AECOM

SAULT STE. MARIE

CITY OF SAULT STE. MARIE

PROTECTIVE SERVICES ASSET MANAGEMENT PLAN

FINAL | 60735219 | June 2025

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AECOM: 2015-04-13

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List of Abbreviations

Abbreviation	Description
AM	Asset Management
AMP	Asset Management Plan
CCBF	Canada Community-Building Fund
CIBI	Canadian Infrastructure Benchmarking Initiative
CMMS	Computerized Maintenance Management System
DSSAB	District Social Services Administration Board
Ea.	Each
EDU	Explosive Disposal Unit
ESL	Expected Service Life
ESU	Emergency Services Unit
FTE	Full-Time Equivalent
FPPA	Fire Protection and Prevention Act
FPPE	Fire Prevention and Public Education
GIS	Geographic Information System
ICI	Industrial, Commercial, and Institutional
KPI	Key Performance Indicator
LoS	Level of Service
MAMP	Municipal Asset Management Program
NFPA	National Fire Protection Association
O&M	Operations and Maintenance
OCIF	Ontario Community Infrastructure Fund
O. Reg.	Ontario Regulation
RSL	Remaining Service Life
SME	Subject Matter Experts

1 Introduction

AECOM Canada ULC (AECOM) was retained by The City of Sault Ste. Marie (the "City") to update the asset management plan developed in 2024 to comply with the third phase (Phase III) of the Ontario Regulation 588/17 (O. Reg. 588/17) requirements in respect to its core municipal infrastructure assets. The scope of work is outlined in AECOM's proposal dated September 20, 2024, and subsequent project correspondence.

1.1 Background

Sault Ste. Marie is a City located on the St. Mary's River, North of the United States of America, bordering on two of the Great Lakes with an estimated population of 76,731 (2021)[1]. The City provides a wide range of public services to their constituents, with the public expectation that these services function efficiently at a certain level. The provision of these services requires the management of the physical assets to meet desired service levels, manage risks, and provide long-term financial sustainability. These assets include, but are not limited to roads, bridges, sidewalks, wastewater assets, stormwater management assets, landfill, fleets, buildings, and parks.

In accordance with the terms of reference for this assignment, it is understood that the City is proceeding with an asset management plan to comply with the third phase of the regulatory requirements in respect to its non-core municipal infrastructure assets, in accordance with O. Reg. 588/17, by July 1, 2025. The non-core assets to be covered in the scope, as defined by the regulation, include the City's protective services, solid waste, parks and cemetery, facilities, fleet, roadway appurtenances, and active transportation.

1.2 Scope and Objectives

In 2015, the City's first Asset Management Plan (AMP) was published. In 2019, by the City Council approval, the Strategic Asset Management (AM) Policy for the City came into effect. In 2022, the City published its core asset AMPs. Following that, the City developed the AMPs for its non-core assets in 2024.

Organizations that implement good AM practices will benefit from improved business and financial performance, effective investment decisions, and better risk management. Stakeholders can expect lower total asset life cycle costs, higher asset performance, and confidence in sustained future performance.

The AMPs capture the City's infrastructure assets and deliver a financial and technical roadmap for the management of the City's assets. The intent of this plan is to provide the means for the City to maximize value from its assets, at the lowest overall expense while, at the same time, enhance service levels for its residents.

The objective of Phase III is to update all the core and non-core AMPs to comply with the July 1st, 2025, deadline set by O. Reg. 588/17. Phase III will update the AMP by incorporating the latest asset information, with a focus on:

- Updating the current AMPs to integrate proposed Levels of Service (LoS).
- Defining the lifecycle activities and associated costs required to achieve those LoS.
- Identify the available funding and any funding shortfalls.
- Document the risk(s) of failing to meet the proposed LoS for all asset classes over a 10-year period.

This AMP is an update of the 2024 AMP for the City's Protective Services assets, in-scope assets are shown in **Table 1-1**. Other core and non-core AMPs are presented under separate reports.

[1] Statistics Canada, 2021 Census of Population, Sault Ste. Marie, Census agglomeration. Information accessed May 8, 2025. Link: https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/page.cfm?lang=E&topic=1&dguid=2021S0504590

Table 1-1: In-Scope Protective Services Assets

Asset Category	Asset Sub-Categories
Police Services	Administration, Communication Services, Explosive Disposal Unit (EDU), Emergency Services Unit (ESU), Forensics, Information Services, Intelligence, Investigations, Patrol, Support, Traffic
Fire Services	Firehall #1, Firehall #2, Firehall #3, Firehall #4, Fire Department

The following elements are included within the scope of this AMP:

- Asset hierarchy, a summary of the asset inventory, including the replacement cost of the assets, the average age of the assets, the condition of the assets, and data gaps analysis (**Sections 2**).
- The City's LoS objectives, stakeholder identification, current LoS determined, proposed service levels, LoS forecast, and future demand drivers (**Section 3**).
- Asset lifecycle management strategies, lifecycle activities and funding needs to achieve proposed LoS, risk of not meeting proposed LoS, available funding and funding gap, and alternative (non-financial) strategies to manage funding shortfall (**Section 4** and **Section 5**)

1.3 Asset Management Provincial Requirements

The O. Reg. 588/17 came into effect in 2018 and stipulates specific AM requirements to be in place within Ontario municipalities by certain key dates (**Table 1-2**). The development of this AMP is one of the steps to guide the City towards meeting the July 1st, 2025 deadline.

Table 1-2: O. Reg. 588/17: AM Planning for Municipal Infrastructure

Deadline Date	Regulatory Requirement
July 1st, 2019	All municipalities are required to prepare their first Strategic AM Policy.
July 1st, 2022	All municipalities are required to have an AM Plan for its entire core municipal infrastructure (i.e., water, protective services, stormwater, roads, and bridges & culverts).
July 1st, 2024	All municipalities are required to have an AM Plan for infrastructure assets not included under their core assets.
July 1st, 2025	All AM Plans must include information about the LoS that the municipality proposes to provide, the lifecycle activities and associated costs needed to achieve those LoS, available funding, any funding shortfalls, and the risk of failing to meet the proposed LoS.

2 State of Infrastructure

Protective services encompass a diverse range of assets crucial to both the police department and fire department to ensures the optimal use of resources, enhancing operational efficiency and readiness. The City's protective services include essential assets such as vehicles, equipment, and communication devices, which are vital for emergency responses. The inventory of protective services is a comprehensive catalog detailing the quantity, condition, and specifications of these components within the City. By analyzing the inventory and assessing the data gaps, this section facilitates informed decision-making and strategic resource allocation, providing essential insights into the maintenance needs and financial requirements.

2.1 Asset Hierarchy

To fulfill the requirements of O. Reg. 588/17 and to pave the way for robust long range asset management planning, the City necessitates a logically segmented asset breakdown structure (hierarchy) within the ambit of this AMP. Achieving this requires a sufficiently granular classification of protective services' assets, enabling the identification of individual assets due for renewal. Striking the right balance is also crucial, as there is a fine trade-off between ensuring adequate granularity to provide essential information and avoiding excessive granularity that could make the effort to collect and manage information more burdensome than the usefulness derived from it.

In **Figure 2-1**, the hierarchy of protective services is illustrated, showcasing the two main departments: police services and fire services. Each category is further broken down into subcategories. This asset hierarchy establishes a logical indexing of the City's protective services' assets, categorizing them into primary (parent) and secondary (child- and grandchild) assets. Such a structure forms the foundational framework for subsequent discussions and analysis, enabling the drill-down to a specific asset within the hierarchy to support maintenance planning or track costs at the asset level or higher levels.

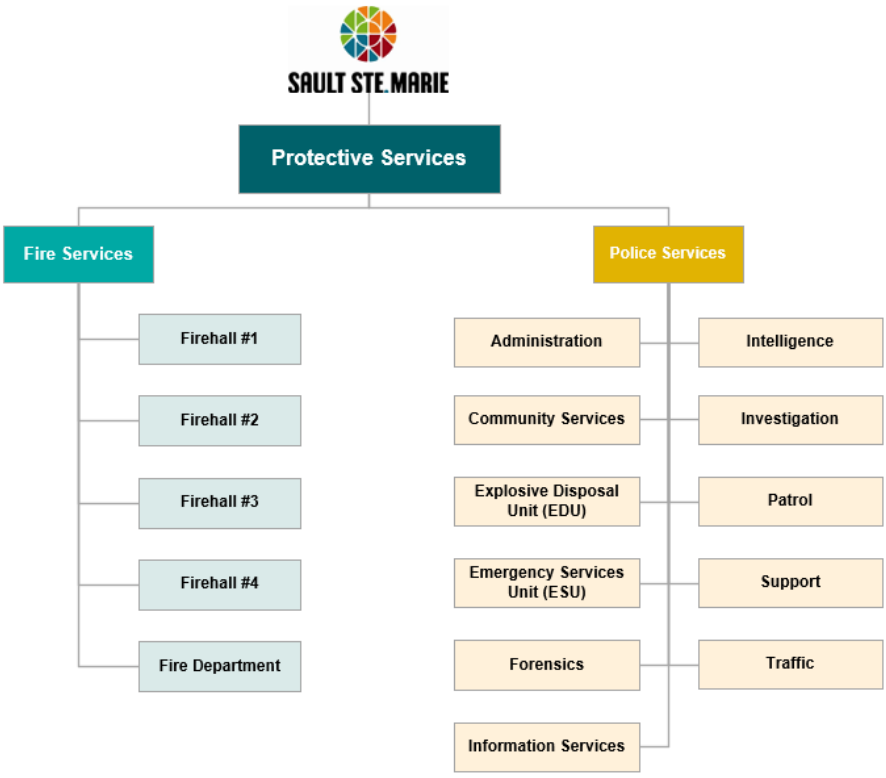

Figure 2-1: City of Sault Ste. Marie Protective Services Asset Hierarchy*

**Buildings and facilities are addressed in the Facilities AMP.*

2.2 Current State of the Assets

2.2.1 Asset Inventory

Table 2-1 presents the summary of the City's protective services inventory.

Table 2-1: Protective Services Inventory Summary

Asset Group	Asset Category	Asset Sub-Category	Quantity	Unit of Measure
Protective Services	Police Services	Administration	27	Ea.
		Communication Services	1	Ea.
		Explosive Disposal Unit (EDU)	5	Ea.
		Emergency Services Unit (ESU)	29	Ea.
		Forensics	13	Ea.
		Information Services	2	Ea.
		Intelligence	3	Ea.
		Investigations	28	Ea.
		Patrol	54	Ea.
		Support	112	Ea.
		Traffic	12	Ea.
	Fire Services	Firehall #1	35	Ea.
		Firehall #2	5	Ea.
		Firehall #3	5	Ea.
		Firehall #4	14	Ea.
		Fire Department	46	Ea.
		Total of Police Services	**286**	Ea.
		Total of Fire Services	**105**	Ea.
		Total	**391**	Ea.

2.2.2 Current Asset Replacement Value

The asset replacement value is the estimated cost that would be incurred to replace an existing asset with a new one of similar functionality, at current market prices. This value represents the monetary amount required to reproduce or procure an asset equivalent to the one being assessed. Examining the distribution of asset replacement values allows the City to comprehend which asset categories hold the highest value for both the City and the public.

Table 2-2 presents the unit replacement cost and the total replacement value for distinct protective services asset categories within the City. Notably, the Patrol sub-category for police services constitutes the most significant portion, accounting for a replacement value of approximately $10 million, followed by the Support sub-category at $5 million, Investigations at $916,000, and Emergency Services Unit (ESU) at $895,000. For fire services, assets at firehall #1 has the highest replacement value at $8.2 million, with Firehall #4's $6.2 million coming in at second. The combined replacement value for all of protective services amounts to approximately $41 million.

It is noted that the replacement costs are estimated based on a Class 4[2] cost estimation approach. These estimates are typically prepared with limited information, resulting in fairly wide accuracy ranges. Class 4 estimates serve various purposes, including project screening, feasibility assessment, concept evaluation, and preliminary budget approval.

They are utilized for detailed strategic planning, business development, project screening at more advanced stages, alternative scheme analysis, confirmation of economic and technical feasibility, and approval to proceed to the next stage.

Typically, depending on the construction complexity of the project, relevant reference information, and other associated risks, the accuracy ranges for Class 4 estimates fall within the following bounds (could exceed based on various criteria):

- On the lower side, -10% to -20%
- On the higher side, +20% to +30%

It is worth noting that the total replacement values have been marked up by 15%, out of which 5% accounts for engineering and project management cost and 10% for contingency cost.

Table 2-2: Protective Services Current Replacement Value

Asset Group	Asset Category	Asset Sub-Category	Total Replacement Value (2025)
Protective Services	**Police Services**	Administration	$881,000
		Communication Services	$28,000
		Explosive Disposal Unit (EDU)	$218,000
		Emergency Services Unit (ESU)	$895,000
		Forensics	$155,000
		Information Services	$18,000
		Intelligence	$130,000
		Investigations	$916,000
		Patrol	$10,357,000
		Support	$4,980,000
		Traffic	$132,000
	Fire Services	Firehall #1	$8,220,000
		Firehall #2	$3,204,000
		Firehall #3	$2,371,000
		Firehall #4	$6,179,000
		Fire Department	$2,435,000
		Total of Police Services	**$18,710,000**
		Total of Fire Services	**$22,409,000**
		Total	**$41,119,000**

[2] Association for the Advancement of Cost Engineering (AACE) International Recommended Practice No. 18R-97. Cost Estimate Classification System - As Applied In Engineering, Procurement, and Construction for the Building and General Construction Industries, 2020, Retrieved in March 2024

2.2.3 Age and Remaining Service Life

In practice, various assets will deteriorate at different rates and not necessarily linearly over time. However, it is pivotal to keep in mind the level of effort required to predict failure compared with the asset value. More sophisticated deterioration modelling may be warranted for very high value assets, whilst the cost of deterioration modeling for low-value assets may very well exceed the replacement cost of the asset. The actual service life can vary significantly from the estimated service life (ESL). The latter is defined as the period over which an asset is available for use and able to provide the required LoS at an acceptable risk and serviceability (i.e., without unforeseen costs of disruption for maintenance and repair). In some instances, a variation in expected vs. actual service life is evident due to the following factors:

- **Operating conditions and demands:** Some assets are operated intermittently or even infrequently or are being operated at a lower demand than their designed capacity. Thus, the actual operating "age" of the asset is reduced.
- **Environment:** Some assets are exposed to very aggressive environmental conditions (e.g., corrosive chemicals), while other assets are in relatively benign conditions; thus, the deterioration of assets is affected differently.
- **Maintenance:** Assets are maintained through refurbishment or replacement of components, which prolongs the service life of the asset.
- **Technological Obsolescence:** Some assets can theoretically be maintained indefinitely, although considerations such as cost to maintain the asset, its energy efficiency, and the cost to upgrade to an updated technology that would result in cost savings are likely to render this approach uneconomical.

Initially, the average age was calculated based on the purchased and installation year of each individual asset. Then, based on the age of the asset and the ESL (collected from a State of Infrastructure Workshop with the City, and additional information provided by the City), the remaining service life (RSL) was calculated. It should be noted that in the case that age was higher compared to ESL, RSL was considered as zero.

Table 2-3 and **Figure 2-2** present the weighted average age, weighted average ESL, and remaining service life for various asset sub-categories within the City's protective services system. The average age of the assets ranges from 5 to 21 years with average ESLs that vary from 9 to 19 years.

