

Brampton
Corporate Asset Management Plan



June 22, 2022

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Key Acronyms and Abbreviations

AIMS	Asset Information Management System
AM	Asset Management
AMP	Asset Management Plan
BCI	Bridge Condition Index
BTE	Benefit to Existing
CLT	Corporate Leadership Team (interchangeably used with SLT)
CAMP	Corporate Asset Management Program
CAMO	Corporate Asset Management Office
CIP	Capital Investment Program
City	The City of Brampton
DAMP	Departmental Asset Management Plan
DC	Development Charges
ERM	Enterprise Risk Management
EUL	Estimated Useful Life
FCI	Facilities Condition Index
IAM	Institute of Asset Management
ICIP	Investing in Canada Infrastructure Program
IIMM	International Infrastructure Management Manual
IT	Information Technology
LOS	Levels of Service
MDM	Master Data Management Strategy
Ministry Guide	Ministry of Infrastructure's Guide for Municipal AMPs
NBV	Net Book Value
O&M	Operations and Maintenance
O.REG	Ontario Regulation
PCI	Pavement Condition Index
PSAB	Public Sector Accounting Board
PTIF	Public Transit Infrastructure Fund
R&R	Repair & Replacement
RAF	Risk Assessment Framework
CRV	Current Replacement Value
RMS	Risk Management Strategy
RMM	Risk Maturity Model
RUL	Remaining Useful Life
SLT	Senior Leadership Team (interchangeably used with CLT)
SME	Subject Matter Expert
SOLI	State of Local Infrastructure
SW	Stormwater
TCA	Tangible Capital Asset
UL	Useful Life

Glossary

The following terms and definitions are provided below.

Asset

An item, thing or entity that has potential or actual value to the City, including but not limited to tangible assets, natural assets, heritage or culturally significant assets and information assets.

Asset Management

Co-ordinated activities by the City to realize value from its assets in the achievement of its organizational objectives.

Asset Management Steering Committee

The team appointed by the City to guide, review and monitor the city-wide Asset Management (AM) implementation and ensure AM development is consistent with organizational goals and objectives.

Asset Management Plans (AMPs)

An Asset Management Plan (AMP) is a tactical plan for managing an organization's infrastructure and other assets to deliver an agreed standard level of service.

Asset Management Working Group

Cross-departmental/divisional team of subject matter experts that governs and maintains the City's assets in compliance with the Strategic Asset Management Policy.

Benchmarking

To evaluate or check by comparison with a standard or with a previous performance threshold.

Capital Expenditure (CAPEX)

Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of the asset stock.

Cash Flow

Inflows and outflows of cash and cash equivalents.

Condition Monitoring

Inspection, assessment, measurement, and interpretation of the resultant data, to indicate the condition of a specific asset or component and determine the need for some preventive or remedial action.

Consequence of Failure

An element of a risk framework that identifies an asset failure that has the highest potential impact on delivering services.

Critical Assets

Those assets whose failure to provide levels of service is likely to result in a more significant financial, environmental and social cost in terms of impact on organizational objectives.

Decommission or Disposal

Activities required to take an asset out of service.

Deferred Maintenance

The shortfall in maintenance work required to maintain the service potential of an asset.

Demand Maintenance

Physical repairs to an asset that has broken down or ceased to function as intended. The repair generally reinstates the asset to normal operating conditions but does not extend the life of the asset.

Depreciation (Amortization)

The systematic allocation of the depreciable amount of an asset over its useful life.

Design Life

The period of time during which an asset is expected by its designer/manufacturer to work within its specified parameters.

Deterioration Rate

The rate at which an asset approaches failure (end of life).

Facilities Audit

The physical audit of a facility, usually required for valuation, life-cycle cost analysis, short-term maintenance planning, and long-term planning purposes.

Facility

A complex comprising many assets (e.g., a hospital, water treatment plant, recreation complex, etc.) that represents a single management unit for financial, operational, maintenance or other purposes.

Failure

The condition in which an asset fails to deliver expected levels of service. Failures can be total (e.g., a pump fails to pump any water) or partial (e.g., a pump can pump only a portion of the required pumping volume).

Geographic Information System (GIS)

Software that provides a means of spatially viewing, searching, manipulating, and analyzing an electronic database.

Infrastructure Backlog

The total capital spending needed to bring all assets to a state of good repair.

Infrastructure Gap

The difference between the total full life cycle needs and the projected revenues over a specified time period.

Key Performance Indicator (KPI)

A subset of the organization's most important quantifiable measures that are used to evaluate the success of the program, project, process, activity or other outcomes. These indicators demonstrate how effectively the organization is achieving key business objectives.

Levels of Service (LOS)

A measure of the delivery of a service against which service performance may be gauged.

Lifecycle Management

Processes to make decisions related to investment on an asset over the difference phases from acquisition to disposal.

Lifecycle Cost Analysis (LCCA)

Any technique that allows for the assessment of alternative solutions (including continuation of the status quo), based on all relevant economic consequences and benefits over the service life of the asset.

Maintenance

All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.

Operational Expenditure (OPEX)

Ongoing annual cost expenditures for running day-to-day business operations including costs of workers and facility expenses such as supplies, rent and utilities.

Operations

The active process of using an asset that consumes resources such as manpower, energy, chemicals, and materials. Operation costs are part of the lifecycle costs of an asset.

Performance Monitoring

Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.

Preventative Maintenance

Regularly scheduled activities initiated as a result of knowledge of an items condition from routine or continuous monitoring, completed while the asset is still in “operational” condition. The purpose of preventative maintenance is to ensure the asset remains in service throughout its design life.

Probability of Failure

The likelihood or frequency that an asset will fail to deliver expected levels of service

Renewal/Rehabilitation

Significant repairs designed to extend the life of an asset.

Replacement

The complete replacement of an asset that has reached the end of its life to provide a similar, or agreed alternative, level of service.

Risk

A combination of the likelihood and consequence of an event occurring.

Risk Management

The application of a formal process to assess organizational risks to determine the resultant ranges of outcomes, their probability of occurrence, and what actions may be cost-effectively taken to reduce the organization’s overall risk exposure.

Strategic Plan

A plan containing the long-term goals and strategies of an organization. Strategic plans have a strong external focus, cover major portions of the organization and identify major targets, actions and resource allocations relating to the long-term sustainability, value, and growth of the organization.

Useful Life

The period of time during which the asset is expected to maintain its performance or function.

Work Order

A list of tasks to be completed to maintain an asset or to correct any issues discovered and reported by an employee via a work request.

Executive Summary

Located in the heart of Canada’s largest urban region, the City of Brampton is well positioned to continue to attract global business investment and educated, skilled residents from across Canada and around the world. The City of Brampton is Canada’s 9th largest municipality with an estimated census population of 656,500 and remains one of the largest employment centres in the Greater Toronto Area.

With the rapid growth that has taken place over the last number of years, the City has been adding a large number of assets to its already extensive inventory. Presently, the City’s asset inventory is estimated to have a replacement cost of \$7.0 billion (in 2021 dollars). This includes all City assets irrespective if they are constructed by the City or contributed by developers. The Corporate Asset Management Plan (Corporate AMP) is intended to summarize how the City manages its infrastructure assets and support evidence-based decision making while adhering to all regulatory requirements.

The first Corporate AMP for the City of Brampton was developed in 2016, which provided a baseline with the best information available at the time. Since 2016, the City has improved its understanding of asset inventories, replacement cost, useful life and condition and is actively working to advance its asset management strategies. This 2021 Corporate AMP is the City’s second asset management plan at the City-wide level.

Like most municipalities, asset management data quality and accuracy varies between service areas. Accordingly, one should focus on the overall recommendations presented in this report rather than the specific service by service findings which will be better addressed through the individual departmental asset management plans (DAMP). It is expected the results outlined in this Corporate AMP will continue to evolve as the City’s asset management processes are refined and improved upon.

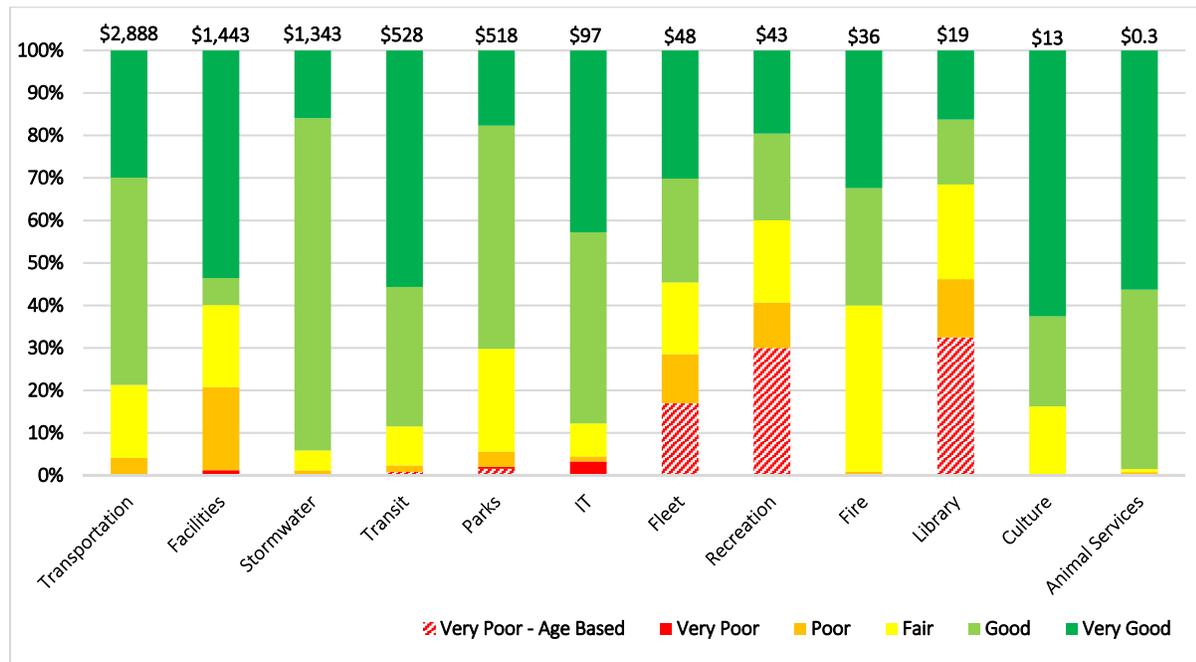
State of the Local Infrastructure

The City’s asset portfolio has a total replacement value estimated at \$7.0 billion with the assets, on average, in “Good” condition. The valuation is estimated based on an inventory of capital assets as of year-end 2020. This baseline snapshot of Brampton’s assets will help decision-makers prioritize investments in the future; improving their ability to efficiently manage assets and deliver services. The figure below outlines the major service areas considered as part of this Corporate AMP and included in the total asset valuation.



The Corporate AMP contains replacement value and condition assessment information specific to the service areas in individual report cards, which is graphically shown in summary below.

Replacement Value & Condition Assessment by Service Area



Note: Values identified at the top of each bar represents the replacement value of infrastructure under the "Responsibility View" for each service area (in Millions). The red-hashed sections reflect age based Very Poor assets and does not truly reflect the condition of the asset – as the City matures its practices, progress is expected in better reporting of these assets.

Levels of Service

In this Corporate AMP, the City has developed the information related to current levels of service to meet the requirements of O. Reg. 588/17 to 2024 which includes levels of service measures associated to core and non-core services for all service areas. This report, inclusive of the appendices, includes the detailed information on current levels of service for all service areas. The levels of service have been developed in relation to strategic themes, the legislated levels of service and customer/technical levels of service.

Asset Management Strategy

Demand Management

Demand management considered in this corporate asset management plan relates to the understanding of how future changes in the City will impact the demand for municipal services. This report identifies the factors that may influence the demand for, and level of service from, the City's asset portfolio. The demand placed on City services would evolve as the priorities of the community change, technologies emerge and existing services are improved. This report outlines the framework for consideration and provides an overview of:

- Demand Drivers and Forecast;
- Demand Impact on Level of Services; and
- Demand Management through Lifecycle Activities.

Risk Management

The core function of the Risk Management Strategy is to identify asset related risks and manage them appropriately to reduce the risk of assets failing to provide expected levels of service. Different risk

treatments will have varying effect on levels of service and it is important to ensure that the optimal risk treatments are utilized.

Section 4.2 of this report details all the components of the Risk Management Strategy and its accompanying framework.

Climate Change Integration

It is important for municipalities to consider and plan for climate changes to ensure the delivery of services, especially as it pertains to the maintenance of key City infrastructure. As per *Ontario Regulation 588/17 s3(5)*, municipalities must include a commitment in their asset management planning to address the vulnerabilities of climate change with respect to operations, levels of service and lifecycle management. There must also be consideration for anticipated costs, mitigation and adaptation approaches and disaster planning to meet all regulatory requirements in Ontario municipal asset management.

In response to the regulatory requirements, the City of Brampton adopted its first Strategic Asset Management Policy and committed to integrating climate change as part of its asset management planning. Section 4.3 of this report aims to build a foundation for future policies regarding climate change integration in the City.

Governance

Effective governance is essential so the City can effectively deliver on its CAMP goals and objectives. Asset management governance can be defined as the manner in which the City allocates responsibilities and how it makes decision in regards to the CAMP. It allows individuals within the organization to understand their role, take ownership and effectively support asset management objectives. The City of Brampton's Corporate Asset Management Office (CAMO) works alongside City staff to employ sound asset management practices and policies, as outlined in Section 4.4 this Corporate AMP.

The Corporate AMP recommendations summarized in this section will help the City align its existing governance structure to improve efficiency and effectiveness in applying key asset management principles to meet provincial requirements.

Asset Information Management Strategy (AIMS)

The City's asset management programs are continuously evolving. With this in mind, the City has identified the importance of the City's asset management data necessary to continue to evolve the City's asset management practices. The City also recognizes that the "availability of data" is not the only criteria needed to better inform asset investment decisions, but also the quality of data, analysis and how it is used. For this reason, the City has found it necessary to develop an Asset Information Management Strategy (AIMS) to help guide the City in developing a framework to identify the City's asset specific data needs and develop a guiding plan to achieve asset data objectives to 2025 and beyond. AIMS is therefore developed to be in line with both the timing of the development of specific departmental asset management plans (DAMP) and a key tool to help achieve the regulatory requirements of *O. Reg. 588/17*.

Communication Strategy

The Corporate AMP is intended to help the City of Brampton's stakeholders (City employees, City Council, and the community) by educating, informing and engaging with them on all aspects of the City's asset management program. The Corporate AMP provides timely, comparable and accurate information regarding the City's assets to facilitate decision making. For this reason, strategically planned

communication can support the Corporate AMP and the City's corporate asset management program (CAMP) by ensuring that stakeholders are aware and understand the need for asset management and its purpose. This also provides opportunities to participate and collaborate in the program, engage and support program requirements, define program goals and have access to information, interactive tools, and capabilities to support Corporate AMP requirements.

Life Cycle Management

As part of the Corporate Asset Management Plan, the City, along with its consultants, have identified the full life cycle costs of an asset that corresponds to the requirements of the regulation. This would entail a cost estimation throughout the asset's life including planning, design, construction, acquisition, operation, maintenance, renewal/rehabilitation, replacement and disposal. In addition, the analysis also takes into consideration the inclusion of expansion related infrastructure into the lifecycle management strategy. This approach ensures that the additional lifecycle costs associated with newly constructed/acquired assets are accounted for in the long-term forecast. The initial first round capital to acquire the asset is not considered in the asset management provision.

Over the next decade, the analysis indicates cumulative spending need of \$5.38 billion. The cumulative costs identified above can be further delineated between the different lifecycle activities, by service area, and how the activities relate to both existing and expansion related activities.

- Asset management activities associated with the existing assets represents \$4.19 billion of the cumulative \$5.38 billion in costs.
- The remaining \$1.19 billion is associated with expansion related activities.

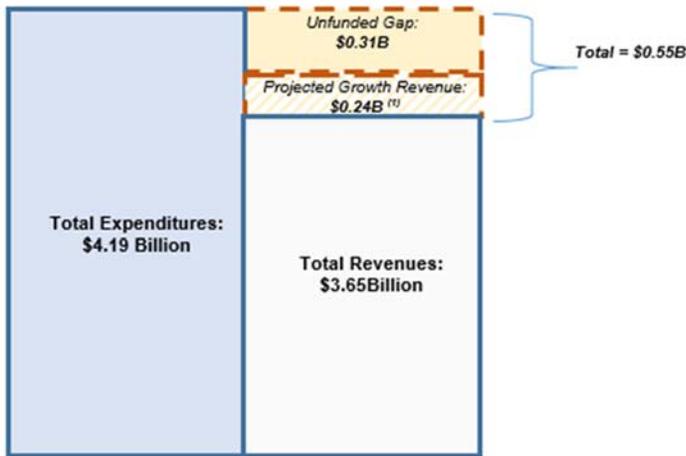
Financing Strategy

Based on the analysis undertaken in this Corporate AMP, an infrastructure gap has been calculated for both existing and expansion asset requirements independently. The infrastructure gap is defined as the difference between the total full-life cycle needs and the projected revenues over the 10-year period.

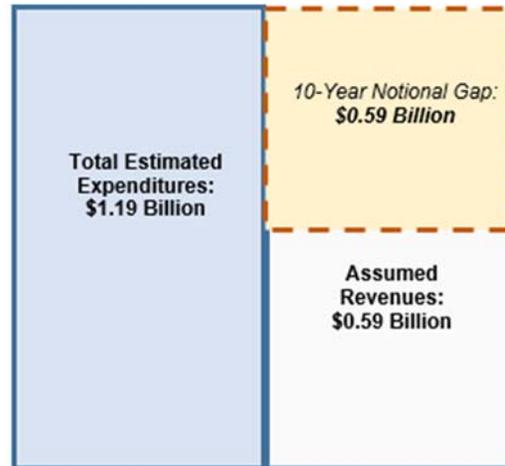
For existing assets, a notional infrastructure gap of \$550 million is identified. However, the gap is reduced to \$307 million (i.e. unfunded share) once the additional revenues that would be generated from new growth are considered into the calculation. Those additional revenues are assumed to be prioritized to existing assets, although, the specific allocations will be further determined through future budgets as growth occurs.

A similar infrastructure gap analysis has been prepared for expansion related activities that have been quantified in this plan to comply with the requirements of the asset management regulation. Based on the total 10-year full lifecycle cost and revenue analysis, a notional infrastructure gap of \$594 million is identified. Section 5 of this Corporate AMP describes the assets full life cycle cost model and overall financing strategy in detail.

Existing Assets



Expansion Related Assets



Monitoring & Improvement Plan

Asset management planning is a continuous improvement process that is needed to ensure infrastructure is managed in the most sustainable way over the long term. The goal of the municipal asset management planning regulation (O. Reg. 588/17) is to promote municipalities to take incremental steps to maximize benefits, manage risk and provide satisfactory levels of service to the public in a cost-effective manner.

Since the City undertook the 2016 Corporate AMP, several major initiatives have transpired and this plan iteration demonstrates a dedicated effort towards continuous improvement of the City's Corporate Asset Management Program. Section 6 of this Corporate AMP provides a list of full recommendations to advanced the maturity of the City's AM program.

Although the 2021 Corporate Asset Management Plan is prepared to consider all municipal infrastructure assets (core and non-core assets), the City is currently in the early phases of meeting the other asset management plan requirements while continuing to improve upon the existing information, data and processes used to develop this Corporate AMP. The City's overall confidence level rating is approximately **three (3)**, which correlates to a medium ("competent") State of Asset Management maturity. The scores are reflective of the quality and type of data available, current processes and management strategies.

The City's Corporate Asset Management Office aims to build off the foundation developed thus far and continue to improve upon a number of different areas, with initiatives that will improve data quality and confidence while driving corporate change.

1 Introduction

Located in the heart of Canada’s largest urban region, the City of Brampton is well positioned to continue to attract global business investment and educated, skilled residents from across Canada and around the world. The City of Brampton is Canada’s 9th largest municipality with an estimated census population of 656,500 (Table 1-1)¹ and remains one of the largest employment centres in the Greater Toronto Area.

Table 1-1 – Population Ranking (Top 10 Cities in Canada)

Municipality	Census Population		Rank	
	2021	2016	2021	2016
Toronto	2,794,356	2,713,571	1	1
Montreal	1,762,949	1,704,694	2	2
Calgary	1,306,784	1,239,220	3	3
Ottawa	1,017,449	934,243	4	4
Edmonton	1,010,899	932,546	5	5
Winnipeg	749,607	705,244	6	7
Mississauga	717,961	721,599	7	6
Vancouver	662,248	631,486	8	8
Brampton	656,480	593,638	9	9
Hamilton	593,353	536,917	10	10

Most of Brampton’s growth has occurred in the last 15 years, making it one of the Country’s fastest-growing urban centres. Its population is expected to increase to about 890,000 residents by 2041. The City is well known for its diversity with more than 234 different cultures and 89 languages represented among its residents.

Brampton’s economy is well diversified with a workforce of roughly 215,000, representing a wide range of industry sectors and regional clusters. The main economic sectors include manufacturing, food and beverage, life sciences, and information and communication technology.

With the rapid growth that has taken place over the last number of years, the City has been adding a large number of assets to its already extensive inventory. Presently, the City’s asset inventory is estimated to have a replacement cost of \$7.0 billion (in 2021 dollars). This includes all City assets irrespective if they are constructed by the City or contributed by developers as new development occurs. The Corporate Asset Management Plan (Corporate AMP) is intended to provide Council with information to help with capital investment decisions while adhering to all regulatory requirements.

Municipal services in Brampton are provided by two tiers of government. The Region of Peel is the “Upper Tier” and the City of Brampton is the “Lower Tier”. From an asset management perspective, municipal services provided by the City and the Region are shown in Figure 1-1. The City of Brampton

¹ The table references census population which is different than total population which is used in Regional Official Plan and the *Growth Plan*.

services described table below are incorporated into the Corporate AMP but the service area names are modified to generally align to the City’s budget structure and the Financial Information Return.

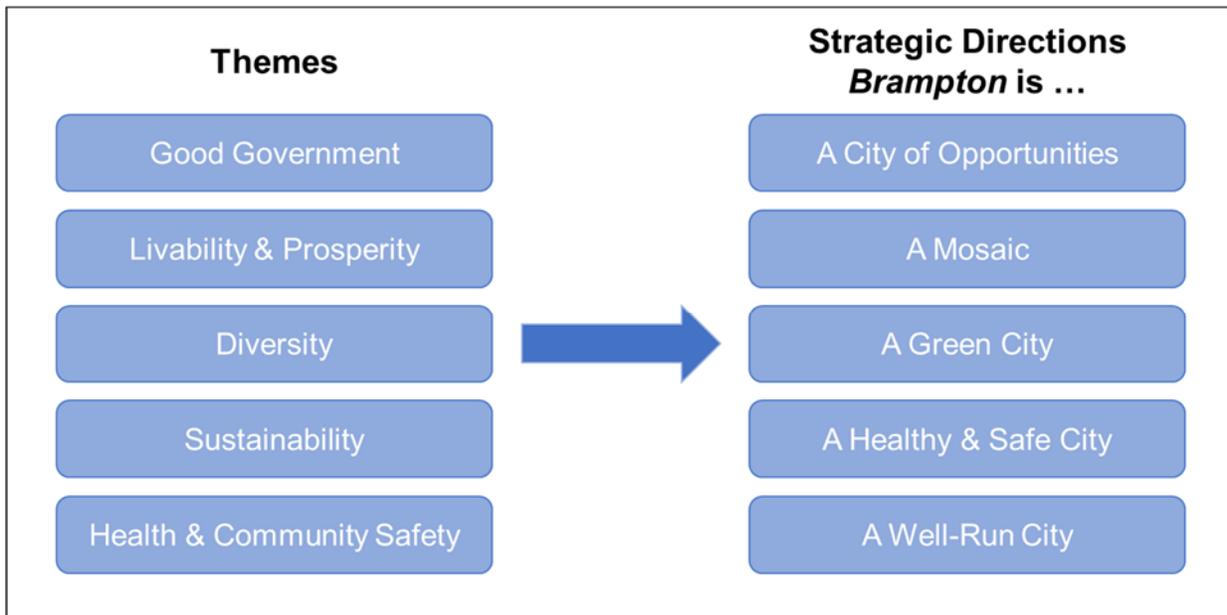
Figure 1-1 – Municipal Service Delivery

	
Arts and Culture	Paramedics
Fire and Emergency Services	Housing Services
Parks and Recreation	Long-Term Care
Animal Services	Police Services
Library Services	Public Health
Roads and Traffic Services	Regional Roads
Public Transit	Social Services
Stormwater Management	Waste Management
City Planning and Economic Development	Water and Wastewater

The City of Brampton’s Term of Council Priorities connected to the City’s 2040 Vision has guided the City’s strategic directions and follow the below key themes:

- 1) Good Government;
- 2) Liveability and Prosperity;
- 3) Diversity;
- 4) Sustainability; and
- 5) Health and Community Safety

Figure 1-2 – Strategic Plan Vision



1.1 Background

This Corporate AMP serves as an update to the City’s first Corporate AMP in 2016. This plan will continue to serve as a living document and is expected to evolve over time to cover all of the range of services offered by the City in greater depth.

The purpose of this Corporate AMP is to advance the City’s asset management practices which allows the City’s infrastructure to be managed in a financially sustainable manner while delivering the expected Levels of Service for its community. Guidance from this Corporate AMP will help in preparing the departmental asset management plans in a consistent manner and, in doing so, meet the stated requirements of the *Ontario Regulation 588/17 (O.Reg. 588/17)*. This regulation aims to provide a more standardized framework to facilitate asset management planning for Ontario municipalities through setting out requirements for asset management plans, policies, levels of service, lifecycle management and financing strategies. A summary timeline of the requirements of the regulation are outlined in Figure 1-3. This Corporate AMP meets and exceeds the requirements as outlined within the Ontario *Building Together Guide* for Municipal Asset Management Plans, and covers components within both the ISO 55000 Global Asset Management Standard, as well as the International Infrastructure Management Manual (IIMM).

Figure 1-3 – O.Reg 588/17 Requirements



This Corporate AMP becomes the overarching corporate asset management plan for all service areas, and there are goals to develop individual Departmental Asset Management Plans (DAMPs) in future years. Development of these DAMPs is one of the major improvement initiatives for the City which should be carried out to continue moving the City’s asset management program forward.

1.2 Purpose

The aim of the Corporate AMP is to take a broad view of the City’s objectives, initiatives and strategies and interpret these for all service areas, thereby showing the linkage between corporate targets and individual service areas targets.

A framework/platform is provided that utilizes existing practices and continues the City’s Corporate Asset Management journey as well as its commitment to develop a comprehensive Corporate Asset Management program well into the future. Key outcomes of the Corporate AMP include:

- Overall State of the Local Infrastructure for all service areas;
- Documented standard Levels of Service (LOS) including links between the Technical LOS, Customer LOS and Corporate LOS current performance;
- Development of a Risk Management Strategy (RMS) that ensures a standardized and consistent approach to asset risk management across all City’s service areas;
- A framework to integrate climate change into asset management;
- The identification of the factors that may influence the demand for, and level of service from, the City’s asset portfolio;
- Governance overview and structure;
- A Lifecycle Management Strategy to determine the activities require to meet levels of service expectations;
- Examination of current evidence-based asset needs and a comparison to revenue projections to identify the infrastructure gap for the corporation; and
- Increased engagement with various stakeholders.

As the Corporate AMP continues to be implemented, it will support the essential evidence-based strategic plan process, including the City’s Long Term Financial Master Plan and budgeting processes, well into the future. The key project outcomes are rooted in the 14 principles endorsed by City Council through the [Strategic Corporate Asset Management Policy](#).

1.3 Context

How the City's assets are managed plays a fundamental role in achieving the City of Brampton's strategic goals and key results. A municipal government exists to deliver services to its community. The delivery of services depends on the available infrastructure. For example, the delivery of stormwater requires a pipe; transportation requires a road; the game of hockey requires an arena. Even administrative and people services such as building permits, marriage licenses or social support require facilities and equipment for people to do the work to deliver the service.

As per ISO 55000, asset management is defined as the coordinated activity of an organization to realize value from its assets. The goals of the City, as expressed by this definition, shape the delivery of service and are completed dependent on infrastructure and people. A City needs reliable infrastructure to perform its functions, which is not sustainable unless it is effectively managed.

The Corporate AMP is a living document that will improve decision making and investment prioritization, generate a common understanding within each of the service areas, and identify the impacts of decisions related to asset management. The asset management plan for each of the service areas establishes a "clear line of sight" from senior management to the customer and from planners to front line decision makers. Any investment requirements included in the Corporate AMP are clearly linked to a well-defined need. These needs are based on either maintaining or enhancing customer-focused levels of service as well as alignment with strategic objectives through capital and operating decisions. This will improve transparency and stakeholder confidence that the right decisions are being made on the right assets at the right time.

State of the Local Infrastructure (SOLI) reports form the backbone of the Corporate AMP. The SOLI is a measurement of the state of infrastructure, overall asset maturity and an overall assessment of the financial ability to manage the infrastructure in Brampton. The City has undertaken annual SOLI updates since 2018.

1.4 Scope

This document is divided into key areas which provide public services recognizing that many service areas are reliant on other corporate functions to properly provide services. The individual service areas operate at a far greater level of detail than the corporate level but are the link which implements the broader corporate asset strategy. For example, Information Technology is a critical corporate-wide function that provides IT service needs to all.

The Corporate AMP focuses on high level planning for the service areas under the direct control of the City and excludes indirect service administered by other corporations and municipalities (i.e. Region of Peel, City of Mississauga, Hydro etc.).

Land has also been excluded since it does not depreciate over time and typically does not require "replacement." Land values will continue to be included as part of Financial Information Return submissions.

This Corporate AMP does not cover all assets which were included as a major area in the Ministry of Infrastructure's 'Guide for Municipal Asset Management Plans'. In the City of Brampton, Social Housing is not owned by the City, and water and wastewater services are under the jurisdiction of the Regional Municipality of Peel.

The following sections provide greater detail on the assets held within the service areas under the scope of this Corporate AMP. Furthermore, Appendix A provides a detailed snapshot of the asset hierarchies of

each service area. The development of the asset hierarchy is important as they represent a logical index and demonstrates relationships between assets and how they work together to provide services. Building and understanding the asset hierarchy is critical to efficiently tracking assets for reporting and effective decision making on how to provide required levels of services in a cost effective manner.

The City’s asset portfolio has a total replacement value estimated at \$7.0 billion with the assets, on average, in “Good” condition. These integrated services form an integral part of the City’s infrastructure asset base that contributes to the key strategic goals of the City. Figure 1-4 outlines the service areas considered as part of this Corporate AMP.

Figure 1-4 –Service Areas included in the Corporate Asset Management Plan



Section 2 includes information on the inventory and replacement value of various asset types within these major service areas that are included within the scope of this Corporate AMP.

1.5 Maturity Assessment

This 2021 Corporate AMP is the City’s second asset management plan at the City-wide level, the first prepared in 2016. Like most municipalities, asset management data quality and accuracy varies between service areas. Accordingly, one should focus on the overall recommendations presented in this report rather than the specific service by service findings which will be better addressed through the individual departmental asset management plans (DAMPs). It is expected the results outlined in this Corporate AMP could change as the City’s asset management processes are refined and improved upon.

Figure 1-5 provides a snapshot of the progress and overall maturity of the City’s asset management data and program relative to 2016 when the City first launched its Corporate AMP. The maturity evaluation is informed by the ISO 55000 assessment framework, MFOA Maturity level framework, the 2016 Corporate Asset Management Plan and a series of discussions with the CAMO team and various service areas to qualify the progress the City has made.

The major premise of comprehensive corporate asset management is that an organization will seldom have perfect processes and data with which to manage the asset portfolio. Instead, the underlying culture of continuous improvement and reliability is its key to success. These improvements will be part of the continuation of the Corporate Asset Management program and the implementation of the CAM Roadmap moving forward.

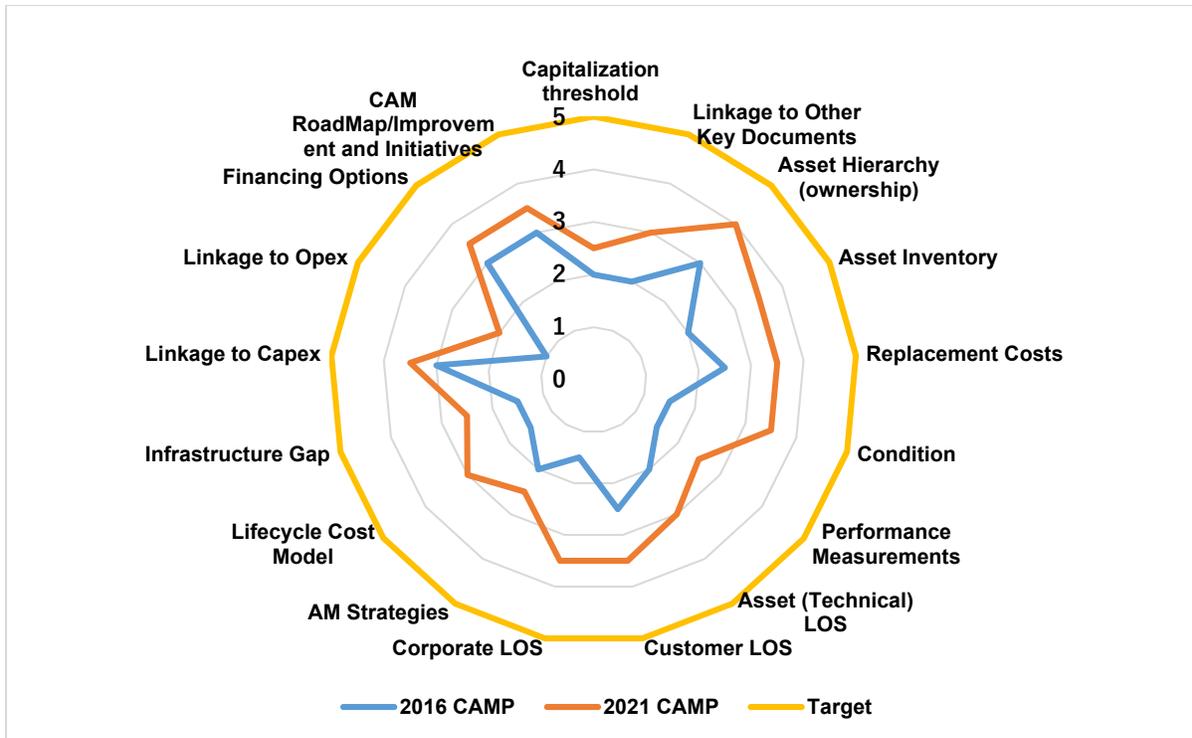
The City’s overall confidence level rating is approximately **three (3)**, which correlates to a medium (“competent”) State of Asset Management maturity. The scores are reflective of the quality and type of data available, current processes and management strategies. The figure indicates two important points:

- 1) The City has made significant progress in further developing various components of their Asset Management program since the completion of the 2016 Corporate AMP. The level of advancement varies by different areas; and
- 2) Despite the progress made, further work is currently underway and planned to be undertaken over the next few years that will move the City towards the targeted “level 5” assessment in all categories. Some of these activities include but are not limited to:
 - a. Completion of the Departmental Asset Management Plans;
 - b. Update to the City’s Long-term Financial Master Plan;
 - c. Updated Condition assessments and replacement valuations;
 - d. Level of Service tracking and consultation regarding proposed/target levels of service; and
 - e. Strong understanding of asset risk, full lifecycle activities, design life, etc.

Importantly, the target identified in Figure 1-5 below is anticipated to occur sometime following full implementation of the regulatory requirements in July 2025. Section 12 of this report identifies a series of future improvements and initiatives that will improve data quality and confidence while driving corporate change. Aside from the regulatory requirement for municipalities to mature their asset management processes, there are more tangible outcomes, which the City can realize:

- 1) Evidence Based Decision Making and prioritized investment needs;
- 2) Integration with Budgeting process, the Long-term Financial Master Plan and other key initiatives;
- 3) Increased coordination with departmental capital plans and corporate funding strategies; and
- 4) Better infrastructure coordination with region and within and other levels of governments and agencies.

Figure 1-5 – Asset Management Maturity Assessment 2016 vs. 2021



1.6 Plan Structure

The Corporate AMP report is structured into 6 major sections and generally follows the format within the Provincial *Building Together: Guide for Municipal Asset Management Plans* (Table 1-2). The overall plan structure has been retooled to better reflect the enhanced reporting and work completed by the City since the Guide was released.

Table 1-2 – Corporate AMP Report Structure

Corporate AMP Report Structure by Section	
1	Introduction
2	State of the Local Infrastructure
3	Levels of Service
4	Asset Management Strategy
4.1	<i>Demand Management</i>
4.2	<i>Risk Management</i>
4.3	<i>Climate Change Integration</i>
4.4	<i>Governance (Including Asset Interdependency)</i>
4.5	<i>Asset Information Management</i>
4.6	<i>Communication</i>
4.7	<i>Lifecycle Management</i>
5	Financing Strategy
6	Monitoring and Improvement Plan

2 State of Local Infrastructure (SOLI)

This section of the report seeks to establish an understanding of the current state of Brampton's estimated \$7.0 billion (\$2021) in infrastructure assets. The valuation is estimated based on an inventory of capital assets as of year-end 2020. This baseline snapshot of Brampton's assets will help decision-makers prioritize investments in the future; improving their ability to efficiently manage assets and deliver services.

The State of Local Infrastructure (SOLI) is a key building block for Brampton's future management of its infrastructure assets. This section is intended to provide the following information:

- Details of the Asset Inventory – What do we own?
- Valuation of the Asset Base (Replacement Value) – What is it worth?
- Condition of the Asset Base – What Condition is it in?

This will lay the foundation for ongoing assessment, reporting, benchmarking of the City's infrastructure assets while also publicly communicating the current state of assets. In this iteration of the report, the focus was on the service areas, described generally, as the infrastructure owned and directly managed by the City. However, this report does include assets managed by Brampton Library, which is a governing board with the authority to make policy and govern the Library's affairs under the authority of the Public Libraries Act. Future iterations of this report will continue to include all assets directly and indirectly owned or managed by the City, including those owned or managed by municipal boards and agencies in addition to Brampton Library.

Despite the major service area categories being consistent with the 2019 SOLI Report, the City has made significant improvements to the datasets, key inputs, assumptions, and reporting views. Furthermore, the financing strategy has been updated to be more reflective of a full lifecycle cost of service approach as required by the regulation. Based on a weighted replacement value average of all services and their condition assessments, approximately 76% of assets are assigned a data confidence rating based on condition. This represents an increase of about 7% from the 2019 SOLI Report in which 69% of the asset ratings were based on condition (and 21% from 2018 SOLI Report). Please note that the replacement values will continue to be updated in future years with more recent data which may better reflect the cost pressures that the City is currently experiencing due to COVID-19 if they continue to persist.

2.1 City-wide Asset Representation: User View and Responsibility View

The assessment of the City's current state of infrastructure is a key component of the overall Corporate Asset Management Plan (Corporate AMP). Previously, the SOLI was reported under a "User View" representation. In this Corporate Asset Management Plan, the state of the City infrastructure is being reported under two different asset representation perspectives: a "Responsibility View" and a "User View" representation. These two views are defined as follows:

Responsibility View: Shows the assets under the service area that is responsible for managing them.

User View: Shows the assets under the service area that is using them.

The responsibility view is also being illustrated in this iteration, as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- provides a direct line of sight to those assets managed by the service area;
- will help prioritize lifecycle activities managed by the service area;
- aligns with industry best practices; and
- provides guidance to future asset management planning practice and departmental initiatives.

The most significant adjustment that can be observed under the new responsibility view pertains to Facilities, City Support Fleet and Software. These assets all form a fundamental component to how services are delivered and therefore “used” by each service area, although, the department that manages the infrastructure is different from those who use it.

The table below goes through each service area’s assets and their Current Replacement Value (CRV), detailing the differences in reporting based on these two views (differences in highlighted in grey). As illustrated in the total replacement value below, both views result in the same valuation of \$7.0 billion:

Table 2-1 – Replacement Value Comparison: Assets under User view and Responsibility View

Service Area	Assets Under Responsibility View		Assets Under User View	
	Asset Type	CRV (\$M)	Asset Type	CRV (\$M)
Transportation	Roads	\$1,421.8	Roads	\$1,421.8
	Islands	\$49.7	Islands	\$49.7
	Structures (Bridges & Culverts)	\$739.8	Structures (Bridges & Culverts)	\$739.8
	Structures (Other)*	\$66.3	Structures (Other)	\$66.3
	Walkways & Paths	\$252.2	Walkways & Paths	\$252.2
	Traffic Services	\$357.9	Traffic Services	\$357.9
			Facilities (Moved to Facilities)	\$81.4
			Fleet (Moved to City Support Fleet)	\$18.0
			Software (Moved to IT)	\$2.3
Total Transportation		\$2,887.8		\$2,989.5
<i>*Note: Structures (Other) includes gateway features, noise walls, retaining walls, fences, guiderails, handrails and steps</i>				
Stormwater	Stormwater Management Ponds	\$94.7	Stormwater Management Ponds	\$94.7
	Storm Sewer Systems	\$1,241.0	Storm Sewer Systems	\$1,241.0
	Oil & Grit Separators	\$7.1	Oil & Grit Separators	\$7.1
Total Stormwater		\$1,342.7		\$1,342.7
Facilities	Corporate Facilities	\$308.9	Corporate Facilities	\$308.9
	Animal Services Facilities	\$9.2	Software (Moved to IT)	\$0.5
	Cultural Services Facilities	\$88.5		
	Recreation Facilities	\$573.4		
	Parks Facilities	\$17.8		
	Transit Facilities	\$165.6		
	Library Facilities	\$81.9		
	Fire Facilities	\$116.0		
Work Operations Facilities	\$81.4			
Total Facilities		\$1,442.6		\$309.3

Service Area	Assets Under Responsibility View		Assets Under User View	
	Asset Type	CRV (\$M)	Asset Type	CRV (\$M)
Transit	Licensed Vehicle Assets	\$429.7	Licensed Vehicle Assets	\$429.7
	Transit Facilities (On Road)	\$53.7	Transit Facilities (On Road)	\$53.7
	Transit IT Infrastructure	\$1.1	Transit IT Infrastructure	\$1.1
	Specialty Equipment	\$43.6	Specialty Equipment	\$43.6
			Facilities (Moved to Facilities)	\$165.6
			Software (Moved to IT)	\$1.1
Total Transit		\$528.0		\$694.7
Information Technology (IT)	End User IT	\$5.9	End User IT	\$5.9
	Infrastructure Assets	\$55.6	Infrastructure Assets	\$55.6
	Software (Shared Corporate Software)	\$27.2	Software (Shared Corporate Software)	\$27.2
	Software (Used by Other Service Areas)	\$8.3		
Total IT		\$97.1		\$88.8
City Support Fleet	Licensed Fleet (Corporate Services Fleet)	\$5.1	Licensed Fleet (Corporate Services Fleet)	\$5.1
	Off-Road Vehicles (Corporate Services Fleet)	\$1.4	Off-Road Vehicles (Corporate Services Fleet)	\$1.4
	Fleet Equipment (Corporate Services Fleet)	\$0.04	Fleet Equipment (Corporate Services Fleet)	\$0.04
	Licensed Fleet (Used by Other Service Areas)	\$27.1	Software (Moved to IT)	\$0.8
	Off-Road Vehicles (Used by Other Service Areas)	\$14.1		
	Fleet Equipment (Used by Other Service Areas)	\$0.3		
Total City Support Fleet		\$48.1		\$7.3
Fire	Front Line Licensed Vehicles & Apparatus	\$19.3	Front Line Licensed Vehicles & Apparatus	\$19.3
	Support Vehicles & Equipment	\$6.4	Support Vehicles & Equipment	\$6.4
	Spare Vehicles	\$6.9	Spare Vehicles	\$6.9
	Personal Fire Equipment	\$3.0	Personal Fire Equipment	\$3.0
			Facilities (Moved to Facilities)	\$116.0
			Software (Moved to IT)	\$3.1
Total Fire		\$35.6		\$154.7
Parks	Parking Lots	\$15.0	Parking Lots	\$15.0
	Small Engine Equipment	\$2.3	Small Engine Equipment	\$2.3
	Park Parkland	\$68.4	Park Parkland	\$68.4
	Natural Heritage Lands	\$0.0	Natural Heritage Lands	\$0.0
	Park Furnishing	\$3.0	Park Furnishing	\$3.0
	Playgrounds	\$85.8	Playgrounds	\$85.8
	Shade Structures	\$36.3	Shade Structures	\$36.3
	Splash Pads & Outdoor Pools	\$3.2	Splash Pads & Outdoor Pools	\$3.2
Fitness Equipment	\$0.7	Fitness Equipment	\$0.7	

Service Area	Assets Under Responsibility View		Assets Under User View	
	Asset Type	CRV (\$M)	Asset Type	CRV (\$M)
	Skate Parks	\$1.7	Skate Parks	\$1.7
	Sports Facilities	\$120.1	Sports Facilities	\$120.1
	Pathways	\$47.3	Pathways	\$47.3
	Trees	\$129.9	Trees	\$129.9
	Flower Beds	\$3.8	Flower Beds	\$3.8
	Cemetery Equipment	\$0.1	Cemetery Equipment	\$0.1
			Facilities (Moved to Facilities)	\$17.8
			Fleet (Moved to City Support Fleet)	\$17.3
			Software (Moved to IT)	\$0.0
Total Parks		\$517.6		\$552.7
Recreation	Equipment	\$31.7	Equipment	\$31.7
	Furniture	\$11.5	Furniture	\$11.5
			Facilities (Moved to Facilities)	\$573.4
			Fleet (Moved to City Support Fleet)	\$4.2
			Software (Moved to IT)	\$0.3
Total Recreation		\$43.2		\$621.1
Cultural Services	Outdoor Equipment	\$1.7	Outdoor Equipment	\$1.7
	Specialty Equipment	\$10.3	Specialty Equipment	\$10.3
	Furniture	\$0.2	Furniture	\$0.2
	Public Art	\$0.8	Public Art	\$0.8
			Facilities (Moved to Facilities)	\$88.5
			Fleet (Moved to City Support Fleet)	\$0.7
			Software (Moved to IT)	\$0.0
Total Cultural Services		\$13.1		\$102.3
Library	Furniture and Equipment	\$8.0	Furniture and Equipment	\$8.0
	Media Collections	\$10.7	Media Collections	\$10.7
	Library Software	\$0.3	Library Software	\$0.3
			Facilities (Moved to Facilities)	\$81.9
			Fleet (Moved to City Support Fleet)	\$0.2
Total Library		\$19.0		\$101.1
Animal Services	Equipment	\$0.3	Equipment	\$0.3
			Facilities (Moved to Facilities)	\$9.2
			Fleet (Moved to City Support Fleet)	\$1.1
			Software (Moved to IT)	\$0.2
Total Animal Services		\$0.3		\$10.8
Total CRV (\$M)		\$6,975.1		\$6,975.1

Note: Numbers in the table above may not add exactly due to rounding

2.2 Asset Inventory and Valuation

As specified in the Ministry Guide, the value of the City’s assets is presented in two different formats: ‘Net Book Value’ and ‘Replacement Value’.

Net Book Value is consistent with the financial accounting practices defined by the Public Sector Accounting Board and is reported on the City's financial statements. The City of Brampton's reported Net Book Value covers the full scope of the City's Tangible Capital Assets, including land. It is noted that this differs from the scope of assets considered under the Corporate Asset Management program and the State of the Local Infrastructure.

The Net Book Value is the original acquisition cost less accumulated depreciation, depletion or amortization. It is reported annually in accordance with reporting standards established by the Public Sector Accounting Board (PSAB) of the Canadian Institute of Chartered Accountants. As shown on Table 2-2 below, the City's 2019 Consolidated Financial Statement reported the Net Book Value of the City's Tangible Capital Assets as of December 31, 2020 at \$3.8 billion, inclusive of land. Under the financial accounting approach many assets may be fully depreciated yet remain in use across the City. Therefore, Net Book Value is not the appropriate methodology to be employed for infrastructure renewal planning.

Table 2-2 – City of Brampton Net Book Value (\$000)

FIR Functional Classification	Net Book Value Jan 1, 2020	Net Additions/ Disposals	Net Amortization Expense	Net Book Value Dec 31, 2020
General Government	\$355,609	\$16,106	\$12,529	\$359,187
Protection	\$66,275	\$5,310	\$5,556	\$66,030
Transportation	\$1,894,898	\$115,335	\$78,054	\$1,932,179
Environmental	\$528,994	\$34,890	\$16,978	\$546,906
Health	\$765	\$82	\$96	\$751
Social and Family	\$4,045	\$52	\$338	\$3,760
Recreation and Cultural Services	\$845,593	\$80,799	\$27,014	\$899,377
Planning and Development	\$8,333	\$740	\$1,436	\$7,637
TOTAL	\$3,704,513	\$253,314	\$142,001	\$3,815,826

Note: Categories/information derived from the 2020 Financial Information Return. The net amortization figure tends to vary from year-to-year pending on in-year asset disposals.

Replacement Values are used as the basis to estimate the cost of replacing an asset when it reaches the end of its engineered design life. The total replacement cost of all assets covered within this Report is estimated at \$7.0 billion.

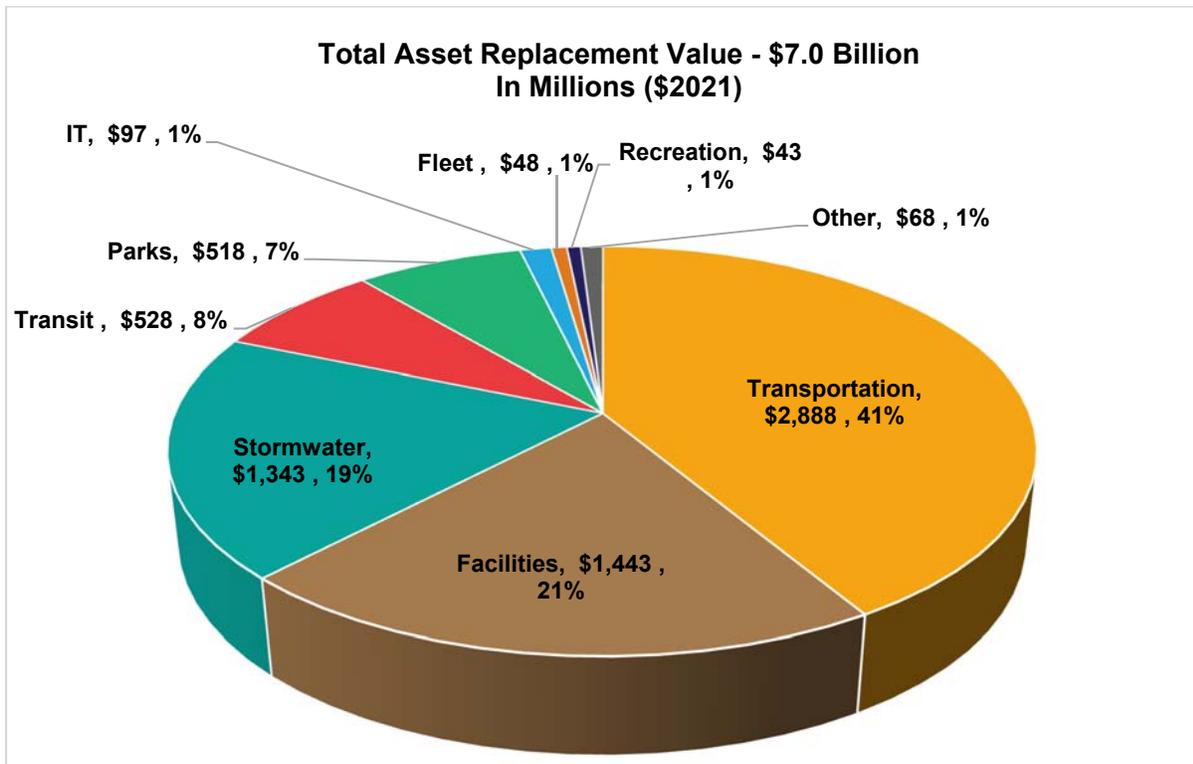
2.3 Replacement Cost Valuation

The City uses three basic methods to estimate replacement costs needed for infrastructure renewal planning:

1. **Local price indices:** This is the most accurate method. The City has collected recent acquisition data demonstrating similar replacement activities.
2. **Published price indices:** Where local indices are not available, the City uses published indices which, although appropriate and standardized, may not be as relevant to City assets as local indices.
3. **Purchasing estimates:** When assets cannot be estimated against either index, the City uses historic cost, asset age and inflationary effects to determine the current replacement value.

The total replacement value of all assets covered under this report is illustrated by service in Figure 2-1 below. Transportation services represents the largest share at 41%, or \$2.89 billion, of the total \$7.0 billion replacement value. The replacement value reported in the below figure is represented under the “Responsibility view” framework.

Figure 2-1 – Total Replacement Value of City Infrastructure = \$7.0 Billion



Note: Other category includes Fire, Library, Culture and Animal Services

Although Figure 2-1 provides a general overview of the replacement value by service area, Table 2-3 to Table 2-14 below provide a more detailed overview of the service area valuations at the sub-asset level and the inventories of assets (as of year-end 2020) that attribute to the total valuation identified. The tables have been adjusted to represent the valuation under both the user view and responsibility view framework. The detailed SOLI Report Cards, by service area, are provided in Appendix B of this

Corporate AMP. All costs are represented in constant \$2021 and for the purposes of this analysis, an inflation factor of 2% was used to adjust the replacement values of assets which were not provided in current dollars.

Table 2-3 – Detailed Asset Inventory Replacement Value – Transportation Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
	1. Assets Managed by Transportation				
	Roadway Network	Roads	3,650	Lane KM	\$1,421,848
		Islands	566,085	Sq. M.	\$49,728
	Structures	Bridges	3,833	Metres	\$348,742
		Culverts	6,065	Metres	\$391,020
		Gateway Features	2,770	Metres	\$12,323
		Noise Walls	12,398	Metres	\$25,291
		Retaining Walls	8,208	Metres	\$18,335
		Fences	34,760	Metres	\$3,891
		Guiderails	31,634	Metres	\$4,903
		Handrails	3,277	Metres	\$526
		Steps	80	Metres	\$1,016
	Walkways & Path	Sidewalks	1,870	KM	\$236,522
		Walkways	14	KM	\$3,986
		Multi-Use Paths	120	KM	\$11,676
	Traffic Services	Street Lighting	43,380	Each	\$265,703
		Traffic Signals	777	Each	\$91,102
		Traffic Signs	46,408	Each	\$1,141
	Subtotal Assets Managed by Transportation - Responsibility View				\$2,887,756
	2. Assets Managed by Other Service Areas				
	Operations Facilities		13	Each	\$81,377
	Fleet	Licensed Fleet	112	Each	\$12,235
		Off-Road Equipment	94	Each	\$5,740
Fleet Equipment		17	Each	\$24	
Software		22	Each	\$2,334	
Subtotal Assets Managed by Other Service Areas				\$101,710	
TOTAL - USER VIEW (1+2)				\$2,989,467	

Note: There are 70 roadway bridges, 114 pedestrian bridges.
 There are 156 culverts.
 There are 290 gateway features.
 There are 44 noise walls and 193 retaining walls.
 There are 568 guiderails and 92 handrails.

Table 2-4 – Detailed Replacement Values – Stormwater Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
	Stormwater Management Ponds		184	Each	\$94,676
	Storm Sewer System	FDC-WTC	252,278	Metres	\$70,603
		Storm Sewers	1,594,134	Metres	\$871,548
		Catchbasins	37,398	Each	\$120,641
		Manholes	21,644	Each	\$156,542
		FDC-WTC Manholes	4,003	Each	\$21,625
	Oil & Grit Separators		92	Units	\$7,086
TOTAL - USER & RESPONSIBILITY VIEW					\$1,342,722

Table 2-5 – Detailed Replacement Values – Facilities

Service	Asset		Inventory	Unit	Replacement Value (\$000)
	1. Assets Used by the Corporation and Managed by Facilities				
	Corporate Facilities		29	Each	\$308,860
	Subtotal Assets Used by the Corporation and Managed by Facilities				\$308,860
	2. Assets Used by Facilities and Managed by Other Service Areas				
	Software		4	Each	\$489
	Subtotal Assets Used by Facilities and Managed by Other Service Areas				\$489
	Subtotal – User View (1+2)				\$309,348
	3. Assets Managed by Facilities and Used by Other Service Areas				
	Animal Services		2	Each	\$9,244
	Cultural Services		1	Each	\$88,504
	Recreation		73	Each	\$573,408
	Parks		16	Each	\$17,753
	Transit		8	Each	\$165,605
	Library		6	Each	\$81,891
	Fire		19	Each	\$115,979
Work Operations		13	Each	\$81,378	
Subtotal Assets Managed by Facilities and Used by Other Service Areas				\$1,133,762	
TOTAL - RESPONSIBILITY VIEW¹ (1+3)					\$1,442,622

Note 1: Does not include software

Table 2-6 – Detailed Replacement Values – Transit Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
Transit 	1. Assets Managed by Transit				
	Licensed Vehicle Assets	Heavy Duty Vehicles	470	Each	\$428,371
		Light Duty Vehicles	28	Each	\$1,289
	Transit Facilities (On Road)	Shelters – Conventional	846	Each	\$7,000
		Shelters – Züm	131	Each	\$29,988
		Shelters – Bike	23	Each	\$246
		Stops	2,293	Each	\$15,379
		Sandalwood Transit Loop	1	Each	\$1,040
	Transit IT Infrastructure	Video Walls	1	Each	\$65
		Smart Bus Systems	1	Each	\$977
		True Credential ID Card	3	Each	\$16
		Application Hardware			
	Specialty Equipment	Conveyance Systems	34	Each	\$6,502
		Comm. Control	4	Each	\$14,723
		Fare Systems	470	Each	\$8,670
		PRESTO	1,459	Each	\$6,451
		Maintenance/Admin Small Equipment	7	Each	\$469
		Signage	3,093	Each	\$3,041
		Fueling	5	Each	\$1,207
		Stock Room	2	Each	\$2,543
Subtotal Assets Managed by Transit - Responsibility View				\$527,979	
2. Assets Managed by Other Service Areas					
Facilities	All Transit Facilities	8	Each	\$165,605	
Transit IT Infrastructure	Software	1	Each	\$1,147	
Subtotal Assets Managed by Other Service Areas				\$166,752	
TOTAL - USER VIEW (1+2)				\$694,732	

Table 2-7 – Detailed Replacement Values – IT Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
Information Technology 	1. Assets Used by Information Technology (IT)				
	End User IT	Computers	2,915	Each	\$4,619
		Monitors	2,843	Each	\$711
		Mobile Phones	1,141	Each	\$406
		Audio Visual Equipment	115	Each	\$188
	Infrastructure Assets	Servers	84	Each	\$2,385
		Storage and Back-Up	29	Each	\$4,212
		Wireless	806	Each	\$1,901
		Cable Plants	286,977	Metres	\$37,103
		Network Infrastructure	671	Each	\$5,991
		Communication System	4,141	Each	\$4,038
	Software		64	Each	\$27,242
	Subtotal Assets Used by IT - User View				\$88,795
	2. Assets Used by Other Service Areas and Managed by IT				
Software		45	Each	\$8,305	
Subtotal Assets Used by Other Service Areas				\$8,305	
TOTAL - RESPONSIBILITY VIEW (1+2)				\$97,100	

Table 2-8 – Detailed Replacement Values – City Support Fleet

Service	Asset		Inventory	Unit	Replacement Value (\$000)
City Support Fleet 	1. Assets Managed by Other Service Areas and Used by City Support Fleet				
	Software		2	Each	\$775
	Subtotal Assets Managed by Other Service Areas and Used by City Support Fleet				\$775
	2. Assets Managed and Used by City Support Fleet				
	Licensed Vehicles		158	Each	\$5,092
	Off-Road Equipment		28	Each	\$1,369
	Fleet Equipment		22	Each	\$42
	Subtotal Assets Managed and Used by the Corporation				\$6,503
	Subtotal Replacement Value - User View (1+2)				\$7,278
	3. Assets Managed by Fleet and Used by Other Service Areas				
	Licensed Vehicles		359	Each	\$27,113
	Off-Road Equipment		256	Each	\$14,121
	Fleet Equipment		101	Each	\$339
	Subtotal Assets Managed by Fleet and Used by Other Service Areas				\$41,573
TOTAL - RESPONSIBILITY VIEW¹ (2+3)				\$48,076	

Note 1: Does not include software

Table 2-9 – Detailed Replacement Values – Fire Services

Service	Asset	Inventory	Unit	Replacement Value (\$000)	
Fire Services 	1. Assets Managed by Fire Services				
	Front Line Licensed Vehicles & Apparatus	21	Each	\$19,263	
	Support Vehicles & Equipment	63	Each	\$6,445	
	Spare Vehicles	31	Each	\$6,918	
	Personal Fire Equipment	1,026	Each	\$3,002	
	Subtotal Assets Managed by Fire Services - Responsibility View				\$35,628
	2. Assets Managed by Other Service Areas				
	Facilities (Moved to Facilities)	19	Each	\$115,979	
	Software (Moved to IT)	5	Each	\$3,103	
	Subtotal Assets Managed by Other Service Areas				\$119,082
TOTAL - USER VIEW (1+2)				\$154,710	

Table 2-10 – Detailed Replacement Values – Parks Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
Parks 	1. Assets Managed by Parks Services				
	Park Assets	Parks Parkland*	676	Ha.	\$68,391
		Natural Heritage Lands	1,653	Ha.	\$0
		Park Furnishing	4,405	Each	\$3,031
		Playgrounds	332	Each	\$85,781
		Shade Structures	310	Each	\$36,340
		Splash Pads/Pools	8	Each	\$3,173
		Fitness Equipment	18	Each	\$678
		Skate Parks	4	Each	\$1,665
		Sports Facilities	1,180	Each	\$120,122
		Pathways	278,379	Metres	\$47,264
		Other Assets	Parking Lots	333	Each
	Trees		249,749	Each	\$129,919
	Cemetery Equipment		76	Each	\$75
	Flower Beds		1,200	Each	\$3,794
	Small Equipment		716		\$2,309
	Subtotal Assets Managed by Park Services - Responsibility View				\$517,574
2. Assets Managed by Other Service Areas					
Facilities (Moved to Facilities)		16	Each	\$17,753	
Fleet (Moved to City Support Fleet)		319	Each	\$17,342	
Software (Moved to IT)		1	Each	\$0	
Subtotal Assets Managed by Other Service Areas				\$35,096	
TOTAL - USER VIEW (1+2)				\$552,669	

*Note: Parks Parkland sub-asset category excludes pathways, sports fields, playgrounds and other sub-asset classes as stated in the table

Table 2-11 – Detailed Replacement Values – Recreation Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
Recreation 	2. Assets Managed by Recreation Services				
	Recreation Equipment	General Equipment	2,198	Each	\$12,745
		Major Equipment	193	Each	\$4,780
		Splash Pads & Pools	8	Each	\$4,692
		Tennis Courts	6	Each	\$612
		Fitness Equipment	572	Each	\$3,245
		Outdoor Fitness Equipment	10	Each	\$153
		Artificial Rinks & Tracks	8	Each	\$1,243
		Skateboard Parks	7	Each	\$4,188
		Furniture	303	Each	\$11,529
	Subtotal Assets Managed by Recreation Services - Responsibility View				\$43,188
	2. Assets Managed by Other Service Areas				
	Facilities (Moved to Facilities)		74	Each	\$573,408
	Fleet (Moved to City Support Fleet)		135	Each	\$4,231
	Software (Moved to IT)		2	Each	\$303
Subtotal Assets Managed by Other Service Areas				\$577,942	
TOTAL - USER VIEW (1+2)				\$621,131	

Table 2-12 – Detailed Replacement Values – Cultural Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
Cultural Services 	1. Assets Managed and Used by Cultural Services				
	Outdoor Equipment		Pooled	N/A	\$1,745
	Specialty Equipment		2,699	Each	\$10,321
	Furniture		424	Each	\$207
	Public Art		25	Each	\$845
	Subtotal Assets Managed by Cultural Services - Responsibility View				\$13,119
	2. Assets Managed by Other Service Areas				
	Facilities (Moved to Facilities)		1	Each	\$88,504
	Fleet (Moved to City Support Fleet)		9	Each	\$655
	Software (Moved to IT)		1	Each	\$0
	Subtotal Assets Managed by Other Service Areas				\$89,159
TOTAL - USER VIEW (1+2)				\$102,279	

Table 2-13 – Detailed Replacement Values – Library Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
Library 	1. Assets Managed by Library Services				
	Furniture and Equipment	Computer Equipment	1,651	Each	\$2,324
		Furniture	3,933	Each	\$3,198
		RFID	98	Each	\$1,469
		Shelving	1,196	Each	\$882
		Telecommunications Equipment	4	Each	\$133
	Media Collections	Electronic Media	Pooled	N/A	\$2,439
		Print Media	Pooled	N/A	\$8,227
	Library Software		19	Each	\$346
	Subtotal Assets Managed by Library Services - Responsibility View				\$19,017
	2. Assets Managed by Other Service Areas				
	Facilities (Moved to Facilities)		6	Each	\$81,891
Fleet (Moved to City Support Fleet)		5	Each	\$171	
Subtotal Assets Managed by Other Service Areas				\$82,062	
TOTAL - USER VIEW (1+2)				\$101,079	

Table 2-14 – Detailed Replacement Values – Animal Services

Service	Asset		Inventory	Unit	Replacement Value (\$000)
Animal Services 	1. Assets Managed by Animal Services				
	Equipment		124	Each	\$275
	Subtotal Assets Managed and Used by Animal Services - Responsibility View				\$275
	2. Assets Managed by Other Service Areas				
	Facilities (Moved to Facilities)		2	Each	\$9,244
	Fleet (Moved to City Support Fleet)		14	Each	\$1,131
	Software (Moved to IT)		1	Each	\$156
Subtotal Managed by Other Service Areas				\$10,531	
TOTAL - USER VIEW (1+2)				\$10,806	

2.4 Asset Condition

The City has adopted an asset condition rating scale that is consistent with the Canadian National Infrastructure Report Card as well as other major organizations and institutions reporting formats. The five-point rating scale, as shown in Table 2-15, was used to assign a condition to all assets. The City aims to continuously improve its assets condition assessment protocols to bring them in line with industry best practices to better reflect reliability and adequacy of the assets to provide service.

Table 2-15 – Five Point Infrastructure Rating Scale

Rank	Condition	Definition
1	Very Good	The infrastructure in the system is in generally good condition, typically new or recently rehabilitated. A few elements show signs of deterioration that require attention.
2	Good	The infrastructure in the system is in good condition; some elements show signs of deterioration that require attention. A few elements show sign of significant deficiencies
3	Fair	The infrastructure in the system or network is in fair condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies.
4	Poor	The infrastructure in the system or network is in poor condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration.
5	Very Poor	The infrastructure in the system or network is in unacceptable condition with widespread signs of advanced deterioration. Many components in the system exhibit signs of imminent failure, which is affecting service.

The following approaches were used to assess the asset condition to the State of the Local Infrastructure:

- Existing Rating System: Facility Condition Index (FCI) - The FCI is a standard facility management benchmark that is used to objectively assess the current condition of a building asset. This 2021 Corporate AMP used the Facility Condition Index (FCI) calculation as the primary method to determine the overall condition of each facility. The facilities Condition grade (very good to very poor ratings) goes hand-in-hand with FCI, and is an industry standard way of evaluating asset condition in a way that is understandable to the public and Council. Building Condition Assessment (BCA) data was analyzed to determine the overall condition of facility assets. Table 2-16 below indicates the Facilities Condition Grading System used in this CAMP.

Table 2-16 – Facilities General Condition Grading System

Grade	Description	Condition (Criteria)
VG	Very Good	Only normal maintenance required (0-2%)
G	Good	Minor Defects only - Minor maintenance required (2%-5%)
F	Fair	Maintenance required to return to accepted Level of Service - Significant maintenance required (5% - 10%)
P	Poor	Requires Renewal - Significant renewal/upgrade required (10-30%)
VP	Very Poor	Over 30% of asset requires replacement

- Existing Rating System: Pavement Condition Index (PCI) – The PCI is an industry standard benchmark used to indicate the general condition of pavement. The method to calculate the PCI is based on a technical inspection of the number and types of distresses in a pavement. Pavement distress includes low ride quality, cracking, bleeding, bumps and sags, depressions, potholes, etc. The result of the analysis is a numerical value between 0 and 10, with 10 representing the best possible condition and 0 representing the worst possible condition.

- *Existing Rating System: Bridge Condition Index (BCI)* – The BCI is a commonly used benchmark that rates the condition of a bridge by evaluating and rating its sub-components, such as foundations, piers, deck structure, sidewalks/curbs/median, abutments or side walls, railings, etc. Each element of the bridge is rated from 1 (the element is on the verge of failure) to 10 (new condition). An overall measure for the bridge is then calculated based on the rating of its elements. All bridges with a span greater than 3 Metres are inspected every two years as per the Provincial mandate.
- *Estimated Rating: Age and Expected Useful Life* – When no formal condition assessment was available, the Age of the asset and its Expected Useful Life (EUL) were used to estimate the current condition. The EUL is the average amount of time in years that an asset is estimated to function when installed new and assuming routine maintenance is practiced.

For most assets, the general deterioration curve presented in Table 2-17 has been applied to derive the condition from the remaining assets useful life and vice versa. However, for some other assets types, such as storm sewers and fleet, a more refined deterioration curve was applied which better represented the lifecycle needs of those assets. The estimated engineered useful life of an asset is the period of time the asset is expected to provide service. The use of an asset ultimately influences the life of the infrastructure and its ability to provide service.

Table 2-17 – Overall City’s Condition Grading Standard Framework

Grade	Condition	% of RUL
Grade 1	Very Good	80-100
Grade 2	Good	60-80
Grade 3	Fair	40-60
Grade 4	Poor	20-40
Grade 5	Very Poor	0-20

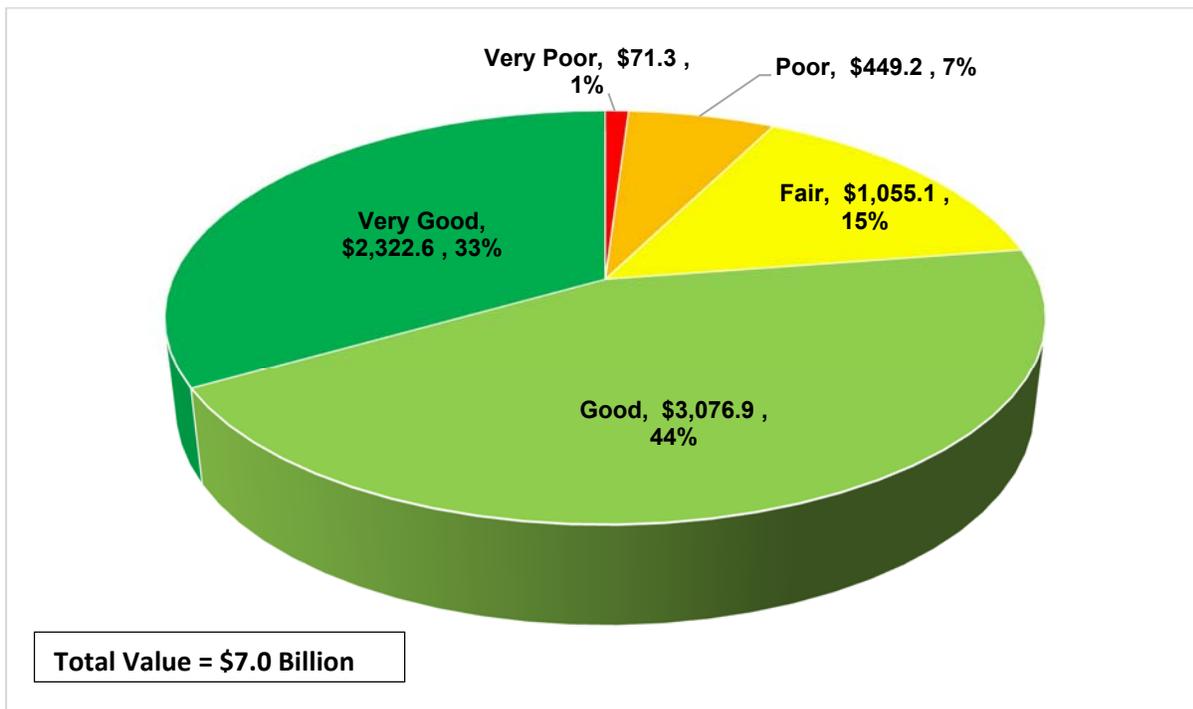
- *Projected Rating: Expert Opinion* – Where formal condition assessment, reliable age data, or the results of the Age & EUL analysis failed to represent actual condition observed by Staff, expert opinion of the City of Brampton service area experts were used to estimate asset condition. For example, all software incorporated into this report is considered to be in very good condition despite the age of the asset. The data would say some software is in poor or very poor condition, relative to the year it may have been acquired, while the expert knows the asset is overall in good condition. The opinion of the expert would override age and useful life in this circumstance. The expert opinion condition was evaluated by comparing Staff experience to the definition as noted above.

