Municipal Asset Management Plan

5/08/2024

Whitby

Land Acknowledgement

We acknowledge the Corporation of the Town of Whitby is located on the Lands of the Great Mississauga Nations who are signatories to the Williams Treaty. These communities include the Mississaugas of Scugog Island, First Nations of Alderville, Beausoleil, Curve Lake, Hiawatha, Chippewas of Georgina Island, and Rama. We believe it is important that we learn, and work to reconcile the impact we, and those before us, have had on the original inhabitants. On behalf of the Town of Whitby, we want to thank them for sharing this land and all its resources. At the Town of Whitby, our goal is to respectfully share in the responsibility of the stewardship and protection of these ancestral lands and waters and continue towards truth and reconciliation as we move forward as friends and allies with all First Nations, Inuit, and Métis people.

Executive Summary

The Town of Whitby maintains an **infrastructure** portfolio with a replacement value of $3.08 Billion comprising seven distinct **Service Areas**: Road Right-of-Way, Facilities, Fire Equipment, Technology and Innovation Services (TIS) Equipment, Parks, Library Resources, and Fleet. Town Staff are committed to employing asset management practices to deliver services that make a difference in the community.

Strategic asset management is a critical practice that empowers modern municipalities to demonstrate a deep understanding of the infrastructure and services that they provide. The Municipal Asset Management Plan (MAMP) gives a high-level overview of the **condition** of Town infrastructure, the **levels of service** the Town is providing through its infrastructure, **risk** assessments as a means of prioritizing capital spending, and projected financial needs over the short-, medium-, and long-terms. This document concludes with recommendations for improvements to the future plans.

Asset Health Rating 2024

Good "B"

Condition of Town Infrastructure

Based on replacement cost and a blend of age-based data and observed data, the vast majority, 94.7% of Whitby's assets are in Fair to Very Good condition. However, 5.3% of assets fall into the Poor or Very Poor condition classes and are worth $163.8 million. As such, an Overall Asset Health Rating of Good ("B") has been assigned to the municipality.

There are several factors that contribute to the overall good health of the Town's infrastructure:

- The development and approval of the Town of Whitby's Strategic Asset Management Policy.
- The Town's investments in maintaining and replacing Town infrastructure as it ages.
- Regular condition assessment programs across the Corporation.
- Relative age of the majority of our most expensive assets to replace.

Levels of Service

This report includes descriptions of Council-approved levels of service for all asset classes. These include technical descriptions of the service the Town provides as well as qualitative or community levels of service that will describe how the service is perceived by our customers (residents, local business, and visitors). Reporting on community levels of service will link the Town's Municipal Asset Management Plan with its existing Community Strategic Plan and its four strategic pillars of: Whitby's Neighbourhoods, Whitby's Natural & Built Environment, Whitby's Economy, and Whitby's Government (Town of Whitby, 2023).

Current Funding Level of 10-Year Annual Needs

74%

Risk and Prioritization

Currently, the Town of Whitby assesses the risks associated with all Town assets. These assessments are primarily based on the asset's condition (probability of failure) and asset type (consequence of failure). The required complexity of these assessments is expected to

increase in response to O. Reg. 588/17, which requires municipalities to report on the risks pertaining to **lifecycle activities** for core assets by 2022 and for all assets by 2024. This will empower Council and Staff to make informed decisions about desired service levels in the future.

Prioritization of operational and capital spending can only occur with a complete understanding of the all the lifecycle activity options and related risks involved in providing a service through Town assets. As such, it is the Town's stated goal to better capture asset lifecycles and provide a more realistic model of asset needs over time. Condition assessments and Consequence of Failure ratings will be reviewed on an ongoing basis to ensure these remain current and meaningful.

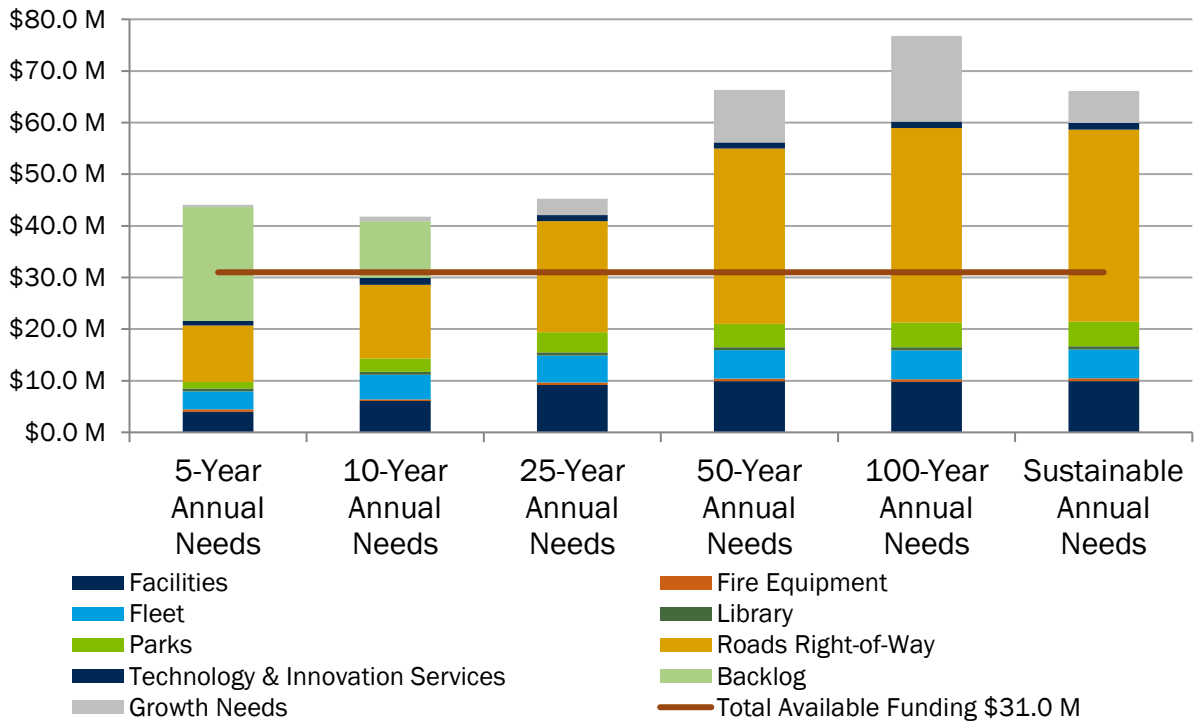

Figure 1 Upcoming financial needs for all Town Assets

Figure 1 depicts the **average annual funding requirements** for 5, 10, 25, 50 and 100 year time periods compared to the current capital maintenance envelope funding. The current capital budget for these assets for the 10-year time frame is $31.0 million leaving funding deficit of $10.8 million for the 10-year average annual funding requirements. The Town is currently funding the identified average annual funding requirements for the 5-year time period at 70%, the 10-year time period at 74%, and the 50-year time period at 47%.

The Municipal Asset Management Plan (MAMP) is a guide to help inform the Town's Long Range Financial Plan of future capital funding requirements. The difference between the available funding and the requirement is known as the **infrastructure deficit**. If available Capital funding remains consistent over time, this deficit will grow in the long-term. There

are a number of ways to manage this deficit and staff will bring recommendations to Council in the process of presenting levels of service for approval. Some options for closing the infrastructure gap include: extending the lifecycles of assets, adding maintenance activities, reducing levels of service, tax levies, tax increases, and user fees such as a stormwater utility fee. Appropriately, these options will be explored for different service areas and asset types.

Recommendations and Next Steps

- Refine existing levels of service for all assets and propose sustainable levels of service for all service areas to be approved by Council by July 1, 2025,
- Assess and evaluate existing maintenance and repair activities and capture these in the AM database in order to get a complete picture of future financial requirements.
- Undertake community engagement surveys and public information sessions, to inform future asset management plans on Whitby residents' desired Levels of Service for municipal assets.
- Review consequence of failure ratings regularly
- Assess the costs of Climate Change resilience and the associated risks to assets.
- Propose Climate Change resilience and mitigation measures for all Service Areas

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1. Introduction

The asset portfolios managed by Ontario's municipalities are also highly diverse. The Town of Whitby owns approximately $3.1 billion of these public assets in seven distinct Service Areas:

Whitby relies on these assets to provide residents, businesses, employees, and visitors with safe access to important services, such as transportation, recreation, culture, and economic development. It is critical that the Town manage these assets by making the right decisions, at the right time, for the right reasons, and at the right costs.

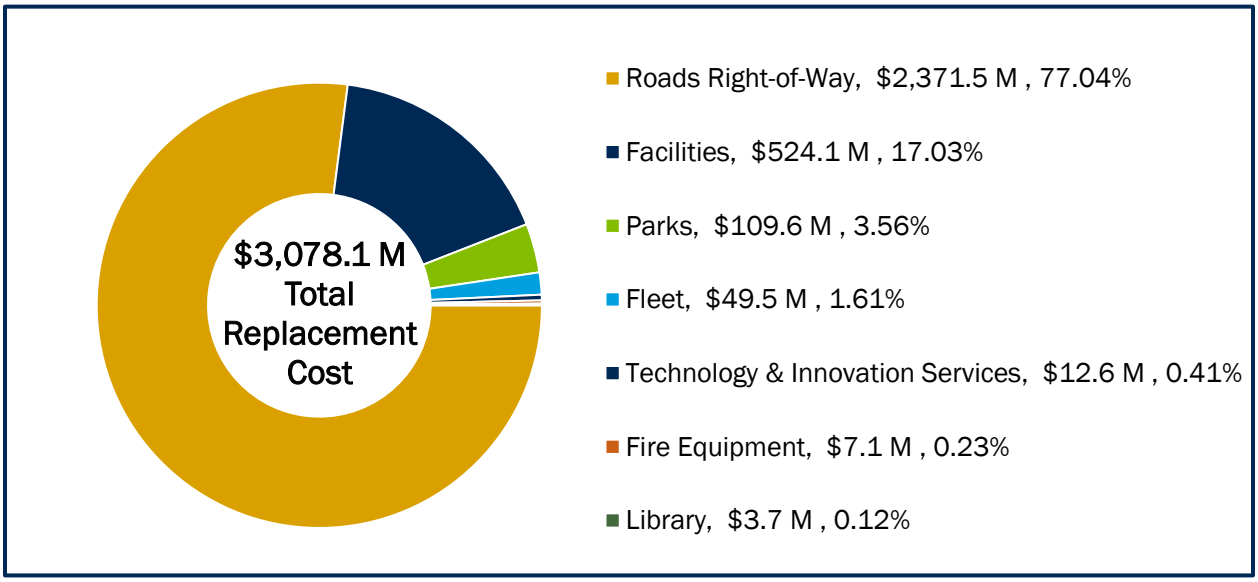


Figure 2 Replacement Value of all Town Assets

1.1. What is Asset Management?

Asset Management (AM) can be best defined as an integrated business approach within an organization that sustainably manages the lifecycle costs of owning, operating, and maintaining assets, at an acceptable level of risk, while continuously delivering expected levels of service for present and future customers.

AM includes the planning, design, construction, operation, and maintenance of infrastructure used to provide services. Infrastructure needs can be prioritized over time by utilizing AM processes, while also ensuring timely investments to minimize repair and rehabilitation costs and maintain municipal assets. Asset Management establishes an evidence-based framework for sustainable financial management of municipal assets and empowers municipalities to plan for future needs with respect to growth.

Key questions municipalities must ask themselves today as they develop their MAMPs and programs are the following:

- What is the asset worth?
- What is the asset's condition and expected remaining service life?

- What is the level of service expectation, and what needs to be done?
- When do you need to do the preventative maintenance, rehabilitation, or replacement?
- How much will the remedial works cost and what is the acceptable level of risk(s)?
- What are the overall life cycle needs and costs?

1.2. Asset Management at the Town of Whitby

Asset Management (AM) is an integrated business approach that minimizes the lifecycle costs of owning, operating, and maintaining assets, at an acceptable level of risk, while continuously delivering expected levels of service for present and future customers. The Town has been developing its AM practice since 2009, but many asset management practices have long been an important component of regular operations at the Town.

1.3. Alignment to the Community Strategic Plan

The Town of Whitby's 2023-2026 Community Strategic Plan was completed in 2023 and describes the mission, vision, strategic pillars or priorities, and corporate values that will guide the Town's corporate processes in the years to come.

1.3.1. Community Vision

"Whitby – naturally beautiful green spaces, a vibrant waterfront, thriving downtowns, and a safe community – the heart of Durham Region, an exceptional place to live, work, and explore."

1.3.2. Mission

"Together, we deliver services that make a difference in our community."

1.3.3. Strategic Pillars

1. Whitby's Neighbourhoods – Safe, Healthy, and Inclusive

   Healthy and inclusive neighbourhoods are safe and welcoming. They provide equitable access to municipal programs and services, and support the health and well-being of all residents, at all ages and stages of life.

2. Whitby's Natural and Built Environment – Connected and Resilient

   Connected and resilient natural and built environments demonstrate a commitment to plan for and invest in green space and quality infrastructure to support the needs of a growing and changing community. It involves promoting environmental stewardship and building resilience to climate change while enhancing community beautification.

3. Whitby's Economy – Innovative and Competitive

   An innovative and competitive economy is premised on collaboration and partnerships that maximize opportunities for business and employment growth. This is achieved through business retention and attraction, promotion of tourism, agriculture, and other sectors.

4. **Whitby's Government – Accountable and Responsive**

   Accountable and responsive government is customer service-driven. It is focused on efficiency, effectiveness, value for money, and financial sustainability. It is premised on the best use of technology, transparent and open decision-making, meaningful engagement, and a commitment to continuous improvement. It is forward-thinking, prioritizing strong community partnerships and integrating good urban planning to ensure the community's sustainable future.

1.3.4. Alignment to the Strategic Pillars

Asset Management is related to three of the Town's Strategic Pillars and is tied closely to Strategic Pillars 2 (Whitby's Natural and Built Environment), and 4 (Whitby's Government).

Whitby's Neighbourhoods — **Safe, Healthy, and Inclusive**

- **Objectives Include:**
  - **Improve community safety, health, and well-being**
    - Review and plan for fire services to address growth of community
- **Relationship with Asset Management:**
  - The growth of fire services to address community growth means more facility, fire equipment, and fleet assets to be strategically managed

Whitby's Natural and Built Environment

Connected and Resilient

- Objectives Include:
  - Demonstrate environmental leadership in sustainability and addressing climate change
    - Develop community climate mitigation measures to achieve zero-carbon emissions by 2045
    - Promote the use of electric vehicles and lead by example by implementing electric vehicles in the Town's municipal fleet
  - Enhance community connectivity and beautification
    - Increase active transportation facilities, including trails, multi-use paths, and bike lanes across the community, considering the Active Transportation Plan
    - Review and enhance service level standards that promote community beautification and maintenance
  - Invest in infrastructure and assets
    - Construct mid-arterial roadway south of 407, between Cochrane and Thornton
    - Construct Whitby Sports Complex

- Relationship with Asset Management:
  - Integrated management across the Corporation for the addition, rehabilitation, or replacement of Town assets provides the opportunity to incorporate climate mitigation measures proactively
  - The thoughtful planning, definition of service levels, management, maintenance, and monitoring of new and existing assets and services can promote active transportation and community beautification
  - Major transportation and facility projects will require strategic asset management and planning into the future

Whitby's Government

Accountable and Responsive

- Objectives Include:
  - Deliver exceptional customer service and community engagement
    - Identify, establish, and report on service levels of interest to the community
  - Ensure fiscal accountability and responsibly plan for growth
    - Deliver services that respond to community needs while balancing the impact to taxpayers
    - Update long-range financial plans to ensure essential Town services are provided in a sustainable and affordable way

- Relationship with Asset Management:
  - Defining and maintaining consistent and transparent asset service levels promotes accountability, community engagement, and a commitment to meeting service targets
  - Strategic short, medium, and long-range planning of asset lifecycle activities to maintain defined service levels encourages financial sustainability and fiscal responsibility

1.4. Asset Management Vision

The Town of Whitby's Asset Management vision is: Providing the framework for responsibly managing all Town owned infrastructure.

1.4.1. Asset Management Objectives

The Town works as a collaborative team to undertake the following objectives comprehensively and consistently for all Town owned assets. These asset management objectives help to inform how the Town puts into practice its asset management vision:

- Inventory: Capture all asset records, inventories, and historical data.
- Current Valuation: Calculate current condition ratings and replacement values.
- Life Cycle Analysis: Identify Maintenance and Renewal Strategies & Life Cycle Costs.
- Service Level Targets: Define Technical and Community Levels of Service Targets
- Risk & Prioritization: Integrate all asset categories through risk and prioritization strategies.
- Transparency: All relevant information to be available for the public, staff, and Council's use.
- Sustainable Financing: Identify sustainable Financing Strategies for all asset categories.
- Continuous Processes: Provide continuous processes to ensure asset information is kept current and accurate.
- Decision Making & Transparency: Employ asset management information in all corporate spending.
- Monitoring & Reporting: At defined intervals, assess the assets and report on progress and performance.
- Growth/Future Assets: Integrate asset management information into all future corporate purchases, acquisitions, and assumptions.
- Climate Change: Ensure infrastructure strategies address climate change impacts.
- Consistency: The Town of Whitby will continue to provide core public services.
- Budgeting and Planning: The Town of Whitby shall incorporate any applicable budgets or fiscal plans into the Asset Management process.
- Integration: The Town will be cognisant of content and principles of plans and strategies (provincial, regional and municipal) that affect the lifecycles of future assets.

1.5. Asset Management Policy

The Town of Whitby's current Strategic Asset Management Policy was presented to and approved by Council on March 4, 2024 (FS 08-24). This document emphasizes key goals and responsibilities for all Staff and Council in addition to outlining regulatory requirements the Town will need to adhere to in coming years to comply with *Bill 6, Infrastructure for Jobs and Prosperity Act* and the *Ontario Regulation 588/17, Asset Management Planning for Municipal Infrastructure*.

1.6. Asset Management Line of Sight

Asset Management Line of Sight refers to the viewpoints of Town Staff at either end of the Asset Management process. Staff who directly work with and maintain Town assets need a clear view of how their work furthers the strategic goals of the Town, while Staff who formulate strategy and policy have a clear view of how their work impacts the maintenance and management of assets.

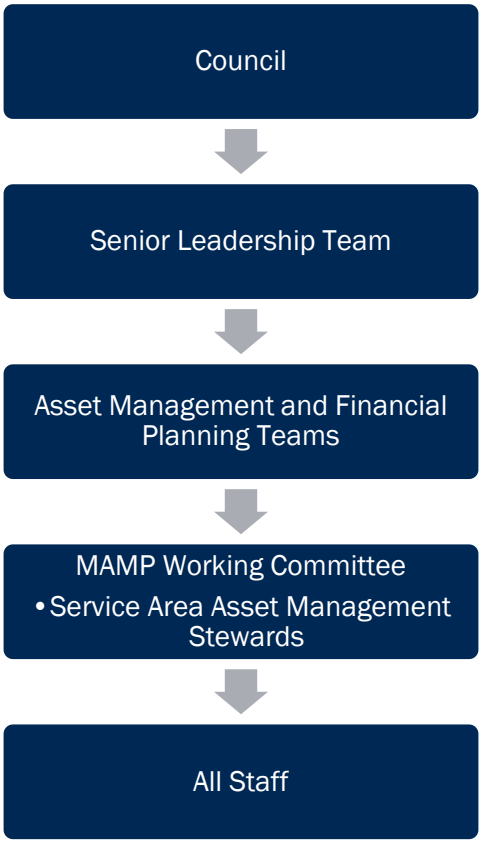


Figure 3 The Town's Asset Management Line of Sight. Further information on responsibilities can be found in the Town's Strategic Asset Management Policy (2024)

2. State of Existing Infrastructure

Replacement value represents the current cost of replacing an asset in 2024 Canadian dollars, as of December 31, 2023. In this section, we summarize key elements in each of the Town's seven service areas. This includes a detailed outline of the asset inventory and the condition of assets. When observed data was not available, the age of the assets was used to approximate their conditions.

2.1. Asset Hierarchy & Inventory

The asset hierarchy illustrates the relationship of individual service areas and their associated assets and components to a wider, more expansive network and system, with the 'Town of Whitby' as the first level in the hierarchy. Each level provides greater detail.

Table 1 Hierarchy of Town Assets

Town	Service Area	Asset Class
Town of Whitby	Facilities	Community Centres
		Fire Halls
		Municipal Building
		Operations Facilities
		Other Town Property
		Sports Facilities
	Fire Halls	Equipment
		Personal Protective Equipment (PPE)
	Fleet	Arena Equipment
		Construction Equipment
		Fire Trucks
		Garage & Shop Equipment
		Lawn Care & Forestry
		Passenger Vehicles
		Refuse Trucks
		Snow Equipment
		Trailers
	Library	Collections
		Community Centres
		Equipment
	Parks	Amenities and Furniture
		Arboriculture & Horticulture
		Lighting
		Paved Surfaces
		Recreation Facilities
		Bridges & Culverts

Town	Service Area	Asset Class
Town of Whitby	Road Right-of-Way	Parking
		Roads
		Roadside Appurtenances
		Sidewalks & Multi-Use Paths
		Stormwater Management
		Streetlights
		Street Trees
	Technology & Innovation Services	Infrastructure
		Network Hardware
		Peripherals
		Servers
		Telecommunications
		Workstations

To view full asset inventories please see the Service Area Report Cards.

The Town is working towards the incorporation of additional **natural assets**, (creeks and park/open space trees) into future editions of the Municipal Asset Management Plan.

2.2. Replacement Value

Replacement values determined by using unit costs for individual asset components will yield more reliable estimates of current market prices. However, in the absence of this detail, the historical costs were inflated to 2024 values. In some cases, the Town provided user-defined replacement costs. The estimated **replacement value** totalled approximately $3.08 billion for all of Whitby's assets. The total cost per household is approximately $58,753 using 52,391 households (Durham Region, 2023). In this section, we detail the replacement value of all Town assets by Service Area.

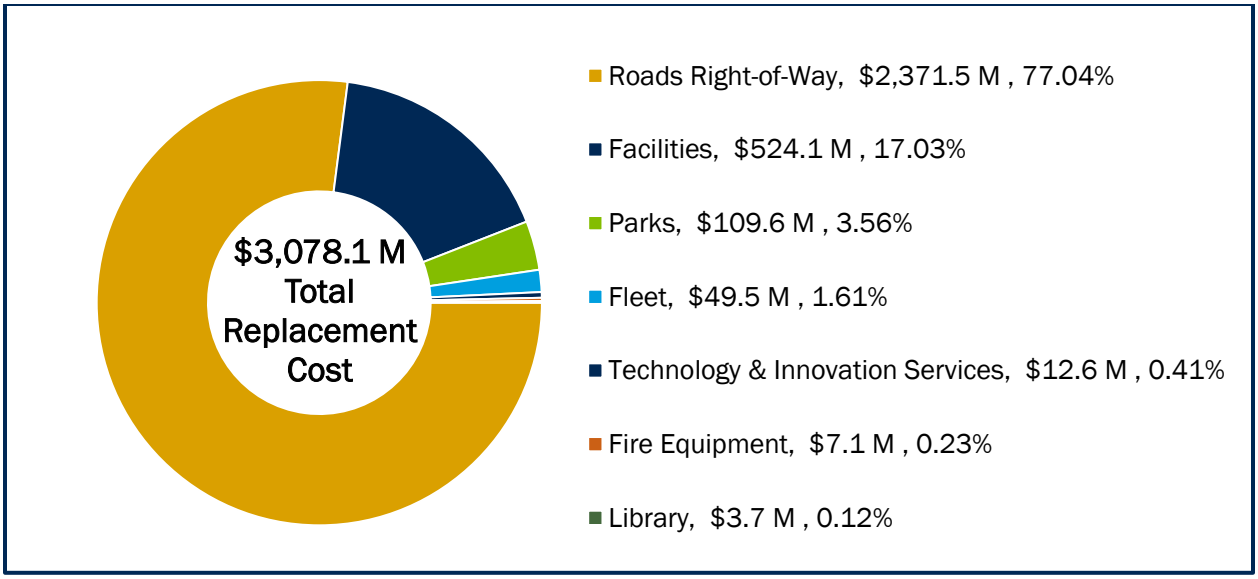


Figure 4 Replacement Value of all Town Assets

Replacement Costs differ from **historical costs** in that replacement costs represent expected spending whereas historical costs capture actual past spending.

2.3. Asset Conditions

Town assets are inspected regularly by staff and deficiencies are repaired or replaced on an as-needed basis. Where condition ratings are unavailable, an age-based condition was used. Condition distributions for individual service areas can be found in the Service Area Report Cards.

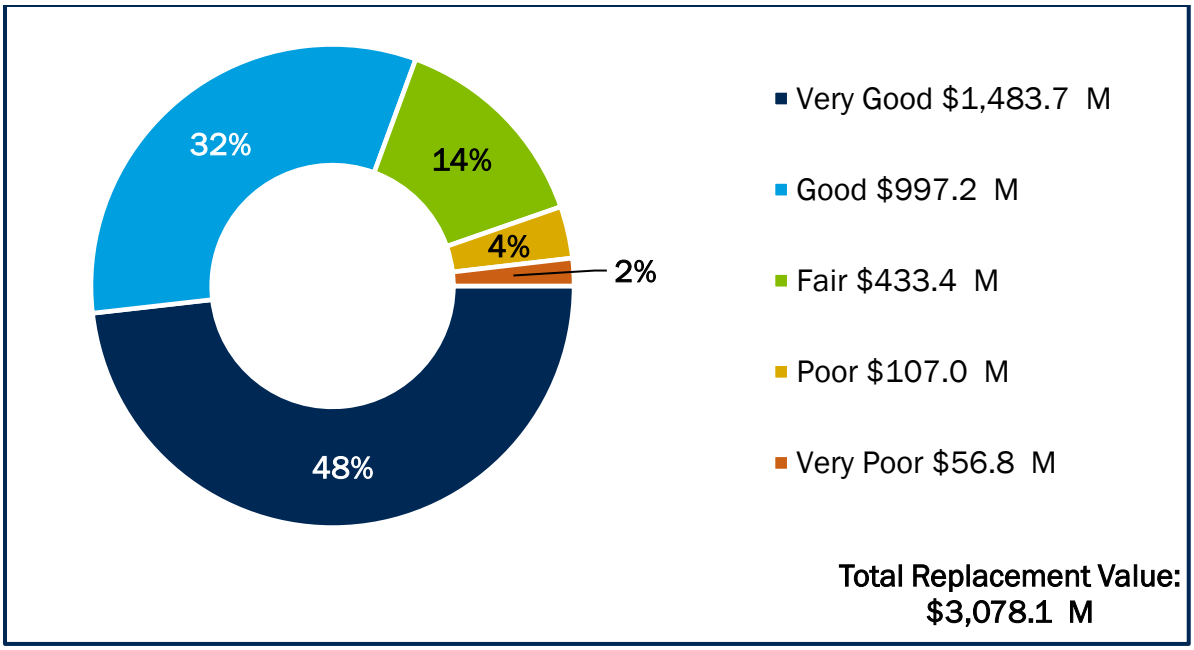


Figure 5 Total Replacement Value of all assets in each condition rating level

2.4. Infrastructure Report Card

The Infrastructure Report Card is a summary of our findings in accessible language that municipalities can use for internal and external distribution.

Asset Health: As shown below in Table 2, using either field inspection data as available or age-based data, the asset health score provides a grade for each infrastructure class based on the portion of assets in Very Poor to Very Good condition (0-100 percent). These conditions are standardized across service areas using replacement value.

Table 2 Infrastructure Report Card – Asset Health Rating Scale

Rating	Numerical Scale	Letter Grade	Description
Very Good	4.50 to 5.0	A	Assets are mostly new or recently rehabilitated
Good	3.50 to 4.49	B	Assets are no longer new but are fulfilling their function. Preventative maintenance is beneficial at this stage.
Fair	2.50 to 3.49	C	Deterioration is evident but assets continue to fulfill their functions. Preventative maintenance is beneficial at this stage.

Poor	1.50 to 2.49	D	Significant deterioration is evident and service is at risk.
Very Poor	1.0 to 1.49	F	Assets are beyond expected life and have deteriorated to the point that they may no longer be fit to fulfil their functions.

It will be important in the near future to assess how these ratings are reflected in Community and Technical Levels of Service. For example, an older piece of equipment could be considered to be in fair condition with no outward signs of disrepair and therefore may meet the needs of the community, while potentially being below desired technical levels of service standards.

Table 3 Asset Health Rating

Service Area	Replacement Cost $ (millions)	Total Replacement Cost %	Numerical Rating	Condition	Weighted Numerical Rating
Road Right-of-Way	$2,371.5	77.04%	4.29	Good (B)	3.30
Facilities	$524.1	17.03%	4.16	Good (B)	0.71
Parks	$109.6	3.56%	3.49	Fair (C)	0.12
Fleet	$49.5	1.61%	3.42	Fair (C)	0.05
TIS Equipment	$12.6	0.41%	2.76	Fair (C)	0.01
Fire Equipment	$7.1	0.23%	4.08	Good (B)	0.01
Library Resources	$3.7	0.12%	4.38	Good (B)	0.01
Total Replacement Cost	$3,078.1	100.00%	Overall Weighted Numerical Rating		4.21
			Overall Weighted Grade		Good ('B')

2.5. Asset Age Profile

Municipalities invest large sums in new assets in times of growth, leading to assets having a similar age profile. Dependent on asset type and condition, the assets may need to be replaced at similar times. The following chart (Figure 6) shows the remaining expected useful life in five-year increments of Town assets. Assets that have exceeded their useful life may still be in good condition. Most Town assets have more than 10 years of useful life remaining. The **expected useful lives (EULs)** of individual asset classes can be seen in the Service Area Report Cards.

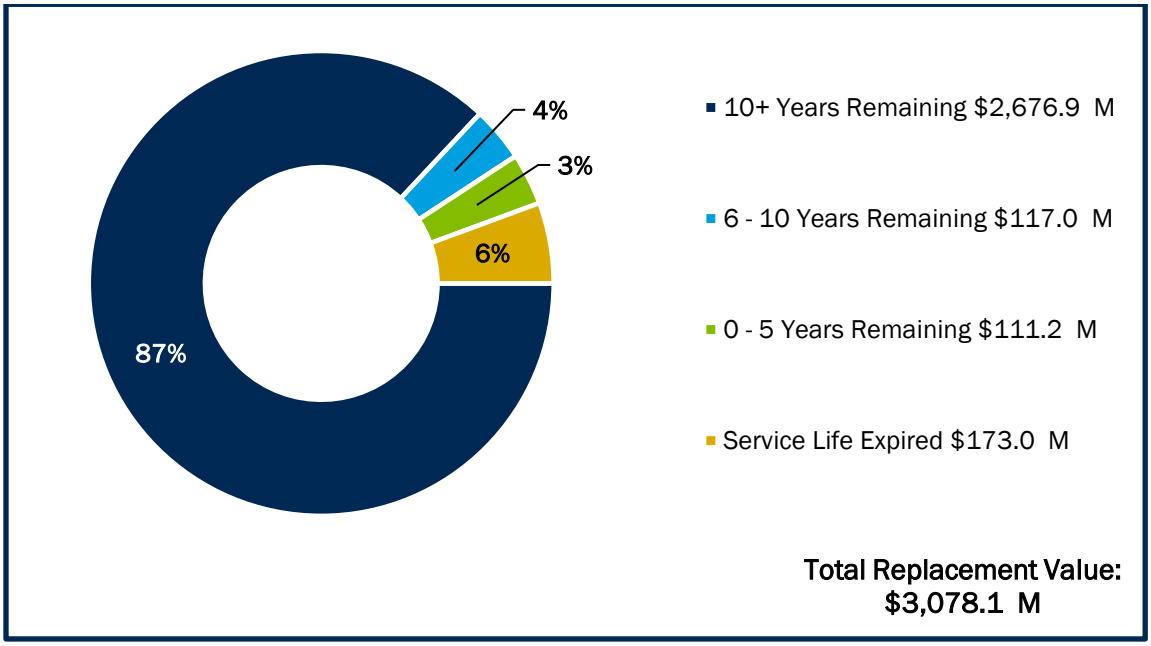


Figure 6 Useful Life Remaining for all Town assets.

Note: The Service Area Report Cards show the same chart as above for each Service Area.

3. Levels of Service

The O. Reg. 588/17requires municipalities to account for Community and Technical Levels of Service provided by asset classes in each of their service areas. Community Levels of Service refer to the qualitative experience of the customer. Technical Levels of Service refer to adherence to regulations such as maintenance standards or by-laws, response time, technically assessed condition(s) of the assets and other more quantitative metrics of service or **Key Performance Indicators (KPIs)**

The Town is required to report on the Community and Technical Levels of Service for all service area assets. These Community Levels of Service and Technical Levels of Service are categorized by Scopes, which define the theme or extent of the Level of Service. The seven (7) service areas, whose asset Community Levels of Service and Technical Levels of Service are outlined, include: Facilities, Fleet, Fire, Library, Parks, Roads Right-of-Way, and Technology & Innovation Services.

Table 4 Community and Technical Levels of Service for the Facilities Service Area

Scope	Community Levels of Service	Technical Levels of Service
Location	Figure 17 in the Appendices maps major Town Facilities.	The Town owns and maintains: • 16 Community Centre Facilities • 5 Fire Halls • 10 Operations Facilities • 1 Municipal Building • 5 Sports Facilities • 22 Other Town Properties
Age	1. Figure 18 in the Appendices graphs the age distribution of Community Centre Facility Assets. 2. Figure 19 in the Appendices graphs the age distribution of Fire Hall Facility Assets. 3. Figure 20 in the Appendices graphs the age distribution of Operations Facilities' Assets. 4. Figure 21 in the Appendices graphs the age distribution of Municipal Building Assets. 5. Figure 22 in the Appendices graphs the age distribution of Sports Facilities' Assets.	1. 5% of Community Centre Facility Assets by replacement cost are beyond their Expected Useful Lives (EULs). 2. 4% of Fire Hall Assets by replacement cost are beyond their Expected Useful Lives (EULs). 3. 2% of Operations Facilities' Assets by replacement cost are beyond their Expected Useful Lives (EULs). 4. 5% of Municipal Building Assets by replacement cost

Scope	Community Levels of Service	Technical Levels of Service
	6. Figure 23 in the Appendices graphs the age distribution of Other Town Property Assets.	are beyond their Expected Useful Lives (EULs). 5. 6% of Sports Facilities' Assets by replacement cost are beyond their Expected Useful Lives (EULs). 6. 17% of Other Town Property Assets by replacement cost are beyond their Expected Useful Lives (EULs).
Condition	1. Figure 24 in the Appendices graphs the distribution of condition ratings of Community Centre Facility Assets. 2. Figure 25 in the Appendices graphs the distribution of condition ratings of Fire Hall Assets. 3. Figure 26 in the Appendices graphs the distribution of condition ratings of Operations Facilities' Assets. 4. Figure 27 in the Appendices graphs the distribution of condition ratings of Municipal Building Assets. 5. Figure 28 in the Appendices graphs the distribution of condition ratings of Sports Facilities' Assets. 6. Figure 29 in the Appendices graphs the distribution of condition ratings of Other Town Property Assets.	1. Community Centre Facilities' assets have an average condition rating of 4.54. 2. Fire Hall assets have an average condition rating of 4.40. 3. Operations Facilities' assets have an average condition rating of 4.31. 4. Municipal Building assets have an average condition rating of 3.41. 5. Sports Facilities' assets have an average condition rating of 4.07. 6. Other Town Property assets have an average condition rating of 3.41.

Table 5 Community and Technical Levels of Service for the Fleet service area

Scope	Community Levels of Service	Technical Levels of Service
Age	The figure on page 66 graphs the ages of Fleet Equipment	38% of Fleet equipment is beyond its Expected Useful Life (EUL)

Scope	Community Levels of Service	Technical Levels of Service
Condition	The figure on page 65 graphs the condition ratings of Fleet Equipment	Fleet equipment's overall average condition rating is 3.42 1. Arena Equipment has an average condition of 3.00 2. Construction Equipment has an average condition of 3.42 3. Fire Trucks have an average condition of 3.27 4. Garage & Shop Equipment has an average condition of 3.01 5. Lawn Care & Forestry has an average condition of 3.70 6. Passenger Vehicles have an average condition of 3.31 7. Refuse Trucks have an average condition of 3.23 8. Snow Equipment has an average condition of 4.39 9. Trailers have an average condition of 3.21

Table 6 Community and Technical Levels of Service for the Fire Equipment service area

Scope	Community Levels of Service	Technical Levels of Service
Age	Figure 30 in the Appendices graphs the installation profile of Fire Equipment	1. 30% of Fire Equipment is between 0 and 5 years old 2. 48% of Fire Equipment is between 6 and 10 years old
Condition	The figure on page 60 graphs the condition ratings of Fire Equipment	100% of Fire Equipment meets NFPA requirements (no Condition Rating less than Good)
Useful Life	The figure on page 61 graphs the age distribution of Fire Equipment assets	7% of Fire Equipment is beyond its Expected Useful Life (EUL)

Scope	Community Levels of Service	Technical Levels of Service
Service Calls per Year	Figure 31 in the Appendices outlines the proportions of service calls of certain natures answered by Fire & Emergency Services in 2023	6746 service calls were answered by Fire & Emergency Services in 2023

Table 7 Community and Technical Levels of Service for the Library Resources service area

Scope	Community Levels of Service	Technical Levels of Service
Age	1. Figure 32 in the Appendices graphs the age distribution of Library Collections 2. Figure 33 in the Appendices graphs the age distribution of Library Equipment	1. 0% of Library Collections assets are beyond their Expected Useful Lives (EULs) 2. 26% of Library Equipment assets are beyond their Expected Useful Lives (EULs) 3. 0% of Library Community Centre assets are beyond their Expected Useful Lives (EULs)
Availability	Library Computers are consistently readily available for use by the public	Library Computers are available for use 99% of the operational year
Diversity	Figures 34 and 35 in the Appendices graph the Diversity, Equity, and Inclusion (DEI) Titles in the Library Collection, for the fiction and non-fiction Collection	15.7% of Library Collections are Diversity, Equity, and Inclusion (DEI) Titles, including: • 14.4% of the Fiction Collection • 18.1% of the Non-Fiction Collection

Table 8 Community and Technical Levels of Service for the Parks service area

Scope	Community Levels of Service	Technical Levels of Service
Availability	The Town aims to provide parkland and recreational facilities that meet the needs of present and future residents. Figure 36 in the Appendices maps Whitby's park system.	The Town owns and maintains 125 parks and a total of 698 ha of parkland.

Scope	Community Levels of Service	Technical Levels of Service
Connectivity	Wherever appropriate, the Major Open Space system shall be linked with paths and trails for use by pedestrians and cyclists. Figure 37 in the Appendices maps Whitby's trail network.	The Town owns and maintains 89 km of trails and walkways.
Quality & Reliability	Park and trail assets are maintained in a fair state of repair to provide reliable services to the community.	1. 98% of Arboriculture & Horticulture assets are in Fair or better condition. 2. 88% of Paved Surface assets are in Fair or better condition. 3. 89% of Recreation Facilities assets are in Fair or better condition. 4. 78% of Amenities & Furniture assets are in Fair or better condition 5. 62% of Lighting assets are in Fair or better condition.

Table 9 Community and Technical Levels of Service for the Road Right-of-Way service area

Scope	Community Levels of Service	Technical Levels of Service
Asset Class: Roads		
Connectivity	Figure 38 in the Appendices shows the connectivity of the road network within the Town, the surrounding municipalities, and the rest of Ontario.	The Town has jurisdiction of: • 249.66 lane kilometers of arterial roads • 196.11 lane kilometers of collector roads, and • 751.95 lane kilometers of local roads. The Town of Whitby also hosts provincial highways — three (3) 400-series highways, Highway 7, and Highway 12 — and is connected to a regional road

Scope	Community Levels of Service	Technical Levels of Service
		network that increases the connectivity of Town roads with neighbouring municipalities.
Condition	1. Figure 39 in the Appendices maps the current condition of municipal roads in the Town of Whitby 2. Figure 40 in the Appendices maps municipal roads by surface type in the Town of Whitby	1. The average condition rating of paved roads is 56.7 2. Gravel roads have an average surface condition of good.
Asset Class: Stormwater Management System		
Reliability	The Town's 47 Stormwater Management Ponds are safe and maintained regularly The Town's Stormwater Management System is shown in Figure 41 in the Appendices	1. 97% of Properties in the Town of Whitby are resilient to a 100-year storm 2. Figures for the 5-year resiliency of the Town's Stormwater Management system are in progress. 3. The Town currently has 1693 m of Corrugated Steel Piping in its Stormwater Management System.
Asset Class: Bridges and Culverts		
Reliability	The Town's 23 road bridges, 29 culverts, and 22 pedestrian bridges support the transportation of all types of traffic from heavy vehicles to pedestrians	9% of the Town's Road Bridges have load restrictions
Condition	1. Bridges are typically in fair condition and are suitable for use by most forms of traffic 2. Culverts are in good condition	1. Road Bridges have an average condition of 69% 2. Large Culverts (> 3 m) have an average condition of 71%
Asset Class: Small Culverts (<3m)		
Condition	Figure 42 in the Appendices graphs the distribution of condition ratings of small (< 3 m) culverts	The average condition rating of small culverts (< 3 m) is 2.42.
Asset Class: Sidewalks and MUPs		

Scope	Community Levels of Service	Technical Levels of Service
Connectivity	Figure 43 in the Appendices maps the connectivity of the Town's sidewalk and MUP network	The Town has jurisdiction of: • 526.22 kilometers of sidewalks • 28.69 kilometers of Multi-Use Paths (MUPs)
Condition	Figure 44 in the Appendices graphs the current condition of municipal sidewalks and MUPs in the Town of Whitby	1. Sidewalks have an average condition rating of 3.97 2. MUPs have an average condition rating of 4.13
Asset Class: Streetlights		
Age	1. Figure 45 in the Appendices graphs the age distribution of street light poles 2. Figure 46 in the Appendices graphs the age distribution of street light luminaires	1. 28% of streetlight poles are beyond their Expected Useful Lives (EULs) 2. 0.2% of streetlight luminaires are beyond their Expected Useful Lives (EULs)
Condition	1. Figure 47 in the Appendices graphs the condition ratings of street light poles 2. Figure 48 in the Appendices graphs the condition ratings of street light luminaires	1. The average streetlight pole condition is 3.95 2. The average streetlight luminaire condition is 4.98
Asset Class: Guiderails		
Type	Figure 49 in the Appendices maps the types and locations of Town-owned guiderails	The Town of Whitby owns and maintains 12,143 m of guiderails 1. 48% of guiderails are Cable Rail 2. 51% of guiderails are W-Beam 3. 1% of guiderails are Wood Post
Age	Figure 50 in the Appendices graphs the age distribution of Town-owned guiderails	1. 0% of Cable Rail guiderails are beyond their Expected Useful Lives (EULs) 2. 0% of W-Beam guiderails are beyond their Expected Useful Lives (EULs) 3. 0% of Wood Post guiderails are beyond their Expected Useful Lives (EULs)

Scope	Community Levels of Service	Technical Levels of Service
Condition	Figure 51 in the Appendices graphs condition ratings of guiderails	1. Cable Rail guiderails have an average condition rating of 22.72 2. W-Beam guiderails have an average condition rating of 43.24 3. Wood Post guiderails have an average condition rating of 44.18
Asset Class: Information Signs		
Quantity	Figure 52 in the Appendices graphs the number of road signs by type (Regulatory, Warning, General Information, Non-Ontario Traffic Manual) owned by the Town	1. 45% of information signs are Regulatory signs 2. 18% of information signs are Warning signs 3. 3% of information signs are General Information 4. 33% of information signs are Non-OTM
Asset Class: Fences		
Type	Figure 53 in the Appendices maps the locations and types of Town-owned fences	The Town owns: • 15,482 m of acoustic/noise barrier fence • 185 m of brick wall • 71,004 m of chain link fence • 50 m of living wall • 4,161 m of wire fence • 4,697 m of wood screen • 630 m of wrought iron fence
Age	Figure 54 in the Appendices graphs the age distribution of fences	1. 30% of acoustic/noise barrier fences are beyond their Expected Useful Lives (EULs) 2. 100% of brick walls are beyond their Expected Useful Lives (EULs) 3. 24% of chain link fences are beyond their Expected Useful Lives (EULs) 4. 0% of living walls are beyond their Expected Useful Lives (EULs) 5. 0% of wire fences are beyond their Expected Useful Lives (EULs) 6. 90% of wood screens are beyond their Expected Useful Lives (EULs)

Scope	Community Levels of Service	Technical Levels of Service
		7. 29% of wrought iron fences are beyond their Expected Useful Lives (EULs)
Condition	Figure 55 in the Appendices graphs the condition ratings of Town-owned fences	1. Acoustic/noise barrier fences have an average condition rating of 2.48 2. Brick walls have an average condition rating of 2.70 3. Chain link fences have an average condition rating of 3.46 4. Living walls have an average condition rating of 2.35 5. Wire fences have an average condition rating of 1.00 6. Wood screens have an average condition rating of 1.55 7. Wrought iron fences have an average condition rating of 3.91
Asset Class: Retaining Walls		
Length	Figure 56 in the Appendices maps the locations of Town-owned retaining walls	The Town owns: • 336 m^2 of armour stone retaining wall • 1,307 m^2 of gabion retaining wall • 870 m^2 of precast segmental retaining wall • 43 m^2 of cast-in-place retaining wall • 743 m^2 of RSS retaining wall • 309 m^2 of timber retaining wall
Age	Figure 57 in the Appendices graphs the age distribution of Town-owned Retaining Walls	1. 0% of armour stone retaining walls are beyond their Expected Useful Lives (EULs) 2. 100% of gabion retaining walls are beyond their Expected Useful Lives (EULs) 3. 0% of precast segmental retaining walls are beyond their Expected Useful Lives (EULs) 4. 0% of cast-in-place retaining walls are beyond their Expected Useful Lives (EULs) 5. 0% of RSS retaining walls are beyond their Expected Useful Lives (EULs)

Scope	Community Levels of Service	Technical Levels of Service
		6. 8% of timber retaining walls are beyond their Expected Useful Lives (EULs)
Condition	Figure 58 in the Appendices graphs the condition ratings of Town-owned retaining walls	1. Armour stone retaining walls have an average condition rating of 3.76 2. Gabion retaining walls have an average condition rating of 1.92 3. Precast segmental retaining walls have an average condition rating of 3.66 4. Cast-in-place retaining walls have an average condition rating of 3.24 5. RSS retaining walls have an average condition rating of 4.94 6. Timber retaining walls have an average condition rating of 1.78
Asset Class: Street Trees		
Biodiversity	Figure 59 in the Appendices graphs the diversity of street tree species	The Town of Whitby plants and maintains 229 different species of street trees
Condition	Figure 60 in the Appendices graphs the condition ratings of street trees	The average street tree condition rating is 4.20
Asset Class: Traffic Signals		
Age	Figure 61 in the Appendices graphs the age distribution of traffic signals owned by the Town	41% of Town-owned traffic signals are beyond their Expected Useful Lives (EULs)
Condition	Figure 62 in the Appendices graphs the condition ratings of traffic signals owned by the Town	The average condition rating of Town-owned traffic signals is 3.47
Asset Class: Parking Kiosks		
Location	Figure 63 in the Appendices displays a parking kiosk in good condition	The Town owns and operates 11 parking kiosks
Age	Figure 64 in the Appendices graphs the age distribution of parking kiosks	91% of parking kiosks are beyond their Expected Useful Lives (EULs)

Scope	Community Levels of Service	Technical Levels of Service
Condition	Figure 65 in the Appendices graphs the condition ratings of parking kiosks	The average condition rating of parking kiosks is 1.27
Asset Class: Parking Lots		
Location	Figure 66 in the Appendices maps the locations of Town-owned parking lots	The Town owns 224,100 m^2 of paved parking lots, and 75,900 m^2 of gravel parking lots
Age	Figure 67 in the Appendices graphs the age distribution of Town-owned parking lots	72% of Town-owned parking lots are beyond their Expected Useful Lives (EULs)
Condition	Figure 68 in the Appendices graphs the condition ratings of Town-owned parking lots	The average condition rating of paved parking lots is 3.51
Asset Class: Parking Meters		
Age	Figure 69 in the Appendices graphs the age distribution of parking meters	100% of parking meters are beyond their Expected Useful Lives (EULs)
Condition	Figure 70 in the Appendices graphs the condition ratings of parking meters	The average condition rating of parking meters is 2.20

Table 10 Community and Technical Levels of Service for the TIS service area

Scope	Community Levels of Service	Technical Levels of Service
Functionality	The figure on page 90 graphs the proportions of equipment within its allocated lifecycle	70% of TIS equipment is within its allocated lifecycle
Unscheduled Down Time	Figure 71 in the Appendices graphs the distribution of unscheduled down time and repair time	TIS' equipment/infrastructure has an uptime percentage of 99.186% in 2023
Service Requests	Figure 72 in the Appendices graphs the proportions of types of service requests handled by TIS	The average service request is resolved in 4.02 days

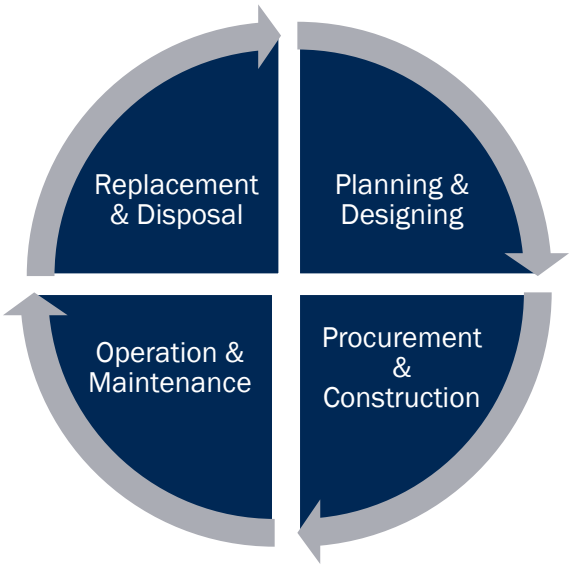
3.1. Asset Lifecycles

In addition to examining current levels of service and proposing new ones, it is important that the municipality capture complete asset lifecycles to get an accurate picture of the true costs of maintaining assets' levels of service. The Town of Whitby has captured the acquisition costs, comprehensive lifecycle events and their costs, and replacement costs of all of its assets across each service area. These complete lifecycle costs can be viewed in Appendix C.

