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City of Sault Ste Marie Parks and Cemetery AMP

AUGUST 2024

City of Sault Ste. Marie
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1. Introduction

AECOM Canada Ltd. (AECOM) was retained by The City of Sault Ste. Marie (the "City") to develop asset management plans 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, parks and cemetery, 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 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 protection services, solid waste, parks and cemetery, facilities, parks and cemetery, roadway appurtenances, and active transportation.

1.2 Objectives

The objective of this AMP is to deliver a financial and technical roadmap for managing the City's parks and cemetery 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 O. Reg. 588/17.

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.

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 objectives, stakeholder identification, levels of service (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 (**Section 4** and **Section 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: The City's Asset Management Line of Sight 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.

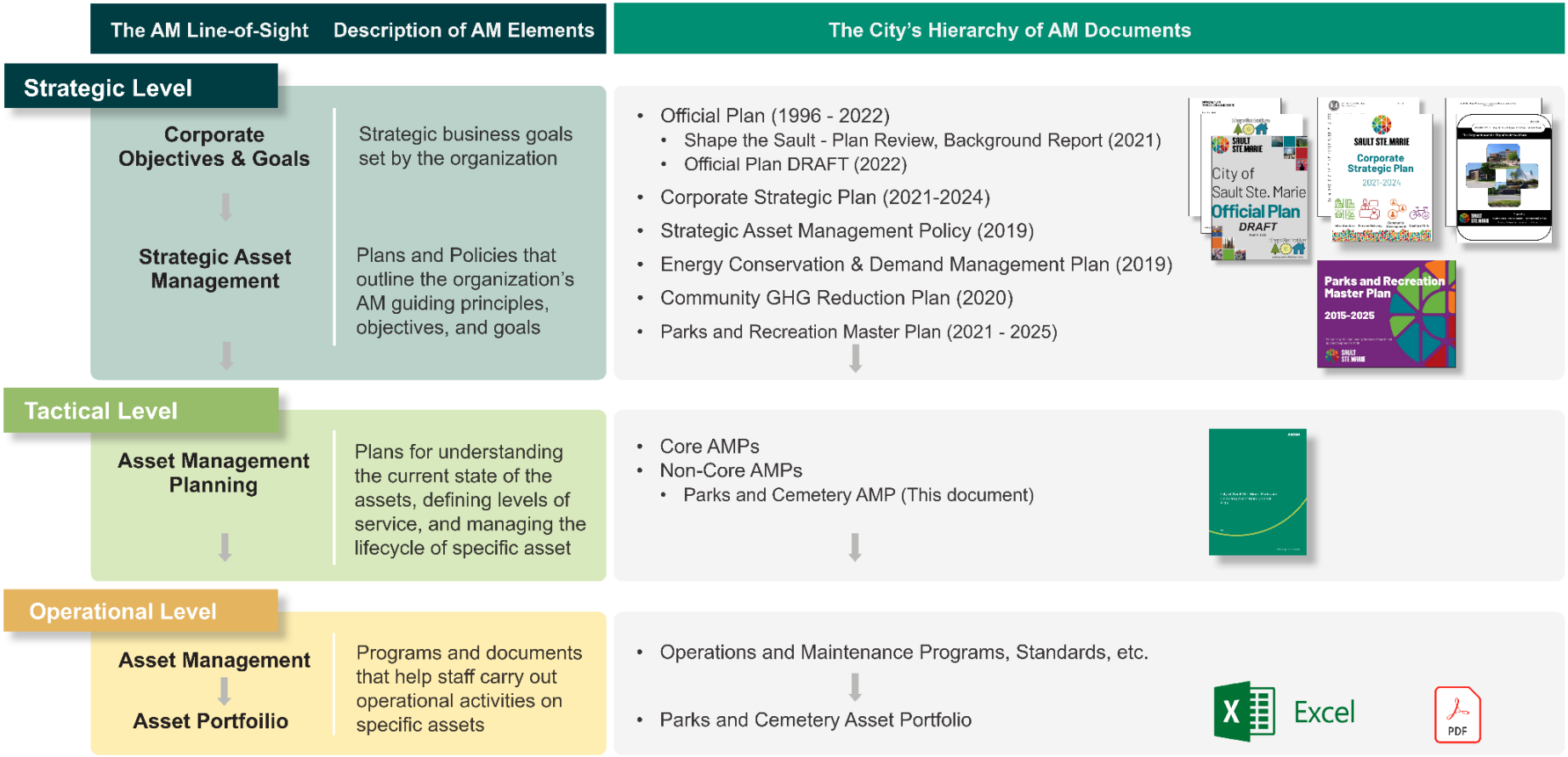

Figure 1-1: The City's Asset Management Line of Sight

2. State of Infrastructure

Parks and cemetery assets are managed by the City's Public Work - Park Division, who is responsible for the maintenance of grounds and assets at municipal parks, sports complexes, and various other facilities, including park structures, recreation facilities, park buildings parklands, park equipment, drinking water treatment facilities. Cemetery Assets, including cemetery equipment, are managed by the Community Services Department. The cemetery offices, columbaria and mausoleums are covered in the Facility AMP. Currently, the Park Division manages 83 parks including the Strathclair, Queen Elizabeth and Elliott Park outdoor sports complex, and the assets range significantly in both complexity and value. The types of service work that the Park division carries out include grass cutting, fielding lining, floral bed, playground maintenance, tree management, refuse collection, and dock and building maintenance.

The inventory of the parks and cemetery is a comprehensive catalogue 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 parks and cemetery 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 parks and cemetery is illustrated, showcasing four main categories: park structure, recreation, parkland, park equipment, sewage, and cemetery equipment. The parks and cemetery buildings are covered in the Facility AMP, and the parks and cemetery fleets are covered in the Fleet AMP.

Each category is further broken down into subcategories. This asset hierarchy establishes a logical indexing of the City's parks and cemetery 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.

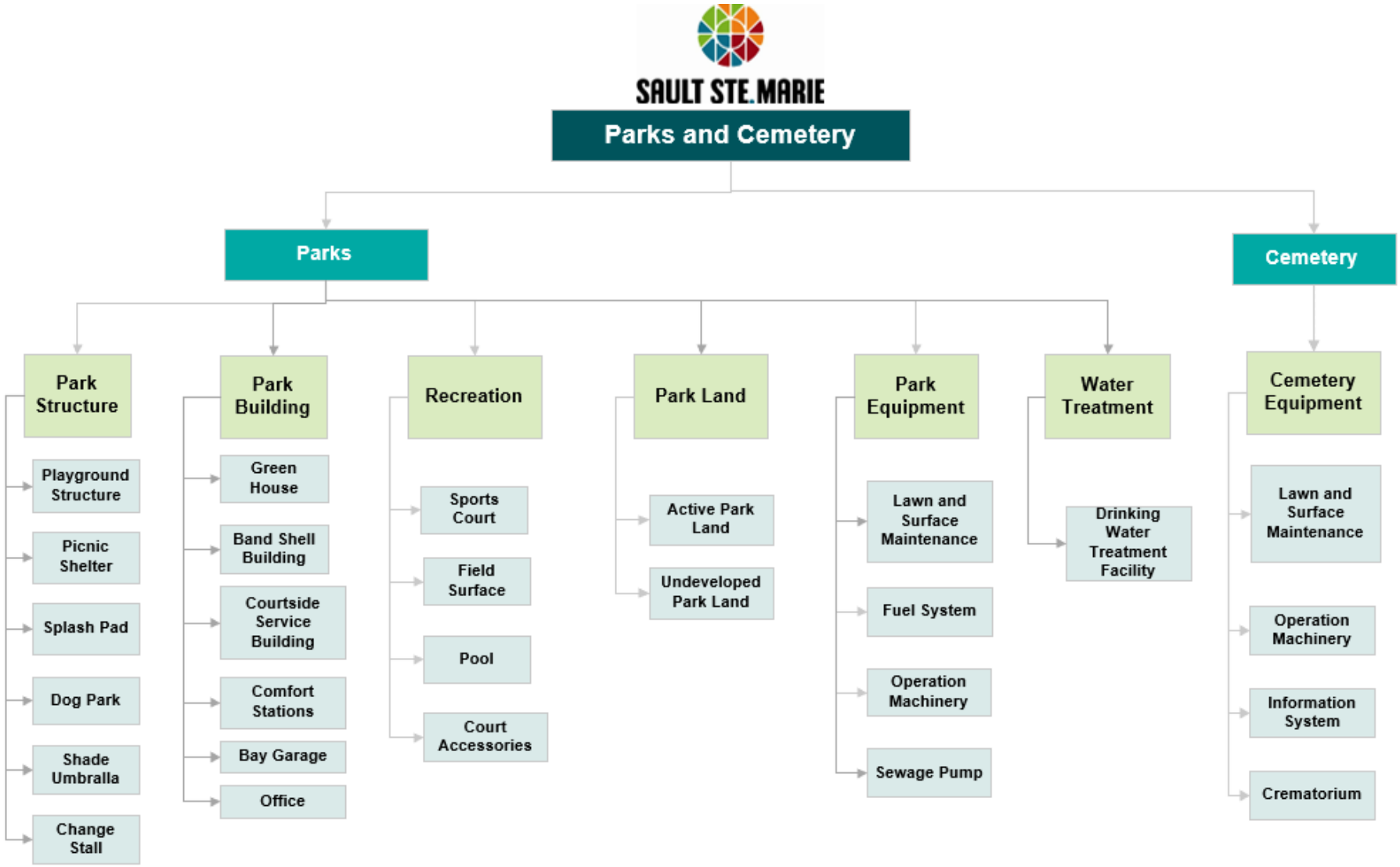

Figure 2-1: City of Sault Ste. Marie Parks and Cemetery Asset Hierarchy

2.2 Current State of the Assets

2.2.1 Asset Inventory

A completed parks and cemetery asset inventory is compiled based on the raw data provided by the City at the initial stage of the project, which was obtained from the following sources:

- Recreation and Culture Assets Phase 2
- Copy of Equipment Cemetery 2022
- Cemetery Fleet & Assets, Feb 16, 2023
- Active Capital Assets 2021
- FINAL 2023 UPDATE SSM Public Works Replacement Plan Workbook updated 20230309
- 2022 Biennial Structure Inspections

Table 2-1 presents the summary of the City's Parks and Cemetery asset inventory.

