Municipality
of Clarington

Asset Management Plan 2025

Clarington

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Executive Summary

Overview

The 2025 Asset Management Plan (AMP) has been completed in accordance with provincial regulation O. Reg. 588/17, which establishes the standard content included in all Municipal Asset Management Plans in the Province of Ontario. This document is intended to satisfy the legislative requirement of completing an updated AMP, including proposed levels of service and a financing strategy, by July 1, 2025.

The purpose of the AMP is to identify both the operating and capital costs associated with maintaining and replacing the Municipality's infrastructure assets at the proposed service levels over the next ten years. The AMP compares the estimated costs with the estimated funding available to identify the current infrastructure gap. The AMP then proposes a financing strategy aimed at reducing the infrastructure gap over time.

The AMP is divided into several sections, each providing a specific set of information related to different aspects of the plan.

The Introduction provides a contextual overview of asset management planning, including the purpose of the AMP and a summary of the provincial legislation. The introduction also provides a risk assessment discussion and climate considerations as required under the legislation.

The Summary of Infrastructure Assets summarizes all asset categories to provide an aggregate view of all assets owned by the Municipality. This section also provides greater context on the various components of the AMP, including a discussion on the embedded assumptions and methodologies.

The Growth and Expansion section provides the growth forecast for the next ten years, along with cost estimates for the expansionary activities required to meet that forecast. The Financing Strategy section outlines strategies and recommendations to close the infrastructure gap over time.

The AMP also includes individual appendices for each of the asset categories covered in the plan. These appendices contain greater detail by providing summary level information down to the asset sub-type level. These sections also define some of the alternative assumptions and methodologies specific to each asset category. The Summary of Infrastructure Assets essentially serves as an aggregate summary of the information presented in these appendices.

Summary of Assets

The table below provides the summary-level data for each asset category included in the AMP. This data includes average age, average condition, and total replacement cost for all the underlying assets within the various asset categories.

Table 1a - Average Age, Replacement Cost, and Average Condition – All Asset Categories

Asset Category	Quantity	Length (KM)	Average Age (Years)	Replacement Cost ($2025)	Average Condition (ULC%)	Average Condition State
Roads		921.56	20.6	$1,861,661,000	60.8%	Good
Bridges and Culverts	274		42.9	$225,710,000	72.1%	Good
Stormwater Management	11,170	281.49	24.5	$248,698,000	33.3%	Very Good
Corporate Facilities[1]	11		77.9	$147,637,000	3.8%	Good
Corporate Fleet	309		10.2	$53,001,000	73.3%	Good
Emergency Services	783		6.8	$2,876,000	59.0%	Good
Information Technology	1,620		8.0	$9,434,000	60.0%	Good
Parking Infrastructure	389		24.6	$28,420,000	67.3%	Good
Parks	537	66.28	19.3	$65,171,000	82.1%	Good
Recreation, Community, and Culture[1]	168		47.0	$574,847,000	1.7%	Good
Transportation Infrastructure	11,084	387.22	23.6	$223,146,000	33.2%	Very Good
Total[2]	**26,345**	**1,656.55**	**29.19**	**$3,440,601,000**	**57.7%**	**Good**

1. Average condition for Corporate Facilities and Recreation, Community, and Culture are based on a Facilities Condition Index (FCI) as opposed to the Useful Lif age (ULC%). Average Condition for Roads utilizes the Pavement Condition Index (PCI) methodology and the average condition for Bridges and Culverts utilizes the Bridge Condition Index (BCI) methodology.
2. Total Average Condition of 57.7% excludes Corporate Facilities and Recreation, Community, and Culture as these assets utilize the FCI condition methodology. These assets are assessed as "Good", on average, meaning the total average condition state would remain as "Good" if these assets were included.

The average age and condition for each asset category represent a weighted average, based on replacement cost, of the average age and condition of the various assets within each asset category. The total average age and condition for all non-core assets represent a weighted average of the various asset categories, based on replacement cost.

The total replacement cost for each asset category represents the sum of the replacement costs of all the underlying assets within the category. Replacement costing reflects an estimate of the full replacement of each asset and was derived using a combination of recent tenders and staff estimates.

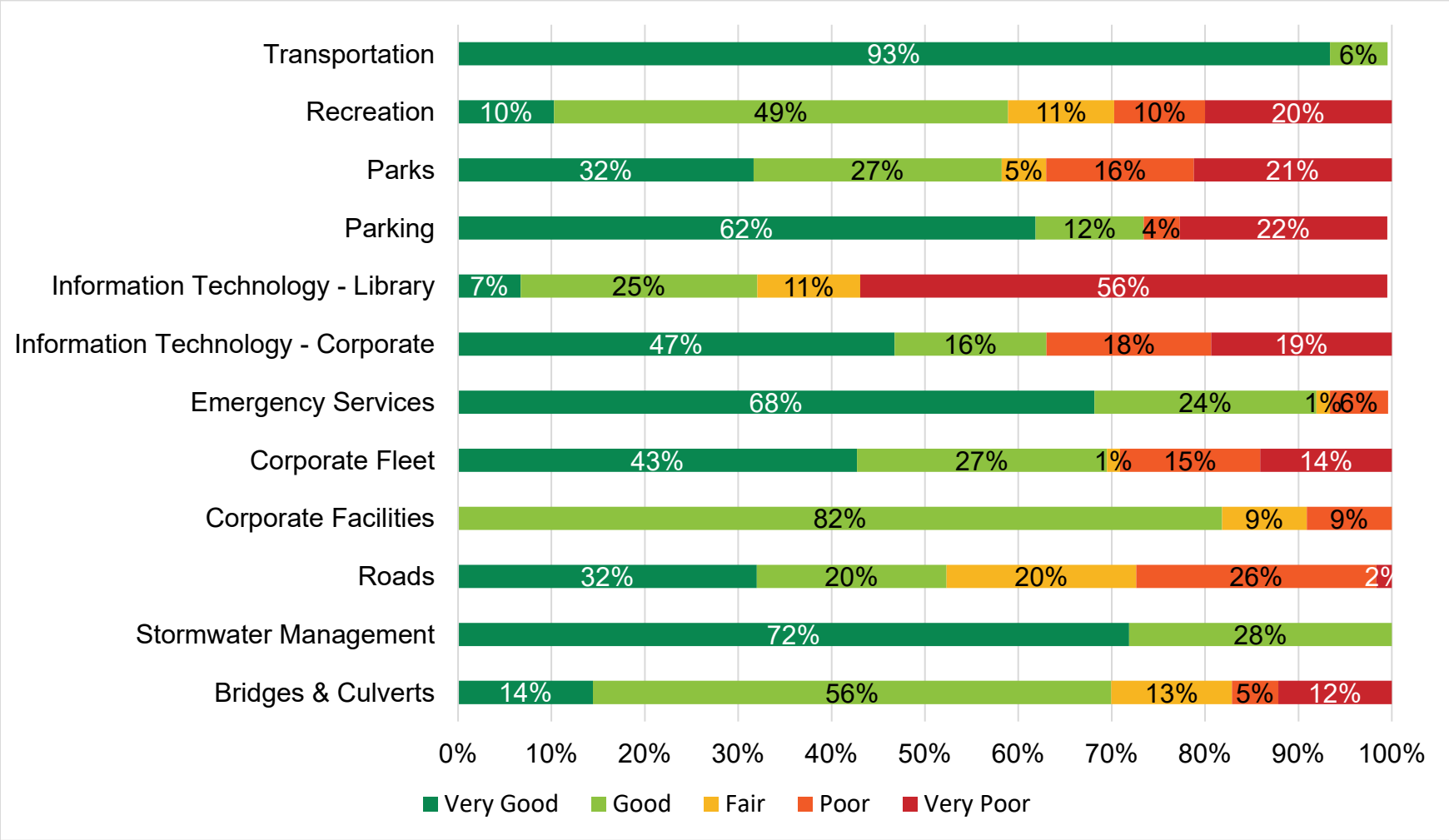
The condition assessments for Corporate Facilities and Recreation, Community, and Culture were determined using a Facilities Condition Index (FCI) methodology. The FCI reflects the ten-year average annual cost of remedying maintenance deficiencies as a percentage of replacement value. The FCI data and methodology were derived from Building Condition Assessments completed by an external engineering consultant in late 2023 and early 2024.

The condition for roads assets was derived using a Pavement Condition Index (PCI) methodology, while the condition for bridges and culverts was assessed using the Bridge Condition Index (BCI). Both methodologies represent industry standards and are based on the physical condition of the assets. The condition rating for roads, bridges and culverts were assigned by engineering consultants assessing the assets.

The remaining assets use a Useful Life Consumption percentage (ULC%) methodology to determine condition ratings. The ULC% is calculated by dividing the asset's age by its estimated useful life to determine the percentage of its estimated useful life that has been consumed. This methodology was used for the majority of assets where physical condition assessments have not been completed.

The average condition of the Municipality's assets is rated as Good. However, although the average condition is rated as Good, the condition rating for each individual underlying asset ranges from Very Good to Very Poor. The figure below provides the condition distribution for all underlying assets, based on the quantity of assets within each asset category.

Figure 1a – Condition Distribution by Asset Category



Lifecycle Management Strategies

According to O. Reg. 588/17, asset management plans must identify the set of planned actions required to maintain the assets and provide a financing strategy to achieve the proposed service level targets over time. Depending on the type of asset, there are many different lifecycle activities to be completed. These activities range from asset inspections to minor or major rehabilitation activities to complete replacement and disposal of the assets at the end of their useful life.

Inspection activities and minor repairs are typically financed through the Municipality's operating budget, while major rehabilitation and replacement activities are financed through the capital budget. Operating budget activities are funded by the property tax levy, whereas the capital budget items are funded primarily through property tax-supported reserve funds and government grants (e.g., Canada Community Building Fund allocation).

