

Town of Milton | Asset Management Plan

# 2024



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# Executive Summary

This asset management plan (AMP) for the Town of Milton was developed in accordance with Ontario Regulation 588/17 (“O. Reg 588/17”). It includes key elements of an industry-standard and O. Reg 588/17 compliant AMP, and provides a detailed overview of the Town’s core and non-core infrastructure. Together, the seven service areas analyzed in this asset management plan have a total current replacement cost of \$3.4 billion. This estimate reflects the Town’s asset portfolio, current as of 2023.

This estimate was calculated using a combination of user-defined costing and the inflation of historical costs to present day. At 63%, Transportation Services form the largest share of the Town’s asset portfolio, followed by Stormwater Management at 18%.

## State of the Infrastructure

Based on both assessed condition and age-based analysis, 94% of the Town’s infrastructure portfolio is in fair or better condition. Less than 6% of assets, with a current replacement cost of \$195.6 million, were estimated to be in poor or very poor condition. Overall, condition assessment data was available for 84% of the Town’s assets. For all remaining asset categories, age was used to estimate condition.

Typically, assets in poor or worse condition may require replacement or major rehabilitation in the immediate or short-term. Targeted condition assessments may help further refine the list of assets that may be candidates of immediate intervention. Keeping assets in fair or better condition is typically more cost-effective than addressing assets needs when they enter the latter stages of their lifecycle or a drop to a lower condition rating, e.g., poor or worse.

## Fiscal Sustainability

Given the magnitude of infrastructure needs, it is common for municipalities, including Milton, to experience annual shortages in funding relative to the amount that a municipality should be investing in reserve annually to fund future lifecycle replacement. A shortfall in funding can result in the requirement to defer future capital replacement projects to later years or place additional pressure on future tax rates.

Achieving full-funding for infrastructure programs is a substantial challenge for municipalities across Canada. Closing annual funding gaps can take many years.

On average, \$87.2 million is required each year to remain current with capital rehabilitation and/or replacement needs for the Town's asset portfolio. To put this differently, the Town should annually invest, on average, 2.6% of the overall current replacement costs of its infrastructure portfolio back into these assets to remain current with replacement needs. While there is no industry or scientific consensus on optimal reinvestment levels, they typically range from 1%-3.5% of asset replacement costs.

Although actual spending may fluctuate substantially from year to year, the average annual requirements serve as a useful benchmark for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise. This figure assumes a like-for-like asset replacement, and does not account for capacity upgrades that offer higher levels of service at higher potential costs.

Currently, average annual funding available totals \$45.2 million for all assets in this AMP. As a result, the Town is funding 52% of its annual capital requirements. This creates a total annual funding deficit of \$41.9 million. Addressing annual infrastructure funding shortfalls is a difficult and long-term endeavour for municipalities.

Considering the Town's current funding position, it will require many years to reach full funding for current assets. Short phase-in periods to meet these funding targets may place too high a burden on taxpayers too quickly, whereas a phase-in period beyond 20 years could result in a continued deterioration of infrastructure, leading to larger annual deficits and accumulated asset needs, or unanticipated increases in tax rates in future years.

The Town is already implementing a prudent and forward-looking strategy to close infrastructure deficits. From 2018 to 2022, the Town contributed an additional \$1.0 million per year in infrastructure funding to non-growth capital reserves. While the additional infrastructure funding contribution was deferred in 2023 and 2024 to assist with mitigating tax pressures, the contribution is expected to be reintroduced at an increased annual amount of \$1.5 million, beginning in 2025.

Under this strategy, the Town can close its infrastructure deficit and fully-fund annual requirements of \$87.2 million for its existing asset base by approximately 2052 (before the consideration of future inflation), reaching total annual funding levels in approximately 27 years. Closing this gap sooner would require additional net new contributions. Conversely, reducing these contributions would further extend annual deficits.

In addition to addressing annual needs, some assets remain in service beyond their estimate useful life, which may warrant further inspections to determine optimal lifecycle intervention. It is highly unlikely that all such assets, with a current replacement cost of \$27.3 million, are in a state of disrepair, requiring immediate replacements or full

reconstruction. This makes targeted and consistent condition assessments integral to refining current and forecasted long-term replacement estimates.

Most municipalities in Ontario, and across Canada, continue to struggle with meeting infrastructure demands. This challenge was created over many decades, and will take many years to overcome. To this end, a number of broad recommendations should be considered, including:

- continuous and dedicated improvement to the Town's infrastructure datasets, which form the foundation for all analysis, including financial projections and needs;
- continuous refinements to risk models as additional data becomes available. This will aid in prioritizing projects and creating more strategic long-term capital budgets that are better aligned with corporate goals.

As Milton's asset base continues to evolve to deliver important services to the community, continuous improvement will require sustained commitment to asset management initiatives. The Town is well-positioned to further advance its asset management program, and ensure ongoing and comprehensive compliance with O. Reg 588/17.

# About this document

This asset management plan (AMP) for the Town of Milton was developed in accordance with Ontario Regulation 588/17 (“O. Reg 588/17”). It contains a comprehensive analysis of Milton’s infrastructure portfolio, spanning seven service areas. The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. In accordance with O. Reg 588/17, the next major update to this AMP is expected in 2025, with the integration of proposed levels of service.

The document draws from a comprehensive array of foundational asset studies and records to formulate strategic renewal requirements. It is designed not to supplant asset-specific lifecycle programs but to enhance them by providing an organizational perspective on the critical elements of those efforts.

# Ontario Regulation 588/17

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, the Ontario government introduced Regulation 588/17 – Asset Management Planning for Municipal Infrastructure. Along with creating better performing organizations, more livable and sustainable communities, the regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

Table 1 Ontario Regulation 588/17 Requirements and Reporting Deadlines

Requirement	2019	2022	2024	2025
Asset Management Policy	●		●	
Asset Management Plans		●	●	●
State of infrastructure for core assets		●		
State of infrastructure for all assets			●	●
Current levels of service for core assets		●		
Current levels of service for all assets			●	
Proposed levels of service for all assets				●
Lifecycle costs associated with current levels of service		●	●	
Lifecycle costs associated with proposed levels of service				●
Growth impacts		●	●	●
Financial strategy			●	●

## Scope

The analysis in this asset management plan relies on information current as of 2023, and spans seven service areas. These are:

1. Transportation Services
2. Stormwater Management Services
3. Community Services
4. Transit Services
5. Protective Services
6. Corporate and Operational Services
7. Milton Public Library Board Services

# Strategic Planning and Asset Management

Adopted from the Institute of Asset Management (IAM), Figure 1 illustrates the relationship between industry-standard documents found in an effective asset management program, beginning with the Town of Milton’s 2023-2027 Strategic Plan. It illustrates the concept of ‘line of sight’, or alignment between the Town’s corporate vision and strategic themes, and asset management activities. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

Figure 1 Key Guiding Documents in Asset Management



## **Role of Strategic Plan**

The Town of Milton's *2023-2027 Strategic Plan* is a foundational document, that will impact future investments in infrastructure. Five strategic themes are outlined to achieve Milton's 2051 strategic vision of a town that "will be a safe, diverse and welcoming community that respects its natural beauty and heritage, supports a range of neighborhoods, sustains a strong and balanced economy, and offers outstanding opportunities to live, learn, work and play." These initiative are:

1. Invest in People
2. Innovate in Technology and Process
3. Quality Facilities and Amenities
4. Connected Transit and Mobility
5. Planned Community Growth

Several of these themes directly intersect infrastructure and asset management programming, including offering high but affordable service levels at the Town's facilities and amenities; making adequate and consistent investments in infrastructure; expansion of active transportation networks; improving transit connectivity and mobility; and supporting community growth through investments in infrastructure that reflects evolving needs, particularly a pivot to higher density and mixed-use neighborhoods.

## **Role of Strategic Asset Management Policy**

The Town completed and approved its Strategic Asset Management Policy No. 114 in 2019, as required by O. Reg 588/17. The strategic asset management policy provides a framework to make the best possible decisions regarding Milton's assets based on targeted levels of service, risk-management and cost effectiveness throughout the entire asset lifecycle. The policy provides a connecting link between the strategic plan and asset management related activities and initiatives. It also complements and supports master plans, policy documents, and financial planning exercises.

The policy establishes consistent standards and guidelines for management of the Town's assets applying sound technical, social and economic principles that consider present and future needs of users, and the service expected from the assets. This means leveraging the lowest total lifecycle cost of ownership with regard to the service levels that best meet the needs of the community while giving consideration to the risk of failure that is acceptable.

# Limitations and Constraints

This AMP required substantial effort by staff. It was developed based on best-available data, current as of 2023, and was subject to the following broad limitations, constraints, and assumptions:

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

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

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

# State of the Infrastructure

The state of the infrastructure (SOTI) summarizes the inventory, condition, age profiles, and other key performance indicators for the Town's infrastructure portfolio across its seven service areas, current as of 2023. These details are presented for all service areas at the Service Area and Asset Type levels.

## Asset Hierarchy

Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and service area. How assets are grouped in a hierarchy structure can impact how data is interpreted. Table 2 shows the data hierarchy structured used in this AMP to organize the Town's asset data. This structure reflects the Town's asset inventory as of 2023.

Table 2 Asset Hierarchy and Data Classification

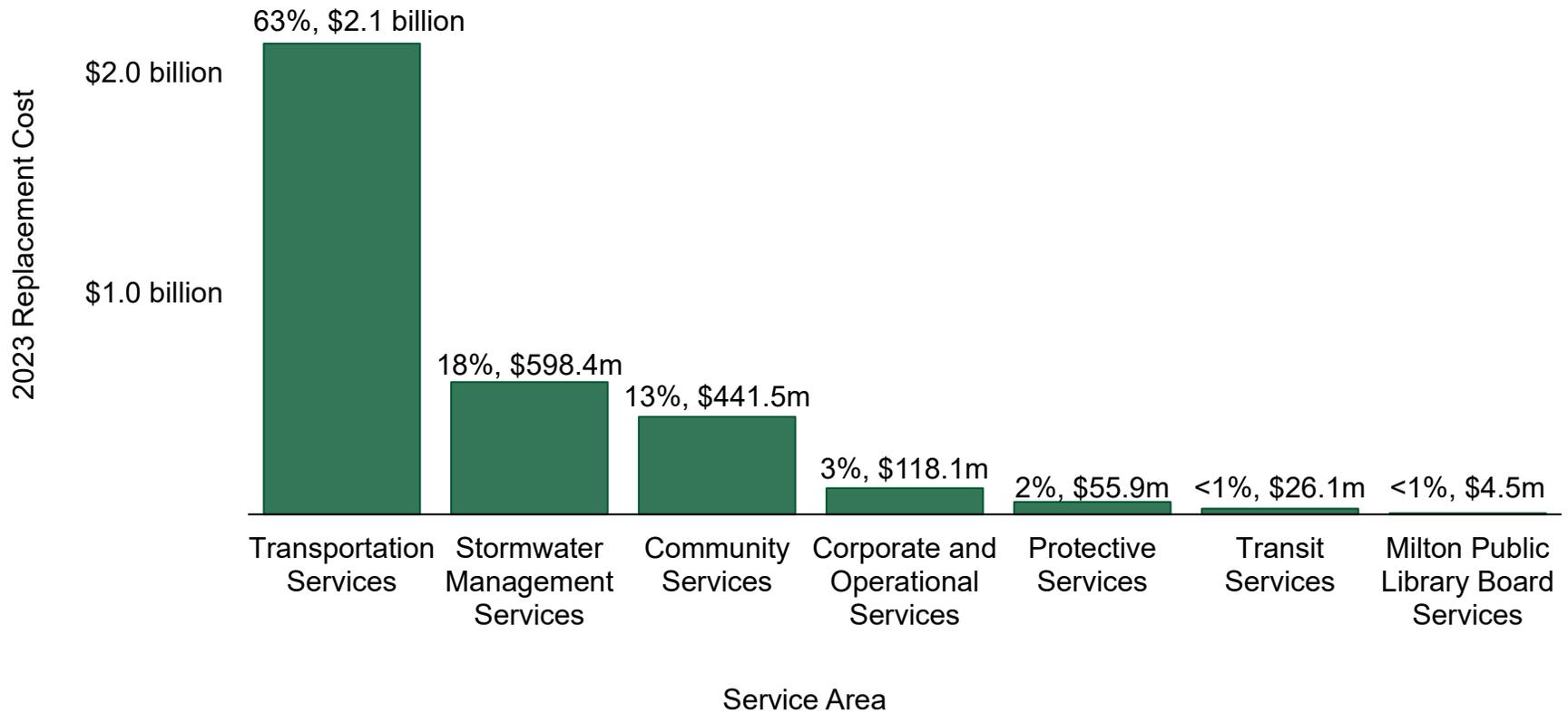
Level 1: Service Area	Level 2: Asset Type	Level 3: Asset
Transportation Services	Roads	Guide Rails
		Road Network
		Sidewalks
		Walkways/Trails
	Structures	Bridges
		Culverts
		Pedestrian Bridges
		Retaining Walls
	Traffic	Streetlights
Traffic Signals		
Traffic Signs		
Stormwater Management Services	Stormwater	Low Impact Development
		Oil/Grit Separators
		Storm Ponds
		Stormsewer Network
Community Services	Parks	Park Amenities
		Park Facilities
	Recreation Facilities	Community Centres & Arenas
		Cultural Facilities
		Library Facilities
	Forestry and Other Services	Urban Forestry
Municipal Parking Lots		
Transit Services	Conventional and Specialized Transit	Stops & Shelters
		Transit Equipment
		Transit Vehicles
Protective Services	Fire	Emergency Vehicles
		Firefighting & Communication Equipment
		Stations & Facilities
	Bylaw Enforcement & Animal Services	Enforcement & Animal Services Vehicles

Level 1: Service Area	Level 2: Asset Type	Level 3: Asset
Corporate and Operational Services	Corporate	Civic Facilities
		Information Technology
		Office Furniture
	Operational	Vehicles & Equipment
Milton Public Library Board Services		Operations Yard Facilities
		Library Fixtures and Furniture
	Library	Library Information Technology (IT)

# Replacement Cost

The seven service areas analyzed in this asset management plan have a total current replacement cost of \$3.4 billion. This estimate was calculated using a combination of user-defined costing and the inflation of historical costs to their equivalent value as of 2023. Figure 2 illustrates the replacement cost of each asset category. At 63%, Transportation Services form the largest share of the Town’s asset portfolio, followed by Stormwater Management at 18%.

Figure 2 2023 Replacement Cost by Service Area



# Condition

This section summarizes the source of asset condition ratings, the condition rating scales used for various asset types, and the overall current condition profile for the seven service areas.

## Source of Condition Data

How asset condition is estimated can dramatically alter an asset's profile. Periodic in-field condition assessments conducted by qualified personnel provide the most credible data on the true physical state of an asset and its ability to continue to deliver its intended function in a safe and effective manner. In the absence of condition data, an asset's age can be used to approximate its physical condition. However, age can often understate an asset's condition, resulting in inferior assigned condition ratings that may be misleading.

Table 3 illustrates the percentage of assets in each service area for which condition data was available. Percentages were calculated based on asset replacement costs. Overall, asset-level condition assessment data was available for 84% of the Town's assets. For stormwater management, partial condition data was available at the summary level. For all remaining assets, age was used to estimate condition.

Table 3 Source of Condition Data

Level 1: Service Area	Level 2: Asset Type	Level 3: Asset	% Assessed
Transportation Services	Roads	Guide Rails	100%
		Road Network	100%
		Sidewalks	100%
		Walkways/Trails	100%
	Structures	Bridges	100%
		Culverts	100%
		Pedestrian Bridges	100%
		Retaining Walls	100%
	Traffic	Streetlights	0%
		Traffic Signals	0%
Traffic Signs		100%	
Stormwater Management Services	Stormwater	Low Impact Development	100%
		Oil/Grit Separators	72%
		Storm Ponds	82%
		Stormsewer Network	18%
Community Services	Parks	Park Amenities	98%
		Park Facilities	99%
	Recreation Facilities	Community Centres & Arenas	98%
		Cultural Facilities	100%
		Library Facilities	100%
	Forestry and Other Services	Urban Forestry	0%
		Municipal Parking Lots	0%
Transit Services	Conventional and Specialized Transit	Stops & Shelters	0%
		Transit Equipment	0%
		Transit Vehicles	0%
Protective Services	Fire	Emergency Vehicles	15%
		Firefighting & Communication Equipment	0%
		Stations and Facilities	100%
	Bylaw Enforcement & Animal Services	Enforcement & Animal Services Vehicles	100%
	Corporate and Operational Services	Corporate	Civic Facilities
Information Technology			0%
Office Furniture			0%
Operational		Vehicles & Equipment	100%
		Operations Yard Facilities	100%

Level 1: Service Area	Level 2: Asset Type	Level 3: Asset	% Assessed
Milton Public Library Board Services	Library	Library Fixtures and Furniture	0%
		Library Information Technology	0%

## Condition Rating Scales

Many assets in this AMP were evaluated using specialized rating scales tailored to their unique characteristics. Condition ratings were then converted to standardized qualitative descriptors, ranging from Very Good to Very Poor. This facilitates a clear comparison across different asset types and streamlines prioritization of maintenance needs and resource allocation.

In addition, assets can also be assessed using a more universal condition rating scale, ranging from 0-100. This scale is also helpful when no condition data is available, requiring asset age (or service life remaining) to be mapped to their respective scores and descriptors.

This section provides the unique rating scales used for different asset groups, as available, as well as the universal rating scale.

Table 4 Universal and Age-based Condition Rating Scale

Label	Condition Rating (0-100)	Alternative Condition Rating (1-5)	Service Life Remaining (%)	General Criteria
Very Good	80-100	1-2	80-100	<b>Fit for the future</b> Asset is new or recently rehabilitated
Good	60-80	2-3	60-80	<b>Adequate for now</b> Asset is performing well; minor defects; only regular maintenance required
Fair	40-60	3-4	40-60	<b>Requires attention</b> Asset is operational, but signs of deterioration evident; some elements exhibit significant deficiencies; renewal upgrade, or replacement required in the medium term
Poor	20-40	4-5	20-40	<b>Increasing potential of service disruption</b> Asset approaching end of service life; condition below standard; significant deterioration; renewal, upgrade, or replacement in the short term
Very Poor	0-20	5+	0-20	<b>Unfit for sustained service</b> Service life may be fully consumed, and asset remains in service beyond service life; widespread and advanced deterioration; may be unusable and requires immediate replacement

Table 5 Condition Rating Scale – Roads

<b>Descriptor</b>	<b>Pavement Condition Index (PCI 0-100)</b>
Very Good	>85
Good	70 – 85
Fair	55 – 70
Poor	40 – 55
Very Poor	<40

Table 6 Condition Rating Scale – Structures

<b>Descriptor</b>	<b>Bridge Condition Index (BCI 0-100)</b>
Very Good	90 – 100
Good	65 – 90
Fair	50 – 65
Poor	40 – 50
Very Poor	<40

Table 7 Condition Rating Scale – Guide Rails

<b>Descriptor</b>	<b>Condition Grade Range</b>
Very Good	1
Good	1 – 1.9
Fair	2 – 2.9
Poor	3 – 3.9
Very Poor	4 – 5

Table 8 Condition Rating Scale – Fleet

<b>Descriptor</b>	<b>Condition Grade Range</b>
Very Good	4 – 5
Good	3 – 4
Fair	2 – 3
Poor	1 – 2
Very Poor	0 – 1

Table 9 Condition Rating Scale – Storm Manholes & Catch Basins

<b>Descriptor</b>	<b>Condition Grade Range</b>
Very Good	0.8 – 1
Good	0.6 – 0.8
Fair	0.4 – 0.6
Poor	0.2 – 0.4
Very Poor	0 – 0.2

Table 10 Condition Rating Scale – Conventional Transit Fleet & Equipment

<b>Descriptor</b>	<b>Asset Age in Years or Status</b>
Very Good	1 – 4 years
Good	5 – 8 years
Fair	9 – 12 years
Poor	13+ years
Very Poor	Stationary/Inoperable

Table 11 Condition Rating Scale – Specialized/Support Transit Fleet & Equipment

<b>Descriptor</b>	<b>Asset Age in Years or Status</b>
Very Good	1 – 2 years
Good	3 – 4 years
Fair	5 – 6 years
Poor	7+ years
Very Poor	Stationary/Inoperable

## Current Asset Condition

Based on both assessed condition and age-based analysis, more than 94% of the Town's infrastructure portfolio is in fair or better condition. Less than 6% of assets, with a current replacement cost of more than \$195.6 million, was estimated to be in poor or very poor condition.

Typically, assets in poor or worse condition may require replacement or major rehabilitation in the immediate or short-term. Targeted condition assessments may help further refine the list of assets that may be candidates of immediate intervention. Keeping assets in fair or better condition is typically more cost-effective than addressing assets needs when they enter the latter stages of their lifecycle or a drop to a lower condition rating, e.g., poor or worse.