Table 2-3: Protective Services Average Age, ESL, and Remaining Service Life

Asset Group	Asset Category	Asset Sub-Category	Weighted Average Age	Weighted Average ESL	Remaining Service
Protective Services	Police Services	Administration	8	19	11
		Communication Services	8	15	7
		Explosive Disposal Unit (EDU)	19	18	0
		Emergency Services Unit	11	16	4
		Forensics	21	18	0
		Information Services	14	10	0
		Intelligence	8	15	7
		Investigations	9	16	7
		Patrol	2	11	10
		Support	7	13	7
		Traffic	13	16	3
	Fire Services	Firehall #1	8	14	6
		Firehall #2	8	15	7
		Firehall #3	13	15	3

Asset Group	Asset Category	Asset Sub-Category	Weighted Average Age	Weighted Average ESL	Remaining Service
		Firehall #4	11	15	4
		Fire Department	5	9	4

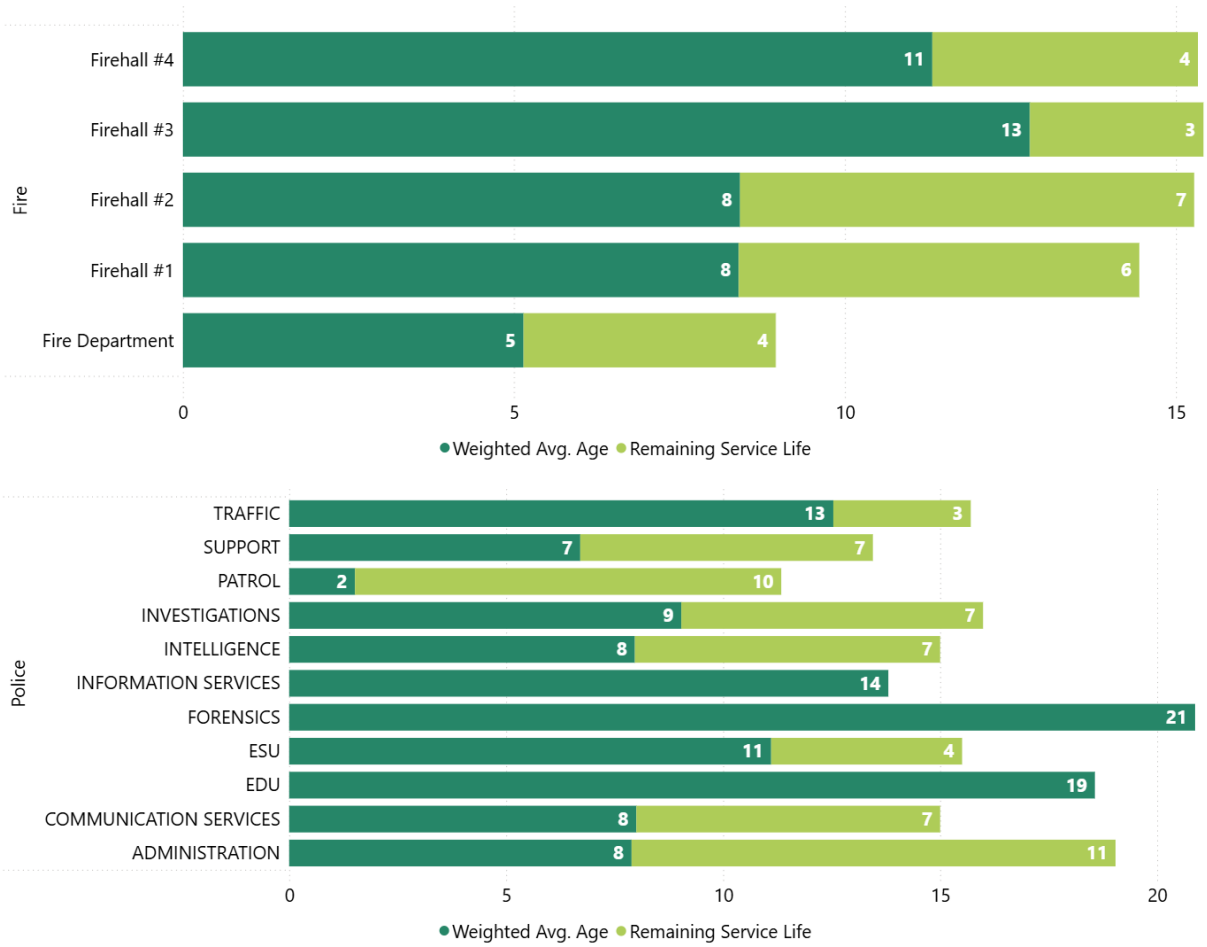

Figure 2-2: Protective Services Weighted Average Age and Remaining Service Life

Figure 2-3 shows the installation profile of the City's protective services according to asset sub-categories. Most assets are fairly new for both police and fire services. Most of the assets for fire services are after 2000, as only $800,000 worth of assets are remaining from pre-2000. For police services, the vast majority of assets are installed / purchased after 2020, with only $1.6 million for 2000 to 2009, and $4.8 million for 2010 to 2019.

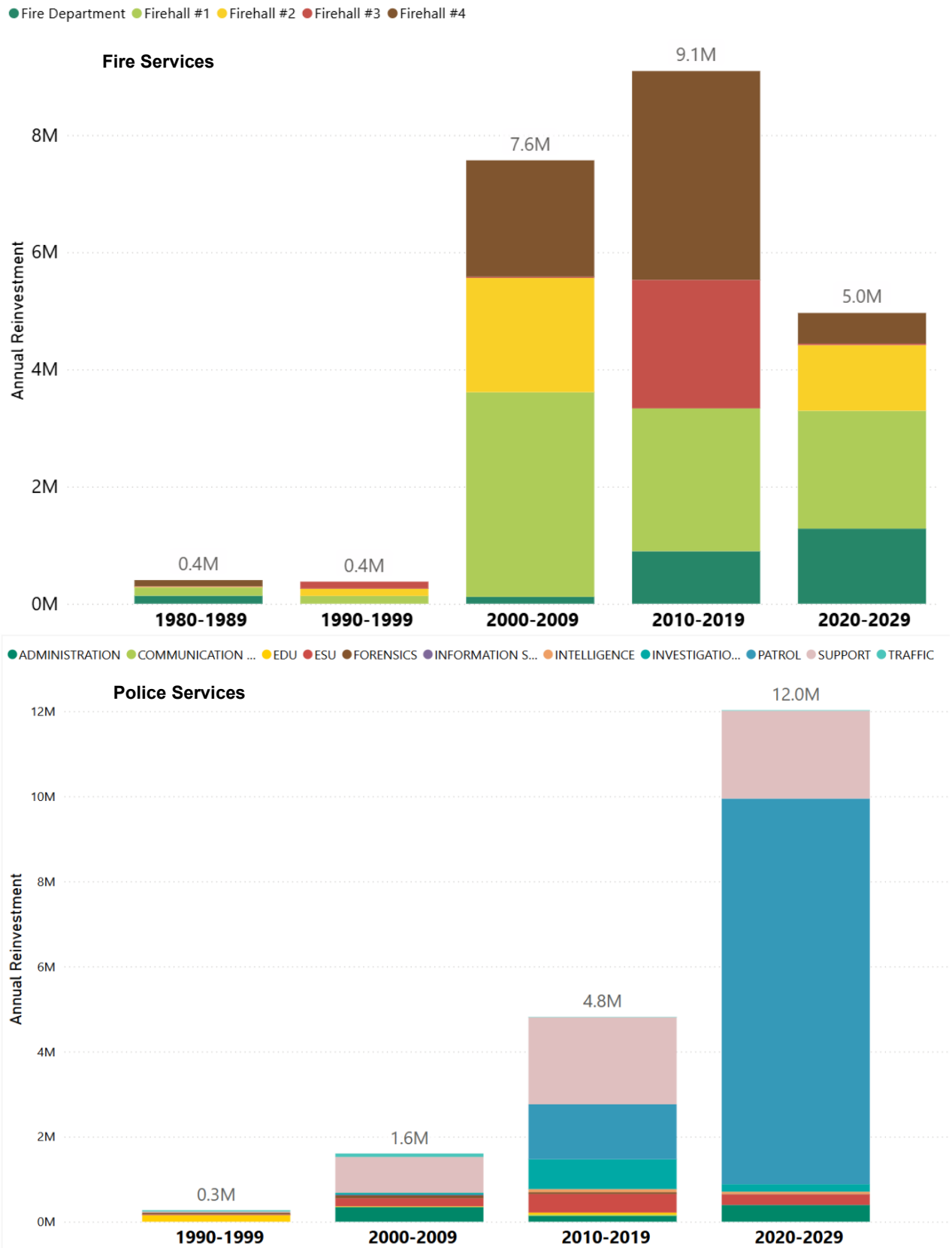

Figure 2-3: Protective Services Installation Profile

2.2.4 Asset Condition

All assets are expected to deteriorate over their lifetime, and their assigned condition reflects the physical state of the asset. There are no regular condition assessments for protective services assets that produce reliable condition gradings for AM purposes. To fill the gap with an interim data set to enable any financial forecasting to take place, the two-parameter Weibull distribution function was used to assess the current condition and to project the future condition of the City's assets. The Weibull distribution has been used extensively in reliability studies and lifetime prediction models in industries ranging from automotive to the oil & gas and provides a suitable distribution for this type of analysis.

The underlying premise of the Weibull-shaped deterioration is that while some assets fail prematurely due to severe conditions or improper installation, other assets are very long-lived and function well beyond their theoretical ESL. To perform a high order network-level analysis, it was assumed that assets would fail (and require replacement) within a deterioration envelope / curve approximated by a Weibull probability distribution. The two-parameter Weibull cumulative distribution has two parameters for scale and shape, as set out in Equation [1]:

$$f(x;\alpha,\beta) = e^{-\left(\frac{x}{\beta}\right)^{\alpha}} \quad [1]$$

Where: x = Age
α = Shape parameter (or slope)
β = Scale parameter

A set of Weibull cumulative distribution functions were leveraged to simulate a set of deterioration curves for assets with different ESLs as shown in **Figure 2-4**.

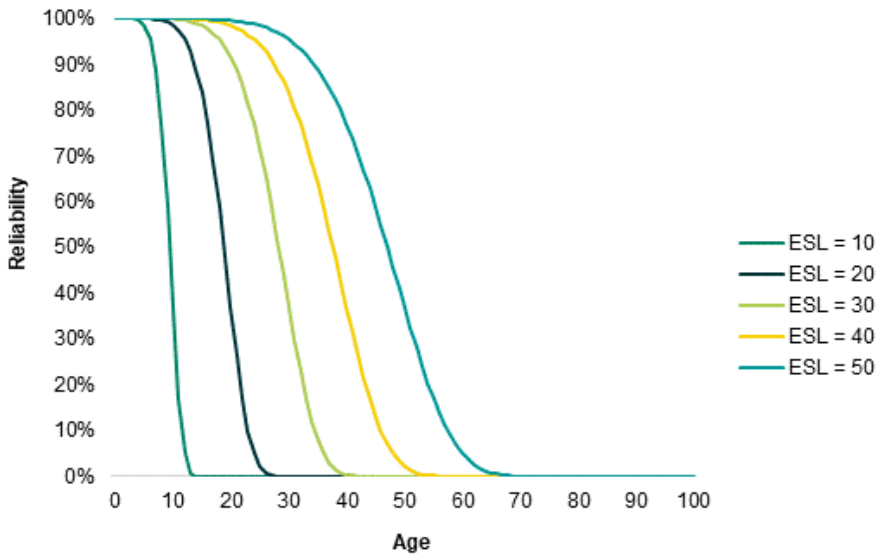

Figure 2-4: Asset Deterioration Curve Samples

Table 2-4 and **Figure 2-5** present the condition ratings of the City's protective services assets with respective replacement values. As stated previously, a substantial number of assets lack installation date information and condition. The assumed condition ratings span from "Very Good" to "Very Poor," with "Very Good" and "Good" collectively contributing 92% of the overall replacement value.

As a considerable assumption for the basis of this AM plan it is recommended that the City consider a routine condition assessment program to increase the reliability of condition grades and therefore also increase the reliability of the financial forecasts.

Table 2-4: Protective Services Condition Summary

Rank	Condition Rating	Replacement Value	% of Replacement Value
1	Very Good	$19,864,000	48%
2	Good	$18,246,000	44%
3	Fair	$331,000	1%
4	Poor	$950,000	2%
5	Very Poor	$1,730,000	4%
Total		**$41,121,000**	**100%**

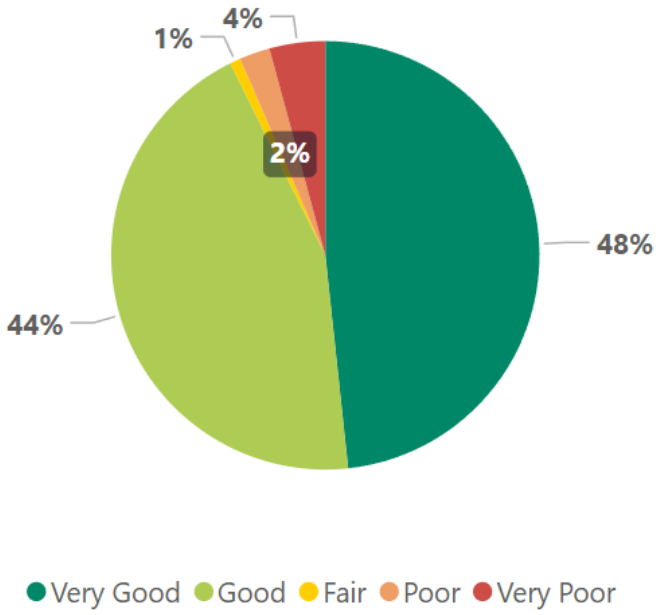

Figure 2-5: Protective Services Condition Summary

2.2.4.1 Fire Services Condition Summary

Table 2-5 and **Figure 2-6** show the condition summary for fire services. As fire service assets are heavily regulated, the vast majority of assets are in good and very good conditions, totalling over 98%, with only 1.6% assets in fair or worse condition.

Table 2-5: Fire Services Condition Summary

Rank	Condition Rating	Replacement Value	% of Replacement Value
1	Very Good	$4,705,000	21%
2	Good	$17,342,000	77%
3	Fair	$91,000	0.4%
4	Poor	$270,000	1.2%
5	Very Poor	$0	0%
Total		**$22,408,000**	**100%**

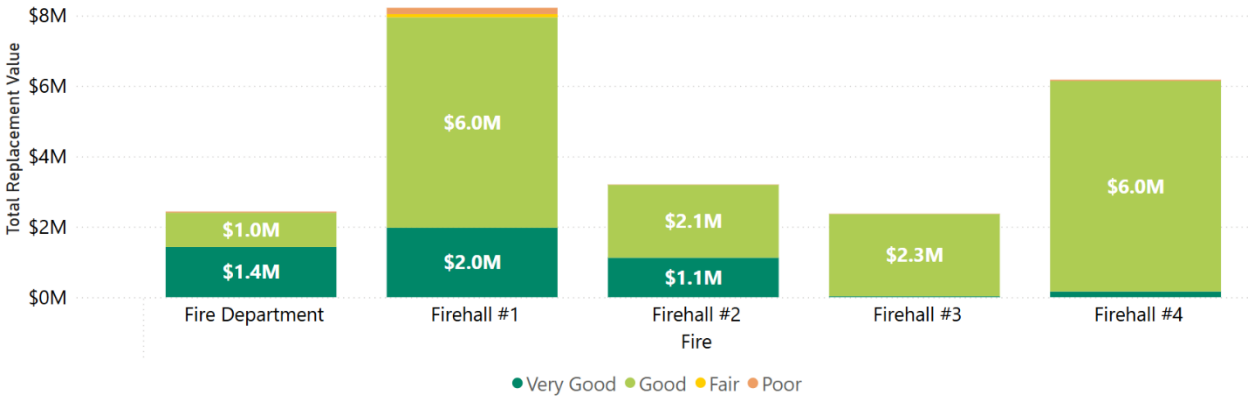

Figure 2-6: Fire Services Condition Summary by Sub-Category

2.2.4.2 Police Services Condition Summary

Table 2-6 and Figure 2-7 show the condition summary for police services. The vast majority of police assets have fairly short ESLs and are in very good condition, with over 81% of assets. However, there are approximately 10% of assets in poor and very poor condition due to being past ESL.