Table 2-1: Parks and Cemetery Summary

Asset Group	Asset Class	Asset Categories	Quantity	Unit	Inventory Details
Parks	Park Structure	Park Amenities	76	Ea.	67 Playgrounds 1 Dog park 4 Picnic Shelter 2 Splash pad 1 Change Stall 1 Shad Umbrella
	Recreation	Sports Courts	45	Ea.	8 Basketball courts 3 Bocce courts 2 Disc golf courses 5 Outdoor rinks 8 Pickleball courts 2 Skate park 6 Slow-pitch field 10 Tennis courts 1 Track
		Field Surface	43	Ea.	1 Cricket pitch 2 Football field 4 Intermediate Soccer Fields 7 Junior Soccer Fields 9 Mini Soccer Fields 6 Senior Soccer Fields 13 Slow-Pitch Field 1 Ultimate Frisbee Field
		Pools	660	m2	2 Outdoor swimming pool
		Court Accessories	84	Ea.	8 Bleachers 5 Field Irrigation System 31 Small Bleacher 39 Track and field lights
	Park Building	Green House	787	m2	Bellevue Park green house
		Office	460	m2	Pointe De Chenes Park offices Bellevue Park staff operation building
		Band Shell Building	444	m2	Bellevue Park band shell

Asset Group	Asset Class	Asset Categories	Quantity	Unit	Inventory Details
					building
		Courtside Service Building	1,193	m2	Strathclair Park slow-pitch courtside service buildings Strathclair Park soccer courtside service buildings Elliott Sport Complex courtside service buildings North Street courtside service buildings Esposito Park courtside buildings
		Comfort Stations	450	m2	Pointe De Chenes Park comfort stations
		Bay Garage	369	m2	Pointe De Chenes Park bay garages
	Park Land	Active Park Land	377	Ha	147 Active park land
		Undeveloped Park Land	N/A	N/A	17 Undeveloped park land
	Park Equipment	Fuel System	6	Ea.	1 Fuel leak detection system 2 Fuel pumps 2 Fuel tanks 1 Fuel system
		Lawn & Surface Maintenance	11	Ea.	11 Equipment include sweepers, weeder eaters, tillers, brooms, riding mowers, sander spreaders and seeders
		Operation Machinery	1	Ea.	1 Post driver
		Sewage Pump	2	Ea.	2 Vacuum pumps
	Water Treatment	Drinking Water Treatment Facility	2	Ea.	1 Water treatment plant 1 Secondary water treatment plant
Cemetery	Cemetery Equipment	Lawn & Surface Maintenance	40	Ea.	40 Equipment include sweepers, weeder eaters, tillers, brooms, riding mowers, sander spreaders and seeders
		Operation Machinery	21	Ea.	21 Equipment include air compressors, generators, lift, hammers, wackers, welders, lowering devices, etc.
		Crematorium	2	Ea.	1 Cremator 1 Emission monitoring system
		Information System	1	Ea.	1 Server

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 or construction costs. 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.

The finalized asset replacement values were determined with the largest numbers of the following:

- Escalating the original asset purchase costs to 2024 dollars, by the average inflation rate of the past 10 years (2014-2023) at 2.11%.
- Current replacement cost from AECOM cost library.

Table 2-2 presents the unit replacement cost and the total replacement value for parks and cemetery asset categories within the City. The final asset replacement values were applied with 15% engineering (Design & Contract Administration) markup and 30% contingencies. In this AMP, the park land value is not treated as a capital asset that requires replacing as typically land can be re-used or replaced for a similar cost to that achieved in sale. Land for cemeteries by their nature treat land as a consumable asset and therefore the condition and remaining ESL should be tied directly to the forecast remaining capacity and life expectancy.

Notably, the recreation constitutes the most significant portion, accounting for a replacement value of approximately $27 million, followed by the park structure at $20 million, the park buildings at $6.2 million, cemetery equipment at $2.1 million, water treatment at $0.80 million, and park equipment at $0.65 million. The combined replacement value for all these categories amounts to approximately $57.8 million. Note that all total replacement values are rounded to the nearest thousand.

Table 2-2: Current Replacement Value

Asset Group	Asset Class	Asset Categories	Replacement Cost Range	Total Replacement Value (2024 Dollar) With Markup
Parks	Park Structure	Park Amenity	$19,900-$977,800	$20,330,000
	Subtotal			**$20,330,000**
	Recreation	Sports Court	$68,700-$2,316,400	$8,817,000
		Field Surface	$42,800-$2,581,600	$14,517,000
		Pool	$870,000-$1,044,000	$1,914,000
		Court Accessories	$12,700-$373,500	$2,464,000
	Subtotal			**$27,712,000**
	Park Buildings	Green House	$53,000-$230,700	$485,000
		Office	$45,500-$262,400	$1,174,000
		Band Shell Building	$92,600-$411,100	$1,040,000
		Courtside Service Building	$18,000-$230,500	$2,122,000
		Comfort Stations	$77,000-$286,600	$801,000
		Bay Garage	$39,100-$273,400	$552,000
	Subtotal			**$6,174,000**
	Park Land	Active Park Land	N/A	N/A
		Undeveloped Park Land	N/A	N/A
	Park Equipment	Fuel System	$15,800-$71,000	$232,000
		Lawn & Surface Maintenance	$9,200-$121,200	$380,000
		Operation Machinery	$10,200	$11,000
		Sewage Pump	$12,000-$14,800	$27,000
	Subtotal			**$650,000**

Asset Group	Asset Class	Asset Categories	Replacement Cost Range	Total Replacement Value (2024 Dollar) With Markup
	Water Treatment	Drinking Water Treatment Facility	$797,800	$798,000
	Subtotal			**$798,000**
Cemetery	Cemetery Equipment	Lawn & Surface Maintenance	$600-$195,000	$868,000
		Operation Machinery	$2,100-$131,300	$762,000
		Crematorium	$227,500	$455,000
		Information System	$18,300	$19,000
	Subtotal			**$2,104,000**
Total Parks				**$55,664,000**
Total Cemetery				**$2,104,000**
Total Parks and Cemetery				**$57,768,000**

It is noted that the replacement costs are estimated based on the Class 4[1] cost estimation approach. These estimates are typically prepared with limited information, resulting in 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 also worth noting that the total replacement values are presented in inflated dollars and have been marked up by 45% for parks and cemetery assets, which accounts for engineering markup and any contingency cost.

2.2.3 Age and Remaining Service Life

The asset age is based on the install year of the assets 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 modelling may be justified. Conversely, for low-value assets, the cost of deterioration modelling 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 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.

[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 February 2024

- **Maintenance:** Assets are maintained through renewal 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 the 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.

Figure 2-2 and Figure 2-3 show the weighted average asset age and RSL as a proportion of average ESL for each asset class. The ESL and RUL data for assets except park equipment and cemetery equipment are counted in years. The ESL and RUL data for park equipment and cemetery equipment are counted in months.

Overall, the weighted average age of pools, and sports courts, is equal to or beyond the weighted average ESL. The drinking water treatment facility, green houses, and court accessories have relatively longer RUL compared to the other asset classes, because of their smaller weighted average age (26 years old for sewage facility, 10 years old for green house, and 12 years old for court accessories).