Figure 3 Asset Condition – Portfolio Overview

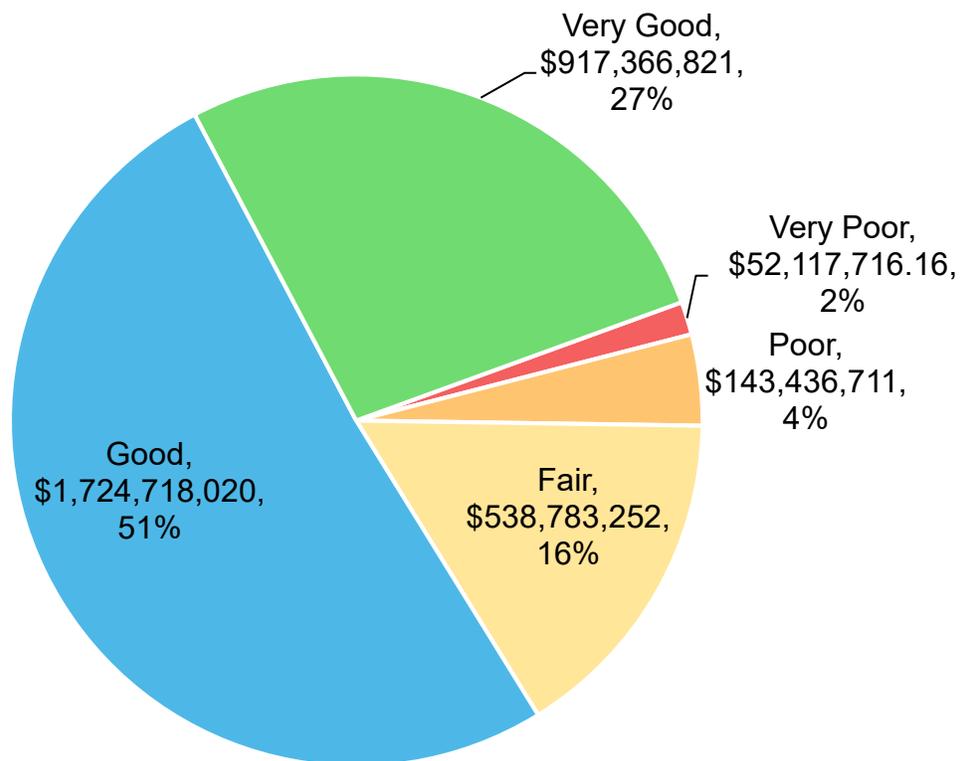
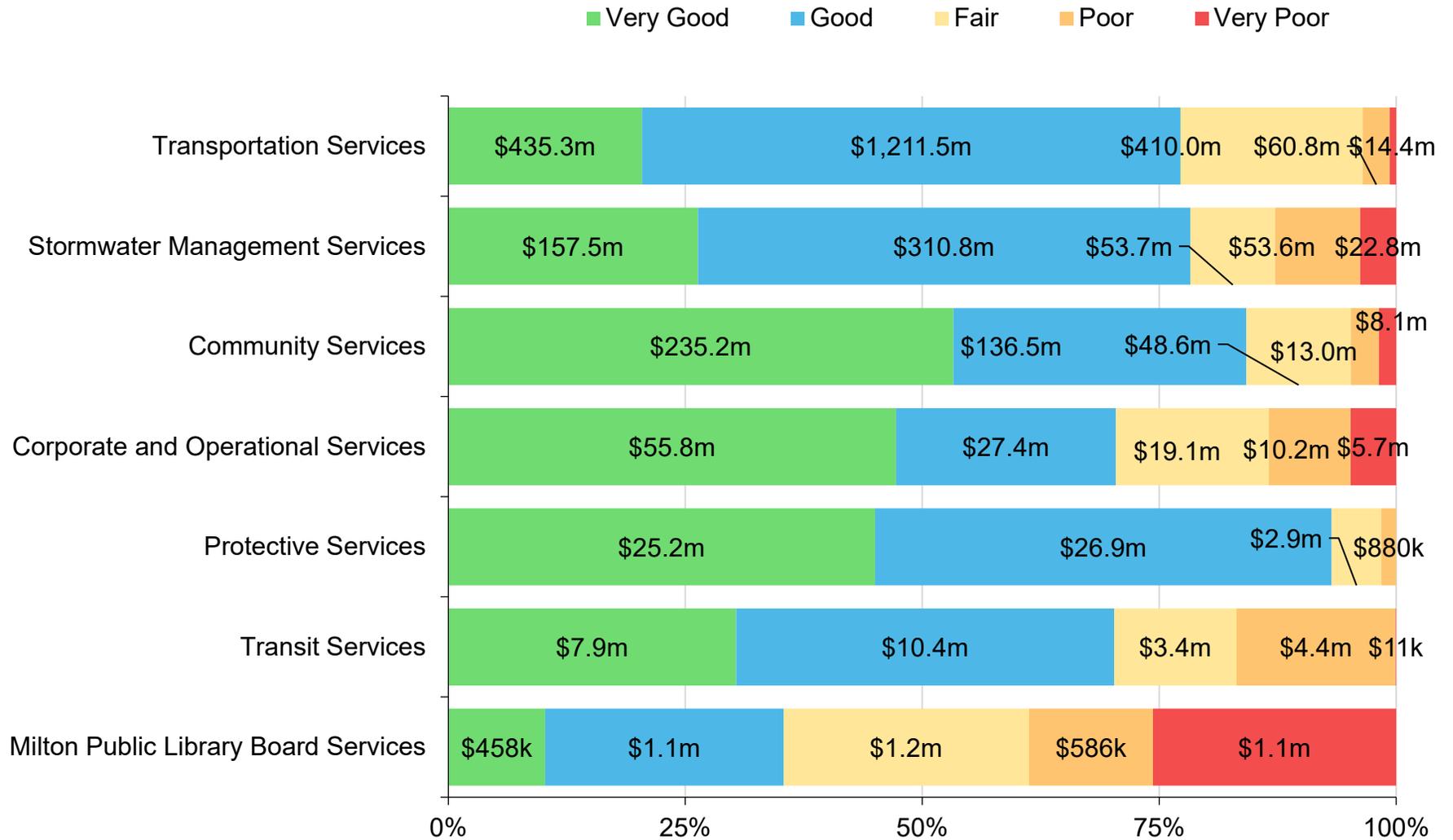


Figure 4 on the next page provides further details on the condition of each service area. Based primarily on assessed condition data, nearly 97% of the Town's Transportation Services assets are in fair or better condition—more than 75% of which are in good to very good condition. Transportation Services include roads, bridges, sidewalks, as well as roadside appurtenances and traffic infrastructure.

By percentage, the highest concentration of assets in poor or worse condition was found in Library Services, with 39% of assets assigned this condition rating. However, most assets are considered minor, and include equipment and furniture.

Within Stormwater Management services, assets with a current replacement cost of \$76.4 million were classified as poor or worse.

Figure 4 Asset Condition – By Service Area

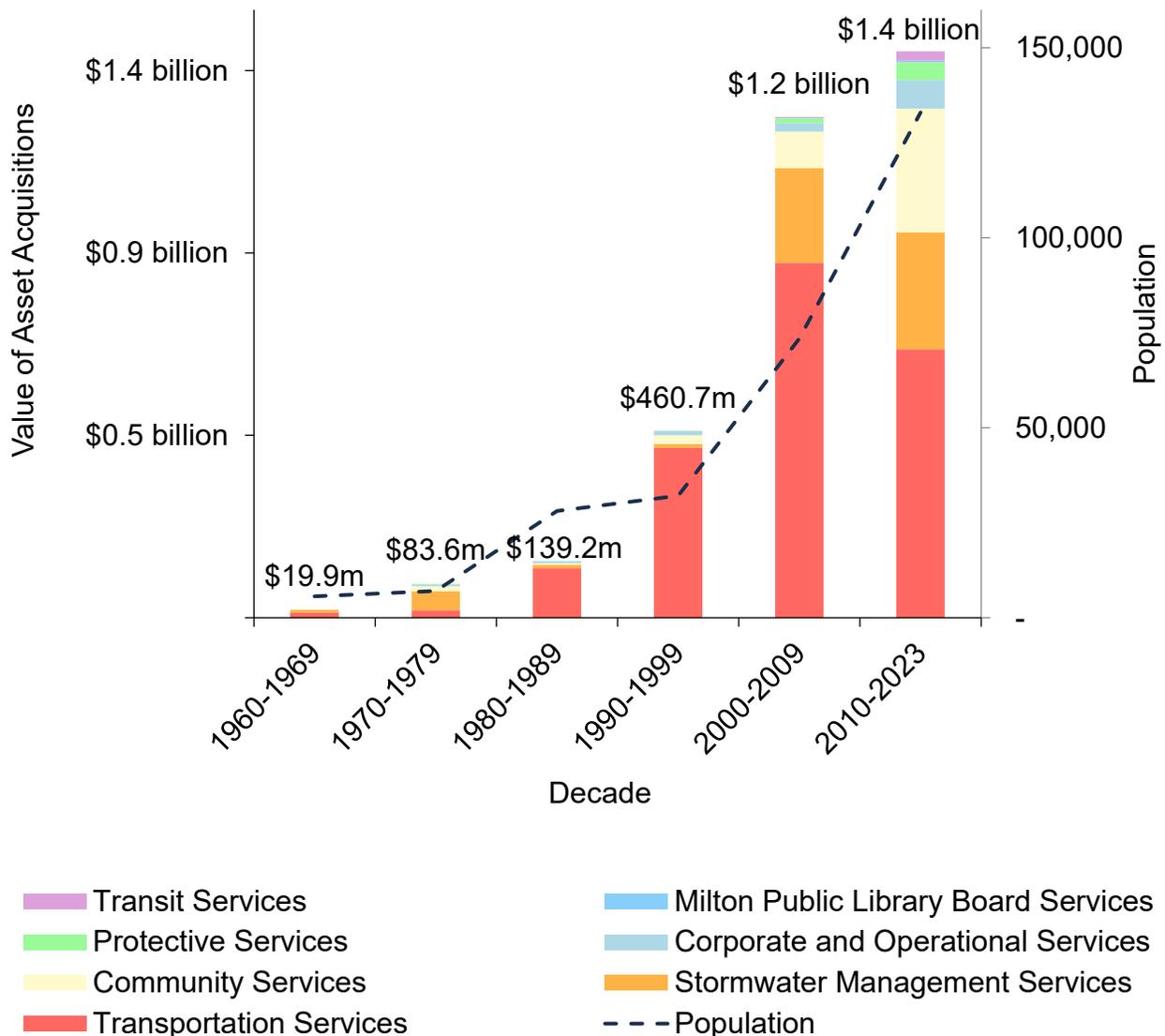


## Asset Acquisitions by Decade

Figure 5 illustrates how the Town of Milton’s current asset base has been accumulated over the last 60 years, in parallel with the rapid population growth within the Town. Although community infrastructure needs and expectations can evolve significantly over decades, understanding historical patterns can be informative in planning for future needs.

The values shown reflect the estimated current replacement cost of those assets as of 2023, rather than the original or historical cost. Only those assets that still remain active and in service as part of the Town’s asset register were included; assets that may have been disposed or decommissioned over time were not captured in this analysis.

Figure 5 Asset Acquisitions by Decade and Population Growth – All Service Areas



Milton's population grew rapidly between 2000 and 2019. The Town was considered one of the fastest growing municipalities in Canada during this period, with population rising from 31,471 in 2001 to 84,362 in 2011. Population grew by an additional 20.7% between 2016 and 2021, totalling 132,979 in the 2021 Census.

These periods coincide with the largest growth in the Town's asset base, reaching \$1.25 billion between 2000 and 2009, and peaking at \$1.4 billion between 2010 and the current decade.

The investments the Town is making today to maintain and develop its infrastructure will be vital to support the continued growth Milton is expected to see in the coming decade.

## Transportation Services

The Town of Milton's Transportation Services comprise a complex and growing network of roads, bridges, sidewalks, and auxiliary traffic infrastructure to support the safe and efficient movement of people and goods. With a total current replacement cost of \$2.1 billion, Transportation Services makes up 63% of the Town's infrastructure.

### Inventory and Valuation

Table 12 summarizes the quantity and current replacement cost of the Town's various Transportation Services assets as managed in its primary asset management register, Citywide.

Table 12 Detailed Asset Inventory – Transportation Services

Asset Type	Quantity	Unit of Measure	Replacement Cost	Percentage
<b>Roads</b>			<b>\$1,908,425,003</b>	<b>90%</b>
Road Network	599.3	Center-line Kilometres	\$1,843,619,407	87%
High Class Bituminous (HCB)	412.1	Center-line Kilometres	\$1,501,005,607	70%
Low Class Bituminous (LCB)	187.3	Center-line Kilometres	\$342,613,800	16%
Sidewalks	387.7	Kilometres	\$43,452,299	2%
Walkways/Trails	125.4	Kilometres	\$16,086,447	<1%
Guide Rails	18.6	Kilometres	\$5,266,850	<1%
<b>Structures</b>			<b>\$134,747,649</b>	<b>6%</b>
Bridges	46	Assets	\$90,466,754	4%
Culverts	46	Assets	\$37,081,875	2%
Pedestrian Bridges	14	Assets	\$5,800,000	<1%
Retaining Walls	44	Assets	\$1,399,020	<1%
<b>Traffic</b>			<b>\$88,688,625</b>	<b>4%</b>
Streetlights	9,631	Components	\$66,747,260	3%
Traffic Signals	59	Assets	\$15,381,305	<1%
Traffic Signs	19,249	Assets	\$6,560,059	<1%
<b>Total</b>			<b>\$2,131,861,277</b>	<b>100%</b>

## Asset Condition

Figure 6 summarizes the replacement cost-weighted condition of Transportation Services. Based on a combination of field inspection data and age, more than 96% of assets are in fair or better condition. Less than 4%, with a current replacement cost of \$75.1 million are in poor to very poor condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

Figure 6 Asset Condition – Transportation Service: Overall

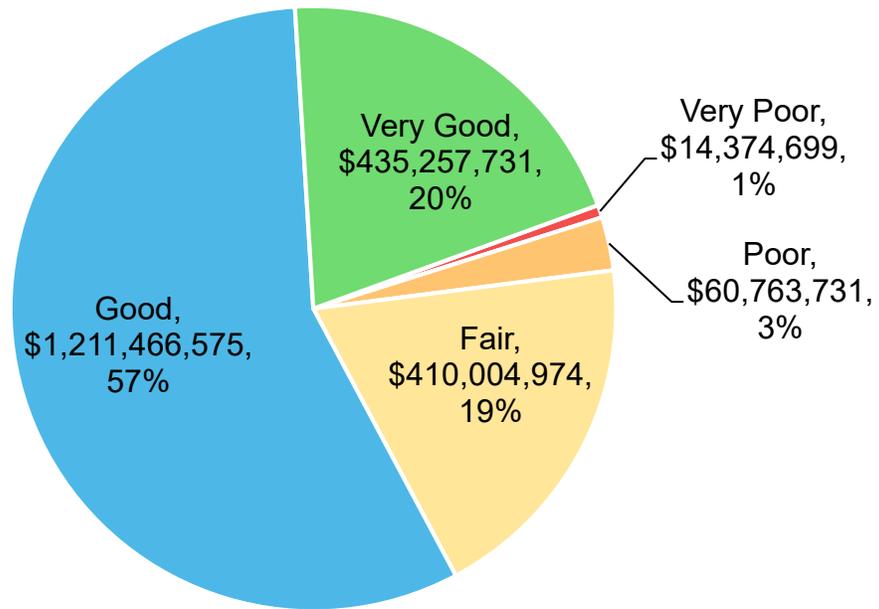
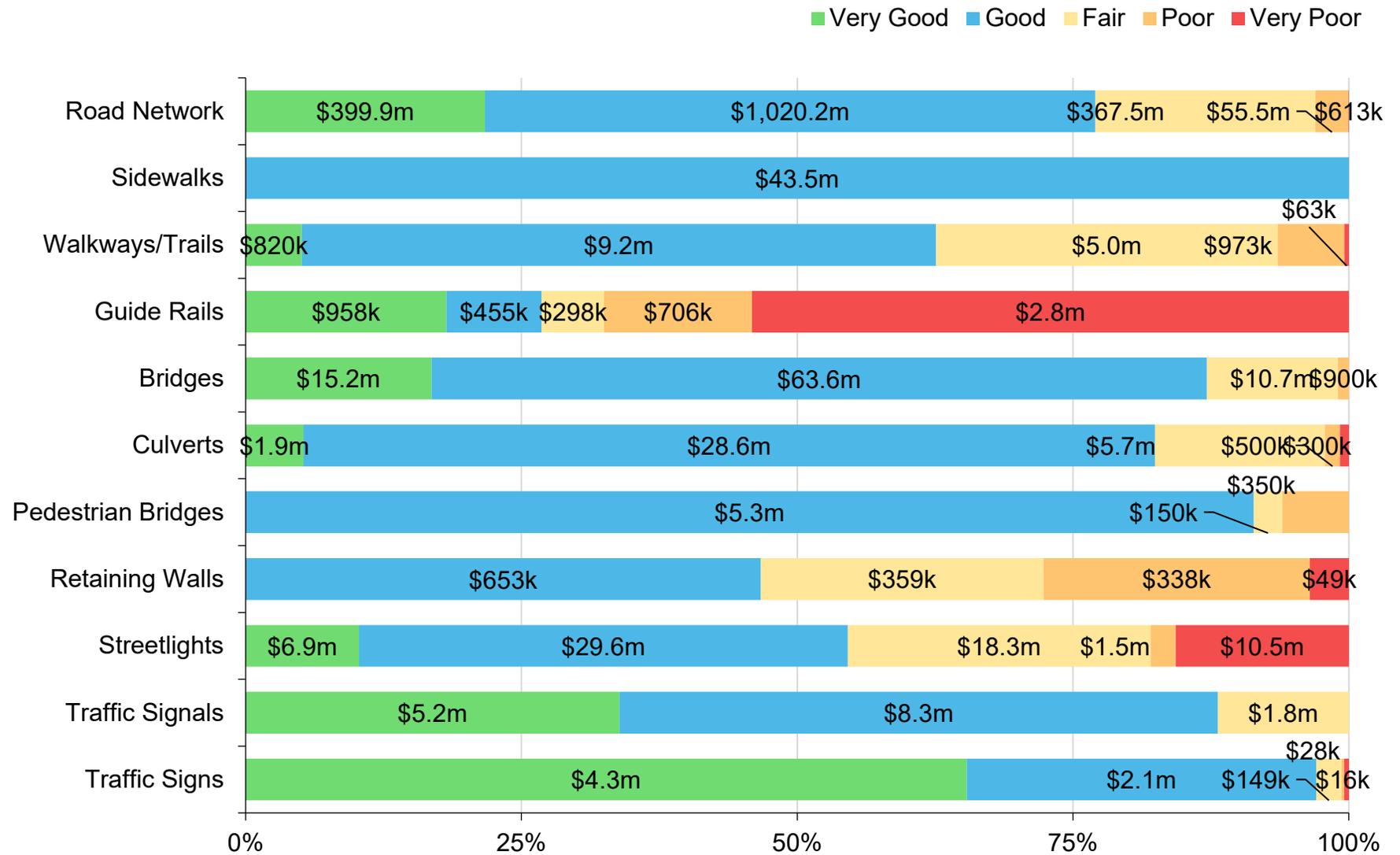


Figure 7 further details the condition of Transportation Services portfolio at the asset type level. The majority of assets in poor or worse condition is concentrated in roadside appurtenances, including streetlights and guiderails. Although some guiderails assigned a poor or very poor condition rating may in fact require rehabilitation or replacement, others may be deemed as such primarily because they do not align with contemporary design standards, rather than due to structural deficiencies.

Most critical assets such as roadways, bridges, and culverts are in fair or better condition, based on recent in-field condition data.

Figure 7 Asset Condition – Transportation Services: By Asset Type



## Age Profiles

The following series of figures contrasts the weighted average estimated useful life (EUL) of each asset against its current weighted average age, as of 2023. Replacement cost was used to weight each asset. Although imperfect on its own, asset age can help triage asset needs when used in conjunction with other data points, including condition, asset criticality, planned upgrades, project bundling, and prior failure history.

On average, most Transportation Services assets are within the first half of their estimated design-life. Exceptions are found primarily within Traffic assets and roadside appurtenances.

Figure 8 Estimated Useful Life vs. Asset Age – Road Network



Figure 9 Estimated Useful Life vs. Asset Age – Structures

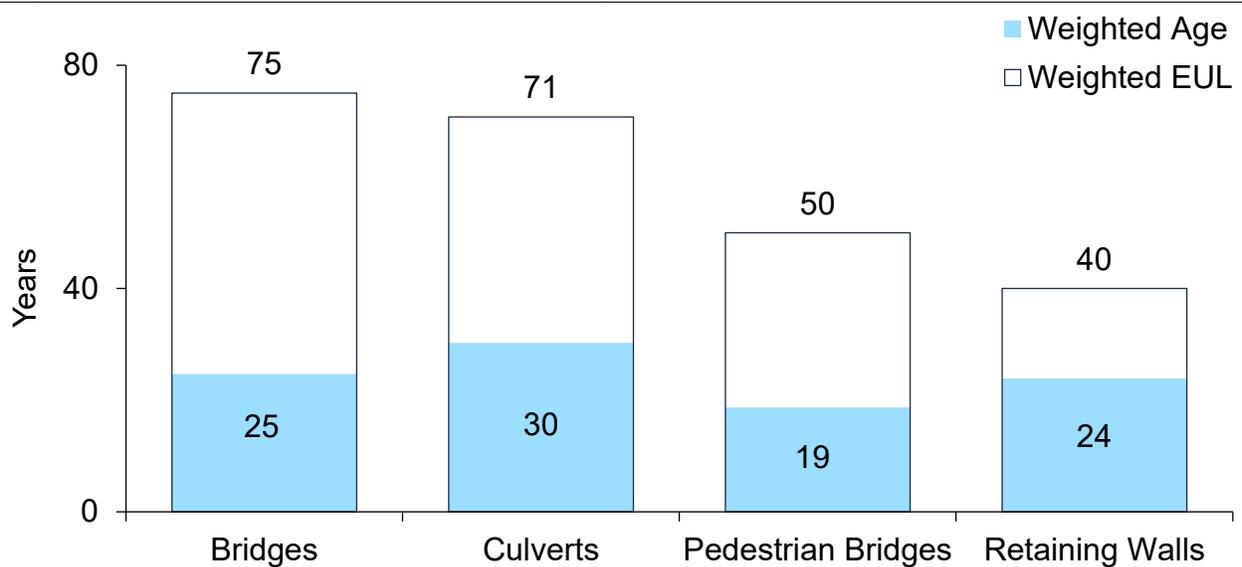
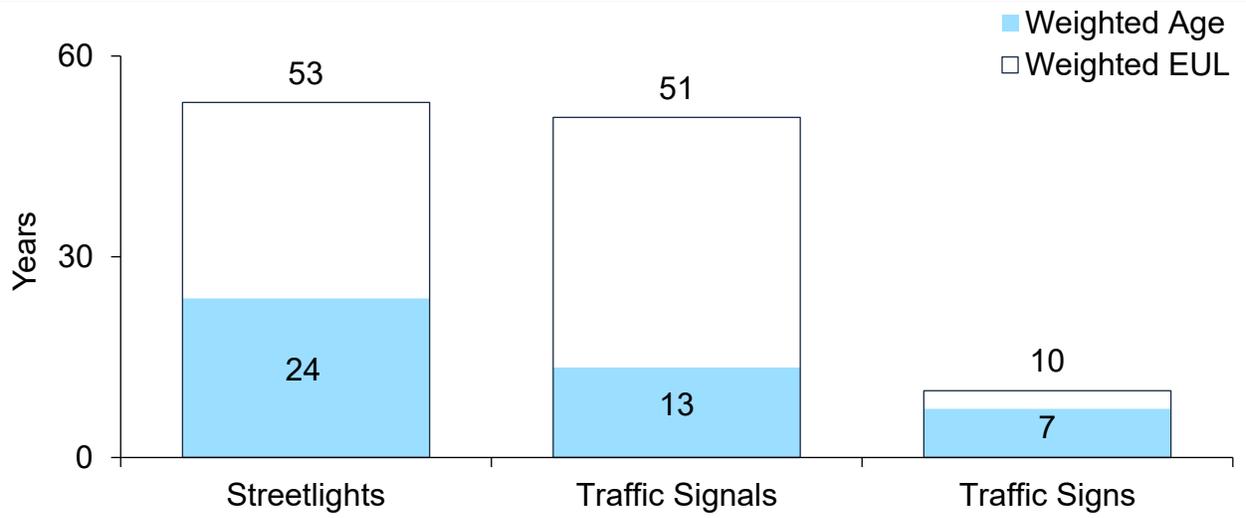


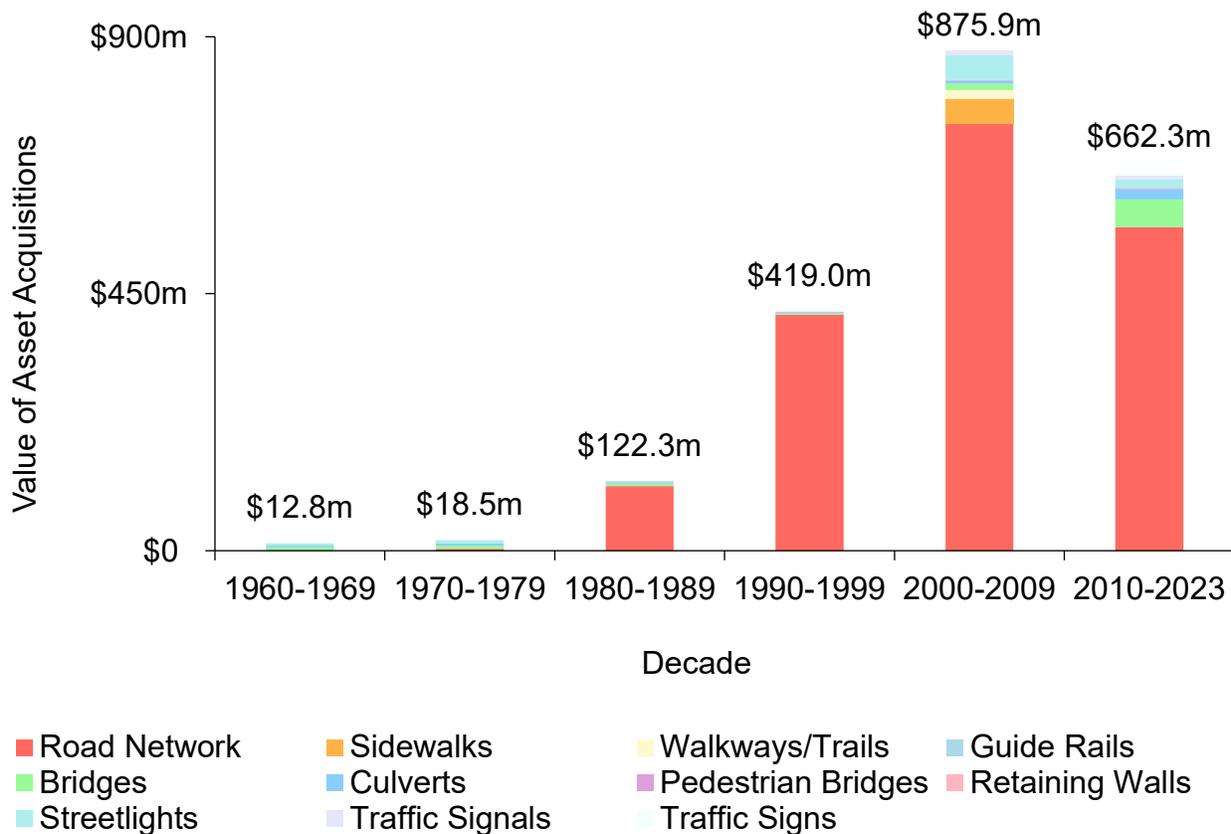
Figure 10 Estimated Useful Life vs. Asset Age – Traffic



## Asset Acquisitions by Decade

Figure 11 illustrates the accumulation of capital assets in Transportation Services over the last 60 years based on the in-service date of each asset. The data is presented using 2023 replacement costs, rather than the original or historical cost at the time of acquisition. Further, the illustration reflects the Town’s current or active inventory only; assets that have been disposed of or decommissioned over time are not included.