Based on the inputs described above, Figure 2-2 below provides a snapshot of the overall condition of municipal infrastructure in the City of Brampton. In general, the assets considered in this report are assessed in “Good” condition with less than 10% of the asset base measuring “Very Poor” to “Poor” indicating some assets in these categories may require more immediate renewal/replacement considerations. One of the attributing factors to the overall “Good” condition rating can largely be

associated to the City’s infrastructure being relatively new in age. Using the service area asset management models developed for this purposes of this CAMP, the data indicates that over 50% of the City’s infrastructure has been emplaced over the last three decades. Transportation, Stormwater, Facilities and Transit constitute the majority of the City’s asset portfolio and most of their assets have over 50% of the asset design life remaining.

The conditions illustrated in the figure below represent the cumulative value of assets categorized in the five condition areas. As Transportation and Stormwater Infrastructure represent about 60% of the City’s total replacement value, the condition of these specific assets provide a greater influence to the overall condition rating identified. Another point to note is the quantum of assets in very poor condition, which represents only about 1% of the total replacement value.

Figure 2-2 – Summary of Brampton’s Asset by Condition (\$ Millions)



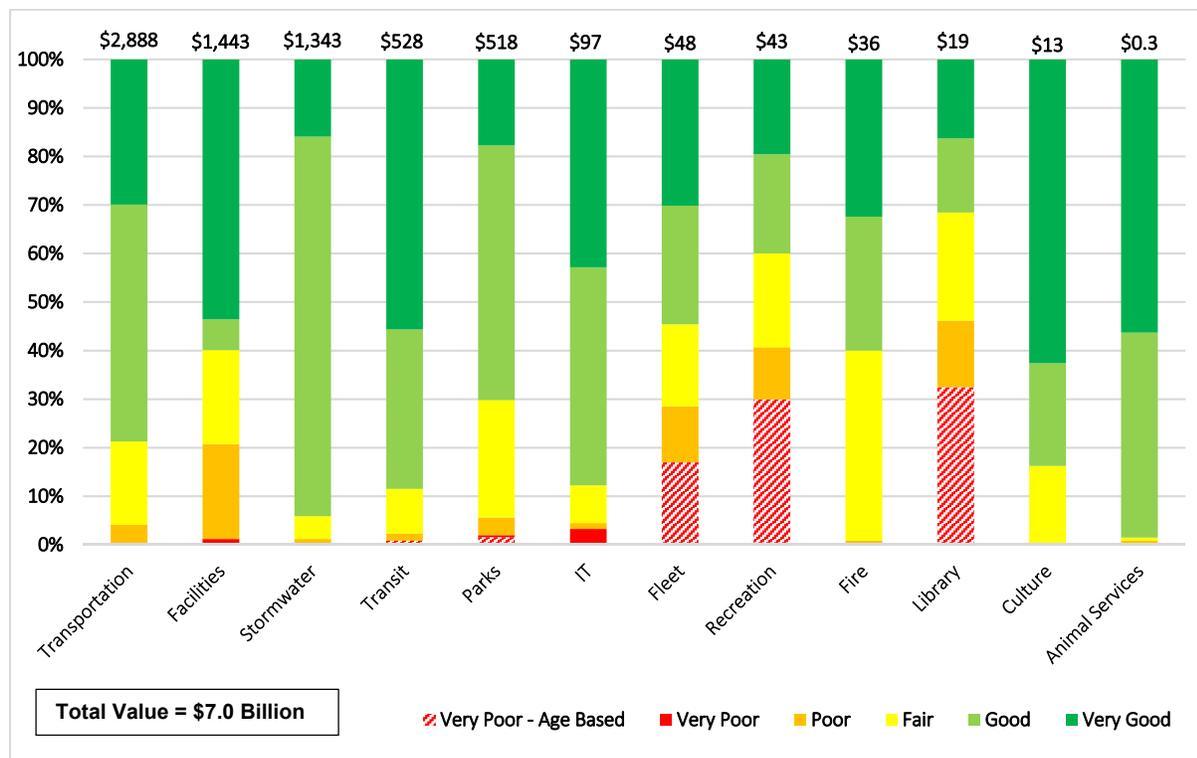
As indicated earlier, the available replacement value and condition assessment information specific to the service areas considered are presented in individual report cards. Each report card presents a comparison of the capital asset inventory and replacement values from the 2019 SOLI Report with the data utilized to formulate this Report card. All costs incorporated within the report cards are represented in constant \$2021. Figure 2-3 below provides a more detailed review of the condition assessment by service area. A few notes for consideration:

- The service areas identified below are under the responsibility view framework which means that all assets related to Facilities, City Support Fleet and IT reside under the respective service area below (i.e. Recreation Service below would not include the recreation centre themselves – the centers would be reported under Facilities).
- Service areas that appear to have a greater proportion of their assets in very poor condition is mostly attributed to assets that the conditions were evaluated based on the “age” of the asset

relative to the useful life. The assets themselves continue to remain in service and functional. In addition, those service areas represent a small share of the City’s overall asset valuation.

- Specifically, for fleet, the evaluation of condition is considered to be “age based”; however, the service area experts do perform some condition-based protocols to evaluate the asset replacement needs. The fleet vehicles and equipment in very poor condition are safe, operational and intended to be addressed in the near future.
- Other service areas where there are assets in very poor condition based on actual condition assessments are being reviewed and addressed through the City’s regular capital budget process.
- Please note, the service area report cards in Appendix B only illustrate the overall asset conditions and does not differentiate very poor assets between age and condition.

Figure 2-3 – Summary of Asset Condition by Service Area (\$ Millions)



Note: Values identified at the top of each bar represents the replacement value of infrastructure under the “Responsibility View” for each service area (in Millions). The red-hashed sections reflect age based Very Poor assets and does not truly reflect the condition of the asset – as the City matures its practices, progress is expected in better reporting of these assets.

Table 2-18 below provides qualifications, by service area, of the assets within each that are in Poor or Very Poor Condition.

Table 2-18 – Qualification of Very Poor Assets

Service Area	Description
Library & Recreation (\$19M)	<ul style="list-style-type: none"> Majority related to furniture/equipment and media collections (for Library) Age based condition assessments and categorized in Very Poor by virtue of design life
Facilities (\$17M)	<ul style="list-style-type: none"> 12 Recreation facilities and 3 Park facilities in Very Poor condition Conditions developed using an FCI based calculation BDC identified facilities to be addressed in upcoming budgets
Parks (\$10M)	<ul style="list-style-type: none"> Largely parkland related assets (i.e. walls, curbs and fences) with some trees and cemetery equipment making up a smaller portion Mostly age based assessments with limited data on actual asset upgrades
Transportation (\$8M)	<ul style="list-style-type: none"> Only 9 lane KM of roadway, some fences, walkways and traffic services Mostly condition based assessments Very Poor assets represent a small portion of the total base
Fleet (\$8M)	<ul style="list-style-type: none"> Based on vehicle useful life, high mileage and engine hours Maintained in good and safe working order with increased maintenance costs
Transit (\$4M)	<ul style="list-style-type: none"> Largely related to fleet support vehicles, communication control equipment where conditions are based on age Most Very Poor assets are addressed through the budget
IT (\$3M)	<ul style="list-style-type: none"> Related to end-user information technology and infrastructure assets Condition based Frequent replacements due to short asset UL and to keep pace with emerging technology
Stormwater (\$1M)	<ul style="list-style-type: none"> Related to storm sewer network and represents only a very small share of total stormwater assets Age based assessment

Note: Numbers may not add exactly to the very poor total due to rounding

2.5 Data Confidence

To aid interpretation of the information presented, a data confidence rating is assigned to the service area condition summarized in the State of the Local Infrastructure Report Cards of this Corporate AMP (Appendix B). The data confidence rating scales outlined in Table 2-15 define the various measures used to qualify the accuracy and reliability of the information used to develop this report, specifically as it relates to condition charts which then relates to the projection of investment needs for asset repair and replacement. It is an overall goal to improve the reliability and accuracy of all information through future reporting. While the City should move to a risk-based approach over time, age-based assessments may still be appropriate for some assets. The current City-wide Data Confidence is assessed as Low-Medium (Age and Condition Based).

For this SOLI report, the following condition assessments methodologies were implemented:

- **Facilities** – Facility Condition Index
- **Roads** – Pavement Condition Index
- **Bridges** – Bridge Condition Index
- **Software and Some Other IT Assets** – Adequate Functionality to Provide Service
- **All other assets** – Age and Condition Based Assessment

Based on a weighted replacement value average of all services and their condition assessments, about 76% of assets are assigned a data confidence rating based on condition. This represents an increase of 7% from the 2019 SOLI Report in which 69% of the assets ratings were based on condition. The scale below provides a visual representation of the City’s reliability and accuracy for condition data based on the criteria listed in Table 2-17. As the City further moves towards a condition and risk based approach the reliability and accuracy of data will continue to increase. Table 2-19 below provides a detailed outline of how each service category’s assets were assessed. Please note the assets classified to be based on condition are in many instances subject to the input received from individual service area experts.



Table 2-19 – Condition Assessment Approach

Service Area ⁽¹⁾	% of Asset Portfolio ⁽²⁾	Age	Condition	Risk
Transportation	41.40%	✓	✓	
Roads	20.38%		✓	
Islands (Part Of Roadway Network)	0.71%	✓		
Roadway Bridges & Pedestrian Bridges	5.00%		✓	
Roadway Culverts	5.60%		✓	
Gateway Features	0.18%		✓	
Noise Walls	0.36%		✓	
Retaining Walls on Walkways	0.26%		✓	
Fences	0.06%		✓	
Guiderails	0.07%		✓	
Handrails	0.01%		✓	
Steps	0.01%		✓	
Sidewalks	3.39%		✓	
Walkways	0.06%		✓	
Multi-Use Paths	0.17%		✓	
Street Lighting	3.81%	✓	✓	
Traffic Signals	1.31%	✓		
Traffic Signs	0.02%		✓	
Stormwater	19.25%	✓	✓	
Stormwater Management Ponds	1.36%		✓	
FDC-WTC	1.01%	✓		
Storm Sewers	12.49%	✓		
Catchbasins	1.73%	✓		
Manholes	2.24%	✓		
FDC-WTC Manholes	0.31%	✓		
Oil & Grit Separators	0.10%	✓		
Facilities	20.68%		✓	
Facilities	20.68%		✓	

Service Area ⁽¹⁾	% of Asset Portfolio ⁽²⁾	Age	Condition	Risk
Transit	7.57%	✓	✓	
<i>Heavy Duty Vehicles (Buses)</i>	6.14%		✓	
<i>Fleet Support</i>	0.02%	✓		
<i>Shelters – Conventional</i>	0.10%		✓	
<i>Shelters – Zum</i>	0.43%		✓	
<i>Shelters – Bike</i>	0.004%		✓	
<i>Stops</i>	0.22%	✓		
<i>Sandalwood Transit Loop</i>	0.01%	✓		
<i>Video Walls</i>	0.001%	✓		
<i>Smart Bus Systems</i>	0.01%	✓		
<i>True Credential Identification Card Application Hardware</i>	0.0002%	✓		
<i>Conveyance Systems</i>	0.09%	✓		
<i>Communication Control</i>	0.21%	✓		
<i>Fare Systems</i>	0.12%	✓		
<i>Presto</i>	0.09%	✓		
<i>Maintenance/Admin Small Equipment</i>	0.01%		✓	
<i>Signage</i>	0.04%	✓		
<i>Fueling</i>	0.02%		✓	
<i>Stock Room</i>	0.04%	✓		
Information Technology	1.39%		✓	
<i>Computers</i>	0.07%		✓	
<i>Monitors</i>	0.01%		✓	
<i>Mobile Phones</i>	0.01%		✓	
<i>Audio Visual Equipment</i>	0.003%		✓	
<i>Servers</i>	0.03%		✓	
<i>Storage And Back-Up</i>	0.06%		✓	
<i>Wireless</i>	0.03%		✓	
<i>Cable Plants</i>	0.53%		✓	
<i>Network Infrastructure</i>	0.09%		✓	
<i>Communication System</i>	0.06%		✓	
<i>Software</i>	0.51%		✓	
City Support Fleet	0.69%	✓		
<i>Licensed Fleet</i>	0.46%	✓		
<i>Off-Road Vehicles</i>	0.22%	✓		
<i>Fleet Equipment</i>	0.01%	✓		
Fire	0.51%	✓	✓	
<i>Front Line Licensed Vehicles & Apparatus</i>	0.28%		✓	
<i>Support Vehicles & Equipment</i>	0.09%		✓	
<i>Spare Vehicles</i>	0.10%		✓	
<i>SCBA</i>	0.02%		✓	
<i>Bunker Gear</i>	0.02%	✓		
Parks	7.42%	✓	✓	
<i>Parking Lots</i>	0.22%		✓	

Service Area ⁽¹⁾	% of Asset Portfolio ⁽²⁾	Age	Condition	Risk
<i>Small Engine Equipment</i>	0.03%	✓		
<i>Parks</i>	0.98%	✓		
<i>Natural Heritage Lands</i>	0.00%	✓		
<i>Park Furnishing</i>	0.04%		✓	
<i>Playgrounds</i>	1.23%		✓	
<i>Shade Structures</i>	0.52%		✓	
<i>Splash Pads & Outdoor Pools</i>	0.05%		✓	
<i>Fitness Equipment</i>	0.01%		✓	
<i>Skate Parks</i>	0.02%		✓	
<i>Sports Facilities</i>	1.72%	✓	✓	
<i>Pathways</i>	0.68%	✓		
<i>Trees</i>	1.86%		✓	
<i>Flower Beds</i>	0.05%	✓		
<i>Cemetery Equipment</i>	0.001%		✓	
Recreation	0.62%	✓	✓	
<i>General Equipment</i>	0.18%	✓		
<i>Major Equipment</i>	0.07%	✓		
<i>Splash Pads & Pools</i>	0.07%		✓	
<i>Tennis Courts</i>	0.01%	✓		
<i>Fitness Equipment</i>	0.05%		✓	
<i>Outdoor Fitness Equipment</i>	0.002%		✓	
<i>Skateboard Parks</i>	0.06%		✓	
<i>Artificial Rinks & Tracks</i>	0.02%		✓	
<i>Furniture</i>	0.17%	✓		
Cultural Services	0.19%	✓	✓	
<i>Outdoor Equipment</i>	0.03%	✓		
<i>Specialty Equipment</i>	0.15%		✓	
<i>Furniture</i>	0.003%		✓	
<i>Public Art</i>	0.01%		✓	
Library	0.27%	✓	✓	
<i>Computer Equipment</i>	0.03%	✓		
<i>Furniture</i>	0.05%	✓		
<i>RFID</i>	0.02%	✓		
<i>Shelving</i>	0.01%	✓		
<i>Telecommunications Equipment</i>	0.002%	✓		
<i>Electronic Media</i>	0.03%	✓		
<i>Print Media</i>	0.12%	✓		
<i>Library Software</i>	0.005%		✓	
Animal Services	0.004%		✓	
<i>Equipment</i>	0.004%		✓	

Note 1: Services are structured under the responsibility view (see section 2.2 for more details)

Note 2: Numbers may not add precisely due to rounding

3 Levels of Service

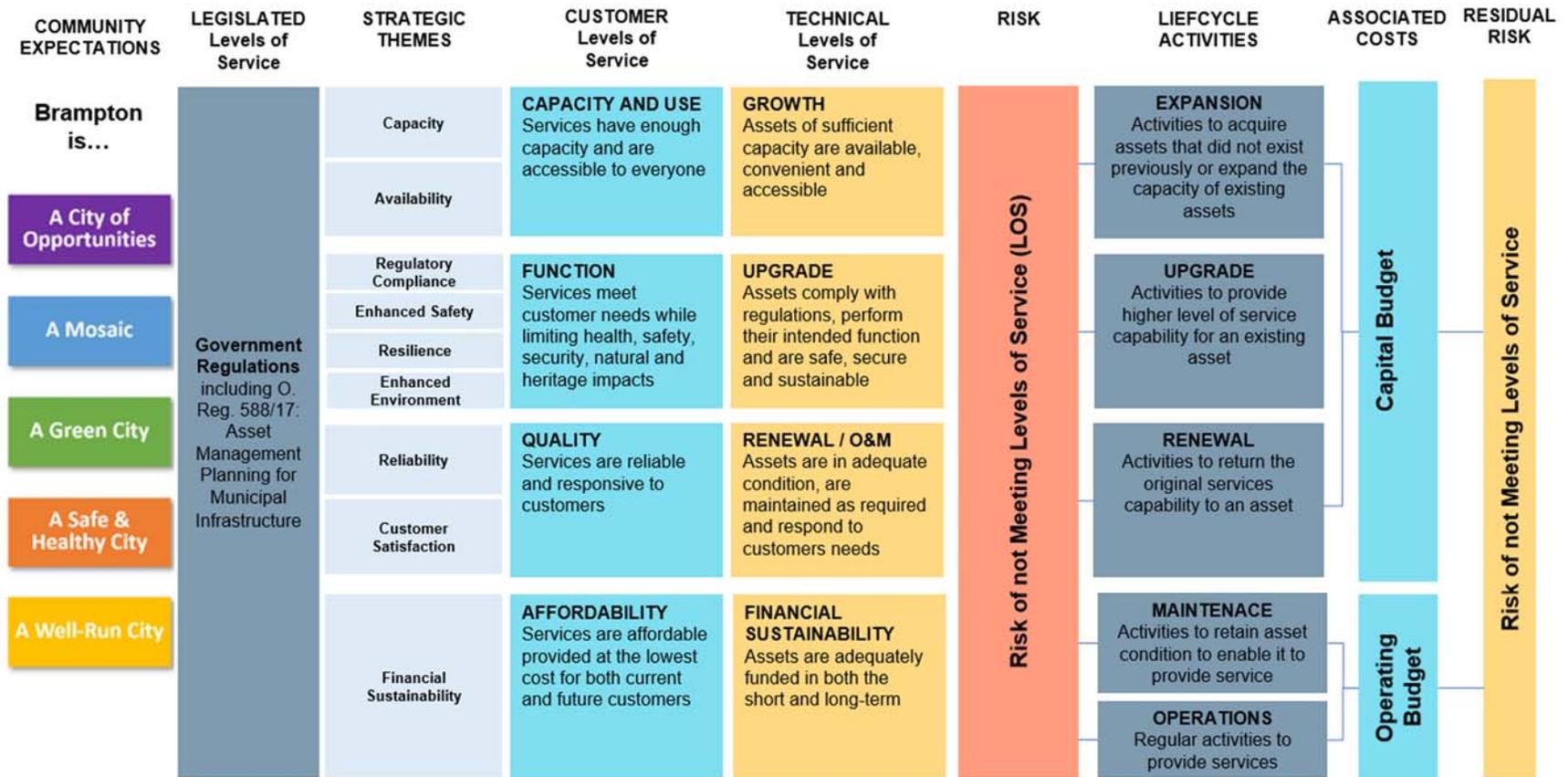
The City of Brampton strives to provide the best possible quality of service for its residents, while at the same time ensuring that services continue to be affordable. This balance ensures that the City continues to be an attractive place to live. As the City's asset management program has evolved, it has become increasingly clear that the City will need a more advanced level of understanding of the extent of the services provided to measure both effectiveness and affordability. Furthermore, the legislative environment in Ontario pertaining to asset management has undergone changes, in particular O. Reg. 588/17 requires municipalities to develop and document their levels of service. More specifically for core assets, the regulation prescribes explicit customer and technical levels of service metrics. While the same is required for non-core assets, the measures to track are at the discretion of the community. The City strives to develop several key level of service measures for its various service areas. This will allow the City to track the current levels of service, a crucial step to help inform the decision making process. With this context, this section outlines several key concepts:

- Establishing the strategic themes and key principles of the City's level of service framework;
- Establishing the City's current levels of service and developing a framework to track the City's performance grades in accordance with *O. Reg. 588/17*;
- Developing a Level of Service Tracker for internal use (see Appendix C);
- Laying the foundation to develop proposed levels of service in accordance with *O. Reg. 588/17*;
- Establishing a link between the levels of service, risk and associated costs; and
- Develop a set of key recommendations to continue developing the City's level of service framework.

3.1 City of Brampton Level of Service Framework

When the City developed its 2016 Corporate Asset Management Plan, there was a concentrated effort to develop a framework that would help guide the City in establishing the tools needed to begin this process. Since that time, the City has worked to refine the framework so it can be utilized as part of this Corporate AMP. Figure 3-1 summarizes the City's Level of Service framework which is being used as the basis for measuring performance moving forward.

Figure 3-1 – City of Brampton Level of Service Framework



The framework outlined in Figure 3-1 includes several key elements:

- **Corporate Levels of Service** – considered to be the overarching principles to ensure that levels of service are in alignment with the City’s strategic themes and resulting customer and technical levels of service.
- **Legislated Levels of Service** - a specific category is included to identify levels of service that are required by government regulation. For the City, O. Reg. 588/17 requires specific levels of service for core assets to be tracked. The City has developed these levels of service which are included as part of Appendix C. Please note that core services such as water and wastewater services which the City of Brampton is not responsible for providing, is not included in this study.
- **Strategic Themes** - the City aims to capture key strategic themes that describe the services provided from an asset level perspective with reference to asset capacity, function, quality and affordability.
- **Customer Levels of Service**² - measures how the community receives the service and whether the organization is providing community value. Customer levels of service are typically grouped into the four service attribute categories (or strategic themes) from Table 3-1.
- **Technical Levels of Service** - relates to the allocation of resources to service activities that the organization undertakes to best achieve the desired community outcomes and demonstrate effective organizational performance. Technical levels of service are also typically grouped into four lifecycle activity categories: Growth, Upgrade, Renewal / O&M and Financial Sustainability. Furthermore, a key relationship between technical and customer levels of service is the alignment of the strategic themes from Table 3-1 with the lifecycle activities. This relationship is also shown in Figure 3-1.
- **Risk** – Identifying the risks associated with providing specific levels of service is an important element of the framework. Management of risks associated to not meeting the desired levels of service is addressed through the Risk Management Strategy (see Section 4.2).
- **Lifecycle Activities** - the main objective of the level of service framework is to identify the actions needed to achieve the level of service the City chooses to provide. Therefore, the framework includes identification of the lifecycle activities that are associated to each level of service.
- **Associated Costs** - following the identification of lifecycle activities, the costs to provide the levels of service should be identified. This component is identified for the framework to be utilized in the decision-making process.
- **Residual Risk** – by undertaking lifecycle activities needed to maintain desired levels of service not all risk is necessarily managed or eliminated. Residual risk refers to any remaining risk after efforts to identify and treat some or all types of risks have been made.

² Note that O. Reg. 588/17 requires specific qualitative descriptions referred to as Community Levels of Service in the regulation. These are required for the core assets of roads, bridges and culverts and stormwater.

3.2 Current Levels of Service

At this stage the City has developed the information related to current levels of service to meet the requirements of O. Reg. 588/17 to 2024 which includes levels of service measures associated to core and non-core services for all service areas.

Appendix C includes the detailed information on current levels of service for all service areas. The levels of service have been developed in relation to strategic themes, the legislated levels of service and customer/technical levels of service. Further to this, City Staff held several consultation sessions with service area representatives in the summer/fall of 2021 to develop appropriate measures and a framework for future use. These levels of service tables were developed to align with several key principles that include:

- LOS measures are relevant to each of the specific service areas;
- LOS are feasible to track and the data to inform the technical measures are readily available; and
- LOS is a key public engagement component, and therefore, the City will need to seek the public's input on LOS in the future. This consultation will ensure that the LOS will be utilized to inform decisions on service provision in the coming years.

The tracking and monitoring of the levels of service is a “living” process and an internal tracking tool was developed in Excel that includes all the information needed to calculate the current levels of service and monitor the trends moving forward.

As part of this “living” process, improvements are expected to be made to the LOS tracker over the coming years, particularly through development of the service area DAMPs. A grading scale to assess the performance of the current levels of service is expected to be implemented. The performance grading scale is presented in Table 3-1. It outlines a scale from Very Good to Very Poor, where Very Good indicates that a particular service is meeting all expectations. The scale is consistent in capturing and assessing the City's customer levels of service for each of the strategic themes.

Table 3-1 – Customer Level of Service Performance Scale

Description	Capacity & Use		Function				Quality		Financial Affordability
	Capacity	Availability	Regulatory Compliance	Enhanced Safety	Resilience	Enhanced Environment	Reliability	Customer Satisfaction	Financial Sustainability
Very Good Fit for the future	Service and assets provide sufficient current and near future capacity, convenience and access to the community	Service and assets are available at all times and enables services to be provided efficiently, including current and near future needs	Service and assets are in compliance with applicable legislation, including known upcoming legislative changes	Service and assets are safe for all current and potential near future users	Service and assets are resilient to any current and potential near future disruptions caused by external hazards	Service and assets contribute to an enhanced environment and support a sustainable City, both now and into the near future	Assets are in very good state of repair : physically sound, new / like new (80 to 100% remaining life)	Customers are kept very well informed and are very satisfied	Service and assets are affordable to all customers and financially sustainable currently and in the near future
Good Adequate for now	Service and assets provide sufficient current capacity, convenience and access to the community	Service and assets are available at all times and enable services to be provided efficiently	Service and assets are in compliance with applicable current legislation	Service and assets are safe for all current users	Service and assets are resilient to any current disruptions caused by external hazards	Service and assets contribute to an enhanced environment and support a sustainable City, for now	Assets are in good state of repair : physically sound with minimal deterioration, early to mid-range of expected life (60 to 79% remaining life)	Customers are kept well informed and are quite satisfied	Service and assets are sufficiently affordable and financially sustainable currently and in the near future
Fair Requires attention	Service and assets provide lower than intended capacity, convenience and access to the community	Service and assets are mostly available to enable services to be provided efficiently	Service and assets are mostly in compliance with applicable legislation	Ⓢ Service and assets are mostly safe for all users	Service and assets are mostly resilient to any disruptions caused by external hazards	Service and assets mostly contribute to an enhanced environment and support a sustainable City	Assets are in fair state of repair : medium deterioration, mid- to later stage of expected life (40 to 59% remaining life)	Customers are kept mostly informed and are mostly satisfied	Service and assets are mostly affordable and financially sustainable currently and in the near future
Poor At risk of affecting service	Service and assets provide much lower than intended capacity, convenience and access to the community	Service and assets are somewhat available to enable services to be provided efficiently	Service and assets are somewhat in compliance with applicable legislation	Service and assets are somewhat safe for all users	Service and assets are somewhat resilient to any disruptions caused by external hazards	Service and assets somewhat contribute to an enhanced environment and support a sustainable City	Assets are in poor state of repair : significant deterioration, approaching end of expected life (20 to 39% remaining life)	Customers are kept somewhat informed and are somewhat satisfied	Service and assets are somewhat affordable and financially sustainable currently and in the near future
Very Poor Unsatisfactory for sustained service	Service and assets do not provide intended capacity, convenience and access to the community	Service and assets are not available to enable services to be provided efficiently	Service and assets are not in compliance with applicable legislation	Service and assets are not safe for all users	Service and assets are not resilient to any disruptions caused by external hazards	Service and assets do not contribute to an enhanced environment and support a sustainable City	Assets are in very poor state of repair : unsound/ failing, past end of expected life (< 20% Remaining Life)	Customers are not kept informed and are not satisfied	Service and assets are not affordable and financially sustainable currently and in the near future

Recognizing the importance of assessing the performance of the customer levels of service, the City also intends to document the level of confidence in the assessment. Confidence in the grading based on Table 3-1 can be influenced by a number of factors including data availability, frequency of updates and engaging the correct stakeholders. Not considering these factors can result in misleading information when measuring the performance of the customer levels of service. Table 3-2 includes a confidence scale which indicates the level of staff confidence on the information used to develop the customer level of service grading. The confidence scale provides a suggested framework to organize the qualitative exercise of assessing the customer levels of service, which assumes qualitative accuracy ranges based on adapting similar confidence scales from the Institute of Asset Management (IAM). It is intended that the confidence grading scale will be revisited and revised as needed through the DAMPs.

Table 3-2 – Customer Levels of Service Confidence Grade

Grade/Scale	Description
Very High	Performance based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate $\pm 2\%$
High	Performance based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate $\pm 10\%$
Moderate	Performance based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade Very High or High data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated $\pm 25\%$
Low	Performance is based on confirmed verbal reports by knowledgeable staff. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy $\pm 30\%$
Very Low	Performance is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy $\pm 40\%$

Source: Adapted from IAM confidence scale.

3.3 Proposed Levels of Service

O. Reg. 588/17 requires municipalities to define its proposed levels of service by July 1st, 2025 which is intended to provide the City with a measurable future target state for the services it provides. The current levels of service developed in Appendix C lay the foundation for this work. In simple terms, for every level of service that the City measures, a corresponding set of key proposed level of service measures should be developed. In developing the proposed levels of service the City will need to undertake consultation with Council, the public and service area representatives to ensure that the proposed levels of service are in alignment with the expectations of all these stakeholders.

It also important to recognize that once proposed levels of service are set and approved by the City, achieving the proposed levels of service may not occur for several years, particularly for those levels of service that would require additional level of service changes to achieve. Moving towards the proposed levels of service will require specific interim planning and targets to ensure that the resources and work needed to achieve the proposed levels of service is sustainable and affordable. Finally, continued monitoring would need to occur to ensure that proposed planning to meet proposed levels of service continues to be achievable and sustainable.

3.4 Key Recommendations

As the City continues to improve the level of service framework, additional refinements will be required to inform the decision-making process. The levels of service that have been defined in Appendix C lay the foundation for this work therefore the City is well positioned to undertake continuous improvements of the data. Table 3-3 provides the key recommendations to undertake these improvements with the expectation that it would be utilized for each service area upon development of each of the DAMPs and in consultation with service area representatives.

Table 3-3 – Recommendations for Current Level of Service Tracking

<i>Recommendation</i>	<i>Description</i>
Develop the customer level of service analysis by grading customer levels of service based on their perceived performance	<ul style="list-style-type: none"> • The performance of each customer levels of service will be identified in accordance with Table 3-1 and Table 3-2 • Identify the appropriate grading through each DAMP and in consultation with service area representatives.
Develop level of service targets	<ul style="list-style-type: none"> • Establish targets for levels of service to measure current performance relative to targets and consideration for customer expectations. • Analyzing the differences between current and target performance will help in assessing the risk, identifying appropriate measures and creating priorities in a limited budget environment.
Explore additional technical level of service measures that are needed to help inform decision making at the departmental level	<ul style="list-style-type: none"> • Through each DAMP develop the additional technical level of service measures that are considered important (the data objectives in AIMS associated to the technical levels of service are an important guide in achieving this task).
Ensure that strategic themes are captured in the City's level of service tracker	<ul style="list-style-type: none"> • Some level of service measures will need to be developed further through the DAMPs as better information becomes available. • Moving forward, ensure that the strategic themes continue to be represented by the identified level of service measures where applicable.
Identify the lifecycle activities associated to each customer/technical level of service	<ul style="list-style-type: none"> • Identify and document the lifecycle activities needed to maintain current levels of service. Currently this is understood at the corporate level. • This objective would need to be undertaken through each of the DAMPs and in consultation with service area representatives.
Identify the costs associated with providing the current level of service	<ul style="list-style-type: none"> • Identify the costs associated to provide current levels of service for each level of service identified. • This objective would need to be undertaken through each of the DAMPs and in consultation with service area representatives.

Note: More detailed data related plans associated to continuous improvements to the City's level of service framework is included in Section 4.5: Asset Information Management Strategy.

As O. Reg. 588/17 requires municipalities to define its proposed levels of service by July 1st, 2025 the City will need to undertake the exercise of defining the proposed levels for all service areas. The foundational work on the current levels of service is underway and is expected to be improved upon to help inform proposed level of service development. Table 3-4 includes some key recommendations related to the proposed levels of service.

Table 3-4 – Recommendations for Proposed Levels of Service

<i>Recommendation</i>	<i>Description</i>
Establish proposed levels of service	<ul style="list-style-type: none"> • Develop proposed levels of service for key levels of service measures identified by the City which will be used to support service area initiatives. • Proposed levels of service will need to be developed in consultation with service area representatives and Council. • Establish targets for levels of service to measure current performance relative to targets. • Continue to track levels of service on an annual basis in order to assess performance relative to proposed levels of service. • Identify risks associated to not meeting the proposed levels of service. This process should be undertaken as part of the Risk Management Strategy. Identification of risks will help inform the lifecycle activities and costs needed to meet proposed levels of service.
Identify the lifecycle activities required to meet the proposed levels of service in a sustainable manner	<ul style="list-style-type: none"> • Identify the lifecycle activities (if any) needed to maintain or achieve the proposed level of service. • This objective would need to be undertaken through each of the DAMPs and in consultation with service area representatives.
Identify the costs needed to meet the proposed levels of service in a sustainable manner	<ul style="list-style-type: none"> • Identify the costs required (if any) to maintain or achieve the proposed levels of service. • This objective would need to be undertaken through each of the DAMPs and in consultation with service area representatives.

4 Asset Management Strategy

As part of this Corporate AMP, the City has compiled a detailed Asset Management Strategy that focuses on the following areas as they pertain to asset management:

1. Demand Management
2. Risk Management
3. Climate Change Integration
4. Governance
5. Asset Information Management
6. Communication
7. Lifecycle Management

The sections below detail the various aspects of these components of the asset management strategy laid out as part of this report. Each one plays a key role in setting targets and recommendations going forward to ensure the full realization of the asset management practices put forth in this report.

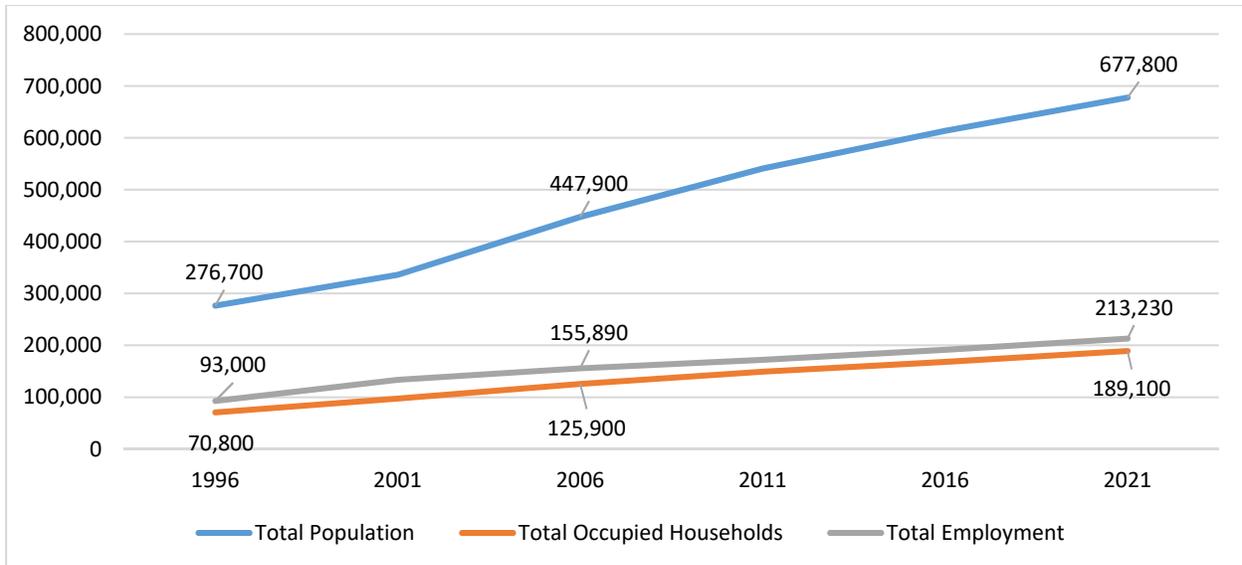
4.1 Demand Management

Demand management considered in this corporate asset management plan relates to the understanding of how future changes in the City will impact the demand for municipal services. This section of the report is intended to identify the factors that may influence the demand for, and level of service from, the City's asset portfolio. The demand placed on City services would evolve as the priorities of the community changes, technologies emerge and existing services are improved. This section of the report does not identify all the costs the City may absorb to address future increases in demand, although, it is expected that the departmental asset management plans review the cost elements as those studies are prepared. This section outlines the framework for consideration and provides an overview of:

- Demand Drivers and Forecast;
- Demand Management Impact on Level of Services; and
- Demand Management through Lifecycle Activities.

The population of the City of Brampton is about 678,000 and is the fourth largest City in Ontario and ninth largest in Canada. Since 2006, the City's population has increased by nearly 230,000 residents and 60,000 employees. This growth has propelled the acquisition of several new assets and expansion of City services to ensure services levels are maintained and the needs of both existing and new residents are met. Figure 4-1 below tracks population, households and employment in the City since 1996.

Figure 4-1 – Historical Population, Occupied Households and Employment (1996 – 2021)



Source: Statistics Canada and Hemson Consulting 2022. 2021 population and household figures are based on 2021 Census while employment is estimated. Population adjusted for census net undercoverage estimated at 3.25%

Despite the rapid growth which has occurred over the last number of years, the City is expected to continue to see a fairly significant amount of development over the long-term. This level of growth will continue to require additional services, such as improved access to all modes of transportation to ensure that quality of life is maintained for the existing and new residents while also ensuring new facilities, parks and other services are expanded to keep pace with the increased demand.

4.1.1 Demand Drivers and Forecast

As indicated in the previous section, the City of Brampton has experienced significant growth over the last few decades and the demand placed on City services is expected to continue to increase with growth. Overall, the demand pressures identified in this section will require the City to review and manage existing levels of service while evaluating the need for new services to expand the servicing capacity to meet the demand pressures or rectify deficiencies in the City’s asset portfolio. The demand drivers are categorized between “Demographic and Planning Elements” and “Other Externalities Impacting Service”.

Demographic and Planning Elements

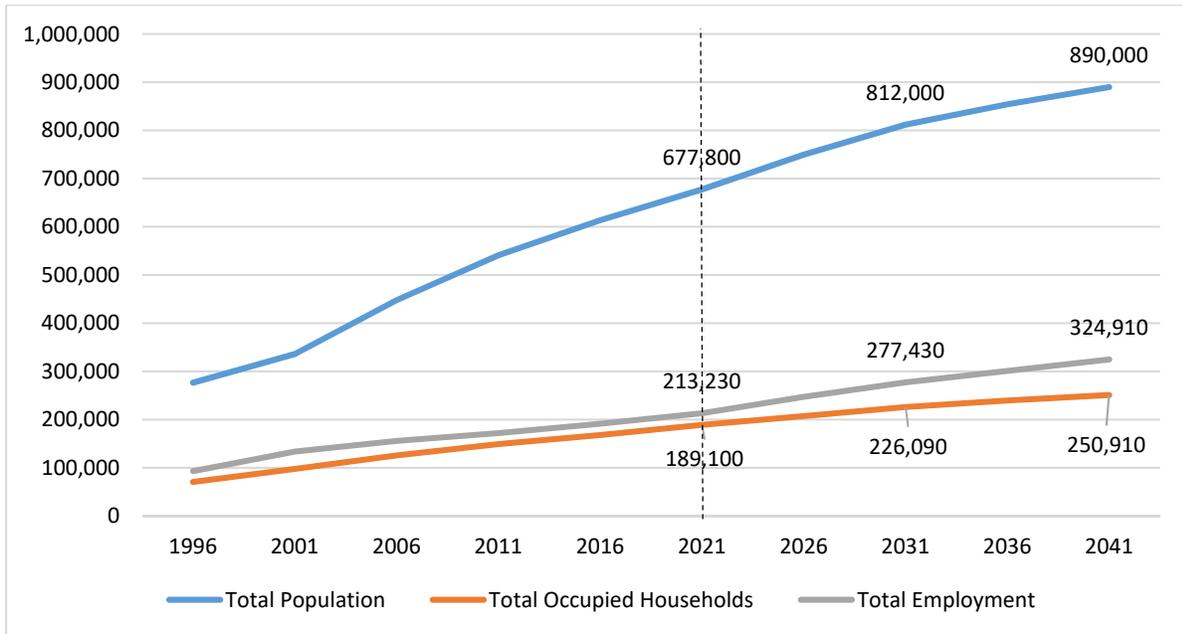
Growth: The total population of the City of Brampton is estimated at approximately 678,000 (2021 Census but adjusted to account for the undercoverage) with a fairly substantial amount of residential and non-residential growth slated over the long-term. It is projected that the City’s population will reach 890,000 and 325,000 employees by 2041³. The projected increase in residential growth supplemented by continued economic development will continue to place increased demand on municipal infrastructure which the City of Brampton will need to plan accordingly for.

The City has always used development charges to the full extent allowed for under the provisions of the *Development Charges Act* (DCA) to ensure growth pays for growth. Further to this, the way in which the

³ This represents the figures approved outlined in Amendment 2 to the Growth Plan for the Greater Golden Horseshoe, May 2017

City grows to meet density and intensification targets may also place other/different demands on services which will need to be considered as development evolves. The Province of Ontario released *Amendment 1 to A Place to Grow: Growth Plan for the Greater Golden Horseshoe* that includes changes to the total population and employment forecasts for the Region of Peel, the planning horizon (from 2041 to 2051), and other policies. The Region is currently in the process of updating the Official Plan to correspond to these changes in which the growth allocated to the City of Brampton and the level of intensification required to meet these targets will also be reviewed in this context. At the time of writing this CAMP, the City of Brampton's 2051 growth projections have not been formally approved by City Council and therefore the approved forecasts as outlined in the City's 2019 DC Background Study which correspond to the Amendment 2 to the *Growth Plan for the Greater Golden Horseshoe*, May 2017 are referenced in the figure below.

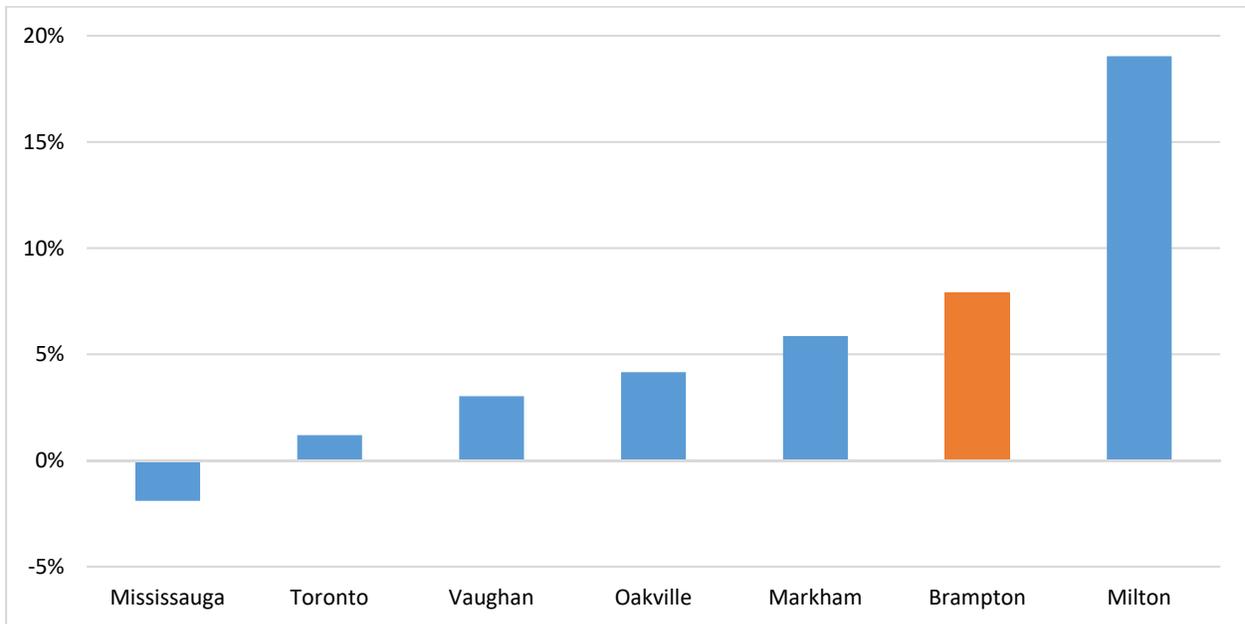
Figure 4-2– Forecast Population, Occupied Households and Employment (1996 – 2041)



Source: Statistics Canada and Hemson Consulting 2022.

Increased Net Migration: Brampton has experienced positive net migration for all age groups between 2011 and 2016. As seen in the chart titled “Percentage of Net Migration Relative to Population” below, Brampton has one of the highest migration rates of the municipalities surveyed. As more people are moving into Brampton rather than moving out, the City will likely continue to experience an increase in demand for services.

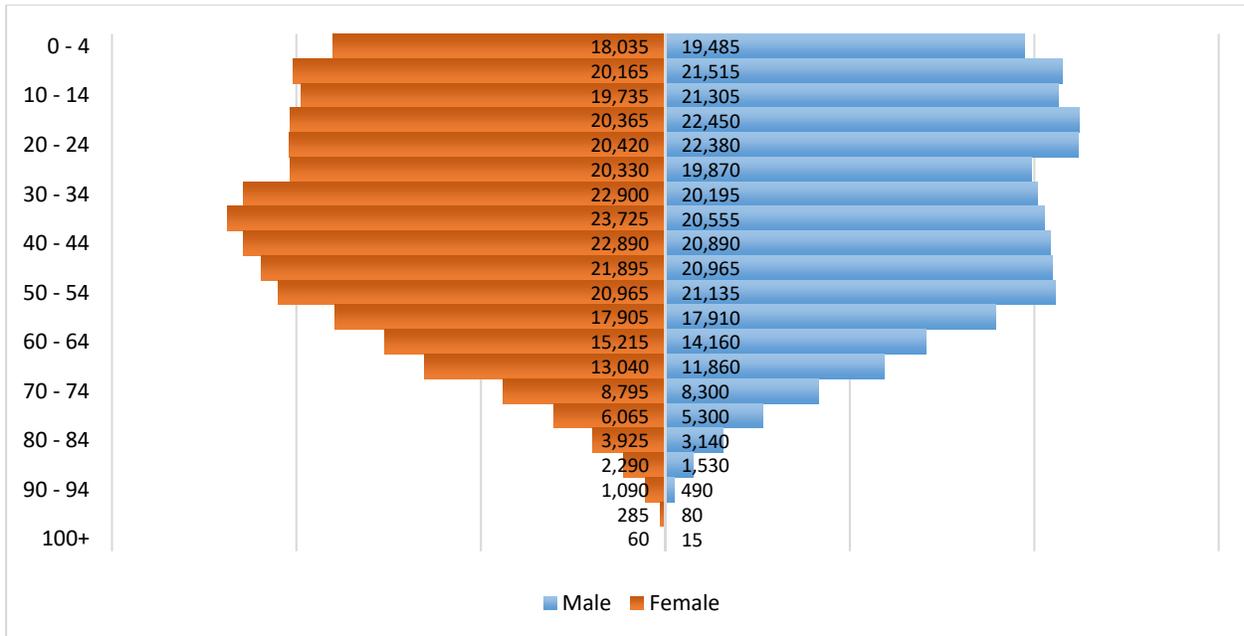
Figure 4-3 – Percentage of Net Migration Changes (2011 - 2016) Relative to 2016 Population⁽¹⁾



Note 1: Informed using 2011 and 2016 Census information. 2021 Census was not available at the time of writing

Age Structure: Brampton’s age structure is relatively young, and as the population ages the need for a variety of different services will change from the current standards. For example, for some, these demographic patterns could potentially lead to a change in transit ridership, utilization of different amenities and outdoor spaces.

Figure 4-4 – City of Brampton Population Age Structure (2016)



Note: Informed using 2016 Census information. 2021 Census was not available at the time of writing

Population Density and Urbanization: The availability of greenfield lands are generally becoming scarcer, and therefore, many communities are looking to increasing density and intensification to continue to accommodate growth. In general, intensification is development that allows for more people to connect, work and play within the existing urban boundary. Overall, this intensification happens when we re-develop, expand and/or re-purpose existing areas, buildings or vacant lands. The City of Brampton is planning for intensification within their built boundary and in their urban growth centers to meet the specific targets outlined in the growth plan. The infrastructure needs and service requirements from intensification are often much different than those required by greenfield developments. The City needs to ensure development in these built-up areas and planned intensification occurs in a sustainable and coordinated fashion.

Diversity: The diversity that exists in Brampton in terms of persons from different social, cultural, economic and religious backgrounds, and persons with disabilities should be important trends to consider, when identifying priorities and building new infrastructure. For reference, according to 2016 census, the City had the 4th largest visible minority population in Canada with over 70% of the population reported as being a visible minority. As the demographics continue to adjust, the change may put additional pressure on the City to ensure the infrastructure and services meet the demands of an evolving user base.

4.1.2 Externalities Impacting Service

Technological Changes: For some service areas, the advancement in technology can be pivotal in the way the City delivers services and the costs associated with providing them. For example, as it relates to Transit services, the introduction of autonomous vehicles could eliminate the human element which could have the potential of avoiding collisions, reducing operating costs, which may also enable Brampton Transit to improve safety and efficiency. Similar technological advancements in Information Technology is likely going to continue to evolve and the City's ability to manage these assets could change moving forward. It will be important for the City to recognize the asset interdependencies which would exist with IT infrastructure and other City services.

Climate Change: Due to the changing nature of the environment, climate change can be a leading element that can place increase demand and stress on the city's infrastructure. Further to this, the growing awareness of environmental sustainability has brought increased focus on federal and provincial emission policies and municipal practices to drive change and implement green policies. These initiatives are leading to the introduction of more hybrid and electric buses for Brampton Transit, electrification of the City's fleet and use of green building standards for new building construction.

Customer Preferences: Other emerging trends and customer preferences may affect the future demand for City services, which would have a direct impact on the assets required to deliver these services is very dependent on the type of service and would certainly need to be reviewed in the context of the departmental asset management plan. Although, a few examples include:

- **Transit:** New mobility services, like Uber, that are able to provide alternate services to transit could impact the delivery of services. The City may need to adapt to flat lined ridership or streamlined travel routes as these "alternative" mobility services continue to expand which are generally outside the scope of the City's ability to govern their use.
- **Recreation:** The continued emergence of privatized services such as gyms, swimming lessons, indoor soccer may impact the infrastructure and the assets the City currently has in place to provide services. The City would need to be cognizant of the desired levels of service and be able to respond to the needs of the community.
- **Transportation:** As the City continues to evolve, active transportation networks and road infrastructure to support transit initiatives, bike lanes, walking paths, and other active transportation initiatives will further impact the City's asset portfolio.

Unknown Externalities: The COVID-19 pandemic has certainly changed the way the City delivers services and these types of externalities can continue to shape the way services are delivered going forward. Although, externalities, such as a pandemic, are often very hard to predict and plan for, the City has to be in a position to be responsive to sometimes quick and disruptive plans to services. With the assistance from federal and provincial governments, the City of Brampton was able to respond to the pandemic adjustments very swiftly, however, the long-term impacts on services are still unknown and the City may need to continue to cater to these changes in demand.

Legislative changes may put demand pressures on the Service Areas to comply with its requirements. These future changes are unknown but may have potential impact on the way the City delivers its levels of service.

4.1.3 Demand Impact on Levels of Service

The demand drivers discussed above would impact customer levels of service in the City over time. Although, the changes in demand might occur gradually in some instances, the City needs to be cognizant of the relationship that exists so that the departmental asset management plans can quantify the impacts to ensure the customer levels of service are maintained.

Table 4-1 – Leading Demand Driver Which Can Impact Level of Service

Service Attributes	Strategic Themes	Leading Demand Driver to Impact LOS	Example:
Capacity & Use <i>Sufficient capacity and is convenient and accessible to the community</i>	Capacity Availability	<i>Demographics</i>	<i>Growth can increase Average Annual Daily Traffic (AADT) triggering road widening's, intersection improvements or rail grade crossings to ensure roads are not congested and traffic flows efficiently.</i>
Function <i>Services are suitable for intended function & minimize health, safety, security, natural & heritage impacts</i>	Regulatory Compliance Enhanced Safety Resilience Enhanced Environment	<i>Climate Change</i> <i>Customer Preferences</i>	<i>A climate event could impact critical infrastructure affecting functionality precluding the delivery of service many rely on.</i>
Quality <i>Services are predictable and continuous, and responsive to stakeholders</i>	Reliability Customer Satisfaction	<i>Technological Changes</i> <i>Demographics</i>	<i>Without being able to adapt to the changing technological landscape, services levels decline as the ability to maintain reliable assets could diminish which could also decrease customer satisfaction.</i>
Affordability <i>Services are affordable and provided at lowest cost for both current and future customers</i>	Financial Sustainability	<i>Demographic</i> <i>Climate Change</i> <i>Customer Preferences</i> <i>Technological Changes</i>	<i>The City needs to ensure services are affordable and demand drivers that could significantly increase costs are planned and managed appropriately.</i>

4.1.4 Demand Management Through Lifecycle Activities

The demand drivers identified in the previous section could impact a series of the asset lifecycle activity costs outlined below. Overall, the demand for new services will be met through a combination of managing existing assets, upgrading existing assets and providing new assets. The section below outlines the link that exists between demand and the lifecycle activities, although, further improvements will be developed in the departmental asset management plans and incorporated into future revisions of this asset management plan.

1. Non-Infrastructure Solutions

The City of Brampton can look to a series of different tools and frameworks to manage different demands, although, not all tools require capital asset repair and rehabilitation dollars to be spent. Many actions or policies do not necessarily relate to direct work on assets and can still increase the efficiency and effectiveness of the infrastructure e.g., education, demand reduction and balancing usage. A key first

initiative to manage demand would be to continue to utilize the Development Charges Background Study to quantify the asset needs to facilitate new growth – this is a well-known practice in the City and DCs has been used to the full extent allowed for under the *DCA* for many years. Other non-infrastructure solutions which can be looked at to manage demand:

- Undertake a Comprehensive User Fee Study – not only will this help the City realize the full cost of providing services, it can also be used as a tool to help further develop pricing structures to incentivize usage of facilities (or services) during non-peak hours. These types of incentives could ultimately help manage the demand placed on these services which could defer capital expansion activities.
- The City can increase fees for use of facilities at peak hours or by non-residents to incentivize residents to use facilities during non-peak hours.
- Continued evaluation of transit routes to ensure the utilization of the existing routes is maximized and are moving the most people with the existing assets in place. Recognizing this is a practice the City already employs, it is imperative that the Transit Services continue to be vetted as customer demands change and the City grows to new areas and intensifies in existing growth corridors.

2. Operations and Maintenance

There are a series of minor to moderate maintenance costs that the City regularly incurs to ensure the longevity of an asset. The City generally takes into consideration two different types of maintenance needs:

- **Preventative Maintenance** which are regularly scheduled activities, completed while the asset is still in an "operational" condition. The purpose of preventative maintenance is to ensure the asset remains in service throughout its design life.
- **Demand Maintenance** (also known as "Reactive") are physical repairs to an asset that has broken down or has ceased to function as intended. The repair generally reinstates the asset to a normal operating condition but does not extend the life of the asset. These types of repairs are expected as assets age and are part of the overall lifecycle management to keep the asset operational for as long as physically and economically viable. It is important to consider that when the repair costs begin to increasingly escalate as the asset ages, and it becomes not feasible to operate, the asset may be best suited to be renewed or replaced.

It is expected that the demand pressures identified could have some implications on the quantum of operations and maintenance expenditures incurred to maintain existing assets. For most new assets, a good estimate of the incremental operational expenditure required to operate and maintain is simply the existing operations and maintenance cost multiplied by the growth factor.

It is expected that the departmental plans will quantify the maintenance needs adjustments which could be realized if the demand changes occur.

3. Renewal / Rehabilitation

As the City of Brampton's needs continue to change with the different demand pressures which can be realized. Asset renewal activities may be impacted with a change in activities as the frequency and use of

assets would change in different environments. There are certain service areas in which renewal and replacement needs would more greatly be impacted with changing demands than other assets or services.

4. Replacement

Once the assets have reached the end of their useful life, and all other lifecycle strategies described would not be the most cost efficient the city would replace the asset. Similar to the renewal activities, replacement activities may be impacted with a change in activities as the frequency and use of assets would change.

5. Disposal

Once assets have reached the end of their service life and replaced with a new asset, the existing asset would be disposed. At this juncture in the CAMP, asset disposal costs have been generally identified as fairly immaterial in the overall fiscal picture of the City of Brampton's long-term asset management needs. Asset disposal activities may be impacted with a change in the frequency and use of assets, and the City's disposal policies and regulatory requirements.

6. Expansion

The Demands placed on the City by all the factors listed above would certainly trigger the need for the City to expand municipal services. The City of Brampton levies development charges to recover the capital costs associated with new development throughout the City. Although there are restrictions on eligible services and the type and amount of infrastructure which can attract DC funding, a significant portion of new growth-related City assets related to Library, Fire, Parking, Transportation Parks and Recreation and Transit are acquired using DCs.

From an asset management perspective, although most of this infrastructure will attract funding from development charges or direct developer contributions, the infrastructure will become the responsibility of the City to operate, maintain, repair and ultimately replace in the future. A proper understanding of the relationship between the infrastructure required to support the demand identified and the long-term asset management implications is critical.

The table below provides examples of how some of the assets and services may be impacted by the key demand drivers. Further work is required to comprehensively understand and state the demand drivers and their impacts on the service areas including some that are not mentioned below. Individual departmental plans will take a further look into this assessment.

Table 4-2 – Key Demand Driver Which Could Impact Infrastructure Lifecycle Activities

Demand Driver	Current Position	Projection	Services Impacted	Impact on Services	Demand Direction	Demand Management Plan
Population Growth	Brampton is one of the fastest growing Cities in Canada with new people calling Brampton “home” every year.	Brampton’s population is projected to grow to 890,000 by year 2041	All Service Areas	Population growth leads to increased usage of City assets that may cause asset conditions to decline at a faster rate, requiring more immediate repair and replacement needs.		Ensuring future growth management and master plans consider effects of population growth on the capacity of services New infrastructure to meet the needs of the growing community (Library, recreation centres, roads, new buses, etc.)
Urbanization	Brampton is considered the fastest growing City in Canada and with new greenfield land opportunities continuing to diminish, development is intensifying in already established and built-up areas.	Brampton is expected to continue to grow, as outline above, and increased urbanization is expected to achieve and accommodate the provincial and regional growth figures.	Transportation Transit Parks Recreation Cultural Services	Urbanization of communities may see increased use of centralized amenities (such as urbanized parks rather than old suburban parks in mature communities). These urbanized assets may need to be prioritized for renewal and upgrade as opposed to other underutilized spaces.		As the City becomes more urbanized, additional studies and plans may need to be undertaken to properly plan for the urbanization of space.
Age Structure	The City currently has a generally young population.	It is expected that the population will continue to age over time, however, additional monitoring of this trend will be needed to determine the rate of change.	Transit Facilities Parks Recreation Library Cultural Services	Increased activity rates can be generally linked to growth or change in demographics, this may require different amenities to be renewed faster, or conversely, provide for some amenities to remain in service longer if activity		The city will need to continue to monitor the age structure of the City over time. Different age groups have varying preferences and demands for services. Future master plans will need to consider the demands for services from different age groups through public

Demand Driver	Current Position	Projection	Services Impacted	Impact on Services	Demand Direction	Demand Management Plan
				rates fall as the facility doesn't meet the demand of the community.		consultation, surveys or other means.
Climate Change	Climate change events are already prevalent and experienced at different levels and magnitudes from each jurisdiction.	As an example, Brampton can be expected to experience warmer air temperatures, increased precipitation, and more extreme weather events in the future.	Transportation Stormwater Facilities Transit Parks	Increased inclement weather events caused by climate change is putting additional pressure on the City's stormwater and transportation infrastructure to withstand these events.		Continuing to incorporate climate change considerations into asset management planning, as well as consideration through future plans and studies to adopt mitigation and adaptation strategies to reduce impacts on levels of service.
Net Migration	The City continues to grow through additional population growth from residents moving into the City. Brampton has experienced positive net migration for all age groups between 2011 and 2016	Brampton's population is projected to grow to 890,000 by year 2041.	Transportation Transit Facilities	Population growth leads to increased usage of City assets that may cause asset conditions to decline at a faster rate, requiring more immediate repair and replacement needs.		Ensuring future growth management and master plans consider effects of population growth on the capacity of services
Customer Preferences	City residents continue to expect quality services for their tax dollars.	It is expected that City residents will continue to place additional demands for services over time and expect high quality services for their tax dollars.	All Service Areas	Change in customer preferences are always evolving. Expected that customer preferences will continue to evolve over time and place increased demand for services.		Continual monitoring and surveying of customer preferences to ensure continued delivery of services that meet customer wants and needs.

Demand Driver	Current Position	Projection	Services Impacted	Impact on Services	Demand Direction	Demand Management Plan
Diversity	According to the 2016 Census, the City of Brampton's population comprised of 234 different ethnic origins reportedly speaking 89 different languages.	The City of Brampton strives to be a diverse community and is therefore expected that the community will continue to be made up of different cultural groups in the future.	Recreation Parks Library Cultural Services	It is important to recognize that different groups in the City will have varying degrees of demands over time for which the City will need to respond.		To meet the City's diversity objectives, future master planning will need to consider the demands placed on services from different groups in the City particularly for services such as library, recreation, parks and cultural services.
Technological Changes	The City employs various technologies across all areas to deliver services efficiently and effectively.	As technology continues to evolve, the City and its assets will continue to evolve with it, with further reliance on technology expected in the future.	All Service Areas	As the technological landscape continues to quickly evolve, this changes will continue to place increased pressure on the City's IT department to support service delivery.		1. Continual monitoring and surveying of the technological landscape to ensure the most up-to-date and efficient technologies are employed 2. Replacement program for IT equipment

4.1.5 Future Recommendations

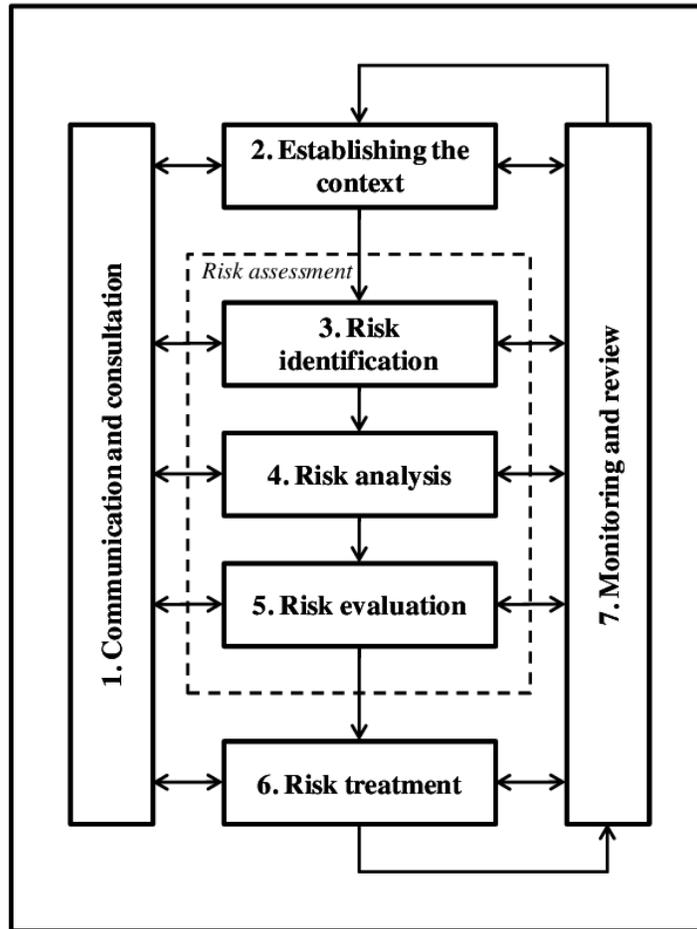
At this stage of the Corporate AMP, most of the costs associated with the demand activities identified are related to increased population and employment with some degree of consideration to changing demographic trends and technological advancements. However, it is recognized that continued efforts through the individual departmental plans and future Corporate AMP updates will continue to evolve this framework and the correlation between demand and costs. Undertaking an in-depth analysis on a service area basis will allow for a more refined look at the different demand drivers affecting each and allow for better monitoring of their affects going forward.

4.2 Risk Management

As the City's asset management practices are applied across the corporation, it is becoming increasingly important to ensure that a system is in place to help guide the decision-making process for prioritization of projects across the asset classes. The City already considers risk as part of daily operating practices to help guide what lifecycle actions are required to allow assets to meet level of service objectives. With this in mind, the City manages risk at the various departmental levels with varying methodologies and strategies. This section is intended to provide the City with a process for developing a Risk Management Strategy (RMS) that ensures a standardized and consistent approach to asset risk management across all

City's service areas. To help inform the approach, the City intends to align the strategy with the risk framework methodologies consistent with ISO 31000. The ISO 31000 risk management standards are utilized world-wide and therefore gives the City an industry standard to strive for. Figure 4-5 below outlines the components of the risk management strategy.

Figure 4-5– ISO 31000 Risk Management Process



Based on Figure 4-5, the Risk Management Strategy should follow the process flow in order to ensure development of a tool that can be utilized throughout the City's CAMP. The RMS is therefore described as having five key components:

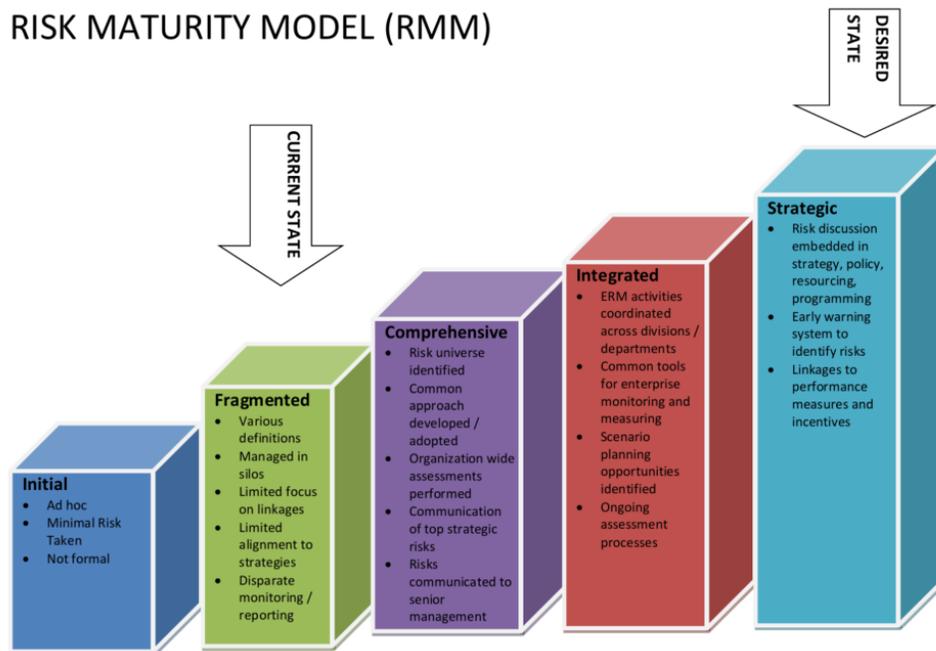
1. Establishing the Context
2. Risk Assessment
 - 2.2 Risk Identification
 - 2.3 Risk Analysis
 - 2.4 Risk Evaluation
3. Risk Treatment

4. Communication and Consultation
5. Monitoring and Review

4.2.1 Establishing the Context

Currently, risk management activities occur at the division or departmental level rather than the enterprise level. All City departments undertake risk management activities on an ongoing basis to continue to provide services. This said, a standardized framework to monitor and manage risk at a corporate level has not been established. For this reason, the City of Brampton is currently in the process of developing an Enterprise Risk Management Framework (ERM) which will enable a standardized understanding, management and monitoring of key risks across the City at a corporate-wide level while utilizing departmental level information. The ERM is in the preliminary stages of development with intention to be fully implemented within the next few years. The ERM in Figure 4-6 illustrates a summary of the Risk Maturity Model (RMM). Currently, the City is in the “fragmented” state, this means that although the City undertakes risk management activities at the departmental level there is little consistency in the approach employed across the City. The City’s goal is to achieve the “strategic” state over the longer term. The proposed ERM framework is projected to be implemented in accordance with ISO 31000.

Figure 4-6 – Risk Maturity Model



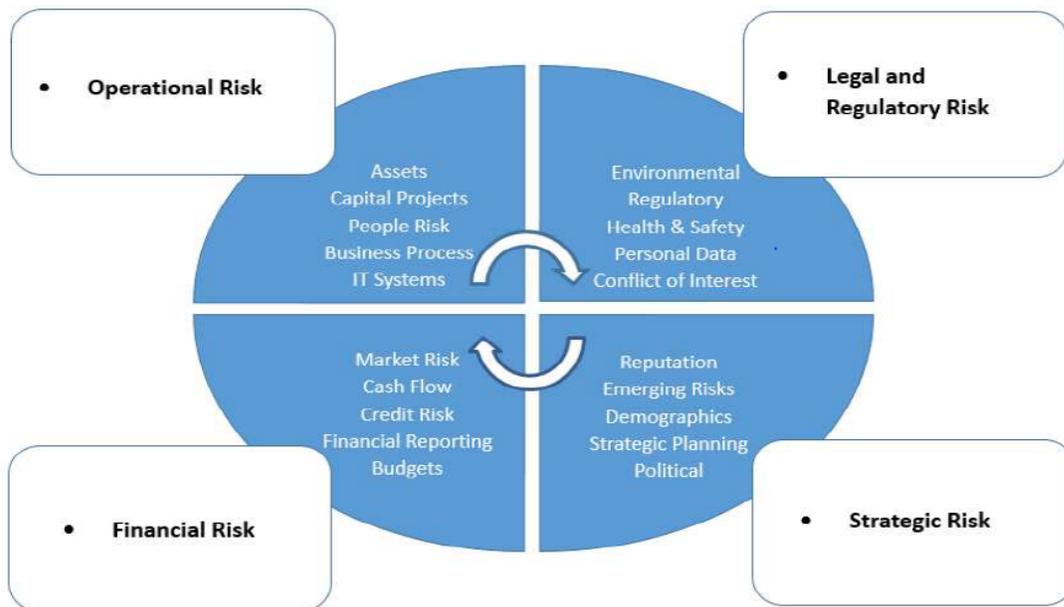
4.2.2 Risk Assessment

The ERM system indicates that “risk at the City” must be evaluated in terms of the potential impact to the City at all levels of the organization. As a result, the City will undertake a comprehensive view in identifying, analyzing and evaluating risk. To achieve this objective, the risk assessment is therefore developed using these three components.

Risk Identification

There are four (4) major categories of risk which are relevant to the services provided by the City. These risk drivers are considered broad categories of risk to the City that can cause assets to fail to provide the desired level of service. Figure 4-7 below outlines the 4 relevant risk drivers illustrated in a quadrant: operational, financial, legal/regulatory and strategic. The quadrant in Figure 4-7 is intended to help support the identification and classification of the types of risks and their impact on the organization. This concept is important, as varying types and levels of risk will also result in varying levels and types of consequences. Figure 4-7 also illustrates that the 4 risk drivers should not be assessed in isolation but are closely related and make up all the actions undertaken through the City’s CAMP.

Figure 4-7 – Risk Quadrants



Risk Analysis

The ERM framework states that all risks are a result of the likelihood and consequence of risk related events. The ERM framework acknowledges that implementation of this standard, and development of a cohesive set of risk categories and associated risk criteria for measurement purposes are required. With this in mind, Table 4-3. illustrates the ERM Risk Matrix which provides a high-level guide on the extent of the actions required to manage risks. Note that the lower left portion of the table represents a low-risk scenario while the upper right of the table represents a high risk scenario.