Expansion activities are also considered part of the asset lifecycle, as expanding the asset inventory is often necessary to maintain consistent service levels during periods of growth. Initial capital acquisition of expansion assets is typically funded through development charges, but subsequent replacements must be funded from other sources.

Estimated Infrastructure Gap and Financing Strategy

After assessing the funding required to achieve the proposed levels of service over the next ten years and comparing it to the estimated funding available for the same period, an average annual infrastructure gap of approximately $10.4 million has been identified.

Table 1b - Estimated Average Annual Infrastructure Gap ($2025)

Average Annual Funding Requirement	Average Annual Funding Available	Estimated Average Annual Infrastructure Gap
$48,612,000	$38,023,000	**$10,426,000**

The Municipality's current infrastructure levy is approximately 0.06% of the overall tax bill. However, the existing infrastructure levy is insufficient, as it does not keep pace with the assumed rate of inflation. If annual investment does not keep up with inflation, it effectively means that – in real dollar terms – the value of the investment is

declining each year. This practice is a significant contributing factor to the estimated $10.4 million average annual infrastructure gap.

The average annual expenditure requirement reflects the cost to maintain existing assets in accordance with their proposed levels of service. Expansionary activities are not included, as they are often dependent on the pace of development and population growth. Given the uncertainty in timing, and the fact that first-round capital acquisition is largely funded through development charges, the AMP assumes that funding for subsequent replacements will begin after the new assets have been assumed.

As part of the asset management regulation, a financing strategy is required to address the infrastructure gap. As the legislation does not provide a timeline for addressing the gap, the AMP outlines multiple options for addressing the estimated infrastructure gap over both ten- and twenty-year periods.

Close the Estimated Infrastructure Gap Over Ten Years

The first option involves closing the estimated annual infrastructure gap over ten years. This would require increasing the annual infrastructure levy from 0.06% to 0.60% in 2026. This equates to a 0.54% increase on the overall tax bill, or approximately $29 more per year for the average household.

This option would provide an additional infrastructure investment of approximately $1.4 million in 2026. An additional investment of $1.4 million, adjusted annually for inflation, would need to be added to the levy in each subsequent year over the ten-year period. This strategy would result in the annual funding available matching the annual funding required by year ten.

The table below illustrates the financial impact in 2026, including the estimated annual impact on the average household.

Option 1 – Close the yearly infrastructure funding shortfall over 10 years

10-year Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Annual Increase for the Average Household
2026 Budget	$12,761,000	**$1,445,000**	$14,206,000	0.54%	$29

As mentioned, closing the annual infrastructure gap over ten years would mean that it would take ten years for annual funding to meet the required levels. During this time, a backlog would begin to accumulate in the years where funding falls short of needs. This backlog would continue to grow each year until the gap is fully closed. Once the gap is closed, the backlog would stop growing and remain constant unless additional funding is provided.

The table below outlines a second option in which both the annual infrastructure gap and the accumulated backlog are addressed within the ten-year period. Under this scenario, the Municipality eliminate the entire backlog over the ten-year period and, moving forward, would only need to maintain capital investment at the rate of inflation. As with the first option, these additional investments would need to continue annually over the ten-year period, with each year's investment increasing in line with inflation.

Option 2 would increase the annual infrastructure levy from 0.06% to 0.98% in 2026. This equates to a 0.92% increase to the overall tax bill, or approximately $49 more per year for the average household.

Option 2 - Close the yearly infrastructure funding shortfall and accumulated backlog over 10 years

10-year Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Annual Increase for the Average Household
2026 Budget	$12,761,000	**$2,440,000**	$15,201,000	0.92%	$49

Close the Estimated Infrastructure Gap Over Twenty Years

The tables below provide two options for addressing the infrastructure gap over a twenty-year period. Option 3 involves closing the annual infrastructure gap over a twenty-year period, while Option 4 addresses both the annual infrastructure gap and the associated backlog within the same timeframe.

Option 3 would increase the infrastructure levy from 0.06% to 0.39% in 2026. This represents a 0.33% increase to the overall tax bill, or approximately $18 more per year for the average household

Option 4 would increase the annual infrastructure levy from 0.06% to 0.58% in 2026. This represents a 0.52% increase to the overall tax bill, or approximately $28 more per year for the average household.

Option 3 - Close the yearly infrastructure funding shortfall over 20 years

20-year Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Annual Increase for the Average Household
2026 Budget	$12,761,000	**$945,000**	$13,706,000	0.33%	$18

Option 4 - Close the yearly infrastructure funding shortfall and accumulated backlog over 20 years

20-year Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Annual Increase for the Average Household
2026 Budget	$12,761,000	**$1,392,000**	$14,153,000	0.52%	$28

The additional annual investments under Options 3 and 4 would need to continue over the next twenty years, with each subsequent investment increasing at the rate of inflation, to ensure the respective gaps close within the desired timeframes.

Conclusion

It is important to note that the AMP represents a snapshot in time and is based on a series of assumptions and the best information available to staff at the time of development. These assumptions will change over time as current uncertainties become clearer and, in particular, as more physical condition assessments are performed on our assets. As better information becomes available, the underlying data will be updated and refined for future reports to Council.

02

Introduction

Overview

The 2025 Asset Management Plan (AMP) provides a long-term plan for investment in all the capital infrastructure assets owned and operated by the Municipality of Clarington. The 2025 AMP combines the Municipality's previous plans for core infrastructure assets, completed in 2022, and non-core infrastructure assets, completed in 2024, into a single consolidated plan. The new plan provides updated asset inventories, replacement costs, and condition ratings, along with updated metrics for monitoring the current levels of service provided by each asset category.

In addition to providing updated summary-level data on the state of the Municipality's capital infrastructure assets, the 2025 AMP also identifies proposed service level targets that represent the future service levels the Municipality aims to achieve over the long term. The proposed service level targets combine the desired service levels identified in various master plans and strategies with recommendations from staff based on experience and municipal best practices.

This iteration also provides a long-term financing strategy that identifies the required investment needed to achieve the proposed levels of service over the next ten years. The financing strategy identifies the Municipality's current infrastructure gap – the difference between its current investment and the required investment in capital infrastructure assets. It analyzes both the operating and capital costs of maintaining infrastructure assets and specifies the annual investment necessary to close the infrastructure gap over the long term.

The AMP aims to capture as many asset types and categories as possible and uses the best information available to forecast the capital financing needs over the next ten years. A variety of approaches were used to estimate both the current state of the Municipality's infrastructure and the estimated costs to maintain these assets over the long term. The AMP is intended to be a tool for staff and Council to guide long-term financial planning decisions and will assist in many areas of financial planning, including capital budgeting and long-term financial forecasting.

Asset management planning has been identified as a key component of the Clarington Strategic Plan. The Municipality has identified the AMP as a strategic action required to address the priority of maintaining, protecting and investing in municipal infrastructure and assets.

It is important to note that the AMP represents a snapshot in time and is based on both a series of assumptions and the best information available to staff at the time of development. As these assumptions change over time, the underlying data will be updated and refined to ensure the information remains relevant and accurate.

Legislative Context for Asset Management Planning

Asset management planning has become a legislated responsibility for municipalities in the Province of Ontario. The legislative context and requirements have significantly evolved over the past decade.

In 2016, the Provincial Government passed the *Infrastructure for Jobs and Prosperity Act*, which gave the Province the authority to guide municipal asset management planning through regulation. This was followed, in late 2017, by the introduction of O. Reg. 588/17, which established the standard content to be included in all Asset Management Plans in the Province of Ontario. Specifically, the regulation requires the following components:

- Development of a Strategic Asset Management Policy
- Infrastructure asset inventory, including summary level data on each asset category
- Defined current and proposed levels of service
- Lifecycle activities undertaken to achieve the defined levels of service
- Financial strategy to support the levels of service and lifecycle activities

Although all components were included in O. Reg. 588/17, the Province is utilizing a phased approach for the implementation of the various requirements. The following table outlines the implementation deadlines for the components listed above:

Table 2a – Asset Management Plan Implementation Deadlines

Implementation Date	Requirement
July 1, 2019	Municipalities to adopt a Strategic Asset Management Policy.
July 1, 2022	Municipalities to complete AMP for core assets, as defined by the Province.
July 1, 2024	Municipalities to complete AMP for remaining non-core assets.
July 1, 2025	Municipalities to develop a financing strategy and proposed service levels for all assets.

Clarington completed the AMP for core assets in 2022 and for non-core assets in 2024. The two plans include all the legislative components required for each implementation date, including a summarized asset inventory, current levels of service metrics, and annualized lifecycle activities.

The Municipality has now completed the final component by developing proposed levels of service targets for each asset category and building out a financing strategy to meet the proposed targets over the next ten years.

Strategic Asset Management Policy

The Municipality adopted its Strategic Asset Management Policy in 2019. The policy outlines the commitments and principles that guide the Municipality's asset management planning. It ensures strategic alignment with the Municipality's vision of building a sustainable, creative, and caring community. Achieving this vision requires coordination across multiple initiatives, while ensuring that all existing and planned asset decisions support the recommended levels of service and long-term vision for the community.

As per O. Reg. 588/17, the Strategic Asset Management Policy must be reviewed every five years. The Municipality's policy was reviewed as part of the development of the 2025 AMP and no significant changes are being proposed. The policy will continue to be reviewed in conjunction future updates to the AMP, and any substantive changes will be brought forward to Council for consideration.

Asset Management Plan Development

Overview

The AMP was developed in accordance with O. Reg. 588/17 and is structured to comply with both the legislative requirements and the Municipality's Strategic Asset Management Policy.

The 2025 AMP covers all infrastructure assets owned and operated by the Municipality. Assets are grouped into categories based on their characteristics and associated levels of service expectations. The following table outlines the asset categories, along with a brief description of the assets included in each category.