Figure 11 Asset Acquisitions by Decade – Transportation Services



The largest acquisitions in Transportation Services were made between 2000-2009, totaling nearly \$876 million, dominated by roads, and coinciding with a period of extensive growth as Milton became the fastest growing municipality in Canada. Between 2000 and 2006, Milton’s population increased by 71.4%, with a further increase of more than 50% in the subsequent census period between 2006 and 2011.

Substantial acquisitions continued between 2010 and 2019, totaling \$487.6 million. Since 2020, the Town has acquired an additional \$174.7 million in Transportation Services, with roads making up the majority of the growth in the asset base.

## Stormwater Management Services

Milton’s Stormwater Management infrastructure consists of a comprehensive network designed to manage precipitation and prevent flooding. It includes more than 390 kilometres of stormwater pipes that collect and convey runoff to designated basins, detention ponds, and other storage facilities. The system also includes various appurtenances such as catch basins and manholes, oil and grit separators, and low impact development assets such as bioswales, which aid in the efficient treatment of stormwater.

The current replacement cost of Milton’s stormwater infrastructure is estimated to be \$598.4 million, reflecting the significant investment required to maintain and upgrade these assets.

### Inventory and Valuation

Table 13 summarizes the quantity and current replacement cost of the Town’s various Stormwater assets as managed in its primary asset management register, Citywide.

Table 13 Detailed Asset Inventory – Stormwater Management Services

Asset Type	Quantity	Unit of Measure	Replacement Cost	Percentage
Stormsewer Network	390.6	Kilometres	\$305,808,854	51%
Storm Ponds	49	Assets	\$157,565,881	26%
Manholes & Catchbasins	13,482	Assets	\$128,708,815	22%
Low Impact Development	9	Assets	\$3,642,141	<1%
Oil/Grit Separators	31	Assets	\$2,681,583	<1%
<b>Total</b>			<b>\$598,407,275</b>	<b>100%</b>

The stormsewer pipe network makes up 51% of the Stormwater Management portfolio, designed to accommodate different flow rates and conditions. Most pipes are PVC, while larger diameter pipes are constructed from concrete. Pipe sizes can range from 300mm for main stormsewer lines and 150mm for foundation drain collectors.

## Asset Condition

Figure 12 provides an overview of the replacement cost-weighted condition of the Town's Stormwater Services. In 2020, Zoom Camera™ assessments were conducted for a portion of the Town's storm pipes and appurtenances, located in the historic urban centre. In total, 1,065 manholes, 1,994 catchbasins, and 70.3km of storm pipes were assessed. Although not as comprehensive as CCTV inspections, Zoom camera assessments provide good representative data. In addition, partial in-field data was available for stormwater ponds, low impact development, and oil and grit separators.

Based on a combination of assessed condition and age analysis, 87% of assets were rated as fair or better, while the remaining 13% of assets, valued at approximately \$76.4 million are classified as being in poor to very poor condition. These assets may need to be considered for replacement in the short term, while assets rated as fair may require rehabilitation or replacement in the medium term and should be closely monitored for potential degradation.

Figure 12 Asset Condition – Stormwater Management Service: Overall

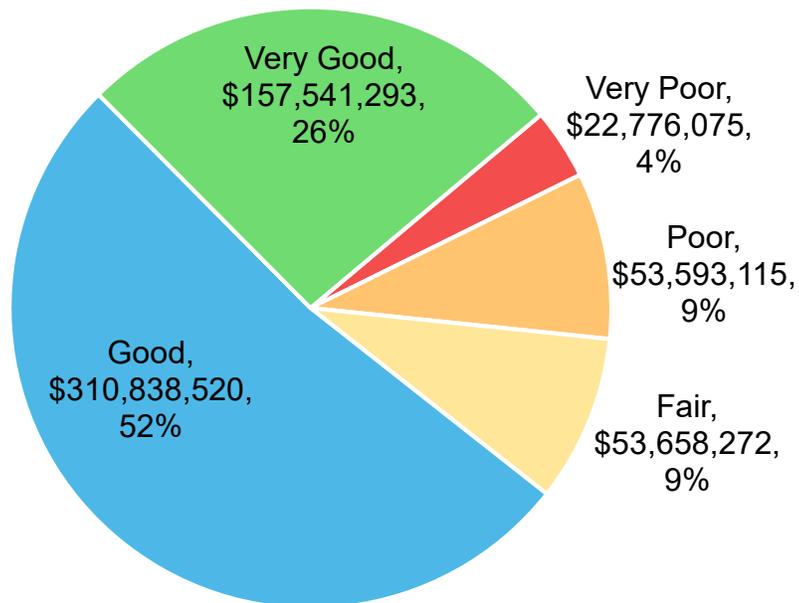
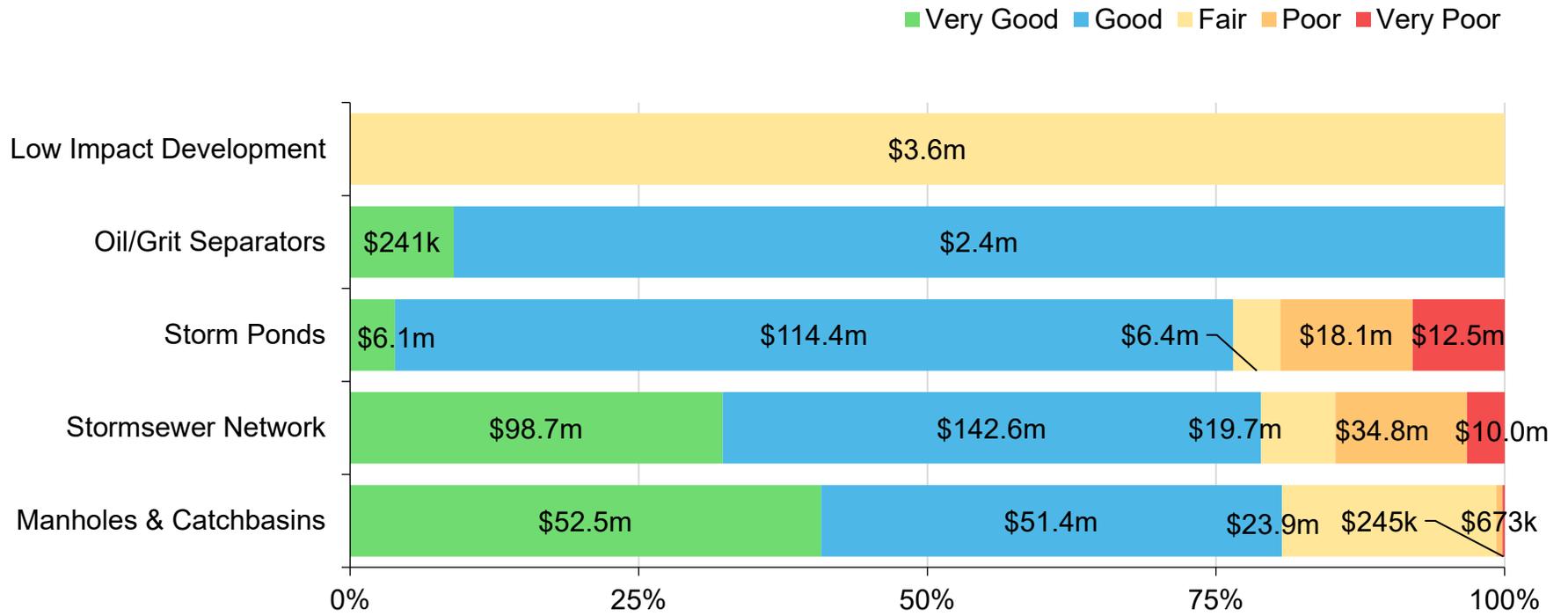


Figure 13 provides additional detail on Stormwater infrastructure condition by asset type. Approximately 85% of storm pipes are in fair or better condition. Stormwater ponds valued at approximately \$31 million are in poor or worse condition, indicating a potential need for significant rehabilitation or replacement to maintain effective stormwater management and mitigate flooding risks.

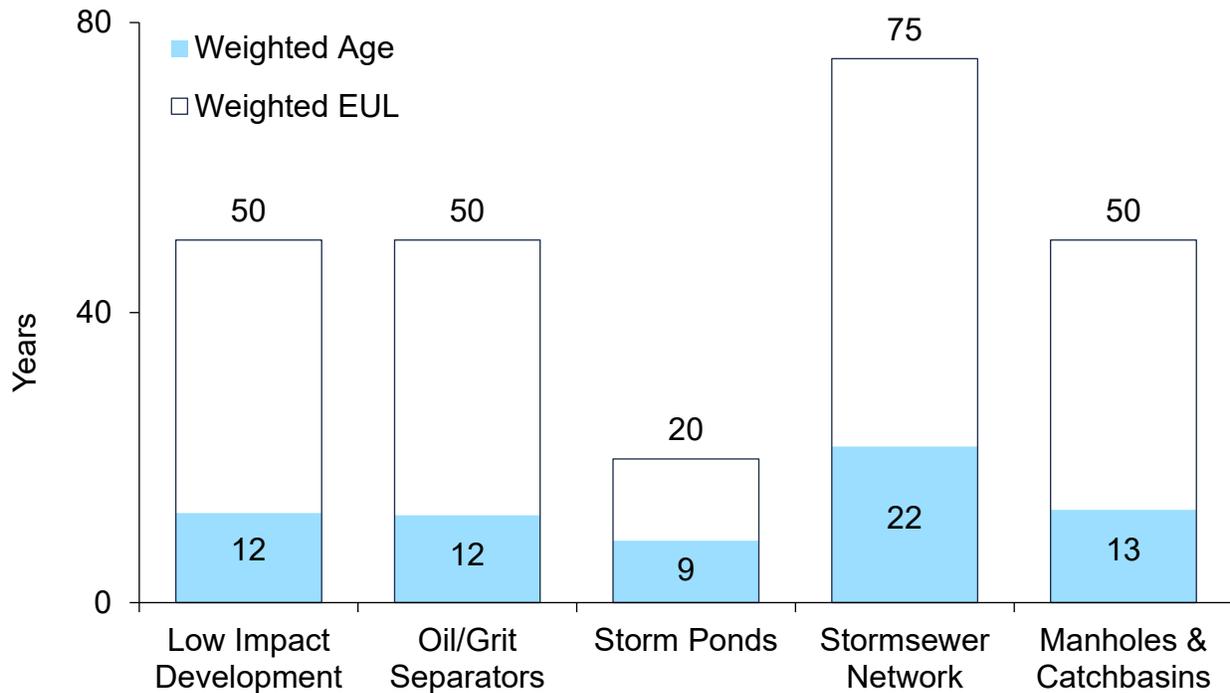
Figure 13 Asset Condition – Stormwater Management Services: By Asset Type



## Age Profiles

The following figure compares each asset's weighted average estimated useful life (EUL) to its current weighted average age as of 2023. Replacement cost was used to weight each asset in the analysis. While age alone may not be a perfect indicator, it serves as a useful initial assessment tool when combined with other data points such as asset condition, criticality, planned upgrades, project bundling, and previous failure history.

Figure 14 Estimated Useful Life vs. Asset Age – Stormwater Management Services



On average, Stormwater Management assets are relatively new and should have lower maintenance demands in the near future. However, ongoing monitoring is essential to ensure these assets continue to perform effectively, particularly given the potential impacts of climate change such as increased precipitation and extreme weather events.

These factors could accelerate the aging process and affect the longevity of assets, underscoring the importance of proactive asset management and strategic planning for future upgrades and replacements.

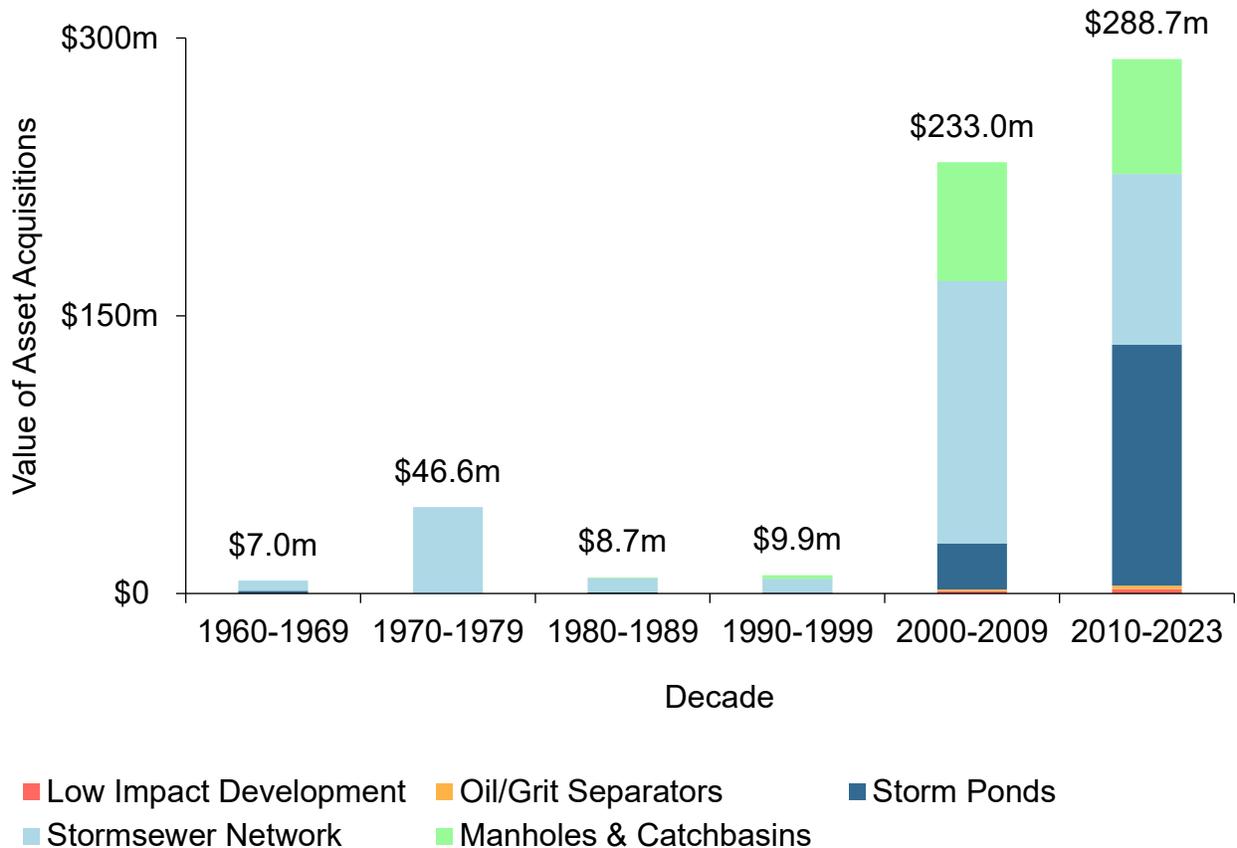
For storm ponds, the estimated EUL of 20 years indicates the duration until the capacity diminishes to a point where it may no longer effectively capture stormwater. This does not entail replacing the pond itself; rather, the pond is dredged to restore it to its intended capacity.

## Asset Acquisitions by Decade

Figure 15 illustrates the accumulation of Stormwater infrastructure assets since 1960 based on the in-service date of each asset. The data is presented using 2023 replacement costs, rather than the original or historical cost at the time of acquisition. The data reflects the Town’s current or active inventory only; assets that have been disposed of or decommissioned over time are not included.

Although valid in-service dates were available for the vast majority of assets, a provisional in-service date of 1960 was used for 264 assets, primarily within stormsewers, to make data analysis possible. Combined, these assets are valued at \$7.0 million, making up less than 2% of the overall Stormwater infrastructure portfolio.

Figure 15 Asset Acquisitions by Decade – Stormwater Management Services



In parallel with Transportation Service, the majority of Stormwater Management infrastructure assets were acquired between 2000-2009, and the consolidated period between 2010-2023, peaking at nearly \$289 million. Since 2020, the Town’s Stormwater asset base has grown by an additional \$87.6 million.

## Community Services

The Town of Milton offers a wide range of Community Services designed to enhance the quality of life for its residents, including a portfolio of parks, and recreation, civic, and cultural facilities. The Town also has a pooled inventory of its trees. The current replacement cost of Milton’s Community Services infrastructure is estimated at \$441.5 million.

### Inventory and Valuation

Table 14 summarizes the quantity and current replacement cost of Milton’s Community Services assets as managed in Citywide. Community Services are supported by a network of assets that ensure a safe and enjoyable use of the Town’s public recreational spaces. These include parking lots, lighting, and utilities, and other assets and their associated components. Land costs are not included in these estimates.

Table 14 Detailed Asset Inventory – Community Services

Asset Type	Quantity	Unit of Measure	Replacement Cost	Percentage
<b>Parks</b>			<b>\$92,074,890</b>	<b>21%</b>
Park Amenities	2,613	Assets/ Components	\$77,492,537	18%
Park Facilities	39	Facilities	\$14,582,353	3%
<b>Recreation Facilities</b>			<b>\$317,877,437</b>	<b>72%</b>
Community Centres & Arenas	9	Facilities	\$267,966,517	61%
Library Facilities	3	Facilities	\$31,126,991	7%
Cultural Facilities	2	Facilities	\$18,783,929	4%
<b>Forestry and Other Services</b>			<b>\$31,546,913</b>	<b>7%</b>
Urban Forestry	44,320	Trees	\$29,814,950	7%
Municipal Parking Lots	9	Lots	\$1,731,963	<1%
<b>Total</b>			<b>\$441,499,240</b>	<b>100%</b>

## Asset Condition

Figure 16 provides an overview of the replacement cost-weighted condition of the Community Services asset portfolio. In-field condition data was available for most park amenities and facilities, community and recreation centres, and library facilities.

Based on a combination of assessed condition and age analysis, 95% of assets were rated as fair or better, while the remaining 5%, valued at approximately \$21.2 million are classified as being in poor to very poor condition, pointing to potential issues with delivering adequate performance levels.

Figure 16 Asset Condition – Community Services: Overall

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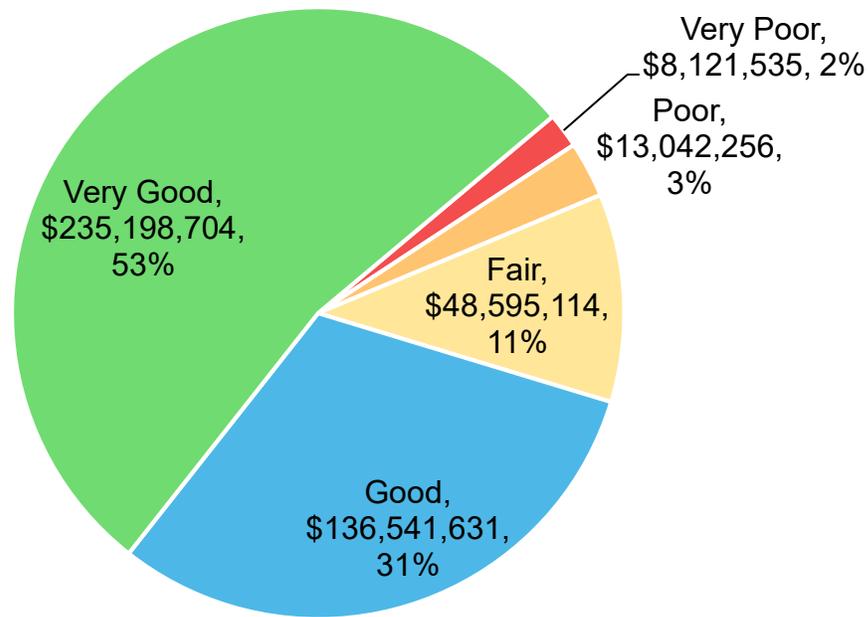
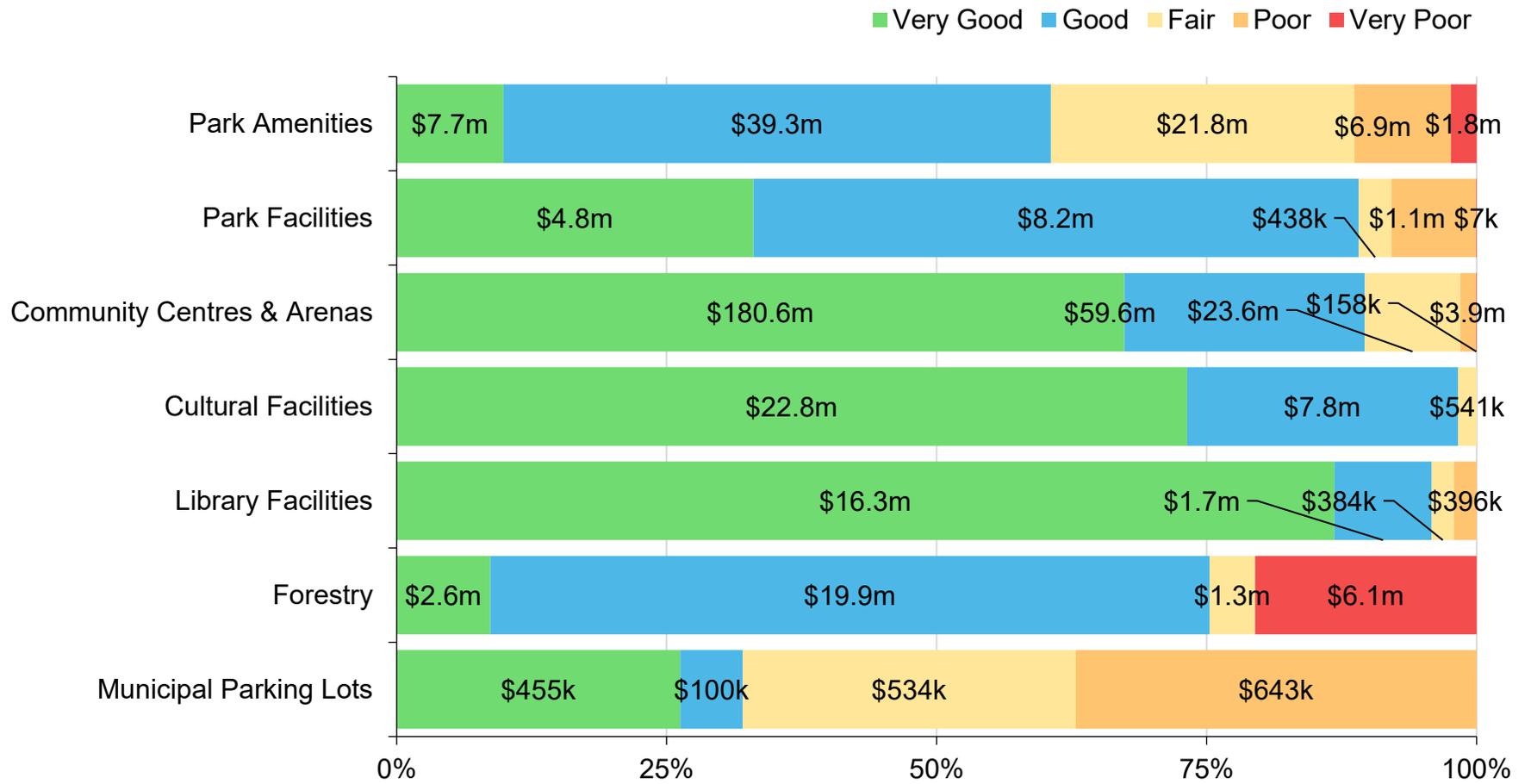


Figure 17 provides a more granular breakdown of Community Services assets and their condition ratings. Although proportionately, Milton's public parking lots contain the highest concentration of assets in poor or worse condition (37%), these assets have a relatively low replacement cost (\$643k) and are not critical.