Table 2-6: Police Services Condition Summary

Rank	Condition Rating	Replacement Value	% of Replacement Value
1	Very Good	$15,156,000	81%
2	Good	$904,000	4.8%
3	Fair	$240,000	1.3%
4	Poor	$679,000	3.6%
5	Very Poor	$1,730,000	9.3%
Total		**$18,709,000**	**100%**

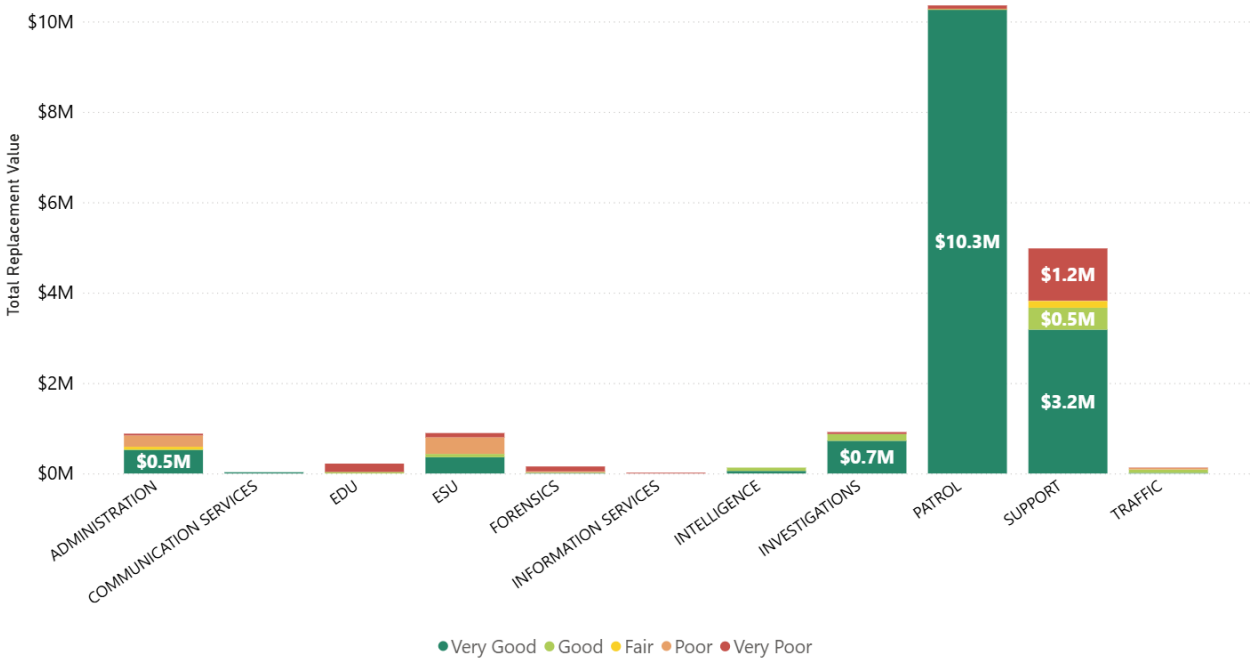

Figure 2-7: Police Services Condition by Sub-Category

2.3 Asset Data Gap Analysis

This section summarizes the current state of the City's asset data by assessing the quality of the asset inventory. Specifically, this section identifies existing data gaps, determines the overall confidence in the current asset data, and introduces good practices of data management.

2.3.1 Data Gap Observations

The City's protective services assets were not previously stored in a single inventory. The multiple spreadsheets provided by the City that did exist only housed a partial listing of the assets. The police assets in particular had numerous data gaps because of a recent cyber attack in 2021, when the City lost capital asset listings and related records. AECOM addressed these data gaps and filled in key information where possible, such as ESL and replacement costs. This has been supplemented by additional data sources such as RS Means and AECOM's prior experience from working with other municipalities.

Table 2-7 provides a summary of observed data gaps in the compiled protective services asset inventory across key data attributes that help to make informed decisions over the asset lifecycle for this AMP.

Table 2-7: Observations on Asset Data Completeness

Asset Group	Inventory Completeness (%)					
	Asset ID	Location	Install Date	Condition	Expected Service Life	Replacement Cost
Protective Services	87%	100%	92%	100%	100%	100%

Improvement activities that support continuous improvement of the asset inventory are:

- Asset ID: Add asset IDs to assets currently without them, especially for Fire Services, as only 20% of Fire Services assets are identified with unique asset IDs.

- Installation date: It is recommended to collect accurate installation date information for all assets and include them in the next iteration of the AMP. In the current iteration, many installation years are calculated based on the estimated service years remaining provided by the City, subtracted from the expected service lives estimated by AECOM.
- Condition: Consider a routine condition assessment program, and track asset condition over time in the CMMS, especially for assets regulated by legislations.

2.3.2 Data Confidence

The quality of asset data is critical to effective AM, accurate financial forecasts, and informed decision-making. For this reason, it is important to know what the reliability of the information is for the State of Infrastructure analysis of the protective services assets. **Table 2-8** provides a description for the data confidence grades used to classify the reliability of the asset data used in this data gap analysis. Through consultation with City staff during a State of Infrastructure Workshop, the asset attribute data for the in-scope protective services assets were assigned the grades outlined in **Table 2-9**.

Table 2-8: Data Confidence Grading Scale

Confidence Grades	Description
A - Highly reliable	Data is 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 ± 2%
B - Reliable	Data is 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 ± 10%
C - Uncertain	Data is based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy is estimated ± 25%
D - Very Uncertain	Data 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 ± 40%
E - Unknown	None or very little data held.

Table 2-9: High-Level Asset Data Confidence Grades

Asset Group	Inventory Confidence					
	Asset ID	Location	Install Date	Condition	Expected Service Life	Replacement Cost
Protective Services	NA	A	B	C	B	B

- Location data has been reviewed and confirmed by the City and are in a reliable state.
- Installation dates as mentioned previously, have been calculated from estimated service life remaining and ESL. The accuracy of the data to the year of installation where available is high but over half are calculated resulting in a lower confidence grade.
- Condition data is graded C as a lot of it is extrapolated from the installation data (which itself has a confidence grade of B). There are some condition data provided by the City, and these are high in accuracy confidence.
- Expected service life is deemed to be reliable as it is founded on available data accumulated for such a purpose (professional construction cost estimating software) and is supplemented with the City's input on estimated service life remaining.
- Replacement cost is also graded reliable as it is derived from a combination of similar cost used by other municipalities and supplemented with the City's own purchasing data. To include a tolerance for the imperfect data the upper range for mark up is used due to the immaturity of the asset inventory. As the inventory is used and further refined the City may decide to reduce the mark up applied to replacement values.

2.3.3 Data Management Practice

The asset data lifecycle is a sequence of stages that data goes through from its initial creation (i.e., data capture and entry) to its eventual archival and/or deletion at the end of its useful life[3]. A clear definition and understanding of the organization's process for acquiring, storing, utilizing, assessing, improving, archiving, and deleting data (see **Figure 2-8**) will ensure good data management practices and help to sustain levels of data quality required to support AM activities.

Figure 2-8: Asset Information Lifecycle

The seven key stages of the asset data lifecycle are described in more detail below:

1. **Acquiring New Data**: The majority of new asset data arises from asset creation, refurbishment and overhaul activities. New data may also come by way of inheritance or transfers from other business units, organizations, or third parties. As such, it is important to have clearly defined processes in place not only to add or update asset data, but to migrate and merge data from other sources.
   - New assets for protective services should be consistently added to the inventory and a minimum required data set defined to maintain inventory accuracy and reliability.
2. **Storing Data**: The way asset data is stored is an important consideration for overall data quality. Having a planned approach to data storage will inevitably reduce the likelihood of duplication and inconsistencies across datasets within the organization. Depending on the needs of the organization, this stage may involve procuring a new software to adequately house the data, along with a data backup and recovery plan to ensure that the necessary data protection and privacy standards are met.
   - Assets are typically stored in the CMMS or fleet management system. For protective services assets, due to having a lot of mobile fleet and equipment assets, it is important to store data and track the assets back to the physical location where the asset is stored and the division it's kept with.
3. **Utilizing / Analysing Data**: This aspect of the asset information lifecycle is where users encounter the data to support data-driven activities within the organization. Data can be viewed, processed, edited, and published to allow users to access the data outside the organization. Critical data that has been modified should be fully traceable to maintain the integrity of the data. As such, it is important to communicate to the users why asset data is so important, and how it is used to inform decisions within the organization.
   - Currently no analysis of the use of protective services assets is carried out. Use of the core asset AM plans (such as sanitary and water) and mature inventoried non-core (such as fleet) should be considered to drive a better understanding of protective services asset performance. This includes improved understanding of estimated service lives and true replacement cost value from the City's experience.

[3] TechTarget Network, Definition: Data Life Cycle, 2020.

4. **Assessing Data**: Assessing the data quality helps to determine the level of confidence in the information and ensures that decision-makers are making informed decisions based on the quality of data available to them. Moreover, it is important to fully understand the availability and quality of the asset data before issuing information publicly. Some of the results of data degradation, due to improper or lack of assessment, may include:
   - Poor asset performance due to lack of information and understanding of asset behaviour.
   - Non-compliance with statutory regulations or safety requirements.
   - Safety incidents due to risks not being identified or reported.
   - Asset failure due to gaps in maintenance planning.
5. **Improving Data**: Improving data quality involves establishing clear targets which are intended to be communicated widely across the organization. It is imperative that the organization understands the costs, benefits, and risks associated with any data improvements since the cost of the improvement may outweigh the overall benefit. It is also important to note that *more* data does not necessarily mean *better* data. It is very possible to collect data that does not add value to the organization. As such, it is critical that the organization aligns its data improvement targets with its AM objectives and considers the data-driven decisions staff need to make at the operational and strategic level, to ensure that the *right* data is being improved upon.
6. **Archiving Data**: Archiving data is the process of storing data that is no longer active or required but is able to be retrieved in case it is needed again. Data that is archived is stored in a location where no usage or maintenance occurs. It is recommended that a data archive strategy exists within an organization in order to lay out the data archival requirements, which considers the following:
   - What data should be archived and why?
   - Are there any legal obligations for retaining data records?
   - How long should data records be retained?
   - What is the risk associated with not being able to retrieve data records?
   - Who should be able to access archived data records?
   - What is the expected timeframe to retrieve archived data records?

   Clearly communicating these requirements across the organization is key to ensuring staff are educated on why records are being archived, how they can access archived data records, and for how long archived data records can still be accessed.
7. **Deleting Data**: The deletion of data is the final component of the asset information lifecycle. Typically, within organizations there is a resistance to permanently delete data, otherwise known as data “squirrelling”, due to the overall capacity of storing data increasing and the cost decreasing. However, within the organization’s data archive strategy, a retention period should be specified to indicate when data should be deleted, along with any processes to follow, such as obtaining prior missing period.
   - When assets are formally disposed of, their entry in the inventory should be archived to maintain data integrity and to further build the City’s understanding of its protective services assets. Several instances of inactive assets were found during the creation of the inventory from available sources.

3 Level of Service

3.1 Purpose

Level of Service (LoS) supports every aspect of the overall AM system. The objective of establishing clearly defined service levels is to help the City meet stakeholder values, achieve its strategic goals, make informed decisions, and implement effective asset lifecycle activities.

Documenting LoS is a proven practice that will enable the City to:

- Link corporate strategic objectives to customer expectations and technical operations.
- Balance customer needs and expectations while evaluating the effectiveness of operations and whether the right LoS is being provided at the right cost.
- Transition from an “Asset Stewardship” approach that focuses on making decisions based on maintaining assets in an acceptable condition to a “Serviceability” approach that is geared towards making decisions based on balancing the costs, risks, and goals for the LoS being provided by the City’s assets.
- Communicate the physical nature of infrastructure that the City owns and is financially responsible for while promoting the use of LoS to enable effective consultation with stakeholders regarding alternative funding options according to desired LoS outcomes.
- Make recommendations on strategies that the City can take now to minimize future renewal costs while ensuring that adequate LoS can be delivered without burdening future generations.
- Assess internal (e.g., program changes) and external (e.g., climate change) factors that have the potential to impact the City’s ability to deliver services and how these factors may impact the LoS being provided.
- Implement a corporate continuous improvement program to further optimize AM across all service areas.

The O. Reg. 588/17 requires that all AMPs include the current and proposed LoS.

3.2 Objectives

Defining LoS objectives is important for drawing a line of sight between the City’s corporate objectives and the tangible asset performance outcomes. To do so, the LoS objectives must take into consideration stakeholder interests to develop asset performance measures that aim to meet the needs and expectations of the community. By doing this, the City will ensure that their assets are striving towards optimal performance, not only operationally, but economically, socially, and sustainably as well. Every stakeholder has certain interests in the service being provided and in general. The City’s corporate objective is to lift up the community and build pride, and attract people (visitors, employers and employees).

The City’s Comprehensive Background Report (2021) for the New Official Plan outlined the overarching themes that reflect the City’s value, as shown in **Table 3-1**. Each overarching theme is also assigned a corporate service objective.

Table 3-1: The City’s Overarching Themes and LoS Objectives

Overarching Themes	LoS Objective
Healthy Community	Supports healthy living, active transportation, access to passive and active recreation, social interaction and the creation of spaces that are comfortable, safe and accessible for all ages and abilities (the “8 to 80 Cities” concept).
Environmental Sustainability	Supports energy conservation and efficiency, improved air quality, reduced greenhouse gas emissions and climate change adaptation.
Integrated Mobility	Supports accessibility and choice of a diversity of transportation modes.

Overarching Themes	LoS Objective
Sense of Place	Fosters a welcoming place for all that establishes connection and provides a memorable experience to visitors.
Sustainable Growth	Stimulates reinvigoration of neighbourhoods to provide a complete range of housing, services, employment and recreation.
Economic Resiliency	Supports the growth and diversification of the city's economy.
Social Equity	Contributes to creating a welcoming and inclusive community, focusing on the removal of systemic barriers so that everyone has access to an acceptable standard of living and can fully participate in all aspects of community life.
Cultural Vitality	Celebrates the Sault's history, diverse communities and natural and cultural heritage, with the Downtown as the Sault's core destination for arts and culture.

3.3 Stakeholder Identification

A stakeholder is any person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or an activity. Stakeholder analysis is the process of understanding stakeholder needs, expectations and perceptions relative to the stakeholder's level-of-interest and level-of-influence over the organization. The organization typically engages with their stakeholders to:

- Establish which activities or services matter most.
- Understand their risk appetite and risk threshold.
- Understand their willingness to pay for services.

Protective services stakeholders encompass a wide range of individuals and groups, both internal—such as staff and Council—and external, including the public, regulatory agencies, suppliers, and neighboring municipalities. During the Level of Service (LoS) workshops, several key stakeholder groups were identified as essential to the planning and delivery of protective services. While not exhaustive, this list offers a strong foundation for the City to advance to the next phase of service planning.

- Council.
- Residents.
- Industrial, Commercial, Institutional (ICI).
- Regulatory Agencies (i.e., Ministry of the Environment, Conservation and Parks [MECP], Fisheries and Oceans Canada [DFO]).
- Government Agencies (i.e., Environment and Climate Change Canada [ECCC] and Michigan Department of Environment, Great Lakes, and Energy [EGLE]).
- Neighbouring Municipalities or Downstream Municipalities (i.e., First Nations including Garden River First Nation, Batchewana First Nation, and Echo Bay, and municipalities from the US including Chippewa County, Michigan, and the City of Sault Ste Marie, Michigan).
- Environmental groups (i.e., Bi-National Public Advisory Council [BPAC] [US & Canada joint committee], Clean North, International Joint Commission, and Stream keepers).
- Developers.
- Other City Departments (e.g., Planning Department).
- Contractors and suppliers (e.g., EDS).

3.4 Legislated and Regulatory Requirements

Protective service assets are critical to the City's ability to provide essential services to the community, and for protecting the health and safety of the public. As such, key legislative requirements exist for the City's infrastructure assets, which ensure that minimum requirements are met and standards are in place that promote a high quality of life (i.e., protective citizens when situations arise, etc.). A sample of key Federal and Provincial legislated requirements are outlined below in **Table 3-2**. Monitoring and development programs relevant to protective services assets are also listed.

Table 3-2: Legislated and Regulatory Requirements

Protective Service	Federal	Provincial
Fire Services	• National Fire Code of Canada • National Fire Protection Association (International Organization, Legislation adopted in Canada)	• Ontario Fire Code • Fire Protection and Prevention Act (FPPA) • Ontario Regulation 379/18 (Training and Certification) • Emergency Management and Civil Protection Act
Police Services	• Royal Canadian Mounted Police Act	• Community Safety and Policing Act (formerly known as the Police Services Act, prior to April 2024)

3.5 O. Reg. 588/17 Levels of Service Metrics

Currently, O. Reg. 588/17 only identifies LoS metrics for core assets. A number of key LoS performance measures for protective services assets have been identified in consultation with City staff through workshops, are detailed in **Section 3.5**.