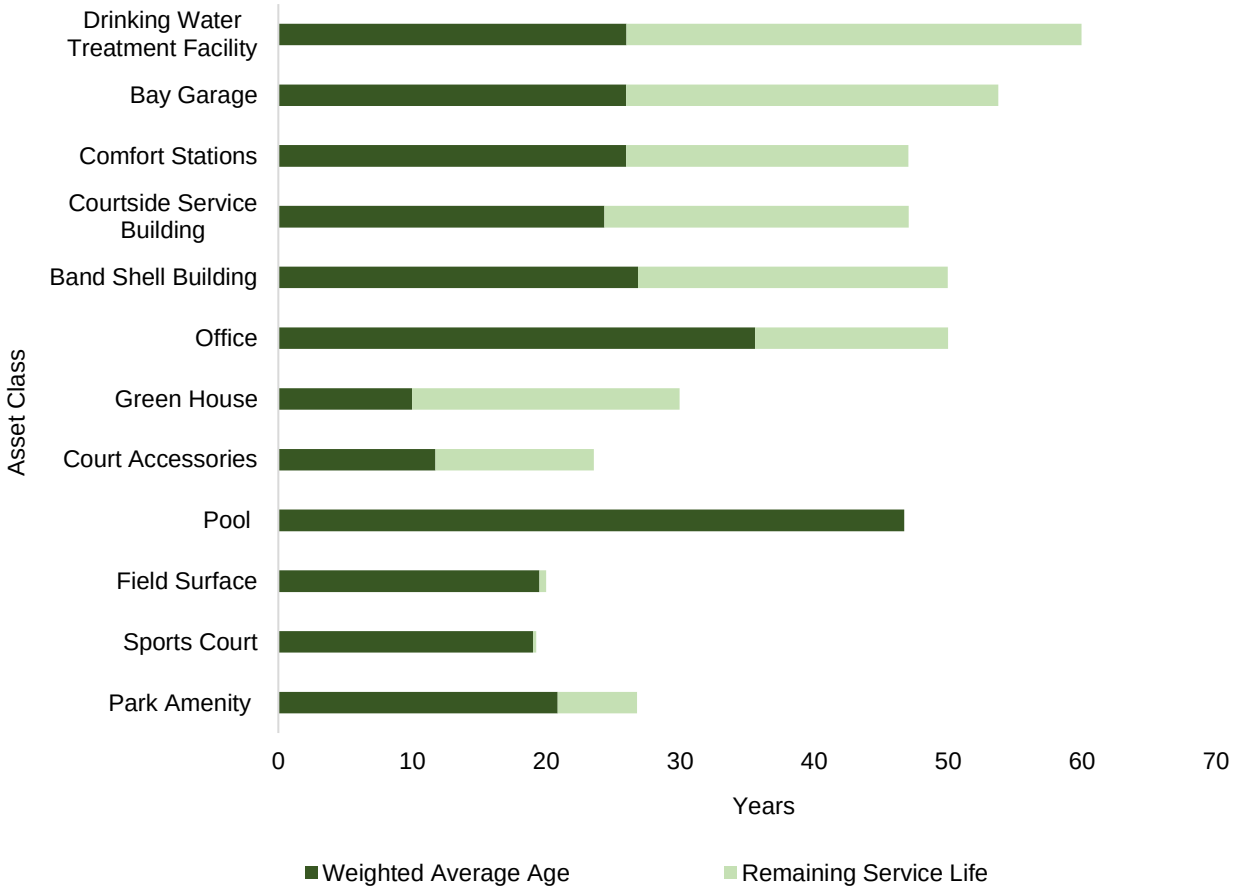

Figure 2-2: Parks and Cemetery Weighted Average Age and Remaining Service Life (Years)

Of the parks and cemetery equipment, most of the equipment has their weighted average age equal to or beyond the weighted average ESL, except the park sewage pumps, crematorium equipment and cemetery lawn & surface maintenance equipment.

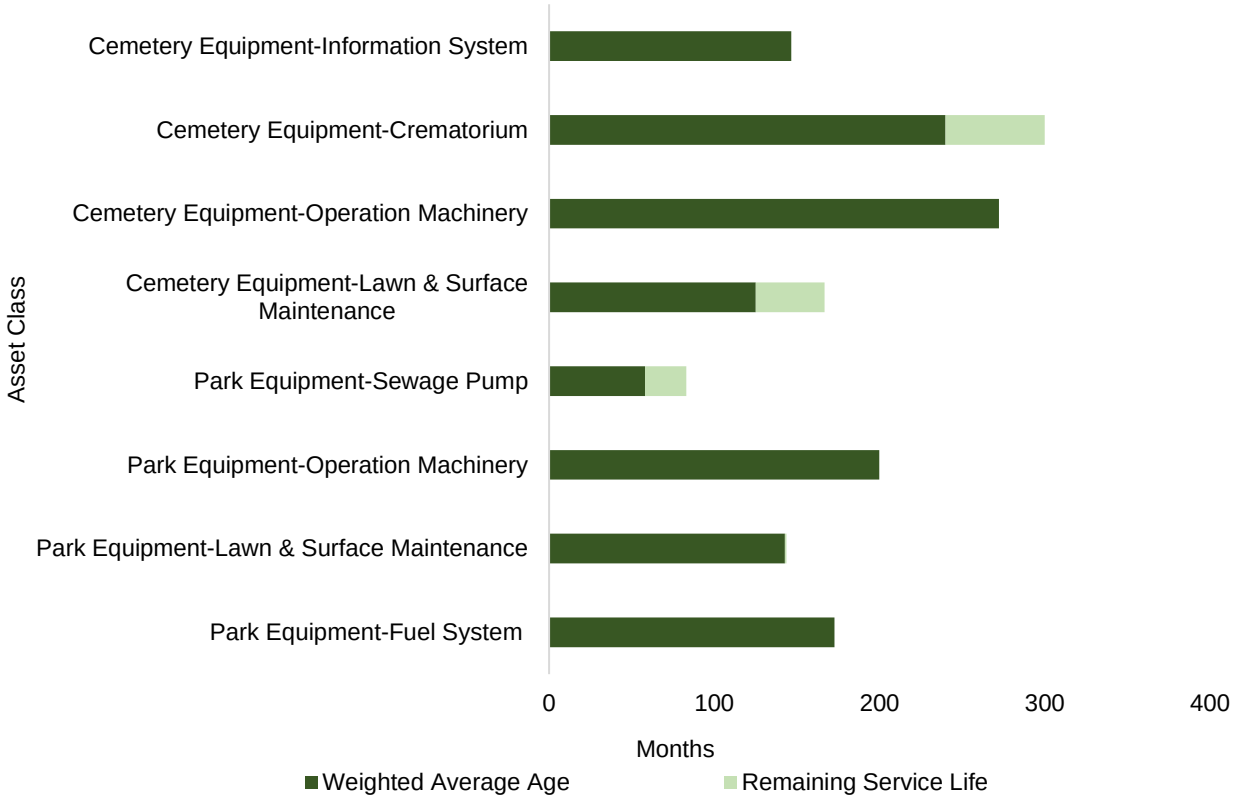

Figure 2-3: Parks and cemetery Weighted Average Age and Remaining Service Life (Months)

2.2.4 Asset Condition

Regular condition assessments for parks and cemetery assets are recommended to monitor the condition and support the asset management decision. For other asset categories that do not have condition assessment results, the two-parameter Weibull distribution function was used to assess the current condition and to project the future condition of the City's parks and cemetery assets. The Weibull distribution has been used extensively in reliability studies and lifetime prediction models in industries ranging from automotive to 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 was leveraged to simulate a set of deterioration curves for assets with different ESLs as shown in **Figure 2-4**.

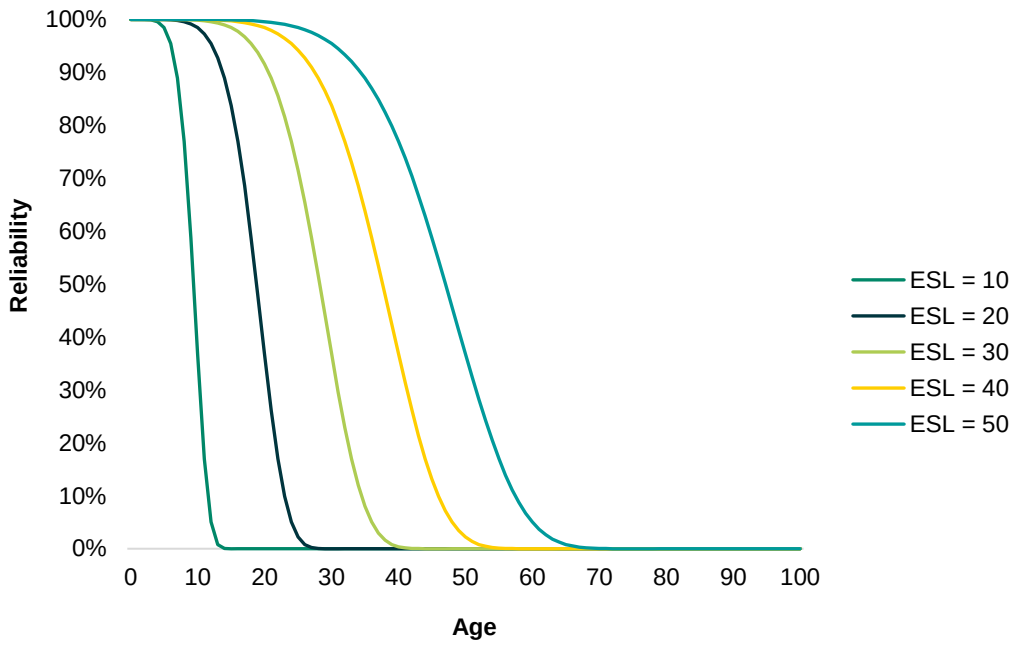

Figure 2-4: Asset Deterioration Curve Samples

The asset condition ratings were based on the five-point condition rating scale presented in **Table 2-3.**

Table 2-3: Condition Assessment Rating Details

Physical Condition Rating	Condition Description
1 - Very Good	The asset is new or in new condition, meets or exceeds all current standards of practice, shows no signs of deterioration, and is fully operable.
2 - Good	The asset has minimal signs of deterioration, generally meets all current standards of practice, and is fully operable.
3 - Fair	The asset may show moderate signs of deterioration, generally meets the current standard of practice, asset performance may decrease and cause service interruptions and is fully operable.
4 - Poor	The asset is approaching its end-of-life expectancy, shows significant signs of deterioration, major components may need to be rebuilt or replaced, may be functioning at an acceptable level is expected to deteriorate further.
5 - Very Poor	The asset is beyond its life expectancy, may no longer meet the current standard of practice, major component may no longer be serviceable, shows significant deterioration, functions at a limited capacity, and may pose a safety hazard if used.