For Urban Forestry, the Town's tree age information is not documented comprehensively, and the age-based estimate used in this report is not necessary reflective of the true condition of the assets.

Park Amenities contains the highest value of assets in poor or worse condition, with \$8.8 million in assets assigned a poor or very poor rating. These include trails, lighting, and various sports fields.

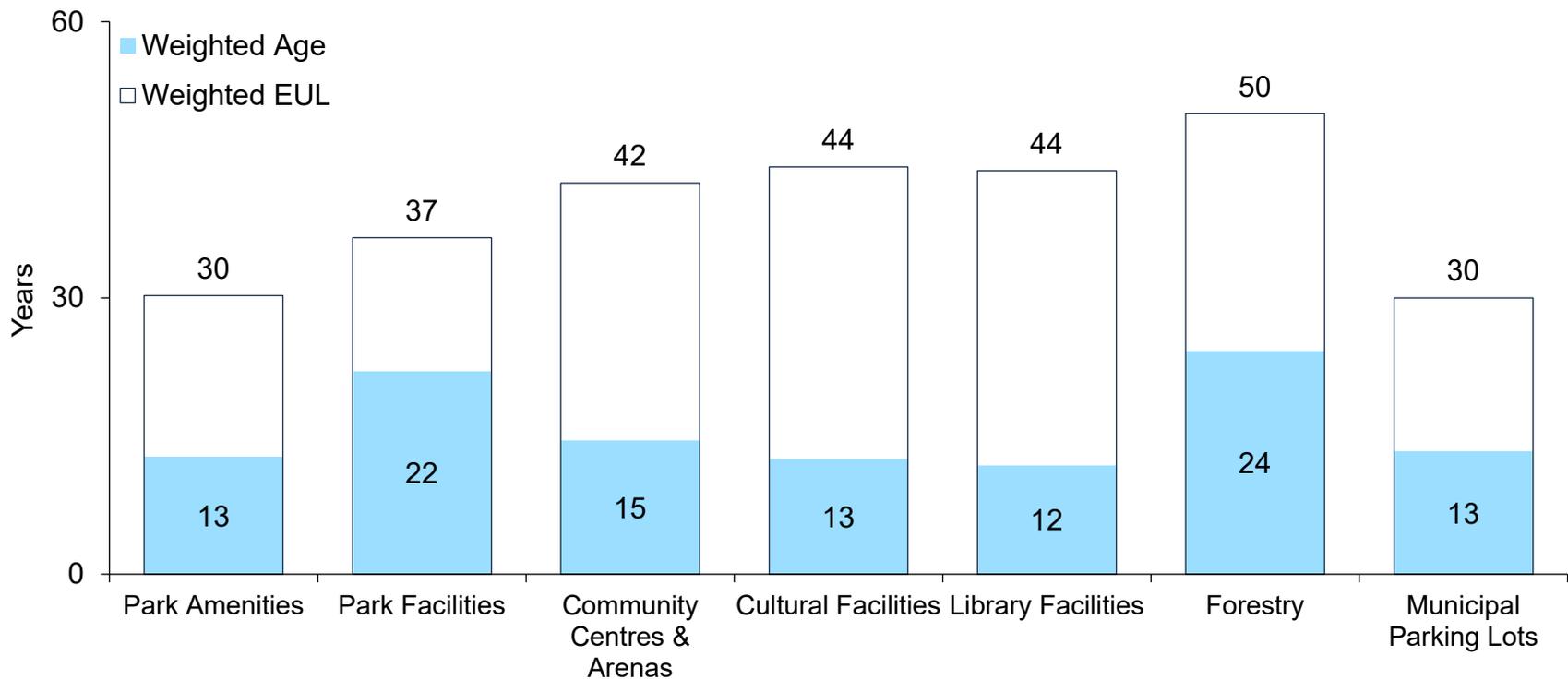
Figure 17 Asset Condition – Community Services: By Asset Type



## Age Profiles

The following figure compares each asset’s weighted average estimated useful life (EUL) to its current weighted average age as of 2023. Replacement cost was used to weight each asset in the analysis. Though age on its own may not provide a complete picture, it is a helpful starting point to prioritize projects when evaluated alongside other factors such as asset condition, criticality, planned improvements, project grouping, and past failure records.

Figure 18 Estimated Useful Life vs. Asset Age – Community Services

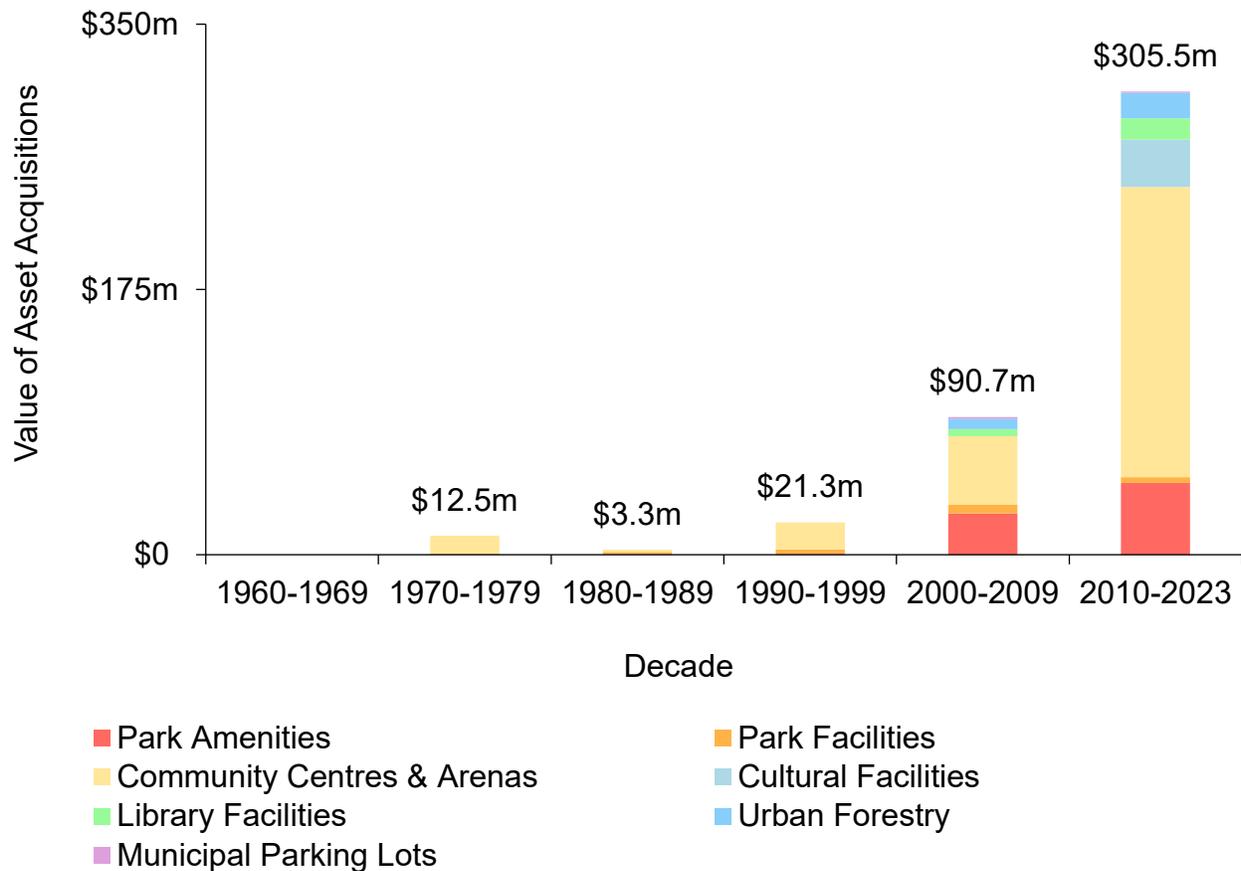


On average, Community Services assets have consumed less than 50% of their estimated design life. Exceptions are found primarily within Park Facilities assets, which include major buildings, and their individual elements and components.

## Asset Acquisitions by Decade

Figure 19 illustrates the accumulation of capital assets in the Town’s Community Services portfolio since 1960. The data is illustrated using 2023 replacement costs rather than the original or historical cost, and asset in-service dates. The data reflects the Town’s current or active inventory only; assets that have been disposed of or decommissioned over time are not included.

Figure 19 Asset Acquisitions by Decade – Community Services



Alongside Transportation Services and Stormwater Management infrastructure, most capital asset acquisitions occurred in the last two decades, rising sharply and peaking in the consolidate period between 2010-2023, totaling nearly \$305.5 million. The last two decades were marked by substantial population growth for Milton, which continues to expand quickly.

Since 2020, the Community Services asset base has grown by an additional \$9 million, with most acquisitions concentrated in Park Amenities, followed by Community Centers & Arenas as well as Cultural Facilities.

## Corporate and Operational Services

Milton’s Corporate and Operational Services assets support the effective delivery of the Town’s municipal operations. These assets, including facilities, furniture, information technology equipment, and vehicles, ensure essential services are delivered with minimal disruption to Milton residents. The current replacement cost of Corporate and Operational Services assets and infrastructure is estimated at \$118.1 million.

### Inventory and Valuation

Table 15 summarizes the quantity and current replacement cost of Corporate and Operational Services assets as managed in Citywide. Given the low relative value and criticality of most furniture assets, they are pooled to reduce data management.

Table 15 Detailed Asset Inventory – Corporate and Operational Services

Asset Type	Quantity	Unit of Measure	Replacement Cost	Percentage
<b>Corporate</b>			<b>\$72,007,985</b>	<b>61%</b>
Civic Facilities	6	Facilities	\$54,762,770	46%
Office Furniture	15	Pooled Assets	\$10,654,895	9%
Information Technology	74	Pooled Assets	\$6,590,320	6%
<b>Operational</b>			<b>\$46,115,178</b>	<b>39%</b>
Vehicles & Equipment	239	Assets	\$21,532,300	21%
Operations Yard Facilities	4	Facilities	\$24,582,878	18%
<b>Total</b>			<b>\$118,123,163</b>	<b>100%</b>

## Asset Condition

Figure 20 provides an overview of the replacement cost-weighted condition of the Corporate and Operational Services asset portfolio. In-field condition data was available for all Corporate and Operations Yard Facilities, as well as Vehicles & Equipment. Given their nature, corporate IT assets often rely on an age-based replacement strategy to ensure currency with evolving technology.

Based primarily on in-field condition data, 87% of assets were rated as fair or better, while the remaining 13% of assets, valued at approximately \$15.9 million are classified as being in poor to very poor condition.

Figure 20 Asset Condition – Corporate and Operational Services: Overall

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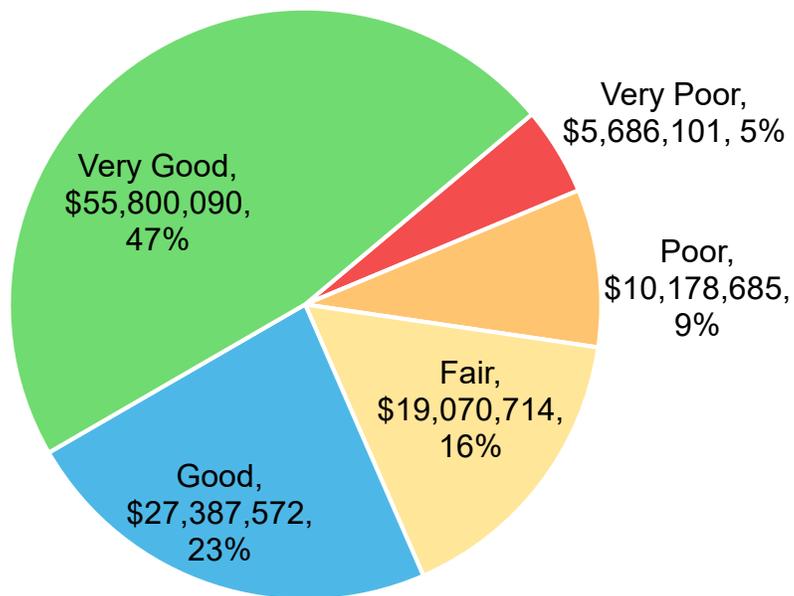
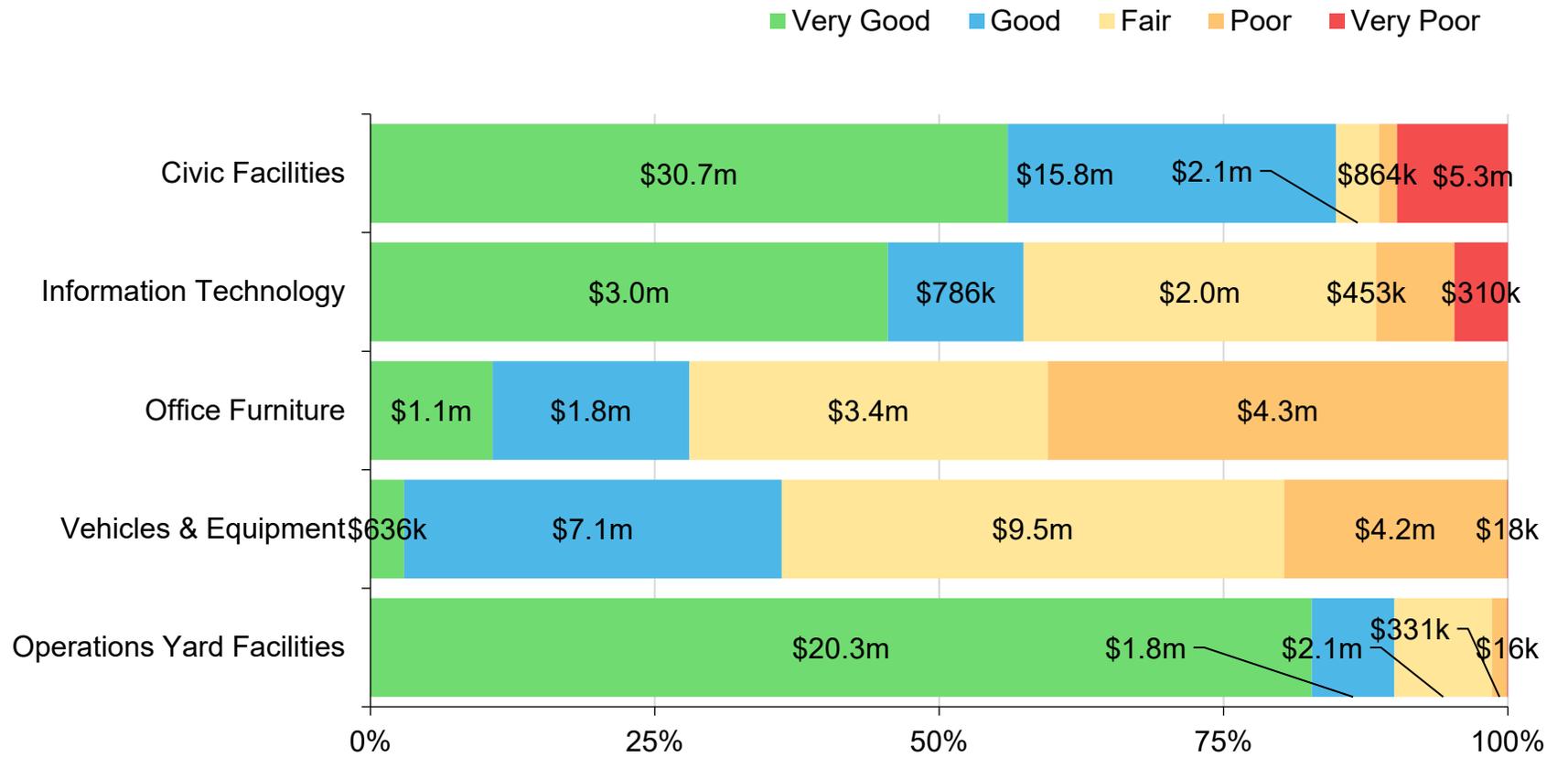


Figure 21 illustrates that, by percentage, office furniture has the highest portion of assets with a poor or worse condition rating, at 40% of total assets. With a current replacement cost of \$6.2 million, Civic Facilities has the highest value of assets in poor or worse condition.

Within Operations, approximately 20% of vehicles & equipment, with a current replacement cost of \$4.2 million were considered poor or worse. IT assets, including laptops and mobile phones, may warrant typical upgrades due to obsolescence, inadequate functionality, lack of ongoing manufacturer support, and security issues.

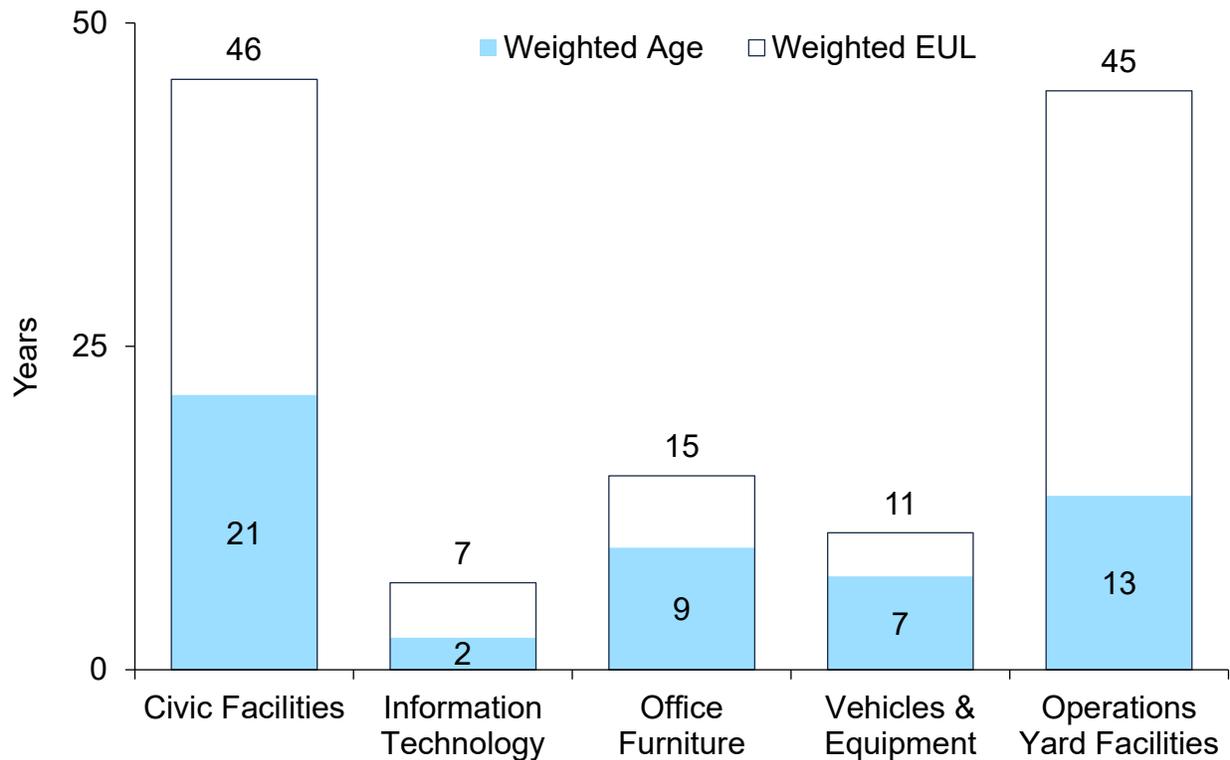
Figure 21 Asset Condition – Corporate and Operational Services: By Asset Type



## Age Profiles

The figure below contrasts each asset’s weighted average estimated useful life (EUL) with its current weighted average age as of 2023. Replacement cost is used to weight each asset. Although age alone may not capture the full picture, it serves as a useful initial assessment for prioritizing projects when considered with other factors such as asset condition, importance, and planned enhancements, particularly IT upgrade strategies.

Figure 22 Estimated Useful Life vs. Asset Age – Corporate and Operational Services

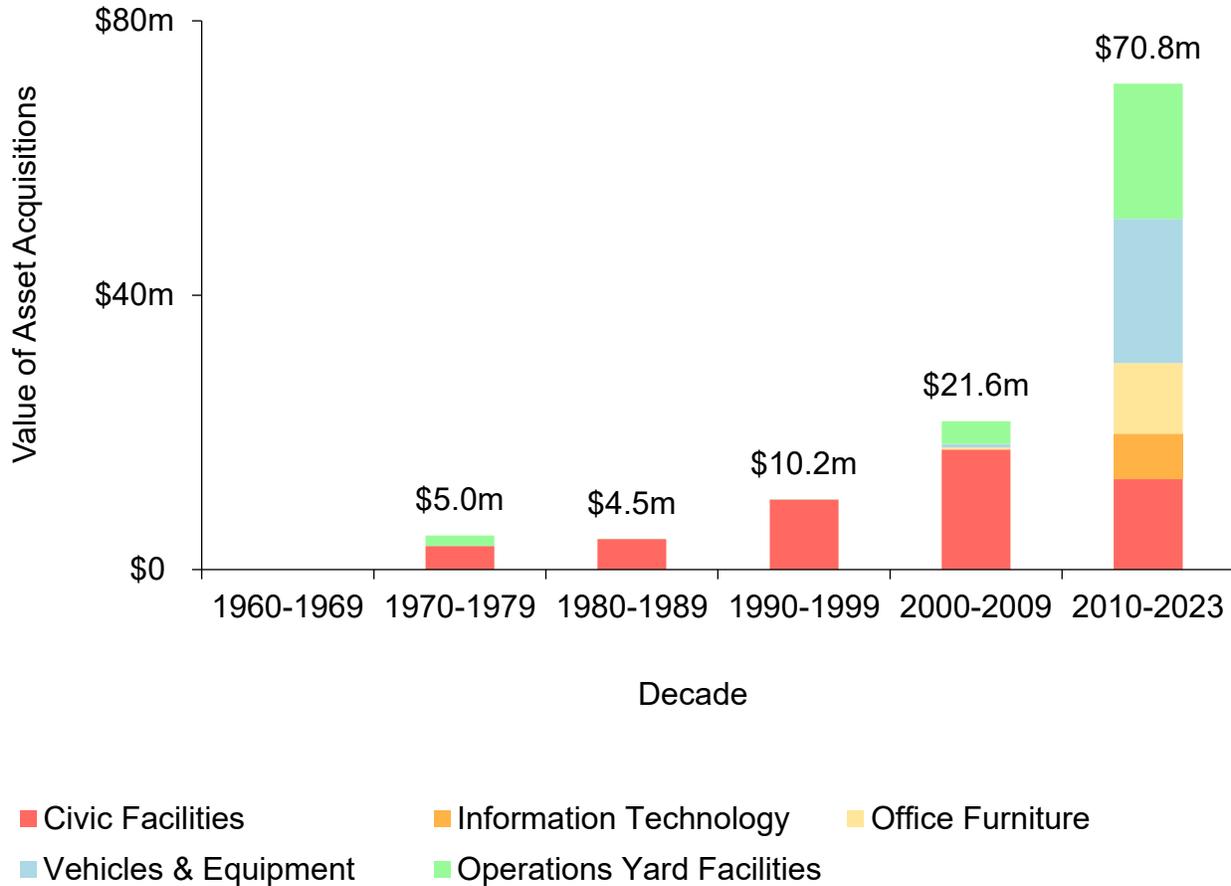


On average, major Corporate and Operational Services assets, including Civic Facilities and Operations Yard Facilities are in the earlier stages of their estimated design-life.