3.6 Current and Proposed Levels of Service

Establishing LoS targets is an important part of continual improvement and performance management. Without targets, it is difficult to ascertain whether goals are being met, or the extent of the gap if they are not. Incorporating targets into the City's LoS Framework helps to ensure that targets are reasonable, aligned with customer expectations, and evaluated on an objective basis by considering cost-benefit trade-offs.

One of the key challenges in setting targets in a municipal environment is that they can often become biased and/or politically motivated. Therefore, it is important to review LoS targets with internal and external stakeholders, especially the customers who will be impacted the most by changes in service delivery. An important aspect of evaluating LoS targets is determining how willing the user is to pay for the service. Regulatory requirements are an exception; however, they only provide the minimum service standard. Cost is still an important parameter to consider when assessing the merits of service improvements. To deal with the financial realities, it is necessary to:

- Calculate how much the service costs based on current LoS.
- Determine the lifecycle activities and cost associated with varying the LoS.
- Assess the customers' willingness to pay.

It is important that any targets set be realistic and achievable. O. Reg. 588/17 requires AMPs to include proposed LoS by July 1, 2025.

A summary of the City's Protective Services service level metrics is presented in **Table 3-4**. Each metric was indicated with its current trend and proposed trend for the next 10 years, represented by legends, taking into account the nature of the measure, data availability, and whether the trend impacts positively or negatively on the proposed LoS. The LoS trend legends are described in **Table 3-3**.

Table 3-3: LoS Trend Legend

Symbol	Name	Description
	Positively Increasing	KPI is improving steadily over time, showing progress toward goals.
	Positively Stable	KPI is at a strong, desirable level and consistently maintained.
	Positively Decreasing	KPI is improving as lower values indicate better performance.

Symbol	Name	Description
	Negatively Increasing	KPI is worsening over time, signaling a need for corrective action.
	Negatively Stable	KPI remains poor with no improvement or further decline.
	Negatively Decreasing	KPI is declining in a way that reflects worsening performance.

In the context for fire services, LoS for fire departments differ significantly from other municipal assets because they are governed by strict regulations and public safety requirements. These standards are not optional and must be met at all times, regardless of financial pressures. As such, the City will have no discretion to reduce spending in this area without compromising compliance or safety. This makes protective services unique in that the cost to maintain service levels is not a matter of choice but a mandated necessity.

Through workshops and conversations with subject matter expects (SME), the primary concern raised is not about a potential decline in service levels—those will always be maintained—but rather about the increasing costs associated with doing so. These rising costs are being driven by several external factors. Delivery fees for parts and services are climbing, and the market for specialized vendors is shrinking. Some suppliers are going out of business, while others are merging, leading to reduced competition and fewer options for procurement. This often forces the City to source materials and services from farther away, which adds to the overall expense.

Additionally, the nature of fire department operations requires certain services to be performed at distant locations. For example, bunker gear must be shipped to Sudbury for inspection or repair, and much of the department's equipment, including fire trucks, is sourced from the United States. While the City currently benefits from having skilled technicians capable of maintaining its fleet, the rapid evolution of vehicle technology may soon necessitate significant investments in new training and equipment. This looming need for adaptation adds another layer of financial pressure.

In summary, while the LoS for fire departments will remain consistent due to regulatory obligations, the cost of maintaining that standard is escalating. These increases are largely beyond the City's control and will have broader implications for municipal budgeting and resource allocation.

Table 3-4: Protective Services Current and Proposed Levels of Service

LoS #	Service Area	LoS Measure	Unit of Measure	LoS Category	Current Performance	Performance Trend		Lifecycle Activities to Meet Proposed LoS	Budget Impact to Meet Proposed LOS	Risk of Not Meeting Proposed LoS
						Current	Proposed			
1	Fire & Rescue	Total Fire Operating Cost per 1,000 Population	$ / 1,000 People	Customer	N/A	→	→	• Attempt to source trucks locally to avoid international shipping, tariffs, and currency exchange risks with the U.S. • Conduct regular financial audits and cost-benefit analyses to optimize spending. • Implement strategic workforce planning to balance staffing levels with service demands.	• Increased operational budget	• Not keeping up with standards, decreased community and staff safety. • Reduced ability to respond effectively to emergencies due to underfunding. • Increased strain on personnel and equipment, leading to burnout and breakdowns. • Public dissatisfaction and erosion of trust in emergency services.
2	Fire & Rescue	Percentage of Fire & Rescue Equipment in Very Good or Good Condition	%	Technical	98%	→	→	• Keep track of current guidelines and standards. • Schedule routine inspections and preventive maintenance for all equipment. • Replace aging or underperforming equipment based on condition assessments. • Maintain an up-to-date asset inventory and condition tracking system.	• Increased maintenance costs	• Poor condition assets are a safety risk for both staff and community. • Equipment failure during critical incidents, endangering lives and property. • Increased repair costs due to deferred maintenance. • Reduced operational readiness and response capability.
3	Fire & Rescue	Percentage of Fire & Rescue Equipment required for health and safety	%	Technical	N/A	→	→	• Ensure compliance with NFPA and other safety standards through regular audits. • Provide ongoing training for staff on proper use and care of safety equipment. • Establish a proactive replacement schedule for health and safety gear.	• Increased compliance costs	• Unsafe conditions for operators or inability to provide service due to lack of equipment. • Increased risk of injury or death to firefighters due to faulty or outdated gear. • Legal and regulatory penalties for non-compliance. • Loss of accreditation or insurance coverage for the department.
4	Fire & Rescue	Hours/mileage of operation per vehicle	Hours / Vehicle	Technical	N/A	→	→	• Rotating vehicle assignments to distribute wear evenly across the fleet and extend fleet lifespan. • Monitor vehicle usage through telematics and adjust deployment strategies. • Conduct regular servicing based on usage thresholds rather than fixed intervals.	• Increased operational costs	• Increased hours or mileage of vehicles indicate an aging fleet. Older vehicles have more costly repairs due to age. • Accelerated wear and tear leading to more frequent breakdowns. • Higher long-term maintenance and replacement costs. • Reduced availability of vehicles during emergencies.
5	Fire & Rescue	Mileage of operation per vehicle	km / Vehicle	Technical	N/A	→	→	• Fuel usage tracking in correlation with mileage to detect inefficiencies. • Track mileage data to identify overused vehicles and redistribute workloads. • Implement route optimization software to reduce unnecessary mileage. • Schedule timely maintenance based on mileage benchmarks.	• Increased fuel and maintenance costs	• Increased hours or mileage of vehicles indicate an aging fleet. Older vehicles have more costly repairs due to age. • Premature vehicle aging and increased downtime. • Higher fuel and maintenance expenses. • Reduced fleet reliability and emergency response efficiency.
6	Fire & Rescue	Cost of maintenance/repairs per vehicle	$ / Vehicle	Technical	N/A	→	↑	• Train in-house technicians and mechanics to handle more repairs internally. • Train mechanics to adapt to the changing vehicle technology. • Use predictive maintenance tools to identify issues before they escalate. • Standardize parts and service procedures to reduce variability and cost.	• Increased repair costs	• Increased downtime of vehicles, limiting service delivery. • Escalating repair costs due to reactive maintenance. • Longer vehicle downtimes affecting service delivery. • Budget overruns impacting other critical areas of fire operations.
7	Fire & Rescue	Fuel cost per vehicle	$ / Vehicle	Technical	N/A	→	→	• Using GPS and dispatch software to reduce unnecessary travel and idle time. • Implement fuel-efficient driving practices and training for operators.	• Increased fuel budget	• Escalating operational costs due to inefficient fuel use. • Budget overruns that impact other critical fire services.

LoS #	Service Area	LoS Measure	Unit of Measure	LoS Category	Current Performance	Performance Trend		Lifecycle Activities to Meet Proposed LoS	Budget Impact to Meet Proposed LOS	Risk of Not Meeting Proposed LoS
						Current	Proposed			
								• Invest in hybrid or alternative fuel vehicles to reduce dependency on gasoline/diesel. • Monitor and analyze fuel usage data to identify inefficiencies or anomalies.		• Increased environmental impact and potential reputational damage.
8	Fire & Rescue	Frontline fire apparatus should be replaced on a schedule of every 20 years (with certain exceptions, but no extensions beyond 30 years)	Yes / No	Technical	Yes	→	→	• Maintain a long-term capital replacement plan aligned with lifecycle benchmarks. • Conduct regular condition assessments to prioritize replacements. • Secure funding in advance through capital budgeting or reserve funds. • Start the truck procurement process early to give time for approval, funding, and delivery.	• Increased capital expenditure	• Increased risk of mechanical failure during emergency response. • Higher maintenance costs and downtime for aging apparatus. • Non-compliance with safety and insurance standards. • Equipment breakdown, leading to a potential loss of fire & rescue services.
9	Fire & Rescue	Personal protective equipment (PPE) should be replaced every 10 years or if it becomes damaged or irreparable as per NFPA 1851, this including turnout gear, helmets, respiratory masks, breathing apparatus, hearing and eye protection, boots, gloves, etc.	Yes / No	Technical	Yes	→	→	• Utilize a tracking policy to keep track of equipment condition and age. Mark all equipment for clear identification. • Maintain a PPE inventory system with age and condition tracking. • Schedule regular inspections and testing of all PPE. • Budget for phased replacement to avoid large one-time costs.	• Increased PPE budget	• Equipment breakdown, leading to a potential loss of fire & rescue services. • Increased risk of injury or exposure for firefighters. • Legal liability and non-compliance with NFPA standards. • Reduced morale and trust among frontline personnel.
10	Police Service	Number of Police Staff (Officers and Civilians) per 100,000 Population	#	Customer	356	↑	↑	• Conduct strategic workforce planning and recruitment campaigns based on projected population growth and crime trends. • Implement recruitment and retention strategies to maintain staffing levels. • Use data analytics to optimize deployment and workload distribution.	• Increased staffing costs	• Increased response times and reduced public safety. • Increased workload and stress for overworked staff leading to burnout and higher turnover. • Decline in community trust and satisfaction with police services.
11	Police Service	Number of complaints against police officers	#	Customer	48	↑	→	• Provide regular ethics, conduct, and de-escalation training. • Public education on complaint processes and rights. • Implement transparent complaint review and accountability systems. • Foster community engagement and communication initiatives.	• Increased legal and administrative costs	• Reputational damage to the City. • Erosion of public trust and legitimacy of the police force. • Increased legal and reputational risks for the department. • Lower morale and internal conflict within the force.
12	Police Service	Number of police officer training hours	Hour	Technical	15,324	↑	→	• Development of structured training programs covering core and advanced topics. • Invest in modern training tools such as simulators and e-learning platforms. • Track and audit training hours to ensure compliance and effectiveness.	• Increased training budget	• Reduced preparedness for emerging threats. • Reduced preparedness and effectiveness in critical situations. • Increased risk of misconduct or procedural errors, as well as liability risks. • Missed opportunities for professional development and career progression.

Performance Trend Legend:

↑ Positively Increasing	→ Positively Stable	↓ Positively Decreasing	↑ Negatively Increasing	→ Negatively Stable	↓ Negatively Decreasing

3.7 2025-2034 10-Year Levels of Service Forecast

Considering the City's characteristics, growth projections, and strategic objectives, the proposed performance trend for each LoS metric for the next 10 years is projected and outlined in **Table 3-5**. This table indicates whether each measure is expected to trend upward, downward, or remain stable, taking into account the nature of the measure, data availability, and whether the projected trend impacts positively or negatively on the proposed LoS.

Table 3-5: 2025-2034 10-Year Levels of Service Forecast

LoS #	Service Area	LoS Measure	Unit of Measure	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Proposed Trend	Basis for Forecast
1	Fire & Rescue	Total Fire Operating Cost per 1,000 Population	$ / 1,000 People					Positively Stable						→	Operating costs are being effectively managed through stable staffing, efficient resource use, and proactive budgeting, keeping per capita expenses consistent over time.
2	Fire & Rescue	Percentage of Fire & Rescue Equipment in Very Good or Good Condition	%					Positively Stable						→	Based on Lifecycle Modelling using the City's Forecasted Budget. Ongoing maintenance and replacement programs are effectively sustaining equipment quality.
3	Fire & Rescue	Percentage of Fire & Rescue Equipment required for health and safety	%					Negatively Stable						→	City's subject matter expert opinion. Rising costs and supply chain delays are making timely replacement of safety-critical gear more difficult.
4	Fire & Rescue	Hours/mileage of operation per vehicle	Hours / Vehicle					Positively Stable						→	Improved fleet management and route optimization are helping maintain consistent usage levels.
5	Fire & Rescue	Mileage of operation per vehicle	km / Vehicle					Positively Stable						→	Balanced vehicle deployment and tracking systems are preventing overuse of specific units.
6	Fire & Rescue	Cost of maintenance/repairs per vehicle	$ / Vehicle					Positively Stable						↑	Preventive maintenance strategies are reducing unexpected repair costs.
7	Fire & Rescue	Fuel cost per vehicle	$ / Vehicle					Positively Stable						→	Fuel efficiency initiatives and stable fuel pricing are keeping costs predictable.
8	Fire & Rescue	Frontline fire apparatus should be replaced on a schedule of every 20 years (with certain exceptions, but no extensions beyond 30 years)	Yes / No					Positively Stable						↑	Adherence to a structured capital replacement plan is ensuring timely apparatus renewal.
9	Fire & Rescue	Personal protective equipment (PPE) should be replaced every 10 years or if it becomes damaged or irreparable as per NFPA 1851, this including turnout gear, helmets, respiratory masks, breathing apparatus, hearing and eye protection, boots, gloves, etc.	Yes / No					Positively Stable						→	City's subject matter expert opinion. Compliance with NFPA 1851 and proactive inventory management are supporting consistent PPE turnover.
10	Police Service	Number of Police Staff (Officers and Civilians) per 100,000 Population	#					Positively Increasing						↑	Strategic hiring and recruitment efforts are responding to population growth and service demand.
11	Police Service	Number of complaints against police officers	#					Negatively Increasing						→	Rising population and crime rates are leading to more interactions between police and the public, increasing the likelihood of complaints being filed.
12	Police Service	Number of police officer training hours	Hour					Positively Increasing						→	Emphasis on professional development and accountability is driving expanded training programs.

Performance Trend Legend:

↑ Positively Increasing	→ Positively Maintain	↓ Positively Decreasing	↑ Negatively Increasing	→ Negatively Maintain	↓ Negatively Decreasing

3.8 Future Demand Drivers

Demand management is a critical component of managing the desired LoS in a sustainable manner, now and into the future. Understanding demand drivers enables the City to proactively develop effective, long-term strategies that are suitable for the City's unique political, environmental, social and technological landscape.

Factors identified during the LoS workshop that would impact protective services service levels now and into the future include, but are not limited to, the following:

- Aging assets (e.g., fire apparatus nearing end-of-life, outdated police communication systems, aging PPE, or specialized equipment like bomb robots and surveillance drones)
- Regulatory changes (e.g., updates to NFPA standards, policing oversight requirements, or occupational health and safety regulations)
- Staff availability (e.g., shortages in certified fire technicians, forensic specialists, or officers trained in emerging technologies like digital evidence systems)
- Succession management & skills transfer (e.g., ensuring experienced officers and fire personnel can pass on critical operational knowledge and certifications before retirement)
- Funding (e.g., ensuring asset management plans support sustainable service delivery while meeting public safety mandates)
- Contractor availability (e.g., limited availability of certified vendors for specialized equipment maintenance or facility upgrades)
- Climate change (e.g., increased wildfire risk, more frequent extreme weather events requiring emergency response, or flooding impacting station infrastructure)
- Supply chain (e.g., delays in acquiring fire trucks, PPE, or police technology due to shortages or vendor consolidation)
- Fluctuations in contract pricing (e.g., rising costs for vehicle leases, equipment servicing, or construction projects due to inflation or tariffs)
- Population growth (e.g., increased demand for emergency response services, requiring more staff, vehicles, and facilities to maintain service levels)

On November 2, 2021, the City's Planning Division released the Comprehensive Background Report for updating the Official Plan[4]. The City's Official Plan guides the local decision-making on land use, development and public infrastructure over the next 20 years. The City's population is expected to reach approximately 80,000 people by 2031, and 83,300 people by 2036. Employment is projected to grow by about 6,000 jobs, from approximately 31,000 jobs in 2016 to 36,900 jobs in 2036.

