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City of Sault Ste. Marie Protective Services Asset Management Plan

June 2024

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AECOM: 2015-04-13

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1. Introduction

AECOM Canada Ltd. (AECOM) was retained by The City of Sault Ste. Marie (the "City") to develop an asset management plan (AMP) to comply with the requirements of Ontario Regulation 588/17 (O. Reg. 588/17) in respect to its non-core municipal infrastructure assets. The scope of work for this investigation is outlined in AECOM's proposal dated May 25th, 2023, 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 three of the Great Lakes with an estimated population of 72,051 (2021). 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 AMP to comply with the second phase of the regulatory requirements in respect to its non-core municipal infrastructure assets, in accordance with O. Reg. 588/17, by July 1st, 2024. 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 Objectives

In 2015, the City's first Asset Management Plan (AMP) was published. In 2019, approved by the City Council, the City's Strategic Asset Management (AM) Policy came into effect.

The objective of this AMP is to deliver a financial and technical roadmap for managing the City's protective services assets and to provide the means for the City to maximize value from its assets, at the lowest overall expense, while at the same time enhancing service levels for its residents. Furthermore, the objective of this AMP is to align with the guidelines laid out in the City's Strategic AM Policy and Section 5 of Ontario Regulation (O. Reg.) 588/17.

Organizations that implement good asset management (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.

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 1-1**). The development of this AMP is one of the steps to guide the City towards meeting the July 1st, 2024 deadline.

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

Description: A regulation made under the Infrastructure for Jobs and Prosperity Act, 2015, stating that every municipality shall prepare and update a Strategic AM Policy, and that every municipality shall prepare an AM Plan for its core infrastructure assets by July 1, 2022, and an AM Plan for all other infrastructure assets by July 1, 2024. The regulation outlines several requirements that each AM Plan must follow, such as including current and proposed level of service. Core municipal infrastructure assets include water, wastewater, stormwater, road, and bridge assets.	
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, wastewater, 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 level of service that the municipality proposes to provide, the activities required to meet those level of service, and a strategy to fund activities.

1.4 Scope

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

- 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 gap analysis (**Section 2**).
- The City's level of service (LoS) objectives, stakeholder identification, LoS framework, and future demand drivers (**Section 3**).
- Asset lifecycle management strategies and funding needs to maintain current LoS, minimize associated asset risks, and to optimize costs over the whole lifecycle of the asset (**Sections 4** and **5**).

1.5 Relationship to Other Corporate Documents

This AMP is a tactical plan which links "top-down" strategic objectives with "bottom-up" operational activities. **Figure 1-1** demonstrates the line-of-sight between AM strategic objectives and tactical and operational AM elements, including the relationship this AMP has to the other plans in the City's hierarchy of documents.

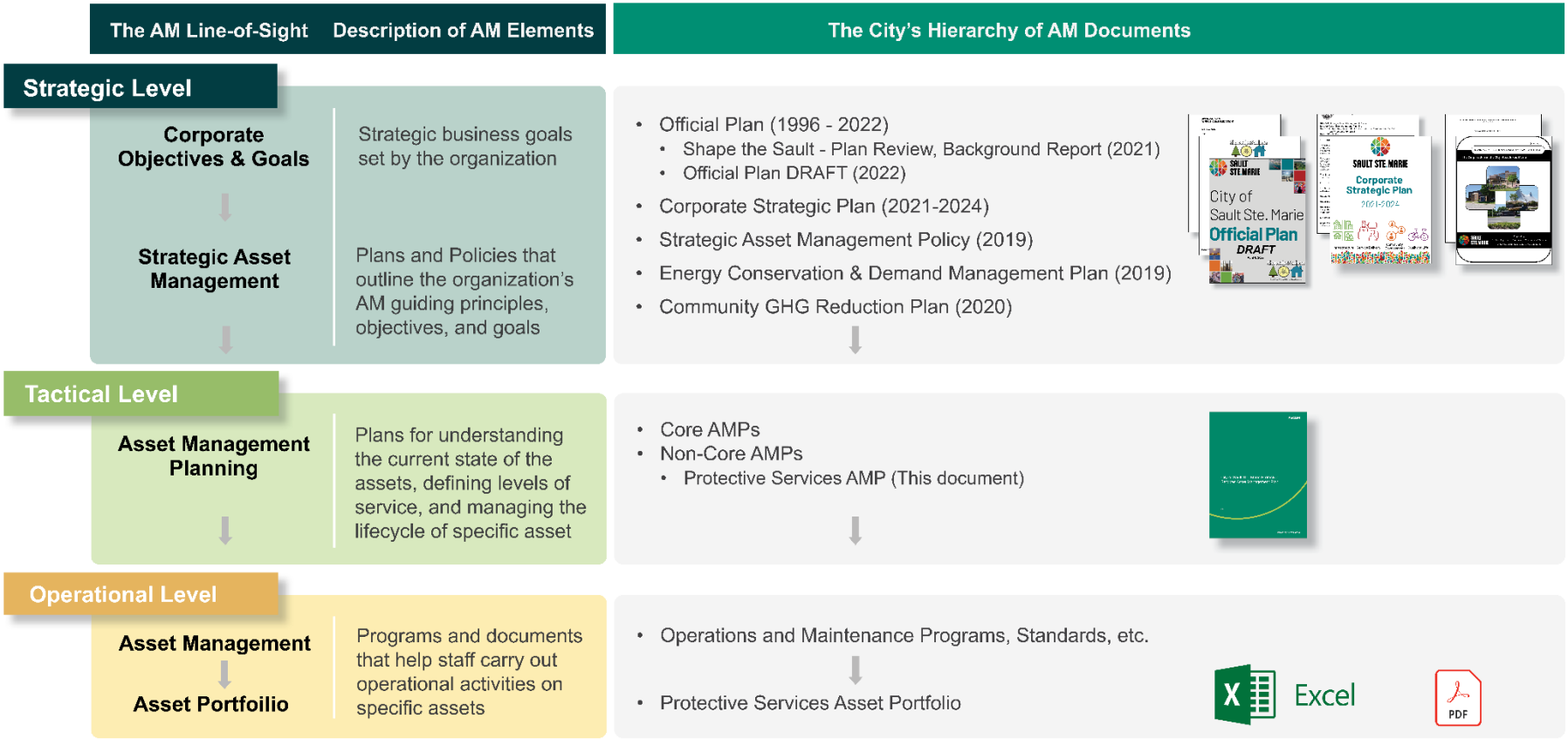

Figure 1-1: The City's AM Line of Sight

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.

