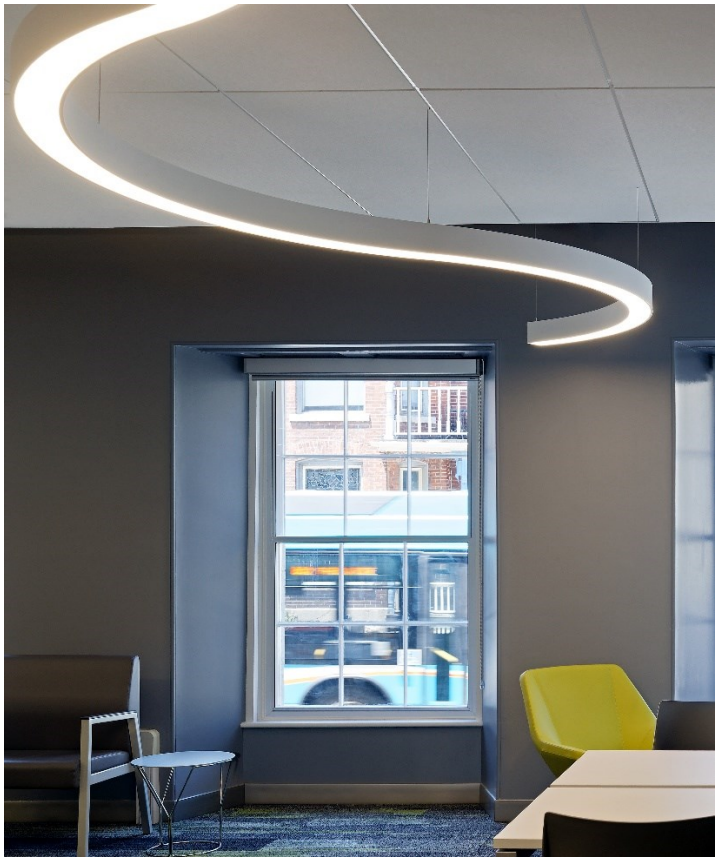


Figure 21. Kingston Frontenac Public Library Central Branch

3.1 Improving Future Asset Management Plans

Opportunities to improve the Facilities Asset Management plan include:

- Continued efforts in refining the inventory. Data accuracy should be improved as new information on performance, lifecycle costing and attribute data changes.
- The assets that are tracked by FMCS in AssetPlanner but are not incorporated in the FMCS Capital or Operating plans should be reviewed and potentially included in the next version of the Facilities AMP.
- Currently, some facilities, equipment & structures managed by FMCS are budgeted in their respective service area. The City should consider a more streamlined approach that would capture all facilities managed by FMCS in their budget.
- There is currently a draft project closeout process. The City should consider finalizing it for new and decommissioned assets. This is an opportunity to improve the process for renovation/maintenance projects, which currently are not being captured in the inventory. A new coordinator position will help to establish enhanced processes, capturing changes in asset data more regularly. This will improve the results and outcomes of this AMP and future capital planning.
- Facilities should be classified by criticality or utilization levels to adjust LCM and LOS strategies (i.e. low utilization facilities are managed at a higher FCI than higher utilized facilities).

3.2 Advancing Facilities Management Asset Management Capabilities

3.2.1 Asset Management Maturity Assessment

In the development of the 2022 core assets AMP, an Asset Management Maturity Assessment was carried out with various stakeholder groups across the City of Kingston. This exercise engaged stakeholders from 19 different groups covering 16 categories associated with enterprise asset management. This exercise provided a snapshot of the current state of AM practices and established a target for where those practices could be in three and five years. Facilities Management & Construction Services was included as one of the groups.

The maturity assessment was based on industry best practices from the International Infrastructure Management Manual (IPWEA, 2015), and the ISO 55000 Series of Standards (ISO/IEC, 2014). In advance of the workshops, an online survey was developed and distributed to stakeholders to capture key information. The survey asked participants to identify the current and target (3-year and 5-year) maturity against the key categories of asset management listed below:

- Asset Condition
- Asset Management Decision-Making
- Asset Management Framework and Strategy
- Asset Management Plans
- Asset Management Service Delivery Models (Internal and external)
- Asset Management Team
- Asset Register Data
- Capital Planning
- Continuous Improvement
- Demand Forecasting
- Financial and Funding Strategies
- Information Systems
- Levels of Service
- Management Systems
- Operations and Maintenance Planning
- Risk Management

Each question was rated according to a defined scale of one (1) to five (5) as shown in Table 21.

Table 21. Maturity State Descriptions

Numerical Rating	Maturity Level	Description
1	Aware	The organization is aware of the benefits of the capability/processes; however, no implementation has started
2	Basic	The processes/capability are in development or are partially implemented.
3	Core	The organization's processes/capabilities are developed and implemented.
4	Intermediate	The activities are fully developed, implemented and are being integrated
5	Advanced	The processes are fully implemented, optimized and are being continually improved.

FMCS rated the current state of AM practices to be at approximately “2.5”, meaning “The processes and capabilities are in development or are partially implemented” and have set a 5-year target of approximately “4.5” – “The activities are fully developed, implemented and are being integrated”. Detailed results are included in the following section. The results observed are typical to those of most municipalities beginning their Asset Management program. The ratings are shown in Figure 22.

Overall, the City of Kingston is taking significant steps forward in the asset management journey. The City has recently reviewed the current maturity, best practices and technology environment and recommended a future state and implementation. Several recommended initiatives, organizational structure modifications, governance changes and resourcing requirements have been identified and are currently under development.

Figure 22. Asset Management Maturity Assessment Results for Facilities Management (Radar Chart)