Figure 7: A Basic Asset Lifecycle encompasses the costs of all activities from Planning & Design to Procurement to Operation and Maintenance to Replacement & Disposal

Operation and maintenance activities ensure that assets meet or exceed their expected useful lifespans, and capturing the anticipated costs of these activities can help with future budgeting and with making business cases for the value of these activities.

Disposal requirements for certain assets can increase the cost of replacement and these costs will be captured in future versions of this document. Some assets will need to be disposed of in line with PS3280, Public Sector Accounting Board Asset Retirement Obligations.[1]



3.2. Risk

Municipalities accept a certain degree of financial risk in owning physical assets. This risk can exist in the form of premature deterioration, unexpected maintenance needs, and unforeseen environmental impacts. In order to mitigate this risk, municipalities need to capture asset lifecycle costs, complete regular condition assessments, and stay informed of environmental impacts both on and by assets. These activities give municipalities a complete picture from which to establish existing levels of service and their costs and to determine whether these levels of service will be sustainable in the future.

Risk is the product of an asset's probability of failure and its consequence of failure. Probability of failure is largely dependent on condition while consequence of failure can be dependent on a number of factors.

Consequence of failure is calculated in Roads Right-of-Way primarily using the operational category and replacement value as a proxy for economic risk. Currently we do not factor in Environmental factors as risks, this could be forthcoming for an asset's energy usage, carbon emissions, or impacts to the environment.

[1] https://www.frascanada.ca/-/media/frascanada/psab/committees/2021-05-10-psadg-meeting-report-apr-8_en.pdf

Risk assessments will be an essential tool in budgeting in future years. It is important for any financially responsible municipality to be able to justify its spending in the bulk of the budget on items that have a higher risk due to poor condition, greater community importance, and/or economic impact. It is imperative that preventative maintenance and rehabilitation works are performed on the assets in the low and medium risk to ensure these assets do not fall into the high risk when their full replacement would be required.

Table 11 Risk Matrix for all Town Assets

Consequence of Failure					
5	887 Assets $213.0 M 6.99%	1,687 Assets $116.9 M 3.83%	143 Assets $48.4 M 1.59%	17 Assets $8.5 M 0.28%	193 Assets $7.0 M 0.23%
4	556 Assets $71.1 M 2.33%	8,764 Assets $119.2 M 3.91%	303 Assets $62.6 M 2.05%	107 Assets $14.1 M 0.46%	117 Assets $5.6 M 0.18%
3	18,207 Assets $255.4 M 8.38%	37,335 Assets $391.2 M 12.83%	6,063 Assets $99.5 M 3.26%	1,543 Assets $17.9 M 0.59%	599 Assets $8.2 M 0.27%
2	3,158 Assets $246.4 M 8.08%	4,533 Assets $136.4 M 4.47%	2,178 Assets $78.4 M 2.57%	912 Assets $18.3 M 0.60%	531 Assets $9.5 M 0.31%
1	15,708 Assets $680.1 M 22.30%	10,389 Assets $234.3 M 7.69%	2,684 Assets $139.7 M 4.58%	2,266 Assets $47.8 M 1.57%	1,512 Assets $19.9 M 0.65%
	1	2	3	4	5

Probability of Failure

As of December 31, 2023, 59.4% of the Town's total replacement costs in assets ($1,811.2 M) are considered low-risk, with lower probabilities and consequences of failures. 37.6% of the Town's total replacement costs in assets ($1,146.4 M) are considered medium-risk, where a combination of lower probabilities of failure and consequences of failure are present. These are groupings of assets which may need to be inspected for possible preventative maintenance or rehabilitation, in order to avoid them moving into the high-risk category. Finally, 3.0% of the Town's total replacement costs in assets ($91.7 M) are considered high-risk assets. These are assets considered to have a higher likelihood of failure and a more serious consequence of failure. They should be looked at more closely by staff and Council to ensure that, if required, their replacement is scheduled in the Town's upcoming capital spending forecasts.

3.3. Climate Change

Climate Change is currently impacting the Town of Whitby and its assets. In 2019, the Town declared a Climate Emergency and committed to the preparation of a **Climate Emergency Response Plan (CERP)**. The first phase of the CERP was approved by council in 2022, and the second was approved in December 2023. Through the first phase of the CERP, the Town has a mandate to anticipate the impacts on its assets and services and plan for **resilience**, and through the second phase, **mitigation.**

The most recent modelling for predicted impacts indicates that Whitby can expect more frequent and longer extreme heat events, increased risk of flooding, and fewer freeze-thaw cycles in the next 80 years (Ontario Climate Consortium, 2020). Staff should look through a Climate Change lens when the Town plans to rehabilitate or reconstruct existing assets or build new assets. This will help to ensure that these assets are built to be resilient in today's climate, as well as future predictions. In future renditions of the MAMP, as the costs to upsize, upgrade and build new infrastructure are more accurately known to deal with climate change, these will be incorporated into the future expenditures.

Resilience to the projected impacts of climate change could include the following:

- Changing standards for paved assets to accommodate higher temperatures.
- Requiring greater capacity for stormwater management in flood-prone areas, including increasing the capacity and quantity of stormwater management ponds, as well as the capacity of storm lines
- Prioritizing Town assets which are used in the event of extreme heat (splash pads, cooling centres) and adding shade in public spaces (shade structures or park trees)
- Expanding **green infrastructure**

Mitigation of climate change involves concrete actions the Town of Whitby can take to reduce its contribution to global Greenhouse Gas (GHG) emissions such as:

- Replacing gas and diesel Town vehicles with electric vehicles where practical
- Reducing natural gas consumption by improving the energy efficiency municipal buildings and through the utilization of heat pumps
- Implementing a standard of warm-mix asphalt paving techniques in place of hot-mix paving to reduce the emissions from the production of the asphalt.

As a lakeside community, Whitby's climate is strongly impacted by Lake Ontario. The lake has warming effects in the early winter months and cooling effects in the summer. It is predicted that the most impactful change in the next 80 years will be in the reduction of ice cover on Lake Ontario (Zuzek Inc., 2020). Less ice cover in the winter months will have two impacts on Town assets:

1. More wave action during winter months which will increase the rate of shoreline erosion. Shoreline assets and private property may be at increased risk.
2. Increased lake-effect precipitation. As ice cover is reduced, the Town of Whitby will see more precipitation in winter months which could lead to an increased number of snow and icing events (Ontario Climate Consortium, 2020).

3.3.1. Strategies for Climate Change Resilience and Mitigation

Road Surfaces

Challenges

There is a significant carbon footprint at all points of road construction from material production, extraction, and transportation, to paving, maintenance, and end of life.

Higher summer temperatures and increased winter precipitation may reduce the lifespan of road surfaces.

Opportunities

Warm mix asphalt paving and the increased use of recycled asphalt concrete can reduce the costs of construction and resurfacing of paved assets and together can reduce the emissions at the production and paving stages (Oner J, 2015).

Adjusting paving standards to asphalt with a higher temperature tolerance may improve the longevity of road surfaces over time. Current mixes are 64-28 and 58-28. The Town of Whitby should continue to monitor and investigate the pavement mixes that are utilized on municipal roads. This will ensure that mixes align with the temperature minimums and maximums and the number of freeze/thaw cycles that are being experienced and forecasted.

Stormwater System

Challenges

Increased precipitation could exceed the current capacity of the Town's stormwater management system.

Opportunities

Recalibrate the Town’s current storm model and incorporate climate change impacts to the stormwater management system to proactively plan infrastructure based on the latest local climate trends.

Increase pipe size, storm pond volume to adapt to increased flooding potential. This could be in the form or larger pipes, larger stormwater ponds, and upsizing bridges and culverts. Identifying and prioritizing flooding areas is the first step, followed by developing a resiliency plan for each area, and lastly monitoring improvements to ensure they were correctly sized, the right treatment, and/or the right priority.

Bridges and Culverts

Challenges

Flooding, extreme weather and changes to winter maintenance could have impacts on bridge and culvert conditions.

Opportunities

Some of Whitby's bridges and culverts are ageing and will need to be replaced. Correctly sizing these assets as they are reconstructed to handle the impacts of climate change is an investment in the Town's future.

Sidewalks and Multi-Use Paths

Steps Completed

Strategically replacing sidewalks with MUPs to improve active transportation network connectivity.

Challenges

As with road surfaces, higher temperatures may reduce the lifespan of paved assets.

Opportunities

Expanding and increasing connectivity of an active transportation network can reduce community contribution to carbon emissions.

Street Trees

Challenges

Changing climate may reduce the viability of some tree species due to temperature ranges, invasive pests or diseases.

Opportunities

Shade from street trees can reduce the urban heat island effect created by roads and parking lots (Armson, 2012). Reducing this urban heat island effect can reduce asphalt assets' risk of failure due to temperatures exceeding their mix or design limits.

Facilities

Steps Completed

Facility lighting systems have been upgraded to LED, greatly improving their energy efficiency.

Challenges

Increasing temperatures and changing climate may reduce the lifespan of facility assets, such as roofing, and place additional demand on cooling or refrigeration systems.

Future storms are predicted to have increased wind and rainfall, that may have adverse effects on buildings.

Opportunities

Transitioning to cleaner energy sources and energy-efficient systems can reduce facilities' greenhouse gas emissions.

Decarbonization initiatives, such as the elimination of fossil-fuel heating, energy-efficient lighting, and the reduction of high global warming potential refrigerants, can reduce the long-term operational energy costs of Town facilities.

Parks

Steps Completed

Several shade structures have been installed in Town parks.

Challenges

Increasing temperatures and more volatile weather systems can have negative impacts on park vegetation viability or health, as well as the useful life of some park assets.

Opportunities

As with street trees, park trees can reduce the urban heat island effects or provide 'Park Cool Islands' (Brown, Vanos, Kenny, & Lenzholzer, 2015). Likewise, vegetation can mitigate urban areas' carbon emissions output.

Fleet

Steps Completed

Where practical, gas and electric vehicles are being substituted for electric vehicles in various departments.

Challenges

Increasing the proportion of electric vehicles in Fleet requires enhanced charging infrastructure to support the electrification.

Opportunities

Continuing to substitute gas and diesel vehicles with electric vehicles where practical can greatly reduce the Town's greenhouse gas emissions.

TIS

Steps Completed

Equipment sleep timing and updating have been optimized to reduce energy consumption.

Equipment at the end of its useful life is disposed of as e-waste or repurposed.

Challenges

More volatile weather systems and increased temperature could impact the service lives of outdoor TIS infrastructure.

Opportunities

Further optimization and advancements in TIS equipment can reduce the Town's energy consumption and act as an important mitigation measure.

3.3.2. Zero Carbon Budget

Endorsed by Council in report CAO 19-22, Whitby's allotted contribution to global carbon output was 62.6 kilotonnes from 2041-2045, with a Greenhouse Gas (GHG) reduction goal of 1,105 tCO_2e (1,105,000 $KgCO_2e$) by 2025. This includes a 20% GHG emission reduction from 2019 levels, by 2025, a 40% GHG emission reduction from 2019 levels, by 2030, and a 100% GHG emission reduction from 2019 levels, by 2045. Strategic asset management practices ensure that carbon output reduction is a crucial factor in capital project planning. Certain 2023 asset management-related capital projects resulted in a GHG emissions savings of 165,373 $KgCO_2e$, and 2024 asset management and zero carbon projects are estimated to result in a decrease of 213.6 tCO_2e.

4. Financial Needs

In order for an Asset Management Plan to be effectively put into action, it must be integrated with long-term financial planning and budgeting. According to O. Reg. 588/17 municipalities must be able to fully fund their existing levels of service for the 10-year average annual capital expenditures by 2024. To bridge the gap between funds and expenditures the Town will have to consider changes to asset lifecycles and levels of service to reduce costs. The municipality must document any lifecycle works that are identified to occur but are not completed and how the risks associated with not performing these works will be managed.

4.1. Financial Profile

Table 12 Average Annual Requirements for all Service Areas

Service Area	5-Year Total Needs	10-Year Total Needs	25-Year Total Needs	50-Year Total Needs	100-Year Total Needs
Facilities	$19.9 M	$60.7 M	$229.7 M	$494.4 M	$979.0 M
Fire Equipment	$2.4 M	$3.3 M	$12.6 M	$24.7 M	$51.3 M
Fleet	$17.4 M	$47.7 M	$129.9 M	$276.9 M	$558.3 M
Library	$2.6 M	$5.7 M	$15.1 M	$28.9 M	$58.7 M
Parks	$6.5 M	$26.0 M	$98.0 M	$225.6 M	$476.8 M
Roads Right-of-Way	$54.6 M	$142.1 M	$536.9 M	$1,697.2 M	$3,771.0 M
Technology & Innovation Services	$4.4 M	$13.6 M	$29.8 M	$61.3 M	$124.3 M
All Service Areas	**$107.9 M**	**$299.1 M**	**$1,051.9 M**	**$2,809.0 M**	**$6,019.4 M**
Current Backlog	$110.1 M	$110.1 M	$110.1 M	$110.1 M	$110.1 M
Growth Needs*	$2.5 M	$8.4 M	$78.4 M	$506.0 M	$1,659.8 M
Average Annual Requirement	**$44.1 M**	**$41.8 M**	**$45.2 M**	**$66.3 M**	**$76.8 M**

* Note: Growth Needs were calculated for roads as an estimation of the assumption rates of future infrastructure for West Whitby, Heathwood, and the Future Expansion of Brooklin. All other service areas' growth needs were based on the Town's 2024 10-Year Capital Forecast of Growth-Related capital projects.

Table 12 shows the cumulative total needs and the resultant average annual requirement over the short-, medium-, and long-term, the current backlog of necessary spending for replacements and lifecycle events, as well as the corresponding lifecycle and replacement costs of anticipated growth-related assets in the coming years. Each of the forecast horizons

contain the needs identified in the previous horizon, meaning the 10-Year Total Needs contain the estimated 5-Year Total Needs, as well as the needs identified in the subsequent 5 years. The municipality can choose to fully fund the short-term rather than committing to achieving fully sustainable funding in the long-term, but this choice runs the risk of passing infrastructure failings down to future Councils and Staff.

The annual requirements shown are a result of current asset lifecycles, condition evaluations, and estimates of replacement costs. The Town of Whitby may be performing maintenance and repair activities that are not currently captured but that could impact annual average requirements in a positive manner. Ensuring lifecycle activities including regular maintenance and repair are fully captured will improve these cost projections over time.

Table 13 Funding Sources

Funding Sources	Current Funding
Council-Approved Tax-based AM Funding	$22.9 M
Canada Community Building Fund (formerly Federal Gas Tax)	$4.2 M
Growth Reserve Funding (tax-based) for AM Purposes	$1.1 M
Program Reserves	$2.7 M
Total Funding Currently Available	**$31.0 M**

Table 14 Financial Sustainability

Total Average Annual Requirement				
5 – Year	**10 – Year**	**25 – Year**	**50 – Year**	**100 - Year**
$44.1 M	$41.8 M	$45.2 M	$66.3 M	$76.8 M
Deficit/Surplus in Annual Needs vs. Current Funding				
5 – Year	**10 – Year**	**25 – Year**	**50 – Year**	**100 - Year**
($13.1 M)	($10.8 M)	($14.2 M)	($35.3 M)	($45.8 M)

The MAMP has identified the funding needs for the short-, medium- and long-term planning horizons – ranging from 5 to 100 years. The average annual investment requirement in total for all seven service areas over the 5-year planning horizon is $44.1 million, over the 10-year planning horizon is $41.8 Million and over the 50-year planning horizon is $66.3 million. The average annual funding currently allocated to these assets for capital purposes is $31.0 Million. The Town is mostly funding its asset management requirements in the short-term and this may offset some of the projected long-term deficits.

Figure 8 illustrates the 10-year average annual capital requirement by household (based on 52,391 households).

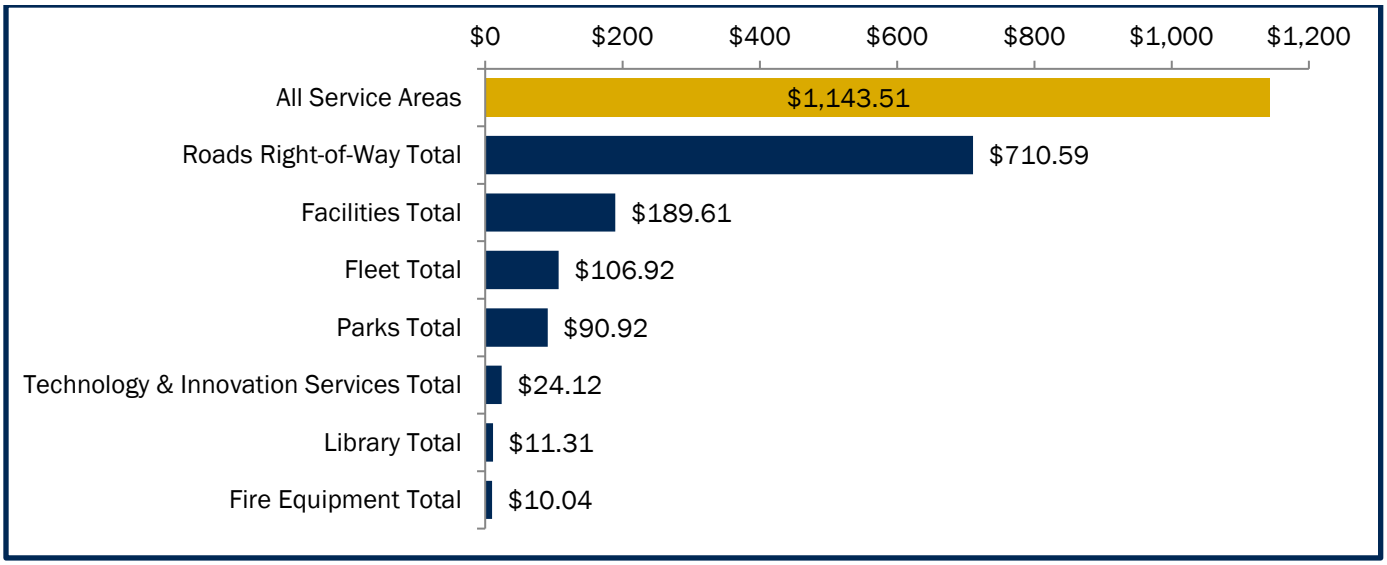


Figure 8 Per-Household 10-Year Average Annual Financial Needs

At this level of funding, the municipality is somewhat prepared to meet its short-term infrastructure needs but is deficient in meeting its medium-term and long-term infrastructure requirements. As a result, replacement for assets in the medium-term will likely be deferred to future years. The municipality may also need to divest some of its assets and review levels of service currently provided.

4.2. Forecast Replacement Needs

Figure 9 shows the 100-year capital investment needs for all Town assets relative to the average annual requirements in the short-, medium-, and long-term. Replacement profiles like the following can be found for individual service areas in the 'Service Area Report Cards'.

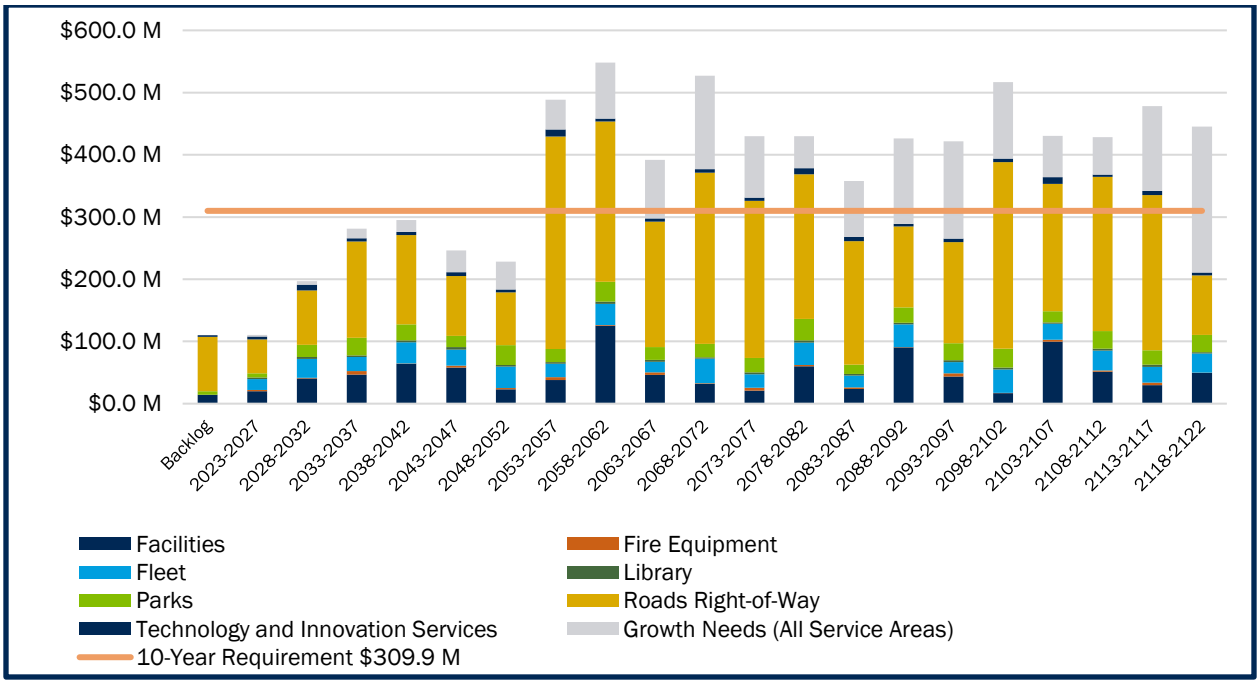


Figure 9 100-Year Capital Needs Forecast

The Municipal Asset Management Plan (MAMP) is a guide to help inform the Town's Long Range Financial Plan of future capital funding requirements. The capital funding requirements can be seen through the average annual capital funding requirements and the peaks and valleys shown above in Figure 9.

5. Growth and Demand

Growth drives critical infrastructure demand for most infrastructure services. As such, the municipality must not only account for the lifecycle cost for its existing asset portfolio, but those of any anticipated and forecasted capital projects associated specifically with growth. Expansion of the Operations Centre was completed in 2019, and construction of the new Whitby Sports Complex began in 2023 in anticipation of the developments of West Whitby and the future expansion of Brooklin. The West Whitby and Heathwood development projects will add 5,000 households and the future expansion of Brooklin will add approximately 14,000 households to the Town's current 52,391.

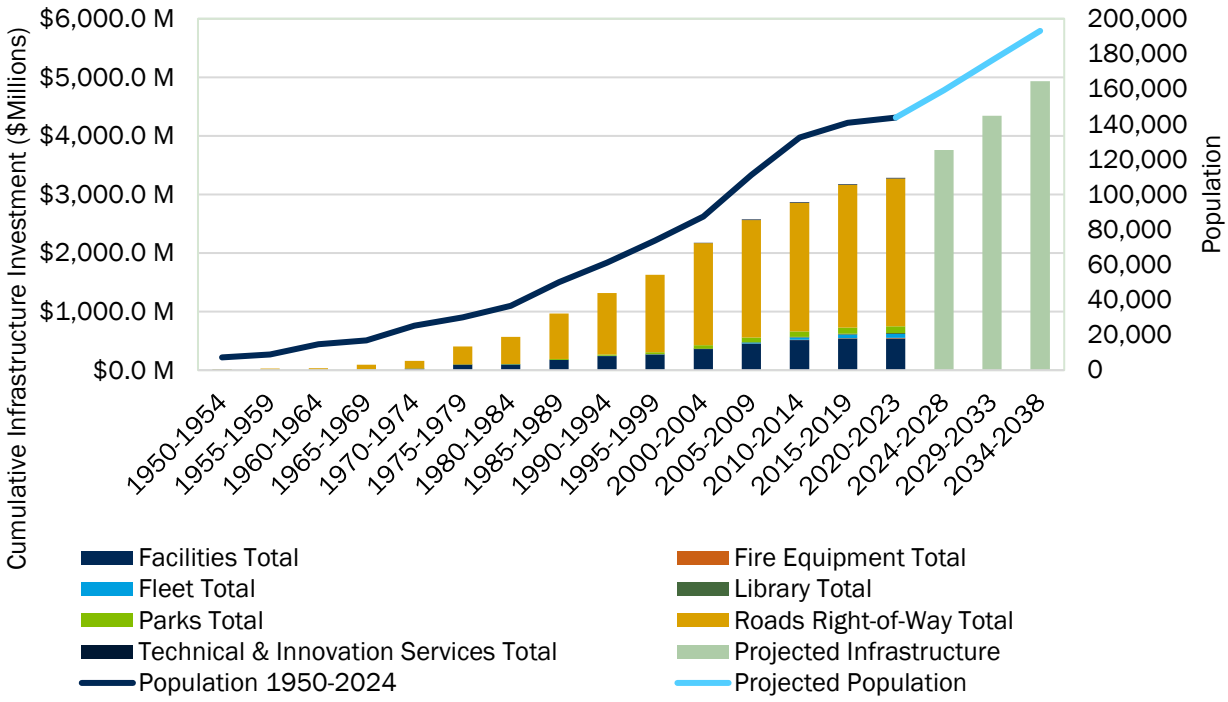


Figure 10 Cumulative infrastructure investment from 1950-2023 alongside Whitby's corresponding population increase over the same period, and projected population data to 2038 with projected infrastructure investments to the same time period (Statistics Canada, 2022) (Durham Region, 2023).

As part of the 2022 Municipal Asset Management Plan, the Town considered the growth needs, and the associated projected lifecycle costs, for its core assets. In 2024, growth needs for core and non-core assets were included. Growth needs assets were approximated using estimated timelines for the onboarding of new roads-related assets, and the 10-Year Capital Forecast. Figure 11 shows the 100-year lifecycle estimates for growth-related infrastructure planned to be in-service in the coming 15 years, across the Town's seven service areas.

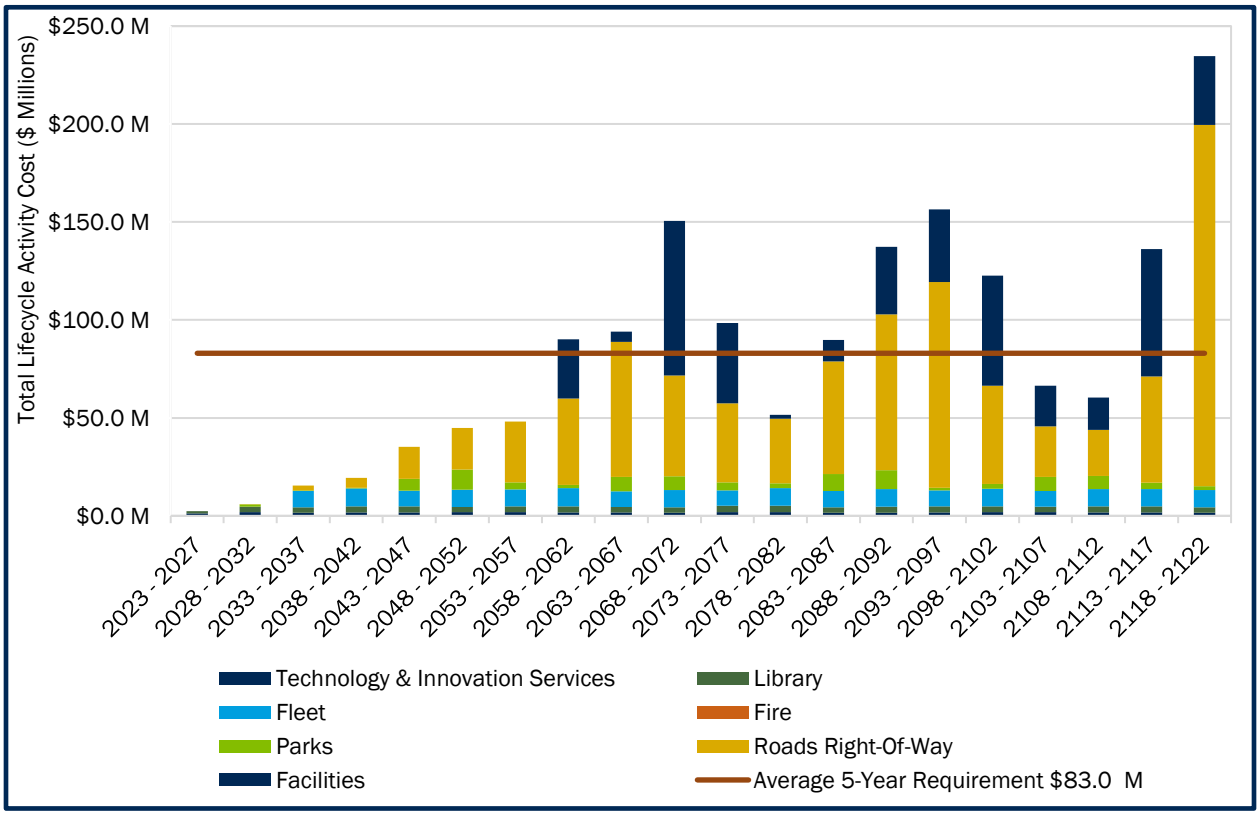


Figure 11 Lifecycle cost estimates for Growth Needs assets for all core and non-core assets estimated to be in service in the next 15 years.

Annual requirements, shown in Table 14 below, reflect average annual investment required to fund the lifecycle costs of growth needs assets (core and non-core). Further information on growth-related costs can be found in the Town's 2021 Consolidated Development Charges Background Study.[2]

Table 15, below, shows the estimated annual requirements for lifecycle activities of growth-related assets. Each of the horizons contain the lifecycle activities of the previous horizon, meaning the 10-year annual needs capture the needs from the 5-year horizon, as well as the remaining needs between years 5 and 10.

Table 15 Estimated Annual Requirements for maintaining Growth Needs (Core and Non-Core Assets) in the 5, 10-, 25-, 50-, and 100-Year Horizon

5-Year Annual Needs	10-Year Annual Needs	25-Year Annual Needs	50-Year Annual Needs	100-Year Annual Needs
$0.5 M	0.8 M	$3.1 M	$10.1 M	$16.6 M

[2] Town of Whitby Consolidated Development Charges Background Study (2021). https://www.whitby.ca/en/work/resources/Whitby-2021-Consolidated-DC-Background-Study.pdf

6. Recommendations

As the Town of Whitby's Asset Management Program progresses it is important that we stay on track to meet the requirements of Provincial legislation and that we continue to meet the needs of our citizens.

- Refine existing levels of service for all other assets and propose sustainable levels of service for all service areas to be approved by Council by July 1, 2025,
- Undertake community engagement surveys and public information sessions, to inform future asset management plans on Whitby residents' desired Levels of Service for municipal assets.
- Assess and evaluate existing maintenance and repair activities and capture these in the AM database in order to get a complete picture of future financial requirements.
- Review consequence of failure ratings regularly
- Assess the costs of Climate Change resilience and the associated risks to assets.
- Propose Climate Change resilience and mitigation measures for all Service Areas

Service Area Summaries

A. Facilities 2024 Overview

Facilities Inventory by Construction Year

Community Centres

Ashburn Community Centre	1861
Brock Street Activity Centre	1982
Brooklin Community Centre	1876
Brooklin Community Centre and Library	2010
Centennial Building	1853
Cullen Cottage	1877
Cullen Log Cabin	1830
Heydenshore Pavilion	1972
Lawn Bowling Club	2003
Lynde House Museum	1812
Main Library Branch	2005
James Rowe House	1856
Whitby Seniors Activity Centre	1996
Spencer Community Centre	1877
Station Gallery	2004
Whitby Marina	2004

Fire Halls

Fire Hall #1	2006
Fire Hall #2	1989
Fire Hall #3	2004
Fire Hall #4	2002
Fire Hall #5 (HQ)	1995

Operations Facilities

Brock Street Pumping Station	1995
Cold Storage Building	2012
Garden Street Pumping Station	1996
Operations Centre	1992
Methane Monitoring Station	1989
Parks Lunch Building	1992
Parks Maintenance Building	1992
Salt and Sand Storage Dome One	1992
Salt and Sand Storage Dome Two	1992
Soils Storage Building	2009

Municipal Building

Whitby Municipal Building	1976

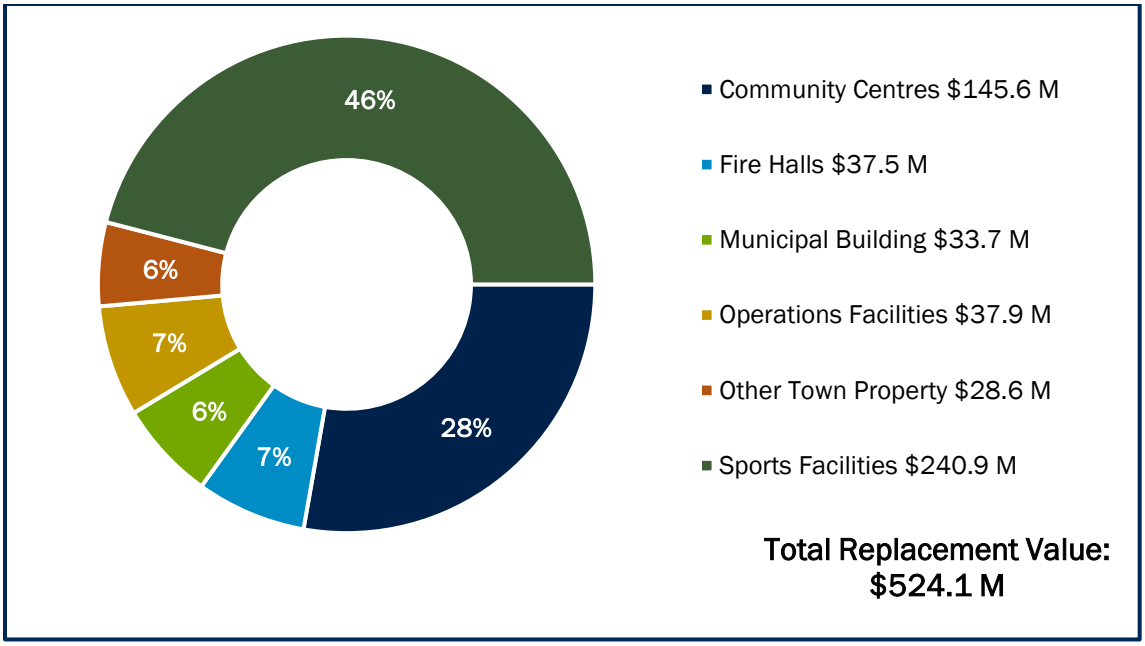
Sports Facilities

Civic Recreation Centre	1991
Iroquois Park Sports Complex	1979
Luther Vipond Memorial Arena	1953
McKinney Arena	2010
Whitby Iroquois Soccer Complex	2016

Other Town Properties

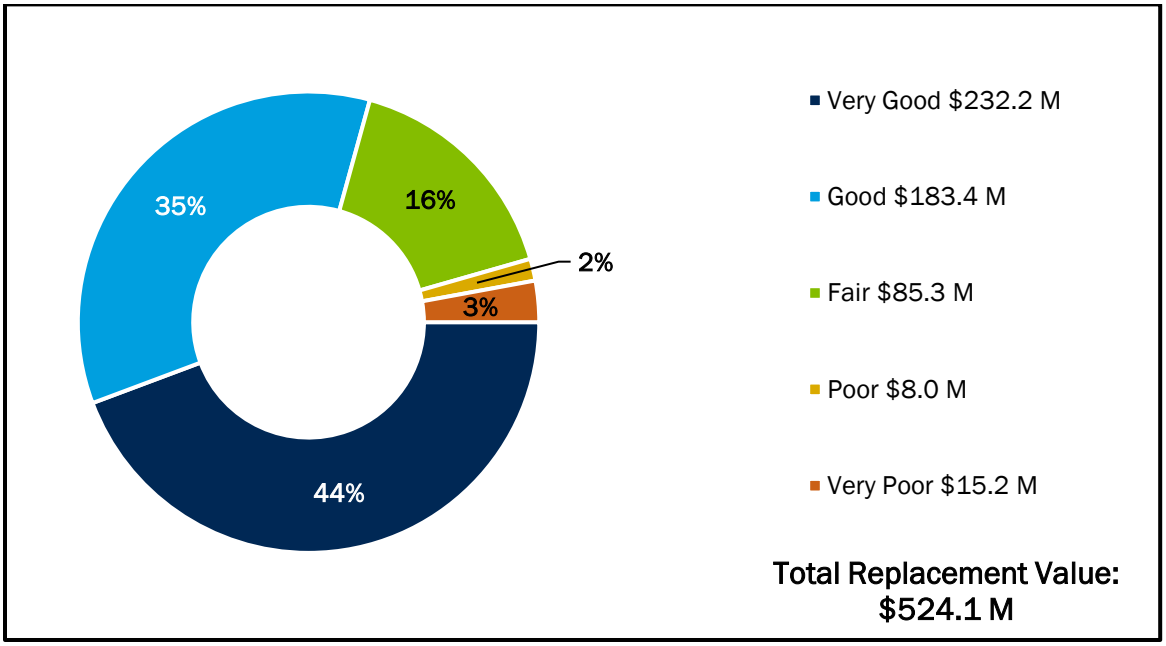
117 King Street	1877
316 Colborne Street West	1877
508 Colborne Street West	1953
Boat Storage Facility (1710 Charles Street)	1974
Boat Storage Facility (1712 Charles Street)	1972
Brooklin Day Care Centre	1968
Brooklin Garage	1952
Camp X	1941
Chamber of Commerce	1948
Groveside Cemetery	1951
Myrtle Fire Hall	1955
Myrtle Fire Hall Storage Building	1974
Historic Pumphouse	1904
1855 (Former Land Registry Office)	1873
Sea Cadet Building	1999
Whitby Animal Control	1983
Brooklin Memorial Park Washroom	1968
Cullen Park Washroom	1980
Heydenshore Park Washroom	2000
Peel Park Washroom	2010
Pringle Park Washroom	1990
Rotary Park Washroom	1981
Willow Park Washroom	2011

Replacement Value of Facilities



The replacement value represents the proposed budget amount to replace an item in the year of publication (2024). Facilities replacement costs are regularly re-evaluated by a consultant and individual components have had their market value estimated by Facilities staff.

Condition Distribution by Replacement Value



As of December 31, 2023, 95% of Facilities' assets by replacement value ($500.9 M) were in Fair or better condition. Condition of Facilities assets was evaluated during the inventory project which took place between 2018 and 2019, and Building Condition Audits are currently being conducted by technical consultants, to evaluate the conditions and replacement costs of individual building components. The majority of these enhanced condition assessments will be available in 2025.

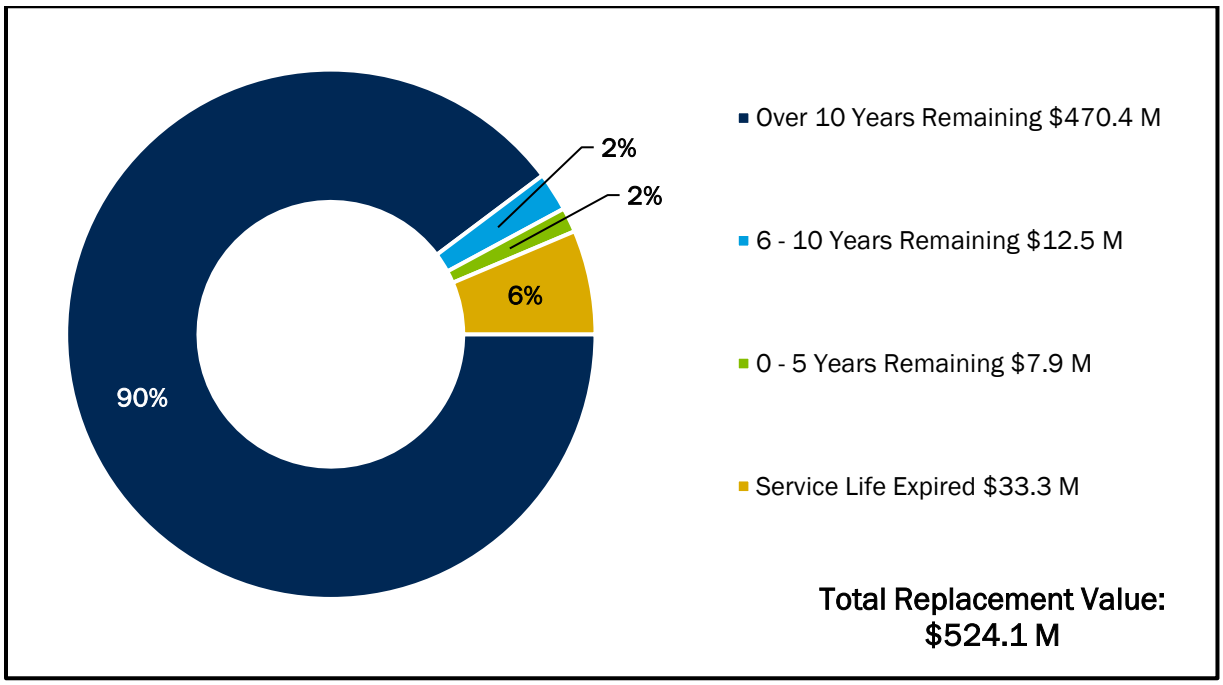
Asset Health Rating 2024

Good "B"

Condition Distribution for Facilities

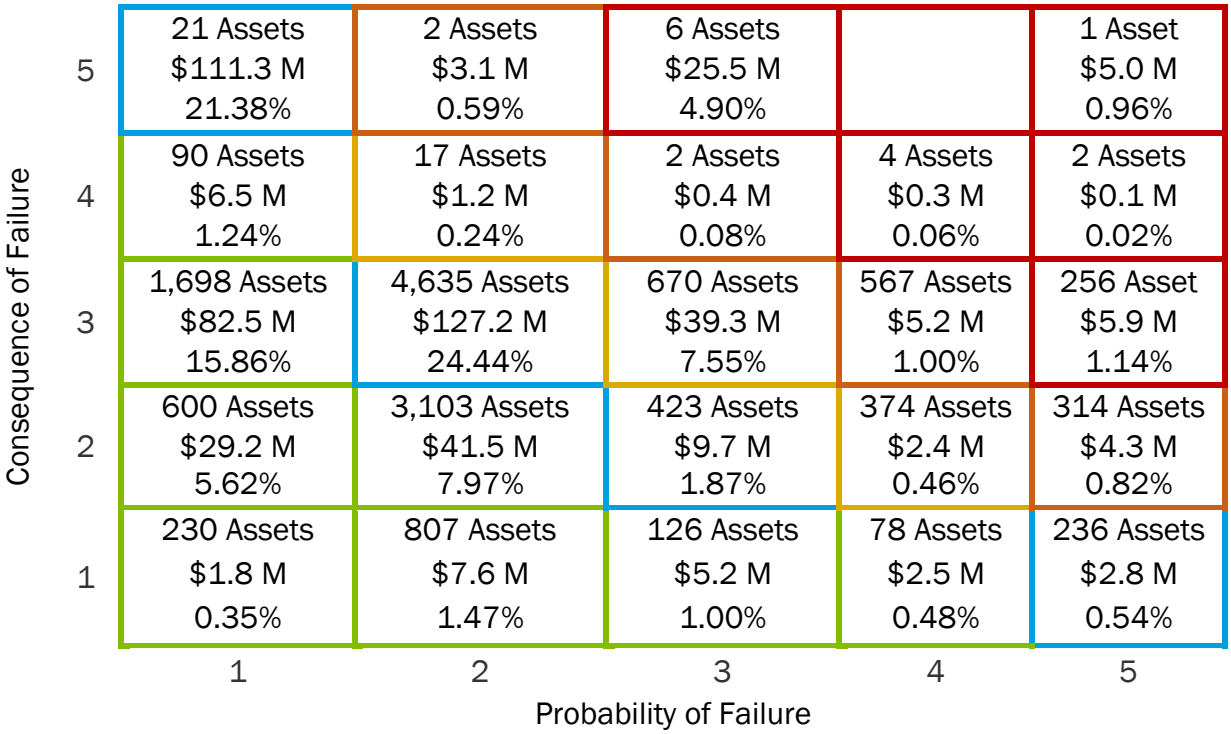
5	**Very Good**	Building components have no defects and are in as-new condition.
4	**Good**	Minor defects are becoming apparent in superficial finishes.
3	**Fair**	Elements likely to become poor within a few years if not addressed.
2	**Poor**	Components are failing and require constant repairs and parts.
1	**Very Poor**	Elements have failed and are at the end of their useful life.