Table 4-3 – ERM Risk Matrix

		Consequence		
		Minor	Moderate	Significant
Likelihood	High	Manage and Monitor Risks	Management Effort Required	Extensive Management Effort Essential
	Medium	Accept but Monitor Risk	Management Effort Worthwhile	Must Manage and Monitor the Risk
	Low	Accept Risks	May Accept Risks but Monitor	Consideration by Management Required

Note: Likelihood and consequence are defined in the following sections in the context of the CAMP.

The RMS Framework is therefore expected to be developed to be consistent with the ERM framework so that the tools established here can be utilized at both the corporate and departmental level. This ensures that risk related asset management practices are consistent across the City.

Likelihood

The likelihood of an asset risk event refers to how likely it is for a risk event to occur. It may be determined and measured using either a qualitative or quantitative approach. Alternatively, it can also be determined as the probability or frequency over a given period. The likelihood of failure will be determined on an asset-by-asset basis based on a qualitative score from 1 to 5 where 5 represents the highest likelihood of failure. Table 4-4 summarizes the definition of likelihood.

Table 4-4 – Likelihood of Failure Definitions

Level	Name	Description
P1	Rare	Event could occur very infrequently or only in exceptional circumstances; but is not expected.
P2	Unlikely	Event could occur infrequently.
P3	Moderate	Event should occur at some time.
P4	Probable	Event will probably occur regularly or in most circumstances.
P5	Almost Certain	Event is expected to occur very frequently or in most circumstances.

Note: Represents the RAF framework. DAMPs are expected to refine likelihood to specific asset types.

It is important to note that the likelihood of failure represents a qualitative assessment of the perceived potential of an asset failing to provide desired levels of service.⁴ The higher the value assigned to an asset (i.e. closer to P5) the more likely that asset is perceived to have the potential to no longer provide the level of service expected. Assets with a higher likelihood of failure would be prioritized for lifecycle activities to address the issues that create the perception of high likelihood of failure. Conversely, an asset that is likely to continue to provide the desired level of service, would have a lower likelihood of failure (i.e. closer to P1). Changes to the likelihood are largely driven by the factors identified in the risk quadrant shown in Figure 4-7, therefore the likelihood should be monitored and adjusted accordingly over time as evaluations of the risk factors occur.

Consequence

An outcome of an event affecting the levels of service is described by the consequence. The consequence can be expressed from both a qualitative or quantitative perspective. The consequence of failure is determined based on the degree to which a risk event would impact levels of service based on the following criteria:

- **Health & Safety:** associated to the magnitude or seriousness of injuries that can occur under a certain risk event. This would correspond to the legal and regulatory category of the risk

⁴ Likelihood of failure in this context should not be confused with the probability of failure which accounts for the statistical probability of an asset failing to provide desired levels of service.

quadrants (see Figure 4-7) where factors such as regulatory changes would affect the consequence.

- **Reputation/Social:** refers to the perception of the public of the service being provided by the asset. This would correspond to the strategic category of the risk quadrants where factors such as shifts in demographic or social consciousness would affect the consequence.
- **Service:** considers the level of disruption if an asset does not provide the target level of service. This would correspond to the operational category of the risk quadrants where factors such as changes to the level of service would affect the consequence.
- **Economic:** refers to the financial/economic impact if an asset does not provide the target level of service. This would correspond to the financial category of the risk quadrants where factors such as current economic or market conditions are drivers of the consequence.
- **Environmental:** considers the impact to the natural environment, and the timeframe in which the impact can be reversed. This is related to both legal and regulatory compliance and the strategic categories of the risk quadrants with a key driver of risk intensification being climate change.

Similar to likelihood of failure, the consequence will be determined on an asset-by-asset basis. An asset is assigned a consequence based on a 1 to 5 scale where 5 represents the highest consequence if an asset is considered to fail. Table 4-5 summarizes the consequence of failure and its definitions based on the criteria above. The consequence framework is expected to provide a standardized method to assess the consequence of assets unable to provide desired levels of service, however it will be utilized within the context of the unique levels of service provided by each service area.

Table 4-5 – Consequence of Failure Definitions

Consequence Criteria	Consequence of Failure				
	C1 Insignificant	C2 Minor	C3 Moderate	C4 Major	C5 Catastrophic
Health & Safety	Negligible injuries	Minor injuries, medical attention required	Serious injuries, multiple minor injuries	Multiple serious injuries, Loss of life	Multiple loss of life or City-wide epidemic
Reputation/ Social	Event only of interest to individuals. No community concern.	Minor community interest. Local media report.	Public Community Discussion. Broad adverse media coverage.	Loss of confidence in Council. National publicity. Public agitation for action.	Public investigation. International coverage. Management changes demanded.
Service	Service not affected or minimal impact	Localized disruption of non-essential service	Localized disruption of essential service	Widespread short-term disruption or localized long-term disruption of essential service	Widespread and long-term disruption of essential service

Consequence Criteria	Consequence of Failure				
	C1 Insignificant	C2 Minor	C3 Moderate	C4 Major	C5 Catastrophic
Economic	Damages, losses or fines <\$10,000	Damages, losses or fines \$10,000 to \$200,000	Damages, losses or fines \$200,000 to \$2,000,000	Damages, losses or fines \$2,000,000 to \$10,000,000	Damages, losses or fines >\$10,000,000
Environmental	Negligible impact fully reversible within 1 week.	Material damage of local importance. Prosecution possible. Impact fully reversible within 3 months.	Serious damage of local importance. Prosecution probable. Impact fully reversible within 1 year.	Serious damage of national importance. Prosecution expected. Impact fully reversible within 5 years.	Serious damage of national importance. Prosecution. Long term study. Impact not fully reversible.

Note: DAMPs are expected to apply consequence framework within the context of each individual service area.

Risk Assessed for Customer Levels of Service

The importance of the risk assessment stems from the concept that certain factors affect the levels of service provided by each asset. The RMS considers defining likelihood and consequence factors for each of the three customer levels of service categories, which would result in an evaluation of risk in all three areas:

- **Capacity & Use:** Describes the assets capacity to provide service to meet demand. It also describes whether the asset is available at all times that service is demanded. Within the City’s context, this typically relates to whether assets have enough capacity to meet the demands for service from a growing population.
- **Functionality:** Describes to what extent the asset complies with regulations, perform their intended function and are safe, secure and sustainable.
- **Quality:** Describes the physical condition of assets, the level they are maintained at and satisfaction of customers. The quality of an asset tends to change over time as the asset ages.

The tool therefore allows for the recognition of asset failure not just in the traditional sense (an asset breaking down) but also in terms of an asset failing to provide desired levels of service. Asset failure is often referred within the context of an asset removed from service, however this framework will help identify assets which are considered to have failed in either their capacity/use, functionality or quality.

Risk Evaluation

After establishing the parameters associated to likelihood and consequence, the information can be used to generate a quantitative assessment based on the following formula:

$$\text{Likelihood} \times \text{Consequence} = \text{Risk Rating}$$

$$\text{where Likelihood} = \{1,2,3,4 \text{ or } 5\} \text{ and Consequence} = \{1,2,3,4 \text{ or } 5\}$$

For example, an asset with likelihood of 5 multiplied by consequence of 5 would generate a risk score of 25 (P5, C5). This would indicate that the asset is at high risk of failing to provide desired levels of service in

the near term, and is of vital importance, therefore would require immediate effort in order to allow the asset to continue to provide service effectively.

The RMS is then expanded to incorporate the customer levels of service for both the likelihood and consequence of failure. Therefore, a more detailed evaluation of the likelihood and consequence of failure are clearly defined as resulting from the customer levels of service. This provides a clearer relationship between the services provided and the linkage to the perceived risks. The more advanced likelihood and consequence formula is as follows:

$$\text{max Likelihood} = \text{max (Capacity \& Use, Functionality, Quality) and}$$

$$\text{max Consequence} = \text{max (Capacity \& Use, Functionality, Quality)}$$

where Capacity & Use = {1,2,3,4 or 5}, Functionality = {1,2,3,4 or 5}, Quality = {1,2,3,4 or 5}

The resulting quantitative risk assessment in this expanded risk framework is therefore determined as follows:

$$\text{max Likelihood} \times \text{max Consequence} = \text{Risk Rating}$$

To clarify the approach, Table 4-6 outlines a sample of an evaluation utilizing 3 hypothetical assets. In this example, Asset 1’s likelihood of failure has been evaluated for each of the customer levels of service. Since Capacity & Use and Functionality are the highest values, the max value of 2 is considered the likelihood. For consequence Capacity & Use and Functionality are again the highest values and the max value of 3 is considered the consequence. Multiplying the likelihood and consequence then results in the risk rating of 6. Asset 2 and 3 show similar approaches that result in higher risk ratings of 12 and 20 respectively. The advanced model presented above and in the sample in Table 4-6 provides the advantage that the primary drivers of risk can be identified more clearly.

Table 4-6 – Sample Risk Assessment Evaluation

Asset	Likelihood				Consequence				Risk Rating
	Capacity & Use	Functionality	Quality	Max Likelihood	Capacity & Use	Functionality	Quality	Max Consequence	
Asset 1	2	2	1	2	3	3	2	3	6
Asset 2	3	2	1	3	2	1	4	4	12
Asset 3	5	1	5	5	2	3	4	4	20

Table 4-7 summarizes the risk rating categories in a risk assessment matrix. Assets identified to be closer to the bottom left of the matrix are considered lower risk to the City with assets identified to be closer to the top right of the matrix considered higher risk. The risk categories, and associated colour coding, are defined as follows:

- **Insignificant (Green)** – No actions required.
- **Low (Light Green)** – May be acceptable but monitoring of assets may be required.
- **Medium (Yellow)** – Requires some consideration by management with necessary risk management and monitoring adopted as needed.
- **High (Orange)** – Requires consideration by management, risk management and monitoring is required.
- **Extreme (Red)** – Requires extensive management input, risk mitigation to reduce to an acceptable level is essential.

Table 4-7 – Risk Assessment Matrix

		Consequence				
		C1	C2	C3	C4	C5
Likelihood	P5	Medium	Medium	High	High	Extreme
	P4	Low	Medium	Medium	High	High
	P3	Low	Low	Medium	Medium	High
	P2	Insignificant	Low	Low	Medium	Medium
	P1	Insignificant	Insignificant	Low	Low	Medium

Note: The framework would generate risk assessment matrices for each of the customer level of service criteria: capacity/use, functionality, and quality.

Based on the criteria in Table 4-7, despite the obvious risk associated with the “extreme” classification, assets in a “high” risk category should garner equal attention as these assets could disrupt the City’s level of service and could transition to an extreme classification without the proper intervention activities. Furthermore, in recognizing the risk rating of a particular asset, the RMS allows for the identification of the key driver of the risk based on the likelihood and consequence. As mentioned in the example from Table 4-6, a key driver of risk for Asset 3 was the likelihood of failure related to capacity and use. This would therefore indicate the lifecycle activities that would need to be undertaken to upgrade the asset or improve its capacity to address the risk. This demonstrates the usefulness of the RMS in helping inform what lifecycle activities should be undertaken on assets.

It is important to note that the evaluation of assets utilizing the RMS are intended to be used as a complimentary process to annual capital budgeting exercises. The City’s current capital budgets are generally developed based on an assessment of capital needs at a departmental level and independent from each other. The RMS will allow the City to assess the risk of assets at both a departmental level and a corporate level to determine assets with the greatest need to undertake lifecycle activities. The evaluation can help inform a list of prioritized works which would include the set of lifecycle activities needed to address high risk assets. This said, development of risk assessments at a departmental level are intended to use the RMS (and this Corporate AMP) as a guiding document, but detailed risk assessments will need to be undertaken under each of the DAMPs.

4.2.3 Risk Treatment

The core function of the RMS is to provide the City with a risk profile of assets. This said, another component is to develop a guideline of risk treatments to manage or reduce asset risks to the City. Of particular importance will be identifying what risk treatments are required in order to manage/reduce the risk of assets failing to provide desired levels of service. Different risk treatments will have varying effect on levels of service and it is important to ensure that the optimal risk treatments are utilized.

With this objective in mind, the City can utilize the process outlined in Figure 4-8 to identify key risks in each of the 4 ERM risk categories to ensure that all potential risk factors can be identified beyond just asset specific risk. The process incorporates all the components of the RMS, however, it adds the Risk Assessment process by developing a set of actionable items to address risk concerns. Figure 4-8 indicates that after identifying the key driving risk factors (see Risk Evaluation), the next step is to identify the risk treatments. The risk treatments are considered the lifecycle actions necessary to reduce or manage the identified risks.⁵

⁵ See Section 6 Lifecycle Management Strategy for a discussion on lifecycle activities.

It also becomes necessary to identify the costs of the lifecycle activities. Factors such as funding availability and affordability to residents of undertaking mitigation actions will create an environment where the City will need to optimize which lifecycle activities will have the greatest net positive impact to the City. Therefore, a cost benefit analysis will need to consider these factors to help prioritize lifecycle activities that are feasible to undertake. This said, it is not necessary to assume that all risks identified through the RMS can be addressed or eliminated through these actions, so identification of residual risk is also important. Residual risk refers to any remaining risk after efforts to identify and treat some or all types of risks have been made. Recognizing that the information required to undertake the process can be extensive and will need to be managed, Appendix D presents a template sample that can be used to document the information needed to undertake the RMS process. The sample template can be utilized to undertake assessments for assets to be addressed through the DAMPs.

Figure 4-8 – Risk Treatment Framework



4.2.4 Communication and Consultation

An important component to the RMS will be communication and consultation on its development and implementation. The City is expecting to begin development and application of the RMS through the various City DAMPs. In doing so, consultation with key stakeholders will be essential particularly in developing the information needed to develop the risk profiles for the various asset classes.

Subject matter experts (SME) at the service area level would need to be consulted to understand both their perceived risk profile of the assets they manage as well as their risk tolerance. Furthermore, moving to implementation of the RMS will require continual communication with SMEs and the ERM team to ensure a successful outcome to this component of the Corporate AMP. Communication with SMEs is expected to be consistent with the Communication Strategy.

Monitoring and Review

Figure 4-8 also outlined an important final component to the RMS: monitoring and review. The purpose of monitoring and review is to assure and improve the quality of the RMS over time. The effectiveness of the RMS can only be measured based on its outcomes. It is important to monitor whether lifecycle activities undertaken are influencing changes in risk profiles, whether they be positive or negative. Monitoring and reviewing such changes will help inform whether those lifecycle activities have been effective, and therefore have direct changes to the risk profile. If there are changes that are warranted of the RMS to better fit the City’s needs, they should be considered through the review process. It is important to recognize that calibrating the RMS to become an integral part of the City’s decision-making process will take several years, as the tool will need to be monitored over some time to gauge its effectiveness.

It is important to note, that monitoring and review of the RMS outcomes will need to be undertaken in tandem with review of levels of service through the City’s LOS tracker. Undertaking lifecycle activities to manage risk will have direct effects on the levels of service that the City provides, therefore assessing the effectiveness of the RMS will also involve closely monitoring levels of service over the next few years.

Key Recommendations

The RMS is a “living tool” which is expected to be evolved and calibrated over time. Parameters used in the RMS for assets (likelihood or consequence) will need to be adjusted on an ongoing basis to ensure the latest available information is reflected in the assessment. The RMS will need to be assessed in practice over several years to ensure that it aligns with the expectations of the budget process. In order to ensure the RMS is successful some general recommendations are proposed:

Table 4-8 – Key RMS Recommendations

<i>Recommendation</i>	<i>Description</i>
Continued Annual SOLI Updates	<ul style="list-style-type: none"> • Ensure that future years of the SOLI include a summary of RMS outcomes and whether they have been effective. • Consider including a list of highest risk assets in need of funding to address any levels of service deficiencies. The effectiveness of the tool will be a key driver to ensure buy-in in future years.
Meet objectives of the Asset Information Management Strategy	<ul style="list-style-type: none"> • Ensure that objectives of the Asset Information Management Strategy are met, particularly from the data availability and review perspective. This will ensure accurate asset data can help inform the RMS.

Recommendation	Description
Continued development and use of the RMS across all service areas	<ul style="list-style-type: none"> • Utilize the RMS on a service area basis to develop risk profiles and analysis through the departmental asset management plans. • Ensure regular communication with departmental representatives on ongoing challenges in order to reflect the latest information in the RMS. • As the RMS is applied and refined through the DAMPs, consider identifying the effects on levels of service based on the risks associated with meeting desired levels of service. Monitoring of levels of service will need to be undertaken in tandem with application of the RMS to ensure that it continues to be an effective tool. • Ensure that the RMS addresses the increased vulnerability of assets as a result of climate change and with focus on environmental consequences. Aim for a balance between established levels of service and the amount of acceptable risk to manage available resources, required expenditures, and current priorities.

4.3 Climate Change Integration

The management of a City’s assets plays a fundamental role in the delivery of services, which depends on the infrastructure available to deliver the service. Corporate asset management in municipalities largely relates to the management of existing assets to keep them in a state of good repair while planning for future repair and/or replacement of their assets across all service areas. Impacts of climate change are already being experienced around the world, including Canada. It is important for municipalities to consider and plan for climate changes to ensure the delivery of services, especially as it pertains to the maintenance of key City infrastructure. As per *Ontario Regulation 588/17 s3(5)*, municipalities must include a commitment in their asset management planning to address the vulnerabilities of climate change with respect to operations, levels of service and lifecycle management. There must also be consideration for anticipated costs, mitigation and adaptation approaches and disaster planning to meet all regulatory requirements in Ontario municipal asset management. In response to the regulatory requirements, the City of Brampton adopted its first Strategic Asset Management Policy and committed to integrating climate change as part of its asset management planning. This section aims to build a foundation for future policies regarding climate change integration in the City.

Expected climate change impacts include hotter, drier summers, warmer winters with increased precipitation, increased frequency and intensity of storms and increased intensity of extreme winds. According to the *Climate Trends and Future Projections in the Region of Peel (2016)* report, the City of Brampton is expected to experience warmer air temperatures, increased precipitation, and more extreme weather events in the future. These changes in the City’s climate will likely lead to increased risks associated with flooding, heatwaves, risk of infrastructure damage, health and safety of residents, the alteration or loss of habitats, etc.

Many of these risks are associated with the City’s assets and may impact the City’s levels of service, including capacity/use, functionality and quality. Climate change mitigation and adaptation planning is an important step for municipalities to take to begin managing risks associated with climate change. Therefore, the City is taking steps towards the integration of climate change considerations into their asset management planning framework.

4.3.1 Climate Change Planning in the City of Brampton

With a commitment to being a Green City, in 2019 Brampton City Council voted unanimously to declare a climate emergency while aiming to reduce greenhouse gas (GHG) emissions generated in the City by 80 per cent by 2050. To achieve this goal and also adapt to the impacts of climate change, the City of Brampton is currently undertaking several mitigation and adaptation strategies.

Climate Change Mitigation Strategies

Climate change **mitigation** in the City of Brampton involves taking steps, through plans and policies, to reduce the City's overall carbon footprint and reduce harm to the environment as an attempt to limit future climate change events and their impacts on the environment and people. Through the *Grow Green Environmental Master Plan* and following green initiatives such as *Community Energy Emissions Reduction Plan (CEERP)*, *Sustainable Fleet Strategy*, *GHG Monitoring and Reporting*, *the Sustainable Fleet Strategy*, and *Natural Heritage & Environmental Management Strategy*, the City has taken serious steps towards mitigating climate change. From an asset management perspective, mitigation strategies will have an effect on municipal levels of service and incur additional costs that need to be considered and planned proactively through the City's regular asset management practices.

Grow Green Environmental Master Plan (EMP)

The Brampton Grow Green Environmental Master Plan aims to conserve, enhance, and balance the City's natural and built environments to create a healthier, resilient, and environmentally sustainable city. It provides goals, actions, and targets for improving Brampton's environmental performance in the areas of People, Air, Water, Land, Energy, and Waste. It establishes objectives to reduce impacts on air quality, including decreasing GHG emissions and reducing energy consumption, and manage the impact of energy usage on the environment. The Plan sets out supportive actions, including the development of a community energy plan and a GHG emissions reduction strategy.⁶

Community Energy and Emissions Reduction Plan (CEERP)

The City has already begun to undertake steps towards climate change planning and integration into asset management. A key component of this preparation includes the City's CEERP, which is "an evidence-based, comprehensive plan to drive innovation, employment and economic development while achieving the City's environmental and climate change goals, along with its associated social benefits."⁷ The plan targets the reduction of carbon emissions while planning for the consequences of potential climate change hazards. The CEERP combines efforts of the City, local utilities and community stakeholders to create a roadmap to improve energy efficiency, reduce GHG emissions, ensure energy security, create economic advantage and increase resilience to climate change. The plan details specific objectives and targets to 2041, including:

- Green Communities – Includes goals towards achieving near net-zero GHG emissions for new communities

⁶ Source:

https://www.brampton.ca/EN/residents/GrowGreen/Documents/CEERP/CEERP_Ch1_TheClimateReality.pdf

⁷ Source: <https://www.brampton.ca/EN/residents/GrowGreen/Pages/Community-Energy-and-Emissions-Reduction-Plan.aspx>

- Transportation Efficiency – Reducing average trip length, increasing trips via walking, cycling and transit, and increased use of electric vehicles and vehicle efficiency
- Home and Building Efficiency – Increasing efficiency of homes and buildings in the City (including water efficiency)
- Green Infrastructure – Planting of a million trees by 2040, increased restoration of natural heritage system and integrate of natural assets into asset management

When looking specifically at these initiatives, it is clear that asset management planning plays a key role in achieving these goals, whether it be through improving active transportation and transit infrastructure, building energy and water efficient City buildings, and the integration of natural assets into the asset management framework. By incorporating the initiatives of this plan into asset management planning through risk frameworks and levels of service, the City can better prepare for future potential events.

Energy Emissions Management Plan – A Zero Carbon Transition (2019-2024)

The Energy Emissions Management plan is focused on reducing GHG emissions within the City’s facilities. The mission of the Plan is “to meet the challenge of a zero carbon transition in alignment with provincial and federal emission targets”. The plan sets out an interim target of achieving a 20% GHG emission reduction target by 2024 (over the 2010 baseline), as well as long-term goals of GHG emission reduction targets of 30% and 80% by 2030 and 2050, respectively. The plan details several actions to be undertaken at existing City facilities, ways to minimize energy emissions at new facilities and steps to maximizing cost recovery in order to meet these interim and long-term targets.

Greenhouse Gas (GHG) Monitoring & Reporting

By continually monitoring and reporting on greenhouse gas emissions, the City can develop and implement a performance monitoring plan and metrics to track Brampton’s progress towards meeting the GHG reduction goals set out in the CEERP.

Sustainable Fleet Strategy

Prepared in August of 2021, the Sustainable Fleet Strategy provides a detailed analysis of the City’s current fleet assets (City Support Fleet and Fire Engines) and includes proposed opportunities for fuel use and GHG reductions that are economically attainable and work towards the City’s GHG emissions reduction target of 50% by 2041 compared to 2016 levels. In addition, the strategy provides a framework and action plan that models the potential solutions available to the City.

Climate Change Adaptation Strategies

Through climate change **adaptation** policies, the City will adjust its current weather and climate expectations and plan to reduce the impacts of Climate Change events on the City’s existing infrastructure and levels of service. The City is currently undertaking various initiatives as part of their plans for climate change adaptation, including the *Climate Change Adaptation Plan*, development of *Green Infrastructure Standards* and the *Intensity-Duration-Frequency (IDF) Curve Update*. The City is working closely with Conservation Authorities to predict the extent of Climate Change impacts on flooding risk as well as defining the most vulnerable areas. Details on these projects are expanded below.

Climate Change Adaptation Plan (CCAP)

The Plan is intended to evaluate, guide, and integrate the diverse policies, programs, and activities of the City, conservation authority partners, and other stakeholders to ensure that our collective efforts are directed towards the long-term health and resilience of Brampton.

It will provide a clear vision for how the City should develop, enhance, manage, and promote climate change adaptation action so that opportunities are maximized and vulnerabilities are reduced. The CCAP will examine current initiatives, identify strengths, weaknesses/risks, opportunities, and constraints, and recommend actions to improve climate change resilience in Brampton based on science and best management practices.

Green Infrastructure Standards

The City has undertaken works to continue the development of standards and specifications for the implementation, operation and maintenance of green infrastructure in the City. This system helps to carry out the green initiatives outlined in other plans such as the CEERP. These standards accelerate the integration of Green Infrastructure with other stormwater management infrastructure to create a more sustainable and resilient stormwater system.

Intensity-Duration-Frequency (IDF) Curve Update

This initiative will update the core criteria for design of municipal infrastructure which is based on the likelihood of occurrence of specific storm events (typically storms that will occur once in every 5 year or 10 years for sewer design, and 100 years for stormwater retention pond design). This update will expand the data set used for the statistical analysis to include all available data to the current period, and will incorporate the more extreme weather events of the last 20 years. The results of the analysis are anticipated to show expected increases in the magnitude of storm events, which would have implications for the sizing of municipal stormwater infrastructure during the design phase and evaluation of the levels of service provided by existing stormwater infrastructure.

4.3.2 Climate Change Impacts on Risk and Levels of Service

Through the 2021 Corporate AMP, a series of level of service metrics and a risk management framework have been developed. Levels of service include some metrics that track climate change mitigation and adaptation planning in the City. The risk management framework considers environmental impacts when evaluating the consequences of asset failure to provide levels of service. Through further development of the risk assessment under this framework, and thorough identification of likelihood and consequence of failure, the City can prioritise measures to adapt to climate change. These two frameworks are key to the integration of climate change planning:

- Using a risk management framework to plan for climate change hazards response allows for the most cost effective action plan to reduce infrastructure damage or loss of services through adaptation.
- Evaluating Levels of Service (LOS) through a climate change lens will include:
 - Identifying LOS that may be affected by climate change to either develop an adaptation strategy to maintain current LOS or, in some cases, accepting a reduction in these LOS;
 - Planning for the lifecycle activities to maintain the existing service delivery standards; and
 - Defining and updating LOS as it pertains to environmental enhancement to reduce the overall scale of climate crises through mitigation (for example, increasing the share of electrical or hybrid vehicles in the City's fleet or adjust the overall LOS target).

Level of Service Framework

The level of service framework included as part of this Corporate AMP (Section 3) provides a means for the City to track the current delivery of services and set targets for the future. This framework can be leveraged to assist in further adaptation and mitigation strategies for climate events. One of the ways it can do so is through setting additional goals to reduce the City's exposure to climate change impacts.

Proactive planning, whether it be through incorporating green facilities and fleet or refining response times of emergency services to major events, can improve cost-effectiveness and mitigation of loss and damage in the future.

Climate change mitigation efforts and implementing “Green Initiatives” can impact the delivery of services, and by extension the assets used to deliver services. Monitoring these Green Initiatives through levels of service allows the City to continually evaluate their mitigation efforts and set targets for future delivery. A sample of levels of service metrics tracking Green Initiatives include:

- Percentage of City facilities which are LEED certified.
- Percentage of overall Fleet assets that are electric or Hybrid.
- Total kilometers of cycling/pedestrian paths per 1,000 persons.

When looking to the potential loss of service that can occur due to climate events, the City can use the levels of service framework to determine areas where these losses will occur and work towards solutions to minimize the impacts on residents and the services. The integration of climate change impacts into the existing framework will improve the City’s response when such events do occur. Further to this, the City should be looking to improve the Level of service tracker developed under this Corporate AMP to consider climate change related factors and associated tracking to each performance measure. This would be considered an enhancement to existing levels of service model to:

- Assess current & future gaps (pertaining to climate change);
- Identify the factors affecting the Level of Service;
- Identify strategies to address the gap; and
- Integrate actions into Asset Management Plans with quantified costs and a timeframe (where appropriate) associated with addressing the climate change gap.

The table below provides a sample of the climate change improvements to the existing Level of Service (LOS) metrics which have already been established. The column highlighted in “grey” are the future improvements to be considered in future departmental plans. It can be expected that the identification of current and future gaps as well as the factors affecting Levels of Service are reasonable short-medium term goals the City can update as departmental plans are completed. However, properly identifying the cost impacts of the various factors which may impact the City’s ability to maintain the levels of service might be more advanced and achieved post 2025 and may need to supplement the departmental plans at a later date.

Table 4-9 – Framework for Climate Change integration with LOS

Customer Level of Service	Technical Level of Service	Current Performance	Current Gap	Future Gap	Factors Affecting LOS	Strategies to Address the Gap	Cost Impacts
Roadway network kept in a good state of repair	For paved roads in the City, the average pavement condition index (PCI)	8.3	No	Yes	Climate change will impact the road condition due to extreme temperatures and heavy precipitation	Increased resurfacing frequency Use of enhanced material for road pavement Lower the target for Levels of Service	Cost \$\$ Timeframe
Stormwater assets protect communities from flooding	Percentage of properties in the municipality that are resilient to a 100-year storm (O.Reg.588/17)	96%	No	Yes	Higher intensity and more frequent precipitation will likely increase flood risk	Intensify LID's development, natural assets Upsize SW systems Flood plain management Flood warnings and emergency management	Cost \$\$

As the Corporate AMP extensively reviewed the capital and operating costs associated with asset management (whether through acquisition of new assets or the continual operations and maintenance of existing assets), the funding model used in the Corporate AMP could be used as a starting point to begin addressing the costs required to address the factors affecting the Levels of Service. Some operating and capital costs could more readily be quantified to address the future gap arising due to climate change. Examples include, but are not limited to:

- Increased annual operational expenditures for additional salting trucks on the road;
- Capital cost of replacing fleet with electric vehicles; and
- Enhanced building related improvements to withstand more severe weather

Risk Management Framework

Prior to the 2021 Corporate Asset Management Plan, the City explored the Hazard Identification and Risk Assessment (HIRA) model to identify environmental and other hazards impacts on City services. As an outcome of the process, the City started to gain understanding of the impact varying hazards may have on both property damage and critical infrastructure which in turn would increase the risk to the corporation. This model can be adopted for exploring climate change associated events and their impacts on City assets and services which are summarized in Table 4-10 below. It should be noted that the Climate Change Adaptation Plan is intended to further explore vulnerabilities to climate change within the City's assets.

The table below considers only City of Brampton owned and operated assets, although, regional critical infrastructure related to water, wastewater, regional roads or public health may also be impacted by the noted hazards. Table 4-10 provides a framework through examples of risk for information purposes to

help further propel climate change integration with asset management, although, recognizing the full utilization would still need to be applied and understood at the staff level. In asset management terms, this table shows the big picture effects that climate change hazards may have on the LOS for various service areas. The specific climate change impacts on LOS by service are to be developed further as part of upcoming Departmental Asset Management Plans.

The information contained will be helpful for the City to understand:

- Impacts climate change could have on assets owned by the City and associated LOS; and
- Critical infrastructure which could be disrupted in either event.

Through further understanding of the anticipated extent of climate change events, climate change adaptation projects at the City will provide additional parameters as to the likelihood and severity of events. At its most simplistic form, the table below provides a range from a “rare” occurrence to “almost certain”. A rare occurrence could be correlated to falling into the tenth percentile of probability, with an almost certain occurrence falling into the ninetieth percentile of probability. The Level of Risk associated with these hazards will be developed through upcoming Departmental Asset Management Plans through a risk framework lens. It should be noted that the link between climate change and asset risk is identified as part of this Corporate AMP’s chapter on the Risk Management Strategy (Section 4.2).

Table 4-10 – Sample Framework for Climate Change Integration with Risk

Hazards / Risks	Likelihood	Consequence	
		Service Area	Possible Critical Infrastructure Failure / Service Impacts
Freezing Rain / Ice Storm	Rare to almost certain	Transportation	Reduced road and bridge conditions, potential for closures
		Stormwater	Potential for increased flooding of stormwater infrastructure
		Transit	Transit delays due to poor road and bridge conditions
Extreme Temperatures – Cold Wave	Rare to almost certain	Parks & Recreation	Closures of outdoor amenities due to extreme weather conditions
		Facilities	Increased strain on indoor heating systems leading to reduced service life and functionality of components and systems
Tornado	Rare to almost certain	All Services	Potential damage to various City assets due to high winds

Hazards / Risks	Likelihood	Consequence	
		Service Area	Possible Critical Infrastructure Failure / Service Impacts
Intense Rain	Rare to almost certain	Transportation	Flooding of bridges and roadways leading to closures
		Stormwater	Potential capacity of storm sewer systems exceeded frequently, leading to property damage
		Transit	Disruptions to service due to flooding of roads, leading to decreased levels of service
Flood – Urban	Rare to almost certain	Transportation	Flooding of bridges and roadways leading to closures
		Stormwater	Potential capacity of storm sewer systems exceeded frequently leading to property damage
		Transit	Disruptions to service due to flooding of roads, leading to decreased levels of service
		Parks	Flooding of Parks leading to closures and reduced levels of service
Extreme Temperatures – Heat Wave	Rare to almost certain	Parks & Recreation	Potential closure/reduce used of outdoor amenities due to high temperatures (reduced levels of service). Lost habitats leading to reduced environmental diversity.
		Facilities	Increased strain on indoor cooling systems leading to reduced service life and functionality of components and systems
Invasive Species, Plant Disease and Pest Infestation	Rare to almost certain	Parks & Recreation	Closures of Parks and outdoor recreation assets due to presence of invasive species (reduced levels of service) Potential damages to City’s natural assets (trees, plants, etc.)
		Facilities	Closure of outdoor assets due to potential hazards for residents Increased strain on facility assets leading to potential damages and reduced service life and functionality of components and systems
Windstorm	Rare to almost certain	Parks & Recreation	Closure of outdoor assets due to potential hazards for residents
		Facilities	Increased strain on facility assets leading to potential damages and reduced service life and functionality of components and systems

Hazards / Risks	Likelihood	Consequence	
		Service Area	Possible Critical Infrastructure Failure / Service Impacts
Energy Emergency (Supply)	Rare to almost certain	IT	Shutdown of IT assets would have a residual effect on all services, limiting access to key technology required to sustain levels of service.
		All Services	Loss of majority of services requiring energy power

Note: Regional services such as water/wastewater or public health are excluded from analysis.

Source: <https://www.assetmanagementbc.ca/wp-content/uploads/Climate-Change-and-Asset-Management.pdf>

4.3.3 Key Recommendations

As the City continues to further develop the integration of climate change into existing asset management structures, some key recommendations for consideration are outlined in Table 4-11 below.

Table 4-11 – Key Recommendations

Recommendation	Description
Further development of mitigation and adaptation strategies into asset management	<ul style="list-style-type: none"> It is recommended that other mitigation and adaptation strategies be explored in order to identify as many climate hazards specific to the City and put in place plans and procedures to mitigate their impacts or adapt to changing circumstances
Identify specific climate change risks in the City	<ul style="list-style-type: none"> It is important to undertake further studies and master plans to identify specific climate change hazards throughout the City in order to fully plan any mitigation or adaptation strategies
Further exploration of climate change on a service area basis through DAMPs	<ul style="list-style-type: none"> Through DAMPs, the risk for specific City assets as it pertains to climate change can be identified and specific measures on an asset basis can be put into place

4.4 Governance

The assignment of roles and responsibilities to effectively carry out a municipality’s asset management planning processes is an important component of the Corporate AMP and overall CAMP in the City of Brampton. It is important to have a framework in place for leadership and staff to support asset management works. The City of Brampton’s Corporate Asset Management Office (CAMO) works alongside City staff to employ sound asset management practices and policies, as outlined as part of this Corporate AMP.

O. Reg. 588/17 requires the City’s Strategic Asset Management Policy to create a clear statement of governance and indicate the individual(s) who provide strategic advice and direction on how to guide the City’s CAMP. The regulation also tries to encourage municipalities to develop integrated approaches towards effective asset management, recognizing all departments have a stake in asset management service goals and in the governance of those services.

Ensuring that the City of Brampton has the right resources and procedures in place is a critical step in the CAMP. This section aims to outline existing structures and teams involved in the City’s asset management planning and governance processes.

4.4.1 Benefits from Effective Governance

Effective governance is essential so the City can effectively deliver on its CAMP goals and objectives. Asset management governance can be defined as the manner in which the City allocates responsibilities and how it makes decision in regards to the CAMP. It allows individuals within the organization to understand their role, take ownership and effectively support asset management objectives.

In this sense the City is looking to improve upon governance structure that will effectively implement the key recommendations of the Corporate AMP while at the same time enabling asset management to be a sustainable and effective practice across the organization. The Corporate AMP recommendations summarized in this chapter will help the City align its existing governance structure to improve efficiency and effectiveness in applying key asset management principles to meet provincial requirements. The governance structure should capture some key principles:

- Clear direction, leadership and organizational stability to support Council in meeting its fiduciary responsibilities;
- Effective resource allocation, planning and management;
- Organizational cohesion across and within organizational layers and vertical business lines; and
- Ensuring desired customer levels of service are met.

4.4.2 Standards for Effective Governance

ISO 55000 is one of the widely recognized industry standards for asset management. Part of the ISO 55000 framework captures the consideration of an effective governance structure to undertake the corporate asset management program. The model proposed by this standard is summarized in Figure 4-9.

The governance structure from Figure 4-9 implies that a top down approach to asset management is the most effective approach. Plans at the organizational level will help inform both the asset management policy and strategy by providing direction on specific components of the corporate asset management program. With this framework in place the asset management plans will help develop operational strategies and plans to actually undertake asset management tasks and manage assets effectively. The framework is important and can be utilized as a guiding model to help develop and effective asset management program at the City. A detailed list of requirements for asset management governance is included in Appendix G-1.

Figure 4-9 - Hierarchy of an Asset Management Governance System



4.4.3 Roles and Responsibilities

Asset management resourcing requires the imposition of certain staff to be leaders in asset management ensuring that communication, planning, and assessment of outcomes are being undertaken. The City's [Strategic Asset Management Policy](#) which came into effect on July 1st 2019 thoroughly outlines the roles and responsibilities of the key City resources required to ensure the corporate asset management program remains an integral component for advancing City initiatives while meeting all regulatory needs.

Section 7 of AM Policy the outlines the City's roles and responsibilities related to the Corporate Asset Management Program, which include:

7.1 Council will:

- a) Approve by resolution the Corporate Asset Management Plan and its updates every five years;
- b) Review progress on the implementation of the Asset Management framework and roadmap on an annual basis; and,
- c) Support the implementation of the Asset Management Plan and ongoing efforts to improve the Plan and ensure it includes changes necessitated by the updates to other strategic documents.

7.2 Senior Leadership Team will:

- a) Endorse the Strategic Asset Management Policy and the Corporate Asset Management Plan; and,
- b) Maintain compliance with the Asset Management Policy and Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure.

7.3 The Treasurer and Manager, Corporate Asset Management have been endorsed by Council as Executive Co-Leads. They will:

- a) Develop the Corporate Asset Management Plan for Council's consideration;
- b) Lead and coordinate efforts to implement Corporate Asset Management strategy, roadmap and supporting strategies;
- c) Collaborate and endorse Service Area Asset Management Plans for Council approval; and
- d) Collaborate with the Asset Management Steering Committee in providing strategic advice to the Senior Leadership Team.

7.4 Asset Management Steering Committee

This is a staff committee of service area directors or designate that will:

- a) Provide executive direction and advice and ensure compliance with the regulatory requirements;*
- b) Sponsor the implementation of the Corporate Asset Management Strategy and Roadmap and supporting strategies; and,*
- c) Represent departments in providing overall guidance and approval of Service Area Asset Management Plans.*

7.5 Corporate Asset Management Unit

Under the leadership of the Treasurer and Manager, Corporate Asset Management, the Corporate Asset Management Unit will:

- a) Develop and implement the Corporate Asset Management Roadmap and supporting strategies;*
- b) Ensure coordination and a standardized approach among asset management related initiatives across service areas; and,*
- c) Collaborate with the Asset Management Technical Leads in preparation of Service Area Asset Management Plans.*

7.6 Asset Management Technical Leads and Asset Management Network

This group consists of service area subject matter experts and supervisors that will:

- a) Develop, administer, and support asset management activities that fall within their service area, including the development of service area asset management plans.*

In developing a more effective governance framework for asset management, the City can undertake the use of a “RACI” matrix to help map the roles and responsibilities of the resources that undertake asset management related work. RACI is short for “Responsible, Accountable, Consulted, and Informed.” The RACI matrix is a tool that helps identify roles associated to certain tasks and to what degree they are involved in the process to complete those tasks. The roles are defined as follows:

- Responsible (R) -The individual responsible for the project delivery or completing the task.
- Accountable (A) - The individual who is the approver or ultimately answerable for the correct and thorough completion of the deliverables.
- Consulted (C) - Those whose opinions, knowledge, or coordination of tasks is required to support the development of the necessary deliverable or task (i.e. two-way knowledge exchange).
- Informed (I) - Those who are kept up to date on progress or updated as a matter of courtesy but not required to contribute to the deliverable. Often these individuals are only notified at the completion of the task or deliverable.

To develop an effective RACI matrix for the City’s corporate asset management program, the City should clearly identify the work/tasks undertaken by staff to provide services. Recognizing that each service area is unique and the task list may be extensive, the City should undertake individual RACI analysis through the DAMP process to ensure that the definition of roles and responsibilities is more focused. This approach

will allow the City to develop a clear governance structure and identify gaps that can be addressed through future recommendations. To illustrate a simple example, Table 4-12 outlines what a typical RACI matrix looks like. The top row outlines the name or role of an individual while the right-most column outlines the practice, process and related accountability. The cross-section of each would outline the specific involvement of that individual.

Table 4-12 – RACI Matrix Sample

<i>AM System Element</i>	<i>Practice or Process</i>	<i>Related accountability</i>	<i>SLT</i>	<i>AM Steering Committee</i>	<i>CAMO</i>	<i>Technical Director</i>	<i>AM Technical Lead</i>
Governance and Leadership	AM Strategy and Policy	1. Lead discussions with council regarding the scope, objectives and policy goals for AM.					
		2. Set AM policy and strategy (including principles, AM objectives etc.).					
		3. Identify key requirements and objectives for the AM policy and ensure alignment with other corporate objectives/plans.					
		4. Advise on strategic issues related to corporate decision-making, including ensuring that adequate investment planning and prioritization processes, criteria and guidelines are in place to support long-term cross-asset optimization and short-term prioritization and co-ordination of work programs.					
		5. Generate solutions to AM organizational challenges.					
		6. Provide direction on corporate-wide AM projects and initiatives.					
		7. Advocate and provide authentic leadership / leadership by example.					
		8. Empower employees based on the City's core values.					
Planning and Decision-Making	AM program development, implementation and management	1. Oversee the AM governance processes and structures within the organization.					
		2. Ensure that approved policy is properly and effectively implemented.					
		3. Approve municipal-wide AM priorities and resources.					
		4. Establish corporate AM program direction and set priorities.					
		5. Define and communicate AM roles and responsibilities.					

<i>AM System Element</i>	<i>Practice or Process</i>	<i>Related accountability</i>	<i>SLT</i>	<i>AM Steering Committee</i>	<i>CAMO</i>	<i>Technical Director</i>	<i>AM Technical Lead</i>
		6. Ensure AM consistency across the organization, as applicable and appropriate.					
		7. Ensure integration of the AM system with corporate policies, standard operating procedures, and management systems.					
		8. Understand, make decisions and coordinate various AM programs, projects and initiatives that have a broad corporate scope and influence.					
		9. Maintain the necessary corporate capacity (including, but not limited to, resourcing, financial support, staff competencies, business processes, data and integrated information systems) to manage risk and support the elements and practices of the AM system.					
		10. Develop corporate data governance. This includes creating guidelines and standards for collecting and storing asset data throughout the organization. It also includes documenting data systems being used for AM, and information about the content and quality of available information.					
		11. Champion the AM program within the corporation.					
Performance and Condition Evaluations	Continual improvement of AM	1. Ensure that the implementation of the AM system serves the purpose and objectives of the AM policy.					
		2. Ensure that AM status/maturity assessments are completed on a regular basis to identify gaps and recommend improvement actions.					
		3. Undertake performance and quality reviews to monitor the achievement of AM objectives and ensure that the AM system is achieving intended outcomes.					
		4. Ensure that an improvement plan/roadmap is developed and maintained with clear targets, prioritized improvements, and well-specified deliverables.					

<i>AM System Element</i>	<i>Practice or Process</i>	<i>Related accountability</i>	<i>SLT</i>	<i>AM Steering Committee</i>	<i>CAMO</i>	<i>Technical Director</i>	<i>AM Technical Lead</i>
		5. Maintain peer relationships and understanding of evolving good practices, and ensure that the city’s AM program is appropriately aligned with these good practices.					
		6. Steward and continually improve corporate AM program documents (policy, strategy, guidelines, standards, etc.).					
		7. Define and support activities that will sustain AM across the organization.					
		8. Manage AM competency, capability and capacity within the organization.					
		9. Develop necessary training programs for development and ongoing support of the AM program.					
		10. Monitor and manage the effectiveness of the overall AM system in achieving and supporting organizational objectives.					
	Sustainable practices	1. Establish sustainability goals for the AM program.					
		2. Assess whether AM outcomes are meeting the organization’s sustainability goals.					
		3. Ensure that energy efficiency, other carbon footprint reduction initiatives, climate change adaptation and resilience, and other relevant council sustainability policies or goals are included in the asset management plans.					
		4. Ensure that adequate corporate direction on long-term planning assumptions and sustainability policies is developed and provided to planning and investment teams.					
		5. Ensure that the long-term plan is updated and aligned with the AM objectives.					
		6. Ensure the integration of long-term planning and triple bottom line (TBL) into AM practices.					
	Risk management	1. Identify and manage risk in the AM system.					

<i>AM System Element</i>	<i>Practice or Process</i>	<i>Related accountability</i>	<i>SLT</i>	<i>AM Steering Committee</i>	<i>CAMO</i>	<i>Technical Director</i>	<i>AM Technical Lead</i>
Stakeholder Engagement	Stakeholder consultation/ communication	1. Identify, engage and inform internal stakeholders.					
		2. Identify, engage and inform external service and investment partners.					
		3. Oversee external stakeholder engagement practices.					
		4. Provide a communication/translation interface between political and administrative elements (via CAO).					

Source: Letter prepared by an external consultant to support development of the Corporate AMP and the Transportation Asset Management Plan.

4.4.4 Potential Governance Models

Through development of the Corporate AMP and Transportation DAMP, the City undertook a survey of potential governance models that could be implemented to help the City streamline the CAMP process. The governance model samples, are based on the hierarchy from Figure 4-9, and are therefore consistent with best industry practice related to ISO 55000. Advantages and disadvantages of each approach is outlined in Table 4-13. Based on the City’s Strategic Asset Management Policy the current governance model is more closely aligned with Model 1.

Figure 4-10 – Model 1 Departmental AM Steering Team (Facilitation and Advisory), Centralized AM Office and Formal Decentralization Departmental Delivery

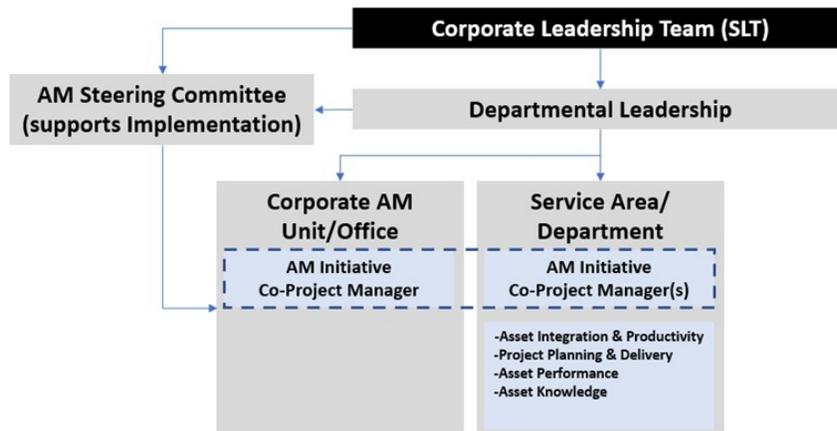


Figure 4-11 – Model 2 Departmental AM Steering Team (Senior Level Cross-Departmental Group) and Informal Decentralized Departmental Delivery

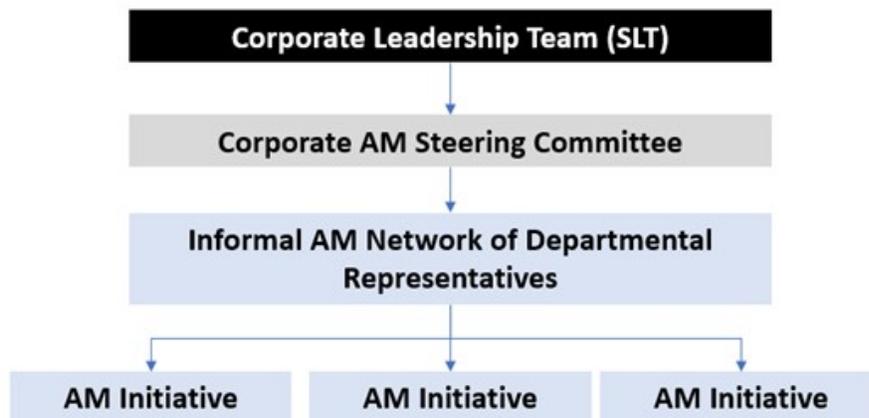


Figure 4-12 – Model 3 Centralized (Departmental AM Office) and Informal Decentralized Departmental Delivery

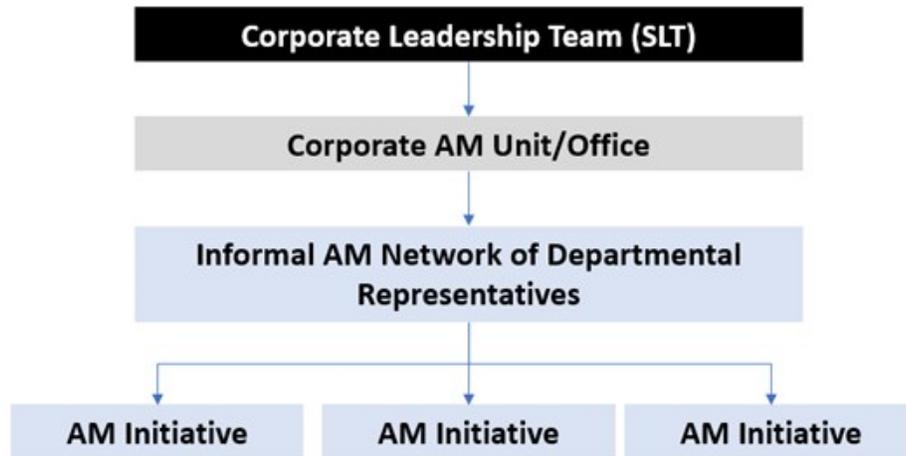


Figure 4-13 – Model 4 Departmental AM Steering Team, AM Delivery through Task Teams



Table 4-13 – Evaluation of Potential AM Governance Models

<i>Model</i>	<i>Advantages</i>	<i>Disadvantages</i>
Model 1	<ul style="list-style-type: none"> • Consistency in Asset Management practices. • Standardization of tools and templates. • Autonomy and flexibility. • Collaboration. • High level of specialization & technical knowledge. • Dedicated Asset Management Office roles. • Clear career paths & succession planning. • Ownership of Asset Management remains with the Departments. 	<ul style="list-style-type: none"> • Adversarial relationships if the Asset Management Office is perceived to be prescriptive with policies and standards. • Resistance to corporate guidelines. • Additional staffing may be required.
Model 2	<ul style="list-style-type: none"> • All Departments are involved in Asset Management strategic & tactical decision making. • Departments control what is implemented and the level of support they require. • No new hires. • Overall it does not involve a significant change program. 	<ul style="list-style-type: none"> • Lengthy implementation. • Lack of consistency, accountability and authority. • Difficulty reaching consensus on key decisions. • Staff may be overloaded. • Concerns for long term viability of Asset Management Steering Team. • Will take longer to show benefits of Asset Management Implementation.

<i>Model</i>	<i>Advantages</i>	<i>Disadvantages</i>
		<ul style="list-style-type: none"> • Work flow and information sharing silos that currently exist are unlikely to change.
Model 3	<ul style="list-style-type: none"> • Accountability for Asset Management is a core function. • Consistency and tight control over all aspects of Asset Management. 	<ul style="list-style-type: none"> • Departments could fear that the Asset Management Office will take over their operations. • Asset Management Office could become disconnected from operational business units.
Model 4	<ul style="list-style-type: none"> • Departments are involved in both Asset Management strategic and tactical decision making. • Departments have a forum for discussing implementation and support needs for Asset Management and in this way have some control on what is implemented and the level of support received. • No new hires required. 	<ul style="list-style-type: none"> • Lengthy implementation. • Lack of consistency, accountability and authority. • Meetings can be adhoc and attendance can be seen as optional. • Staff may be overloaded. • Competing objectives duplication of frameworks and the development of standalone solutions.

4.4.5 Consideration for Asset Interdependence

The City of Brampton provides a series of different services to its residents, from library and recreation programs to transit and a connected transportation network. Although many of the services provided by the City may be managed and provided independently from each other, certain service areas are co-dependent and co-ordinate asset management activities to achieve cost efficiencies. Currently, much of this co-ordination occurs at the departmental level and has largely remained undocumented as part of the City’s overall asset management strategy. Therefore, the City recognizes that development of a framework to identify asset interdependencies is important in order for the City to co-ordinate asset management activities across service areas in the most cost-effective manner.

For the purposes of this section asset interdependency is defined as:

“The extent to which customer levels of service (capacity and use, functionality and quality) provided by one service area, are dependent on the lifecycle activities carried out by another service area”

With this in mind, the City aims to streamline asset management processes across service areas. To achieve this, the City will need to begin documenting how asset management decisions from a service area should be considered or integrated into asset management decisions in other service areas, particularly for areas that are highly interdependent. This section aims to achieve the following objectives:

- Develop a tool that will identify asset interdependence across the City’s service areas;
- Identify service areas for which levels of service are highly dependent on the lifecycle activities of other service areas; and
- Develop key recommendations to incorporate asset management strategies that will help facilitate streamlining asset lifecycle activities across service areas.

Asset Interdependence Model

In order to help identify the asset interdependencies across different service areas, an MS Excel based model has been developed. The model outlines and qualifies the relationship between customer levels of service and lifecycle activities across service areas. Customer levels of service are considered based on asset capacity and use, functionality and quality while lifecycle activities are considered for operations/maintenance, renewal, replacement and expansion activities.⁸ City staff have undergone an initial qualitative review to identify if a dependence exists for each level of service attribute relative to the lifecycle activities across service areas. Furthermore, the City has also identified the potential asset relationships with external partners particularly the Region of Peel as it relates to Regional roads, water, wastewater and stormwater services. Table 4-14 summarizes the services areas that have been considered under this exercise.

Table 4-14 – Service Areas Considered Under Asset Interdependency Analysis

Area	Service Areas Considered
City of Brampton	<ul style="list-style-type: none"> • Transportation • Stormwater • Facilities • Transit • Information Technology • City Support Fleet • Fire • Parks • Recreation • Cultural Services • Library • Animal Services
Region of Peel	<ul style="list-style-type: none"> • Stormwater • Water • Wastewater • Roads

The dependence of levels of service to other service area lifecycle activities were assessed based on a scoring system out of 12 points (4 lifecycle activities x 3 levels of service). A score of 12/12 would indicate a high asset dependence where a score on the lower end of the spectrum, closer to 1/12, would indicate low asset dependence. The scoring system was derived qualitatively with consideration to some key factors:

- Where justifiable and interdependence is more obvious, the relationship between service areas is considered to be strongly dependent. Dependence exists where it is understood there is a need for capital coordination and/or a SLA (Service Level of Agreement) between the service areas that clearly states the services required and the expected levels of service.
- Avoiding indirect interdependencies, such as risk events, other infrastructure external to the City such as utility infrastructure or phone lines, and hypothetical scenarios. This maintains the analysis focused on direct implications to the City asset management practices.
- Where interdependency is not obvious, it would be assumed that the relationship between service areas is lower.

⁸ Note that these levels of service have been defined in Section 3 Levels of Service.

The interdependence is then assessed on a qualitative basis based on the 12 point scoring system. Table 4-15 below outlines a summary of the scoring system. A score greater than 66% (out of 12) indicates a strong dependence, indicated by a darker colour. Lighter colours indicate weaker dependence. A not applicable category is assigned in comparison of service areas with themselves, as this comparison does not add value to the analysis.

Table 4-15 – Interdependence Assessment Parameters

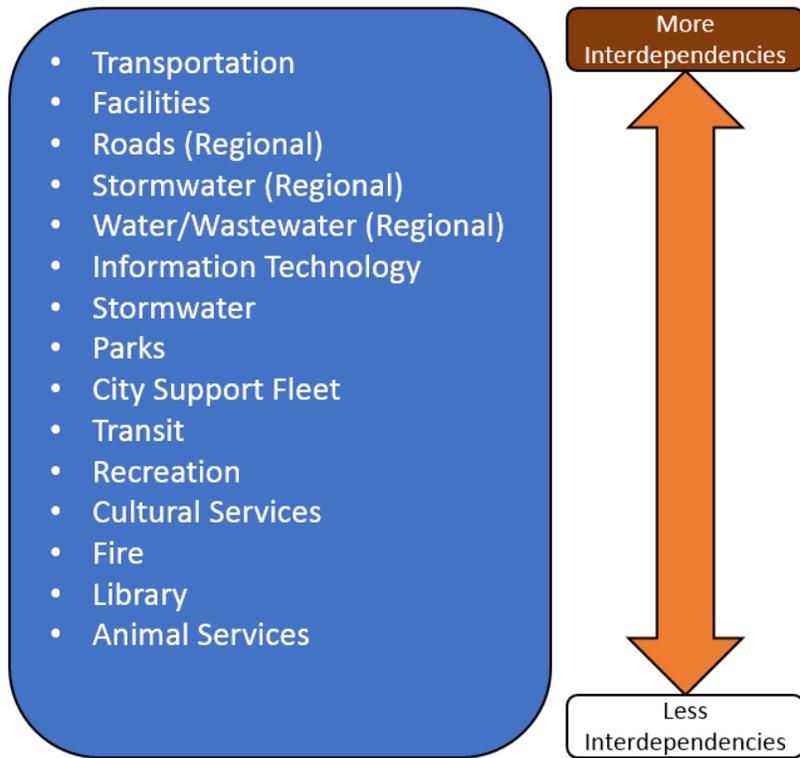
<i>Colour Code</i>	<i>Description</i>	<i>% of Interdependence (out of 12)</i>
	Strong Dependence	>66%
	Moderate Dependence	34%-66%
	Low Dependence	1%-33%
	No Dependence	0%
	Not Applicable	Not Applicable

Note: Not applicable applies to comparison of service areas with themselves which are excluded.

Interdependence Key Results

Figure 4-14 below summarizes the key results of the qualitative asset interdependency analysis that was undertaken. The City’s transportation and facility services are determined to have key dependencies to several other service areas. For transportation, there is strong interdependence with several City service areas including; Stormwater, Transit, Parks and Regional services as well as moderate interdependence with all other service areas. Similarly, as many services are dependent on facilities to facilitate the provision of services or to maintain required service levels, the “Facilities” category has interdependencies with most service areas. City services which are indicated lower on the scale, tend to provide levels of service that are independent of other service areas such as those in recreation, cultural services, library and animal services. This said these service areas are still largely dependent on facilities services. The complete comprehensive asset interdependency matrix is illustrated in Appendix G-2.

Figure 4-14 – Summary of Key Results



4.4.6 Key Recommendations

To develop an effective governance model for the corporate asset management program at the City, an understanding of current practices needs to be developed. This will allow the City to understand the gaps in the current governance model in order to create actionable improvements and achieve the preferred governance model. Table 4-16 outlines key recommendations to move the City’s governance framework forward.

Table 4-16 – Key Recommendations

Key Recommendation	Description
Governance Model	<ul style="list-style-type: none"> • Implement a formalized CAMP governance model that is consistent with the City’s Strategic Asset Management Policy. The models presented in this section provide the City with a starting point. • Working communication between all stakeholders involved to ensure the governance model is effective • Policy to be maintained and updated on a regular basis to ensure governance links are clear and consistent • Amend the Strategic Asset Management Policy to include clear roles and responsibilities once a preferred governance structure is adopted • Developing a reporting dashboard based on governance metrics would help to ensure that the current structure is still functioning effectively for the City.
RACI Matrix	<ul style="list-style-type: none"> • Develop a RACI matrix to outline the roles and responsibilities of all individuals involved in the CAMP

<i>Key Recommendation</i>	<i>Description</i>
	<ul style="list-style-type: none"> • The RACI matrix should be developed to understand the City’s current roles and responsibilities at the service area level through the DAMP process • Once this is complete, identify gaps utilizing the RACI matrix to ensure consistency with the preferred governance model and Strategic Asset Management Policy
Hiring Practices	<ul style="list-style-type: none"> • Enable hiring practices that places value on asset management skills within each service area
Capacity Building	<ul style="list-style-type: none"> • Ensure capacity building through training/internal workshops and involvement of applicable staff in asset management updates while implementing asset management practices • The City should also continue to explore: <ul style="list-style-type: none"> ○ new FTE needs for CAMP related works; ○ increasing existing staff allocations and resources to AM governance activities as needed; and ○ utilizing external consulting resources, where feasible, to advance the City's data quality framework.
Asset Interdependence	<ul style="list-style-type: none"> • Through the DAMP process, identify specific lifecycle activities in each service area and document the levels of service that may be dependent on them in all other service areas. The mapping developed through this CAMP provides a template to generate a similar analysis at a service area level. • Identify key cooperative opportunities that are already taking place between service areas and document them in the Corporate AMP. This can be developed through each service area DAMP in consultation with service area staff. • Identify key cooperative gaps that have potential to hinder the asset management process between service areas. Consultation with service area staff will be needed to identify areas where interdepartmental coordination is required. Ensure that a governance structure is implemented so that ownership is clearly identified. • Explore the option of formalizing any cooperative agreements between service areas through service level policies or agreements. Service level agreements can be developed to both formalize existing practices and address current gaps. Note that cooperative agreements are not required in all service areas of the City, however they should be assessed based on their benefit and whether efficiencies can be achieved if implemented. • Ensure that asset interdependence is considered when formalizing a preferred governance model.

4.5 Asset Information Management

The City’s asset management programs are continuously evolving. With this in mind, the City has identified the importance of the City’s asset management data necessary to continue to evolve the City’s asset management practices. The City also recognizes that the “availability of data” is not the only criteria needed to better inform asset investment decisions, but also the quality of data, analysis and how it is used. For this reason, the City has found it necessary to develop an Asset Information Management Strategy (AIMS) to help guide the City in developing a framework to identify the City’s asset specific data needs and develop a guiding plan to achieve asset data objectives to 2025 and beyond. AIMS is therefore developed to be in line with both the timing of the development of specific departmental asset management plans (DAMP) and a key tool to help achieve the regulatory requirements of O. Reg. 588/17.

4.5.1 Background

The initial development of the AIMS began in early 2021 in order to help inform the development of the Corporate AMP. The AIMS is a high-level guiding plan that establishes the vision for asset data management at the City and also helps to assess the current position as to where the City is in terms of data and systems to support asset management. The intent of the strategy is to help the City improve the maturity of its asset information management processes associated with broader asset management practices. Finally, the AIMS is expected to be reviewed in conjunction with updates to the Corporate AMP, which has created the need to review this approach here.

The City identified the need to adapt the AIMS framework to better fit the development of DAMPs and assist in meeting the requirements of O. Reg. 588/17. Five guiding principles were established and endorsed by the City's corporate leadership. These principles are summarized as follows:

1. **Standardization** - Ensure compliance with asset data guidelines including asset hierarchy and technology standards (e.g. GIS standards). Use standardized and modern business processes across systems, divisions and departments. Key tools for standardization include:
 - Adopt baseline data standards for all corporate assets
 - Modernize workflows for day-to-day management of assets
 - Standardize reporting across systems and asset classes
2. **Centralized Asset Register** - Each asset will be captured and managed within a centralized asset solution. This will include capturing each asset record that can be mapped in the Enterprise GIS system. Completeness of centralized asset inventories residing in the overall Enterprise solution will enable access to accurate information on assets to support evidence based decision-making and drive funding priority decision making processes. Key tools of the asset register include:
 - Adopt baseline data standards for all corporate assets
 - GIS expected to be the asset register of record for the majority of assets
 - Only assets that cannot be mapped will be managed in other centralized corporate solutions
 - Centralized systems will contain the data that feeds into the enterprise decision support solution and minimize data duplication
3. **Sustainability** – The City will adopt system consolidation plans and practices to capture data at the source when it is created, minimize duplication of asset data and business processes, and maximize re-use opportunities.
 - Asset data will be centralized into systems of record in order to minimize duplication, build confidence in data and lower support efforts
 - Workflows and specifications will be established for operations, maintenance, engineering and finance to work together and ensure all necessary asset data and information is captured during the capital delivery process
 - Modernized workflows for day-to-day management of assets will be implemented

- Prior to purchasing new systems, existing systems will be reviewed for re-use opportunities
4. **Integration** - To address corporate reporting needs, the City will strive for enterprise systems where possible, systems of record and other supporting systems will be fully integrated to improve productivity, data quality and timely access. Key tools include:
- Systems will feed into the City’s Master Data Management (MDM) solution for data recording, sharing and reporting based on standardized data and workflows
 - Standardized reporting and dash boarding across systems and asset classes will be implemented
5. **Data Confidence and Reliability** – The City will report on asset data quality, integrity and confidence measures to ensure sound stewardship, support evidence-based decision-making and continuously address data quantity and quality gaps.
- Data quality improvement plans and measures will be adopted
 - Maturity framework for asset data, workflows & reporting will be developed
 - A robust data collection and quality control plan will be established based on asset criticality and all missing data will be collected and updated in the relevant systems
 - Develop continuous improvement plans to measure effectiveness of various programs

4.5.2 Framework

The AIMS framework has been developed to assist City staff to plan and track the action items needed to achieve asset management objectives and meet the requirements of O. Reg. 588/17. Furthermore, an internal tracker tool (AIMS Tracker), which tracks the progress of key AIMS objectives, the timing of completion and expected progression was created. The AIMS framework considers specific asset management tools which are critical to informing the City’s asset decision making process. The AIMS strives to advance the City’s asset related data management practices through adoption of baseline data standards in the key areas outlined in Table 4-17.

Table 4-17 – Key Asset Data Areas

Category	Description	Asset Data Type
State of Local Infrastructure (SOLI)	As the SOLI is the City’s main tool to report on key asset information, it is prudent that background information needed for its development is complete. In particular, AIMS would focus on improvements to existing data and management of data over the coming years as it relates to all technical descriptors of its assets.	<ul style="list-style-type: none"> • Asset Identification • Asset Location • Asset Classification • Physical Attribute • Condition
Levels of Service	As part of this CAMP the City has developed its first level of service tracker. Levels of service are intended to be used to assist forward looking asset investment decision-making. With this said, level of service tracking is expected to be improved over time.	<ul style="list-style-type: none"> • Performance • Predictive
Lifecycle Strategies	Although the City already tracks lifecycle strategies, most tracking is fragmented and done	<ul style="list-style-type: none"> • Risk/Criticality • Work Management

<i>Category</i>	<i>Description</i>	<i>Asset Data Type</i>
	at a service area level. Documenting key lifecycle strategies will likely be necessary through the DAMP process and require co-operative work to achieve unity across departments.	<ul style="list-style-type: none"> • Lifecycle •
Financing Strategies	The financing strategy is presented to Council on an annual basis. The City strives to continue this practice. With this said, it is expected that every future iteration of the financing strategy will be better informed as information on assets becomes better.	<ul style="list-style-type: none"> • Asset Values • Expenditure Forecasts • Funding Sources • Funding Gaps
Data Management	The points above will require improvements to the City's data management processes. Today many of the processes are fragmented, however the City intends to work towards an enterprise solution to begin managing and tracking data across all the areas of interest above.	<ul style="list-style-type: none"> • Governance • Collection Protocols

The existing state of the City's asset data for the areas of interest presented in Table 4-17 were assessed through the work completed for the Corporate AMP. A detailed review was developed based on the consultation process undertaken with departmental representatives for this Corporate AMP. With this information, staff undertook a qualitative review of each of the areas of interest in Table 4-17 by assessing the maturity of the existing state of data available and its management. The exercise undertaken not only looks at the maturity assessment on a service area basis but as well as from an asset category perspective. The assessment was developed based on the City's asset hierarchy, to identify in more detail, areas where data gaps exist. The asset maturity assessment is based on a qualitative scale that includes three levels of maturity: basic, intermediate and advanced. The levels of maturity describe the key objectives the City wants to achieve to reach the advanced level. The scale is shown in Table 4-18.

Table 4-18 – AIMS Asset Data Maturity Scale

<i>Category</i>	<i>Asset Data Type</i>	<i>Basic Level</i>	<i>Intermediate Level</i>	<i>Advanced Level</i>
State of Local Infrastructure	Asset Identification	Most assets recognized by different asset identifiers in different asset registers which inhibits linkage of attributes across asset registers	Some assets recognized by a common asset identifier which enables linkage of attributes across some asset registers	All assets recognized by a common asset identifier which enables linkage of attributes across all asset registers
	Asset Location	Some assets have data about location and/or relation to other assets	Many assets have data about location and/or relation to other assets	All assets have data about location and/or relation to other assets

<i>Category</i>	<i>Asset Data Type</i>	<i>Basic Level</i>	<i>Intermediate Level</i>	<i>Advanced Level</i>
	Asset Classification	Some assets have data to enable grouping required for reporting, placement in asset hierarchies, and differentiation of assets with differing service level requirements	Many assets have data to enable grouping required for reporting, placement in asset hierarchies, and differentiation of assets with differing service level requirements	All assets have data to enable grouping required for reporting, placement in asset hierarchies, and differentiation of assets with differing service level requirements
	Physical Attribute	Some assets have some physical attribute data to enable it or its components to be differentiated from other similar assets, quantified and described in detail	Many assets have most physical attribute data to enable it or its components to be differentiated from other similar assets, quantified and described in detail	All assets have all physical attribute data to enable it or its components to be differentiated from other similar assets, quantified and described in detail
	Condition	Most assets have some staff review of age-based data but no condition assessment data	Assets have a combination of staff inspection data and full condition assessments	All assets have complete condition inspections and assessment data
Levels of Service	Performance	Some assets have some Customer and Technical LOS metric data	Many assets have most Customer and Technical LOS metric data	All assets have complete Customer and Technical LOS metric data
	Predictive	Some assets have some asset lifecycle prediction data	Many assets have most lifecycle prediction data	All assets have all lifecycle prediction data
Lifecycle Management Strategy	Risk/Criticality	Some assets have high-level risk/criticality assessment data based on professional judgement	Many assets have high-level risk/criticality assessment data based on analytics; some professional judgement	All assets have detailed risk/criticality assessment data based on analytics
	Work Management	Some assets have some lifecycle activity work history data	Many assets have most lifecycle activity work history data and some repair/breakdown/deficiency data	All assets have complete lifecycle activity work history and repair/breakdown/deficiency data
	Lifecycle	Lifecycle strategies based on historical practices and ad hoc reactionary adjustments	Lifecycle strategies based on some consideration for asset condition, risk, and level of service data	Lifecycle strategies based on full consideration of asset condition, risk, and level of service data

<i>Category</i>	<i>Asset Data Type</i>	<i>Basic Level</i>	<i>Intermediate Level</i>	<i>Advanced Level</i>
Financing Strategy	Asset Values	Some assets have some cost data for the assets (both historical and current)	Many assets have most cost data for the assets (both historical and current)	All assets have complete cost data for the assets (both historical and current)
	Expenditure Forecasts	Expenditure forecasts are based on historic operating and capital budget data	Expenditure forecasts are based on historic operating and capital budget data and some consideration of asset condition, risk and level of service data, broken down by lifecycle category including expansion need and contributed asset data	Expenditure forecasts are based on the optimal set of planned activities that will enable the assets to provide the desired levels of service, while managing risk, at the lowest lifecycle cost, broken down by lifecycle category including expansion need and contributed asset data
	Funding Sources	Funding source data includes current debt needs, reserve funds, and taxation/user fees	Funding source data includes current and future debt needs, reserve funds and taxation/user fees	Funding source data includes current and future debt needs, reserve funds and taxation/user fees and annual repayment limit
	Funding Gaps	Infrastructure funding gap data exists for the initial 1 to 2 years of the forecast period	Infrastructure funding gap data exists for all years of the forecast period for some asset types	Infrastructure funding gap data exists for all years of the forecast period and the long term for all asset types
	Funding Sustainability	Little or no data to show how the funding gap will be reduced/eliminated	Complete data to show how the funding gap will be reduced/eliminated for significant assets, with little data for other assets	Complete data to show how the funding gap will be reduced/eliminated for all assets
Data Management	Governance	Data stewardship is established for some assets	Data stewardship is established for most assets with clear definition of responsibility of data maintenance and validation	Data stewardship is clearly established for all assets and responsibilities for data creation and maintenance are clearly defined and realized for all assets. Data sharing is enabled.