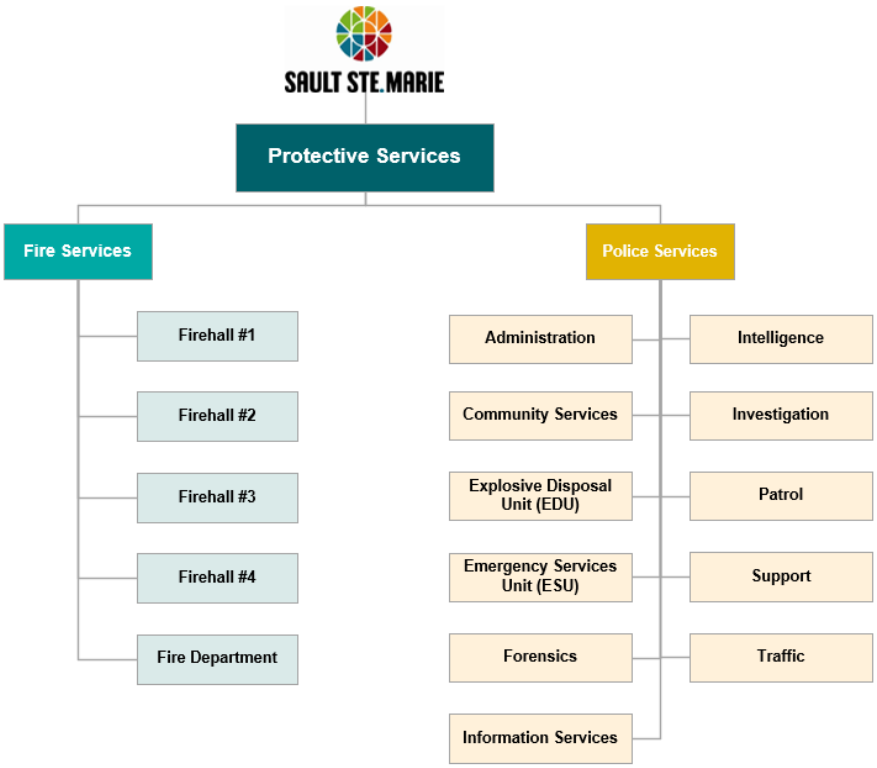

Figure 2-1: City of Sault Ste. Marie Protective Services Asset Hierarchy*

*Firehall buildings 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	32	Ea.
		Communication Services	1	Ea.
		Explosive Disposal Unit (EDU)	5	Ea.
		Emergency Services Unit (ESU)	143	Ea.
		Forensics	23	Ea.
		Information Services	8	Ea.
		Intelligence	3	Ea.
		Investigations	71	Ea.
		Patrol	100	Ea.
		Support	642	Ea.
		Traffic	25	Ea.
	Fire Services	Firehall #1	93	Ea.
		Firehall #2	34	Ea.
		Firehall #3	49	Ea.
		Firehall #4	40	Ea.
		Fire Department	67	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 support sub-category for police services constitutes the most significant portion, accounting for a replacement value of approximately $9 million, followed by the patrol sub-category at $3.3 million, investigations and emergency services unit (ESU) at $8 million each, and traffic equipment at $0.7 million. The combined replacement value for all these categories amounts to approximately $39 million.

It is noted that the replacement costs are estimated based on a Class 4[1] 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.

[1] 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

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 45%, out of which 15% accounts for engineering and project management cost and 30% for contingency cost.

Table 2-2: Protective Services Current Replacement Value

Asset Group	Asset Category	Asset Sub-Category	Total Replacement Value (2024)
Protective Services	Police Services	Administration	$967,000
		Communication Services	$38,000
		Explosive Disposal Unit (EDU)	$448,000
		Emergency Services Unit (ESU)	$1,091,000
		Forensics	$290,000
		Information Services	$32,000
		Intelligence	$183,000
		Investigations	$1,285,000
		Patrol	$3,317,000
		Support	$8,995,000
		Traffic	$240,000
	Fire Services	Firehall #1	$5,878,000
		Firehall #2	$2,555,000
		Firehall #3	$1,897,000
		Firehall #4	$4,331,000
		Fire Department	$997,000
Total			**$32,544,000**

2.2.3 Age and Remaining Service Life

The asset age is based on the install year of the assets or the assumed year if not available and the remaining service life (RSL) is estimated by considering both the age and the expected service life (ESL) in years. In practice, different assets will deteriorate at varying rates, and their deterioration may not necessarily follow a linear pattern over time. However, it is crucial to consider the level of effort required to predict failure in relation to the asset value. For highly valuable assets, more sophisticated deterioration modeling may be justified. Conversely, for low-value assets, the cost of deterioration modeling might surpass the replacement cost of the asset. Moreover, the actual service life can vary significantly from the ESL. ESL 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:

- **Environment:** Some assets are exposed to very aggressive environmental conditions, while other assets are in relatively benign conditions; thus, the deterioration of assets is affected differently.
- **Maintenance:** Assets are maintained through renewal or replacement of components, which prolongs the service life of the asset. Critical assets are maintained (some through service contracts) but many are yet to experience failure and require replacement.
- **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. The majority of protective services assets are fleet and equipment that does not become technologically obsolete. Those assets at risk are software systems and IT assets (such as servers). Some areas of technology may arise and become legislatively necessary, but this is not likely in the immediate short term.

Figure 2-2 shows the weighted average asset age and RSL as a proportion of average ESL for the asset subcategories. It is recommended to collect accurate installation date information for all assets and include it in the next iteration of the AMP.

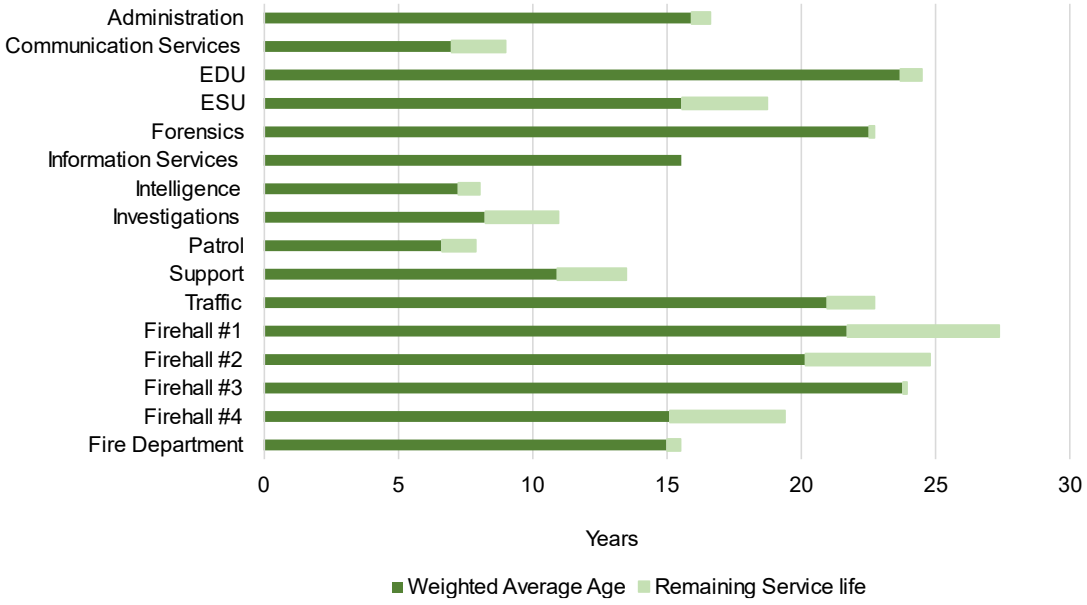

Figure 2-2: Protective Services Weighted Average Age and Remaining Service Life

2.2.4 Asset Condition

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. In order 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 2-3**.