Useful Life Remaining for Facilities Assets



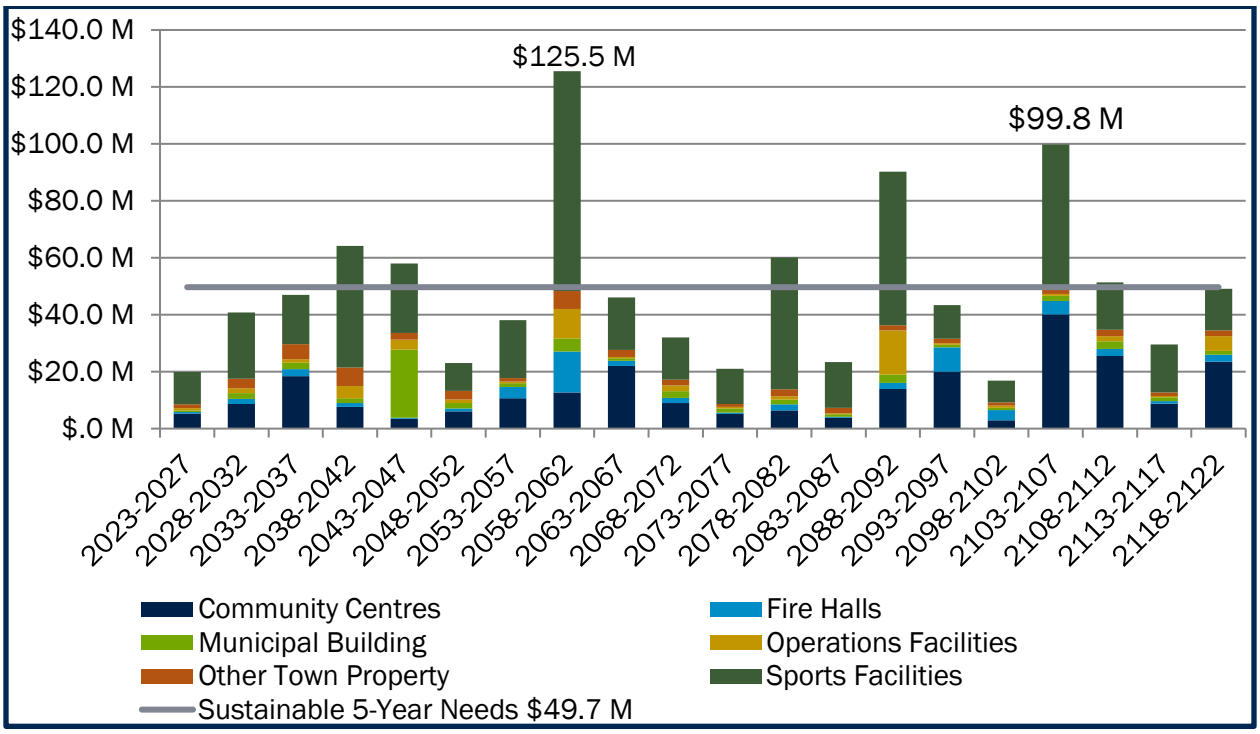
The above chart shows the remaining useful life in five-year increments of Town assets. Assets that have exceeded their useful life may still be in good condition. Most Facility assets (90%) have more than 10 years of useful life remaining.

Risk Levels for Facilities Assets



Risk levels for Facilities assets depend on the operational purpose of the asset (consequence of failure) and the condition of the asset (probability of failure). An asset such as a Fire Hall with a high consequence of failure would appear in the top right portion of the above graph if it also had a poor condition rating (high probability of failure). As of December 31, 2023, 34.0% of Facilities assets by replacement value ($176.8 M) are considered low-risk, 59.0% of Facilities assets by replacement value ($306.8 M) are considered medium-risk, and 7.0% of Facilities assets by replacement value ($36.8 M) are considered high-risk.

Replacement Profile for Facilities Assets



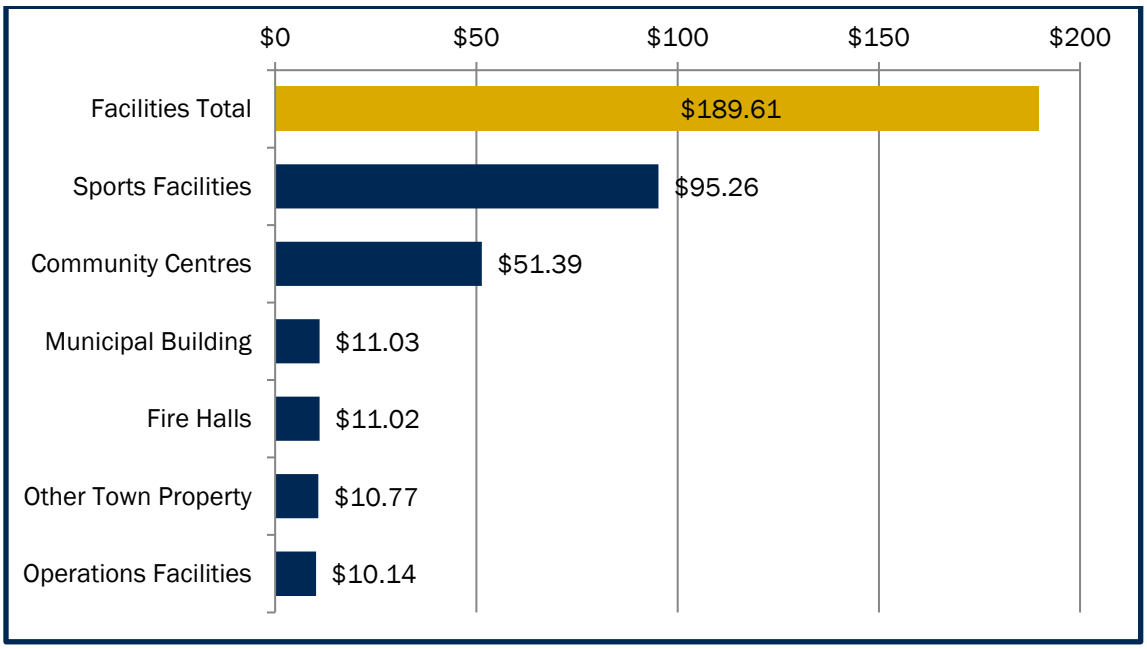
Replacement needs are based on existing lifecycle projections for Facilities assets and the projected costs may be reduced upon re-evaluation of lifecycles, capturing maintenance and repair activities, or new condition assessments.

10-Year Reinvestment	10-Year Total Requirement with Backlog	10-Year Capital Budget
Total Reinvestment (2024 $*)	$74,721,692	$54,106,284

*Values are in 2024 Dollars

Capital investments in the next 10 years include only spending allocated to Asset Management – growth investment is not included.

Annual Requirement per Household



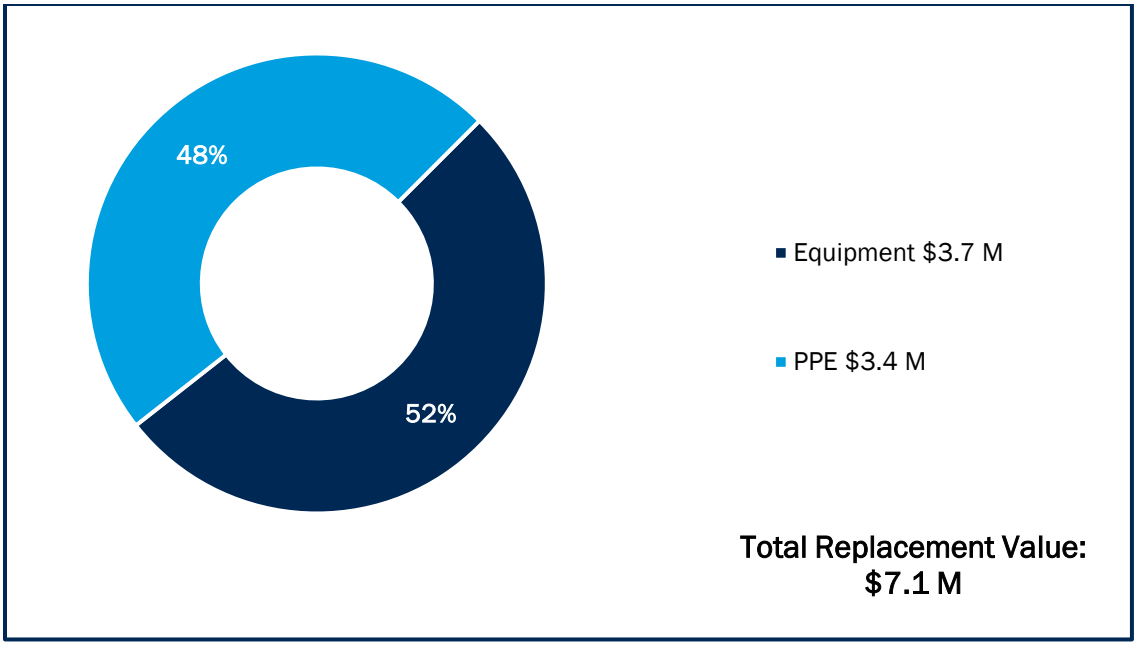
The annual requirement represents the amount required to fully fund a given service area's replacement and lifecycle needs. The above chart shows this amount distributed over the 52,391 households in the Town.

B. Fire Equipment 2024 Overview

Fire Equipment Inventory by Quantity

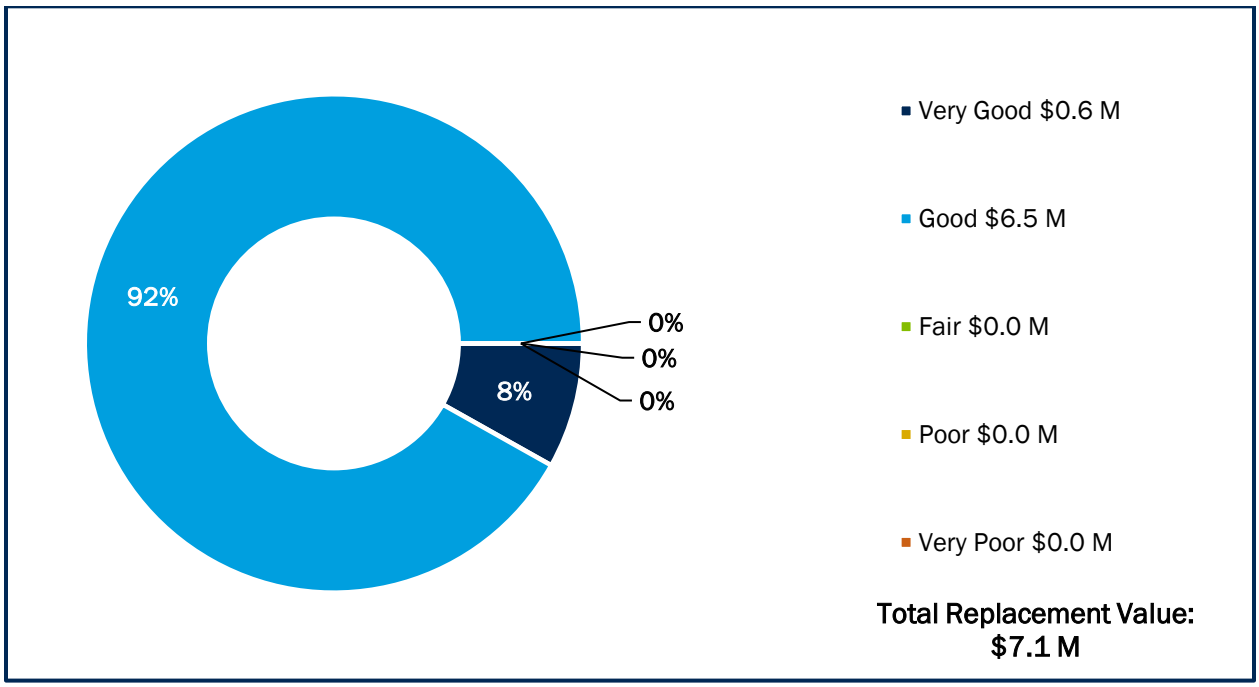
PPE		Equipment	
Breathing Air	468	Pumper Equipment	7
Bunker Gear	266	Aerial Equipment	2
		Communications	256

Replacement Value of Fire Equipment



The replacement value represents the proposed budget amount to replace an item in the year of publication (2024). Fire Equipment replacement costs are regularly re-evaluated by Fire staff.

Condition Distribution by Replacement Value



Asset Health Rating 2024

Good

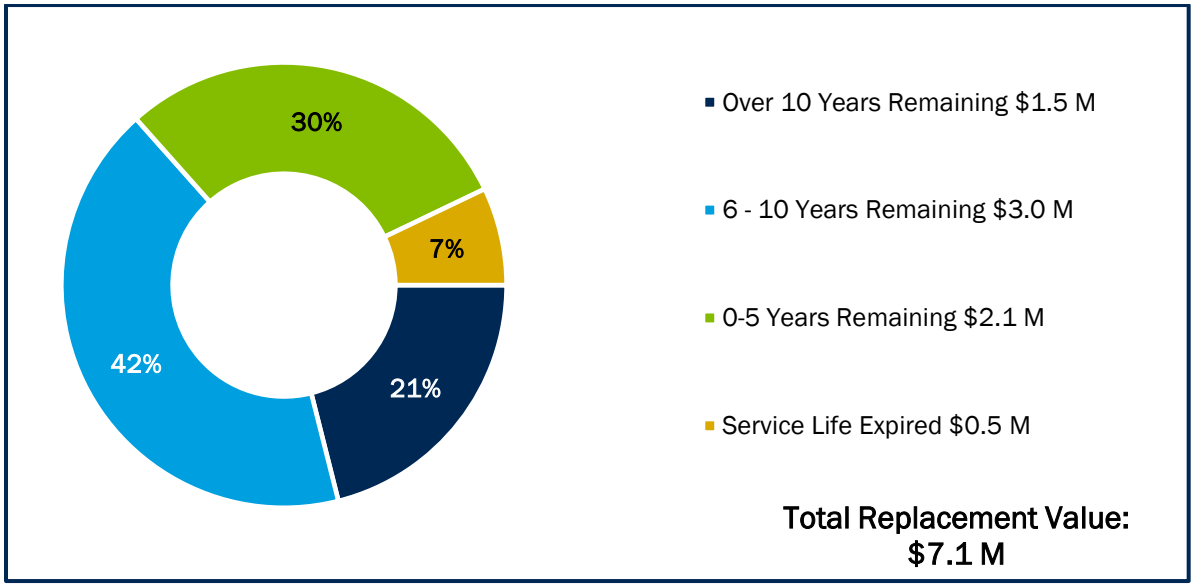
"B"

As of December 31, 2023, 100% of Fire Equipment assets by replacement value ($7.1 M) were in Good or better condition. Condition of Fire Equipment assets was initially evaluated during the inventory project which took place between 2018 and 2019, and Whitby Fire and Emergency Services staff regularly inspect Fire Equipment to ensure health and safety (NFPA) regulatory requirements are met.

Condition Distribution for Fire Equipment

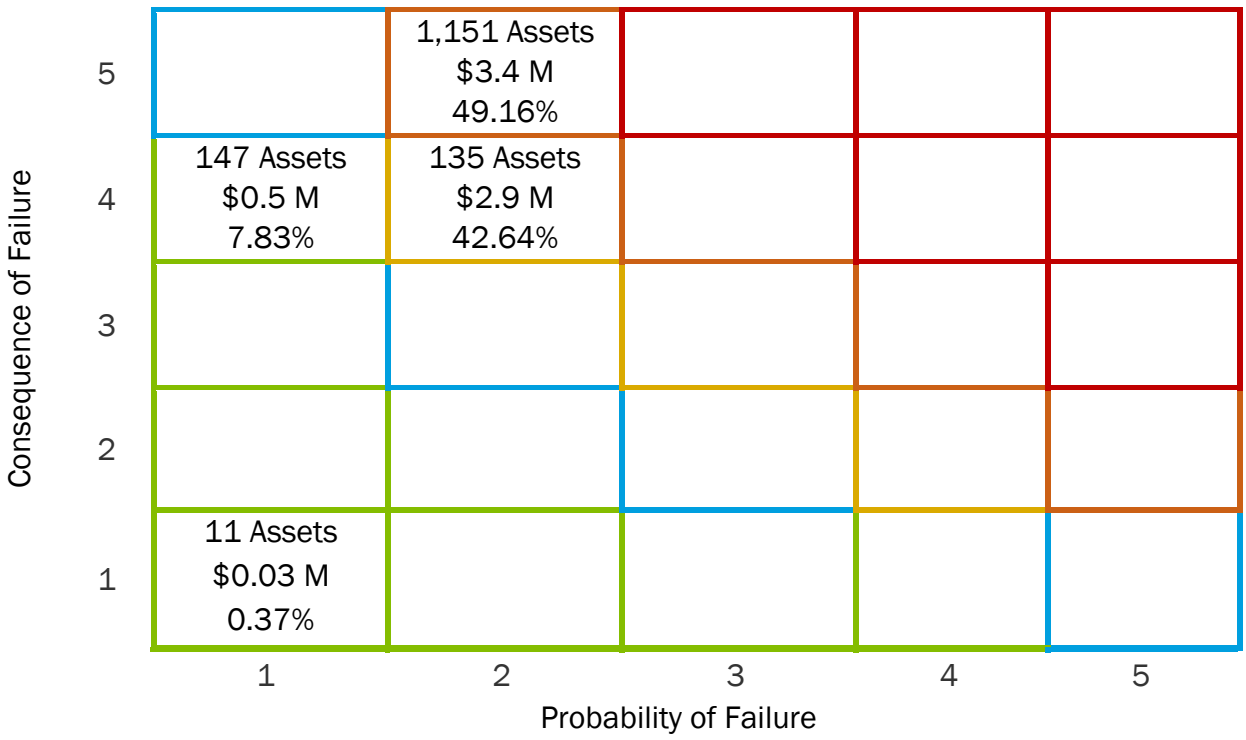
5	**Very Good**	No defects and are in as-new condition.
4	**Good**	Minor defects are becoming apparent in superficial finishes.
3	**Fair**	Elements likely to become poor within a few years if not addressed.
2	**Poor**	Components are failing and require constant repairs and parts.
1	**Very Poor**	Elements have failed and are at the end of their useful life.

Useful Life Remaining for Fire Equipment Assets



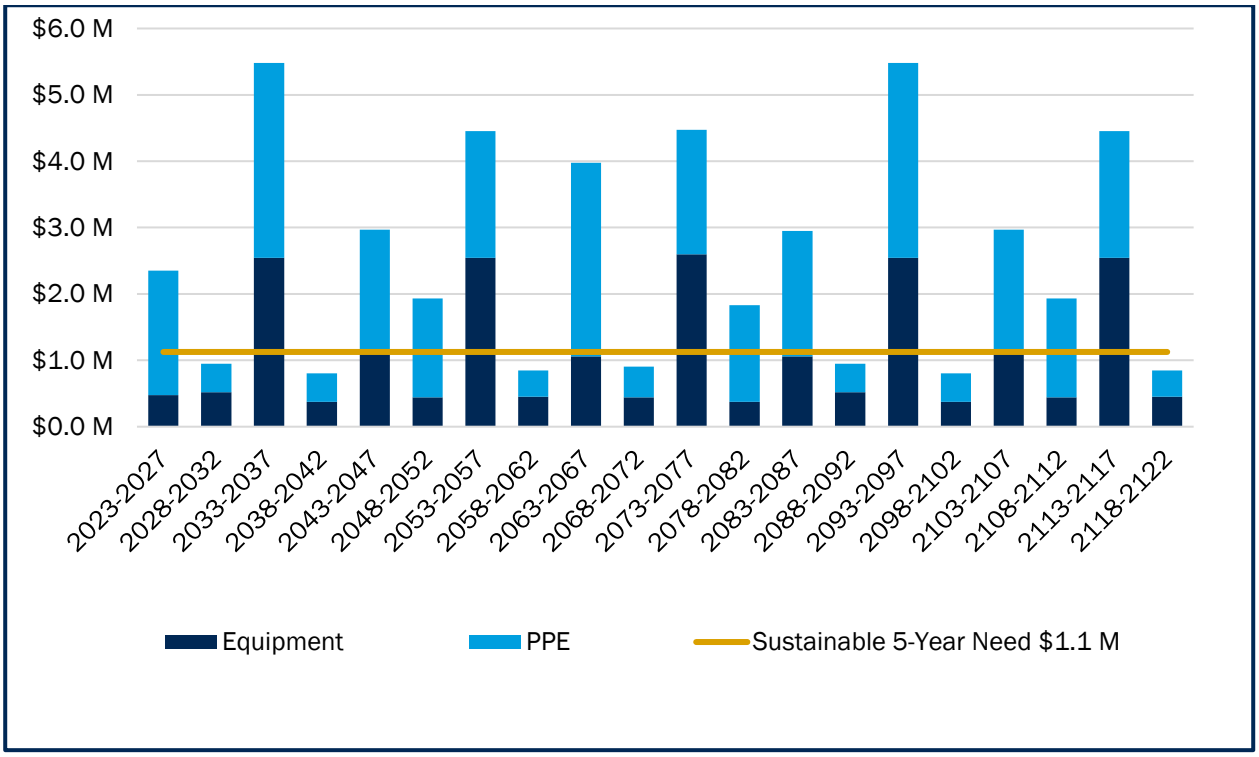
The above chart shows the remaining useful life in five-year increments of Fire Equipment assets. Assets that have exceeded their useful life may still be in good condition. 21 % of Fire Equipment assets have more than 10 years of useful life remaining, and 63% have more than 5 years of useful life remaining.

Risk Levels for Fire Equipment Assets



Risk levels for Fire Equipment assets depend on the operational purpose of the asset (consequence of failure) and the condition of the asset (probability of failure). An asset such as Bunker Gear with a high consequence of failure would appear in the top right portion of the above graph if it also had a poor condition rating (high probability of failure). Fire Equipment assets are typically governed by NFPA guidelines and as such are replaced if they reach Fair condition. As of December 31, 2023, 8.2% of Fire Equipment assets by replacement value ($0.6 M) are considered low-risk, 91.8% of Fire Equipment assets by replacement value ($6.3 M) are considered medium-risk.

Replacement Profile for Fire Equipment Assets



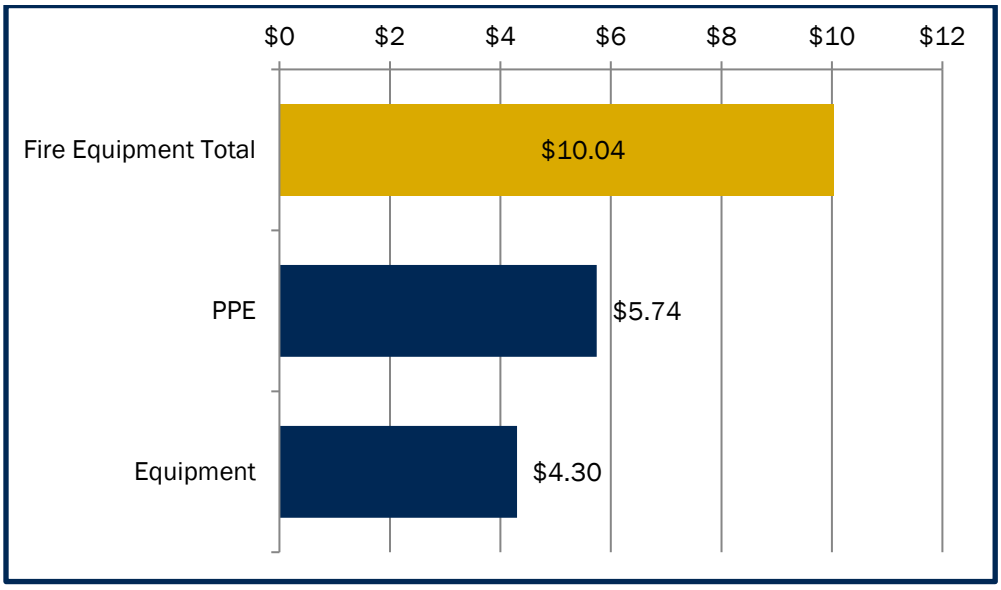
Replacement needs are based on existing lifecycle projections for Fire Equipment assets and the projected costs may be reduced upon re-evaluation of lifecycles, capturing maintenance and repair activities, or new condition assessments.

10-Year Reinvestment	10-Year Total Requirement	10-Year Capital Budget
Total Reinvestment (2024 $*)	$3,300,647	$4,745,718

*Values are in 2024 Dollars

Capital investments in the next 10 years include only spending allocated to Asset Management – growth investment is not included.

Annual Requirement per Household



The annual requirement represents the amount required to fully fund a given service area's replacement and lifecycle needs. The above chart shows this amount distributed over the 52,391 households in the Town.

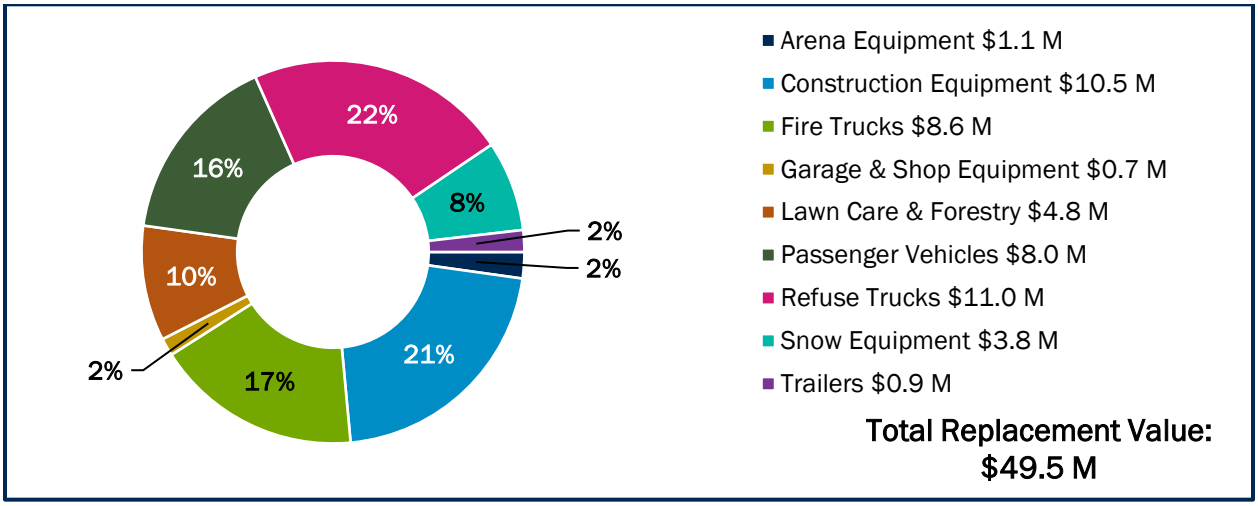
C. Fleet 2024 Overview

Fleet Inventory by Quantity

Arena Equipment	
Ice Edger	3
Ice Resurfacer	8
Construction Equipment	
Dump Trucks	29
Gradall	1
Loader	8
Mobile Compressor	9
Pavement Grinder	2
Street Sweeper	3
Street Flusher	1
Utility	11
Vacuum Truck	4
Fire Trucks	
Aerial	2
Pumper	8
Rescue	2
Tanker Trucks	1
Fire Car	1
Garage and Shop Equipment	
Cleaning Equipment	28
Fuel Pump	3
Hoist	5
Overhead Crane	2
Saws	2
Sweeper Scrubber	2
Tools	30
Welders	4

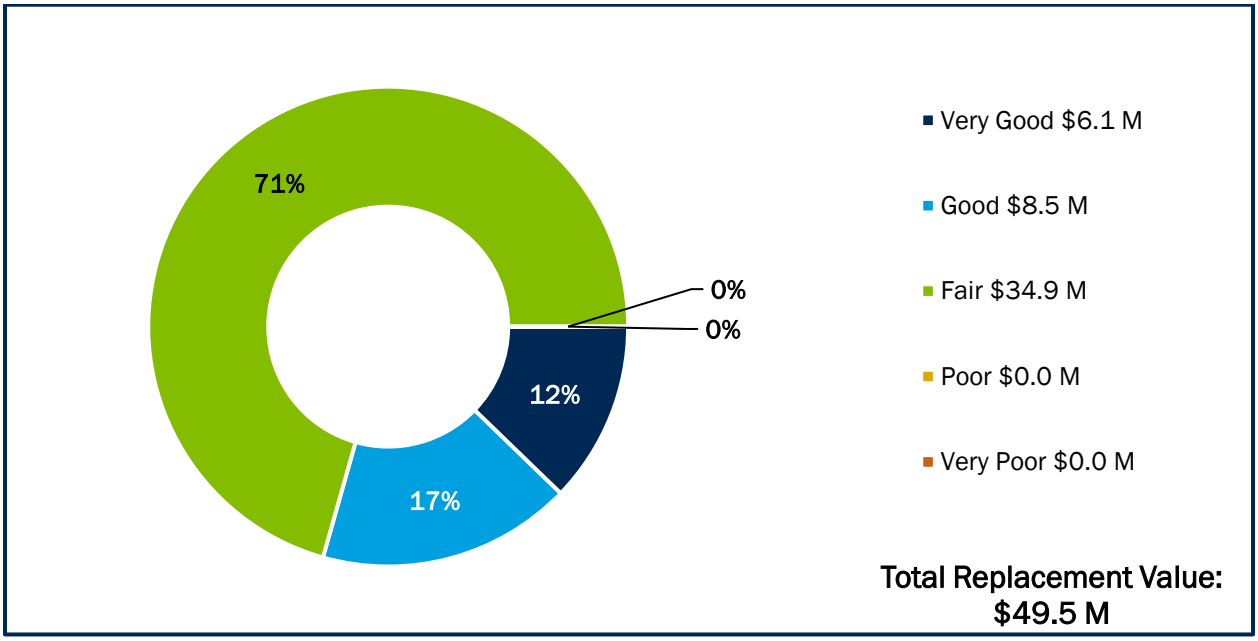
Lawn Care & Forestry	
Bucket Truck	2
Chipper Truck	3
Crane Truck	1
Front Mount Mowers	5
Litter Loader	2
Rotary Mowers	20
Saws	31
Small Equipment	43
Tractors	6
Turf Care Machines	102
Turf Topper	4
Passenger Vehicles	
Cars	2
Equipment	27
Pick-up Trucks	62
SUVs	28
Vans	11
Refuse Trucks	
Rear Loader	3
Side Loader	24
Snow Equipment	
Plows	9
Sanders	1
Sidewalk Machines	15
Snow Blowers	4
Trailers	
Boat Trailers	4
Ice Painting Trailer	1
Utility Trailers	15
Water Tanker Trailers	7

Replacement Value of Fleet



The replacement value represents the proposed budget amount to replace an item in the year of publication (2024). Fleet replacement costs are regularly re-evaluated by Town Staff and correspond where possible to budgeted amounts for new assets. Where possible and practical, the costs of potential fleet electrification have been incorporated into replacement cost estimates.

Condition Distribution by Replacement Value



Condition of Fleet assets is evaluated regularly by staff through visual and mechanical inspections. 100% of Fleet assets by replacement value ($49.5 M) are in Fair or better condition, and 29% of Fleet assets by replacement value ($14.6 M) are in Good or better condition. No assets on the road or in use by staff are in less than Fair condition.

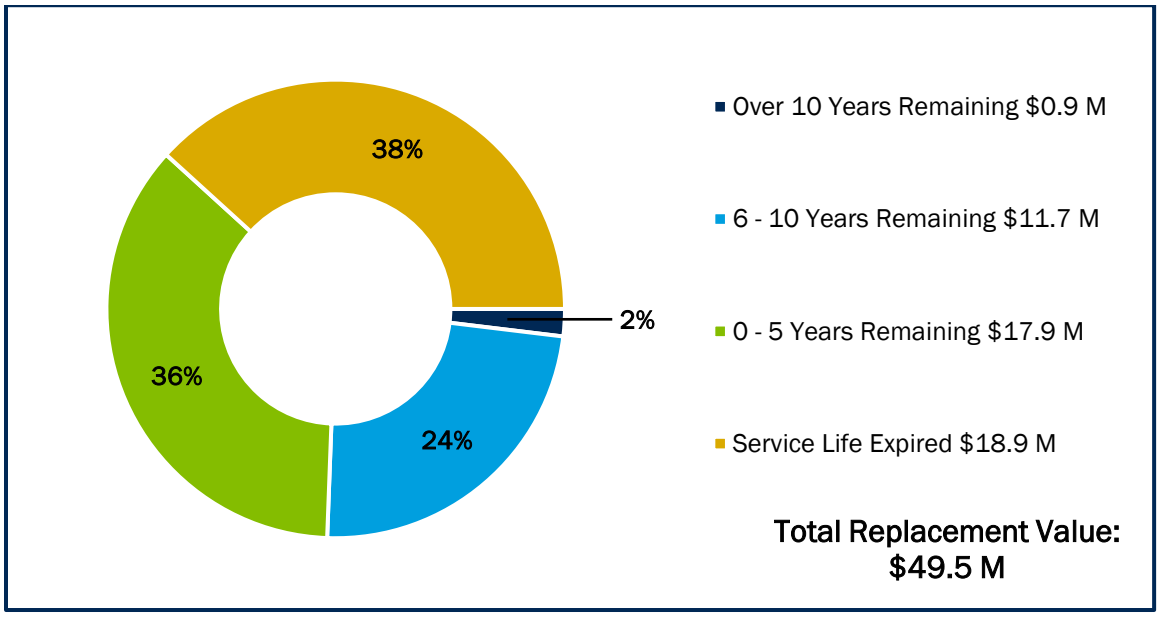
Asset Health Rating 2024

Fair "C"

Condition Distribution for Fleet

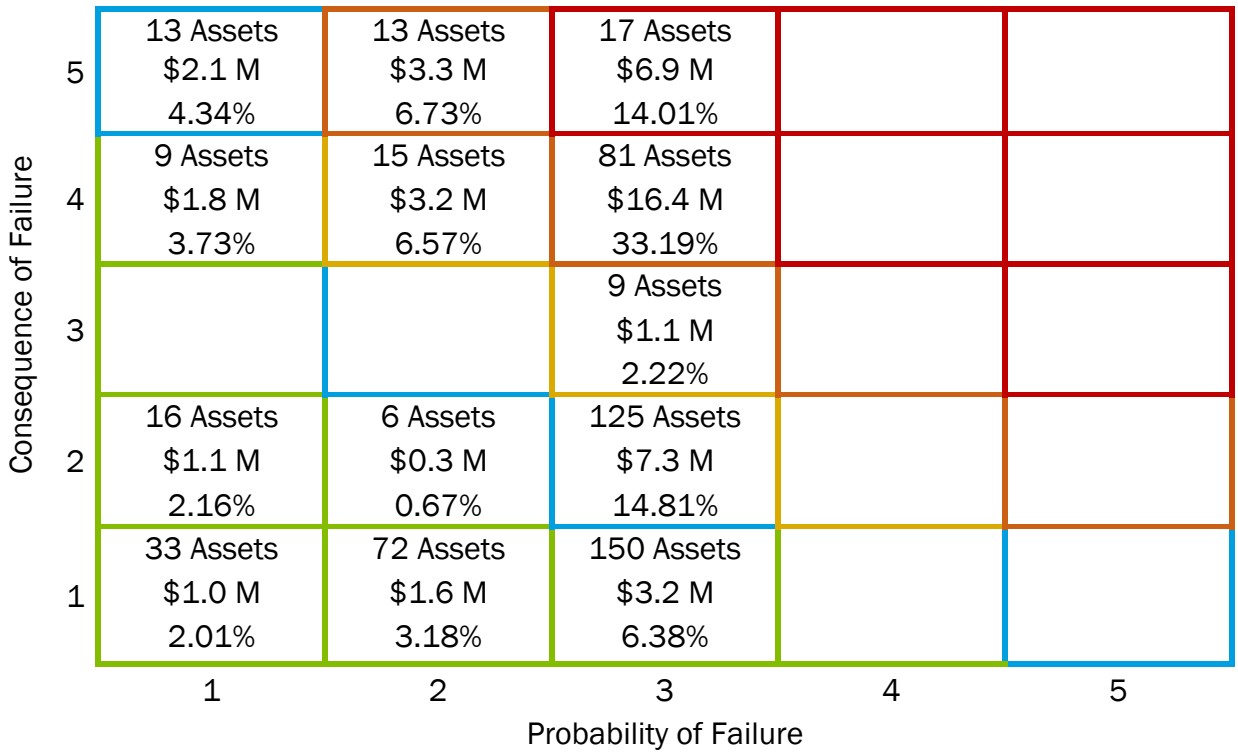
5	**Very Good**	The asset is typically new with good public appearance.
4	**Good**	The asset is still in good condition with good public appearance.
3	**Fair**	The asset is showing signs of corrosion, increased maintenance costs and down-time in order to meet governing standards. Poor visual appearance.
2	**Poor**	Assets are repaired or replaced if they reach this level.
1	**Very Poor**	Assets do not reach this level.

Useful Life Remaining for Fleet Assets



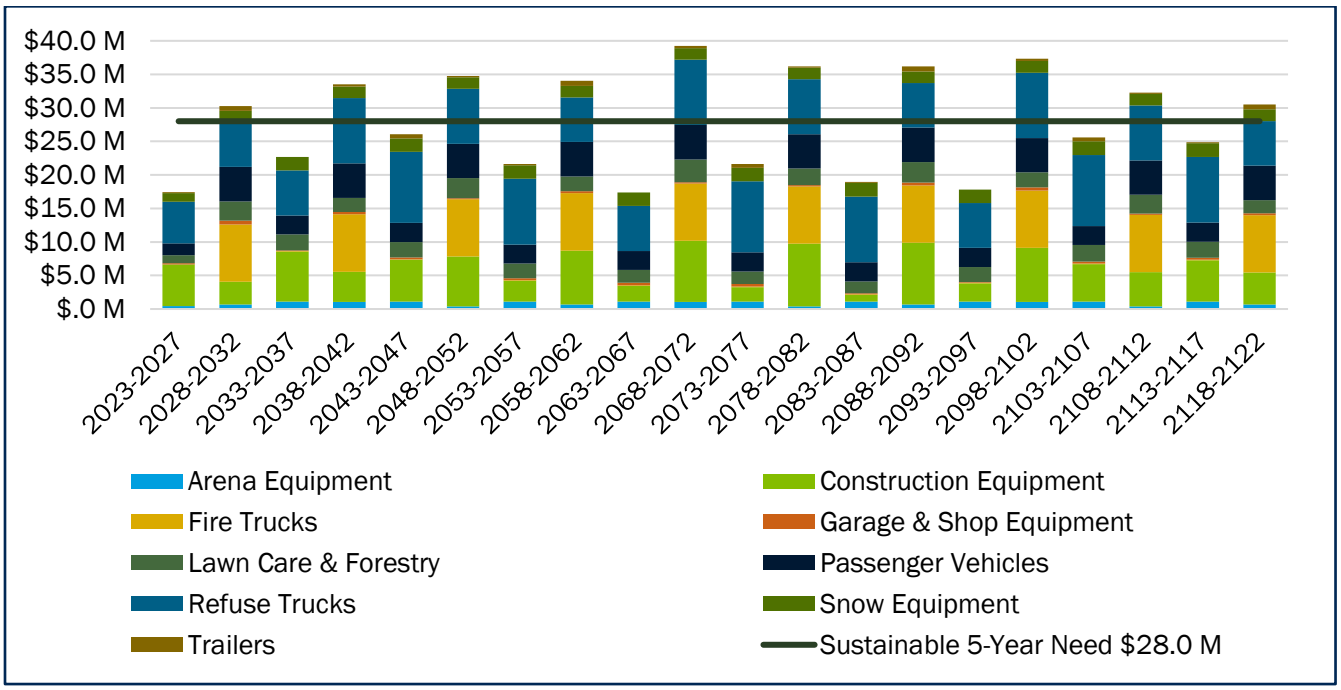
2% of Fleet assets by replacement cost have more than 10 years of useful life remaining, and 26% have more than 5 years of useful life remaining. Most Fleet assets have an estimated life span of 10 or fewer years. Any assets that have exceeded their useful life are still in Fair or better condition.

Risk Levels for Fleet Assets



The Risk Levels chart shows the operational consequence of failure relative to the condition-dependent probability of failure. Essential assets such as Fire Trucks rank higher in consequence of failure and appear higher on the chart. As of December 31, 2023, 18.1% of Fleet assets by replacement value ($9.0 M) are considered low-risk, 67.9% of Fleet assets by replacement value ($33.6 M) are considered medium-risk, and 14.0% of Fleet assets by replacement value ($6.9 M) are considered high-risk.

Replacement Profile for Fleet Assets



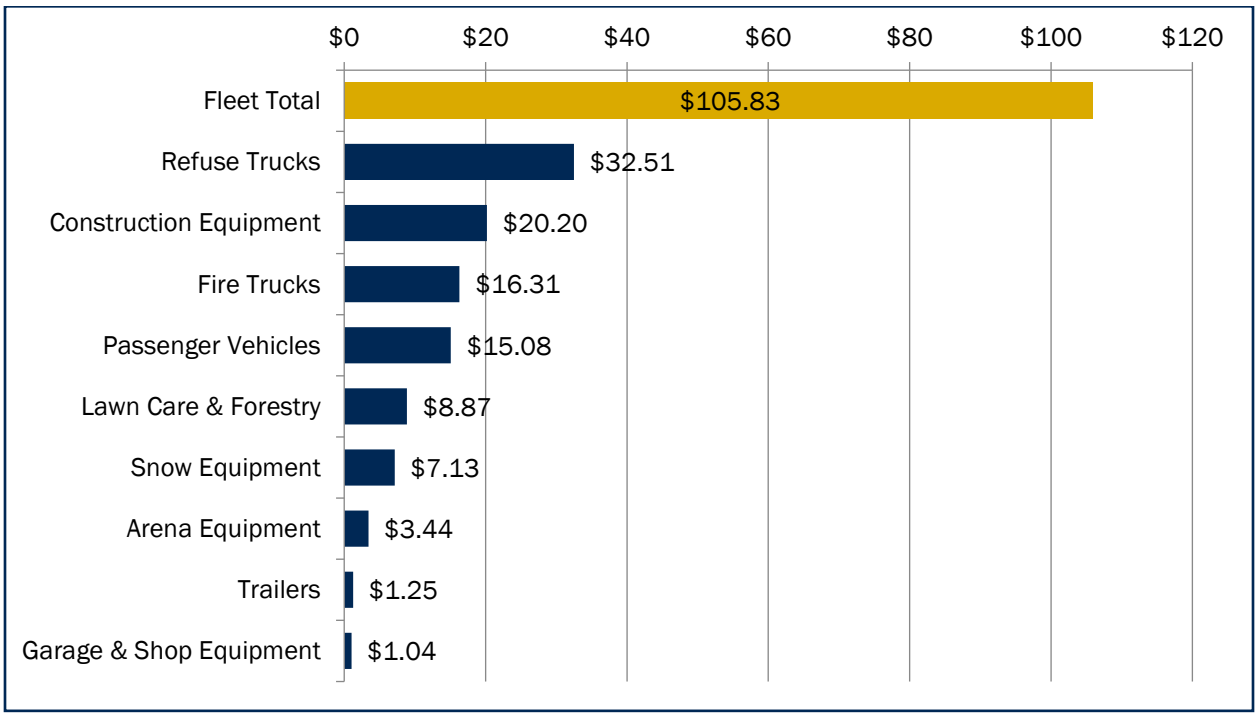
Replacement needs are based on existing lifecycle projections for Fleet assets and the projected costs may be reduced upon re-evaluation of lifecycles, capturing maintenance and repair activities, or new condition assessments.

10-Year Reinvestment	10-Year Total Requirement	10-Year Capital Budget
Total Reinvestment (2024 $*)	$47,675,675	$43,305,673

*Values are in 2024 Dollars

Capital investments in the next 10 years include only spending allocated to Asset Management – growth investment is not included.

Annual Requirement per Household



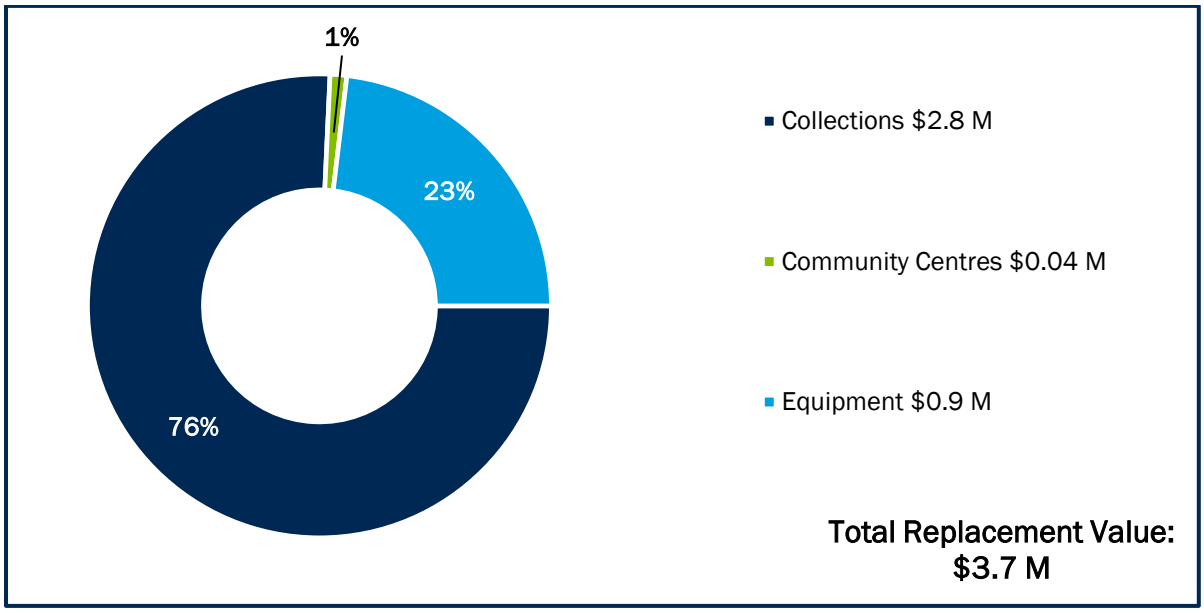
The annual requirement represents the amount required to fully fund a given service area's replacement and lifecycle needs. The above chart shows this amount distributed over the 52,391 households in the Town.

