MUNICIPALITY OF

ARRAN-ELDERSLIE

Asset Management Plan

2024

psdcitywide

Key Statistics

$502M	2024 Replacement Cost of Asset Portfolio
$167k	Replacement Cost of Infrastructure Per Household
67%	Percentage of Assets in Fair or Better Condition
77%	Percentage of Assets with Assessed Condition Data
$6.0M	Annual Capital Infrastructure Deficit
20 Years	Recommended Timeframe to reach Full Funding
2.0%	Target Investment Rate to meet Full Funding
0.8%	Actual Investment Rate

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1. Executive Summary

Municipal infrastructure provides the foundation for the economic, social, and environmental health and growth of a community through the delivery of services. The goal of asset management is to balance delivering critical services in a cost-effective manner. This involves the development and implementation of asset management strategies and long-term financial planning.

1.1 Scope

The scope of this document is to identify the current practices and strategies that are in place to manage the public infrastructure and to make recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Municipality can ensure that public infrastructure is managed to support the sustainable delivery of services.

The AMP's categories are summarized in Figure 1.

Core Assets

- Road Network
- Bridges & Culverts
- Water System
- Sanitary Sewer System
- Storm Water System

Non-Core Assets

- Buildings & Facilities
- Parks & Land Improvements
- Fleet
- Machinery & Equipment

Figure 1: Core and Non-Core Asset Categories

1.2 Compliance

With the development of this AMP the Municipality of Arran-Elderslie has achieved compliance with July 1, 2024, requirements under O. Reg. 588/17. This includes requirements for inventory reporting for all asset categories.

1.3 Findings

$501,984,049
Total Portfolio Replacement Cost

$72,602
Replacement cost of infrastructure per capita

$4,622,779
Annual cost savings for roads through proactive lifecycle management

The overall replacement cost of the asset categories owned by Arran-Elderslie total $502 million. 67% of all assets analysed are in fair or better condition. Assessed condition data was available for the road network, bridges & culverts, the sanitary sewer network, and the water network. For the remaining assets, assessed condition data was unavailable, and asset age was used to approximate condition.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the municipality's average annual capital requirement totals $10.2 million. Based on a historical analysis of sustainable capital funding sources, Arran-Elderslie is committing approximately $4.2 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $6.0 million.

A financial strategy was developed to address the annual capital funding gap. The recommended annual tax change for the Municipality is 2.9% over 20 years, while the recommended annual rate increase for the Sanitary Sewer Network is also 2.9%, phased over 15 years.

It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the municipality. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

1.4 Limitations and Constraints

The asset management program development required substantial effort by staff, it was developed based on best-available data, and is subject to the following broad limitations, constrains, and assumptions:

- The analysis is highly sensitive to several critical data fields, including an asset's estimated useful life, replacement cost, quantity, and in-service date. Inaccuracies or imprecisions in any of these fields can have substantial and cascading impacts on all reporting and analytics.
- User-defined and unit cost estimates, based typically on staff judgment, recent projects, or established through completion of technical studies, offer the most precise approximations of current replacement costs. When this isn't possible, historical costs incurred at the time of asset acquisition or construction can be inflated to present day. This approach, while sometimes necessary, can produce inaccurate estimates.
- In the absence of condition assessment data, age was used to estimate asset condition ratings. This approach can result in an over- or understatement of asset needs. As a result, financial requirements generated through this approach can differ from those produced by in-field assessments.
- The risk models are designed to support objective project prioritization and selection. However, in addition to the inherent limitations that all models face, they also require availability of important asset attribute data to ensure that asset risk ratings are valid, and assets are properly stratified within the risk matrix. Missing attribute data can misclassify assets.

These limitations have a direct impact on most of the analysis presented, including condition summaries, age profiles, long-term replacement and rehabilitation forecasts, and shorter term, 10-year forecasts that are generated from Citywide, the municipality's primary asset management system.

These challenges are quite common and require long-term commitment and sustained effort by staff. As the municipality's asset management program evolves and advances, the quality of future AMPs and other core documents that support asset management will continue to increase.

2. Introduction and Context

2.1 Community Profile

Census Characteristic	Municipality of Arran-Elderslie	Ontario
Population 2021	6,913	14,223,942
Population Change 2016-2021	1.6%	5.8%
Total Private Dwellings	2,998	5,929,250
Population Density	15.1/km^2	15.9/km^2
Land Area	458.76 km^2	892,411.76 km^2

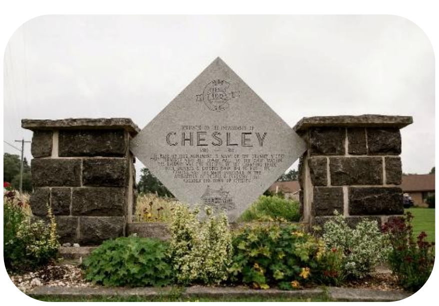
Table 1: The Municipality of Arran-Elderslie Census Information

The Municipality of Arran-Elderslie is a lower-tier municipality in Bruce County, Ontario. Its location offers residents convenient access to regional amenities while preserving a distinctly rural character, shaped by open farmland, close-knit communities, and a strong agricultural tradition. According to the 2021 Census, the municipality is home to 6,913 residents, an increase of 1.6% since 2016, with a population density of 15.1 persons per square kilometre across 458.76 km^2.

Arran-Elderslie was established on January 1, 1999, through the amalgamation of the former Townships of Arran and Elderslie, the Town of Chesley, and the Villages of Paisley and Tara. This restructuring sought to enhance service delivery and local governance while maintaining the unique identities of each community.

The local economy is grounded in agriculture, supported by a network of family farms and agribusinesses. Complementary sectors such as construction, tourism, and small business also contribute to economic vitality. The downtowns of Chesley, Tara, and Paisley function as service and retail hubs for residents and the surrounding rural area.

To support continued growth and maintain a high quality of life, Arran-Elderslie invests in core infrastructure including roads, bridges, water and wastewater systems, and community facilities. These ongoing efforts strengthen the municipality’s agricultural foundation, meet the evolving needs of residents and businesses, and uphold its long-term sustainability and rural heritage.



2.2 Climate Change

Climate change can cause severe impacts on human and natural systems around the world. The effects of climate change include increasing temperatures, higher levels of precipitation, droughts, and extreme weather events. In 2019, Canada's Changing Climate Report (CCCR 2019) was released by Environment and Climate Change Canada (ECCC).

The report revealed that between 1948 and 2016, the average temperature increase across Canada was 1.7°C; moreover, during this time period, Northern Canada experienced a 2.3°C increase. The temperature increase in Canada has doubled that of the global average. If emissions are not significantly reduced, the temperature could increase by 6.3°C in Canada by the year 2100 compared to 2005 levels. Observed precipitation changes in Canada include an increase of approximately 20% between 1948 and 2012. By the late 21st century, the projected increase could reach an additional 24%. During the summer months, some regions in Southern Canada are expected to experience periods of drought at a higher rate. Extreme weather events and climate conditions are more common across Canada. Recorded events include droughts, flooding, cold extremes, warm extremes, wildfires, and record minimum arctic sea ice extent.

The changing climate poses a significant risk to the Canadian economy, society, environment, and infrastructure. The impacts on infrastructure are often a result of climate-related extremes such as droughts, floods, higher frequency of freeze-thaw cycles, extended periods of high temperatures, high winds, and wildfires. Physical infrastructure is vulnerable to damage and increased wear when exposed to these extreme events and climate variabilities. Canadian Municipalities are faced with the responsibility to protect their local economy, citizens, environment, and physical assets.

2.2.1 Arran-Elderslie Climate Profile

The Municipality of Arran-Elderslie is located in Bruce County. The Municipality is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Municipality of Arran-Elderslie may experience the following trends:

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 6.6 ºC
- Under a high emissions scenario, the annual average temperatures are projected to increase to 9.4ºC by the year 2050 and to 13.2ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, Arran-Elderslie is projected to experience an 12% increase in precipitation by the year 2051 and a 15% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

- Like many rural Ontario communities, Arran-Elderslie is likely to face more frequent and intense extreme weather events, including heavy rainfall, localized flooding, windstorms, and heat waves.

2.2.2 Integration Climate change and Asset Management

Asset management in Arran-Elderslie aims to provide sustainable service delivery—ensuring that infrastructure continues to meet community needs today and into the future. Climate change presents risks to this objective by:

- Reducing the useful life of municipal assets (e.g., roads subject to freeze–thaw cycles, culverts undersized for heavier rainfall events).
- Increasing the likelihood of asset failure due to flooding, heat stress, or storm damage.
- Making desired levels of service more difficult to achieve, particularly for transportation, stormwater, and water infrastructure.

Integrating climate projections into asset management practices supports risk-based decision-making, ensures long-term resilience, and aligns with industry best practices for sustainable municipal service delivery.

3. Asset Management Overview

Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks while maximizing the value and levels of service the community receives from the asset portfolio.

Lifecycle costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of the broader asset management program. The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan (AMP).

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents.

3.1 Foundational Documents

In the municipal sector, 'asset management strategy' and 'asset management plan' are often used interchangeably. Other concepts such as 'asset management framework', 'asset management system', and 'strategic asset management plan' further add to the confusion; lack of consistency in the industry on the purpose and definition of these elements offers little clarity. To make a clear distinction between the policy, strategy, and the plan see the following sections for detailed descriptions of the document types.

3.1.1 Strategic Plan

The strategic plan has a direct, and cascading impact on asset management planning and reporting, making it a foundational element. At the beginning of each term, Council holds strategic planning exercises and discussions to identify major initiatives and administrative improvements it wishes to achieve during its tenure. Staff then identify the scope, resources, timing & other logistical matters associated with proposed initiatives.

3.1.2 Asset Management Policy

An asset management policy represents a statement of the principles guiding the Municipality's approach to asset management activities as well as their commitment. It aligns with the organization and provides clear direction to municipal staff on their roles and responsibilities.

3.1.3 Asset Management Strategy

An asset management strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. It provides greater detail than the policy on how the Municipality plans to achieve its asset management objectives through planned activities and decision-making criteria.

3.1.4 Asset Management Plan

The asset management plan is often identified as a key output within the strategy. The AMP has a sharp focus on the current state of the Municipality's asset portfolio, and its approach to managing and funding individual asset groups. It is tactical in nature and provides a snapshot in time.

3.2 Key Technical Concepts

Effective asset management integrates several key components, including data management, lifecycle management, risk management, and levels of service.

3.2.1 Replacement Costs

There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. The two methodologies are:

- User-Defined Cost and Cost/Unit: Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience.
- Cost Inflation/CPI Tables: Historical cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index.

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the Municipality incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

3.2.2 Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Municipality expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

By using an asset's in-service date and its EUL, the Municipality can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Municipality can more accurately forecast when it will require replacement. The SLR is calculated as follows:

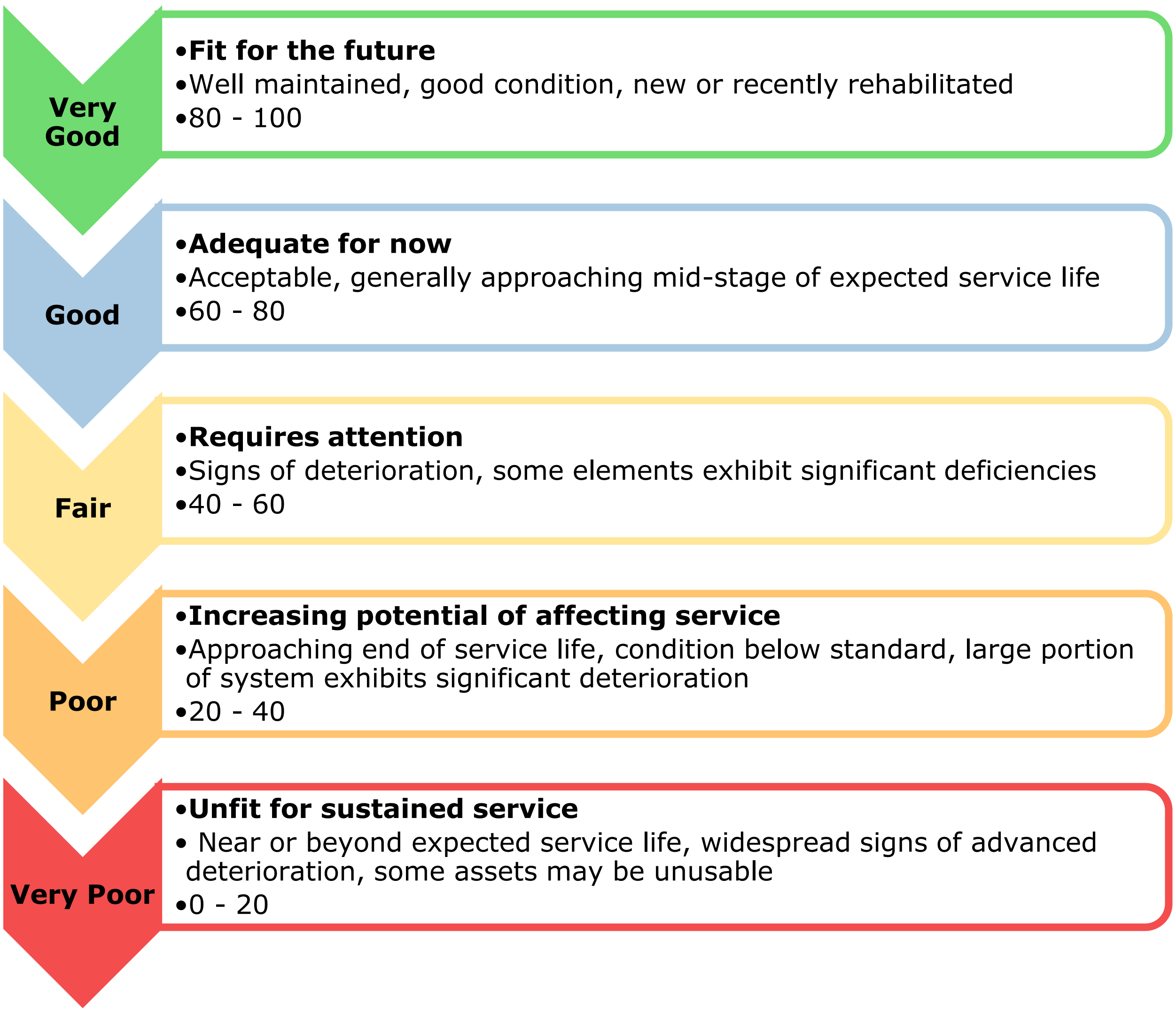
Figure 2: Service Life Remaining Calculation

3.2.3 Asset Condition

An incomplete or limited understanding of asset condition can mislead long-term planning and decision-making. Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life.

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Municipality's asset portfolio. The figure below outlines the condition rating system used to determine asset condition for all assets in Arran-Elderslie.

Figure 3: Standard Condition Rating Scale



The analysis is based on assessed condition data (only as available). In the absence of assessed condition data, asset age is used as a proxy to determine asset condition. Appendix B includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

3.2.4 Lifecycle Management Strategies

The condition or performance of assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories: maintenance, rehabilitation, and replacement. Figure 4 provides a description of each type of activity and the general difference in cost.

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

The Municipality's approach to lifecycle management is described within each asset category. Developing and implementing a proactive lifecycle strategy will help staff to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

Figure 4: Lifecyle Management Typical Interventions

Maintenance

- General level of cost is **$**
- All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal. Maintenance does not increase the service potential of the asset
- It slows down deterioration and delays when rehabilitation or replacement is necessary.

Rehabilitation / Renewal

- General level of cost is **$$$**
- Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification.
- Generally involves repairing the asset to deliver its original level of service (i.e. milling and paving of roads) without resorting to significant upgrading or replacement, using available techniques and standards.

Replacement

- General level of cost is **$$$$$**
- The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.
- Existing asset disposal is generally included.

3.2.5 Risk Management Strategies

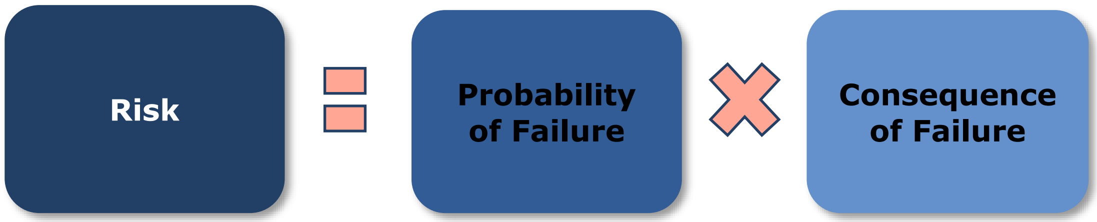
Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

By identifying the various impacts of asset failure and the likelihood that it will fail, risk management strategies can identify critical assets, and determine where maintenance efforts, and spending, should be focused.

A high-level evaluation of asset risk and criticality was performed. Each asset has been assigned a probability of failure score and consequence of failure score based on available asset data. These risk scores can be used to prioritize maintenance, rehabilitation, and replacement strategies for critical assets.

Risk is a product of two variables: the probability that an asset will fail, and the resulting consequences of that failure event. It can be a qualitative measurement, (low, medium, high) or quantitative measurement (1-5), that can be used to rank assets and projects, identify appropriate lifecycle strategies, optimize short- and long-term budgets, minimize service disruptions, and maintain public health and safety.

Figure 5: Risk Equation



Probability of Failure

Several factors can help decision-makers estimate the probability or likelihood of an asset's failure, including its condition, age, previous performance history, and exposure to extreme weather events, such as flooding and ice jams—both a growing concern for municipalities in Canada.

Consequence of Failure

Estimating criticality also requires identifying the types of consequences that the organization and community may face from an asset's failure, and the magnitude of those consequences. Consequences of asset failure will vary across the infrastructure portfolio; the failure of some assets may result primarily in high direct financial cost but may pose limited risk to the community. Other assets may have a relatively minor financial value, but any downtime may pose significant health and safety hazards to residents. See Appendix D: Risk Rating Criteria for definitions and the developed risk models.

3.2.6 Levels of Service

A level of service (LOS) is a measure of the services that Arran-Elderslie is providing to the community and the nature and quality of that service. Within each asset category, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

Community Levels of Service

Community LOS are a simple, plain language description or measure of the service that the community receives. For core asset categories, the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required. For non-core asset categories, the Municipality must determine the qualitative descriptions that will be used. The community LOS can be found in the Levels of Service subsection within each asset category section.

Technical Levels of Service

Technical LOS are a measure of key technical attributes of the service being provided to the community. These include mostly quantitative measures and tend to reflect the impact of the Municipality's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories, the Province, through O. Reg. 588/17, has provided technical metrics that are required. For non-core asset categories, the Municipality determined the technical metrics that will be used. The metrics can be found in the LOS subsection within each asset category.

Current and Proposed Levels of Service

Current LOS are the past performance metrics of an asset category up until present day. In contrast, Proposed LOS looks toward the municipality's goal for asset performance by a defined future date.

It is important to note that O. Reg 588/17 does not dictate which proposed LOS metrics municipality's need to strive for. A proposed LOS will be very specific to each community's resident desires, political goals, and financial capacity. This can range from increasing service levels and costs, to maintaining or even reducing current performance in order to mitigate future cost increases. Regardless of the proposed LOS chosen, O. Reg 588/17 requires municipalities to demonstrate the achievability of their selected metrics.

3.2.7 Reinvestment Rate

As assets age and deteriorate, they require additional investment to maintain a state of good repair. The reinvestment of capital funds, through asset renewal or replacement, is necessary to sustain an adequate level of service. The reinvestment rate is a measurement of available or required funding relative to the total replacement cost. By comparing the actual vs. target reinvestment rate the Municipality can determine the extent of any existing funding gap.

4. Portfolio Overview

4.1 Asset Hierarchy and Data Classification

Asset hierarchy illustrates the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Key category details are summarized at the asset segment level.

Table 2 Asset Hierarchy

Road Network
- Gravel Roads
- HCB Roads
- LCB Roads
- Sidewalks
- Signs
- Streetlights

Bridges & Culverts
- Bridges
- Structural Culverts

Water System
- Fleet
- Hydrants
- Machinery & Equipment
- Mains
- Sample Stations
- Towers & Reservoirs
- Treatment Plants & Facilities
- Valves & Chambers
- Wells

Sanitary Sewer System
- Lift Stations
- Machinery & Equipment
- Mains
- Manholes
- Treatment Plants & Lagoons
- Wet Wells & Pumps

Storm Sewer System
- Inlets
- Mains
- Manholes

Buildings & Facilities
- Administrative
- Fire Halls
- Library
- Medical Clinic
- Public Works
- Recreation & Cultural

Parks & Land Improvements
- Cemeteries
- Park Furnishings & Fencing
- Playground Equipment
- Sport Fields & Courts

Fleet
- Fire & Emergency
- Public Works
- Recreation & Cultural

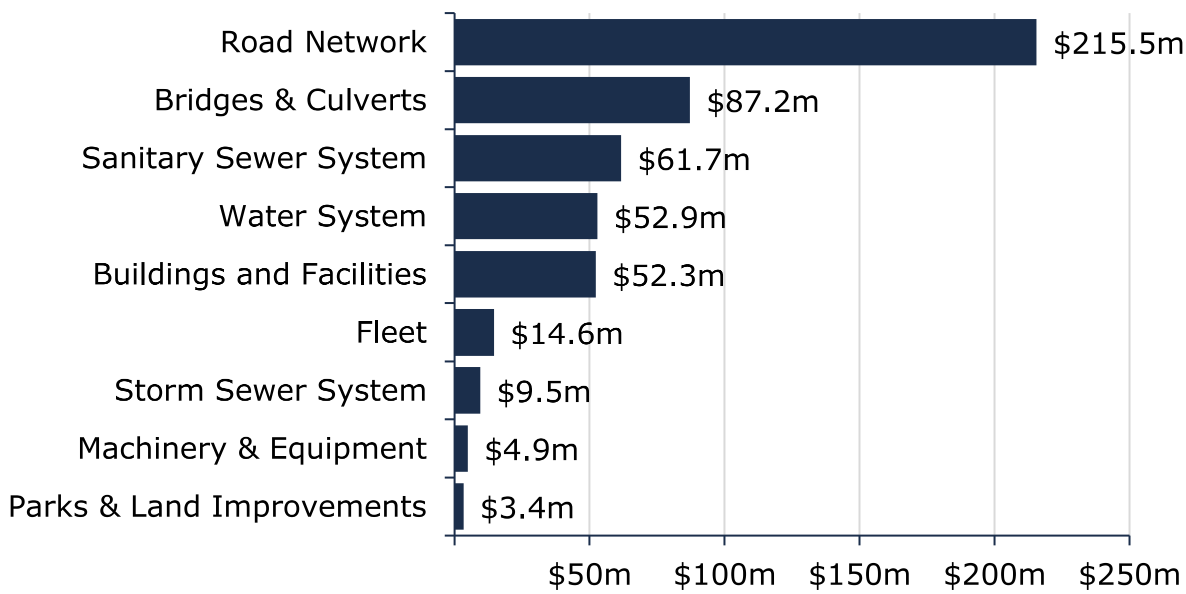
Machinery & Equipment
- Fire & Emergency
- General Government
- Public Works
- Recreation & Cultural
- Solid Waste Disposal

4.2 State of the Infrastructure

4.2.1 Replacement Cost

All Arran-Elderslie's asset categories have a total replacement cost of $501.9 million based on available inventory data. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

Figure 6: Portfolio Replacement Value

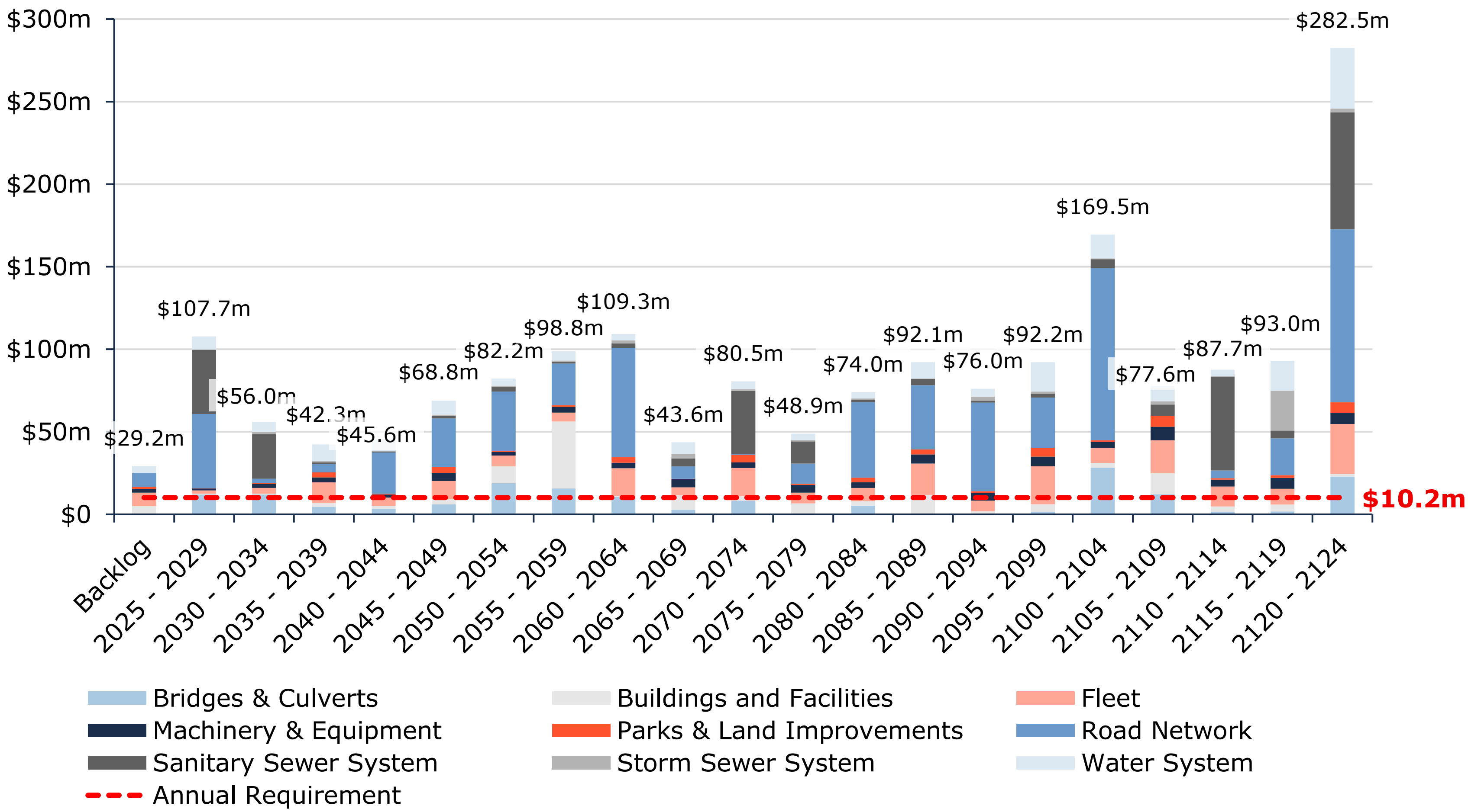


4.2.2 Forecasted Capital Requirements

Aging assets require maintenance, rehabilitation, and replacement. The figure below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for all asset categories analyzed. On average, $10.2 million is required each year to remain current with capital replacement needs for Arran-Elderslie' asset portfolio (red dotted line).

Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise. This figure relies on age and available condition data. Based on the current replacement cost of the portfolio, estimated at $501.9 million, this represents an annual target reinvestment rate of 2.0%.

Figure 7: Forecasted Capital Requirements



The chart also illustrates a backlog of $29.2 million, comprising assets that remain in service beyond their estimated useful life. It is unlikely that all such assets are in a state of disrepair, requiring immediate replacements or major renewals. This makes targeted and consistent condition assessments integral.

Risk frameworks, proactive lifecycle strategies, and levels of service targets can then be used to prioritize projects, continuously refine estimates for backlogs and ongoing capital needs and help select the right treatment for each asset.