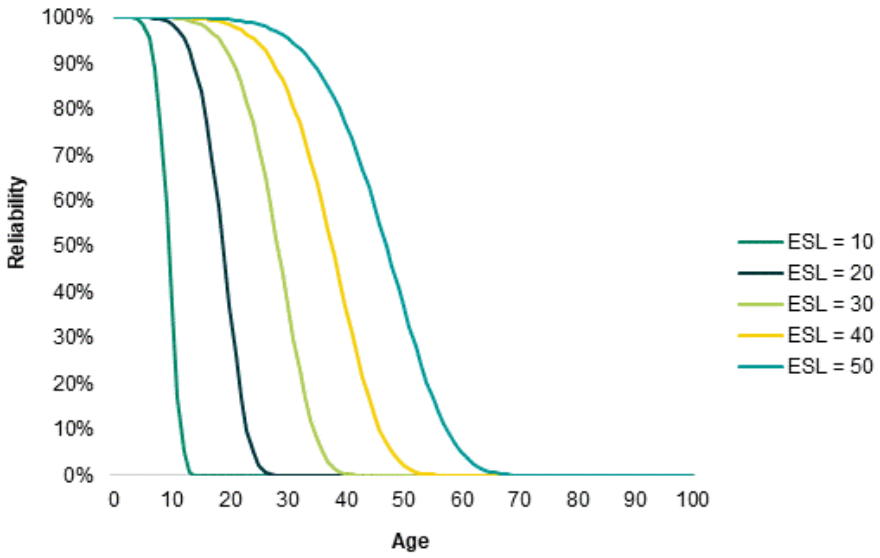

Figure 2-3: Asset Deterioration Curve Samples

Table 2-3 and **Figure 2-4** 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 44% 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 2-3: Protective Services Condition Summary

Rank	Condition Rating	Replacement Value	% of Replacement Value
1	Very Good	$2,374,000	7%
2	Good	$11,914,000	37%
3	Fair	$1,741,000	5%
4	Poor	$3,516,000	11%
5	Very Poor	$2,384,000	7%
6	Unknown	$10,659,000	33%

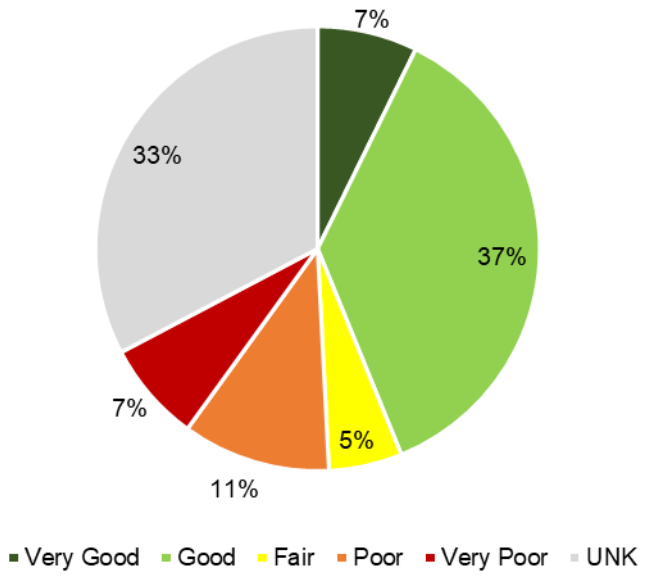

Figure 2-4: Protective Services Asset Condition Weighted by Replacement Value

Figure 2-5 demonstrates the condition of the assets based on asset subcategories and their respective replacement values. The replacement cost per condition is reliant on the calculated condition demonstrated previously. The largest groups of assets in poor and very poor conditions are found in Support, Patrol and Administration for Police Services, whereas Fire Services have very little assets in poor condition as they are heavily regulated for maintenance and replacement.

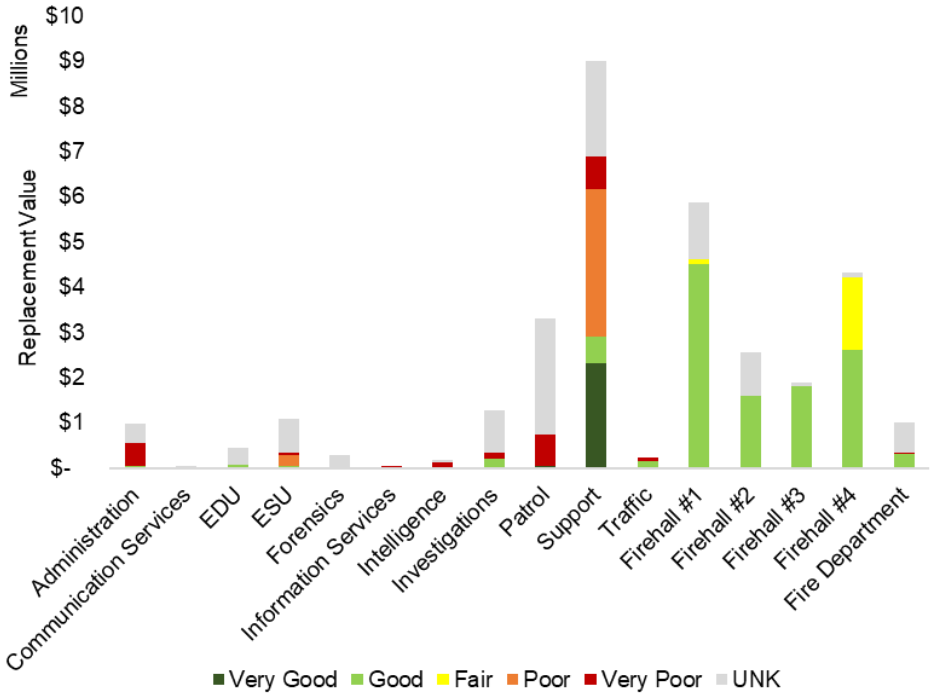

Figure 2-5: Distribution of Protective Services Asset Condition

The top items currently in very poor condition are as follows:

For Police Services:

1. A total of $1.1 million in total replacement value of various police fleet under the Intelligence, Investigations, Patrol and Support divisions.
2. $550k worth of office furniture purchased in the 2000s for the Administration division.
3. Firearms purchased in 2007 and 2008 for the Support division, worth $195k in total.
4. $90k worth of equipment (traffic radars and breathalysers) for the Traffic division, purchased from 1994 to 2003.
5. $65k worth of video surveillance, portable radio and other equipment for the Support division, purchased from 2001 to 2005.
6. Rifles and handguns (MP-5 and S&W handguns) purchased in 1999 and 2005, worth $51k in total, for the Emergency Services Unit (ESU).

For Fire Services:

1. $30k worth of computers purchased in 2004.

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 expected service lives 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 2-4 provides a summary of data completeness levels in the compiled protective services inventory across key data attributes. It is recommended that the City continue to work on filling any remaining gaps, ensuring a comprehensive and up-to-date database.

Table 2-4: Asset Data Completeness

Asset Group	Inventory Completeness (%)					
	Asset ID	Location	Install Date	Condition	Expected Service Life	Replacement Cost
Protective Services	87%	100%	92%	34%	69%	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 2-5** provides a description for the data confidence grades used to classify the reliability of the asset data. This can serve as a reference for the City to assess the quality of their asset data. A brief summary and explanation of the available data can be seen in **Table 2-6**.

Table 2-5: 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 2-6: Asset Data Confidence

Asset Group	Inventory Confidence					
	Asset ID	Location	Install Date	Condition	Expected Service Life	Replacement Cost
Protective Services	NA	A	C	D	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 expected service life. 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 D as a lot of it is extrapolated from the installation data (which itself has a confidence grade of C). 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 build (i.e., data capture and entry) to its eventual archival and/or deletion at the end of its useful life[2]. A clear definition and understanding of the organization's process for acquiring, storing, utilizing, assessing, improving, archiving, and deleting data (see **Figure 2-6**) will ensure good data management practices and help to sustain levels of data quality required to support AM activities.