Table 2-4 and **Figure 2-5** present the condition ratings of the City's parks and cemetery with respective replacement values in non-inflated dollars. The known condition ratings span from "Very Good" to "Very Poor," with "Very Good" and "Good" collectively contributing 38% to the overall replacement value. 43% of the assets are in "Poor" and "Very Poor" condition.

Table 2-4: Parks and Cemetery Condition Summary

Rank	Condition Rating	Replacement Value	% of Replacement Value
1	Very Good	$14,412,000	25%
2	Good	$7,189,000	13%
3	Fair	$11,184,000	19%
4	Poor	$4,764,000	8%
5	Very Poor	$19,859,000	35%
Total		**$57,408,000**	**100%**

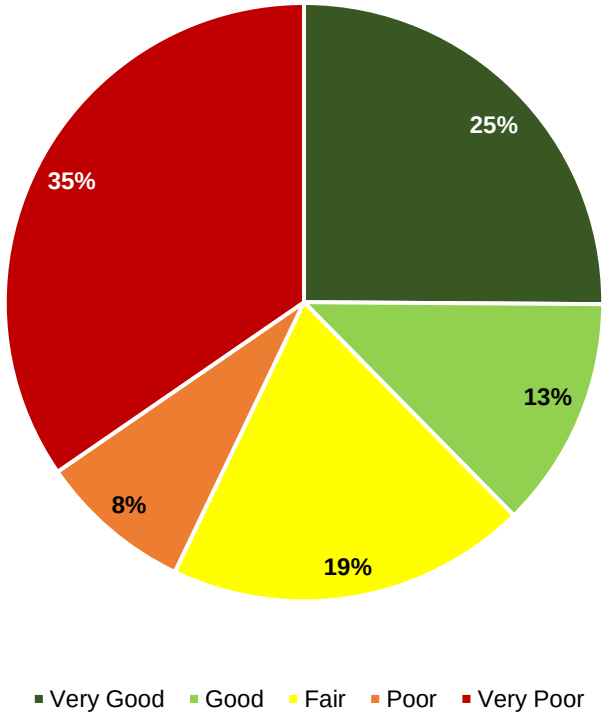

Figure 2-5: Parks and Cemetery Asset Condition Weighted by Replacement Value

Figure 2-6 shows the condition summary breakdown for each asset class, weighted by replacement value. For the court accessories, green houses, band shell buildings, courtside service buildings, bay garage, over 50% of the assets are in “Very Good” condition. The green houses are in “Very Good” condition. For park amenity, pool, over 50% of the assets are in “Very Poor” condition. The drinking water treatment facility has over 50% of assets in “Good” condition.

As for the park equipment and cemetery equipment, the park fuel system equipment, park lawn & surface maintenance equipment, park operational machinery, cemetery operational machinery and cemetery information system equipment (one server of $19 thousand), over 50% of the assets are in “Very Poor” condition. The park operation machinery, park sewage pumps. cemetery lawn & surface maintenance equipment and cemetery crematorium are in relatively better condition with over 50% of assets in “Good” and “Very Good” condition.

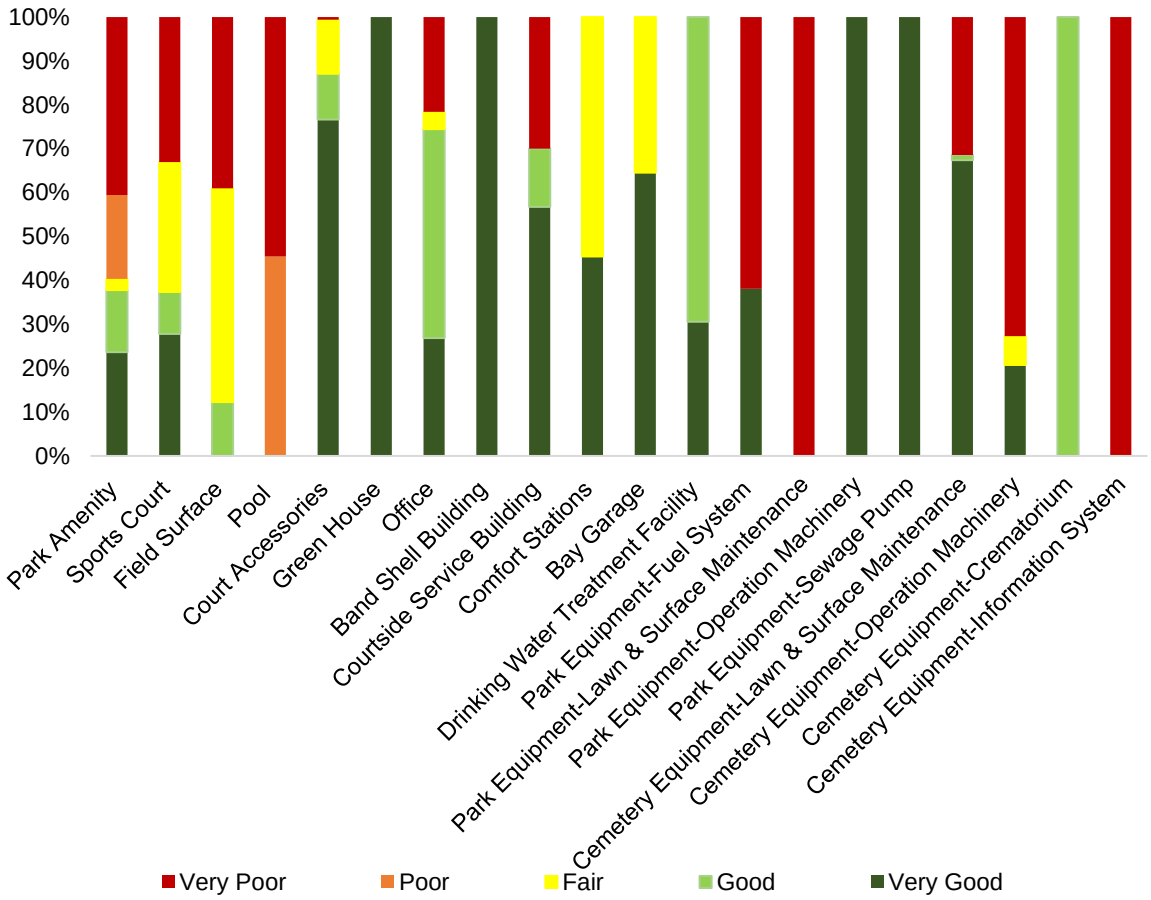

Figure 2-6: Condition Summary for Each Asset Class Weighted by Replacement Value

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 parks and cemetery assets were previously stored across multiple spreadsheets. This project has successfully centralized the data into a single inventory. Additionally, it has addressed and filled gaps in key data, such as expected service life and replacement costs, achieving a 100% completeness rate. **Table 2-5** provides a summary of data completeness levels in the compiled parks and cemetery 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 2-5: Asset Data Completeness

Asset Group	Inventory Completeness (%)					
	Asset ID	Location	Install Date	Condition	Expected Service Life	Replacement Cost
Parks and Cemetery	52%	50%	100%	100%	100%	100%

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 parks and cemetery assets. **Table 2-6** 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 2-7. Overall, The parks and cemetery asset inventory data are comprehensive in terms of the four key parameters required for the AM data analysis.

Table 2-6: 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 2-7: Asset Data Confidence

Asset Group	Inventory Confidence					
	Asset ID	Location	Install Date	Condition	Expected Service Life	Replacement Cost
Parks and Cemetery	C	C	A	A	A	A

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 2-7**) will ensure good data management practices and help to sustain levels of data quality required to support AM activities.

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

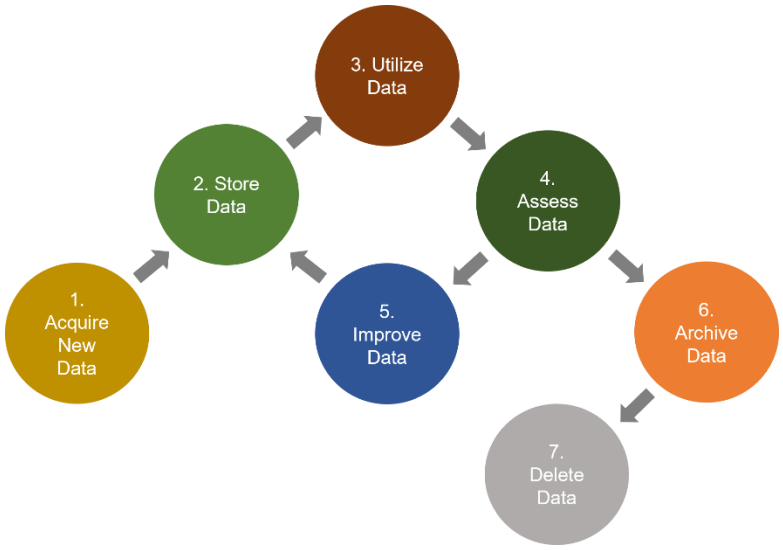

Figure 2-7.Asset Information Lifecycle

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 also to migrate and merge data from other sources.
    - New parks and cemetery assets should be consistently added to the inventory and a minimum required data set defined to maintain inventory accuracy and reliability. The required data includes the asset material, size, specification, new equipment make, model, Vehicle Identification Number, fuel type, original purchase price, purchase dates, purchase location, etc.
- **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 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 either the Computerized Maintenance Management System (CMMS) or the maintained asset inventory spreadsheet. For parks and cemetery assets, typical information including park structure specification, sports courts and field surface material and size, parks and cemetery buildings' frame type, story and associated mechanical and electrical equipment need to be captured and maintained to be updated during the daily data management process.
- **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.
    - The City should conduct regular inspections and condition assessments for its playground structure, sports courts and field surfaces, benches, picnic tables, parks and cemetery buildings, swimming pools, and lighting poles to adequately support the associated asset lifecycle activities decision-making including renewal, repair, and replacement.
- **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.
- **Deleting Data:** The deletion of data is the final component of the asset information lifecycle. Typically, within organizations, there is resistance to permanently delete data, otherwise known as data “squirrelling”, due to the overall capacity of storing data increasing and the cost decreases. 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 the current LoS by July 1, 2024. Additionally, the proposed LoS for all municipal assets including core and noncore 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.