D. Library 2024 Overview

Library Inventory by Quantity

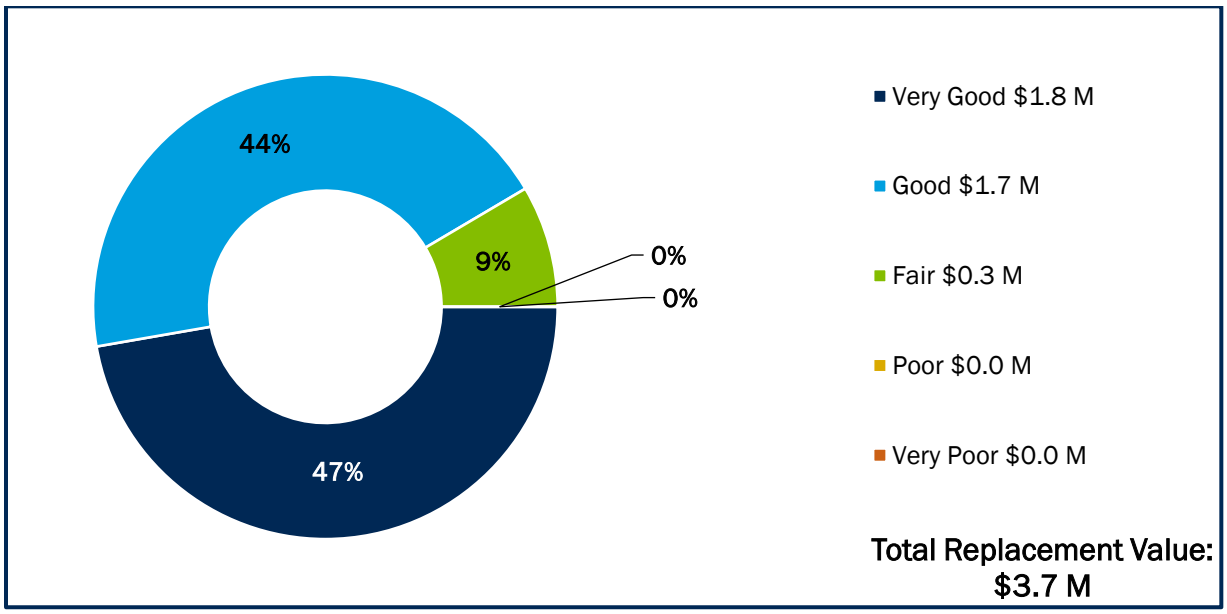
Collections	
Various	184,391
Equipment	
Desktop Laptop	216
Monitors	142
Network Hardware	94
Peripherals	181
Maker Gear	14
Servers	15
Power and Charging	25
Community Centres	
Various Equipment/Furniture	202

Replacement Value of Library Assets



The replacement value represents the proposed budget amount to replace an item in the year of publication (2024). Library replacement costs are regularly re-evaluated by a consultant and individual components have had their market value estimated by Library staff.

Condition Distribution by Replacement Value



As of December 31, 2023, 100% of Library assets were in Fair or better condition, and 91% of Library assets were in Good or better condition. Condition of Library assets was initially evaluated during the inventory project which took place between 2018 and 2019. Individual assets were visually assessed by students. Library Assets' conditions are regularly reevaluated by Library staff.

Asset Health Rating 2024

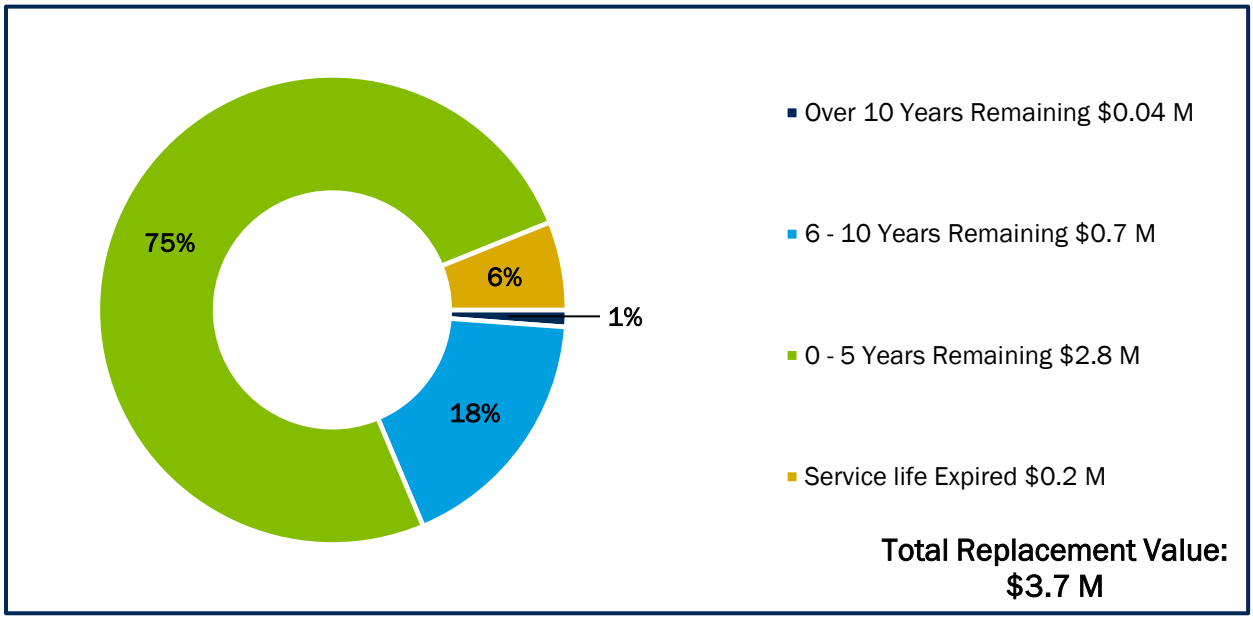
Good

"B"

Condition Distribution for Library

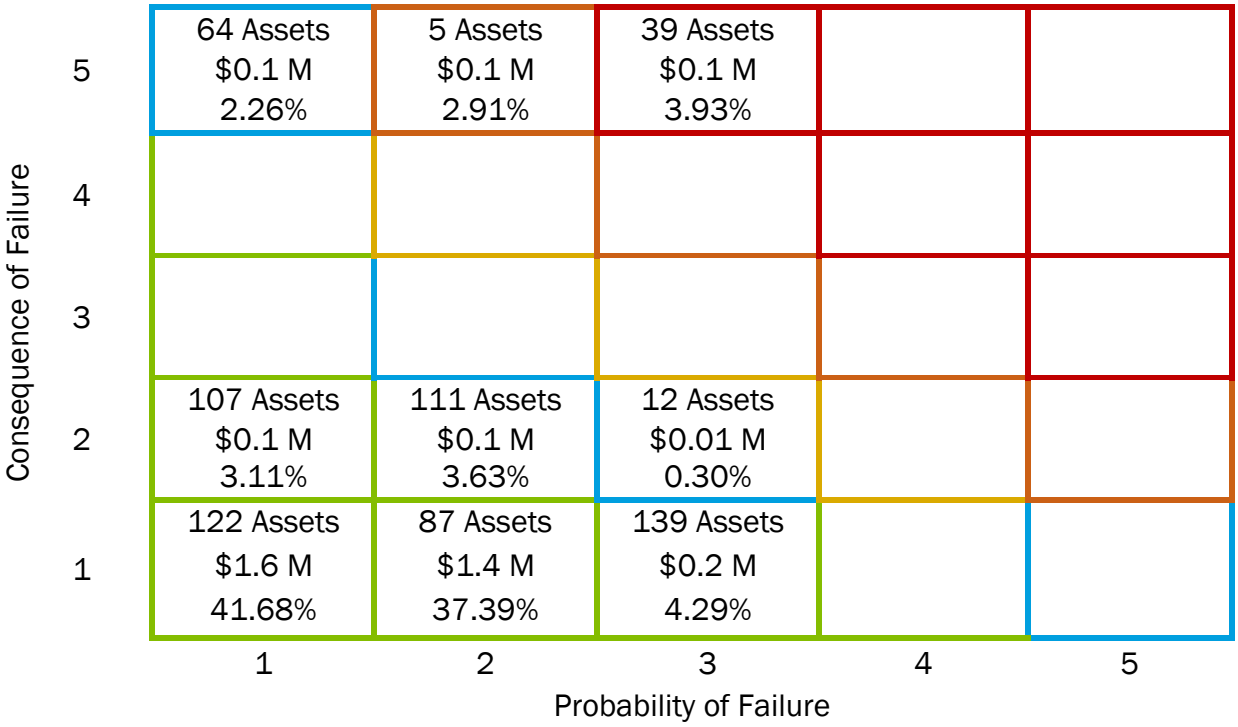
5	**Very Good**	The equipment is in new condition and meets or exceeds needs.
4	**Good**	Minor deficiencies are fixed so that the asset remains in service.
3	**Fair**	Equipment is scheduled to be replaced when in fair condition.
2	**Poor**	Assets are disposed of when they are in less than fair condition.
1	**Very Poor**	Assets are disposed of when they are in less than fair condition.

Useful Life Remaining for Library Assets



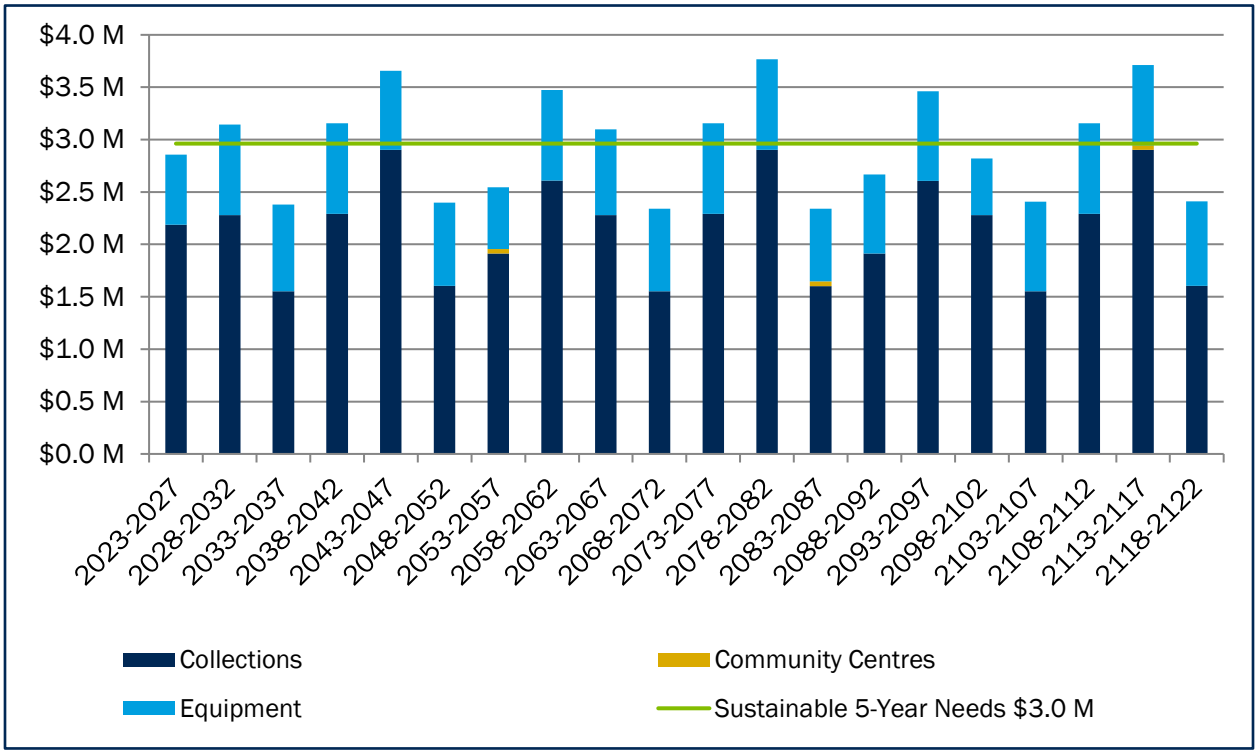
The above chart shows the remaining useful life in five-year increments of Town assets. Assets that have exceeded their useful life may still be in good condition. Most Library assets (75%) have 0-5 years of useful life remaining.

Risk Levels for Library Assets



Risk levels for Library assets depend on the operational purpose of the asset (consequence of failure) and the condition of the asset (probability of failure). An asset such as a Fire Hall with a high consequence of failure would appear in the top right portion of the above graph if it also had a poor condition rating (high probability of failure). As of December 31, 2023, 90.2% of Library assets by replacement value ($3.2 M) are considered low-risk, 5.7% of Library assets by replacement value ($0.2 M) are considered medium-risk, and 4.1% of Library assets by replacement value ($0.1 M) are considered high-risk.

Replacement Profile for Library Assets



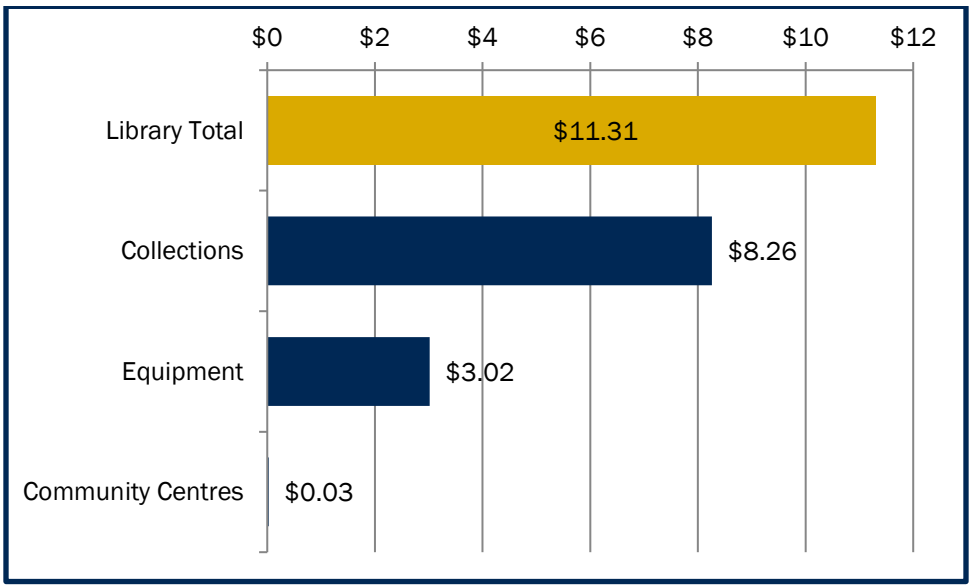
Replacement needs are based on existing lifecycle projections for Library assets and the projected costs may be reduced upon re-evaluation of lifecycles, capturing maintenance and repair activities, or new condition assessments.

10-Year Reinvestment	10-Year Total Requirement	10-Year Capital Budget
Total Reinvestment (2024 $*)	$5,712,430	$9,576,700

*Values are in 2024 Dollars

Capital investments in the next 10 years include only spending allocated to Asset Management – growth investment is not included.

Annual Requirement per Household



The annual requirement represents the amount required to fully fund a given service area's replacement and lifecycle needs. The above chart shows this amount distributed over the 52,391 households in the Town.

E. Parks 2024 Overview

Parks Inventory by Quantity

Amenities and Furniture

Amphitheatre	1
Shade Structure	9
Picnic Shelter	32
Fencing	56 km
Retaining Wall	839 m
Misc. Park Amenities	836
Signage	738
Lighting	307
Seating	933
Sports Equipment Bunker	15
Fountains	3

Arboriculture & Horticulture

Garden Beds	5,524 m^2
Parks Trees	14,000 (est.) [3]

Paved Surfaces

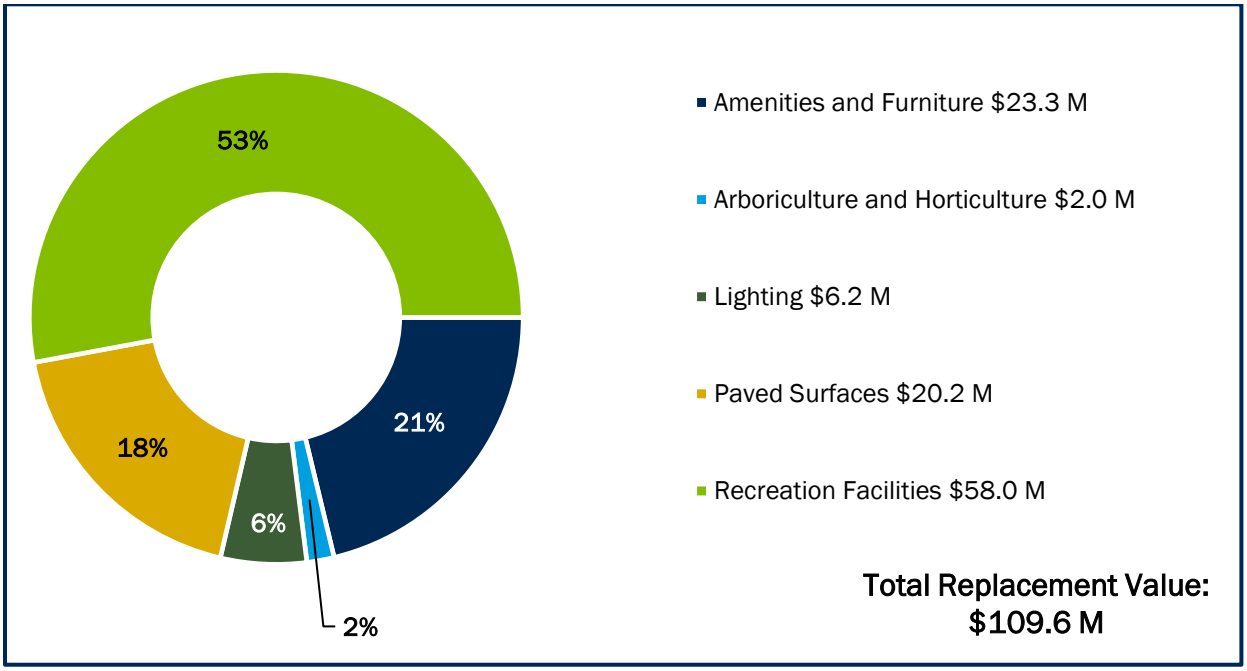
Access Drives	1552 m^2
Trails and Walkways	142,986 m^2
Parking Lots	90,595 m^2

Recreation Facilities

Splash Pad	18
Lacrosse Box	2
Bocce Court	4
Skateboard Park	3
Soccer Pitch	58
Play Space	255
Baseball Diamond	44
Basketball Court	36
Multi-Use Court	3
Tennis Court	35
Pickleball Court	3

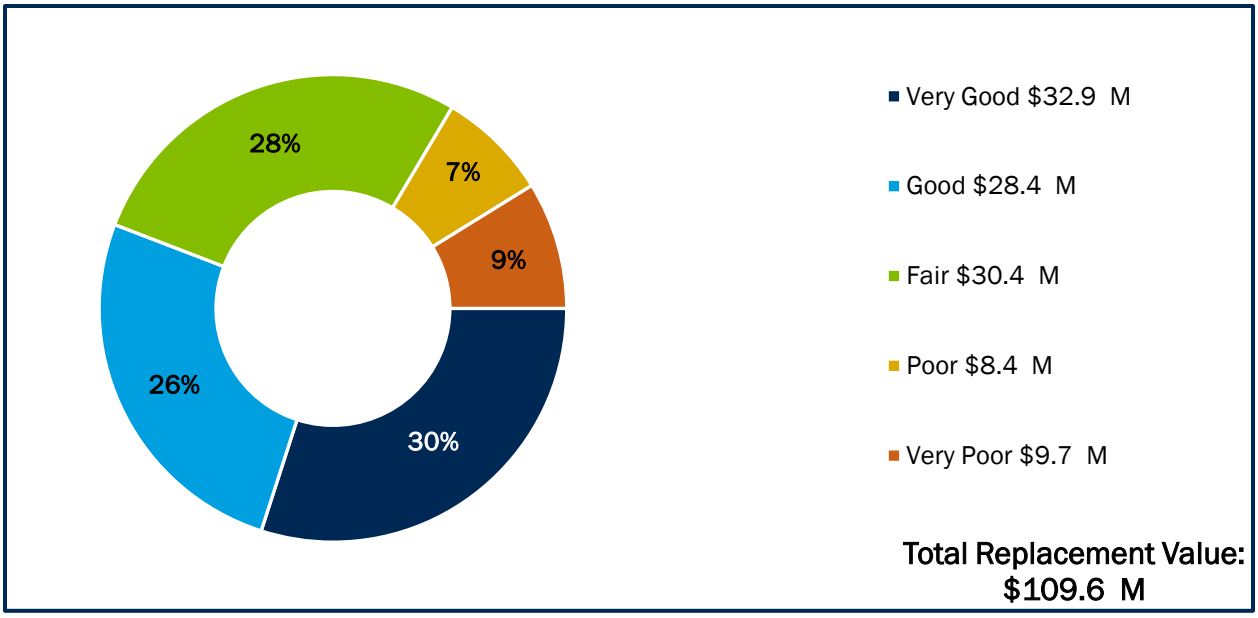
[3] Parks Trees have not been fully inventoried

Replacement Value of Parks



The replacement value represents the proposed budget amount to replace an item in the year of publication (2024). Parks replacement costs are regularly re-evaluated by a consultant and individual components have had their market value estimated by Parks staff.

Condition Distribution by Replacement Value



As of December 31, 2023, 84% of Parks assets by replacement value ($109.8 M) are in Fair or better condition.

Conditions of Parks assets are evaluated regularly for health and safety, as well as for condition assessment as described in Table 13 below.

Asset Health Rating 2024

Fair

"C"

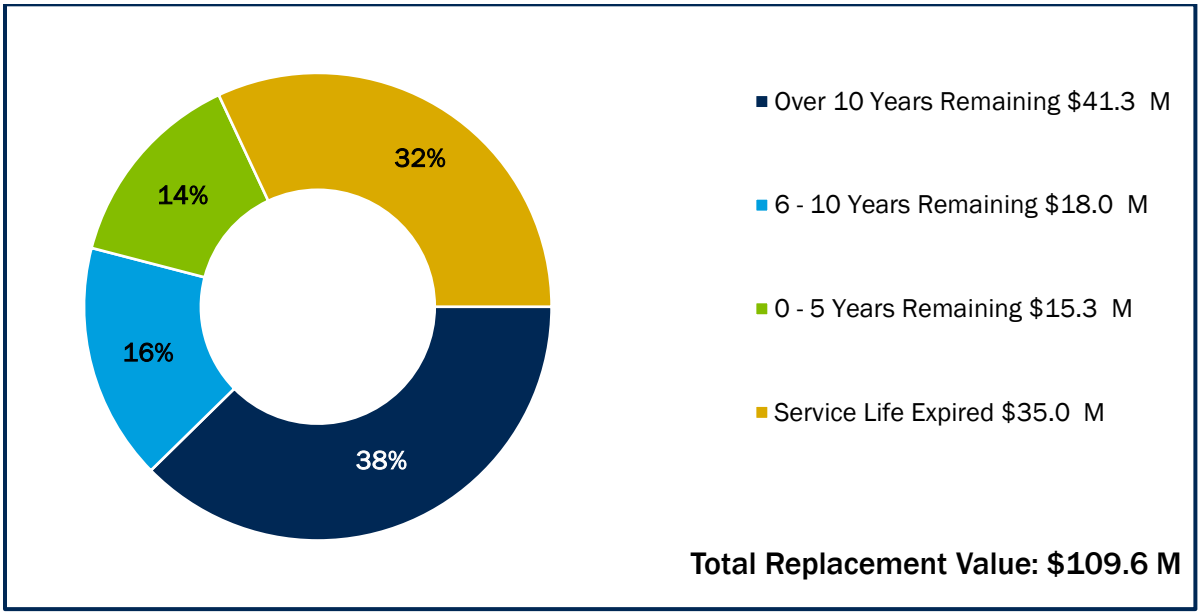
Table 16 Inspection processes for Parks assets

Asset	Inspection Frequency	Previous Year of Inspection	Inspection Method
Parks Assets (Overall)	Parks are evaluated on a monthly basis for safety and maintenance	2023	Parks Operations staff visually inspect parks
Parks Assets (Individual)	Inspected annually	2022	Summer Students visually inspect individual Parks assets

Condition Distribution for Parks

5	**Very Good**	The asset is typically new or well-maintained without wear or damage.
4	**Good**	The asset still has good public appearance with normal wear.
3	**Fair**	The asset is showing minor defects.
2	**Poor**	Asset has defects and needs more maintenance and repair.
1	**Very Poor**	Assets have failed and are at the end of their useful life.

Useful Life Remaining for Parks Assets



The above chart shows the remaining useful life in five-year increments of Town assets. Assets that have exceeded their useful life may still be in good condition. Most Parks assets (68%) are within their expected service life.

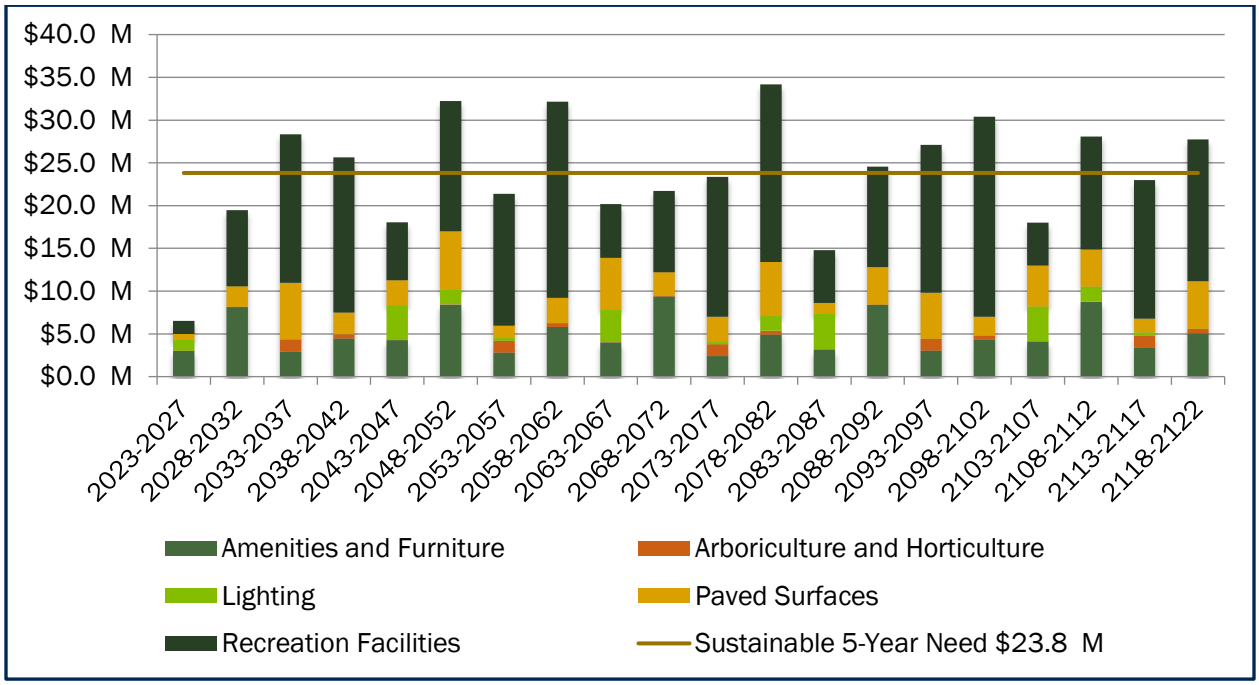
Risk Levels for Parks Assets

Consequence of Failure	1	2	3	4	5
5					
4	102 Assets $19.9 M 19.19%	88 Assets $17.1 M 16.49%	80 Assets $14.8 M 14.32%	25 Assets $3.4 M 3.29%	13 Assets $1.3 M 1.28%
3	215 Assets $2.7 M 2.56%	273 Assets $4.6 M 4.43%	354 Assets $5.6 M 5.45%	125 Assets $1.0 M 0.97%	60 Assets $2.1 M 2.03%
2	613 Assets $8.8 M 8.53%	261 Assets $5.6 M 5.40%	1,072 Assets $8.3 M 8.06%	333 Assets $2.7 M 2.61%	128 Assets $1.9 M 1.81%
1	18 Assets $0.4 M 0.34%	38 Assets $0.3 M 0.30%	129 Assets $1.6 M 1.50%	426 Assets $1.1 M 1.05%	233 Assets $0.4 M 0.37%

Probability of Failure

Risk levels for Parks assets depend on the operational purpose of the asset (consequence of failure) and the condition of the asset (probability of failure). An asset such as a Fire Hall with a high consequence of failure would appear in the top right portion of the above graph if it also had a poor condition rating (high probability of failure). As of December 31, 2023, 38.9% of Parks assets by replacement value ($40.2 M) are considered low-risk, 54.5% of Parks assets by replacement value ($56.4 M) are considered medium-risk, and 6.6% of Parks assets by replacement value ($6.8 M) are considered high-risk.

Replacement Profile for Parks Assets



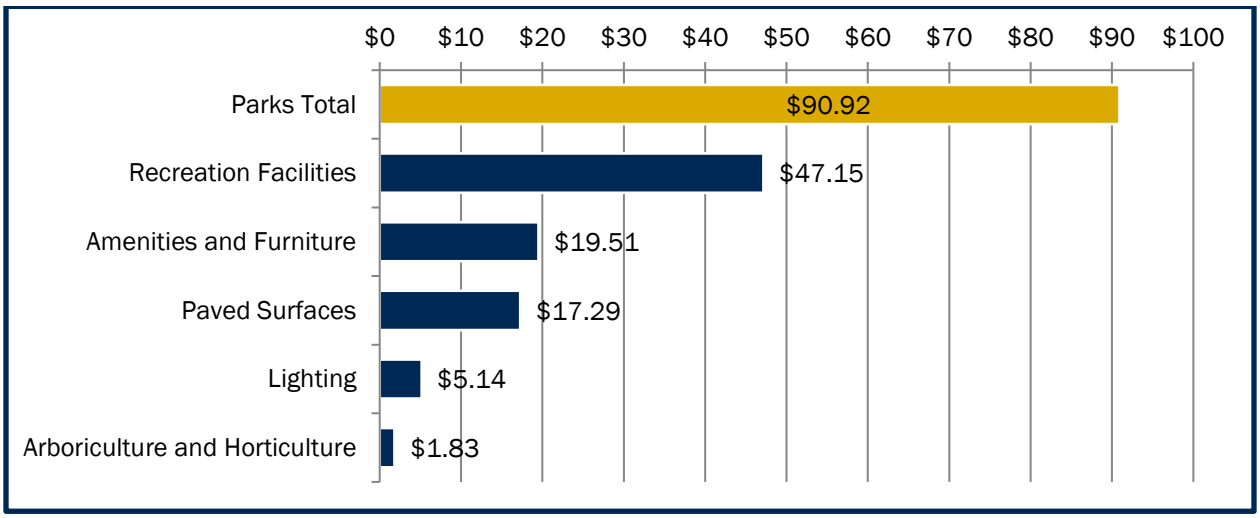
Replacement needs are based on existing lifecycle projections for Parks assets and the projected costs may be reduced upon re-evaluation of lifecycles, capturing maintenance and repair activities, or new condition assessments.

10-Year Reinvestment	10-Year Total Requirement with Backlog	10-Year Capital Budget
Total Reinvestment (2024 $*)	$31,744,064	$27,274,952

*Values are in 2024 Dollars

Capital investments in the next 10 years include only spending allocated to Asset Management – growth investment is not included.

Annual Requirement per Household



The annual requirement represents the amount required to fully fund a given service area's replacement and lifecycle needs. The above chart shows this amount distributed over the 52,391 households in the Town.

F. Roads Right-of-Way 2024 Overview

Roads Right-of-Way Inventory by Quantity

Roadways

Arterial Roads	212 lane km
Collector Roads	172 lane km
Local Roads	685 lane km
LCB Roads	127 lane km
Gravel Roads	2.9 lane km

Bridges & Culverts

Road Bridges	24
Culverts 3 m+	29
Culverts < 3 m	19,716 m
Pedestrian Bridges	23

Parking

Kiosks	11
Parking Meters	282
Paid Parking Lots	8 lots (29,341 m^2)

Sidewalks & Multi-Use Paths

Sidewalks	526 km
Multi-Use Paths	29 km

Roadside Appurtenances

Fences	32 km
Signs	13,564
Retaining Walls	67 (3,606 m^2)
Guiderails	12,142 m

Stormwater Management

Stormlines	494 km
Stormwater Management Ponds	47
Major Channels	2.7 km

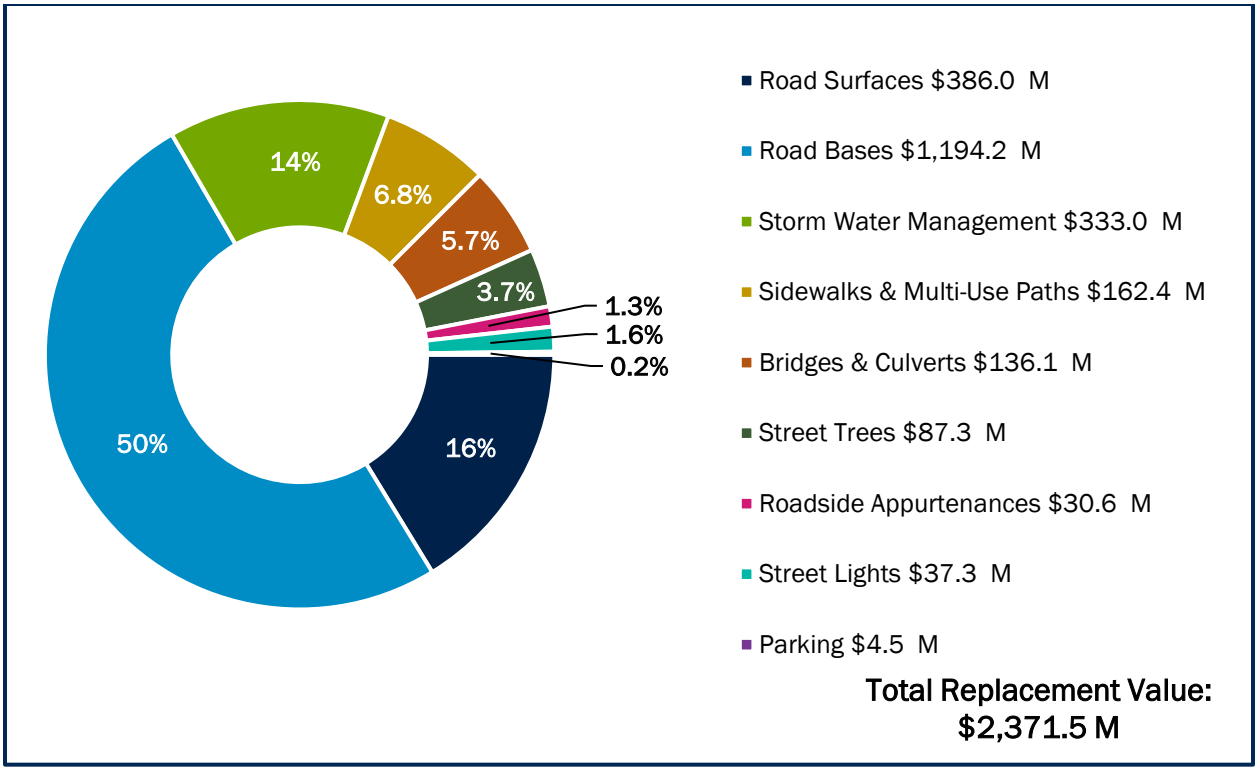
Street Lights

Poles	8,392
Luminaires	12,003

Street Trees

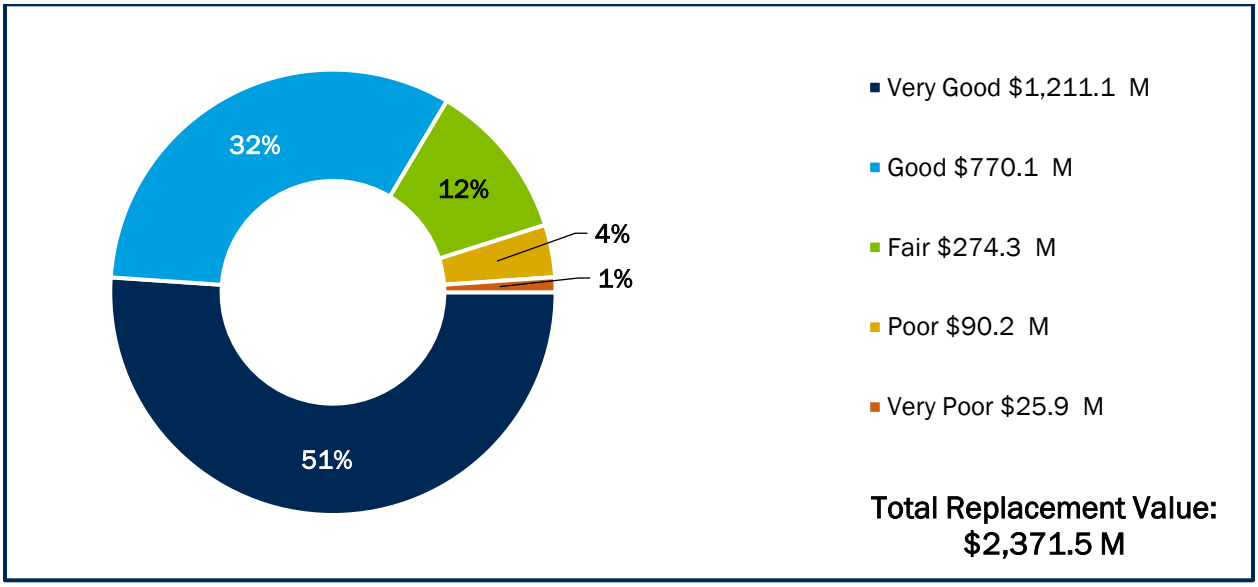
Street Trees	40,431

Replacement Value of Roads Right-of-Way



The replacement value represents the proposed budget amount to replace an item in the year of publication (2024). Roads Right-of-Way replacement costs are regularly re-evaluated by a consultant and individual components have had their market value estimated by Roads Right-of-Way staff.

Condition Distribution by Replacement Value



As of December 31, 2023, 95% of Roads Right-of-Way assets by replacement value ($2,255.5 M) are in Fair or better condition.

Conditions of Roads Right-of-Way assets are evaluated regularly as described in Table 17 below.

Asset Health Rating 2024

Good "B"

Table 17 Inspection Programs for Roads Right-of-Way Assets

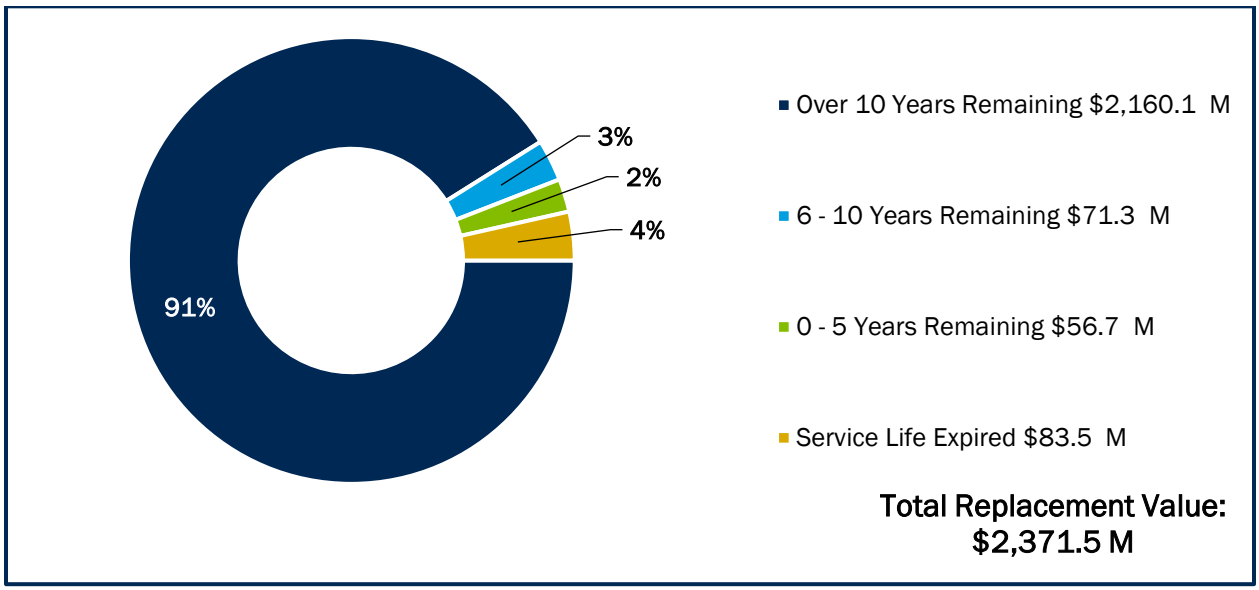
Asset	Inspection Frequency	Previous Year of Inspection	Inspection Method
Roadways	Half of all roadways inspected annually on a biennial cycle	2023	Contractor visually inspects roads
Bridges & Culverts	Inspected biennially	2023	Contractor inspects all structures visually and submits a report
Stormlines	A portion inspected annually on a 9-year cycle	2023	Contractor inspects using a CCTV robot and cleaning is performed as needed
Sidewalks	Inspected annually	2023	Summer students ride a tricycle capturing video and deficiencies on a web map
Streetlights	Inspected every 7 years	2020	Contractor visually inspects streetlights

Asset	Inspection Frequency	Previous Year of Inspection	Inspection Method
Signs	Inspected annually	2023	Summer students inspect regulatory and warning signs with a retroreflectometer
Pedestrian Bridges	Inspected biennially	2023	Contractor inspects pedestrian bridges and submits a report
Retaining Walls	Inspected biennially	2023 (Class A)	Contractor performs a visual inspection of all retaining walls
Driveway Culverts	Inspected 2020	2020	Students/Staff inspect culverts visually
Fences	Every 5 years	2020	Students inspect fences visually
Guiderails	Every 5 years	2021	Contractor inspects all guiderails
Headwalls	Will be inspected in 2026	N/A	
SWM Ponds	Biannual and as-needed inspections Every 4-5 years	2023	Staff inspect ponds for blockages and flooding in the Spring, Fall, and after major storms Contractors perform in-depth pond studies to determine sedimentation rates, soil condition, etc.

Condition Distribution for Roads Right-of-Way

5	**Very Good**	Components have no defects and are in as-new condition.
4	**Good**	Minor defects are becoming apparent in superficial finishes.
3	**Fair**	Elements likely to become poor within a few years if not addressed.
2	**Poor**	Components are failing and require constant repairs and parts.
1	**Very Poor**	Elements have failed and are at the end of their useful life.

Useful Life Remaining for Roads Right-of-Way Assets



The above chart shows the remaining useful life in five-year increments of Road Right-of-Way assets. Assets that have exceeded their useful life may still be in good condition. Most Roads assets (91%) have more than 10 years of useful life remaining.

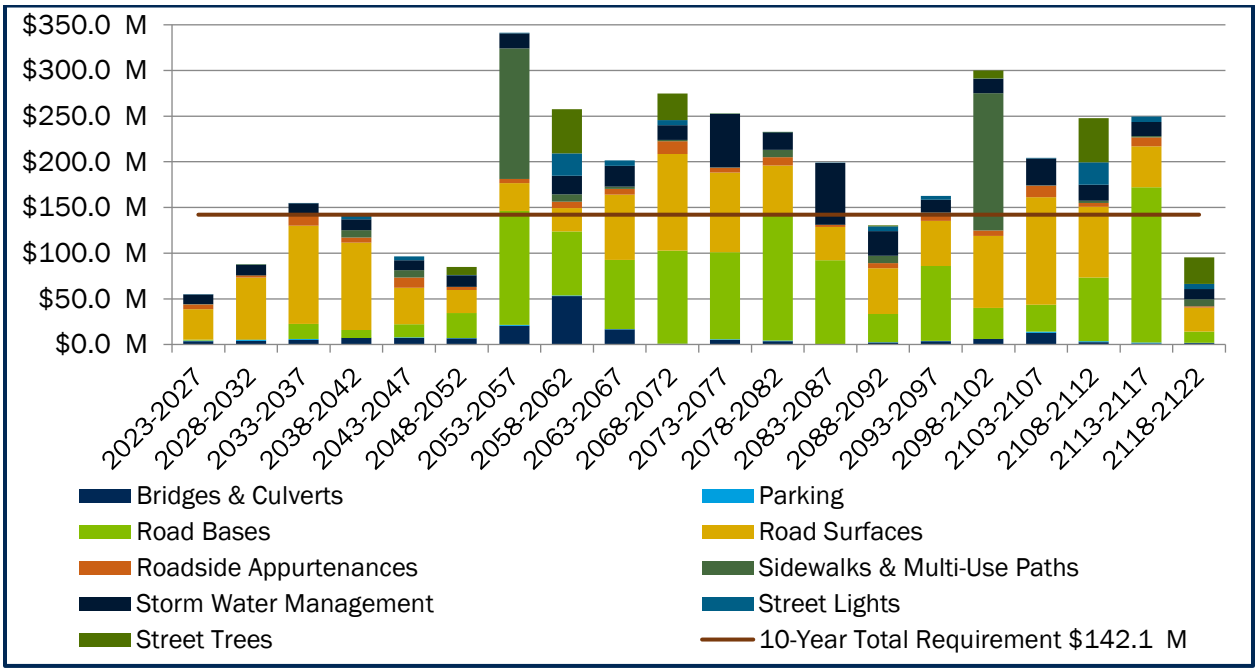
Risk Levels for Roads Right-of-Way Assets

Consequence of Failure	1	2	3	4	5
5	761 Assets $99.4 M 4.23%	478 Assets $107.0 M 4.55%	33 Assets $15.3 M 0.65%	17 Assets $8.5 M 0.36%	
4	188 Assets $42.2 M 1.79%	8,493 Assets $94.8 M 4.03%	132 Assets $29.9 M 1.27%	74 Assets $10.2 M 0.43%	94 Assets $3.9 M 0.17%
3	16,288 Assets $169.3 M 7.20%	32,331 Assets $257.1 M 10.93%	4,867 Assets $47.5 M 2.02%	937 Assets $14.0 M 0.60%	442 Assets $1.3 M 0.05%
2	1,503 Assets $206.4 M 8.77%	859 Assets $88.3 M 3.75%	379 Assets $52.0 M 2.21%	176 Assets $13.2 M 0.56%	44 Assets $4.6 M 0.20%
1	14,851 Assets $675.1 M 28.69%	9,074 Assets $222.9 M 9.48%	1,978 Assets $129.6 M 5.51%	1,751 Assets $44.2 M 1.88%	744 Assets $16.1 M 0.68%

Probability of Failure

Risk levels for Roads Right-of-Way assets depend on the operational purpose of the asset (consequence of failure) and the condition of the asset (probability of failure). An asset such as a Fire Hall with a high consequence of failure would appear in the top right portion of the above graph if it also had a poor condition rating (high probability of failure). As of December 31, 2023, 67.1% of Roads Right-of-Way assets by replacement value ($1,577.9 M) are considered low-risk, 31.3% of Roads Right-of-Way assets by replacement value ($735.6 M) are considered medium-risk, and 1.6% of Roads Right-of-Way assets by replacement value ($39.2 M) are considered high-risk.