Table 2b – AMP Asset Categories

Asset Category	Description
Roads	Includes the entire municipally owned road network, encompassing all roads of various surface types in both urban and rural areas.
Bridges and Culverts	Includes all bridges, including pedestrian bridges, as well as culverts located throughout the Municipality.
Stormwater	Includes the entire network of stormwater infrastructure, including conduits, catch basins, maintenance holes, inlet/outlet structures, oil grit separators, and stormwater ponds.
Corporate Facilities	Includes all municipally owned facilities used for public administration purposes, excluding those used for community programming.
Corporate Fleet	Includes all vehicles and equipment required to deliver municipal services, such as fire trucks, snowplows, and ice resurfacers.
Emergency Services	Includes various assets and equipment used in the delivery of fire and emergency services, excluding fire stations (categorized under Corporate Facilities) and fire vehicles (categorized under Corporate Fleet).
Information Technology	Includes various information technology hardware and software used by the Municipality for service delivery and communication purposes. Also includes hardware owned and operated by Clarington Library, Museums, and Archives.
Parking Infrastructure	Includes assets used in the delivery of parking services throughout the Municipality, such as parking lots, parking lot lighting, parking meters, and electric vehicle (EV) chargers.
Parks	Includes infrastructure used to provide parks services and support outdoor recreational activities, such as playground equipment, sports fields and courts, and trails. Cemetery infrastructure, such as columbaria, is also included in this asset category.

Asset Category	Description
Recreation, Community, and Culture	Includes municipally owned facilities used for community programming and events, such as arenas, aquatic centres, community halls, museums, and libraries. Also includes various pieces of fitness and recreation equipment.
Transportation Infrastructure	Includes assets used in the delivery of transportation services, with the exception of the Municipality's Road network, such as traffic lights, sidewalks, guiderails, and streetlights.

Developing the AMP was a collaborative effort between the Finance and Technology Department and the various Departments and Divisions responsible for owning and operating the assets used in the delivery of municipal services. Collaboration with service area experts was a key component in ensuring the plan reflects the best information available.

Asset Management Plan Structure

The plan has been designed to emphasize the individual asset categories by providing dedicated appendices for each. The appendices include separate sections focusing on the various requirements of O. Reg. 588/17, such as State of Local Infrastructure, Levels of Services, and Lifecycle Management Strategies. They provide a higher degree of granularity by summarizing data down to the asset sub-type level and provide insight into the specific assumptions and nuances that are unique to each asset category.

The AMP also provides a "Summary of Non-core Infrastructure Assets" section, which aggregates information from the individual asset categories to offer a broader view of the Municipality's overall infrastructure. This section also outlines further information on the legislative requirements for each component of the AMP and provides background information on the general assumptions and methodologies used to derive the data.

In addition, separate sections are provided for Growth and Expansion and the Financing Strategy. The Growth and Expansion section summarizes the estimated costs associated with future development-related activities, while the Financing Strategy section presents options for addressing the estimated infrastructure gap over time.

Risk Assessment

The AMP assesses risk in terms of likelihood of failure, which is quantified using asset condition ratings. The consequence of failure, however, is more difficult to quantify and has not been identified in this iteration of the AMP. The identified lifecycle activities have been based on the likelihood of asset failure rather than the consequence of failure.

The Municipality is currently developing a risk assessment matrix that will help prioritize lifecycle activities in future iterations of the AMP. Currently, asset spending prioritization is performed by subject matter experts within the respective departments.

The AMP outlines the annual costs associated with maintaining and replacing assets based on their likelihood of failure. Individual departments will continue to assess which projects should proceed or be deferred, considering the consequences of asset failure as part of their internal decision-making process.

Climate Change Considerations

Climate change considerations have been incorporated in the AMP, where possible, through the estimated replacement costing of assets. These cost estimates are based on the Municipality's current standards for asset acquisition and functionality. For example, replacement costs for fleet assets assumes electric vehicle replacement, where possible, while lighting assets assume the use of energy-efficient LED luminaires.

The AMP also includes the projected costs of retrofitting municipal facilities with high-efficiency components intended to reduce Greenhouse Gas (GHG) emissions. It accounts for both the replacement and expansion activities required to meet the GHG reduction targets outlined in Clarington's Corporate Climate Action Plan.

In March 2020, the Municipality of Clarington joined over 400 Canadian municipalities and 1,300 local governments by declaring a climate emergency. By declaring a climate emergency, the Municipality recognizes its leadership role in addressing climate change by actively working to reduce Greenhouse Gas (GHG) emissions.

Clarington Corporate Climate Action Plan

In March 2021, Clarington Council approved the Clarington Corporate Climate Action Plan (CCCAP) to help the Municipality prepare for climate change and reduce the environmental impact of municipal service delivery. The CCCAP outlines over 100 actions the Municipality can take to respond to climate change while adapting services

and operations to minimize climate-related risks. It also establishes specific targets to reduce corporate GHG emissions, including a 35 per cent reduction by 2030 and achieving net-zero emissions by 2050. The actions in the CCCAP will be considered in all future asset replacement activities.

Green Fleet and Equipment Policy

In December 2023, Clarington Council approved the Green Fleet and Equipment Policy, which directs staff to prioritize investment in low- or zero-emission fleet assets as a strategy for reducing GHG emissions. In alignment with this policy, the AMP assumes electric replacements for all fleet assets where a suitable electric replacement is available. Currently, electric options only exist for cars, vans, light-duty trucks, and certain types of equipment. The policy's provisions have been captured in the AMP's levels of service indicators for fleet assets by tracking the number of electric vehicles as a percentage of total fleet.

Asset Management Planning – Long-term Vision

The Municipality will continue to work towards meeting the various legislative requirements of asset management planning, in accordance with the timelines established under O. Reg. 588/17. This includes providing future updates on progress towards achieving the proposed levels of service.

Future asset management planning will incorporate a more comprehensive risk assessment matrix and an expanded approach to natural asset planning. While an inventory of natural assets has been provided as an appendix in this AMP, future iterations aim to include condition assessments and defined lifecycle activities for these assets.

Going forward, the underlying asset data will be updated annually to ensure it remains current and relevant. This data will support future capital budgeting and long-term financial forecasting. The development of a single, comprehensive AMP for all municipal assets is intended to serve as a foundational element of the Municipality's long-term financial planning strategy.

03

Summary of Infrastructure Assets

Overview

The following sections provide an overview of the key components required under the provincial asset management regulation, O. Reg. 588/17. The regulation mandates an assessment of the state of local infrastructure, including asset age, condition, and replacement cost, as well as indicators of current service levels and annual lifecycle costing over a ten-year forecast horizon.

Detailed information for each asset category is presented in the corresponding appendix. The summary information from these appendices has been consolidated in the sections below to offer an overarching view of all assets owned and operated by the Municipality.

In addition, the following sections provide context regarding the assumptions and methodologies used to derive the data, along with further explanation of the legislative requirements outlined in O. Reg. 588/17.

State of Local Infrastructure

According to O. Reg. 588/17, the following information must be identified as an indicator of the state of local infrastructure for each asset category:

- Summary of the assets included in the asset category
- Replacement cost of the assets included in the asset category
- Average age of the assets in the asset category, determined by assessing the average age of the components of the assets
- Information available on the condition of the assets in the category
- Description of the municipality's approach to assessing the condition of the assets in the category (based on recognized and generally accepted good engineering practices where appropriate)

The following table presents a consolidated summary of the asset categories included in the AMP, offering a high-level view of asset inventory, condition, and replacement cost across the Municipality.

Table 3a – Average Age, Replacement Cost, and Average Condition – All Asset Categories

Asset Category	Quantity	Length (KM)	Average Age (Years)	Replacement Cost ($2025)	Average Condition (ULC%)	Average Condition State
Roads		921.56	20.6	$1,861,661,000	60.8%	Good
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Total[2]	**26,345**	**1,656.55**	**29.19**	**$3,440,601,000**	**57.7%**	**Good**

1. Average condition for Corporate Facilities and Recreation, Community, and Culture are based on a Facilities Condition Index (FCI) as opposed to the Useful Life Consumption percentage (ULC%).
2. Total Average Condition of 57.7% excludes Corporate Facilities and Recreation, Community, and Culture as these assets utilize the FCI condition methodology. These assets are assessed as "Good", on average, meaning the total average condition state would remain as "Good" if these assets were included.

Most of the asset data—such as inventory, age, and historical costing—has been extracted from the Municipality's asset management tracking software, CityWide. The Finance and Technology Department maintains the CityWide database and

collaborates with other departments to ensure the system is regularly updated as new assets are acquired and existing assets are rehabilitated or decommissioned.

The majority of data for Corporate Facilities and Recreation, Community, and Culture (RCC) facilities was sourced from Building Condition Assessments (BCAss) completed in late 2023 and early 2024. These BCAss provide current condition assessments, lifecycle costing, and replacement cost estimates. The condition ratings presented in the AMP reflect updated calculations based on these assessments.

Data related to roads assets was primarily obtained from the most recent Roads Needs Study, completed in 2023 by an engineering consulting firm. The study provides detailed information on asset condition, replacement costs, and lifecycle strategies.

Information on bridges and culverts was drawn from the 2023 Clarington Municipal Structure Inventory and Inspection Report, also conducted by an engineering consultant. This study provides data on condition, lifecycle activities, and replacement costing. Under provincial legislation, all bridge and culvert structures with a span greater than 3.0 metres must be inspected under the direction of a Professional Engineer at intervals not exceeding two years.