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.

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

Overarching Themes	Corporate Objective
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 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 Stakeholders 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 parks and cemetery at the LoS workshops. 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. The City's key stakeholder groups for parks and cemetery service are identified below.

- Residential Customers
- Industrial, Commercial & institutional (ICI) Customers
- Visitors
- Regulatory Agencies
- Neighbouring Municipalities
- Developers
- First Nations
- Environmental Groups
- Internal City Departments
- Council Committees
- Parks and Recreation Advisory Committee
- Environmental Sustainability Committee

3.3.1 Legislated and Regulatory Requirements

Parks and cemetery 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., clean drinking water and safe roads, etc.). A sample of key Federal and Provincial legislated requirements are outlined below in **Table 3-2**.

Table 3-2: Legislated and Regulatory Requirements

Federal	Provincial
• Canadian Environmental Protection Act (CEPA) • Fisheries Act	• Environmental Protection Act (EPA) – Ontario Regulation 351 – Marinas • Public Parks Act • Cemeteries Act • Pesticides Act • Ontario Drainage Act • Accessibilities for Ontarians with Disabilities Act • Health Protection and Promotion Act – Ontario Regulation 565 - Public Pools • Recreational Water Protocol • Bereavement Authority of Ontario • Ministry of Environment • Conservations Authority Act – Ontario Regulation 97 – Conservation Authorities Regulation

3.4 O. Reg 588/17 Levels of Service Metrics

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

3.5 Levels of Service Performance Metrics

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.

A summary of the City's parks and cemetery service level metrics are presented in **Table 3-3**.

Table 3-3: Levels of Service Performance Metrics (Parks and Cemetery)

	Asset Category	Universal Service Value	LoS Performance Measure	Unit	Is Data Available? (Y/N)
1.	Parks	Customer Service & Responsiveness	Number of Hours of Sport Fields Booked Annually	#	Y
2.	Parks	Customer Service & Responsiveness	Total Number of New Trees Planted Annually	#	N
4.	Parks	Health & Safety	Percentage of Playgrounds Inspected Monthly	%	N
5.	Cemetery	Customer Service & Responsiveness	First Treatments	#	N
6.	Cemetery	Environment & Sustainability	Annual Cremator Natural Gas Consumption	GJ	N
7.	Cemetery	Health & Safety	# of Grave Repairs	#	Y

3.6 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 parks and cemetery service levels include, but are not limited to, the following:

- Energy and demand management.
- Aging park infrastructure
- Active living customer demands
- Funding level.
- Climate change.
- Staffing expertise.
- Cemetery demands.
    - Mausoleum sales
    - Green burials

On November 2, 2021, the City of Sault Ste. Marie'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 roughly reach to 80,000 (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. The City will have to address these aspects during the later phases of the AM regulatory compliance process and before the July 1, 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.

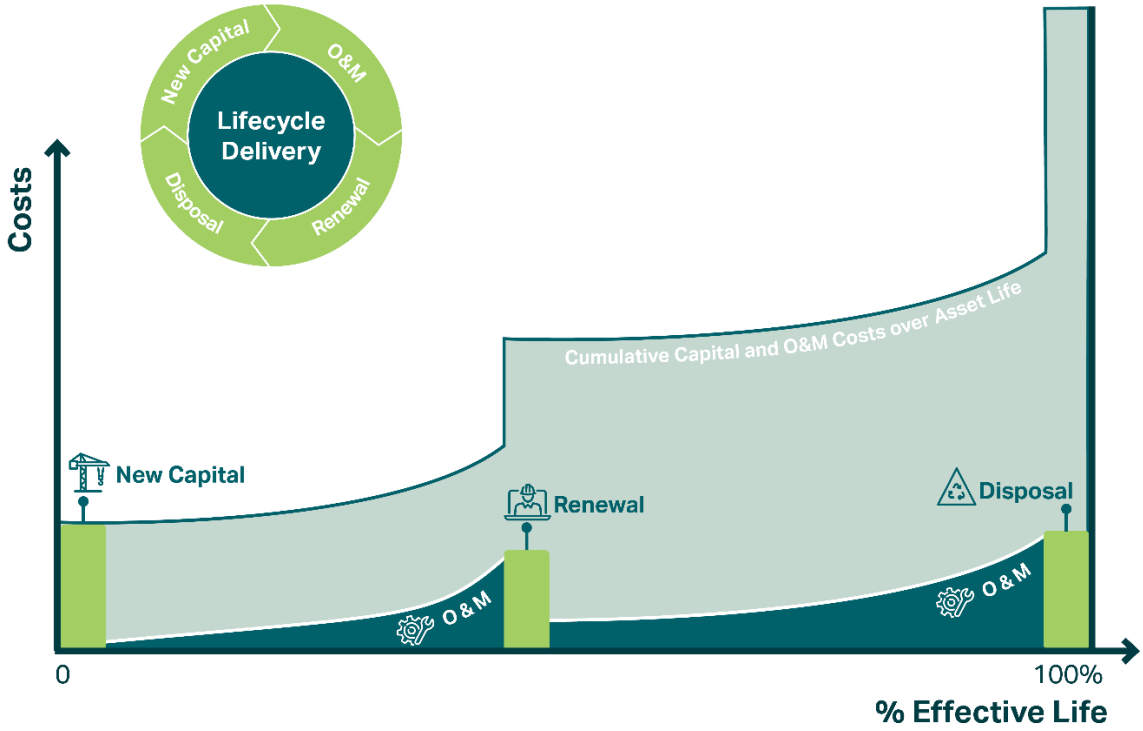

Figure 4-1: Lifecycle Cost Accumulation Over Asset Life

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, renew or refurbish the aging playground structure, and resurface the court surfaces. 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 to 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 (e.g., playground structure with persistent settlement problems in areas with extremely erodible soils), or assets no longer suitable for their original purpose (e.g., aging service buildings repurpose as storage facility).

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 need for new parks and cemetery assets is propelled by both aging infrastructure and a growing demand for services and additional facilities. The aging infrastructure, characterized by wear and tear over time, poses challenges in maintaining the safety and functionality of existing parks and cemetery assets. Acquiring new assets becomes imperative to ensure that the City continues to deliver safe and well-maintained facilities for residents.

In addition, the City recognizes the diverse recreational needs of the residents. With a strong interest in activities such as cricket, pickleball, skateboarding, and hiking, residents expect the City to add new park amenities. Furthermore, residents emphasize a desire for neighborhood-based play options, reflecting a preference for localized and community-centric recreational opportunities. Essential support amenities, including benches and washrooms, are also vital to enhance residents' experiences. Last but not least, the City acknowledges the growing interest in physical activity among senior residents, with a dedicated effort to ensure accessibility and ease for this demographic.

Table 4-1 summarizes the acquisition activities associated with the City's parks and cemetery assets.

Table 4-1: Acquisition Activities for Parks and Cemetery Assets

Asset Group	Activities Undertaken by the City	Notes
Parks	• Develop more space: – Build neighborhood parks. – Develop sports fields, ball courts, and bike/skate parks. • Add new park structures: – Acquire new senior-friendly facilities and park structures. – Add new signs to raise environmental awareness.	• The City's master plan underscores the intention to implement a park revitalization program, which, despite lacking recent support, has been pursued through collaborations with non-profit organizations. The City is currently revitalizing two parks. • The City's park density, measured in hectares per 1,000 residents, stands at 5.16, surpassing the City of Toronto's 2.8 and slightly higher than the City of Sudbury's 4.
Cemetery	• Purchase and lease new equipment.	• The City has established a Mausoleum Strategic Plan for the next decade, allocating $1.5 million to $2 million for new builds.

4.3 Asset Operations and Maintenance Strategies

Effective O&M of assets is crucial for sustainable performance and longevity. Managing O&M costs involves developing comprehensive strategies that optimize resource utilization while ensuring asset reliability. Proactive maintenance schedules and condition monitoring can help identify potential issues before they escalate, reducing unplanned downtime and minimizing repair costs. Implementing energy-efficient technologies and best practices in parks and cemetery AM also contribute to cost-effectiveness over the asset's lifecycle. **Table 4-2** summarizes the O&M activities associated with the City's parks and cemetery assets.