Replacement Profile for Roads Right-of-Way Assets



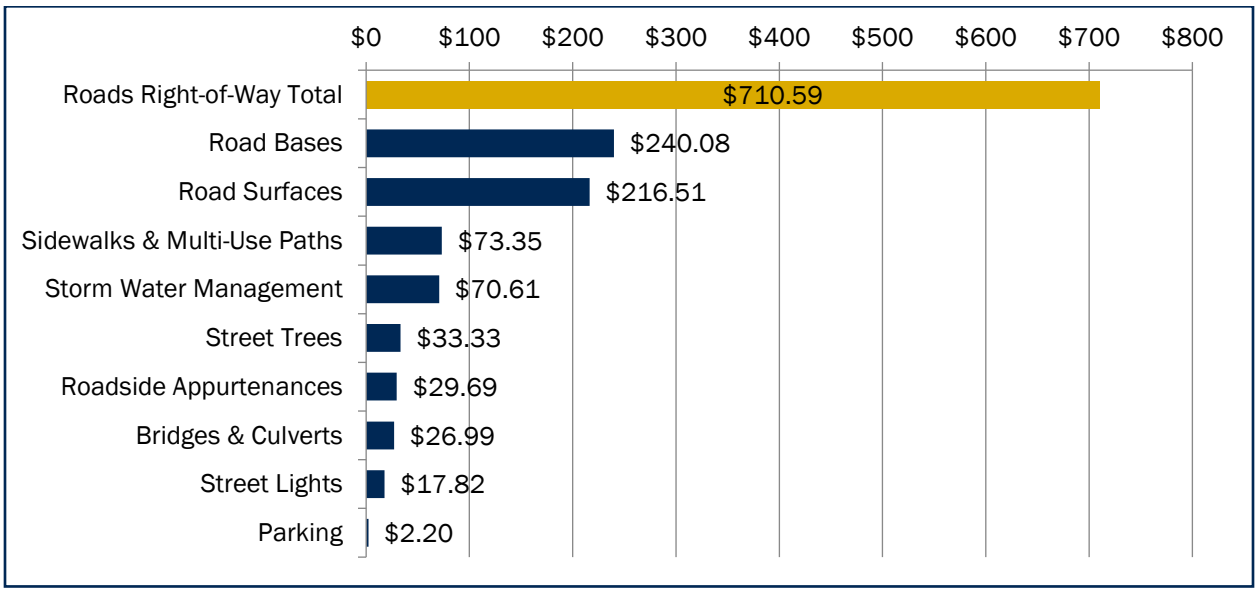
Replacement needs are based on existing lifecycle projections for Roads Right-of-Way assets and the projected costs may be reduced upon re-evaluation of lifecycles, capturing maintenance and repair activities, or new condition assessments.

10-Year Reinvestment	10-Year Total Requirement with Backlog	10-Year Capital Budget
Total Reinvestment (2024 $*)	$229,834,474	$182,607,866

*Values are in 2024 Dollars

Capital investments in the next 10 years include only spending allocated to Asset Management – growth investment is not included.

Annual Requirement per Household



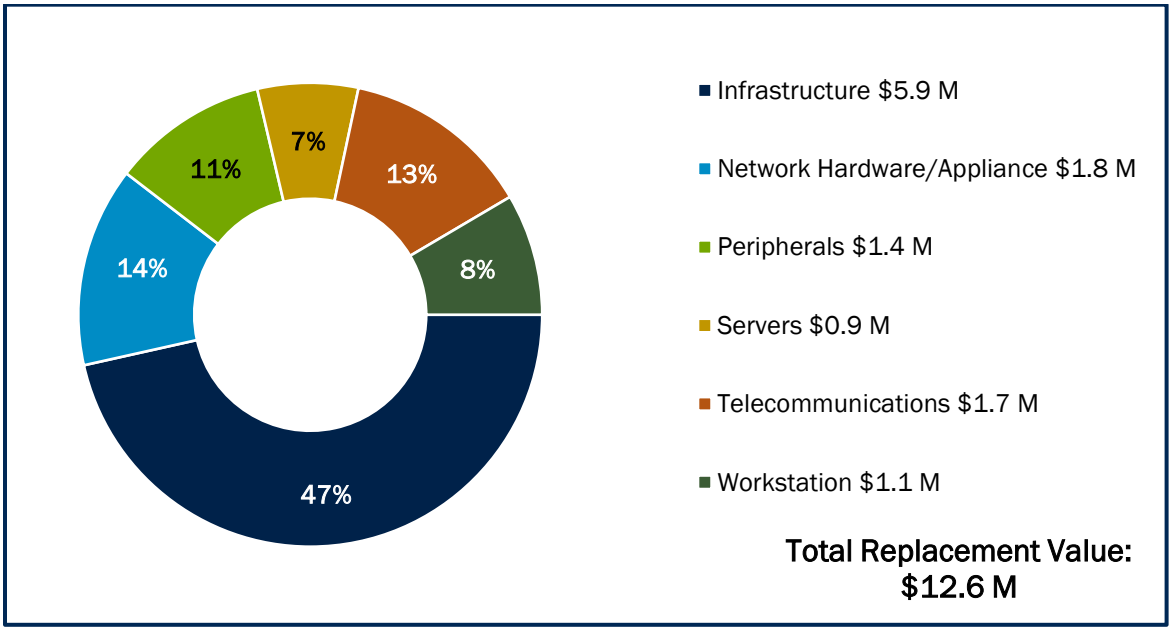
The annual requirement represents the amount required to fully fund a given service area's replacement and lifecycle needs. The above chart shows this amount distributed over the 52,391 households in the Town.

G. Technology & Innovation Services 2024 Overview

Technology & Innovation Services Inventory by Quantity

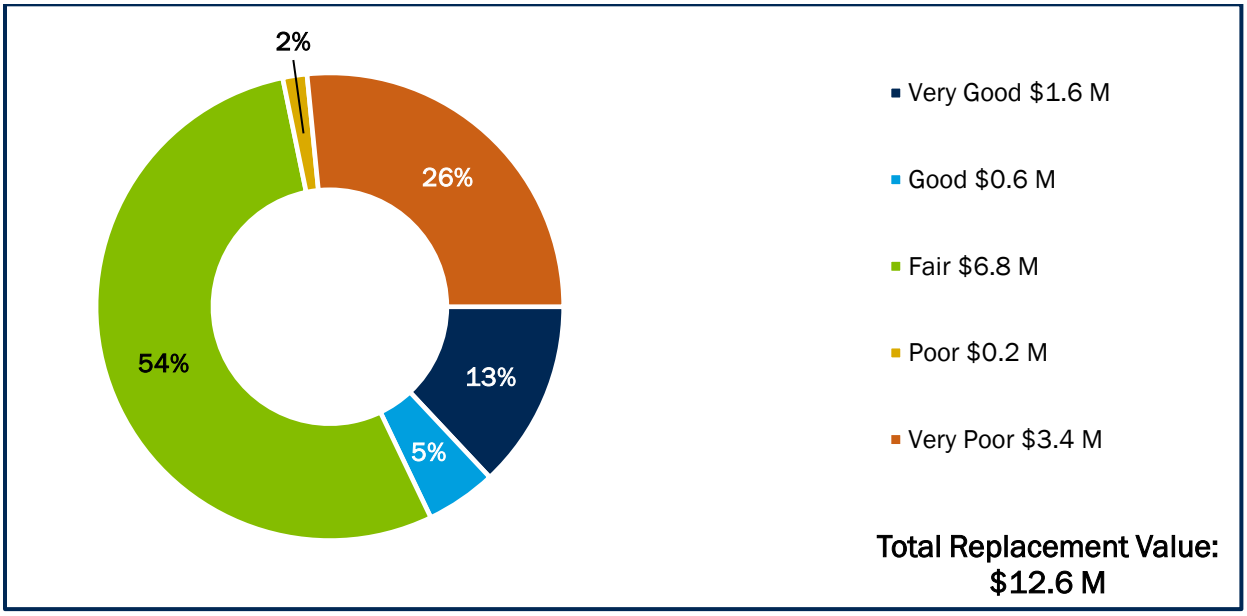
Network Appliances	364	Peripherals	1,868
Servers	64	Telecommunication	403
Workstations	1,266	Infrastructure	30,064 m

Replacement Value of Technology & Innovation Services



The replacement value represents the proposed budget amount to replace an item in the year of publication (2024). Technology & Innovation Services replacement costs are regularly re-evaluated by a consultant and individual components have had their market value estimated by Technology & Innovation Services staff.

Condition Distribution by Replacement Value



As of December 31, 2023, 72% of Technology & Innovation Services assets by replacement value ($9.1 M) are in Fair or better condition.

Condition of TIS assets are visually assessed by TIS Staff, and several asset types have standard replacement schedules. Items currently listed in Poor or Very Poor condition were in-service prior to 2019 and are subject to a complete asset inventory and condition assessment audit in 2024, so these ratings may change in the future.

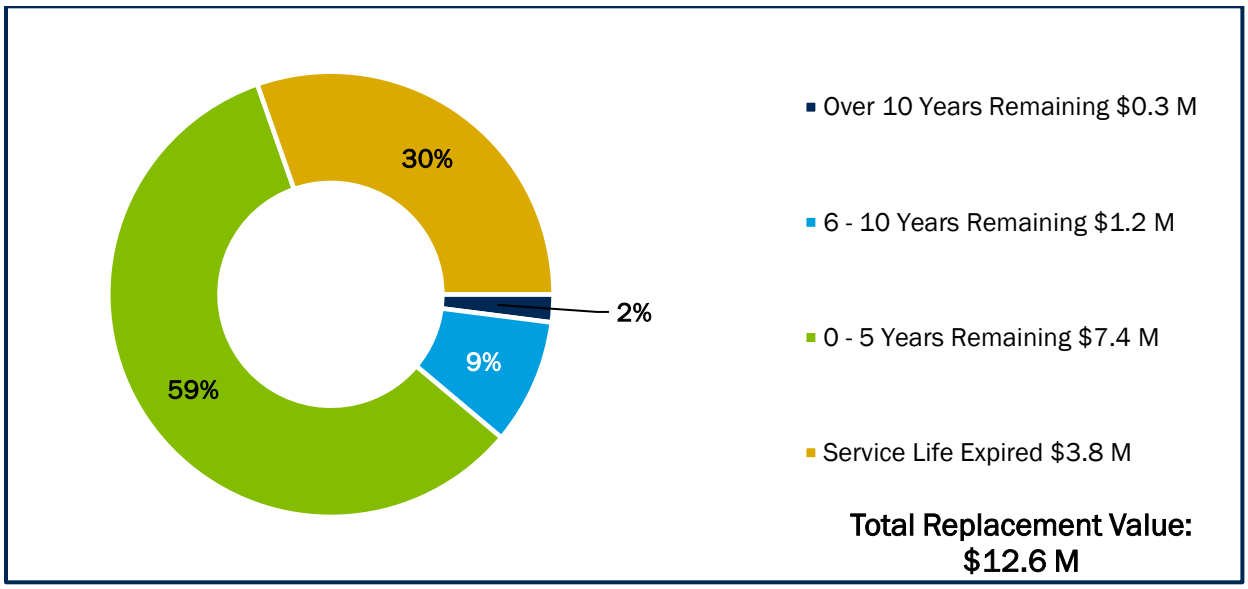
Asset Health Rating 2024

Fair "C"

Condition Distribution for Technology & Innovation Services

5	**Very Good**	Asset is typically new or recently rehabilitated.
4	**Good**	Asset is meeting the operational needs.
3	**Fair**	Asset likely to become poor if not improved.
2	**Poor**	Assets are decommissioned at this level.
1	**Very Poor**	Assets do not reach this level while in service.

Useful Life Remaining for Technology & Innovation Services Assets



The above chart shows the remaining useful life in five-year increments of assets. Assets that have exceeded their useful life may still be in good condition. Most TIS assets (70%) are within their expected service life.

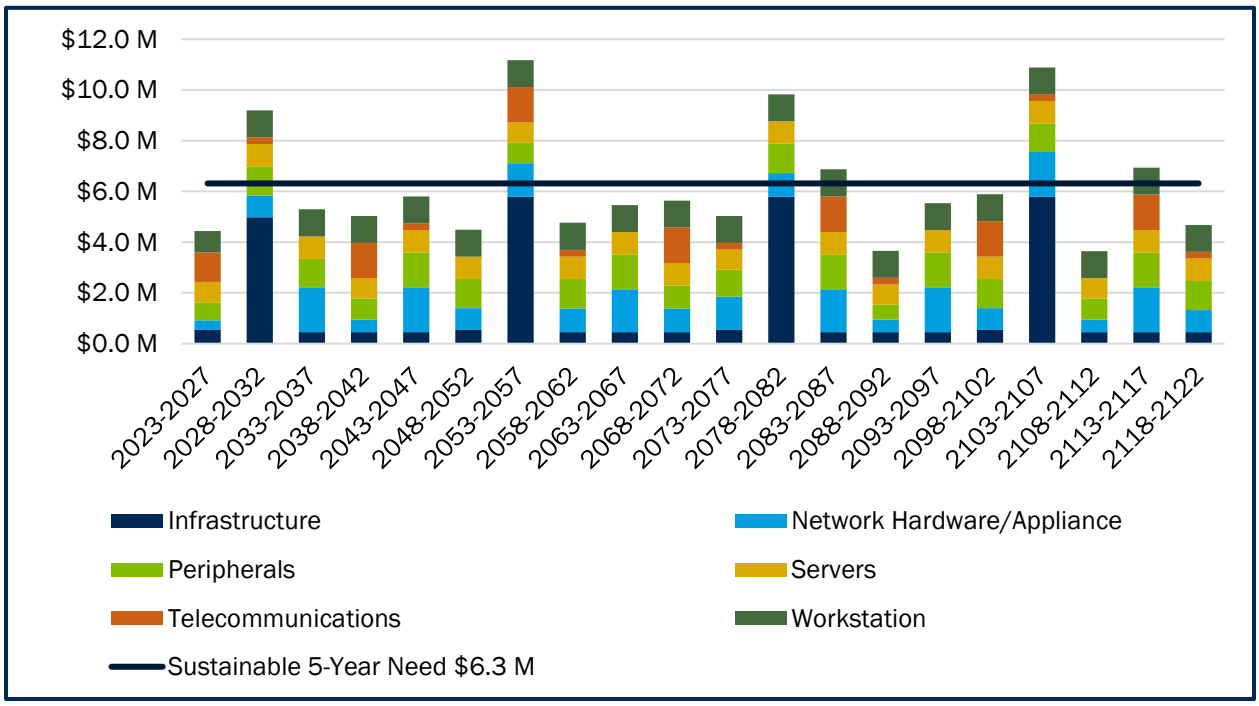
Risk Levels for Technology & Innovation Services Assets

Consequence of Failure	1	2	3	4	5
5	28 Assets $0.1 M 0.82%	38 Assets $0.1 M 0.48%	48 Assets $0.5 M 4.01%		192 Assets $2.0 M 15.64%
4		36 Assets $0.1 M 0.79%	8 Assets $1.1 M 8.88%	4 Assets $0.2 M 1.55%	8 Assets $0.2 M 1.95%
3	3 Assets $0.8 M 6.47%	1 Asset $0.0 M 0.02%	13 Assets $5.0 M 39.53%		3 Assets $0.1 M 0.49%
2	318 Assets $0.5 M 3.86%	124 Assets $0.2 M 1.37%	88 Assets $0.1 M 0.93%		223 Assets $0.3 M 2.33%
1	443 Assets $0.2 M 1.87%	299 Assets $0.3 M 2.23%	143 Assets $0.1 M 0.51%	1 Asset $0.02 M 0.12%	340 Assets $0.8 M 6.16%

Probability of Failure

Risk levels for Technology & Innovation Services assets depend on the operational purpose of the asset (consequence of failure) and the condition of the asset (probability of failure). An asset such as a Fire Hall with a high consequence of failure would appear in the top right portion of the above graph if it also had a poor condition rating (high probability of failure). As of December 31, 2023, 16.4% of TIS assets by replacement value ($2.1 M) are considered low-risk, 59.9% of TIS assets by replacement value ($7.6 M) are considered medium-risk, and 23.6% of TIS assets by replacement value ($3.0 M) are considered high-risk.

Replacement Profile for Technology & Innovation Services Assets



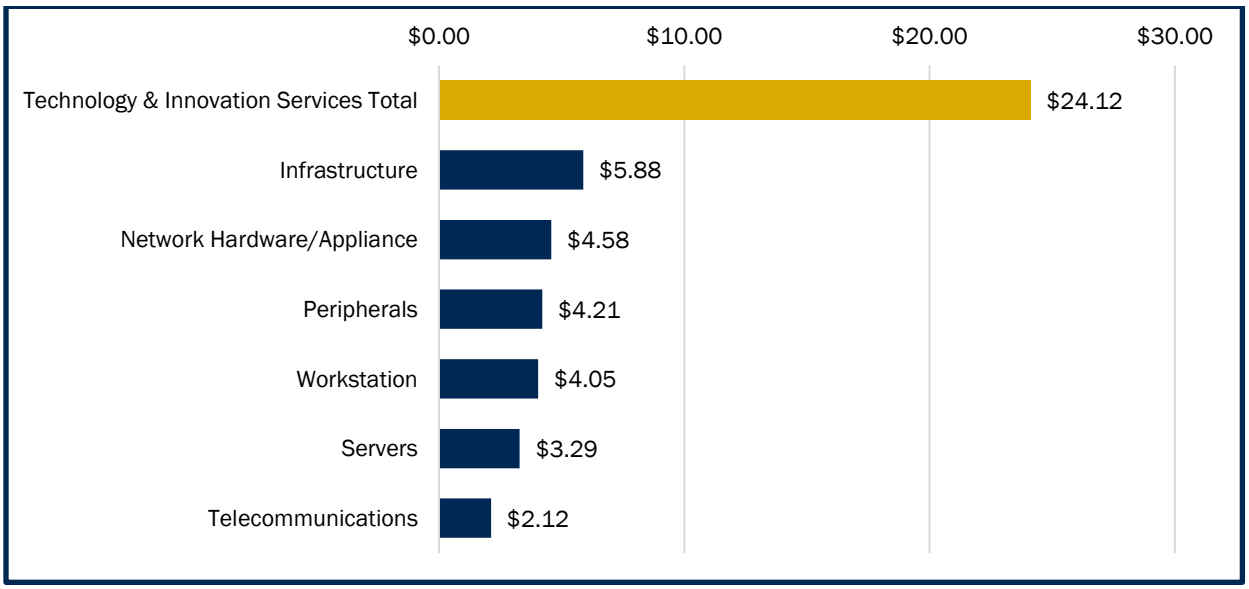
Replacement needs are based on existing lifecycle projections for Technology & Innovation Services assets and the projected costs may be reduced upon re-evaluation of lifecycles, capturing maintenance and repair activities, or new condition assessments.

10-Year Reinvestment	10-Year Requirement (With Backlog)	10-Year Capital Budget
Total Reinvestment (2024 $*)	$16,213,074	$20,080,300

*Values are in 2024 Dollars

Capital investments in the next 10 years include only spending allocated to Asset Management – growth investment is not included.

Annual Requirement per Household



The annual requirement represents the amount required to fully fund a given service area's replacement and lifecycle needs. The above chart shows this amount distributed over the 52,391 households in the Town.

H. References

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I. Appendices

Appendix A: Condition Scales for Roads Right-of-Way

Figure 12 A photo of a road in Very Good condition

Figure 13 A photo of a road in Good condition

Figure 14 A photo of a road in Fair condition

Figure 15 A photo of a road in Poor condition

Figure 16 A photo of a road in Very Poor condition

Appendix B: Expected Useful Life

Table 18 Asset Useful Life in Years: Facilities

Building Element	Element Type	Useful Life in Years
Driveways, Parking Lots, Walkways, Curbs	Asphalt	10
	Concrete	15
	Gravel	10
	Interlocking blocks	20
Fencing, Handrails	Concrete	20
	Masonry	20
	Metal, Wrought Iron	25
	Aluminium	15
	Steel, Chain Link	15
	Wood	10
Landscaping, General	Sodding, Shrubs, Etc.	10
	Trees	20
Parking Lot Guards	Parking Bumpers	5
	Guard rails	10
Retaining Walls	Concrete	25
	Masonry	25
	Wood	15
Stairs, Porches, Decks	Concrete	15
	Wood	10
Storage, Service Buildings	Masonry	20
	Wood	15
Balcony Railings	Steel	15
	Aluminium	15
	Wood	10
	Concrete slabs	25
	Concrete	15
	Toppings/waterproofing	15
Caulking, Weather Stripping	Caulking, weather-stripping	10
Exterior Entrance and Patio Doors	Aluminium	20
	Steel	20
	Wood	20
	Aluminium – storm	15
Exterior Walls, Columns, Siding	Aluminium	25
	Asphalt shingles	15
	Masonite	20
	Masonry	20
	Steel	25
Exterior Walls, Columns, Siding	Stucco	20
	Vinyl	25

Building Element	Element Type	Useful Life in Years
	Damp – proofing	25
Metal Flashing	Aluminium	25
	Galvanized, Painted	15
	Pre-finished Steel	10
Rainwater Gutters and Downspouts	Aluminium	15
	Plastic	15
	Galvanized	20
Roofing	Asphalt shingles	15
	Built-up	15
	Inverted	20
	Metal	25
	Single-ply	20

Table 19 Asset Useful Life in Years: Fire Equipment

Asset Class	Asset Type	Useful Life (Years)
PPE	Breathing Air	10/15/20
	Bunker Gear	10
Equipment	Pumper Equipment	15
	Aerial Equipment	20
	Communications	10

Table 20 Asset Useful Life in Years: Fleet

Asset Class	Asset Type	Useful Life
Passenger Vehicles	Cars	10
	Pick-up Trucks	10
	SUVs	10
	Vans	10
Construction Equipment	Dump Trucks	10
	Loader	10
	Gradall	20
	Backhoe	15
	Mobile Compressor	10
	Cement Mixer	20
	Street Sweeper	7
	Street Flusher	15
	Vacuum Truck	10
	Pavement Grinder	10
	Hot Patcher	10
	Utility	10
Trailers	Boat Trailers	15
	Paint Trailer	15
	Ice Painting Trailer	15
	Utility Trailers	15

Asset Class	Asset Type	Useful Life
	Water Tanker Trailers	10
Fire Trucks	ATV & Trailer	10
	Command Vehicle	10
	Aerial Trucks	10
	Pumper Trucks	10
	Rescue Trucks	10
	Tanker Trucks	10
Lawn Care & Forestry	Litter Truck	8
	Chipper Truck	10
	Tractors	10
	Wide Cut Mowers	8
	Walk Behind and Front Mount Mowers	7
	Turf Care Machines	20
Refuse Trucks	Side-loader	6
	Rear-loader	10
	Hooklift	10
Arena Equipment	Zamboni	6
	Ice Edger	10
Snow Equipment	Sidewalk Machines	10
	Sanders	10
	Snow Blowers	10
Garage & Shop Equipment	Hoist	12
	A/C Machine	10
	Overhead Crane	35
	Blade Sharpener	10
	Fuel Pump	15
	Drill Press	18
	Compressor	20
	Sweeper/Scrubber	15
	Saws	20

Table 21 Asset Useful Life in Years: Library

Asset Class	Asset Type	Expected Useful Life
Collections	Print	7
	Media	5
	Magazines	2
	Equipment / Tech	5
Equipment	Servers	5
	Printers	5
	Network Hardware	5
	Monitors	5
	Desktop Laptop	5

Table 22 Asset Useful Life in Years: Parks

Asset Class	Asset Type	Expected Useful Life
Arboriculture & Horticulture	Garden Beds	25
Paved Surfaces	Access Drives	5/7/10
	Trails and Walkways	20
	Parking Lots	25/80
Recreation Facilities	Splash Pads	20
	Lacrosse Boxes	20
	Bocce Courts	30
	Skateboard Parks	25
	Soccer Pitches	40
	Play Spaces	20
	Baseball Diamonds	30
	Basketball Courts	30
	Multi-Use Courts	30
	Tennis Courts	30
Amenities and Furniture	Picnic Shelters	15/25
	Restrooms	25
	Field Houses	25
	Fencing	20
	Arbours/Trellis	25
	Retaining Walls	20
	Misc. Park Amenities	10/20/100
	Pavilions	25
	Signage	10/15/100
	Lighting	30
	Seating	10/20
	Shade Structures	25/50
	Sports Equipment Bunkers	20/100
	Fountains	20

Table 23 Asset Useful Life in Years: Road Right of Way

Asset Class	Asset Type	Expected Useful Life
Roads	HCB 1 Surface/HCB 1 Base	45/90
	HCB 2 Surface/HCB 2 Base	45/90
	HCB 3 Surface/HCB 3 Base	35/96
	HCB 4 Surface/HCB 4 Base	35/96
	LCB	20
Bridges & Culverts	Deck/Superstructure	30/60
	Substructure	120
	Culverts (3m+)	90
	Culverts (0 to 3m)	50
	Pedestrian Bridges	30/35/40/50
Sidewalks & Multi-Use Paths	Sidewalks	45
	Multi-Use Paths	20
Parking	Public Lots - Surface	25
	Public Lots - Base	80
	Meters	20
	Kiosks	10
Roadside Appurtenances	Traffic Control Signs	30
	Information Signals	10/20
	Fences	20/25/30
	Guiderails	25
	Retaining Walls	25/35/65/80
Stormwater Management	Stormwater Ponds	90
	Storm Sewers	90
	Major Channels	90
Street Lights	Poles	50
	Luminaries	25
Street Trees	Street Trees	50

Table 24 Asset Useful Life in Years: TIS Equipment

Asset Class	Asset Type	Expected Useful Life
Network Appliances	Switches	7
	Storage Arrays	10
	NAC	7
	Security Appliances	7
	Wi-Fi Access Points	5
Servers	Tape Backup Devices	5
	VM Servers	5
	Physical Servers	5
Workstations	Desktops	5
	Laptops	3
	Tablets	7
Peripherals	Large Multifunction copiers	10
	Network Printers	7
	Plotters	10
	Monitors	5
	Scanners	3
	Projectors	3
	Rack Mounted Uninterrupted Power Supplies	5
	Backup Drive	7
Tele-Communications	PBX Equipment	15
	Digital Telephone Sets	15
	IP Telephone Sets	15
	Videoconferencing/Meeting Screens	10
Infrastructure	External Fibre Cable	25

Appendix C: Lifecycle Activities

Facilities

Table 25 Lifecycle Activities: Foundations

Year	Activity	Cost	Notes
0	Construct	$19.43 /sq.ft.	Average
100	Reconstruct	$19.43 /sq.ft.	Average

Table 26 Lifecycle Activities: Basement Construction

Year	Activity	Cost	Notes
0	Construct	$23.32 /sq.ft.	Average
50	Reconstruct	$23.32 /sq.ft.	Average

Table 27 Lifecycle Activities: Super Structure

Year	Activity	Cost	Notes
0	Construct	$13.60 /sq.ft.	Average
100	Reconstruct	$13.60 /sq.ft.	Average

Table 28 Lifecycle Activities: Exterior Enclosure

Year	Activity	Cost	Notes
0	Construct	$194.34 /sq.ft.	Average
Every 10	Caulking	$37.11 /ft.	
Every 10	Painting	$7.77 /sq.ft.	
Every 10	Repointing of Brick	$19.43 /sq.ft.	
Every 50	Reconstruct EIFS system	$13.60 /sq.ft.	
Every 50	Reconstruct Vinyl Siding	$13.60 /sq.ft.	
Every 50	Reconstruct Wood Siding	$15.55 /sq.ft.	
100	Reconstruct Brick/Stone	$48.59 /sq.ft.	

Table 29 Lifecycle Activities: Roofing

Year	Activity	Cost	Notes
0	Construct	$48.59 /sq/ft.	Average
Every 20	Reconstruct Asphalt Shingle Roof	$8.90 /sq.ft.	
Every 25	Reconstruct Mod Bit Roof	$14.79 /sq.ft.	
Every 25	Reconstruct EPDM Roof	$14.65 /sq.ft.	
Every 25	Reconstruct Metal Gutters and Rain Water Leaders	$17.49 /ft.	
Every 25	Reconstruct BUR Roof	$17.41 /sq.ft.	
Every 30	Reconstruct Metal Roof	$18.99 /sq.ft.	

Table 30 Lifecycle Activities: Interior Construction

Year	Activity	Cost	Notes
0	Construct	$97.17 /sq.ft.	Average
Every 10	Painting	$0.87 /sq.ft.	
Every 10	Carpet Replacement	$12.15 /sq.ft.	
Every 15	Epoxy Floor Recoat	$29.15 /sq.ft.	
Every 20	VCT Floor Replacement	$14.38 /sq.ft.	
Every 20	Vinyl Sheet Floor Replacement	$2.43 /sq.ft.	
Every 20	Acoustic Ceiling Tile Replacement	$11.31 /sq.ft.	
Every 50	Ceramic Floor Tile Replacement	$3.81 /sq.ft.	
Every 75	Terrazzo Floor Replacement	$42.09 /sq.ft.	

Table 31 Lifecycle Activities: Conveying Systems (Elevators)

Year	Activity	Cost	Notes
0	Construct	$223,208 each	Average
50	Reconstruct	$223,308 each	Average

Table 32 Lifecycle Activities: Fire Protection

Year	Activity	Cost	Notes
0	Construct	$14.19 /sq.ft.	Average
50	Reconstruct	$14.19 /sq.ft.	Average

Table 33 Lifecycle Activities: Electrical / Site Electrical

Year	Activity	Cost	Notes
0	Construct	$46.64 /sq.ft.	Average
50	Reconstruct	$46.64 /sq.ft.	Average

Table 34 Lifecycle Activities: Plumbing

Year	Activity	Cost	Notes
0	Construct	$33.04 /sq.ft.	Average
50	Reconstruct	$33.04 /sq.ft.	Average

Table 35 Lifecycle Activities: HVAC

Year	Activity	Cost	Notes
0	Construct	$77.74 /sq.ft.	Average
20	Reconstruct	$77.74 /sq.ft.	Average

Table 36 Lifecycle Activities: Furnishings

Year	Activity	Cost	Notes
0	Construct	$38.47 /sq.ft.	Average
10	Replace Damaged Furniture	$0.49 /sq.ft.	Average
20	Replace Damaged Furniture	$0.49 /sq.ft.	Average
30	Replace Damaged Furniture	$0.49 /sq.ft.	Average
40	Replace Damaged Furniture	$0.49 /sq.ft.	Average
50	Reconstruct	$38.47 /sq.ft.	Average

Fire Equipment

Table 37 Lifecycle Activities: PPE

Year	Activity	SCBA Packs	Face Pieces	Bunker Gear	Extractor Washer	Drying Unit
0	Purchase	$6,543	$609	$2,974	$20,000	$8,500
10	Replace	$6,543	$609	$2,974	$20,000	$8,500

Table 38 Lifecycle Activities: PPE - Air Cylinders

Year	Activity	Air Cylinders
0	Purchase	$1,700
15	Replace	$1,700

Table 39 Lifecycle Activities: PPE - Compressors

Year	Activity	Compressors
0	Purchase	$53,000
20	Replace	$53,000

Table 40 Lifecycle Activities: Equipment - Batteries

Year	Activity	Batteries
0	Purchase	$700
3	Replace	$700

Table 41 Lifecycle Activities: Equipment - Aerial Equipment

Year	Activity	Aerial Equipment
0	Purchase	$193,612
20	Replace	$193,612

Table 42 Lifecycle Activities: Equipment - Pumper Equipment

Year	Activity	Pumper Equipment
0	Purchase	$220,384
15	Replace	$220,384

Table 43 Lifecycle Activities: Equipment - Communications and Bunker Gear

Year	Activity	Mobile Radios	Portable Radios	Bunker Gear	Vehicle Repeaters	Single Bay Charger	6 Bay Charger
0	Purchase	$5,423	$4,992	$1,700	$15,739	$168	$778
10	Replace	$5,423	$4,992	$1,700	$15,739	$168	$778

Fleet

Table 44 Lifecycle Activities: Fleet

Asset Class	Asset Type	Useful Life	Unit Cost
Passenger Vehicles	Cars	10	$55,350
	Pick-up Trucks	10	$88,737
	SUVs	10	$57,000
	Vans	10	$85,314
Construction Equipment	Backhoe	15	$133,451
	Cement Mixer	20	$12,300
	Dump Trucks - Tandem	10	$475,000
	Dump Trucks - Single	10	$450,000
	Dump Trucks - 1 & 2 Ton	10	$108,920
	Gradall	20	$594,924
	Hot Patcher	10	$248,771
	Loader	10	$421,693
	Mobile Compressor	10	$43,643
	Pavement Grinder	10	$5,000
	Street Flusher	15	$350,000
	Street Sweeper	7	$372,326
	Utility	10	$150,000
	Vacuum Truck	10	$135,837
Trailers	Boat Trailers	15	$78,406
	Paint Trailers	15	$15,000
	Ice Painting Trailer	15	$15,000
	Utility Trailers	15	$28,431
	Water Tanker Trailers	10	$16,953
	ATV & Trailer	10	$60,000
Fire Trucks	Command Vehicle	10	$121,095
	Aerial Trucks	10	$3,500,000
	Pumper Trucks	10	$2,131,471
	Rescue Truck	10	$1,868,022
	Tanker Truck	10	$511,252
Lawn Care & Forestry	Chipper Trucks	10	$166,901
	Front Mount Mowers	10	$36,855
	Litter Trucks	8	$236,615
	Wide Cut Mowers	8	$141,629
	Walk Behind	7	$6,845

Asset Class	Asset Type	Useful Life	Unit Cost
	Turf Care Machines	20	$24,216
Refuse Trucks	Hooklift	10	$236,925
	Rear Loaders	10	$380,000
	Side Loaders	6	$390,000
Arena Equipment	Zambonis	6	$135,000
	Ice Edgers	10	$17,735
Snow Equipment	Sidewalk Machines	10	$214,812
	Sanders	10	$214,812
	Snow Blowers	10	$196,436
Garage & Shop Equipment	A/C machine	10	$6,000
	Blade Machine	10	$2,000
	Compressor	20	$3,000
	Drill Press	18	$1,089
	Fuel Pumps	15	$16,953
	Hoists	12	$33,000
	Overhead Crane	35	$112,250
	Saw	20	$807
	Sweeper Scrubber	15	$25,000

Library

Table 45 Lifecycle Activities: Collections - Print

Year	Activity	Average Cost
0	Purchase	$18.65
7	Replace	$18.65

Table 46 Lifecycle Activities: Collections - Media

Year	Activity	Average Cost
0	Purchase	$48.00
5	Replace	$48.00

Table 47 Lifecycle Activities: Collections - Magazines

Year	Activity	Average Cost
0	Purchase	$9.50
2	Replace	$9.50

Table 48 Lifecycle Activities: Collections - Equipment / Tech

Year	Activity	Average Cost
0	Purchase	$140
5	Replace	$140

Table 49 Lifecycle Activities: Equipment - Technology (Servers, Printers)

Year	Activity	Average Cost
0	Purchase	$785
5	Replace	$785

Parks

Table 50 Lifecycle Activities: Recreational Off-Road Trails

Year	Activity	Cost	Cost per km of Trail
0	Construct	$90.76	$226,898/km of 2.5m wide trail
5	Crack Sealing	$2.67/m	$1,068/km assuming 400m of cracks
10	Crack Sealing	$2.67/m	$1,068/km assuming 400m of cracks
20	Reconstruct	$90.76	$226,898/km of 2.5m wide trail

Table 51 Lifecycle Activities: Parks Parking Lots

Year	Activity	Cost	Cost per 1,000 m^2 parking lot	Notes
0	Construct	$107.96/$m^2$	$107,960	
6	Crack Sealing	$2.15/m	$1,075	Assuming 0.5m/m^2
12	Crack Sealing	$2.15/m	$1,075	Assuming 0.5m/m^2
25	Resurface	$75/$m^2$	$75,000	
31	Crack Sealing	$2.15/m	$1,075	Assuming 0.5m/m^2
37	Crack Sealing	$2.15/m	$1,075	Assuming 0.5m/m^2
50	Resurface	$75/$m^2$	$75,000	
56	Crack Sealing	$2.15/m	$1,075	Assuming 0.5m/m^2
62	Crack Sealing	$2.15/m	$1,075	Assuming 0.5m/m^2
80	Reconstruct	$107.96/$m^2$	$107,960	

Table 52 Lifecycle Activities: Play Structures

Year	Activity	Parkette Cost	Local Park Cost	District Park Cost
0	Construct	$59,981	$85,778	$248,407
20	Reconstruct	$59,981	$85,778	$248,407

Table 53 Lifecycle Activities: Splash Pads

Year	Activity	Cost
0	Construct	$537,051
5	Spray deck caulking and general repairs	$5,863
10	Spray deck caulking and general repairs	$5,863
15	Spray deck caulking and general repairs	$5,863
20	Reconstruct	$537,051

Table 54 Lifecycle Activities: Soccer Fields / Multi-Use Fields

Year	Activity	Local Standard Field Cost	District Premium Field Cost
0	Construct	$220,498	$424,456
40	Reconstruct	$220,498	$424,456

Table 55 Lifecycle Activities: Ball Diamonds

Year	Activity	Cost
0	Construct	$222,391
30	Reconstruct	$222,391

Table 56 Lifecycle Activities: Full Basketball Courts / Multi-Use Courts

Year	Activity	Cost
0	Construct	$81,302
5	Crack sealing and line painting	$6,929
10	Acrylic surface repair and line painting	$53/m^2
15	Crack sealing and line painting	$6,929
20	Acrylic surface repair and line painting	$53/m^2
25	Crack sealing and line painting	$6,929
30	Reconstruct	$81,302

Table 57 Lifecycle Activities: Half Basketball Courts / Multi-Use Courts

Year	Activity	Cost
0	Construct	$20,491
5	Crack sealing and line painting	$5,330
10	Acrylic surface repair and line painting	$53/m^2
15	Crack sealing and line painting	$5,330
20	Acrylic surface repair and line painting	$53/m^2
25	Crack sealing and line painting	$5,330
30	Reconstruct	$20,491

Table 58 Lifecycle Activities: Bocce

Year	Activity	Cost
0	Construct	$41,465
30	Reconstruct	$41,465

Table 59 Lifecycle Activities: Skate Parks

Year	Activity	Cost
0	Construct	$784/m^2
25	Reconstruct	$784/m^2

Table 60 Lifecycle Activities: Tennis Courts

Year	Activity	Cost
0	Construct	$90,854
5	Acrylic crack repair, line painting	$62/m^2
10	Acrylic resurfacing, line painting	$75/m^2
15	Acrylic crack repair, line painting	$62/m^2
20	Acrylic resurfacing, line painting	$75/m^2
25	Acrylic crack repair, line painting	$62/m^2
30	Reconstruct	$90,854

Table 61 Lifecycle Activities: Pickleball Courts

Year	Activity	Cost
0	Construct	$47,161
5	Acrylic crack repair, line painting	$62/m^2
10	Acrylic resurfacing, line painting	$75/m^2
15	Acrylic crack repair, line painting	$62/m^2

Year	Activity	Cost
20	Acrylic resurfacing, line painting	$75/m^2
25	Acrylic crack repair, line painting	$62/m^2
30	Reconstruct	$47,161

Table 62 Lifecycle Activities: Shade Structures

Year	Activity	Local/Parkette Park Cost	District/Town Park Cost
0	Construct	$107,211	$184,080
15	Painting	$22,386	$27,716
25	Reconstruct Roof	$21,320	$29,848
40	Painting	$22,386	$27,716
50	Reconstruct	$107,211	$184,080

Table 63 Lifecycle Activities: Lacrosse

Year	Activity	Cost
0	Construct	$363,320
5	Dasher boards maintenance	$5,330
10	Dasher boards maintenance	$5,330
15	Dasher boards maintenance	$5,330
20	Reconstruct	$363,320

Table 64 Lifecycle Activities: Sports Field Lighting

Year	Activity	Cost
0	Construct	$23,665
30	Reconstruct	$23,665

Table 65 Lifecycle Activities: Pedestrian Lighting

Year	Activity	Cost
0	Construct	$5,863
30	Reconstruct	$5,863

Table 66 Lifecycle Activities: Park Trees

Year	Activity	Cost
0	Construct	$640
50	Reconstruct	$640

Table 67 Lifecycle Activities: Site Furnishings - Benches

Year	Activity	Cost
0	Construct	$10,660
20	Reconstruct	$2,665

Table 68 Lifecycle Activities: Wood Guiderails for Recreational Trails

Year	Activity	Cost
0	Construct	$352/m
20	Reconstruct	$352/m

Table 69 Lifecycle Activities: 1.2 m High Black Vinyl Chain Link Fences

Year	Activity	Cost
0	Construct	$107/m
20	Reconstruct	$107/m

Road Right-of-Way

Table 70 Lifecycle Activities: HCB-1 & HCB-2 Roads

Asset Class	Lifecycle Event	Cost/lane-km (HCB-1)	Cost/lane-km (HCB-2)	Year
Roads – HCB 1 & HCB 2	Crack Sealing	$4,015	$3,285	5
	Crack Sealing	$4,015	$3,285	10
	R1 Resurfacing	$316,353	$267,607	15
	Crack Sealing	$4,015	$3,285	20
	Crack Sealing	$4,015	$3,285	25
	R1 Resurfacing	$316,353	$267,607	30
	Crack Sealing	$4,015	$3,285	35
	Crack Sealing	$4,015	$3,285	40
	R2 Resurfacing	$615,167	$546,066	45
	Crack Sealing	$4,015	$3,285	50
	Crack Sealing	$4,015	$3,285	55
	R1 Resurfacing	$316,353	$267,607	60
	Crack Sealing	$4,015	$3,285	65
	Crack Sealing	$4,015	$3,285	70
	R1 Resurfacing	$316,353	$267,607	75
	Crack Sealing	$4,015	$3,285	80
	Crack Sealing	$4,015	$3,285	85
	Reconstruction	$1,802,400	$1,590,347	90

Table 71 Lifecycle Activities: HCB-3 & HCB-4 Roads

Asset Class	Lifecycle Event	Cost/lane-km (HCB-3)	Cost/lane-km (HCB- 4)	Year
Roads – HCB 3 & HCB 4	Crack Sealing	$2,920	$2,555	5
	Crack Sealing	$2,920	$2,555	10
	R2 Resurfacing	$497,466	$370,567	32
	Crack Sealing	$2,920	$2,555	40
	Crack Sealing	$2,920	$2,555	45
	R2 Resurfacing	$497,466	$370,567	64
	Crack Sealing	$2,920	$2,555	70
	Crack Sealing	$2,920	$2,555	75
	Reconstruction	$2,035,056	$1,766,040	96

Table 72 Lifecycle Activities: LCB Roads

Asset Class	Lifecycle Event	Cost/m^2	Year
Roads – LCB	Slurry Seal	$4.54	6-7
	Double Surface Treatment & Slurry Seal	$14.24	12-14
	Reconstruction	$20.13	20

Table 73 Lifecycle Activities: Road Bridges

Asset Class	Lifecycle Event	Cost	Year
Bridges & Culverts	Replace Deck	$2,558/$m^2$	30
	Replace Deck & Superstructure	$7,675/$m^2$	60
	Replace Deck	$2,558/$m^2$	90
	Replace Deck, Superstructure & Substructure	$12,792/$m^2$	120

Table 74 Lifecycle Activities: Culverts

Asset Class	Lifecycle Event	Cost	Year
Bridges & Culverts	Reconstruct (Culverts 0 to 3m)	$462/m	50
	Reconstruct (Culverts 3m +)	$11,539/$m^2$	90

Table 75 Lifecycle Activities: Sidewalks

Year	Activity	Cost
0	Construct	$193/$m^2$
45	Reconstruct	$193/$m^2$

Table 76 Lifecycle Activities: Multi-Use Paths

Year	Activity	Cost
0	Construct	$128/$m^2$
20	Reconstruct	$128/$m^2$

Table 77 Lifecycle Activities: Parking Meters

Year	Activity	Cost
0	Purchase	$1,814
20	Replace	$1,814

Table 78 Lifecycle Activities: Parking Kiosks

Year	Activity	Cost
0	Purchase	$19,066
10	Replace	$19,066

Table 79 Lifecycle Activities: Public Parking Lots

Activity	Cost	Year	Notes
Construct	$131/$m^2$	0	
Crack Sealing	$2.15/m	6	Assuming 0.5m/m^2
Crack Sealing	$2.15/m	12	Assuming 0.5m/m^2
Resurface	$53/$m^2$	25	
Crack Sealing	$2.15/m	31	Assuming 0.5m/m^2
Crack Sealing	$2.15/m	37	Assuming 0.5m/m^2

Activity	Cost	Year	Notes
Resurface	$53/m^2	50	
Crack Sealing	$2.15/m	56	Assuming 0.5m/m^2
Crack Sealing	$2.15/m	62	Assuming 0.5m/m^2
Reconstruct	$131/m^2	80	

Table 80 Lifecycle Activities: Streetlights

Year	Activity	Poles	Luminaires
0	Purchase	$2,771	$885
25	Replace		$885
50	Replace	$2,771	