4.2.3 Condition of Asset Portfolio

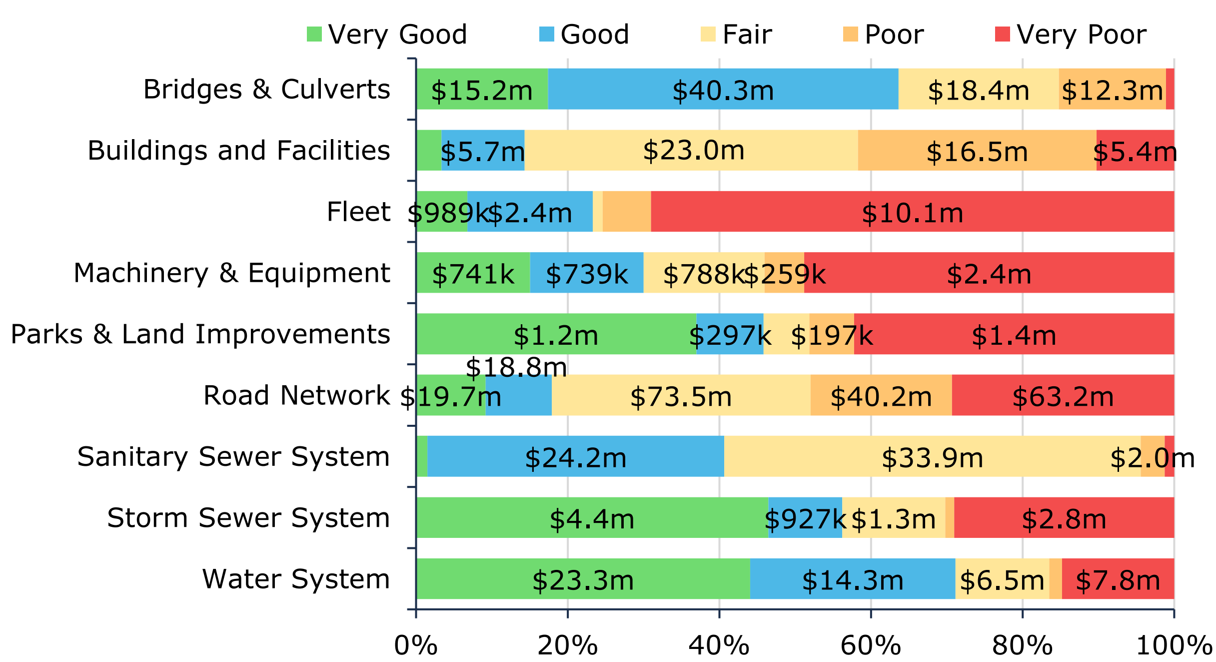
The current condition of the assets is central to all asset management planning. Collectively, 67% of assets in Arran-Elderslie are in fair or better condition. This estimate relies on both age-based and field condition data.

Assessed condition data is available for 77% of all assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data.

Table 3: Assessed Condition Data Sources

Asset Category	Assets with Assessed Condition	Source of Condition Data
Bridges & Culverts	99%	2024 OSIM Inspections (B.M. Ross)
Storm Sewer System	5%	2021 Staff Assessments
Parks & Land Improvements	3%	2021 Staff Assessments
Road Network	100%	2020 Roads Needs Study (GSS Engineering Consultants Ltd.)
Sanitary Sewer System	70%	2021 Staff Assessments
Water System	98%	2021 Staff Assessments

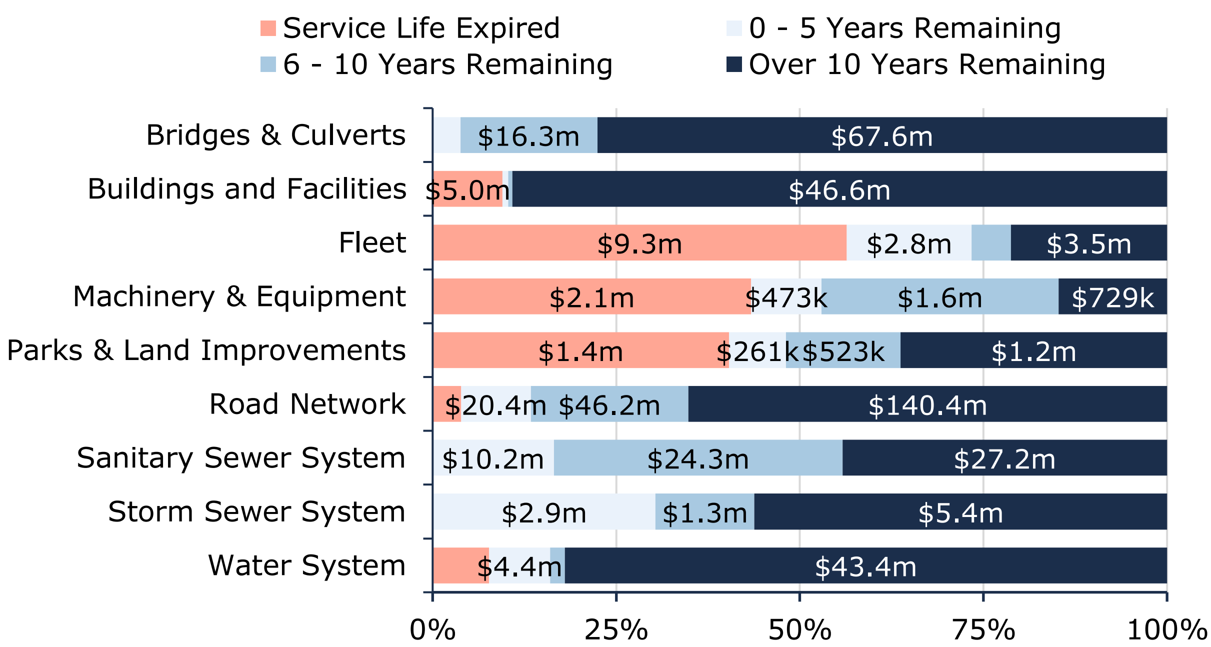
Figure 8: Asset Condition by Asset Category



4.2.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 33% of the Municipality's assets will require rehabilitation/replacement within the next 10 years. Details of the capital requirements are identified in each asset section.

Figure 9: Service Life Remaining by Asset Category



4.2.5 Risk & Criticality

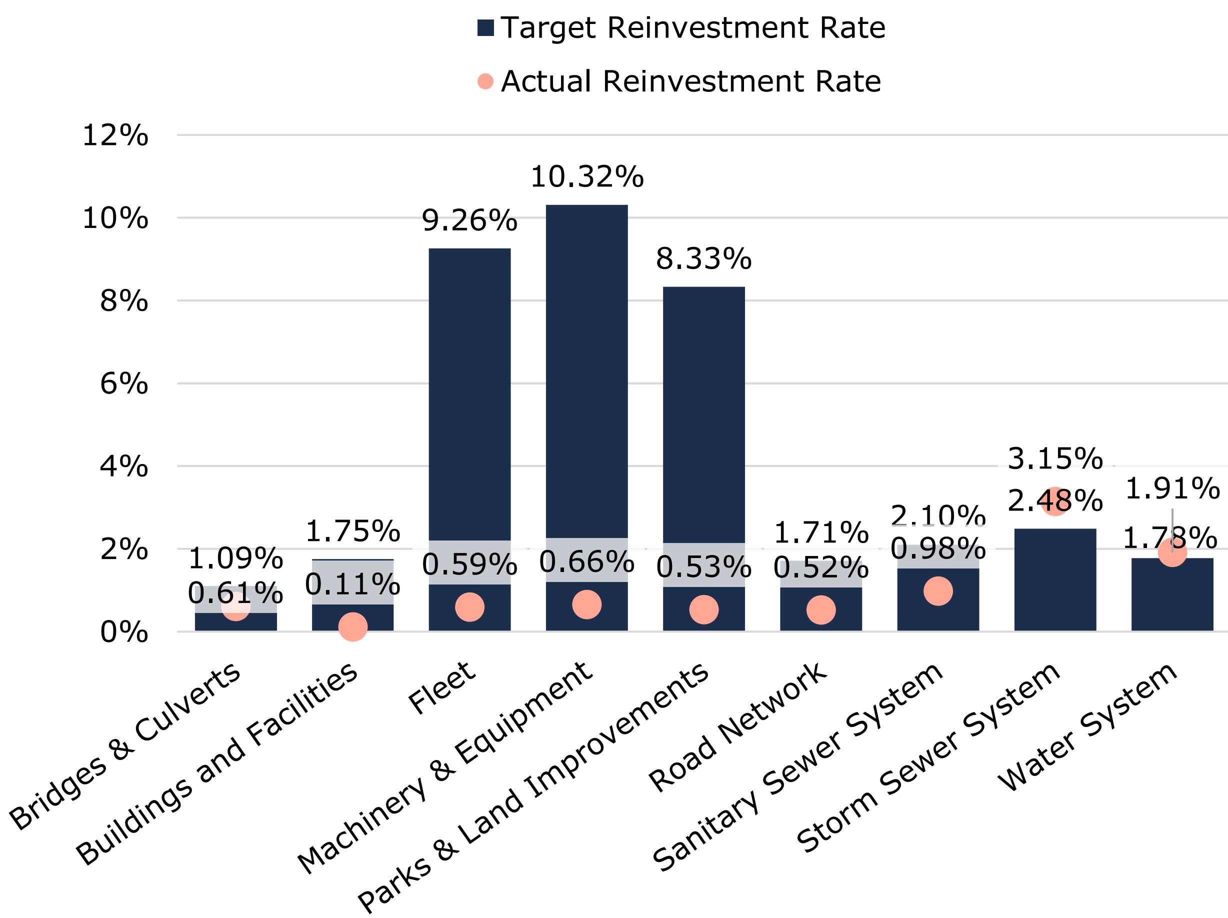
The overall asset risk breakdown for Arran-Elderslie' asset inventory is portrayed in the figure below.

Figure 10: Overall Asset Risk Breakdown

4.2.6 Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Municipality is recommended to be allocating approximately $10.2 million annually, for a target reinvestment rate of 2.0%. Actual annual spending on infrastructure totals approximately $4.2 million, for an actual reinvestment rate of 0.8%.

Figure 11: Target vs Actual Reinvestment Rates



Categorical Analysis

5. Road Network

Arran-Elderslie' Road Network comprises the largest share of its infrastructure portfolio, with a current replacement cost of $215.5 million. The Public Works Department plans and directs the construction and maintenance of Municipal roads, parking lots, culverts, streetlights, sidewalks, civic address numbers, Municipal drains and other infrastructure.

The state of the infrastructure for the road network is summarized below.

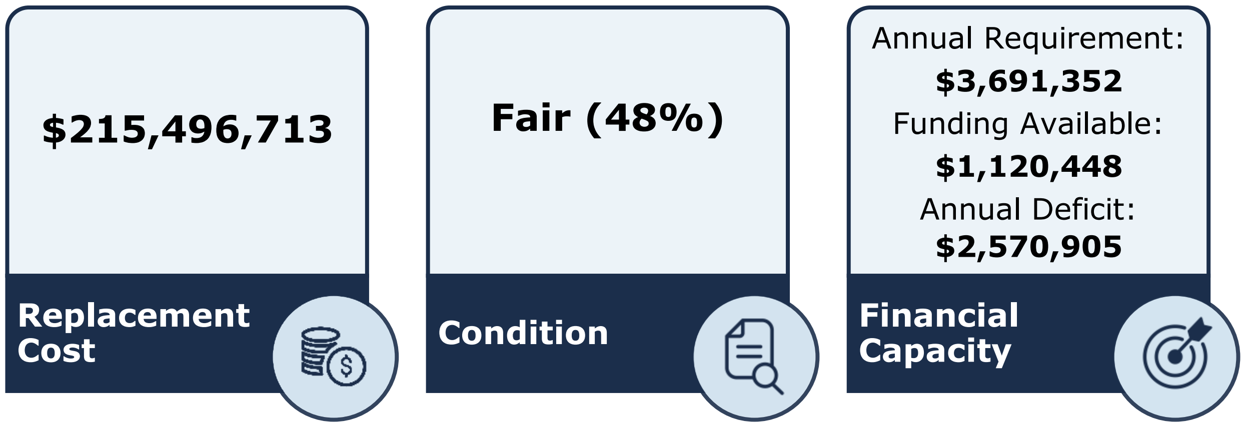


Figure 12: Road Network State of the Infrastructure

5.1 Inventory & Valuation

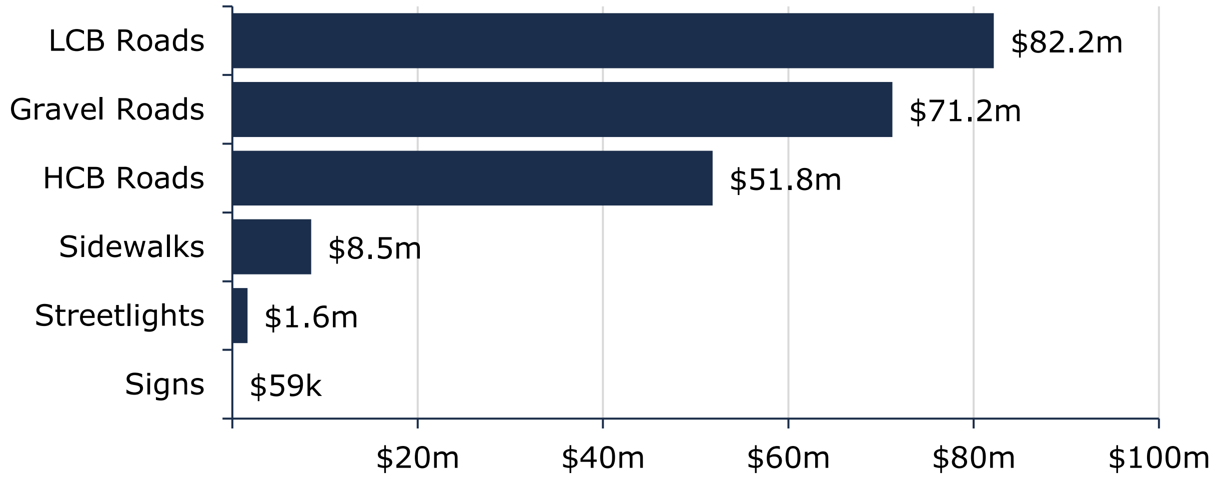
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Road Network inventory.

Table 4: Road Network Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Gravel Roads	199.7	Length (km)	Cost per Unit	$71,230,809
HCB Roads	55	Length (km)	Cost per Unit	$51,841,799
LCB Roads	115.8	Length (km)	Cost per Unit	$82,192,390
Sidewalks	31.7	Length (km)	Cost per Unit	$8,525,822
Signs	210	Quantity	CPI	$59,113
Streetlights	1,695	Quantity	CPI	$1,646,781
Total			**Cost per Unit**	**$215,496,713**

The figure below displays the replacement cost of each asset segment in the Municipality's road inventory.

Figure 13: Road Network Replacement Value

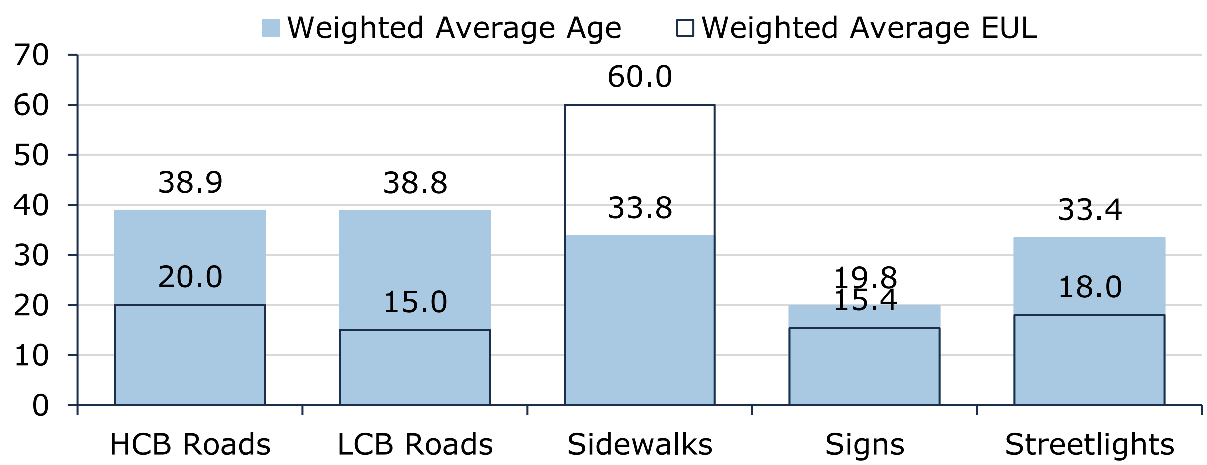


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.2 Asset Condition & Age

The graph below identifies the average age, and the estimated useful life for each asset segment[1]. It is all weighted by replacement cost.

Figure 14: Road Network Average Age vs Average EUL

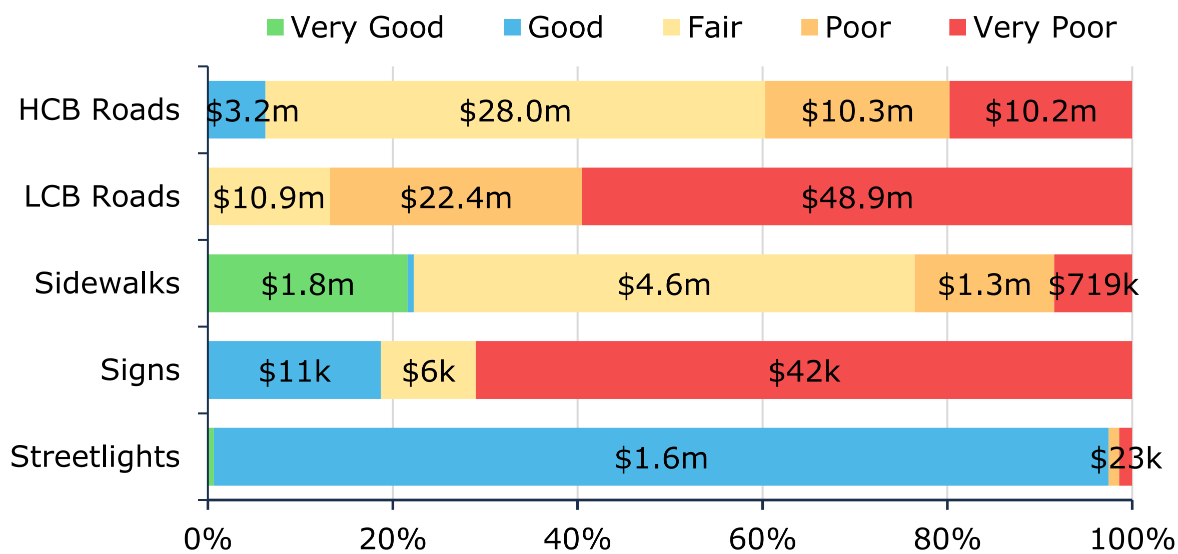


The analysis shows that, based on in-service dates, paved roads continue to remain in operation beyond their expected useful life. This is due to the life cycle management strategies currently being utilized.

[1] *Gravel roads have been included as they comprise a significant portion of the Municipality's road network. However, their lifecycle management relies on perpetual maintenance activities and does not require capital funding for rehabilitation or replacement. As a result, gravel roads are excluded from the age-based analysis and capital forecast.*

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 15: Road Network Condition Breakdown



Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

5.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Municipality's current approach:

- A Road and Sidewalk Needs Study was completed in 2020 that included a detailed assessment of the condition of each road and sidewalk segment
- Road patrols are undertaken every 2 weeks, granular roads are also visually inspected during grading activities
- Road Network assets are inspected as per O. Reg. 239/02

5.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

The following lifecycle strategies in the figure below have been developed as a proactive approach to managing the lifecycle of road assets. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

Figure 16: Road Network Current Lifecycle Strategy

Maintenance

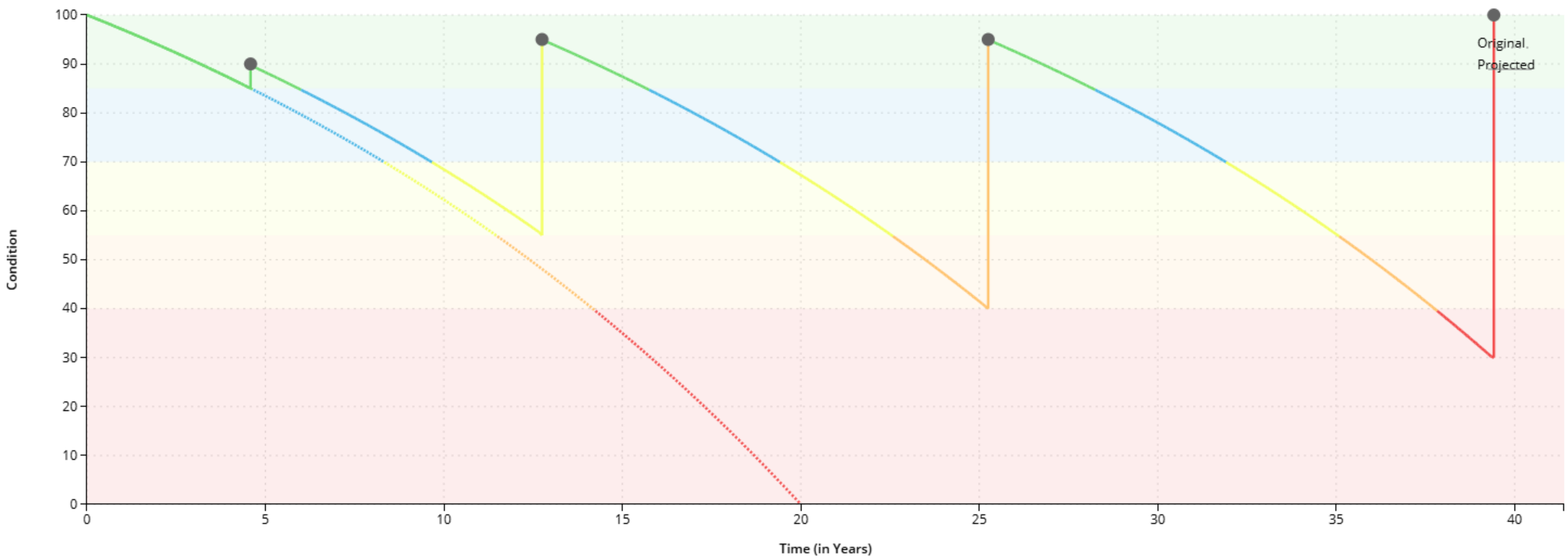
- Pothole repairs are completed annually based on deficiencies identified through regular road patrols and feedback from the public.
- Seasonal maintenance activities include asphalt patching, graveling, and tree cutting.
- Summer maintenance activities include sidewalk repairs, grading, re-gravelling, dust control, ditching, roadside mowing, tree trimming, brush cleanup, road sign installation/maintenance, and line painting.
- Winter maintenance activities include snow plowing, slating, and snow removal.
- A crack sealing program is in place for asphalt roads as needed to reduce erosion caused by poor drainage.

Rehabilitation / Renewal / Replacement

- Rehabilitation activities include: microsealing, pulverize & pave, asphalt overlay, and full depth asphalt reclamation.
- Road replacement prioritization is determined by consideration of growth, risk, condition, health and safety, and social impact.
- Road reconstruction projects (base & surface) are identified based on road condition, risk, and sub-surface asset requirements (water/sewer/storm).

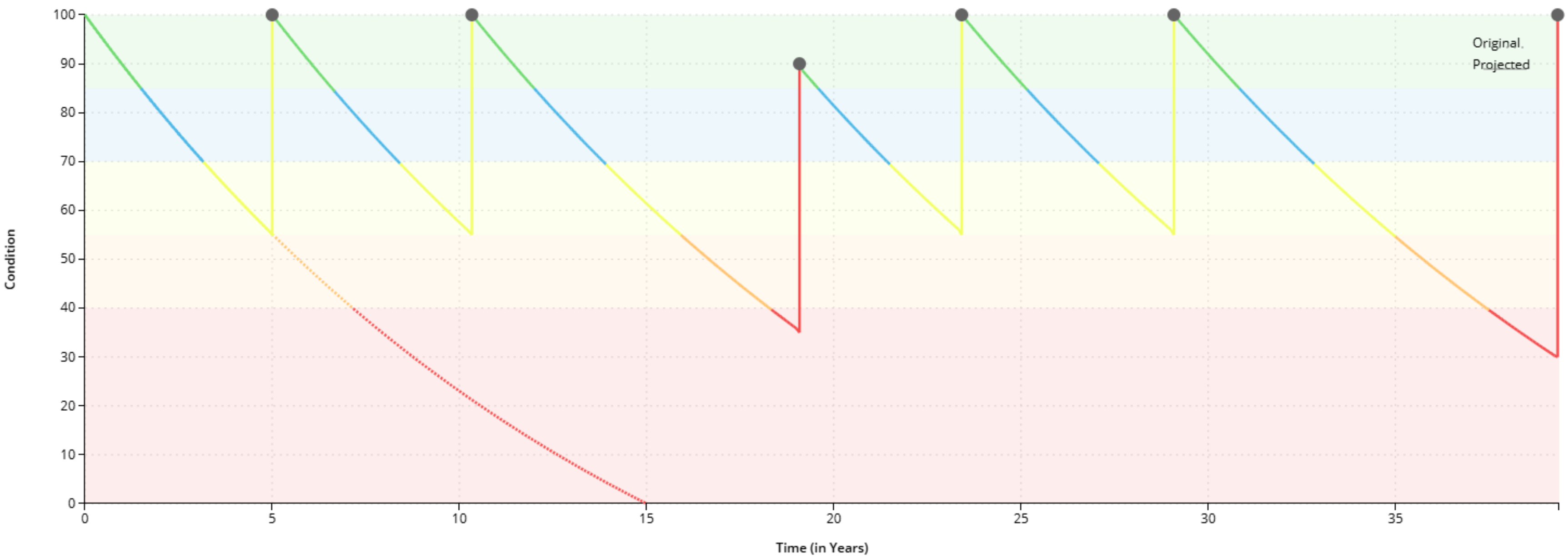
Lifecycle models used to estimate the savings to annual capital requirement are shown below in Figure 17 for Paved (HCB) roads, and Figure 18 for Paved (LCB) Roads.

Figure 17: Paved (HCB) Road Lifecycle Model



HCB Roads		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing & Asphalt Patching (1 Treatment per Pavement Cycle)	Preventative Maintenance	85 to 95 Condition
Full Depth Pulverize and Pave (40mm HL-4)	Rehabilitation	55 to 75 Condition
Pulverize and Pave	Rehabilitation	40 to 55 Condition
Full Reconstruction	Replacement	Condition at 30

Figure 18: Paved (LCB) Road Lifecycle Model



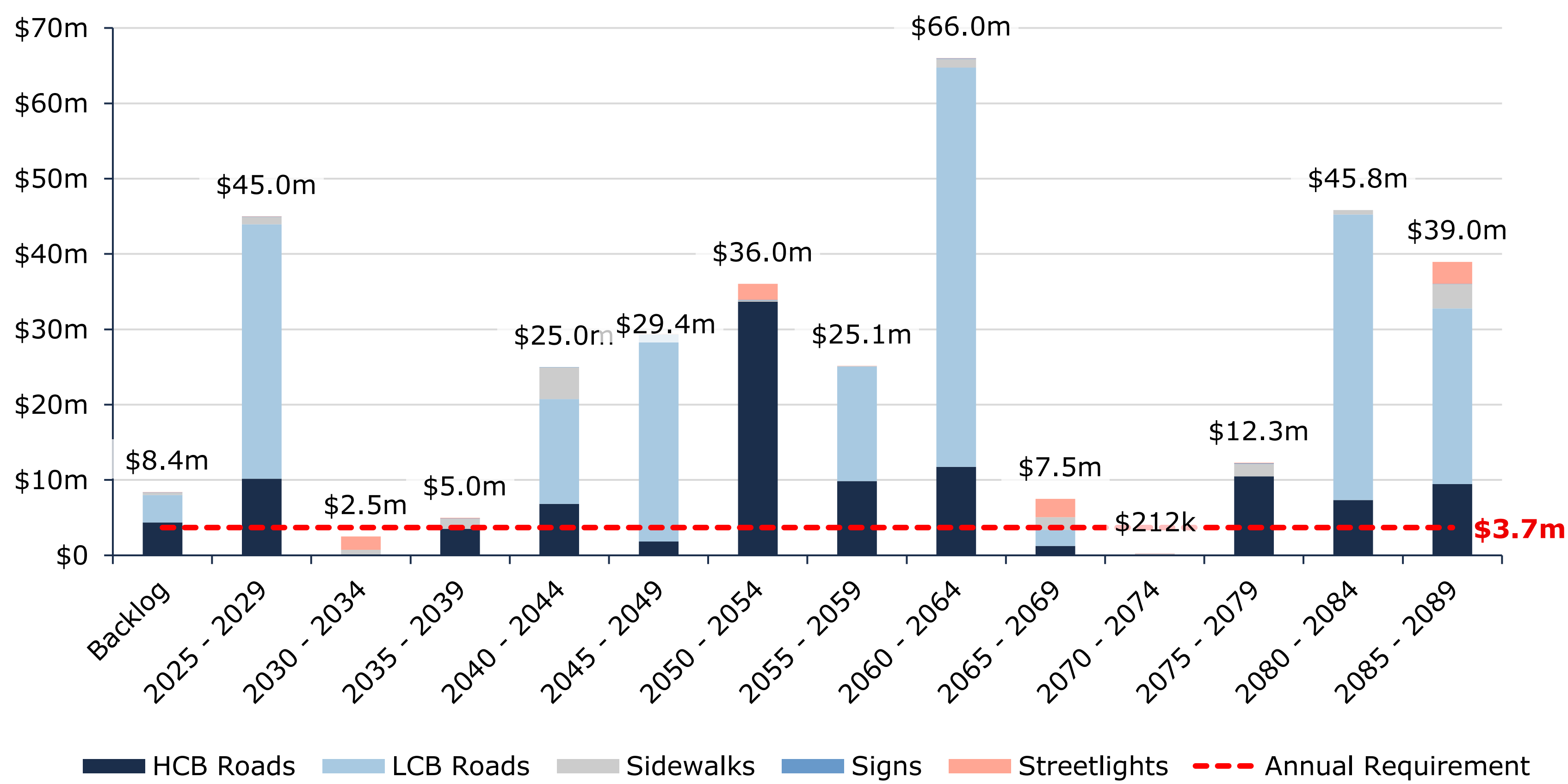
LCB Roads		
Event Name	**Event Class**	**Event Trigger**
Surface Treatment - Double Surface	Rehabilitation	55 to 70 Condition
Surface Treatment - Single Surface	Rehabilitation	35 to 55 Condition
Full Reconstruction	Replacement	Condition at 30

5.4 Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Municipality's road network. This analysis was run until 2089 to capture at least one iteration of replacement for the longest-lived asset in the asset register.