## Asset Acquisitions by Decade

Figure 23 illustrates the growth and accumulation of Milton’s Corporate and Operational Services asset base since 1960. The data is illustrated using 2023 replacement costs rather than the original or historical cost, and asset in-service dates. The data reflects the Town’s current or active inventory only; assets that have been disposed of or decommissioned over time are not included.

Figure 23 Asset Acquisitions by Decade – Corporate and Operational Services



Consistent with the trend, most acquisition in Corporate and Operational Services assets occurred in the last two decades, particularly in the consolidated period between 2010-2023, when the asset base grew by nearly \$71 million. Facilities, both Corporate and Operations, accounted for the vast majority of these acquisitions, followed by Fleet.

Since 2020, assets totaling \$9.8 million have been added to the Town’s asset register, with IT and Vehicles & Equipment accounting for the largest portion of acquisitions. Unlike roads, storms, facilities, and other major engineered assets, these particular assets typically have short lifespans, requiring more frequent cycles of replacements and acquisitions.

# Protective Services

The Town’s Protective Services assets play a vital role in responding quickly to emergencies, enforcing local regulations, and ensuring public safety across all areas of the municipality. Milton’s public safety infrastructure and asset portfolio includes fire vehicles, stations, and equipment, as well as bylaw enforcement vehicles. The current replacement cost of these assets and infrastructure is estimated at \$55.9 million.

## Inventory and Valuation

Table 16 summarizes the quantity and current replacement cost of Milton’s Protective Services assets as managed in Citywide. Overall, fire assets comprise 99% of all Protective Services assets.

Table 16 Detailed Asset Inventory – Protective Services

Asset Type	Quantity	Unit of Measure	Replacement Cost	Percentage
<b>Fire</b>			<b>\$55,513,359</b>	<b>99%</b>
Stations and Facilities	5	Stations	\$30,990,508	55%
Emergency Vehicles	37	Vehicles	\$20,349,236	36%
Firefighting & Communication Equipment	75	Pooled Assets	\$4,173,615	7%
<b>Bylaw Enforcement &amp; Animal Services</b>			<b>\$409,247</b>	<b>&lt;1%</b>
Enforcement & Animal Services Vehicles	8	Vehicles	\$409,247	<1%
<b>Total</b>			<b>55,922,606</b>	<b>100%</b>

## Asset Condition

Figure 24 provides an overview of the replacement cost-weighted condition of the Protective Services asset portfolio. In-field condition data was available for most assets. The Town also maintains strict standards for its fire vehicles and equipment assets, and has established a 'Fair' condition rating as a minimally acceptable performance level. As assets begin to degrade beyond this threshold, they are disposed, sold, and scheduled for replacement.

Based primarily on in-field condition data, more than 98% of assets were rated as fair or better, while less than 2% of assets, valued at \$880k are classified as being in poor condition.

Figure 24 Asset Condition – Protective Services: Overall

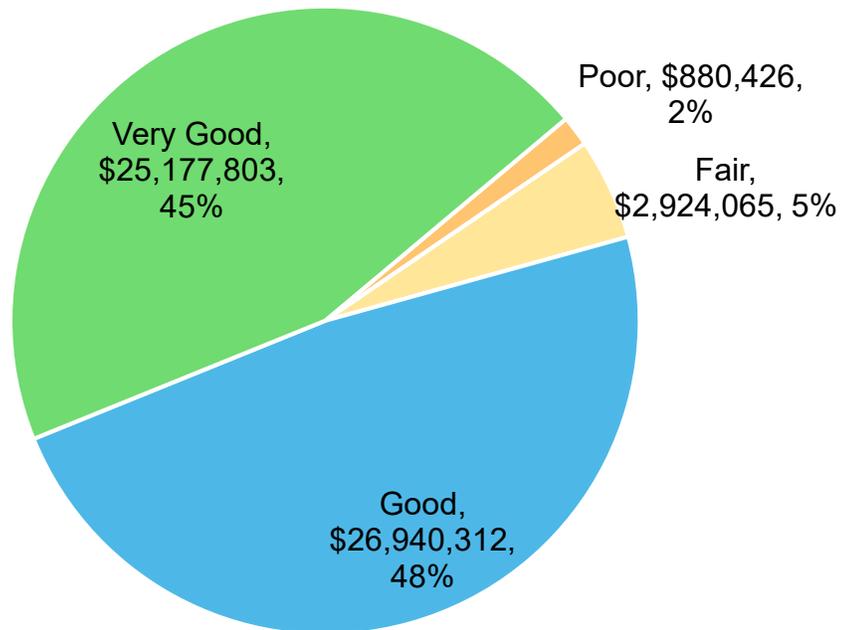
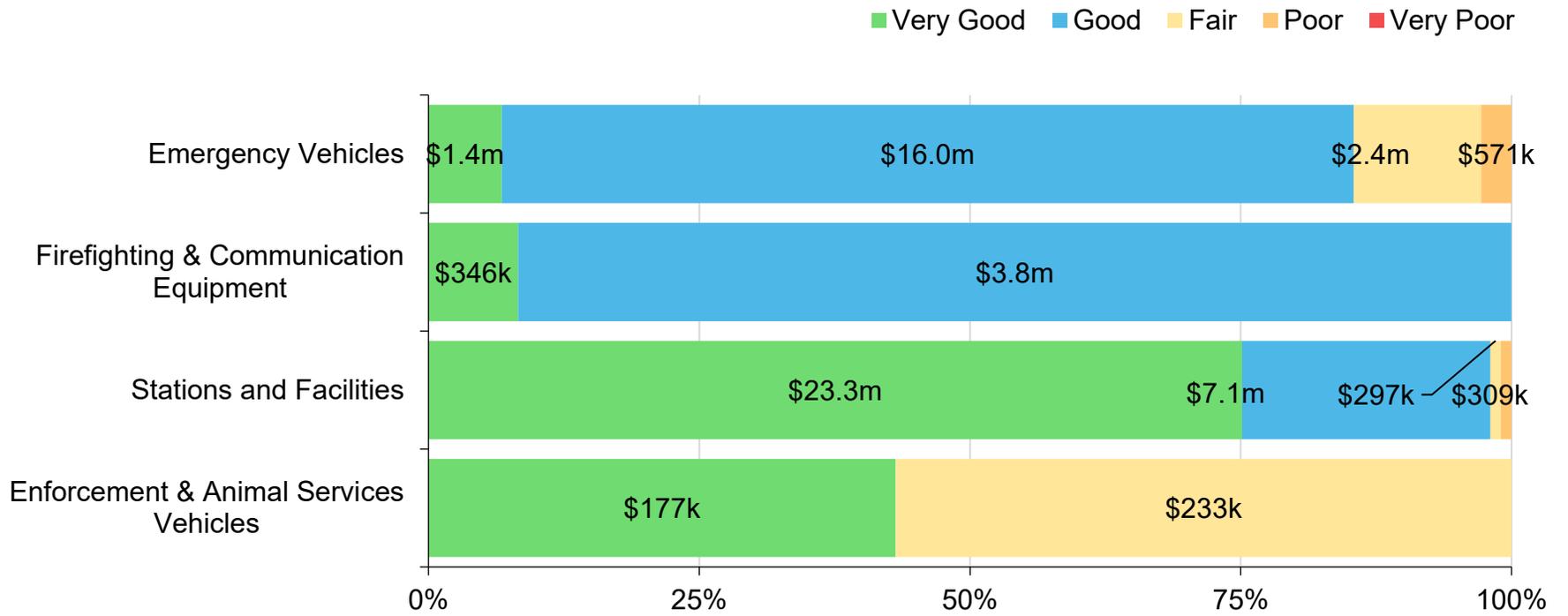


Figure 25 shows that some Emergency Vehicles assets were assigned a 'Poor' condition rating. These are limited to four support or auxiliary vehicles. All critical firefighting and communication equipment were assigned a good to very good condition rating.

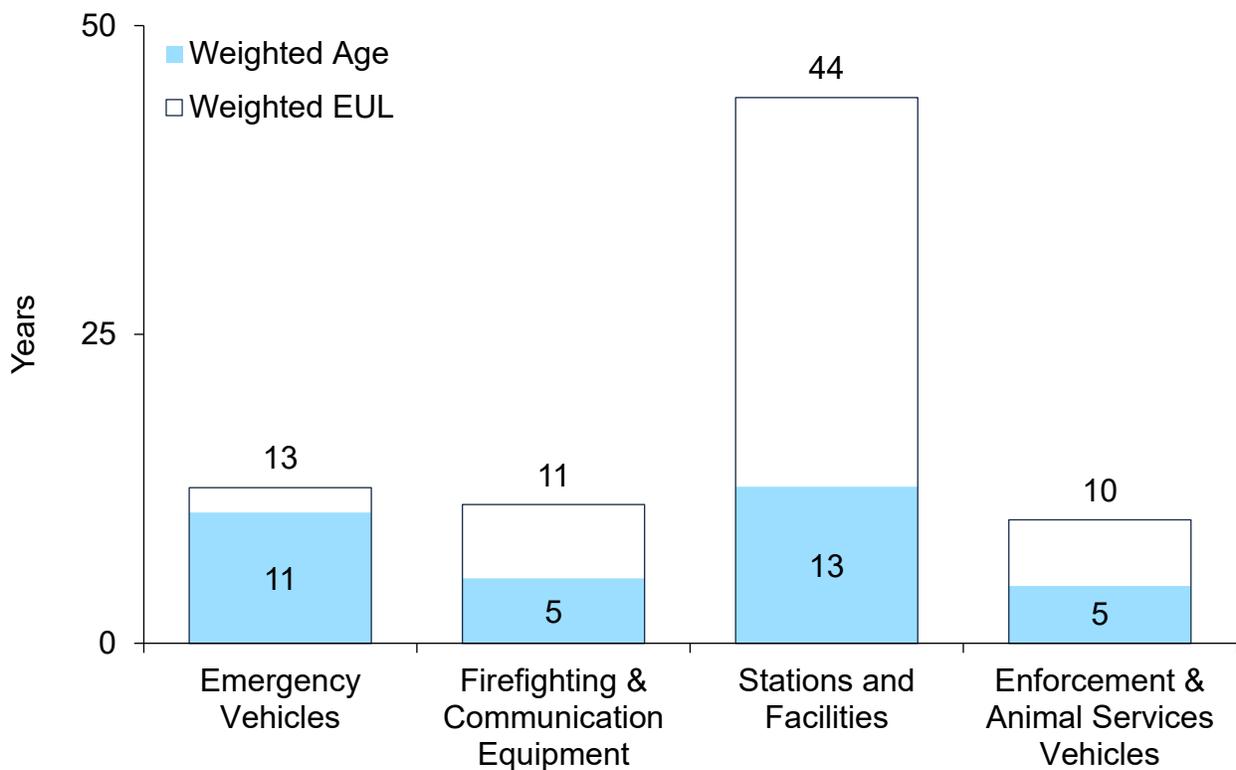
Figure 25 Asset Condition – Protective Services: By Asset Type



## Age Profiles

The figure below compares each asset’s weighted average estimated useful life (EUL) with its current weighted average age as of 2023, using replacement cost as a weighting factor. While age on its own may not provide a complete view, it offers a helpful starting point for prioritizing projects when combined with other considerations such as asset condition, importance, and planned improvements, especially considering the Town’s minimum condition threshold for its Fire vehicles and equipment portfolio.

Figure 26 Estimated Useful Life vs. Asset Age – Protective Services

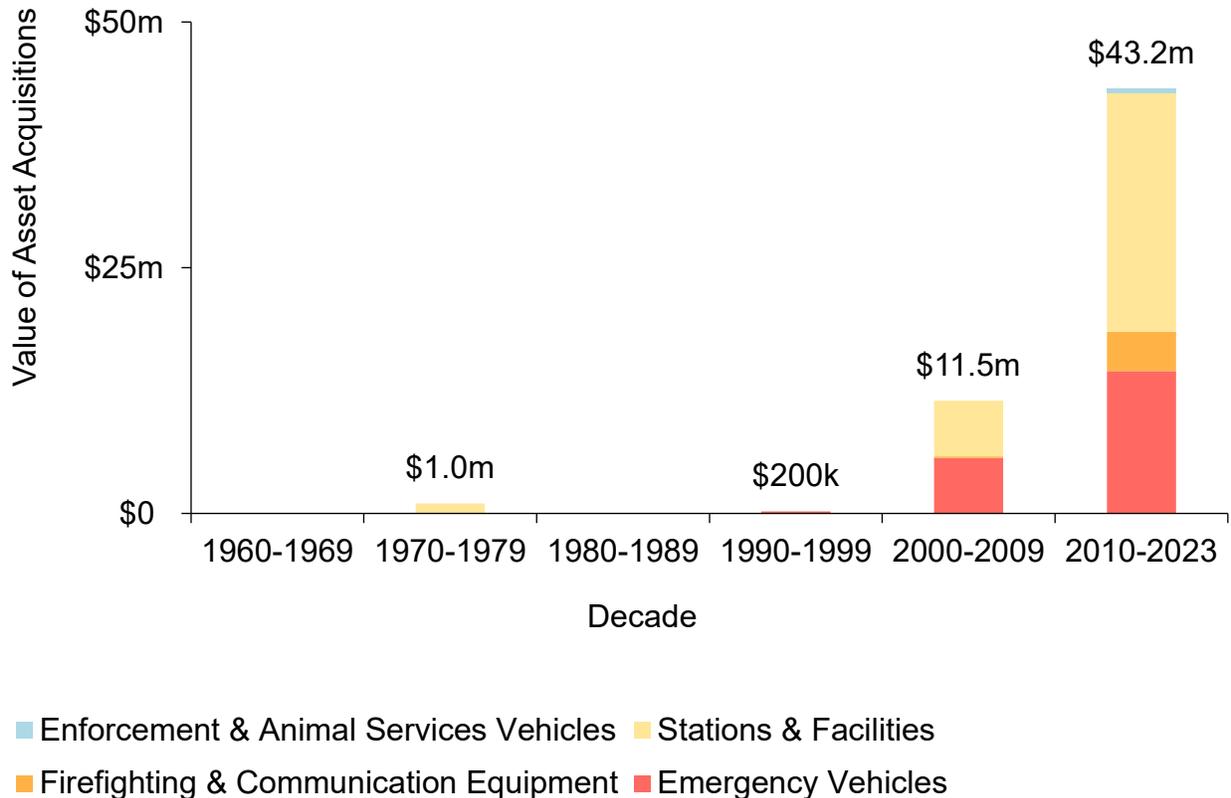


On average, most Protective Services assets are within the first half of their estimated design life. Some exceptions were found within Emergency Vehicles, attributed primarily to the age of support vehicles rather than fire apparatuses.

## Asset Acquisitions by Decade

Figure 27 illustrates the accumulation of assets in the Town’s Protective Services portfolio since 1960, illustrated using 2023 replacement costs rather than original or historical costs, and asset in-service dates. The data reflects the Town’s current or active inventory only; assets that have been disposed of or decommissioned over time are not included.

Figure 27 Asset Acquisitions by Decade – Protective Services



In line with the prevailing trend, most asset acquisitions occurred between 2000 and the current decade, a time of significant population growth for Milton. The bulk of the growth in the Protective Services asset base was concentrated in Stations & Facilities, followed by Emergency Vehicles.

Acquisitions reached their highest point in the consolidated period between 2010-2023, totaling \$43.2 million. Since 2020, the Town has added \$8.1 million in assets to its Protective Service portfolio, with the majority comprising Emergency Vehicles.

## Transit Services

Milton Transit plays a vital role in enhancing mobility and connectivity for the residents and visitors of the Town of Milton. The Town provides conventional and access+ or specialized service on weekdays and Saturdays, and connects with GO Transit services at the Milton GO Station. The current replacement cost of the associated vehicles, equipment, and facilities totals \$26.1 million.

### Inventory and Valuation

Table 17 summarizes the quantity and current replacement cost of Milton’s Transit Services assets as managed in Citywide. Vehicles make up 90% of the Transit asset portfolio.

Table 17 Detailed Asset Inventory – Transit Services

Asset Type	Quantity	Unit of Measure	Replacement Cost	Percentage
<b>Conventional and Specialized Transit</b>			<b>\$26,124,995</b>	<b>100%</b>
Transit Vehicles	37	Vehicles	\$23,432,333	90%
Transit Equipment	200	Assets/Components	\$1,742,550	7%
Stops & Shelters	538	Assets/Components	\$950,112	4%
<b>Total</b>			<b>\$26,124,995</b>	<b>100%</b>

## Condition

Figure 28 provides an overview of the replacement cost-weighted condition of the Transit Services asset portfolio. In-field condition data was not available for this asset group. As such, only age was used to approximate asset condition. This analysis suggests that while 83% of assets are in fair or better condition, the remaining 17%, with a current replacement cost of \$4.4 million, were rated as poor or worse.

Figure 28 Asset Condition – Transit Services: Overall

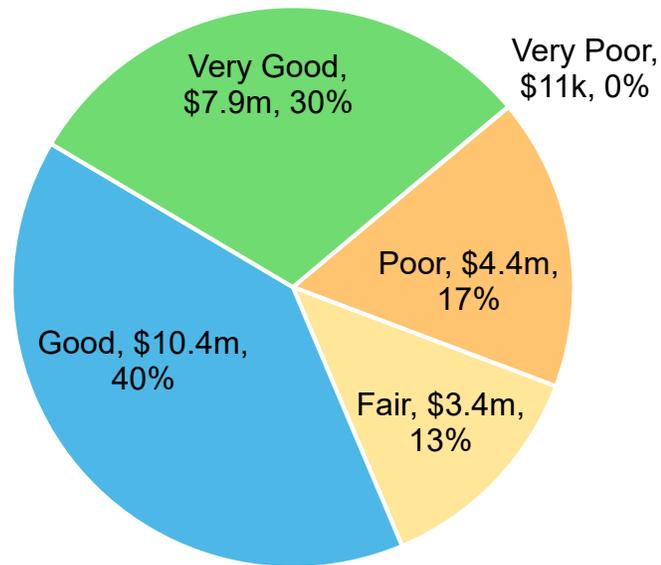
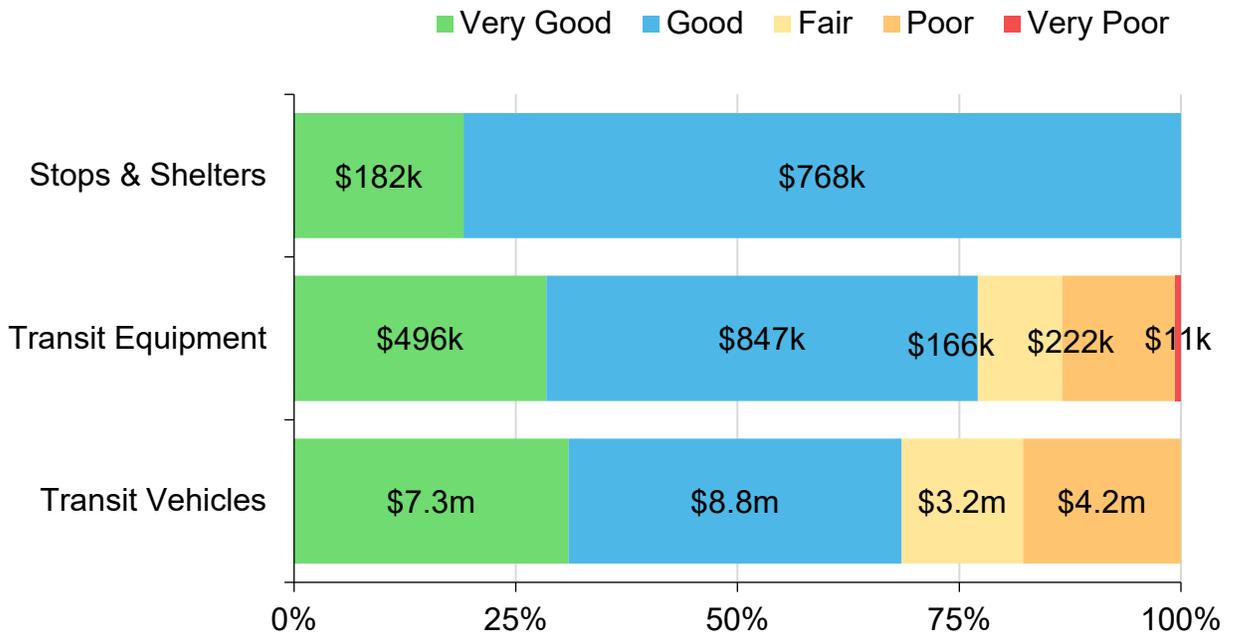


Figure 29 illustrates that the majority of assets classified as poor or worse were concentrated within Equipment and Vehicles asset groups. However, these are age-based estimates; actual condition of these assets may be sufficient to provide services safely and effectively. Some units remain in service beyond their useful life due to supply chain challenges that have delayed their planned replacements. Vehicles identified as very poor based on age are considered inoperable and made stationary; currently, no vehicles were assigned this rating.