Asset Exclusions

Only assets being actively maintained by the Municipality and expected to be replaced have been included in the AMP. Some municipal assets, although still in use, are not planned to be replaced at the end of their useful life. These assets are typically well beyond their estimated useful life but continue to serve a functional role. In many cases, they have already been replaced but remain in service. As a result, they have been excluded from the AMP to provide a more accurate and realistic representation of the current state of local infrastructure.

Summary of Assets

The following tables present the asset categories included in the AMP, broken down by asset type and sub-type. Asset types were defined by grouping assets with similar characteristics, such as replacement costs, estimated useful lives, and lifecycle activities.

Detailed descriptions of the asset sub-types can be found in the appendices for each asset category, which also provide further information on assets included in any “Miscellaneous” category.

Table 3b – Summary of Non-Core Asset Types

Asset Category	Asset Types	Asset Sub-Types
Corporate Facilities	Corporate Facilities	Municipal Administration Facilities
		Fire Stations
		Operations Depots
Corporate Fleet	Vehicles	Aerials, Pumpers, Tankers
		Cars and Vans
		Heavy, Medium, and Light Duty Vehicles
	Equipment	Ice Resurfacers
		Loaders, Graders, Tractors, Mowers
		Trailers, Unlicensed Equipment, Small Equipment
Emergency Services	Suppression Gear	Bunker Suits and Helmets
		Self-Contained Breathing Apparatus'
	Equipment	Suppression Equipment
		Defibrillators, Pagers, Radios
	Training Infrastructure	Miscellaneous Training Equipment
Information Technology	Communications	Communication Towers, Wireless Links, Phone System
	Software	Software Systems
	End User Computing	Various Hardware (laptops, monitors, etc.)
	Critical Infrastructure	Various Hardware (firewalls, servers, etc.)

Asset Category	Asset Types	Asset Sub-Types
Parking Infrastructure	CLMA Infrastructure	Various Hardware (laptops, monitors, etc.)
	Parking Lots	Paved and Gravel Lots
	Parking Lot Infrastructure	Lights, Parking Meters, Electric Vehicle Chargers
Parks	Courts	Tennis, Basketball, and Pickleball Courts
	Sports Fields	Baseball, Softball, Soccer, Football, Cricket, Lacrosse
	Playgrounds	Playground/Outdoor Fitness Equipment and Splashpads
	Park Structures/Amenities	Sports Field Lights and Park Lights
		Shade Structures, Park Washrooms, Miscellaneous Structures
	Trails	Park/Non-park Trails, Waterfront Trails, Multi-use Paths
Recreation, Community, and Culture	Miscellaneous	Miscellaneous Park Assets
	Facilities	Arenas, Aquatic Centres, Community Centres, Hamlet/Neighbourhood Facilities, Culture Facilities
	Equipment	Fitness and Recreation Equipment
Transportation Infrastructure	Guiderails	Steel Beam, Guideposts/Post & Cable, Concrete Barriers
	Sidewalks	Concrete and Asphalt
	Streetlighting	Concrete, Wood, Aluminum Poles (standard and decorative)
		LED Luminaires (standard and decorative)
	Traffic Controls	Traffic Signals and Pedestrian Crossings
	Equipment	Radar Message Boards

Table 3c – Summary of Core Asset Types

Asset Category	Asset Types	Asset Sub-Types
Roads	Rural	Various Surface Types
	Semi-Urban	Various Surface Types
	Urban	Various Surface Types
Bridges and Culverts	Bridges	Bridges (various built forms) and Pedestrian Bridges
	Culverts	Various Culverts
Stormwater Management	Stormwater Ponds	Wet Ponds and Dry Ponds
	Conduits	Mainline Pipes
	Structures	Maintenance Holes, Catch Basins, Oil Grit Separators
		Inlet / Outlet Structures

Replacement Costing

The total estimated replacement cost of all assets owned and operated by the Municipality is over $3.4 billion. The majority of the cost is attributed to the three core asset categories: roads, bridges and culverts, and stormwater infrastructure. Together, these categories represent more than $2.3 billion in replacement costs, accounting for over 67 per cent of the Municipality's total asset replacement value.

Replacement Costing Assumptions

Replacement costing generally reflects the estimated cost for the full replacement of an asset. This includes not only the tangible asset itself but also associated costs such as construction, installation, and the removal of existing assets. All replacement cost estimates have been provided in current (2025) dollars.

Replacement costs were determined using a combination of recent tenders for similar assets and the expertise of staff involved in asset purchasing and operations. Where past tenders were used, costs were adjusted to reflect current market prices. For roads, bridges, and culverts, base replacement costs were sourced from engineering reports and subsequently inflated to 2025 values.

For facilities, replacement costing was calculated by multiplying the total square footage by an assumed cost per square foot. These cost assumptions were informed by recent tenders, the Altus Group 2025 Canadian Cost Guide, and relevant figures from the Parks, Recreation, and Culture Master Plan—particularly for recreation facilities.

Asset Age

The majority of asset age data was extracted from the Municipality's asset inventory and is based on the in-service dates recorded in CityWide. The average age for each asset category is calculated as a weighted average, based on replacement cost, of the average ages of the various asset types within that category. Detailed average ages by asset type are provided in the individual asset appendices.

The overall average age across all asset categories is also calculated as a replacement cost-weighted average, and is estimated to be approximately 29.19 years.

Average age varies significantly by asset type. For example, the average age of facilities is significantly higher than the other asset categories because these assets are generally maintained and renovated instead of being fully replaced. Their reported age is based on the original construction date — in some cases, such as the Municipal Administration Centre, this dates back over 100 years.

In cases where the exact in-service date of an asset was unknown, reasonable estimates were made when possible. However, for some assets—such as certain older streetlights—a reliable estimate could not be determined due to data limitations. In these instances, the average age is reported as "N/A" (not available).

Estimated Useful Life

Each asset has been assigned an estimated useful life, based on industry best practices or input from service area experts within the Municipality. The Municipality's Capitalization Policy outlines standard useful life estimates for all capital assets for the purpose of amortizing assets for financial reporting purposes. The estimates provided in this policy are based on prevailing best practices at the time the policy was developed and were used in most circumstances for the AMP.

In certain circumstances, however, staff expertise was used to assign more current useful life estimates, particularly when supported by data from recent acquisitions. In some asset categories, technological advancements and improvements in manufacturing have led to long expected useful lives. For example, light poles for streetlights and sports fields now often come with lifetime warranties, extending their expected lifespan.

Estimated useful lives for specific asset types are provided in the appendices corresponding to each asset category.

Asset Condition

Condition Assessment Methodology

Physical condition assessments have not been completed for the majority of the Municipality's non-core assets. While many of these assets undergo periodic visual inspections to identify obvious signs of deterioration, they are not routinely subject to detailed structural assessments.

However, physical condition assessments are carried out for specific Emergency Services assets that have a direct impact on user health and safety—such as bunker gear, helmets, and Self-Contained Breathing Apparatus (SCBAs). These assets are assigned a condition rating of "Assessed", indicating that they undergo frequent, structured inspections to ensure they remain in Very Good condition. This approach is also applied to certain types of critical IT infrastructure.

In addition, comprehensive physical condition assessments have been completed for all municipal facilities, as well as the core asset categories of roads and bridges and culverts. These assessments were performed by third-party engineering consultants, utilizing established industry-standard methodologies.

Given the wide variation in asset types, the AMP applies multiple condition assessment methodologies. The specific approaches used for each asset category are detailed in the sections that follow.

Useful Life Consumption Percentage (ULC%)

In the absence of physical condition assessments, the majority of the Municipality's assets use asset age as a proxy for condition. The primary metric used is the Useful Life Consumption Percentage (ULC%), which estimates an asset's condition based on its age relative to its estimated useful life. The ULC% is calculated by dividing an asset's age by its estimated useful life to determine the percentage of useful life that has been consumed.

New assets have a ULC% of 0%, indicating that none of their estimated useful life has been consumed. Assets that have reached the end of their estimated useful life will have a ULC% of 100%, while assets beyond their estimated useful life will show a ULC% greater than 100%.

It is important to note that a ULC% exceeding 100% is not necessarily a cause for immediate concern. Some assets can continue to provide the desired level of service beyond their estimated lifespan, particularly if they have been well maintained. However, these assets warrant closer monitoring, as they are more likely to require replacement in the near future.

The table below segments the ULC% into qualitative condition states, which are based on the probability of failure. An asset with a ULC% of 100% is categorized as being in “Fair” condition. As the ULC% increases beyond 100%, the asset’s condition shifts into “Poor” or “Very Poor,” reflecting a higher risk of failure.

This condition assessment scale was provided by the consulting firm Watson & Associates, based on guidance from the International Infrastructure Management Manual.

Table 3d – ULC% Condition States

ULC%	Condition State
0% ≤ ULC% ≤ 45%	Very Good
45% < ULC% ≤ 90%	Good
90% < ULC% ≤ 100%	Fair
100% < ULC% ≤ 125%	Poor
125% < ULC%	Very Poor

Facility Condition Index (FCI)

The condition of Corporate and RCC Facilities was assessed by Nadine International Inc, an engineering consulting team, through formal Building Condition Assessments (BCAs). The BCAs were completed in late 2023 and early 2024 and included visual inspections of the majority of facilities owned by the Municipality.

The purpose of the visual assessments was to provide a general indication of the current physical condition of the building components. The inspections evaluated the structure and facility elements, the building envelope, and the mechanical and electrical systems. The BCAs also included a predictive ten-year forecast for renewal costs. These assessments did not include any physical or destructive testing; observations were made only in areas that were visible or readily accessible.

The BCAs assessed the condition of each facility using a Facility Condition Index (FCI) methodology. The FCI reflects the cost of remedying maintenance deficiencies as a percentage of the current replacement value. The AMP uses the methodology derived from the BCAs but uses the 10-year average annual cost of remedying maintenance deficiencies as a percentage of the current replacement value. This is being done to provide a more balanced view of facility condition.