Category	Asset Data Type	Basic Level	Intermediate Level	Advanced Level
	Data Collection Protocols	Information is mostly scattered in various documents like Operations Manuals	For most assets information transfer process is established however involves manual data transfer	Information transfer process is well established and covers wide range of the asset attributes and performed in the most automated way permitted with current technology

Source: Asset Information Management Strategy March 2021.

4.5.3 Next Steps

Based on the rating scale in the previous section, the City undertook an assessment of the data related to all service areas that is currently available, how it is being utilized and overall how the information is governed. Overall, assessment of the current state determined that most areas expected to be addressed through AIMS are currently in the Basic to Intermediate range (see Appendix H-1). This assessment is based on the qualitative scale from Table 4-18 to reach a high-level rating based on internal staff opinion.

The City’s objective is to achieve the “Advanced” range for all service areas over the coming years. To achieve this objective, the City has identified key tasks that will need to be undertaken over the next few years. Appendix H-2 outlines a detailed list of these tasks by service area. The tasks largely involve tangible work needed to improve the quality, quantity and connectivity of asset data across the City but most importantly how the data will be utilized. The completion of the tasks outlined through AIMS in Appendix H is also a critical component for other Corporate AMP areas including the Level of Service templates, Risk Management Strategy, Lifecycle Management Strategy and Financing Strategy. To summarize the detailed analysis of Appendix H, Table 4-20 outlines a high level list of objectives that apply at the City overall level and are expected to be completed for all service areas.

Implementation of AIMS is an evolving process and will require co-operation from various service areas across the City. Some key recommendations are as follows:

Table 4-19 – Key Recommendations

Recommendation	Description
Development of the City’s DAMPs represent an opportunity to further the objectives of the AIMS.	<ul style="list-style-type: none"> Consideration should be made during DAMP development to include development of specific plans to better obtain and manage the data needed to reach the “Advanced” maturity level for each service area.
Continue to co-ordinate with service area level representatives to understand their data and data management needs.	<ul style="list-style-type: none"> Currently, much of the City’s data is fragmented and therefore risk exists that if service areas continue to evolve their processes independently, fragmentation will continue. Efficiencies can be achieved by continuing dialogue with each service area.
Development of a Financial Decision Support Solution	<ul style="list-style-type: none"> The development of a Financial Decision Support Solution will require a more involved level of coordination with IT. It is expected that this enterprise solution would be informed by the data related to the areas of interest outlined in Table 4-17. It will therefore be important to begin co-ordination with IT to develop this solution as well as explore best industry practices.

<i>Recommendation</i>	<i>Description</i>
Continual updating and monitoring of the AIMS internal tracker	<ul style="list-style-type: none"> • The AIMS internal tracker (see Appendix H) developed as part of this CAMP should be continually updated and monitored to ensure that AIMS objectives are being met within the specified phases. • Reviewing and updating the tracking tool on a regular basis allows the City to assess its progress towards Advance maturity and identify any gaps or challenges. • For future iterations of the data assessment, it is recommended that the City looks to adopt a 'consensus' based approach to obtain the maturity rating levels for each service area.

It is important to note, that many of the tools needed to continue towards the path of advanced maturity have been developed or are under development. These include development of the annual SOLI reports and financing strategy, the newly developed LOS tracker and development of more mature asset management processes through the various DAMPs. These tools are expected to be further refined over time.

Table 4-20 – Phased Approach to Implementation of AIMS

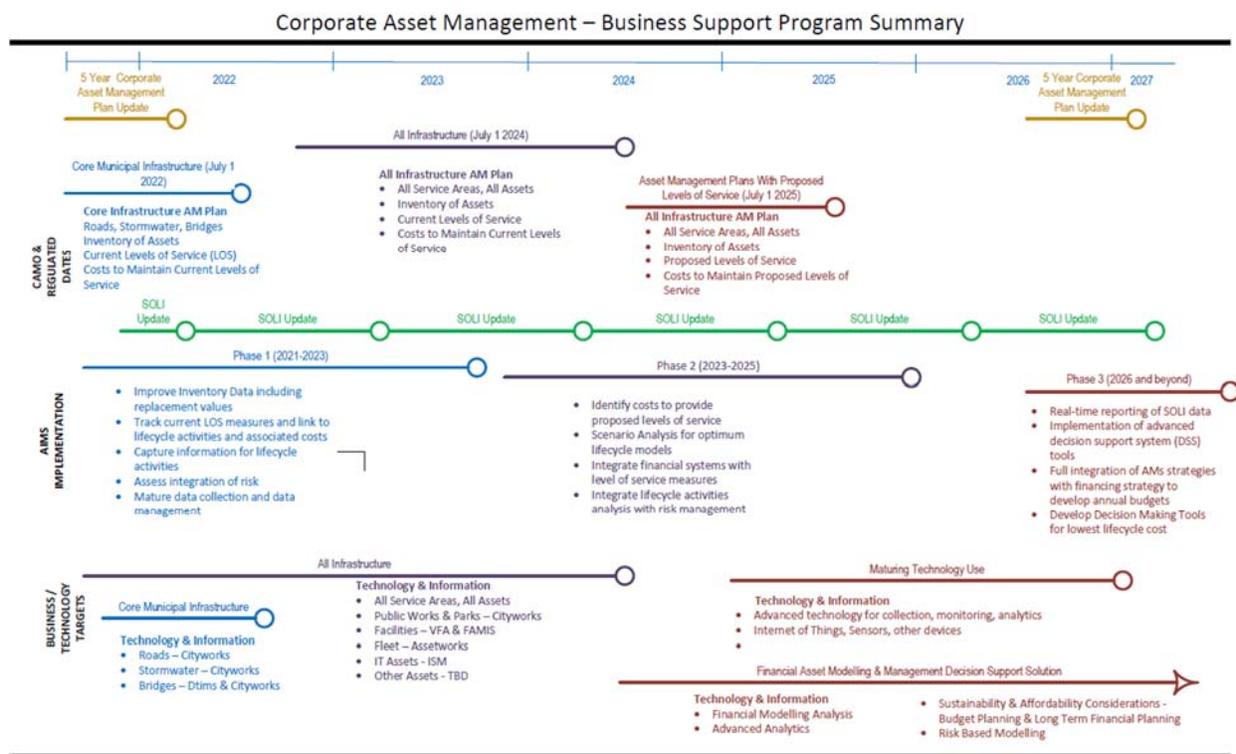
<i>Information Category (Data Type)</i>	<i>Phase 1 (2021-2023)</i>	<i>Phase 2 (2023-2025)</i>	<i>Phase 3 (2026 and beyond)</i>
State of Infrastructure (Asset Identification, Location, Classification, Physical attribute, Condition)	<ul style="list-style-type: none"> • Improve inventory data required for the first round of DAMPs • Continue to mature inventory management solutions which are on-board for most service areas and implement solutions to cover gaps identified 	<ul style="list-style-type: none"> • Utilize improved inventory data for DAMP development and continue to monitor gaps • Continue to mature inventory management solutions 	<ul style="list-style-type: none"> • Detailed incorporation of the information developed through DAMPs including all relevant asset inventory information required for LOS, Risk Management Strategy, Lifecycle Strategy and Financing Strategy • Real time reporting of integrated SOLI
Levels of Service (Performance, Predictive)	<ul style="list-style-type: none"> • Review how existing LOS measures are tracked and improve tracking by identifying attributes required to quantify and work on collecting the data. • Collaborate with Corporate Performance group and Service areas on tracking performance for current LOS. Link selected LOS to the dashboards. Develop dashboard update for City assets first for regulatory compliance. • Associate current cost to provide major LOS and develop the linkage to lifecycle strategy for selected assets, start including refined information on O&M costs collected through CMMS solutions as attributed to specific LOS. Timeline to align with the CAMO roadmap for DAMPs 	<ul style="list-style-type: none"> • Track existing LOS measures to identify a trend to inform decision making • Evaluate options to develop LOS linkage to lifecycle strategy through service area systems or one corporate decision support system • Continue to develop linkage between LOS and associated costs through lifecycle activities • Integrate financial systems with AM LOS metrics to allow connection of LOS to cost • Provide tools to facilitate decision making on desired LOS • Develop and mature predictive models to identify cost to provide proposed/desired LOS and incorporate into financing strategy 	<ul style="list-style-type: none"> • Further implementation of the advanced tools (DSS) to establish connection between SOLI, LOS, lifecycle strategies, risk management strategy and financial system for decision making • Continue tracking of costs to provide levels of service (budget vs actual)
Lifecycle Strategy (Risk/Criticality, Work Management, Lifecycle)	<ul style="list-style-type: none"> • Define lifecycle activities to be tracked in alignment with Corporate Lifecycle activities framework • Develop and continue to refine systems, tools and processes to enable all asset lifecycle information to be captured and be available for analysis by 	<ul style="list-style-type: none"> • Support the development of the different scenarios for the lifecycle models to ensure that assets are managed to the optimum lifecycle • Develop process and system for risk treatment including assessing residual risk 	<ul style="list-style-type: none"> • Detailed incorporation of the information developed through DAMPs related to the Lifecycle Management Strategy with all relevant asset inventory information required for LOS, Risk Management Strategy and Financing Strategy • Develop advanced decision-making tools to apply lowest lifecycle principle so lifecycle strategies

<i>Information Category (Data Type)</i>	<i>Phase 1 (2021-2023)</i>	<i>Phase 2 (2023-2025)</i>	<i>Phase 3 (2026 and beyond)</i>
	<p>service areas for lifecycle strategies development and refinement</p> <ul style="list-style-type: none"> Review how to integrate risk factors into Lifecycle strategies and CMMS activities 	<ul style="list-style-type: none"> Integrate Life Cycle activity analysis with the risk management strategy for prioritization and implementation through CMMS systems 	<p>updated based on an analysis of LOS, risk and current lifecycle activities costs on an ongoing basis</p>
<p>Financing Strategies (Asset values, Expenditure Forecasts, Funding Sources, Funding Gap, Funding sustainability)</p>	<ul style="list-style-type: none"> Develop procedures and frequency to update asset replacement values and integrate them within the asset inventory management systems including unit cost and reference to the source of the information. Develop requirements and explore use of current systems for decision support Development of lifecycle cost model to capture all lifecycle activities (non-infrastructure solutions, operation/maintenance, renewal, replacement, disposal and expansion) leveraging information contained in CMMS and other systems 	<ul style="list-style-type: none"> Development of asset specific modules for detailed asset level financial analysis, for example Asset Works AM module for Fleet Continued development of lifecycle cost model to capture all lifecycle activities at a service area level through connection to the CMMS systems Refine methodology and start lifecycle costs integration with financial planning 	<ul style="list-style-type: none"> Full integration of LOS, Risk Management Strategy and Lifecycle Management Strategy to inform the Financing Strategy Full integration of the Financing Strategy to develop annual budgets and long-term forecasts Lifecycle cost modelling fully developed at a service area basis and integrated with financial strategy decision making
<p>Data Management (Governance and Collection Protocols)</p>	<ul style="list-style-type: none"> Formalize asset data governance including interdependent assets Mature processes and continue implementing tools for the data collection and data management, including data migration into City systems upon acquisition or capital construction phase. 	<ul style="list-style-type: none"> Continue implementation of the data collection tools where required Develop data quality assurance protocols in accordance with established data governance Incorporate data management practices into the procurement and development processes 	<ul style="list-style-type: none"> Efficient management of data on a corporate-wide basis with protocols to continually improve information quality

To achieve the advanced maturity level, the City has proposed a timeline over 3-phases as outlined in Table 4-20. As the work required is extensive, the phased approach to achieve the advanced maturity level provides the City with a realistic timeline to meet its objectives. Furthermore, it aligns to the key timelines required by O. Reg. 588/17 to 2025.

Each phase of the AIMS is expected to encompass the development of the key tools necessary to achieve the “Advanced” maturity level for all areas of interest by Phase 3. Therefore, the tasks that have been outlined in detail in Appendix H have also been created using this phased approach. Figure 4-15 outlines a high-level summary of the tasks outlined in Appendix F, utilizing the phased approach proposed for AIMS.

Figure 4-15 – Phased Approach to Achieve Advanced Maturity Level



4.6 Communication

The Corporate AMP is intended to help the City of Brampton’s stakeholders (City employees, City Council, and the community) by educating, informing and engaging with them on all aspects of the City’s asset management program. The Corporate AMP provides timely, comparable and accurate information regarding the City’s assets to facilitate decision making. For this reason, strategically planned communication can support the Corporate AMP and the City’s corporate asset management program (CAMP) by ensuring that stakeholders are aware and understand the need for asset management and its purpose. This also provides opportunities to participate and collaborate in the program, engage and support program requirements, define program goals and have access to information, interactive tools, and capabilities to support Corporate AMP requirements.

To achieve these objectives, a Communication Strategy (CS) is proposed as part of this Corporate AMP. The goal of this communication strategy is to establish an integrated approach that will enable clear, accurate, and timely communication with stakeholders, which informs, educates and brings awareness (and potential engagement) to key messaging related to the City's asset management program. The purpose of the CS is to ensure that:

- Communication approaches are integrated within the City's asset management program;
- Information is easily accessible, relevant, timely and accurate;
- The release of key public documents, such as SOLI reports and Corporate AMP, is communicated using the City's main methods of delivery for each audience;
- Ensure contributions of stakeholders are regularly acknowledged; and
- Achieve a level of public engagement that meets the requirements of *O Reg 588/17*.

A communication strategy was included as part of the 2016 Corporate AMP and is updated in this report to better reflect changes in information and service delivery since that time.

4.6.1 Key Principles of the Communication Strategy

As the key objectives of the CS is to provide and receive key information from stakeholders on an ongoing basis on CAMP matters, it is important that there is consistency among deliverables. To achieve consistency in communications, a set of key principles should be established to ensure that all communication documents (both inputs and outputs) related to the CAMP are interrelated and can be utilized as templates in future years. These key principles should be applied to templates of communication materials and key messaging as needed. A set of key principles is therefore outlined in this section.

Key Principle 1: Consistency Across Communication Materials

The CS purpose is to support the needs of the CAMP itself. In order to achieve effective communication to support good inputs to the CAMP as well as report useful outputs, materials should be consistent and follow a set framework. Messaging should align with corporate messaging, leverage existing CAMP tools, be consistent for all audiences and be consistent over time. This approach means employing the following communication principles:

- Consistent graphics and styles for all CAMP communication documents. For example, continue providing Council and public with annual SOLI that incorporates annual year over year comparisons;
- Providing communication materials to all relevant stakeholders;
- Utilize and adapt existing City media tools to incorporate CAMP reporting; and
- When developing new communication tools, ensure that these tools are consistent with overall CAMP messaging.

Key Principle 2: Simplicity

Ensure that the elements of the communication process are simple in nature. Of particular importance is developing communication material that is both useful for internal decision making but also available for public review.

- Use established communication mechanisms and processes (such as Council meetings) that people recognize and value for their information;
- Strive for clarity and conciseness of messaging, this can be done by identifying the target audience; and
- Consider Brampton’s diverse audiences and ensure communication is simple and easy to understand (utilize other mediums to share information, such as but not limited to, media relations, social media, website, digital, print, etc.).

Key Principle 3: Engagement

The CAMP needs to promote avenues for feedback with stakeholders to generate useful information and improve asset management over time in the City. Information from the CAMP needs to be actively communicated on an ongoing basis. Engagement with stakeholders also encompasses the key principle of transparency of all the information in the CAMP.

- Ensure key stakeholders are engaged as necessary;
- For all aspects of the CAMP, develop an engagement plan that captures who is being engaged and for what reason;
- Ensure that the objective to be achieved from engaging stakeholders is clear, and targeted specifically to the audience, before any consultation is to take place; and
- Develop an asset management network within the City that identifies key contacts to obtain relevant asset management information.

Key Principle 4: Relevance

It is important to ensure that the information stakeholders receive is relevant to them and received when appropriate. Ensure that information is shared across the City’s service areas. This approach suggests the following principles be adopted:

- Ensure that stakeholders are provided information that is relevant to their area and is consistent with the level of maturity of their service area and the overall asset management program;
- Utilize communications that each stakeholder recognizes and values; and
- Track the engagement of stakeholders to ensure that they continue to engage with asset management processes as necessary.

Key Principle 5: Phased Implementation and Adaptability

An effective CS is an ongoing process and should therefore be implemented over time. This approach would be consistent with development of the various DAMPs and the objectives of AIMS. The following principles should be adopted:

- Development of communication strategies that are relevant to the specific item being communicated. This is particularly important during the development of the various DAMPs as different stakeholders will be engaged in different service areas;

- Overall CS should evolve over time as the asset management program evolves. In particular, as improvements are made to the City’s asset management framework through AIMS; and
- Implement communication strategies over time to ensure that both sufficient and relevant information is provided once there is confidence that the information can be utilized for City decision making.

4.6.2 Identifying Stakeholders

Every citizen of the City of Brampton is a stakeholder in the City’s corporate asset management program, however, it is the degree of stakeholder engagement that is different across groups within the City. In keeping with the principles of the previous section, it is therefore important to identify who stakeholders are and what their level of engagement should be. This exercise is important in developing the materials that are to be communicated to each group and identifying what level of consultation is required from them.

Table 4-21 is a generalized list and high level analysis of the external and internal groups that have some level of interest and/or influence in the development and outcomes of the corporate asset management program. A key portion of implementing the CS will entail providing detail to this analysis, including identifying key members of the various groups, what their expectations are, and what the City hopes to attain. This would need to be developed over time.

Table 4-21 – Identifying Key Stakeholders

<i>Stakeholders</i>	<i>Expectations from the City’s Corporate Asset Management Program</i>	<i>Inputs to the City’s Corporate Asset Management Program</i>
City Council	<ul style="list-style-type: none"> • Address public concerns • Ensure a sustainable plan to manage City infrastructure and service levels • Inform budget approval by presenting SOLI information in advance of the budget process to invite participation • Track recommendations are resulting in positive management outcomes • Identify prioritized list of assets for repairs and/or replacement to continue providing desired LOS/minimize risks/lifecycle costs • Develop funding scenarios to adequately meet projected investment needs and identify infrastructure funding requirements and gap • Alignment with Term of Council priorities 	<ul style="list-style-type: none"> • Direction on corporate asset management program objectives • Direction on key components of the corporate asset management program for adoption, such as the financing strategy
CAMO	<ul style="list-style-type: none"> • Corporate AMP program design and implementation • A plan to coordinate activities across City to facilitate management of assets 	<ul style="list-style-type: none"> • Corporate AMP program design and implementation • Data analysis and modelling support • Engagement of City groups to obtain information
City Staff (Includes Service Area SMEs and CLT)	<ul style="list-style-type: none"> • Reporting on asset information • Assistance with processes & procedures to assist decision making • New approaches and tools to manage assets • Methodologies on asset condition and valuation • Education and information on asset management 	<ul style="list-style-type: none"> • Data collection and reporting • Identification of challenges and gaps • Asset stewardship • Communication guidance on alignment with the key communication principles

<i>Stakeholders</i>	<i>Expectations from the City's Corporate Asset Management Program</i>	<i>Inputs to the City's Corporate Asset Management Program</i>
Upper Levels of Government	<ul style="list-style-type: none"> • Compliance with legal and regulatory requirements • Compliance with service agreements • Compliance with grant/funding program requirements 	<ul style="list-style-type: none"> • Legal and regulatory framework
City Residents	<ul style="list-style-type: none"> • Municipal services available for their use • Plans for future infrastructure investment (Where and how their tax dollars are being spent) • Indication that levels of service and infrastructure are sustainable 	<ul style="list-style-type: none"> • Feedback on levels of service expected • Feedback on level of funding particularly on the financing strategy

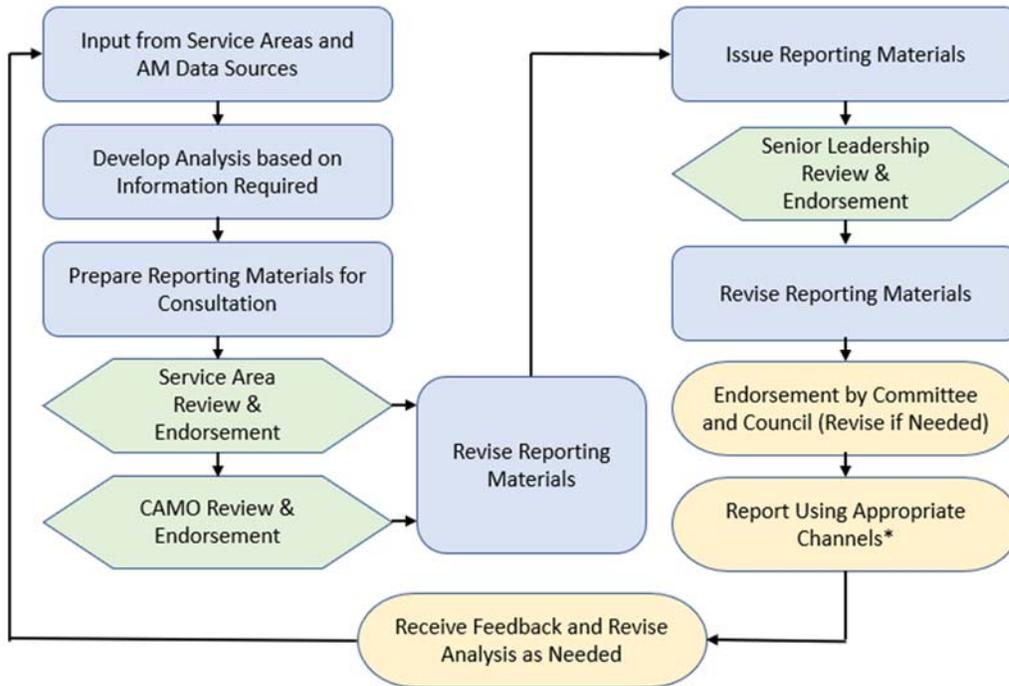
4.6.3 Key Tools of the Communication Strategy

The corporate asset management program entails several working tools that will necessitate different levels of communication. This section outlines each of these tools and key deliverables that will need to be developed as part of the communication strategy. The CS deliverables have been categorized by each Corporate AMP component to facilitate planning and development as separate communication deliverables are to be developed for each tool. It is important to also note that Communication Services will be a key partner in delivery of the strategy and facilitating use of the available communication tools.

Communications Activity Flow Chart

The CS entails a formal process to both provide and obtain information from stakeholders. Figure 4-16 provides the communication process flow chart which has been adapted from the 2016 Corporate AMP. The process is expected to form a generalized approach for all aspects of communication on asset management matters. The typical process begins with all the information needed to develop the analysis required for reporting. The resulting deliverables would usually be provided as a report or formal PowerPoint presentation. These components would then be reviewed by each relevant service area and CAMO to obtain comments and revisions as needed. From there, the process would move for review to senior leadership. A final, reviewed and staff endorsed product, would move to Council and should be communicated through the City's appropriate channels, which can include the website, media relations, social media or other means. If necessary, consultation with residents would be undertaken, with all information acquired along the process helping inform the next update. It should be noted that unique and specific communication flows should be developed for different deliverables and in consultation with Communication Services who can provide advice on the most appropriate approach.

Figure 4-16 – Communication Flow Chart



Note*: Communication channels include the City’s website, media relations, social media, etc.

Corporate Asset Management Plan (Corporate AMP)

The Corporate Asset Management Plan is intended to provide a framework for asset management in the City. The plan includes all summary reports for each of the service areas, as well as recommendations and action plans laying the foundation for future investment decisions. The process presented in Figure 4-16 is typical to undertake updates of the Corporate AMP, which at minimum, should be undertaken every 5 years as required by O. Reg. 588/17. The Corporate AMP includes several elements:

- State of Local Infrastructure
- Levels of Service
- Asset Management Strategies
- Financing Strategy
- Other supporting elements such as the Communication Strategy, Level of Service Framework, Risk Assessment Framework, Climate Change Integration, Demand Management and others

Departmental Asset Management Plans (DAMPs)

Departmental Asset Management Plans are intended to provide the framework for asset management in the service areas. The DAMPs are intended to provide greater focus to each specific service area’s unique challenges. Although the process presented in Figure 4-16 will also apply to the DAMP, a key difference is that the consultation process is to focus the exercise with subject matter experts. DAMPs are expected to contain the same elements as the Corporate AMP, however they are developed specific to each service area.

Of importance will be development of the risk assessment at the service area level. The DAMPs will be key drivers in development of service area specific risk assessments and will require consultation with subject matter experts on their development. The risk framework will then need to be brought to Council for overall approval and direction. It is therefore recommended, that a specific communication strategy be developed to consult on the risk assessment with department representatives as it is expected there will be extensive work required to develop the first round of risk findings.

State of Local Infrastructure Report (SOLI) Annual Report

The City already undertakes annual reporting in the annual SOLI report which is presented as part of the budget process. The 2020 SOLI report outlined summaries of the assets owned and operated by the City, their condition and age. The summary is developed using Infrastructure Report Cards that are developed by service area. In previous years, assets were reported based on the “User” view approach which reported on assets categorized by their asset type. For better clarity and transparency, the City has also utilized the “Responsibility” view to provide readers with a report that outlines how the assets are managed. The 2020 SOLI also outlines an annual update of the financing strategy which includes a forecast of the 10-year infrastructure gap and its implications. In future years, it is expected that the SOLI report will be refined to include reporting based on the risk assessment of assets. Overall improvements to the SOLI report can be done in line with AIMS objectives as they are completed. The SOLI includes several elements:

- Summaries of the asset inventory including replacement values, age and condition under the responsibility view
- Analysis of the 10-year cumulative infrastructure gap and its implications

Levels of Service Tracker⁹

As part of the 2021 Corporate AMP the City has developed a framework to document and track current levels of service. As part of O. Reg. 588/17 requirements, the City will also need to develop proposed levels of service. The proposed levels of service are targets set by the City for each of the service levels developed as part of this Corporate AMP. A specific communication strategy may need to be developed to obtain feedback from both Council and the public on defining the proposed levels of service. The recommendations on levels of service outlined in Section 3 will need to be consulted on with each service area through development of the DAMPs. The guiding principles in the CS should be utilized as this engagement moves forward.

City of Brampton Website Asset Management Section

The City of Brampton operates a website with a wealth of information. Of particular importance is the asset management page of the site which includes a link to the 2016 Corporate AMP. The City’s asset management page can be found at:

- <https://www.brampton.ca/EN/City-Hall/Corporate-Asset-Management/Pages/Welcome.aspx>

It is recommended that the City continues to post relevant reports on this section of the site as the website is the City’s most important tool for communication of City matters. Therefore, as part of the City’s asset management practices the website should be used to promote awareness and education on asset management through infographics, GIS tools, public data banks, etc. The site shall be updated with the recently completed asset management reports for easier access to the public. In future years, as the

⁹ For a full discussion on the City’s Levels of Service see Section 3.

corporate asset management program evolves and DAMPs are completed, a central repository of this information will be necessary to ensure that all documents are available to the public. This is also in line with the City’s objectives to be a transparent organization. Further benefits are possible once consultation on proposed levels of service is completed in the coming years.

4.6.4 Public Engagement Plan

O. Reg. 588/17 emphasizes the need for engaging the public on asset management matters. The City’s key objective has always been to keep the public informed on City decisions and continue to ensure a level of transparency as expected from residents. Therefore, consistent with the regulation and current City practices, a specific public engagement process should be developed. This process is expected to be developed in line with the maturity scale presented in Table 4-22.

The maturity scale outlines the specific high-level criteria needed to achieve each level. Regular reporting on asset management is provided to Council, most recently through the 2020 SOLI report. This information is provided to Council and through public channels including the Council agenda, which makes these documents available to the public in advance of meetings. However, there is limited opportunity for input on asset management from the public, therefore the City is currently considered to be at the “Basic” level.

Table 4-22 – Maturity Scale for Public Engagement

Basic	Intermediate	Advanced
The public can attend meetings where asset management is being discussed or approved.	The public can attend meetings where asset management is being discussed or approved and provide input on some aspects.	The public is invited to provide input into asset management during initial stages of development.
Criteria: <ul style="list-style-type: none"> • Ensure the public is aware when asset management is to be discussed in a council or committee meeting (agenda item, public notice, etc.) • Ensure that documents or reports being discussed are available to the public before the meeting (reports, CAMP, etc.) 	Meet the Basic Criteria and: <ul style="list-style-type: none"> • Provide mechanisms for the public to provide comments on asset management related topics (delegations, written comments, surveys, etc.). 	Meet the Intermediate Criteria and: <ul style="list-style-type: none"> • Provide opportunities for the public to directly participate in the asset management process (committee, workshop, detailed survey, etc.)

Source: Based on MFOA Asset Management Framework 2018.

Given the maturity scale developed in Table 4-22, it is important that a plan to reach the “Advanced” level is developed. Table 4-23 provides several key objectives that will allow the City to achieve the “Advanced” level. Reaching this objective is expected to take several years and a phased approach will ensure incremental improvements in meeting the requirements of O. Reg 588/17.

Table 4-23 – Public Engagement Plan

<i>Engagement Tool</i>	<i>Level of Engagement</i>	<i>Maturity Level</i>
Public Attendance at Council	<ul style="list-style-type: none"> Public only receives information Ensure there is public attendance at Council meetings whenever asset management topics are discussed Provide advance notice that such information will be presented through the City’s website or social media channels in co-operation with Communication Services 	Basic
Asset Management Reporting (SOLI, infographics, etc.)	<ul style="list-style-type: none"> Public only receives information Ensure all asset management reporting is posted on the City’s website. Relevant reports should be available for download 	Basic
Public Surveys or Polls	<ul style="list-style-type: none"> Public can provide limited information but can be focused to certain topics Develop public polls or surveys to obtain public perception of certain asset management topics such as perceptions on conditions of assets, proposed levels of service or levels of maintenance expected Polls/surveys should be developed in tandem with infographics or SOLI information to ensure the public is aware of the information in advance of polling Can be developed using the City’s website or social media channels in co-operation with Communication Services 	Intermediate
Working Group	<ul style="list-style-type: none"> Public can provide input Develop workshops aimed at providing a public forum for City residents to provide their input and comments Can be developed in a similar format to City public meetings 	Advanced
Asset Management Public Committee	<ul style="list-style-type: none"> Public can provide input Develop an asset management committee The committee would be expected to include both members of Council and the public and can be structured similarly to existing City committees that are aimed at public engagement 	Advanced

Source: Adapted from MFOA Asset Management Framework 2018.

4.6.5 Key Timelines to Develop Communication Strategy

The CS is intended to be completed using a phased approach as the elements of the asset management program is also utilizing a phased approach to improvements. Table 4-24 includes the key tools of the communication strategy as well as proposed timing of when those tools would be developed.

Table 4-24 – Timing of Communication Strategy Deliverables

<i>Key CS Tool</i>	<i>Description and Timing</i>
Corporate AMP	<ul style="list-style-type: none"> Develop reporting through Corporate AMP – every 5 years
DAMP	<ul style="list-style-type: none"> Develop reporting through specific DAMPs – by 2025
SOLI Reports	<ul style="list-style-type: none"> Develop SOLI reports – annual basis
Level of Service Tracker	<ul style="list-style-type: none"> Develop LOS tracker to facilitate consultation of proposed levels of service by 2025 and provide annual asset management updates to Council – by 2026

Key CS Tool	Description and Timing
City Website AM Section	<ul style="list-style-type: none"> • Provide 2020 SOLI and subsequent updates – 2022 and ongoing • Level of service consultation page – by 2024 • Develop infographics page to provide asset management awareness and education – by 2024

4.7 Lifecycle Management

The City of Brampton strives to provide its services at the highest quality possible while managing risk at the lowest possible cost. These factors create a balancing act for the City which must be managed. To achieve this, the City undertakes different actions to ensure that the City’s infrastructure assets continue to provide appropriate levels of service. These actions are generally called asset lifecycle activities. The City therefore aims to develop a Lifecycle Management Strategy (LMS) which will enable the City to standardize its approach to asset management. With this, the City intends to develop the LMS in line with the principles of the *Building Together Guide* which defines the lifecycle management strategy to be “the set of planned actions that will enable the assets to provide the desired levels of service in a sustainable way, while managing risk, at the lowest lifecycle cost.” Furthermore, the City aims to meet the requirements of O. Reg. 588/17 to identify the associated lifecycle activities and costs to maintain current levels of service.

4.7.1 Objectives of the LMS

The City recognizes that a more formalized approach is necessary in order to develop tools to continue to optimize the use of its assets over time. For this reason, the Corporate AMP includes a framework to formalize the Lifecycle Management Strategy (LMS), in particular to develop a plan to identify the lifecycle actions necessary to continue to provide services in a financially sustainable manner. The key objectives of the LMS are as follows:

- Document and develop a set of lifecycle actions aimed at improving the City’s CAMP (Corporate Asset Management Program);
- To ensure that the assets the City owns and those that will be acquired or constructed in the future provide suitable levels of service at a cost the community can afford;
- Ensure that a consistent approach to lifecycle management is utilized across the City. This approach will be further applied through the DAMPs.

The LMS therefore includes an overview of the improvements proposed by the City to the lifecycle management process. It is also noted that the LMS is a key tool to develop other components of the Corporate AMP: The Level of Service templates and Risk Management Strategy.

4.7.2 Lifecycle Management Strategies

The City of Brampton is a multi-service delivery organization with responsibility for managing assets across various service areas throughout the City. Currently each service area largely undertakes the management of these assets utilizing service area specific lifecycle strategies to provide services. These lifecycle strategies are captured through a mix of service area policies/formal procedures or informal procedures that may not be necessarily documented. This said, all these lifecycle strategies formulate the actions required to continue to provide services.

In order to formalize the City’s CAMP and provide consistency across service areas, it is proposed that the City’s asset related work be categorized using the six lifecycle action categories: non-infrastructure solutions, operations and maintenance, renewal/rehabilitation, replacement, disposal and expansion.

These categories represent the actions undertaken throughout the lifecycle of assets to ensure assets continue to provide appropriate levels of service. The lifecycle actions are developed consistent with the *Building Together – Guide for Municipal Asset Management Plans* and the *MFOA Asset Management Framework* with each of them outlined in this section.

Non-Infrastructure Solutions

Non-infrastructure solutions refer to actions or policies that can lower costs or extend asset life but is not directly related to work on the asset itself. The City currently undertakes various types of non-infrastructure solutions on an ongoing basis which includes initiatives such as integrated infrastructure planning and co-ordination with other levels of government, demand management through the growth-planning process or continual improvements to City processes to achieve cost efficiencies. The various infrastructure studies that the City undertakes are also considered non-infrastructure solutions including master plans, asset management plans, development related studies and others. Current practice is that the costs associated to the City's non-infrastructure solutions are largely captured through the City's capital budget on an annual basis.

Operations & Maintenance Activities

These activities refer to servicing assets on a regular basis in order to fully realize the original service potential of the assets. Operation and maintenance (O&M) will not extend the life of an asset or add to its value, however, not performing regular maintenance may reduce an asset's useful life and/ or levels of service. O&M therefore ensures the asset continues to deliver defined levels of services.

Currently the City's asset O&M requirements and required resources are assessed and prioritized based on:

- Carrying out legislated operations and maintenance activities at or above minimum standards to ensure safety and environmental sustainability in accordance with appropriate regulations;
- Conducting routine and preventative maintenance activities to ensure preservation of existing assets; and
- Analysis of current operations and maintenance contracts and known historical costs of delivering defined levels of services to forecast future operations and maintenance costs.

Best asset management practices include an appropriate mix of maintenance management techniques, so the assets do not fail prematurely and continue to perform well throughout their estimated useful life. These maintenance management techniques include:

- **Preventative Maintenance** which are regularly scheduled activities, completed while the asset is still in an "operational" condition. The purpose of preventative maintenance is to ensure the asset remains in service throughout its design life. It is important to note, that the City undertakes a mix of preventative maintenance approaches in managing its assets. Therefore, the City's budget captures all costs associated to preventative maintenance activities. The City aims to have a higher percentage of preventative maintenance (compared to demand maintenance) and the appropriate balance between preventative and demand maintenance will be explored further in the DAMPs.

- **Demand Maintenance** (also known as “Reactive”) are physical repairs to an asset that has broken down or has ceased to function as intended. The repair generally reinstates the asset to a normal operating condition but does not extend the life of the asset. These types of repairs are expected as assets age and are part of the overall lifecycle management to keep the asset operational for as long as physically and economically viable. It is important to consider that when the repair costs begin to escalate as the asset ages, and it becomes not feasible to operate, the asset may be best suited to be renewed or replaced. Finally, it is noted that the City currently captures demand maintenance costs through the operating budget.

Renewal/Rehabilitation Activities

Renewal/rehabilitation activities are mostly associated to significant repairs designed to extend the life of an asset. These types of activities are typically undertaken at key points in the lifecycle of an asset to ensure the asset reaches or exceeds its designed useful life. The City undertakes renewal activities throughout the asset portfolio in order to realize the full potential life of the asset, with the decisions on the scope and timing of renewal largely based on assessing the conditions of assets. Costs associated to renewal activities are captured through the City’s capital budget and are largely embedded in individual project costs.

Of note is that renewal and maintenance activities are strongly linked; maintenance strategies can hasten or delay the need for renewals, and if renewals are deferred, maintenance needs will often increase. However, there is a distinction between both types of activities in that the magnitude and frequency of the works are different. Renewal activities are generally considered capital in nature while O&M are considered ongoing activities on assets. O&M therefore ensures that assets continue to deliver defined levels of services, while renewals can extend the asset’s useful life. Therefore, the distinction is also clear for costs, where renewal activities are considered to be capital related and maintenance costs are set through accounting policies and standard operating procedures, and are considered operating costs. The City’s operating and capital budgets are consistent with this distinction.

Replacement Activities

Replacement activities are expected to occur once an asset has reached the end of its useful life and renewal/rehabilitation or maintenance is no longer an option. Replacement activities are usually considered to be capital in nature as they are usually accounted as fixed costs. The City undertakes replacement activities on a regular basis particularly for assets with smaller design lives or rolling stock such as vehicles, furniture or equipment. The City captures all its replacement activity costs through the annual capital budget.

Disposal Activities

Disposal activities are actions associated with disposing of an asset once it has reached the end of its useful life, or is otherwise no longer needed. Typically, most assets will have one-time associated disposal costs particularly for those that need to be disposed in an environmentally safe manner. Other assets such as vehicles may be disposed through sales on the used vehicle market or recycled. The City’s disposal costs are typically captured through the capital budget and are included as part of individual project costs, typically when replacement or major renewal takes place.

Expansion Activities

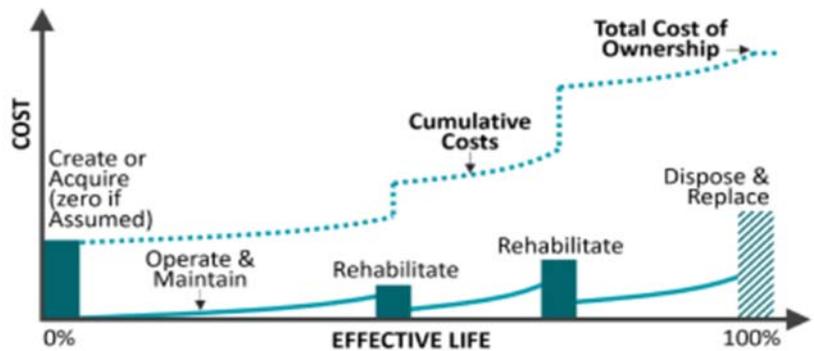
These are related to planned activities required to extend or expand municipal services to accommodate the demands of growth. As development occurs, additional infrastructure is required to service new residents and businesses. This would include additional roads, recreation facility space or extended fire

services for example. Expansion activities would therefore be net new additions to the City’s asset portfolio. Costs associated to expansion activities are typically capital in nature and are related to acquisition of assets or construction costs of infrastructure. The City captures expansion activity costs through the capital budget.

4.7.3 Lifecycle Cost Model

The City assesses the costs of potential lifecycle activities to determine the lowest lifecycle cost strategy to manage each asset type. The sum of all asset lifecycle management strategies informs the minimum cost to sustain each asset type. These principles are summarized utilizing the lifecycle cost model, which describes both the activities and associated costs to allow assets to provide the desired levels of service. Figure 4-17 outlines a conceptual example which shows the costs undertaken through the effective life on an asset. Figure 4-17 shows that over the life of this asset there are several costs undertaken which include initial costs to acquire the asset, O&M costs throughout the lifecycle, periodic rehabilitation costs and end of life disposal and replacement costs. The sum of these costs is considered the full lifecycle cost.

Figure 4-17 – Conceptual Lifecycle Cost Model



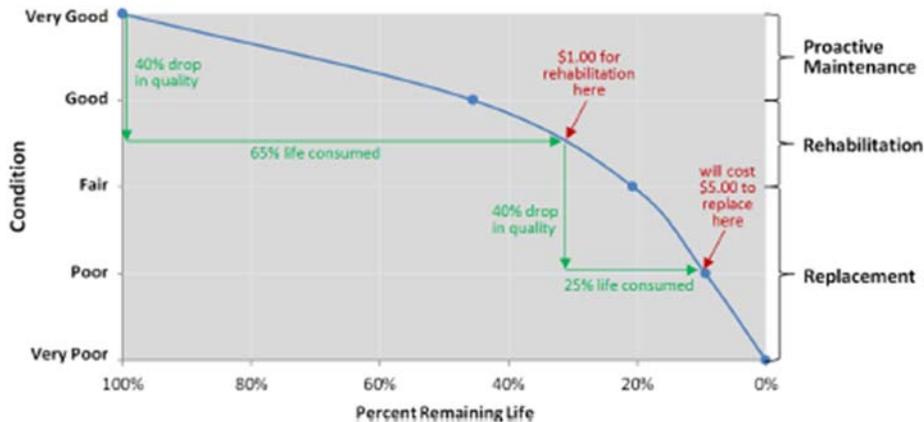
- Failing to take care of assets can impact the total cost of ownership for that asset and can also have other impacts such as negative effects on the levels of service. Renewal and O&M activities should therefore be timed to reduce the risk of failing to provide the levels of service due to deterioration in asset condition, and to minimize the total cost of ownership. The deterioration curve maps out the condition of an asset over its life. As the asset ages, deterioration of the asset tends to occur at a faster rate. All assets physically deteriorate at different rates to eventual failure and loss of ability to deliver the desired level of service. Many assets deteriorate slowly at first to a fair condition and, after that, there is more rapid deterioration.
- To understand the condition of assets, condition assessments or inspections need to be undertaken on a regular basis. Asset condition is a measured assessment of an asset’s current position or place on the asset deterioration curve. The City already undertakes regular assessments of their assets to understand their current state.
- A key observation is that it is more cost effective to maintain and rehabilitate assets before they reach a condition where the only option is a costlier replacement. For assets where preventive maintenance and renewal activities are technically feasible, understanding the asset’s current condition and place on the asset deterioration curve enables forecasts of future condition and

therefore determination of optimal lifecycle activity and timing. This is a key aspects of lowest lifecycle cost decision-making.

Figure 4-18 shows a typical deterioration curve which illustrates the key concept of utilizing the appropriate lifecycle strategy to allow assets to provide the desired level of service. Figure 4-18 shows:

- The deterioration curve maps out the condition of an asset over its life. As the asset ages, deterioration of the asset tends to occur at a faster rate. All assets physically deteriorate at different rates to eventual failure and loss of ability to deliver the desired level of service. Many assets deteriorate slowly at first to a fair condition and, after that, there is more rapid deterioration.
- To understand the condition of assets, condition assessments or inspections need to be undertaken on a regular basis. Asset condition is a measured assessment of an asset’s current position or place on the asset deterioration curve. The City already undertakes regular assessments of their assets to understand their current state.
- A key observation is that it is more cost effective to maintain and rehabilitate assets before they reach a condition where the only option is a costlier replacement. For assets where preventive maintenance and renewal activities are technically feasible, understanding the asset’s current condition and place on the asset deterioration curve enables forecasts of future condition and therefore determination of optimal lifecycle activity and timing. This is a key aspects of lowest lifecycle cost decision-making.

Figure 4-18 – Typical Asset Deterioration Curve



4.7.4 Key Recommendations

The City already undertakes all the lifecycle actions noted in this section. These actions, and their costs, are largely understood at the corporate level, however a gap exists in understanding these actions at the service area level. The overall CAMP of the City utilizes a combined approach of determining lifecycle actions based on historical, reactionary and forward-looking approaches. This results in a mix of practices that range from a basic to advanced level of maturity which also varies by service area. Therefore, at the corporate level, lifecycle activities are mainly undertaken to ensure that service

provision continues to meet levels of service requirements, however, the understanding of the future implications on levels of service of undertaking such actions is limited.

Furthermore, it is expected that other key supporting tools, such as the LOS Framework and RMS which will be further developed through the DAMPs, would progress the City closer to a more mature level. Table 4-25 therefore outlines the corporate recommendations of the LMS. It is important to note that the LMS is not a standalone tool and should be developed along with the RMS and LOS Framework. The key recommendations are therefore a component of these two tools.

Table 4-25 – Key Recommendations

<i>Recommendation</i>	<i>Description</i>
Document existing lifecycle strategies at the service area level	<ul style="list-style-type: none"> • A better understanding of the lifecycle strategies utilized at the service area level will need to be documented. • Document both existing policies or procedures that may be formally adopted as well as informal practices. • This is a fundamental step to develop a baseline of lifecycle practices on which to benchmark for future use. • Consultation with SMEs will need to be undertaken at the service area level through the DAMPs.
Document proposed lifecycle strategies at the service area level	<ul style="list-style-type: none"> • Through the DAMPs, identify any lifecycle solutions that are proposed (in addition) to existing practices
Fully integrate the LMS with the RMS and LOS Framework ¹⁰	<ul style="list-style-type: none"> • A fundamental component of both the RAF and LOS Framework are the lifecycle activities necessary to meet level of service objectives • The RAF requires the identification of lifecycle activities needed to meet level of service objectives based on the risk assessment of assets • The LOS Framework is utilized to determine whether lifecycle activities have been effective in meeting proposed levels of service • Integrate both current and proposed lifecycle strategies into the tools above • Develop corporate and/or departmental lifecycle management procedures on an as needed basis
Costs	<ul style="list-style-type: none"> • To the extent possible, costs associated with the lifecycle activities need to be understood so that the City can more accurately represent the costs associated with maintaining the existing level of service and costs associated with achieving the proposed level of service.

¹⁰ For details on Levels of Service see Section 3. For details on the Risk Management Strategy see Section 4.2.

5 Financing Strategy

Like many municipalities across Canada, the results of the Corporate Asset Management Plan (Corporate AMP) indicate that the current levels of financial contributions fall short of the optimal level of capital requirements identified over the next ten years. The concern over an infrastructure gap is not so much that it exists, but how this gap changes over the long-term and if the change affects levels of service, asset conditions and the delivery of services. In fact, maintaining a controlled “gap” is likely indicative of prudent financial management, however, there is no standard to evaluate what is an acceptable municipal infrastructure gap and would generally vary by jurisdiction.

This section describes the forecast asset management funding requirements over the 2021-2030 period while highlighting some key approaches to close the funding gap.

5.1 Overview of Fiscal Position: City of Brampton

The City of Brampton is uniquely positioned to continue to deliver high quality services with an infrastructure base that is in good condition. As per the 2022 City Budget, an operating budget of \$794 million and a capital budget of \$328 million has been identified, which results in a 2.7% increase in the tax levy. The City’s extensive public and private services and its prime location within the Greater Golden Horseshoe have made Brampton a desirable spot to reside or locate a business. This secure assessment base helps the City address the infrastructure-related needs. Council has also been proactive by increasing the annual tax supported contribution to the asset replacement reserve by 2 per cent of the tax levy each year¹¹, implementing a dedicated 1 per cent levy to bolster transit services and introducing a dedicated stormwater user fee to provide a sustainable funding source for capital infrastructure that is typically underfunded. All of which has been done earlier on in the asset maturity journey than other municipalities that have previously experienced a fast growth phase.

5.1.1 Overview of Reserves

Municipalities use reserves to set aside funds for future spending. This practice can help to stabilize any annual fluctuations in funding requirements, plan for any major long-term infrastructure investments, and prevent sudden spikes in property taxes, rates, and debt levels.

As of year-end 2020, about \$591 million in reserve and reserve funds were on hand, although, a portion of this includes obligatory funds (such as DCs) which the City is collecting for specific purposes. Reserve 4 represents the City’s most utilized asset replacement reserve, with net tax contributions of \$76 million in 2021.

5.1.2 Corporate Debt Overview

Tax and rate supported external debt can be used to fund growth, replacement, and enhancement projects. For equity purposes, debt is best used for projects that provide benefits over a longer timeframe so that the burden of capital cost is distributed between the current and future taxpayers.

The amount of debt a City can carry is set by provincial regulations to ensure municipalities continue to operate in a fiscally sound environment. The Ministry of Municipal Affairs mandates that a municipality’s annual debt repayment must not exceed 25 per cent of annual own-source revenues. For 2021, the City’s total debt charges are estimated at \$17.2 million; a very small number given the City’s size. This

¹¹ With the exception of 2021 and 2022 which the levies were reduced to manage the impacts of COVID-19.

equates to about 11 per cent (out of 100 per cent) of the total allowable annual repayment limit of \$158.2 million as identified by the Ministry. Importantly, the annual debt charges are also substantially lower than the City's self-imposed limitation at 15 per cent of annual own-source revenues.

The City's current practice of not using tax supported debt for replacement projects has been continued in the Corporate AMP model. This would allow the City to use its debt capacity for strategic projects that increase service levels or growth-related projects that are ineligible for development charges funding. Strategic projects typically provide a return on investment such as reduction in operating costs. Capacity would also be available for unforeseen critical asset failures, should the need arise. This will be considered by the City's Long-Term Financial Master Plan and this policy can be revisited if the infrastructure gap persists after other measures have been taken.

5.1.3 User Fees

Although the City's largest revenue source continues to be property taxes, user fees continue to be an important revenue source. Based on the 2021 budget, user fees and service charges amount to about \$216.4 million dollars making up just under 30% of the City's total revenue sources, making it the second biggest source of revenues. The City will need to continue to rely on user fees particularly for service areas for which key revenues sources are from user fees such as transit and stormwater services. The financing strategy includes an assumption on future reliance on user fees to fund operations and maintenance expenditures for various service areas as well as revenues associated to the stormwater service charge. These revenue sources will need to be monitored closely over the coming years.

5.1.4 Grants

The City continues to rely on upper level government grants to undertake major capital works. The most reliable source of grant funding for the City continues to be gas tax. In 2021 the City received about \$33.0 million in gas tax funds with the expectation that gas tax funding will continue into future years. Furthermore, the City is expecting that additional grant funding from upper levels of government will be required in order to help carry out key infrastructure repair works and undertake major future transit expansion works particularly for major projects such as the LRT. Recognizing the need for ongoing grant funding to undertake capital initiatives in future years the City expects to continue to maximize all grant funding opportunities wherever possible and continue to use upper levels of government as key partners to maintain assets in the most sustainable way. The financing strategy does not include any grant funding assumptions outside of gas tax and existing known grant funding from secured application.

5.2 Cost Analysis: Overview of the Full Life Cycle Model Approach

As part of the Corporate Asset Management Plan, the City, along with the Consultant, has identified the total full life cycle costs of an asset that corresponds to the requirements of the regulation. This would entail a cost estimation throughout the assets life including planning, design, construction, acquisition, operation, maintenance, renewal (and disposal). In addition, the analysis also takes into consideration the inclusion of expansion related infrastructure into the lifecycle management strategy. This approach ensures that the additional lifecycle costs associated with newly constructed/acquired assets are accounted for in the long-term forecast. The initial first round capital to acquire the asset is not considered in the asset management provision.

A "lifecycle management approach" in asset management planning not only includes estimating future lifecycle costs, but also embeds the process of monitoring how the asset performs over its life while providing affordable services.

These lifecycle activities can be segmented into six (6) categories: non-infrastructure solutions, operations/maintenance, renewal/rehabilitation, replacement, disposal, and expansion activities. While this Corporate AMP looks to address the various cost elements, it is important to recognize that as the maturity level increases, the costs associated with each lifecycle activity will strengthen and improve the expenditure outlook. The table below provides a description of each lifecycle category and the specific approach used to forecast expenditures in this 2021 Corporate AMP. Please note that the outputs of both the ongoing 2021 Transportation and Stormwater Departmental Asset Management Plans were used to inform the full lifecycle cost model as well. Table 5-1 provides an overview of the full lifecycle cost activities and Corporate Asset Management Program’s approach to addressing these costs.

Table 5-1 – Overview of the Full Lifecycle Cost Activities and CAMP Approach

Category	Summary Description	Corporate AMP Approach
Non-infrastructure Solutions	<ul style="list-style-type: none"> • Actions or policies that can lower costs or extend asset life (e.g., better integrated infrastructure planning, demand management, process optimization, etc.). 	<ul style="list-style-type: none"> • Based on average 3-year (2018-2020) budget by service area.
Operations & Maintenance Activities (capital maintenance related)	<ul style="list-style-type: none"> • Servicing assets on a regular basis in order to fully realize the original service potential. • Regular maintenance will not extend the life of an asset or add to its value. Not performing regular maintenance may reduce an asset’s useful life. 	<ul style="list-style-type: none"> • Budgeted 3-year historical average of maintenance activities by service area considered. • Maintains relationship of average expenditures relative to replacement value of existing assets. • In most instances, the approach does not include general operating costs associated with the new asset acquisition (example: new staff to carry out programming in a new facility).
Renewal/ Rehabilitation Activities	<ul style="list-style-type: none"> • Mostly associated with significant repairs designed to extend the useful life of an asset. • These types of activities are typically undertaken at key points in the lifecycle of an asset to ensure the asset reaches its designed useful life. 	<ul style="list-style-type: none"> • Renewal expenditures calculated based on discussions with individual service areas relative to the asset type considered. • See Appendix E for more specific renewal methodologies employed for each service area.
Replacement Activities	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Incorporating the average annual investment required to replace assets when they reach the end of their useful life (age/condition replacement schedule). • Average need for all assets (except transportation) are based on a 25-Year cost model. Transportation was set relative to each sub-asset useful life. • See Appendix E for more specific replacement methodologies employed for each service area.

Category	Summary Description	Corporate AMP Approach
Disposal Activities	<ul style="list-style-type: none"> The activities associated with disposing of an asset once it has reached the end of its useful life, or is otherwise no longer needed. Typically, disposal costs are accounted under replacement activities. 	<ul style="list-style-type: none"> Analysis assumes any costs associated with “disposal” is included in the replacement value and captured in the capital replacement requirements.
Expansion Activities	<ul style="list-style-type: none"> Planned activities required to extend or expand municipal services to accommodate the demands of growth. 	<ul style="list-style-type: none"> New “first-round” capital expenditures are excluded from the calculation as the cost is funded through development charges or other sources. Only Asset Management requirements associated with expansion activities are considered. DC study and 3-year budget average, as well as known federally or provincially funded projects, used to inform new acquisitions to base Asset Management requirements. For new acquisitions, O&M costs are maintained at the relationship of average expenditures relative to replacement value of assets.

Note: A detailed discussion on lifecycle activities is provided in Section 6 Lifecycle Management Strategy.

It is important to recognize that there are some limitations with the cost analysis:

- The contributions for asset replacement includes the replacement of assets of a similar function and style. For service areas such as Transit, Fleet or IT for example, the infrastructure that supports these services are very dynamic and the capital lifecycle requirements of these assets are continuing to evolve. Therefore, this Corporate AMP does not include for the consideration of electrification of the City’s fleet (or supporting infrastructure) to upgrade existing technologies. It is expected that this level of detail will be contemplated through future departmental and corporate plans.
 - In this context, achieving GHG reductions and targets may require additional funding beyond what has been identified herein and the Green fleet initiative resides outside the scope of the 2021 CAMP but will be considered through the fleet departmental plan (once initiated) and future CAMP and SOLI reports.
- The cost analysis is intended to be used for information purposes outlining a level of optimal investment to support the existing asset base and future lifecycle needs as the City matures.
- The investment requirements for asset renewal and replacement identified might exceed the city’s existing internal capacity to deliver these infrastructure projects. However, as the city matures its practices and with the funding help of upper-levels of government, the City will be able to properly plan for service enhancements and replacements.

5.3 Summary of the Cumulative Full Life Cycle Costs

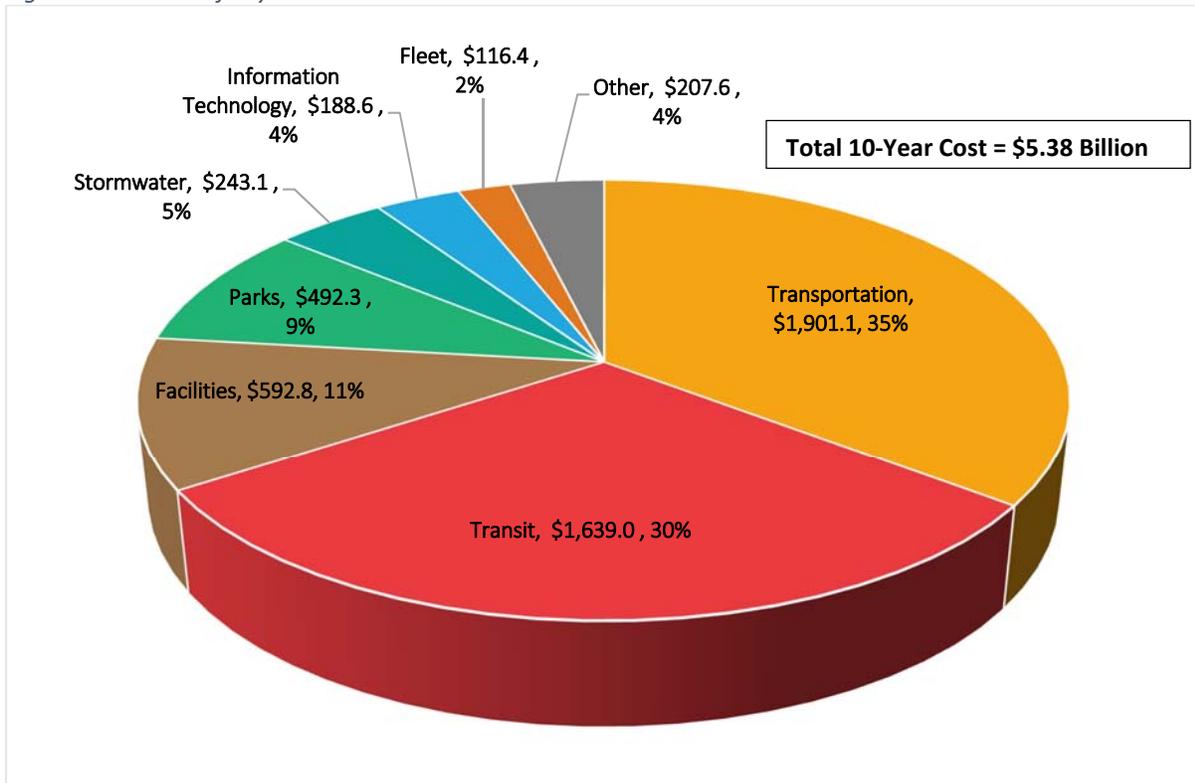
Over the next decade, the analysis indicates a spending need of about \$5.38 billion¹². Figure 5-1 below summarizes the cumulative 10-year investment needs across the service areas based on a 25-year average lifecycle cost¹³. A longer-term average cost approach was used in an effort to smooth out the infrastructure backlog which would exist when using age and condition based approaches. A condition and risk based approach will be better suited to predict investment activities moving forward. A few notes:

- Transportation services represents the most significant share of the total 10-year needs accounting for 35%, or \$1.90 billion, of the total \$5.38 billion need.
- The cumulative investment needs over the 10-year period for IT services is higher than the entire replacement value of existing IT assets (valued at \$97.1 million as identified in Figure 2-2 in the State of the Local Infrastructure section) as IT infrastructure is replaced more frequently with higher turnover rates than other assets with a longer useful life. As a result, IT represents about 4% of the total \$5.38 billion 10-year investment needs required for all service categories while only representing less than 1.5% of the total \$7.0 billion city-wide asset valuation.
- A similar observation can be made with Transit, as the investment needs over the 10-year period amount to \$1.64 billion, which is second to the cumulative needs for Transportation services despite Transit having a replacement value significantly lower than transportation service assets (as identified in Figure 2-2). This is because Transit fleet is required to be replaced more frequently with higher turnover rates and requires frequent and significant mid-life refurbishments costs to ensure proper service delivery.
- Conversely, despite stormwater services representing nearly 20% of the total City asset replacement value, the full lifecycle costs represent a proportionately smaller share of the total as the linear storm sewer network has a design life of 100 years allowing for ample time to save for replacement. In addition, the City has undertaken a financing strategy study (e.g. Stormwater Rate Study) to quantify the operating, capital renewal and rehabilitation needs that yield a more accurate representation of the total asset requirements relative to the user fees generated each year.

¹² The analysis does not consider expenditures required to improve the level of service or inflation.

¹³ 25- Year average cost approach was used for all service areas with the exception of transportation infrastructure which was based relative to the useful life of each asset to remain consistent with the assumptions used in the departmental Transportation AMP,

Figure 5-1 – Total Life Cycle Cost Over the Next 10-Years



1. All cost estimates are in 2021 dollars; and
2. For the calculation of annual needs, earning rates are assumed to equal inflation, consistent with a straight-line approach

5.3.1 Allocating the Lifecycle Costs between Existing Assets and Expansion Activities

The cumulative costs identified above can be further delineated between the different lifecycle activities, by service area, and how the activities relate to both existing and expansion related activities. As outlined in Table 5-2, the asset management activities associated with the existing assets still represents the majority of the cumulative \$5.38 billion in costs. The lifecycle costs associated with the newly acquired assets (i.e. expansion activities) include annual savings for asset replacement that will occur outside the planning period.

Table 5-2 – Summary of Total 10-Year Lifecycle Costs by Service Area

Service Area	Lifecycle Costs: Existing Assets	Lifecycle Costs: Expansion Assets	Total Lifecycle Costs
Transportation	\$1,591,258,000	\$309,890,000	\$1,901,114,000
Transit	\$1,028,544,000	\$610,427,000	\$1,638,971,000
Facilities	\$504,858,000	\$87,915,000	\$592,773,000
Parks	\$394,720,000	\$97,602,000	\$492,322,000
Stormwater	\$234,409,000	\$8,699,000	\$243,108,000
IT	\$164,817,000	\$23,746,000	\$188,563,000
Fleet	\$107,444,000	\$8,977,000	\$116,421,000
Fire	\$69,838,000	\$8,541,000	\$78,379,000
Library	\$38,621,000	\$19,623,000	\$58,244,000
Recreation	\$52,049,000	\$4,894,000	\$56,943,000
Cultural Services	\$9,257,000	\$4,525,000	\$13,782,000
Animal Services	\$248,000	\$-	\$248,000
Total	\$4,196,063,000	\$1,184,839,000	\$5,380,902,000

Note: All figures are rounded.

The total lifecycle costs between existing assets and expansion activities can also be further allocated between the different lifecycle activities. Table 5-3 below summarizes the key lifecycle events between existing and expansion activities but also illustrating how much the capital related operation and maintenance costs represent of the total lifecycle costs. The table indicates that over \$2 billion of the \$5.38 billion cumulative 10-year costs are associated with capital-related maintenance costs to ensure assets continue to perform at the expected level. Importantly, the inclusion of capital-related maintenance costs is a new element added to the cost analysis in this 2021 Corporate AMP. However, as the costs to maintain existing assets are already built into the City’s regularly approved budget, the revenues are also included in the analysis and equates to a revenue neutral position in this analysis. A similar assumption is made for expansion related operation and maintenance expenditures.

Table 5-3 – Summary of Total Lifecycle Costs by Activities and Actions (In \$Millions)

Service Category	Operations and Maintenance - Existing Assets	Replacement/ Renewal/Non-Inf. - Existing Assets	Operations and Maintenance - Expansion Related	Replacement & Renewal - Expansion Related	Total Lifecycle Costs
TOTAL INVESTMENT	\$ 1,532.2	\$ 2,663.8	\$ 591.2	\$ 593.7	\$ 5,380.9

5.3.2 Expansion Activities

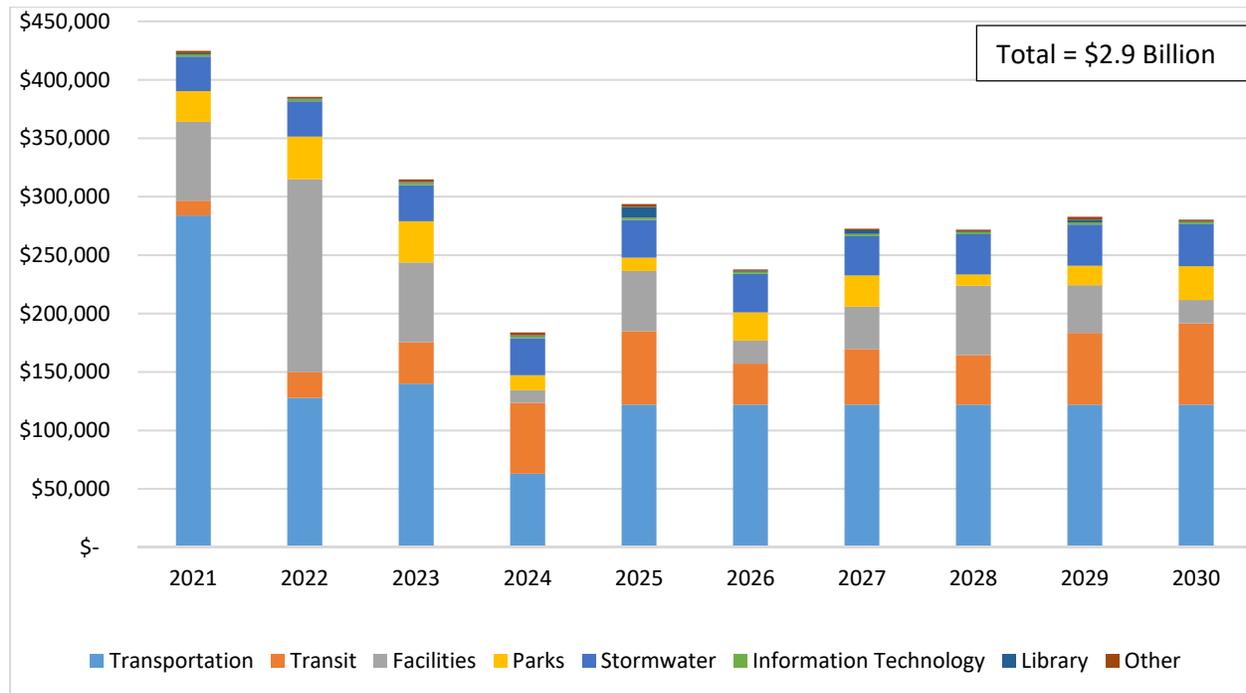
The City of Brampton levies development charges to recover the capital costs associated with new development throughout the City. A couple of new legislative amendments which took place over the last 5-years would have the impact of increasing the use of DCs in Brampton to leverage the expansion of services to address demand:

- In 2017, changes to the *Development Charges Act* allowed for the calculation of the transit development charge to be based on the use of the “planned level of service” rather than the more restrictive “10-year historical average level of service”. Furthermore, transit, would also not be subject to the statutory 10% capital cost deduction (as required at the time of the legislation change). As a result, the City of Brampton has been able to substantially increase the Transit DCs¹⁴ to fund an increased share of transit costs relative to the older model based on the more restrictive 10-year historical average level of service approach. As a City with a rapidly expanding population and employment base and a consistent yearly increase in ridership (prior to COVID-19), the updated development charges calculation has proven to be a great benefit to the City’s ability to fund infrastructure.
- More recently, the 10% statutory discount applied to all soft services is now not required, and eligible growth-related infrastructure is 100% recoverable from DCs. Based on the 2019 DC Study, this legislative amendment could represent about \$7 million a year once a new by-law is passed to reflect these new legislative changes.

Based on the 2019 DC Study capital programs, recent budgets (for non-DC eligible services) and the assumptions outlined in the Transportation and Stormwater departmental Asset Management Plans, over the forthcoming 10-year planning horizon, the first round capital expenditures required for expansion activities is estimated at approximately \$2.9 Billion. Of this total, just over 45% is related to new transportation infrastructure while the next major infrastructure categories relate to both facilities and transit assets. The figure below illustrates the quantum of expansion related activities needed to support growth over the long-term. Importantly, the capital program is subject to annual budget reviews and it is expected that the capital program listing (for DC projects) be reviewed again at the next DC Study update in 2023/2024.

¹⁴ The Transit DC increased by over 270% (or \$4,822 for a SDU) through the 2019 DC Study process which was completed following the legislative amendment related to the calculation of the transit development charge in 2017.

Figure 5-2 – Distribution of New Acquisitions of Assets (Under the Responsibility View)

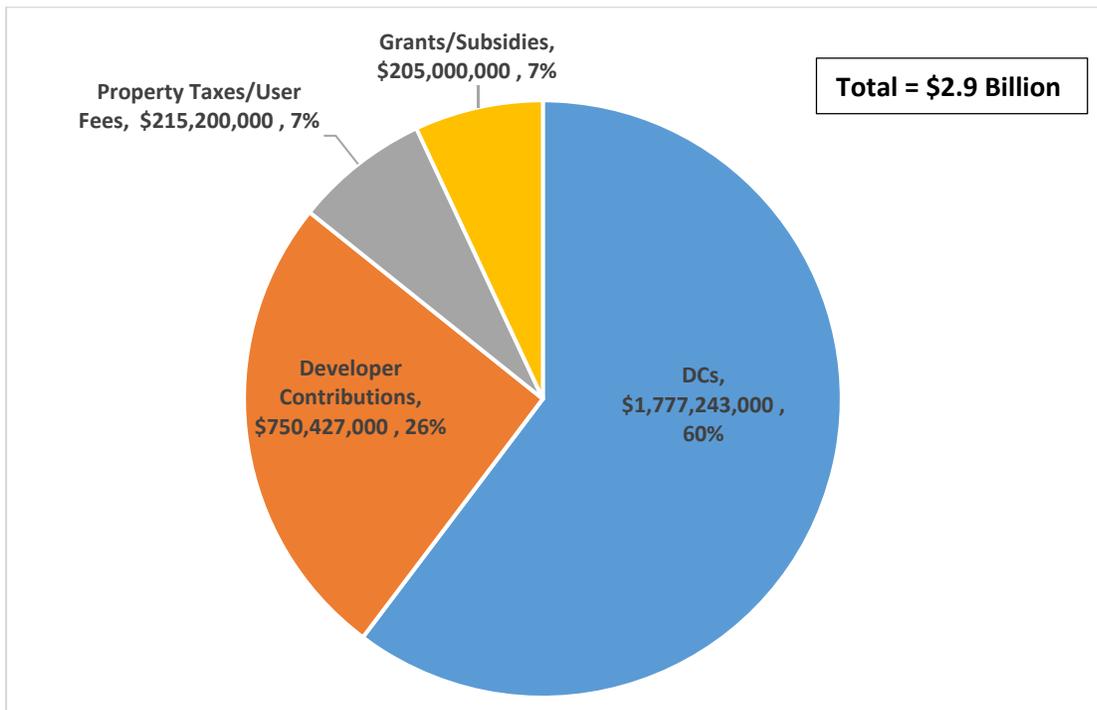


Source: Estimated using: 2019 DC Study capital programs, recent capital budgets information from 2018 – 2020 (for non-DC eligible services) and the assumptions outlined in the Transportation and Stormwater departmental Asset Management Plans. Other relates to: Fire, Culture, Animal Services, Recreation,

From an asset management perspective, although most of this infrastructure will attract funding from development charges or direct developer contributions, the infrastructure will become the responsibility of the City to operate, maintain, repair and ultimately replace in the future. The chart below illustrates the range of funding sources for the initial capital expenditures required to emplace the new infrastructure. As shown, development charges are anticipated to fund approximately 60% of the \$2.9 Billion costs identified over the 10-year period, developer contributions related to the construction of local roads and stormwater infrastructure amounts to 26% of the total funding sources and almost 10% coming from property taxes (including the dedicated transit levy), user fees and storm water fees¹⁵.