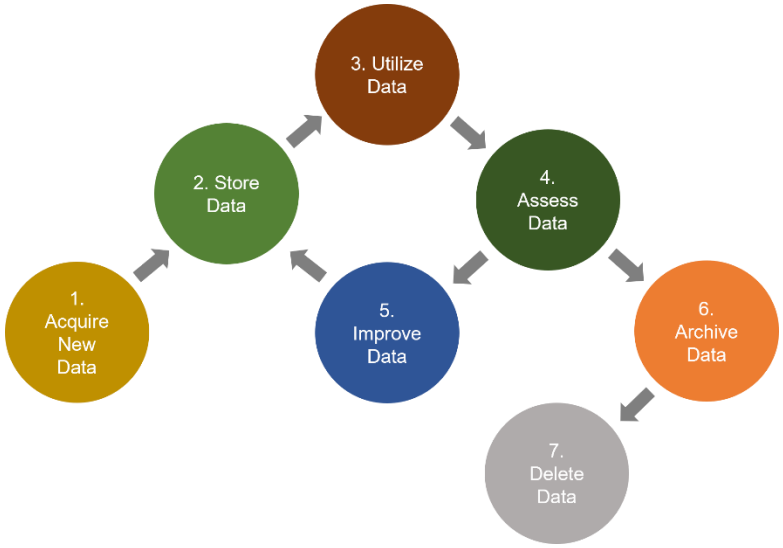

Figure 2-6: Asset Information Lifecycle

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

- **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.
- **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.
- **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

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

improved understanding of estimated service lives and true replacement cost value from the City's experience.

- **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.
- **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.
- **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 includes the following factors:
    - Consider what data should be archived and articulate the reasons behind the archival decisions.
    - Examine any legal obligations pertaining to the retention of data records.
    - Determine the appropriate duration for retaining different categories of data records.
    - Evaluate the risks associated with the inability to retrieve specific data records.
    - Specify the authorized individuals or entities who should have access to archived data records.
    - Establish the expected timeframe for retrieving archived data records.
    - Communicate these requirements across the organization to ensure staff understand why records are being archived, how they can access archived data records, and for how long archived data records can still be accessed.
    - 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.
- **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 authorization.

3. Levels 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.

O. Reg. 588/17 mandates that Ontario municipalities must report their current LoS by July 1, 2024. Additionally, the proposed LoS for all municipal assets including core and non-core assets should be reported by July 1, 2025.

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[3] 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.

The development of level of service targets should be aligned with these corporate objectives which will be addressed in the next iteration of the AMP.

[3] City of Sault Ste Marie. 2021. Comprehensive Background Report.

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

Overarching Themes	Corporate 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.
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 City's history, diverse communities, and natural and cultural heritage, with the Downtown as the City'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 to them.
- Understand their risk appetite and risk threshold.
- Understand their willingness to pay for services.

Stakeholders can take many forms and may be internal (i.e., staff, Council) or external (i.e., the public, regulatory agencies, suppliers, neighbouring municipalities, etc.) to the organization. The following groups were identified as key stakeholders for fleet during the LoS workshop held with City staff. This is not intended to be an exhaustive list; however, the following groups provide a good starting point for the City to move forward to the next stage:

- Residential Customers
- Industrial, Commercial & institutional (ICI) Customers
- Regulatory Agencies
- Neighbouring Municipalities
- Internal City Departments
- School Boards

3.3.1 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)

3.4 O. Reg 588/17 Levels of Service Metrics

Currently, O. Reg 588/17 only identifies levels of service 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**.

3.5 Levels of Service Performance Metrics

Through a review of the legislated and regulatory requirements required for protective services and collaboration with the City during the LoS workshop, seven (7) LoS performance metrics were determined for fire & rescue protective services, and three (3) performance metrics were determined for police protect services. A summary of the City's protective services service level metrics are presented in **Table 3-3**.

Table 3-3: Levels of Service Performance Metrics (Protective Services)

	Asset Category	Universal Service Value	LoS Performance Measure	Unit	Is Data Available? (Y/N)
1.	Fire & Rescue	Affordability	Total Fire Operating Cost per 1,000 Population	$ / 1,000 People	TBD
2.	Fire & Rescue	Affordability	Cost of Maintenance/Repairs per Vehicle	$ / Vehicle	TBD
3.	Fire & Rescue	Affordability	Fuel Cost per Vehicle	$ / Vehicle	TBD
4.	Fire & Rescue	Quality & Reliability	Percentage of Fire & Rescue Equipment in Very Good or Good Condition	%	TBD
5.	Fire & Rescue	Quality & Reliability	Percentage of Fire & Rescue Equipment Required for Health and Safety	%	TBD
6.	Fire & Rescue	Quality & Reliability	Hours of Operation per Vehicle	Hrs / Vehicle	TBD
7.	Fire & Rescue	Quality & Reliability	Mileage of Operation per Vehicle	km / Vehicle	TBD
1.	Police Service	Access & Capacity	Number of Police Staff (Officers and Civilians) per 100,000 Population	#	TBD
2.	Police Service	Customer Service & Responsiveness	Number of complaints against police officers	#	TBD
3.	Police Service	Health & Safety	Number of police officer training hours	Hour	TBD

3.6 Levels of Service Performance Targets

Establishing LoS targets is an important part of continual improvement and performance management. Without performance 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 infrastructure performance 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 the user is willing 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 cost associated with varying the LoS.
- Assess the customers' willingness to pay.

It is important that any targets set be realistic and achievable. Therefore, it is not advisable that the City sets any firm targets until their current performance has been fully assessed. O. Reg. 588/17 requires AMPs to include proposed levels of service and a formalized financial strategy by July 1, 2025.

3.7 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.

A summary of factors identified from the LoS workshop that would impact fleet service levels include, but are not limited to, the following:

- Technology.
- Electrification.
- Energy and Demand Management.
- Funding level.

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 local decision-making on land use, development, and public infrastructure over the next 20 years. The City's population is expected to reach 80,000 people by 2031, and 83,300 people by 2036. Employment is projected to grow by approximately 6,000 jobs, from 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. The City will have to address these aspects during the later phases of the AM regulatory compliance process and before the 2025 deadline.

[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 the entire asset lifecycle ensures that the City makes sound decisions that take into account present and future service delivery needs.

The overarching goal of lifecycle management is to maximize the long-term benefits and services that the City's 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 activities undertaken throughout its service life. Part of the purpose of the AM planning process is to fully understand and predict the long-range financial requirements for the City's infrastructure, facilitating 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 ongoing operations and maintenance, renewal & replacement, and disposal costs accumulate up to many multiples of the initial acquisition costs. As such, it is important to fully understand the entire lifecycle costs before proceeding with asset acquisition.