The table below segments the FCI% into qualitative condition states. The FCI is a widely recognized benchmark, used in facilities management, and the condition states identified below are based on industry best practices.

Table 3e – FCI Condition States

FCI	Condition State	Definition
0% ≤ FCI% < 5%	Good	Facilities look clean and functional with limited expectation of equipment/component failure. Repairs are generally more aesthetic in nature.
5% ≤ FCI% < 10%	Fair	Facilities are beginning to show signs of wear and equipment failures are more frequently expected. Specific systems/components require repair or replacement.
10% ≤ FCI% < 30%	Poor	Facilities appear worn, with increasing deterioration, and frequent component failures are expected. Replacement of major systems are required.
30% < FCI%	Critical	Facilities appear worn, with obvious signs of deterioration, and frequent equipment failures are expected. Replacement of multiple systems are required, and the facility poses a health and safety risk.

Pavement Condition Index (PCI)

The Pavement Condition Index (PCI) methodology was used to assess the condition of the Municipality's Road network. The PCI for each road segment was determined by WSP Canada Inc, engineering consultants, through the 2023 Roads Needs Study.

Determining a PCI value includes several components. First, visual inspections of the road network are conducted to identify the density and severity of distress. This data is recorded as a Distress Manifestation Index (DMI) in accordance with the Ontario Ministry of Transportation (MTO) manuals.

The various road segments are subsequently driven along at the posted speed limit, to record a Riding Condition Rating (RCR). The RCR is rated on a scale from 1 to 10, with 1 being very poor and 10 being excellent.

A PCI score is eventually derived using a combination of the DMI and the RCR results. The PCI is rated on a scale from 0 to 100, 0 being very poor and 100 being very good. The table below segments the PCI into qualitative condition states as determined by the engineering consultants in the Roads Needs Study. The PCI is a widely recognized benchmark for assessing the condition of the road network.

Table 3f – PCI Condition States

PCI	Condition State	
75 to 100	Very Good	Roads within this category may show surface distress for up to 10% of the length. The required maintenance effort may be slightly above average but not uneconomical compared to the reconstruction costs.
60 to < 75	Good	Roads within this category show surface distress from 11% to 15% of the length. Similar to the Very Good level, required maintenance may be above average but not necessarily uneconomical compared to the cost of a full reconstruction.
40 to < 60	Fair	Roads show surface distress from 16% to 20% of the length and the required maintenance effort is high.

PCI	Condition State	
20 to < 40	Poor	Roads show surface distress of more than 20% of the length, and the required maintenance effort is excessive.
0 to < 20	Critical	These roads have exceeded their expected useful life and require replacement.

Bridge Condition Index (BCI)

All bridges and culvert assets use the Bridge Condition Index (BCI) as a measure of condition. The BCI for the Municipality's bridge and culvert assets were determined by GHD Limited, an engineering consultant, and were extracted from the 2023 Municipal Structure and Inventory Inspection Report.

As per the Municipal Structure and Inventory Report, BCI values are established using Material Condition Rating (MCR) values for each component. The rating values are weighted, and those weighted values are combined with weightings reflecting the importance of each component to produce the BCI values.

The table below segments the BCI values into qualitative condition states. As per the Ministry of Transportation guidelines, a condition of 70 and above would result in no work needed in the next five years, whereas anything below 60 would require work within the following year.

Table 3g – BCI Condition States

BCI	Condition State	
80 to 100	Very Good	The structure is functioning as intended. Very little to no deterioration. New or recent rehabilitation. Very low risk of failure. Low capital maintenance needs.
70 to < 80	Good	The structures are functioning as intended. No major maintenance is anticipated within the next five years. Some signs of deterioration. Low risk of failure. Some unplanned maintenance is required.

BCI	Condition State	
65 to < 70	Fair	The structures are functioning as intended. Additional signs of deterioration and minor distress observed. Maintenance will be required within the next five years to maintain functionality. Level of Service may be affected. Some failures occur. Rehabilitation is possible.
60 to < 65	Poor	The structures are starting not to function as intended. Significant distress observed. Maintenance and some repairs are required within the next few years to restore functionality Failures will increasingly occur. Reduced ability to provide the service. Maintenance costs will likely increase. Rehabilitation may become impossible.
0 to < 60	Critical	The structures are not functioning as intended. Significant deterioration and major distress observed. Requires immediate attention. Assets have exceeded their service life and require careful monitoring and maintenance.

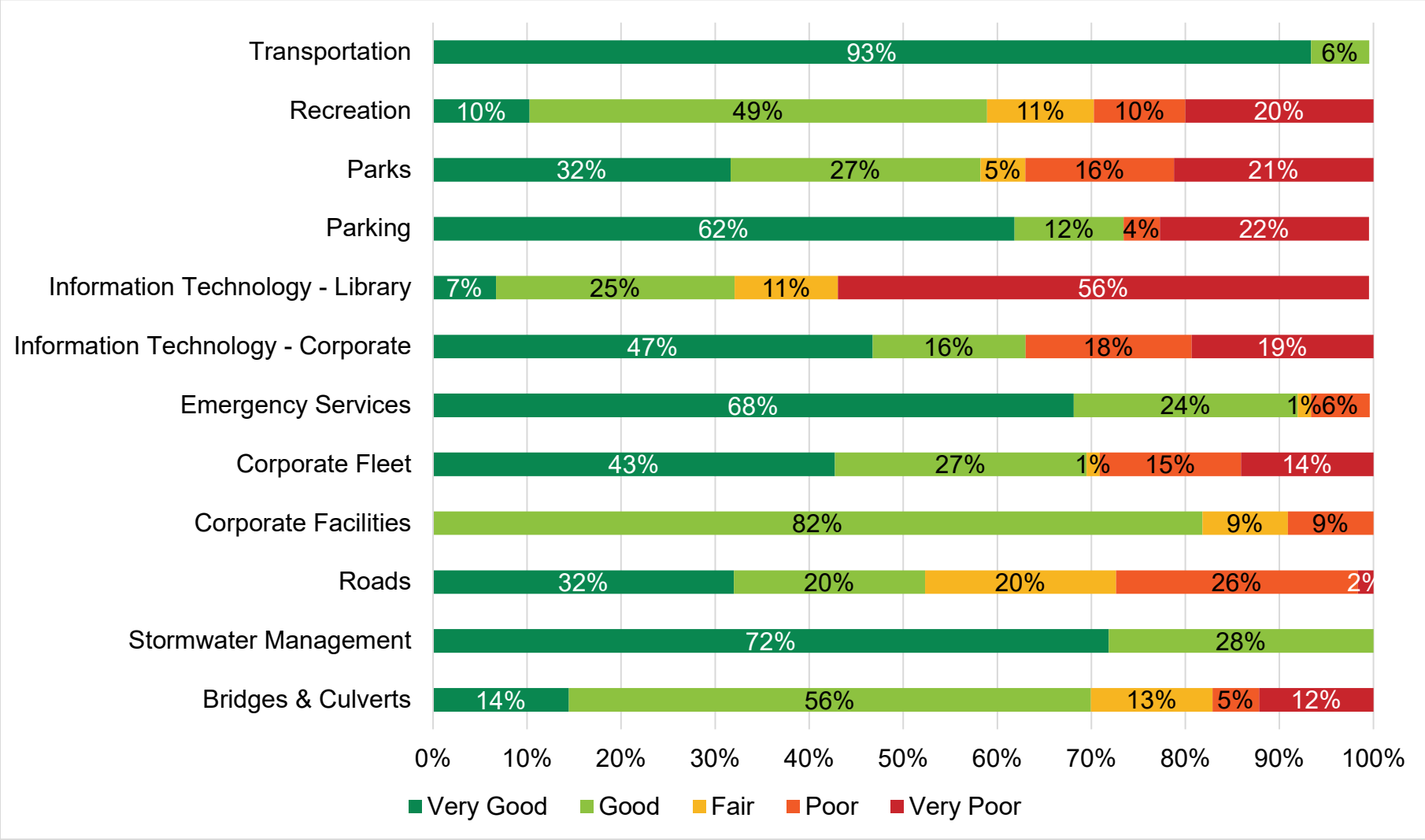
Assessed Conditions

Most asset categories have an average condition rating of Good. The average condition rating for each asset category is determined using the same weighted average approach used for calculating average age. The condition ratings suggest that the majority of the assets with significant estimated replacement costs are still within their estimated useful life. The average condition for Transportation Infrastructure and Stormwater assets is rated as Very Good due to the lengthy estimated useful lives assigned to the assets with the highest replacement costs.

Although the average condition for all asset categories is rated as Good, the condition rating for each individual underlying asset ranges from Very Poor to Very Good. The figure below provides the condition distribution for all underlying assets within the various asset categories. It provides an unweighted view of asset conditions and provides a distribution based on the quantity of assets. The condition distribution for Recreation, Community, and

Culture is significantly different than the average condition for this asset category because the distribution is unweighted, and the quantity of recreation equipment far outnumbers the quantity of facilities.

Figure 3a – Condition Distribution by Asset Category



Levels of Service

Specific levels of service metrics were developed for each asset category. Metrics were developed in an effort to reflect the desires, values, and expectations of the community. The structure of the levels of service tables are similar for all asset categories and include the following columns:

- **Service Attribute** – identifies the high-level attribute being addressed and are intended to reflect important values of the organization.
- **Levels of Service Statement** - intended to capture the expectations of the community.
- **Performance Measure** – intended to quantify the expectation identified in the Levels of Service Statement.
- **Current Performance** – identifies the current performance of the metric, using the most recent data available.
- **Target Performance** - identifies the proposed performance metric, utilizing input from Master Plans, and staff expertise while considering costs to meet this target.