When additional assets to accommodate this population and employment growth are introduced to the City's portfolio, additional human resources, training and funding are required to maintain and operate, and renew or replace those assets. O. Reg. 588/17 requires municipalities by July 1, 2025, to estimate capital expenditures and significant operating costs to achieve the proposed LoS and accommodate projected increases in demand caused by population and employment growth. This includes the estimated capital expenditures and significant operating costs related to new construction and / or to upgrade existing municipal infrastructure assets. This has been addressed in **Section 5.2**.

[4] City of Sault Ste Marie. 1996. Official Plan.

4 Asset Management Strategies

4.1 Asset Lifecycle Management Introduction

Asset lifecycle management focuses on the specific activities that should be undertaken during all phases of the asset lifecycle. Considering entire asset lifecycles can ensure that the City makes sound decisions that consider present and future service delivery needs.

The overarching goal of lifecycle management is to maximize the long-term benefits and services that our assets deliver while minimizing the associated costs and risks in the long run. Every asset has a lifecycle cost, which is the total cost of all the activities undertaken throughout its service life. Part of the purpose of the asset management planning process is to fully understand and predict the long-range financial requirements for the City's infrastructure to facilitate planning and resource management in the most cost-effective manner possible. **Figure 4-1** illustrates how costs typically accumulate over an asset's life. It is worth noting that the accumulation of the ongoing operations and maintenance, renewal & replacement and disposal costs is many multiples of the initial acquisition costs. As such, it is important to fully understand the entire lifecycle costs across an asset's entire life before proceeding with asset acquisition.

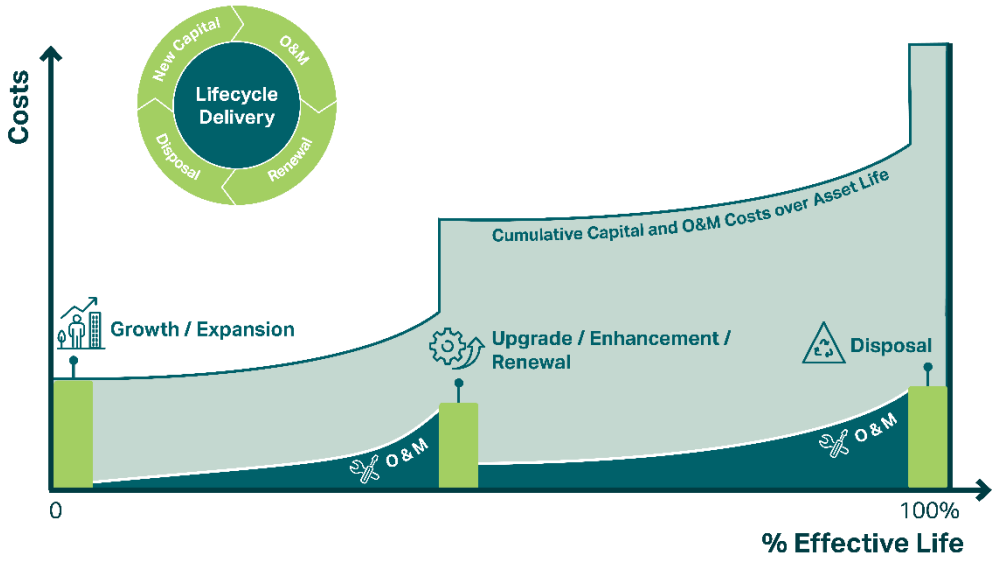

Figure 4-1: Lifecycle Cost Accumulation Over Asset Life

Asset lifecycle management strategies are typically organized into the following categories.

1. **Asset Acquisition / Procurement / Construction**: Acquisition includes expansion activities and upgrading activities to extend services to previously unserved areas or expand services to meet growth demands and to meet functional requirements. When acquiring new assets, the City should evaluate credible alternative design solutions that consider how the asset is to be managed at each of its lifecycle stages. Asset management and full life cycle considerations for the acquisition of new assets include, but are not limited to the following:

   - The asset's operability and maintainability.
   - Availability and management of spares.
   - Staff skill and availability to manage the asset.
   - The manner of the asset's eventual disposal.

2. **Asset Operations and Maintenance (O&M)**: As new asset is commissioned, the City accepts the responsibility of operating and maintaining the asset according to O&M standards to ensure that the asset is safe and reliable. Operations staff provide the day-to-day support required to operate asset. In few cases, operation costs are minor, but for most there are significant increases. Maintenance expenses include periodic preventive maintenance to ensure that the asset can provide reliable service throughout the life of the asset and corrective maintenance that is required to repair defective assets as and when needed. Inadequate funding for O&M will have an adverse impact on the lifespan of assets. The amount of O&M resources required in any period is a function of the current inventory of asset and total O&M needs required for each asset. As the inventory grows, total O&M requirements will also grow.

3. **Renewal and Replacement:** The third portion of full life cycle costing relates to the renewal and replacement of assets that have deteriorated to the point where it no longer provides the required service. Renewal cost is sometimes incurred during the life of an asset where an investment is made to improve the condition and / or functionality of the asset e.g., upgrading in-vehicle technology in police cruisers or refurbishing fire apparatus components. Replacement activities that are expected to occur once an asset has reached the end of its useful life and rehabilitation is no longer an option.

4. **Decommissioning and Disposal:** There will inevitably come a point in time when an asset must be removed from service and, depending on the type of asset, there may be significant costs associated with its decommissioning and disposal. Factors that may influence the decision to remove an asset from service include changes to legislation that cause the asset to be in non-compliance, the inability of the asset to cope with increased service levels, technology advances that render the asset obsolete, the cost of retaining the asset is greater than the benefit gained, or the current risk associated with the asset's failure is not tolerable.

Normally, major costs that may be incurred during disposal and decommissioning derive from the environmental impact of the disposal and, if required, the rehabilitation and decontamination of land. In some cases, there will be residual liabilities and risks to consider if a decision is made to partially abandon the asset as opposed to fully disposing of its components (e.g., destruction of retired police assets through agreement with the steel plant). However, some cost savings may be achieved through the residual value of the asset or by exploring alternative uses for the asset. In all cases, it is important to consider disposal and decommissioning as the strategy employed has the potential to attract significant stakeholder attention. For that reason, the costs and risks associated with disposal and decommissioning should be equally considered in the City's capital investment decision-making process.

4.2 Protective Services Assets Management Strategies

The asset management strategies that are employed by the City to manage the protective services assets throughout their lifecycle is summarized in **Table 4-1**.

Table 4-1: Lifecycle Management Strategies for Protective Services Assets

Asset Group	Lifecycle Activity	Description of Activities Practiced by the City	Benefits and Risks Associated with the Activities
Protective Services	**Acquisition**	**Fire Services** • Procure frontline apparatus and vehicles based on a 20-year replacement schedule. • Acquire PPE in compliance with NFPA 1851 (every 10 years or as needed). • Invest in fuel-efficient or hybrid vehicles to manage fuel costs. • Purchase health and safety equipment aligned with regulatory standards.	**Benefits:** • Ensures compliance with safety standards (e.g., NFPA). • Supports operational readiness with modern, reliable equipment. • Enables long-term planning through structured capital investment. **Risks:** • High upfront costs may strain capital budgets. • Supply chain issues can delay procurement. • Risk of acquiring equipment that becomes obsolete quickly due to tech changes.
		Police Services • Vehicles are acquired through the Police Purchasing Co-op to ensure discounted pricing and suitability for police operations. These are then leased back through ARI Financial. • Annual capital budgets (approx. $1M) are used to acquire essential equipment such as firearms, forensic tools, and IT systems. • Long-term leases like the 10-year Axon package are used for body-worn cameras and digital evidence systems. Capital reserves also support infrastructure projects like building renovations.	**Benefits:** • Access to purpose-built vehicles and equipment through co-op purchasing. • Supports staffing and operational needs with modern tools. • Enables proactive planning for capital and infrastructure needs. **Risks:** • Leasing costs can fluctuate with market conditions and tariffs. • Budget limitations may restrict timely acquisition. • Risk of over-reliance on long-term leases without flexibility.
	Operations and Maintenance	**Fire Services** • Conduct regular inspections and preventive maintenance on vehicles and equipment. • Monitor fuel usage and vehicle mileage to optimize deployment. • Maintain PPE through routine cleaning, inspection, and minor repairs. • Track and manage operating costs per 1,000 population to ensure budget stability.	**Benefits:** • Extends asset life and reduces emergency repairs. • Maintains high service reliability and safety. • Helps control long-term costs through preventive care. **Risks:** • Rising costs of parts and labor may exceed budget. • Inadequate maintenance can lead to equipment failure. • Overuse of aging assets increases risk of breakdowns.
		Police Services • All vehicles are leased and maintained under a structured plan by the Fleet Manager. Frontline vehicles are leased for 2 years due to high usage, while others are leased for 3–5 years and rotated to balance mileage. • Approximately $250,000 is allocated annually for vehicle maintenance, built into the operating budget alongside lease costs (~$1.03M). • Most operational needs, including equipment upkeep and minor capital replacements, are covered within the department's own budget, reducing reliance on external funding.	**Benefits:** • Leased fleet ensures vehicles are well-maintained and rotated efficiently. • Built-in maintenance budgets support predictable cost management. • Self-sufficient budgeting allows for responsive operations. **Risks:** • High usage of frontline vehicles may still lead to unexpected wear. • Maintenance costs could rise with inflation or supply shortages. • Dependence on leasing partners for service timelines.

Asset Group	Lifecycle Activity	Description of Activities Practiced by the City	Benefits and Risks Associated with the Activities
	Renewal and Replacement	**Fire Services** • Conduct regular inspections and preventive maintenance on vehicles and equipment. • Monitor fuel usage and vehicle mileage to optimize deployment. • Maintain PPE through routine cleaning, inspection, and minor repairs. • Track and manage operating costs per 1,000 population to ensure budget stability.	**Benefits:** • Keeps fleet and PPE within safe and effective service life. • Reduces long-term maintenance costs. • Enhances firefighter safety and public trust. **Risks:** • Deferred replacements can lead to safety hazards. • Budget constraints may delay necessary upgrades. • Poor timing can result in overlapping capital needs.
		Police Services • Vehicles are replaced at the end of their lease terms and either sold to the City or auctioned online, ensuring a continuous refresh of the fleet. • Items like handguns are replaced when they reach end-of-life and can no longer be serviced (e.g., 180 new 9mm pistols in 2025). • Building reserves are used for major renovations and future planning for a new police headquarters.	**Benefits:** • Regular fleet turnover ensures reliability and safety. • Capital reserves allow for timely replacement of critical equipment. • Supports modernization of facilities and technology. **Risks:** • Delays in replacement can impact service delivery or safety. • Budget constraints may limit ability to replace aging assets. • Risk of underestimating future capital needs.
	Disposal	**Fire Services** • Conduct regular inspections and preventive maintenance on vehicles and equipment. • Monitor fuel usage and vehicle mileage to optimize deployment. • Maintain PPE through routine cleaning, inspection, and minor repairs. • Track and manage operating costs per 1,000 population to ensure budget stability.	**Benefits:** • Removes outdated or unsafe equipment from service. • Frees up space and reduces liability. • May recover value through resale or recycling. **Risks:** • Improper disposal can lead to environmental or legal issues. • Disposal costs may be underestimated. • Loss of backup equipment if not carefully planned.
		Police Services • Vehicles are replaced at the end of their lease terms and either sold to the City or auctioned online, ensuring a continuous refresh of the fleet. • Items like handguns are replaced when they reach end-of-life and can no longer be serviced (e.g., 180 new 9mm pistols in 2025). • Building reserves are used for major renovations and future planning for a new police headquarters.	**Benefits:** • Online auctions and resale to the City generate revenue. • Secure disposal of sensitive or obsolete equipment (e.g., bomb suits). • Keeps asset registry current and accurate. **Risks:** • Improper disposal of sensitive equipment could pose security risks. • Disposal logistics may be complex or costly. • Potential loss of value if assets are not disposed of at the right time.

5 Funding Need Analysis

Financial forecasting and capital planning are a critical element in ensuring the efficient and sustainable management of infrastructure. This involves estimating future financial needs and developing a strategic plan to secure the necessary funding for the maintenance, renewal, or expansion of assets. By accurately forecasting financial requirements and implementing a well-structured capital plan, the City can not only ensure the long-term viability of their infrastructure systems but also effectively manage costs, reduce environmental risks, and protect public health.

The financial projections presented in the subsequent sections provide visualizations of the results from the financial model. The subsequent sections are structured as follows:

Section 5.1 summarizes historical capital and O&M expenditures, along with budget forecasts for the next 10 years (2025–2034).

Section 5.2 outlines the assumptions used in the financial model to guide reinvestment and replacement decisions for each sub-category and estimates the annual funding requirements over the 10-year period. The projected levels of service over this period are also presented.

Section 5.3 presents the full funding needs for the next 10 years, including capital, O&M, and disposal costs.

Section 5.4 summarizes the risk of funding gaps and **Section 5.5** explores possible funding sources and alternative strategies to support the protective services AM lifecycle activities.

5.1 Capital and Operating Budget

Based on the review of the budget documents provided by the City, including:

- Summary Capital Budget - 2020 to 2024
- Long Term Financial Plan Model - Final Client Version

This section presents the annual average budgets allocated for capital reinvestment as well as operations and maintenance.

5.1.1 Capital Budget - Historical Expenditure and Future Forecast

Historical capital expenditures for protective services have typically included long-term investments and major purchases such as fire trucks, police vehicles, PPEs, firearms, communication systems, and facility upgrades. These are assets with a useful life beyond one year and often require planned replacement cycles. **Table 5-1** present the capital reinvestment budget forecast.

Table 5-1: Capital Reinvestment Budget Forecast

Asset Class	Asset Category	Asset Sub-Categories	2025-2029 5-Year Average Reinvestment Budget
Protective Services	Police Services	Administration, Communication Services, Explosive Disposal Unit (EDU), Emergency Services Unit (ESU), Forensics, Information Services, Intelligence, Investigations, Patrol, Support, and Traffic	$1,085,000
	Fire Services	Firehall #1, Firehall #2, Firehall #3, Firehall #4, and Fire Department	$725,000*
		Total	**$1,810,000**

**$560k in 2025, $190k in 2026, $1.4M from 2027 to 2034 (except 2028).*

5.1.2 Operating Budget - Historical Expenditure and Future Forecast

The City's historical operating expenditures for protective services have includes day-to-day expenses necessary to keep services running. This covers salaries, training, fuel, leasing costs, routine maintenance, utilities, and consumables like medical supplies or office equipment. It also includes service contracts and software subscriptions that support ongoing operations. **Table 5-2** present the operating budget forecast.

Table 5-2: Operating Budget Forecast

Asset Class	Asset Category	Asset Sub-Categories	2025-2029 5-Year Average O&M Budget
Protective Services	Police Services	Administration, Communication Services, Explosive Disposal Unit (EDU), Emergency Services Unit (ESU), Forensics, Information Services, Intelligence, Investigations, Patrol, Support, and Traffic	$8,805,000
	Fire Services	Firehall #1, Firehall #2, Firehall #3, Firehall #4, and Fire Department	$17,901,000
		Total	**$26,706,000**

5.2 Capital Reinvestment Funding Needs Analysis

This section outlines the capital funding scenarios analyse approach, assumptions, and presents service level trends regarding asset condition under various budget scenarios.

5.2.1 Lifecycle Model Approach and Assumptions

The lifecycle analysis was implemented within an PowerBI Model. The analysis involves integrating key asset attribute information including asset inventory, age, expected service lives, replacement values, and condition to create a theoretical asset replacement cycle for each asset. A financial dashboard was developed to present the lifecycle modeling results.