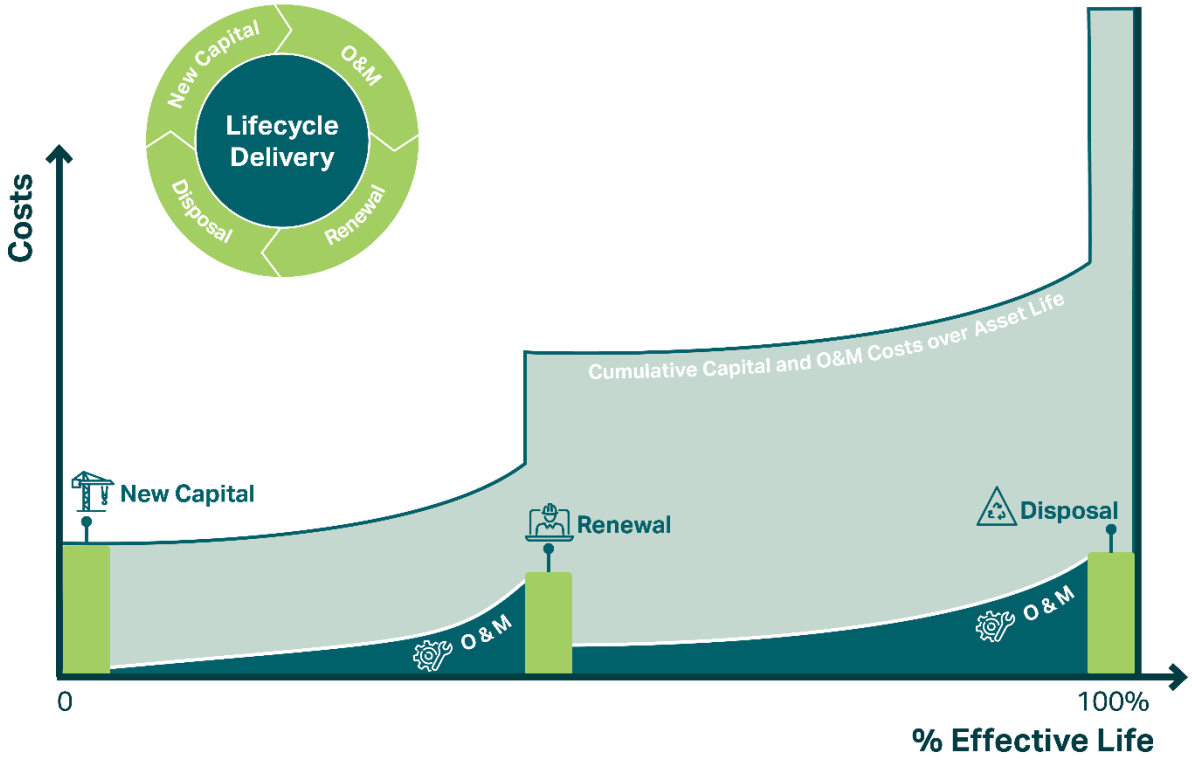

Figure 4-1: Lifecycle Cost Accumulation Over Asset Life

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 meet the demands of growth and functional requirements. When acquiring new assets, the City should evaluate credible alternative design solutions, considering how the asset will be managed at each of its lifecycle stages. AM and full lifecycle considerations for the acquisition of new assets include, but are not limited to, the following:

    - The asset's operability and maintainability.

- Supply chain considerations.
- Availability and management of detours.
- 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 infrastructure is commissioned, the City assumes the responsibility of operating and maintaining the infrastructure according to O&M standards to ensure its safety and reliability. The operations staff provides the necessary day-to-day support for operating the assets. Maintenance expenses include periodic preventive maintenance to ensure that the infrastructure can provide reliable service throughout the life of the asset and corrective maintenance that is required to repair defective assets as needed. Inadequate funding for O&M will adversely impact the lifespan of assets. The number of O&M resources required in any period is a function of the current inventory of infrastructure and the total O&M needs for each asset. As the inventory of infrastructure grows, total O&M requirements will also increase.

3. **Renewal and Replacement:** The third aspect of full lifecycle costing pertains to the renewal and replacement of assets that have deteriorated to the point where they no longer provide the required service. Renewal or rehabilitation costs may be incurred during the life of an asset where an investment is made to improve its condition and/or functionality, for example, renewing turnout gear. Reconstruction activities are expected to occur once an asset has reached the end of its useful life, and renewal is no longer a viable option.

4. **Decommissioning and Disposal:** There will inevitably come to 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 retire an asset include changes leading to non-compliance, the inability of the asset to handle increased LoS, technological advances rendering the asset obsolete, the cost of retaining the asset exceeding the benefits gained, the current risk associated with the asset's failure becoming intolerable, assets negatively impacting service delivery or negative impacts on the environment.

   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. 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 Asset Acquisition Strategies

The City's approach to acquiring protective services assets adheres to relevant regulations, standards, and the City's strategic plans. These documents outline criteria for selecting assets, based on factors such as service levels and cost-effectiveness. Furthermore, the City's acquisition strategy aligns with their dedication to environmental sustainability, as notably demonstrated through the Green Fleet Initiative. **Table 4-1** summarizes the acquisition activities associated with the City's protective services assets.

Table 4-1: Acquisition Activities for Protective Services Assets

Asset Group	Asset Category	Activities Undertaken by the City	Guiding Documents
Protective Services	Fire Services Police Services	• Acquisition of new equipment. • Expansion, updating, and restoration of current assets.	• Official Plan. • Corporate Strategic Plan. • Energy Conservation and Demand Management Plan. • Strategic Business Plan. • Strategic Asset Management Policy. • Green Fleet Initiative. • Fleet Management Services Report.

4.3 Asset Operations and Maintenance Strategies

Effective O&M of assets is crucial for sustainable performance and longevity. The City's O&M of protective services assets is conducted with a primary focus on regulatory compliance. The City follows a meticulous maintenance schedule, incorporating regular inspections and adherence to best practices. **Table 4-2** summarizes the O&M activities associated with the City's protective services assets.

Table 4-2: O&M Activities for Protective Services Assets

Asset Group	Asset Category	Activities Undertaken by the City	Compliances
Protective Services	Fire Services	• Annual service tests. • Daily and weekly visual checks. • Operational inspections. • Road test and annual weight verification. • Performance testing. • Re-testing and correction for defective apparatus.	• National Fire Protection Association (NFPA). • Occupational Safety and Health (OHS) • Best practices: International Fire Service Training Association (IFSTA), Fire Underwriters Survey (FUS), Underwriter's Laboratories of Canada (ULC). • Emergency Management and Civil Protection Act.
	Police Services	• Regular maintenance and inspections for equipment.	• Community Safety and Policing Act (formerly known as the Police Services Act, prior to April 2024) – O. Reg. 405/23 Police Uniforms and Equipment.

4.4 Renewal and Replacement Strategies

Renewal often involves upgrading or refurbishing existing assets to extend their lifespan, while replacement entails acquiring new assets. The costs associated with these activities include not only the direct expenses of acquisition but also indirect costs such as downtime during the transition, training for new technologies, and potential disposal or recycling costs.

The City's decisions to renew or replace protective services assets are driven by various factors. These include commitments to enhancing asset condition, implementing upgrades to meet LoS, ensuring accessibility, and adapting to changes in regulations. Additionally, the City considers guidance from insurance policies, ensuring that assets meet coverage criteria. **Table 4-3** summarizes the renewal and replacement activities associated with the City's protective services assets.

Table 4-3: Renewal and Replacement Activities for Protective Services Assets

Asset Group	Asset Category	Activities Undertaken by the City
Protective Services	Fire Services	• Replace at the end of life: – Replaced $450k rescue truck in 2021. – Received $850k tanker truck in 2022. – Replaced $300k bunker gear in 2023. – In progress: $2.6M aerial truck replacement.
	Police Services	• Switched car model due to improved vehicle availability and enhanced fuel efficiency.

4.5 Decommissioning and Disposal Strategies

Effective asset decommissioning and disposal are integral components of strategic asset management. The City's choices to dispose of protective services assets are influenced by several key factors. These include responsiveness to evolving regulations, alignment with insurance, retirement plans for assets like fire apparatus, and adherence to predefined out-of-service criteria. Additionally, factors such as assets no longer in service, uneconomical conditions due to limited spare parts availability or obsolescence, and the pursuit of newer technologies contribute to the strategic approach the City takes in responsibly managing the lifecycle of protective services assets.

4.6 Risk Associated with Lifecyle Activities

In the context of AM, risk is defined as the consequence or impact of uncertainties on AM objectives. These uncertainties span a spectrum of events, including financial market fluctuations, unexpected asset failures, changes in regulatory environments, and other factors capable of influencing the performance or condition of assets. Risk management, developed to handle uncertainties in a systematic and timely manner, is a practical framework that ensures thoughtful decision-making and protects the achievement of goals. The risk management process generally follows a series of steps, as outlined in **Table 4-4**.