Arran-Elderslie's average annual requirements (red dotted line) total $3.7 million for all assets in the road network. These requirements are based on asset replacement costs, age analysis, and condition data when available, as well as lifecycle modeling.

Figure 19: Road Network Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (rehabilitation and replacement) that may need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register.

These projections can be different from actual capital forecasts. Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts.

Table 5 Road Network System-generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
HCB Roads	$4.4m	$8.2m	$549k	$1.5m	-	-	-	-	-	-	-
LCB Roads	$3.6m	$33.7m	-	-	-	-	-	-	-	-	-
Sidewalks	$318k	$401k	$410k	-	$199k	-	-	-	$150k	-	$601k
Signs	$42k	-	-	$6k	-	-	-	-	-	-	-
Streetlights	$23k	-	$19k	-	-	-	-	-	-	$969k	$768k
Total	**$8.4m**	**$42.3m**	**$978k**	**$1.5m**	**$199k**	**-**	**-**	**-**	**$150k**	**$969k**	**$1.4m**

5.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for Road Network assets.

Figure 20: Road Network Risk Matrix

1 - 4	**5 - 7**	**8 - 9**	**10 - 14**	**15 - 25**
Very Low	**Low**	**Moderate**	**High**	**Very High**
$39,422,633	$40,782,592	$14,029,747	$56,430,960	$64,830,781
(18%)	(19%)	(7%)	(26%)	(30%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

5.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Climate Change & Extreme Weather Events

An increase in freeze/thaw cycles causes road pavement to heave and settle. This can cause the accelerated deterioration of road surface pavement which leads to an increased need for maintenance and rehabilitation. The uncertainty surrounding the impact of extreme weather events can make changing conditions difficult to plan for.

Organizational Knowledge & Capacity

Both short- and long-term planning requires the regular collection, storage and maintenance of infrastructure data to support asset management decision-making. Staff find it a continuous challenge to dedicate resource time towards data collection to ensure that asset condition and asset attribute data is regularly reviewed and updated. Consequently, the Municipality often utilizes third party contractors to meet needs.

5.6 Levels of Service

The following tables identify the Municipality's metrics to identify their current level of service for the roads.

5.6.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the road network.

Table 6 Road Network Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, of the road network in the Municipality and its level of connectivity	See Appendix A.
Quality	Description or images that illustrate the different levels of road class pavement condition	The Municipality completed a Road and Sidewalk Needs Assessment Study in 2020 in coordination with GSS Engineering Consultants Ltd. In addition to the assessment of roads and calculation of PCI, condition ratings of each road section were also determined. The Condition Rating number is a visual assessment of the structural condition or integrity of the road. The rating numbers were assigned on a scale of 1 to 10 with the lower numbers describing those roads with the most structural distress or poorest shaped road cross section. (1-5) Road surface exhibits moderate to significant deterioration and requires improvement. (6-10) Road surface is in generally good condition, with localized deficiencies. See Appendix A for sample photographs to indicate the examples of physical distress of road surface.

5.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the road network.

Table 7 Road Network Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area in the municipality (km/km^2)	0 lane km/km2
	Lane-km of collector roads (MMS classes 3 and 4) per land area in the municipality (km/km^2)	1.2 lane km/km2
	Lane-km of local roads (MMS classes 5 and 6) per land area in the municipality (km/km^2)	0.26 lane km/km2
	Average Risk Rating	11.91 (High)
Quality	Average pavement condition index for paved roads in the municipality	HCB: 51 LCB: 34
	Average surface condition for unpaved roads in the municipality	61
Performance	Operating costs for unpaved (loose top) roads per lane kilometer	$709,146
	Capital Reinvestment Rate	0.5%

6. Bridges & Culverts

Bridges and culverts (B&C) represent a critical portion of the transportation services provided to the community. The Municipality has developed a Bridge Master Plan to support safe, sustainable, and cost-effective infrastructure.

The state of the infrastructure for bridges and culverts is summarized below.

$87,196,139

Replacement Cost

Good (68%)

Condition

Annual Requirement:
$954,535
Funding Available:
$532,087
Annual Deficit:
$422,448

Financial Capacity

Figure 21: Bridges & Culverts State of the Infrastructure

6.1 Inventory & Valuation

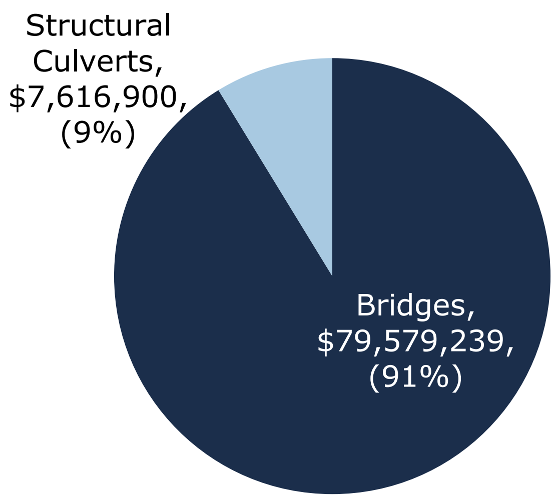
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Bridges & Culverts inventory.

Table 8: Bridges & Culverts Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Bridges	48	Assets	User-Defined	$79,579,239
Structural Culverts	16	Assets	User-Defined	$7,616,900
Total	**64**	**Assets**	**User-Defined**	**$87,196,139**

The figure below displays the replacement cost of each asset segment in the Municipality's bridges and culverts inventory.

Figure 22: Bridges & Culverts Replacement Cost

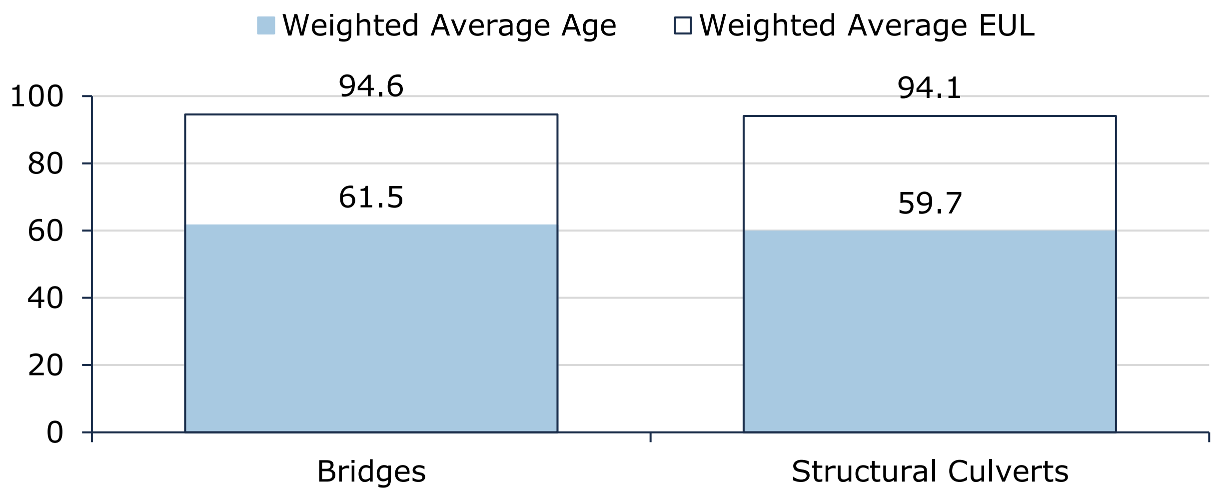


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed. This can be included in the Ontario Structures Inspection Manual (OSIM) inspections as the replacement cost is part of the calculation for the bridge condition index (BCI).

6.2 Asset Condition & Age

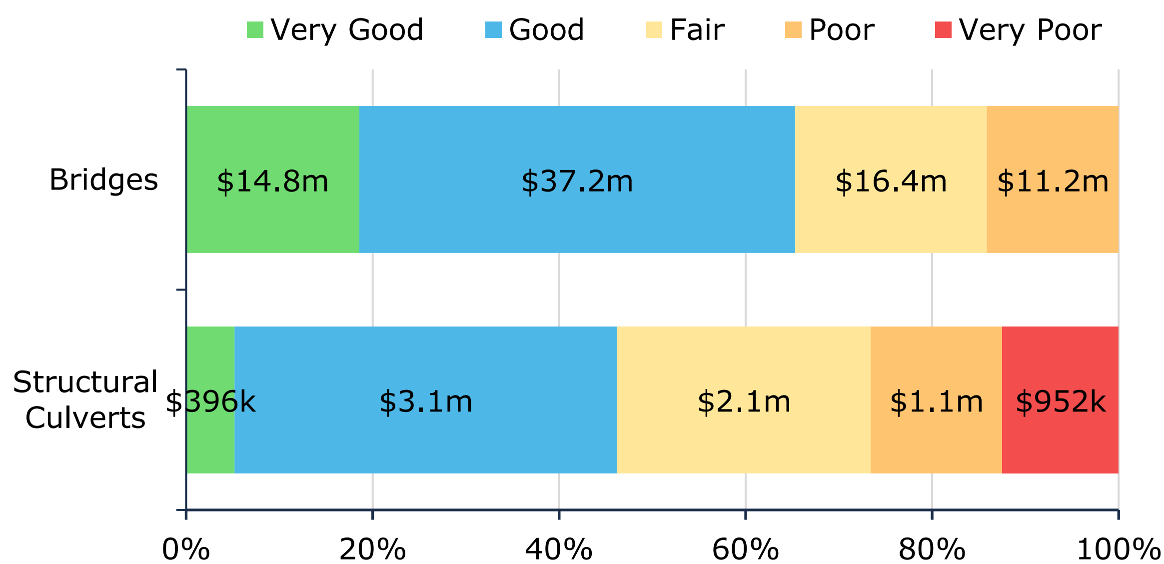
The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 23: B&C Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 24: B&C Condition Breakdown



To ensure that the Municipality's bridges and culverts continue to provide an acceptable level of service, the staff should monitor the average condition of all assets. Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

6.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)
- The most recent OSIM inspection was conducted in 2024 by B. M. Ross and Associates Limited.

6.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. Figure 25 outlines Arran-Elderslie' current lifecycle management strategy.

Figure 25: B&C Current Lifecycle Strategy

Maintenance

- Typical maintenance includes obstruction removal, cleaning/sweeping, erosion control and brush/tree removal
- Biennial OSIM inspections including a list of recommended maintenance activities that the Municipality considers and completes according to cost and urgency

Rehabilitation / Renewal / Replacement

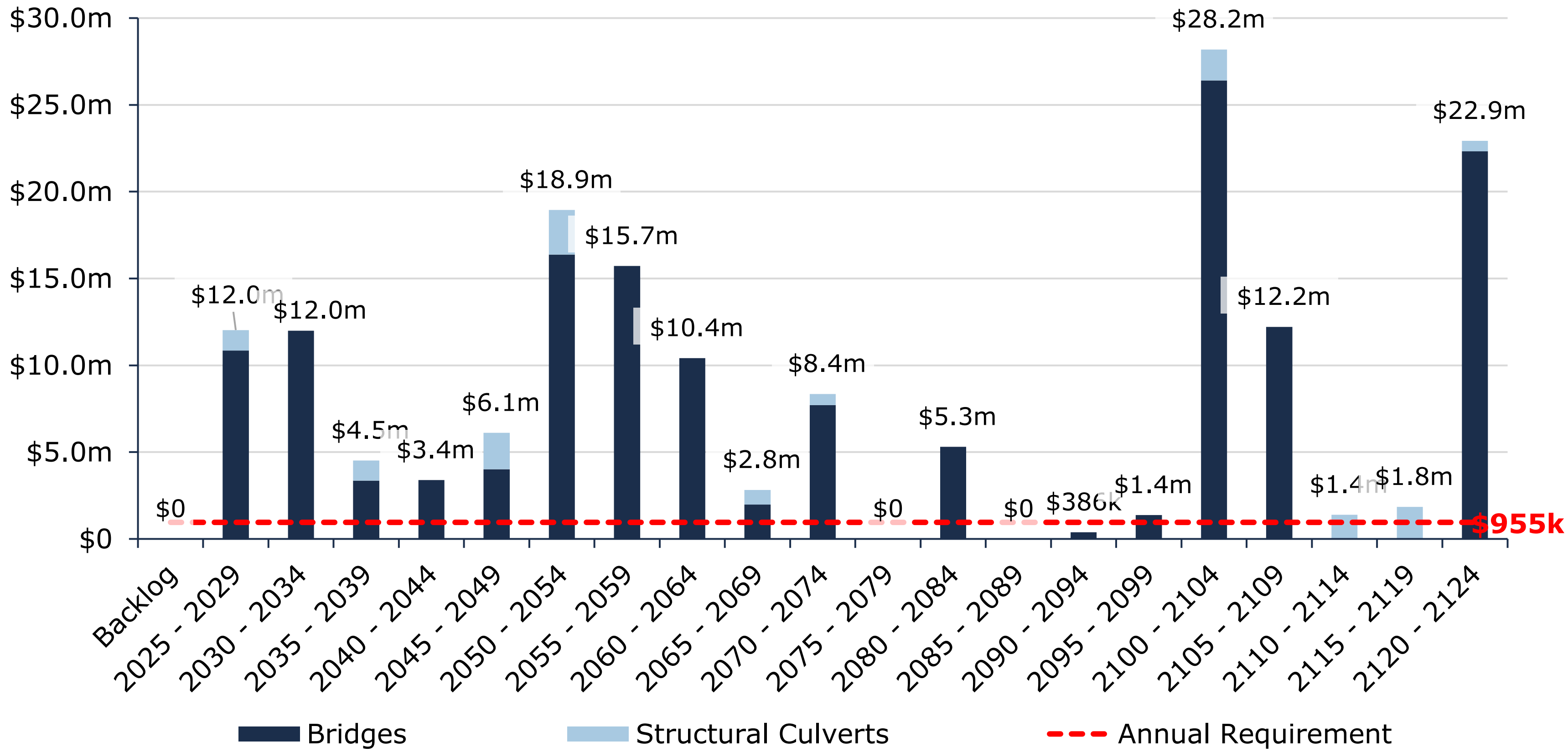
- Rehabilitation activities including structural repairs, are initiated based on wear and tear or recommendations from biennial OSIMs.
- Replacement is considered for bridges and culverts when their condition has significantly deteriorated, and rehabilitation is no longer cost-effective. Assets nearing the end of their service life or requiring frequent, costly repairs are prioritized for replacement.

6.4 Forecasted Capital Requirements

The following analysis was run until 2124, and the resulting graph identifies capital requirements over the next 100 years. Arran-Elderslie's average annual requirements (red dotted line) for bridges and culverts total $955 thousand.

OSIM condition assessments and a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including rehabilitation and replacement activities.

Figure 26: B&C Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (as previously described) that may need to be undertaken over the next 10 years to support current levels of service. These are represented at the major asset level.

Table 9 B&C System-generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Bridges	-	$1.7m	$1.9m	$2.7m	$1.3m	$3.3m	$6.6m	$2.2m	-	$3.2m	-
Structural Culverts	-	-	$48k	-	$260k	$865k	-	-	-	-	-
Total	**-**	**$1.7m**	**$1.9m**	**$2.7m**	**$1.6m**	**$4.2m**	**$6.6m**	**$2.2m**	**-**	**$3.2m**	**-**

These projections are generated in Citywide and rely on the data available in the asset register. Assessed condition data and replacement costs were used to assist in forecasting replacement needs for bridges and structural culverts.

6.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for Bridges & Culverts.

Figure 27: B&C Risk Matrix

1 - 4 **Very Low** $1,491,146 (2%)	**5 - 7** **Low** $14,043,793 (16%)	**8 - 9** **Moderate** $10,950,300 (13%)	**10 - 14** **High** $42,970,700 (49%)	**15 - 25** **Very High** $17,740,200 (20%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

9.1.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Aging Infrastructure

As municipal bridges and culverts continue to age and deteriorate, the 2024 OSIM inspections have indicated a number of assets that have a low bridge condition index (BCI) and will require significant capital investment over the next 5 years.

Funding & Staff Capacity

The Municipality has a large inventory of bridges which require regular maintenance and assessment. It can be challenging for Staff to deploy optimal maintenance and assessment strategies. Major capital rehabilitation projects for bridges and culverts may also be deferred depending on the availability of grant funding opportunities. A long-term capital funding strategy can reduce dependency on grant funding and help prevent the deferral of necessary capital works.

6.6 Levels of Service

The following tables identify the Municipality's metrics to identify their current level of service for the bridges and culverts.

6.6.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by bridges and culverts.

Table 10 B&C Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport, motor, emergency vehicles, pedestrians, cyclists)	The municipal bridges support a diverse range of traffic, serving as crucial conduits within the Municipality and also for travel between communities. They accommodate a wide variety of users, including large agricultural equipment, heavy transport vehicles, motor and emergency vehicles, cyclists, pedestrians, and horse-and-buggy traffic. There are 13 structures with load limits.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	See Appendix A.

6.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by bridges and culverts.

Table 11 B&C Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	% of bridges in the Municipality with loading or dimensional restrictions	20%[2]
	Average Risk Rating	11.8 (High)
Quality	Average bridge condition index value for bridges in the municipality	69
	Average BCI value for culverts in the municipality	62
Performance	Capital Reinvestment Rate	0.6%

[2] *There are thirteen (13) structures subject to load restrictions or width limitations.*

7. Water System

The Municipality of Arran-Elderslie provides drinking water to the communities of Chesley, Paisley, and Tara through municipally owned groundwater-based water systems. These systems include wells, treatment and disinfection facilities, pumping stations, storage, and distribution infrastructure designed to deliver safe and reliable water in compliance with provincial standards.

The state of the infrastructure for the Water System is summarized in the following table:

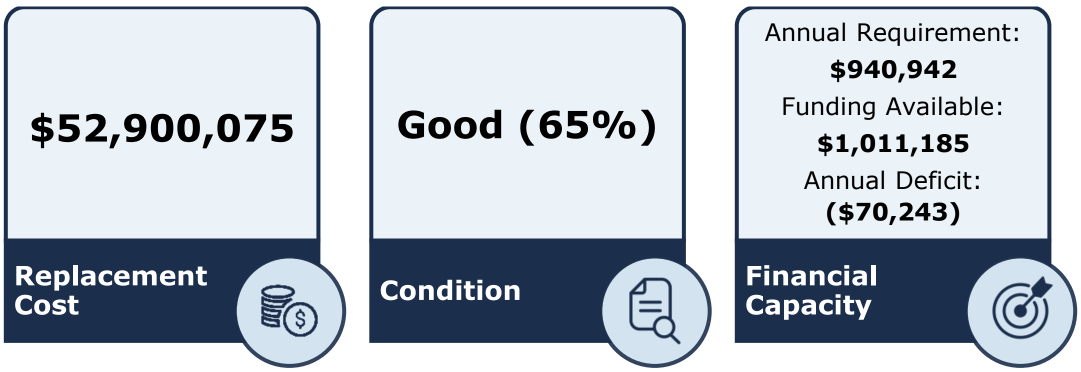


Figure 28: Water System State of the Infrastructure

7.1 Inventory & Valuation

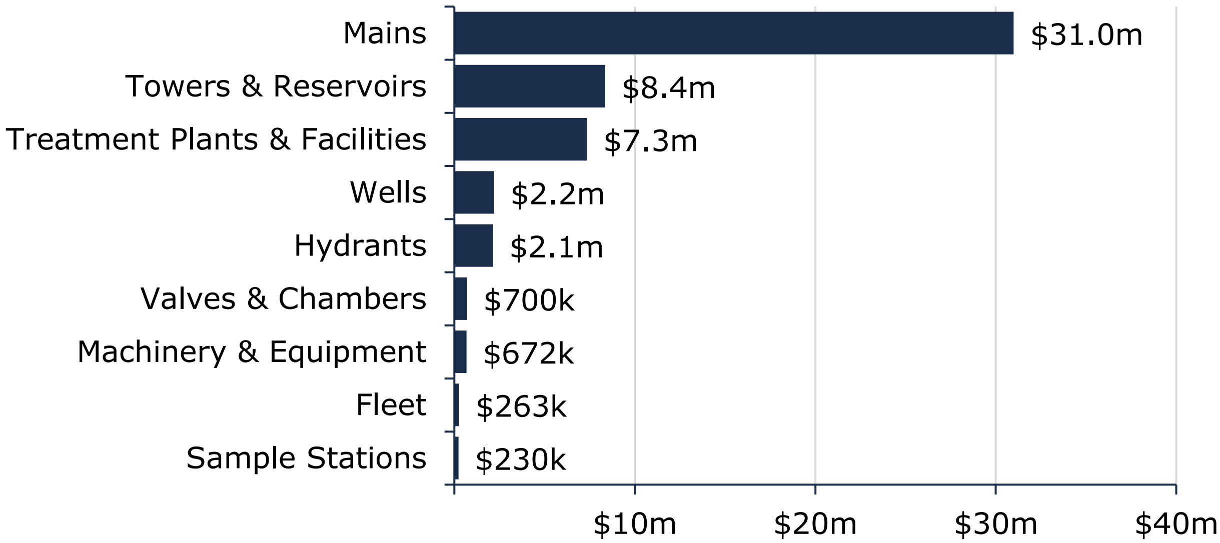
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment for the Municipality's Water System.

Table 12: Water System Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Fleet	7	Quantity	CPI	$262,658
Hydrants	220	Quantity	Cost per Unit	$2,139,500
Machinery & Equipment	31	Quantity	CPI	$671,775
Mains	50,298	Length (m)	Cost per Unit	$30,992,635
Sample Stations	11	Quantity	User-Defined	$229,570
Towers & Reservoirs	3	Quantity	CPI	$8,354,898
Treatment Plants & Facilities	12	Quantity	User-Defined	$7,348,838
Valves & Chambers	103	Quantity	CPI	$700,209
Wells	23	Quantity	User-Defined	$2,199,993
Total			**Cost per Unit**	**$52,900,075**

The graph below displays the total replacement cost of each asset segment in Arran-Elderslie' water network inventory.

Figure 29: Water System Replacement Cost

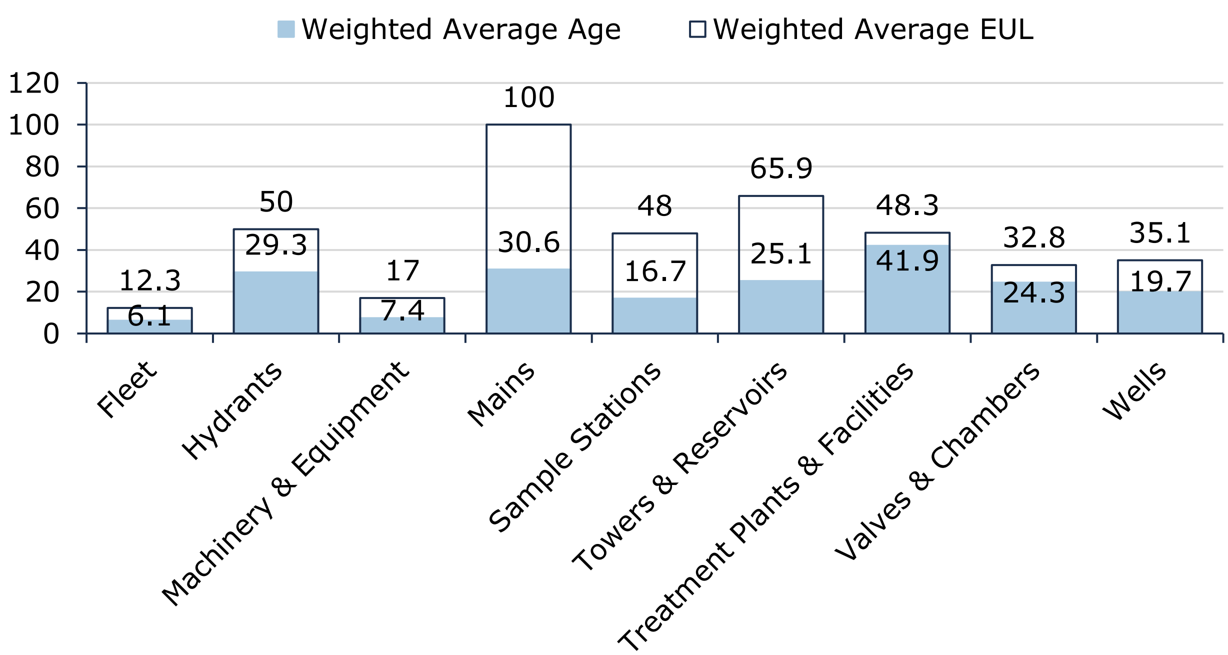


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

7.2 Asset Condition & Age

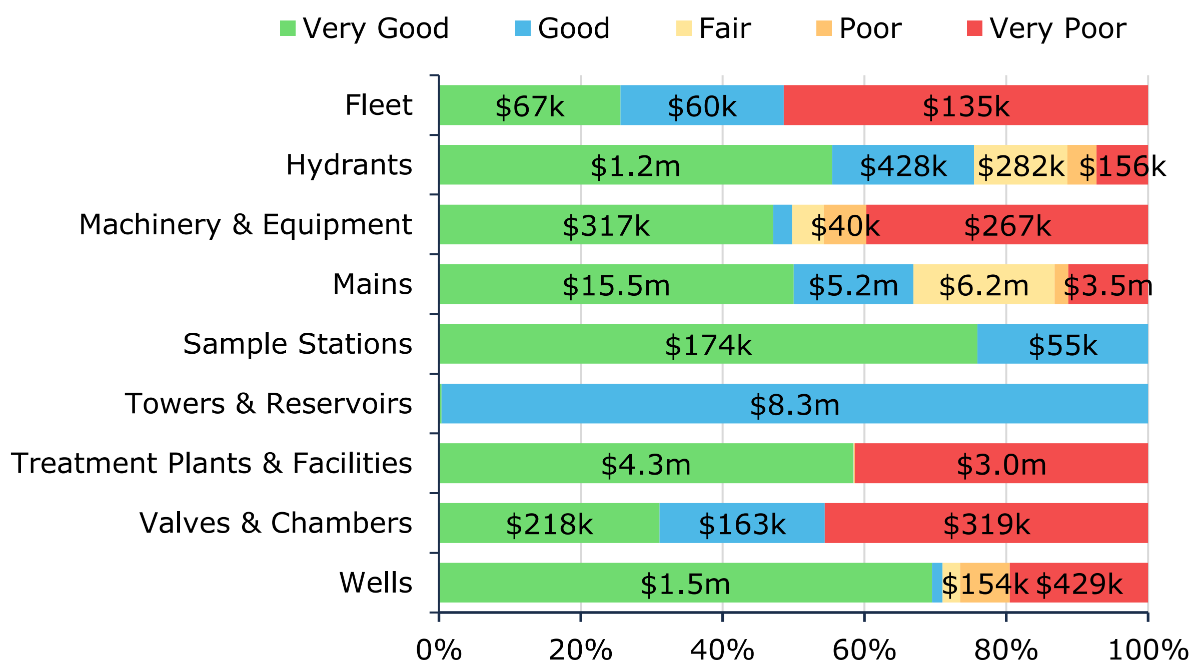
The figure below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Figure 30: Water System Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 31: Water System Condition Breakdown



Each asset's estimated useful life should also be reviewed to determine whether adjustments need to be made to better align with the observed service life.