The Municipality retained Hemson Consulting to assist in the development of levels of service metrics for the AMP. Consultations were held with staff representatives from each asset category, to develop specific measures related to their service area. As part of these consultations, staff discussed service level targets based on knowledge of the assets and municipal best practice.

In some cases, levels of service metrics and targets were pulled from departmental master plans. The Municipality recently completed the Parks, Recreation, and Culture Master Plan, which included a number of service level metrics that have been pulled into the AMP.

The majority of service level targets have been derived based on the current levels of service provided by the assets. In some cases, the current level of service was adjusted to address a known deficiency or to align with industry standard. It most cases, the current level of service has been carried forward as the proposed service level to maintain the status quo.

Progress towards the service level targets is required to be monitored on an annual basis. As part of this annual monitoring, proposed service levels will be reviewed to ensure they remain consistent with the Clarington Strategic Plan.

Proposed Levels of Service

The proposed service level targets were established utilizing existing Master Plans, and the knowledge and expertise of Clarington staff. The targets were derived using the current level of service as the base and then making adjustments to enhance or reduce desired service levels as needed.

The current levels of service approach, for most assets, is to plan for replacement of an asset once the asset falls into poor condition. This approach is typically brought forward through the annual budget process, with certain asset replacements being deferred based on the annual budget constraint or the condition assessment of staff at the time of scheduled replacement. These factors combined generate the current level of service results shown in the asset category appendices.

The proposed levels of service recognize that not all assets need to be replaced at the end of their useful life. Some assets are capable of being pushed beyond their estimated useful life while still performing up to standard.

Proposed service levels will be more clearly defined and adjusted over time as more master plans are created for the asset categories. As these studies are completed, the associated service levels will be adopted by the AMP and will provide the implementation strategy for the proposed service levels.

Lifecycle Management Strategies

Lifecycle management strategies represent the set of planned actions required to maintain assets at their current or proposed level of service. The set of actions can include activities intended to maintain or extend the service life of an asset. Asset management plans must also include a ten-year capital plan that forecasts the costs associated with the lifecycle management strategies over the ten-year period.

The table below identifies the main categories of lifecycle activities or planned actions that would be associated with capital assets.

Table 3h – Lifecycle Activities for Capital Assets

Lifecycle Activity	Description
Inspection	Includes routine inspections of assets to ensure condition remains at desired levels. This could include physical inspections or visual inspections.
General Repair and Maintenance (minor rehabilitation)	Includes the routine maintenance and repair activities performed to ensure assets reach their estimated useful life. These activities are generally minor in nature and typically represent a cost of less than $5,000.
Major Repair and Maintenance	Includes major repair and maintenance work that exceeds $5,000 per activity. This would typically include the repair or replacement of a major asset component.
Replacement	Includes the full replacement of the asset at the end of its lifecycle.
Expansion or Enhancement	Includes the expansion or enhancement of an asset; generally completed to enhance the level of service provided by the asset.
Disposal	Activities associated with disposing of an asset once it has reached the end of its useful life or when it is no longer required by the Municipality.

Inspection activities and general maintenance and repair are either completed by staff or are budgeted through the Municipality's operating budget. Major rehabilitation and replacement activities typically require a much larger investment and are therefore included in the capital budget. The capital budget items are typically funded through tax levy-supported reserve funds. Details of the average annual cost of these activities are provided in the individual asset category appendices. The summarized costs for all asset categories are provided in the Financing Strategy section of the AMP.

Expansion or enhancement activities are related to the acquisition of net new infrastructure or represent the expansion of an existing asset (e.g., facility expansion). These lifecycle activities are required to maintain existing service level standards in the face of population or employment growth. The initial capital acquisition costs associated with these activities are typically funded, in whole or in part, by development charges. However, the ongoing maintenance and subsequent replacement of this infrastructure will need to be included in future municipal budgets. The following section of the report provides greater detail on the estimated costs associated with growth and expansion.

04

Growth and Expansion

Overview

As the Municipality continues to experience growth in population, economic development, and infrastructure demands, it is essential to plan strategically for the expansion of municipal assets. Growth and expansion activities are generally required to ensure service level standards remain constant over time as population and employment expand.

Expansion activities align with the Municipality's long-term planning frameworks, including the Official Plan and associated Secondary Plans, to ensure that investments are made in a fiscally responsible, environmentally sustainable, and community-focused manner. It also considers projected growth patterns, service level expectations, and available financial resources, ensuring that new assets are added in a way that supports the overall vision for Clarington's future.

Growth Considerations

The Municipality uses Development Charges (DC's), and the associated DC Study, to plan for the infrastructure required to service the increased growth identified through the Official Plan and associated secondary plans. The Municipality is completing an update to its DC study in 2025.

The 2025 DC Study forecasts population and employment growth out to 2034. The DC Study estimates are provided in Table 4a below. The population estimates exclude the census undercount, while the employment estimates include both work from home and employees with no fixed place of work.

Table 4a – Population and Employment Estimates – 2025 DC Study

	2025	2028	2031	2034
Population	109,379	116,778	125,230	135,536
Employment	33,376	36,224	39,315	42,670

Annualized estimates for the next ten years are provided in Table 4b below. The annualized estimates are based on the information from the 2025 DC Study.

Table 4b – Annualized Population and Employment Estimates (2025 – 2034)

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Population	109,379	111,462	114,089	116,778	119,530	122,347	125,230	128,575	132,010	135,536
Employment	33,376	34,300	35,249	36,224	37,226	38,256	39,315	40,403	41,521	42,670

Expansion Costs

The specific types of infrastructure required to service this growth are also, for the most part, included in the 2025 DC Study. A summary of the total DC eligible expansion costs by, over the next 10 years, is provided in the table below.

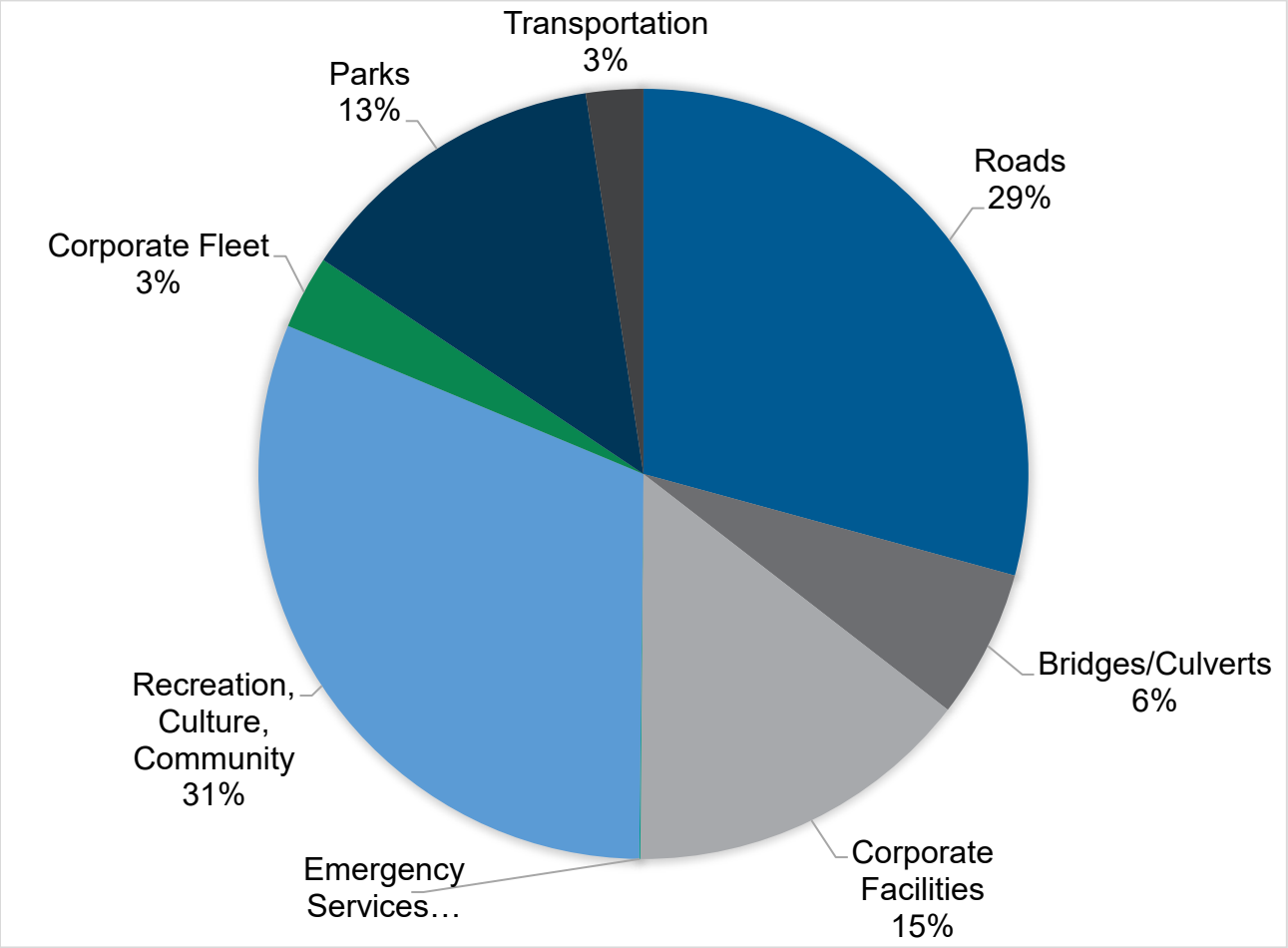
While most asset categories are eligible for DC financing, parking infrastructure and IT assets are largely ineligible. In absence of an infrastructure growth forecast for these DC ineligible services, a per capita approach was used to estimate an annual provision for expansion activities. This is included in Table 4d.