Table 4-4: Key Steps in the Risk Management Process

Step	Description
1. Establish the context	• Define the scope of the risk management process and the objectives that the City seeks to achieve through effective risk management. • Consider the City's internal and external factors and understand stakeholder expectations.
2. Risk identification	• Identify potential risks that could impact the City's AM objectives.
3. Risk analysis	• Utilize qualitative or quantitative analysis methods to assess risks.
4. Risk evaluation	• Evaluate the likelihood and impact of identified risks. • Prioritize risks based on their criticality.
5. Risk treatment	• Develop strategies to reduce the likelihood and impact of identified risks. • Implement preventive measures to address potential issues proactively. • Establish contingency plans for managing risks that cannot be eliminated.
6. Monitor and review	• Regularly update risk assessments to reflect evolving circumstances. • Develop KPIs and monitoring tools to track the effectiveness of risk treatment strategies. • Learn from the City's past experiences and continuously improve risk management strategies.

Over the course of an asset's service life, the accelerating rate of deterioration with age poses inherent risks, inevitably leading to a corresponding increase in maintenance costs. **Figure 4-2** illustrates a general asset deterioration curve. This trend becomes particularly pronounced in the final phase of the asset's service life, where the cost of maintenance experiences a rapid escalation, highlighting the financial risks associated with prolonged neglect. This phenomenon underscores the critical importance of preventive maintenance in the early stages of an

asset's service life. By addressing risks proactively during these initial periods, the potential financial burden tied to accelerated deterioration in later stages can be effectively mitigated.

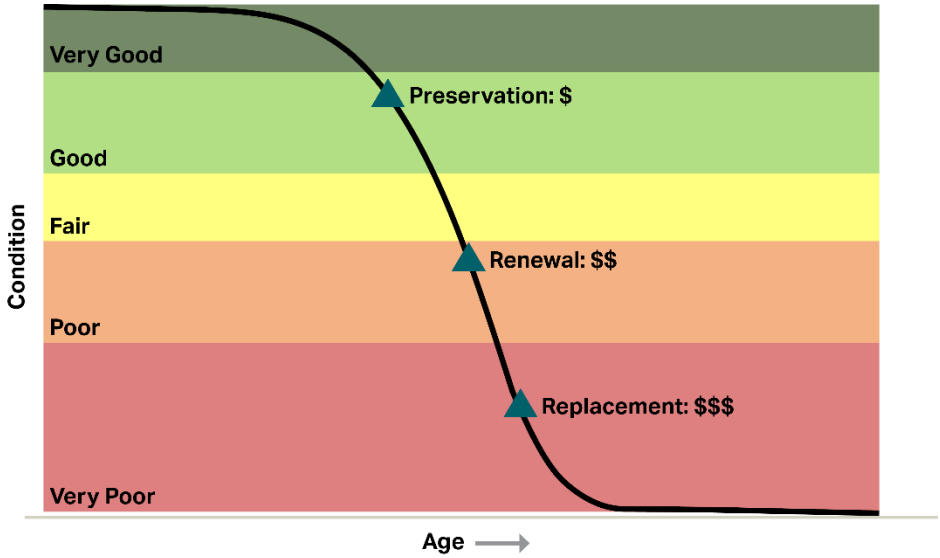

Figure 4-2: Asset Deterioration Curve and Renewal Costs

Beyond the general guidance, the City's approach to risk management should be tailored to their overarching goals, financial resources, and willingness to tolerate uncertainties. To help shape the City's risk management process, AECOM recommends taking into account the following key considerations:

1. Specialized Parts and Limited Vendor Pool

The supply chain for specialty equipment, like fire trucks, often relies on a limited pool of specialized vendors, while few of them are located within Ontario. In many instances, the required parts need to be shipped from overseas. This dependency can result in vulnerability to disruptions, such as production delays, supply shortages, or unexpected events affecting the vendor's operations. Consequently, it may lead to longer lead times and potential delays in maintenance. Addressing these challenges requires a strategic approach to enhance local capabilities, streamline vendor dependencies, and optimize the supply chain, ensuring the efficient operation and maintenance of crucial fire service assets within the City.

2. Stringent Safety Standards and Changes in Regulations

Specialty equipment is subject to rigorous safety standards and regulations; however, regulatory frameworks are dynamic and prone to change due to technological advancements, lessons learned from incidents, and evolving societal expectations. Therefore, staying ahead of these changes is crucial for the City to proactively identify and mitigate potential risks associated with non-compliance.

5. Funding Need Analysis

Financial forecasting and capital planning are a critical element of 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 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 shows the assumptions adopted in the financial model to determine the reinvestment and replacement decisions for each subcategory of protective services assets.

Section 5.2 assesses the annual funding requirements for the next 20 years (2024-2043). Additionally, a smoothed allocation of annual funding is provided to align with the City's budgeting requirements.

Section 5.3 presents the full funding needed over the next 10 years (2024-2033). The full funding expenditure profile includes the budget required for Capital, O&M, and disposal.

5.1 Reinvestment Forecast and Lifecycle Modeling

The lifecycle analysis was conducted using an MS Excel Asset Lifecycle Model that integrated asset inventory, age, ESLs, replacement values, and condition to establish a theoretical replacement cycle for each protective services asset. The reinvestment forecasts prepared for this assessment provide estimates of the costs required over the next 20 years to sustain each of the City's protective services assets. A financial dashboard was developed to present the results of the lifecycle modeling (**Appendix A**). Investments were also compared to the existing business plan to confirm alignment and understand gaps in planned expenditure.

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 and is based on the following assumptions:

- Base year: The base year used is 2024. Any historic asset valuations have been inflated using assumed inflation rates.
- Reinvestment rate: Reinvestment rate is calculated as the average annual expenditure for asset replacement and renewal divided by the total replacement value. For example, a 10% reinvestment rate would mean, on average, all assets would be replaced and renewed in the span of 10 years.
- The inflation rates used are as follows:

Table 5-1: Projected Inflation Rates

Year	Inflation Rate[5]
2024	7%
2025	6%
2026	5%
2027	4%
2028	4%
2029 onwards	3%

[5] AECOM Analysis, "Easing Inflation and Construction Costs – Q2 2023", June 2023

- Markup: The project management and engineering, and contingency mark ups are 15% and 30% respectively.
- Disposal Rate: 1% of the annual reinvestment is used as an allocation for disposal costs.

5.2 Capital Reinvestment Need Analysis

The City's protective services require an average annual reinvestment of $3.4 million over the period 2024-2033 and $4.5 million over 2034-2043 in inflated dollar values, as presented in **Figure 5-1**. This is equivalent to a total of approximately $79 million over the next 20-year period. Notably, the reinvestment funding needs for Police Services is the Support division and for Fire Services is Firehall #1.

Furthermore, the large spike in 2038 is because a number of big-ticket items needing replacement for Fire Services, such as the Smeal 100 ft Aerial Platform fire truck, the Smeal Rescue Pumper P3, and various turnout gear.