7.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Municipality's current approach:

- Staff primarily rely on the age and material of water mains to determine the projected condition of water mains

7.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, the lifecycle management strategies have been developed to proactively manage asset deterioration.

Figure 32: Water System Current Lifecycle Strategy

Maintenance

- Valves undergo annual maintenance
- Periodic pressure testing is conducted to identify deficiencies and potential leaks
- Mains and hydrants are flushed annually

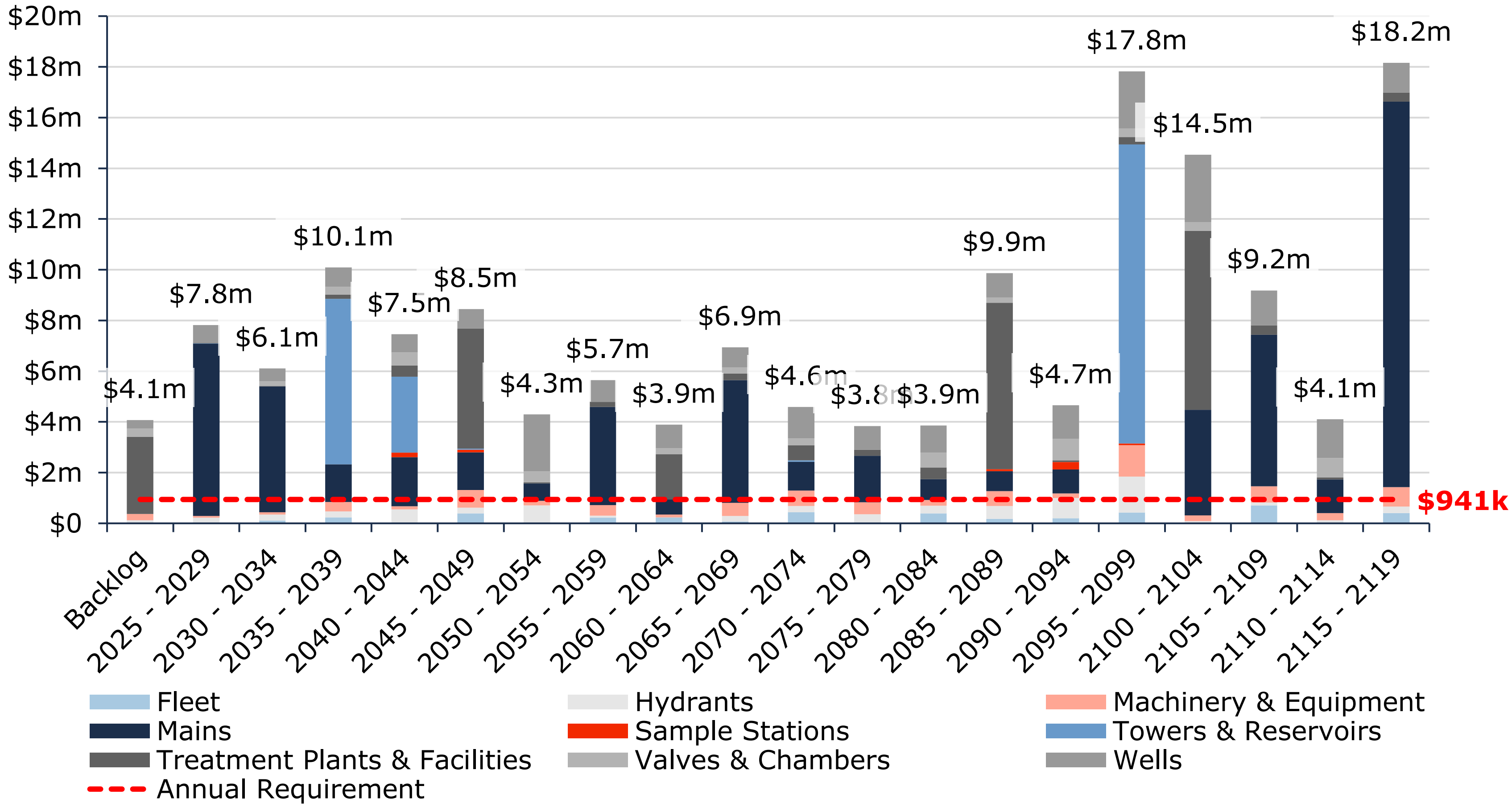
Rehabilitation / Renewal / Replacement

- In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life
- The 2021 - 2026 Drinking Water Financial Plan provides capital projections that include replacement and rehabilitative activities for specific assets and components
- Other replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities.

7.4 Forecasted Capital Requirements

The following graph identifies capital requirements until 2119. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $941 thousand.

Figure 33: Water System Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital activities only) that may need to be undertaken over the next 10 years to support current levels of service.

Table 13: Water System System-Generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Fleet	$7k	$35k	-	-	-	-	-	-	-	$43k	$66k
Hydrants	$117k	$39k	$88k	-	$20k	$40k	$72k	-	-	$168k	-
Machinery & Equipment	$247k	-	$11k	$53k	-	$8k	$69k	-	$8k	$8k	-
Mains	-	$472k	$5.0m	$307k	-	$997k	$110k	$4.2m	-	$691k	-
Sample Stations	-	-	-	-	-	-	-	-	-	-	-
Towers & Reservoirs	-	-	$14k	-	-	-	-	-	-	-	-
Treatment Plants & Facilities	$3.0m	$11k	$2k	$6k	-	-	-	$25k	-	-	-
Valves & Chambers	$319k	-	-	-	-	-	-	-	-	-	$177k
Wells	$340k	$276k	$71k	$170k	-	$179k	$140k	-	$143k	-	$219k
Total	**$4.1m**	**$832k**	**$5.2m**	**$535k**	**$20k**	**$1.2m**	**$391k**	**$4.2m**	**$151k**	**$911k**	**$462k**

7.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the Water System.

Figure 34: Water System Risk Matrix

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low $65,364,605 (67%)	**Low** $11,064,042 (11%)	**Moderate** $12,399,826 (13%)	**High** $4,467,225 (5%)	**Very High** $3,710,877 (4%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

7.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to sanitary service delivery that the Municipality is currently facing:

Asset Data and Information

There is a misalignment in the current inventory data for critical water system assets, particularly water system facilities. Some of the asset data has not been consolidated into the Municipality's central asset inventory. This poses a risk and will lead to discrepancies when trying to manage assets and planning future work.

Assessed Condition Data

Water System assets such as mains are difficult to visually inspect, in contrast to storm and sanitary mains which can have CCTV inspections. Water main condition assessments generally rely on age-based estimates of current condition and pipe material to try and predict when mains need to be replaced.

7.6 Levels of Service

The following tables identify the Municipality's metrics to identify their current level of service for the Water System.

7.6.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the water network.

Table 14 Water System Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	The Municipality provides drinking water to the communities of Chesley, Paisley, and Tara. See Appendix A.
Reliability	Description of boil water advisories and service interruptions	No boil water advisories were issued in 2024.

7.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the water network.

Table 15 Water System Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	% of properties connected to the municipal water system	69%
	% of properties where fire flow is available	100%
	Average Risk Rating	8.2 (Moderate)
Reliability	# of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	Average Condition Rating	Good (65%)
Performance	Capital Reinvestment Rate	1.9%

8. Sanitary Sewer System

The Municipality operates sanitary systems in the communities of Chesley, Paisley, and Tara to collect, convey, treat, and safely discharge wastewater. These systems include sewer networks, pumping stations, and treatment facilities that protect public health and the natural environment. The infrastructure varies by community and reflects a mix of lagoon-based and mechanical treatment processes supported by standby power and monitoring systems.

The state of the infrastructure for the Sanitary Sewer System is summarized in the following table:

Replacement Cost	Condition	Financial Capacity
$61,702,374	**Fair (55%)**	Annual Requirement: **$1,298,041** Funding Available: **$602,884** Annual Deficit: **$695,157**

Figure 35: Sanitary Sewer System State of the Infrastructure

8.1 Inventory & Valuation

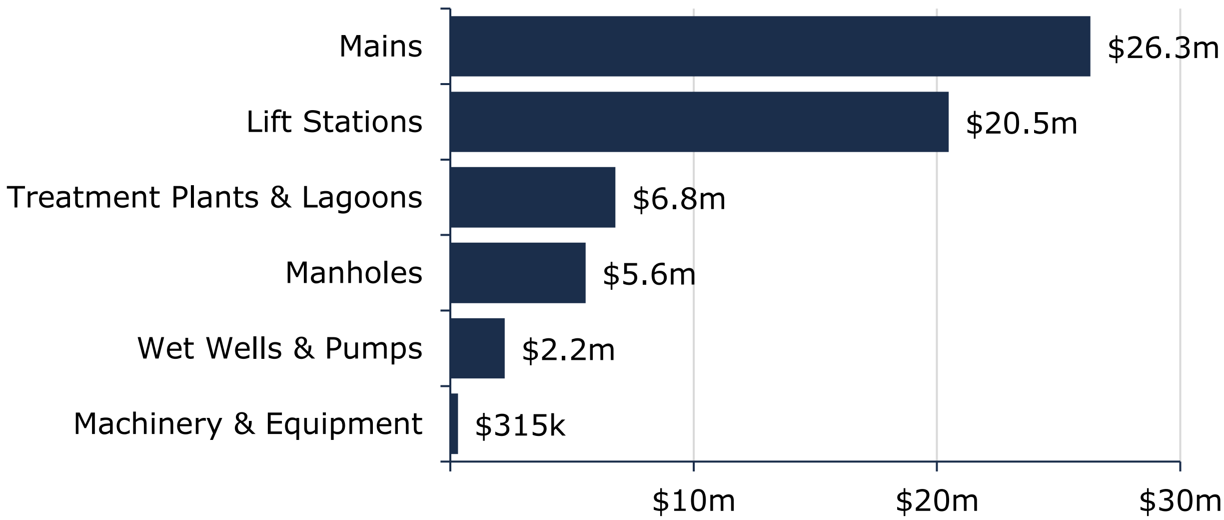
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment for the Sanitary Sewer System.

Table 16: Sanitary Sewer System Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Lift Stations	17	Quantity	CPI	$20,484,169
Machinery & Equipment	27	Quantity	CPI	$314,743
Mains	39,937	Length (m)	Cost per Unit	$26,309,662
Manholes	445	Quantity	Cost per Unit	$5,562,500
Treatment Plants & Lagoons	27	Assets	CPI	$6,789,859
Wet Wells & Pumps	7	Quantity	CPI	$2,241,441
Total			**Cost per Unit**	**$61,702,374**

The graph below displays the total replacement cost of each asset segment in Arran-Elderslie' Sanitary Sewer System inventory.

Figure 36: Sanitary Sewer System Replacement Cost

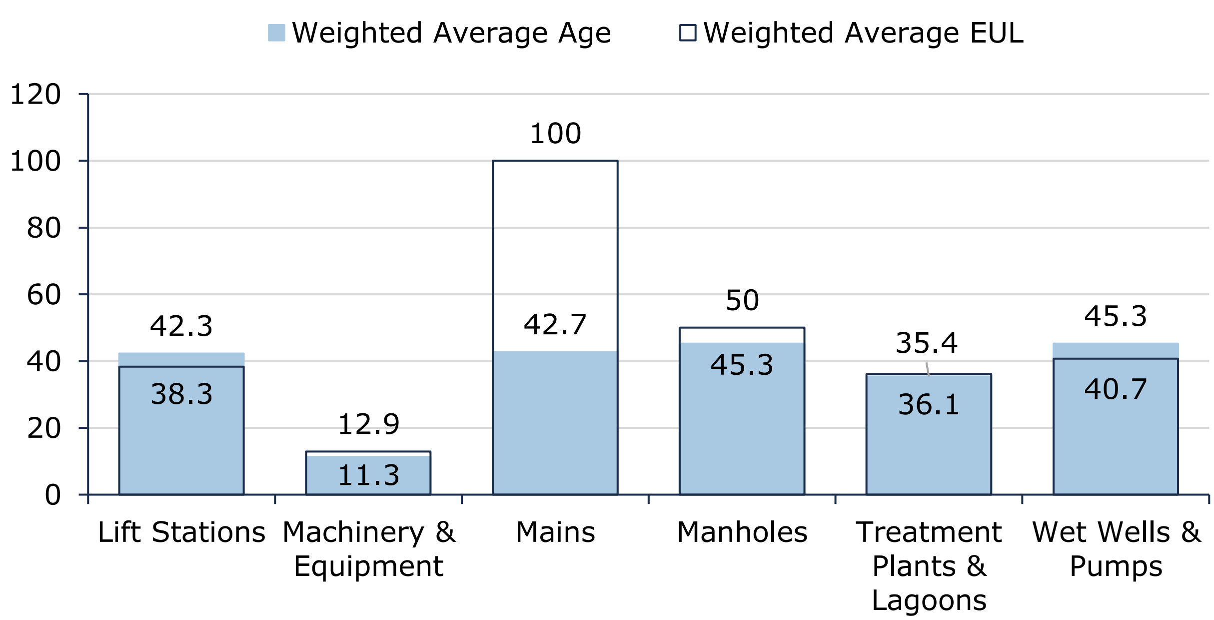


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

8.2 Asset Condition & Age

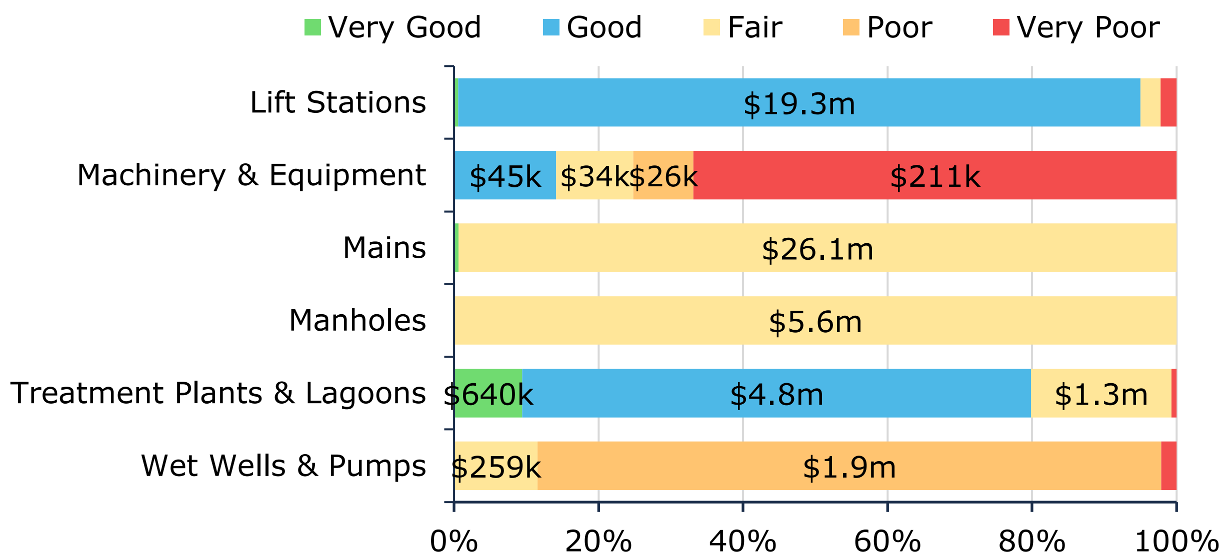
The figure below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Figure 37: Sanitary Sewer System Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 38: Sanitary Sewer System Condition Breakdown



Each asset's estimated useful life should also be reviewed to determine whether adjustments need to be made to better align with the observed service life.

8.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets.

- CCTV inspections are conducted on as-needed or in coordination with road construction
- Staff rely on a variety of metrics including age, pipe material and diameter, location, and available CCTV assessments to determine the projection condition of linear assets
- Other sanitary assets are inspected by staff on a regular basis

8.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, the lifecycle management strategies have been developed to proactively manage asset deterioration.

Figure 39: Sanitary Sewer System Current Lifecycle Strategy

Maintenance

- Annual maintenance of mains that consists of main flushing, rodding and inspections
- Annual maintenance of manholes that consists of manhole inspection, lining and grouting

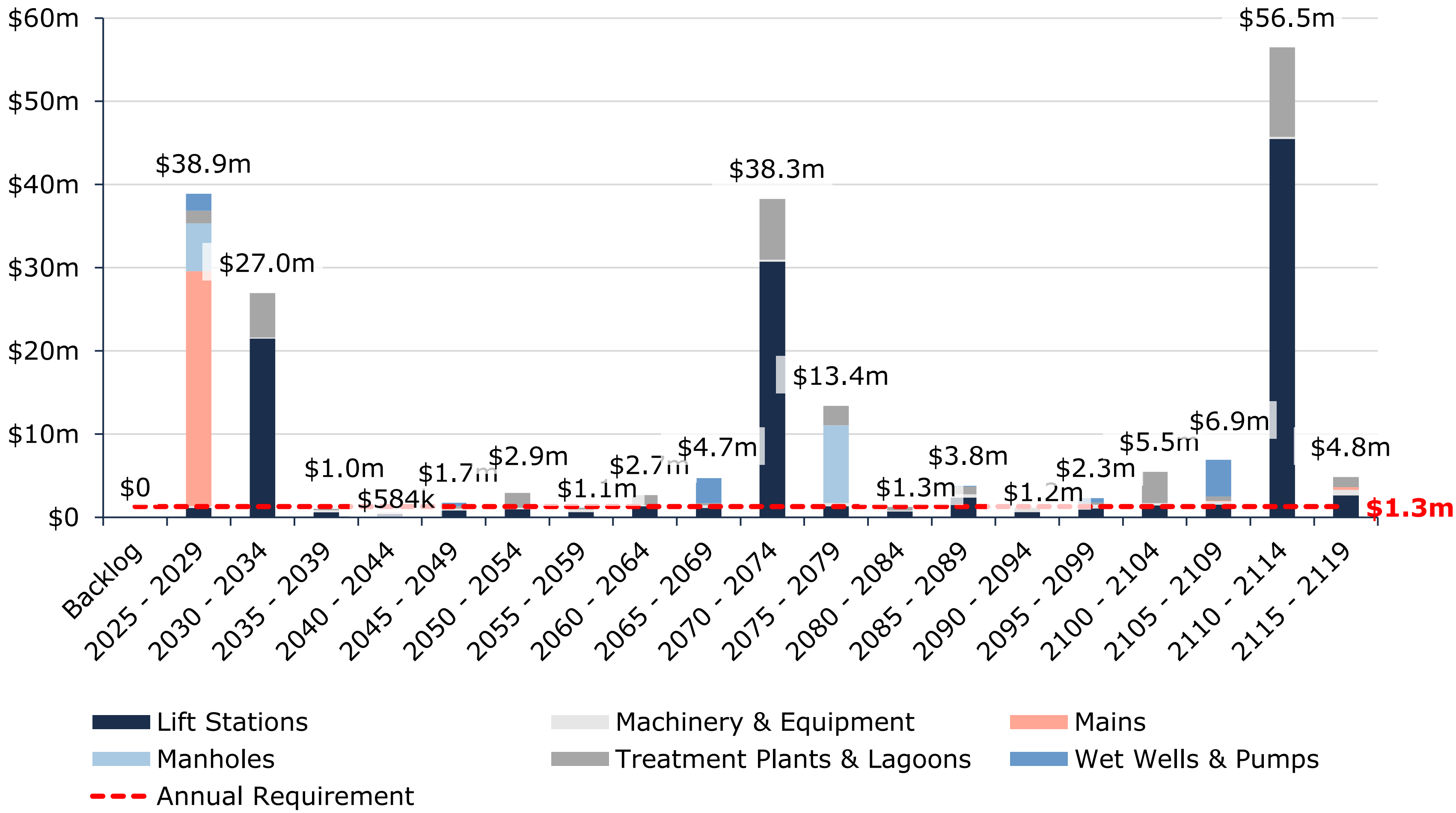
Rehabilitation / Renewal / Replacement

- In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life
- The 2021 - 2026 Sewer Financial Plan provides capital projections that include replacement and rehabilitative activities for specific assets and components
- Project prioritization is based on CCTV inspections, asset age, material, environmental risks, health and safety risks, and social impact.

8.4 Forecasted Capital Requirements

The following graph identifies capital requirements until 2119. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $1.3 million.

Figure 40: Sanitary Sewer System Forecasted Capital Replacement Requirements



The Table below summarizes the projected cost of lifecycle activities (capital activities only) that may need to be undertaken over the next 10 years to support current levels of service.

Table 17 Sanitary Sewer System-Generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Lift Stations	-	$30k	$518k	$230k	-	$358k	-	$938k	-	$55k	$20.5m
Machinery & Equipment	-	-	$214k	$8k	$4k	$4k	$25k	$46k	$36k	$4k	$16k
Mains	-	$898k	$113k	-	-	$27.2m	-	-	-	-	-
Manholes	-	$11k	-	-	$5.7m	-	-	-	-	-	-
Treatment Plants & Lagoons	-	$18k	$85k	$94k	-	$1.3m	$37k	$358k	-	$38k	$4.9m
Wet Wells & Pumps	-	$6k	$60k	$2.0m	-	-	-	-	-	-	-
Total	**-**	**$964k**	**$991k**	**$2.3m**	**$5.7m**	**$28.9m**	**$62k**	**$1.3m**	**$37k**	**$97k**	**$25.4m**

8.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the Sanitary Sewer System.

Figure 41: Sanitary Sewer System Risk Matrix

1 - 4 **Very Low**	**5 - 7** **Low**	**8 - 9** **Moderate**	**10 - 14** **High**	**15 - 25** **Very High**
$8,600,557 (14%)	$25,848,359 (42%)	$887,389 (1%)	$24,813,674 (40%)	$1,552,395 (3%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

8.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to sanitary service delivery that the Municipality is currently facing:

Asset Data and Information

There is a misalignment in the current inventory data for critical sanitary sewer system assets, particularly the sanitary sewer facilities. Some of the asset data has not been consolidated into the Municipality's central asset inventory and some assets are pooled. This poses a risk and will lead to discrepancies when trying to manage assets and planning future work.

Climate Change & Extreme Weather Events

With the intensity and frequency of climate change and extreme weather events increasing, the Municipality has experienced sewage overflow in the Chesley Sanitary System.

8.6 Levels of Service

The following tables identify the Municipality's metrics to identify their current level of service for the Sanitary Sewer System.

8.6.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Sanitary Sewer Network.

Table 18 Sanitary Sewer System Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, areas of the municipality that are connected to the municipal wastewater system	The Municipality operates sanitary systems in the communities of Chesley, Paisley, and Tara. See Appendix A.
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes.	The Municipality does not own any combined sewers.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater	

Service Attribute	Qualitative Description	Current LOS
	system that occur in habitable areas or beaches.	
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.	Stormwater can enter into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g., weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. the disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

8.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Sanitary Sewer System.

Table 19 Sanitary Sewer System Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	% of properties connected to the municipal wastewater systems	64%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of	0

Service Attribute	Technical Metric	Current LOS
	properties connected to the municipal wastewater system	
	# of connection-days per year with sanitary main backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
	Average Risk Rating	8.6 (Moderate)
	Average Condition Rating	Fair (55%)
Performance	Capital Reinvestment Rate	1.0%

9. Storm Sewer System

The Municipality of Arran-Elderslie manages stormwater infrastructure in both rural and urban areas to safely convey runoff, reduce flooding risk, and protect roads, properties, and natural watercourses. Rural stormwater management relies on natural drainage systems and municipally regulated drains maintained under the Ontario Drainage Act, while urban stormwater systems in Chesley, Paisley, and Tara consist of engineered storm sewers, structures, and conveyance features. Together, these systems support effective surface water management, environmental protection, and long-term infrastructure resilience.

The state of the infrastructure for the Storm Sewer System is summarized below:

$9,533,072
Replacement Cost

Fair (58%)
Condition

Annual Requirement: **$250,017**
Funding Available: **$338,430**
Annual Deficit: **($88,413)**
Financial Capacity

Figure 42: Storm Sewer System State of the Infrastructure

9.1 Inventory & Valuation

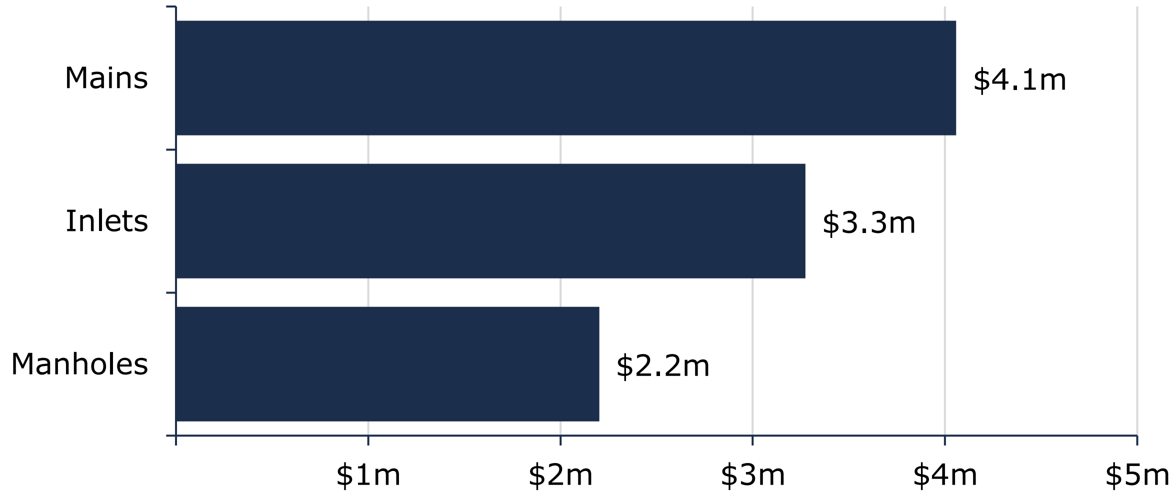
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment for the Municipality's Storm Water Network.

Table 20: Storm Sewer System Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Inlets	873	Quantity	Cost per Unit	$3,273,750
Mains	29,573.8	Length (m)	Cost per Unit	$4,057,822
Manholes	259	Quantity	Cost per Unit	$2,201,500
Total			**Cost per Unit**	**$9,533,072**

The graph below displays the total replacement cost of each asset segment in Arran-Elderslie' Storm Network inventory.