¹⁵ Please note that some projects may require DC collections over a longer-term to pay for the works identified in the 10-year period due to timing of development or service level restrictions.

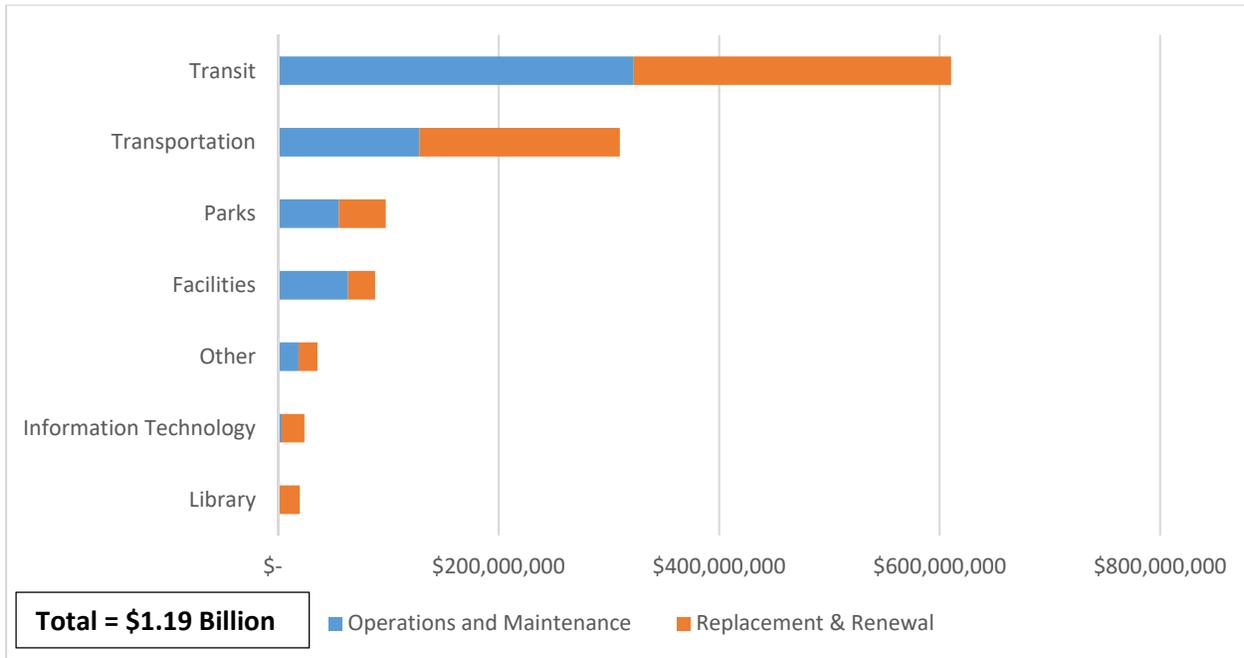
Figure 5-3 – Funding Sources for Expansion Activities (10-year)



A proper understanding of the relationship between the infrastructure required to support the demand identified and the long-term asset management implications is critical. At this stage of the CAMP, most of the costs associated with the demand activities identified are related to increased population and employment with some degree of consideration to changing demographic trends and technological advancements. However, it is recognized that continued efforts through the individual departmental plans and future Corporate AMP updates will continue to evolve this framework and the correlation between demand and costs. As a result of the expansion activities identified above, it is expected that expansion related activities will amount to approximately \$1.19 Billion over the next 10-years (see Figure 5-4). Of this total, about 50% are related to operations and maintenance expenditures and the balance associated with the long-term repair and replacement of the infrastructure in the future. A few important considerations:

- As a result of the first round capital expansion activities identified, the total estimated costs represent the full lifecycle asset management requirements the City would need to consider with the acquisition of new assets over the forthcoming planning period.
- The \$590 million in assumed revenue is estimated to support capital related O&M costs for new expansion related assets (set equal to costs and assumed revenue neutral). It is expected that this figure continues to be reviewed and updated with detailed business plans, budget reviews and operational reviews, as new capital is required and these costs become known.
- The remaining \$594 million is related to asset repair and replacement activities. Importantly, these asset repair and replacement expenditures would in large part only be required outside of the planning period, the City has the benefit of planning for these activities as development proceeds, and as corresponding non-growth revenues materialize over time.

Figure 5-4 – Asset Management Related Costs Associated with Expansion Activities (by service area over 10-years)



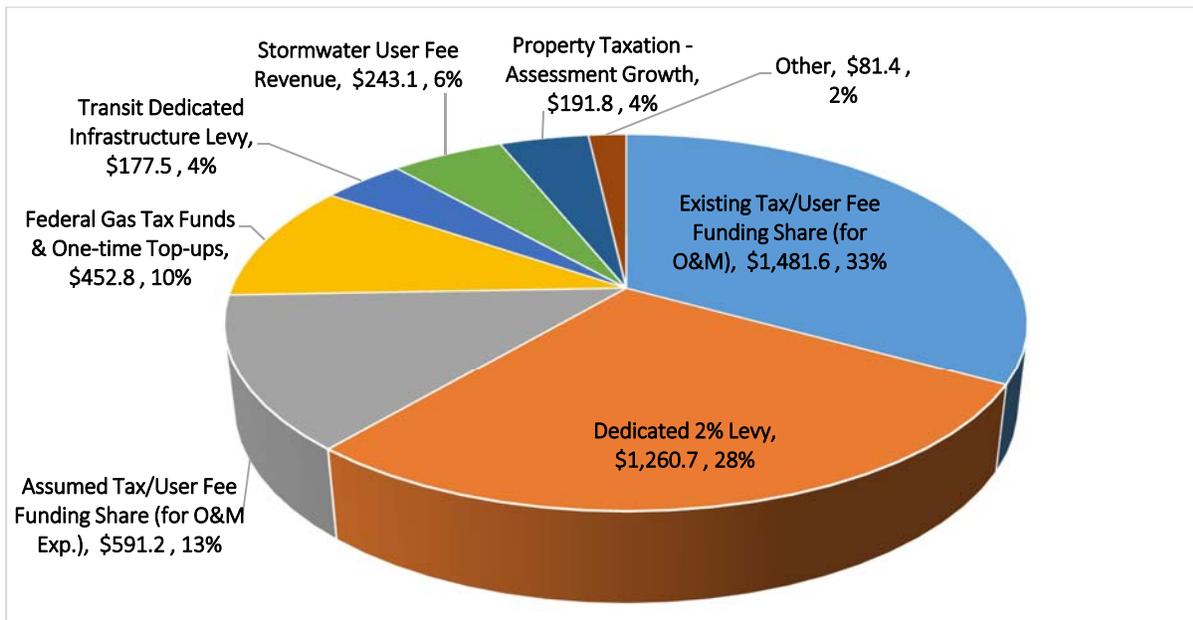
Note: "Other" includes: Animal Services, Culture, Recreation, Fleet, Fire and Stormwater Services

5.4 Revenue Analysis

The City uses a wide range of funding and financing tools to address the identified capital requirements. Generally, the type of capital project aligns to its funding source. In this regard, growth related projects receive most of their funding through development charges; replacement projects are predominantly funded through tax-based contributions (primarily through Reserve 4 and Reserve 119). Importantly, once the new asset is acquired, although the first round capital may be DC funded, the ongoing maintenance, rehabilitation and replacement of the infrastructure is not growth-related and therefore would not receive funding through development charges. When assets require rehabilitation or are due for replacement, the source of funds are essentially limited to reserves or contributions from the annual budget.

Over the past number of years, the City's tax base capital contributions continually represent the largest share of capital funding sources for asset repair and replacement activities. Figure 5-5 summarizes the breakdown of assumed revenues, for the purposes of this Corporate AMP, over the planning period. However, a detailed overview of the key revenue assumptions used to support the CAMP can be found in Appendix D.

Figure 5-5 – Summary of Funding Sources (Cumulative 10-Year)



Note: Other represents available reserves (for asset management) and estimated share of transit funding stream for replacement projects.

A few key observations:

- The dedicated levies are the most significant source of revenue generated and directed to capital asset repair and replacement activities. Both levies amount to \$1.44 billion and is comprised of:
 - \$1.26 billion is associated with the dedicated 2% infrastructure levy;
 - \$178 million is derived from the dedicated 1% transit levy. Please note that the share included only represents the portion allocated to asset replacement activities while the remaining funds generated are used to help fund new Transit infrastructure.
- About \$1.48 billion relates to existing taxation and user fee support for capital related O&M costs at similar levels to recent years (status quo budget and set equal to costs for existing assets).
- A further \$500 million is estimated to support capital related O&M costs for new expansion related assets (set equal to costs). It is expected that this figure continues to be reviewed and updated with detailed business plans, budget reviews and operational reviews, as new capital is acquired.

Other key considerations:

- Unspent funds in capital replacement work in progress accounts have not been considered;
- Federal gas tax funds are assumed to be allocated toward asset replacement projects;
- Provincial gas taxes have not been considered, as it is assumed that these funds will continue to be used for transit operating costs; and

- Other unconfirmed one-time Federal and Provincial grants have not been considered.

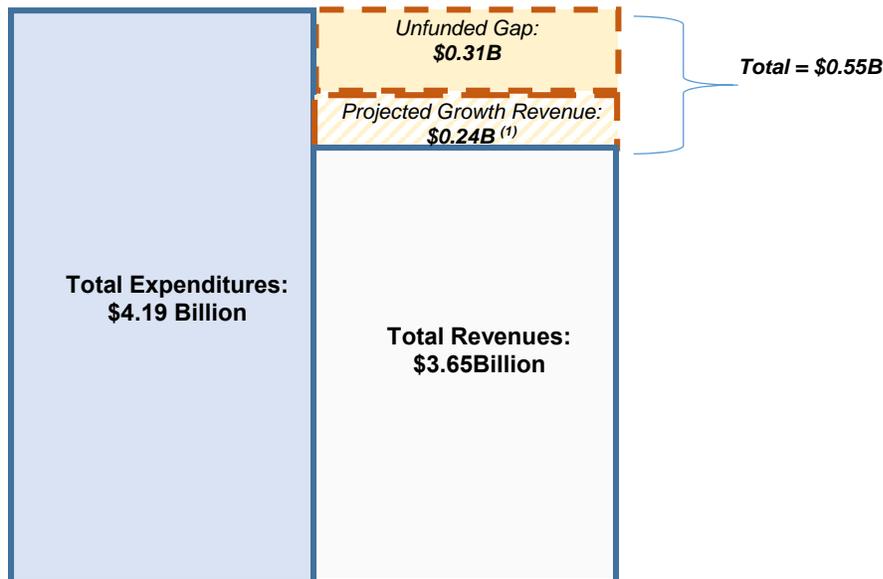
5.5 Estimated City-wide Infrastructure Gap

Based on the preceding analysis, the infrastructure gap has been calculated for both existing and expansion asset requirements independently. For the purposes of this analysis, the infrastructure gap is defined as the difference between the total full-life cycle costs and the projected revenues over the 10-year period.

Existing Assets:

Based on the preceding analysis, a notional infrastructure gap of \$550 million is identified (Figure 5-6) for existing assets. However, the gap is reduced to \$307 million (i.e. unfunded share) once the additional revenues that would be generated from new growth are considered into the calculation - those additional revenues are assumed to be prioritized to existing assets, although, the specific allocations will be further determined through future budgets as growth occurs.

Figure 5-6 – City-wide: Summary of 10-Year Lifecycle Costs and Projected Revenues: Existing Assets



Note 1: Additional revenue from assessment growth, increases in Federal Gas Tax allocation with population change, increase in special purpose levies and stormwater fees. Excludes DC revenue to fund first round capital.

The chart above displays the following information:

- **Full-Life Cycle Costs (Expenditures):** this bar represents the total full-lifecycle costs required to maintain the City's existing assets and accounts for the money required to repair and replace assets within the ten-year period while also saving for asset repair and replacements required beyond 2031. Importantly, as noted in the previous sections, the full life-cycle costs also include the costs to maintain the assets over their life, which is a new element, added to the cost analysis in this 2021 Corporate AMP.
- **Revenues:** The bar represents the total projected revenues based on existing funding commitments over the 10-year period while also including an estimation of revenues that can

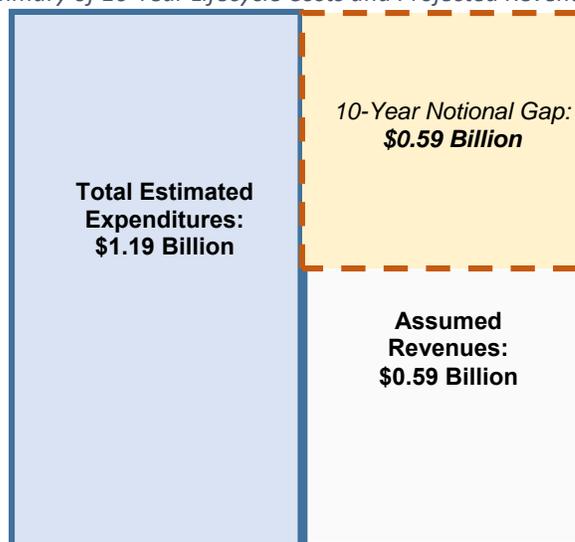
be derived from new growth coming online. This additional funding availability is assumed to be used towards existing assets, which in general is consistent with the City's existing budget practice.

Expansion Activities:

A similar infrastructure gap analysis has been prepared for expansion related activities that have been quantified in this plan to comply with the requirements of the asset management regulation (Figure 5-7). Based on the total 10-year full lifecycle cost and revenue analysis, a notional infrastructure gap of \$594 million is identified. The infrastructure gap is defined for the purposes of this analysis as the difference between the total full-life cycle costs (associated with expansion activities) and the projected revenues over the 10-year period. A couple of notes:

- The total estimated costs represent the full lifecycle asset management requirements the City would need to consider with the acquisition of new assets over the forthcoming planning period. This \$1.19 Billion does not represent the first round capital expenditure the City would incur to acquire new assets or replace the infrastructure.
- The \$590 million in assumed revenue is estimated to support capital related O&M costs for new expansion related assets (set equal to costs and assumed revenue neutral). It is expected that this figure continues to be reviewed and updated with detailed business plans, budget reviews and operational reviews, as new capital is required and these costs become known.
- Additional revenues that would be generated from new growth are considered into the calculation, although for the purposes of this analysis, those additional revenues are assumed to be prioritized to existing assets. The specific allocations will be further determined through future budgets as growth occurs. Importantly, the gap will always continue to be re-evaluated and self-adjusting with the new assets and revenues.

Figure 5-7 – City-wide: Summary of 10-Year Lifecycle Costs and Projected Revenues: Expansion Activity Assets



When considering both the asset requirements for both the existing and expansion activities combined, a cumulative infrastructure gap exists. A few important considerations:

1. The asset management requirements associated to the expansion activities have been quantified to correspond to the requirements of the asset management regulation (Ontario Regulation 588/17). These expansion requirements form a significant share of the overall cumulative gap, even after considering the increased revenues that would be derived from growth. Importantly, these asset repair and replacement expenditures would in large part only be required outside of the planning period, the City has the benefit of planning for these activities as development proceeds, and as corresponding non-growth revenues materialize over time.
2. It is evident that the City requires additional funding and support from all levels of government to continue to manage both the existing asset base and new assets that will be acquired in the future to ensure services are adequately maintained.
3. The inclusion of capital related operation and maintenance costs is a new element added to the cost analysis in this 2021 Corporate AMP. However, as the costs to maintain existing assets are already built into the City’s regularly approved operating budget, the revenues are also included in the analysis and equates to a revenue neutral position. A similar approach has been taken for new maintenance costs associated with the expansion activities.
4. The introduction of both the dedicated Transit levy and Stormwater management user fee program has assisted the City manage the investment requirements associated with this existing infrastructure while also ensuring a stable funding source to manage new asset expansion related acquisitions is available;
5. This information illustrated above does reinstate the need for the City to continue the utilization of these funding programs to maintain existing service levels over the long-term. However, as the City’s asset management program further advances, it can be expected that the cost analysis be improved to better reflect asset risks, levels of service and a more fulsome understanding of the condition of the City’s infrastructure.

5.6 Approaches to Closing the Funding Gap

There are several ways the City can address the current funding gap. The table below outlines the various strategies that the City has available to them in order to close the gap. The strategies combine both qualitative data improvements and other financial solutions.

Table 5-4 – Summary of Total Lifecycle Costs by Service Area

Strategy	Approach
Maintain 2% Infrastructure Levy	To continue bridging the funding gap and improve financial sustainability, the City should maintain their existing infrastructure levy dedicated towards asset management and monitor the revenues derived.
Maintain 1% Transit Levy	The City of Brampton has placed great importance on creating a reliable and well-operated transit system, as it is vital to a thriving City. Having a strong transit infrastructure is important to reducing road congestion, attracting businesses and investments and helping to connect people and jobs. The City should continue to implement this levy, which will help strengthen new services, but it will also ensure existing transit assets are well maintained.

Strategy	Approach
Improved Data Quality	As the City matures its asset management practices, better data by service will help to achieve a proper assessment of the condition of assets. Further, some assets are currently assessed on an age-based approach that does not necessarily reflect the actual condition of the asset. Improved lifecycle cost data will also further prioritization of repair and replacement activities.
Levels of Service Measures	As part of the Corporate AMP, levels of services measures by service area have been established. These assessments will assist in tracking asset performance, condition ratings and may identify areas where these funding needs could be recalibrated based on performance.
Develop Annual Capital Reinvestment Targets	Targets should be set for various assets to determine if the current reinvestment rates are reasonable and allow new targets to be developed in order to meet current or planned levels of service.
Implement a Standardized Risk Framework	A standardized risk framework for asset classes would help to establish the tolerance level of individual asset classes in order to help prioritize investment needs and levels of service.
Seek Funding Support from Upper Levels of Government	The City of Brampton is demonstrating a significant commitment to asset management and developing a set of renewal practices to ensure that services are delivered in the most cost efficient manner. Despite the efforts, upper level of government support is required to supplement the City's practices to balance affordability. For long-term financial planning and accurately assessing the infrastructure gap, it is equally important that upper-level government funding is stable and predictable.
Continued Project Co-ordination with Region of Peel and Utility Companies	In exploring opportunities with the Region and Utility service providers, overall cost efficiencies may be achieved during linear asset rehabilitation and replacement (e.g. storm sewers, roads, bridges, culverts) by better aligning capital ventures.

6 Monitoring & Improvement Plan

Asset management planning is a continuous improvement process that is needed to ensure infrastructure is managed in the most sustainable way over the long term. The goal of the municipal asset management planning regulation (O. Reg. 588/17) is to promote municipalities to take incremental steps to maximize benefits, manage risk and provide satisfactory levels of service to the public in a cost-effective manner.

Municipalities are also required to develop a comprehensive Asset Management Plan in multiple phases (2022-2025) that includes inventory of all assets they own, incorporates the current and proposed levels of service, identifies investment activities and costs to maintain current service levels, and a supporting financial strategy.

Since the City undertook the 2016 Corporate AMP, several major initiatives have transpired and this plan iteration demonstrates a dedicated effort towards continuous improvement of the City's Corporate Asset Management Program. Although the 2021 Corporate Asset Management Plan is prepared to consider all municipal infrastructure assets (core and non-core assets), the City is currently in the early phases of meeting the other asset management plan requirements while continuing to improve upon the existing information, data and processes used to develop this Corporate AMP. As outline in the maturity assessment in this report (Figure 1-5), the City has undertaken several initiatives since the 2016 Corporate CAMP, including the initiation of key departmental asset management plans (including the Transportation and Stormwater master plans), annual SOLI updates with report cards by service brought to Council, improved data quality and condition analysis, adoption of the 2019 Strategic Asset Management Policy and further development of service area-specific levels of service. These initiatives have advanced the City's maturity which increases the confidence of the asset management plan.

6.1 Improvement Plan

The City of Brampton's current asset management practices were assessed using a variety of tools including ISO 55000 and workshops with City staff responsible for the various service areas. This section aims to create a plan to guide the City towards best practices in asset management through implementation methodologies, asset management maturity assessment and other strategic initiatives.

As per ISO 55000, asset management is defined as the coordinated activity of an organization to realize value from its assets. The ISO 55000 approach to successful asset management requires integration of the City's major business asset information systems. It is recognized that the City has initiated the proper steps towards these requirements by establishing the Corporate Asset Management Office (CAMO) to achieve the following goals and objectives:

- Manage assets based on the principles of sustainability, continuous improvement, and simplicity;
 - Enable the integration of corporate priorities within decision making for infrastructure asset management;
 - Provide reliable data with the integrity to meet or surpass regulatory demands;
 - Enable clear, accurate reporting in a timely manner; and
- Enable robust, repeatable, and defensible decision-making with regard to asset interventions.

The table below summarizes the key recommendations and accompanying improvement actions outlined throughout this report. Many of these initiatives rely on the joint responsibility amongst service areas and the Corporate Asset Management office to reach all outcomes outline below. Table 6-1 outlines the key actions, outcomes, timelines and priority of the key recommendations. The timelines are broken into the following:

- Short Term (1-2 years)
- Medium-Term (3-5 years)
- Long-Term (Beyond 5 years)

The table below outlines a summary of key area for improvement and corresponding actions for consideration – a fulsome list of recommendations has been prepared for each chapter and can be found in their specific sections of the report.

Table 6-1 – Improvement Plan

<i>Area of Improvement</i>	<i>Action</i>	<i>Outcome</i>	<i>Timeline</i>	<i>Priority</i>
State of the Local Infrastructure	Continued improvement of condition assessment methodologies to increase the share of assets evaluated based on condition	Provides a foundation for the City to transition to a risk-based approach to asset management over the long-term	Medium	Medium
	Improve data confidence and reliability of asset data (useful lives, replacement valuations, asset in-service date, etc.)	Better base data to improve the quality and accuracy of results of asset management analysis	Medium	High
	Monitoring of estimated infrastructure gap at service area level	Facilitates a more mature level of integrated infrastructure planning and financial sustainability	Medium	Medium
Levels of Service	Develop levels of service targets	Ability to track progress relative to target to assess risk and identify appropriate measures and prioritization of key asset needs	Short	High
	Explore additional LOS metrics for service area basis through DAMPs	More informed decision making at the departmental level.	Short	Medium
	Identify lifecycle activities associated with each customer/technical LOS through DAMPs		Short	Medium

<i>Area of Improvement</i>	<i>Action</i>	<i>Outcome</i>	<i>Timeline</i>	<i>Priority</i>
	Identify costs associated with providing current LOS through DAMPs		Short	Medium
	Establish proposed LOS through DAMPs		Medium	Medium
	Management and monitoring of LOS through developed LOS trackers by service area		Short	High
	Identify lifecycle activities required to meet proposed LOS sustainably through DAMPs		Medium	Medium
	Identify costs needed to meet proposed LOS sustainably through DAMPs		Medium	Medium
Demand Management	Evolution of existing demand management framework	Identified correlation between demand and costs to allows for a more refined look at the different demand drivers and allow for better monitoring going forward	Medium	Medium
Risk Management Strategy	Incorporate risk assessment into annual SOLI updates	Confirmation through SOLI of the effectiveness of RMS outcomes to address funding needs and LOS deficiencies	Medium	Medium
	Advanced data maturity	Improved data accuracy to inform RMS and future decision making	Medium	Medium
	Continued development and use of RMS across all service areas through DAMPs	More informed decision making at the departmental level as it pertains to managing available resources, required expenditures and current priorities	Medium	Medium
Climate Change Integration	Further development of mitigation and adaptation strategies into asset management	Further reduction of climate change risk on City's delivery of services and support informed decision making.	Short	High
	Continued identification of specific climate change risks in the City		Short	High

<i>Area of Improvement</i>	<i>Action</i>	<i>Outcome</i>	<i>Timeline</i>	<i>Priority</i>
	Further exploration of climate change framework on a service area basis through DAMPs		Short	High
Governance	Development of a governance model and RACI matrix	More informed decision making at the departmental level by monitoring effectiveness of governance in the City and assigning roles and responsibilities of those involved in the CAMP	Medium	Medium
	Build capacity of staff through hiring practices and training	Staff is more knowledgeable throughout on existing and future asset management practices – will create efficiencies and limit knowledge gap.	Long	Medium
	Further refinement of asset interdependencies	Capitalize on efficiencies across service areas and asset types	Long	High
	Improved knowledge transfer through robust asset management processes and systems	Better insight and coordinated effort at the service area level to better inform future iterations of this report	Long	Medium
Asset Information	Further the objectives of the AIMS through DAMPs (includes co-ordination with service area representatives to understand their data and data management needs)	More informed decision making at the departmental level	Medium	Medium
	Development of a financial decision support solution	Financial efficiencies achieved across the organization	Medium	Low
	Continued updates and monitoring of internal AIMS roadmap	Ensures objectives are met within specified phases to progress towards advanced maturity and identify any gaps or challenges	Medium	Medium

<i>Area of Improvement</i>	<i>Action</i>	<i>Outcome</i>	<i>Timeline</i>	<i>Priority</i>
Communication Strategy	Communication of corporate asset management objectives in the City through the website and public facing documents	Buy in and understanding of asset management in the community	Long	Medium
Lifecycle Management Strategy	Document existing and proposed lifecycle strategies at the service area level through DAMPs	Development of baseline lifecycle practices to benchmark for future use	Medium	Medium
	Full integration of LMS with the RMS and LOS frameworks	Fully developed LOS and RMS frameworks based on LMS to inform decision making across all service areas	Medium	Medium
	Identify costs associated with lifecycle management activities	More accurate representation of costs to maintain existing and achieving proposed levels of service	Medium	Medium
Financing Strategy	Maintain current levies (Infrastructure Levy & Transit Levy)	Continual bridging of funding gap for improved financial sustainability	Long	High
	Seek funding support from upper levels of government		Long	High
	Continue to monitor and benchmark infrastructure gap with other municipalities		Short	Medium
	Continuous alignment with Long-Term Financial Master plan and Budget		Medium	Medium
	Develop annual capital reinvestment targets	Determination of reasonability of current reinvestment rates and allows for new targets to be developed to meet current or planned LOS	Medium	High
	Continued project co-ordination with Region of Peel and utility companies	Cost efficiencies through linear asset rehabilitation and replacement	Medium	Medium

6.2 Monitoring and Review Procedures

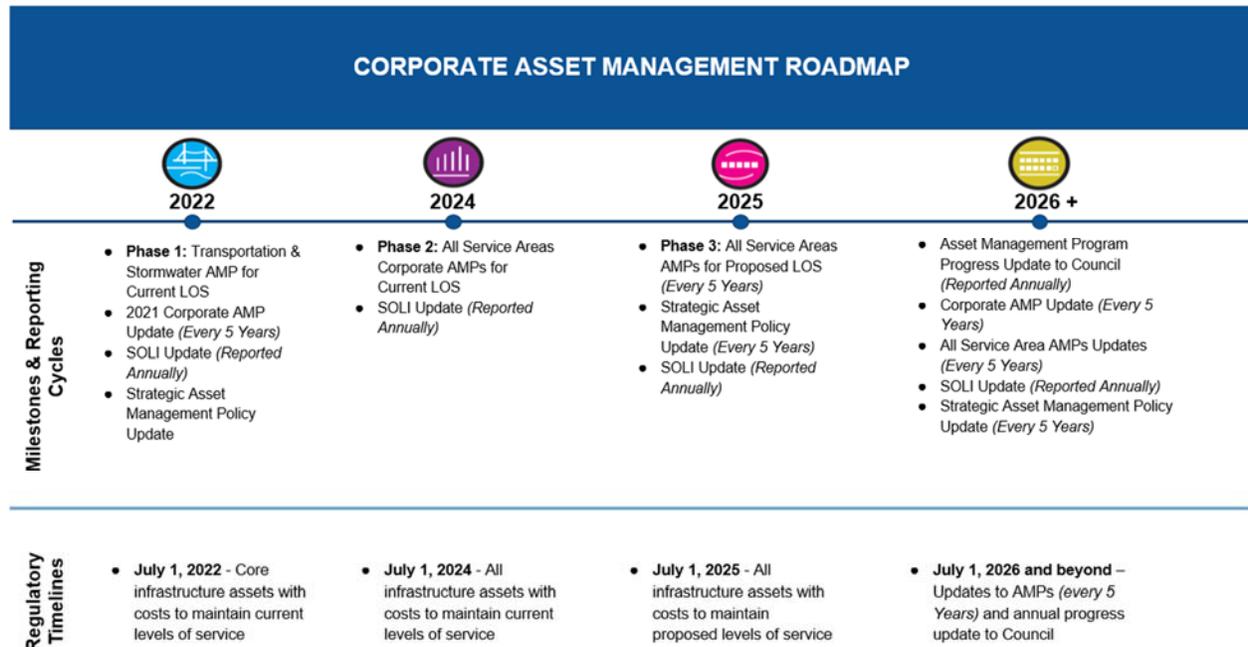
In order to effectively monitor the corporate asset management progress in the City, key performance measures are established to help benchmark and determine the current state of the City's infrastructure through asset management. Some key ways the Corporate AMP can be measured include:

- Assessment of the maturity of the Corporate Asset Management Program relative to the desired targets (many of which are outlined in Table 6-1 above)
- Identification of expenditures included as part of this Corporate AMP as part of the City’s long-term financial plan
- The level to which the various programs, budgets, plans and corporate structures include the recommendations of this Corporate AMP
- The level to which the existing and projected levels of service and risk are incorporated into the City’s Strategic Plans and associated documents
- Achieving an Asset Renewal Funding Ratio target of 1.0

The City of Brampton 2021 Corporate AMP includes an enhanced financial strategy which takes a longer-term perspective with costs averaged over a 25-year period, which is extended from the previous 2016 Corporate AMP timeframe of 10 years. Ideally, the plan will reflect the asset lifecycles which vary from asset to asset, many lasting decades. The Corporate AMP is expected to be a living document and related performance measures will be collected and monitored annually to ensure the Corporate AMP is being implemented. Significant events may trigger the need for additional updates. As the City budgets on an annual cycle, to some degree, changes can be anticipated annually depending on budget approvals. Figure 6-1 below shows the targeted timelines for updates to the Plan and associated documents.

In addition to the regulatory timelines, the City has outlined a Corporate Asset Management Roadmap as outlined in Figure 6-1 below. The roadmap details the City’s plans as it pertains to asset management over the coming years to meet the deadlines and deliverables.

Figure 6-1 – Corporate Asset Management Roadmap

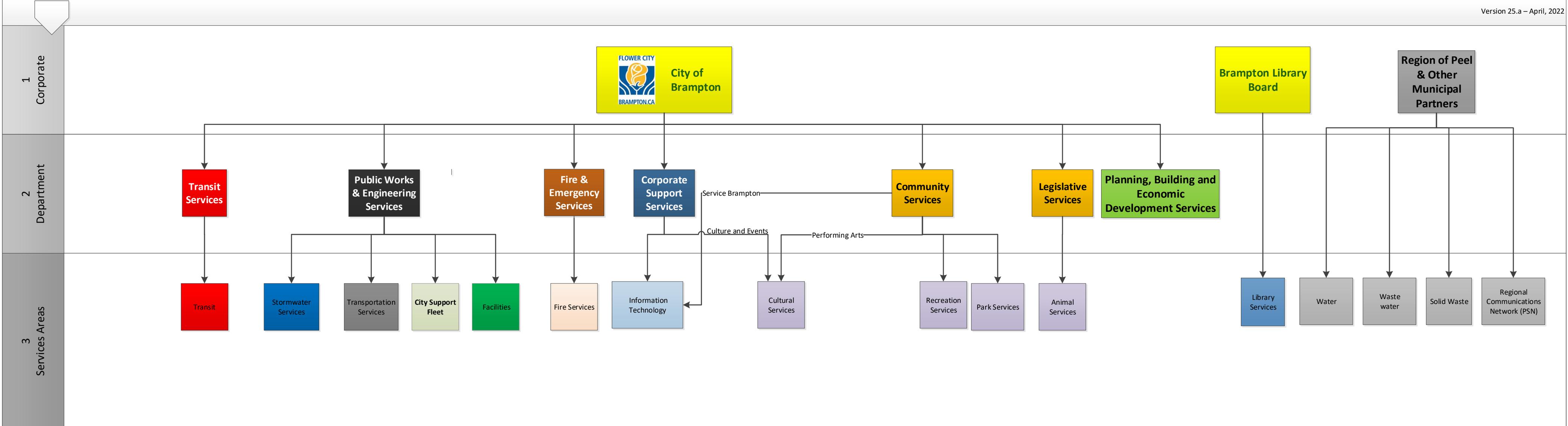


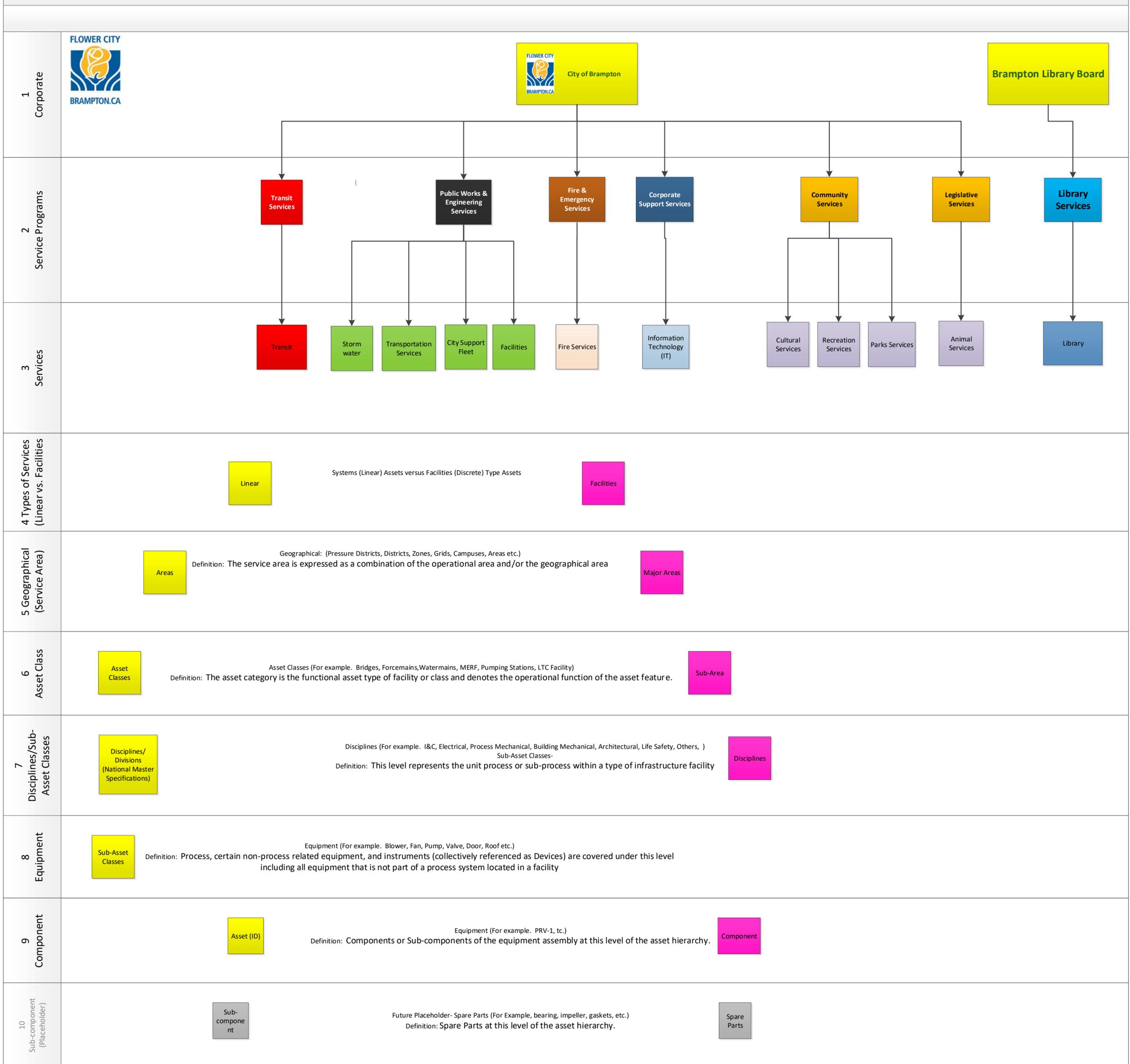
Over the next several years, the City will continue to implement various components of the Corporate Asset Management Plan. Despite the relative importance of each of the components below to the City's overall asset management program, it is important that the City set expectations and manage resources to implement high priority elements.

APPENDIX A
ASSET HIERARCHY

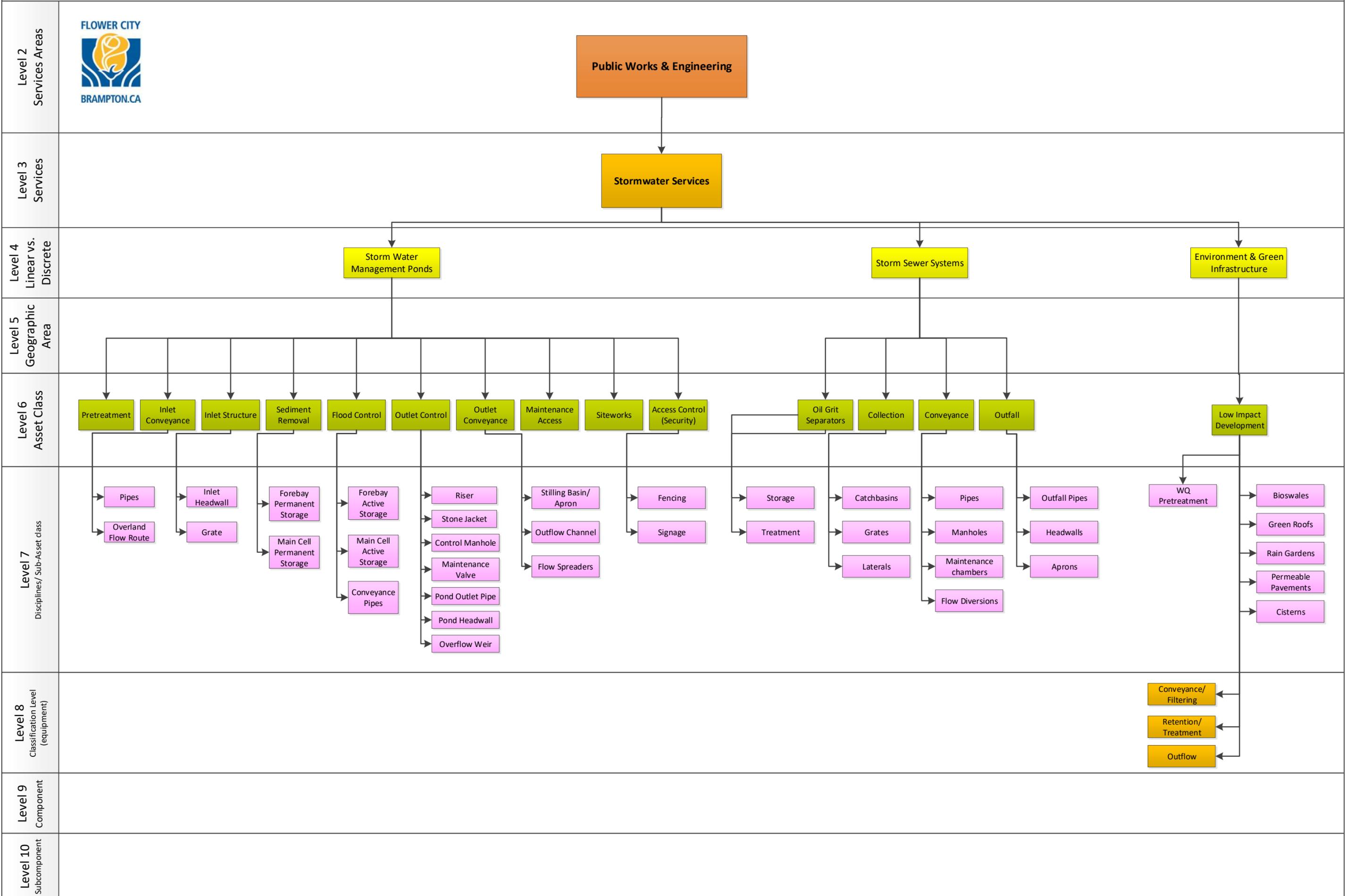
City of Brampton – Corporate Asset Hierarchy Standard – Main Index

Version 25.a – April, 2022

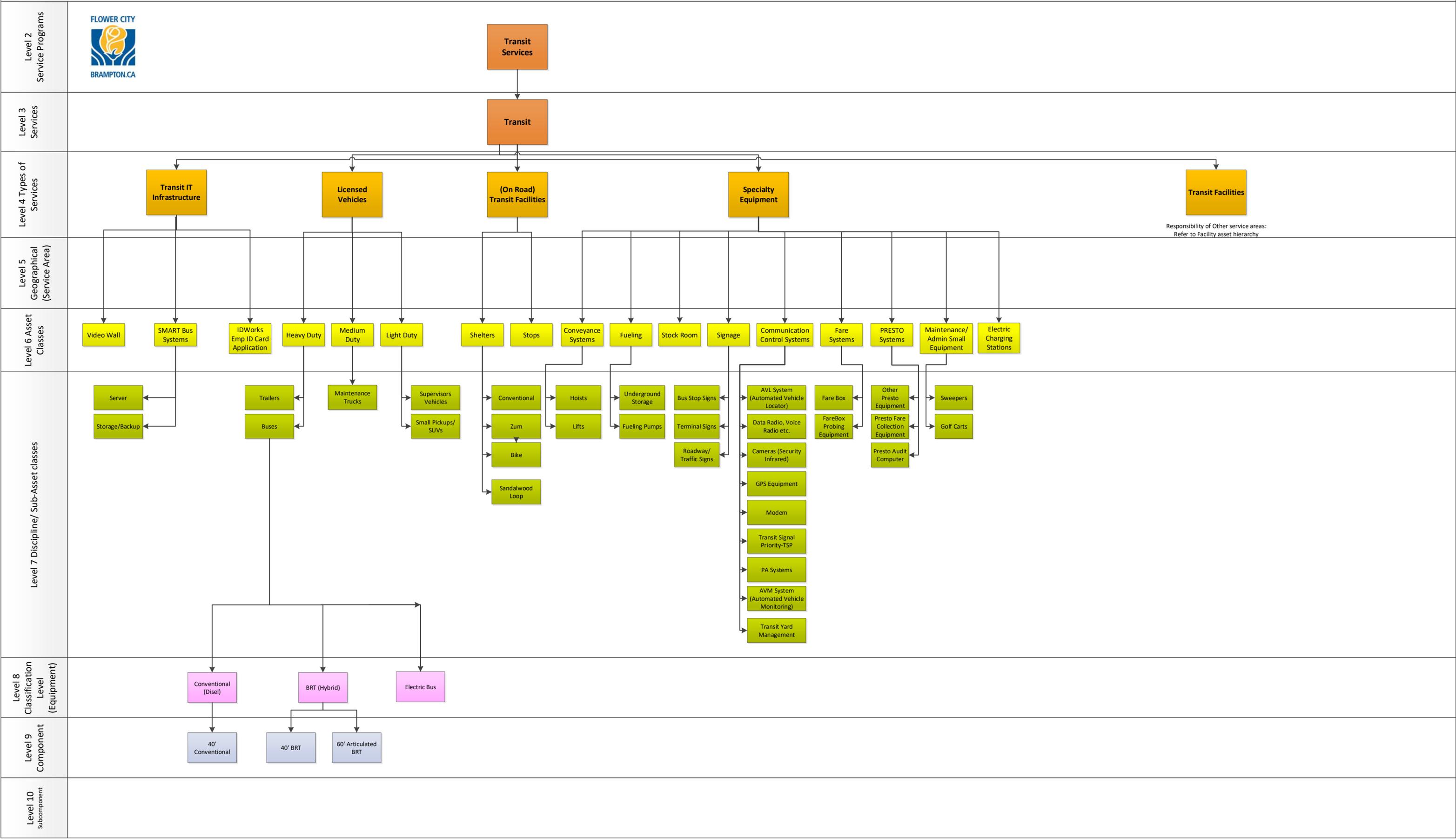




Stormwater Services

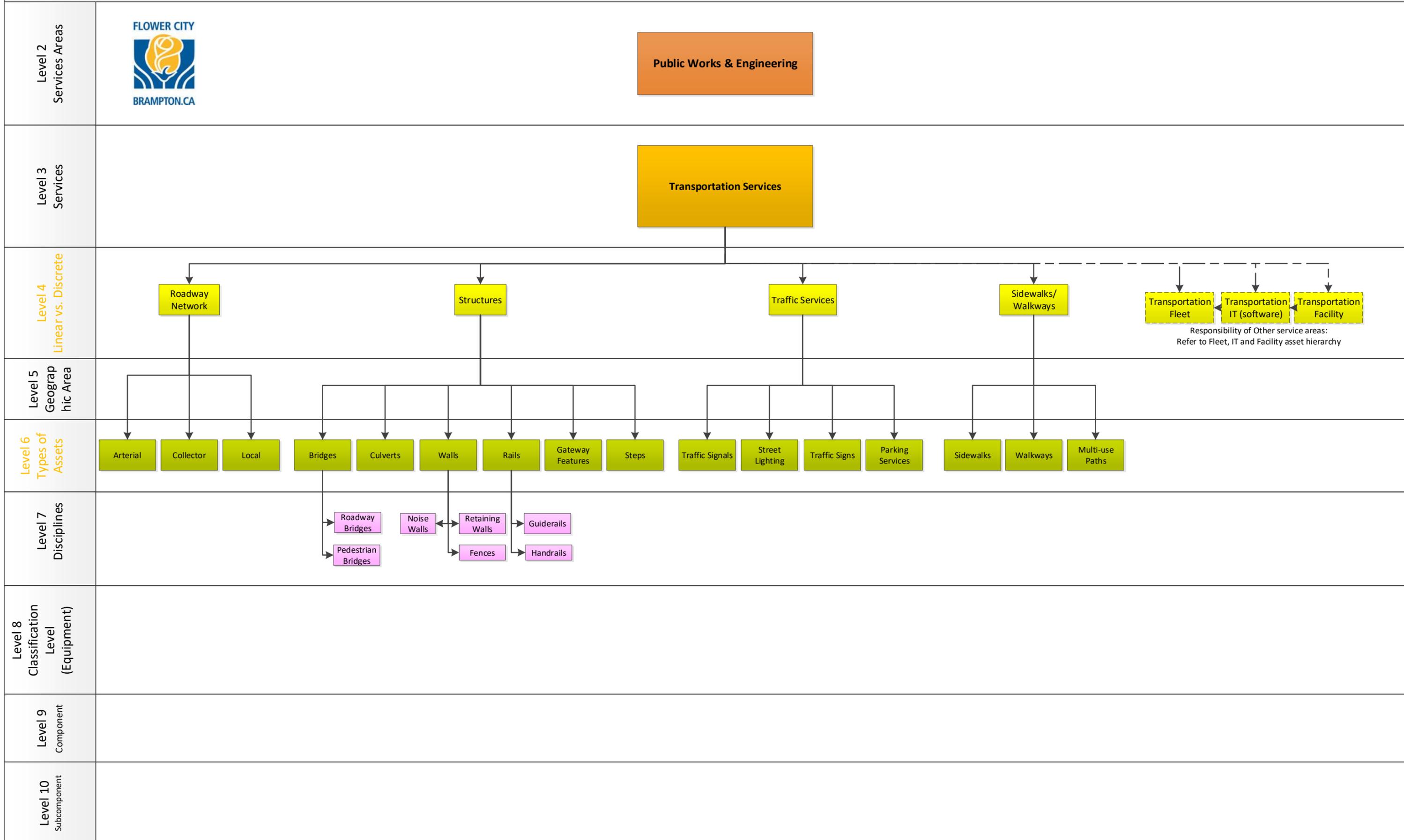


Transit Services



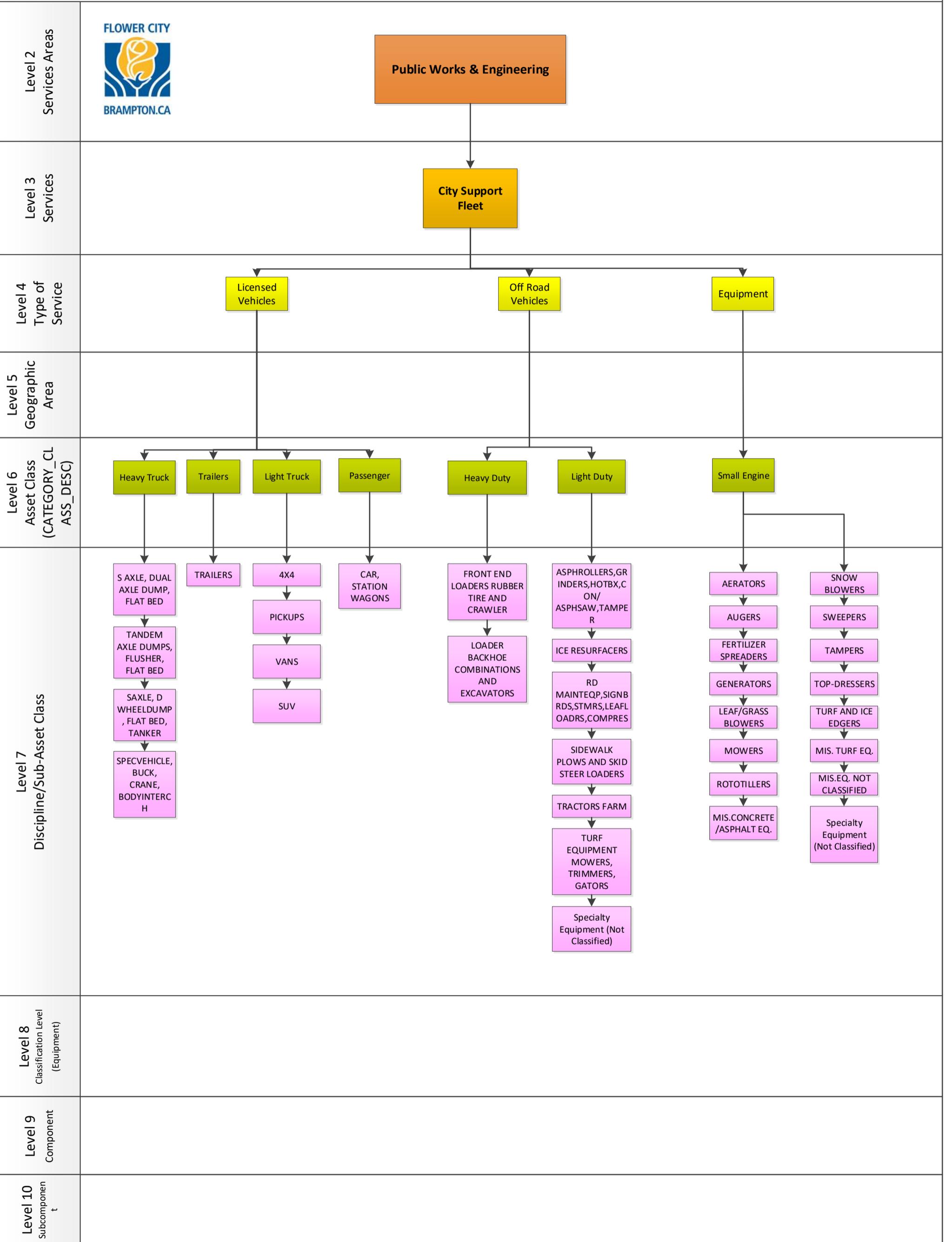
Transportation Services

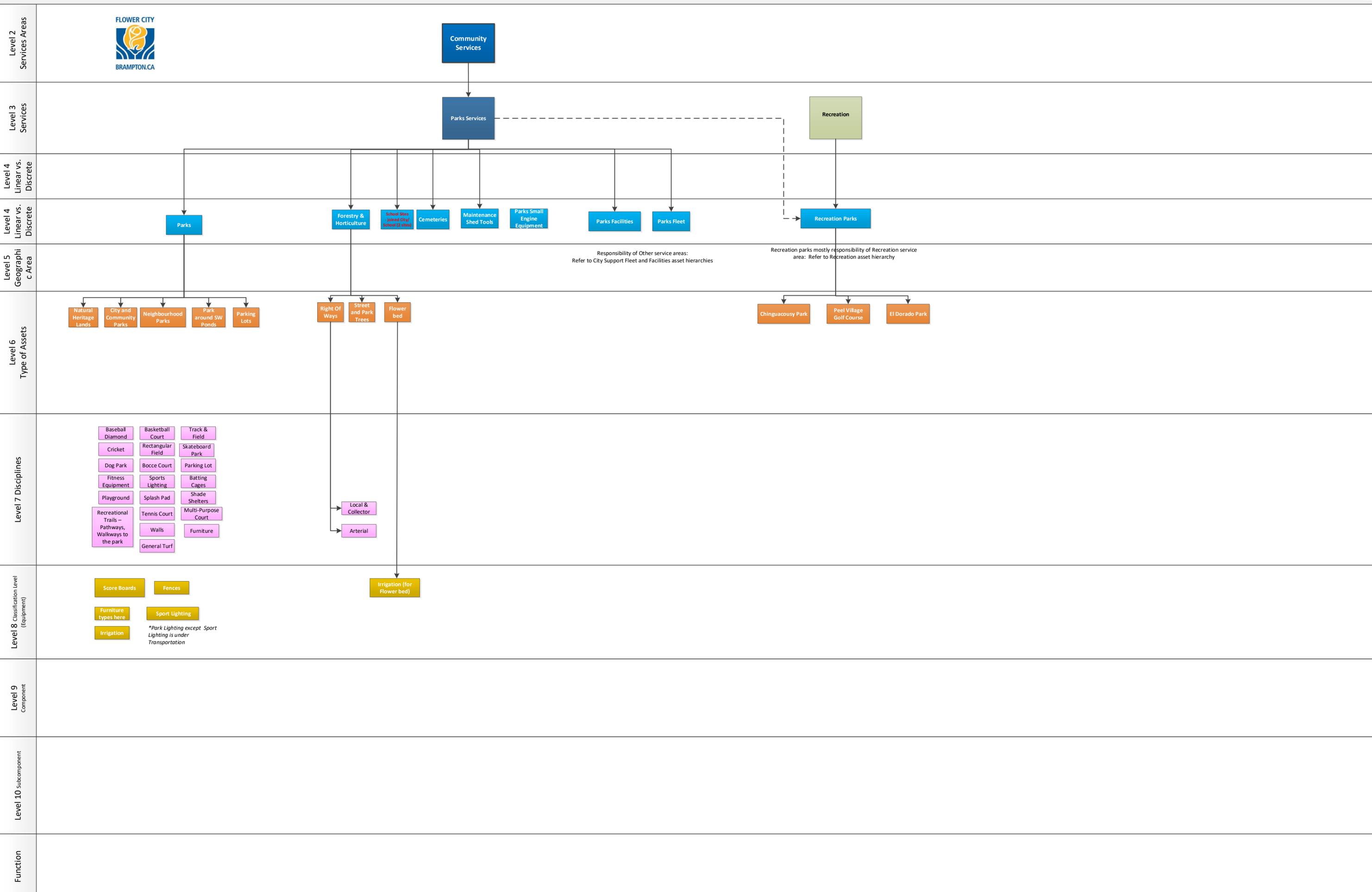
Phase



City Support Fleet

Phase

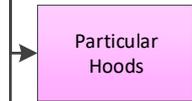
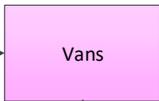
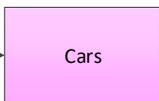




Fire Services



Responsibility of Other service areas:
Refer to, IT and Facility asset hierarchy



Level 2 Service Programs
Level 3 Services
Level 4 Types of Services
Level 5 Geographical (Service Area)
Level 6 Asset Class
Level 7 Discipline / Sub-Asset Class
Level 8 Classification Level (Equipment)
Level 9 Component
Level 10 Subcomponent

Information Technology



Corporate Support Services

Information Technology

End User IT

IT Infrastructure

Software

- PCs
- Tablets & Laptops
- Monitors
- Plotters
- Printers
- Mobile Phones
- Audio Visual Equipment

- Servers
- Storage & Backup
- Wireless
- Network Infrastructure
- Communication Systems

Corporate Wide Software

- Leased
- Owned

- Emergency (Part of Regional System)
- Non-Emergency (City owned)
- Radios

- Switches
- Inside Cabling
- Outside Cabling

- Storage
- Backup

All Types

Level 2 Service Programs

Level 3 Services

Level 4 Types of Services

Level 6 Asset Class

Level 5 Geographical (Service Area)

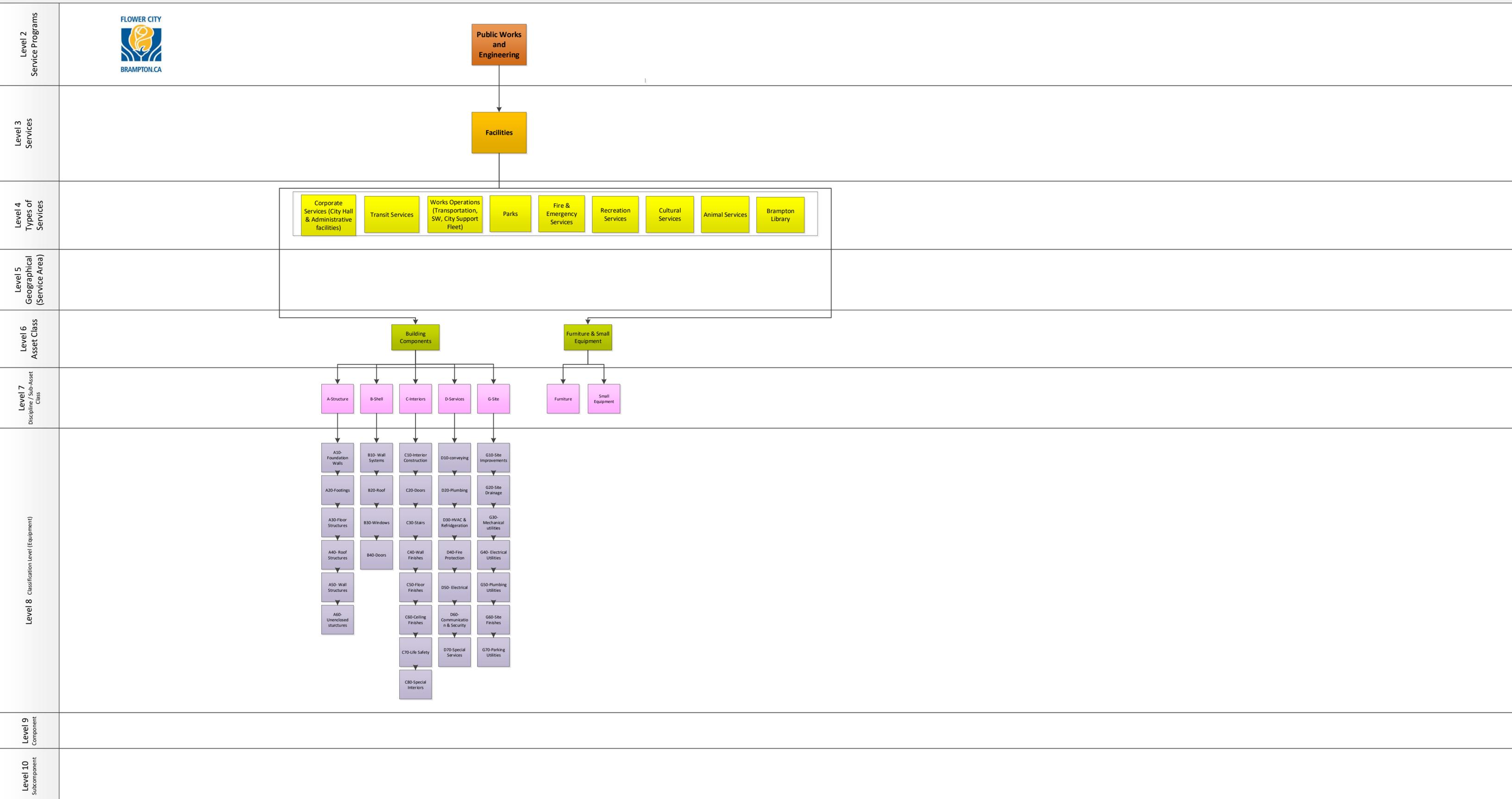
Level 7 Discipline / Sub-Asset Class

Level 8 Classification Level (Equipment)

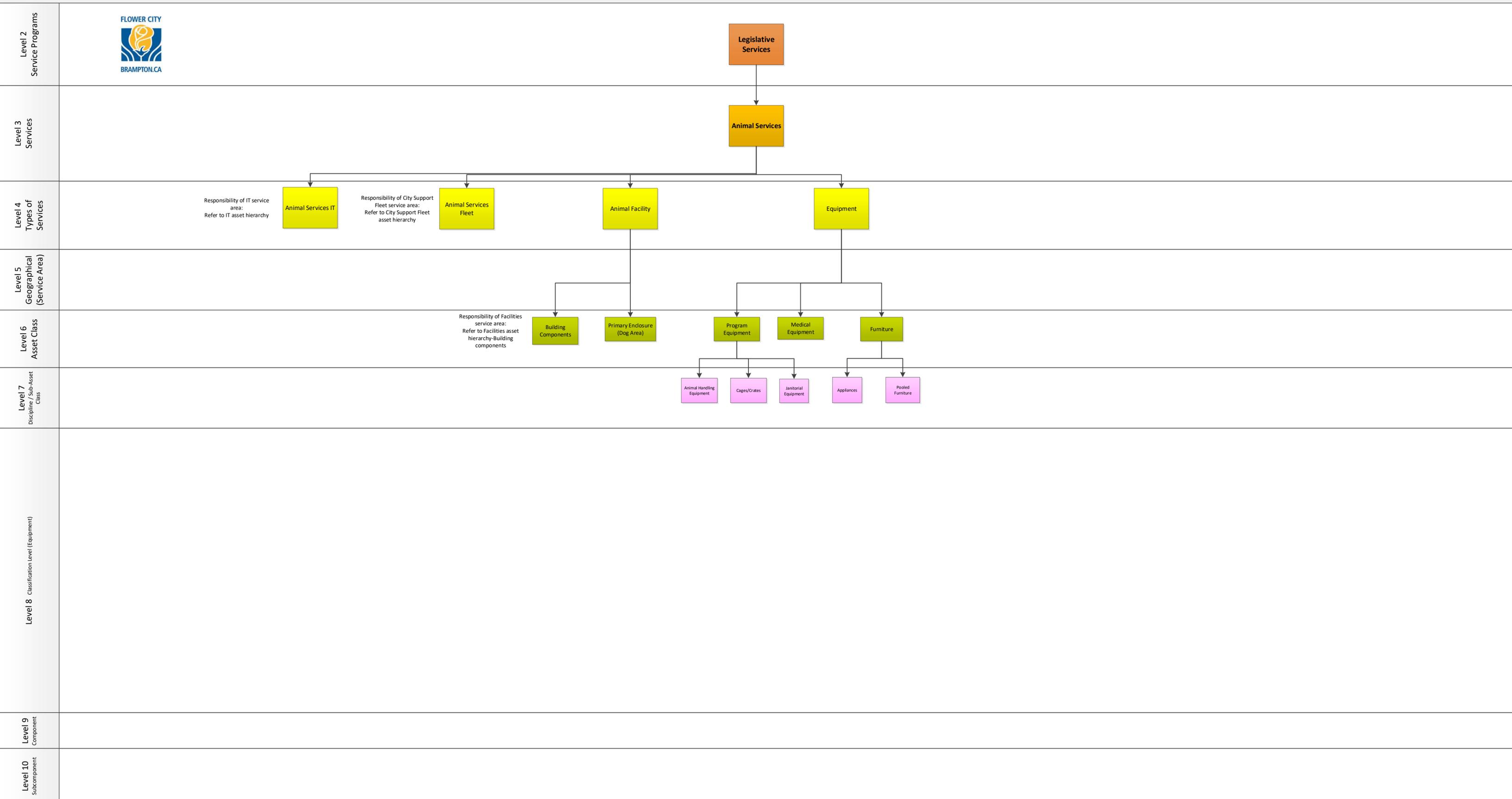
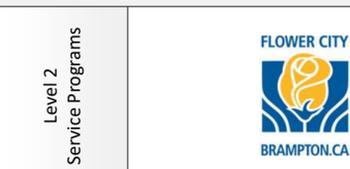
Level 9 Component

Level 10 Subcomponent

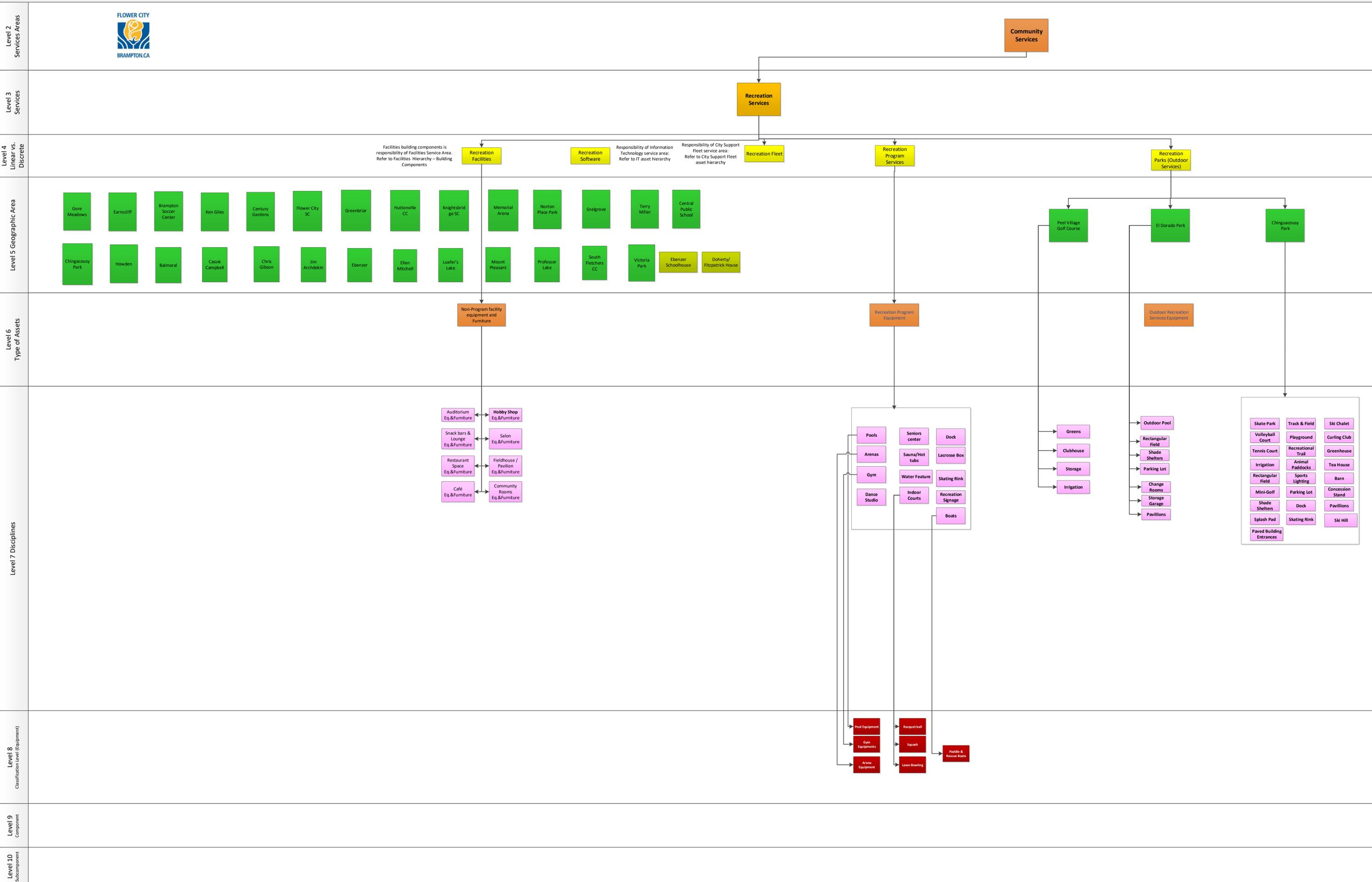
Facilities



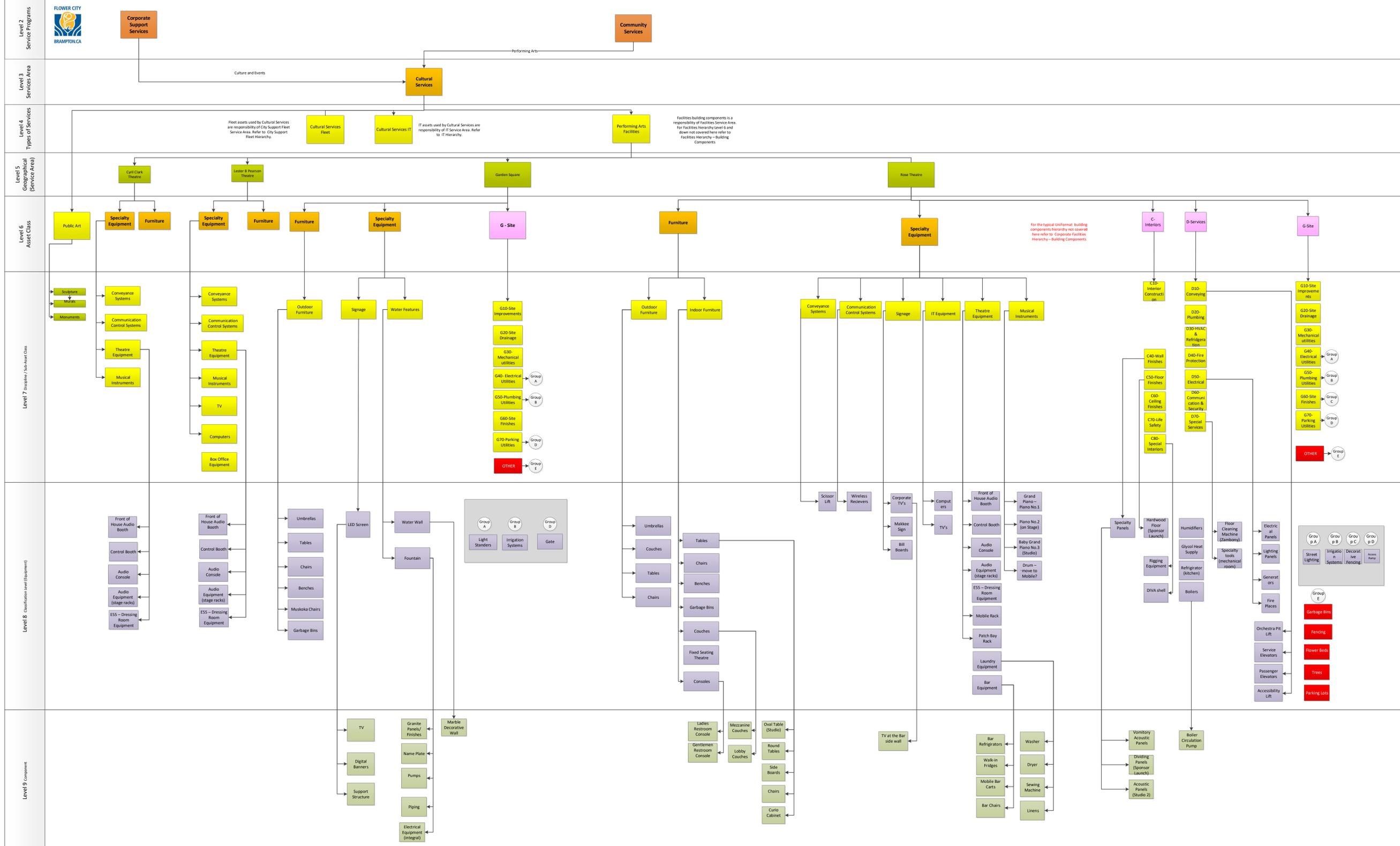
Animal Services



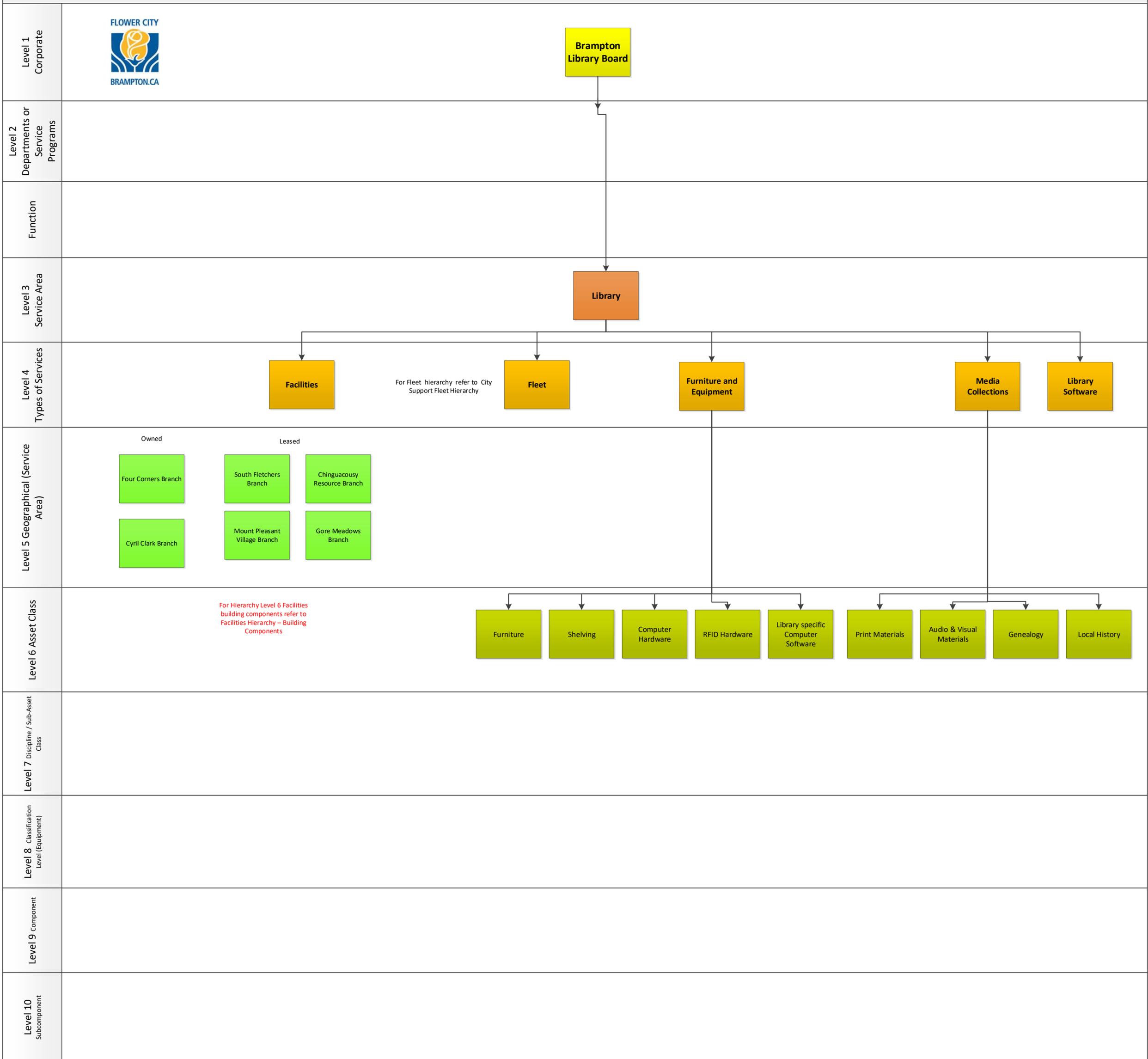
Recreation Services



Cultural Services



Library Services



APPENDIX B
SOLI REPORT CARDS

APPENDIX B



Transportation



Total Asset Replacement Value:	\$2.9 Billion
Total Asset Replacement Value Including Facilities, Fleet and Software:	\$3.0 Billion
Future Condition Trend (Next 10 Years):	Declining - As assets age they may require attention in the future
Data Confidence & Reliability:	Age and Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

Responsibility View: Shows the assets under the service area that is responsible for managing them

User View: Shows the assets under the service area that is using them

The responsibility view is also being illustrated in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

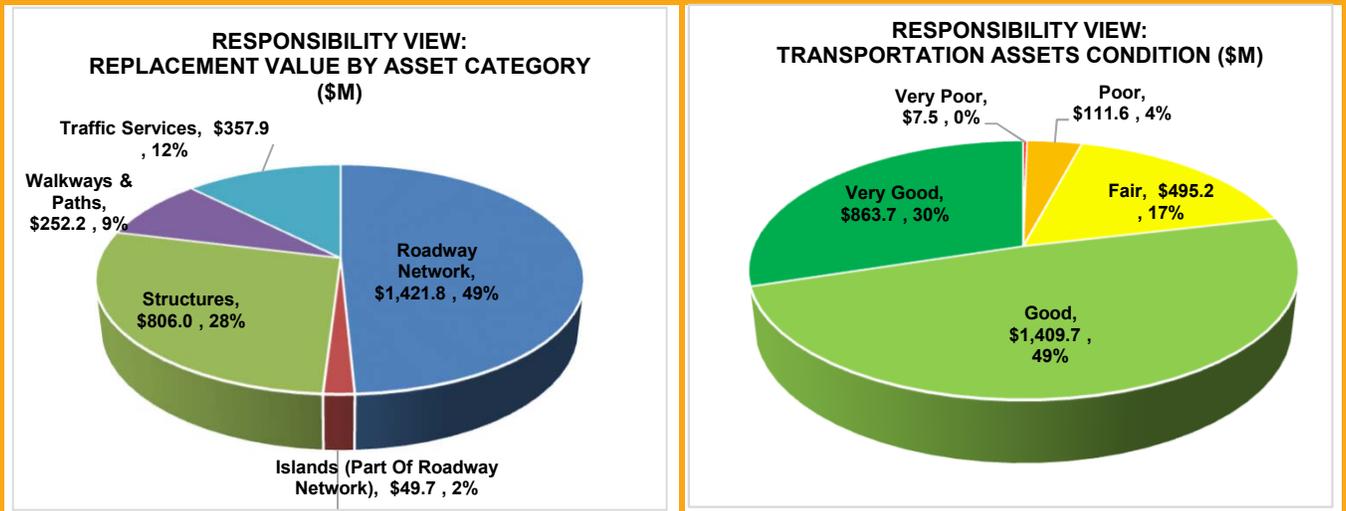
Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Transportation Services		
Roads	\$1,421.8	3,650 Lane KM
Islands	\$49.7	566,085 Square Metres
Structures (Bridges & Culverts)	\$739.8	10 KM
Structures (Other)	\$66.3	93 KM
Walkways & Paths	\$252.2	2 KM
Traffic Services	\$357.9	90,565 Each
<i>Subtotal Assets Managed by Transportation Services (Responsibility View)</i>	<i>\$2,887.8</i>	-
Assets Managed by Other Service Areas		
Operations Facilities (Moved to Facilities)	\$81.4	13
Fleet (Moved to City Support Fleet)	\$18.0	223
Software (Moved to IT)	\$2.3	22
Total Replacement Value (User View)	\$2,989.5	-

**Other structures include: Gateway Features, Noise walls, Retaining walls on Walkways, Fences, Guiderrails, Handrails and steps*



Major Types of Assets within Transportation Services - Responsibility View

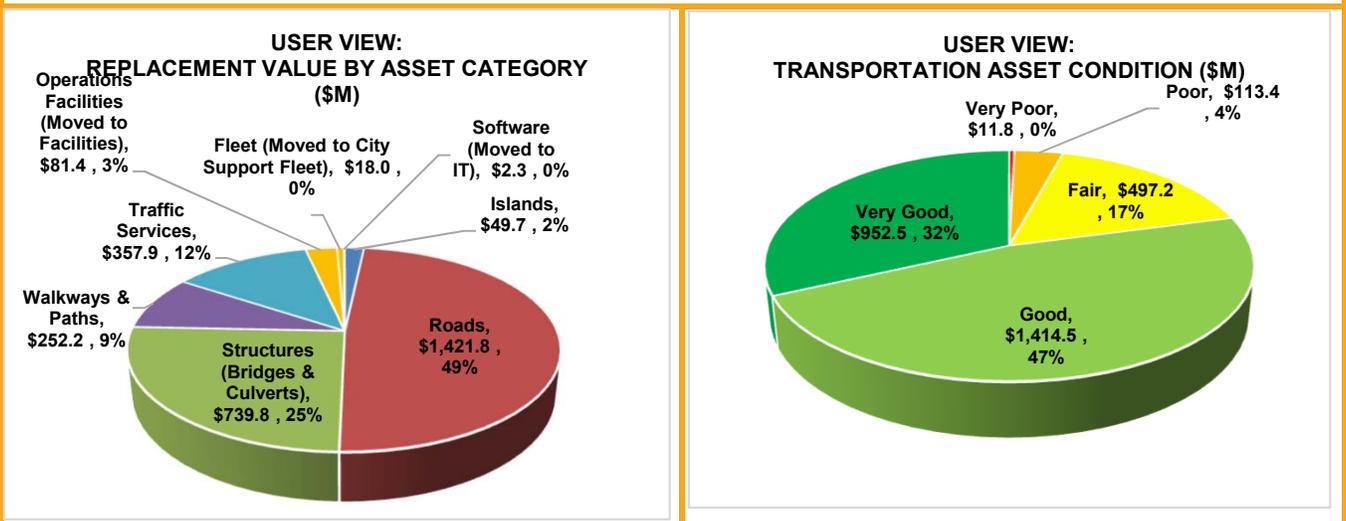
The figure below illustrates the replacement value and condition of Transportation Services assets under the responsibility view. Under this view, the total replacement value of assets is \$2.9 billion. Of this total, roughly 51% is related to the roadway network (including islands). About 79% of the assets are considered to be in Good to Very Good condition, with the majority of the remaining assets in fair condition. Approximately 4% of assets are in Poor and Very Poor condition - of which a portion of the assets belongs to traffic services which the condition is assessed relative to the age and design life of the asset.