Table 4-2: O&M Activities for Parks and Cemetery Assets

Asset Group	Activities Undertaken by the City
Parks	• Conduct condition assessments every 3-5 years with following exceptions: – Playground equipment is inspected monthly by certified playground practitioners (City Staff), as regulated by the Canadian Standards Association (CAN/CSA-Z614-14: Children's Play spaces and Equipment). – Bi-annual inspections are conducted for buildings, bridges on hub trails, bleachers, and high mass lighting. – Structural assessments are completed by external engineering consultants alongside the bi-annual bridge inspections. • Conduct safety and condition inspection periodically. • Conduct scheduled repair and maintenance: – Re-coat the structure with peeling paints or corrosion. – Fix or replace the damaged parts. – Conduct court/field surface cleaning and patch repairs. – Conduct park parking lots surface cleaning and patch repairs. – Rent mobile washrooms during peak seasons at popular sites. – Conduct routine maintenance, including plant maintenance, lawn trimming, snow removal, utility maintenance, garbage cleaning, and pest and animal controls.
Cemetery	• Conduct equipment repair. • Conduct oil and filter changes for cemetery equipment • Maintain bearing structures annually. • Rent equipment during peak seasons and contract out maintenance as needed.

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.

In line with the acquisition of parks and cemetery assets, the City's choice to renew and replace these assets is prompted by factors such as aging infrastructure and increasing demand. **Table 4-3** summarizes the renewal and replacement activities associated with the City's parks and cemetery assets.

Table 4-3: Renewal and Replacement Activities for Parks and Cemetery Assets

Asset Group	Activities Undertaken by the City
Parks	• Replace the old park structures. • Resurface the old courts/fields. • Replace the tiles for the swimming pools. • Restore and expand visitor amenities, including garbage bins.
Cemetery	• Replace equipment on a regular basis or at the end of its service life.

4.5 Decommissioning and Disposal Strategies

Effective asset decommissioning and disposal are integral components of strategic AM. As the City's parks and cemetery assets approach the end of their lifecycle or become obsolete, a systematic approach to their removal and decommissioning becomes imperative. This process involves careful planning, environmental considerations, and adherence to the City's regulatory requirements.

However, the disposal of assets within the realm of parks and cemetery demands unique consideration due to their special nature. According to the City, parks or cemetery that have been developed and named are highly unlikely to be disposed of. This sentiment is reinforced by strong support from both residents and the council for safeguarding municipal parks and green spaces, reflecting a shared commitment to preserving these vital community spaces. Therefore, there is a consensus that the bar for the disposal of parkland should be set exceptionally high to ensure careful scrutiny and thoughtful decision-making, thus maintaining the integrity and purpose of these valued public spaces.

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.

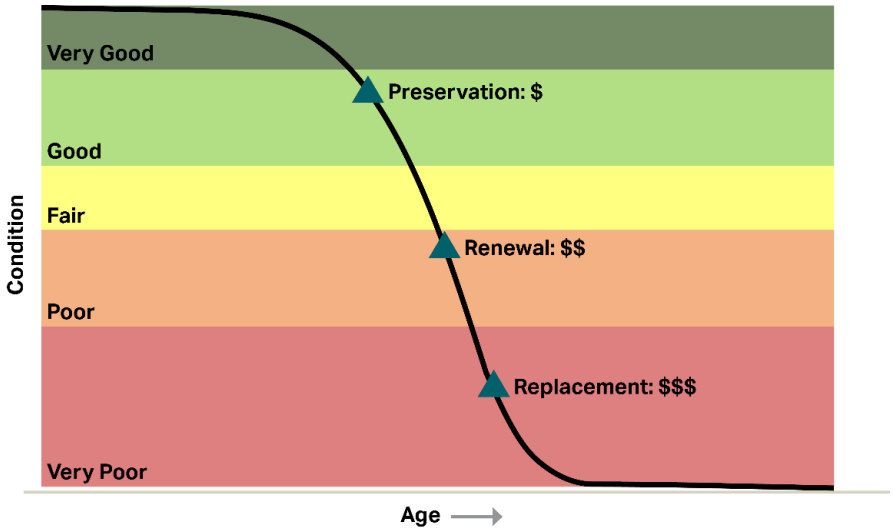

Figure 4-2: Asset Deterioration Curve and Renewal Costs

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. **Navigating the Challenge of Excess Park Land**

   This situation arises from the necessity of striking a delicate balance between providing ample green spaces for the community and managing these areas efficiently. While parks play a crucial role in enhancing residents' quality of life, an excess may lead to challenges such as increased maintenance costs, potential underutilization, or other financial considerations. The council's desire to reduce park land reflects the need to align the city's resources with the optimal size and functionality of its park system. This ensures that the available land is used effectively and efficiently to meet the evolving needs of the community."

2. **Filling the Data Gaps for Parks Asset Inventory**

   The City's current inventory assessment emphasizes land officially named as parks, thereby excluding areas without this designation or zoning. Notably, instances exist where the City has zoned land for parks that currently lack an official name. In response to this, AECOM recommends that the City conduct a comprehensive review to assess the complete park inventory. Furthermore, AECOM suggests distinguishing between wood lots (non-servicing parks) and officially named parks to enhance the accuracy and nuance of data management.

5. Funding Needs 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 parks and cemetery assets.

Section 5.2 massages 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.

Section 5.4 summarizes the City's parks and cemetery asset funding strategies and available grants for supporting the parks and cemetery AM lifecycle activities.

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 parks and cemetery 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 parks and cemetery assets. A financial dashboard was developed to present the results of the lifecycle modelling (**Appendix A**).

The annual reinvestment needs for the parks and cemetery assets were determined based on their age and ESL in years in inflated dollar values and are based on the following assumptions:

- Base year: the base year used is 2024. Any historic asset valuations have been inflated using the experienced inflation rate.
- Analytical Period: the analysis period for capital reinvestment needs is from 2024 to 2043, and the analysis period for full funding needs is from 2024 to 2033.
- Funding Restriction: no funding restrictions are applied.
- Replace at the End of ESL: Assets will be replaced when their theoretical end of useful life is reached.
- Cost markup: 15% engineering (Design & Contract Administration) markup and 30% contingencies.
- Backlog Smooth-out: replace assets that are in Very Poor condition and have already exceeded their ESL, depending on their designated replacement year (Designated Replacement Year = Asset Install Year + Estimated Service Life), The backlog replacements were planned to be allocated within the first four years of the analysis period, determined by applying the following logic:
    - If the designated asset replacement year is between 1975 and 1990, they will be replaced on 2024-06-01.
    - If the designated asset replacement year is between 1991 and 2005, they will be replaced on 2025-01-01.
    - If the designated asset replacement year is between 2006 and 2010, they will be replaced on 2026-01-01.
    - If the designated asset replacement year is between 2011 and 2015, they will be replaced on 2027-01-01.
    - If the designated asset replacement year is between 2011 and 2015, they will be replaced on 2027-01-01.
    - If the designated asset replacement year is between 2016 and 2020, they will be replaced on 2028-01-01.

- If the designated asset replacement year is between 2021 and 2023, they will be replaced on 2029-01-01.

- Future Inflation: AECOM applied an annual inflation rate forecast to this analysis, as presented in **Table 5-1**

Table 5-1: Inflation Rate for Different Years Throughout 20 Years[5]

Year	Inflation Rate
2024	7%
2025	6%
2026	5%
2027	4%
2028	4%
2029	3%
2030 - 2043	3%

- For the reinvestment of large polygon surface areas, such as parkland and soccer/football field surface, the partial surface patch repair and replacement are more feasible than the full replacement approach. In this case, the annual reinvestment needs for parklands and soccer/football field are estimated based on the assumption listed in **Table 5-2**.

Table 5-2: Parks and Cemetery Asset Capital Reinvestment Assumptions

Asset Categories	Annual Reinvestment Rate (2024-2033)	Annual Average Reinvestment Cost (2024-2033) *	Assumption
Active Parkland	$200/Ha of parkland	$75,000	$200/Ha of park land annually to cover the patch repair or partial replacement of hard pavement surface and lawn reseeding
Field Surface	1%	$146,000	1% of the full replacement values annually to cover the patch repair or partial replacement of the field surface
Pointe De Chenes Park Drinking Water Treatment Plant	1.5%	$12,000	1.5% of the full replacement values annually to cover the repair or partial replacement as needed

**Note: The annual average reinvestment costs are presented in non inflated dollar value.*

- Capital Expansion and O&M Funding Needs: The annual new asset acquisition (expansion) funding and operation & maintenance (O&M) funding needs are forecasted by escalating the City of SSM's average historical expansion expenditure from 2019 to 2023 with the inflation rate forecast presented in **Table 5-1.**

- Asset Disposal Funding Needs: The annual disposal and decommissioning (disposal) funding needs are forecasted by annual capital reinvestment needs multiplied by the disposal rate, which is assumed as 1% in this exercise.

- The cost numbers are rounded to the nearest $1,000.

[5] AECOM Analysis, "Rising Inflation", June 2022, Retrieved in October 2022

5.2 Capital Reinvestment Need Analysis

The City's parks and cemetery assets require an average annual reinvestment of $3.9 million over the period 2024-2033 and $1.7 million over 2034-2043 in inflated dollar values, as presented in **Figure 5-1**. This is equivalent to a total of approximately $55.3 million over the next 20-year period. Notably, the reinvestment funding needs for the park structures and recreation account for the largest share, with first 10-year average of $1.8 million and $1.4 million, which incur the expenditure spikes in the years 2025, 2026, 2028 and 2029.