Table 81 Lifecycle Activities: Traffic Control Signals

Year	Activity	Cost
0	Purchase	$337,416
30	Replace	$337,416

Table 82 Lifecycle Activities: Fences

Year	Activity	Cost
0	Construct	$765/m
25	Reconstruct	$765/m

Table 83 Lifecycle Activities: Guiderails

Year	Activity	Cost
0	Construct	$402/m
25	Reconstruct	$402/m

Table 84 Lifecycle Activities: Retaining Walls

Type	Year	Activity	Cost (Avg.)
Armour Stone	0	Purchase	$99,795
	80	Replace	$99,795
Cast-in-Place Concrete	0	Purchase	$46,295
	80	Replace	$46,295
Concrete Segmental	0	Purchase	$58,602
	65	Replace	$58,602
Gabion	0	Purchase	$132,405
	25	Relace	$132,405
RSS	0	Purchase	$197,745
	80	Replace	$197,745
Timber	0	Purchase	$38,962
	35	Replace	$38,962

Table 85 Lifecycle Activities: Stormwater Management

Year	Activity	Ponds	Storm Lines	Major Channels
0	Construct	$117/m^3	$579/m	$2,785/m
90	Reconstruct	$117/m^3	$579/m	$2,785/m

Table 86 Lifecycle Activities: Street Trees

Year	Activity	Cost
0	Purchase	$627
50	Replace	$627

Technology & Innovation Services (TIS)

Table 87 Lifecycle Activities: Network Appliances (Wireless Access Points)

Year	Activity	Cost
0	Purchase	$534
5	Replace	$534

Table 88 Lifecycle Activities: Network Appliances (Switches)

Year	Activity	Cost
0	Purchase	$2,743
7	Replace	$2,743

Table 89 Lifecycle Activities: Network Appliances (NAC)

Year	Activity	Cost
0	Purchase	$17,946
7	Replace	$17,946

Table 90 Lifecycle Activities: Network Appliances (Storage)

Year	Activity	Cost
0	Purchase	$44,604
10	Replace	$44,604

Table 91 Lifecycle Activities: Servers

Year	Activity	Cost
0	Purchase	$7,388
5	Replace	$7,388

Table 92 Lifecycle Activities: VM Servers

Year	Activity	Cost
0	Purchase	$9,080
10	Replace	$9,080

Table 93 Lifecycle Activities: Televisions

Year	Activity	Cost
0	Purchase	$1,500
10	Replace	$1,500

Table 94 Lifecycle Activities: Workstations (Desktops)

Year	Activity	Cost
0	Purchase	$767
5	Replace	$767

Table 95 Lifecycle Activities: Workstations (Laptops)

Year	Activity	Laptops
0	Purchase	$1,674
3	Replace	$1,674

Table 96 Lifecycle Activities: Workstations (Tablets)

Year	Activity	Cost
0	Purchase	$1,554
7	Replace	$1,554

Table 97 Lifecycle Activities: Printers (Plotters)

Year	Activity	Cost
0	Purchase	$15,784
10	Replace	$15,784

Table 98 Lifecycle Activities: Printers (Personal)

Year	Activity	Cost
0	Purchase	$643
7	Replace	$643

Table 99 Lifecycle Activities: Printers (Multi-Functional)

Year	Activity	Cost
0	Purchase	$8,271
10	Replace	$8,271

Table 100 Lifecycle Activities: Videoconferencing / Meeting Screens

Year	Activity	Cost
0	Purchase	$18,000
10	Replace	$18,000

Table 101 Lifecycle Activities: Backup Drive

Year	Activity	Cost
0	Purchase	$11,643
7	Replace	$11,643

Table 102 Lifecycle Activities: Telecommunications

Year	Activity	Cost
0	Purchase	$545
15	Replace	$545

Table 103 Lifecycle Activities: Infrastructure

Year	Activity	Cost
0	Purchase	$150/m
25	Replace	$150/m

Appendix D: Community Levels of Service

Facilities

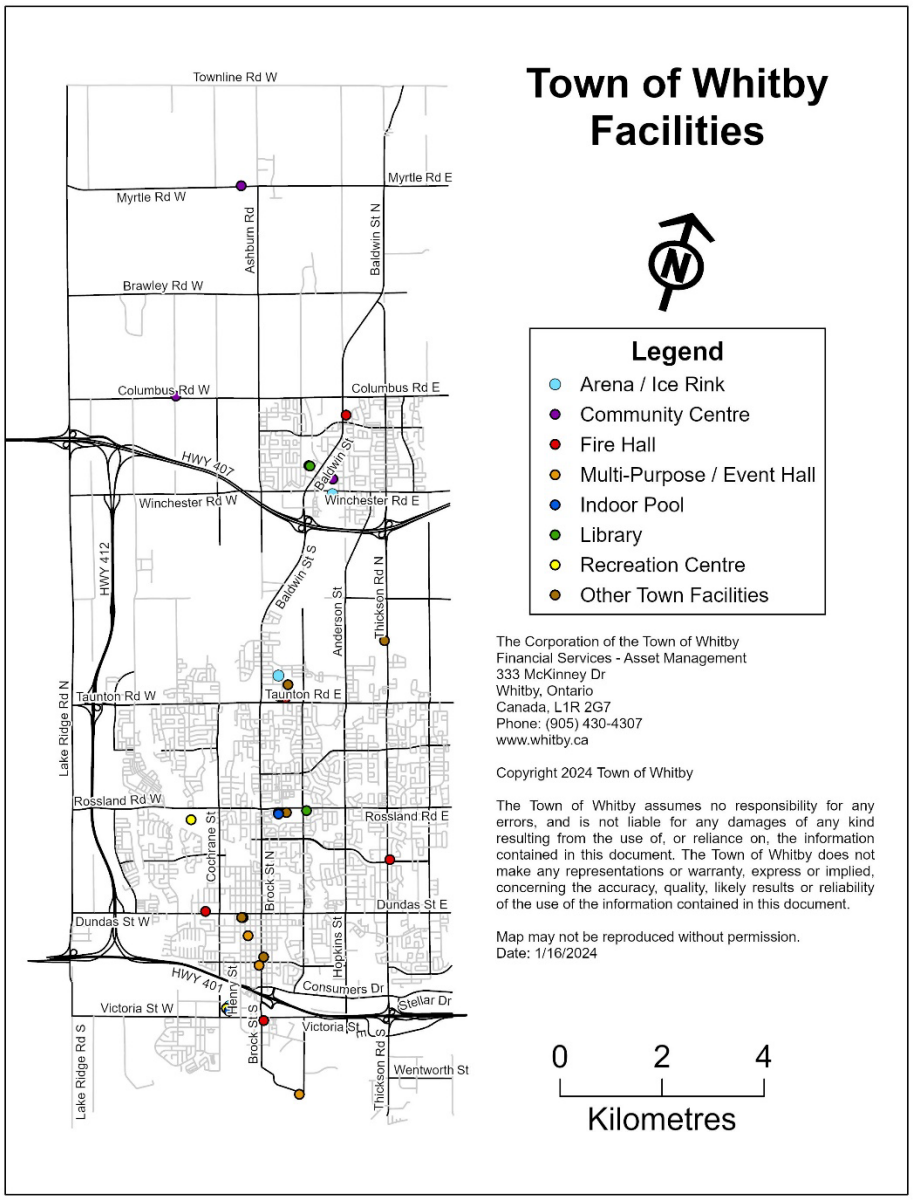

Figure 17 Locations and Types of Key Town-owned Facilities

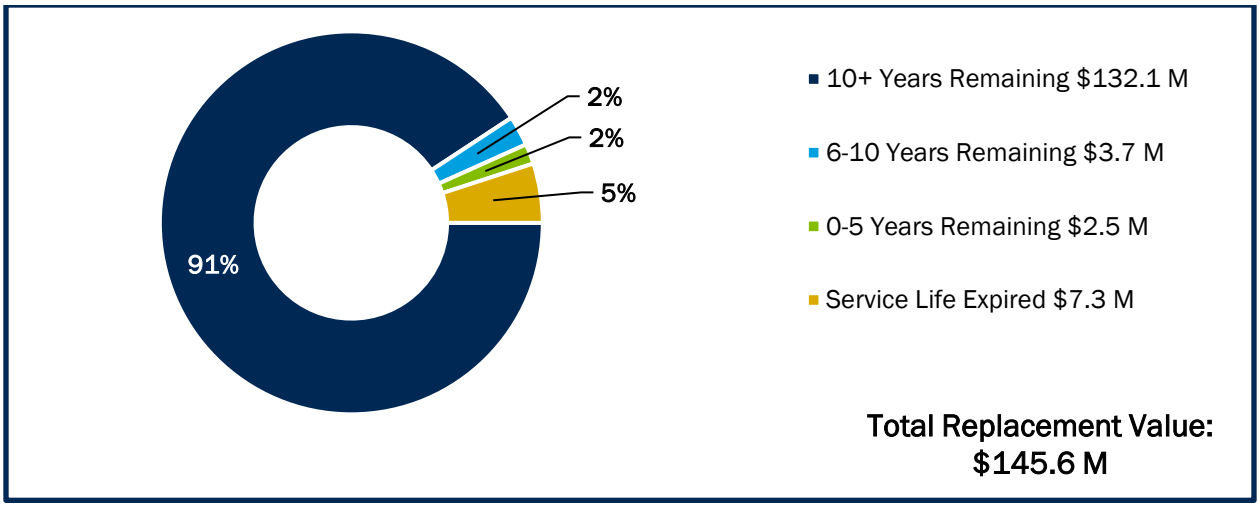

Figure 18 Age Distribution of Community Centre Assets

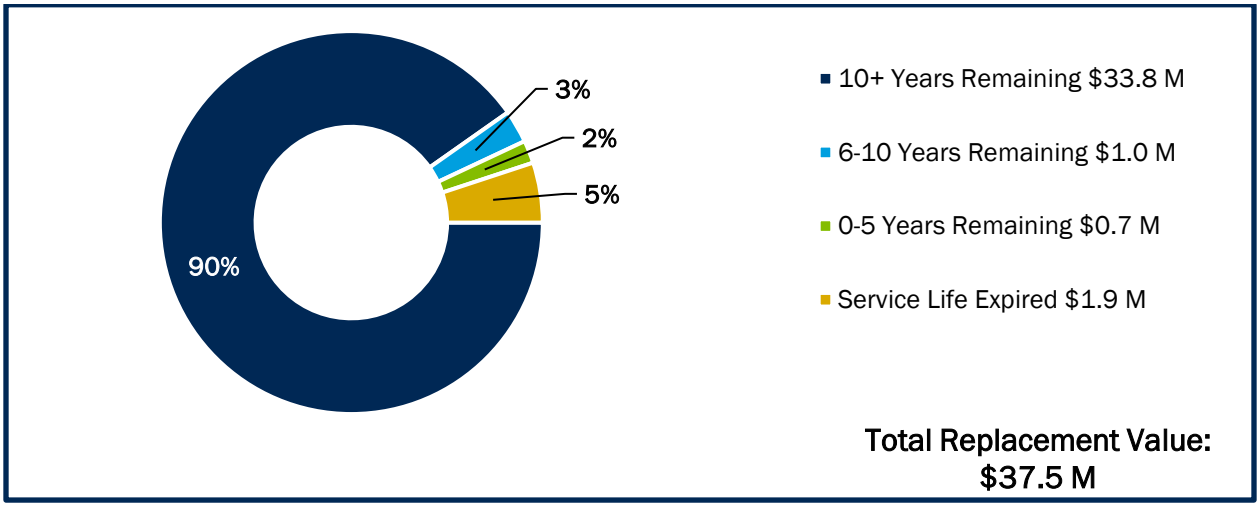

Figure 19 Age Distribution of Fire Hall Assets

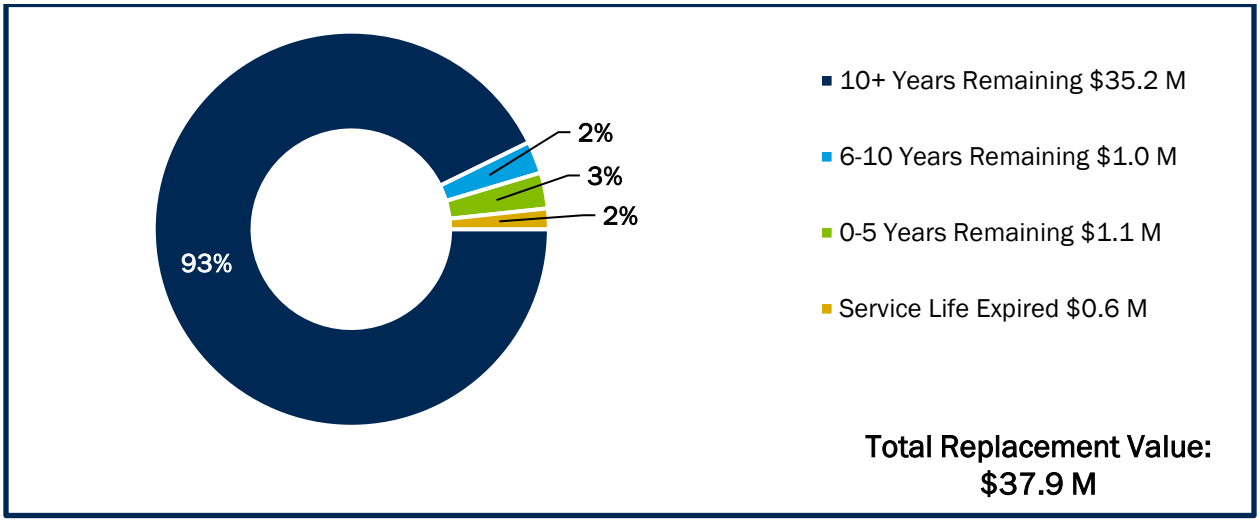

Figure 20 Age Distribution of Operations Facilities Assets

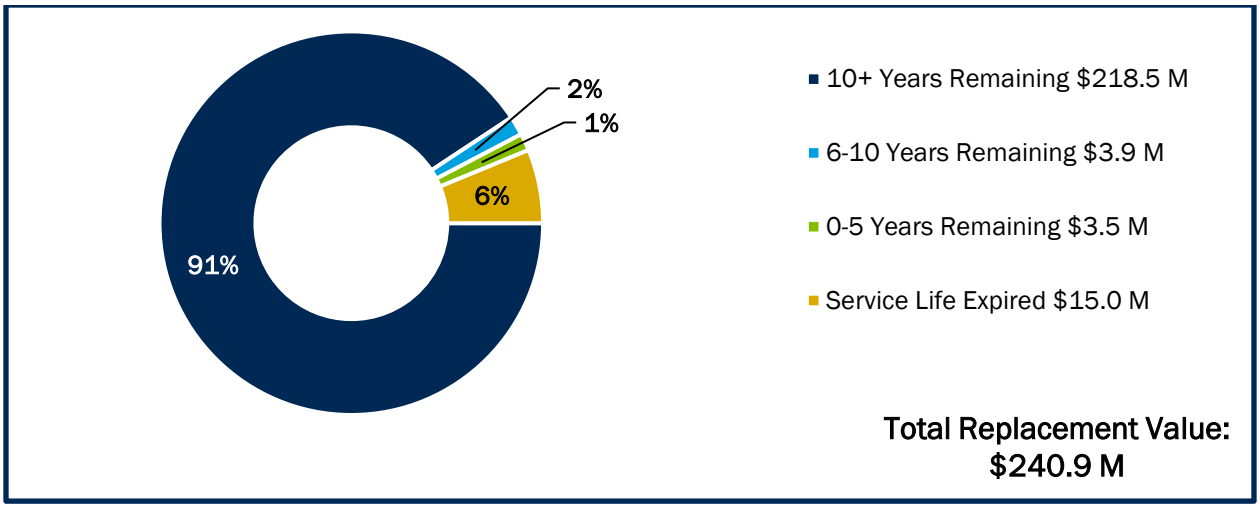

Figure 21 Age Distribution of Sports Facilities Assets

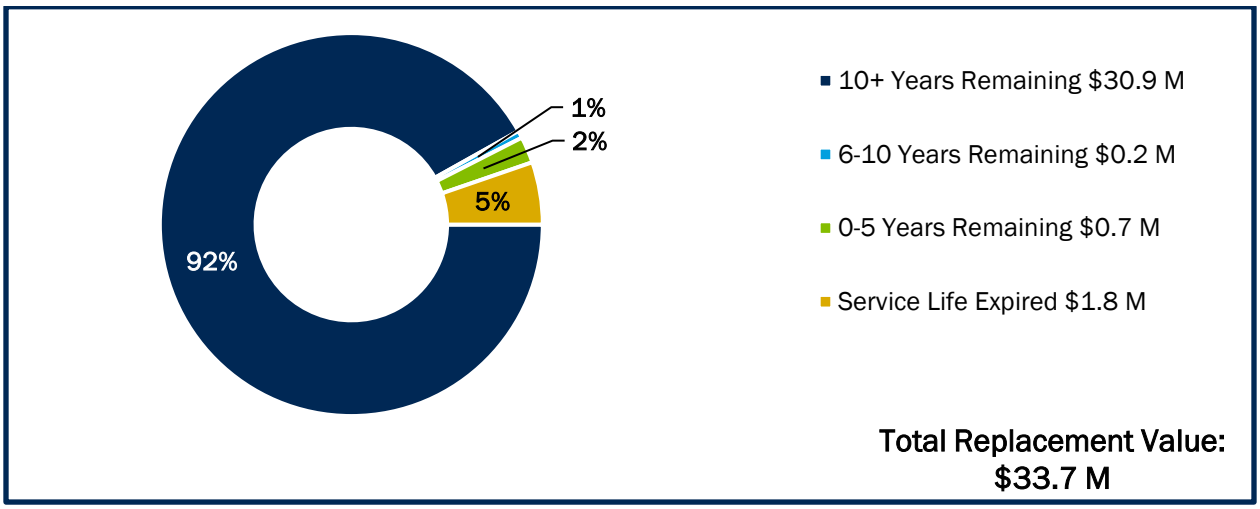

Figure 22 Age Distribution of Municipal Building Assets

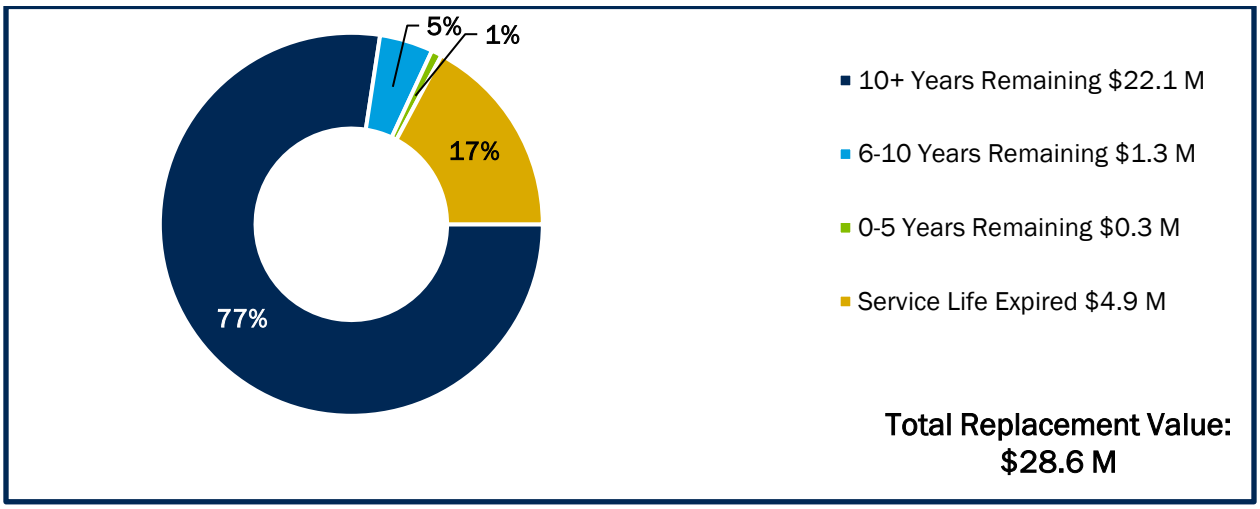

Figure 23 Age Distribution of Other Town Properties Assets

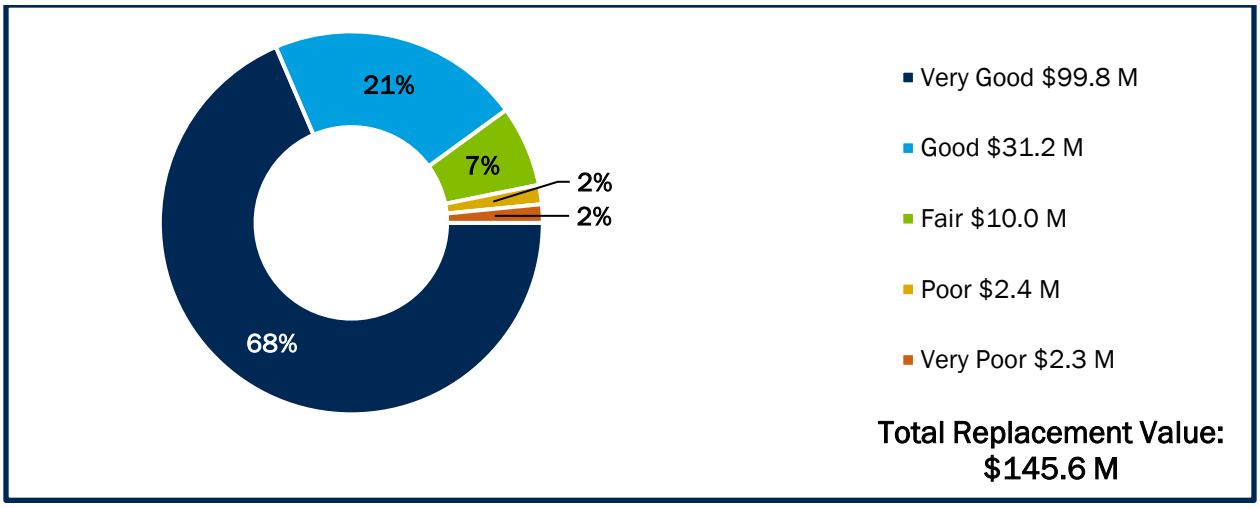

Figure 24 Condition Ratings of Community Centres Assets

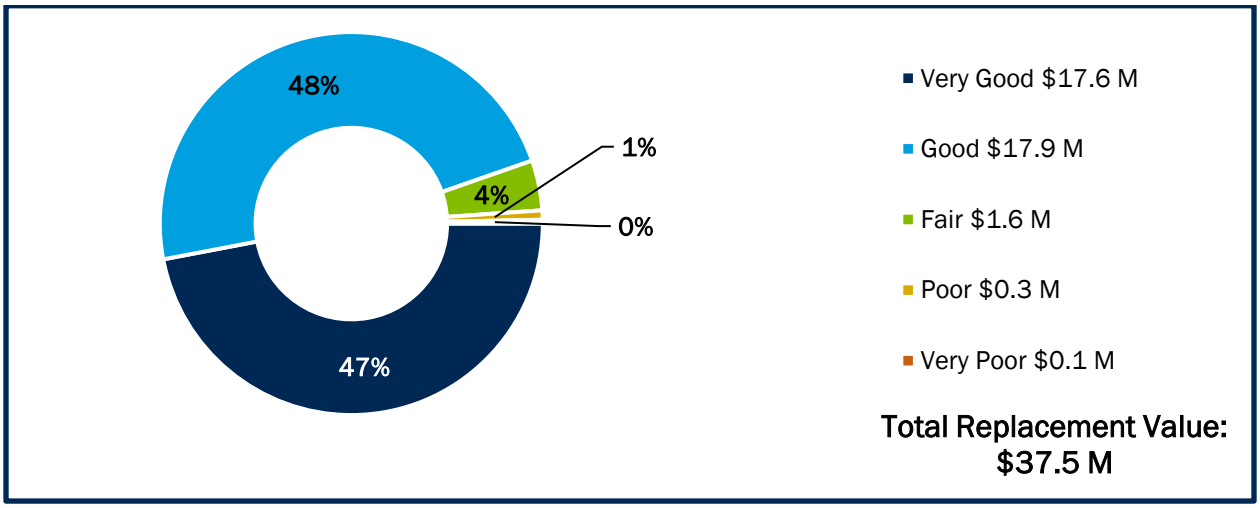

Figure 25 Condition Ratings of Fire Hall Assets

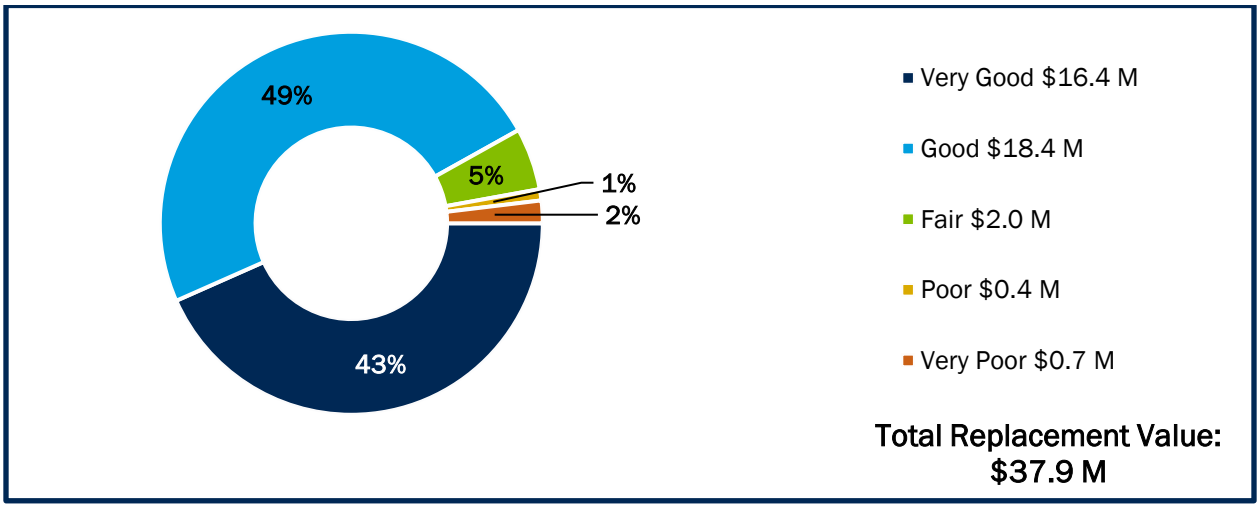

Figure 26 Condition Ratings of Operations Facilities Assets

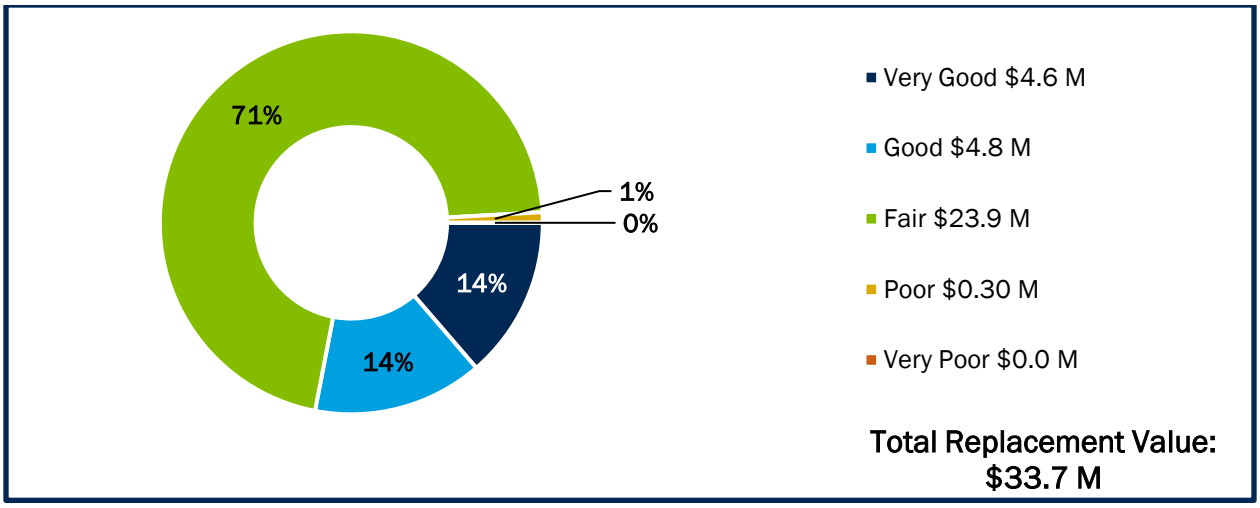

Figure 27 Condition Ratings of Municipal Building Assets

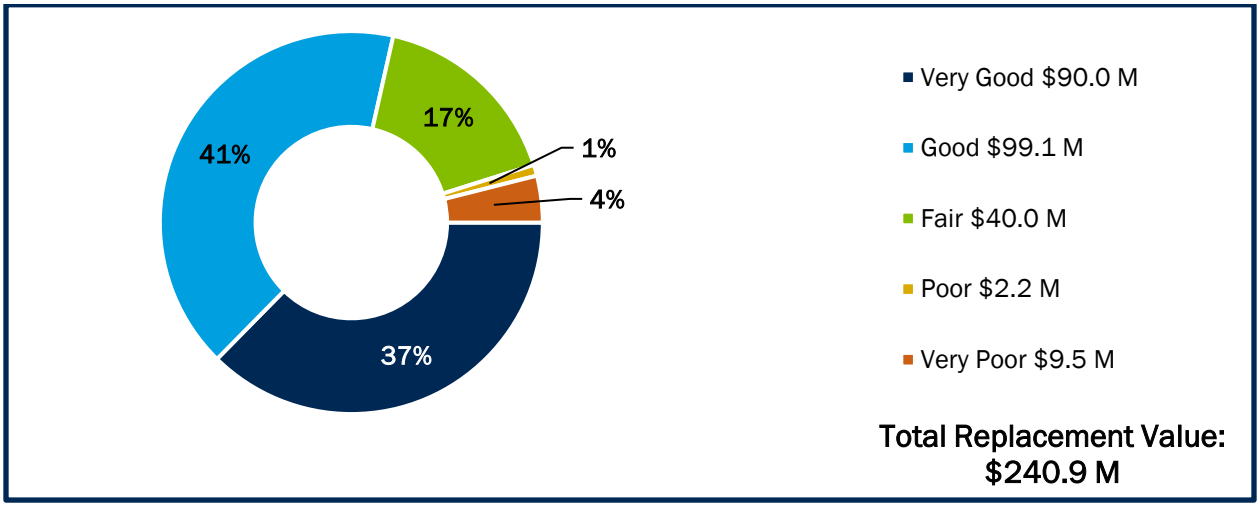

Figure 28 Condition Ratings of Sports Facilities Assets

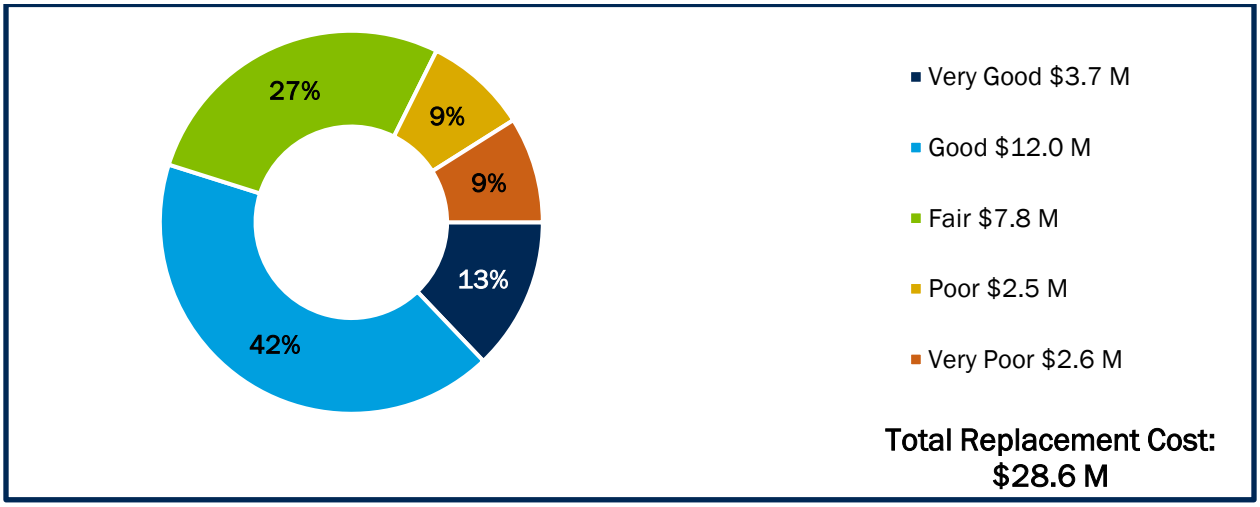

Figure 29 Condition Ratings of Other Town Property Assets

Fire Equipment

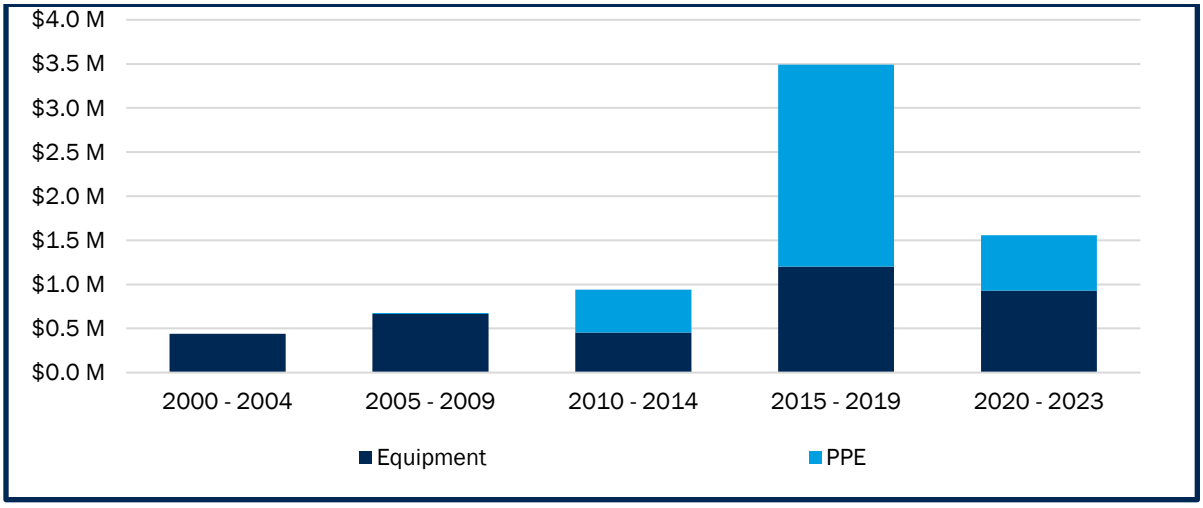

Figure 30 In-Service Dates of Fire Equipment Assets

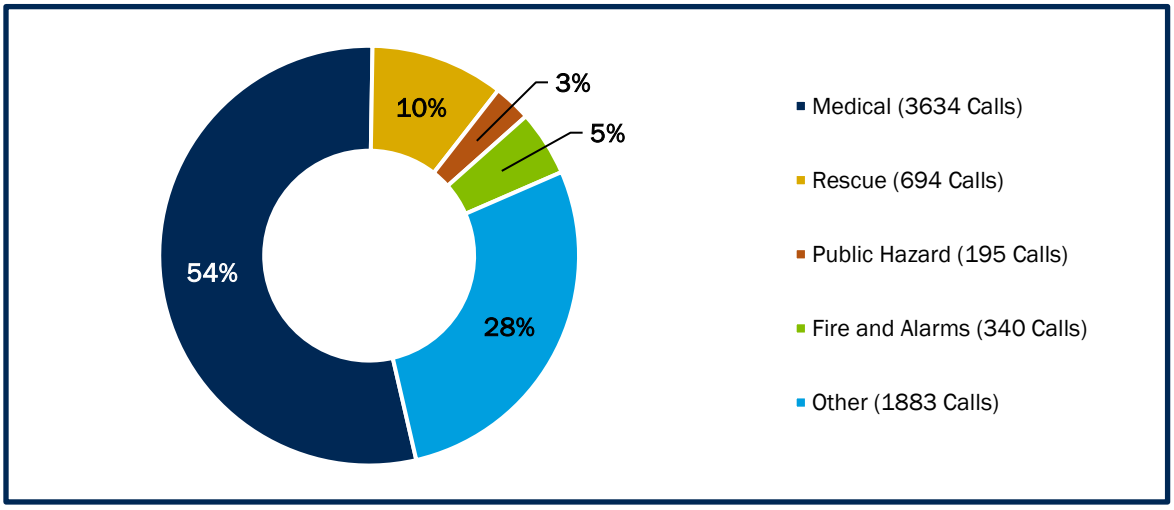

Figure 31 Composition of Service Calls Handled by Whitby Fire and Emergency Services in 2023

Library

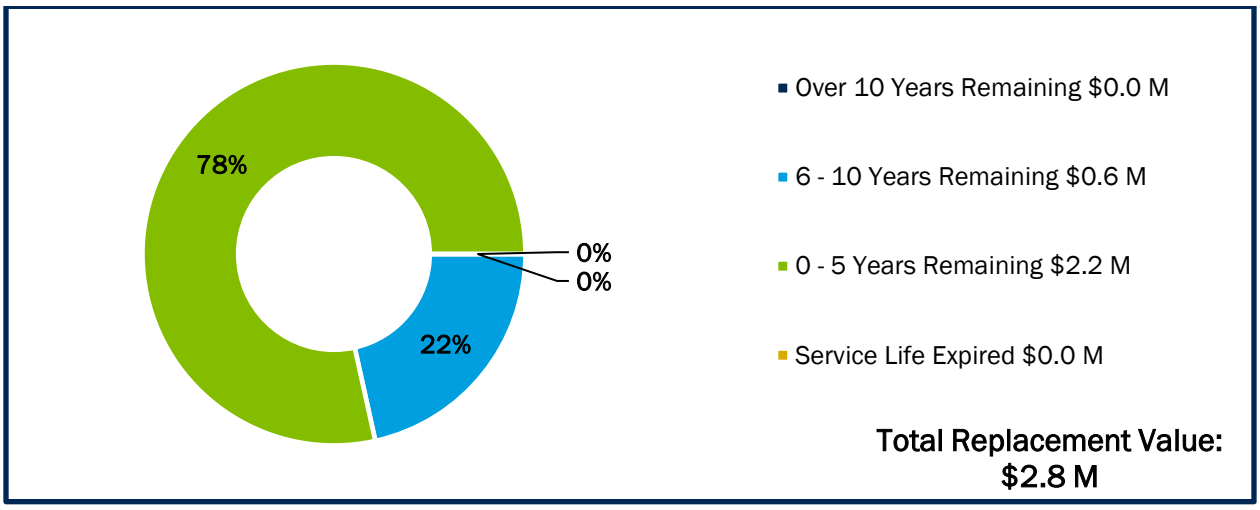

Figure 32 Age Distribution of Library Collections Assets

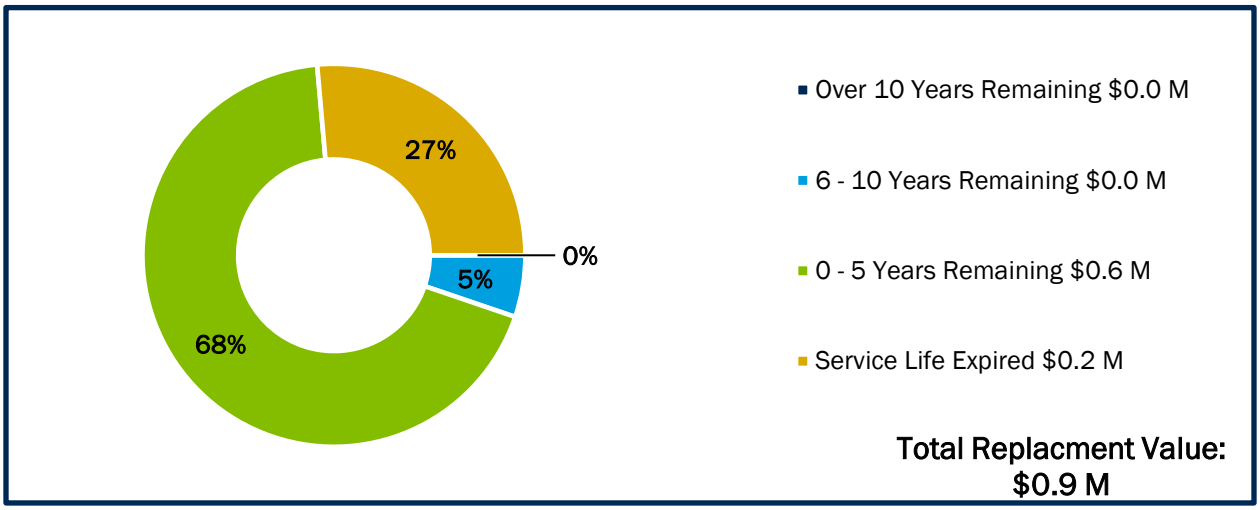

Figure 33 Age Distribution of Library Equipment Assets

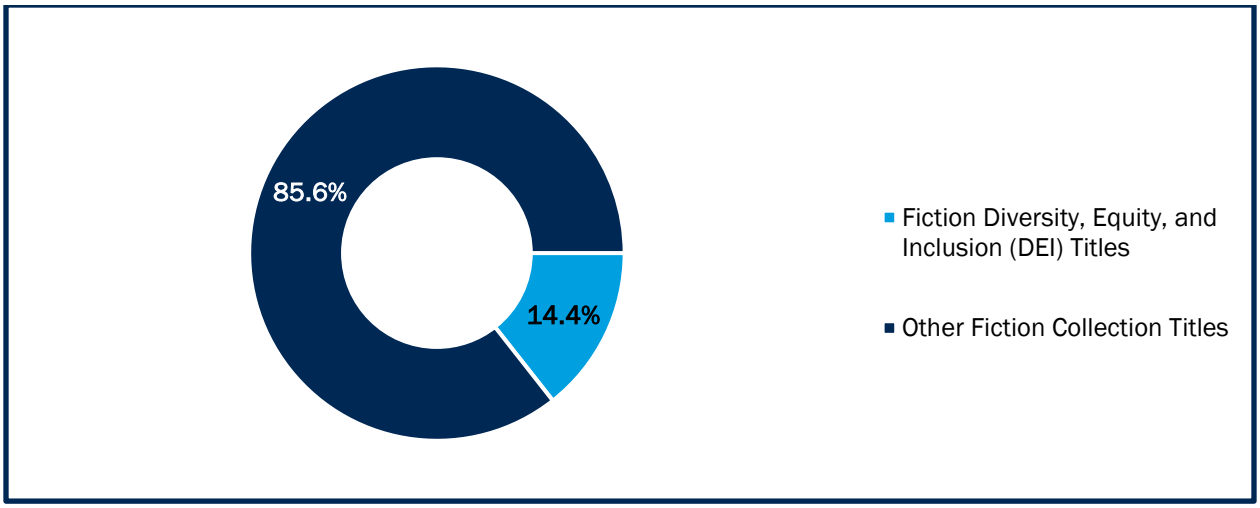

Figure 34 Library Diversity, Equity, and Inclusion (DEI) Titles in the Fiction Collection

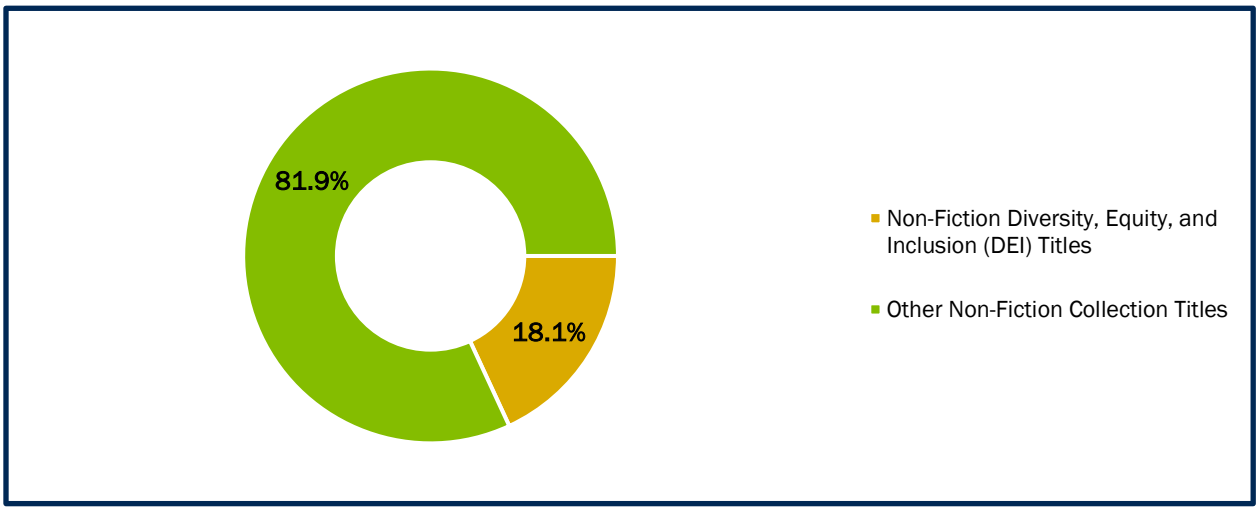

Figure 35 Library Diversity, Equity, and Inclusion (DEI) Titles in the Non-Fiction Collection