Data Source: Pavement and Bridge Management System, Departmental Inventories, dTIMS BA, GIS (Geographical Information System), PSAB, Parametric Estimating Guide of MTO 2016, City Works, Infor

Major Types of Assets within Transportation Services - User View

The figures below illustrate the replacement value and condition of Transportation Services assets under the user view. Under the user view illustration which also captures facilities, city support fleet and software, the replacement value is about \$3.0 billion. Approximately 79% of the assets are considered to be in Good to Very Good Condition.

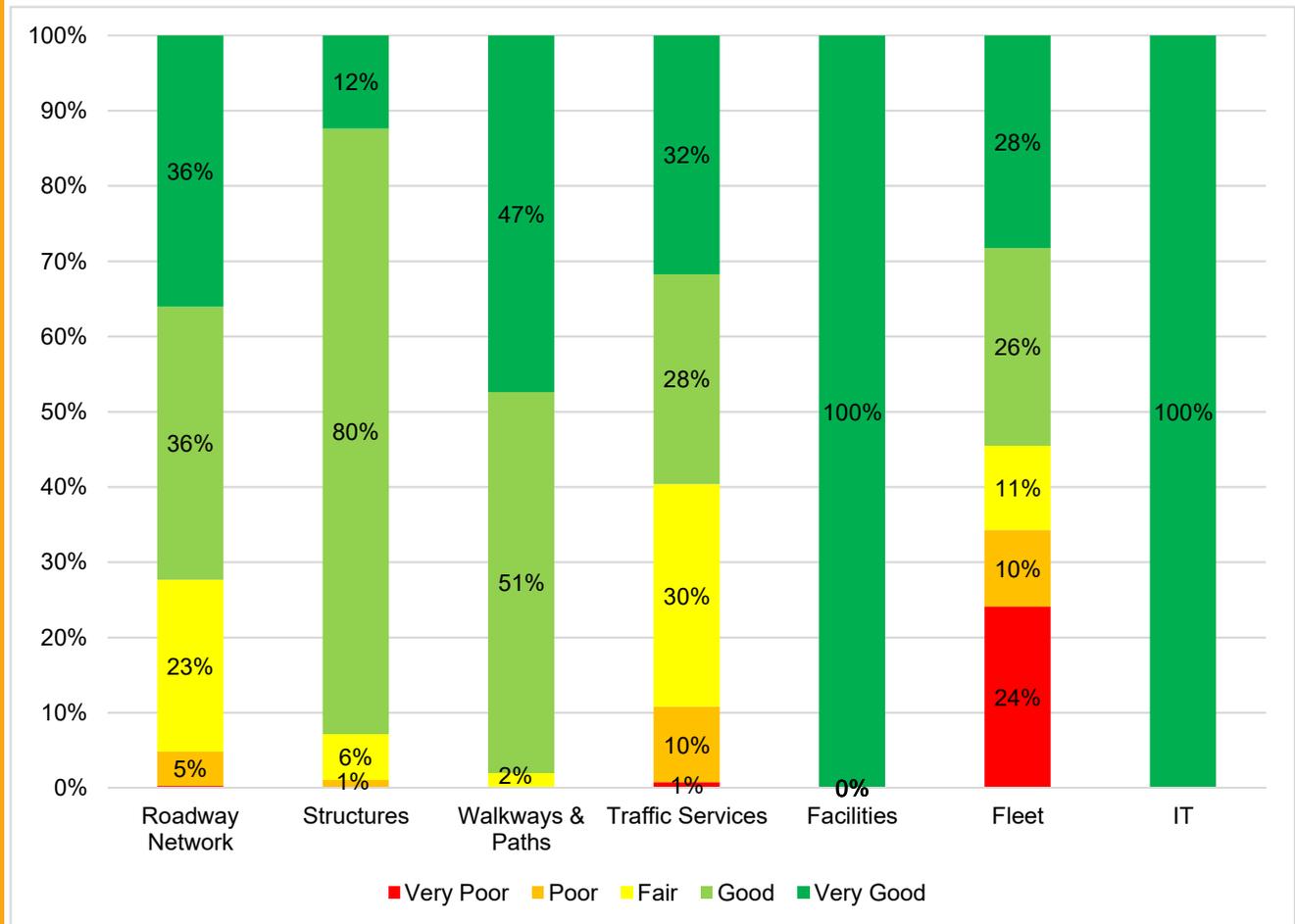


APPENDIX B



Transportation

The figure below illustrates the condition of the seven sub-component assets of Transportation Services. The majority of assets are in Good to Very Good condition, although, a small portion of assets pertaining to the Roadway Network, Structures, Traffic Services and Fleet are in Poor and Very Poor condition.



APPENDIX B



Transportation

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outlines the difference in Transportation Services assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. All values are expressed in 2021 dollars.

Under the responsibility view framework, the value of Transportation Services assets has increased by 18% from approximately \$2.5 billion to \$2.9 billion. This increase can be attributed to better asset data, costing information and the inclusion of additional traffic services assets.

When considering the Transportation Services Facilities, Fleet and Software, the total asset value for Transportation Services has increased proportionately with the inclusion of these assets. Furthermore, the total value of Transportation Services assets represents an increase of 16% (or \$422.2 million) from the value reported in 2019 after inflationary adjustments.

Please note, the Facilities, City Support Fleet and IT report cards will include additional information on those assets used by Transportation Services but maintained and managed by a different City department. For fair comparison, 2019 asset inventory has been adjusted to align with 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Roads	3,287	Lane KM	3,650	Lane KM
Islands	565,064	Square Metres	566,085	Square Metres
Structures (Bridges & Culverts)	10	KM	10	KM
Structures (Other)	86	KM	93	KM
Walkways & Paths	1,949	KM	2,004	KM
Traffic Services	87,817	Each	90,565	Each
Operations Facilities (Moved to Facilities)	12	Each	13	Each
Fleet (Moved to City Support Fleet)	166	Each	223	Each
Software (Moved to IT)	23	Each	22	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Operations Facilities (Moved to Facilities)	\$ 97,731,610	\$ 81,377,531	\$ (16,354,079)	-17%
Fleet (Moved to City Support Fleet)	\$ 16,793,431	\$ 17,999,354	\$ 1,205,922	7%
Software (Moved to IT)	\$ 1,826,604	\$ 2,334,420	\$ 507,816	28%
Subtotal Assets Managed by Other Service Areas	\$ 116,351,645	\$ 101,711,305	\$ (14,640,340)	-13%
2. Assets Managed by Transportation Services				
Roads	\$ 1,122,065,117	\$ 1,421,848,118	\$ 299,783,001	27%
Islands	\$ 48,129,441	\$ 49,728,441	\$ 1,599,000	3%
Structures (Bridges & Culverts)	\$ 709,654,759	\$ 739,762,548	\$ 30,107,789	4%
Structures (Other)	\$ 40,315,238.86	\$ 66,284,527	\$ 25,969,288	64%
Walkways & Paths	\$ 239,705,928	\$ 252,184,720	\$ 12,478,791	5%
Traffic Services	\$ 290,981,122	\$ 357,947,250	\$ 66,966,129	23%
Subtotal Assets Managed by Transportation Services (Responsibility View)	\$ 2,450,851,606	\$ 2,887,755,604	\$ 436,903,998	18%
Total Replacement Value: User View (1+2)	\$ 2,567,203,251	\$ 2,989,466,908	\$ 422,263,657	16%

**Other structures include: Gateway Features, Noise walls, Retaining walls on Walkways, Fences, Guiderails, Handrails and steps*



Stormwater



Asset Replacement Value:	\$1.3 Billion
Future Condition Trend (Next 10 Years):	Increasing - Introduced a dedicated User Fee to fund operational and asset renewal expenditures.
Data Confidence & Reliability:	Age and Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

- Responsibility View:** Shows the assets under the service area that is responsible for managing them.
- User View:** Shows the assets under the service area that is using them.

The responsibility view is also being illustrated in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

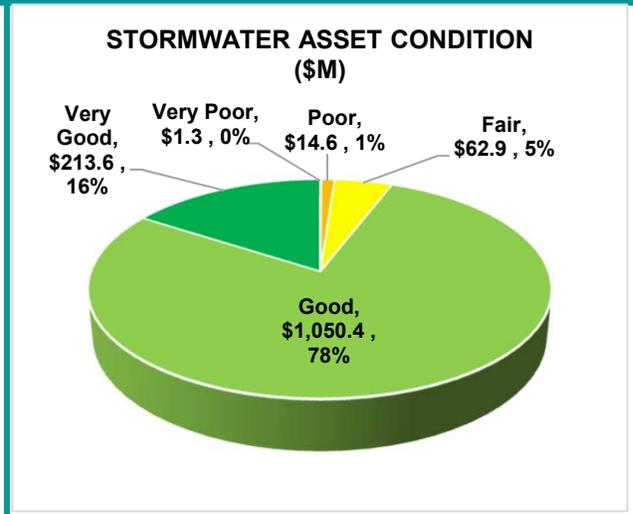
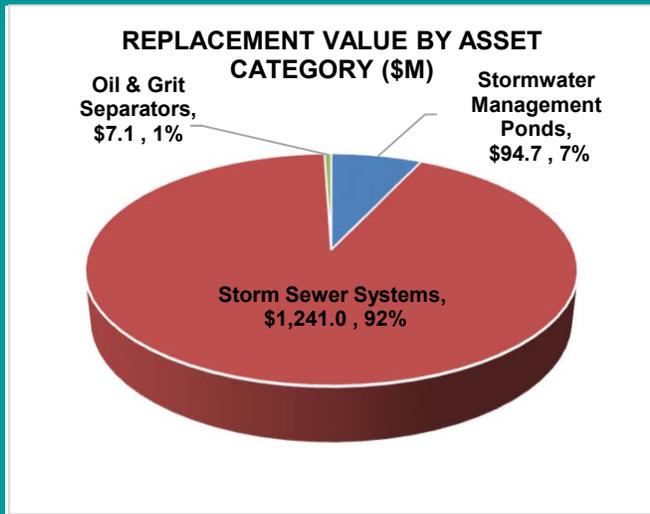
The shift in asset representation has no effect on the overall asset portfolio for Stormwater Services. The table below outlines the assets under both the User and Responsibility View:

Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Stormwater		
Stormwater Management Ponds	\$94.7	184
Storm Sewer Systems	\$1,241.0	Pooled
Oil & Grit Separators	\$7.1	92
Total Replacement Value (User or Responsibility View)	\$1,342.7	-



Major Types of Assets within Stormwater Services - User & Responsibility View

The figures below illustrate the replacement value and condition of Stormwater Service assets under the user and responsibility view. Under these views, the total replacement value of assets is \$1.3 billion. About 92% of this total is related to the City's storm sewer system with the remaining value largely associated with stormwater management ponds. Nearly 95% of the City's stormwater assets are Good to Very Good condition with the remaining assets in Fair or Poor condition. The increased future condition trend is attributable to the recently introduced dedicated stormwater user fee which transfers funding from property taxes to a user-fee program. Revenues derived from the user fees will be used exclusively towards Stormwater-related costs and investments which will in turn help relieve some pressure on the capital budget, and allow funds to be re-allocated towards other service areas.



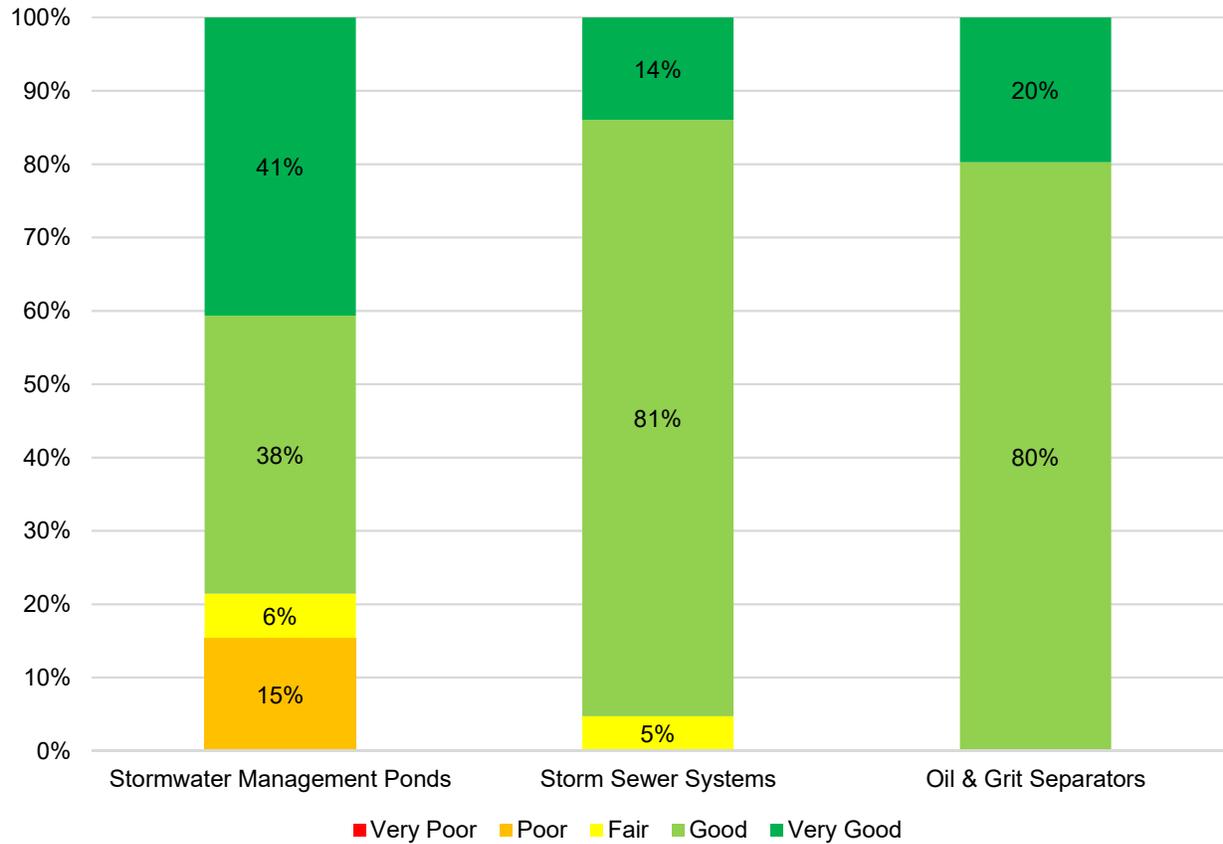
Data Source: GIS database, Departmental Inventory for O&GS (Excel based tracking), Manufacturer pipe price lists and City contracts (cost model)

APPENDIX B



Stormwater

The figure below illustrates the condition of the three sub-component assets of Stormwater services. All sub-components are generally in Good to Very Good Condition, however, about 15% of Stormwater Management Ponds are in Poor condition.



APPENDIX B



Stormwater

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in Stormwater assets in the 2019 SOLI relative to the 2020 SOLI. Please note, all values are expressed in 2021 dollars.

Under the user and responsibility view framework, the total value of Stormwater assets has decreased by 5% from approximately \$1.4 billion to \$1.3 billion. This decrease can generally be attributed to updated costing related to stormwater management ponds as part of the 2020 SOLI.

Asset	2019 SOLI		2020 SOLI	
Stormwater Management Ponds	182	Each	184	Each
Storm Sewer Systems - Linear	1,821,549	Meters	1,846,411	Meters
Storm Sewer Systems - MH/CB	61,898	Each	63,045	Each
Oil & Grit Separators	92	Each	92	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
Stormwater Management Ponds	\$ 189,352,800	\$ 94,676,400	\$ (94,676,400)	-50%
Storm Sewer Systems - Linear & MH/CB	\$ 1,213,245,325	\$ 1,240,959,760	\$ 27,714,434	2%
Oil & Grit Separators	\$ 7,086,041	\$ 7,086,041	-	0%
Subtotal Assets Considered in 2020 SOLI	\$ 1,409,684,166	\$ 1,342,722,200	\$ (66,961,966)	-5%

APPENDIX B



Facilities



Total Asset Replacement Value (Corporate Facilities): \$309.3 Million

Total Asset Replacement Value (All Facilities, Including Software): \$1.4 Billion

Future Condition Trend (Next 10 Years): Stable - Assets are renewed as needed and therefore remain in stable condition

Data Confidence & Reliability: Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and a "**User View**" representation

Responsibility View: Shows the assets under the service area that is responsible for managing them
User View: Shows the assets under the service area that is using them

The responsibility view is an addition in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

Asset Type	Replacement Value (\$Millions)	Asset Inventory
1. Assets Used by the Corporation and Managed by Facilities		
Corporate Facilities	\$308.9	29
<i>Subtotal Assets Used by the Corporation and Managed by Facilities</i>	<i>\$308.9</i>	<i>29</i>
2. Assets Used by Facilities and Managed by Other Service Areas		
Software (Moved to IT)	\$0.5	4
<i>Subtotal Assets Used by the Corporation and Managed by Facilities (User View = 1+2)</i>	<i>\$309.3</i>	<i>-</i>
3. Assets Managed by Facilities and Used by Other Service Areas		
Animal Services Facilities	\$9.2	2
Cultural Services Facilities	\$88.5	1
Recreation Facilities	\$573.4	73
Parks Facilities	\$17.8	16
Transit Facilities	\$165.6	8
Library Facilities*	\$81.9	6
Fire Facilities	\$116.0	19
Work Operations Facilities*	\$81.4	13
<i>Subtotal Assets Managed by Facilities and Used by Other Service Areas</i>	<i>\$1,133.8</i>	<i>138</i>
Total Replacement Value (Responsibility View = 1+ 3)	\$1,442.6	167

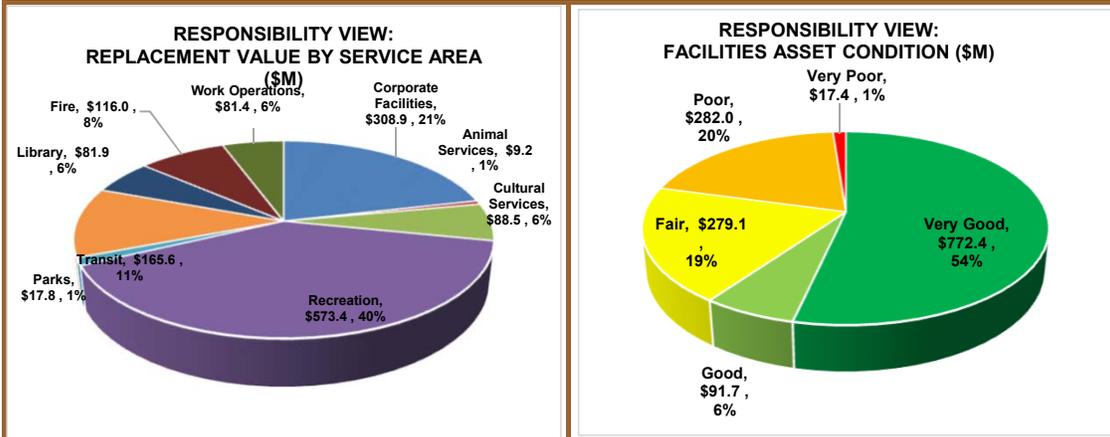
* Work Operations include facilities associated with Fleet, Stormwater and Transportation

* Four (4) library facilities are standalone buildings while two (2) of the Library facilities are shared facilities with Recreation



Major Types of Assets within Facilities - Responsibility View

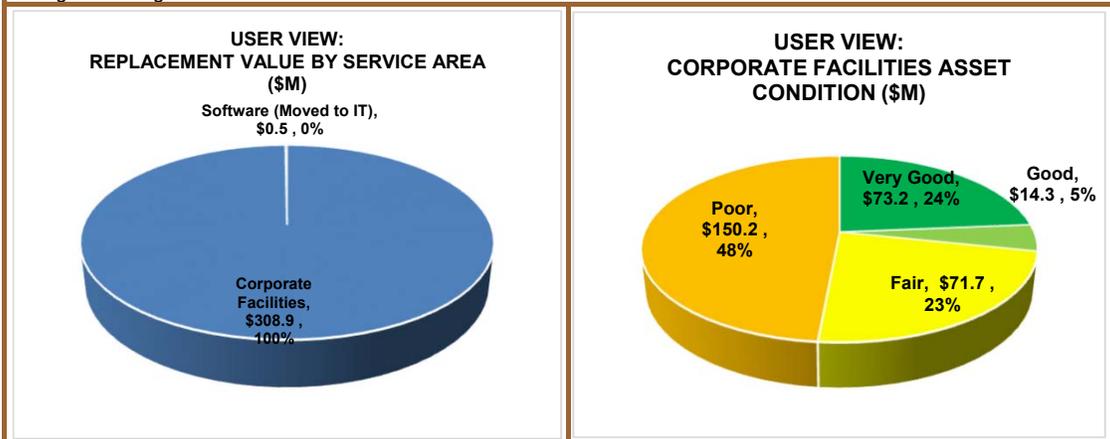
The figure below illustrates the replacement value and condition of Facilities assets under the responsibility view. Under this view, the total replacement value of assets is \$1.4 billion. This includes all facilities used across various service areas in addition to Corporate Facilities. As depicted in the figure below, Recreation Facilities are the largest portion representing 40% (or \$573.4 million) of the total facilities replacement value. Overall, the facilities are in Good condition, with 60% of assets classified to be in Good or Very Good condition. Approximately 21% of assets are in Poor or Very Poor condition, with only 1% of that representing Very Poor assets. The facilities condition reporting is set on an FCI calculation basis which considers the cost of immediate repair work required at each facility relative to the replacement value of the facility. Poor and Very Poor condition reporting does not represent a safety issue or preclude service areas from delivering services to meet the needs of residents.



Source: Building Condition Assessments, Suncorp Valuation Report

Major Types of Assets within Facilities - User View

The figures below illustrate the replacement value and condition of Facilities assets under the user view. The user view for Facilities captures Corporate Facilities and Software, with a total replacement value of \$309.3 million. Approximately 28% of Corporate Facilities assets are considered to be in Good to Very Good Condition and no assets are in Very Poor condition, although, about 49% of assets are in Poor condition. The poor condition assets mainly related to the Civic Centre and City Hall as significant renewal costs are identified in the short-term. As mentioned in the section above, these facilities do not represent a safety issue or preclude the delivery of services to meet resident needs and will be addressed through the budget.

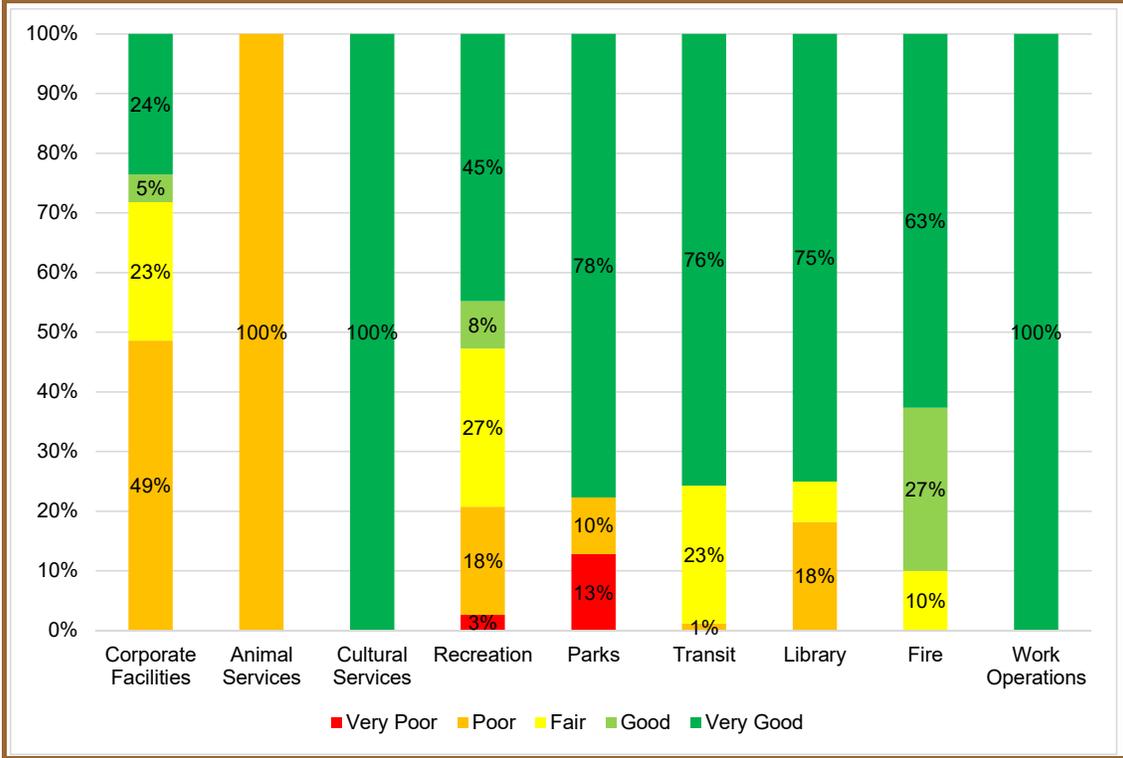


APPENDIX B



Facilities

The figure below illustrates the condition of all facilities assets by service area based on the responsibility view. While the assets are generally in Good to Very Good condition, the overall condition makeup varies by service area. Corporate Facilities, Animal Services, Recreation, Parks, Transit, Library and Fire all have a portion of facilities in Poor or Very Poor condition. Again, the condition assessment are determined on an FCI calculation basis which considers the cost of immediate repair works required at a facility relative to the replacement value of the facility. Poor and Very Poor condition reporting does not represent a safety issue or preclude service areas from delivering services to meet the needs of residents. These facilities are being addressed through the budget as required.



APPENDIX B



Facilities

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in Facilities assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. Additionally in 2020, some noteworthy changes appeared due to the recategorization of a few facilities from Parks to Recreation. Please note, all values are expressed in 2021 dollars.

Under the user view framework, which only considers Corporate Facilities and Software, the total value of assets has increased by 10% from approximately \$281.1 million to \$309.3 million. This increase can generally be attributed to additional facilities and software included as part of the 2020 SOLI.

When considering all Facilities under the responsibility view, the total asset value for Facilities has increased proportionately with the inclusion of these assets. In total, the value of Facilities assets increased by 10% (or \$132.5 million) from the value in 2019 after inflationary adjustments. This is due to better information surrounding the City's facilities. The valuations are largely based on the valuation prepared by Suncorp and it is expected that a new study will be initiated in the near term to update the facility values used for this report.

Asset	2019 SOLI		2020 SOLI	
Corporate Facilities	23	Each	29	Each
Animal Services	1	Each	2	Each
Cultural Services	1	Each	1	Each
Recreation	61	Each	73	Each
Parks	29	Each	16	Each
Transit	8	Each	8	Each
Library	4	Each	6	Each
Fire	19	Each	19	Each
Work Operations	12	Each	13	Each
Software (Moved to IT)	0	Each	4	Each
Total	158	Each	167	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Used by Facilities and Managed by Other Service Areas				
Software (Moved to IT)	\$ -	\$ 488,578	\$ 488,578	N/A
Subtotal Assets Used by Facilities and Managed by Other Service Areas	\$ -	\$ 488,578	\$ 488,578	N/A
2. Assets Used by the Corporation and Managed by Facilities				
Corporate Facilities	\$ 281,073,823	\$ 308,859,632	\$ 27,785,809	10%
Subtotal Assets Used by the Corporation and Managed by Facilities	\$ 281,073,823	\$ 308,859,632	\$ 27,785,809	10%
Subtotal Assets Used by Facilities - User View (1+2)	\$ 281,073,823	\$ 309,348,210	\$ 28,274,387	10%
3. Assets Managed by Facilities and Used by Other Service Areas				
Animal Services	\$ 6,482,628	\$ 9,243,785	\$ 2,761,157	43%
Cultural Services	\$ 87,547,306	\$ 88,504,196	\$ 956,890	1%
Recreation	\$ 539,434,464	\$ 573,407,833	\$ 33,973,369	6%
Parks	\$ 20,804,879	\$ 17,753,484	\$ (3,051,395)	-15%
Transit	\$ 148,589,003	\$ 165,605,215	\$ 17,016,212	11%
Library	\$ 59,651,334	\$ 81,891,070	\$ 22,239,736	37%
Fire	\$ 83,530,595	\$ 115,979,197	\$ 32,448,602	39%
Work Operations	\$ 84,189,957	\$ 81,377,531	\$ (2,812,425)	-3%
Subtotal Assets Managed by Facilities and Used by Other Service Areas	\$ 1,030,230,166	\$ 1,133,762,311	\$ 103,532,145	10%
Total Replacement Value of Facilities - Responsibility View (1+3)	\$ 1,311,303,988	\$ 1,442,621,943	\$ 131,317,954	10%

APPENDIX B



Transit



Asset Replacement Value:	\$528.0 Million
Total Asset Replacement Value Including Facilities and Software:	\$694.7 Million
Future Condition Trend (Next 10 Years):	Stable
Data Confidence & Reliability:	Age and Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

Responsibility View: Shows the assets under the service area that is responsible for managing them.

User View: Shows the assets under the service area that is using them.

The responsibility view is also being illustrated in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

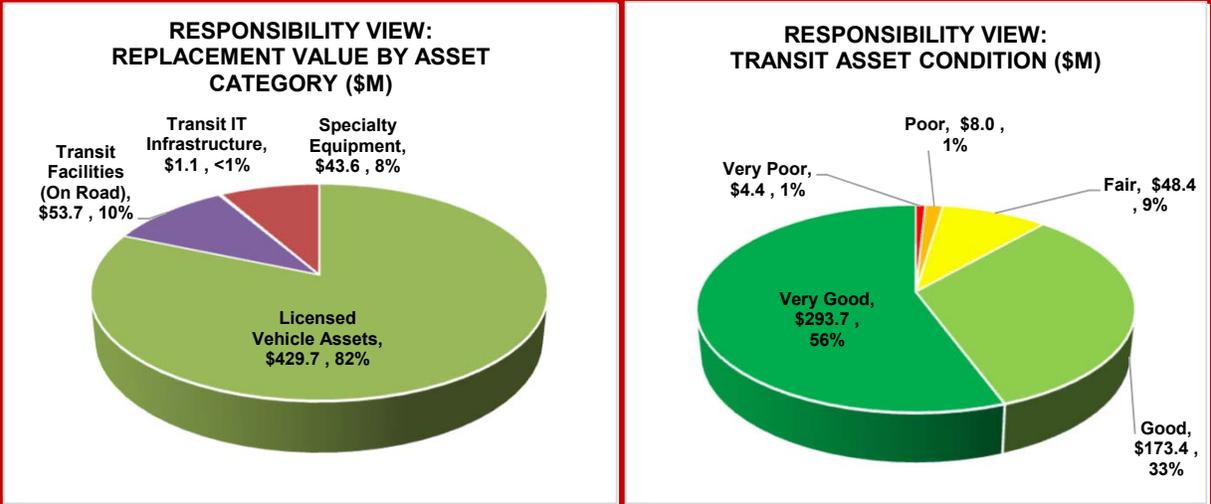
Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Transit Services		
Licensed Vehicle Assets	\$429.7	498
Transit Facilities (On Road)*	\$53.7	3,294
Transit IT Infrastructure	\$1.1	5
Specialty Equipment	\$43.6	5,074
<i>Subtotal Assets Managed by Transit (Responsibility View)</i>	<i>\$528.0</i>	<i>-</i>
Assets Managed by Other Service Areas		
<i>Transit Facilities</i>	<i>\$165.6</i>	<i>8</i>
<i>Software Used by Transit</i>	<i>\$1.1</i>	<i>1</i>
Total Replacement Value (User View)	\$694.7	-

* Transit Facilities (On Road) include Conventional Shelters, Bike Shelters, Zum Shelters, Bus Stops (with Concrete Pads), and Sandalwood Loop



Major Types of Assets within Transit Services - Responsibility View

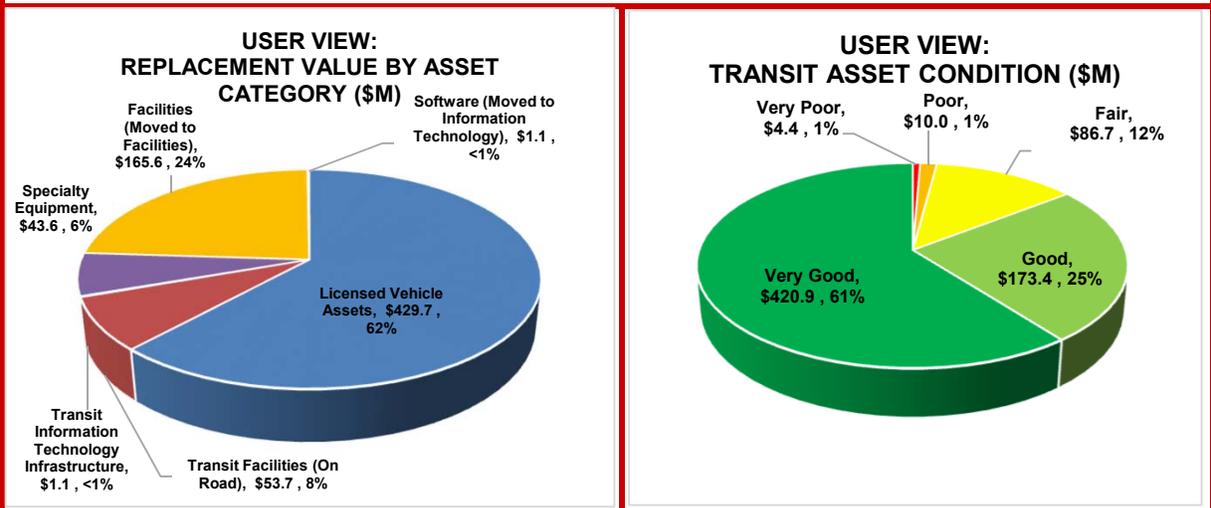
The figures below illustrate the replacement value and condition of Transit Service assets under the responsibility view. Under this view, the total replacement value of assets is \$528.0 million. As part of the 2020 SOLI, only Transit licensed vehicle assets, on road transit facilities, Transit IT infrastructure and specialty equipment are considered under the management of this service area. Overall, the Transit assets are in Good condition with only about 1% (\$8.0 million) of the total asset base rated in Poor condition and a further 1% (\$4.4 million) in Very Poor condition. It is important to note that assets classified in "Poor" and Very Poor" condition are not considered to be unsafe; the condition indicates only that assets are nearing the end of an engineered UL and may need to be replaced to avoid inflated maintenance costs.



Data Source: Departmental Inventory, PSAB data as of year-end 2020

Major Types of Assets within Transit Services - User View

The figures below illustrate the replacement value and condition of Transit assets under the user view. Under the user view illustration which also captures transit facilities and software, the replacement value is about \$694.7 million. Of this total, licensed vehicles continue to represent the largest share at \$429.7 million. Approximately 86% of the assets are considered to be in Good to Very Good Condition. Only 2% of assets are in Poor and Very Poor condition. As above, assets classified in "Poor" and Very Poor" condition are not considered to be unsafe; the condition indicates only that assets are nearing the end of an engineered UL and may need to be replaced to avoid inflated maintenance costs.

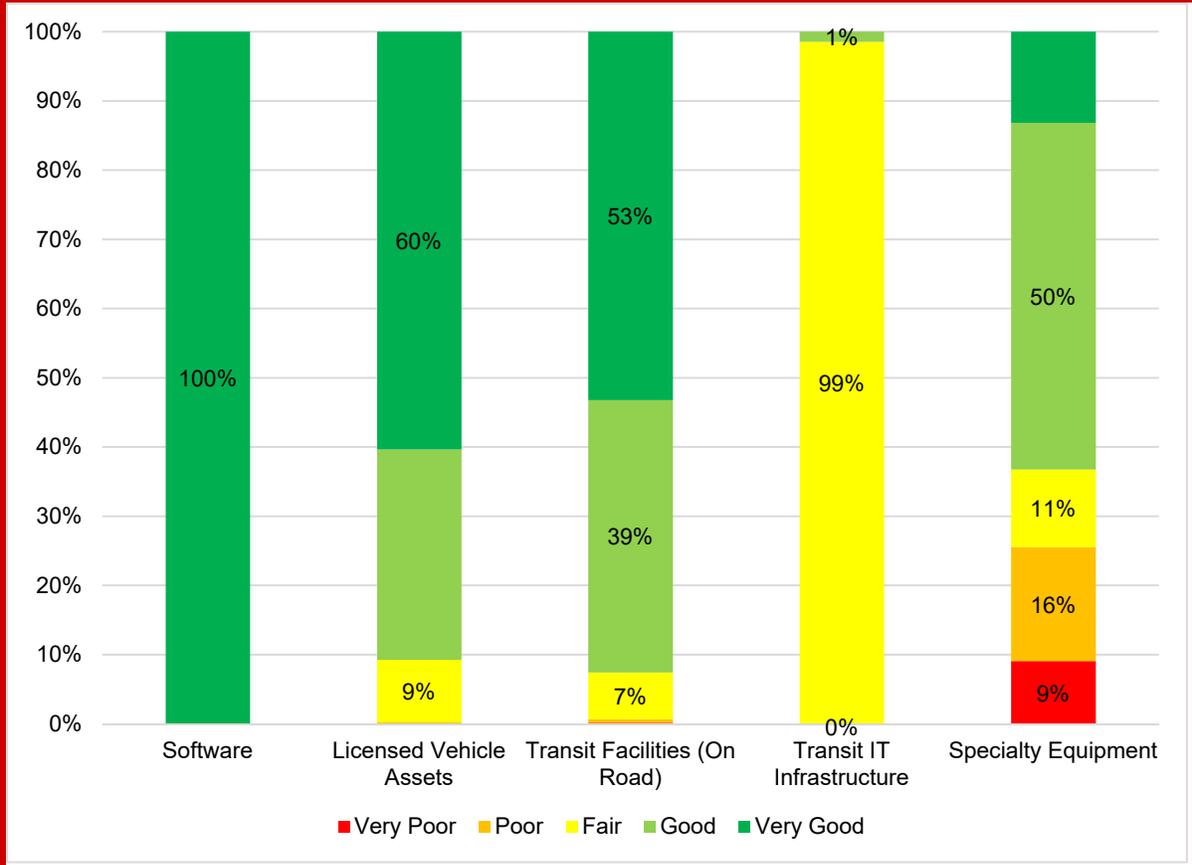


APPENDIX B



Transit

The figure below illustrates the condition of the various Transit assets by key sub-component areas based on the user view. While the assets are generally in Good to Very Good condition, specialty equipment has about 9% of assets in Very Poor condition and a further 16% in poor condition. Much of these assets relate to Smart bus on-board equipment, and although these assets continue to be operational and in working order, they are anticipated to be serviced over the short-term which will improve the condition of the assets.



APPENDIX B



Transit

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in Transit assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. Please note, all values are expressed in 2021 dollars.

Under the responsibility view framework, the total value of Transit assets has increased by 9% from approximately \$484.7 million to \$528.0 million. This increase can generally be attributed to updated costing information as part of the 2020 SOLI, updated inventory information and recent acquisitions.

When considering the Transit Facilities and software, the total asset value for Transit increases proportionately with the inclusion of these assets. In total, the value of Transit assets increased by 9% (or \$59.9 million) from the value reported in 2019 after inflationary adjustments. This increase is due to better information surrounding the City's facilities related to transit services.

Please note, the Facilities and IT report cards include additional information on those assets used by Transit Services but maintained and managed by a different City department. For fair comparison, 2019 asset inventory has been adjusted to align with 2020 responsibility view. Also note, future transit SOLI reports will continue to transform as the city transitions to a more green based fleet which will impact the total value of infrastructure and number of assets required to deliver services.

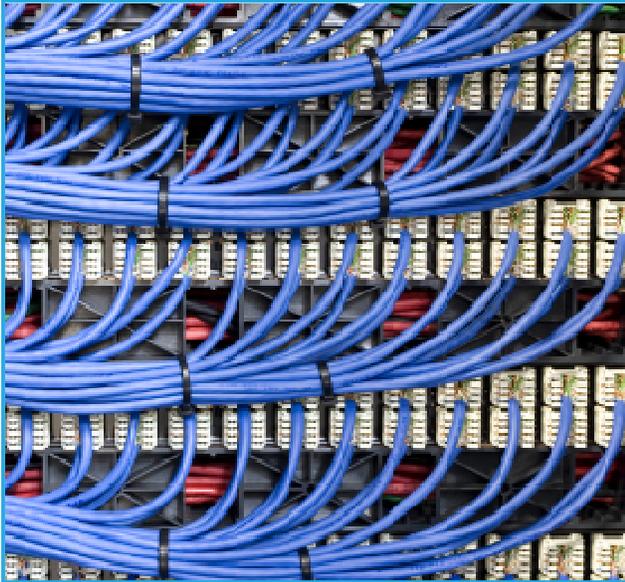
Asset	2019 SOLI		2020 SOLI	
Facilities (Moved to Facilities)	8	Each	8	Each
Software (Moved to IT)	1	Each	1	Each
Licensed Vehicle Assets	481	Each	498	Each
Transit Facilities (On Road)	2,366	Each	3,294	Each
Transit Information Technology Infrastructure	10	Each	5	Each
Specialty Equipment				
Conveyance Systems	34	Each	34	Each
Communication Control		Pooled	4	Each
Fare Systems*	2,950	Each	470	Each
Presto	1,395	Each	1,459	Each
Maintenance/Admin Small Equipment		Pooled	7	Each
Signage	2,577	Each	3,093	Each
Fueling	5	Each	5	Each
Stock Room		N/A		N/A

*The Drop in Fare Systems is due to a change in the valuing of equipment, which now values all equipment on each bus as a whole rather than by sub-component.

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Facilities (Moved to Facilities)	\$ 148,589,003	\$ 165,605,215	\$ 17,016,212	11%
Software (Moved to Information Technology)	\$ 1,544,994	\$ 1,147,500	\$ (397,494)	-26%
Subtotal Assets Managed by Other Service Areas	\$ 150,133,997	\$ 166,752,715	\$ 16,618,718	11%
2. Assets Managed by Transit Services				
Licensed Vehicle Assets	\$ 389,592,866	\$ 429,660,720	\$ 40,067,854	10%
Transit Facilities (On Road)	\$ 52,634,388	\$ 53,653,576	\$ 1,019,187	2%
Transit Information Technology Infrastructure	\$ 1,057,049	\$ 1,057,720	\$ 671	0%
Specialty Equipment				
Conveyance Systems	\$ 6,502,500	\$ 6,502,500	\$ -	0%
Communication Control	\$ 14,722,244	\$ 14,723,000	\$ 756	0%
Fare Systems*	\$ 9,396,239	\$ 8,670,000	\$ (726,239)	-8%
Presto	\$ 6,169,000	\$ 6,451,000	\$ 282,000	5%
Maintenance/Admin Small Equipment	\$ 395,352	\$ 469,200	\$ 73,848	19%
Signage	\$ 516,944	\$ 3,041,640	\$ 2,524,696	488%
Fueling	\$ 1,206,864	\$ 1,207,000	\$ 136	0%
Stock Room	\$ 2,543,090	\$ 2,543,000	\$ (90)	0%
Subtotal Assets Managed by Transit Services (Responsibility View)	\$ 484,736,536	\$ 527,979,356	\$ 43,242,820	9%
Total Replacement Value: User View (1+2)	\$ 634,870,533	\$ 694,732,070	\$ 59,861,538	9%



Information Technology



Asset Replacement Value:	\$88.8 Million
Asset Replacement Value including software from other service areas	\$97.1 Million
Future Condition Trend (Next 10 Years):	Stable - Assets are replaced frequently and therefore remain in stable condition
Data Confidence & Reliability:	Medium (Condition Based)

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and a "**User View**"

- Responsibility View:** Shows the assets under the service area that is responsible for managing them
- User View:** Shows the assets under the service area that is using them

The responsibility view in this 2020 SOLI is an important viewpoint from an Asset Management planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

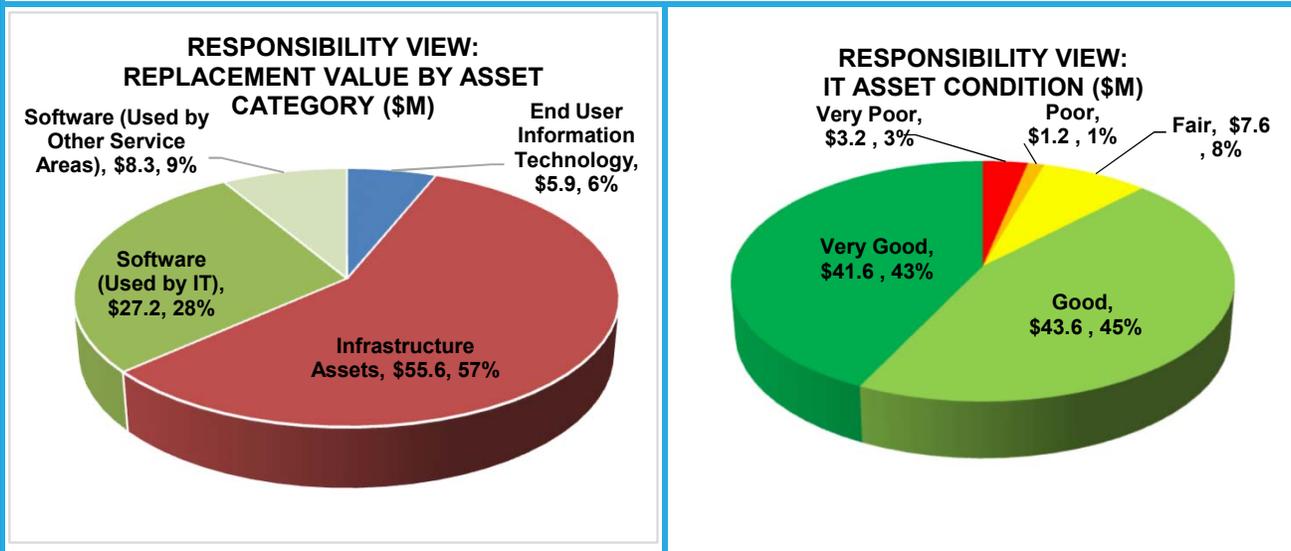
The table below illustrates the replacement value (in 2021\$).

Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Used by IT		
End User Information Technology	\$5.9	7,014
Infrastructure Assets	\$55.6	Pooled
Software (Shared Corporate Software)	\$27.2	64
<i>Subtotal Assets Used by IT (User View)</i>	<i>\$88.8</i>	<i>-</i>
IT Assets Used by Other Service Areas		
Software	\$8.3	45
Total Replacement Value (Responsibility View)	\$97.1	-



Major Types of Assets within IT - Responsibility View

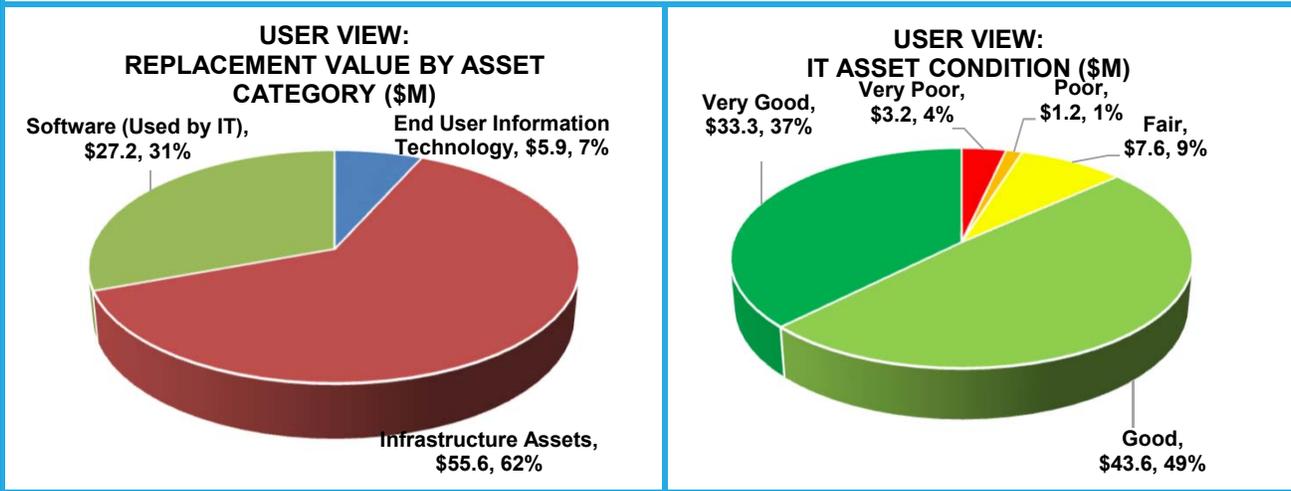
The figure below illustrates the replacement value and condition of IT services under the responsibility view. Under this view, the total replacement value of IT assets is \$97.1 million, of which, over 50% of the total value is related to the City's IT infrastructure assets. Approximately 88% of IT assets are in Good or Very Good condition, with only 4% of assets in Poor to Very Poor condition. As IT assets are replaced and serviced frequently, their condition will remain stable. Overall, the Corporate IT assets are in Good condition and are meeting current needs.



Data Source: Departmental Inventory

Major Types of Assets within IT - User View

The figures below illustrate the replacement value and condition of IT assets under the user view. IT is an internal service provider that manages assets on behalf of many other service areas. However, under the user view, IT accounts for Software assets used exclusively by IT services. With that under consideration, the replacement value under the user view amounts to about \$88.8 million. The difference between the user view and responsibility view is entirely attributed to software assets used by various service areas. The overall condition assessment of IT assets generally does not change under the user view as all software assets are considered to be in "Very Good" condition.

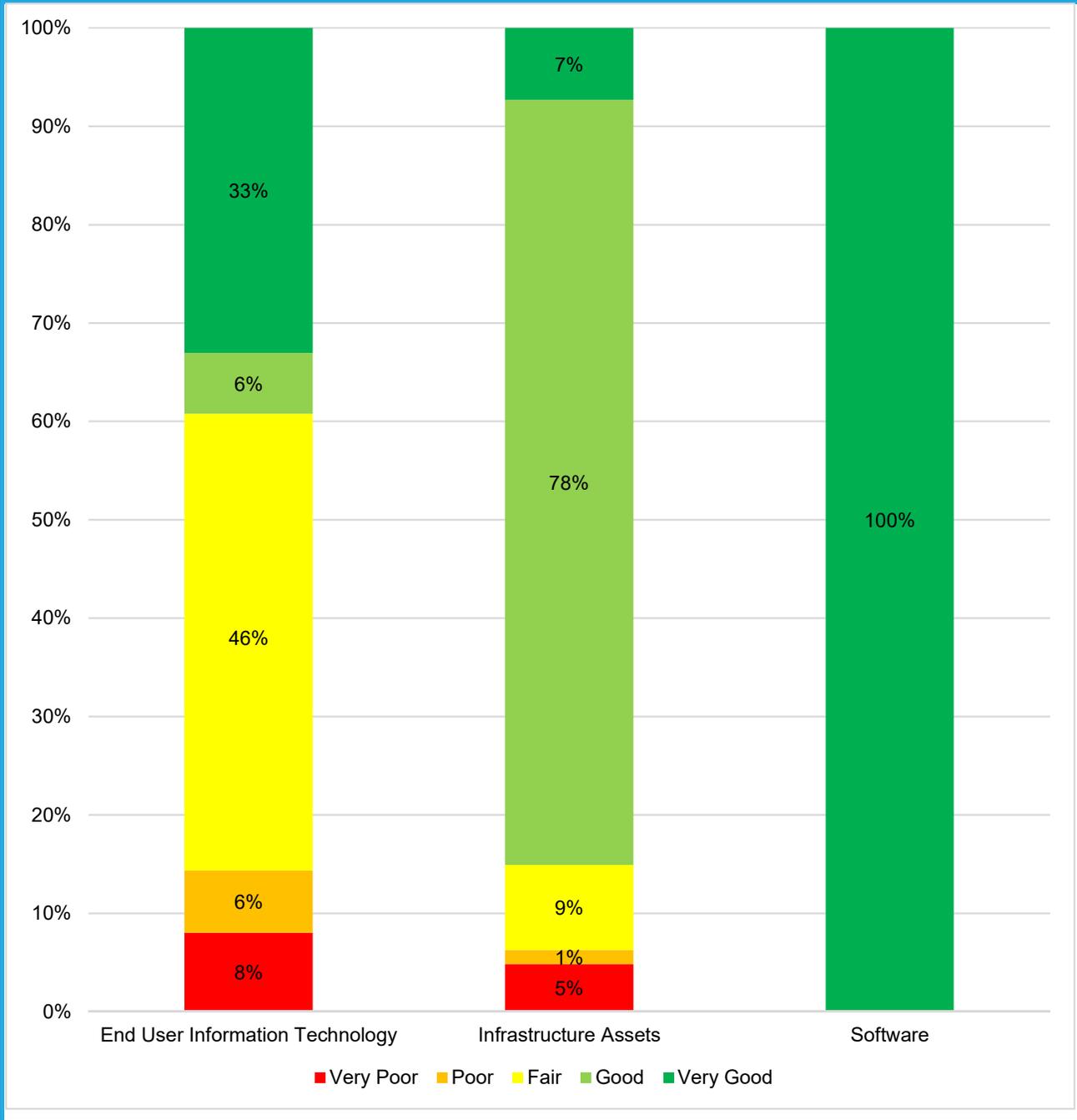


APPENDIX B



Information Technology

The figure below illustrates the condition of the three sub-component assets of Information Technology services under the responsibility view. All sub-component asset categories are mostly in Good to Very Good Condition. With this said about 46% of End User IT assets are in Fair condition. This amount mostly relates to computers, monitors and mobile phones which have been considered in Fair condition, however assets continually receive regular maintenance and continue to be in good working condition.



APPENDIX B



Information Technology

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in IT assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. All values are expressed in 2021 dollars.

For IT, the only notable change in switching to the responsibility view is the addition of all City software assets (except Library). Previously all Software was distributed to their respective user service areas where the particular asset was being utilized.

The tables below outline the difference in IT assets in the 2019 SOLI relative to the 2020 SOLI while considering the change in reporting to the new responsibility view. Looking only at those assets included under the responsibility view framework, the total value of IT has nominally decreased from approximately \$100.1 million to \$97.1 million largely attributed to better costing information in the 2020 SOLI.

Asset	2019 SOLI		2020 SOLI	
End User Information Technology				
Computers	3,039	Each	2,915	Each
Monitors	2,846	Each	2,843	Each
Mobile Phones	1,059	Each	1,141	Each
Audio Visual Equipment			115	Each
Infrastructure Assets				
Servers	64	Each	84	Each
Storage And Back-Up	13	Each	29	Each
Wireless	1,013	Each	806	Each
Cable Plants	285,544	Metres	286,977	Meters
Network Infrastructure	581	Each	671	Each
Communication System	3,809	Each	4,141	Each
Software	50	Each	109	Each

Asset	2019 SOLI (2021\$)	2020 SOLI (2021\$)	Difference	
Assets Used and Managed by IT				
End User Information Technology				
Computers	\$ 4,722,696	\$ 4,619,300	\$ (103,396)	-2%
Monitors	\$ 755,049	\$ 710,750	\$ (44,299)	-6%
Mobile Phones	\$ 407,881	\$ 405,907	\$ (1,974)	0%
Audio Visual Equipment	\$ -	\$ 187,500	\$ 187,500	N/A
Infrastructure Assets				
Servers	\$ 1,834,694	\$ 2,385,141	\$ 550,447	30%
Storage And Back-Up	\$ 3,376,976	\$ 4,211,570	\$ 834,593	25%
Wireless	\$ 2,818,402	\$ 1,901,105	\$ (917,297)	-33%
Cable Plants	\$ 38,380,031	\$ 37,102,756	\$ (1,277,275)	-3%
Network Infrastructure	\$ 5,965,159	\$ 5,991,462	\$ 26,303	0%
Communication System	\$ 3,527,318	\$ 4,037,890	\$ 510,572	14%
Software (Shared Corporate Software)	\$ 33,863,940	\$ 27,242,195	\$ (6,621,745)	-20%
Subtotal Assets Used by IT (User View)	\$ 95,652,148	\$ 88,795,576	\$ (6,856,572)	-7%
Assets Used By Other Service Areas but Managed by IT				
Software (Moved to IT)	\$ 4,469,861	\$ 8,304,692	\$ 3,834,830	86%
Total Replacement Value - Responsibility View	\$ 100,122,009	\$ 97,100,268	\$ (3,021,741)	-3%

APPENDIX B



City Support Fleet



Total Asset Replacement Value (excl. Software):	\$48.1 Million
Future Condition Trend (Next 10 Years):	Stable - Assets are replaced frequently and therefore remain in stable condition
Data Confidence & Reliability:	Low-Medium (Age and Condition Based)

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

Responsibility View: Shows the asset under the service area that is responsible for managing them

User View: Shows the assets under the service area that is using them

The responsibility view is an addition in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

Asset Type	Replacement Value (\$Millions)	Asset Inventory
1. Assets Managed by Other Service Areas but used by City Support Fleet		
<i>Software (Moved to IT)</i>	\$0.8	2
<i>Subtotal Assets Managed by Other Service Areas and Used by City Support Fleet</i>		
	\$0.8	-
2. Assets Managed and Used by City Support Fleet		
Licensed Fleet	\$5.1	158
Off-Road Vehicles	\$1.4	28
Fleet Equipment	\$0.0	22
<i>Subtotal Assets Managed and Used by City Support Fleet</i>		
	\$6.5	208
Total Replacement Value - User View (1+2)		
	\$7.3	-
3. Assets Managed by Fleet and Used by Other Service Areas		
Licensed Fleet	\$27.1	359
Off-Road Vehicles	\$14.1	256
Fleet Equipment	\$0.3	101
<i>Subtotal Assets Managed by Fleet and Used by Other Service Areas</i>		
	\$41.6	716
Total Replacement Value - Responsibility View (2+3)		
	\$48.1	924

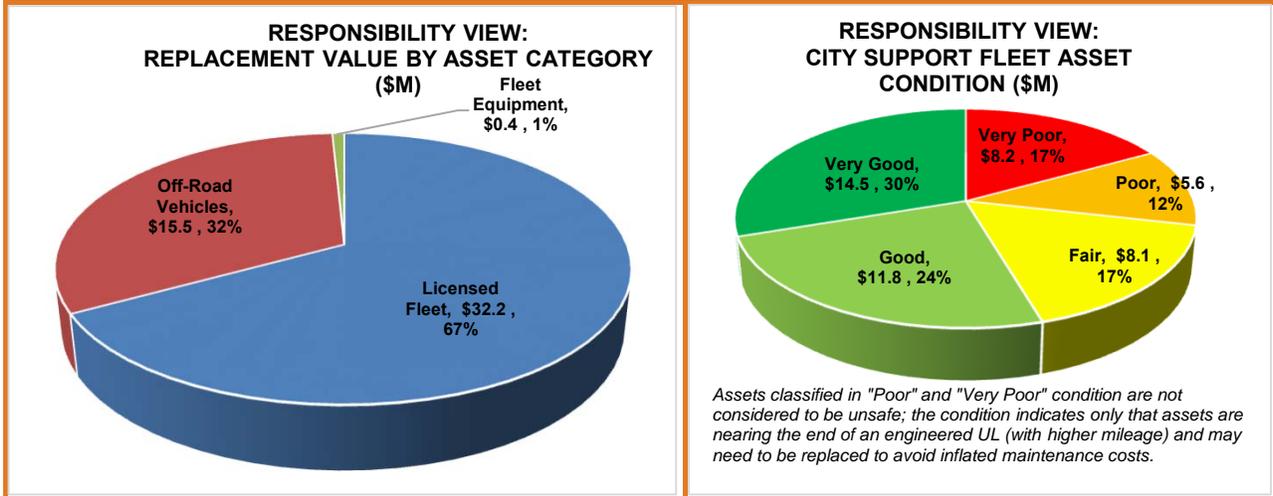
City Support Fleet excludes Transit and Fire Assets and Parks Fleet Equipment which are managed by respective service areas.



City Support Fleet

Major Types of Assets within City Support Fleet - Responsibility View

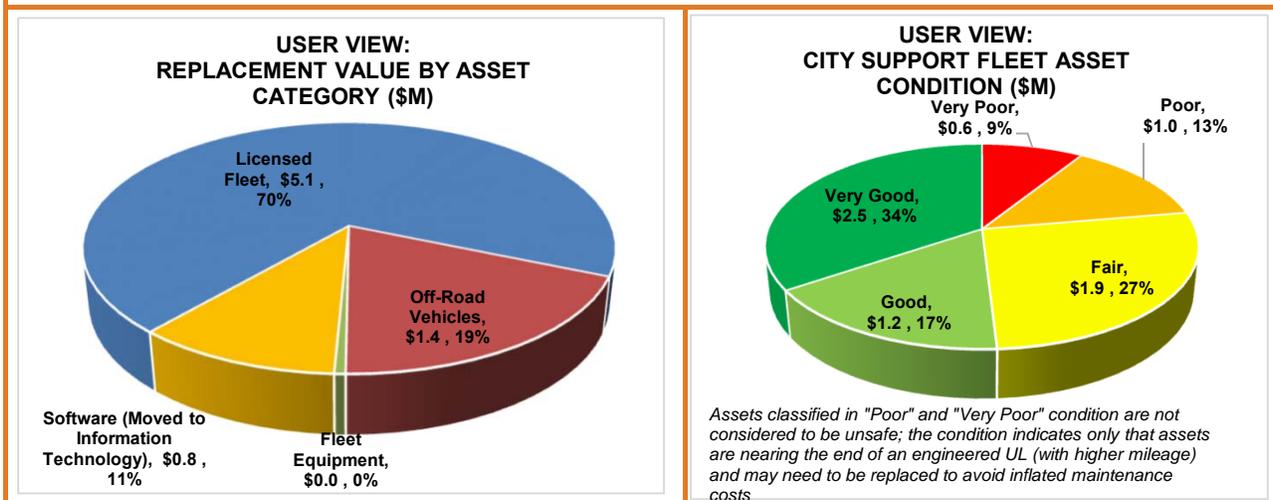
The figure below illustrates the replacement value and condition of City Support Fleet assets under the responsibility view. Under this view, the total replacement value of assets is \$48.1 million. Approximately 67% of the total value is related to the City's licensed fleet. About 55% of assets are considered to be in Good to Very Good condition. However, about 29% remain in Poor to Very Poor condition. The condition of City Support Fleet assets for the most part is based on age and/or vehicle mileage and not necessarily always reflective of the comprehensive asset condition. Assets classified in "Poor" and "Very Poor" condition are not considered to be unsafe; the condition indicates only that assets are nearing the end of an engineered UL (with higher mileage) and may need to be replaced to avoid inflated maintenance costs.