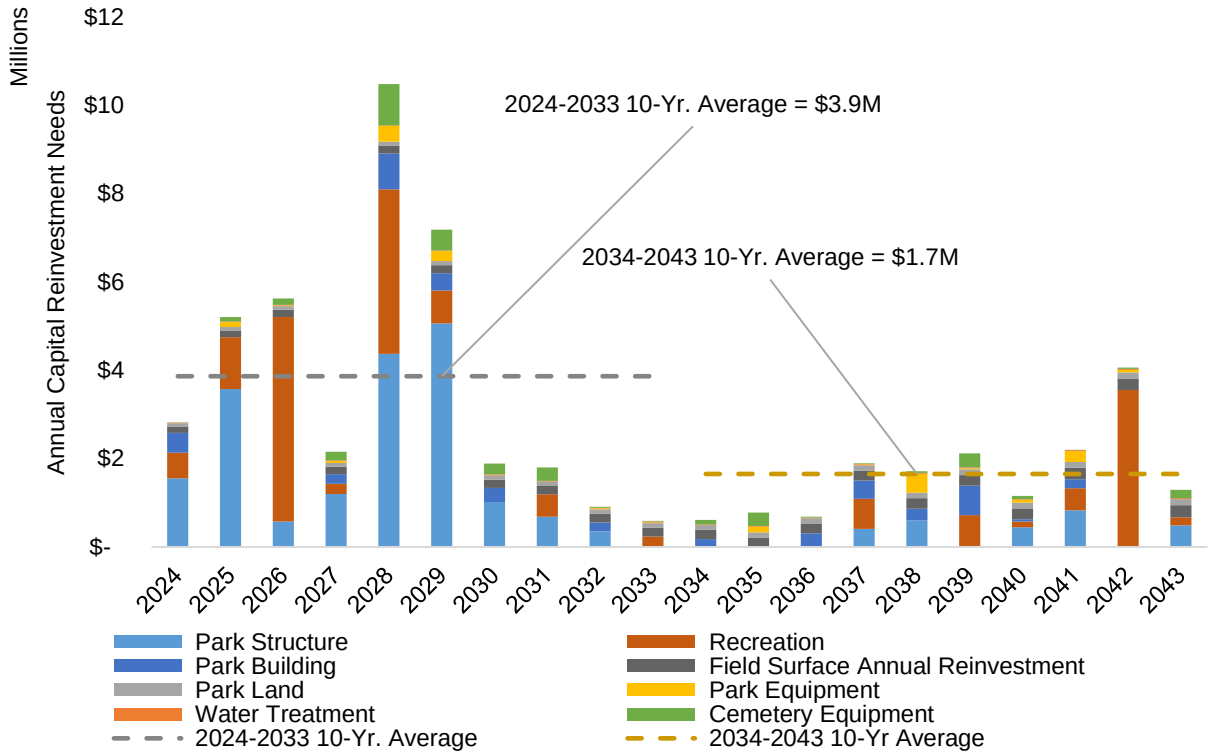

Figure 5-1: Parks and Cemetery 20-Year Reinvestment Need

The detailed 20-year reinvestment needs for parks and cemetery assets are presented in **Table 5-3** in inflated dollar values according to the business case values.

Table 5-3: Parks and Cemetery Asset 20-Year Total and Annual Average Reinvestment Needs

Asset Class	20-Year Average Annual Reinvestment Need (Inflated Dollar)	20-Year Total Reinvestment Needs (Inflated Dollar)
Park Structure	$1,060,000	$21,189,000
Recreation	$880,000	$17,584,000
Field Surface Annual Reinvestment	$210,000	$4,184,000
Park Buildings	$224,000	$4,461,000
Park Land	$108,000	$2,152,000
Water Treatment	$18,000	$351,000
Park Equipment	$93,000	$1,844,000
Cemetery Equipment	$178,000	$3,544,000
Total	**$2,771,000**	**$55,309,000**

To better align with the City's budgeting requirements, the annual capital reinvestment needs for the City's parks and cemetery 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.

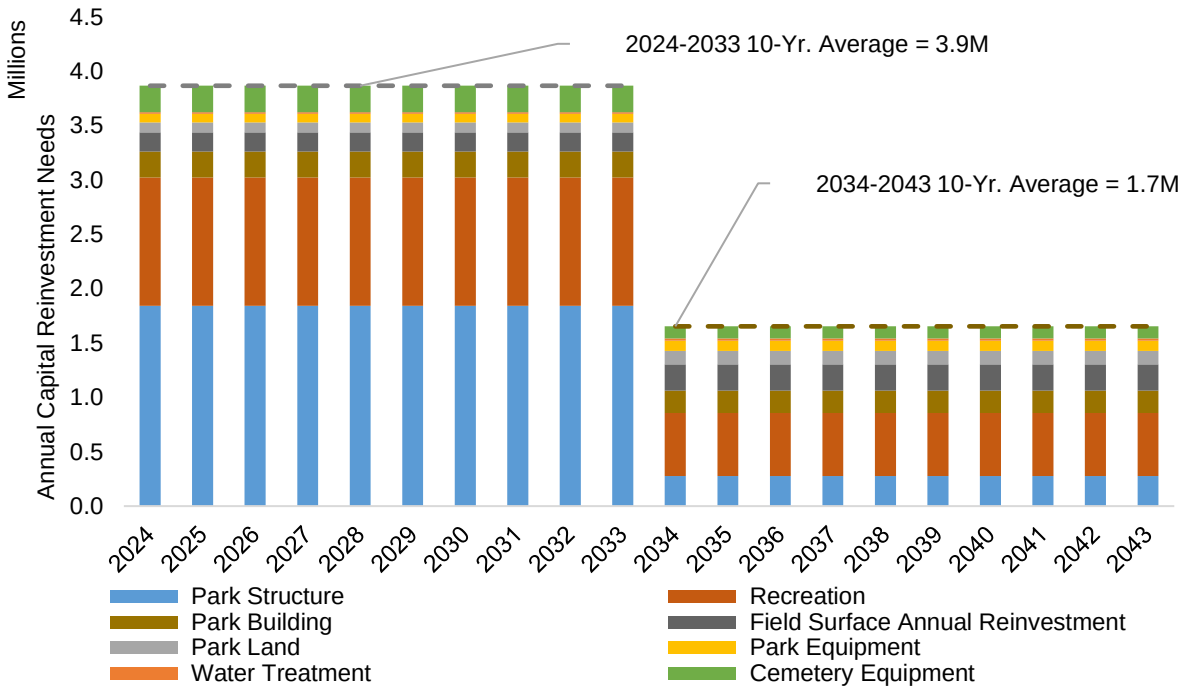

Figure 5-2: Parks and Cemetery Asset 20-Year Smoothed Annual Reinvestment Needs

For the assets already beyond their expected service life, their replacements (backlog) need to be prioritized within the years 2024 to 2029, based on their designated replacement years (refer to **Section 5.1**). The prioritization of the backlog replacements is the major reason for the significant difference between the 2024-2033 10-year average ($3.9 million) and the 2034-2043 10-year average ($1.7 million). **Figure 5-3** indicates the asset backlog replacement, on-time full replacement and annual reinvestment for the next 20 years. The total replacement values of backlogs for parks and cemetery assets are around $12.5 million (in 2024-dollar value), and over 80% of the backlog replacements are scheduled in the years 2028 and 2029, with expenditure of $6.1 million and $6.3 million (inflated dollar value), respectively.

Given that 43% of parks and cemetery assets are classified as "Poor" and "Very Poor" condition, with many surpassing their expected service life, the current average age (weighted by replacement value) of these assets stands at 21.7 years. The overall asset conditions will be improved with the completion of the backlog replacement, and the average age of the parks and cemetery assets reduced to 8.4 years in the year 2030, which is the lowest number in the next 20 years. The overall asset weighted average trends in the next 20 years is indicated in **Figure 5-3**.