Parks

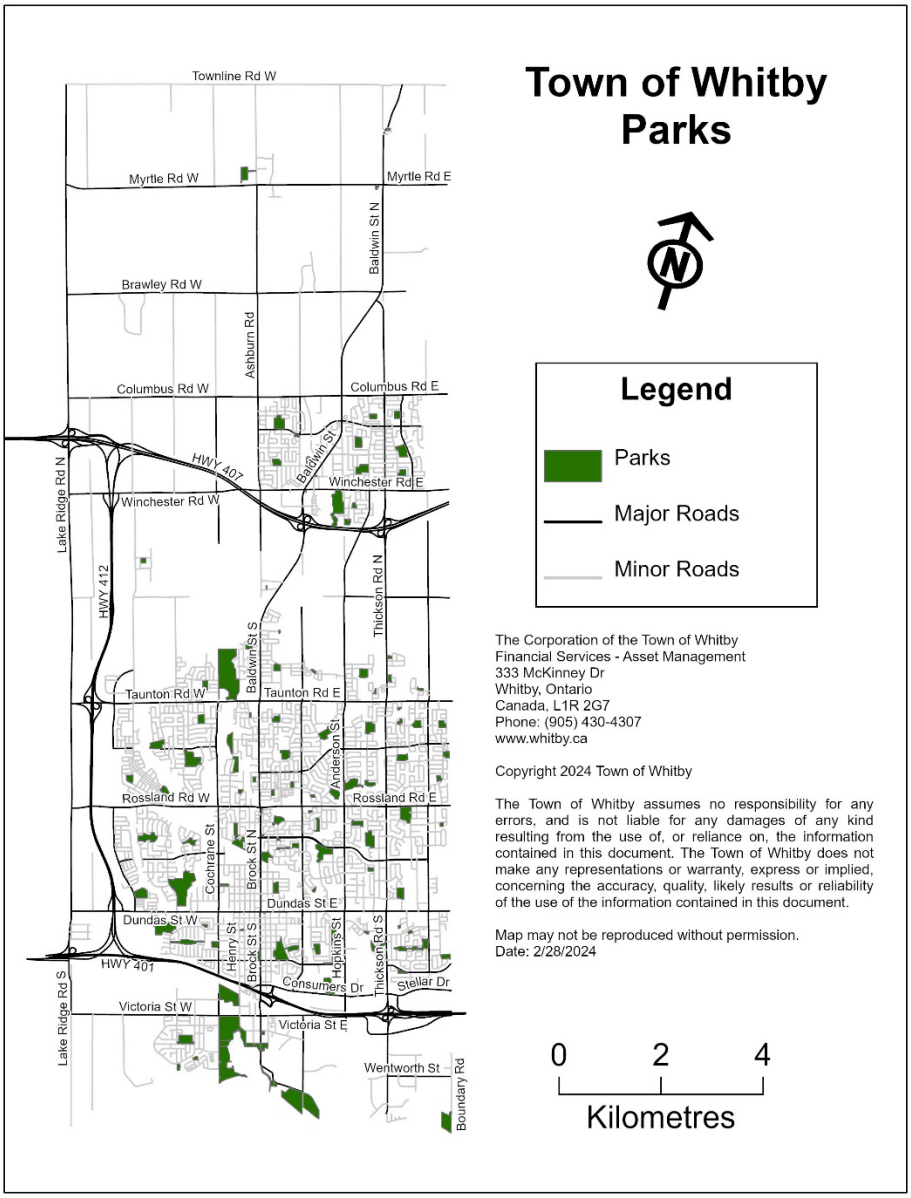

Figure 36 Locations of Town-owned Parks

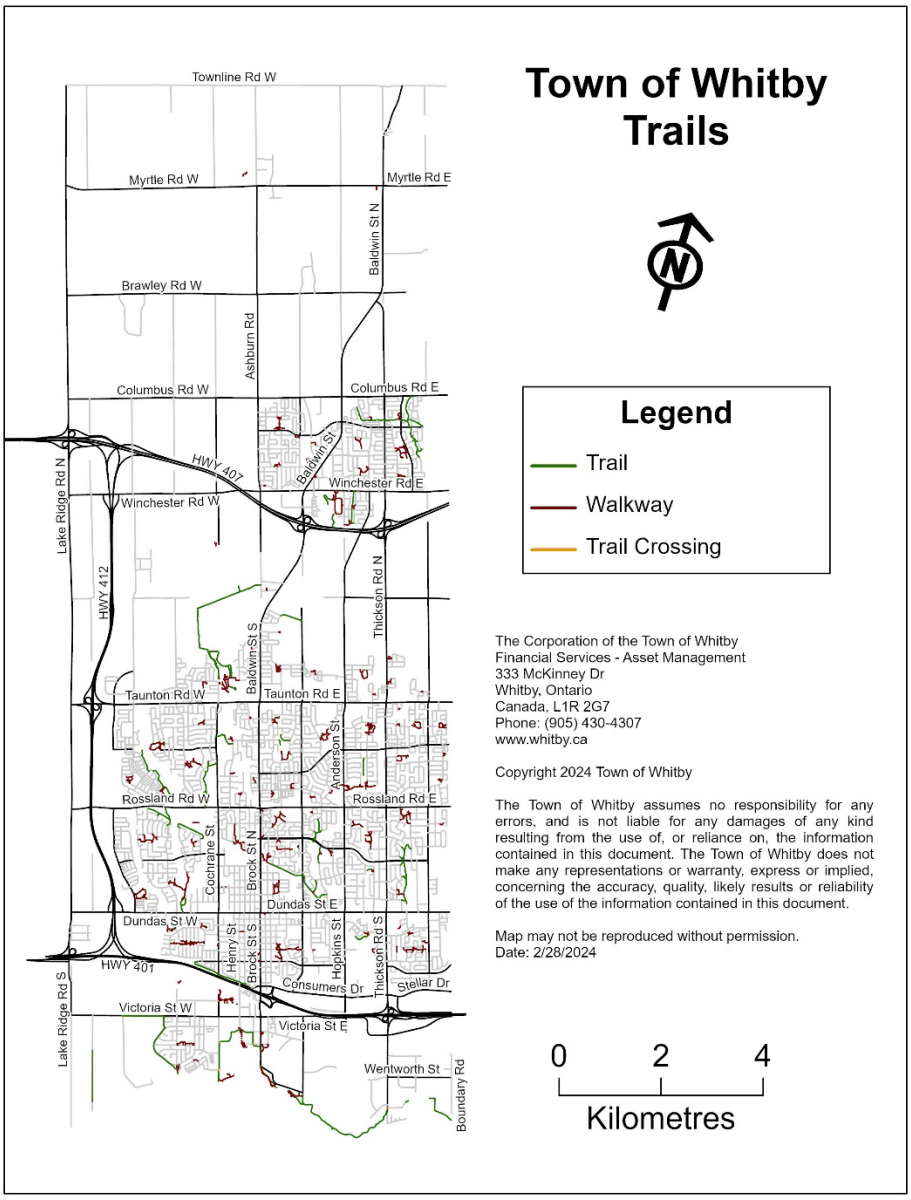

Figure 37 Scope and Connectivity of Town of Whitby Trail Network

Road Right-of-Way

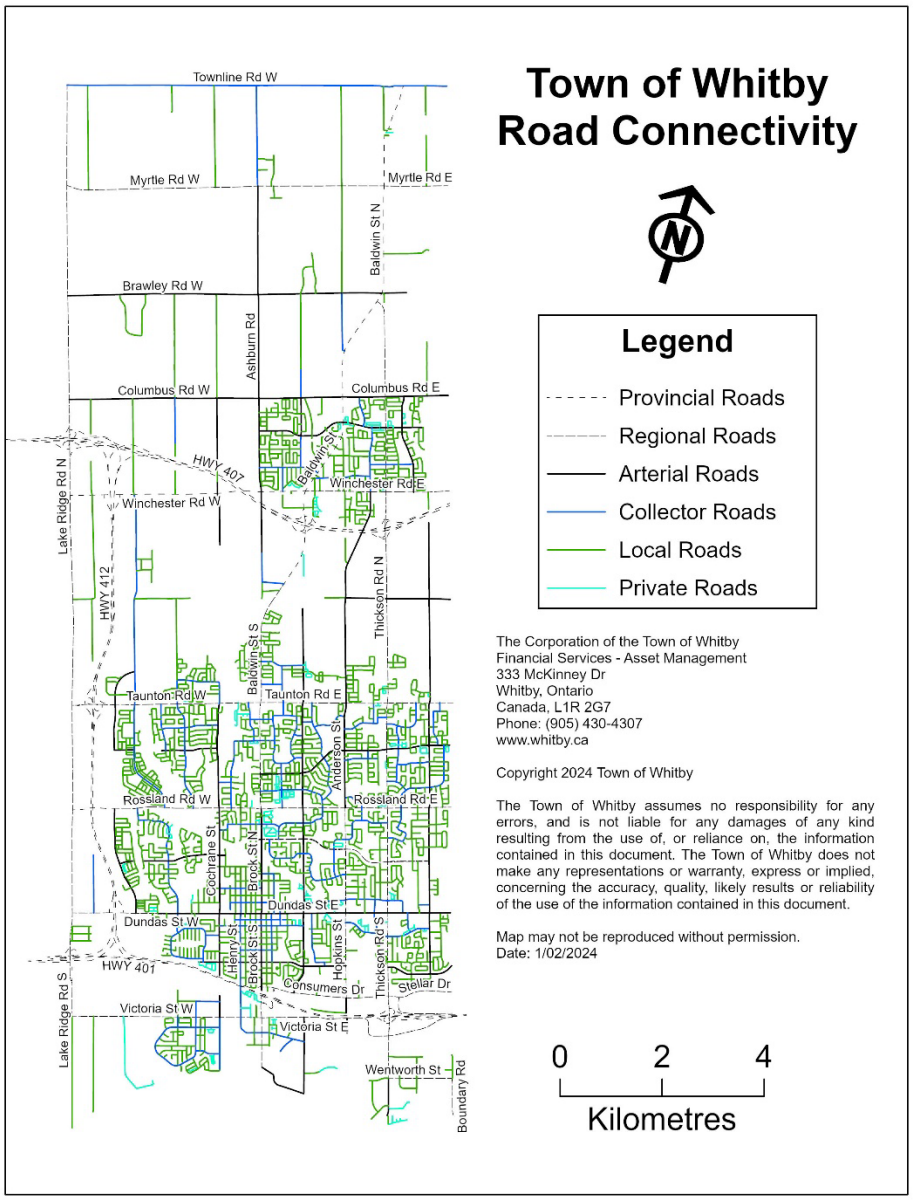

Figure 38 Scope and Connectivity of Town of Whitby Roads

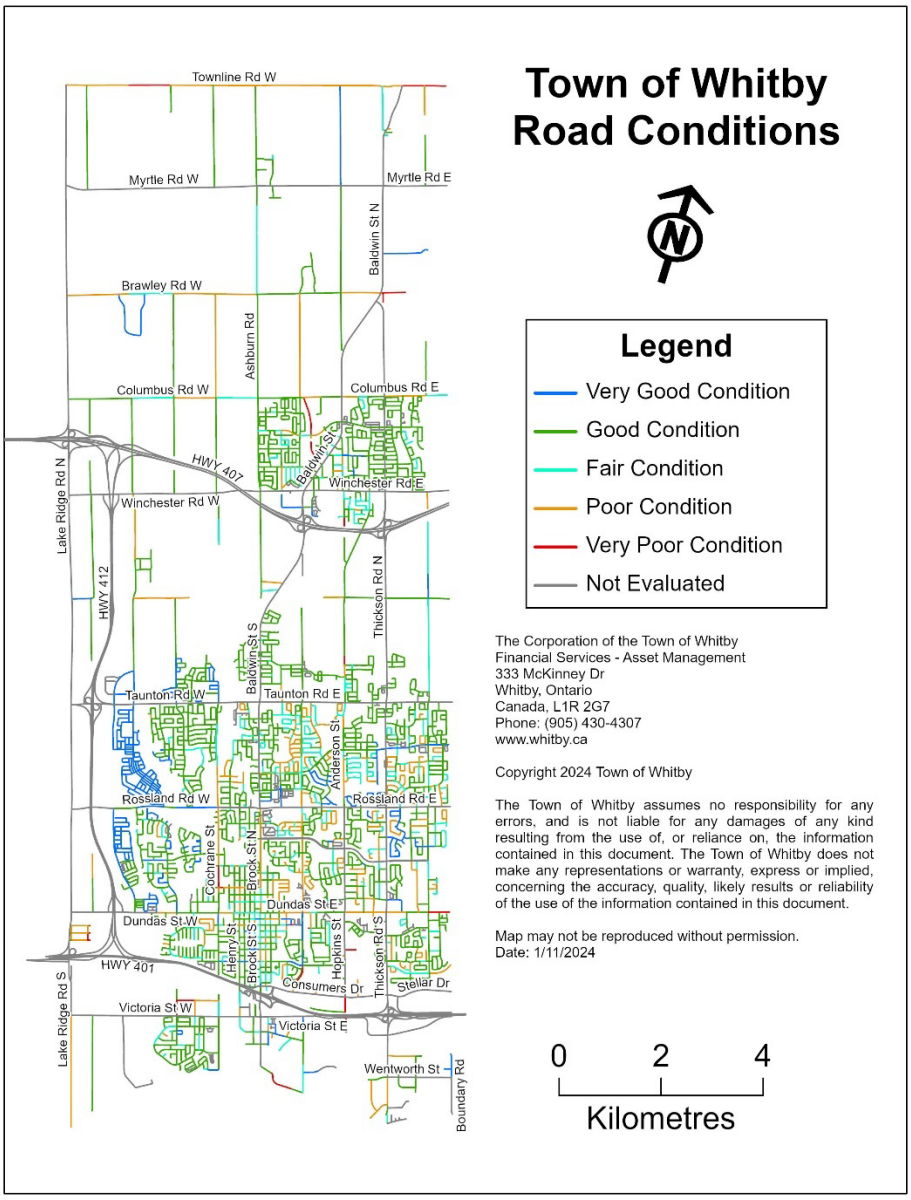

Figure 39 Conditions of Town Roads

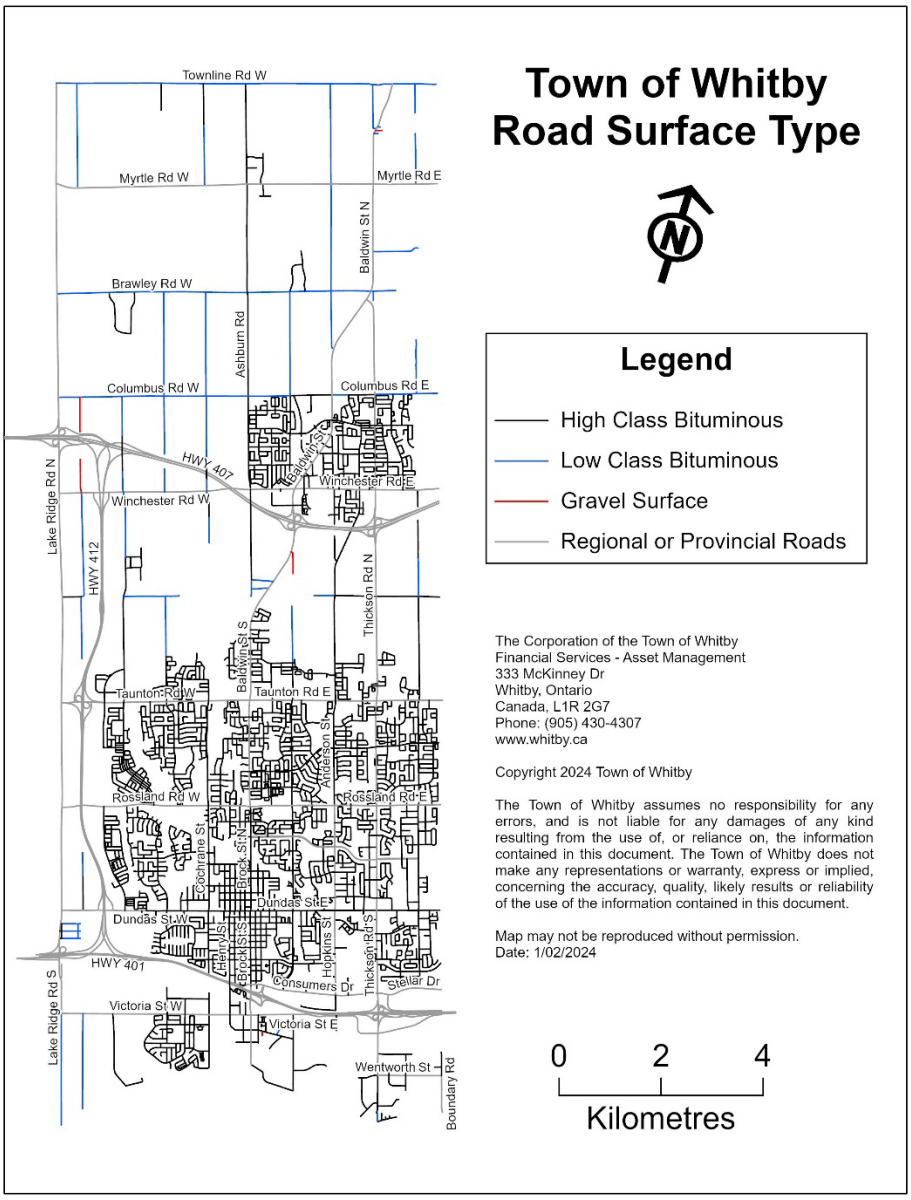

Figure 40 Surface Types of Town Roads

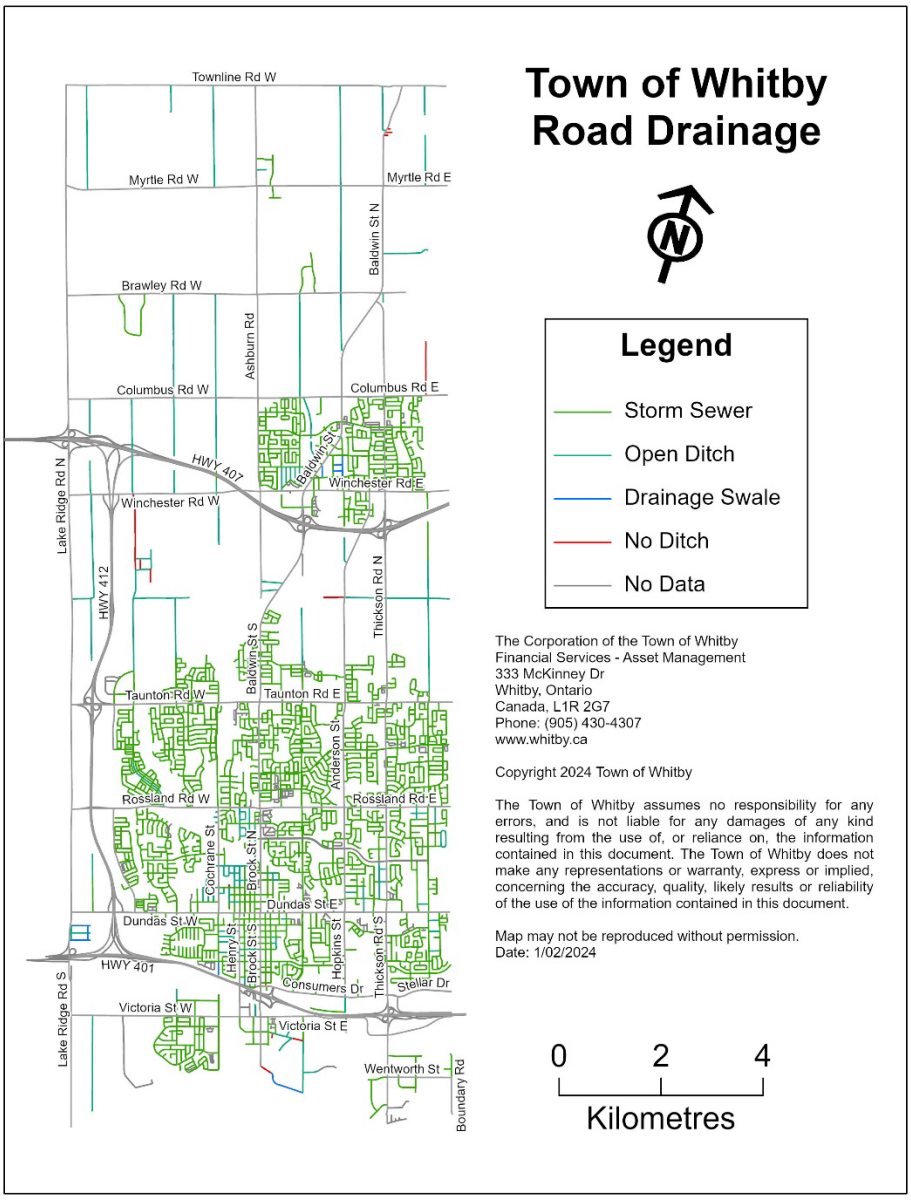

Figure 41 Extent of Stormwater Management on Town Roads

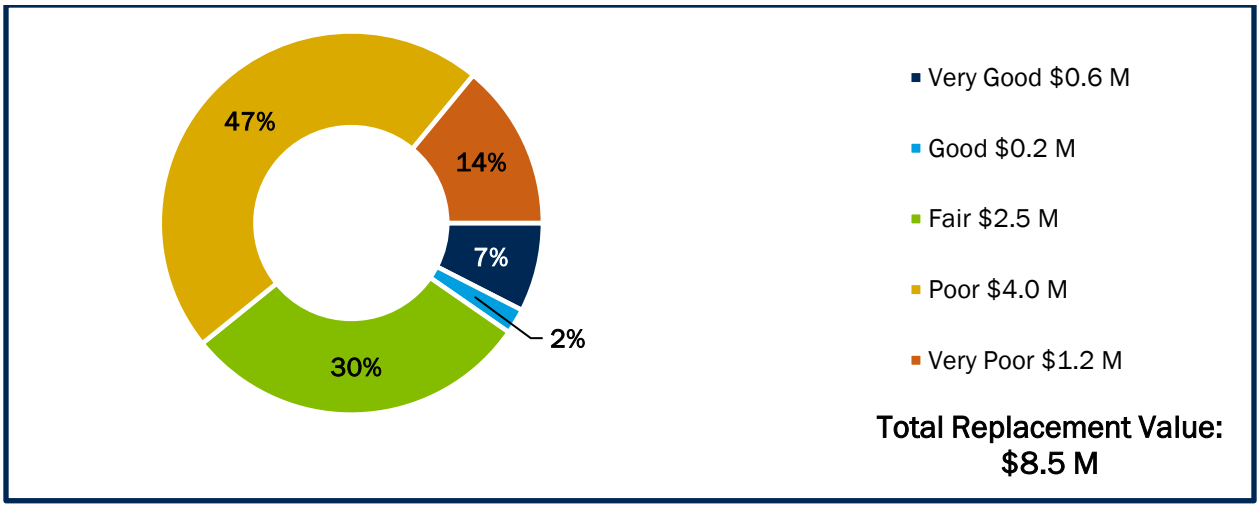

Figure 42 Condition Ratings of Town-owned Small Culverts (< 3 m in Diameter)

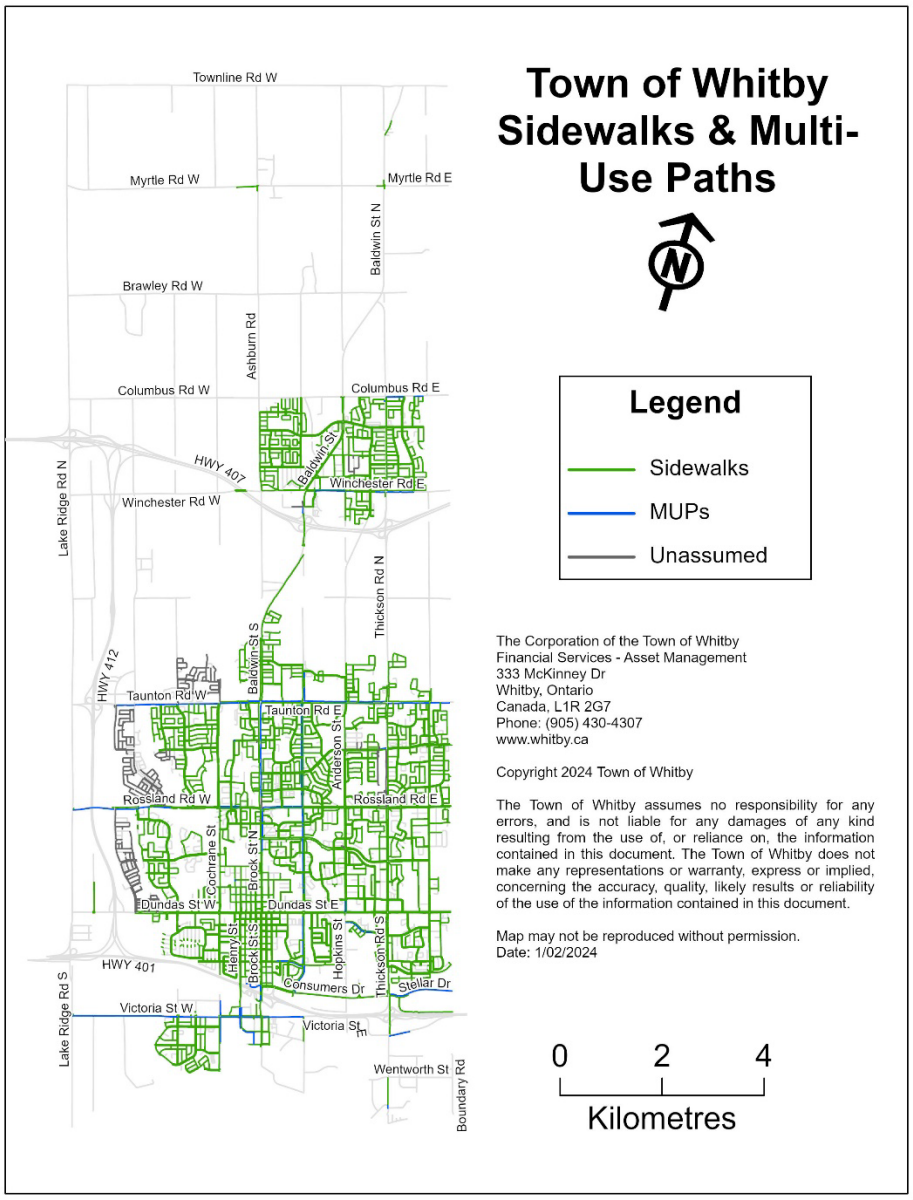

Figure 43 Scope and Connectivity of Town of Whitby Sidewalks and Multi-Use Path Network