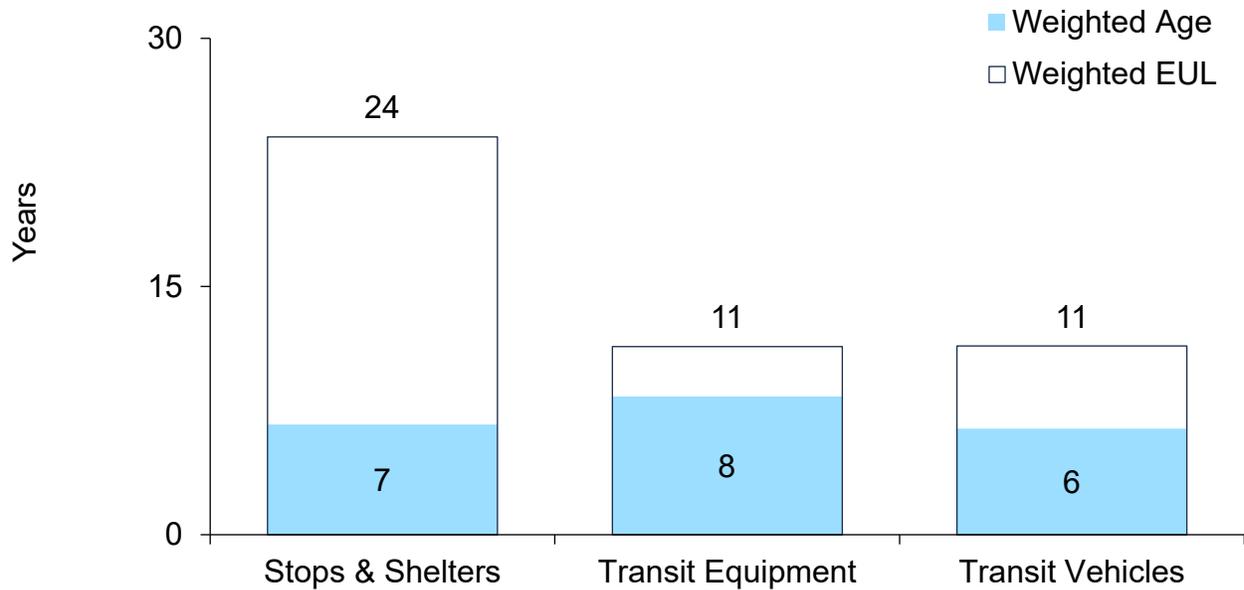
Figure 29 Asset Condition – Transit Services: By Asset Type



## Age Profiles

The figure below compares each asset's weighted average estimated useful life (EUL) with its current weighted average age as of 2023, using replacement cost as a weighting factor. As no in-field condition data was available, this graph provides a complementary perspective by presenting the same age data in an alternative format.

Figure 30 Estimated Useful Life vs. Asset Age – Transit Services



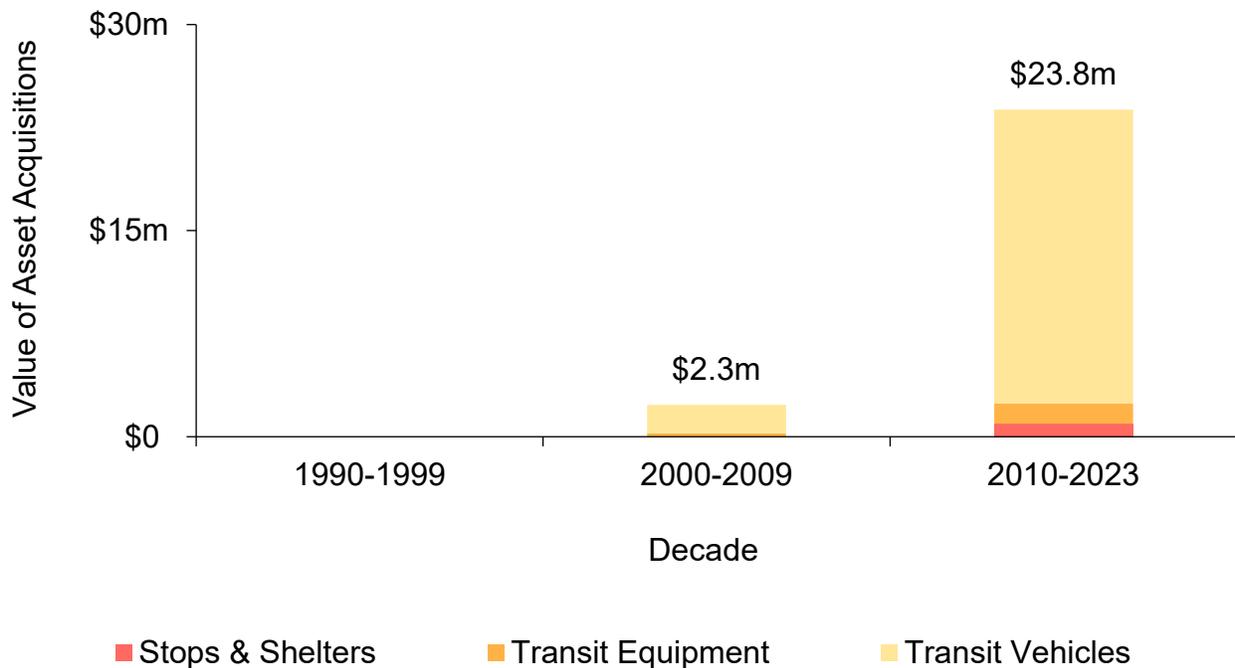
On average, Transit Equipment and Vehicles assets are in the latter stages of their lifecycle, while Stops and Shelters remain relatively new. Field condition assessments are used to help reveal actual asset needs and condition states.

## Asset Acquisitions by Decade

Figure 31 illustrates the accumulation of assets in the Town's Transit Services portfolio since 1960, illustrated using 2023 replacement costs rather than historical or original costs, and asset in-service dates. The data reflects the Town's current or active inventory only; assets that have been disposed of or decommissioned over time are not included.

Unlike other asset classes, the overwhelming majority of Transit assets have shorter lifespans, requiring more frequent cycles of disposals and replacements. Hence, the analysis is presented on a condensed time horizon, beginning with 1990.

Figure 31 Asset Acquisitions by Decade – Transit Services



The Town's Transit Services asset base increased substantially between 2000-2009 and 2010-2023, coinciding with a rapid growth in Town population and the assets required to support service demand and delivery. In the current consolidate period, Milton has acquired nearly \$24 million in Transit Services assets, dominated by vehicles.

# Milton Public Library Board Services

The Milton Public Library Board Services offer a comprehensive range of resources and programs designed to enrich the community. In addition to its collection, the library’s three branches provide access to computers, internet, and study spaces, making it a hub for information and connection. The current replacement cost of library assets totaled \$4.6 million.

## Inventory and Valuation

Table 18 summarizes the quantity and current replacement cost of the Milton Public Library Board Services assets as managed in Citywide. Fixtures and Furniture comprise 76% of the asset base.

Table 18 Detailed Asset Inventory – Milton Public Library Board Services

Asset Type	Quantity	Unit of Measure	Replacement Cost	Percentage
<b>Library</b>			<b>\$4,477,530</b>	<b>100%</b>
Fixtures & Furniture	1,412	Assets	\$3,393,367	76%
Information Technology	433	Assets	\$1,084,163	24%
<b>Total</b>			<b>\$4,477,530</b>	<b>100%</b>

## Asset Condition

Figure 32 provides an overview of the replacement cost-weighted condition of the Milton Public Library Board Services asset portfolio. As no assessed condition data was available, only age was used to approximate asset condition. This analysis suggests that while 61% of asset are in fair or better condition, the remaining 39%, with a current replacement cost of 1.7 million are in poor or worse condition.

Figure 32 Asset Condition – Milton Public Library Board Services: Overall

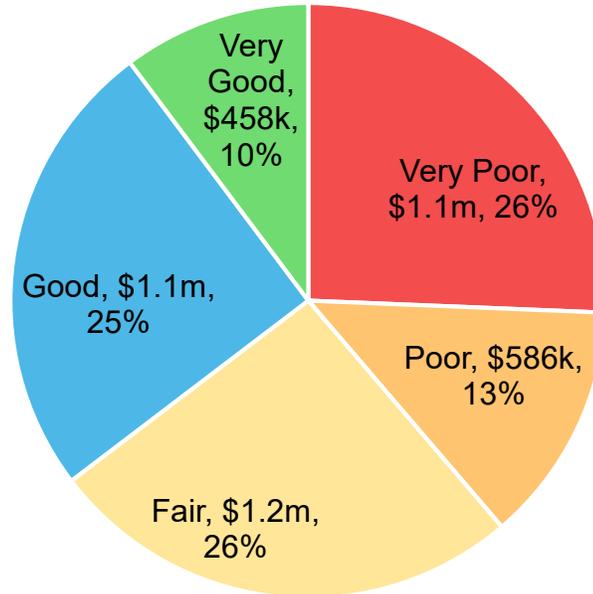
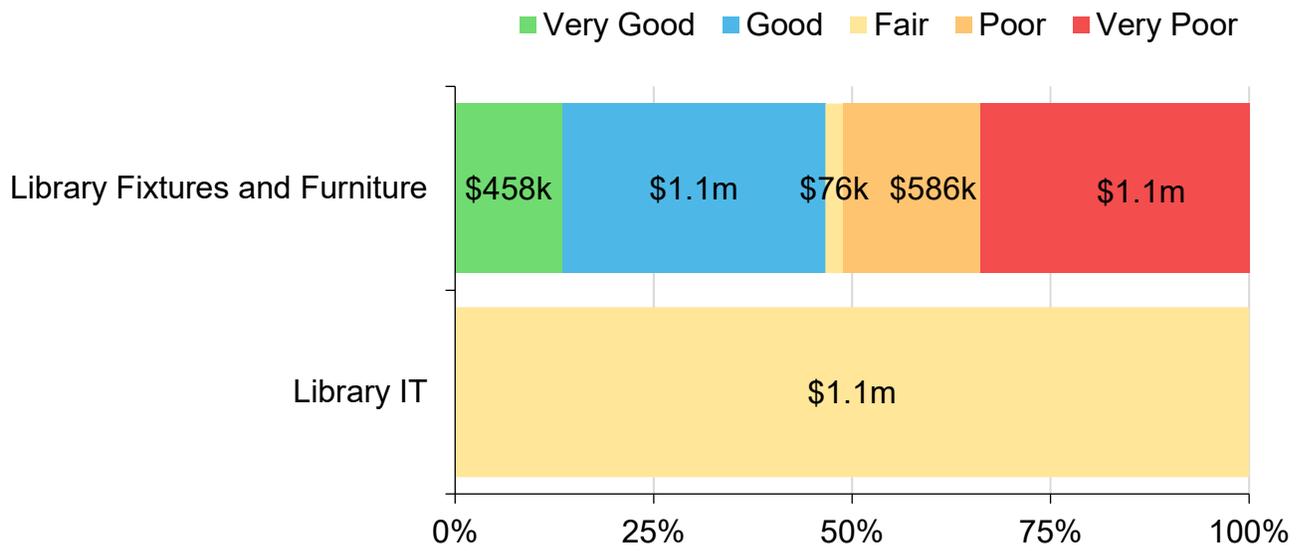


Figure 33 illustrates that all Library IT assets are in fair condition, based only on age. As IT assets were pooled, it was not possible to determine the nature of these assets or establish condition ratings at the individual asset level. Typically, these assets are relatively minor in nature. The age-based analysis also suggests that more than 50% of Library Fixtures and Furniture assets in poor or very poor condition.

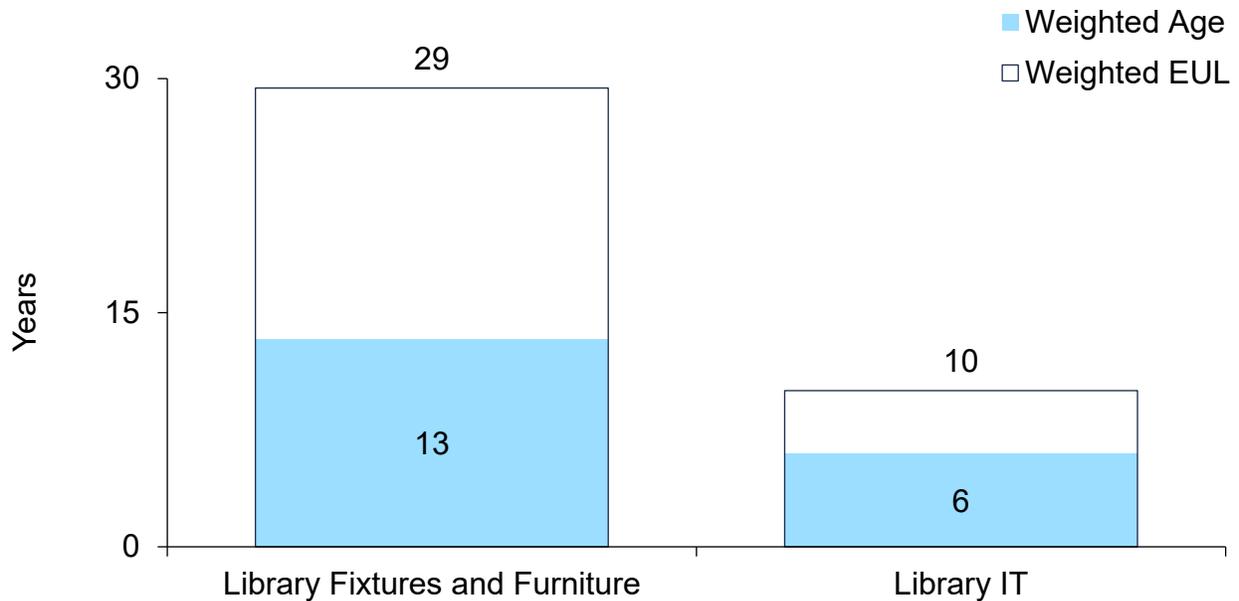
Figure 33 Asset Condition – Milton Public Library Board Services: By Asset Type



## Age Profiles

The figure below compares each asset’s weighted average estimated useful life (EUL) with its current weighted average age as of 2023, using replacement cost as a weighting factor. As no in-field condition data was available, this graph relies again on age to offer an alternative perspective on the state of Library assets.

Figure 34 Estimated Useful Life vs. Asset Age – Milton Public Library Board Services



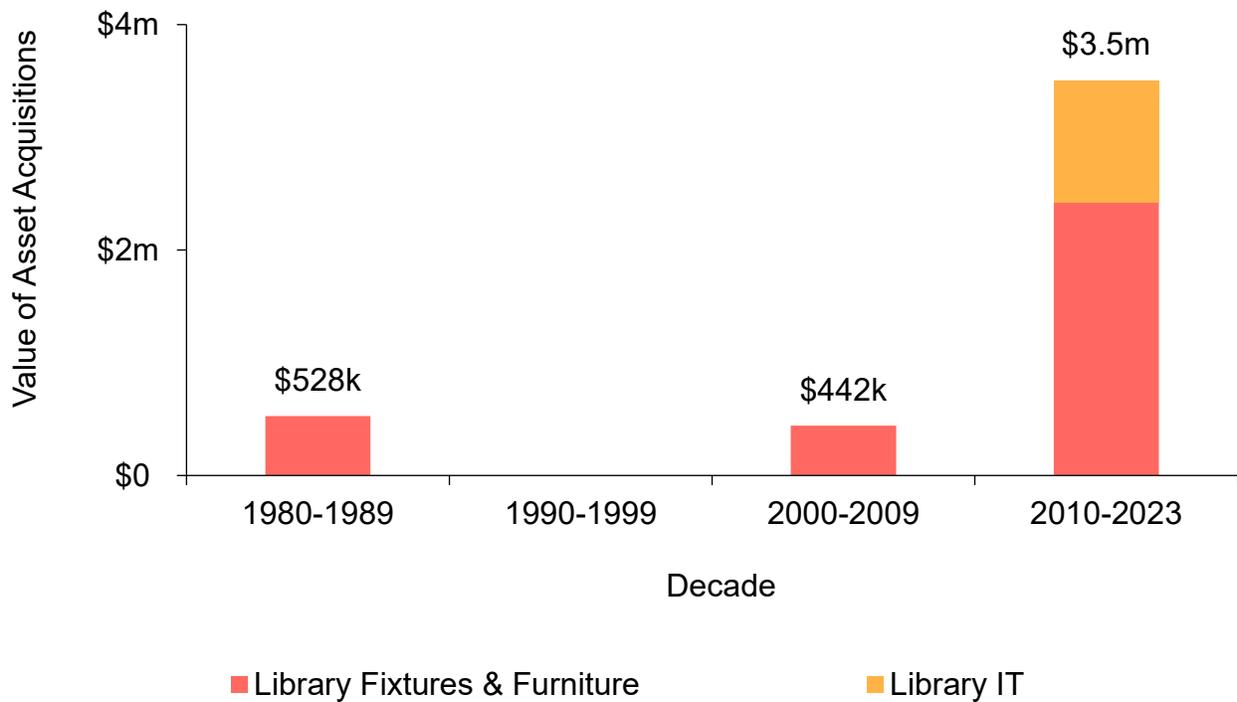
As the diagram illustrates, most Fixtures and Furniture assets are, on average, approaching the latter stages of their lifecycle. In addition, IT assets have consumed, on average, 60% of their estimated design life. IT upgrades and replacements are typically part of a broader, organization-wide replacement strategy. Others are replaced on an as-needed basis.

## Asset Acquisitions by Decade

Figure 35 illustrates the growth and accumulation of the Town of Milton’s Public Library Board Services assets since 2000, illustrated using 2023 replacement costs rather than the original or historical cost, and asset in-service dates. The data reflects the Town’s current or active inventory only; assets that have been disposed of or decommissioned over time are not included.

Most Library Services assets have short lifespans and may undergo many replacement cycles during a 50-year period. As a result, the analysis is presented on a more condensed time horizon, similar to Transit Services.

Figure 35 Asset Acquisitions by Decade - Milton Public Library Board Services



Acquisitions of Library assets coincide with Milton’s overall growth period, which saw a sharp increase in the 2000s. Library assets grew rapidly between 2009 and 2023, with acquisitions totaling \$3.5 million in the consolidated period between 2010-2023. Since 2020, the Town’s Library asset base has expanded by \$202k.

# Lifecycle Management

The Town of Milton's approach to asset lifecycle management is comprehensive. Maintenance, repair, and replacement activities are guided by technical external condition assessment surveys, asset age, and staff judgment through routine inspections and monitoring. Risk assessments and other contextual information is used to select the right lifecycle activity at the right time.

# Lifecycle Framework

Consistent with industry standards, Milton’s lifecycle framework includes direct intervention activities as well as non-infrastructure activities or strategies. Direct lifecycle activities are those that improve an asset’s condition or extend its useful life. Non-infrastructure activities are necessary to identify asset needs, and inform decision-making, and can include condition and risk assessments. Table 19 provides an overview of the various lifecycle activities and their roles in managing infrastructure.

Table 19 Typical Lifecycle Framework

Activity Type	Description
Non-Infrastructure Activities	Activities such as studies, condition inspections, planning, and monitoring that support decision-making but do not directly impact the asset’s physical state.
Maintenance	Routine and preventive actions that preserve the asset’s current condition and functionality, such as cleaning, minor repairs, and regular upkeep.
Renewal, Rehabilitation, and Replacement	Major interventions aimed at restoring, improving, or replacing infrastructure to extend its useful life, including significant repairs, overhauls, and complete asset replacement.
Growth	Activities related to the expansion of infrastructure capacity to meet increased demand, such as constructing new facilities or extending existing ones.
Disposal	The process of decommissioning, removing, or repurposing infrastructure that is no longer needed or has reached the end of its useful life.

The table that follows outlines Milton’s current lifecycle framework for its major infrastructure and other tangible capital assets.

Table 20 Current Lifecycle Framework

Asset	Lifecycle Activities
Roads	<ul style="list-style-type: none"> <li>• Pavement condition assessment, with most recent conducted in 2023</li> <li>• Crack sealing, micro-surfacing, pothole repairs, street sweeping, winter maintenance, line repainting</li> <li>• More invasive, surface- and roadside environment-specific activities, including single and double lifts; expanded asphalt; full reconstruction</li> </ul> <p>The Town’s current lifecycle strategy for its road network was built into Citywide to generate more realistic lifespans and calculate average annual requirements (AAR). These lifecycle strategies were based directly on the pavement condition report.</p>
Sidewalks, Walkways and Trails	<ul style="list-style-type: none"> <li>• Leveling uneven pathways; vegetation management; litter cleanup</li> <li>• Patching or regrading of pathways, based on surface type</li> <li>• Sidewalk leveling; salting and winter maintenance; patching of cracked sidewalks; as-needed sidewalks repairs and rehabilitation;</li> <li>• Replacement of sidewalk panels and curbs</li> <li>• Vegetation management and collision related repairs for guardrails</li> </ul>
Roadside Appurtenances	<ul style="list-style-type: none"> <li>• Roadways shoulder grading</li> <li>• Replacement or sealing of gravel surface</li> <li>• Light bulb replacement, and lamp/fixture cleaning of streetlights</li> <li>• Streetlight pole rehabilitation</li> <li>• LED retrofit programs, and broader electrical component replacement and upgrades</li> <li>• Cleaning of traffic signs</li> <li>• Sign repairs</li> <li>• Routine cleaning of traffic signals</li> <li>• Repair and rehabilitation of signal poles</li> <li>• Replacing, upgrading, and modernization of electrical components</li> </ul>

Asset	Lifecycle Activities
Structures	<ul style="list-style-type: none"> <li>• Biennial condition assessments of bridges and structural culverts (3m+) in accordance with OSIM requirements, with most recent was completed in 2021. (The 2023 inspection was in draft at the time of preparing this AMP, and will be incorporated in the 2025 iteration.)</li> <li>• Street sweeping; salting, winter maintenance;</li> <li>• Routine cleaning and vegetation management for retaining walls</li> <li>• Deck flushing and drain cleanouts</li> <li>• Repairs and interventions as recommended by OSIM study, and in conjunction with age and service life</li> </ul>
Stormwater Management Infrastructure	<ul style="list-style-type: none"> <li>• Zoom Camera™ inspection of storm sewers (Phase 1, Historic Urban Area)</li> <li>• Flushing and cleaning of storm pipes</li> <li>• Spot repairs as required; reactive and proactive sewer replacements</li> <li>• Annual storm pond condition inspections and monitoring</li> <li>• Maintaining vegetation, removing trash, inlet/outlet cleaning; basic channel cleaning; sediment buildup monitoring and control;</li> <li>• Replanting, landscaping, hydroseeding, tree removal; pond dredging; regrading and paving</li> <li>• Minor manhole and catchbasin repairs, e.g., grouting/root treatment;</li> <li>• Alignment of modular manhole/catchbasin components with road surface</li> <li>• Routine cleaning and erosion control</li> <li>• Replacement of catchbasin and manholes coordinated with road work</li> </ul>

Asset	Lifecycle Activities
Buildings and Facilities	<ul style="list-style-type: none"> <li>• Standard building condition assessment (BCA)</li> <li>• Facilities components repair, rehabilitation, and replacement program based on BCAs</li> <li>• Playground structures and equipment adhere to regulatory requirements for inspection and repairs, e.g. Canadian Standard Association (CSA) standards</li> </ul> <p>Facilities comprise thousands of individual components, each with their unique lifecycle requirements. The Town’s facilities inspections span Civic Facilities, Fire Stations, Operations Yard Facilities, Park Facilities, and Recreation Facilities.</p> <p>Renewal and replacement capital expenditures from 2024 to 2033 are estimated through these inspection efforts, and organized for all facilities according to Uniformat II code standard.</p>
Fleet and Equipment	<ul style="list-style-type: none"> <li>• Equipment and vehicles follow manufacturer recommended inspection and repair protocols.</li> <li>• Protective vehicles, particularly Fire services assets, follow strict Town guidelines for replacements, with a minimum condition rating of fair.</li> <li>• Vehicles below this threshold are repurposed and/or replaced.</li> </ul> <p>Relatively minor assets, including IT and various Library assets, typically follow a buy-replace cycle, and do not require complex lifecycle strategies.</p>