Data Source: Assetworks M5-Fleet Management Solution

Major Types of Assets within City Support Fleet - User View

The figures below illustrate the replacement value and condition of City Support Fleet assets under the user view. Under the user view illustration which also captures software, the replacement value is about \$7.3 million. This view only includes City Support Fleet assets, as those assets used by other service areas under the user view are reported under each area respectively.

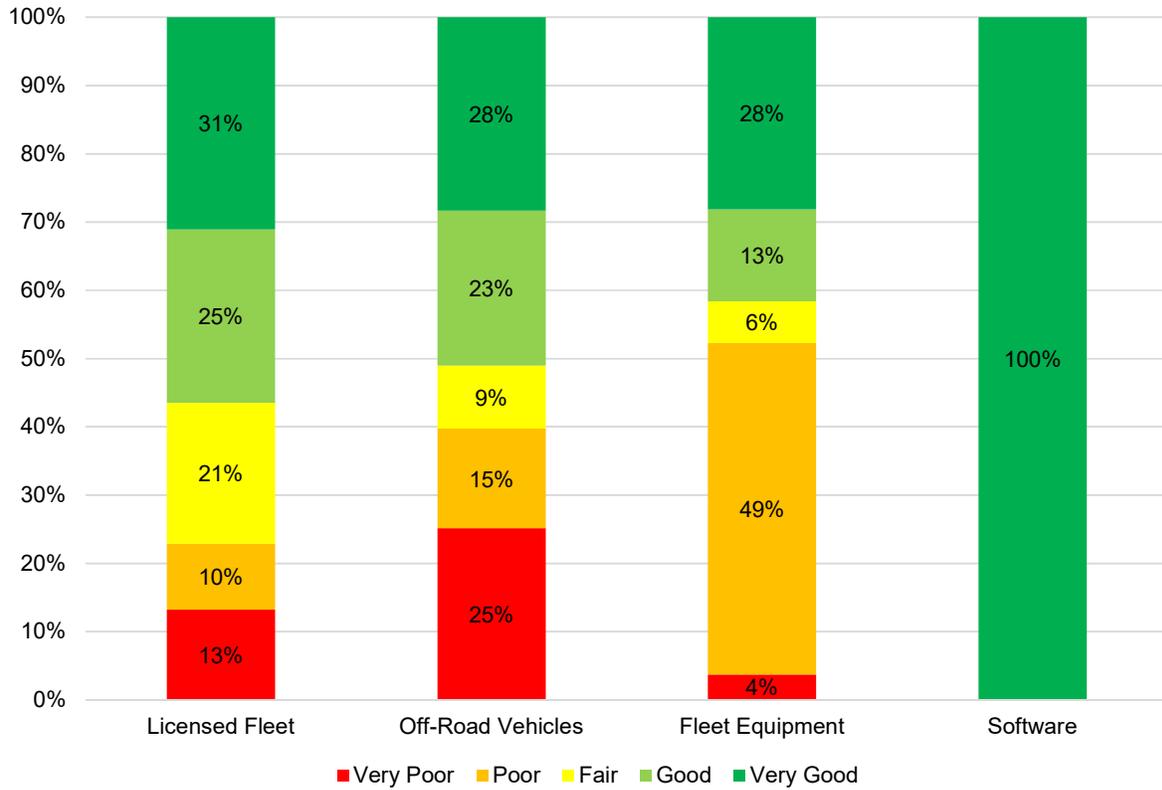


APPENDIX B



City Support Fleet

The figure below illustrates the condition of the various City Support Fleet assets by key sub-component areas based on the user view. While a portion of the assets are in Good to Very Good condition, a share of the Licensed Fleet, Off-Road Vehicles and Fleet Equipment are in Poor or Very Poor condition. It is important to note that assets classified in "Poor" and "Very Poor" condition are not considered to be unsafe; the condition indicates only that assets are nearing the end of an engineered UL (with higher mileage) and may need to be replaced to avoid inflated maintenance costs.



APPENDIX B



City Support Fleet

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in City Support Fleet assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. Please note, all values are expressed in 2021 dollars.

Under the responsibility view framework, the total value of City Support Fleet assets has increased by 5% from approximately \$45.7 million to \$48.1 million. This increase can generally be attributed to updated costing information and asset inventories as part of the 2020 SOLI. When considering assets only used by City Support Fleet, inclusive of software, the total asset value is only \$7.3 million which does represent an increase of 19% when compared to the similar assets in 2019.

Please note the IT report card will include additional information on those assets used by City Support Fleet but maintained and managed by a different City department. For fair comparison, 2019 asset inventory has been adjusted to align with 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Licensed Fleet	469	Each	517	Each
Off-Road Vehicles	156	Each	284	Each
Fleet Equipment*	444	Each	123	Each
Software (Moved to Information Technology)	2	Each	2	Each

*In 2020 Parks Fleet Equipment was moved to Parks service area.

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas and Used by City Support Fleet				
Software (Moved to Information Technology)	\$ 806,518	\$ 775,200	\$ (31,318)	-4%
Subtotal Assets Managed by Other Service Areas and Used by City Support Fleet				
	\$ 806,518	\$ 775,200	\$ (31,318)	-4%
2. Assets Used and Managed by City Support Fleet				
Licensed Fleet	\$ 4,225,909	\$ 5,092,168	\$ 866,259	20%
Off-Road Vehicles	\$ 811,900	\$ 1,368,772	\$ 556,872	69%
Fleet Equipment*	\$ 280,570	\$ 42,112	\$ (238,458)	-85%
Subtotal Assets Used and Managed by City Support Fleet				
	\$ 5,318,379	\$ 6,503,052	\$ 1,184,673	22%
Subtotal Replacement Value - User View (1+2)				
	\$ 6,124,897	\$ 7,278,252	\$ 1,153,355	19%
3. Assets Managed by City Support Fleet and Used by Other Service Areas				
Licensed Fleet	\$ 26,033,977	\$ 27,112,918	\$ 1,078,941	4%
Off-Road Vehicles	\$ 11,158,023	\$ 14,120,935	\$ 2,962,912	27%
Fleet Equipment*	\$ 3,197,837	\$ 338,715	\$ (2,859,122)	-89%
Subtotal Assets Managed by City Support Fleet and Used by Other Service Areas				
	\$ 40,389,838	\$ 41,572,569	\$ 1,182,731	3%
Subtotal Replacement Value - Responsibility View (2+3)				
	\$ 45,708,217	\$ 48,075,621	\$ 2,367,404	5%

*In 2020 Parks Fleet Equipment was moved to Parks service area.

Note: The 2019 SOLI included corporate fleet only, however, all fleet are illustrated here for comparison purposes under the responsibility view

APPENDIX B



Fire Services



Total Asset Replacement Value:	\$35.6 Million
Total Asset Replacement Value Including Facilities:	\$154.7 Million
Future Condition Trend (Next 10 Years):	Declining - As assets age they may require attention in the future
Data Confidence & Reliability:	Age and Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

Responsibility View: Shows the assets under the service area that is responsible for managing them
User View: Shows the assets under the service area that is using them

The responsibility view is also being illustrated in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

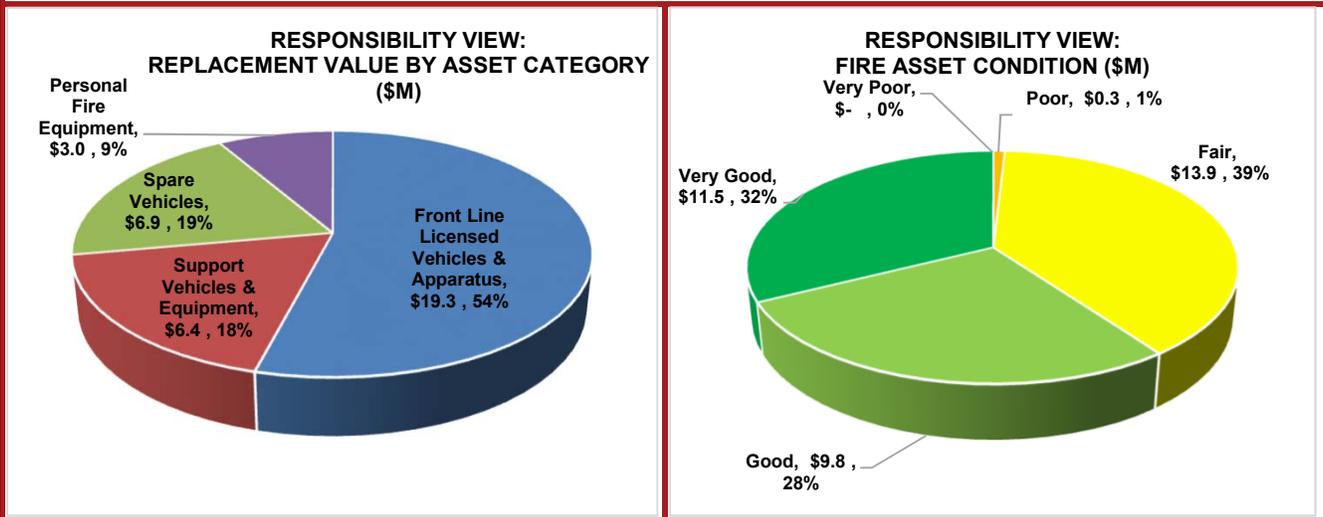
The table below illustrates the replacement value (in 2021\$) under the two different views.

Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Fire Services		
Front Line Licensed Vehicles & Apparatus	\$19.3	21
Support Vehicles & Equipment	\$6.4	63
Spare Vehicles	\$6.9	31
Personal Fire Equipment	\$3.0	1,026
<i>Subtotal Assets Managed by Fire Services (Responsibility View)</i>	\$35.6	-
Assets Managed by Other Service Areas		
<i>Fire Services Facilities (Moved to Facilities)</i>	\$116.0	19
<i>Fire Services Software (Moved to IT)</i>	\$3.1	5
Total Replacement Value (User View)	\$154.7	-



Major Types of Assets within Fire Services - Responsibility View

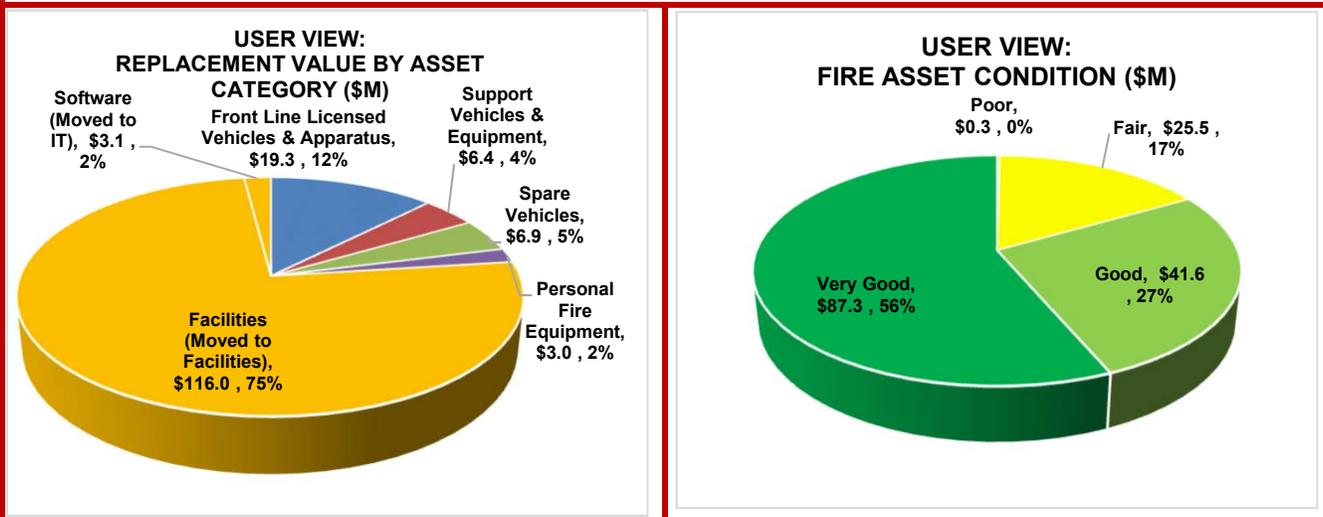
The figure below illustrates the replacement value and condition of Fire Services assets under the responsibility view. Under this view, the total replacement value of assets is \$35.6 million. Of this total, roughly 91% is related to the Fire fleet (including front line licensed vehicles & apparatus, support vehicles & equipment and spare vehicles. About 60% of the assets are considered to be in Good to Very Good condition, with the majority of the remaining assets in fair condition. No assets for Fire Services are in Very Poor condition.



Data Source: M5 and City Databases

Major Types of Assets within Fire Services - User View

The figures below illustrate the replacement value and condition of Fire Services assets under the user view. Under the user view illustration which also captures facilities, the replacement value is about \$154.7 million. Approximately 71% of the assets are considered to be in Good to Very Good Condition. No assets for Fire Services are in Very Poor condition.



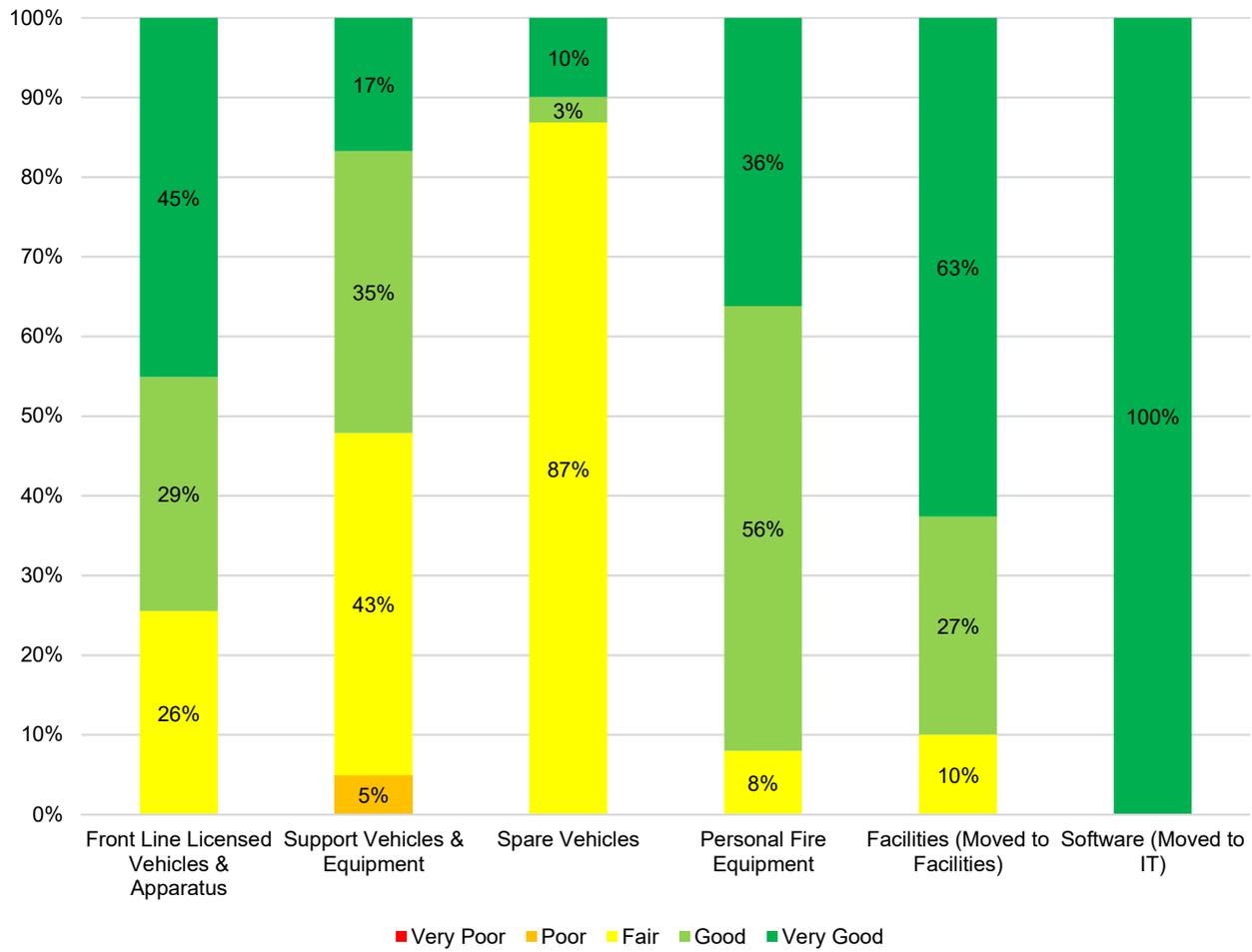
Data Source: M5, City Databases, Suncorp valuations report and recent tenders (for facility)

APPENDIX B



Fire Services

The figure below illustrates the condition of the five sub-component assets of Fire Services. Facilities are generally in Good to Very Good condition. There are no assets in any sub-area that are in Very Poor condition. Assets in Poor condition are generally associated with a limited number of support vehicles and does not represent a safety issue or preclude fire from delivering services to meet the needs of residents.



APPENDIX B



Fire Services

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outlines the difference in Fire Services assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. All values are expressed in 2021 dollars.

Under the responsibility view framework, the value of Fire Services assets has decreased slightly by 5% from approximately \$37.5 million to \$35.6 million. This decrease can be attributed to better asset data, costing information and increased confidence in the City's spare vehicle inventory.

When considering the Fire Services Facilities and Software, the total asset value for Fire Services increases proportionately with the inclusion of these assets. Furthermore, the total value of Fire Services assets represents an increase of 28% (or \$33.5 million) from the value reported in 2019 after inflationary adjustments.

Please note, the Facilities and IT report cards will include additional information on those assets used by Fire Services but maintained and managed by a different City department. For fair comparison, 2019 asset inventory has been adjusted to align with 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Front Line Licensed Vehicles & Apparatus			21	Each
Support Vehicles & Equipment	101	Each	63	Each
Spare Vehicles			31	Each
Personal Fire Equipment	1,048	Each	1,026	Each
Facilities (Moved to Facilities)	19	Each	19	Each
Software (Moved to IT)	5	Each	5	Each

Note: In 2019 SOLI, Spare Vehicles and Support Vehicles & Equipment were not listed as separate categories.

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Facilities (Moved to Facilities)	\$ 83,530,595	\$ 115,979,197	\$ 32,448,602	39%
Software (Moved to IT)	\$ 164,487	\$ 3,102,544	\$ 2,938,057	1786%
Subtotal Assets Managed by Other Service Areas	\$ 83,695,082	\$ 119,081,741	\$ 35,386,659	42%
2. Assets Managed by Fire Services				
Front Line Licensed Vehicles & Apparatus		\$ 19,263,414		
Support Vehicles & Equipment	\$ 34,942,849	\$ 6,444,539	\$ (2,317,154)	-7%
Spare Vehicles		\$ 6,917,742		
Personal Fire Equipment	\$ 2,600,636	\$ 3,002,108	\$ 401,472	15%
Subtotal Assets Managed by Fire Services (Responsibility View)	\$ 37,543,485	\$ 35,627,803	\$ (1,915,682)	-5%
Total Replacement Value: User View (1+2)	\$ 121,238,567	\$ 154,709,544	\$ 33,470,977	28%

APPENDIX B



Parks



Total Asset Replacement Value:	\$517.6 Million
Total Asset Replacement Value Including Facilities, City Support Fleet and Software	\$552.7 Million
Future Condition Trend (Next 10 Years):	Declining - As assets age they may require attention in the future
Data Confidence & Reliability:	Age & Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

- Responsibility View:** Shows the assets under the service area that is responsible for managing them*
- User View:** Shows the assets under the service area that is using them*

The responsibility view is also being illustrated in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Parks Services		
Parking Lots	\$15.0	333
Small Engine Equipment	\$2.3	716
Trees	\$129.9	249,749
Flower Beds	\$3.8	1,200
Cemetery Equipment	\$0.1	76
Park Assets		
Parks	\$68.4	676 Hectares
Natural Heritage Lands	\$0.0	1,653 Hectares
Park Furnishing	\$3.0	4,405
Playgrounds	\$85.8	332
Shade Structures	\$36.3	310
Splash Pads & Outdoor Pools	\$3.2	8
Fitness Equipment	\$0.7	18
Skate Parks	\$1.7	4
Sports Facilities	\$120.1	1,180
Pathways	\$47.3	278,379 Metres
Subtotal Assets Managed by Parks (Responsibility View)	\$517.6	-
Assets Managed by Other Service Areas		
Parks Facilities	\$17.8	16
City Support Fleet Used by Parks	\$17.3	319
Software Used by Parks	\$0.0	1
Total Replacement Value (User View)	\$552.7	-

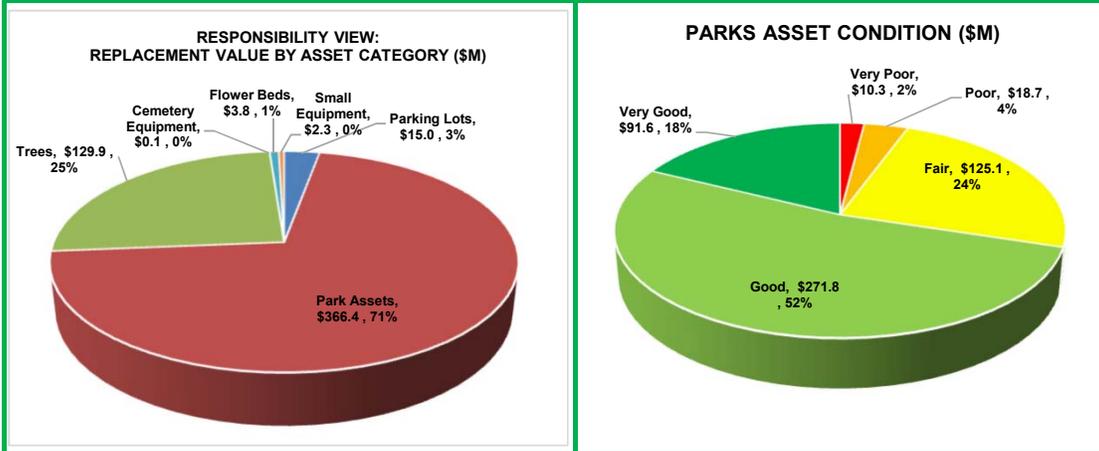
APPENDIX B



Parks

Major Types of Assets within Parks - Responsibility View

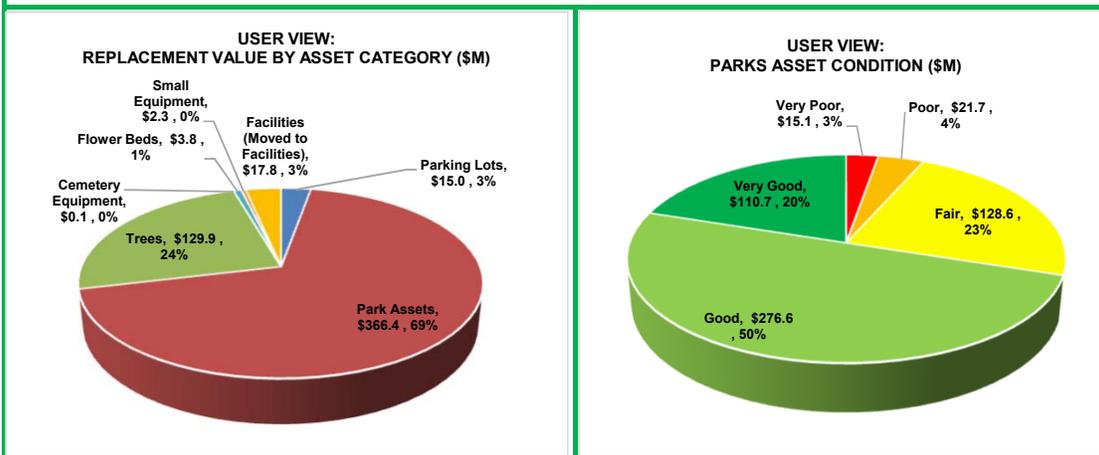
The figure on the below illustrates the replacement value and condition of Parks assets under the responsibility view. Under the responsibility view, the total replacement value of the Parks assets is \$517.6 million. Of the \$517.6 million replacement value, about 71%, or \$366.4 million, is attributed to park assets, which include the Sports Facilities infrastructure, parkland, playgrounds, etc. Furthermore, about 25%, or \$129.9 million is attributed to Trees. The remaining assets are valued as detailed below. As the Parks infrastructure is in overall Good condition, the infrastructure is meeting current needs, however, these assets may require attention as they age over time. Only about 6% of assets are considered to be in Poor and Very Poor Condition.



Data Source: Departmental Inventories, GIS database, City of Brampton 2019 Development Charges Background Study

Major Types of Assets within Parks - User View

The figures below illustrate the replacement value and condition of Parks assets under the user view. Under the user view illustration which also captures facilities, City-support fleet and software, the replacement value is about \$552.7 million. Of this total, the Park Assets continues to represent the largest share at \$366.4 million of the assets considered. Facilities assets add \$17.8 million to the total replacement value while Fleet adds \$17.3 million. Approximately 70% of the City's assets are considered to be in Good to Very Good Condition. Only 3% of assets are in Very Poor condition, largely related to Parks Trees, Facilities and Fleet. This condition assessment does not mean the assets are unsafe.

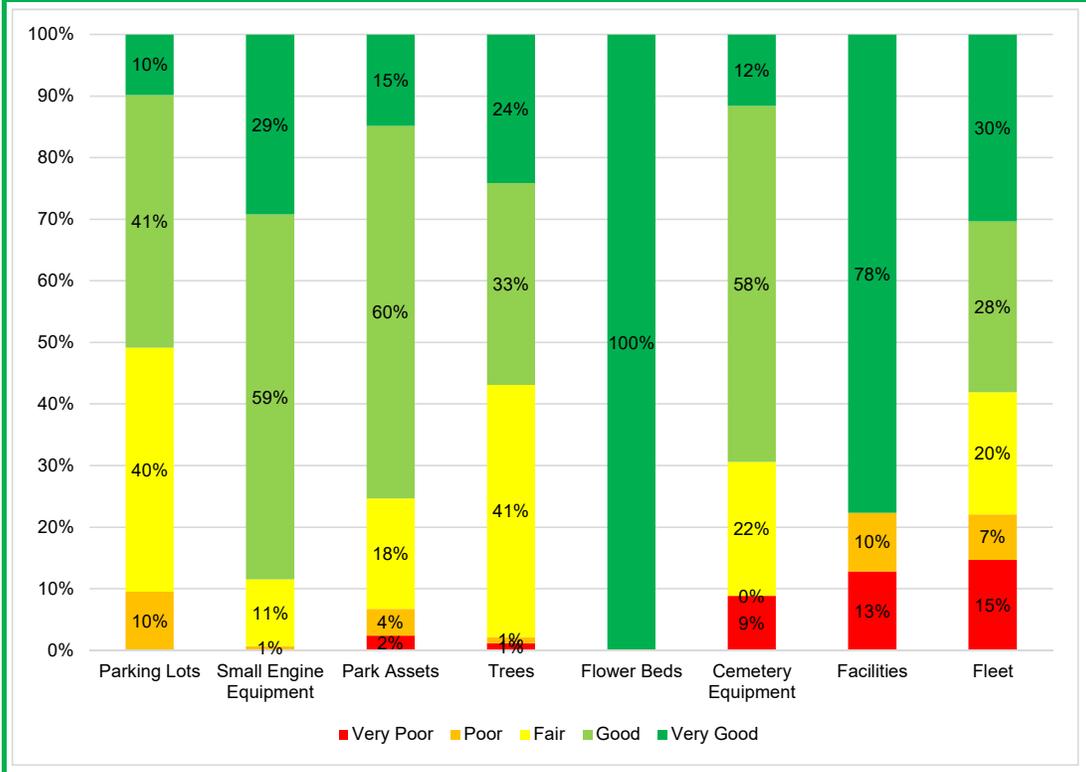


APPENDIX B



Parks

The figure below illustrates the condition of the various Parks assets by key sub-component areas based on the user view. While the assets are generally in Good to Very Good condition, a small portion of Park Assets, Trees, Cemetery Equipment, Facilities and Fleet are in Very Poor condition. These condition assessments do not indicate that the assets are unsafe; generally these assets are nearing the end of their useful life and are due for replacement as part of this analysis. Specifically for facilities, the condition assessment are determined on a Facilities Condition Index (FCI) calculation basis which considers the cost of immediate repair works required at a facility relative to the replacement value of the facility. Poor and Very Poor condition assessments do not represent a safety issue or preclude service areas from delivering services to meet the needs of residents and will be addressed through the budget.



APPENDIX B



Parks

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in Parks assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. Please note, all values are expressed in 2021 dollars.

Under the responsibility view framework, the total value of Parks assets has decreased by 18% from approximately \$673.3 million to \$552.7 million. This decrease can generally be attributed to better costing information as part of the 2020 SOLI. Additionally, some Park assets that were previously included under parks have been moved to Recreation as the assets are managed by Recreation Services.

When considering the Parks Facilities, City Support Fleet and IT assets, the total value for Parks has increased proportionately with the inclusion of these assets. However, the total value of Parks assets has decreased by \$120.6 million from the value reported in 2019 after inflationary adjustments. This again is attributed to better asset information as well as the recategorization of some Parks assets to Recreation.

Please note that Facilities, City Support Fleet and IT report cards include additional information on those assets used by Parks but maintained and managed by different City departments. For fair comparison, the 2019 asset inventory has been adjusted to align with the 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Parking Lots	299	Each	333	Pooled
Small Equipment	292	Each	716	Each
Trees	215,118	Each	249,749	Each
Flower Beds	Not Included	Not Included	1,200	Each
Cemetery Equipment	76	Each	76	Each
Park Assets				
Parkland (Excluding Natural Heritage Lands)	1,075	Hectares	676	Hectares
Natural Heritage Lands	1,255	Hectares	1,653	Hectares
Park Furnishing	Not Identified	Not Identified	4,405	Each
Playgrounds	326	Each	332	Each
Shade Structures	246	Each	310	Each
Splash Pads & Outdoor Pools	14	Each	8	Each
Fitness Equipment	33	Each	18	Each
Skate Parks	10	Each	4	Each
Sports Facilities	226	Each	1,180	Each
Pathways	279,239	Metres	278,379	Metres
Facilities (Moved to Facilities)	29	Each	16	Each
Fleet (Moved to City Support Fleet)	597	Each	319	Each
Software (Moved to IT)	2	Each	1	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Facilities (Moved to Facilities)	\$ 19,997,000	\$ 17,753,484	\$ (2,243,516)	-11%
Fleet (Moved to City Support Fleet)	\$ 20,176,199	\$ 17,342,219	\$ (2,833,980)	-14%
Software (Moved to IT)	\$ -	\$ -	\$ -	0%
Subtotal Assets Managed by Other Service Areas	\$ 40,173,199	\$ 35,095,703	\$ (5,077,496)	-13%
2. Assets Managed by Parks Services				
Parking Lots	\$ 17,499,526	\$ 15,031,163	\$ (2,468,363)	-14%
Small Equipment	\$ 2,308,626	\$ 2,308,626	\$ -	0%
Trees	\$ 111,904,384	\$ 129,919,430	\$ 18,015,046	16%
Flower Beds	\$ -	\$ 3,794,400	\$ 3,794,400	N/A
Cemetery Equipment	\$ 74,967	\$ 74,967	\$ -	0%
Park Assets				
Parkland (Excluding Natural Heritage Lands)	\$ 219,329,554	\$ 68,390,728	\$ (150,938,826)	-69%
Natural Heritage Lands	\$ -	\$ -	\$ -	0%
Park Furnishing	\$ -	\$ 3,030,522	\$ 3,030,522	0%
Playgrounds	\$ 83,179,980	\$ 85,780,980	\$ 2,601,000	3%
Shade Structures	\$ 28,678,626	\$ 36,340,444	\$ 7,661,818	27%
Splash Pads & Outdoor Pools	\$ 6,866,640	\$ 3,173,220	\$ (3,693,420)	-54%
Fitness Equipment	\$ 936,360	\$ 678,036	\$ (258,324)	-28%
Skate Parks	\$ 4,473,720	\$ 1,664,640	\$ (2,809,080)	-63%
Sports Facilities	\$ 112,404,816	\$ 120,122,085	\$ 7,717,269	7%
Pathways	\$ 45,591,142	\$ 47,264,430	\$ 1,673,288	4%
Subtotal Assets Managed by Parks Services (Responsibility View)	\$ 633,248,341	\$ 517,573,671	\$ (115,674,669)	-18%

APPENDIX B



Recreation



Total Asset Replacement Value:	\$43.2 Million
Total Asset Replacement Value Including Facilities, City Support Fleet and Software:	\$621.1 Million
Future Condition Trend (Next 10 Years):	Declining - As assets age they may require attention in the future
Data Confidence & Reliability:	Age & Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

- Responsibility View:** Shows the assets under the service area that is responsible for managing them
- User View:** Shows the assets under the service area that is using them

The responsibility view is also being illustrated in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

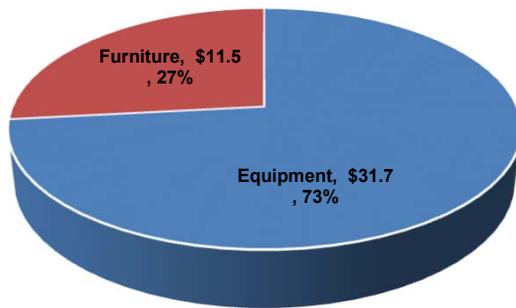
Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Recreation		
Equipment	\$31.7	3,002
Furniture	\$11.5	303
<i>Subtotal Assets Managed by Recreation (Responsibility View)</i>	<i>\$43.2</i>	<i>3,305</i>
Assets Managed by Other Service Areas		
<i>Recreation Facilities</i>	<i>\$573.4</i>	<i>73</i>
<i>City Support Fleet Used by Recreation</i>	<i>\$4.2</i>	<i>135</i>
<i>Software Used by Recreation</i>	<i>\$0.3</i>	<i>2</i>
Total Replacement Value (User View)	\$621.1	-



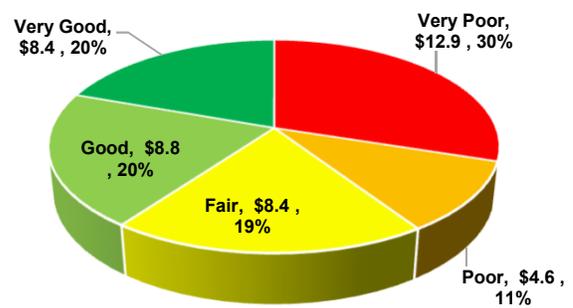
Major Types of Assets within Recreation - Responsibility View

The figures below illustrate the replacement value and condition of Recreation assets under the responsibility view. Under this view, the total replacement value of assets is \$43.2 million. As part of the 2020 SOLI, only Recreation Equipment and Furniture are considered under the management of this service area. Overall, the Recreation assets are in Fair condition, although, about 41% of the total asset base is rated in Poor to Very Poor condition. The determination of condition for recreation assets is mainly "age based" meaning the condition is set relative to the remaining useful life of the asset. It is expected that future iterations of the SOLI will look to further incorporate condition based assessments which may improve the overall confidence and reliability of the identified condition ratings.

**RESPONSIBILITY VIEW:
REPLACEMENT VALUE BY ASSET
CATEGORY (\$M)**



**RESPONSIBILITY VIEW:
RECREATION ASSET CONDITION (\$M)**



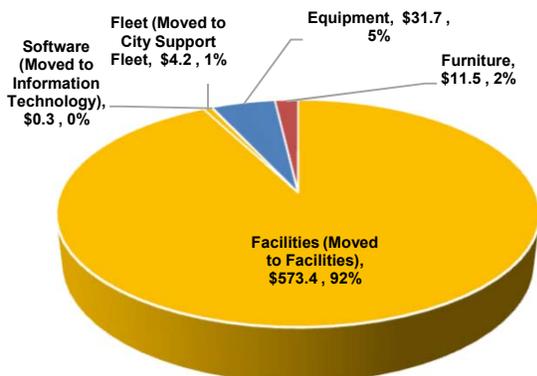
Data Source: Departmental Inventory, PSAB data as of year-end 2020

Major Types of Assets within Recreation - User View

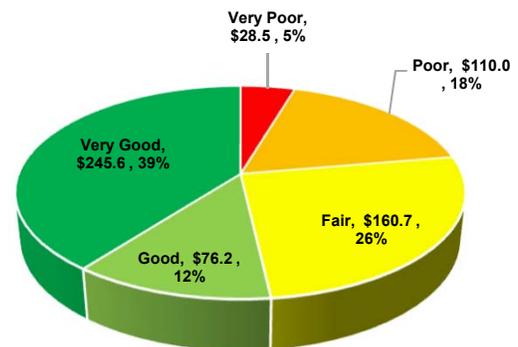
The figures below illustrate the replacement value and condition of Recreation assets under the user view. Under the user view illustration which also captures facilities, City support fleet and software, the replacement value is about \$621.1 million. Of this total, the Recreation facilities represent the largest share at \$573.4 million. Approximately 51% of the assets are considered to be in Good to Very Good Condition. Only 5% of assets are in Very Poor condition.

It is important to note, that the proportion of assets considered to be in Poor condition can be attributed to some of the Recreation facilities, although, the facilities continue to be operational and safe for use. It is expected that detailed condition assessments will be developed in the next iteration of the City's facilities asset management plan.

**USER VIEW:
REPLACEMENT VALUE BY ASSET
CATEGORY (\$M)**



**USER VIEW:
RECREATION ASSET CONDITION (\$M)**

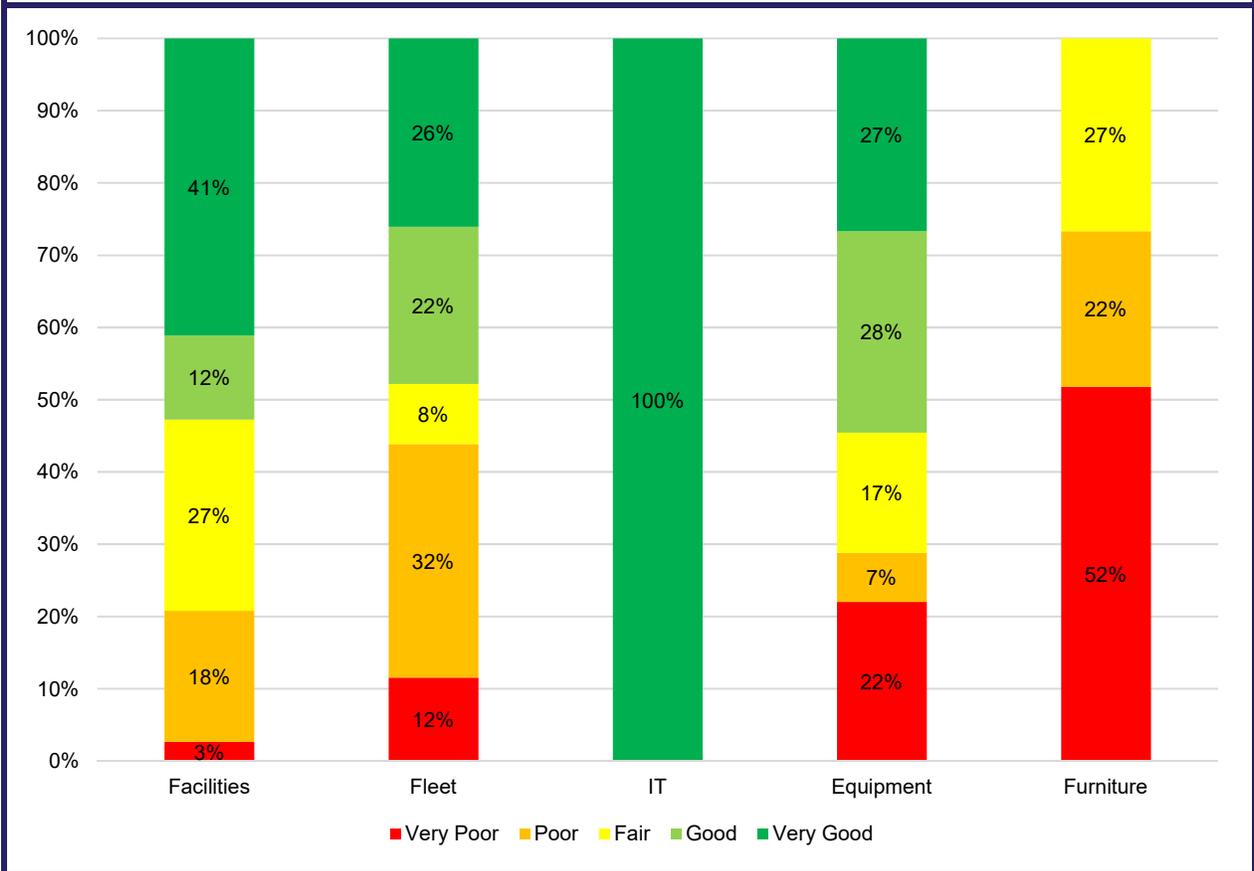


APPENDIX B



Recreation

The figure below illustrates the condition of the various Recreation assets by key sub-component areas based on the user view. While the assets are generally in Good to Very Good condition, Furniture is in generally Very Poor condition based on age but are all in working order. Approximately 12% of Fleet and 29% of Equipment are also in Poor or Very Poor condition. Assets that are in Very Poor condition are based on the age of the asset and will be replaced as they reach the end of their useful life. The City is implementing Asset Information Management Strategy (AIMS) project which will advance its asset management practices and improve confidence and reliability in data including condition.



APPENDIX B



Recreation

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in Recreation assets in the 2019 SOLI relative to the 2020 SOLI, while considering reporting under the two different views. Please note, all values are expressed in 2021 dollars.

Under the responsibility view framework, the total value of Recreation assets has increased by 68% from approximately \$25.7 million to \$43.2 million. This increase can generally be attributed to updated costing information as part of the 2020 SOLI, as well as the inclusion of some assets previously classified under Parks (including Recreation managed multi-purpose courts, tracks, splash pads, etc.)

When considering the Recreation Facilities, City Support Fleet and IT assets, the total asset value for Recreation has increased proportionately with the inclusion of these assets. However, in total, the value of Recreation managed assets increased by 9% (or \$52.6 million) from the value reported in 2019 after inflationary adjustments. This is due to better information surrounding the City's facilities, fleet and equipment related to Recreation.

Please note, the Facilities, City Support Fleet and IT report cards will include additional information on those assets used by Recreation but maintained and managed by these different City departments. For fair comparison, the 2019 asset inventory has been adjusted to align with the 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Facilities (Moved to Facilities)	61	Each	74	Each
Fleet (Moved to City Support Fleet)	120	Each	135	Each
Software (Moved to Information Technology)	2	Each	2	Each
Equipment	2,693	Each	3,002	Each
Furniture	Included in Equipment		303	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Facilities (Moved to Facilities)	\$ 539,434,464	\$ 574,637,586	\$ 35,203,123	7%
Fleet (Moved to City Support Fleet)	\$ 3,703,755	\$ 4,231,230	\$ 527,475	14%
Software (Moved to Information Technology)	\$ 896,721	\$ 303,450	\$ (593,271)	-66%
Subtotal Assets Managed by Other Service Areas	\$ 544,034,940	\$ 579,172,266	\$ 35,137,326	6%
2. Assets Managed by Recreation				
Equipment	\$ 25,682,485	\$ 31,659,369	\$ 5,976,884	23%
Furniture	\$ 25,682,485	\$ 11,529,011	\$ 11,529,011	N/A
Subtotal Assets Managed by Recreation - Responsibility View	\$ 25,682,485	\$ 43,188,380	\$ 17,505,895	68%
Total Replacement Value - User View (1+2)	\$ 569,717,425	\$ 622,360,646	\$ 52,643,221	9%

APPENDIX B



Cultural Services



Total Asset Replacement Value:	\$13.1 Million
Total Asset Replacement Value Including Facilities, City Support Fleet and Software:	\$102.3 Million
Future Condition Trend (Next 10 Years):	Declining - As assets age they may require attention in the future
Data Confidence & Reliability:	Age and Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

Responsibility View: Shows the assets under the service area that is responsible for managing them

User View: Shows the assets under the service area that is using them

The responsibility view is also being illustrated in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

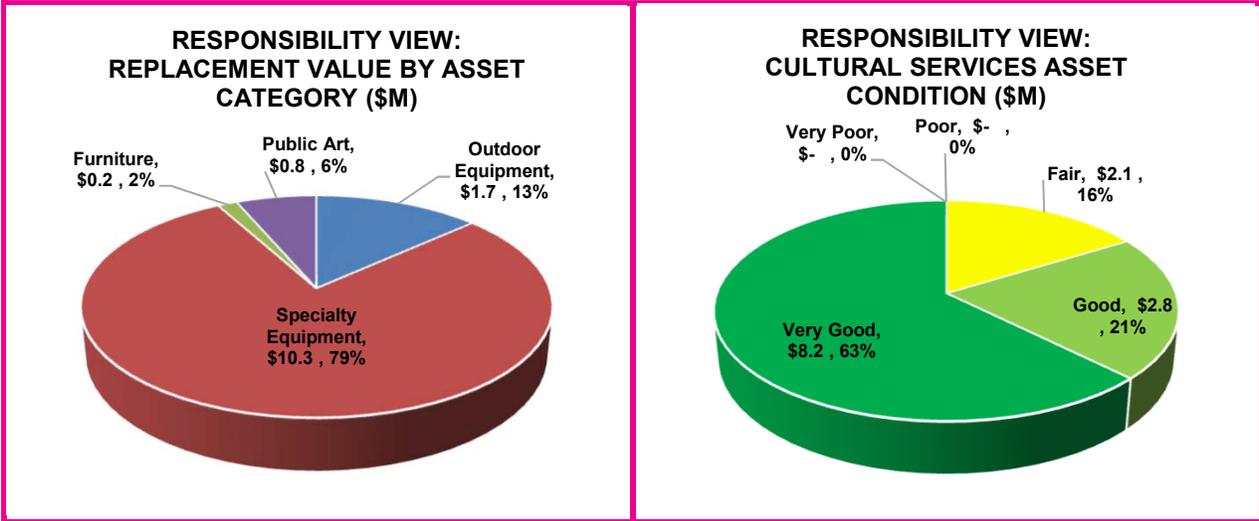
Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Cultural Services		
Outdoor Equipment	\$1.7	Pooled
Specialty Equipment	\$10.3	2,699
Furniture	\$0.2	424
Public Art	\$0.8	25
<i>Subtotal Assets Managed by Cultural Services (Responsibility View)</i>	<i>\$13.1</i>	<i>-</i>
Assets Managed by Other Service Areas		
<i>Cultural Services Facilities</i>	<i>\$88.5</i>	<i>2</i>
<i>City Support Fleet Used by Cultural Services</i>	<i>\$0.7</i>	<i>14</i>
<i>Software Used by Cultural Services</i>	<i>\$0.0</i>	<i>-</i>
Total Replacement Value (User View)	\$102.3	-



Cultural Services

Major Types of Assets within Cultural Services - Responsibility View

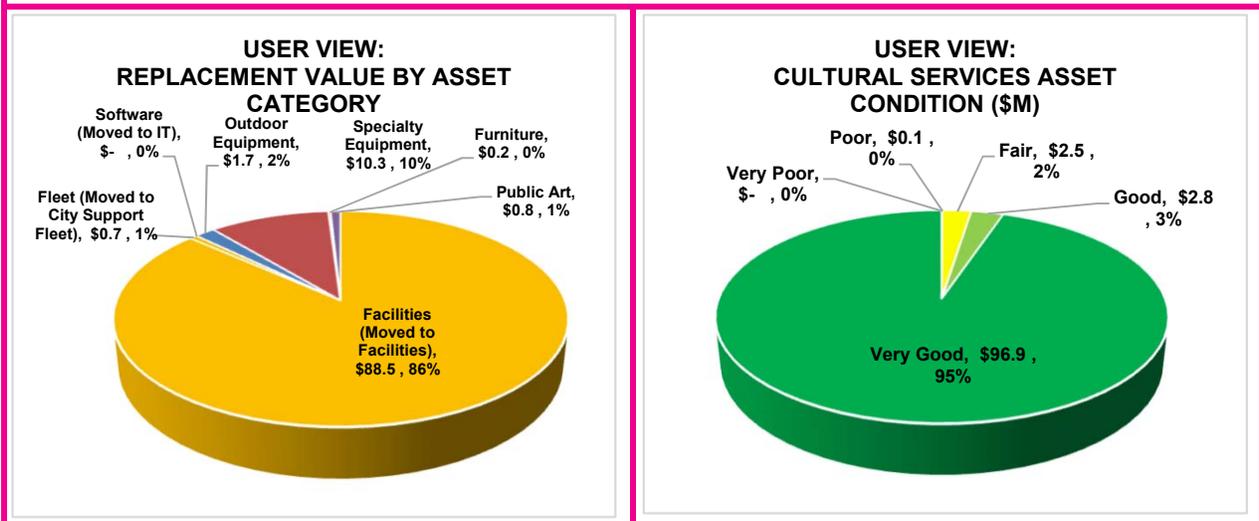
The figure below illustrates the replacement value and condition of Cultural Services assets under the responsibility view. Under this responsibility view, the total replacement value of assets is \$13.1 million. Of this total, roughly 79% is related to the speciality equipment. About 84% of assets are considered to be in Good to Very Good condition, with the remaining assets in Fair condition. As the City's Cultural Services assets are overall in Good condition, these assets are meeting current needs.



Data Source: Departmental Inventory, PSAB data as of year-end 2020

Major Types of Assets within Cultural Services - User View

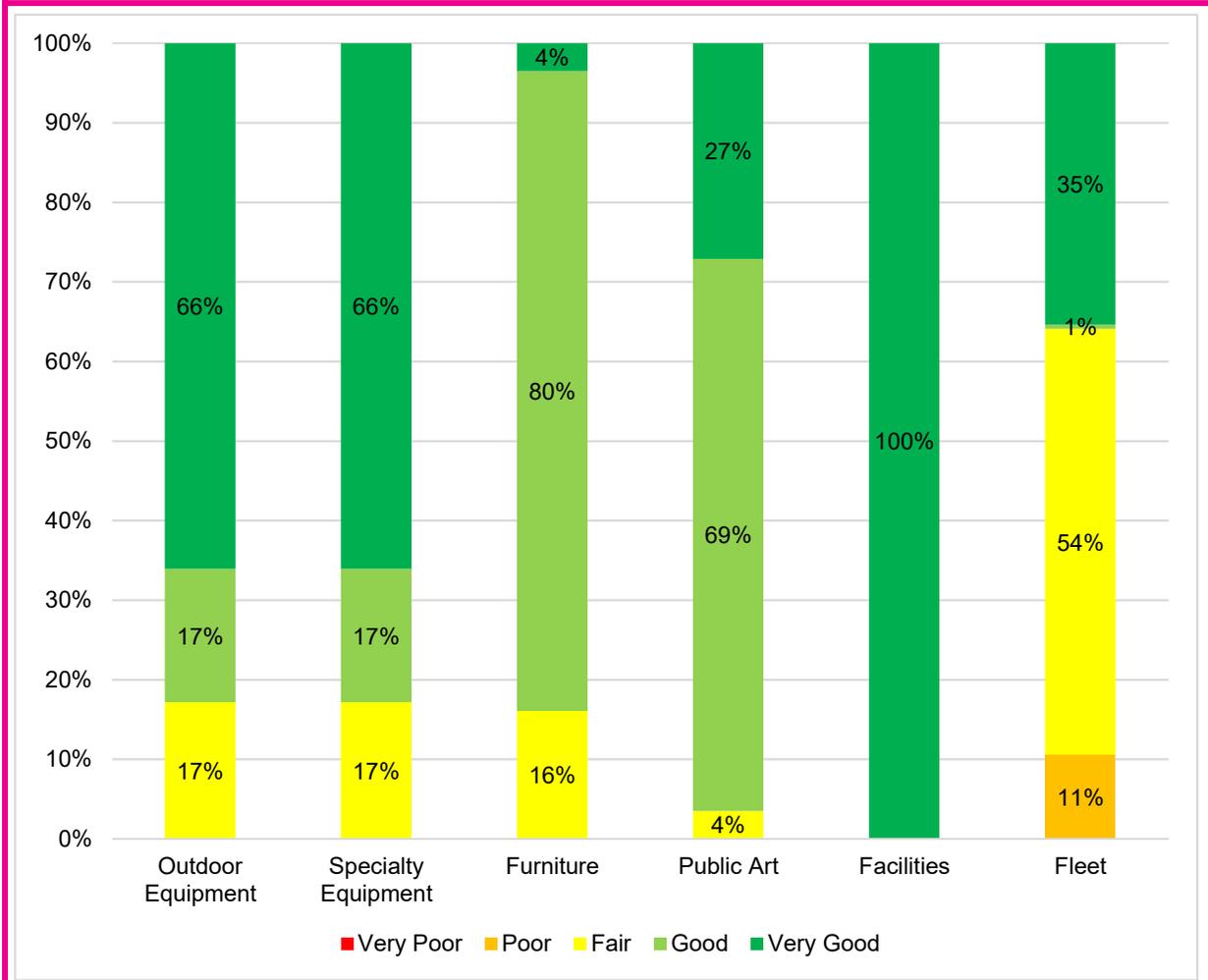
The figures below illustrate the replacement value and condition of Cultural Services assets under the user view. Under the user view illustration which also captures facilities, City support fleet and software, the replacement value is about \$102.3 million. Of this total, the Cultural Services facilities represent the largest share at \$88.5 million. Approximately 98% of the assets are considered to be in Good to Very Good Condition. No assets are Very Poor condition.





Cultural Services

The figure below illustrates the condition of the various Cultural Services assets by key sub-component areas based on the user view. Most asset categories are all generally considered to be in Good or Very Good Condition. Only 11% of Fleet assets are considered to be in Poor condition as they reach the end of their service life and will be replaced.



APPENDIX B



Cultural Services

Comparison of 2019 vs. 2020 Inventory Replacement Value (2021\$)

The tables below outline the difference in Cultural Services assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. Please note, all values are expressed in 2021 dollars.

Under the responsibility view framework, the total value of Cultural Services assets has increased by 41% from approximately \$9.3 million to \$13.1 million. This increase can be attributed to better asset data as well as the inclusion of Public Art and Furniture in this analysis.

When considering the Cultural Services Facilities, City Support Fleet and IT assets, the total asset value for Cultural Services has increased proportionately with the inclusion of these assets. Furthermore, the total value of Cultural Services assets increased by 5% (or \$4.9 million) from the value reported in 2019 after inflationary adjustments. This is due to better information surrounding the City's facilities and fleet related to Cultural Services.

Please note, the Facilities, City Support Fleet and IT report cards will include additional information on those assets used by Cultural Services but maintained and managed by a different City department. For fair comparison, the 2019 asset inventory has been adjusted to align with the 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Outdoor Equipment	Pooled		Pooled	
Specialty Equipment	Pooled		2,699	Each
Furniture	Included with Outdoor/Specialty Equipment		424	Each
Public Art	Not Included		25	Each
Facilities (Moved to Facilities)	1	Each	1	Each
Fleet (Moved to City Support Fleet)	8	Each	9	Each
Software (Moved to IT)	1	Each	1	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Facilities (Moved to Facilities)	\$ 87,547,306	\$ 88,504,196	956,890	1%
Fleet (Moved to City Support Fleet)	\$ 532,871	\$ 655,342	122,471	23%
Software (Moved to IT)	\$ -	\$ -	-	N/A
Subtotal Assets Managed by Other Service Areas	\$ 88,080,177	\$ 89,159,538	1,079,361	1%
2. Assets Managed by Cultural Services				
Outdoor Equipment	\$ 1,883,644	\$ 1,745,687	\$ (137,957)	-7%
Specialty Equipment	\$ 7,438,539	\$ 10,321,264	\$ 2,882,725	39%
Furniture	\$ -	\$ 206,962	\$ 206,962	N/A
Public Art	\$ -	\$ 845,298	\$ 845,298	N/A
Subtotal Assets Managed by Cultural Services (Responsibility View)	\$ 9,322,183	\$ 13,119,211	\$ 3,797,028	41%
Total Replacement Value: User View (1+2)	\$ 97,402,360	\$ 102,278,749	\$ 4,876,389	5%

APPENDIX B



Library



Asset Replacement Value:	\$19.0 Million
Total Asset Replacement Value including Facilities and City-Support Fleet:	\$101.1 Million
Future Condition Trend (Next 10 Years):	Declining – As assets age they may require attention in the future
Data Confidence & Reliability:	Age and Condition Based

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and "**User View**" representation

Responsibility View: Shows the assets under the service area that is responsible for managing them

User View: Shows the assets under the service area that is using them

The responsibility view is an addition in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in millions) under the two different views.

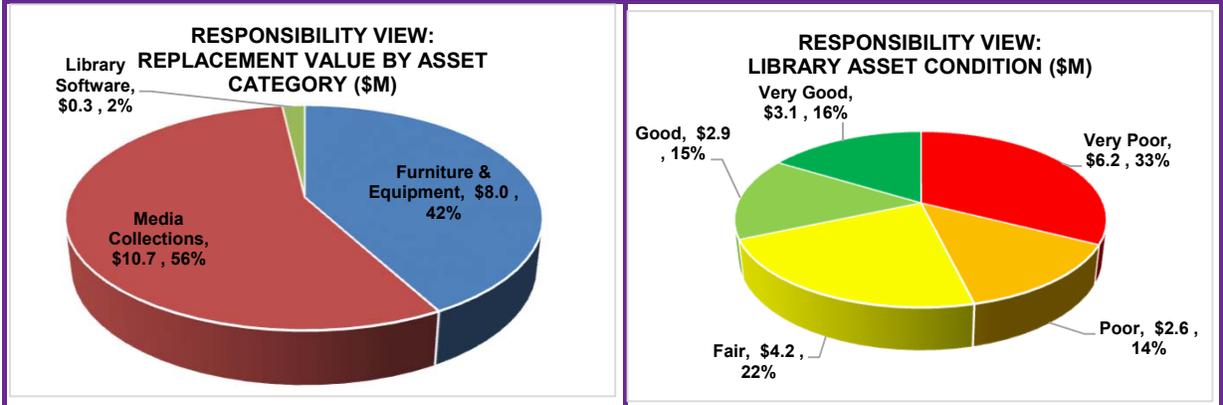
Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Library		
Furniture and Equipment	\$8.0	6,882
Media Collections	\$10.7	Pooled
Library Software	\$0.3	19
<i>Subtotal Assets Managed by Library (Responsibility View)</i>	<i>\$19.0</i>	<i>-</i>
Assets Managed by Other Service Areas		
<i>Library Facilities</i>	<i>\$81.9</i>	<i>6</i>
<i>City Support Fleet Used by Library</i>	<i>\$0.2</i>	<i>5</i>
Total Replacement Value (User View)	\$101.1	-

The Library facility figure reported includes the four (4) standalone library branches as well as two (2) libraries located within Recreation Facilities (Gore Meadows Community Centre and South Fletchers Sports Complex). The library portion of those shared facilities are included in the above facilities total of \$81.9 million. The inclusion of the two (2) shared facilities in this report is a data improvement from the 2019 SOLI Report.



Major Types of Assets within Brampton Library - Responsibility View

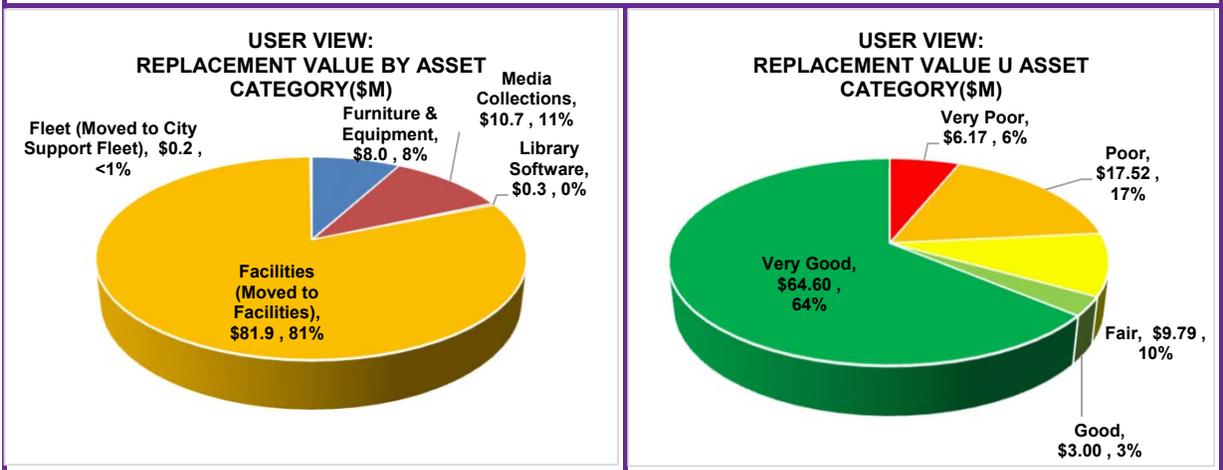
The figure on the following page illustrates the replacement value and condition of Library service assets under the responsibility view. Under the responsibility view, the total replacement value of the Library assets is \$19.0 million. Of the \$19.0 million replacement value, about 56%, or \$10.7 million, is attributed to Media Collections. Furthermore, about 42%, or \$8.0 million is attributed to Furniture and Equipment while the remaining \$346,000 is related to Library Software. As most of the furniture and equipment and media collection condition are age based, a portion of these assets are considered to be in Poor and Very Poor condition.



Data Source: PSAB data and consultation with Library staff

Major Types of Assets within Brampton Library - User View

The figures below illustrates the replacement value and condition of Library service assets under the user view. Under the user view illustration which captures facilities and city support fleet, the replacement value increases to \$101.1 million from \$19.0 million reported under the responsibility view framework. Of this total \$101.1 million, the Library facilities represent the largest component at \$81.9 million. Approximately two-thirds of the Library's assets are considered to be in Good to Very Good condition, with the remaining assets close to, or past, the end of their service life.

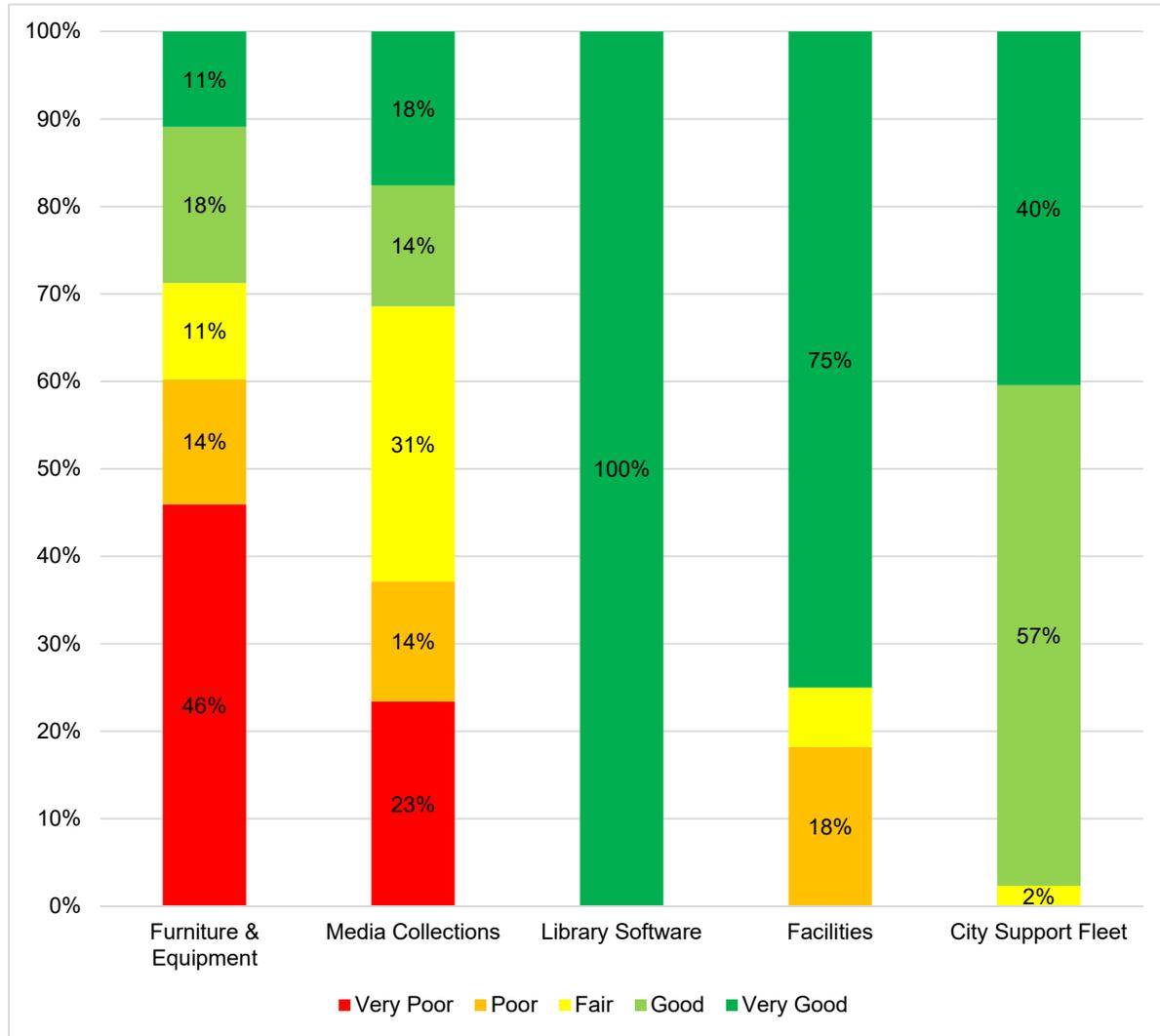


APPENDIX B



Library

The figure below illustrates the condition of the various Library service assets by key sub-component areas. While the assets are cumulatively in Good condition, Furniture and Equipment as well as Media Collections have a significant component of assets in Poor or Very Poor condition. Lastly, all Library Software assets and most facilities are in Very Good Condition. The assets in Poor Condition are evaluated based on the asset age.



APPENDIX B



Library

Comparison of 2019 vs. 2020 Inventory and Replacement Value (All Costs in \$2021)

The tables below outline the difference in Library assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. Please note, all values are expressed in 2021 dollars.

Looking only at those assets included under the responsibility view framework, the total value of Library Services has decreased by 17% from approximately \$22.8 million to \$19.0 million. This decrease can generally be attributed to media collection as the Library decreased purchases due to COVID-19 restrictions imposed on Library facilities which resulted in an increase in usage of the online database (eResources).

Including the Library Facility and City Support Fleet assets, the total asset value for Library Services has increased proportionately with those assets. In total, the value of library assets has increased by 22% (or \$18.5 million) from 2019. This can largely be attributed to the inclusion of the 2 shared library facilities in Recreation centres which were not captured in the 2019 SOLI Report.

Please note, the Facilities and City Support Fleet report cards will include additional information on those assets used by Library but maintained and managed by a different city department. For fair comparison, 2019 asset inventory has been adjusted to align with 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Furniture & Equipment	6,703	Each	6,882	Each
Media Collections	Pooled		Pooled	
Library Software		Not Included	19	Each
Facilities	4	Each	6	Each
Fleet	4	Each	5	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Facilities (Moved to Facilities)	\$ 59,651,334	\$ 81,891,070	\$ 22,239,736	37%
Fleet (Moved to City Support Fleet)	\$ 135,744	\$ 171,027	\$ 35,284	26%
Subtotal Assets Managed by Other Service Areas	\$ 59,787,078	\$ 82,062,097	\$ 22,275,020	37%
2. Assets Managed by Library				
Furniture & Equipment	\$ 7,731,427	\$ 8,005,728	\$ 274,301	4%
Media Collections	\$ 15,049,732	\$ 10,665,636	\$ (4,384,095)	-29%
Library Software	\$ -	\$ 345,703	\$ 345,703	N/A
Subtotal Assets Managed by Library (Responsibility View)	\$ 22,781,159	\$ 19,017,068	\$ (3,764,092)	-17%
Total Replacement Value: User View (1+2)	\$ 82,568,237	\$ 101,079,165	\$ 18,510,928	22%



Animal Services



Total Asset Replacement Value:	\$274,900
Total Asset Replacement Value Including Facilities, City Support Fleet and Software	\$10.8 Million
Future Condition Trend (Next 10 Years):	Declining - As assets age they may require attention in the future
Data Confidence & Reliability:	Medium (Condition Based)

The 2020 SOLI analysis is being reported under two different asset representation perspectives: "**Responsibility View**" and a "**User View**" representation

Responsibility View: Shows the assets under the service area that is responsible for managing them

User View: Shows the assets under the service area that is using them

The responsibility view is an addition in this 2020 SOLI as it is an important viewpoint from an Asset Management Planning perspective. The responsibility view:

- ✓ provides a direct line of sight to those assets managed by the service area;
- ✓ will help prioritize lifecycle activities managed by the service area;
- ✓ aligns with industry best practices; and
- ✓ provides guidance to future asset management planning practice and departmental initiatives.

The table below illustrates the replacement value (in 2021\$) under the two different views.

Asset Type	Replacement Value (\$Millions)	Asset Inventory
Assets Managed by Animal Services		
Equipment	\$0.3	124
<i>Subtotal Assets Managed by Animal Services (Responsibility View)</i>	\$0.3	124
Assets Managed by Other Service Areas		
<i>Animal Services Facilities ⁽¹⁾</i>	\$9.2	2
<i>City Support Fleet Used by Animal Services</i>	\$1.1	14
<i>Software Used by Animal Services</i>	\$0.2	1
Total Replacement Value (User View)	\$10.8	-

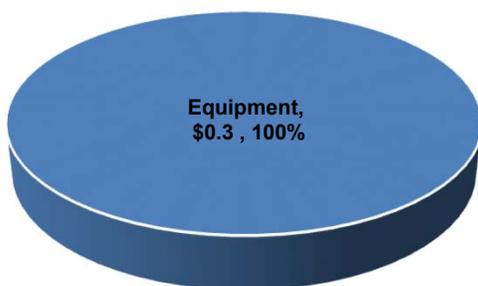
(1) By-law facility with a replacement value of approximately \$ 2.8 million is now included Animal Shelter under user view



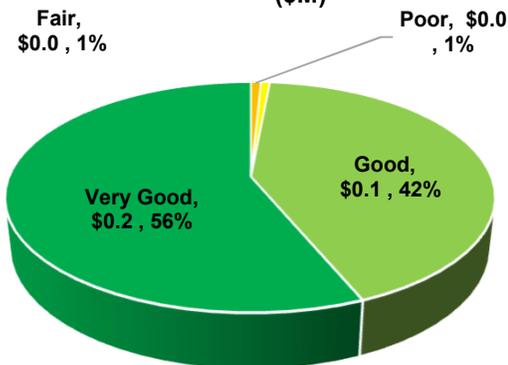
Major Types of Assets within Animal Services - Responsibility View

The figure below illustrates the replacement value and condition of Animal Services assets under the responsibility view. Under this view, the total replacement value of assets is \$274,900. As part of the 2020 SOLI, only Animal Services equipment is considered under the management of the service area and therefore makes up the entire replacement value. Overall, the Animal Services assets are in Very Good condition with about 1% of the total asset rated in Poor condition.

**RESPONSIBILITY VIEW:
REPLACEMENT VALUE BY ASSET
CATEGORY (\$M)**



**RESPONSIBILITY VIEW:
ANIMAL SERVICES ASSET
CONDITION (\$M)**



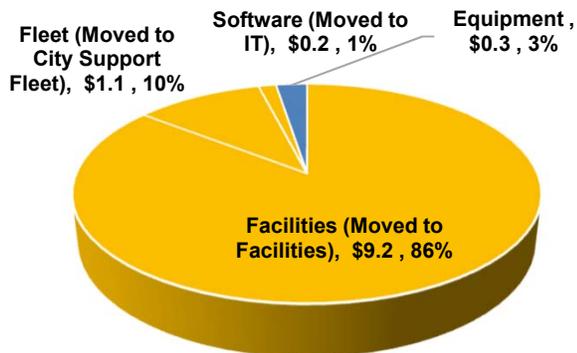
Data Source: Departmental Inventory, PSAB data as of year-end 2020

Major Types of Assets within Animal Services - User View

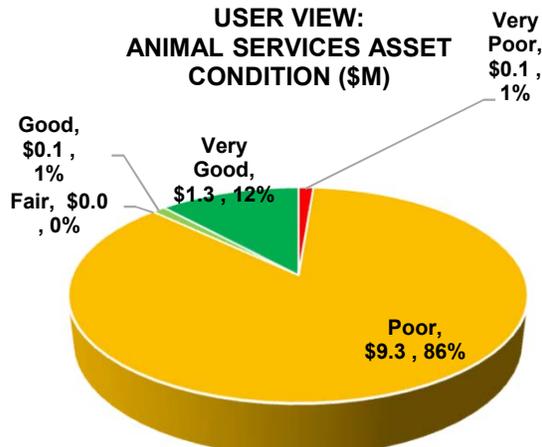
The figures below illustrate the replacement value and condition of Animal Services assets under the user view. Under the user view illustration which also captures facilities, City support fleet and software, the replacement value is about \$10.8 million. Of this total, \$10.8 million, the Animal Services facilities represent the largest share at \$9.2 million. Approximately 13% of the City's assets are considered to be in Good to Very Good Condition and only 3% of assets are in Very Poor condition.