The annual reinvestment needs for the protective services assets were determined based on their age and ESL in years (i.e., replacing assets that have exceeded their ESL, in inflated dollar values, incorporating the following assumptions on inflations:

- The base year used is 2025. Any historic asset replacement values have been inflated using the experienced inflation rate from Non-Residential Building Construction Price Index (NRBCPI).
- Inflation rate: the inflation rates adopted for the financial model are presented in **Table 5-3**. The inflation for 2025 and later is determined based on the City's input.

Table 5-3: Inflation Rate[5]

Year	Inflation Rate
2022	7%
2023	7.1%
2024	6%
2025	2%
2026	2%
2027	2%

[5] Past inflation data obtained from NRBCPI using the non-residential; yearly result taken from an average of quarterly results. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1810027601

Year	Inflation Rate
2028	2%
2029	2%
2030 - 2034	2%

5.2.2 Fire Services Budget Scenarios & 10-Year Service Level Forecast

This section presents the budget scenario analysis and the 10-year service level forecast for fire services.

5.2.2.1 Budget Scenarios Setting for Fire Services

Table 5-4 budget scenarios setting for fire services. Scenario 1 (S1) is a "Do Nothing" approach with zero expenditure; S2 assumes an ideal, unconstrained budget enabling asset replacement at end-of-life; S3 reflects the City's defined budget at $1.4 million annually; and S4 reflects a mid-point between S2 and S3 as an alternative option.

Table 5-4: Fire Services Budget Scenarios

Scenario		Description	Budgets
S1	Do Nothing	Spend Nothing	$0 million
S2	Unconstrained Budget	Replace assets at end of life	Unlimited
S3	City's Planned Budget	City's Current Planned Budget	$1.4 million annual budget
S4	Approximate Midpoint between S2 and S3 Budget	Budget level between S2 and S3 to offer an alternative	$1.7 million annual budget

5.2.2.2 Fire Services Assets Funding Need

The average annual reinvestment estimates for the City's fire services is $2.2 million over the next 10 years in inflated dollar values. This is equivalent to a total of approximately $21.9 million over the next 10-year period, as presented in Figure 5-1. There aren't any significant backlogs for reinvestment in 2025. The theoretical expenditure spikes are presented in the year 2028 and 2030 in Figure 5-1.

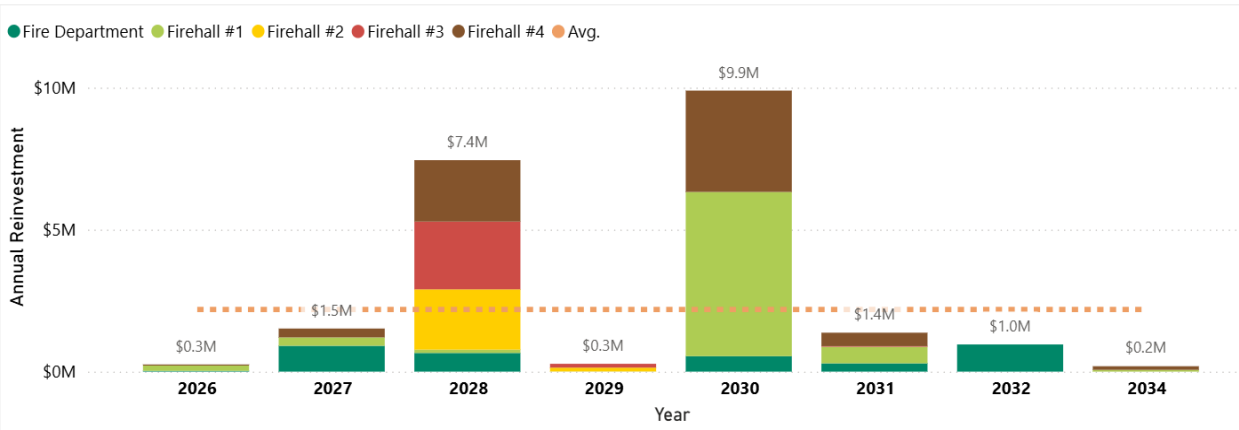

Figure 5-1: 10-Year Funding Need for Fire Services – Unlimited Budget Scenario

The detailed 10-year reinvestment needs for fire services are presented in Table 5-5 in inflated dollar values.

Table 5-5: Fire Services 10-Year Total and Annual Average Capital Reinvestment Need

Asset Category	Annual Average Need	10-Year Total
Fire Department	$339,000	$3,386,000

Asset Category	Annual Average Need	10-Year Total
Firehall #1	$703,000	$7,031,000
Firehall #2	$226,000	$2,256,000
Firehall #3	$254,000	$2,544,000
Firehall #4	$669,000	$6,686,000
Total	**$2,191,000**	**$21,903,000**

5.2.2.3 Fire Services 10-Year Service Level Trend Forecast

Figure 5-2 presents the projected condition of fire services under the four funding scenarios over a 10-year period. Currently, 98% of assets are in fair or better condition. Under the "Do Nothing" scenario, the service level declines steadily to 16% by 2034. With an unlimited budget of approximately $2.2 Million annually, the asset condition improves to 99%. Under the City's current budget of $1.4 million annually, the service level declines more moderately, reaching 43% by 2034. If the City is to increase the annual budget to $1.7 million per year (S4), the service level improves to 67%, compared to only 43% under scenario 3.

These projections indicate that the City's current funding is not sufficient to sustain current service levels for fire services over the long term. While the decline under the current budget is gradual, it still reflects increasing deferred maintenance and future risk. Additional investment or complementary strategies may be needed to close this gap and preserve long-term system performance.

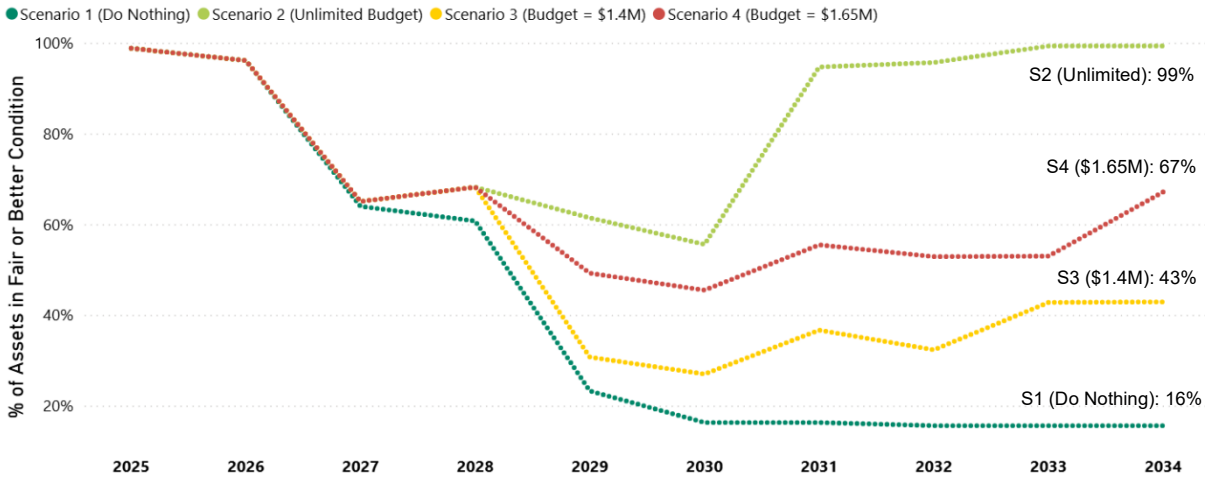

Figure 5-2: Fire Services Levels of Service Trend in the Next 10-Year for All Budget Scenarios

Figure 5-3 illustrates the projected condition distribution of fire services from 2025 to 2034, assuming the City maintains the current annual investment of $1.4 million. Currently, 98% of assets are in very good condition, with only a small proportion rated as poor or very poor. However, under continued funding at this level, the condition of the asset base is expected to decline steadily. By 2034, only 43% of assets are projected to remain in fair or better condition, while the share of assets in very poor condition increases from 0% to 57%.

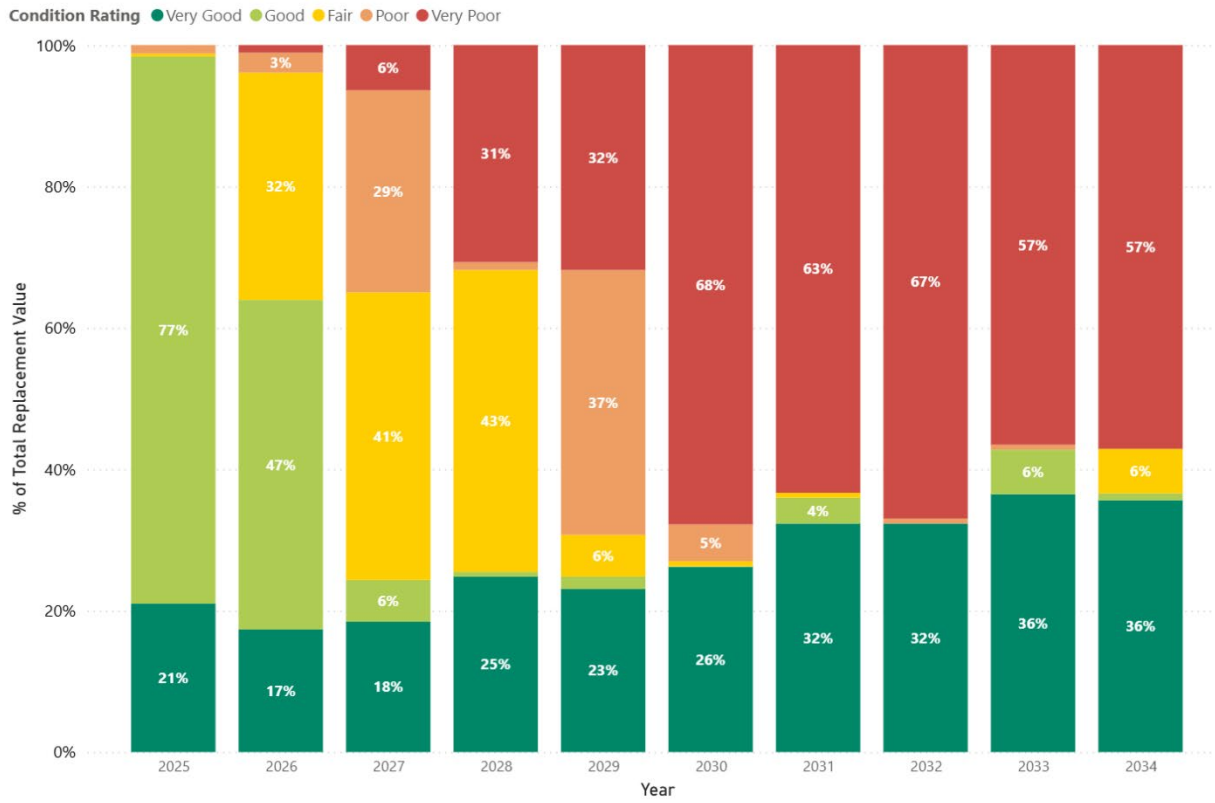

Figure 5-3: Fire Services Condition Projection under Scenario 3 – City's Current Budget ($1.4M per Year)

As illustrated, rising costs are placing increasing pressure on fire services, where service levels are mandated by strict safety regulations and cannot be reduced to save money. Unlike other municipal services, fire protection must meet non-negotiable standards, regardless of financial constraints. However, the cost of maintaining these standards is escalating due to factors such as supply chain disruptions, vendor consolidation, and increased delivery fees. Specialized equipment often needs to be sourced from distant locations, and services like PPE inspection must be performed off-site, adding to operational expenses.

With the service levels in mind, the current investment levels are not sufficient to keep pace with these rising costs. As shown in **Figure 5-2**, the City should consider increasing the annual capital budget for fire services from the current $1.4M per year (scenario 3) to $2.2M per year (scenario 2). Without increased funding, the City risks higher long-term costs from emergency repairs, outdated equipment, and reduced operational efficiency. Sustained investment is essential to ensure fire services remain safe, compliant, and responsive.

5.2.3 Police Services Budget Scenarios & 10-Year Service Level Forecast

This section presents the budget scenario results and the 10-year service level forecast for police services.

5.2.3.1 Budget Scenarios Setting for Police Services

Table 5-7 shows budget scenario setting for protective services facilities. S1 is a "Do Nothing" approach with zero expenditure; S2 assumes an ideal, unconstrained budget enabling asset replacement at end-of-life or rehab where applicable; S3 reflects the City's current capital expenditure budget at $1.1 million annually; and S4 reflects the $250k capital reserve budget for comparison.

Table 5-6: Police Services Budget Scenarios

Scenario		Description	Budgets
S1	Do Nothing	Spend Nothing	$0 million
S2	Unconstrained Budget	Replace assets at end of life or rehab where applicable	Unlimited
S3	City's Planned Budget	City's Current Capital Expenditure Budget	$1.1 million annual budget
S4	City's Capital Reserve	City's Current Annual Capital Reserve Budget	$250 k annual budget

5.2.3.2 Police Services Funding Need

The average annual reinvestment estimates for the City's police services is $835 k over the next 10 years in inflated dollar values. This is equivalent to a total of approximately $8.4 million over the next 10-year period, as presented in **Figure 5-4**. A funding need spike is observed in 2034, where total reinvestment needs reach $2.6 million, primarily driven by the need to renew the Axon package, which includes critical digital policing tools such as body-worn cameras and evidence management systems. While the annual lease cost is built into the existing budget, the anticipated renewal in 2034 will result in a significant spike in expenditure. This is due to expected increases in technology costs, potential changes in service scope, and inflationary pressures. Without proactive financial planning, this renewal could place considerable strain on the capital or operating budget, highlighting the need for long-term forecasting and reserve contributions to manage the impact effectively.

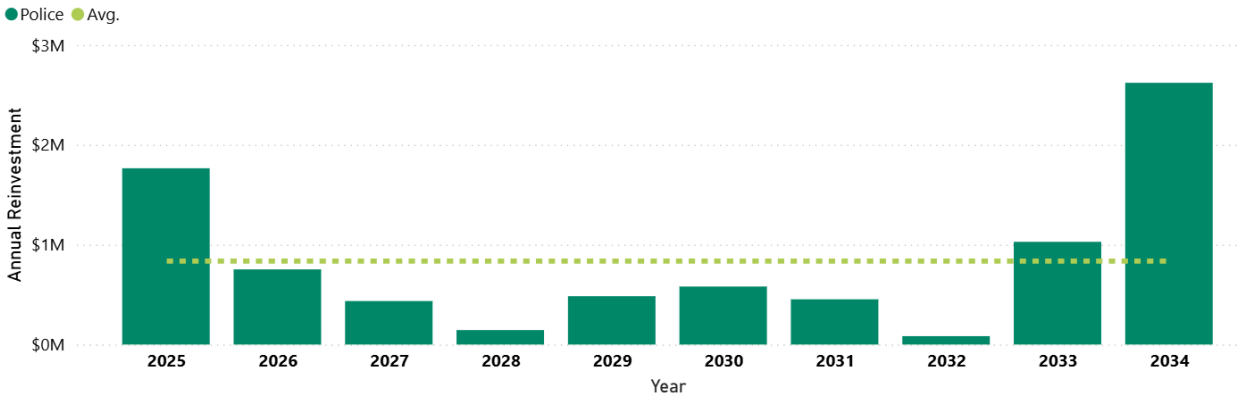

Figure 5-4: 10-Year Funding Need for Police Services – Unlimited Budget Scenario

The detailed 10-year reinvestment need for police services is shown in **Table 5-7** in inflated dollar values.