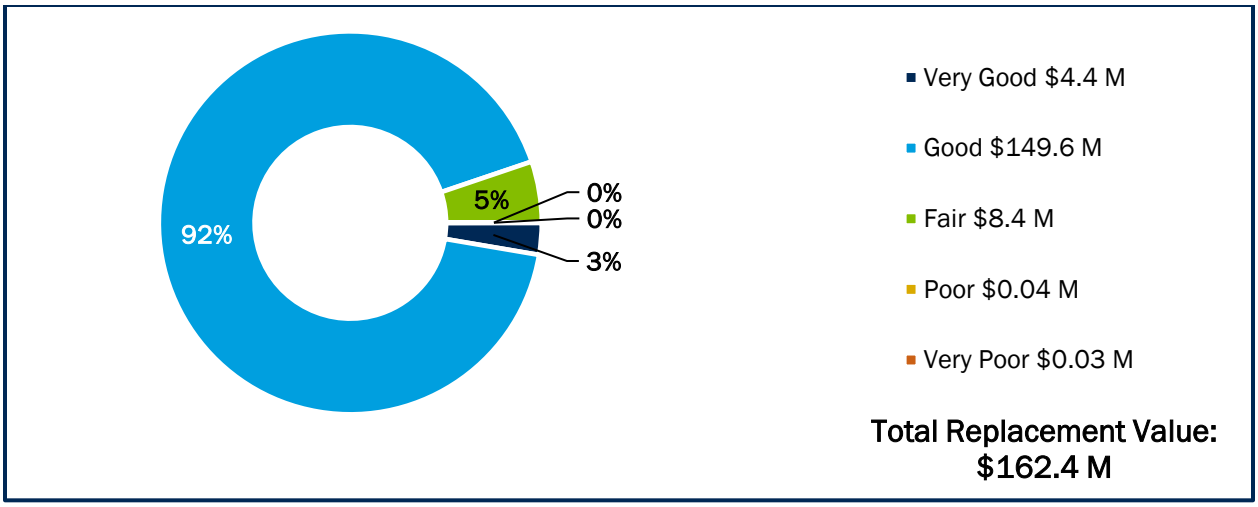

Figure 44 Condition Ratings of Town-owned sidewalks and multi-use paths

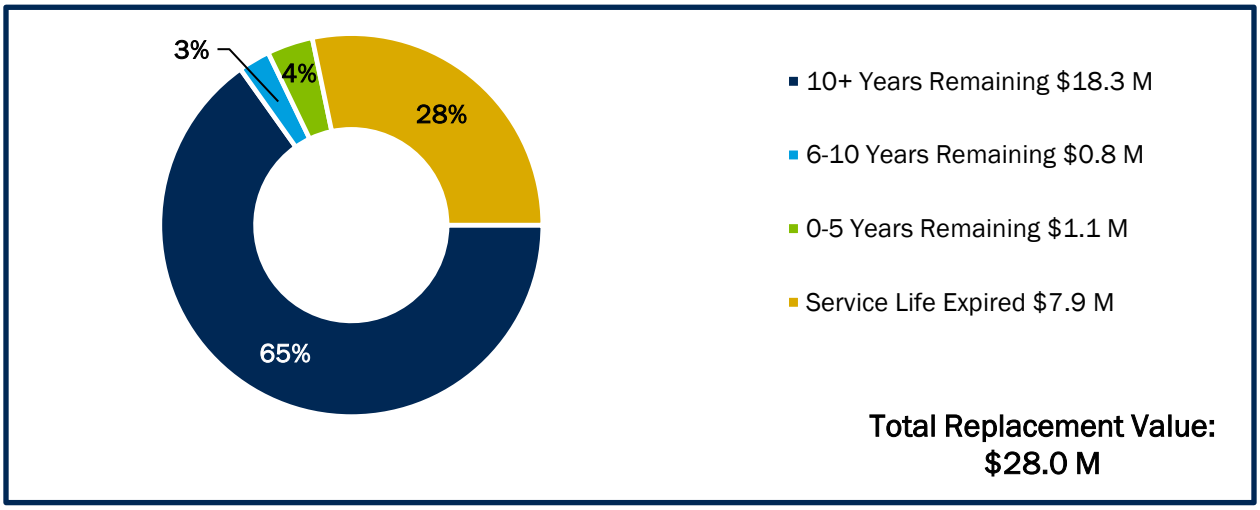

Figure 45 Age Distribution of Town-owned Street Light Poles

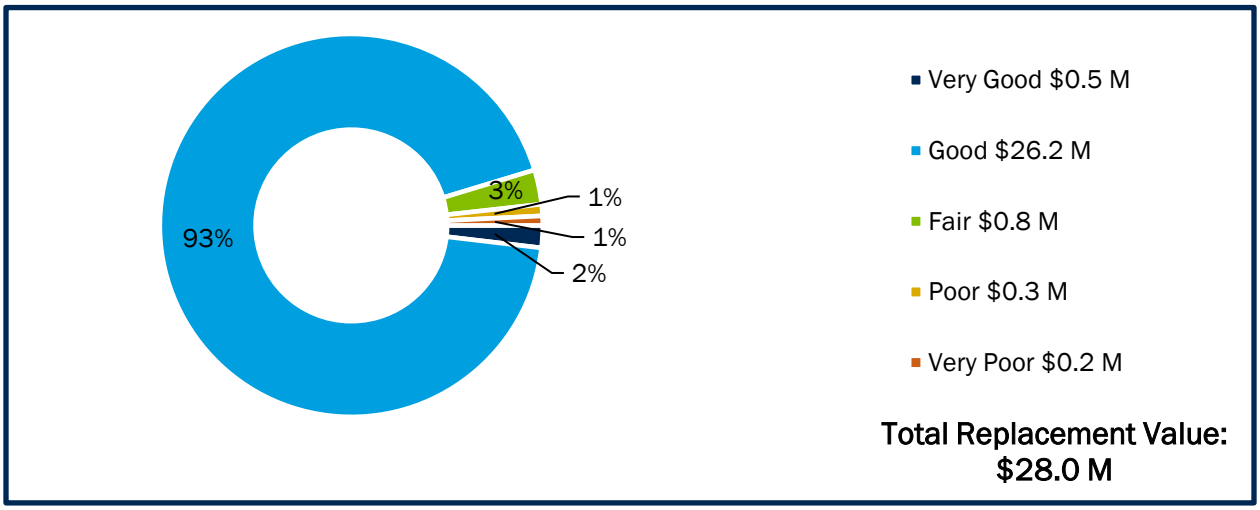

Figure 46 Condition Ratings of Town-owned Street Light Poles

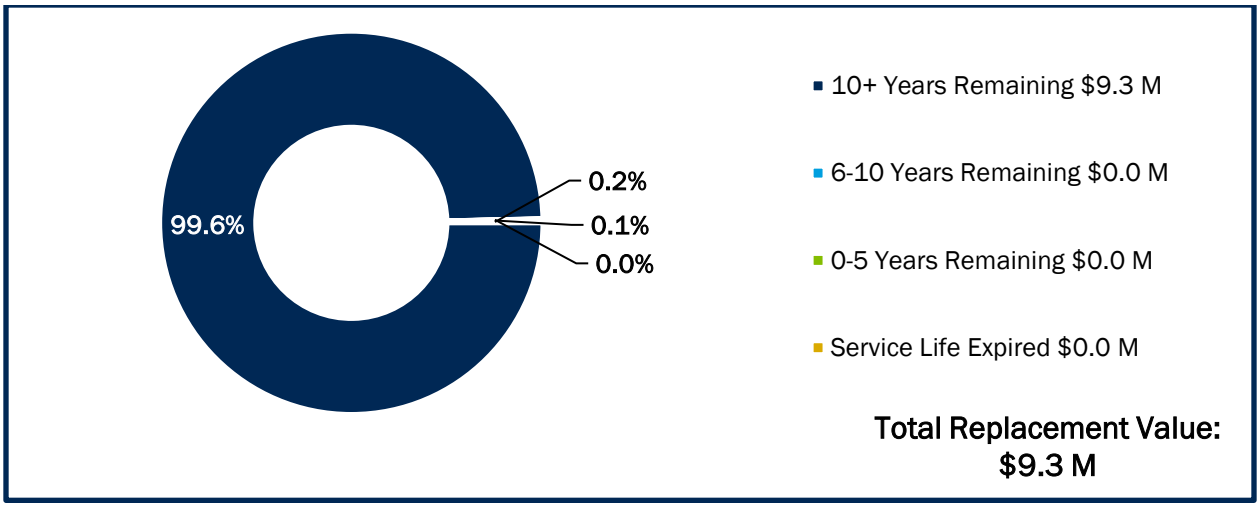

Figure 47 Age Distribution of Town-owned Street Light Luminaires

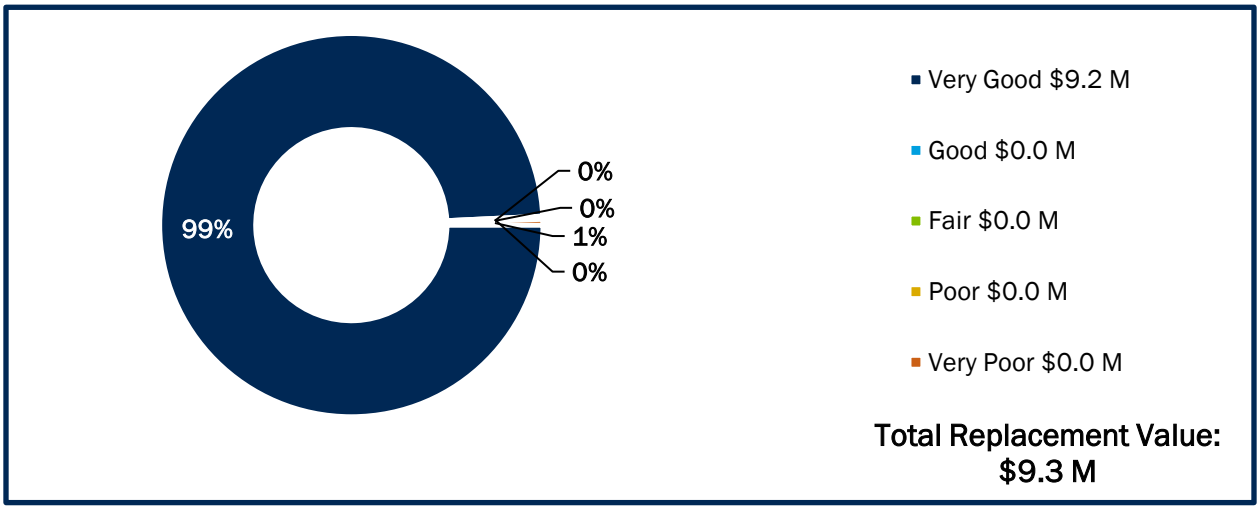

Figure 48 Condition Ratings of Town-owned Street Light Luminaires

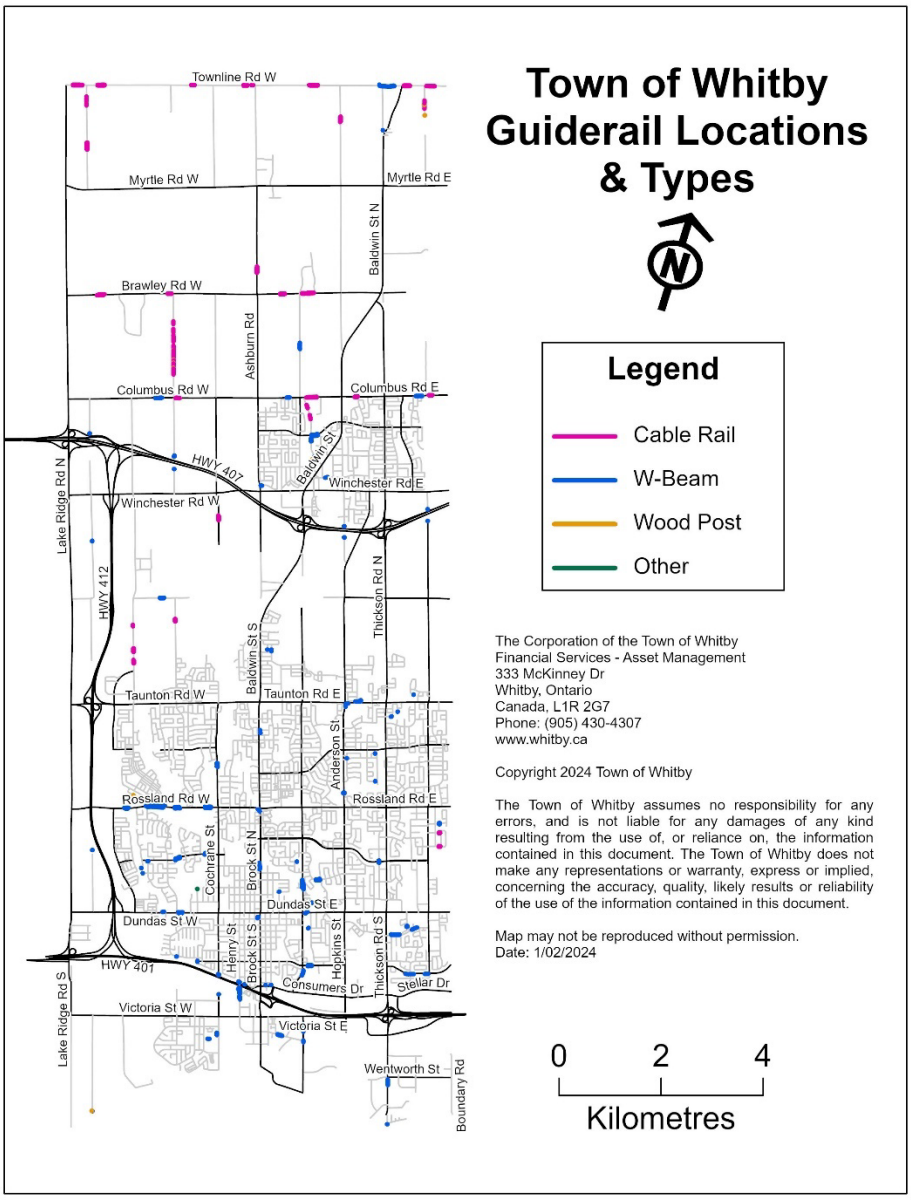

Figure 49 Locations and Types of Town-owned Guiderails

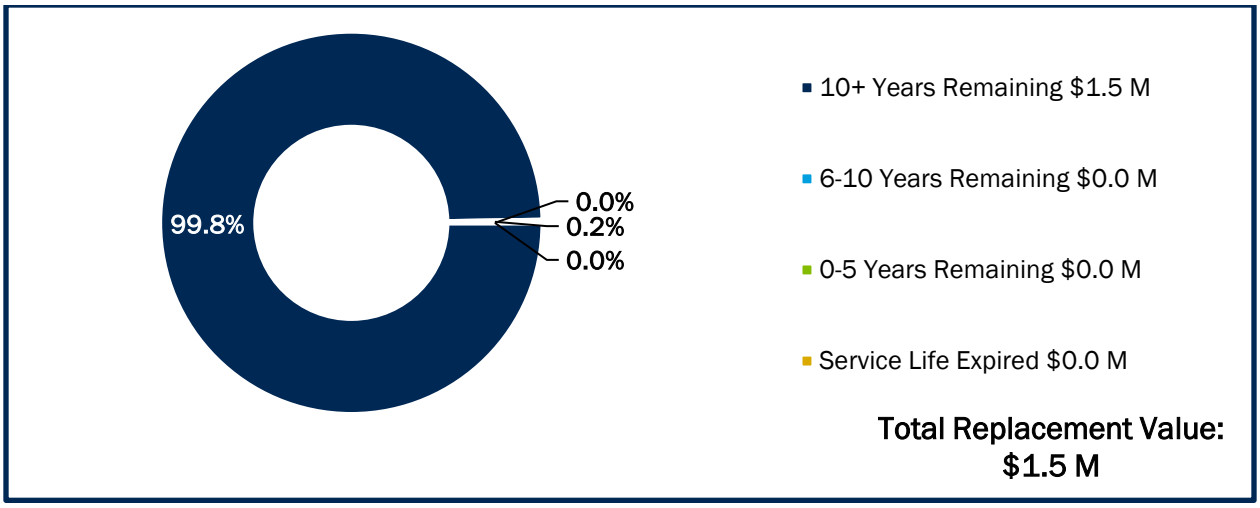

Figure 50 Age Distribution of Town-owned Guiderails

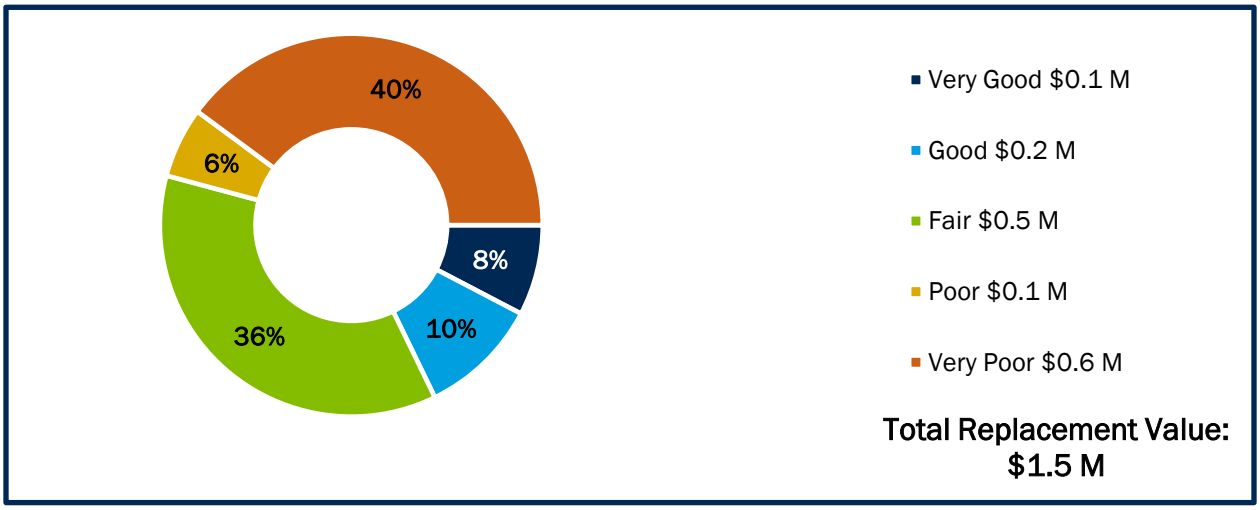

Figure 51 Condition Ratings of Town-owned Guiderails

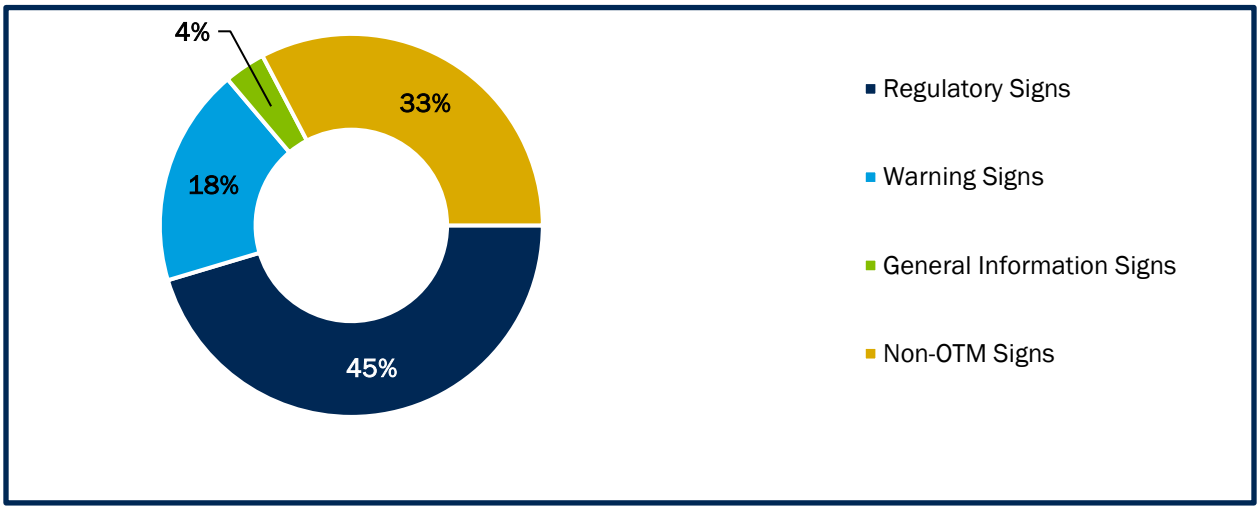

Figure 52 Sign types of Town-owned Information Signs

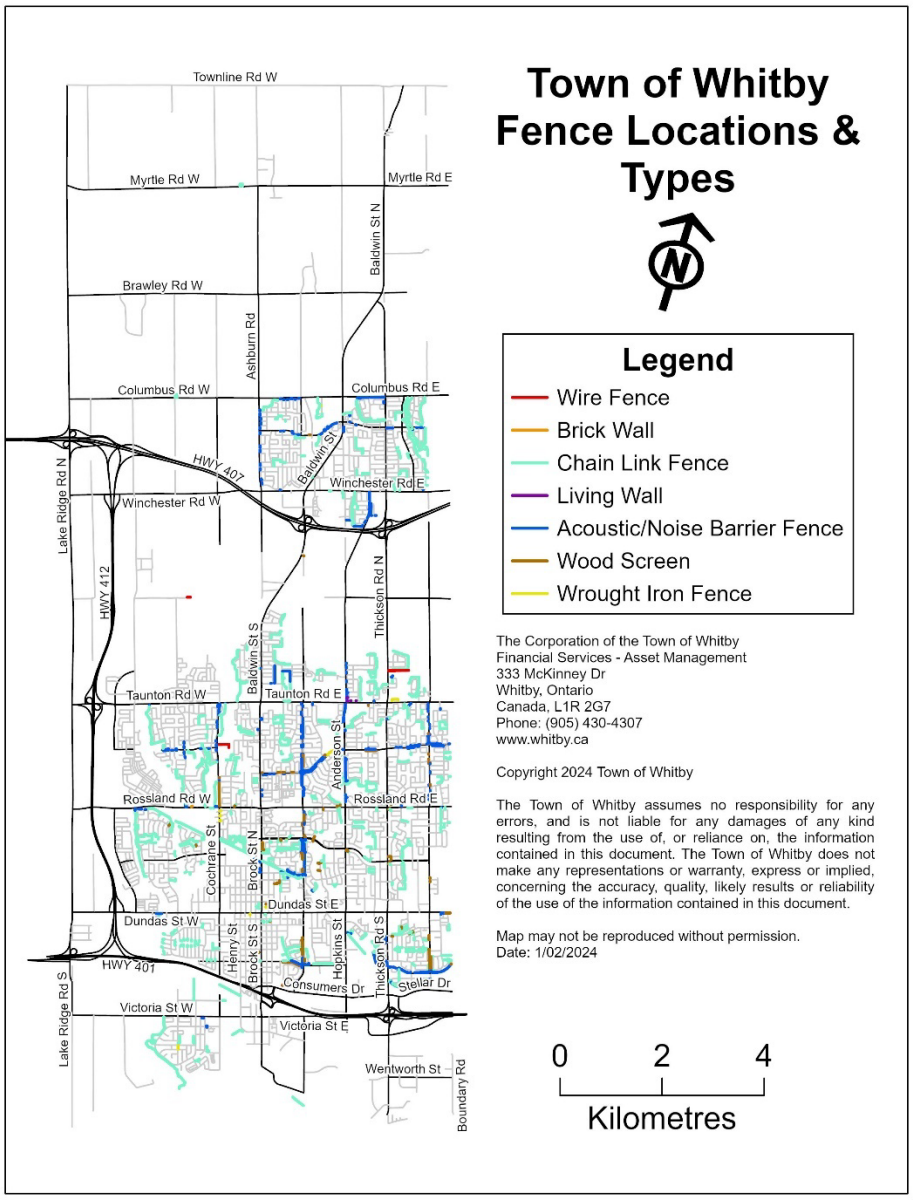

Figure 53 Locations and types of Town-owned Fences

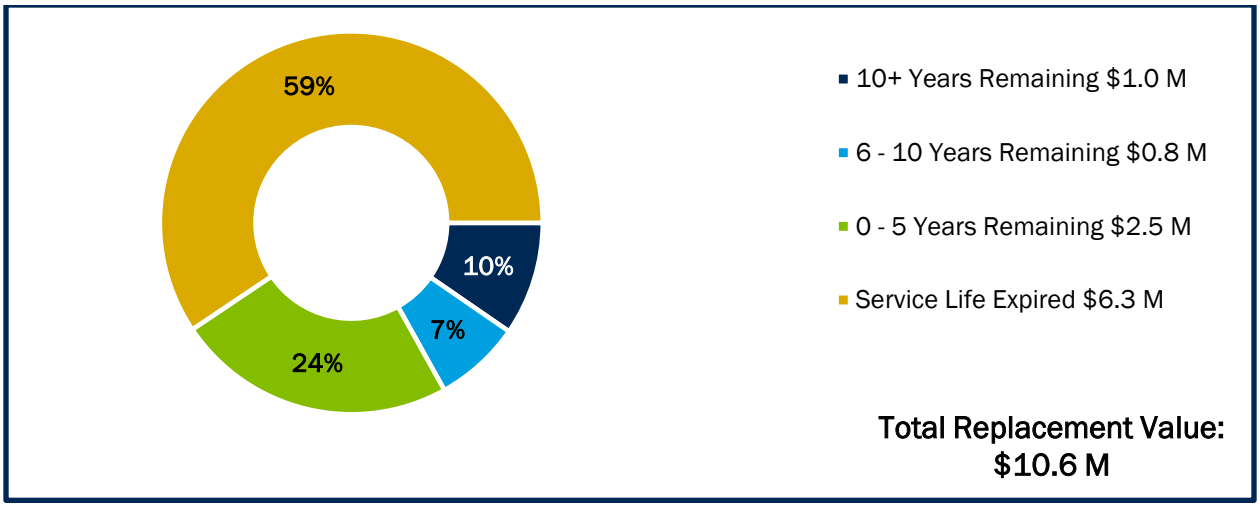

Figure 54 Age Distribution of Town-owned Fences

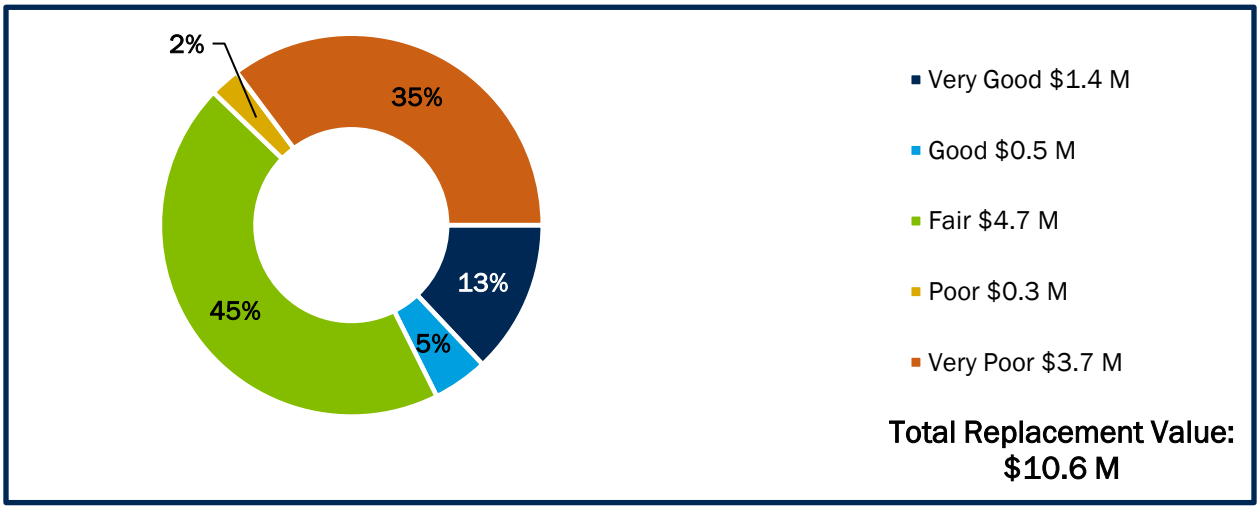

Figure 55 Condition Ratings of Town-owned Fences

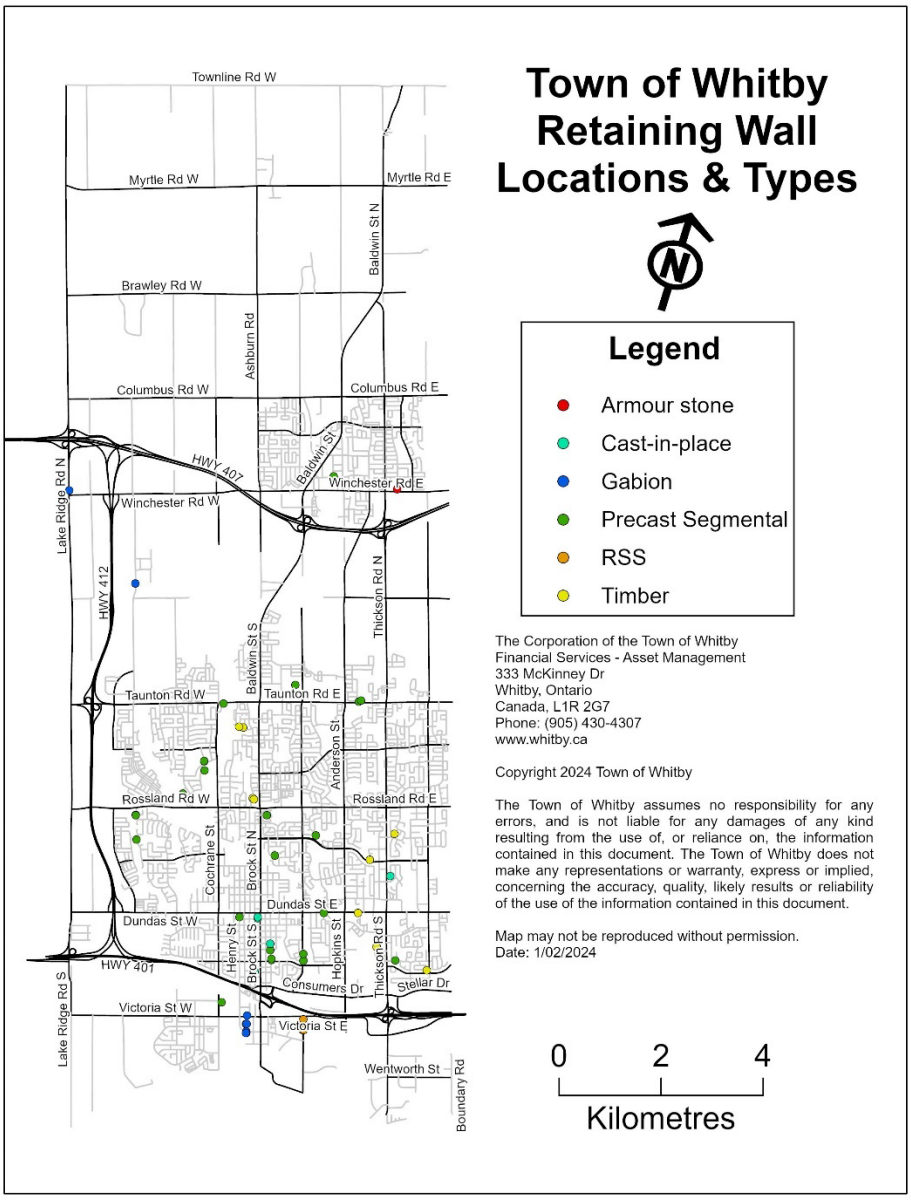

Figure 56 Locations and Types of Town-owned Retaining Walls

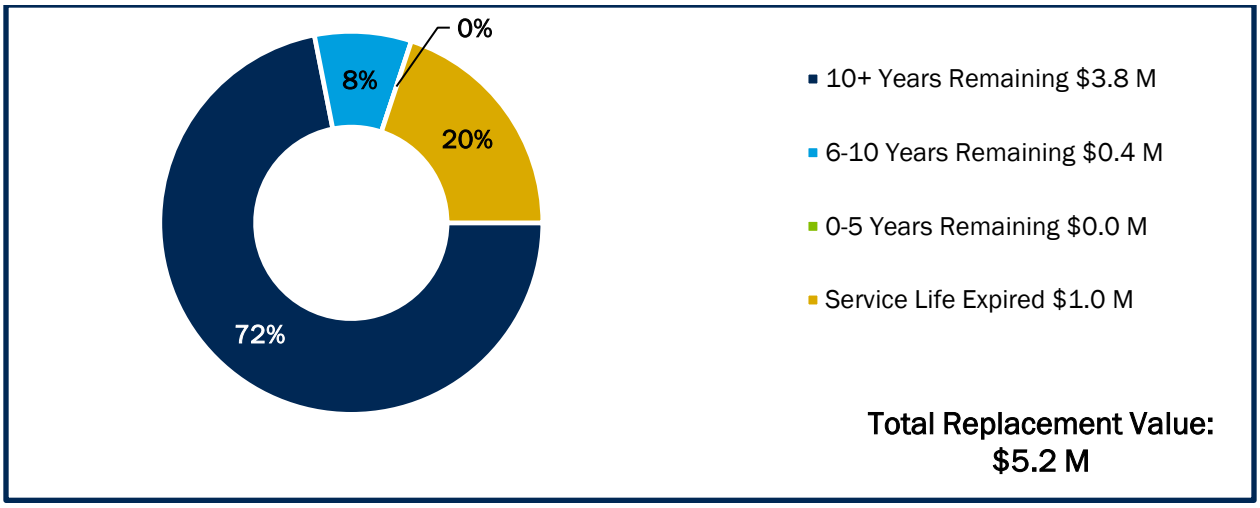

Figure 57 Age Distribution of Town-owned Retaining Walls

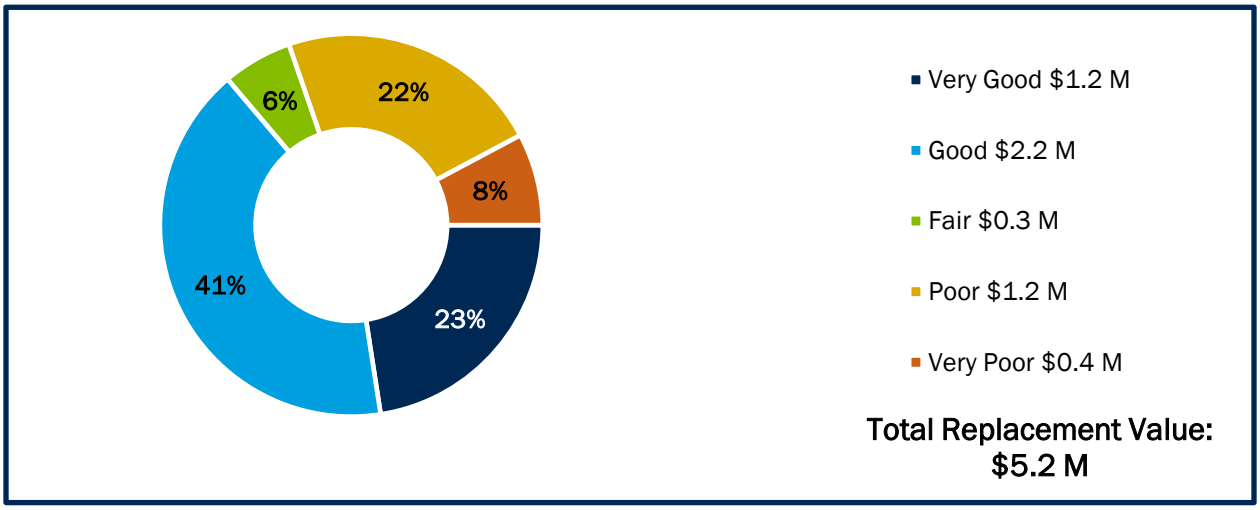

Figure 58 Condition Ratings of Town-owned Retaining Walls

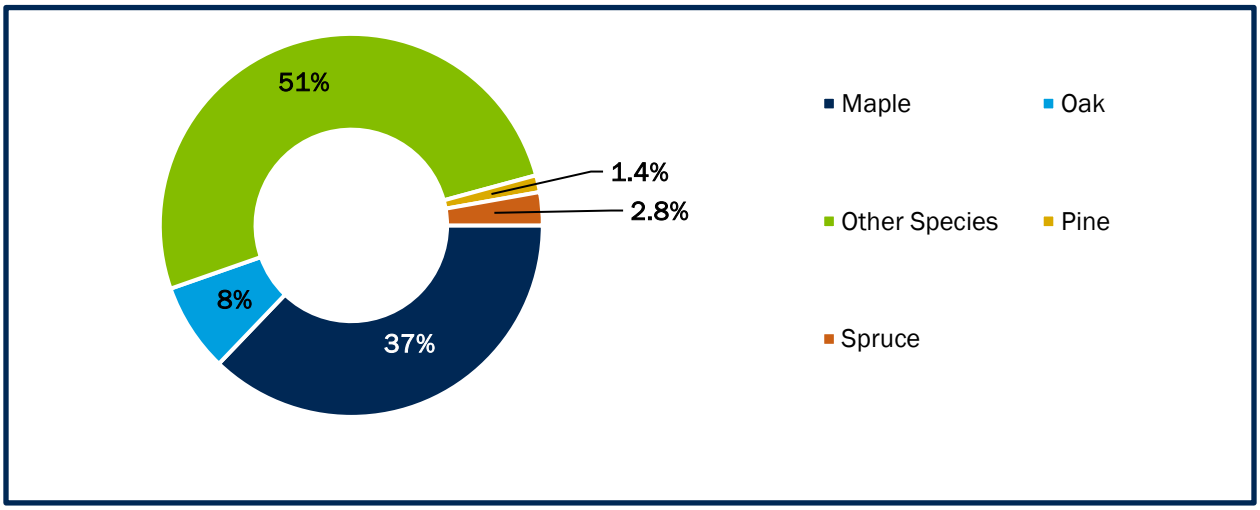

Figure 59 Species of Town-owned Street Trees

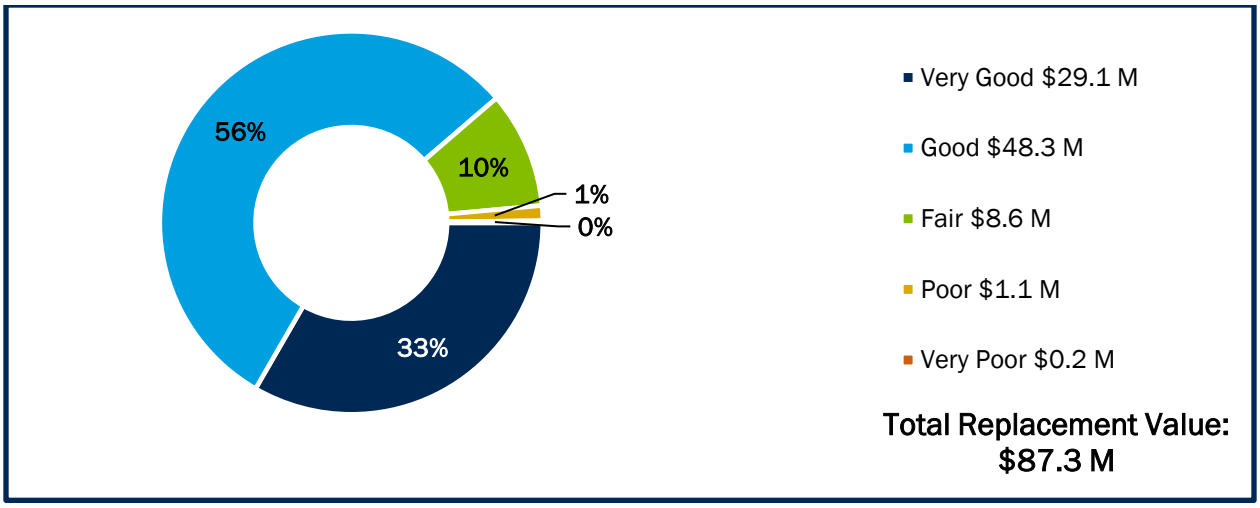

Figure 60 Condition Ratings of Town-owned Street Trees

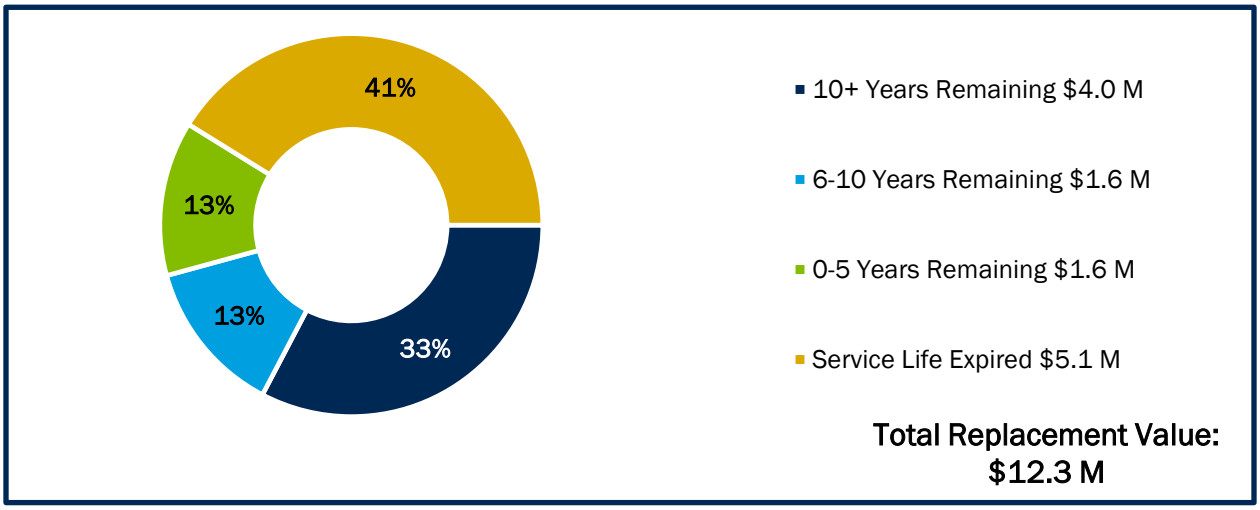

Figure 61 Age Distribution of Town-owned Traffic Control Signals

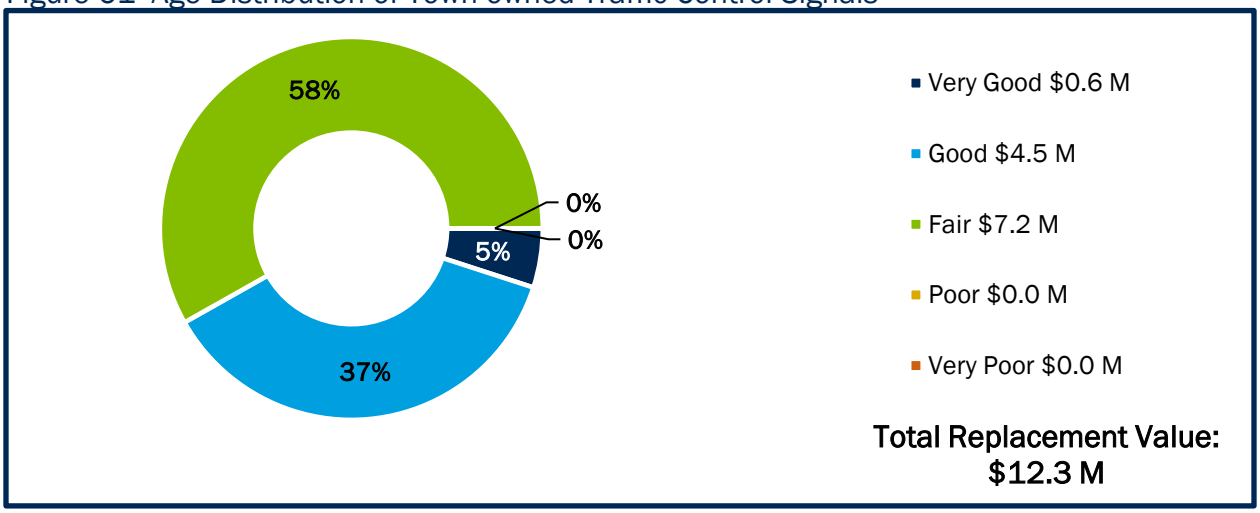

Figure 62 Condition Ratings of Town-owned Traffic Control Signals

Figure 63 A Parking Kiosk in Good Condition

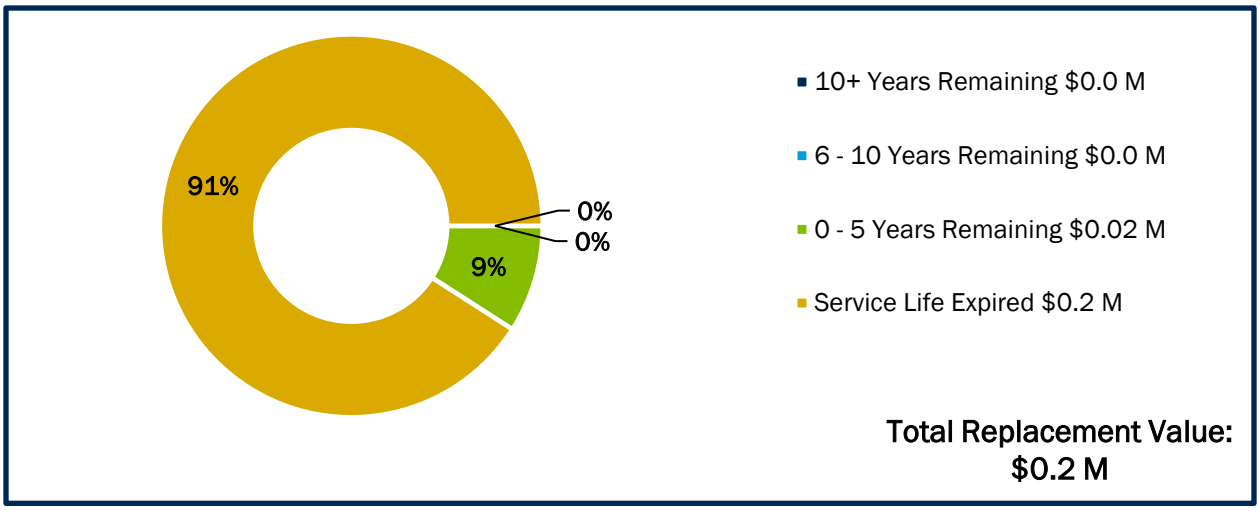

Figure 64 Age Distribution of Town-owned Parking Kiosks

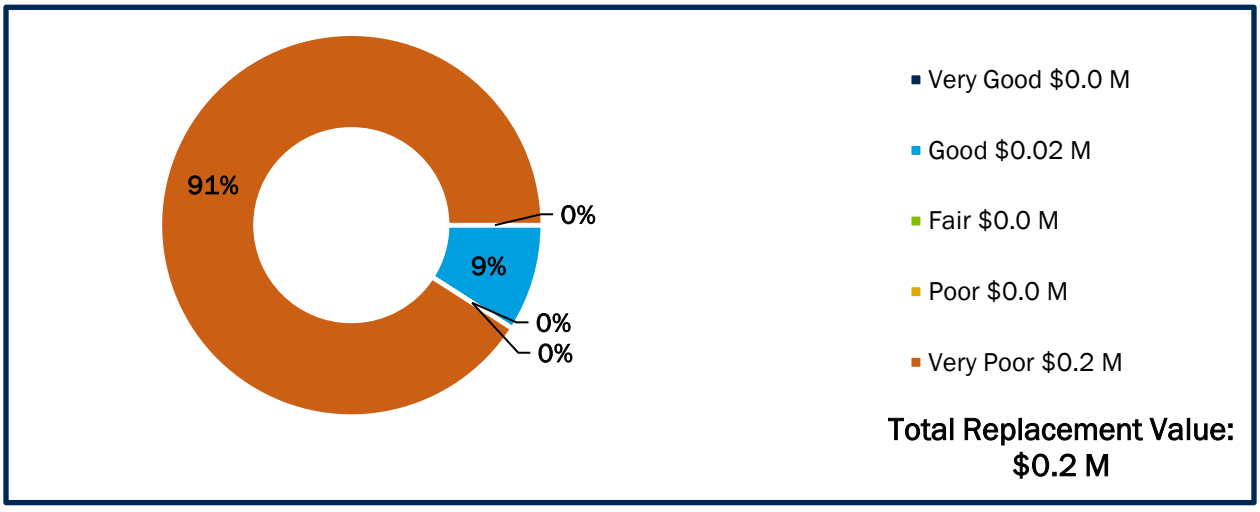

Figure 65 Condition Ratings of Town-owned Parking Kiosks

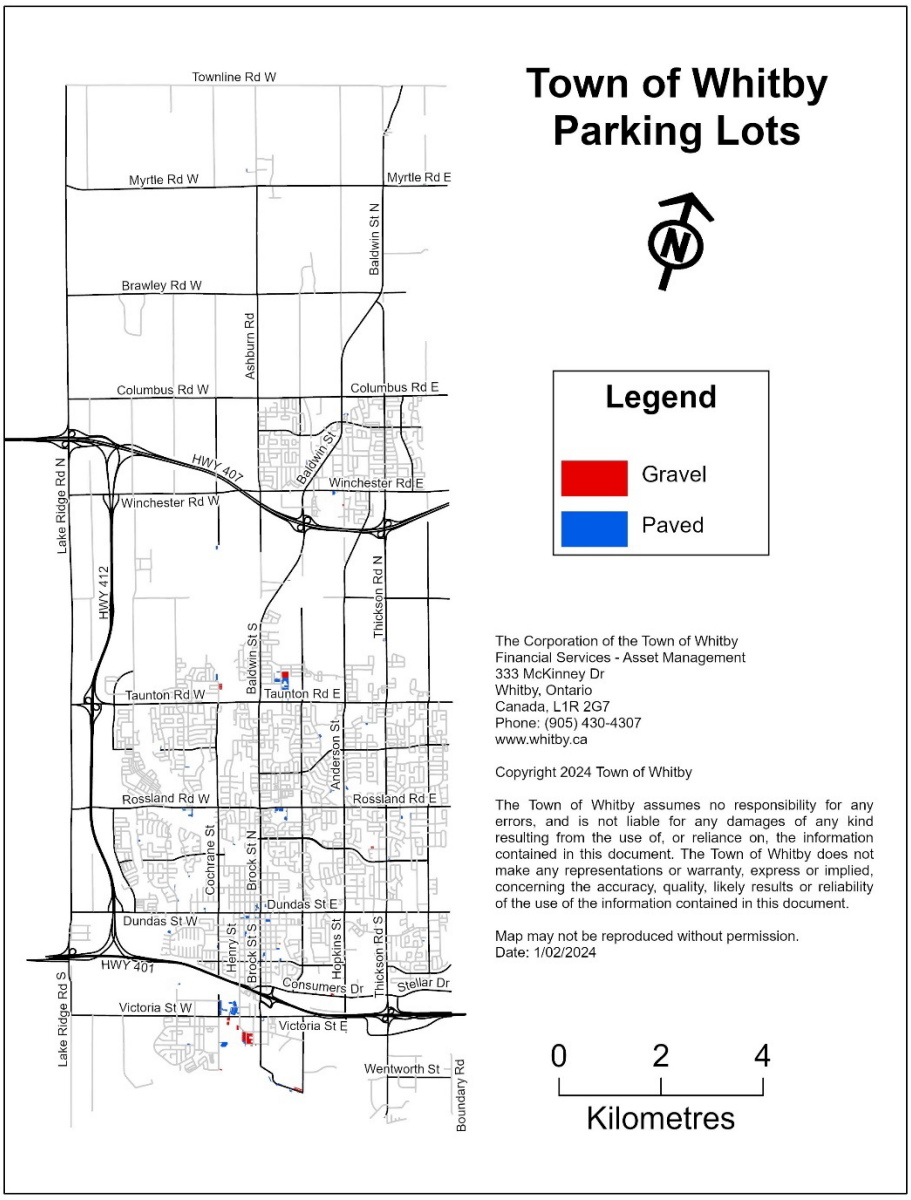

Figure 66 Locations and Surface Types of Town-owned Parking Lots

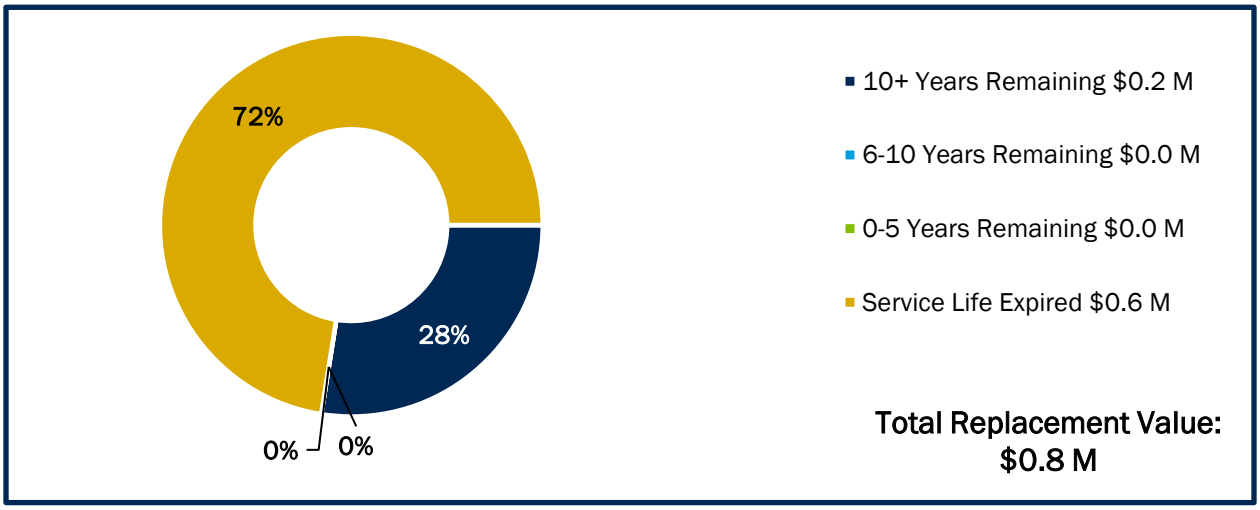

Figure 67 Age Distribution of Town-owned Parking Lots

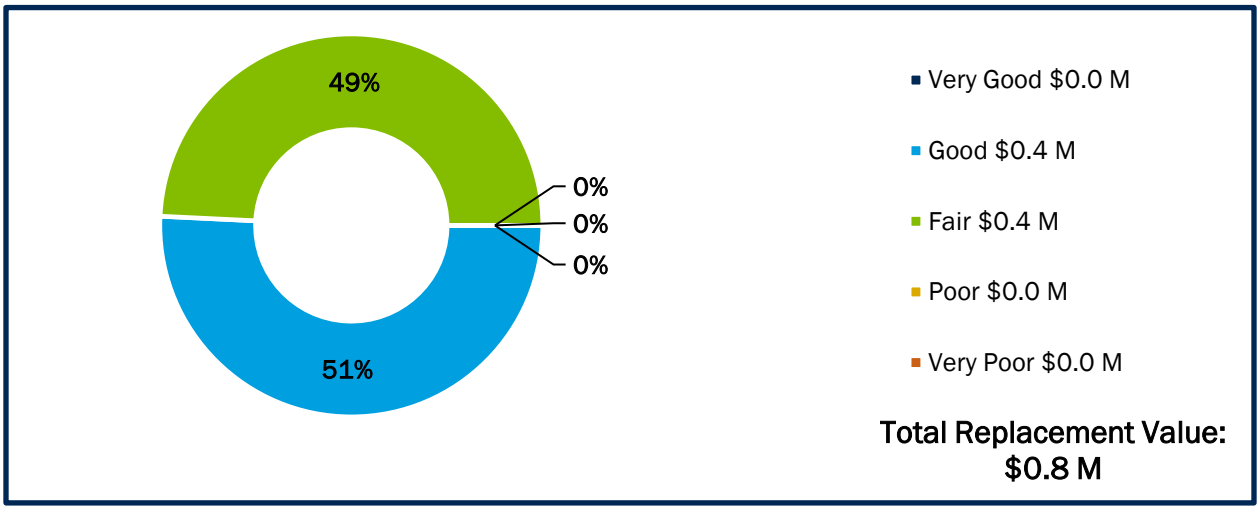

Figure 68 Condition Ratings of Town-owned Parking Lots

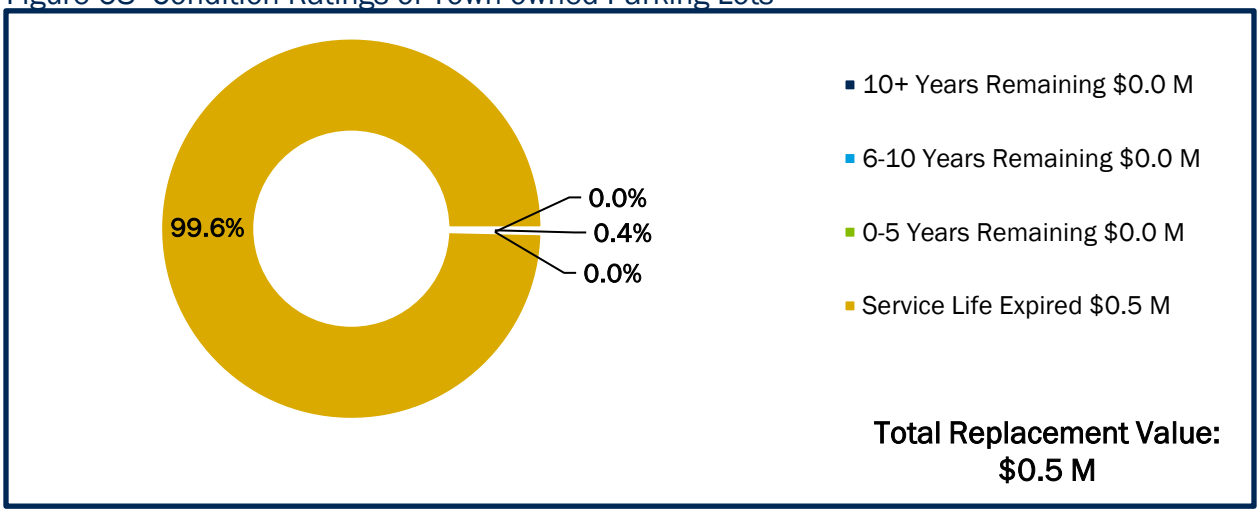

Figure 69 Age Distribution of Town-owned Parking Meters

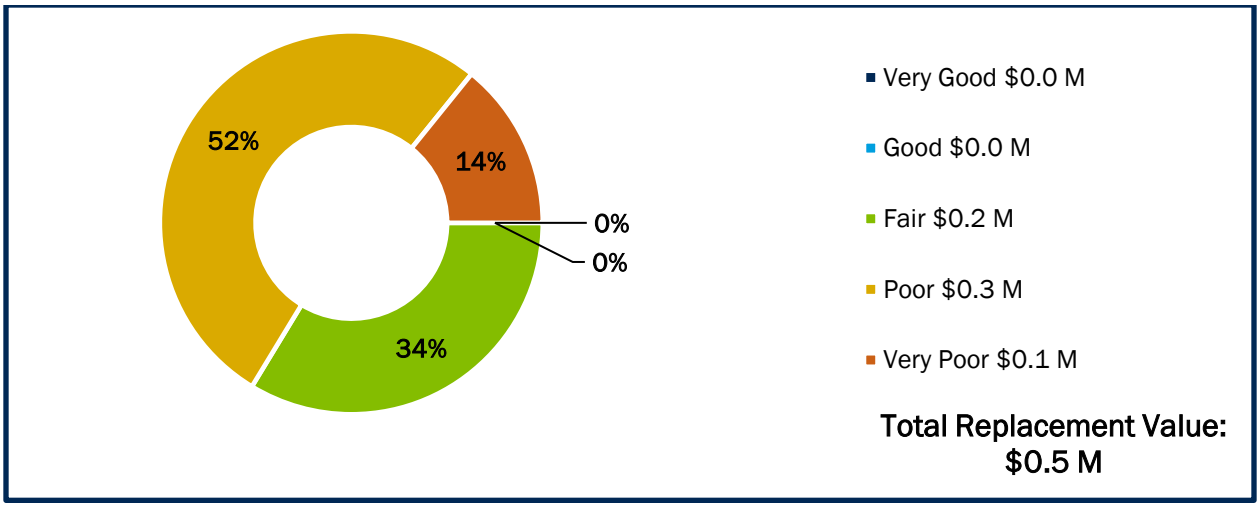

Figure 70 Condition Ratings of Town-owned Parking Meters

TIS

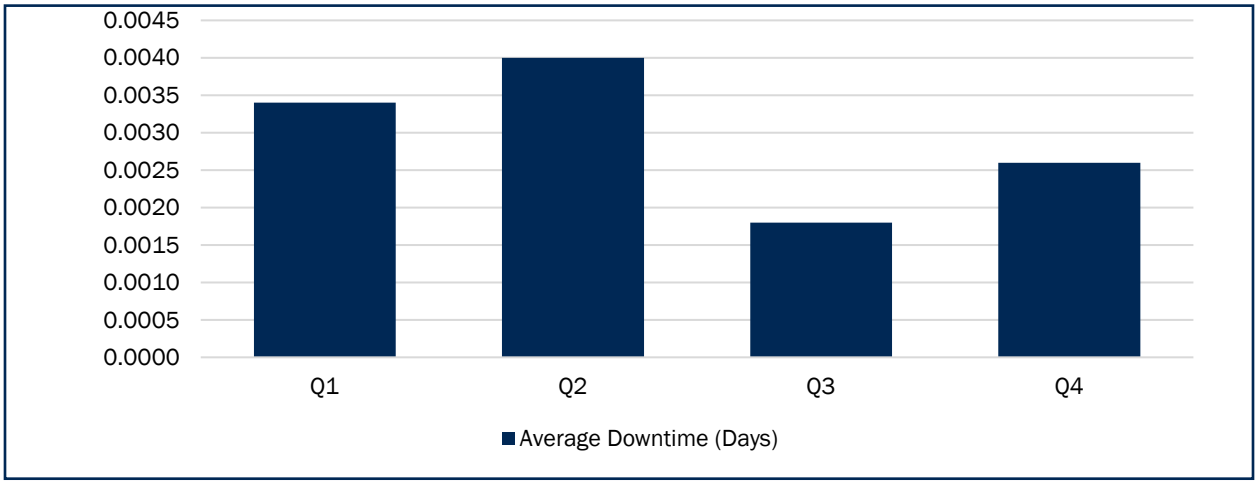

Figure 71 Average downtime of TIS Assets (in days), by Quarter, for 2023

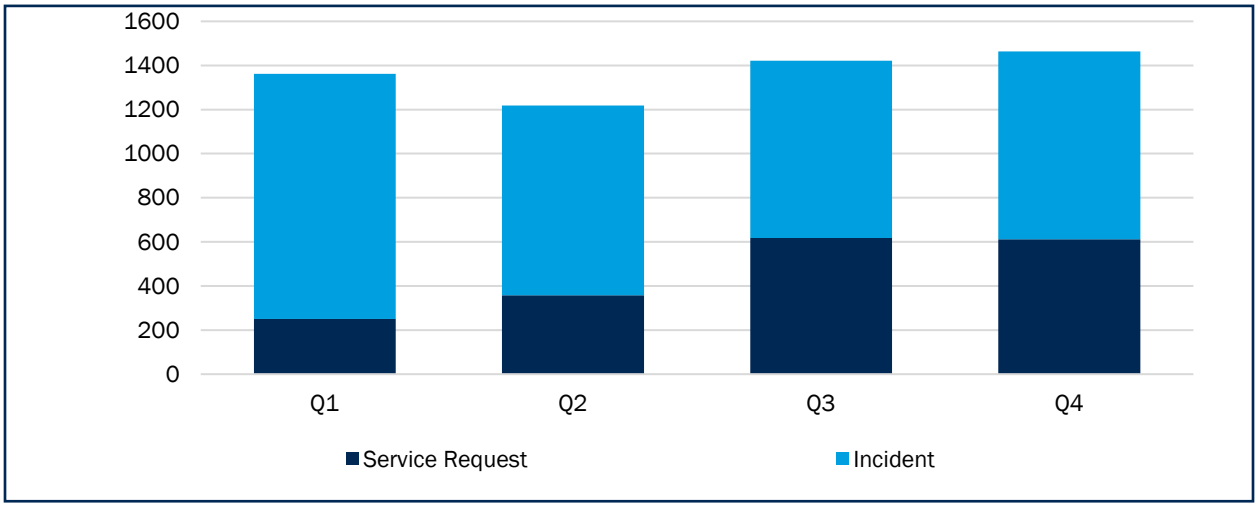

Figure 72 TIS Service Requests and Incidents, by Quarter, in 2023

Glossary

Average Annual Funding Requirements: the average of the spending that will be required to replace assets over a given amount of time. This amount is calculated by summing the replacement values of assets at the end of their lifespan in the given time frame and adding the costs of any lifecycle activities for those years. v

Climate Change: refers to the rapid changes to long-term weather patterns as a result of increasing greenhouse gases (GHGs) in the Earth's atmosphere caused by human burning of fossil fuels 40

Climate Emergency Response Plan (CERP): developed in two phases, outlines the resilience (Phase 1) and mitigation (Phase 2) measures the Town of Whitby will need to investigate to decrease the effects of climate change 40

Condition: the state of the asset or asset class assessed by industry standards or rated relative to other assets. All asset types have a condition rating scale relating asset deficiencies to condition levels. iv

Expected Useful Lives (EUL): or expected useful life of an asset is its predicted lifespan in years or months and describes how long an asset might last. These figures are averages meant to be used for planning and modelling and need to be revised regularly 26

Green Infrastructure: assets that nature has provided or are human-made that provide ecological, and environmental functions and benefits to the Town. 40

Historical Costs: the actual funds spent on an asset. This differs from Replacement Costs which account for predicted future spending. 23

Infrastructure Deficit: or infrastructure gap refers to the difference between asset renewal requirements and budgeted capital funding. v

Infrastructure: the physical assets owned by a government to provide services to its citizens. This can include transportation networks, facilities, and any tangible object involved in providing service to the community iv

Key Performance Indicators (KPIs): quantifiable metrics used by an organization to evaluate the performance of an asset against standards, best practices, or corporate strategic goals. 27

Levels of Service: or service levels are a result of asset conditions and the level of Town maintenance. Community Levels of Service describe the experience of the citizen or staff member using the asset, while Technical Levels of Service are a description of the Town's commitment to maintaining assets in a good state of repair. iv

Lifecycle Activities: the operational and maintenance activities required to keep assets in a state of good repair. These activities may or may not have an impact on an asset's expected useful life v

Mitigation: the activities required to reduce carbon emissions or to remove carbon from the atmosphere (carbon sequestration). 40

Natural Assets: assets nature has provided which deliver services or functional benefits to the Town. Examples include creeks, park and open space trees. 22

Replacement Value: or replacement cost refers to the cost in current day dollars to replace a given asset. This value can include the costs of disposals, construction and labour costs, material costs, and may factor in contingency costs. These amounts can be used as budgeting estimates. Replacement costs differ from historical costs in that they may not reflect what the Town actually spends. 22

Resilience: the ability to address climate change as currently experienced in Whitby, as well as expected future climate change experiences 40

Risk: for the purpose of this document risk refers to the operational risks of failing to replace, repair or maintain an asset to an appropriate standard and highlights which assets should be targeted in the Capital Budget. iv

Service Areas: the seven categories of Town services, including Roads Right-of-Way, Facilities, Parks, Technology and Innovation Services Equipment, Fire Equipment, Fleet, and Library Resources. iv

Technical and Community Levels of Service: the two forms of service levels the municipality must report on as per O. Reg. 588/17 which describe, respectively, the technical metrics and the qualitative customer experience the municipality provides with a given asset type. 19