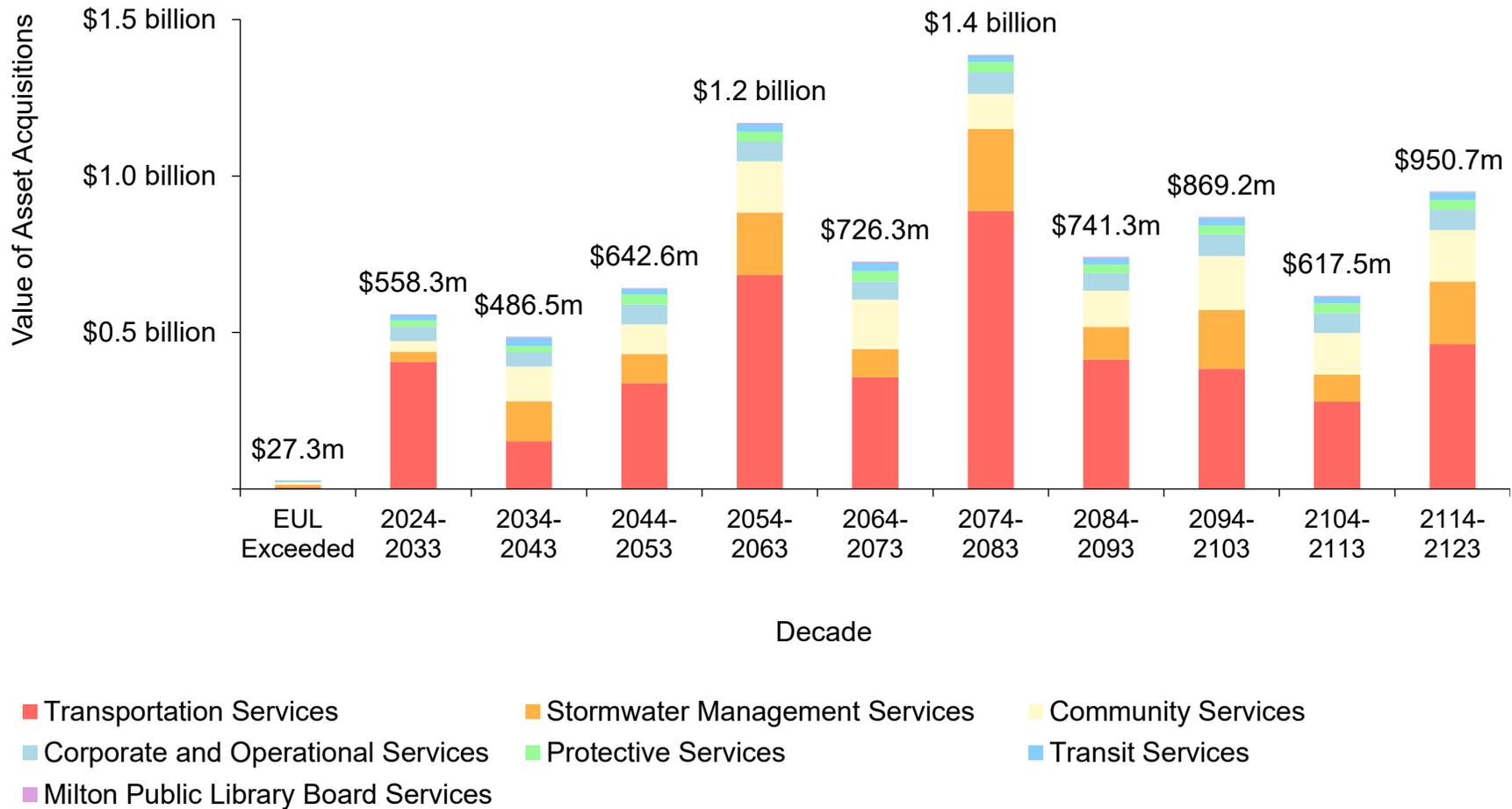
## Long-term Forecast

In contrast to historical investments in infrastructure, Figure 36 illustrates the cyclical short-, medium- and long-term replacement requirements for the seven service areas, forecasted for the next 100 years. In addition to replacements, the chart also illustrates the repair and rehabilitation lifecycle needs for the Town's road network.

On average, these seven service areas require \$87.2 million annually to meet capital needs related to the assets held by the Town as of the end of 2023. Although actual spending and replacement needs may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement and rehabilitation needs are met as they arise.

The chart illustrates substantial capital needs through the forecast period. The largest spike, totaling \$1.4 billion, is forecasted in approximately six decades, for 2074-2083. The Town will also face a \$1.2 billion investment spike between 2054 and 2063. In the current decade, capital replacement forecasts total \$558.3 million.

Figure 36 Long-term Forecasted Replacement Needs



The chart also shows that a portion of assets, with a replacement cost of \$27.3 million have reached the end of their useful life—based either on condition ratings, or age-only data. While not all such assets may require immediate replacements, further evaluation may be warranted to identify actual asset needs. The magnitude of capital requirements typically far exceeds what most agencies can afford to fund. A risk-based approach can be used to direct funds where they are needed most.

# Risk Management

The level of risk an asset carries determines how closely it is monitored and maintained, including the frequency of various lifecycle activities, and the investments it requires on an ongoing basis.

Some assets are also more important to the community than others, based on their financial and economic significance, their role in delivering essential services, the impact of their failure on public health and safety, and the extent to which they support a high quality of life for community stakeholders.

A risk-based approach to infrastructure spending can help prioritize capital projects to channel funds where they are needed most. Rather than taking the worst-first approach, a risk-based approach ranks assets based on their condition/performance as well as their criticality—providing a more complete rationale for project selection.

## Asset-level Risk

Asset-level risk ratings attempt to rank assets based on their criticality and likelihood of failure. This risk rating is a product of two variables: the probability that an asset will fail, and the variety of consequences of that failure event. It can be a qualitative or a quantitative measurement that can be used to rank assets and projects, identify appropriate lifecycle strategies, optimize short- and long-term budgets, minimize service disruptions, and maintain public health and safety.

### Approach to Risk

The approach used in this asset management plan produces a quantitative measurement of risk associated for each asset. The probability and consequence of failure are each scored from 1 to 5, producing a minimum risk rating of 1 for the lowest risk assets, and a maximum risk index of 25 for the highest risk assets.

These calculations incorporate available asset attribute data to produce a risk matrix. For assets lacking detailed attribute information, a more general risk model has been created and applied to all such assets, drawing on common practices employed by municipalities to estimate the probability and consequences of failure.

Table 21 Risk Ratings

Risk Rating	Description
Very Low (1-4)	Assets in excellent condition with minimal risk of failure; failure event may have negligible financial, economic, or social impact.
Low (5-7)	Assets in good condition with low risk of failure; failure event may result in minor financial, economic, or social impact.
Moderate (8-9)	Assets showing moderate wear with moderate risk of failure; asset failure may result in noticeable, adverse financial, economic, or social consequences.
High (10-14)	Assets needing significant repairs soon with high risk of failure; failure may result in substantial, critical financial, economic, or social consequences.
Very High (15-25)	Assets in poor condition with the highest risk of failure; failure consequences are severe or catastrophic, causing significant financial, economic, or social disruptions, requiring urgent action.

## **Probability of Failure**

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

Each of these factors and individual attributes must also be weighted, out of 100%, based on how well it can predict and explain the likelihood of asset failure. For example, recent condition assessments may be more dependable than age in helping predict asset failure, and would be ranked and weighted higher.

Once weightings are assigned, a scale is developed for each attribute so that a probability of failure rating from 1 to 5 can be assigned at each interval, reflecting how likely the asset is to fail at a particular level.

## **Consequence of Failure**

The consequence of failure describes the overall, aggregate effect that an asset's failure will have on an organization's asset management goals. Consequences of failure can range from non-eventful to severe. An uneven sidewalk with some surface distress may pose a minor inconvenience to residents. However, a bridge failure poses critical health and safety risks, and may disconnect areas of the Town.

As with probability of failure, available asset attribute data is used to aid in the calculation of an asset's criticality, or consequence of failure, rating. Common types of adverse consequence of asset failure may include operational, direct financial, and socio-economic impacts.

Similar to measuring the probability of failure, these consequence types are ranked, and assigned a weighting out of 100%, reflecting their relative perceived severity. Available asset attributes are then used to help measure or quantify these consequences so that they can be incorporated into the risk models.

Once weightings are assigned to each consequence of failure type, a unique scale is developed so that a consequence of failure rating from 1 to 5 can be assigned at each interval, reflecting the relative severity of asset failure. Similar scales are developed for each attribute that is used to help approximate a particular consequence of failure.

## Risk Models

The models used in this AMP have been developed in Citywide Assets, the Town's asset register application, and applied to the existing asset base. These models are provisional and intended as a foundational framework. They are expected to evolve over time as new information regarding asset attributes becomes available and is integrated into the analytical process.

For some assets, such as roads, contextual attributes such as AADT values were available. This data was used to further develop consequence of failure ratings and help distinguish one asset from another based on its criticality.

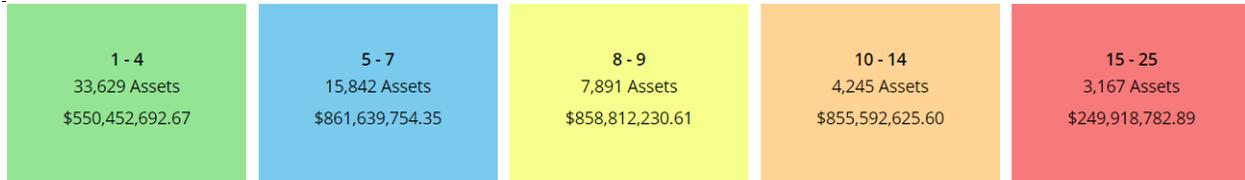
For assets without such additional, contextual information, a more general risk model was developed and applied. For these assets, replacement cost, service area, and asset type were used as the only data fields to approximate the consequence of their failure.

It is important to note that these models are not designed to guide annual capital expenditures at this time. Rather, they serve as an initial step in understanding and managing asset-level risk, providing a basis upon which further refinements and enhancements can be built.

## Risk Matrix

The risk matrix below classifies the Town's assets based on their respective risk ratings, as determined by the risk models. The analysis shows that 3,167 assets, with a combined replacement cost of approximately \$250 million, carried a very high risk rating, based on both their probability and consequence of failure. An additional 4,245 assets, with a total current replacement cost of \$855.6 million, carried a high risk rating.

Figure 37 Risk Matrix



Assets in the left-most box, with the lowest risk rating ranging from 1-4, require minimal immediate attention, allowing for routine maintenance and monitoring. Conversely, assets in the right-most box, with the highest risk rating ranging from 15-25, should be prioritized for intervention, including preventive measures, repairs, or replacements to mitigate potential impacts.

By systematically addressing assets according to their risk ratings, infrastructure and asset management activities can be effectively prioritized, ensuring resources are allocated to maintain safety, reliability, and performance.

# General and Corporate Risks

In addition to asset-level risk, the Town may also face risk associated with not executing key lifecycle activities, including repairs, rehabilitation, and replacement of critical assets. These are summarized in Table 22 below.

Table 22 General Corporate Risks

Asset Category	Risks of not completing lifecycle activities
Roads, Bridges, and Culverts	<p><b>Infrastructure Failure:</b> Increased risk of road surface degradation, bridge collapses, safety hazards, and traffic disruptions, leading to potential injuries and fatalities.</p> <p><b>Cost Implications:</b> Higher repair costs due to delayed maintenance, reduced asset lifespan, and emergency repairs.</p> <p><b>Legal and Regulatory:</b> Potential legal liabilities and fines for non-compliance with MMS, safety standards, and regulations.</p>
Stormwater (Linear and Appurtenances)	<p><b>Flooding and Property Damage:</b> Increased risk of flooding, property damage, erosion, and loss of infrastructure functionality during storm events.</p> <p><b>Environmental Impact:</b> Water quality degradation, habitat disruption, and public health risks from untreated stormwater runoff.</p> <p><b>Costs:</b> Higher maintenance costs, emergency response expenses, and potential fines for non-compliance with environmental regulations.</p>
Facilities	<p><b>Safety and Operational Risks:</b> Deterioration of building structures leading to safety hazards for occupants and visitors.</p> <p><b>Operational Efficiency:</b> Decreased efficiency due to equipment failures, energy inefficiencies, and operational disruptions.</p> <p><b>Compliance Issues:</b> Potential violations of building codes, accessibility standards, and workplace safety regulations, resulting in fines and legal liabilities.</p>

Asset Category	Risks of not completing lifecycle activities
Fleet (Including Protective Services Vehicles/Equipment)	<p><b>Vehicle Breakdowns:</b> Increased risk of breakdowns, downtime, and service disruptions affecting public safety and emergency response capabilities.</p> <p><b>Costs:</b> Higher repair expenses, reduced vehicle lifespan, and increased operational costs due to inefficient fleet management.</p> <p><b>Safety Concerns:</b> Potential safety risks for emergency responders and the public from poorly maintained vehicles and equipment.</p> <p><b>Operational Disruptions:</b> Reduced readiness and response effectiveness during emergencies due to equipment failures.</p> <p><b>Regulatory Compliance:</b> Potential violations of safety standards and regulations, impacting the ability to provide timely and effective emergency services.</p>
Equipment	<p><b>Operational Disruptions:</b> Equipment breakdowns causing service interruptions, and reduced operational capacity.</p> <p><b>Costs:</b> Increased repair and replacement costs, inefficient use of resources, and decreased asset lifespan.</p> <p><b>Safety and Compliance:</b> Safety hazards, regulatory non-compliance, and potential fines for failing to meet operational and safety standards.</p>
IT Assets	<p><b>Cybersecurity Risks:</b> Vulnerabilities leading to data breaches, unauthorized access, and compromised sensitive information.</p> <p><b>Operational Disruptions:</b> Downtime and system failures affecting municipal services and operations.</p> <p><b>Compliance Issues:</b> Non-compliance with data protection regulations, leading to fines and legal liabilities.</p>

## Key Considerations

- Since risk ratings rely on many factors beyond an asset's physical condition or age, assets in a state of disrepair can sometimes be classified as low risk, despite their poor condition rating. In such cases, although the probability of failure for these assets may be high, their consequence of failure ratings was determined to be low based on the attributes used and the data available.
- Similarly, assets in very good condition can receive a moderate to high risk rating despite a low probability of failure. These assets may be deemed as highly critical to the Town based on their costs, economic importance, social significance, and other factors.
- Continued calibration of an asset's criticality and regular data updates are needed to ensure these models more accurately reflect an asset's actual risk profile. As these models are further calibrated with additional contextual data, their alignment with capital planning will improve, allowing for a risk-based approach to prioritizing maintenance and capital expenditures.
- Asset-level risk assessments and documented awareness of corporate and strategic risk provide essential information to help staff prioritize annual maintenance workplans and capital projects. Both approaches supplement the more detailed studies and processes undertaken by all program areas to ensure assets can continue to provide safe and effective service levels to Milton residents.

# Levels of Service

Levels of service (LOS) measure the quality and quantity of service provided, and offer direction for infrastructure investments. They are necessary for performance tracking and reporting. Many agencies attempt to deliver levels of service that cannot be sustainably funded by the existing tax base. This can lead to an eventual drop in quality of service, or increases to tax and utility rates to fund higher service levels.

LOS should be affordable and aligned with the community's long-term vision for itself and the service attributes it most values for different infrastructure programs.

# Levels of Service Reporting

This asset management plan includes the Town’s current performance levels against metrics required under O. Reg 588/17 for core infrastructure. For non-core assets, the Town has established its own performance metrics.

Table 23 Ontario Regulation 588/17 Community Levels of Service – Roads

Service Attribute	Qualitative Description	Current Level of Service
Scope	Description, which may include maps, of the road network in the Town and its level of connectivity.	<p>The Town’s road network comprises urban, rural, and semi-urban roads. These roads support a variety of traffic volumes, ranging from several hundred vehicles to over 20,000.</p> <p>See Figure 38</p>
Quality	Description or images that illustrate the different levels of road class pavement condition.	<p>The majority of roadways are rated as good or very good.</p> <p>These condition ratings suggest high performance levels, with road surfaces offering a smooth, safe, and comfortable driving experience. Some road sections may exhibit minor surface imperfections, with no impact on safety or rideability.</p> <p>Road surfaces in fair condition may offer a less smooth ride, exhibit more signs of disrepair including pot holes and cracking, but remain generally safe.</p> <p>A minority of the Town’s road segments are in poor or very poor condition. These sections may show noticeable deterioration and damage, including potholes, cracks, rough patches, with reduced comfort and may pose safety risks.</p> <p>See Table 25</p>

Figure 38 Road Network

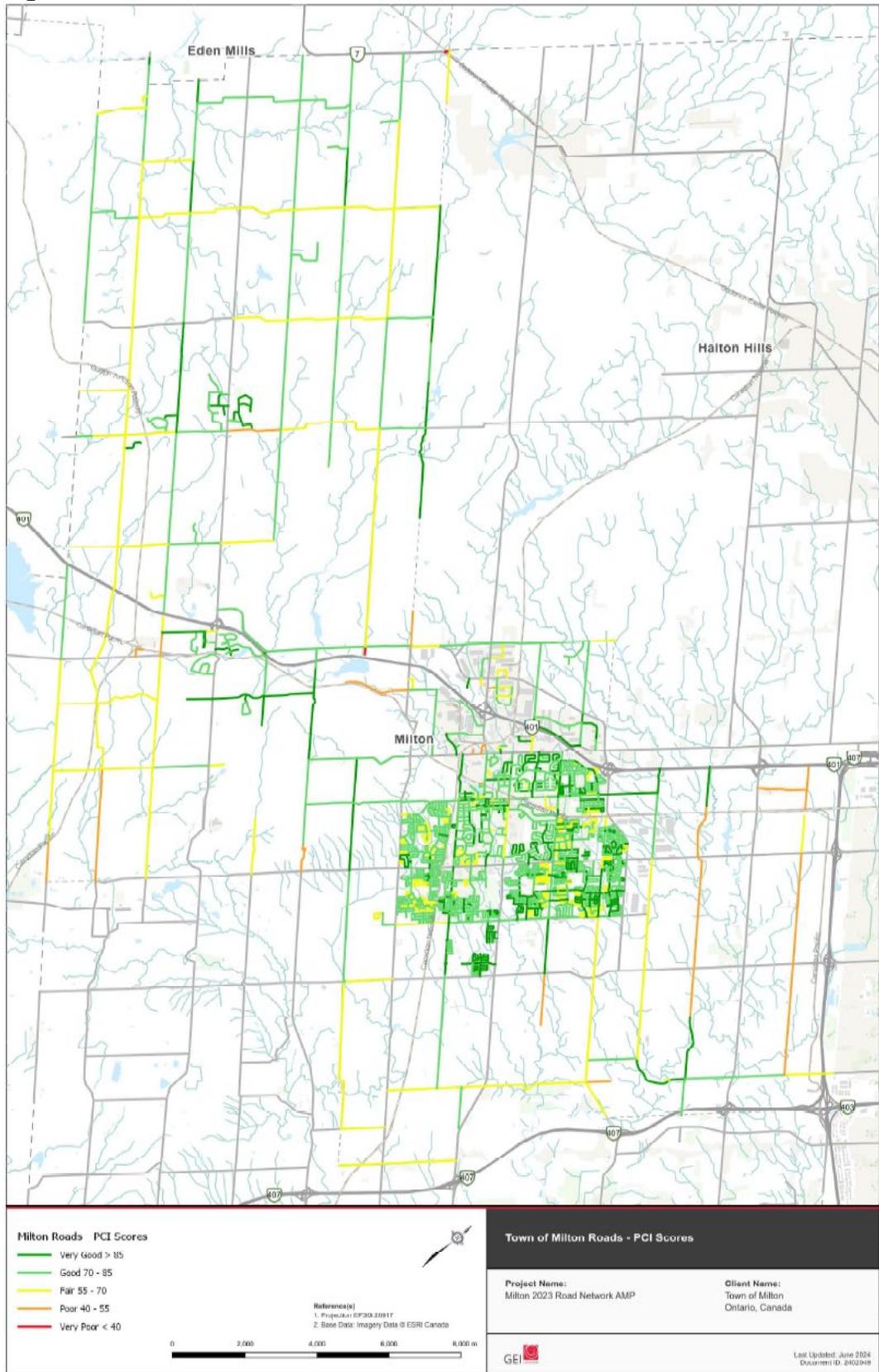


Table 24 Ontario Regulation 588/17 Technical Levels of Service – Roads

Service Attribute	Qualitative Description	Current Level of Service
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km <sup>2</sup> )	0.12
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km <sup>2</sup> )	1.89
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km <sup>2</sup> )	1.43
Quality	Average pavement condition for paved roads in the Town weighted by replacement cost	76.9 (Good)
Quality	Percentage of roads in good to very good condition (PCI>70)	71.3%

Table 25 Visual Examples of Pavement Condition Index Scores

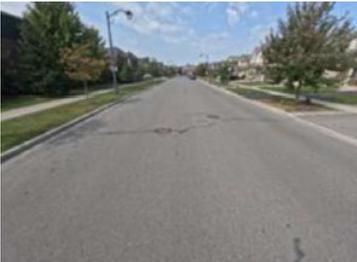
PCI Score	Visual Examples
<p>Very Good PCI &gt;85</p>	
<p>Good PCI 70 – 85</p>	
<p>Fair PCI 55 – 70</p>	
<p>Poor PCI 40 – 55</p>	
<p>Very Poor PCI &lt;40</p>	

Table 26 Ontario Regulation 588/17 Community Levels of Service – Bridges and Culverts

Service Attribute	Qualitative Description	Current Level of Service
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	Together, the Town’s bridges support all traffic types, including heavy transport.
Quality	1. Description or images of the condition of bridges and how this would affect use of the bridges.	Weighted by replacement cost, more than 98% of the Town’s structural culverts and bridges are in fair or better condition, with a BCI of at least 65. These structures are safe and fully operational.  See Table 28
	2. Description or images of the condition of culverts and how this would affect use of the culverts.	

Table 27 Ontario Regulation 588/17 Technical Levels of Service – Bridges and Culverts

Service Attribute	Qualitative Description	Current Level of Service
Scope	Percentage of bridges in the Town with loading or dimensional restrictions.	3%
Quality	1. For bridges in the Town, the average bridge condition index value.	72 (Good)
	2. For structural culverts in the Town, the average bridge condition index value.	68 (Good)

Table 28 Visual Examples of Bridges and Culverts Condition

Bridge Condition Index Score (BCI)		Bridges		Culverts
<p>Very Good BCI Range: 90 – 100</p>				
<p>Good BCI Range: 65 – 89</p>				
<p>Fair BCI Range: 50 – 64</p>				
<p>Poor BCI Range: 40 – 49</p>				
<p>Very Poor BCI Range: &lt;40</p>				

Table 29 Ontario Regulation 588/17 Community Levels of Service – Stormwater Network

Service Attribute	Qualitative Description	Current Level of Service
Scope	Description, which may include maps, of the user groups or areas of the Town that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	See Figure 39 and Figure 40.