Table 5-7: Police Services 10-Year Total and Annual Average Capital Reinvestment Need

Asset Type	Annual Average Need	10-Year Total
Administration	$57,000	$573,000
Communication Services	$3,000	$32,000
Explosive Disposal Unit (EDU)	$23,000	$226,000
Emergency Services Unit (ESU)	$72,000	$715,000
Forensics	$15,000	$154,000
Information Services	$2,000	$18,000
Intelligence	$8,000	$82,000
Investigations	$83,000	$828,000
Patrol	$190,000	$1,899,000
Support	$369,000	$3,691,000
Traffic	$13,000	$133,000

Asset Type	Annual Average Need	10-Year Total
Total	**$835,000**	**$8,351,000**

5.2.3.3 Police Services 10-Year Service Level Trend Forecast

This analysis models the service level in terms of condition of police services over a 10-year horizon under four funding scenarios shown in **Figure 5-5**. Currently, approximately 87% of the City's police services' assets are in fair or better condition. In a "do nothing" scenario, the condition of the asset base declines significantly, with only 54% of assets projected to remain in fair or better condition by 2034, this shows the worst possible condition forecast. In a scenario assuming unlimited funding results in a stabilized condition level of approximately 81% by 2034. Notably, the City's current budget scenario—based on an annual investment of approximately $1.1 million—yields identical results, also achieving a projected service level of 81% by 2034, but the backlog at the end of the 10 year period will be noticeably different, as indicated by the $2.65 million difference in total spending between S2 and S3.

This finding indicates that the City's current level of capital reinvestment in police services is adequate for maintaining asset condition over the next decade.

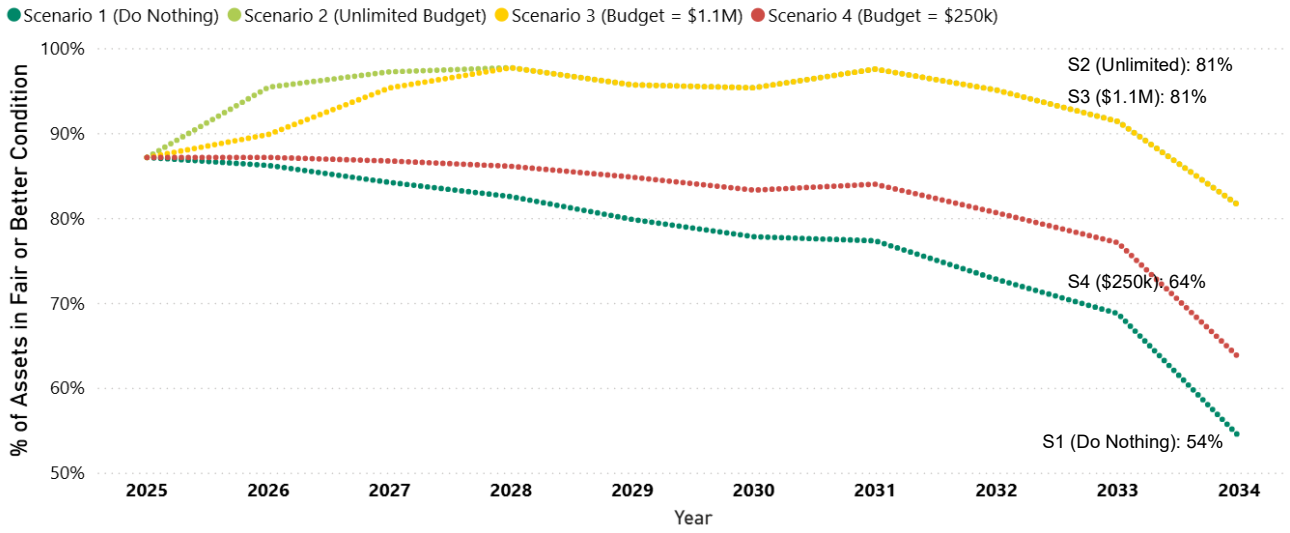

Figure 5-5: Police Services Levels of Service Trend in the Next 10-Year for All Budget Scenarios

Figure 5-6 shows the detailed condition distribution profile under the City's planned budget scenario for police services. Notably, the percentage of assets in poor and very poor condition peaks in 2034, which reflects the 10-year Axon package lease set to expire in 2034.

Police Services maintains the condition of its assets through a proactive and well-structured approach that includes leasing vehicles through the Police Purchasing Co-op for durability and cost efficiency, rotating fleet usage to balance wear, and budgeting for regular maintenance. Capital reserves are used strategically to replace aging equipment—such as firearms and specialized tools—before they reach end-of-life, ensuring operational readiness and safety. This self-sufficient model, with built-in funding for both maintenance and capital needs, helps keep assets in good condition while minimizing unexpected costs.

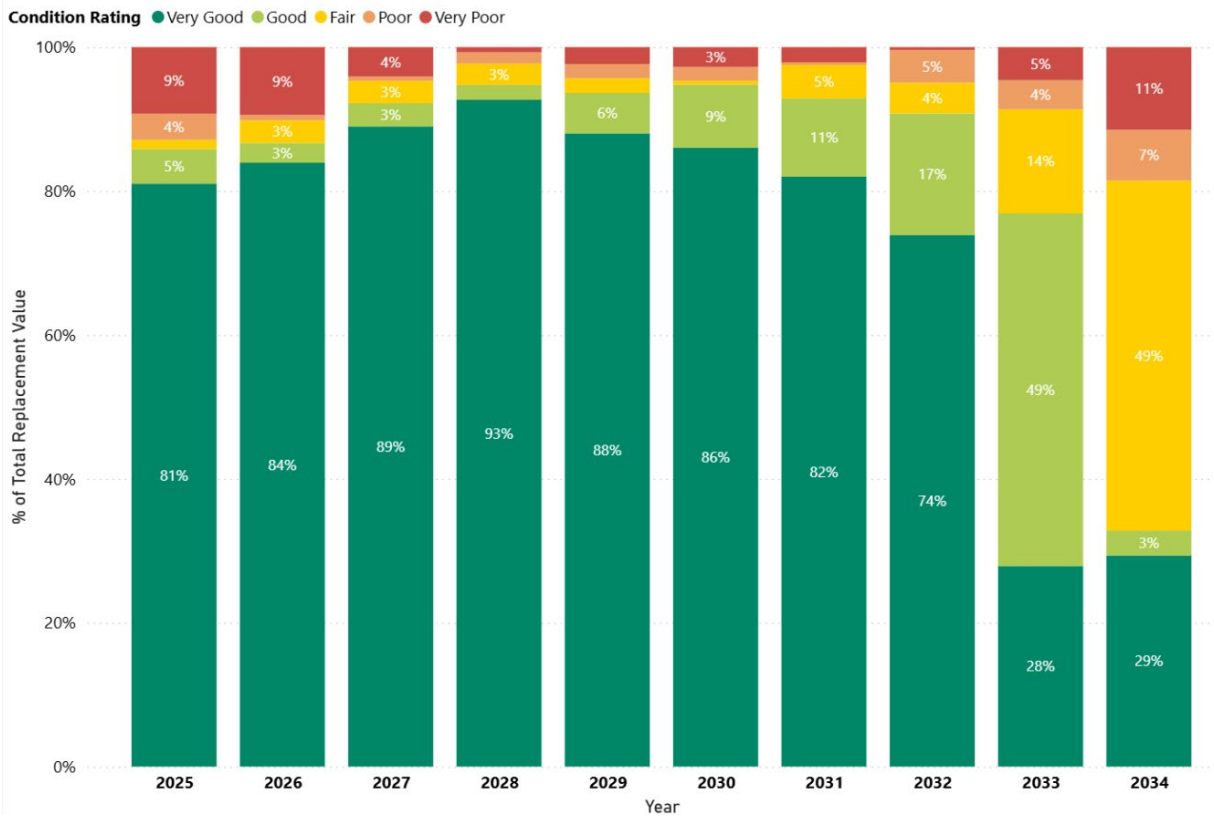

Figure 5-6: Police Services Condition Projection under Scenario 3 - City's Planned Budget ($1.1M per Year)

5.3 Full Funding Profile

Figure 5-7 and **Figure 5-8** show full pictures of the City's protective services funding need forecast over the next 10 years, which provides the City the full funding requirements in order to perform effective financial planning activities. The total annual reinvestment cost from **Figure 5-1** and **Figure 5-4** have been overlaid with the City's annual average O&M cost. In addition, 1% of the annual reinvestment need is used as an allocation for asset disposal costs.

The City's protective services full funding requirement increases to approximately $20 million and $9.6 million over the next 10 years in inflated dollar value, for fire and police services respectively.

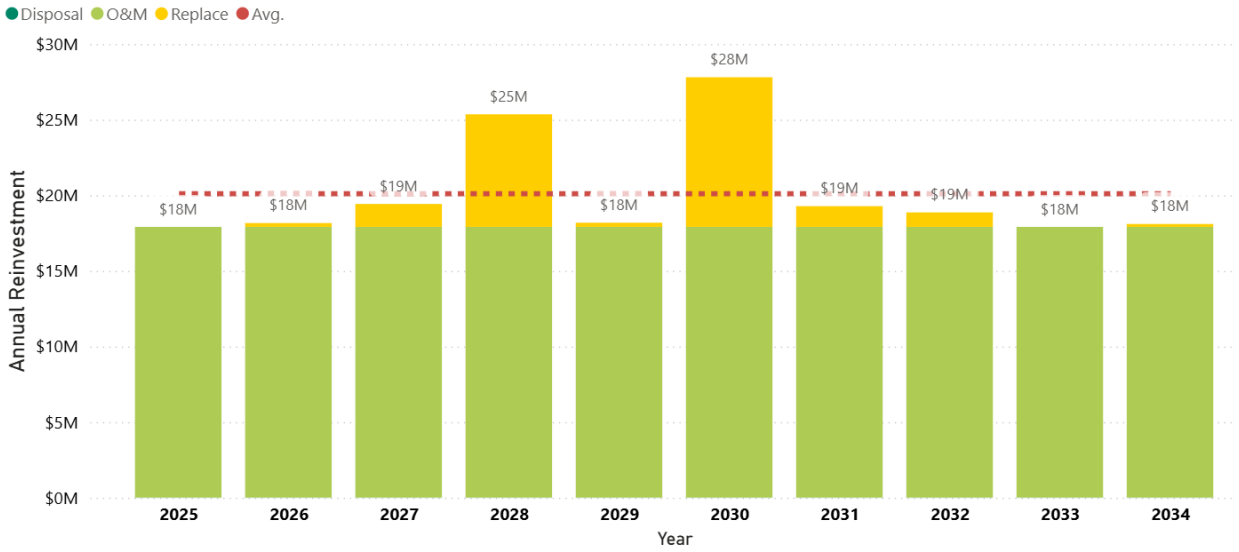

Figure 5-7: Full Funding Profile for Fire Services

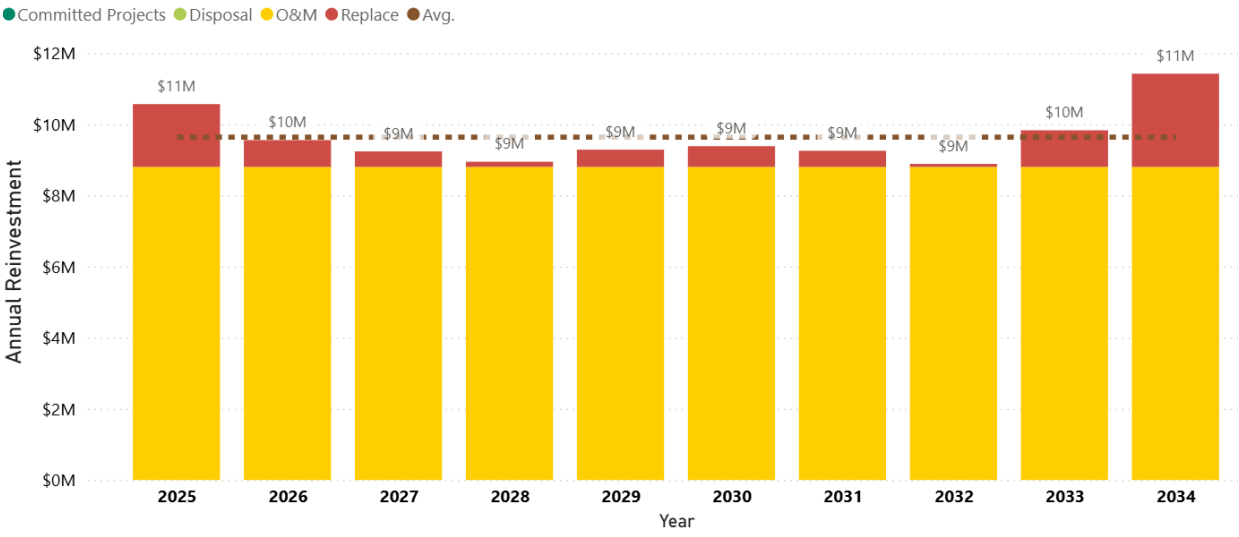

Figure 5-8: Full Funding Profile for Police Services

5.4 Funding Gaps & Risk

The City intends to continue to invest in the growth and renewal of the Protective Services assets over the next 10 years. **Table 5-8** compares the City planned capital reinvestment budget against the capital reinvestment funding needs. The shortfall between the City planned capital reinvestment budget against the capital reinvestment funding needs is referred to as the "funding gap".

Table 5-8: Protective Services Funding Gap – Capital Reinvestment Funding Needs vs. Budget Forecast

Asset Class	10-Year Need Total ($million)	10-Year City Budget Total ($million)	10-Year Gap Total ($million)
Fire Services	$201	$190	$11
Police Services	$96.4	$98.9	Adequate

As described in **Section 3.6**, risks are identified for each service level performance measure.

Table 5-9 provides a high-level overview of the key risks associated with funding gaps, as well as the potential consequences and impacts of not meeting the proposed service levels.

Table 5-9: Risk of Delayed Intervention for Protective Services

Key Risk	Asset	Potential Consequences/Impacts
Safety and Compliance Risks	All Protective Services assets	• Failure to meet safety standards or replace outdated gear increases the risk of injury or death to staff and the public. • Non-compliance with regulations (e.g., NFPA standards) can lead to legal penalties, loss of accreditation, or insurance issues. • Poor condition of assets compromises both firefighter and police officer safety during critical incidents.
Operational and Service Delivery Risks	All Protective Services assets	• Equipment failure, aging fleets, and increased downtime reduce emergency response capability and operational readiness. • Deferred maintenance and reactive repairs escalate costs and limit service availability. • Inability to provide timely service due to lack of functioning vehicles or gear undermines public safety.
Financial and Resource Risks	All Protective Services assets	• Rising maintenance, fuel, and replacement costs strain operating budgets and may lead to budget overruns. • Underfunding capital renewal leads to higher long-term costs and emergency expenditures. • Tariffs, inflation, and supply chain issues further increase the cost of maintaining service levels.
Workforce and Organizational Risks	All Protective Services assets	• Overworked staff and aging equipment contribute to burnout, turnover, and reduced morale. • Missed training opportunities and outdated tools reduce preparedness and increase liability risks. • Internal dissatisfaction and lack of professional development can lead to internal conflict and inefficiency.
Public Trust and Reputational Risks	All Protective Services assets	• Service failures, safety incidents, and increased complaints erode public trust in protective services. • Perceived or actual decline in service quality can damage the City's reputation and legitimacy. • Legal issues and community dissatisfaction may lead to increased scrutiny and reduced support.

5.5 Funding Sources & Alternative Strategies

The City's protective services primarily funded through the property tax levy. While the City affirms the current security of this funding source and expresses confidence in its sustainability over the next 10 to 20 years, there is a noted awareness of potential challenges. The City acknowledges concerns about rising costs and supplier issues, underscoring the importance of continuous strategic planning and financial. In response to these challenges, the City is actively seeking funding opportunities through various means and has successfully established the following connections:

- The City currently provides servicing for the District Social Services Administration Board (DSSAB) fleet, with associated costs offset by them.
- The City secures green funding for small equipment pieces, including lawnmowers, grass-cutting equipment, and snow equipment, along with some funding allocated for firefighting equipment.
- The City receives a provincial grant supporting 12 officers' Full-Time Equivalents (FTEs).
- The City obtains funding through the Community Safety Program.
- The City generates income from record checks or freedom of information requests.

In addition to the City's current funding sources, AECOM also suggests the following options that could be considered, acknowledging that the City's eligibility for these funds is subject to certain criteria:

- Canada Community-Building Fund (CCBF).
- Ontario Community Infrastructure Fund (OCIF).
- Municipal Asset Management Program (MAMP).
- Fire Prevention and Public Education (FPPE) Grant.
- Proceeds of Crime Front-Line Policing Grant.