Figure 43: Storm Sewer System Replacement Cost

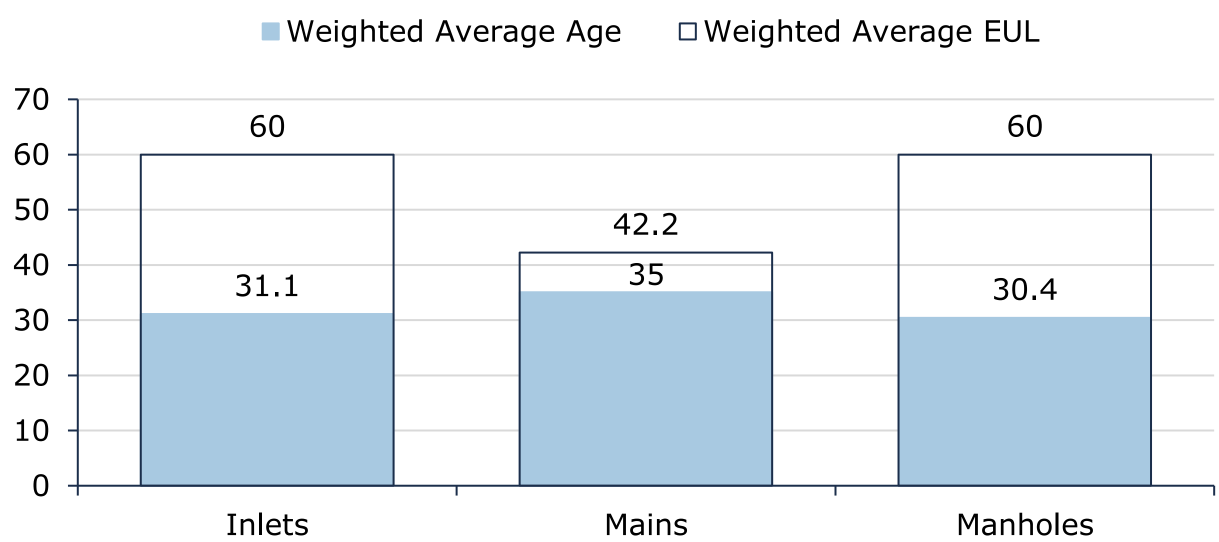


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

9.2 Asset Condition & Age

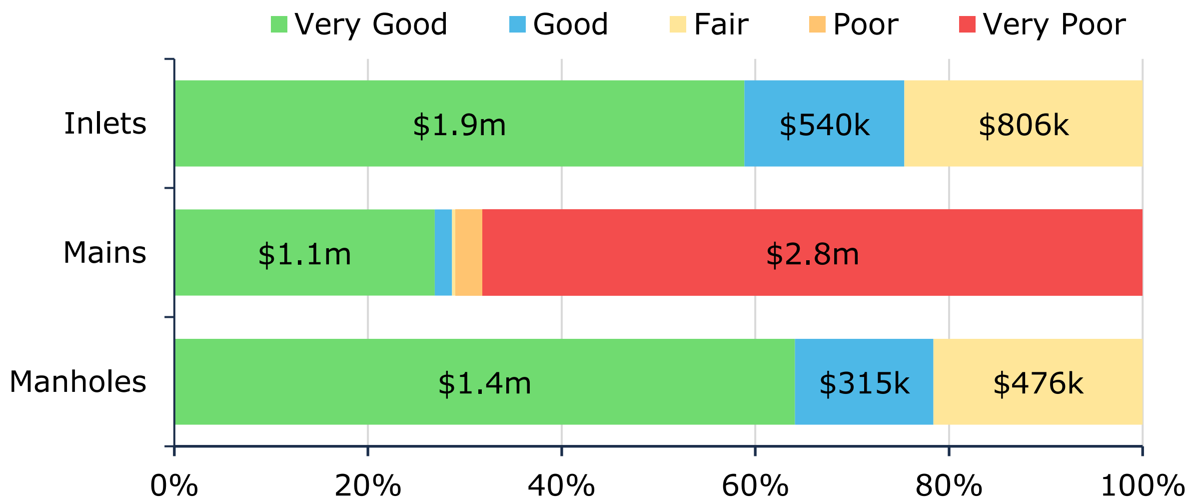
The graph below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Figure 44: Storm Sewer System Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 45: Storm Sewer System Condition Breakdown



9.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- There are no formal condition assessment programs in place for storm sewer infrastructure currently and CCTV inspections are not completed regularly
- Age-based estimates of condition are used to project current condition, although confidence in accuracy of these estimates is low
- As the Municipality refines the available asset inventory for the storm sewer system, a regular assessment cycle should be established

9.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Figure 46: Storm Sewer System Current Lifecycle Strategy

Maintenance

- Catch basins are cleaned annually and outlets are inspected regularly to ensure unobstructed flow
- Flushing and cleaning of storm mains is conducted every 3 years; one town per year
- All other maintenance activities are completed on a reactive basis when operational issues are identified (e.g., blockages, backups)

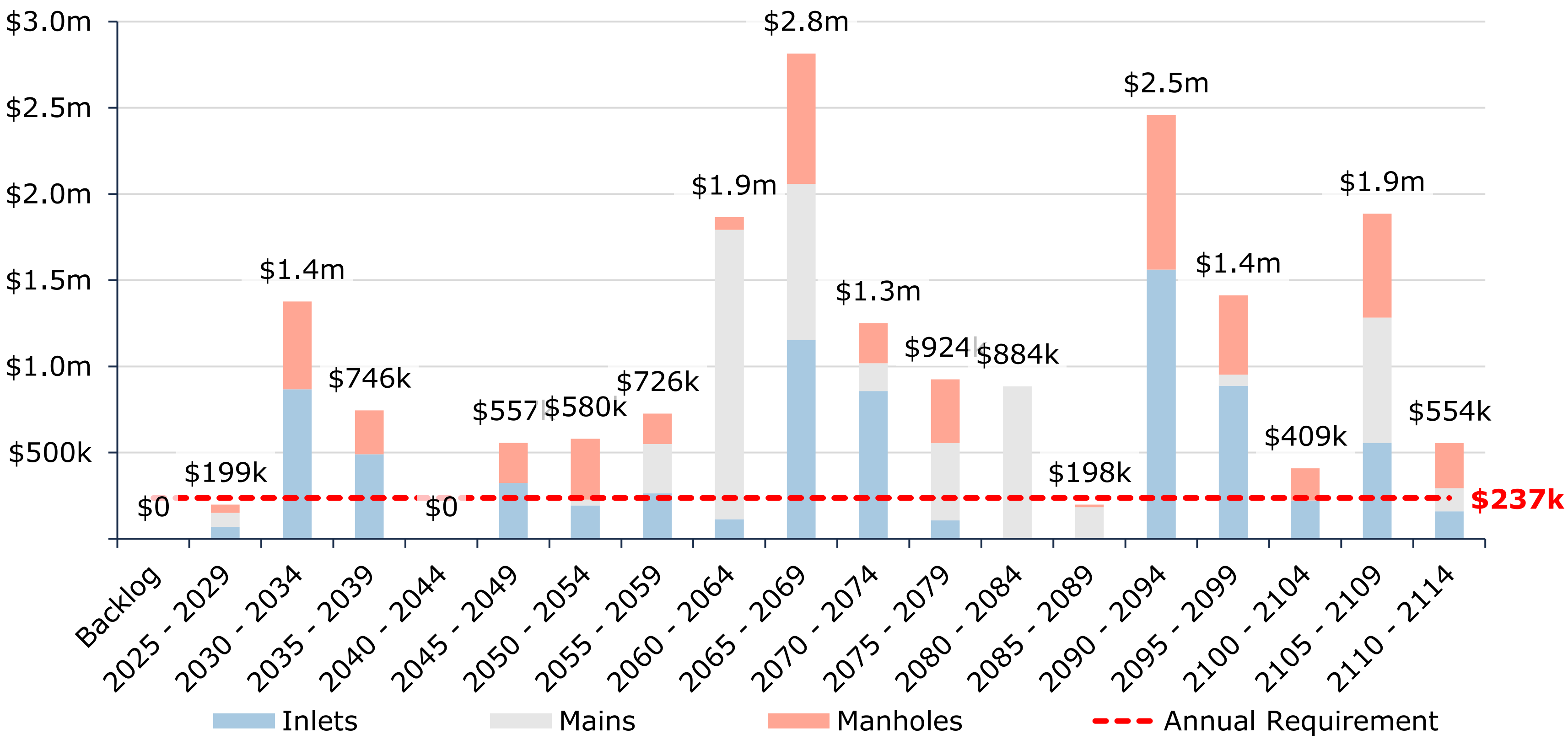
Renewal and Replacement

- With the introduction of a dedicated storm sewer rate in 2026, the municipality now has a predictable and sustainable funding source for stormwater infrastructure. This enables the implementation of a proactive lifecycle management strategy focused on asset renewal and replacement, and incorporate findings from the recently completed Storm Needs Study, which identified recommendations for upgrading and expanding the system to meet current and future demands.
- Staff have proposed that $400,000 be allocated from 2022 - 2026 to expand the existing storm sewer infrastructure
- Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature

9.4 Forecasted Capital Requirements

The following graph identifies capital requirements until 2114. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $237 thousand.

Figure 47: Storm Sewer System Forecasted Capital Replacement Requirements



The Table below summarizes the projected cost of lifecycle activities (capital activities only) that may need to be undertaken over the next 10 years to support current levels of service.

Table 21 Storm Sewer System System-Generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Inlets	-	$35k	$35k	-	-	-	-	$267k	-	$601k	-
Mains	-	$41k	$41k	-	-	-	-	-	-	-	-
Manholes	-	$24k	$24k	-	-	-	$9k	$361k	-	$138k	-
Total	**-**	**$99k**	**$99k**	**-**	**-**	**-**	**$9k**	**$628k**	**-**	**$739k**	**-**

9.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the Storm Sewer System.

Figure 48: Storm Sewer System Risk Matrix

1 - 4 Very Low	**5 - 7 Low**	**8 - 9 Moderate**	**10 - 14 High**	**15 - 25 Very High**
$6,065,503 (64%)	$660,569 (7%)	$48,750 (<1%)	$1,672,750 (18%)	$1,085,500 (11%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

9.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Asset Data and Information

Significant gaps and inconsistencies exist in the storm sewer system data, including differences between the asset inventory in the Needs Study and the Citywide database. Some assets are missing, incomplete, or outdated, and condition information is limited. These data deficiencies increase the risk of underestimating capital requirements, mis prioritizing maintenance and replacement activities, and over- or under-allocating funding. Without reliable and complete information, long-term asset management strategies may not achieve desired service levels or adequately mitigate flood risk.

9.6 Levels of Service

The following tables identify the Municipality's metrics to identify their current level of service for the Storm Sewer System.

9.6.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Storm Network.

Table 22 Storm Sewer System Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	The municipal stormwater system provides flood protection to developed areas in Chelsey, Paisley, and Tara by conveying runoff from minor rainfall events through the storm sewer network. The system is generally designed to manage a 1:5-year storm event, which represents the intended level of service. During larger storm events, such as a 1:100-year storm, flooding and surcharging are expected, as the system is not designed to convey major storms and excess runoff is managed through overland flow routes. A Needs Study completed by GSS Engineering Ltd. in 2024 has identified upgrades that would reduce flooding during 1:5-year storms and improve overall system performance. See Appendix A.

9.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Storm Network.

Table 23 Storm Sewer System Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	% of properties in municipality resilient to a 100-year storm.	52.1%[3]

[3] Rural properties outside the areas served by the municipal stormwater system are considered unprotected and are excluded from the resilience calculation for serviced areas.

Service Attribute	Technical Metric	Current LOS
	% of the municipal stormwater management system resilient to a 5-year storm	90.4%[4]
	Average Risk Rating	5.62 (Low)
Performance	Average Condition Rating	Fair (58%)
	Capital Reinvestment Rate	3.2%

[4] Each flooded storm structure is assumed to represent flooding impacting at least one property or dwelling. This serves as a conservative proxy where parcel-level flood mapping is not available.

10. Buildings

The municipality's building assets support a wide range of services, including administration, public safety, health, public works, and recreation/cultural programs. Facilities include municipal offices, town halls, fire halls, medical clinics, workshops, storage buildings, arenas, community centres, libraries, museums, theatres, pavilions, pools, and cemetery buildings. These assets enable essential operations, community services, and cultural programming, and are maintained through ongoing upgrades and improvements to ensure accessibility, safety, and functionality.

The state of the infrastructure for municipal Buildings is summarized below:

$52,280,065

Replacement Cost

Fair (41%)

Condition

Annual Requirement:
$915,128
Funding Available:
$58,351
Annual Deficit:
$856,776

Financial Capacity

Figure 49: Buildings & Facilities State of the Infrastructure

10.1 Inventory & Valuation

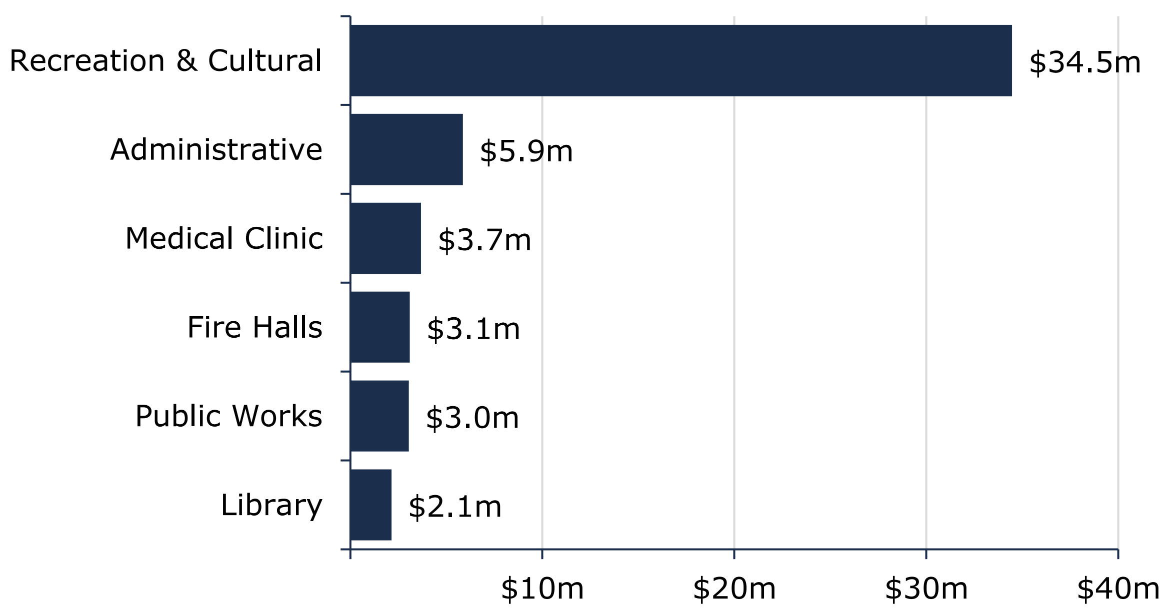
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's buildings inventory.

Table 24: Buildings & Facilities Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Administrative	3	Assets	User-Defined	$5,853,047
Fire Halls	3	Assets	User-Defined	$3,098,590
Library	3	Assets	User-Defined	$2,135,689
Medical Clinic	2	Assets	CPI	$3,679,613
Public Works	9	Assets	User-Defined	$3,043,153
Recreation & Cultural	10	Assets	User-Defined	$34,469,973
Total	**30**	**Assets**	**User-Defined**	**$52,280,065**

The graph below displays the total replacement cost of each asset segment in Arran-Elderslie' buildings inventory.

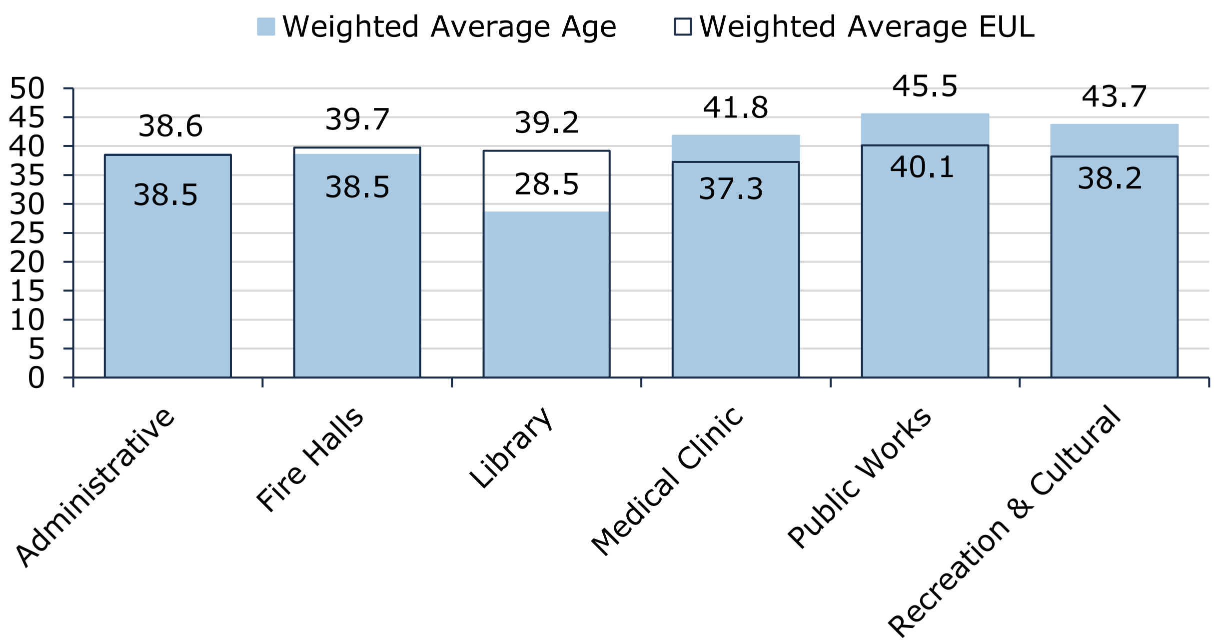
Figure 50: Buildings & Facilities Replacement Cost



10.2 Asset Condition & Age

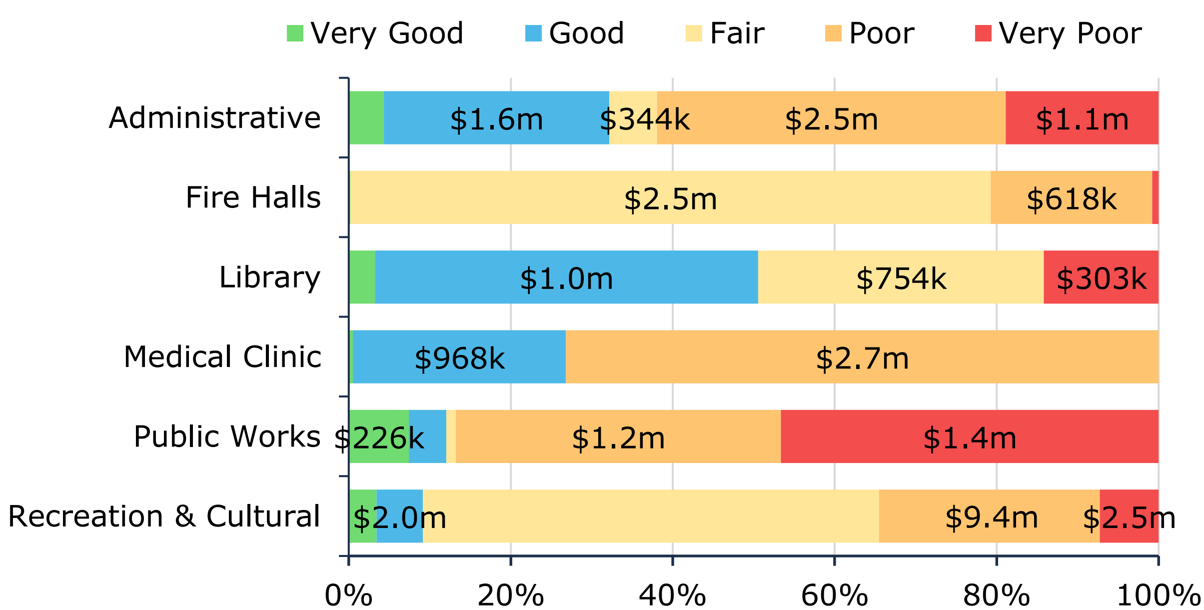
The graph below identifies the average age, and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 51: Buildings & Facilities Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 52: Buildings & Facilities Condition Breakdown



10.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Municipality's current approach:

- Formal workplace inspections conducted every year through the Municipality's health and safety program.
- High-level assessments by internal staff are performed annually to determine the condition of facilities.

10.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following describes the Municipality's current lifecycle management strategy.

Figure 53: Buildings & Facilities Current Lifecycle Strategy

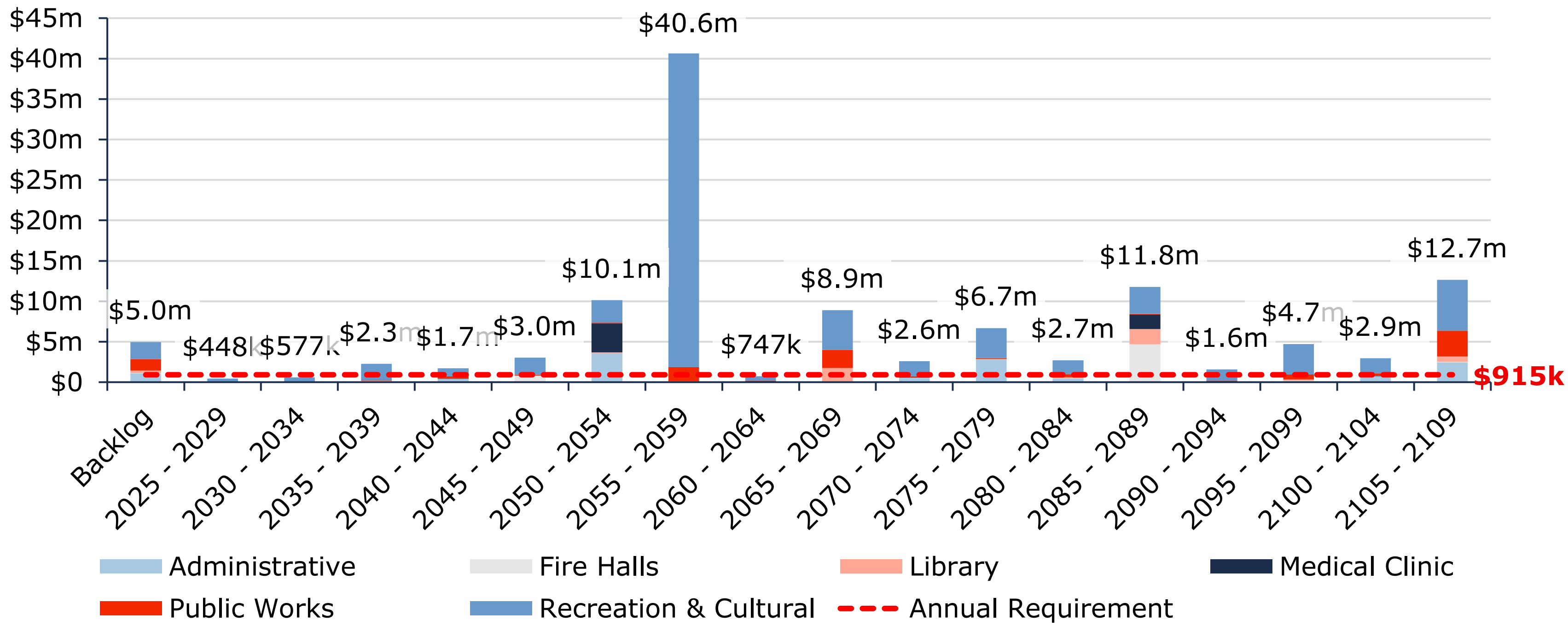
Maintenance / Rehabilitation / Replacement

- Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention
- Critical buildings (Fire Stations, Arenas, Town Hall, etc.) have a detailed maintenance and rehabilitation schedule, while the maintenance of other facilities are dealt with on a case-by-case basis
- Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate.

10.4 Forecasted Capital Requirements

The following graph identifies capital requirements until 2109. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $915 thousand.

Figure 54: Buildings & Facilities Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital activities only) that may need to be undertaken over the next 10 years to support current levels of service.

Table 25 Buildings & Facilities System-Generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administrative	$1.1m	-	-	-	-	$2k	-	-	-	-	-
Fire Halls	$15k	$10k	-	-	-	-	$11k	-	-	-	-
Library	$303k	-	-	-	-	-	-	-	-	-	-
Medical Clinic	-	-	-	-	-	-	-	-	-	-	-
Public Works	$1.4m	-	-	$42k	-	-	-	-	$10k	-	$72k
Recreation & Cultural	$2.1m	$214k	-	$7k	$155k	$18k	$273k	$52k	$20k	$128k	$11k
Total	**$5.0m**	**$224k**	**-**	**$49k**	**$155k**	**$20k**	**$284k**	**$52k**	**$30k**	**$128k**	**$83k**

10.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for buildings and facilities.

Figure 55: Buildings & Facilities Risk Matrix

1 - 4 Very Low	**5 - 7 Low**	**8 - 9 Moderate**	**10 - 14 High**	**15 - 25 Very High**
$2,211,352 (4%)	$612,536 (1%)	$1,470,698 (3%)	$15,398,473 (29%)	$32,587,006 (62%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

10.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Organizational Knowledge & Capacity

Both short- and long-term planning requires the collection of infrastructure data to support asset management decision-making. Staff find it a continuous challenge to dedicate resource time towards data collection and consolidation.

10.6 Levels of Service

By comparing the cost, performance (average condition) and risk year-over-year, the Municipality will be able to evaluate how their services/assets are trending.

10.6.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by municipal buildings.

Table 26 Buildings & Facilities Community Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of municipal buildings and the plans that are in place to maintain or improve the provided level of service	Buildings and Facilities are currently in fair condition. Maintaining and improving service levels is challenged by gaps in infrastructure data needed to support both short- and long-term planning. While ongoing maintenance activities are carried out to keep facilities operational and safe, limited staff resources for data collection and consolidation constrain more proactive asset management. Improving the completeness and quality of building condition and lifecycle data remains a key priority to support informed decision-making and future service level improvements.

10.6.2 Technical Levels of Service

The quantitative metrics that determine the technical level of service provided by the buildings in Arran-Elderslie are going to be the analysis of reinvestment rates, asset performance and asset risk levels.

Table 27 Buildings & Facilities Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Fair (41%)
	Average Risk Rating	15.1 (Very High)
Performance	Capital Reinvestment Rate	0.1%

11. Parks & Land Improvements

The Municipality's Parks and Land Improvement assets include a diverse range of community spaces, recreational facilities, and cemetery properties that support public health, leisure, and cultural heritage. Assets encompass cemeteries, columbaria, monuments, landscaping, park furnishings such as bleachers, docks, and trash/recycling stations, playground equipment, splash pads, sports fields, courts, and associated lighting and fencing. These assets provide safe, accessible, and enjoyable spaces for residents, while ongoing maintenance and upgrades ensure their functionality and compliance with accessibility and safety standards.

The state of the infrastructure for the land improvements is summarized below:

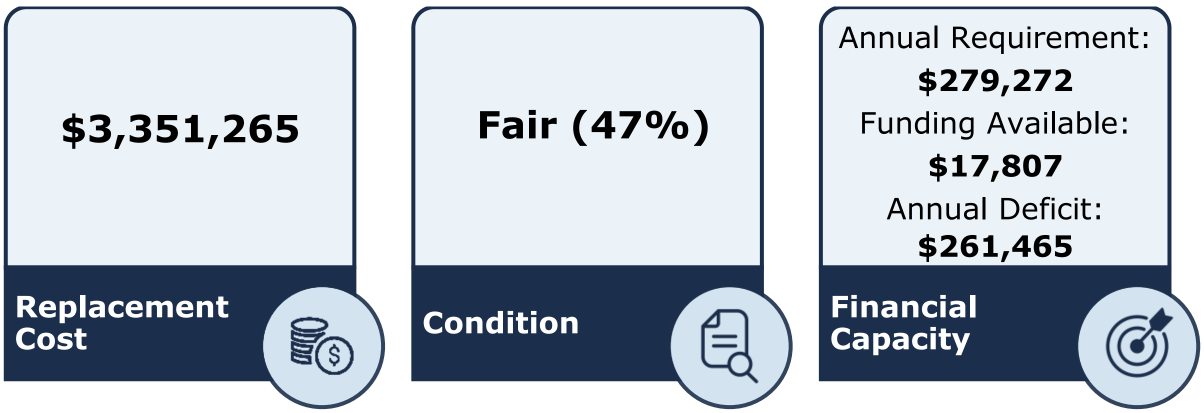


Figure 56: Parks & Land Improvements State of the Infrastructure

11.1 Asset Inventory & Valuation

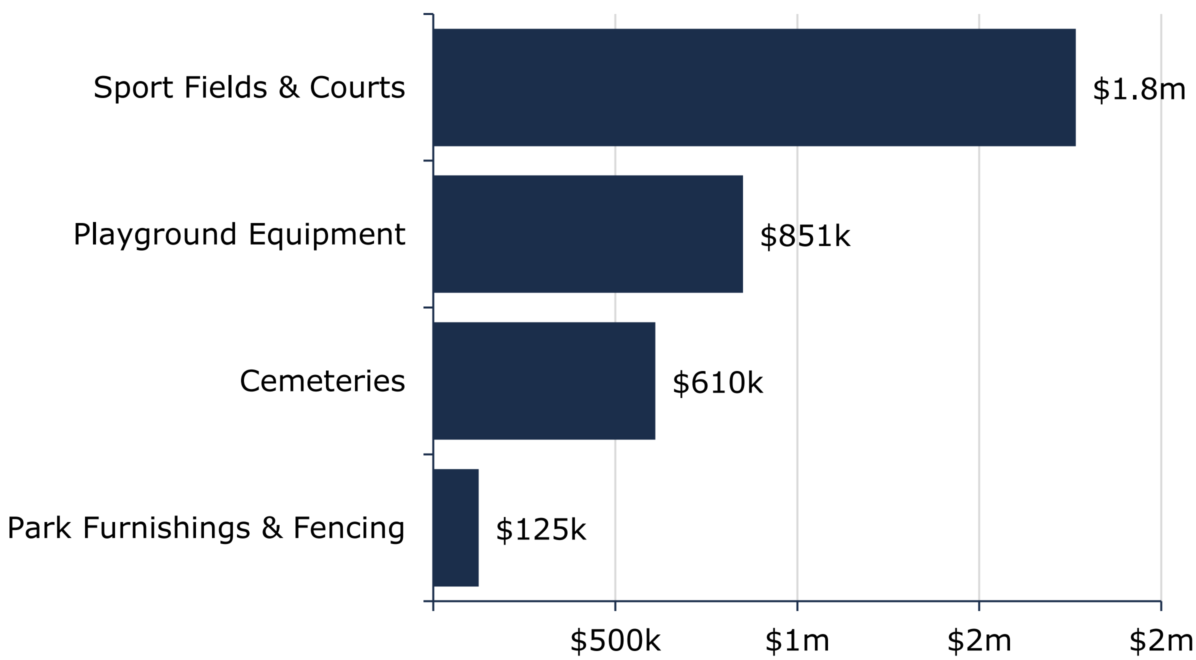
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment for the Municipality's Land Improvements.