It is important to note, that although the animal facilities are considered to be in Poor condition based on the City's condition threshold methodology, the facility continues to be in good working order. It is expected that detailed condition assessments of the animal facilities will be developed in the next iteration of the City's facilities asset management plan.

**USER VIEW:
REPLACEMENT VALUE BY ASSET
CATEGORY (\$M)**



**USER VIEW:
ANIMAL SERVICES ASSET
CONDITION (\$M)**

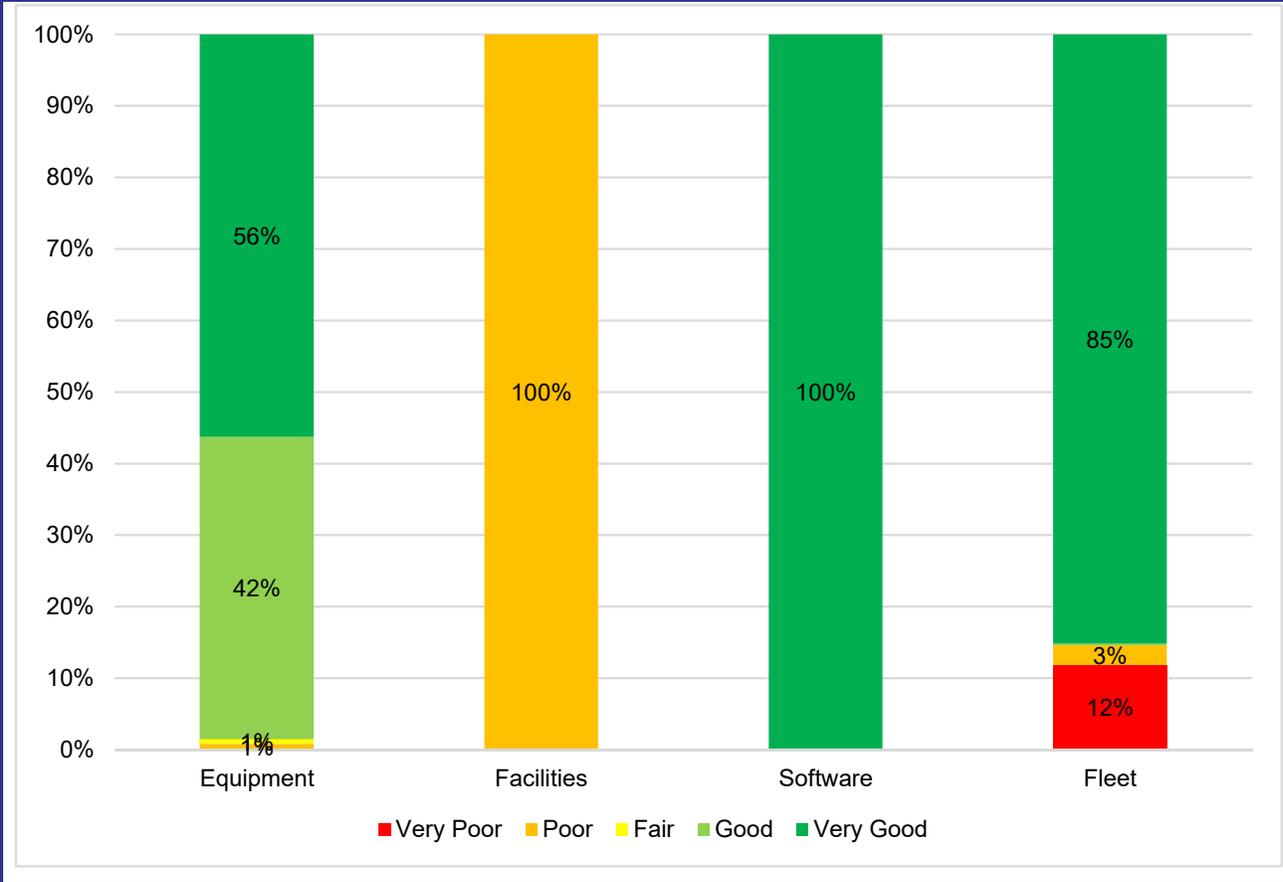


APPENDIX B



Animal Services

The figure below illustrates the condition of the various Animal Services assets by key sub-component areas based on the user view. While the assets are generally in Good to Very Good condition, Facilities are in generally Poor condition as well as approximately 15% of Fleet in Poor or Very Poor condition.



APPENDIX B



Animal Services

Comparison of 2019 vs. 2020 Inventory and Replacement Value (2021\$)

The tables below outline the difference in Animal Services assets in the 2019 SOLI relative to the 2020 SOLI while considering reporting under the two different views. Please note, all values are expressed in 2021 dollars.

Under the responsibility view framework, the total value of Animal Services assets has decreased by 8% from approximately \$300,300 to \$274,900. This decrease can generally be attributed to updated costing information as part of the 2020 SOLI.

When considering the Animal Services Facilities, City Support Fleet and IT assets, the total asset value for Animal Services increased proportionately with the inclusion of these assets. However, in total, the value of Animal Services assets increased by 45% (or \$3.4 million) from the value reported in 2019 after inflationary adjustments. This is due to better information surrounding the City's facilities and fleet related to Animal Services.

Please note, the Facilities, City Support Fleet and IT report cards include additional information on those assets used by Animal Services but maintained and managed by a different City department. For fair comparison, 2019 asset inventory has been adjusted to align with 2020 responsibility view.

Asset	2019 SOLI		2020 SOLI	
Facilities (Moved to Facilities)	1	Each	2	Each
Fleet (Moved to City Support Fleet)	11	Each	14	Each
Software (Moved to IT)	1	Each	1	Each
Equipment	153	Each	124	Each

Asset	2019 SOLI (\$2021)	2020 SOLI (\$2021)	Difference	
1. Assets Managed by Other Service Areas				
Facilities (Moved to Facilities)	\$ 6,482,628	\$ 9,243,785	\$ 2,761,157	43%
Fleet (Moved to City Support Fleet)	\$ 541,345	\$ 1,131,287	\$ 589,942	109%
Software (Moved to IT)	\$ 106,970	\$ 156,060	\$ 49,090	46%
Subtotal Assets Managed by Other Service Areas	\$ 7,130,943	\$ 10,531,132	\$ 3,400,189	48%
2. Assets Managed by Animal Services				
Equipment	\$ 300,284	\$ 274,944	\$ (25,340)	-8%
Subtotal Assets Managed by Animal Services (Responsibility View)	\$ 300,284	\$ 274,944	\$ (25,340)	-8%
Total Replacement Value: User View (1+2)	\$ 7,431,227	\$ 10,806,076	\$ 3,374,849	45%

APPENDIX C

LEVEL OF SERVICES: TRACKING TECHNICAL MEASURES AT THE SERVICE AREA LEVEL

APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: ANIMAL SERVICES

ANIMAL SERVICES						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Animal Services	Affordability	Financial Sustainability	Animal Services assets are cost efficient	Financial Sustainability	Annual Budgeted expenditure to provide Animal Services - Capital & Operating(\$/household).	\$16.42
Overall Animal Services	Quality	Customer Satisfaction	Animal Services meets customer needs and expectations	Upgrade	Number of Animal Services calls attended and completed	14,949
Overall Animal Services	Capacity & Use	Capacity	Providing efficient Animal Services to ensure the protection of people, animals and property	Upgrade	Average annual capacity/availability of Animal Services (i.e. how much space is available to take in more animals if needed) - peak time	41 Dogs & 132 Cats
Overall Animal Services	Capacity & Use	Availability		Upgrade	Total annual hours where services are unavailable to residents (planned closures, over capacity)	The shelter is closed to the public 528 hours a year based on an eight hour work day. (Holidays and Sundays)
Equipment	Quality	Reliability	Animal Services Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment	Very Good

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: CULTURAL SERVICES

CULTURAL SERVICES						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Cultural Services	Affordability	Financial Sustainability	Cultural Services assets are cost efficient	Financial Sustainability	Annual budgeted expenditure to provide Culture services - Capital & Operating (\$/household)	\$63.96
Overall Cultural Services	Quality	Reliability	Cultural Services meet customer needs and expectations	All Technical LOS Categories	Number of annual visit to City-run theatres	300,378
Overall Cultural Services	Capacity & Use	Capacity		Growth	Number of planned events at Outdoor Venues	115
Overall Cultural Services	Capacity & Use	Availability		Growth	Number of programs offered to residents	523
Outdoor Equipment	Quality	Reliability	Cultural Outdoor Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment	Good
Specialty Equipment	Quality	Reliability	Cultural Specialty Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment	Good
Furniture	Quality	Reliability	Cultural Furniture are kept in a state of good repair	Renewal	Average weighted condition assessment	Good
Public Art	Quality	Reliability	Cultural Public Art are kept in a state of good repair	Renewal	Average weighted condition assessment	Good

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: FACILITIES**

FACILITIES						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Facilities	Quality	Reliability	Corporate Facilities are kept in a state of good repair	Renewal	Average weighted condition assessment	Good
Facilities	Affordability	Financial Sustainability	Corporate Facilities assets are cost efficient	Operations	Annual Budgeted expenditure to provide facilities services - Capital & Operating(\$/household)	\$681.60
Facilities	Function	Enhanced Safety	To provide safe, functional and accessible public Corporate Facilities for the community	Operations	% of regulated health and safety inspections completed.	100%
Facilities	Function	Enhanced Environment	City Facilities are green and environmentally sustainable	Upgrade	Number of facilities that meet LEED Certified standards or equivalent	8
Facilities	Function	Enhanced Environment		Upgrade	Power capacity of solar panels (kW) (measure Energy Consumption generated from renewable sources).	190
Facilities	Function	Enhanced Environment		Upgrade	Annual cooling capacity of geothermal systems, MBTU/hr (thousands BTU/hr) (measure Energy Consumption generated from renewable sources).	24,801,700
Facilities	Function	Enhanced Environment		Upgrade	Green roofs area (square meters)	5,160
Facilities	Function	Enhanced Environment		Upgrade	Tonnes of GHG Emissions per area (tonnes CO2e per square feet). [Accounts for Tonne of GHG Emissions from immobile sources].	0.00451
Facilities	Function	Enhanced Environment		Upgrade/maintenance	Potable water indoor usage in cubic metres of water per square metre of the floor area.	1.27
Facilities	Function	Enhanced Environment		Upgrade	# of Charging Stations for electrical vehicles, Public and Staff accessible	57
Facilities	Function	Enhanced Environment		Transit Facilities are green and environmentally sustainable	Upgrade	# of Charging Stations for electrical buses (Transit)
Facilities	Function	Enhanced Environment	Upgrade		# of Charging Stations for electrical vehicles, publicly accessible, located at Transit Facilities (Under Transit Services)	4
Facilities	Function	Enhanced Environment	O&M		EV charging stations inspections frequency (Under Transit Services)	Semi-annually
Facilities	Function	Enhanced Environment	Upgrade		Transit Facilities with Leed Certifications or inclusive of Green Building Standards	0

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: FIRE**

FIRE						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Fire Services	Affordability	Financial Sustainability	Fire services are cost efficient	Financial Sustainability	Annual budgeted expenditure to provide Fire services - Capital & Operating (\$/household)	\$467.63
Overall Fire Services	Function	Enhanced Safety	Providing efficient Fire Services to ensure the protection of people and property	O&M	Number of fire related civilian injuries per 100,000 persons	0.73
Overall Fire Services	Quality	Reliability		O&M	Number of fire related civilian fatalities average per 100,000 persons	0.36
Overall Fire Services	Quality	Reliability		O&M	Annual dollar loss due to structure fires	\$17,518,832
Overall Fire Services	Capacity & Use	Availability		Growth	Population served per full-time fire fighter	1,405
Overall Fire Services	Capacity & Use	Capacity		O&M	Annual number of structure fire incidents	177
Overall Fire Services	Capacity & Use	Capacity		Growth	Population served per Fire station	48,729
Overall Fire Services	Capacity & Use	Capacity		Growth	Number of incidents per full-time crew	1,072
Overall Fire Services	Function	Enhanced Safety		To provide safe, functional and accessible fire services for the community.	Upgrade	Percentage of regulated inspections completed
Overall Fire Services	Quality	Reliability	O&M		% of structure fires responded to within 384 Seconds	77%
Overall Fire Services	Quality	Reliability	O&M		% of medical calls responded to within 384 Seconds	81%
Licensed Vehicles	Quality	Reliability	Fire Licensed Vehicles are kept in a state of good repair	Renewal	Average weighted condition assessment	Good
Licensed Vehicles	Quality	Reliability	To provide safe, functional and accessible fire services for the community.	Renewal	Number of unplanned maintenance events per year	89
Licensed Vehicles	Function	Enhanced Environment	Fire Fleet services are green and environmentally sustainable	Renewal	GHG emissions in tonnes of eC)2 for Fire Licensed Vehicles	775
Fire Equipment	Quality	Reliability	Fire Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment	Good

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: CITY SUPPORT FLEET**

FLEET						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Fleet Services	Quality	Reliability	Corporate Fleet services are cost efficient and Available to Provide Services	Renewal	Vehicle downtime as a percentage of total available hours per year	4%
Overall Fleet Services	Affordability	Financial Sustainability		Financial Sustainability	Annual Budgeted expenditure to provide Fleet services - Capital & Operating(\$/household)	\$36.40
Licensed Vehicles	Quality	Reliability	Licensed Fleet are kept in a state of good repair	Renewal	Average weighted condition assessment of Licensed Fleet	Good
Licensed Vehicles	Quality	Reliability		Maintenance	Number of unplanned maintenance events per year	2,635
Licensed Vehicles	Function	Enhanced Safety	Fleet Licensed Vehicle assets meet all safety requirements and City standards to ensure proper performance and safety.	Maintenance	Total # of preventative maintenance activities performed	734
Licensed Vehicles	Function	Regulatory Compliance		Upgrade	Percentage of regulated inspections completed	100%
Licensed Vehicles	Function	Regulatory Compliance		Upgrade	Percentage of Licensed Vehicles in compliance with HTA (Highway Traffic Act)	100%
Licensed Vehicles	Quality	Reliability		Maintenance	Percentage of repair hours spent on unscheduled repairs and service not "Planned Maintenance" related to overall maintenance.	52%
Licensed Vehicles	Function	Enhanced Environment	Fleet services are green and environmentally sustainable	Renewal	GHG emissions in tones of eCO2 for Overall City Support Fleet (except Fire and Transit)	1913
Off-Road Vehicles	Quality	Reliability	Fleet Off-Road Vehicles are kept in a state of good repair	Renewal	Average weighted condition assessment of Off-Road Vehicles	Fair
Off-Road Vehicles	Quality	Reliability		Operations and Maintenance	Number of unplanned/demand maintenance events per year for Off-Road Vehicles - for Overall City Fleet except Transit and Fire	690
Off-Road Vehicles	Function	Enhanced Safety	Fleet Off-Road Vehicle assets meet all safety requirements and City standards to ensure proper performance and safety.	Operations & Maintenance	Total # of preventative maintenance activities performed on Off-Road Equipment	304
Off-Road Vehicles	Function	Enhanced Safety		Upgrade	Percentage of inspections completed to comply with COR policy	100%
Off-Road Vehicles	Quality	Reliability		Operations & Maintenance	Percentage of repair hours spent on unscheduled repairs and service (not "Planned Maintenance") relative to overall maintenance for Off-Road Vehicles.	40%
Fleet Equipment	Quality	Reliability	Fleet Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment of Fleet Equipment	Fair

*City Support Fleet Excludes Fire and Transit Support Fleet and Parks Fleet Equipment

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: INFORMATION TECHNOLOGY (IT)**

CORPORATE IT							
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance	
Overall IT Services	Affordability	Financial Sustainability	It Assets are Cost Efficient	Financial Sustainability	Annual Budgeted expenditure to provide IT services - Capital & Operating (\$/household)	\$253.52	
Overall IT Services	Capacity & Use	Availability	IT services are secure and have proper internal major incident management	Growth	IT Service Desk average speed to answer phone	35.5 seconds	
Overall IT Services	Quality	Reliability		Growth	IT Service Desk abandoned calls relative to total calls	7%	
Overall IT Services	Quality	Reliability		Operations and Maintenance	Average time to resolution	6.25 days	
Overall IT Services	Function	Enhanced Safety		Operations and Maintenance	Server production uptime (%)	99.68%	
Overall IT Services	Capacity & Use	Availability		Operations and Maintenance	Number of GIS data products	934	
Overall IT Services	Capacity & Use	Availability	IT meets all SLA targets and response times and are reliable and available for use	Operations and Maintenance	Number of Open Data datasets	185	
Overall IT Services	Function	Regulatory Compliance		Upgrade	% of regulated inspections completed	100% City is in compliance with any regulatory provisions surrounding the privacy of personal property and Freedom for Information request	
Overall IT Services	Quality	Reliability		Operations and Maintenance	Number of "hits" to The City's GeoHub	241,367	
Overall IT Services	Function	Enhanced Environment		Brampton IT assets are environmentally sustainable and actively pursuing green initiatives	Upgrade	Percentage of computer and related equipment disposed of in an environmentally friendly manner	100% of all equipment where feasible
Overall IT Services	Function	Enhanced Environment			Upgrade	Percentage of IT infrastructure acquired meets "energy star" rating system	100% of all assets where feasible and applicable
End User IT	Quality	Reliability	End User IT assets are kept in a state of good repair	Renewal	Average weighted condition assessment	Fair	
Infrastructure Assets	Quality	Reliability	Infrastructure Assets are kept in a state of good repair	Renewal	Average weighted condition assessment	Good	
Software	Quality	Reliability	Software assets are kept in a state of good repair	Renewal	Average weighted condition assessment	Very Good	
Service Brampton Equipment	Quality	Reliability	Service Brampton Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment	Very Good	
Service Brampton Equipment	Quality	Customer Satisfaction	Service Brampton Equipment meets customer needs and expectations	Renewal	Percentage of Service Brampton (311) calls are answered within 30 seconds	70%	

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: LIBRARY**

LIBRARY						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Library Services	Affordability	Financial Sustainability	Library assets are cost efficient	Financial Sustainability	Annual Budgeted expenditure to provide Library services - Capital & Operating (\$/household) ⁽¹⁾	\$109.36
Overall Library Services	Capacity & Use	Availability	Library services meets customer needs and expectations	Growth	Proportion of the population living within 3 km of a Library (with 2016 census)	6/8 branches support 100K population in 3km radius
Overall Library Services	Capacity & Use	Capacity		Growth	Average wait time for requested materials	21 days
Overall Library Services	Quality	Customer Satisfaction		Renewal	Active library card users (more than 1 resident)	125,889
Overall Library Services	Quality	Reliability		Renewal	Annual number of branch visits by residents	2,238,351
Overall Library Services	Capacity & Use	Availability		Growth	Number of residents attending library programs annually	151,661
Overall Library Services	Capacity & Use	Availability		Growth	Number of programs offered to residents	6,285
Furniture & Equipment	Quality	Reliability		Library Furniture & Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment
Media Collections	Quality	Reliability	Library Media Collections are kept in a state of good repair	Renewal	Average weighted condition assessment	Fair
Media Collections	Capacity & Use	Capacity	Library services meets customer needs and expectations	Growth	Number of materials borrowed annually (physical and electronic)	4,286,275
Media Collections	Capacity & Use	Availability		Growth	Total number of electronic materials checkouts (eBooks & eAudiobooks)	325,695
Media Collections	Capacity & Use	Availability		Growth	Electronic library uses as a percentage of total library uses	28%
Media Collections	Capacity & Use	Availability		Growth	Non-electronic uses as a percentage of total library uses	72%
Software	Quality	Reliability	Software are kept in a state of good repair	Renewal	Average weighted condition assessment	Very Good

(1) Calculation is based on City of Brampton's transfer to Brampton Library and does not include any self-funded capital

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: PARKS

PARKS						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Parks Services	Affordability	Financial Sustainability	Parks assets are cost efficient	Financial Sustainability	Annual budgeted expenditure to provide Parks services - Capital & Operating (\$/household) <i>Note: capital includes expansion activities</i>	\$265.31
Overall Parks Services	Capacity & Use	Capacity	Parks services meet customer needs and expectations	Growth	Hectares of natural heritage lands per 1,000 persons	5.97
Overall Parks Services	Capacity & Use	Capacity		Growth	Hectares of Parks (excluding natural heritage lands) per 1,000 persons	2.01
Overall Parks Services	Capacity & Use	Capacity		Growth	Total kilometers of pathways (in Parks) per 1,000 persons	0.43
Overall Parks Services	Function	Enhanced Environment		Upgrade	Area in hectares of the NHS (Natural Heritage Land) restored each year	29.4
Overall Parks Services	Quality	Customer Satisfaction		Growth	Percentage of residents that believe there are enough parks and open spaces in their neighbourhood and surrounding area	52%
Cemetery Equipment	Quality	Reliability		Parks Cemetery Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment for Cemetery Equipment
Parking Lots	Quality	Reliability	Parks Open Space assets are kept in a state of good repair	Renewal	Average weighted condition assessment for Parking Lots	Good
Park Assets	Quality	Reliability		Renewal	Average weighted condition assessment for overall Park Assets	Good

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appro,

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: PARKS**

PARKS						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Park Assets	Function	Enhanced Safety	Park Assets meet customer needs and expectations	O&M	Percentage of regulated inspections performed (Playground equipment inspections include: skate parks and outdoor fitness equipment)	100%
Park Assets	Function	Enhanced Safety		O&M	Number of playgrounds that do not meet accessibility standards based on surface quality (Hedge Sand)	87
Park Assets	Capacity & Use	Capacity		Growth	Ratio of playgrounds to residents	1 : 1,967 residents
Park Assets	Capacity & Use	Capacity		Growth	Ratio of splash pads to residents	1 : 45,241 residents
Park Assets	Capacity & Use	Capacity		Growth	Ratio of skate parks to residents	1 : 79,172 residents
Park Assets	Capacity & Use	Capacity		Growth	Ratio of outdoor tennis courts to residents	1 : 11,951 residents
Park Assets	Capacity & Use	Capacity		Growth	Ratio of artificial turf fields to residents	1 : 126,675 residents
Park Assets	Capacity & Use	Capacity		Growth	Ratio of cricket pitches to residents	1 : 33,336 residents
Park Assets	Capacity & Use	Capacity		Growth	Ratio of ball diamonds to residents	1 : 7,117 residents
Park Assets	Capacity & Use	Capacity		Growth	Ratio of rectangular fields (natural) per residents	1 : 5,110 residents
Park Assets	Function	Enhanced Environment	Park Assets are sustainable and provide an enhanced environment	Upgrade	Water Usage for irrigation in cubic meters/year	15,896
Park Assets	Function	Enhanced Environment		Upgrade	City Water Usage for outdoor purposes in cubic meters/year	241,474
Trees	Function	Enhanced Environment	Parks street trees services are sustainable and provide an enhanced environment	Growth	Total number of trees (including trees around ponds, park trees and street trees)	249,749
Trees	Function	Enhanced Environment		Growth	Number of trees planted by the City per annum	2,908
Flower Beds	Quality	Reliability	Flower beds are sustainable and provide an enhanced environment	Growth	Number of flower beds	1,200

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: RECREATION

RECREATION						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Recreation Services	Affordability	Financial Sustainability	Recreation assets are cost efficient	Financial Sustainability	Annual Budgeted expenditure to provide Recreation services - Capital & Operating(\$/household)	\$6.76
Overall Recreation Services	Capacity & Use	Availability	Recreation services meet customer needs and expectations	Growth	Program Registrations per Resident	1:21.59
Overall Recreation Services	Capacity & Use	Availability	Recreation services meet customer needs and expectations	Growth	Rental Hours per Resident	1:6.27
Overall Recreation Services	Capacity & Use	Capacity	Recreation services meet customer needs and expectations	Growth	Membership Scans per Resident	1:2.40
Overall Recreation Services	Capacity & Use	Capacity	Recreation services meet customer needs and expectations	Growth	Foot Traffic (Annual visitors to the City's Recreational facilities)	4,092,568
Overall Recreation Services	Function	Enhanced Safety	Recreation services meet customer needs and expectations	O&M	Frequency of recreation assets inspections (includes pools and arenas) expressed as % of regulated inspections performed.	100%

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: RECREATION**

RECREATION						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Recreation Services	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of multi-purpose program rooms to residents	1:11,350
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of outdoor pools to residents	1:646,972
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of indoor soccer fields to residents	1:215,657
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of gymnasiums to residents	1:40,436
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of squash & racquetball courts to residents	1:71,886
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of indoor tennis courts to residents	1:107,829
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of fitness centres to residents	1:92,425
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of curling sheets to residents	1:53,914
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of indoor ice pads to residents	1:43,131
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of outdoor ice pads to residents	1:80,872
Facilities	Capacity & Use	Capacity	To provide safe, functional and accessible public Recreation Facilities for the community	Growth	Ratio of indoor aquatic centres to residents	1:53,914
Equipment	Quality	Reliability	Recreation furniture and equipment assets are kept in a state of good repair	Renewal	Average weighted condition assessment (furniture and equipment)	Fair

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: STORMWATER**

STORMWATER						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall SW Services	Affordability	Financial Sustainability	SW assets are cost efficient	Financial Sustainability	Annual Budgeted expenditure to provide SW services - Capital & Operating(\$/household)	\$ 120.68
Overall SW Services	Capacity & Use	Availability	Description/maps of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater management system. (O.Reg. 588/17)	Growth	Percentage of properties in municipality resilient to a 100-year storm (O.Reg. 588/17)	96%
Overall SW Services	Capacity & Use	Availability	Communities are protected from flooding, including the extent of protection provided by the municipal stormwater management system	Growth	Percentage of the municipal stormwater management system resilient to a 5-year storm (O.Reg. 588/17)	80%
SWMP	Function	Enhanced Environment	Stormwater assets contribute to an enhanced environment and support a sustainable City	Upgrade	Stormwater Retrofits expenditure/planned Stormwater retrofits budgeted annually (to support water quality and erosion control)	to be reported starting from 2022
WQU/O&GS	Function	Regulatory Compliance	SW assets provide reliable service	Maintenance/Non-infrastructure	Asset class inspections expressed as % of regulated inspections required by consolidated ECA (Environmental Certificate of Approval)	Consolidated ECA hasn't come into effect yet
SWMP	Function	Regulatory Compliance	SW assets provide reliable service	Maintenance/Non-infrastructure	SWMP inspections expressed as % of inspections regulated by consolidated ECA	Consolidated ECA hasn't come into effect yet
Sewers	Quality	Reliability	SW assets provide reliable service	Renewal	Average Weighted condition of the assets in the asset class	Good
WQU/O&GS	Quality	Reliability	SW assets provide reliable service	Renewal	Average Weighted condition of the assets in the asset class	Good
SWMP	Quality	Reliability	SW assets provide reliable service	Renewal	Average Weighted condition of the assets in the asset class	Good
Water Courses	Quality	Reliability	SW assets provide reliable service	Renewal	Average Weighted condition of the assets in the asset class	Good
Sewers	Quality	Reliability	SW assets provide reliable service	Maintenance	Frequency of Catch Basin Maintenance (cleaning)	Annual
SWMP	Quality	Reliability	SW assets provide reliable service	Maintenance	Regular Pond Cleaning (dredging and disposal of accumulated sediments) expressed as % of planned pond cleaning	to be reported starting from 2022
Overall SW Services	Function	Customer Satisfaction	Stormwater Education and Outreach is coordinated, consistent, and accessible	Non-infrastructure	Delivered Education and Outreach program expressed as % of planned program	to be reported starting from 2022

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

**APPENDIX C
CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: TRANSIT**

TRANSIT						
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Level of Service Measure	Current Performance
Overall Transit Services	Capacity & Use	Capacity	Transit network is available to all residents and provides consistent and predictable travel	Growth and Utilization	Transit Ridership per Capita (Pre-Covid)	50
Overall Transit Services	Capacity & Use	Availability		O&M	Transit On-Time Performance	88%
Overall Transit Services	Quality	Customer Satisfaction	Transit services provide residents with sufficient mobility	O&M	Average number of rides (in thousands) per customer complaint	17.54
Overall Transit Services	Affordability	Financial Sustainability	Transit services are cost efficient	Financial Sustainability	Annual budgeted expenditure to provide Transit services - Capital & Operating (\$/household)	\$387.20
Overall Transit Services	Affordability	Financial Sustainability		Financial Sustainability	Revenue/Cost Ratio of Transit Services (Pre-Covid)	51%
Overall Transit Services	Affordability	Financial Sustainability		Financial Sustainability	Cost per Ride (Pre-Covid)	\$5.00
Overall Transit Services	Affordability	Financial Sustainability		Financial Sustainability	Municipal Subsidy per Ride Ratio (Pre-Covid)	\$2.08
Overall Transit Services	Function	Regulatory Compliance	Transit Licensed Vehicles comply with safety regulations	Upgrade	Percent of regulated inspections completed	100%
Licensed Vehicle Assets	Quality	Reliability	Transit Licensed Vehicles are kept in a state of good repair	Renewal	Average weighted condition assessment of Licensed Vehicles	Very Good
Licensed Vehicle Assets	Function	Enhanced Environment	Transit licensed vehicles are green and environmentally sustainable	Upgrade	% of City owned Transit Buses that are Electric (Year-End 2020)	0%
Licensed Vehicle Assets	Function	Enhanced Environment		Upgrade	% of City owned Transit Vehicles that are Hybrid	26%
Transit Facilities (On Road)	Quality	Reliability	Transit Facilities (On Road) are kept in a state of good repair	Renewal	Average weighted condition assessment of Transit Facilities (On Road)	Good
Transit IT Infrastructure	Quality	Reliability	Transit IT Infrastructure are kept in a state of good repair	Renewal	Average weighted condition assessment of Transit IT Infrastructure	Fair
Speciality Equipment	Quality	Reliability	Transit Speciality Equipment are kept in a state of good repair	Renewal	Average weighted condition assessment of Transit Speciality Equipment	Fair

Note: Current Performance is based on either: the average of 2018-2020 data or recent in-year specific data where appropriate. The appropriate method was established based on the availability of data, discussions with City staff, and review of trends

CITY OF BRAMPTON
2021 CORPORATE ASSET MANAGEMENT PLAN
CURRENT LEVEL OF SERVICE: TRANSPORTATION

TRANSPORTATION							
Asset Class	Service Attribute	Strategic Theme	Customer Level of Service Measure	Technical LOS Category	Technical Levels of Service Measure	Current Performance	
Roadways (Arterial)	Capacity & Use	Capacity	Transportation network provides convenient access to properties at all times (O.Reg.588: description/maps of road network connectivity)	Growth & Utilization	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality (lane-km/km2) (O.Reg.588)	2.9	
Roadways (Collector)	Capacity & Use	Capacity				1.9	
Roadways (Local)	Capacity & Use	Capacity				7.3	
Roadway Network	Capacity & Use	Capacity	Transportation network provides convenient access to alternative transport modes*	Growth & Utilization	% modal share of auto passenger during the PM peak period (2016)	15%	
	Capacity & Use	Capacity				% modal share of transit trips during the PM peak period (2016)	10%
	Capacity & Use	Capacity				% modal share of walking and cycling during the PM peak period (2016)	2%
Structures (Roadway Bridges & Culverts)	Capacity & Use	Capacity	Bridges and culverts are accessible for designated users and modes of transport	Growth & Utilization	% roadway bridges and structural culverts with loading restriction (# with restriction / total #) (O.Reg.588)	1.50%	
	Capacity & Use	Capacity		Growth & Utilization	% roadway bridges and structural culverts with dimensional restriction - vertical clearance (# with restriction / total #) (O.Reg.588)	2.00%	
Walkways & Paths	Capacity & Use	Availability	Pedestrian facilities are present along roadway	Growth & Utilization	Rated performance of sidewalk along roadway network	Good	
	Capacity & Use	Availability	Bicycle facilities are present along roadway network	Growth & Utilization	Rated performance of bicycle facility along the roadway network	Fair	
Overall Transportation	Functionality	Regulatory Compliance	Transportation services comply with regulations	Upgrade	Rated performance related to compliance with legislation or Brampton standard whichever is higher	Very Good	
Structures (Roadway Bridges & Culverts)	Functionality	Enhanced Safety	Roadway bridges are designed to reduce incidents	Upgrade	Rated performance of safety measured as availability of protective barriers to avoid vehicle collision with piers on roadway bridges	Good	
	Functionality	Enhanced Safety		Upgrade	% of roadway bridges & culverts that have sidewalks and railings	0.95	
	Functionality	Enhanced Safety		Upgrade	% of roadway bridges that have parapet walls with end protection (e.g., guiderails)	66%	
Structures (Pedestrian Bridges)	Functionality	Enhanced Safety		Upgrade	% of pedestrian bridges with railings	95%	
Structures (Pedestrian Bridges & Underpasses)	Functionality	Enhanced Safety		Upgrade	% of pedestrian bridges or underpasses including rails lit at night	100%	
Traffic Services	Functionality	Enhanced Safety	Traffic assets support safe road conditions	Upgrade	Rated performance of automated speed enforcement cameras implemented as per plan within the community safety zones	Good	
Traffic Services	Functionality	Enhanced Environment	Transportation services are green and environmentally sustainable	Upgrade	% of streetlights retrofitted with LED lights for more efficient energy consumption (percentage is overall city owned)	57%	
Roadway Network	Quality	Reliability	Roadway network kept in a good state of repair (O.Reg.588: description/images that illustrate the different levels of road class pavement condition)	Renewal	For paved roads in the City, the average pavement condition index (PCI) value (PCI) (O.Reg. 588)	7.60	
Roadway Network	Quality	Reliability		Renewal	% of roadways in fair or better condition	95%	
Structures (Roadway Bridges)	Quality	Reliability	Roadway Bridges are kept in a good state of repair (O.Reg.588: description/images of the condition of bridges and how this would affect use of the bridges)	Renewal	For bridges in the City, the average bridge condition index value (O.Reg. 588)	76.7	
Structures (Culverts)	Quality	Reliability	Culverts are kept in a good state of repair (O.Reg.588: description/images of the condition of culverts and how this would affect use of culverts and how this would affect use of the culverts)	Renewal	For structural culverts in the City, the average bridge condition index value (O.Reg. 588)	77.6	
Structures (Walls, Rails, Gateway Features and Steps)	Quality	Reliability	Walls, Rails, Gateway Features and Steps are kept in a good state of repair	Renewal	Average weighted condition assessment of Structures	Good	
Walkways & Paths	Quality	Reliability	Walkways & Paths kept in a good state of repair	Renewal	Average weighted condition assessment of Walkways and Paths	Good	
Traffic Services	Quality	Reliability	Traffic assets kept in a good state of repair	Renewal	Average weighted condition assessment of Traffic Services	Good	
Overall Transportation	Quality	Reliability	Maintenance work done as and when required	Maintenance	Rated performance based on outstanding maintenance work orders	Good	
Overall Transportation	Quality	Reliability	Operations work done as and when required	Operations	Rated performance based on outstanding operation work orders	Good	
Overall Transportation	Affordability	Financial Sustainability	Transportation services are cost efficient	Financial Sustainability	Annual budgeted expenditure to provide Transportation services - Capital & Operating (\$/household)	\$400.26	

*Based on 2016 Transportation Tomorrow Survey

APPENDIX D
RMS FACTORS REQUIRED TO INFORM
DECISIONS

APPENDIX D

SAMPLE RMS FRAMEWORK TEMPLATE

Risk Factors	Risk Description	Risk Quadrant Category	Likelihood	Consequence	Risk Score	Mitigation Action	Mitigation Cost	Residual Risk
Asset Construction Quality	The quality of infrastructure assumed by the City is subpar quality. This might create the need for earlier than anticipated asset intervention (replacement or major refurbishment)	Financial Risk	Moderate (3)	Major (4)	Moderate (12)	Propose to review the current procedures and process for providing feedback. Develop or update current Handover Standard Operating procedures with Development Engineering department to formalize feedback processes.	Staff costs associated to review	Moderate (8)

Note: The table provides a sample to document RMS factors required to inform the decision-making process.

APPENDIX E

FINANCING STRATEGY: ASSUMPTIONS USED TO DETERMINE REPAIR AND REPLACEMENT ACTIVITIES

Appendix E

Financing Strategy: Assumptions Used to Determine Repair and Replacement Activities

Service	Methodology
Transportation	<p>Roads: Annual provision accounts for the asset renewal needs to maintain assets above PCI thresholds by road type (2 interventions per road). In addition, the annual provision also accounts for road replacement activities over a 50-year timeframe.</p> <p>Bridges: Annual provision accounts for both Bridge/Culvert Reconstruction costs <i>and</i> regular asset rehabilitation expenditures over the planning period.</p> <p>Street Lighting: Annual provision accounts for the rehabilitation <i>and</i> replacement of both Poles and Brackets over the planning period.</p> <p>Sidewalks, Traffic Signals: Annual provision accounts for the rehabilitation <i>and</i> replacement of assets over the planning period.</p> <p>All Other Assets: Annual provision accounts for the replacement of assets over the planning period based on reconstruction cost.</p>
Stormwater	<p>Stormwater Management Ponds: Average annual provision based on the total replacement value of ponds spread equally over the estimated useful life.</p> <p>All Other Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the age of the asset.</p> <p><i>Note: A discount was applied to the annual provisions associated with Sewer conveyance systems to align with the SW revenue identified in the SW Rate Study that is currently implemented. The City undertakes a condition assessment program for the CCTV system that will allow for refinement of useful life assumptions and replacement needs of the SW system in the future.</i></p>
Facilities	<p>Annual provision is based on asset renewal needs and considers two parts to the calculation:</p> <ol style="list-style-type: none"> 1. The first 10-years are based on BCA and BDC information (2022-2030). Annualized for 10 years. 2. “Sherman Dergis” formula for estimating capital funding requirements for a facility for the next 15 years or where BCAs are not available <p>The total investment over the 25-year period is illustrated on an annual basis. Complete asset replacement is not considered in the calculation model.</p>
Transit	<p>Heavy Duty Vehicles (Buses): Annual provision accounts for both regular Bus Refurbishment costs <i>and</i> regular asset replacement (at 18 years) over the planning period. The refurbishments include engine replacements, transmission changes, general refurbishments, etc.</p> <p>Stops, IT Infrastructure, Fare Systems, Signage, and Stock Room: Average annual provision based on the total replacement value of assets spread equally over their estimated remaining useful life</p> <p>All Other Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the age or condition of the asset. When condition is used, the UL of assets are extended relative to the condition applied.</p>
IT	<p>All Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the age of the asset.</p>
City Support Fleet	<p>Licensed Fleet: Annual provision accounts for the replacement of assets over the planning period based on the age and mileage of the asset.</p> <p>All Other Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the age of the asset.</p>

Service	Methodology
Fire	<p>Licensed Vehicles & Apparatus: Annual provision accounts for the replacement of assets over the planning period based on the condition of the asset. When condition is used, the UL of assets are extended relative to the condition applied.</p> <p>All Other Assets: Annual provision accounts for the replacement of assets over the planning period based on the age of the asset.</p>
Parks	<p>Playgrounds: Annual provision accounts for the replacement of playgrounds at the end of the useful life (20 Years).</p> <p>Sportsfields: Annual provision accounts largely for the replacement of the fields' main components such as artificial turf, irrigation system and lights at the end of their useful life. Annual provisions for some portion of the Sports Facilities is based on the replacement of the field as a whole at the end of its useful life with provisions for replacement of lights.</p> <p>Pathways: Annual provision accounts for the replacement of each pathway at the end of its useful life. Replacement schedule is based on Condition, so the UL of assets are extended relative to the condition applied.</p> <p>All Other Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the age or condition of the asset. When condition is used, the UL of assets are extended relative to the condition applied.</p>
Recreation	<p>All Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the age or condition of the asset. When condition is used, the UL of assets are extended relative to the condition applied.</p>
Cultural Services	<p>Public Art: Assumes art will not be replaced and therefore not accounted for in the investment needs.</p> <p>Outdoor Equipment: Average annual provision based on the total replacement value of outdoor equipment spread equally over the estimated useful life.</p> <p>All Other Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the condition of the asset. When condition is used, the UL of assets are extended relative to the condition applied.</p>
Library	<p>Library Software: Average annual provision based on the total replacement value of software spread equally over the estimated useful life.</p> <p>All Other Assets: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the age of the asset.</p>
Animal Services	<p>Equipment: Annual provision accounts for the replacement of assets at the end of their UL over the planning period based on the condition of the asset. When condition is used, the UL of assets are extended relative to the condition applied.</p>

APPENDIX F

FINANCING STRATEGY: KEY REVENUE ASSUMPTIONS APPLIED TO THE FINANCING STRATEGY

Appendix F

Financing Strategy: Key Revenue Assumptions

Revenue Source	Analysis Assumptions
Infrastructure Levy (2%)	<ul style="list-style-type: none"> • Levy maintained over the planning period. This means the dedicated 2% levy is calculated each year on the previous year's taxation revenue. • 2021 Total Contribution = \$76.0 Million. • Assumption beyond 2021 = the base reserve contribution of \$76 Million in 2021 will increase each year the 2% dedicated levy continues to be in force throughout the period. • The increase in contribution will be relative to how much the 2% levy adds to the base (Example: 2022 estimated increase over the 2021 base is approximately \$10 million).
Transit Levy (1%)	<ul style="list-style-type: none"> • Levy maintained over the planning period. This means the dedicated 1% levy is calculated each year on the previous years' taxation revenue. • 2021 Total Contribution = \$11.2 Million. • Assumption beyond 2021 = the base of \$11.2 Million will increase each year the 1% dedicated levy continues to be in force throughout the period. • The increase in contribution will be relative to how much the 1% levy adds to the base (Example: 2022 estimated increase over the 2021 base is approximately \$5 million) • It is not assumed that the entire transit Levy is allocated to R&R activities. Approximately 50% of the annual levy is directed to fund the BTE share of net new growth-related busses).
Growth in Tax Levy Base	<ul style="list-style-type: none"> • The forecast assumes a net growth in tax levy revenues (net of special purpose levies) at 1% each year to account for general growth in the base from new residential and non-residential development. • Revenues are in constant \$2021 and does not make consideration for a change in reassessment or inflation.
Stormwater User Fees	<ul style="list-style-type: none"> • Average annual revenues from the dedicated user fees are assumed at \$24.3 million per annum based on currently budgeted SW fee collection and allowance for annual revenue growth of 2/2% due to new billing units associated with growth. • This amount is set equal to average annual costs and therefore considered to be revenue neutral.
Federal Gas Tax	<ul style="list-style-type: none"> • 2021 = Equal to \$67.5 Million which includes a one-time "doubling" from the government. The allocation, pre-top up, is generally consistent with 5-year average. • Assumption beyond 2021 = assumed to increase relative to population growth as gas tax monies usually are distributed based on population every few years. <ul style="list-style-type: none"> • Entire amount is assumed to be allocated to R&R activities in this CAMP (consistent with current practice). • Other minor one-time confirmed grants included (ICIP funding for cultural services, transit funding, etc.).
Provincial Gas Tax	<ul style="list-style-type: none"> • Totals \$13.3 Million in 2021 and the entire amount is used to offset transit-operating costs. • These funds are not assumed for capital repair and replacement activities in the forecast period (consistent with current practice).

Revenue Source	Analysis Assumptions
PTIF	<ul style="list-style-type: none"> Approximately \$35 million is assumed over the next 10-years, which will be allocated to capital repair and replacement activities for Transit. The remaining \$315 Million is assumed to be directed towards the acquisition of new transit buses (consistent with approach outlined in the DC Study).
One-time Government Funding Top-up	<ul style="list-style-type: none"> Other minor one-time confirmed grants included (ICIP funding for cultural services, transit funding, etc.) Assumption beyond 2021 = Any potential one-time Federal and Provincial grants have not been considered beyond the base year.
DCs	<ul style="list-style-type: none"> Development Charges are used to fund first round growth-related infrastructure and any existing funds in these obligatory accounts are not considered for asset management purposes. That said, Reserve #4 (the City's asset management reserve) has sometimes been used to fund growth-related capital when DCs were not available. It is assumed that future DCs will not be used to repay Reserve #4 in those instances where non-dc sources were used to fund growth capital.
Existing Reserves	<ul style="list-style-type: none"> Approximately \$46.4 million in existing reserve funds are considered and applied towards funding asset repair and replacement activities. Only certain capital related reserves are considered in this study and other dedicated and special purpose reserves are not considered to be "available" for capital asset Repair and Replacement. This total is allocated over 3-years in the CAMPlan (consistent with previous City's AMP methodology). Less than 10% of the total \$591M Reserve and Reserve Funds are considered as other key non-obligatory reserves such as the Legacy Fund (\$95M), General Rate Stabilization (\$85M) or the Community Investment Fund (\$51M) are excluded. Reserve fund balances applied in CAMP are actuals as of year-end 2020.
Existing Taxation & User Fee Revenues	<ul style="list-style-type: none"> Approximately \$148 Million per annum in existing capital related operating and maintenance costs, which are currently funded through existing taxation and user fee revenues is assumed to remain constant over the period to maintain the existing asset base. It is assumed that any new asset acquisitions would result in increased capital operating and maintenance costs that would need to be absorbed by the City and captured in the full life cycle model. This share relates only to capital related operating and maintenance costs (i.e. to maintain parks, maintain fleet or facilities) and does not account for general operating costs which may arise from new infrastructure.

APPENDIX G
ASSET GOVERNANCE &
INTERDEPENDENCY MATRIX

Appendix G

Asset Management Governance Requirements

<i>AM System Element</i>	<i>Documents</i>	<i>Description</i>
Organisational Context	Organisational Strategic Plan or Vision	Ensure clear understanding of the organizational objectives and mission for stakeholders Contain existing strategic plans that relate to the assets (e.g. service goals, sustainability)
Governance and Leadership	Asset Management Policy	Articulates senior management commitment to asset management and continual improvement Provides “top down” direction regarding expectations and mandatory requirements for asset management and defines the key principles that underpin asset management in the municipality
	Asset Management Strategy	Defines what the organization intends to achieve from asset management activities and by when. Identifies and prioritizes key initiatives that support delivery of the asset management policy High-level overview of resources, time scales for implementation
Planning and Decision-Making	Master Plans Asset Management Plans Maintenance Strategies	Provide approach to managing the assets over the short, medium, and long term Outline long-term plans for the assets including service expectations, timelines and funding, and resource requirements
Operation (Service Delivery)		There are resource implications with this clause that need to be considered in an Asset Management Governance Model
Performance and Condition Evaluations	Performance and Condition Reports	There are resource implications with this clause that need to be considered in an Asset Management Governance Model
Stakeholder Engagement		There are resource implications with this clause that need to be considered in an Asset Management Governance Model
Continuous Improvement		There are resource implications with this clause that need to be considered in an Asset Management Governance Model
Resources and Support		There are resource implications with this clause that need to be considered in an Asset Management Governance Model

Source: Letter prepared by GHD to support development of the CAMPlan and the Transportation Asset Management Plan.

APPENDIX G

APPENDIX G
ASSET INTERDEPENDENCE MATRIX

Dependence Matrix	Max Score	City Infrastructure (Technical Levels of Service)											Regional Infrastructure (Technical Levels of Service)			
		Transportation	Stormwater	Facilities	Transit	Corporate Information Technology	Fleet	Fire Services	Parks	Recreation	Cultural Services	Brampton Library	Animal Services	Storm Water (Regional)	Water / Wastewater (Regional)	Roads (Regional)
Transportation	12	Strong Dependence	Moderate Dependence	Low Dependence	Moderate Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence
Stormwater	12	Moderate Dependence	Strong Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence
Facilities	12	Moderate Dependence	No Dependence	Strong Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Strong Dependence	Strong Dependence	Strong Dependence	Strong Dependence	Strong Dependence	Strong Dependence	No Dependence	No Dependence	No Dependence
Transit	12	No Dependence	No Dependence	Moderate Dependence	Strong Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	Moderate Dependence
Corporate Information Technology	12	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Strong Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence
Fleet	12	No Dependence	No Dependence	Moderate Dependence	No Dependence	Moderate Dependence	Strong Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence
Fire Services	12	No Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	No Dependence	Strong Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	Moderate Dependence	No Dependence
Parks	12	Moderate Dependence	Moderate Dependence	Moderate Dependence	No Dependence	No Dependence	Moderate Dependence	No Dependence	Strong Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence
Recreation	12	No Dependence	No Dependence	Moderate Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Strong Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence
Cultural Services	12	No Dependence	No Dependence	Moderate Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Strong Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence
Brampton Library	12	No Dependence	No Dependence	Moderate Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Strong Dependence	No Dependence	No Dependence	No Dependence	No Dependence
Animal Services	12	No Dependence	No Dependence	Moderate Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Moderate Dependence	Strong Dependence	No Dependence	No Dependence	No Dependence
Storm Water (Regional)	12	Moderate Dependence	Moderate Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	Strong Dependence	Moderate Dependence	Moderate Dependence
Water / Wastewater (Regional)	12	Moderate Dependence	Moderate Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	Moderate Dependence	Strong Dependence	Moderate Dependence
Roads (Regional)	12	Moderate Dependence	Moderate Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence	Moderate Dependence	No Dependence	No Dependence	No Dependence	No Dependence	No Dependence	Moderate Dependence	Moderate Dependence	Strong Dependence

>66% Strong Dependence
 34% - 66% Moderate Dependence
 1% - 33% Low Dependence
 0% No Dependence
 Not applicable Not Applicable

APPENDIX H
AIMS ROADMAP

APPENDIX H-1 ASSET INFORMATION MATURITY ASSESSMENT

STATE OF THE LOCAL INFRASTRUCTURE

STATE OF THE LOCAL INFRASTRUCTURE						
		ASSET IDENTIFICATION	ASSET LOCATION	ASSET CLASSIFICATION	PHYSICAL ATTRIBUTE	CONDITION
Service	Asset	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE
Transportation	Roadway Network (incl. Islands)	Intermediate	Intermediate	Intermediate	Intermediate	Advanced
	Structures	Intermediate	Advanced	Intermediate	Intermediate	Advanced
	Walkways & Paths	Intermediate	Intermediate	Intermediate	Intermediate	Advanced
	Traffic Services	Basic	Intermediate	Intermediate	Intermediate	Intermediate
Stormwater	Stormwater Management Ponds	Intermediate	Intermediate	Intermediate	Basic	Basic
	Storm Sewer Systems	Intermediate	Intermediate	Intermediate	Intermediate	Basic
	Oil & Grit Separators	Intermediate	Intermediate	Intermediate	Intermediate	Basic
	Green Infrastructure	Basic	Basic	Basic	Basic	Basic
Facilities	All Facilities	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Transit	Licensed Vehicle Assets	Advanced	Advanced	Advanced	Advanced	Intermediate
	Transit Facilities (On Road)	Advanced	Advanced	Intermediate	Intermediate	Intermediate
	Transit Information Technology Infrastructure	Intermediate	Advanced	Intermediate	Intermediate	Basic
	Specialty Equipment	Intermediate	Advanced	Advanced	Intermediate	Intermediate
Information Technology	End User Information Technology Assets	Intermediate	Advanced	Intermediate	Intermediate	Intermediate
	Information Technology Infrastructure Assets	Basic	Advanced	Intermediate	Intermediate	Intermediate
	Software	Basic	Advanced	Intermediate	Intermediate	Intermediate
City Support Fleet (except Transit, Fire and Parks Fleet)	Licensed Vehicles	Advanced	Intermediate	Intermediate	Intermediate	Intermediate
	Off-Road Vehicles	Advanced	Intermediate	Intermediate	Intermediate	Intermediate
	Fleet Equipment	Advanced	Intermediate	Advanced	Intermediate	Intermediate
Fire Services	Front Line Licensed Vehicles & Apparatus	Advanced	Intermediate	Intermediate	Intermediate	Intermediate
	Support Vehicles	Advanced	Intermediate	Intermediate	Intermediate	Intermediate
	Spare Vehicles	Advanced	Intermediate	Intermediate	Intermediate	Intermediate
	Personal Fire Equipment	Intermediate	Basic	Basic	Intermediate	Basic
Parks	Park Assets	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Street Trees (Forestry and Horticulture)	Intermediate	Basic	Basic	Intermediate	Intermediate
	Cemetery Equipment	Intermediate	Intermediate	Intermediate	Intermediate	Basic
	Parking lots	Basic	Intermediate	Intermediate	Intermediate	Basic
	Small Engine equipment	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Flower Beds (Forestry and Horticulture)	Basic	Basic	Basic	Basic	Basic
Recreation	Equipment and Furniture	Basic	Intermediate	Basic	Basic	Intermediate
Cultural Services	Specialty Equipment and Furniture	Intermediate	Intermediate	Basic	Basic	Intermediate
	Outdoor Equipment	Basic	Intermediate	Basic	Basic	Intermediate
	Public Art	Basic	Basic	Basic	Basic	Basic
Library Services	Furniture & Equipment	Intermediate	Intermediate	Advanced	Intermediate	Basic
	Media Collections	Intermediate	Intermediate	Advanced	Intermediate	Basic
	Library Software	Basic	Advanced	Intermediate	Intermediate	Intermediate
Animal Services	Equipment	Basic	Basic	Basic	Basic	Basic

APPENDIX H-1 ASSET INFORMATION MATURITY ASSESSMENT

		LEVEL OF SERVICE		LIFE CYCLE STRATEGY		
		PERFORMANCE	PREDICTIVE	RISK / CRITICALITY	WORK MANAGEMENT	LIFECYCLE
Service	Asset	AIMS EXISTING STATE				
Transportation	Roadway Network (incl. Islands)	Basic	Intermediate	Basic	Intermediate	Intermediate
	Structures	Basic	Intermediate	Basic	Intermediate	Intermediate
	Walkways & Paths	Basic	Basic	Basic	Intermediate	Intermediate
	Traffic Services	Basic	Basic	Basic	Intermediate	Intermediate
Stormwater	Stormwater Management Ponds	Basic	Basic	Basic	Basic	Basic
	Storm Sewer Systems	Basic	Basic	Basic	Basic	Basic
	Oil & Grit Separators	Basic	Basic	Basic	Basic	Basic
	Green Infrastructure	Basic	Basic	Basic	Basic	Basic
Facilities	All Facilities	Intermediate	Intermediate	Basic	Basic	Intermediate
Transit	Licensed Vehicle Assets	Advanced	Intermediate	Basic	Intermediate	Intermediate
	Transit Facilities (On Road)	Advanced	Basic	Basic	Intermediate	Basic
	Transit Information Technology Infrastructure	Basic	Intermediate	Intermediate	Intermediate	Basic
	Specialty Equipment	Basic	Basic	Basic	Basic	Basic
Information Technology	End User Information Technology Assets	Intermediate	Advanced	Intermediate	Intermediate	Intermediate
	Information Technology Infrastructure Assets	Intermediate	Advanced	Intermediate	Intermediate	Intermediate
	Software	Intermediate	Advanced	Intermediate	Intermediate	Intermediate
City Support Fleet (except Transit, Fire and Parks Fleet)	Licensed Vehicles	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Off-Road Vehicles	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Fleet Equipment	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Fire Services	Front Line Licensed Vehicles & Apparatus	Intermediate	Intermediate	Intermediate	Advanced	Intermediate
	Support Vehicles	Intermediate	Intermediate	Intermediate	Advanced	Intermediate
	Spare Vehicles	Intermediate	Intermediate	Intermediate	Advanced	Intermediate
	Personal Fire Equipment	Intermediate	Intermediate	Intermediate	Advanced	Intermediate
Parks	Park Assets	Intermediate	Intermediate	Basic	Intermediate	Intermediate
	Street Trees (Forestry and Horticulture)	Intermediate	Basic	Basic	Basic	Basic
	Cemetery Equipment	Basic	Basic	Basic	Basic	Basic
	Parking lots	Intermediate	Intermediate	Basic	Basic	Intermediate
	Small Engine equipment	Intermediate	Intermediate	Basic	Basic	Basic
	Flower Beds (Forestry and Horticulture)	Basic	Basic	Basic	Basic	Basic
Recreation	Equipment and Furniture	Intermediate	Intermediate	Basic	Basic	Intermediate
Cultural Services	Specialty Equipment and Furniture	Basic	Basic	Basic	Basic	Basic
	Outdoor Equipment	Basic	Basic	Basic	Basic	Basic
	Public Art	Basic	Basic	Basic	Basic	Basic
Library Services	Furniture & Equipment	Basic	Basic	Basic	Basic	Basic
	Media Collections	Basic	Basic	Basic	Basic	Basic
	Library Software	Intermediate	Advanced	Intermediate	Intermediate	Intermediate
Animal Services	Equipment	Basic	Basic	Basic	Basic	Basic

APPENDIX H-1 ASSET INFORMATION MATURITY ASSESSMENT

		FINANCING STRATEGY					DATA MANAGEMENT	
		ASSET VALUES	EXPENDITURE FORECASTS	FUNDING SOURCES	FUNDING GAPS	FUNDING SUSTAINABILITY	GOVERNANCE	COLLECTION PROTOCOLS
Service	Asset	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE	AIMS EXISTING STATE
Transportation	Roadway Network (incl. Islands)	Intermediate	Intermediate	Basic	Basic	Basic	Basic	Intermediate
	Structures	Intermediate	Intermediate	Basic	Basic	Basic	Basic	Intermediate
	Walkways & Paths	Intermediate	Intermediate	Basic	Basic	Basic	Basic	Intermediate
	Traffic Services	Intermediate	Intermediate	Basic	Basic	Basic	Basic	Intermediate
Stormwater	Stormwater Management Ponds	Basic	Intermediate	Advanced	Intermediate	Advanced	Basic	Intermediate
	Storm Sewer Systems	Intermediate	Intermediate	Advanced	Intermediate	Advanced	Basic	Intermediate
	Oil & Grit Separators	Intermediate	Intermediate	Advanced	Intermediate	Advanced	Basic	Intermediate
	Green Infrastructure	Basic	Intermediate	Basic	Intermediate	Intermediate	Basic	Basic
Facilities	All Facilities	Intermediate	Intermediate	Basic	Basic	Basic	Basic	Basic
Transit	Licensed Vehicle Assets	Advanced	Advanced	Advanced	Advanced	Advanced	Basic	Intermediate
	Transit Facilities (On Road)	Advanced	Advanced	Advanced	Advanced	Advanced	Basic	Intermediate
	Transit Information Technology Infrastructure	Intermediate	Intermediate	Advanced	Intermediate	Advanced	Intermediate	Intermediate
	Specialty Equipment	Intermediate	Intermediate	Advanced	Advanced	Advanced	Basic	Intermediate
Information Technology	End User Information Technology Assets	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Information Technology Infrastructure Assets	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Software	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
City Support Fleet (except Transit, Fire and Parks Fleet)	Licensed Vehicles	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Off-Road Vehicles	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Fleet Equipment	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Fire Services	Front Line Licensed Vehicles & Apparatus	Advanced	Intermediate	Intermediate	Intermediate	Intermediate	Advanced	intermediate
	Support Vehicles	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Advanced	intermediate
	Spare Vehicles	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Advanced	intermediate
	Personal Fire Equipment	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	intermediate	Basic
Parks	Park Assets	Basic	Intermediate	Intermediate	Basic	Basic	intermediate	Basic
	Street Trees (Forestry and Horticulture)	Basic	Basic	Intermediate	Basic	Basic	intermediate	Basic
	Cemetery Equipment	Basic	Basic	Intermediate	Basic	Intermediate	intermediate	Basic
	Parking lots	Basic	Intermediate	Intermediate	Intermediate	Intermediate	Basic	intermediate
	Small Engine equipment	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	intermediate	Intermediate
	Flower Beds (Forestry and Horticulture)	Basic	Basic	Basic	Basic	Basic	intermediate	Basic
Recreation	Equipment and Furniture	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Basic	Basic
Cultural Services	Specialty Equipment and Furniture	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Basic
	Outdoor Equipment	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Basic
	Public Art	Basic	Basic	Basic	Basic	Basic	Basic	Basic
Library Services	Furniture & Equipment	Basic	Basic	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
	Media Collections	Basic	Basic	Intermediate	intermediate	Intermediate	Intermediate	Intermediate
	Library Software	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Animal Services	Equipment	Basic	Basic	Basic	Basic	Basic	Basic	Basic

APPENDIX H-2
Summary of AIMS Roadmap

<i>Service Area</i>	<i>Phase 1 (2021-2023)</i>	<i>Phase 2 (2023-2025)</i>	<i>Phase 3 (2026 and beyond)</i>
Transportation	<ul style="list-style-type: none"> • Continued implementation of CityWorks: Track what lifecycle activities have actually been undertaken on assets to ensure they are consistent with those of the recommendations from the risk assessment. • Traffic: Complete Asset Inventories. Develop plan for incorporation Traffic control lights in CityWorks. • Implement data quality protocols - data quality assurance and align stewardship as more processes/inspections are digitised. <ul style="list-style-type: none"> ○ Improve data transfer from developers: Implement working group with Development Engineering, Capital Works and Operations to establish asset information standards for each asset type. ○ Formalize the process for collection of data and its management in GIS. • Lifecycle prediction models have been developed for most of the Roads and Bridges with validation activities to be completed. 	<ul style="list-style-type: none"> • Roll out Risk framework to all asset classes starting with Roads, Bridges and Culverts. • Develop lowest life cycle strategy based on the lifecycle information/risk • Integrate the project prioritization into the budget process to help inform decision making. This decision matrix would need to give consideration for the technical levels of service of each asset. • Continue to refine systems, tools and processes to enable all asset lifecycle information to be captured and be available for analysis by SMEs • Tools: evaluate the use of sensors and emerging technologies and complete proof of concept. • 100% completion of the asset inventories and associated work flows for maintaining assets and information • Review, enhance and integrate systems for optimised lifecycle strategies (operation/maintenance, renewal, replacement and expansion) - Projectwise, CityWorks, GIS and dTIMS , and any other applicable systems 	<ul style="list-style-type: none"> • Start lifecycle strategies integration with financial systems • Implement sensors based on the plan and dependent on the asset class.

Note: This table outlines specific recommendations for each service area on various asset data topics. For general recommendations related to each data category please refer to Table 10-3 of the Asset Information Management Strategy (Section 10) of the CAMPlan: Phased Approach to Implementation of AIMS.

APPENDIX H-2
Summary of AIMS Roadmap

<i>Service Area</i>	<i>Phase 1 (2021-2023)</i>	<i>Phase 2 (2023-2025)</i>	<i>Phase 3 (2026 and beyond)</i>
Stormwater	<ul style="list-style-type: none"> • Active holistic review of business requirements • Active project to implement stormwater assets into CityWorks including condition assessment (CCTV); establish asset governance • Close gap on inventories in GIS (using mobile tools): outfalls, watercourses, SW syphons, driveway culverts, ditches, ponds, cooling trenches, catchbasins in parks and easements, ditches, green roofs, and bafflers. Start implementing LID's and other added assets in GIS/City Works • Review and document how existing LOS measures are tracked and improve tracking by identifying attributes and actions required to improve tracking and work on collecting the data. 	<ul style="list-style-type: none"> • 100% completion of the asset inventories for City owned stormwater infrastructure including LID's and associated work flows and governance for maintaining asset information. • Complete implementation of the stormwater assets in CityWorks • 2024: Address gaps in stormwater management facilities on private property, assets owned and/or operated by developers (ECA requirement). • 2025: Delineate sewersheds and characterize the level of treatment within each and address gaps in culverts (ECA) 	<ul style="list-style-type: none"> • Mature solutions and strategic information (including QA processes). • Implement the use of sensors and emerging technologies for data acquisition • Continue improvements of data over time and ensure continuous monitoring of data gaps in stormwater data systems
Facilities	<ul style="list-style-type: none"> • Develop processes of incorporation of BCA's into Asset Management planning through VFA implementation - condition updates, investment needs identified for next 10 years. Streamline BCA's validation process. Consider Facilities CRV's to be incorporated into VFA and be adjusted for asset management practices. Implement unique asset IDs through all involved systems and reports. Implement VFA according to the project plan (including asset location, physical attributes, conditions and Uniformat classification). • Initial data collection will be manual on mobile devices • VFA reference includes both VFA and FAMIS solution. • Establish/review of the City Facilities furniture data governance, design and implement the operating model • Implement VFA for managing and tracking lifecycle activities and costs. This project is on-going. 	<ul style="list-style-type: none"> • Start implementation of automatic data collection through IoT devices to feed into preventative and proactive maintenance processes and life cycle management • Complete the integration between VFA, Famis and Ebuilder for effective information transfer from contractors on new or renovated facilities • Implement solution for small equipment and furniture asset management, consider VFA • Complete integration of lifecycle costs in VFA based on BCA identified needs on a component basis 	<ul style="list-style-type: none"> • Continue improvements of data over time and ensure continuous monitoring of data gaps of facility data systems • Continue integration of lifecycle costs determined through BCAs regularly, min 3 year cycle basis.

Note: This table outlines specific recommendations for each service area on various asset data topics. For general recommendations related to each data category please refer to Table 10-3 of the Asset Information Management Strategy (Section 10) of the CAMPlan: Phased Approach to Implementation of AIMS.

APPENDIX H-2
Summary of AIMS Roadmap

<i>Service Area</i>	<i>Phase 1 (2021-2023)</i>	<i>Phase 2 (2023-2025)</i>	<i>Phase 3 (2026 and beyond)</i>
Transit	<ul style="list-style-type: none"> • Confirm inventory management solution for Transit specialty equipment and on-road facilities • Implement Asset Works (M5) - Corporate AM module for managing lifecycle of the vehicles • Review adding reporting capabilities to Yard Management • Improvements to monitoring and maintaining automated vehicle-monitoring systems. To be validated by survey • Review and confirm system requirements and data attributes as the City transitions to more electric and hybrid vehicles 	<ul style="list-style-type: none"> • Transit facilities asset information to be fully implemented through the IT solution • Implement the outcomes of phase 1 	<ul style="list-style-type: none"> • Continue improvements of data over time and ensure continuous monitoring of data gaps of Transit data systems
Information Technology	<ul style="list-style-type: none"> • Complete the inventory and valuations for corporate software • Implement ISM for managing and tracking lifecycle activities and costs 	<ul style="list-style-type: none"> • Implement the SOLI reporting model in the appropriate solution for all IT assets. 	<ul style="list-style-type: none"> • Continue improvements of data over time and ensure continuous monitoring of data gaps of IT data systems
City Support Fleet	<ul style="list-style-type: none"> • Further align Fleet vehicle Condition framework with City AM practices - review if system improvement is required for condition inspections. Review how fleet management solutions can better support the outcome of the Sustainable Fleet Strategy • Review and confirm system requirements and data attributes as the City transitions to more electric and hybrid vehicles • Evaluate Asset Works (M5) - Corporate AM module implementation for managing lifecycle • Review if it's feasible to conduct overall comprehensive conditions regularly (not safety inspections) or UL should be adjusted for certain vehicles based on the vehicle model and based on the Service area and use patterns. 	<ul style="list-style-type: none"> • Implement the outcomes of phase 1 	<ul style="list-style-type: none"> • Continue improvements of data over time and ensure continuous monitoring of data gaps of City Support Fleet data systems

Note: This table outlines specific recommendations for each service area on various asset data topics. For general recommendations related to each data category please refer to Table 10-3 of the Asset Information Management Strategy (Section 10) of the CAMPlan: Phased Approach to Implementation of AIMS.

APPENDIX H-2
Summary of AIMS Roadmap

<i>Service Area</i>	<i>Phase 1 (2021-2023)</i>	<i>Phase 2 (2023-2025)</i>	<i>Phase 3 (2026 and beyond)</i>
Fire	<ul style="list-style-type: none"> • Further align Fire vehicle fleet Condition framework with City AM practices - review if system improvement is required for condition inspections. • Review and confirm system requirements and data attributes as the City transitions to more electric and hybrid vehicles • Evaluate Asset Works (M5) - Corporate AM module implementation for managing lifecycle • Review if it's feasible to conduct overall comprehensive conditions regularly (not safety inspections) or UL should be adjusted for certain vehicles based on the vehicle model and based on the Service area and use patterns possibly as part of asset management module. • Confirm inventory for the Fire Specialty equipment and implement management solution as required. 	<ul style="list-style-type: none"> • Implement the outcomes of phase 1 	<ul style="list-style-type: none"> • Continue improvements of data over time and ensure continuous monitoring of data gaps of Fire data systems
Parks	<ul style="list-style-type: none"> • Complete and continue to maintain Park Asset inventory in GIS and CityWorks. • CityWorks has been implemented for work order management and lifecycle activities tracking • Establish processes for new asset information transfer from developers to operations 	<ul style="list-style-type: none"> • Implement the outcomes of phase 1 	<ul style="list-style-type: none"> • Continue improvements of data over time and ensure continuous monitoring of data gaps of Fire data systems
Recreation	<ul style="list-style-type: none"> • Recreation equipment inventory, work order management and lifecycle activities and costs tracking solution to be implemented (evaluate the Famis solution first) • Identify asset classes that require to be tracked outside of the existing core asset management solutions. • Identify information specific attributes required in addition to the standard City attributes • Establish and implement digital inspection procedures • Develop methodology to capture lifecycle activity costs for major equipment assets • Finalise asset data governance specifically between Parks and Recreation in regards to Recreation parks assets 	<ul style="list-style-type: none"> • Continue implementation of the Recreation equipment inventory and life cycle management systems, • Implement system to capture lifecycle activity costs for major equipment assets - review integration with financial systems 	<ul style="list-style-type: none"> • Continue improvements of data over time and ensure continuous monitoring of data gaps of Recreation data systems

Note: This table outlines specific recommendations for each service area on various asset data topics. For general recommendations related to each data category please refer to Table 10-3 of the Asset Information Management Strategy (Section 10) of the CAMPlan: Phased Approach to Implementation of AIMS.

APPENDIX H-2
Summary of AIMS Roadmap

<i>Service Area</i>	<i>Phase 1 (2021-2023)</i>	<i>Phase 2 (2023-2025)</i>	<i>Phase 3 (2026 and beyond)</i>
Cultural Services	<ul style="list-style-type: none"> Identify asset classes that require to be tracked outside of the existing core asset management solutions. Evaluate if current ISM or Famis solution or other solution can be implemented for equipment and furniture Establish condition assessments protocols in line with the corporate framework. Evaluate information condition protocols including mobile option. Develop methodology to capture lifecycle activity costs for smaller/lower value assets 	<ul style="list-style-type: none"> Implement the outcomes of phase 1 Begin implementing methodology to capture lifecycle activity costs for smaller/lower value assets 	<ul style="list-style-type: none"> Continue improvements of data over time and ensure continuous monitoring of data gaps of Cultural Services data systems Full development of lifecycle costs at a service area level even for smaller/lower value assets
Library	<ul style="list-style-type: none"> Review and determine system and data requirements moving forward 	<ul style="list-style-type: none"> Implement the outcomes of phase 1 Begin implementing methodology to capture lifecycle activity costs for smaller/lower value assets 	<ul style="list-style-type: none"> Continue improvements of data over time and ensure continuous monitoring of data gaps of Library data systems Full development of lifecycle costs at a service area level even for smaller/lower value assets
Animal Services	<ul style="list-style-type: none"> Review and determine system and data requirements moving forward 	<ul style="list-style-type: none"> Implement the outcomes of phase 1 	<ul style="list-style-type: none"> Continue improvements of data over time and ensure continuous monitoring of data gaps of Animal Services data systems Full development of lifecycle costs at a service area level even for smaller/lower value assets

Note: This table outlines specific recommendations for each service area on various asset data topics. For general recommendations related to each data category please refer to Table 10-3 of the Asset Information Management Strategy (Section 10) of the CAMPlan: Phased Approach to Implementation of AIMS.