Recognizing the constrains of internal funding and limitations and uncertainties associated with external funding, it becomes increasingly important to explore complementary approaches that do not depend solely on financial sources. In this context, alternative or non-financial strategies play a critical role in enhancing the City's ability to manage service levels and asset performance within existing fiscal constraints. **Table 5-10** highlights the City's non-financial strategies to address the identified protective services funding gap. These strategies are designed to support long-term financial sustainability through alternative delivery methods, changes in practices or policies, and system optimization, without relying solely on increased funding.

Table 5-10: Non-Financial Strategies to Address Funding Gaps for Protective Services

Category	Strategy	Description / Actions
Planning & Prioritization	Asset Lifecycle Planning	Use condition assessments and usage data to prioritize replacements and maintenance based on risk and criticality.
	Multi-year Capital Forecasting	Develop long-term capital plans that align with service level goals and anticipated asset renewal needs.
	Scenario Planning	Prepare for different funding levels by identifying essential vs. deferrable investments.
Operational & Engineering Solutions	Fleet Optimization	Rotate vehicles across departments to balance wear and extend asset life.
	Preventive Maintenance Programs	Strengthen maintenance schedules to reduce emergency repairs and extend equipment lifespan.
	Shared Services	Explore shared procurement, maintenance, or training with neighboring municipalities or regional partners.
Regulatory & Policy	Policy Review & Alignment	Ensure internal policies align with current standards (e.g., NFPA, policing best practices) to avoid unnecessary over-compliance costs.
	Procurement Policy Enhancements	Update procurement policies to prioritize lifecycle cost over lowest upfront cost.
Redundancy & Optimization	Standardization of Equipment	Reduce variety in equipment types to simplify training, maintenance, and procurement.
	Cross-Training Staff	Increase operational flexibility by training staff to handle multiple roles or equipment types.
	Technology Integration	Use data analytics and AM software to optimize resource allocation and decision-making.

5.5.1 Canada Community-Building Fund (CCBF)

The CCBF, previously known as the Federal Gas Tax Fund, is a permanent source of upfront funding distributed twice a year to territories and provinces. The delivery of the CCBF to municipalities varies by province or territory, with allocation following a per-capita basis for provinces, territories, and First Nations[6].

The CCBF is administered in Ontario through a bilateral agreement with the Government of Ontario, the Association of Municipalities of Ontario (AMO), and municipalities. This program allocates approximately $816 million annually to 641 communities in Ontario, with an additional top-up of $816.5 million provided in 2020 to expedite communities' recovery from the COVID-19 pandemic. Notably, as of 2022, the City has received over $9 million through the CCBF, granting the City flexibility to strategically invest across 19 distinct project categories[7].

5.5.2 Ontario Community Infrastructure Fund (OCIF)

The OCIF is a program designed to support municipalities with small populations (less than 100,000), along with those situated in northern and rural areas. Its primary objective is to aid communities in overcoming challenges related to infrastructure maintenance and improvement while facilitating the development and updating of their asset management plans. Eligible communities receive annual allocations and have the option to accumulate these grants for up to five years to address substantial infrastructure projects. The fund is an essential component of the provincial government's commitment to fostering strong, resilient, and well-equipped communities across Ontario[8].

5.5.3 Municipal Asset Management Program (MAMP)

The MAMP is aimed at improving AM practices within municipalities. Designed to assist municipalities in gaining a better understanding, planning, and efficient and sustainable management of their infrastructure assets, the program may offer funding to support the development or improvement of AM plans. This financial support is intended to incentivize municipalities to adopt and implement sustainable AM practices[9].

5.5.4 Fire Prevention and Public Education (FPPE) Grant

The FPPE Grant is a funding initiative that typically awards $1,000 to three fire departments in good standing with the Ontario Municipal Fire Prevention Officer's Association (OMFPOA). The awarded money is intended to be used towards on fire prevention and public education[10].

5.5.5 Proceeds of Crime Front-line Policing Grant

The Proceeds of Crime Front-Line Policing Grant stands as the cornerstone of the Ontario government's commitment to investing over $6 million in the mission to combat crime and cultivate safer communities. This grant is set to be extended to 16 police services across the province, empowering them to implement 21 crime prevention and community safety initiatives aimed at addressing issues such as gun and gang violence, human trafficking, and sexual violence and harassment. This strategic allocation of funds underscores the government's dedication to proactively utilize resources garnered from criminal activities to strengthen law enforcement efforts and foster safer communities[11].

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[6] The Canada Community-Building Fund. (2022). Infrastructure Canada. Infrastructure Canada - The Canada Community-Building Fund. Retrieved on February 15th, 2024.

[7] Ontario's 2021–22 federal Canada Community-Building Fund allocations and top-up amounts. (2021). Infrastructure Canada. Backgrounder: Ontario's 2021–22 federal Canada Community-Building Fund allocations and top-up amounts - Canada.ca. Retrieved on February 15th, 2024.

[8] Ontario Community Infrastructure Fund. (2023). Ministry of Infrastructure, Ontario. Ontario Community Infrastructure Fund | ontario.ca. Retrieved on February 15th, 2024.

[9] Municipal Asset Management Program. (n.d.). Federation of Canadian Municipalities. Municipal Asset Management Program | FCM. Retrieved on February 15th, 2024.

[10] Fire Prevention and Public Education Grant. (2023). Ontario Municipal Fire Prevention Officer's Association. Grants - Ontario Municipal Fire Prevention Officer's Association (omfpoa.com). Retrieved on February 15th, 2024.

[11] Ontario Investing $6 Million to Boost the Fight Against Crime. (2020). Government of Ontario. Ontario Investing $6 Million to Boost the Fight Against Crime | Ontario Newsroom. Retrieved on February 15th, 2024.

6 Implementation Plan and Continuous Improvement

Continuous improvement is an important component of any AM program and is achieved through the implementation of recommended improvement initiatives which support sustainable service delivery. While the City's protective services assets are in a relatively good condition at the moment, there are future challenges that must be considered. It is important to address these challenges thoroughly and promptly to leave a positive legacy for future generations.

A suite of improvement initiatives has been identified for the next update of AM planning for the City's protective services assets, as outlined below:

- **Recommendation 1: Refine asset hierarchy and inventory**

  To improve asset management in protective services, the City should continue refining its asset hierarchy and inventory by closing existing data gaps to ensure a more accurate understanding of asset conditions. This includes consolidating all inventory records into a single, centralized database—such as migrating data from multiple spreadsheets into one master file—for better consistency and accessibility. Additionally, tracking installation years and recording the physical location of each asset will support more effective planning and management across all lifecycle phases, from acquisition to disposal.

- **Recommendation 2: Develop a Data Governance Framework and Information Management Strategy to provide a holistic and consistent approach to the City's protective services data management practices**.

  A Data Governance Framework includes developing an Asset Information and Data Standards Strategy to clearly define what asset data exists, who is accountable for managing it, methods of data collection, and safeguarding data quality. The successful deployment of a Data Governance Framework aims to achieve the following benefits:

  - Enhanced data integrity to support reliable analysis.
  - Improved data management workflows and processes.
  - Improved AM reporting.
  - Clearly defined data management roles & responsibilities.

  Asset data will be centralized, digitized, and made accessible to all staff, enabling more efficient and coordinated asset management. Annual updates will be conducted to maintain accurate information on asset attributes such as age and condition. Asset management staff will also have the capability to collect and update data in the field in real time, ensuring timely and accurate records. Additionally, workflows will be documented and digitized to streamline processes and support consistent, data-driven decision-making.

  To ensure the confidentiality, integrity, and availability of sensitive asset data, the following data security measures should be considered:

  - Role-Based Access Controls (RBAC): Implement tiered access permissions to ensure that only authorized personnel can view or modify specific datasets.
  - Data Encryption: Apply encryption protocols for data at rest and in transit to protect against unauthorized access and breaches.
  - Audit Trails and Monitoring: Establish logging mechanisms to track data access and changes, supporting accountability and early detection of anomalies.
  - Regular Security Assessments: Conduct periodic vulnerability assessments and penetration testing to identify and mitigate potential security risks.
  - Data Backup and Recovery Plans: Implement automated backup systems and disaster recovery protocols to ensure data resilience and business continuity.

- Staff Training and Awareness: Provide ongoing training for staff on data security best practices, including phishing prevention, secure data handling, and incident reporting.

These security measures will help safeguard the City's data assets, support compliance with relevant regulations, and build public trust in the City's digital infrastructure.

- **Recommendation 3: Develop a formalized protective services assets condition assessment process and use consistent condition grading schemes for these assets.**

  The City should develop a formalized condition assessment process for protective services assets using a consistent and specialized grading system tailored to fire and police infrastructure. Currently, asset conditions are not tracked with a standardized methodology, making it difficult to forecast renewal needs accurately. The grading system should include clear descriptions for each condition level, linked to asset performance and the corresponding corrective or preventive maintenance required. Prioritizing assessments for the most critical assets ensures consistency, supports risk-based decision-making, and strengthens the City's ability to present a defensible case for investment to senior management and Council.

- **Recommendation 4: Refine the Level of Service (LoS) Framework.**

  The AMP represents the City's LoS in alignment with the requirements of O. Reg. 588/17 July 1, 2025 deadline. The City will continue its efforts to:

  – Regularly record LoS performance measures to monitor changes over time and identify emerging trends.

  – Review and update performance measures as needed to ensure they remain relevant and effective.

  – Periodically assess proposed LoS to confirm alignment with shifting community expectations, regulatory changes, City priorities, available resources, and observed performance trends—supporting adaptive and responsive service delivery.

  – Continuously enhance demand management by routinely evaluating future demand drivers that influence service delivery and asset use, integrating these insights into long-term capital planning to ensure LoS remains responsive to changing needs.

  The City should begin collecting current asset performance data for KPIs that are not yet tracked, enabling a more complete understanding of how protective services assets are performing. This data should be analyzed to identify trends and establish annual performance benchmarks.

- **Recommendation 5: Incorporate risk assessment for future iterations of the AM plan, and use the risk assessment results to drive future condition assessments and financial needs forecasting**

  To strengthen future iterations of the AM Plan, the City should incorporate a comprehensive risk assessment process that evaluates asset criticality and informs work prioritization. This includes regularly reviewing risk attribute values to ensure they align with evolving business objectives and the City's risk tolerance. By overlaying the risk model with current asset condition data and financial forecasts, the City can strategically allocate resources—focusing monitoring, maintenance, and renewal efforts on high-risk assets, mitigating failure in medium-risk assets through regular oversight, and cautiously accepting low-risk assets. This risk-based approach will enhance decision-making and improve the accuracy of long-term financial planning.

- **Recommendation 6: Continue to find ways to improve AM initiatives across the City by maintaining a high level of AM awareness through training, AM buy-in, communication, and knowledge sharing.**

  Continue to enhance AM initiatives across the City by fostering a strong and sustained culture of AM awareness, engagement, and collaboration. This includes maintaining a high level of organizational commitment through targeted training, leadership buy-in, effective communication, and knowledge sharing. ISO 55010[12] identifies the that the financial and non-financial functions of AM within organizations are generally inadequately aligned. The lack of alignment between financial and non-financial functions can be attributed to silos in an organization, including reporting structures, functional / operational business processes, and related technical data. Financial and non-financial alignment needs to work both "vertically" and "horizontally", as follows:

[12] International Organization for Standardization (2019): ISO 55010 - Asset management — Guidance on the alignment of financial and non-financial functions in asset management

- Vertical Alignment: financial and non-financial asset-related directives by management are informed by accurate upward information flows, effectively implemented across the appropriate levels of the organization.
- Horizontal alignment: financial and non-financial information that flows between departments conducting functions such as operations, engineering, maintenance, financial accounting, and management, etc. should use the same terminology and refer to the assets identified in the same way.

- **Recommendation 7: Update AM Plan Regularly**

  The City should regularly update its AMP to ensure it remains responsive and effective. This includes reviewing and adjusting performance measures and LoS targets at least every 2 to 5 years, while lifecycle strategies—covering operations and maintenance, renewals, upgrades, growth, and regulatory compliance—should be updated annually. In parallel, financial strategies such as asset valuations, long-term capital planning, operating budgets, and revenue sources must also be reviewed each year to reflect current conditions and future needs. This ongoing cycle of updates supports informed decision-making and long-term sustainability.

- **Recommendation 8: Implement a CMMS / Work Management System.**

  The City will conduct an AM Software Strategy following the completion of this AM plan to identify future system requirements that may include enhancing existing software, adding-on, or replacing.

- **Recommendation 9**: **Refine and Regularly Update the Protective Services Lifecycle Funding Model.**

  The current protective services funding model is built on available data, assumptions, and generalized asset information, providing a high-level estimate of future funding needs. As such, it is essential to refine the model periodically by incorporating updated data—such as asset condition assessments, project cost information, and implementation schedules—to improve its accuracy. Project timing and costs should also be reviewed and adjusted as projects near execution to ensure realistic planning and budgeting.

- **Recommendation 10: Grant application program**

  The City should establish an internal program dedicated to developing grant applications that align with organizational goals and the specific criteria of various funding programs (as outlined in **Section 5.5**). This includes crafting proposals that clearly articulate project objectives, expected outcomes, and financial plans that demonstrate transparency and long-term sustainability. Applications should highlight the City's capacity to deliver through realistic timelines, defined milestones, and robust project management strategies. Supporting documentation must be well-organized to strengthen the application, and each submission should undergo a thorough final review to ensure compliance with the grant's requirements. This structured approach will enhance the City's ability to secure external funding and support critical initiatives.

- **Recommendation 11: Develop a Knowledge Retention Strategy to document staff AM knowledge and experience for succession planning purposes.**
- To ensure continuity and resilience in AM operations, it is essential to develop a structured Knowledge Retention Strategy. This strategy should focus on systematically capturing the tacit knowledge, technical expertise, and institutional insights held by experienced staff.

- **Recommendation 12: Develop a Change Management & Communications Plan.**

  AM buy-in and support are needed from all levels of the City to ensure that AM standards, practices, and tools are properly adopted and incorporated into day-to-day work activities. A successful Change Management & Communications Plan will depend on the following factors:

  - AM buy-in from Council, senior management, staff, and departments.
  - AM objectives are realistic and achievable.
  - AM improvement initiatives are appropriately resourced.
  - A network of AM champions is developed and empowered across the City.

- **Recommendation 13: Public and Council Engagement Activities.**

  Establish a structured approach to public and Council engagement to ensure the AMP aligns with community expectations, supports informed decision-making, and enhances transparency, the City is committed to establishing a structured approach to public and Council engagement. While several engagement activities have already been undertaken, these efforts lay the foundation for a more consistent and strategic approach moving forward.

  For Council engagement, the City has held presentations and conducted media events to share key project updates. It is recommended the development of Councillor Tool Kits could equip elected officials with clear and consistent messaging, including project overviews and frequently asked questions, to help them confidently respond to inquiries from residents. Suggested content for the tool kits includes:

  - Overview of the City's Protective Services Infrastructure
  - Unique Conditions and Localized Challenges
  - Investment in Infrastructure: Past, Present, and Future
  - How the City Plans and Delivers Maintenance
  - Why Continued Investment in Infrastructure Is Critical
  - Asset Types and How They Guide Investment Priorities
  - Introduction to Asset Management Principles
  - Service Levels: What Residents Can Expect
  - How Climate Change Impacts Infrastructure and their Maintenance
  - Leveraging Technology to Improve Infrastructure Management
  - Funding Sources and Budget Allocation
  - How Infrastructure Are Prioritized and Selected for Maintenance

  On the public engagement side, the City has shared information through existing channels, and this could be enhanced through a dedicated project webpage. This webpage would serve as a central hub for infrastructure planning updates, offering frequently asked questions, downloadable resources, project timelines, contact information, and an interactive feature to encourage two-way communication. A targeted social media strategy is also recommended to further broaden outreach—leveraging platforms such as Facebook and Instagram, including the use of sponsored posts to promote project milestones and public input opportunities.

  The recommended engagement strategies would help foster public trust, define customer-focused performance targets, and ensure that the AMP reflects the evolving priorities of both Council and the broader community.

APPENDIX A

Protective Services Asset Inventory

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