Table 28: Parks & Land Improvements Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Cemeteries	11	Assets	CPI	$610,461
Park Furnishings & Fencing	14	Assets	CPI	$125,120
Playground Equipment	15	Assets	CPI	$850,819
Sport Fields & Courts	17	Assets	User-Defined	$1,764,865
Total	**57**	**Assets**	**User-Defined**	**$3,351,265**

The graph below displays the replacement cost of each asset segment in the Municipality's land improvement inventory.

Figure 57: Parks & Land Improvements Replacement Cost

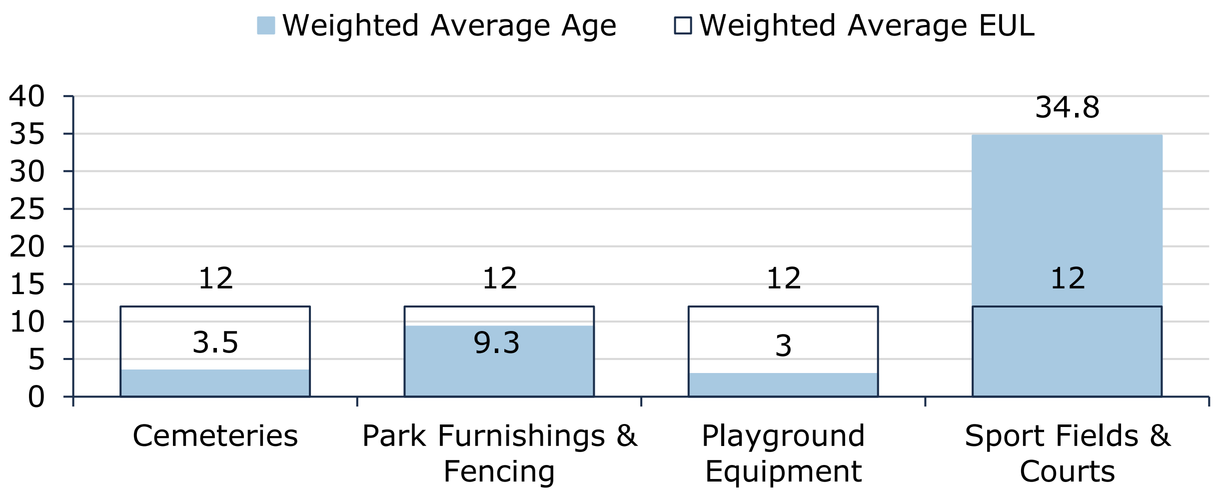


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

11.2 Asset Condition & Age

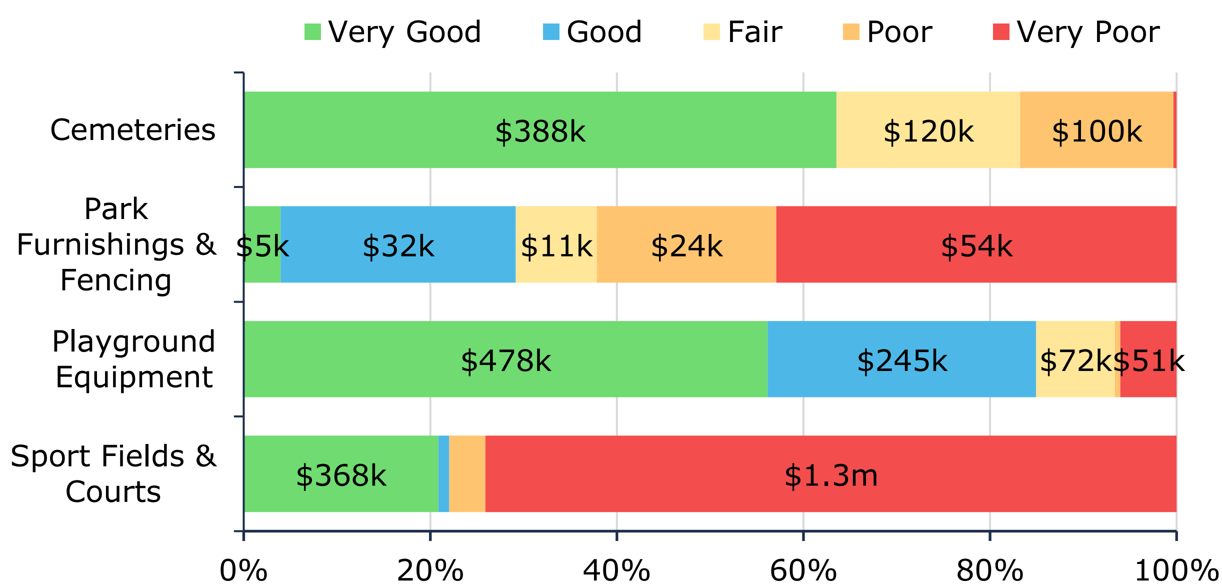
The graph below identifies the average age, and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 58: Parks & Land Improvements Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 59: Parks & Land Improvement Condition Breakdown



11.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Staff complete regular visual inspections of parks and land improvements assets to ensure they are in state of adequate repair
- Staff conduct formal inspections of outdoor play space, fixed play structures and surfacing in accordance with CAN/CSA-Z614 and required as per O. Reg. 137/15
- There are no formal condition assessment programs in place for other parks and land improvements assets

11.3 Lifecycle Management Strategy

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets.

Figure 60: Parks & Land Improvements Current Lifecycle Strategy

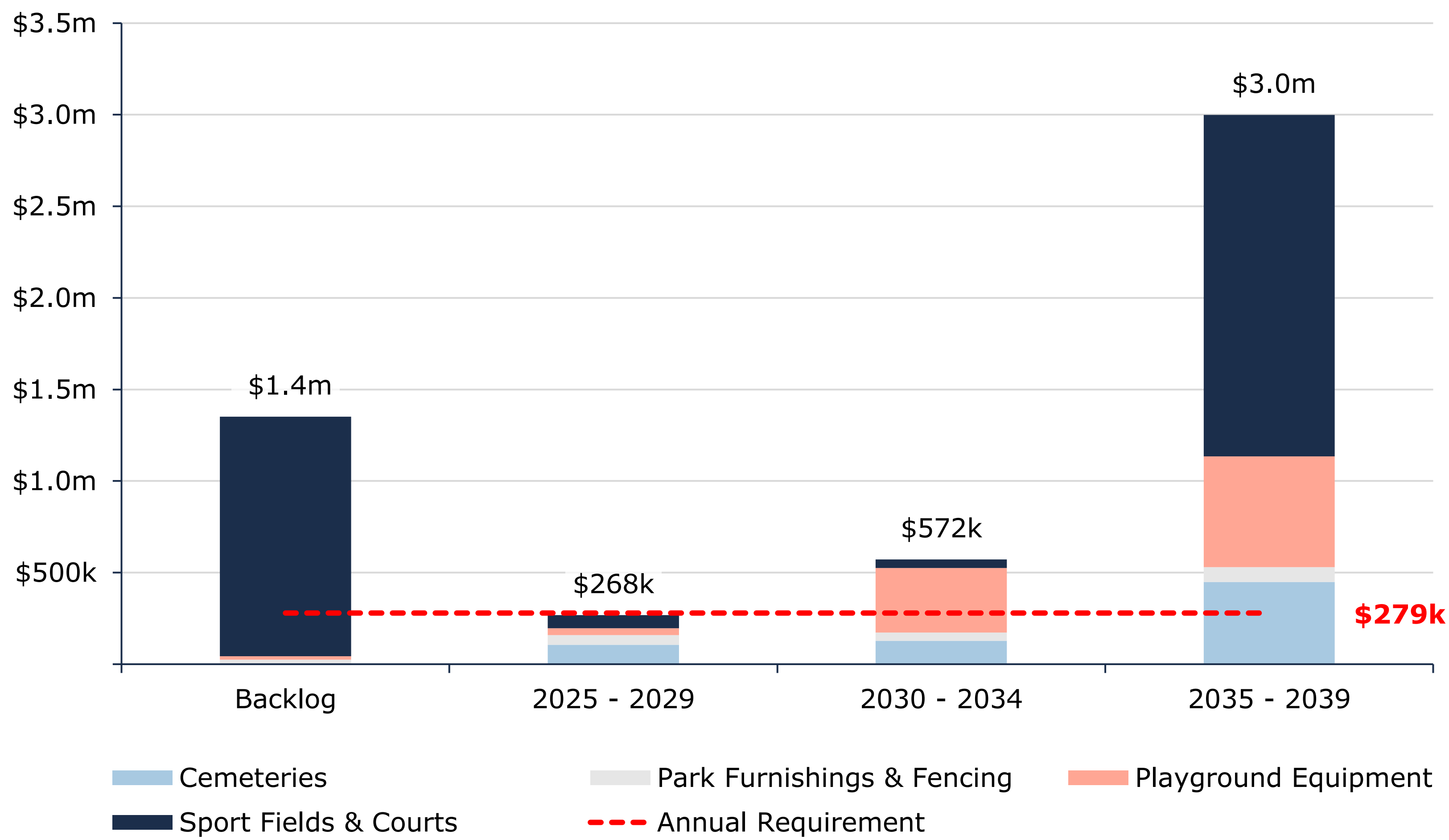
Maintenance / Rehabilitation / Replacement

- The Parks & Land Improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis

11.4 Forecasted Capital Requirements

The following graph identifies capital requirements until 2039. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $279 thousand.

Figure 61: Parks & Land Improvements Forecasted Capital Replacement Requirements



It is unlikely that all land improvements will need to be replaced as forecasted. Coordinated projects may help drive replacements and rehabilitations.

The table below summarizes the projected cost of lifecycle activities (capital replacement only) that will need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register, which was limited to asset age, replacement cost, and useful life.

Table 29 Parks & Land Improvements System-Generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Cemeteries	-	-	$2k	-	$103k	-	$86k	$42k	-	-	-
Park Furnishings & Fencing	$25k	-	$29k	$13k	$12k	-	-	$12k	$30k	-	$4k
Playground Equipment	$19k	-	$33k	-	$5k	-	$35k	$41k	-	-	$276k
Sport Fields & Courts	$1.3m	-	-	$5k	-	$65k	-	-	$22k	-	$25k
Total	**$1.4m**	**-**	**$64k**	**$18k**	**$120k**	**$65k**	**$121k**	**$94k**	**$52k**	**-**	**$305k**

Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts.

11.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for parks & land improvement assets.

Figure 62: Parks & Land Improvement Risk Matrix

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$1,342,956 (40%)	$415,686 (12%)	$106,351 (3%)	$521,733 (16%)	$964,539 (29%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

11.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Asset Data Confidence

The current inventory for parks & land improvements is pooled and incomplete, resulting in a basic level of data maturity. This is a limiting factor in allowing for accurate and reliable projections, and Staff have indicated that the current inventory is incomplete.

11.6 Levels of Service

The following tables identify Arran-Elderslie' metrics to identify the current level of service for the land improvement assets. By comparing the cost, performance (average condition) and risk year-over-year the Municipality will be able to evaluate how their services/assets are trending.

11.6.1 Community Levels of Service

The following table outlines the quantitative metrics that determine the community level of service provided by the municipal Parks & Land Improvements.

Table 30 Parks & Land Improvements Community Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of land improvement assets and the plans that are in place to maintain or improve the provided level of service	Parks and Land Improvements assets are in fair condition, reflecting the diverse range of asset types and varying lifecycle requirements within this category. Maintenance and renewal activities are addressed on a case-by-case basis to ensure assets remain safe, functional, and aligned with community use. While this approach allows flexibility, continued improvement in condition assessment and lifecycle planning will support more consistent levels of service and long-term sustainability of park and land improvement assets.

11.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the municipal Parks & Land Improvements.

Table 31 Parks & Land Improvements Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Fair (47%)
	Average Risk Rating	10.9 (High)
Performance	Capital Reinvestment Rate	0.5%

12. Machinery & Equipment

This asset category includes a diverse range of mobile, operational, and specialty equipment required to support municipal service delivery across Fire & Emergency Services, General Government, Public Works, Recreation & Cultural Services, and Solid Waste operations. These assets range from life-safety and emergency response equipment to operational machinery, as well as information technology, office furnishings, and facility support systems. Machinery and equipment assets are generally shorter-lived, highly utilization-dependent, and critical to maintaining service levels, public safety, regulatory compliance, and operational efficiency.

The state of the infrastructure for municipal Machinery & Equipment is summarized below:

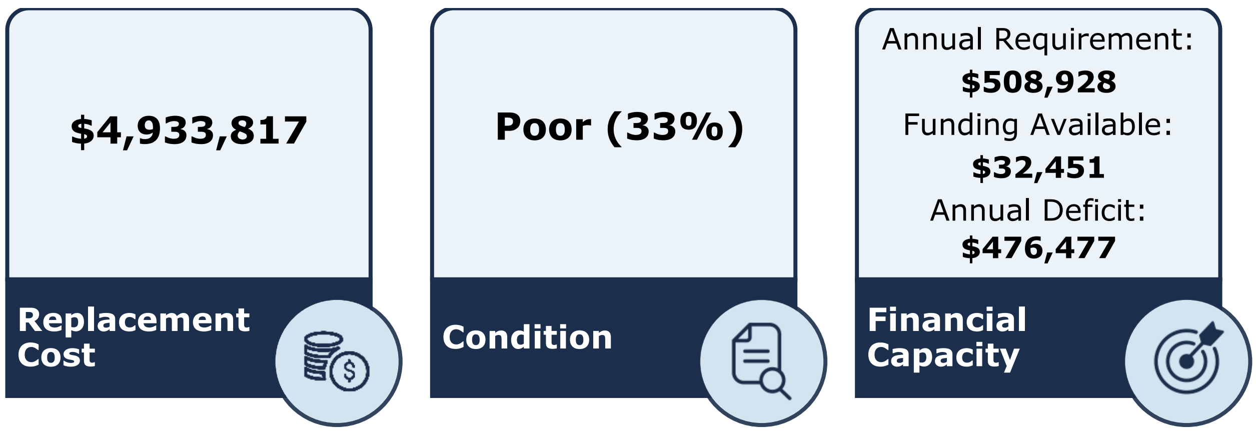


Figure 63: Machinery & Equipment State of the Infrastructure

12.1 Inventory & Valuation

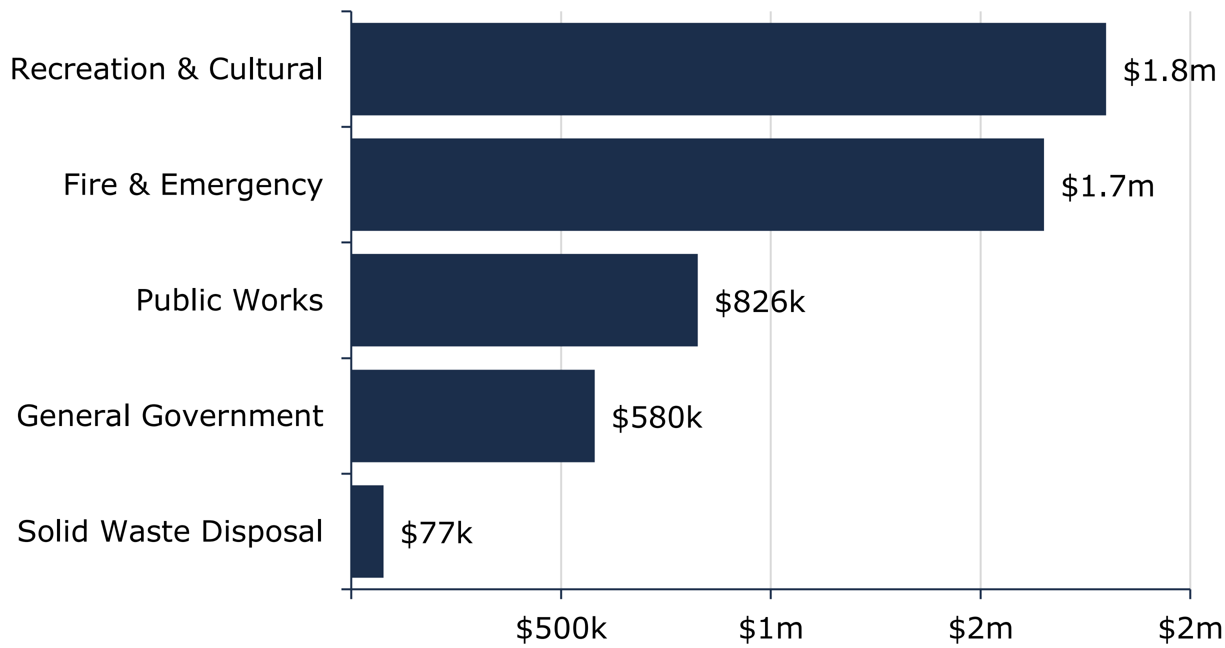
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Machinery & Equipment inventory.

Table 32: Machinery & Equipment Detailed Asset Inventory

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Fire & Emergency	520	Assets	CPI	$1,651,478
General Government	138	Assets	CPI	$580,463
Public Works	23	Assets	User-Defined	$825,738
Recreation &	75	Assets	CPI	$1,799,169
Solid Waste Disposal	2	Assets	CPI	$76,969
Total	**758**	**Assets**	**CPI**	**$4,933,817**

The graph below displays the total replacement cost of each asset segment in the Arran-Elderslie' Machinery & Equipment inventory.

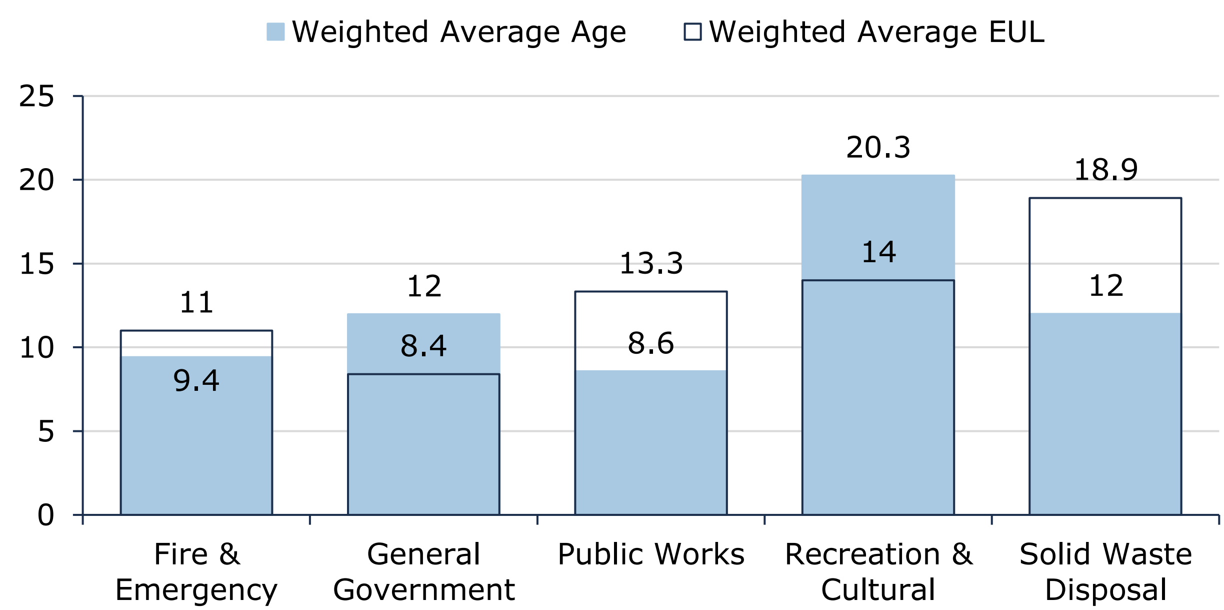
Figure 64: Machinery & Equipment Replacement Costs



12.2 Asset Condition & Age

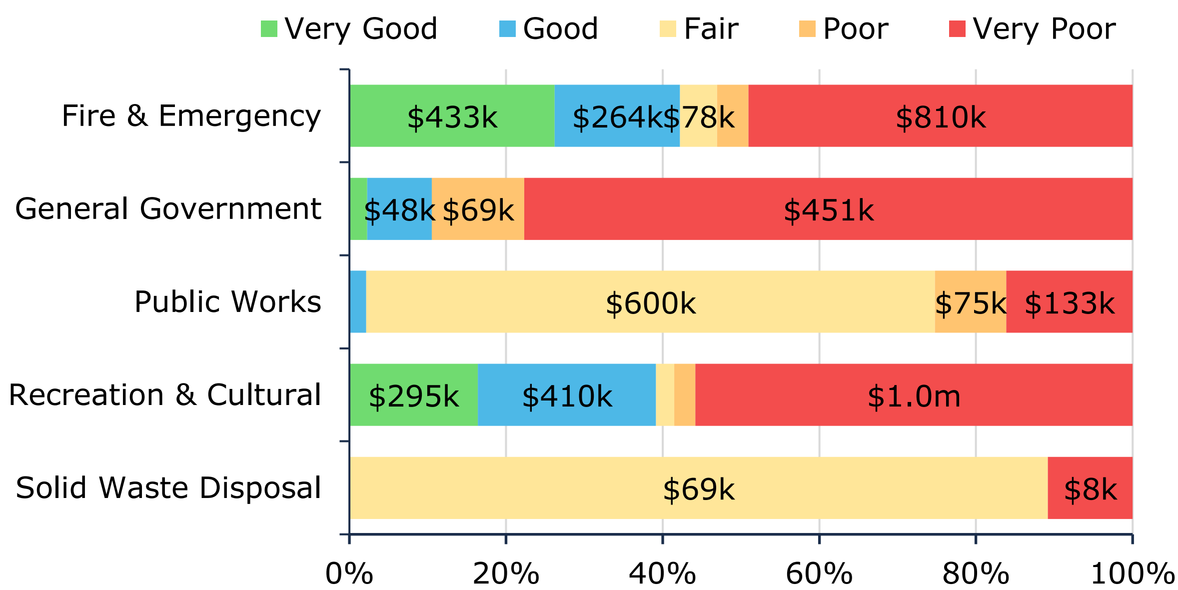
The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 65: Machinery & Equipment Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 66: Machinery & Equipment Condition Breakdown



To ensure that the Municipality's equipment continues to provide an acceptable level of service, Arran-Elderslie should continue to monitor the average condition. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition.

12.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Staff complete regular visual inspections of machinery & equipment to ensure they are in state of adequate repair
- Some machinery & equipment have previously been assigned cursory condition ratings
- Condition assessments are conducted on Fire & Emergency assets in accordance with health and safety regulations including National Fire Protection Association (NFPA) codes and standards for fire service-related assets

12.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Figure 67: Machinery & Equipment Current Lifecycle Strategy

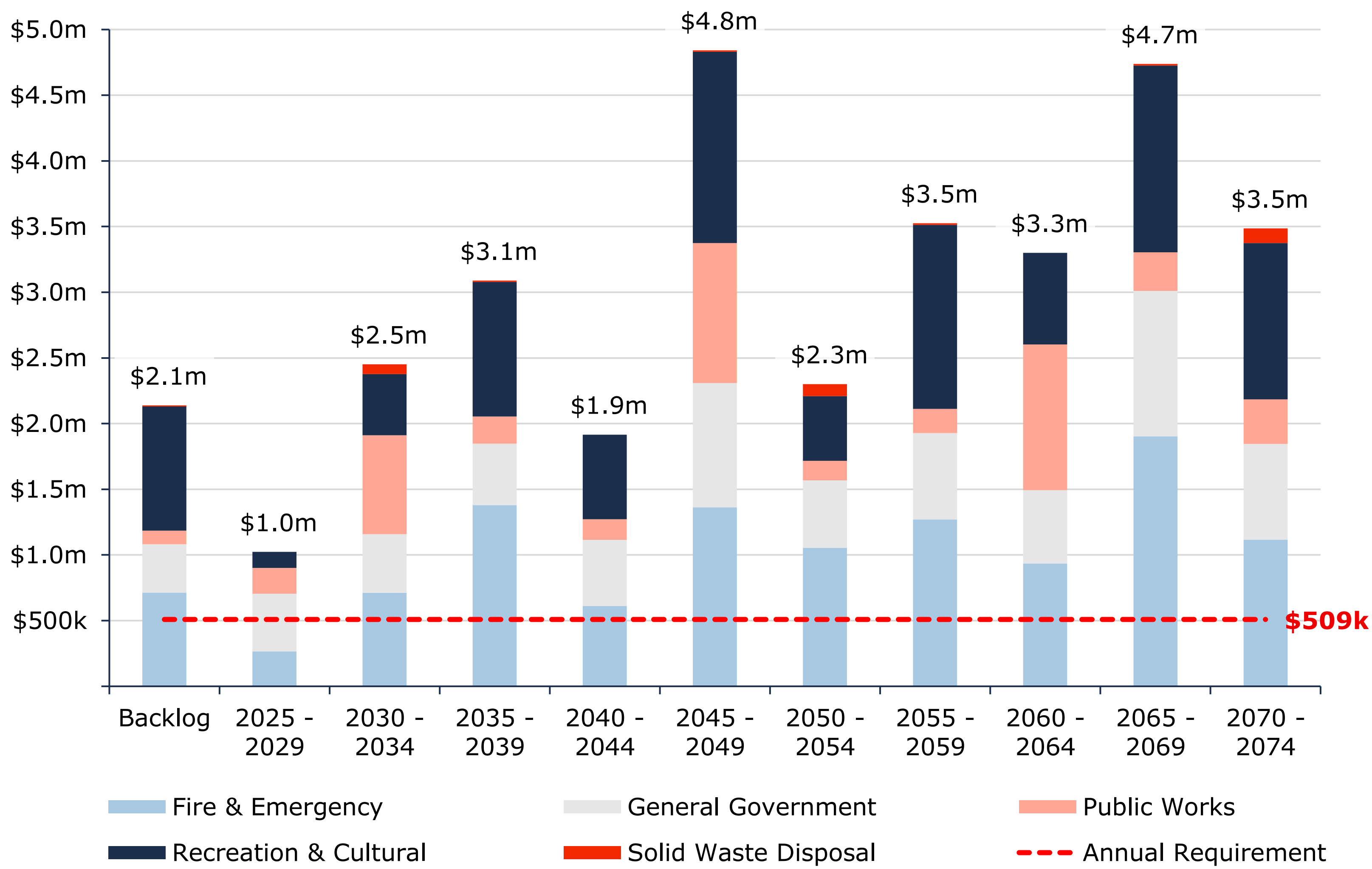
Maintenance / Rehabilitation
• Maintenance program varies by department • Fire Protection and Emergency Services equipment is subject to a much more rigorous inspection and maintenance program compared to most other departments • Machinery & Equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff

Asset Replacement
• The replacement of machinery & equipment assets depends on deficiencies identified by operators that may impact their ability to complete required tasks

12.4 Forecasted Capital Requirements

The following graph identifies capital requirements over the next 20 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $509 thousand.

Figure 68: Machinery & Equipment Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital replacement only) that may need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register.