Table 4c – Total Estimated Expansion Costs by Asset Type (2025-2034)

Asset Type	Expansion Costs
Roads	$192,880,000
Bridges/Culverts	41,149,000
Corporate Facilities	96,532,000
Recreation, Culture, Community	205,098,000
Corporate Fleet	20,433,000
Parks	87,190,000
Transportation	15,829,000
Emergency Services Equipment	304,000
Total	**$659,415,000**

The chart below provides an overview of the allocation of expansion costs over the next 10 years, categorized by asset type. This breakdown illustrates how projected investments will be distributed across the asset categories to support the Municipality's growth objectives.

Figure 4a – Expansion Costs by Asset Category (2025 – 2034)



As shown, the largest share of expansion-related spending is expected to be allocated to roads, and recreation, culture, and community, reflecting the Municipality's focus on providing a more urban, walkable community, with great public spaces and complete streets designed for people.

Annual Provision for Expansion Costs

Although the initial capital acquisition is typically funded through development charges, subsequent repairs and replacements would require funding from other sources. The table below provides an estimate of the annual capital and operating provisions required to finance future lifecycle activities over time.

Table 4d – Estimated Average Annual Capital and Operating Provision for Expansion Activities

Asset Type	Average Annual Capital Investment	Average Annual Operating Investment	Average Annual Total Investment
Roads	$228,000	$76,000	$304,000
Bridges and Culverts	48,000	4,000	52,000
Stormwater	0	13,000	13,000
Corporate Facilities	193,000	129,000	322,000
Corporate Fleet	140,000	78,000	218,000
Emergency Services	2,000	3,000	5,000
Information Technology	38,000	58,000	96,000
Parking Infrastructure	0	0	0
Parks	329,000	555,000	884,000
Recreation, Community, and Culture	262,000	127,000	389,000
Transportation	24,000	16,000	40,000
Total	**$1,264,000**	**$1,059,000**	**$2,323,000**

The average annual capital investment represents the estimated annual allocation required to finance the subsequent capital replacement of the infrastructure. The estimates are derived by taking the annual expansion requirements and dividing by the average estimated useful life for the asset category.

The average annual operating investment represents the estimated annual allocation required to maintain the asset throughout its lifecycle. The estimate includes portions for salaries, repair and maintenance, and other miscellaneous operating expenses associated with the maintenance of the asset. The estimated average annual operating costs were derived by determining current asset management operating expenditures as a percentage of replacement value and then applying that percentage to the additional expansion costs.

05

Financing Strategy

Purpose

The financing strategy provides a comparison of the current funding allocation for asset management activities and the required investment needed to meet the proposed level of service for each asset category. Like other municipalities, the comparison identifies a disparity between the current funding allocation and required investment needs. This disparity is known as the infrastructure gap.

Investment Requirements

The table below provides the average annual investment requirements, for each asset category, to meet the proposed levels of service. The average annual investment is expressed in current (2025) dollars; therefore, the annual investment will need to be scaled up for inflation in each subsequent year.

Table 5a – Estimated Average Annual Investment Requirement (PLOS)

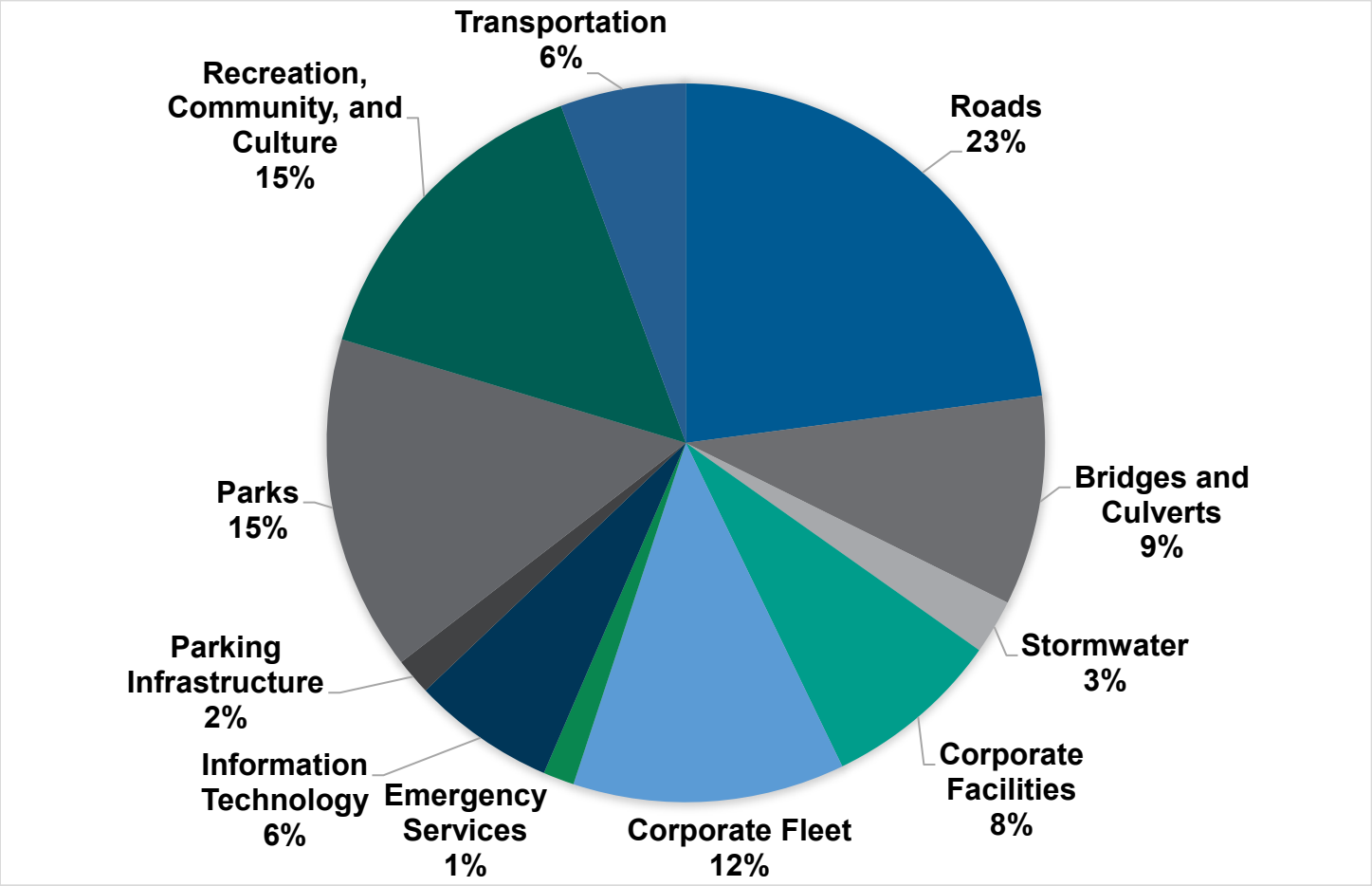
Asset Type	Average Annual Capital Requirement	Average Annual Operating Requirement	Average Annual Total Requirement
Roads	$6,184,000	$4,951,000	$11,135,000
Bridges and Culverts	4,373,000	210,000	4,583,000
Stormwater	657,000	537,000	1,194,000
Corporate Facilities	1,809,000	2,098,000	5,950,000
Corporate Fleet	3,936,000	1,851,000	5,787,000
Emergency Services	282,000	398,000	680,000
Information Technology	758,000	2,371,000	3,129,000

Parking Infrastructure	766,000	38,000	804,000
Parks	3,223,000	4,116,000	7,339,000
Recreation, Community, and Culture	3,411,000	3,734,000	7,145,000
Transportation	528,000	2,218,000	2,746,000
Total	**$25,927,000**	**$22,522,000**	**$48,449,000**

The average annual capital requirement identifies the average annual amount required to complete the major repair and replacement activities identified in the proposed levels of service. The average annual operating requirement represents the average annual operating amount needed to achieve the proposed levels of service for each asset category.

The chart below further defines the distribution of investment requirements across the various asset categories.

Figure 5a – Estimated Average Annual Investment Distribution ($2025)



As illustrated in the chart, the largest investment requirement is geared toward Roads. A large portion is also allocated to Bridges and Culverts. These represent the largest asset categories by total replacement value and are considered part of the core infrastructure assets operated by the Municipality. Alternatively, Stormwater, another core asset category, represents a small portion of the distribution relative to its total replacement value. Stormwater assets have a long lifecycle (75 years) and often do not require major interventions within their useful life.

The most significant non-core asset distributions are to Parks, Recreation, Community, and Culture, Corporate Fleet, and Corporate Facilities. Parks assets, such as playgrounds, trails, and other outdoor infrastructure, tend to have shorter lifespans and need to be replaced more often. As a result, there's less time to set aside funding before replacements are needed. Fleet includes many heavy-duty vehicles (e.g., fire trucks, snowplows, etc.) with significant replacement costs. Corporate Facilities, Recreation, Community, and Culture include maintenance of various facilities like ice rinks and swimming pools, along with investments in greenhouse gas (GHG) reduction projects that often come with significant costs.

Current Funding Allocations

The Municipality currently uses four main funding sources to finance asset management activities.

1. **Tax levy** financing is used to fund the operating expenses related to asset management.
2. **Tax levy supported capital reserve funds** are used to finance capital repair and replacement activities.
3. **Grant funding**, in the form of the annual Canada Community Building Fund allocation, is used to finance capital repair and replacement activities.
4. **Debenture financing** is used to fund large scale capital repair and replacement activities.

Council has also recently provided staff with the authority to pursue a Stormwater Fee that will be used to finance future asset management activities related to stormwater infrastructure.

The table below provides an estimate of the average annual funding available from each funding source, based on current and expected future contributions over the next ten years. The average annual funding allocations have been presented in 2025 dollars.