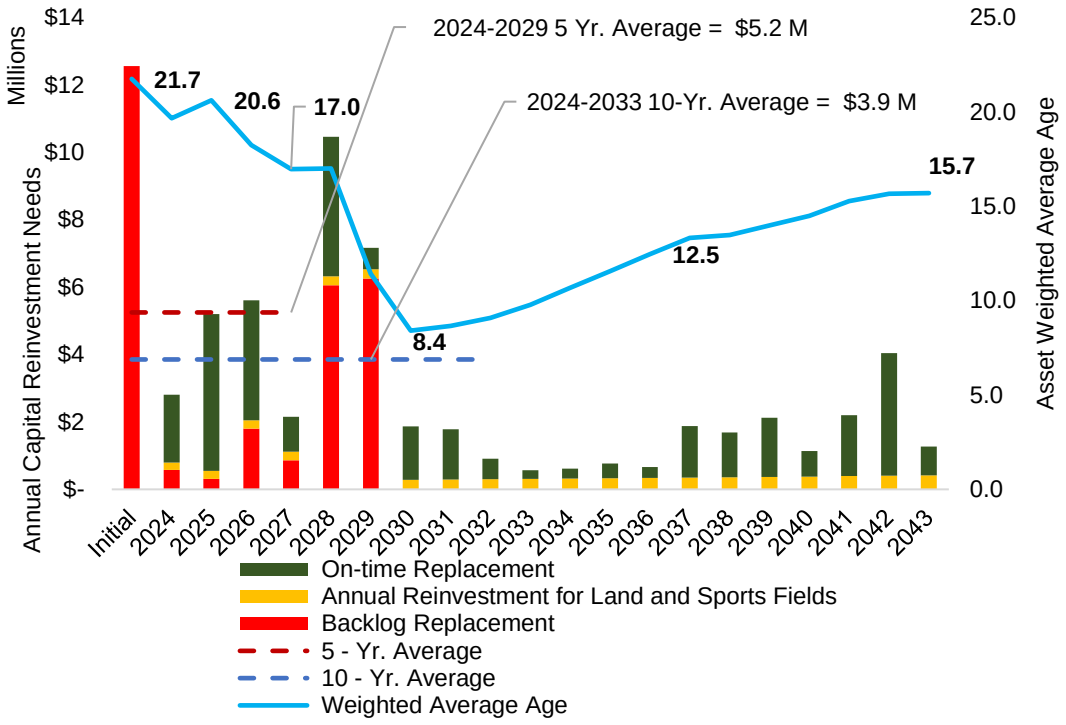

Figure 5-3: Backlog Replacement, On-time Full Replacement and Annual Reinvestment for Parks and Cemetery Assets

5.3 Full Funding Need Profile

Figure 5-4 shows a full picture of the City's parks and cemetery 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 full funding needs were combined with the following:

- Capital reinvestment needs (**Table 5-3**)
- The annual O&M funding needs forecasted by escalating the City of SSM's average historical O&M expenditure with the inflation rate forecast presented in **Table 5-1**.
- The annual capital expansion funding needs forecasted by escalating the City of SSM's average historical capital expansion expenditure with the inflation rate forecast presented in **Table 5-1**.
- One percent of the annual replacement cost was added to account for the asset disposal cost. Note that *PS 3280 Asset Retirement Obligations*[6] is a new accounting standard covering asset retirement obligations that applies to all Canadian public sector entities that prepare their financial statements under PSAB.

With these additions, the City's parks and cemetery full funding requirement increases to approximately $113 million over the next 10 years, averaging $11.3 million per year in inflated dollar value.

[6] Public Sector Accounting Board (PSAB). (2021). PS 3280 - Asset Retirement Obligations.

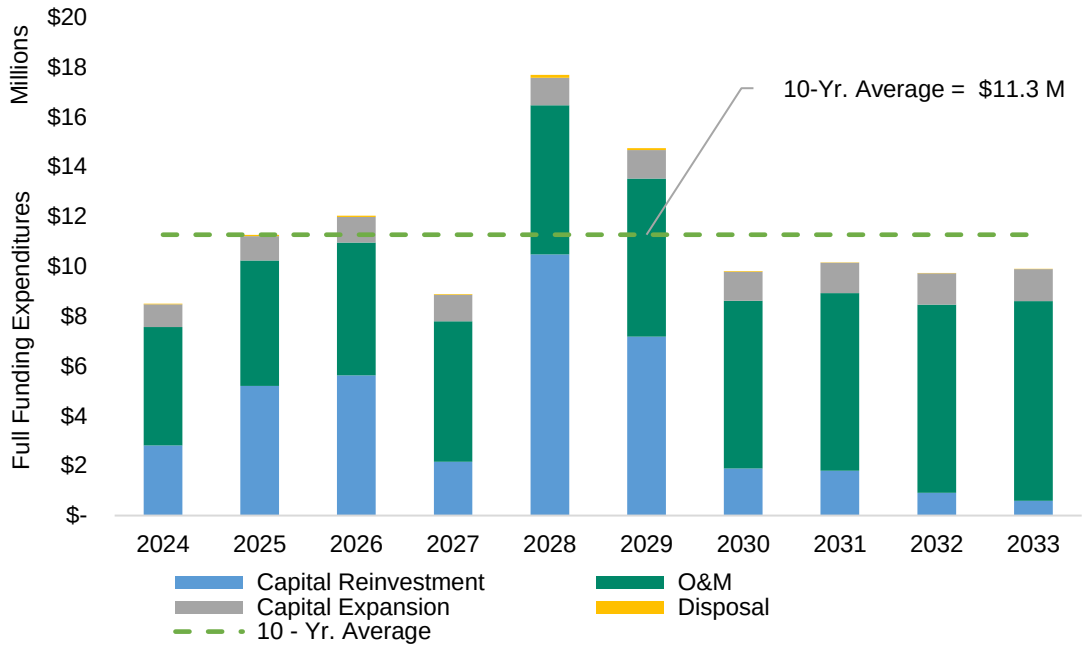

Figure 5-4: Parks and Cemetery Asset Full Funding Needs

5.4 Funding Strategies

The City secures funding for its park assets primarily through the property tax levy. As for the cemetery, the City is working towards achieving full funding for both capital and operating expenditures through user fees. Furthermore, the City actively ensures support for park infrastructure by engaging in grant applications and collaborative initiatives with community partners, agencies, and organizations. Impressively, the City has established a successful track record, garnering support from various groups and demonstrating a history of effective collaboration in their grant endeavors. Moreover, the City strategically engages with Federal grant sources, including the Canada Healthy Communities Initiative and Infrastructure Canada. In some instances, the City also secures multi-level funding for notable projects such as the downtown plaza and the Old Stone House.

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)
- Green Municipal Fund (GMF)
- Municipal Asset Management Program (MAMP)
- Enabling Accessibility Fund (EAF)
- Northern Ontario Heritage Fund Corporation (NOHFC)

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[7].

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[8].

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[9].

5.4.3 Green Municipal Fund (GMF)

The GMF is a financial initiative in Canada dedicated to supporting sustainability and environmental projects at the municipal level. Managed by the Federation of Canadian Municipalities (FCM), the GMF provides funding and resources to assist municipalities across the country in undertaking projects that contribute to environmental sustainability, energy efficiency, and the reduction of greenhouse gas (GHG) emissions[10].

In the context of parks and cemetery, the GMF allocates funds for feasibility studies and capital projects that allow local recreational and cultural facilities to achieve 50% GHG reductions within 10 years and 80% GHG reductions within the next 20 years. Some of the available funding opportunities are as follows:

- Study: GHG reduction pathway feasibility.
- Capital project: GHG impact retrofit.
- Capital project: GHG reduction pathway retrofit.

5.4.4 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[11].

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

[8] 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.
[9] Ontario Community Infrastructure Fund. (2023). Ministry of Infrastructure, Ontario. Ontario Community Infrastructure Fund | ontario.ca. Retrieved on February 15th, 2024.
[10] Funding opportunities. (n.d.). Green Municipal Fund. Funding opportunities | Green Municipal Fund. Retrieved on February 14th, 2024.
[11] Municipal Asset Management Program. (n.d.). Federation of Canadian Municipalities. Municipal Asset Management Program | FCM. Retrieved on February 14th, 2024.

5.4.5 Enabling Accessibility Fund (EAF)

The EAF is a Federal government program aimed at supporting projects that enhance accessibility for individuals with disabilities. The fund provides financial assistance to eligible organizations for initiatives such as infrastructure improvements, renovations, and retrofitting to create more accessible spaces. Its goal is to contribute to a barrier-free and inclusive society by addressing physical barriers and promoting equal access in community spaces[12].

5.4.6 Northern Ontario Heritage Fund Corporation (NOHFC)

The NOHFC is an organization that provides financial support and promotes economic development in the northern regions of Ontario. Established to stimulate growth and sustainability, NOHFC offers funding for various projects, such as business expansion, job creation, infrastructure development, and community initiatives. Within the NOHFC, the Community Enhancement Program is an initiative aimed at supporting community-driven projects[13]. This program provides financial assistance for local initiatives that enhance community infrastructure, amenities, and services. Eligible projects may include the development or improvement of recreational facilities, community spaces, and essential services.

[12] About Enabling Accessibility Fund. (2023). Government of Canada. Enabling Accessibility Fund - Canada.ca. Retrieved on February 14th, 2024.

[13] Community Enhancement Program. (2024). Northern Ontario Heritage Fund Corporation. Community Enhancement Program | NOHFC. Retrieved on February 14th, 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 5-4**.

Table 5-4: 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 parks and cemetery 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 Word documents into the Excel spreadsheets. • Trace the installation years of parks and cemetery assets. • The City parks and cemetery team should allocate each asset within their physical locations and record the location information in the asset inventory. Such as recording all the basketball courts' addresses and the names of the parks where they are located.
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. • Staff will 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 parks and cemetery assets condition assessment process and use consistent condition grading schemes for these assets	• Currently, the condition of the parks and cemetery asset is not tracked with a well-developed asset condition rating grading system specialized for parks and cemetery 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 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.

Index	Improvement Initiative	Description
6.	Establish a sustainable park and cemetery funding model that fits the needs of the community	• In light of the annual funding need outlined in **Figure 5-2** it is recommended that the City allocate an average of $3.9 million per year over the next 10 years for capital reinvestment in parks and cemetery. Additionally, a total of $6.2 million should be budgeted annually for O&M expenditures during the same period. • Review financial modeling assumptions on reinvestment rate and replacement values and update the financial model with new information as it becomes available. The financial model is based on several key assumptions that could have a significant impact on the outcomes of the model.
7.	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.
8.	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.
9.	Grant and funding 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 Parks and Cemetery MS Excel Lifecycle Model and Inventory