Table 33 Machinery & Equipment System-Generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Fire & Emergency	$713k	$70k	$47k	$56k	$16k	$77k	$164k	$142k	$69k	$276k	$61k
General Government	$369k	$26k	$6k	$75k	$21k	$311k	$23k	-	$74k	$323k	$27k
Public Works	$102k	-	-	$108k	-	$89k	$17k	$624k	-	$92k	$19k
Recreation & Cultural	$946k	$50k	$9k	$44k	$6k	$13k	$47k	$365k	$47k	$7k	-
Solid Waste Disposal	$8k	-	-	-	-	-	-	-	-	$74k	-
Total	**$2.1m**	**$146k**	**$63k**	**$283k**	**$43k**	**$489k**	**$252k**	**$1.1m**	**$189k**	**$773k**	**$106k**

As assessed condition data was available for few equipment, age based condition was mostly used to determine forthcoming replacement needs. These projections can be different from actual capital forecasts. Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality’s capital expenditure forecasts.

12.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for machinery & equipment assets.

Figure 69: Machinery & Equipment Risk Matrix

1 - 4	**5 - 7**	**8 - 9**	**10 - 14**	**15 - 25**
Very Low	**Low**	**Moderate**	**High**	**Very High**
$1,061,042	$993,395	$507,017	$1,582,291	$790,072
(22%)	(20%)	(10%)	(32%)	(16%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

12.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Aging Assets

As machinery and equipment assets continue to age, there are several assets that have approached and/or exceeded their original useful life. Staff have recognized this and are developing a decision-making process to determine how to plan and prioritize for assets that will require replacement or disposal.

12.6 Levels of Service

By comparing the cost, performance (average condition) and risk year-over-year, Arran-Elderslie will be able to evaluate how their services/assets are trending.

12.6.1 Community Levels of Service

The following table outlines the qualitative metrics that determine the community level of service provided by equipment.

Table 34 Machinery & Equipment Community Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of municipal machinery & equipment and the plans that are in place to maintain or improve the provided level of service	Machinery and Equipment assets are in poor condition, reflecting aging equipment and varied maintenance practices across departments. Assets are generally maintained according to manufacturer recommendations and supported by operator expertise, with Fire Protection and Emergency Services equipment subject to more rigorous inspection and maintenance standards. Replacement decisions are currently driven by operational deficiencies identified by operators that affect service delivery. As more assets exceed their expected useful life, staff are working toward establishing a more consistent and proactive approach to lifecycle planning, prioritization, and replacement to sustain service levels.

12.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by equipment.

Table 35 Machinery & Equipment Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Poor (33%)
	Average Risk Rating	9.9 (Moderate)
Performance	Capital Reinvestment Rate	0.7%

13. Fleet

The municipality maintains a diverse fleet of vehicles and equipment to support its Fire & Emergency Services, Public Works, and Recreation & Cultural operations. The fleet ranges from modern emergency response vehicles, graders, and snowplows to specialized recreational and grounds maintenance equipment. Regular renewal and replacement are guided by asset condition, operational requirements, and service life to ensure safety, reliability, and efficiency across all municipal services.

The state of the infrastructure for municipal Fleet is summarized below:

$14,590,530

Replacement Cost

Poor (24%)

Condition

Annual Requirement:
$1,350,983
Funding Available:
$86,143
Annual Deficit:
$1,264,840

Financial Capacity

Figure 70: Fleet State of the Infrastructure

13.1 Inventory & Valuation

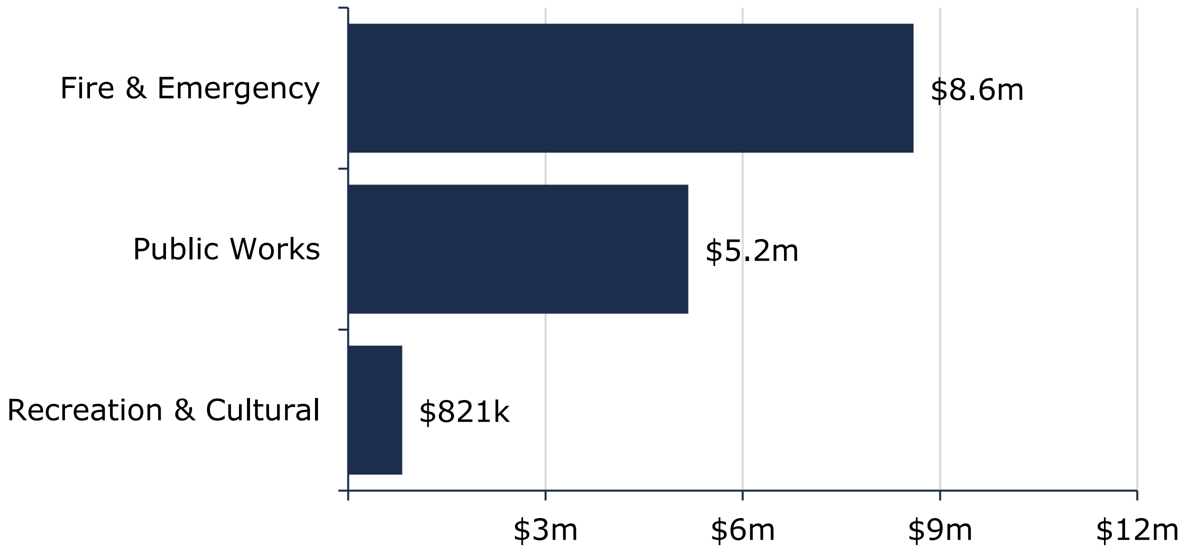
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Fleet inventory.

Table 36: Detailed Asset Inventory - Fleet

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Fire & Emergency	14	Assets	User-Defined	$8,597,162
Public Works	43	Assets	CPI	$5,172,792
Recreation & Cultural	15	Assets	User-Defined	$820,576
Total	**72**	**Assets**	**User-Defined**	**$14,590,530**

The graph below displays the total replacement cost of each asset segment in the Fleet inventory.

Figure 71: Fleet Replacement Costs

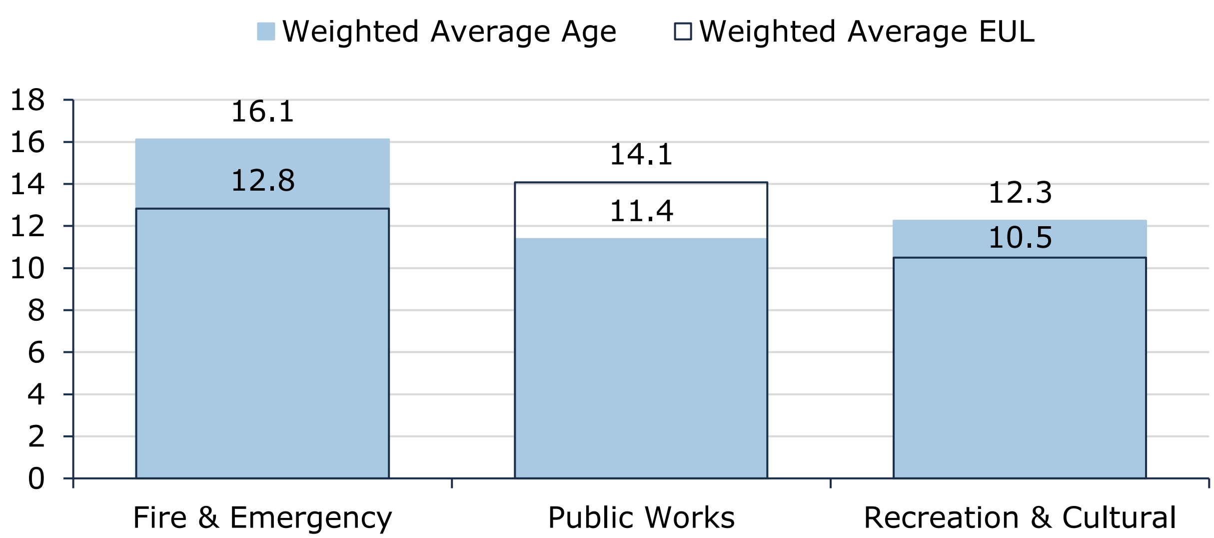


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

13.2 Asset Condition & Age

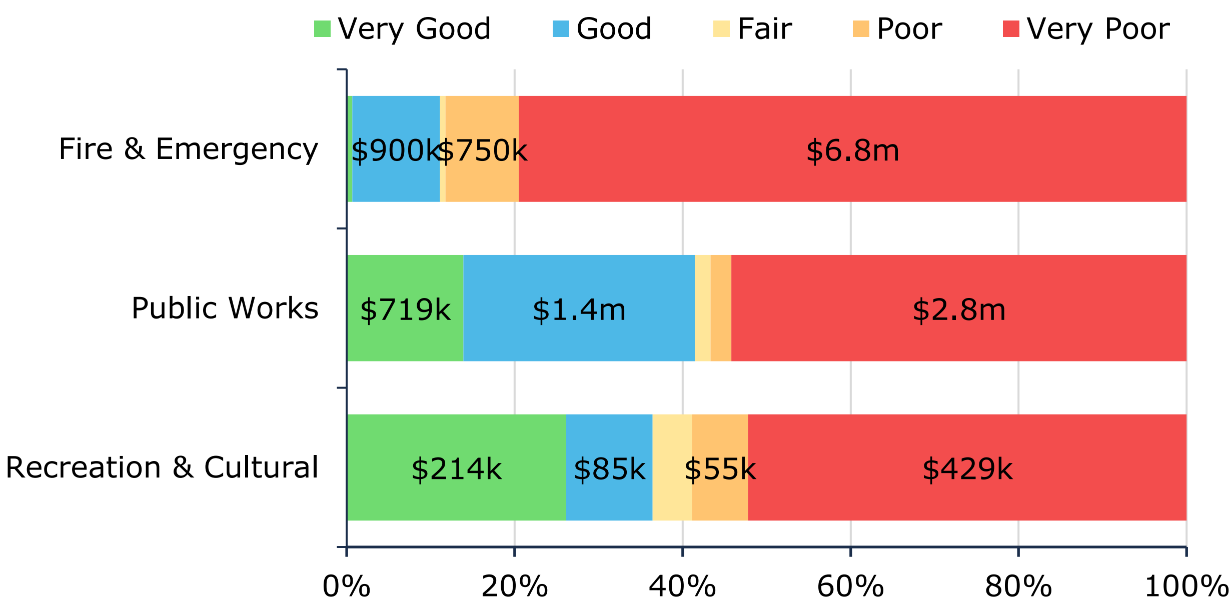
The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 72: Fleet Average Age vs Average EUL



The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.

Figure 73: Fleet Condition Breakdown



To ensure that the Municipality's vehicles continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the vehicles.

13.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Staff complete regular visual inspections of fleet assets to ensure they are in state of adequate repair prior to operation
- The mileage of vehicles is used as a proxy to determine remaining useful life and relative vehicle condition
- Condition assessments are conducted on Fire & Emergency fleet assets in accordance with regulations for health and safety regulations including National Fire Protection Association (NFPA) codes and standards for fire service-related fleet assets

13.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. The following describes the Municipality's current lifecycle management strategy.

Figure 61: Fleet Current Lifecycle Strategy

Maintenance / Rehabilitation

- Visual inspections completed and documented daily; fluids inspected at every fuel stop; tires inspected monthly
- Every 4-7000km includes a detailed inspection; tires are rotated and oil changed
- Annual preventative maintenance activities include system components check and additional detailed inspections

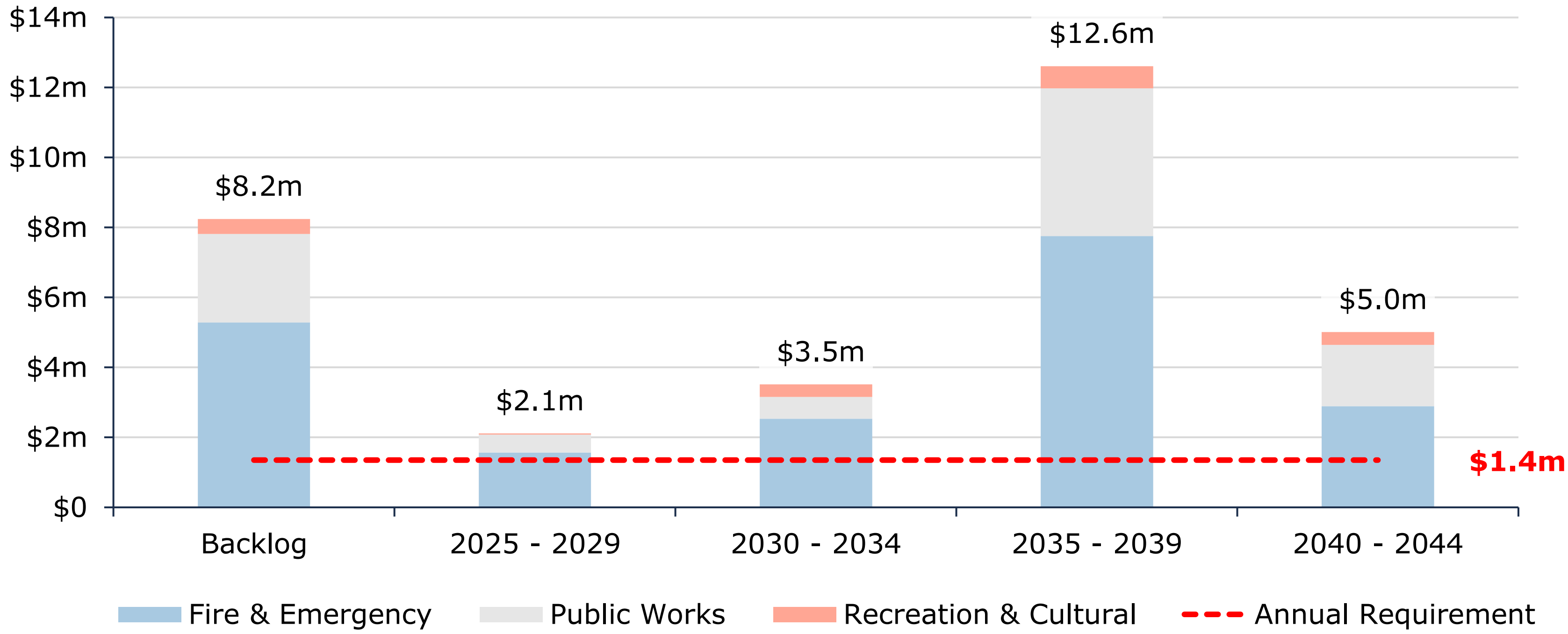
Renewal and Replacement

- Vehicle age, kilometres and annual repair costs are taken into consideration when determining appropriate treatment options

13.4 Forecasted Capital Requirements

The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 20 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $1.4 million.

Figure 74: Fleet Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital replacement only) that may need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register.

Table 37 Fleet System-Generated 10-Year Capital Costs

Segment	Backlog	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Fire & Emergency	$5.3m	-	$1.6m	-	-	-	$1.7m	$59k	$804k	-	-
Public Works	$2.5m	-	$278k	$131k	-	$101k	$328k	-	$4k	$217k	$71k
Recreation & Cultural	$429k	-	-	-	$37k	-	$169k	$20k	-	-	$169k
Total	**$8.2m**	**-**	**$1.8m**	**$131k**	**$37k**	**$101k**	**$2.2m**	**$79k**	**$808k**	**$217k**	**$240k**

13.5 Risk & Criticality

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for fleet assets.

Figure 75: Fleet Risk Matrix

1 - 4	**5 - 7**	**8 - 9**	**10 - 14**	**15 - 25**
Very Low	**Low**	**Moderate**	**High**	**Very High**
$1,130,174 (7%)	$298,372 (2%)	$1,077,736 (7%)	$1,956,289 (12%)	$12,019,333 (73%)

This is a high-level model developed by Municipality staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented in Appendix C: Risk Rating Criteria.

13.5.1 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Aging Assets

As fleet assets continue to age, there are several assets that have approached and/or exceeded their original useful life. Staff have recognized this and are developing a decision-making process to determine how to plan and prioritize for assets that will require replacement or disposal.

13.6 Levels of Service

By comparing the cost, performance (average condition) and risk year-over-year, the Municipality will be able to evaluate how their services/assets are trending.

13.6.1 Community Levels of Service

The qualitative descriptions that determine the community levels of service provided by municipal Fleet is based on the service usage outlined below:

Table 38 Fleet Community Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of municipal vehicles and the plans that are in place to maintain or improve the provided level of service	The Fleet asset category is currently in poor condition, largely due to aging vehicles that have approached or exceeded their original useful life. The municipality maintains service levels through a structured preventative maintenance program that includes daily visual inspections, routine fluid and tire checks, scheduled servicing every 4,000–7,000 km, and annual detailed inspections. Vehicle age, mileage, and repair costs are actively monitored to guide maintenance and replacement decisions. Recognizing the increasing risk associated with aging assets, staff are developing a more formalized decision-making framework to prioritize fleet replacement and disposal while maintaining operational reliability.

13.6.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by Fleet.

Table 39 Fleet Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Poor (24%)
	Average Risk Rating	19.1 (Very High)
Performance	Capital Reinvestment Rate	0.6%

Strategies

Financial Management

Growth

14. Financial Management

14.1 Financial Strategy Overview

Each year, the Municipality of Arran Elderslie makes important investments in its infrastructure's maintenance, renewal, rehabilitation, and replacement to ensure assets remain in a state of good repair. However, spending needs typically exceed fiscal capacity. In fact, most municipalities continue to struggle with annual infrastructure deficits. Achieving full-funding for infrastructure programs will take many years and should be phased-in gradually to reduce burden on the community.

This financial strategy is designed for the Municipality's existing asset portfolio and is premised on two key inputs: the average annual capital requirements and the average annual funding typically available for capital purposes. The annual requirements are based on the replacement cost of assets and their serviceable life, and where available, lifecycle modeling. This figure is calculated for each individual asset and aggregated to develop category-level values.

The annual funding typically available is determined by averaging historical capital expenditures on infrastructure, inclusive of any allocations to reserves for capital purposes. For Arran Elderslie, budget allocations for 2026 were used to project available funding.

Only reliable and predictable sources of capital funding are used to benchmark funds that may be available on any given year. The funding sources include:

- Revenue from taxation allocated to capital reserves
- The Ontario Community Infrastructure Fund (OCIF)
- The Ontario Municipal Partnership Fund (OMPF)

Although provincial and federal infrastructure programs can change with evolving policy, CCBF, OCIF and OMPF are considered as permanent and predictable.

14.1.1 Annual Capital Requirements

The annual requirements represent the amount the Municipality should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. For most asset categories the annual requirement has been calculated based on a "replacement only" scenario, in which capital costs are only incurred at the construction and replacement of each asset.

However, for the road network and the sanitary sewer network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented.

The following table compares two scenarios for the road network:

- **Replacement Only Scenario:** Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
- **Lifecycle Strategy Scenario:** Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

Table 40 Annual Requirement Comparison

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$8,314,131	$3,691,352	$4,622,779

The implementation of a proactive lifecycle strategy for paved roads leads to a potential annual cost avoidance of approximately $4.6 million. This represents an overall reduction of the annual requirements by 56%.

As the lifecycle strategy scenario represents the lowest cost option available to the Municipality, we have used this annual requirement in the development of the financial strategy.

The table below presents the system-generated average annual capital requirements for existing assets across each asset category. These figures are based on a total replacement value of $502 million, resulting in an estimated annual capital need of approximately $10.2 million for all analyzed assets .

Table 41 Average Annual Capital Requirements

Asset Category	Replacement Cost	Annual Capital Requirements	Target Reinvestment Rate
Road Network	$215,496,713	$3,691,352	1.7%
Stormwater System	$9,533,072	$236,891	2.5%
Bridges & Culverts	$87,196,139	$954,535	1.1%
Buildings & Facilities	$52,280,065	$915,128	1.8%
Machinery & Equipment	$4,933,817	$508,928	10.3%
Land Improvements	$3,351,265	$279,272	8.3%
Vehicles	$14,590,530	$1,350,983	9.3%
Water System	$52,900,075	$1,298,041	2.5%
Sanitary Sewer System	$61,702,374	$940,942	1.5%
Total	**$501,984,049**	**$10,176,073**	**2.0%**

Although there is no industry standard guide on optimal annual investment in infrastructure, the TRRs above provide a useful benchmark for organizations. In 2016, the Canadian Infrastructure Report Card (CIRC) produced an assessment of the health of municipal infrastructure as reported by cities and communities across Canada. The CIRC remains a joint project produced by several organizations, including the Federation of Canadian Municipalities (FCM), the Canadian Society of Civil Engineers (CSCE), the Canadian Network of Asset Managers (CNAM), and the Canadian Public Works Association (CPWA).

The 2016 version of the report card also contained recommended reinvestment rates that can also serve as benchmarks for municipalities. The CIRC suggest that, if increased, these reinvestment rates can "stop the deterioration of municipal infrastructure." The report card contains both a range for reinvestment rates that outlines the lower and upper recommended levels, as well as current municipal averages.

14.2 Financial Profile: Tax Funded Assets

14.2.1 Current Funding Levels

The table below summarizes how current funding levels compare with funding required for each asset category. Under existing funding, the Municipality is meeting approximately 24.0% of the annual capital investment needed to maintain current service levels, resulting in an estimated annual funding shortfall of $5.9 million.

Table 42 Current Funding Levels

Asset Category	Annual Capital Requirements	Annual Funding Available	Annual Infrastructure Deficit	Funding Level
Road Network	$3,691,352	$1,120,448	$2,570,905	30.4%
Bridges & Culverts	$954,535	$532,087	$422,448	55.7%
Buildings & Facilities	$915,128	$58,351	$856,776	6.4%
Machinery & Equipment	$508,928	$32,451	$476,477	6.4%
Land Improvements	$279,272	$17,807	$261,465	6.4%
Vehicles	$1,350,983	$86,143	$1,264,840	6.4%
Total	**$7,700,199**	**$1,847,287**	**$5,852,912**	**24.0%**

Table 43: Taxes: Required Funding vs Current Funding Position

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Reserve Contribution from Taxes	OCIF	OMPF	Total Available	
Road Network	$3,691,352		$885,075	$235,372	$1,120,448	$2,570,905
Bridges & Culverts	$954,535	$303,218	$228,869		$532,087	$422,448
Buildings & Facilities	$915,128			$58,351	$58,351	$856,776
Machinery & Equipment	$508,928			$32,451	$32,451	$476,477
Land Improvements	$279,272			$17,807	$17,807	$261,465
Vehicles	$1,350,983			$86,143	$86,143	$1,264,840
Total	**$7,700,199**	**$303,218**	**$1,113,944**	**$430,125**	**$1,847,287**	**$5,852,912**

The average annual investment requirement for tax funded assets is $7,700,199. Annual revenue currently allocated to these assets for capital purposes is $1,847,287, leaving an annual deficit of $5,852,912. Put differently, these infrastructure categories are currently funded at 24% of their long-term requirements.

14.2.2 Closing the Gap

Eliminating annual infrastructure funding shortfalls is a difficult and long-term endeavor for municipalities. Achieving recommended funding levels while maintaining affordability for residents will require time and deliberate financial planning.

This section outlines how Arran Elderslie can gradually work toward closing the annual capital funding shortfall using its own-source revenues, such as property taxes and utility rates. This approach avoids the use of additional debt for existing assets and supports the Municipality’s goal of sustainably increasing investment to maintain service delivery at the chosen targets. By phasing in additional funding as financial capacity allows, Arran Elderslie can begin to align infrastructure spending with service level expectations and the priorities identified through community and stakeholder engagement.

14.2.3 Funding Requirements Tax Revenues

In 2026, Arran Elderslie has budgeted annual tax revenues of $7,933,316. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, achieving the target levels of service would require a 73.7% tax change over time.

To achieve this increase, several scenarios have been developed using phase-in periods ranging from five to twenty years. Shorter phase-in periods may place too high a burden on taxpayers, whereas a phase-in period beyond 20 years may see a continued deterioration of infrastructure, leading to larger backlogs.

Table 44 Phasing in Annual Tax Increases

Asset Category	Tax Change Required
Road Network	32.4%
Bridges & Culverts	5.3%
Buildings & Facilities	10.8%
Machinery & Equipment	6.0%
Land Improvements	3.3%
Vehicles	15.9%
Total	**73.7%**

The table below illustrates the tax increase required to address the identified infrastructure deficit under different phase-in periods.

Table 45: Phase-in Period for Full Funding

	Phase-in Period			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$5,852,912	$5,852,912	$5,852,912	$5,852,912
Tax Increase Required	73.7%	73.7%	73.7%	73.7%
Annually:	**11.7%**	**5.7%**	**3.8%**	**2.9%**

14.2.4 Financial Strategy Recommendations

Considering all the above information, we recommend the 20-year option. This involves full funding being achieved over 20 years by:

a) Increasing tax revenues by 2.9% each year for the next 20 years to gradually implement the funding strategy outlined in the selected scenario for the asset categories covered in this section of the AMP.
b) Allocating the current OCIF revenue and OMPF revenue as outlined previously.

c) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
d) Leveraging additional, non-sustainable revenue sources such as one-time grants, surpluses, and reserves, as supplementary funding to advance asset management goals.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[5].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. While OMPF funding is treated as a sustainable funding source for the purposes of this financial strategy, the Municipality retains flexibility in its use, and annual allocations between operating and capital expenditures may be adjusted at the discretion of the Municipality's Chief Financial Officer in response to evolving financial and operational needs. As a result, actual contributions to capital in future years may be lower than those assumed in this strategy.
4. Proceeds from surplus land sales are considered one-time, non-recurring revenue and are therefore excluded from the assessment of sustainable, ongoing capital funding. When realized, these funds may be appropriately directed toward one-time capital projects, used to pay down existing debt to reduce long-term financial obligations, or allocated to establish or bolster capital reserves with appropriate disclosure. Using surplus land sale revenue in this way supports sound financial management while ensuring that long-term lifecycle and funding strategies remain grounded in stable, repeatable revenue sources.

Although this option achieves full funding and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment

[5] *The Municipality should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.*

demand of $8.4m for the Road Network, $5m for Buildings, $8.2m for Fleet, $2.1m for Machinery & Equipment, and $1.4m for Parks & Land Improvements.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may be required otherwise.

14.3 Financial Profile: Rate Funded Assets

14.3.1 Current Funding Levels

The following tables show, by asset category, Arran-Elderslie's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by rates.

Table 46: Rates - Required Funding vs Current Funding Position

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit
		Rates	To Operating	Total Available	
Water System	$940,942	$1,661,499	($650,314)	$1,011,185	($70,243)
Sanitary Sewer System	$1,298,041	$1,328,953	($726,069)	$602,884	$695,157
Storm Sewer System	$250,017	$375,000	($36,570)	$338,430	($88,413)
Total	**$2,489,000**	**$3,365,452**	**($1,412,953)**	**$1,952,499**	**$536,501**

The average annual investment requirement for the above categories is $2,489,000. Annual revenue currently allocated to these assets for capital purposes is $1,952,499, leaving an annual deficit of $536,501. Put differently, these infrastructure categories are currently funded at 78.4% of their long-term requirements.

14.3.2 Funding Requirements Rate Revenues

In 2026, the Municipality has budgeted annual water revenues of $1,661,499, budgeted sanitary sewer revenues of $1,328,953 and budgeted storm sewer revenues of $375,000. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time.

Table 47: Phasing in Annual Rate Increases

Asset Category	Rate Change Required
Water System	No increase required
Sanitary Sewer System	52.3%
Storm Sewer System	No increase required

The table below summarizes the rate increases required to address the identified infrastructure deficits for the Sanitary Sewer Network under various phase-in periods. While the total infrastructure deficit for each network remains constant, the annual rate increase varies depending on the length of the phase-in period.

Table 48: Phasing in Annual Wastewater Rates

	Sanitary Sewer System			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	695,157	695,157	695,157	695,157
Rate Increase Required	52.3%	52.3%	52.3%	52.3%
Annually:	**8.8%**	**4.3%**	**2.9%**	**2.2%**

14.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option for the sanitary sewer network and keeping rates steady for the water and stormwater networks. This involves full funding being achieved for the sanitary sewer network over 15 years as well as maintaining adequate funding based on current requirements for the water and stormwater networks by:

a) Increasing rate revenues by 2.9% for sanitary services each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) Maintaining current water and stormwater rates in the near term until the systems can be reassessed with more complete and up to date information.
c) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
d) Leveraging additional, non-sustainable revenue sources such as one-time grants, surpluses, and reserves, as supplementary funding to advance asset management goals.