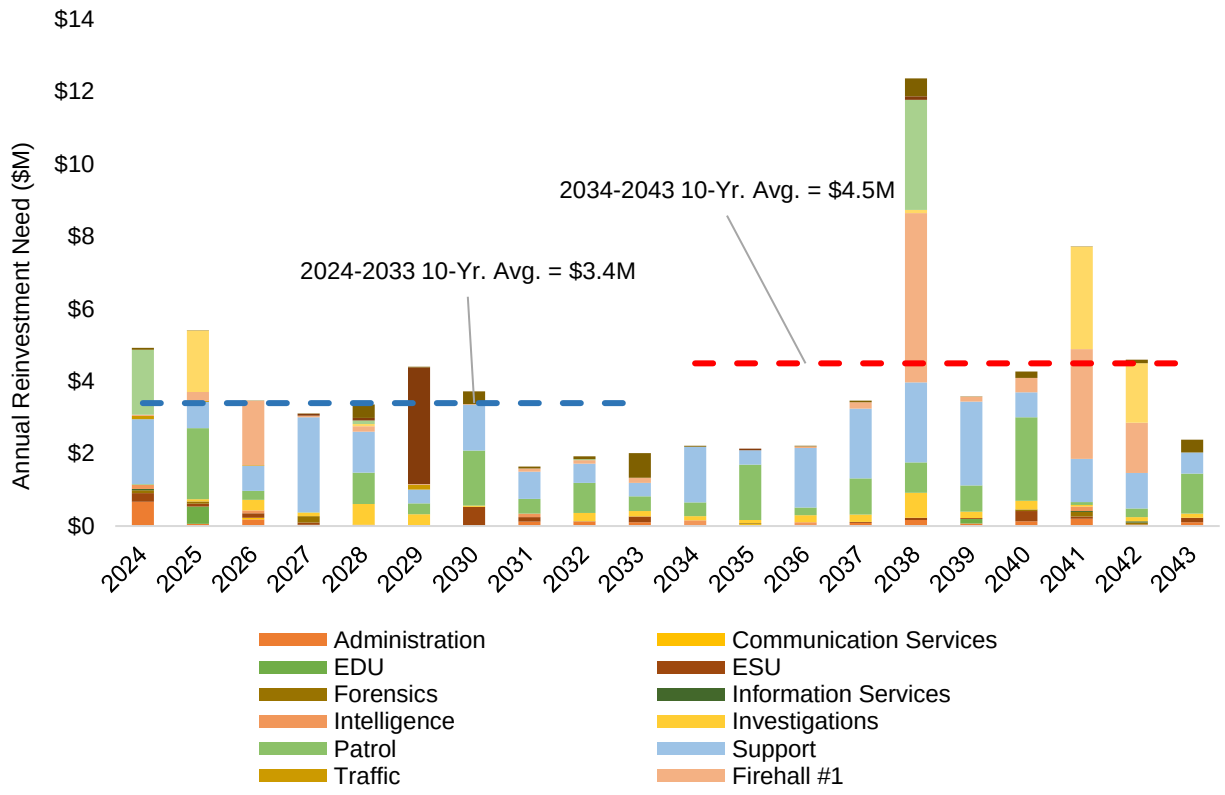

Figure 5-1: Protective Services 20-Year Reinvestment Need

The detailed 20-year reinvestment needs for protective services are presented in **Table 5-2** in inflated dollar values.

Table 5-2: Protective Services 20-Year Total and Annual Average Reinvestment Need

Asset Category	Asset Sub-Category	Annual Average Need	20-Year Total
Police Services	Administration	$106,000	$2,114,000
	Communication Services	$5,000	$100,000
	EDU	$30,000	$601,000

Asset Category	Asset Sub-Category	Annual Average Need	20-Year Total
	ESU	$99,000	$1,980,000
	Forensics	$28,000	$555,000
	Information Services	$4,000	$89,000
	Intelligence	$34,000	$683,000
	Investigations	$187,000	$3,735,000
	Patrol	$748,000	$14,967,000
	Support	$1,185,000	$23,708,000
	Traffic	$13,000	$269,000
Fire Services	Firehall #1	$624,000	$12,483,000
	Firehall #2	$316,000	$6,317,000
	Firehall #3	$248,000	$4,961,000
	Firehall #4	$174,000	$3,488,000
	Fire Department	$141,000	$2,822,000
	Total	**$3,944,000**	**$78,872,000**

To better align with the City's budgeting requirements, the annual capital reinvestment needs for the City's protective services assets have been evenly distributed over the next 20 years, as illustrated in **Figure 5-2**. This smoothing of reinvestment requirements aims to facilitate the City's budgeting processes by providing a more predictable and steadier financial outlook. Rather than experiencing significant fluctuations in capital expenditure from year to year, this approach allows for a more consistent and manageable financial planning for the City throughout the period of 2024-2043.

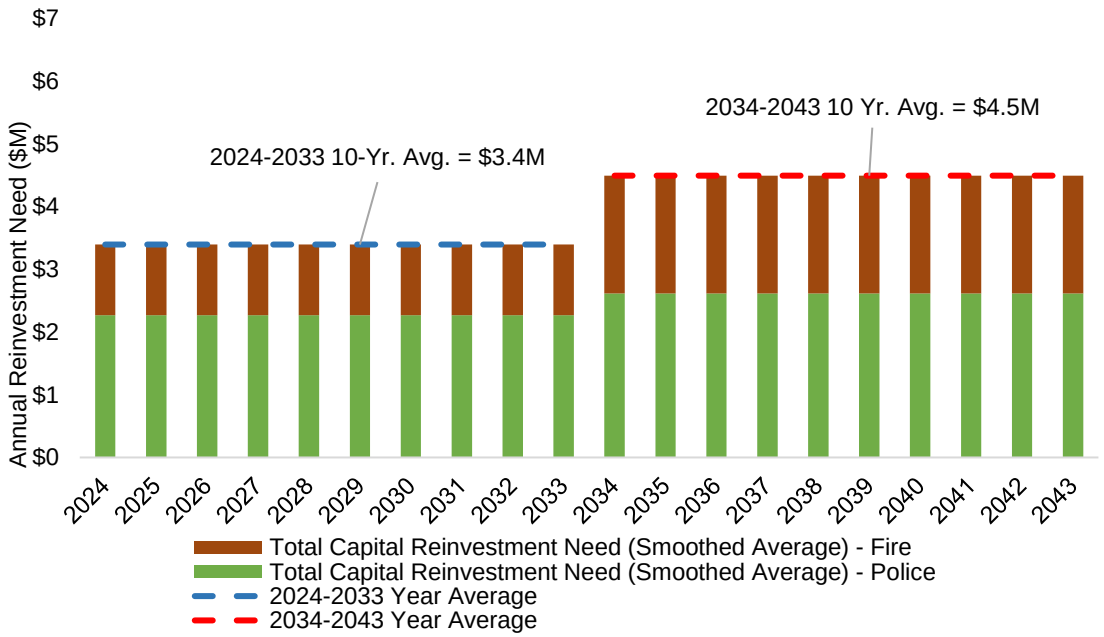

Figure 5-2: Protective Services 20-Year Smoothed Annual Reinvestment Needs

Of the $3.4M annual average for 2024-2033, fire services will require $1.1M and police services will require $2.3M. For 2034-2043's annual average of $4.5M, it consists of $1.9M and $2.6M annually for fire and police services, respectively.

See **Appendix A** for additional graphs and detailed breakdown of reinvestment needs for both Police Services and Fire Services.

5.3 Full Funding Need Profile

Figure 5-3 shows a full picture of the City's protective services funding forecast for the next 10 years. This graph provides the City with a comprehensive understanding of the full funding requirements, essential for effective financial planning activities. The total annual reinvestment cost (**Figure 5-1**) was combined with the City's projected O&M cost. Additionally, one percent of the annual replacement cost was added to account for the asset disposal cost. With these additions, the City's protective services full funding requirement increases to approximately $62 million over the next 10 years, averaging $6.2 million per year in inflated dollar value. Of the total $62 million annual average, fire services will need $19.8 million and police services will need $42.6 million.