Table 30 Ontario Regulation 588/17 Technical Levels of Service – Stormwater Network

Service Attribute	Qualitative Description	Current Level of Service
Scope	1. Percentage of properties in municipality resilient to a 100-year storm.	98.99%
	2. Percentage of the municipal stormwater management system resilient to a 5-year storm.	100%
Quality	Percentage of stormsewers by replacement value in poor to very poor condition	15%
Quality	Percentage of storm ponds in poor to very poor condition	19%
Quality	Percentage of storm ponds inspected annually	100%

Figure 39 Conservation Halton Urban Milton Flood Hazard Draft Mapping Area 1

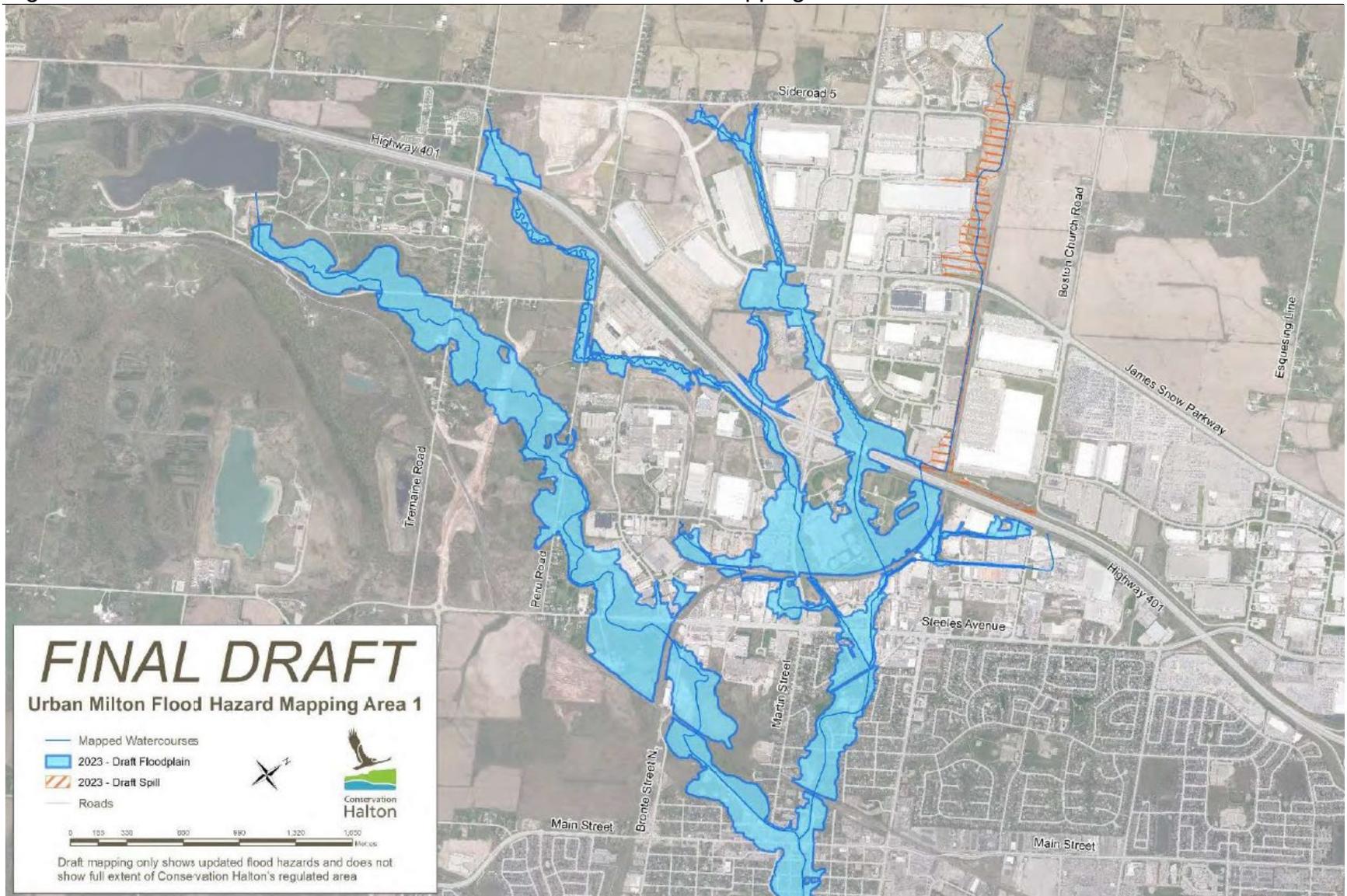


Figure 40 Conservation Halton Urban Milton Flood Hazard Draft Mapping Area 2



Table 31 Non-core Assets Levels of Service – Sidewalks and Roadside Appurtenances

<b>Asset</b>	<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current Level of Service</b>
Streetlight	Environmental Stewardship	Percentage of streetlights that are energy efficient	40%
Sidewalks	Quality	Percentage of sidewalks in poor or very poor condition	<1%
Walkways and Trails	Quality	Percentage of walkways and trails in poor or very poor condition	6%
Traffic Signs	Quality	Percentage of traffic signs in poor or very poor condition	<1%

Table 32 Non-core Asset Levels of Service – Facilities, Fleet, Vehicles, and Other Assets

Asset	Service Attribute	Qualitative Description	Current Level of Service
Recreation Facilities	Scope	Number of ice arenas per capita	1: 16,800
Recreation Facilities	Scope	Number of pools per capita	1: 33,600
Recreation Facilities	Scope	Number of gymnasiums per capita	1: 26,900
Recreation Facilities	Scope	Number of community centres per capita	1: 33,600
Recreation Facilities	Quality	Average facility condition index	5.68% (Good)
Civic Facilities	Quality	Average facility condition index	3.99% (Very Good)
Operations Yard Facilities	Quality	Average facility condition index	5.93% (Good)
Fire Stations	Quality	Average facility condition index	1.29% (Very Good)
IT	Quality	Percentage of IT assets in poor or very poor condition	12%
Vehicles & Equipment	Quality	Percentage of vehicles & equipment in poor or very poor condition	20%
Emergency Vehicles	Quality	Percentage of emergency vehicles in poor or very poor condition	3%
Firefighting and Communication Equipment	Quality	Percentage of firefighting and communication equipment in good to very good condition	100%

# Integrating Climate Change

Milton integrates a sustainability perspective across all departments. This embedded sustainability lens and holistic approach ensures that every aspect of the Town’s operations and planning incorporates climate action and sustainability principles.

The Town of Milton's *Climate Change Work Plans* emphasize a comprehensive approach to integrating sustainability into municipal operations and community development. In 2022, key initiatives included starting the transition to an electrified fleet, investigating renewable energy systems for town facilities, updating energy management plans, implementing the Urban Forestry Management Strategy, expanding community gardens, eliminating single-use plastics from Town programs, and developing sustainability policies within the *Official Plan*. These efforts laid the groundwork for substantial environmental improvements and community involvement in climate action.

Building on these foundations, the plan now focuses on developing policies to promote sustainable community development, continuing the electrification of the Town's fleet, refining strategies for the Community and Corporate Energy Plans, and enhancing urban forestry management. Additionally, the Town aims to increase community engagement through partnerships and educational initiatives, fostering a culture of sustainability.

Table 33 Climate Change Initiatives and Accomplishments

Timeline	Initiative	Accomplishments
2022	Fleet Electrification	Initiated planning for electrifying town fleet vehicles
2022	Renewable Energy	Installed solar panels at Sherwood Community Centre
2022	Energy Management	Updated Community and Corporate Energy Plans; energy retrofits
2022	Urban Forestry	Implemented Urban Forestry Management Strategy; expanded community gardens
2023+	Official Plan Policy Update	Developing policies for sustainable community development
2023+	Fleet Strategy	Continued planning for 15-year fleet electrification
2023+	Battery Electric Bus Project	Converted a diesel bus to electric (first in Canada)

Timeline	Initiative	Accomplishments
2023+	Energy Plans Refresh	Further development of strategies for energy plan emission reductions
2023+	Urban Forestry Management	Continued implementation of Urban Forestry Management Strategy
2023+	Zero-Emission Bus Feasibility Strategy Fleet Transition Plan	Assesses the viability of implementing battery-electric technology for transit fleet (Report to Council April 2024)

Milton’s approach is characterized by innovative projects, integrated planning across departments, and a strong emphasis on public participation, setting a unique precedent in municipal climate action.

Some of these initiatives may change the type of assets the Town owns, necessitating adjustments in asset management strategies and funding allocations. For example, as the Town begins to convert its fleet to electric vehicles, there will be impacts on replacement and lifecycle costs that need to be considered in the annual funding of the Town's reserves, which may require incremental increases.

# Financial Strategy

Each year, the Town of Milton makes important investments in its infrastructure to ensure assets deliver their intended function and service levels, safely and efficiently. These efforts contribute to making Milton an attractive destination for residents and businesses alike.

Given the magnitude of infrastructure needs, it is common for municipalities, including Milton, to experience annual shortfalls in funding relative to the amount that a municipality should be investing in reserve annually for future lifecycle replacement. A shortfall in funding can result in the need to defer capital projects to later years, or place additional pressure on future tax rates.

Annual deficits can accumulate over time and create asset needs that can become unmanageable. Achieving full-funding for infrastructure programs is a substantial challenge for municipalities across Canada. Closing annual funding can take many years.

This financial strategy provides a consolidated analysis of the Town's seven service areas, and is designed to support the implementation of this asset management plan and gradually eliminate annual deficits.

## Approach and Methodology

The assets included in the Town of Milton’s seven areas have a combined 2023 replacement cost of \$3.4 billion, as illustrated in Table 34 below. The table also summarizes the average annual requirement (AAR) for each service area, and the equivalent target reinvestment rate (TRIR). The AAR reflects asset replacement costs, estimated useful lives, and capital lifecycle needs.

The Town’s combined AAR totals \$87.2 million, generating an equivalent reinvestment rate of 2.6%. To put this differently, the Town should invest, on average, 2.6% of the overall current replacement costs of its infrastructure portfolio back into these assets to remain current with replacement needs. Although there is no industry or scientific consensus on optimal reinvestment levels, they typically range from 1%-3.5% of asset replacement costs. Short-lived assets, such as vehicles, fleet, and other equipment often have higher reinvestment rate targets, given high replacement costs.

Table 34 Service Area Replacement Costs and Target Reinvestment Rates

Service Area	Replacement Cost	Average Annual Requirements (AAR)	Target Reinvestment Rate (TRIR)
Transportation Services	\$2,131,861,276	\$47,141,440	2.2%
Stormwater Management Services	\$598,407,275	\$14,656,396	2.4%
Community Services	\$441,499,240	\$13,507,629	3.1%
Corporate and Operational Services	\$118,123,163	\$6,211,161	5.3%
Protective Services	\$55,922,606	\$3,042,763	5.4%
Transit Services	\$26,124,995	\$2,327,485	8.9%
Milton Public Library Board Services	\$4,477,530	\$265,282	5.9%
<b>Total</b>	<b>\$3,376,416,085</b>	<b>\$87,152,155</b>	<b>2.6%</b>

The purpose of the financial strategy is to position the Town of Milton to fully fund the above annual requirements, and continue to deliver affordable service levels to the community. This is done by examining the Town’s current funding framework, quantifying annual funding deficits, and identifying a roadmap to close any identified funding gaps. To ensure fiscal prudence, only those funding sources considered sustainable are integrated with the strategy.

## Current Funding Framework

Table 35 shows that the Town currently allocates \$29.1 million annually as of 2023 from property taxation revenues towards non-growth capital for assets included in the seven service areas. This figure is net of budgeted capital-works-in-progress (CWIP) interest allocation of \$1.79 million, and \$600k in investment earnings. Both amounts are illustrated in Table 36.

Table 35 Annual Tax-funded Allocations to Non-growth Capital

Service Area/Asset Category	Annual Transfers to Non-Growth Infrastructure Reserves (\$)
Infrastructure Renewal – Roads & Structures, Traffic	\$11,767,130
Infrastructure Renewal – Stormwater	\$2,295,415
Studies and Other Non-Growth Capital	\$1,316,642
Infrastructure Renewal – Recreation, Facilities, Misc.	\$4,664,343
Information Technology	\$3,399,427
Fleet	\$4,951,332
Library Capital Works	\$678,988
<b>Total</b>	<b>\$ 29,073,277</b>

Table 36 shows other revenue streams that staff consider sustainable, and that can be allocated to meet annual infrastructure requirements.

The table also captures future retirement of existing debt and the principal and interest payments associated with these debentures, totaling \$4.7 million. Rather than reducing taxes as the debt is fully amortized, these payments will be reallocated to non-growth infrastructure investments. This is a proactive strategy that can help minimize fluctuations in tax rates, and add more stability and predictability in planning.

Table 36 Other Sustainable Revenue Streams

Revenue Stream	Amount (\$)
Existing Tax Funded Debt Principal and Interest Payments	\$4,653,857
Excess Investment Earnings Reinvested in Infrastructure Replacement Reserves	\$600,000
Interest on CWIP Reinvested in Infrastructure Replacement Reserves	\$1,790,000
Canada Community-Building Fund (CCBF)	\$3,600,000
Ontario Lottery Corporation Proceeds	\$5,500,000
<b>Total</b>	<b>\$16,143,857</b>

Combined, these streams provide an additional \$16.1 million annually towards non-growth capital, increasing the Town's combined annual contributions to \$45.2 million. However, when contrasted with \$87.2 million in annual requirements, this creates an annual funding deficit of \$41.9 million. To put this differently, the Town is currently funding 52% of its annual needs.

Table 37 Annual Funding Deficit

Measure	Amount (\$)
Average Annual Requirements	\$87,152,155
Total Current Annual Contributions	\$45,217,134
<b>Annual Funding Deficit</b>	<b>\$41,935,021</b>

## Closing Annual Deficits

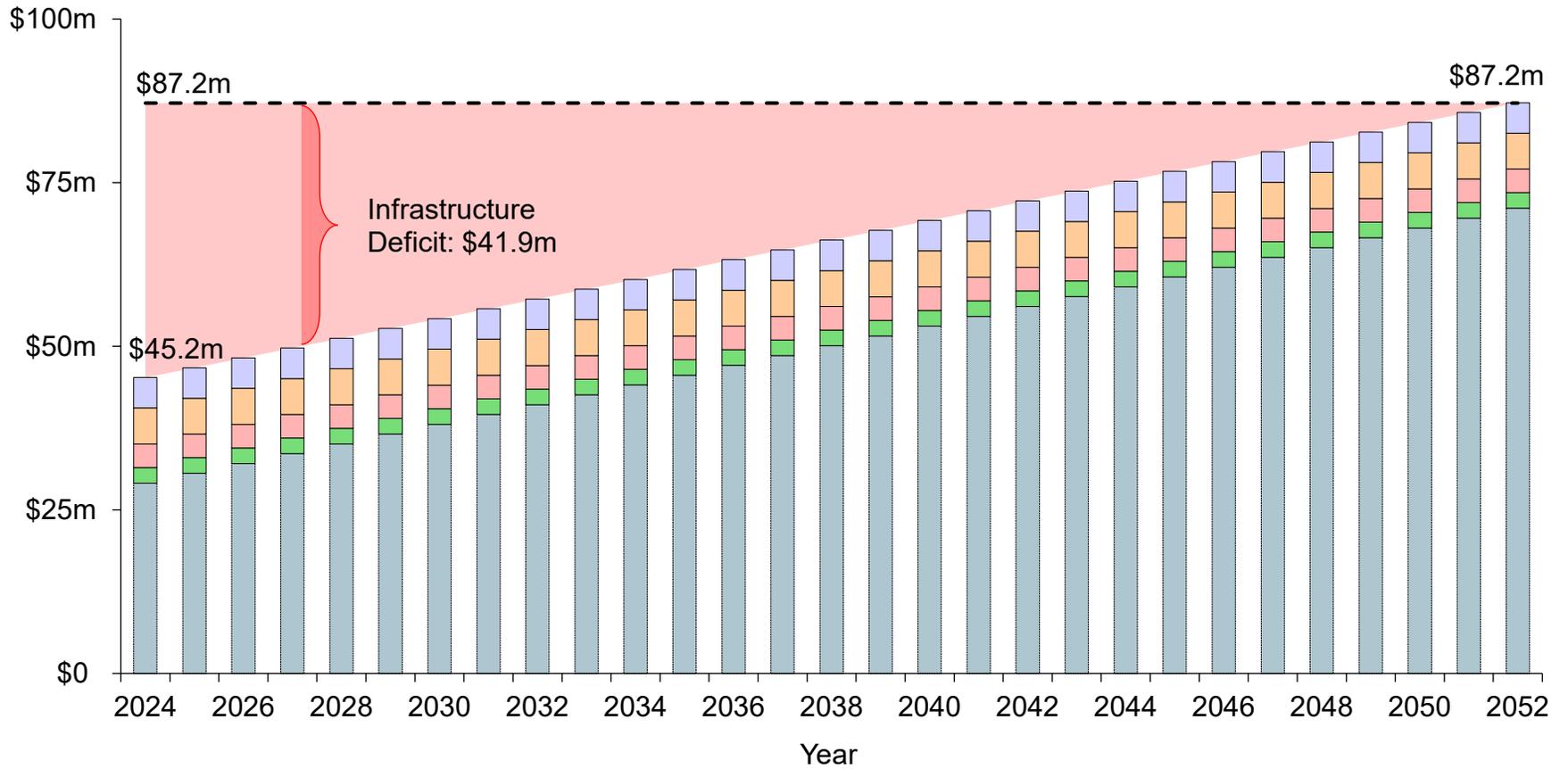
Eliminating annual infrastructure funding shortfalls is a difficult and long-term endeavour for municipalities. It can require many years to reach full funding for existing assets. This section outlines how the Town of Milton can close annual funding deficits using sustainable revenue streams.

### Increasing Annual Contributions

The Town is already planning a prudent and forward-looking strategy to close infrastructure deficits. Beginning 2025, the re-introduction of a net new annual transfer in the amount of \$1.5 million to the non-growth capital reserve will be considered in the development of the 2025 budget. These funds would be available for capital investment either immediately or in future periods.

Under this strategy, the Town can close its infrastructure deficit and fully-fund annual requirements of \$87.2 million by 2052, reaching total annual funding levels for the existing asset base in approximately 27 years. These results are presented in the following graph, noting that amounts presented exclude both inflation and future acquisitions of additional assets.

Figure 41 Impact of Net New Annual Transfers of \$1.5 Million on Closing Annual Deficits



- Infrastructure Non-growth Transfers
- Canada Community-Building Fund
- Reallocated Principal and Interest Payments
- Investment Earnings
- Ontario Lottery Corporation Proceeds
- - - Target

With the implementation of these net new, dedicated annual infrastructure transfers, the Town is positioning itself to develop more sustainable infrastructure programs in a systematic manner. Although the 27-year phase-in period to achieve full-funding is a lengthy timeline, it reduces the incremental financial impact on Milton's residents.

Striking a balance between funding timelines and tax burdens is a complex challenge. Extended timelines for full infrastructure funding might reduce immediate tax hikes for residents but risk unmet annual needs and ongoing project deferrals. Conversely, shorter funding periods can reduce deferred infrastructure needs, but impose a higher yearly financial burden.

There is no singular solution, or optimal strategy. Rather, levels of service goals, transparent communication with residents on opportunities and constraints, and ongoing dialogue among key stakeholders and decision-makers are necessary in developing flexible short- and long-term strategies. The size of the anticipated \$1.5 million incremental funding increase may need to be revisited and potentially adjusted during this time period.

It is also important to acknowledge that during this 27-year period, the Town's asset base will continue to grow through assets constructed by the Town or assumed from the development community. Should the Town continue its existing practice of adding sustainable funding sources for the future lifecycle costs of those new assets at the time of acquisition, this will also further contribute to the growth of the annual funding sources that are available during the period.

These future assets, along with their related funding sources and lifecycle requirements, have been excluded from Figure 41 as the Town's current financial policies ensure that they have no impact on the current annual funding deficit. The additional funding added in the Town's budget for these new assets, however, may provide a source of cash flow for rehabilitation during this period. These details will continue to be assessed each year as part of the Town's budget process and periodic fiscal impact studies.

Table 38 shows additional funding scenarios and their impact on taxpayers and full-funding timelines. These are presented only for illustrative purposes and additional consideration by senior leadership.

Scenario 1 represents the Town's planned strategy of implementing net new annual transfers of \$1.5 million, beginning in 2025. The scenario analysis shows that further increasing these annual transfers by \$0.5 million (to \$2 million) will reduce full-funding timelines by seven years. Conversely, decreasing them by \$0.5 million will extend the full-funding timelines to 2066, requiring an **additional** 14 years to close annual deficits.

Table 38 Funding Scenarios

Scenario	Infrastructure Deficit Closed by:	Time Needed to Close Deficit
<b>Scenario 1 (Current/Planned)</b> Maintain planned net new annual transfers of \$1.5 million beginning 2025	2052	27 years
<b>Scenario 2</b> Increase net new annual transfers by \$0.5 million (to \$2 million)	2045	20 years
<b>Scenario 3</b> Decrease net new annual transfers to \$1 million	2066	41 years

Each model has risks and benefits, as outlined below. The right model balances the burden placed between generations of residents while realizing the highest value from infrastructure assets.

Table 39 Risks and Benefits of Funding Phase-in Periods

Aspect	Longer Phase-in Periods	Shorter Phase-in Periods
Annual Financial Burden	<ul style="list-style-type: none"> <li>– Lower annual burden on taxpayers</li> </ul>	<ul style="list-style-type: none"> <li>– Higher annual burden on taxpayers</li> </ul>
Infrastructure Condition	<ul style="list-style-type: none"> <li>– Risk of unmet annual needs and potential difficulties in maintaining acceptable condition</li> </ul>	<ul style="list-style-type: none"> <li>– More like to ensure infrastructure remains in good repair</li> </ul>
Project Deferrals	<ul style="list-style-type: none"> <li>– Increased likelihood of project deferrals</li> </ul>	<ul style="list-style-type: none"> <li>– Reduces project deferrals</li> </ul>
Long-term Costs	<ul style="list-style-type: none"> <li>– Potential for higher long-term costs due to delays</li> </ul>	<ul style="list-style-type: none"> <li>– Timely maintenance may reduce long-term expenses</li> </ul>
Economic Impact	<ul style="list-style-type: none"> <li>– Possible negative impact on economy due to poor infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>– Supports economic development and local commerce through reliable infrastructure</li> </ul>
Flexibility	<ul style="list-style-type: none"> <li>– More flexible, allowing adjustments over time between, and among, programs (trade-offs)</li> </ul>	<ul style="list-style-type: none"> <li>– Less flexible, may impede ability to fund other programs and services</li> </ul>

By carefully weighing these factors, Council and staff can make informed decisions that best balance the needs of infrastructure maintenance and taxpayer burden, ensuring sustainable and efficient long-term development.

As illustrated in Figure 36, the Town is expected to undergo major investment spikes related to its existing asset base over a 100-year forecast period, two of which will be in excess of \$1 billion. Although further evaluations of actual asset needs will be needed, increasing annual reserve transfers today will better position the Town to meet anticipated investment needs as they arise, and avoid project deferrals that can lead to infrastructure backlogs, which can increase financial needs dramatically and reduce service quality.

These higher reserve balances will also occur in relation to the growth in the Town's asset base should the Town's existing financing strategy/policy be continued as new infrastructure is constructed/assumed.

# Continuous Improvement and Monitoring

Continuous improvement and monitoring are essential components of effective asset management. This asset management plan ensures the Town is in full compliance with the 2024 requirements of O. Reg 588/17. The 2025 requirements will require further commitment and resources. Key next steps and strategic considerations include:

- Continuous improvement in datasets to remain current with the Town's evolving asset base, including maintaining an accurate inventory with current replacement costs
- Integrating new condition and inspection data as it becomes available to adjust forecasted asset needs
- Calibration of, and refinements to, provisional risk models using additional attribute data to better reflect staff judgement and improve alignment with capital planning
- Establishing feasible levels of service targets in compliance with metrics prescribed by O. Reg 588/17 for core assets and those established by the Town for non-core assets.

Levels of service targets should be aligned with strategic objectives, and reflect the Town's forecasted fiscal capacity and anticipated changes to community needs.

Adjustments to current performance levels should be supported by strong rationale. Although not required by the regulation, community input and feedback can provide useful insight into how Milton residents prioritize various infrastructure services.

- After 2025, O. Reg 588/17 requires municipalities to produce annual updates that identify progress in implementing asset management plans, factors that may have impeded progress, and the municipality's response strategy to these obstacles. In addition, the Town's asset management policy and plan will require updates on, at minimum, a 5-year cycle, covering all asset classes and/or service areas.