Notes:

1. Although current water rates appear to be sufficient based on available information, the system is not materially overfunded. Funding needs are sensitive to future inflation, known data gaps within the asset inventory, and future updates to replacement cost information. As these inputs improve and future rate studies are completed, the municipality should reassess whether maintaining current rates remains appropriate. Ongoing monitoring through future AMP updates is recommended to ensure long-term sustainability.
2. The storm sewer rate is newly implemented for 2026, and there is limited historical financial data available to fully assess system performance,

operating costs, and long-term capital requirements. In addition, known gaps in the asset inventory and supporting information may result in lifecycle and renewal costs being understated at this stage. As a result, no adjustments to storm sewer rates are recommended at this time. As more complete asset data is developed and financial history is established, the Municipality will be better positioned to refine operating assumptions, capital allocations, and funding strategies in future updates to the financial strategy.

3. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[6].
4. We realize that raising revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
5. Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves full funding and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $4.1 million for the Water System.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may be required otherwise

[6] *The Municipality should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.*

14.4 Use of Reserves

14.4.1 Available Reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
b) financing one-time or short-term investments
c) accumulating the funding for significant future infrastructure investments
d) managing the use of debt
e) normalizing infrastructure funding requirement

By asset category, the table below outlines the details of the reserves currently available to Arran-Elderslie.

Table 49: Reserve Balances

Asset Category	Balance at December 31, 2024
Road Network	$1,425,369
Storm Sewer System	$56,858
Bridges & Culverts	$741,136
Buildings & Facilities	$1,931,078
Machinery & Equipment	$152,952
Parks & Land Improvements	$23,988
Fleet	$246,719
Total Tax Funded:	**$4,578,100**
Water System	$8,460,782
Sanitary Sewer System	$4,702,366
Total Rate Funded:	**$13,163,148**

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Municipality should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should take into account when determining their capital reserve requirements include:

a) breadth of services provided
b) age and condition of infrastructure
c) use and level of debt
d) economic conditions and outlook
e) internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

15. Growth

15.1 Description of Growth Assumptions

The demand for infrastructure and services in Arran-Elderslie will change over time due to internal and external factors including population trends, economic shifts, environmental considerations and policy changes. A thorough understanding of these key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure investments, upgrades and decommissioning of existing assets. Fluctuations in demand can influence what assets are needed and what level of service meets the needs of the community.

15.1.1 Arran-Elderslie Official Plan

The Official Plan for the Urban Areas of Chesley, Paisley, and Tara/Invermay (consolidated January 2018) applies to the three main settlement areas of the Municipality of Arran-Elderslie. The Plan was prepared under the Ontario Planning Act with a planning period from 2003 to 2021. It is based on background studies, public meetings, and policy decisions made by Council, and builds on earlier planning documents prepared for Chesley, Paisley, and Tara before amalgamation in 1999.

The purpose of the Plan is to set general policies for shaping and guiding physical growth, ensuring development is in harmony with the social and economic needs of the communities and their capacity to provide services. It contains policies on land use distribution, community services, and the road network. Community goals include maintaining Chesley, Paisley, and Tara/Invermay as viable residential, commercial, industrial, and service centers; improving the commercial/industrial assessment base; expanding employment opportunities; providing a range of housing types including affordable housing; protecting the natural environment, particularly the Saugeen and Teeswater Rivers; and encouraging preservation of historic or older buildings.

Population forecasts projected modest growth across the three communities, from 4,013 residents in 2001 to 4,339 by 2021, requiring approximately 142 new housing units. The Plan noted there was an adequate supply of undeveloped land within the urban boundaries to accommodate this growth. It identified a target housing mix of 70% low-density and 30% medium-density development, and a tenure balance of 70% ownership and 30% rental.

15.1.2 Bruce County Official Plan

The Bruce County Official Plan (consolidated April 2024) provides the planning policy framework for growth and development across the County. Adopted by County Council in 1997 and approved by the province in 1998, the Plan sets out policies to guide physical, social, and economic development and to protect the natural environment to the year 2021.

The Plan's vision is to protect the quality of life of Bruce County while ensuring the growth of sustainable communities based upon diverse economic opportunities, which respect the natural environment. Its guiding principle is sustainable development, balancing the need for new development with the protection of existing community and environmental attributes.

The Plan establishes goals under several themes:

- **Physical:** ensure efficient and environmentally sound use of land and resources and encourage orderly development.
- **Transportation:** provide safe and efficient systems for moving people and goods.
- **Environmental:** protect and preserve ecologically significant areas, restore degraded lands, and protect air, land, and water quality.
- **Social:** maintain the small-community environment, ensure provision of educational, social, recreational, health, and cultural facilities, provide affordable housing, and maintain an adequate supply of land for anticipated development.
- **Economic:** strengthen the industrial and commercial base, promote tourism, recognize agriculture as a vital sector, and encourage energy generation.
- **Mineral resources:** protect resources for future extraction.

The Plan also sets out a structure of settlement areas, distinguishing Primary Urban Communities, Secondary Urban Communities, and Hamlets, each with specific policies on permitted uses, servicing, subdivision development, and future land need.

15.1.3 Land Use and Development Areas

The Economic Development Strategic Plan (2020) highlights that Arran-Elderslie's economy is shaped by its agricultural base, small urban centres, and rural settlements. Strategic priorities include:

- Increasing investment readiness and promoting Arran-Elderslie as a distinct community with vibrant downtowns and a strong agricultural economy.
- Preparing for population growth by expanding the supply and diversity of housing and addressing workforce gaps.
- Supporting business attraction and retention, with emphasis on small businesses, tourism, and leveraging opportunities from the Bruce Nuclear refurbishment project.
- Creating vibrant downtowns by filling vacancies, improving aesthetics, and supporting local commercial activity.

The Plan notes the need to attract entrepreneurs to replace an aging population of business owners and farmers. Expanding broadband and natural gas infrastructure, along with tourism development tied to heritage downtowns and outdoor amenities, are identified as differentiators for growth.

15.1.4 Employment and Economic Growth

The Economic Development Strategic Plan (2020) highlights that Arran-Elderslie's economy is shaped by its agricultural base, small urban centres, and rural settlements. Strategic priorities include:

- Increasing investment readiness and promoting Arran-Elderslie as a distinct community with vibrant downtowns and a strong agricultural economy.
- Preparing for population growth by expanding the supply and diversity of housing and addressing workforce gaps.
- Supporting business attraction and retention, with emphasis on small businesses, tourism, and leveraging opportunities from the Bruce Nuclear refurbishment project.
- Creating vibrant downtowns by filling vacancies, improving aesthetics, and supporting local commercial activity.

The Plan notes the need to attract entrepreneurs to replace an aging population of business owners and farmers. Expanding broadband and natural gas infrastructure, along with tourism development tied to heritage downtowns and outdoor amenities, are identified as differentiators for growth.

15.1.5 Community Services and Infrastructure

Arran-Elderslie provides a wide range of community services that will be influenced by growth:

- **Recreation Infrastructure**: The Recreation Master Plan highlights that many arenas, curling clubs, pools, and fields are aging and require reinvestment. At the same time, population growth and new employment opportunities will increase demand for modernized facilities. Partnerships with volunteers and service clubs remain essential for sustaining recreation delivery.
- **Emergency Services**: The Fire Master Plan (2020) recommends restructuring three separate fire departments into a single municipal department under a full-time Fire Chief. Growth will increase demands on fire prevention, training, and emergency response. The Plan emphasizes the importance of maintaining volunteer firefighter capacity while preparing for higher service expectations.
- **Accessibility**: The Multi-Year Accessibility Plan (2020–2025) outlines the Municipality's commitment to removing barriers across facilities, public spaces, and services. Growth will require ensuring that new development complies with accessibility standards, while older facilities are upgraded to meet provincial requirements.
- **Energy and Sustainability**: The Conservation and Demand Management Plan (2024–2029) commits to reducing municipal energy consumption and greenhouse gas emissions. Growth-related infrastructure expansion must integrate energy-efficient design, renewable energy opportunities, and operational cost savings.
- **Sanitary Sewer System:** The Paisley Wastewater Treatment Plant is experiencing increased capacity pressures due to recent growth, including residential infilling, redevelopment to multi-residential units, and changes to Provincial policies allowing additional dwelling units. Updated capacity assessments completed in 2021 and 2024 indicate that, while surplus capacity previously existed, the plant is now operating beyond its rated capacity. In addition, higher sewage flows compared to water supply suggest ongoing inflow and infiltration issues within the collection system. To support future growth, the Municipality is undertaking further studies to evaluate options to re-rate the existing facility and to expand treatment capacity, in accordance with the Municipal Class EA process.

15.2 Impact of Growth on Lifecycle Activities

Growth will add to Arran-Elderslie's asset portfolio, increasing long-term lifecycle costs:

- **Transportation and Bridges**: Replacing or repairing the municipality's aging bridges could exceed $28 million if all structures are retained. Decisions to close or consolidate crossings will affect road connectivity and lifecycle budgets.
- **Recreation Assets**: New families moving to the area will increase demand for arenas, pools, and parks. Each new or refurbished facility will add annual costs for maintenance, rehabilitation, and renewal.
- **Fire Services**: Expanded population and economic activity will increase service demand, requiring updated equipment, new training programs, and potentially additional facilities, all of which increase lifecycle management requirements.
- **Energy Systems**: As infrastructure expands, operating costs and carbon emissions could increase unless efficiency measures and renewable energy projects outlined in the CDM Plan are fully implemented.

The Corporate Strategic Plan stresses the importance of leading financial management and ensuring that growth-related assets are integrated into the Asset Management Plan. While development can expand the tax base, the municipality must adopt long-term funding strategies that account for the full lifecycle costs of new infrastructure.

16. Recommendations

16.1 Financial Strategies

- Review the feasibility of adopting the funding required to meet full funding for the asset categories analyzed. This includes:
    a. Increasing taxes by 2.9% per year over a period of 20 years;
    b. Increasing wastewater rates by 2.9% per year over a period of 15 years.
- Continued allocation of OCIF and CCBF funding as previously outlined.
- Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
- Continue to apply for project specific grant funding to supplement sustainable funding sources
- With the introduction of the dedicated storm sewer rate in 2026, the municipality now has a predictable funding source for this asset category. It is recommended to use this funding to implement a proactive capital program, prioritize upgrades based on risk and condition, and address gaps in asset data. This approach will improve system reliability, reduce reactive maintenance, and better manage flood risk during extreme weather events.

16.2 Asset Data

- The Municipality's storm sewer system data should be updated and validated to ensure that capital planning reflects actual asset needs. Current gaps and inconsistencies, including discrepancies between the asset inventory in the Needs Study and the Citywide database, limit confidence in the accuracy of capital planning assumptions. We recommend a comprehensive data verification and reconciliation process, including:
    - ♦ Conducting field inspections or condition assessments for all storm sewer assets.
    - ♦ Updating the asset inventory in the Citywide database to align with the Needs Study and any physical improvements or modifications.
    - ♦ Establishing a regular review and maintenance schedule to ensure ongoing accuracy of inventory, condition, and replacement cost information.
- Asset management planning is highly sensitive to replacement costs. Periodically update replacement costs based on recent projects, invoices, or estimates, as well as condition assessments, or any other technical reports and studies. Material and labour costs can fluctuate due to local, regional, and broader market trends, and substantially so during major world events. Accurately estimating the replacement cost of like-for-like assets can be challenging. Ideally, several recent projects over multiple years should be

used. Staff judgement and historical data can help attenuate extreme and temporary fluctuations in cost estimates and keep them realistic.

- Like replacement costs, an asset's established serviceable life can have dramatic impacts on all projections and analyses, including condition, long-range forecasting, and financial recommendations. Periodically reviewing and updating these values to better reflect infield performance and staff judgement is recommended.

16.3 Risk & Levels of Service

- Risk models and matrices can play an important role in identifying high-value assets, and developing an action plan which may include repair, rehabilitation, replacement, or further evaluation through condition assessments. As a result, project selection and the development of multi-year capital plans can become more strategic and objective. Initial models have been built into Citywide for all asset groups. These models reflect current data, which was limited. As the data evolves and new attribute information is obtained, these models should also be refined and updated.
- Available data on current performance should be centralized and tracked to support any calibration of service levels for long-term tracking of O. Reg. 588's requirements on proposed levels of service.
- Staff should monitor evolving local, regional, and environmental trends to identify factors that may shape the demand and delivery of infrastructure programs. These can include population growth, and the nature of population growth; climate change and extreme weather events; and economic conditions and the local tax base. This data can also be used to review service level targets.

Appendices

Appendix A: Levels of Service Maps

Road Network Examples of Road Conditions

Source 1: Road and Sidewalks Needs Assessment Study (GSS Engineering Consultants Ltd.)

Alligator cracking throughout road

Edge alligator cracking

Alligator and map cracking

Center line longitudinal and driving lane longitudinal cracking

Cover aggregate loss through pavement indicating poor base

Flushing of pavement

Chelsey Road Map

Source 2: Road and Sidewalks Needs Assessment Study (GSS Engineering Consultants Ltd.)

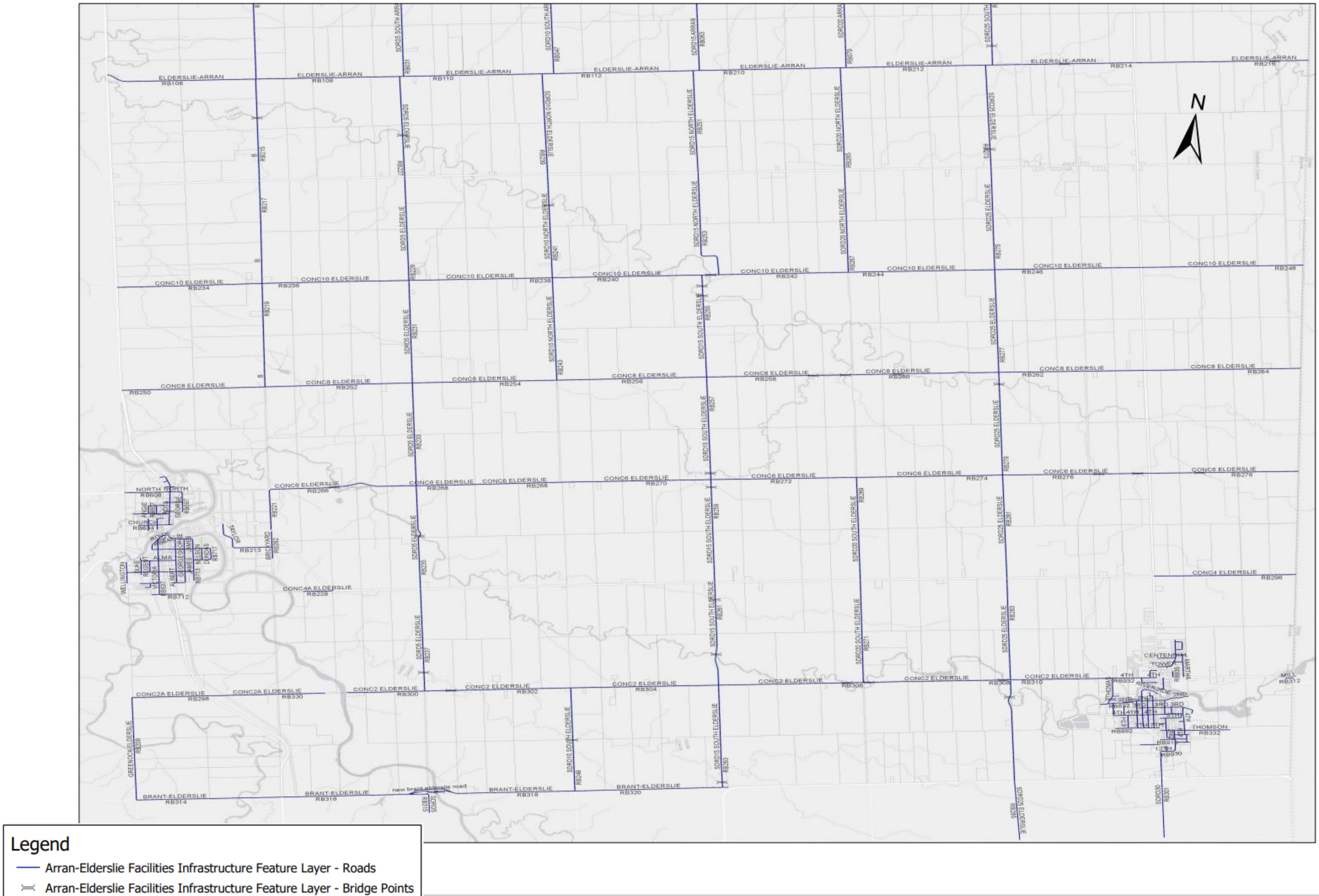
Legend

Arran-Elderslie Facilities Infrastructure Feature Layer - Roads

Arran-Elderslie Facilities Infrastructure Feature Layer - Bridge Points

Elderslie Road Map

Source 3: Road and Sidewalks Needs Assessment Study (GSS Engineering Consultants Ltd.)



Paisley Road Map

Source 4: Road and Sidewalks Needs Assessment Study (GSS Engineering Consultants Ltd.)

Tara Road Map

Source 5: Road and Sidewalks Needs Assessment Study (GSS Engineering Consultants Ltd.)

Bridges & Culverts Images

The condition scale for bridges & culverts utilized is from 0 to 100 from Very Poor to Very Good. See the following images as examples of a bridge and a structural culvert in Very Good condition, as well as a bridge and a structural culvert in Fair condition.

A1 - Brunton Bridge (BCI = 91 Very Good)

Inspection Date: 2024-08-28

A14 - Arranvale Bridge (BCI = 45 Fair)

Inspection Date: 2024-08-28

A26 - Sideroad 20 Culvert (BCI = 95 Very Good)

Inspection Date: 2024-08-28

A28 - B-Line Culvert (BCI = 58 Fair)

Inspection Date: 2024-08-28

Appendix B: Condition Assessment Guidelines

The foundation of good asset management practice is accurate and reliable data on the current condition of infrastructure. Assessing the condition of an asset at a single point in time allows staff to have a better understanding of the probability of asset failure due to deteriorating condition.

Condition data is vital to the development of data-driven asset management strategies. Without accurate and reliable asset data, there may be little confidence in asset management decision-making which can lead to premature asset failure, service disruption and suboptimal investment strategies. To prevent these outcomes, the Municipality's condition assessment strategy should outline several key considerations, including:

- The role of asset condition data in decision-making
- Guidelines for the collection of asset condition data
- A schedule for how regularly asset condition data should be collected

Role of Asset Condition Data

The goal of collecting asset condition data is to ensure that data is available to inform maintenance and renewal programs required to meet the desired level of service. Accurate and reliable condition data allows municipal staff to determine the remaining service life of assets, and identify the most cost-effective approach to deterioration, whether it involves extending the life of the asset through remedial efforts or determining that replacement is required to avoid asset failure.

In addition to the optimization of lifecycle management strategies, asset condition data also impacts the Municipality's risk management and financial strategies. Assessed condition is a key variable in the determination of an asset's probability of failure. With a strong understanding of the probability of failure across the entire asset portfolio, the Municipality can develop strategies to mitigate both the probability and consequences of asset failure and service disruption. Furthermore, with condition-based determinations of future capital expenditures, the Municipality can develop long-term financial strategies with higher accuracy and reliability.

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent and objective assessment criteria. Without proper guidelines for the completion of condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.

There are many options available to the Municipality to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

Condition assessments and general data collection can be both time-consuming and resource intensive. It is not necessarily an effective strategy to collect assessed condition data across the entire asset inventory. Instead, the Municipality should prioritize the collection of assessed condition data based on the anticipated value of this data in decision-making. The International Infrastructure Management Manual (IIMM) identifies four key criteria to consider when making this determination:

- Relevance: every data item must have a direct influence on the output that is required
- Appropriateness: the volume of data and the frequency of updating should align with the stage in the assets life and the service being provided
- Reliability: the data should be sufficiently accurate, have sufficient spatial coverage and be appropriately complete and current
- Affordability: the data should be affordable to collect and maintain

Appendix C: Risk Rating Criteria

Risk Definitions

Risk	Integrating a risk management framework into your asset management program requires the translation of risk potential into a quantifiable format. This will allow you to compare and analyze individual assets across your entire asset portfolio. Asset risk is typically defined using the following formula: **Risk = Probability of Failure (POF) x Consequence of Failure (COF)**
Probability of Failure (POF)	The probability of failure relates to the likelihood that an asset will fail at a given time. The current physical condition and service life remaining are two commonly used risk parameters in determining this likelihood.
POF - Structural	The likelihood of asset failure due to aspects of an asset such as load carrying capacity, condition or breaks
POF - Functional	The likelihood of asset failure due to its performance
POF - Range	**1 - Rare 2 - Unlikely 3 - Possible 4 - Likely 5 - Almost Certain**
Consequences of Failure (COF)	The consequence of failure describes the overall effect that an asset's failure will have on an organization's asset management goals. Consequences of failure can range from non-eventful to impactful: a small diameter water main break in a subdivision may cause several rate payers to be without water service for a short time. However, a larger trunk water main may break outside a hospital, leading to significantly higher consequences.
COF - Financial	The monetary consequences of asset failure for the organization and its customers
COF - Social	The consequences of asset failure on the social dimensions of the community
COF - Environmental	The consequence of asset failure on an asset's surrounding environment
COF - Operational	The consequence of asset failure on the municipality's day-to-day operations
COF - Health & safety	The consequence of asset failure on the health and well-being of the community
COF - Economic	The consequence of asset failure on strategic planning
COF - Range	**1 - Insignificant 2 - Minor 3 - Moderate 4 - Major 5 - Severe**

Risk Frameworks

Road Network – HCB/LCB Roads

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance	Asset Condition Weight: 75%	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
	Service Life Remaining (%) Weight: 25%	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial Weight: 35%	Replacement Cost ($)	>$5,000,000	5 – Severe
		$500,000	4 – Major
		$350,000	3 - Moderate
		$200,000	2 – Minor
		<$50,000	1 – Insignificant
Operational Weight: 20%	Surface Material	HCB	
		LCB	
		Gravel	
Socio-Political Weight: 20%	AADT Weight: 50%	>1,050	5 – Severe
		650	4 – Major
		450	3 – Moderate
		250	2 – Minor
		<50	1 – Insignificant
	Road Class Weight: 50%	Arterial	5 – Severe
		Collector	4 – Major
		Local Industrial	3 – Moderate
		Local Commercial	3 – Moderate
		Collector Industrial	3 – Moderate
		Collector Commercial	3 – Moderate
		Local	2 – Minor
Economic Weight: 25%	Roadside Environment	Urban	5 – Severe
		Semi-Urban/Urban	4 – Major
		Semi-Urban	3 – Moderate
		Rural	2 – Minor

Bridges & Culverts

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance Weight: 75%	Asset Condition	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-64	3 - Possible
		65-89	2 - Unlikely
		90-100	1 - Rare
Operational Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial Weight: 75%	Replacement Cost ($)	>$5,000,000	5 – Severe
		$1,000,000	4 – Major
		$500,000	3 - Moderate
		$250,000	2 – Minor
		<$100,000	1 – Insignificant
Operational Weight: 20%	AADT	601+	5 – Severe
		451-600	4 – Major
		301-450	3 – Moderate
		151-300	2 – Minor
		<150	1 - Insignificant
Socio-Political Weight: 5%	Detour Distance (Km)	11+	5 – Severe
		9-10	4 – Major
		6-8	3 – Moderate
		3-5	2 – Minor
		<2	1 – Insignificant

Water System – Water Mains

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Performance Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
Operational Weight: 75%	Condition Weight: 90%	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-64	3 - Possible
		65-89	2 - Unlikely
		90-100	1 - Rare
	Pipe Material Weight: 10%	Cast Iron	4 - Likely
		AC	4 - Likely
		Transite	4 - Likely
		Ductile Iron	3 - Possible
		PVC	2 - Unlikely
		HDPE	2 - Unlikely

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial Weight: 75%	Replacement Cost ($)	More than $1,000,000	5 - Severe
		Up to $500,000	4 - Major
		Up to $100,000	3 - Moderate
		Up to $50,000	2 - Minor
		Equal or less than $50,000	1 - Insignificant
Operational Weight: 25%	Pipe Diameter	>450	5 - Severe
		251-450	4 - Major
		151-250	3 - Moderate
		51-150	2 - Minor
		<50	1 - Insignificant

Sanitary Sewer System – Mains

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Performance Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
Operational Weight: 75%	Condition Weight: 90%	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-64	3 - Possible
		65-89	2 - Unlikely
		90-100	1 - Rare
	Pipe Material Weight: 10%	AC	4 - Likely
		Ductile Iron	3 - Possible
		HDPE	2 - Unlikely

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial Weight: 75%	Replacement Cost ($)	More than $100,000	5 - Severe
		Up to $100,000	4 - Major
		Up to $50,000	3 - Moderate
		Up to $25,000	2 - Minor
		Equal or less than $10,000	1 - Insignificant
Operational Weight: 25%	Pipe Diameter	>450	5 - Severe
		251-450	4 - Major
		151-250	3 - Moderate
		51-150	2 - Minor
		<50	1 - Insignificant

Storm Sewer System – Mains

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Performance Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
Operational Weight: 75%	Condition Weight: 90%	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-64	3 - Possible
		65-89	2 - Unlikely
		90-100	1 - Rare
	Pipe Material Weight: 10%	Cast Iron	4 - Likely
		AC	4 - Likely
		Transite	4 - Likely
		Ductile Iron	3 - Possible
		PVC	2 - Unlikely
		HDPE	2 - Unlikely

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial Weight: 75%	Replacement Cost ($)	More than $100,000	5 - Severe
		Up to $100,000	4 - Major
		Up to $50,000	3 - Moderate
		Up to $25,000	2 - Minor
		Equal or less than $10,000	1 - Insignificant
Operational Weight: 25%	Pipe Diameter	>750	5 - Severe
		501-749	4 - Major
		301-500	3 - Moderate
		151-300	2 - Minor
		<150	1 - Insignificant

Parks & Land Improvements

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance Weight: 75%	Asset Condition	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
Operational Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial 80%	Replacement Cost	More than $250,000	5 - Severe
		Up to $250,000	4 - Major
		Up to $110,000	3 - Moderate
		Up to $40,000	2 - Minor
		Equal or less than $15,000	1 - Insignificant
Social 20%	Segment	Protection Services	5 - Severe
		Health Services	5 - Severe
		Environmental Services	4 - Major
		Transportation Services	3 - Moderate
		Public Works	3 - Moderate
		General Government	2 - Minor
		Recreation & Cultural	2 - Minor

Buildings & Facilities

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance Weight: 75%	Asset Condition	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
Operational Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial 80%	Replacement Cost	More than $1,000,000	5 - Severe
		Up to $1,000,000	4 - Major
		Up to $250,000	3 - Moderate
		Up to $100,000	2 - Minor
		Equal or less than $50,000	1 - Insignificant
Social 20%	Segment	Protection Services	5 - Severe
		Health Services	5 - Severe
		Environmental Services	4 - Major
		Transportation Services	3 - Moderate
		Public Works	3 - Moderate
		General Government	2 - Minor
		Recreation & Cultural	2 - Minor

Fleet

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance Weight: 75%	Asset Condition	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
Operational Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial 80%	Replacement Cost	More than $250,000	5 - Severe
		Up to $250,000	4 - Major
		Up to $110,000	3 - Moderate
		Up to $40,000	2 - Minor
		Equal or less than $15,000	1 - Insignificant
Social 20%	Segment	Protection Services	5 - Severe
		Health Services	5 - Severe
		Environmental Services	4 - Major
		Transportation Services	3 - Moderate
		Public Works	3 - Moderate
		General Government	2 - Minor
		Recreation & Cultural	2 - Minor

Machinery & Equipment

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance Weight: 75%	Asset Condition	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare
Operational Weight: 25%	Service Life Remaining (%)	0-19	5 - Almost Certain
		20-39	4 - Likely
		40-59	3 - Possible
		60-79	2 - Unlikely
		80-100	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial 80%	Replacement Cost	More than $250,000	5 - Severe
		Up to $250,000	4 - Major
		Up to $110,000	3 - Moderate
		Up to $40,000	2 - Minor
		Equal or less than $15,000	1 - Insignificant
Social 20%	Segment	Protection Services	5 - Severe
		Health Services	5 - Severe
		Environmental Services	4 - Major
		Transportation Services	3 - Moderate
		Public Works	3 - Moderate
		General Government	2 - Minor
		Recreation & Cultural	2 - Minor