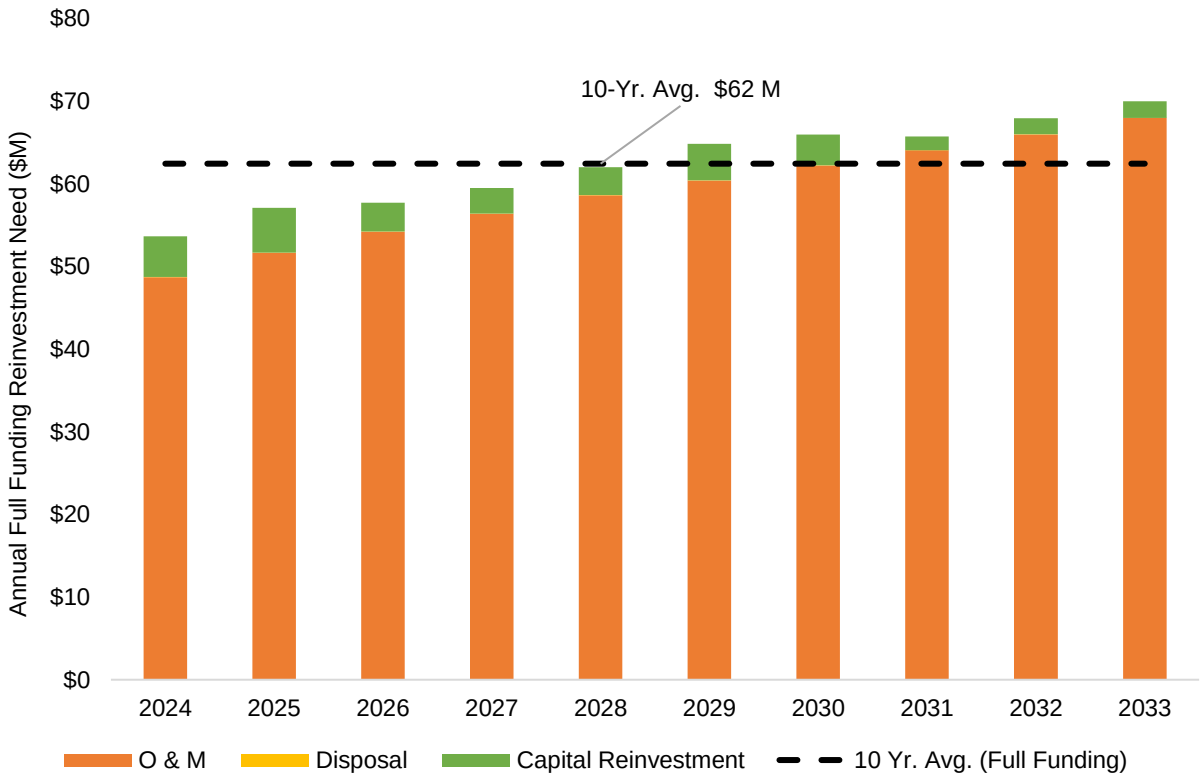

Figure 5-3: Protective Services Full Funding Need Profile

5.4 Funding 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.

5.4.1 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].

5.4.2 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].

5.4.3 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

[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.

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].

5.4.4 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].

5.4.5 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].

[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. AECOM has identified a set of activities that represents the next stage of AM planning and implementation within the City, as shown in **Table 6-1**.

Table 6-1: Recommended AM Improvement Initiatives

Index	Improvement Initiative	Description
1.	Refine the asset hierarchy and inventory.	• Continue to refine the asset inventory and close existing data gaps, to have a more accurate representation of the current state of the protective services assets; and, ultimately, to make more informed and defensible decisions. • Incorporate and maintain all the inventory data within one database, for example, move the asset inventory recorded in various spreadsheets into one master spreadsheet. • Trace the installation years of protective services assets. • Record the physical location of each asset in the asset inventory. This would for easier management of each of the lifecycle phases.
2.	Establish and implement a data information management strategy	• Asset data will be centralized, digitized and accessible to all staff. • Annual updates for the state of infrastructure data attributes such as the asset inventory, including the age and condition of the assets. • AM staff should have the ability to collect and update asset data in the field and in real time. • Workflows will be documented and digitized.
3.	Develop a formalized protective services assets condition assessment process and use consistent condition grading schemes for these assets.	• Currently, the condition of the protective services asset is not tracked with a well-developed asset condition rating grading system specialized for fire and police assets. • The grading system should include a description directly tied to each condition grade, along with details about the asset's performance and the necessary level of corrective and preventive maintenance required for assets falling within a certain condition rating category. This process will enable the City to keep track of and better forecast asset renewal needs. • Perform condition assessments on the most critical assets first. This ensures that assets are assessed using the same methodology and prioritized based on their criticality. It facilitates a more defensible business case when addressing issues of asset degradation with senior management and the Council.
4.	Refine the LoS Framework.	• Collect current asset performance data for key performance indicators (KPIs) that are not currently being tracked. • Analyze asset performance data to identify trends and establish annual performance benchmarks. • Engage in discussions with key stakeholders to establish service level targets and identify associated costs to meet those targets. • Once LoS targets have been decided upon, the City should develop strategies on how to meet service level targets, considering its existing operating environment (i.e., staff availability, current funding, resources, etc.). • Develop a Customer Consultation Plan to engage the public and other stakeholders on the LoS framework and better understand customers' willingness to pay for enhanced service levels.
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	• Conduct a comprehensive criticality and risk assessment of assets to inform work prioritization. • Review risk attribute values periodically to ensure alignment with business objectives and risk appetite. • Overlay the risk model with the current state of the assets (i.e., condition) and the financial forecast. Using this approach, the City could focus its monitoring, maintenance, and renewal and replacement budget and

Index	Improvement Initiative	Description
		activities on high-risk assets. Medium-risk infrastructure could be addressed through the mitigation of failure via regular monitoring, while low-risk assets could be accepted with caution.
6.	Continue to find ways to improve AM initiatives across the City by maintaining a high level of AM awareness through training, communication, and knowledge sharing.	• Conduct an AM Software Assessment to identify future system requirements, which may involve enhancing existing software, adding new features, or replacing the current system. • Develop a Knowledge Retention Strategy and Internal Communications Plan to document staff AM knowledge and experience for reporting and succession planning purposes. Communicate AM improvement initiatives and enhance AM awareness internally through internal communication.
7.	Update AM Plans	• Updates to the performance measures, and targets for the LoS framework, every 2 to 5 years. • Annual updates to the lifecycle strategies, including the O&M, renewal, upgrades, growth, and regulatory compliance strategies. • Updates to the financial strategies, such as asset valuations, long-term capital plans, operating budgets, and revenue sources.
8.	Grant application program	• The City should initiate an internal program for developing grant applications tailored to organizational objectives and align to the criteria of various funding programs. (refer to **Section 5.4** for available grant options). • Guidance includes: - Aligning with grant-specific criteria: prepare the grant application align with the requirements, and place emphasis on the key aspects relevant to the grant objectives. - Developing a grant application proposal: the application will be a project proposal that resonates with the grant agencies' goals, which should articulate clear objectives and expected outcome. - Budget planning: the financial plans must resonate with the grant's objectives, presenting transparency in fund utilization and emphasizing the project's viability and long-term financial sustainability. - Demonstrating feasibility and organization capacity: presenting a realistic project timeline, clear milestones, and a well-thought-out implementation plan. - Compliance, Reporting, and Effective Project Management: a robust project management strategy should be devised, illustrating the City's capacity to effectively manage, oversee, and report on the project's progress, in accordance with the grant's stipulations. - Preparing and Organizing Supporting Documents: these documents will be organized and presented in a manner that lucidly supports and enhances the application. • Final Review and Submission Process: prior to submission, each application should undergo a thorough review to ensure it meets the specific criteria and guidelines of the respective grant program.

Appendix A – Protective Services MS Excel Lifecycle Model and Inventory