Table 5b – Estimated Average Annual Funding Allocations ($2025)

Funding Source	Funding Allocation
Tax Levy (Operating)	$22,234,000
Tax Levy (Capital Reserve Funds Contribution)	12,142,000
Grants	2,990,000

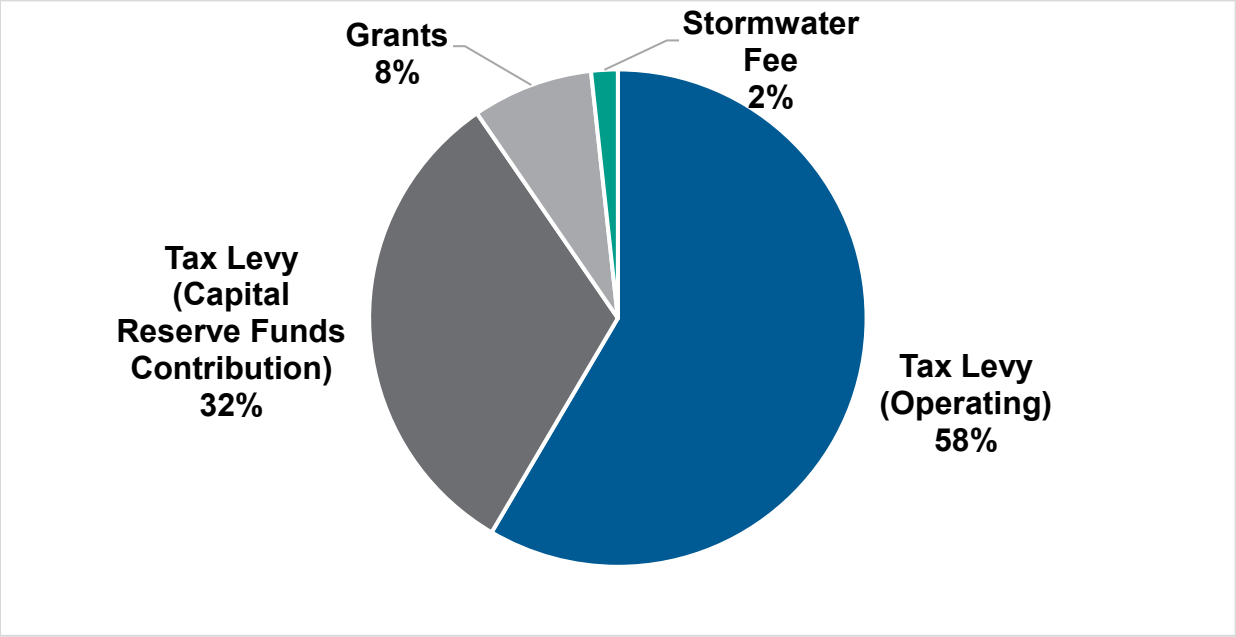
Stormwater Fee	657,000
Total	**$38,023,000**

Although the stormwater fee has not yet been implemented, the average annual allocation reflects the anticipated revenue offset available from this funding source.

It should also be noted that the grant funding received by the Municipality no longer includes an allocation from the Ontario Community Infrastructure Fund (OCIF). OCIF funding is an annual provincial grant provided to Ontario municipalities with populations less than 100,000. The funding is provided to assist with the cost of core asset repair and rehabilitation. Clarington received its last annual allocation in 2024 as Clarington's population now exceeds 100,000. Clarington's annual allocation was approximately $3 million which now has to be made up from other sources, such as increased capital reserve contributions.

The chart below provides the average annual funding allocation distribution by funding source.

Figure 5b – Estimated Average Annual Funding Distribution ($2025)



The majority of asset management financing comes from tax levy. This is in the form of both operating budget allocations and the annual tax levy contributions to the capital reserve funds. Tax levy financing accounts for 90% of overall asset management financing.

Projected Infrastructure Gap

The investment requirements outlined above are reflective of the activities required to meet the proposed levels of service. The table below provides the current estimated average annual infrastructure gap based on projected funding needs and funding available. The average annual infrastructure gap is currently estimated at approximately $10.4 million

Table 5c – Estimated Average Annual Infrastructure Gap ($2025)

Average Annual Funding Requirement	Average Annual Funding Available	Estimated Average Annual Infrastructure Gap
$48,449,000	$38,023,000	**$10,426,000**

The estimated average annual infrastructure gap in the table above represents the gap associated with maintaining only existing infrastructure assets. Expansion activities have not been included in the projected infrastructure gap as the timing is unclear. Once expansionary assets are acquired, they will form part of the municipal asset inventory and will be layered into future iterations of the AMP.

As mentioned, the estimated average annual infrastructure gap includes the loss of OCIF funding, which was approximately $3 million per year. The projected infrastructure gap would be significantly lower had it not been for the loss of this annual provincial grant.

The Municipality's current infrastructure levy is approximately 0.06% on the overall tax bill. The existing infrastructure levy is insufficient as it does not keep up with the assumed rate of inflation. If the annual investment does not keep up with the rate of inflation, it effectively means that, in real dollar terms, the investment is declining on an annual basis. This practice is a significant contributing factor to the estimated $10.4 million average annual infrastructure gap.

Closing the Infrastructure Gap

There are several approaches that can be taken to close the projected infrastructure gap over time. These approaches range from direct financing to policy changes and data improvements.

Financing Strategies

Addressing the infrastructure gap through direct financing will require the expansion of the current capital infrastructure levy dedicated toward capital asset management activities. The expansion would be in addition to the annual capital reserve fund transfers.

Given the size of the estimated average annual infrastructure gap, it is not financially feasible to close the entire infrastructure gap in year one. The more feasible approach is to provide steady annual investment increases that will close

the gap over time. However, it should be noted that, if the annual gap is not fully addressed in year one, it will compound over time and lead to a cumulative gap that is much larger than the average annual.

The sections below provide options for addressing the estimated infrastructure gap over time.

Close the Estimated Infrastructure Gap Over Ten Years

The first option involves closing the average annual infrastructure gap over the next ten years. Under this scenario, the Municipality would get to a point where the annual funding available is equal to the annual funding required by year ten. The table below provides the additional annual investment required in 2026 to begin closing the average annual gap over ten years. The table also provides the estimated tax levy impact associated with the additional investment, along with the estimated annual impact to the average household.

Option 1 - Close the yearly infrastructure funding shortfall over 10 years

Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Estimated Annual Impact to the Average Household
2026 Budget	$12,761,000	**$1,445,000**	$14,206,000	0.54%	$29

These additional annual investments would need to continue over the next ten years, with each subsequent investment increasing at a 3% inflation rate. This means that the additional annual investment to close the annual infrastructure gap would be $1,489,000 in 2027, representing an additional 0.53% tax levy increase.

However, gradually closing the annual infrastructure gap over a ten-year period means that, for the first nine years, the annual funding available will remain below the annual funding required. When the funding available does not meet the funding required, it results in a backlog. The backlog will accumulate each year until the annual infrastructure gap is closed. Once the annual infrastructure gap is closed, the backlog will stop growing and remain constant until additional funds are provided.

The table below identifies the estimated cost of a second option in which both the annual infrastructure gap and the associated backlog are closed within a ten-year period. Under this scenario, the Municipality will have closed the entire

infrastructure backlog in ten years and, moving forward, will simply need to maintain its capital allocation at the rate of inflation.

Option 2 - Close the yearly infrastructure funding shortfall and accumulated backlog over 10 years

Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Estimated Annual Impact to the Average Household
2026 Budget	$12,761,000	**$2,440,000**	$15,201,000	0.92%	$49

Similar to Option 1, these additional annual investments would need to continue annually over the ten year period, with each subsequent year increasing at the rate of inflation.

Close the Estimated Infrastructure Gap Over Twenty Years

It should be noted that O. Reg 588/17 does not require the infrastructure gap to be closed within a certain period. Municipalities have the flexibility to determine their own timeline, based on financial feasibility. As a means to reduce the cost of closing the infrastructure gap, the table below outlines a third option of closing the annual infrastructure gap over a twenty-year period.

Option 3 – Close the yearly infrastructure funding shortfall over 20 years

Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Estimated Annual Impact to the Average Household
2026 Budget	$12,761,000	**$945,000**	$13,706,000	0.33%	$18

Similar to Option 1, this scenario would result in a large cumulative backlog at the end of the twenty-year period. The table below outlines the costs of closing both the annual infrastructure gap and the accumulated backlog over the twenty-year period.

Option 4 - Close the yearly infrastructure funding shortfall and accumulated backlog over 20 years

Scenario	Current Capital Allocation	Additional Annual Investment	Total Capital Allocation	Estimated Tax Levy Impact of Additional Investment	Estimated Annual Impact to the Average Household
2026 Budget	$12,761,000	**$1,392,000**	$14,153,000	0.52	$28

The additional annual investments under Options 3 and 4 would need to continue over the next twenty years, with each subsequent investment increasing at the rate of inflation, in order to close the respective gaps within the desired timeframe.

For example, the additional annual investment required to close the annual infrastructure gap would be approximately $973,000 in 2027, representing an additional 0.33% increase to the tax levy.

It should also be noted that the longer the annual infrastructure gap remains unaddressed, the greater the cumulative funding shortfall becomes. Closing the gap over a shorter time horizon results in a smaller overall cumulative gap.

Alternative Strategies

Outside of direct financing, other strategies for closing the infrastructure gap are listed below.

Table 5f – Closing the Infrastructure Gap – Alternative Strategies

Strategy	Description
Levels of Service Adjustments	The financing strategy and infrastructure gap are driven by the proposed levels of service established for each asset category. Service levels could be reviewed and adjusted to potentially reduce the investment requirement.
Condition Ratings	The majority of asset condition ratings are based on the age of the asset. Investment in the resources and tools necessary to conduct physical condition ratings could potentially lengthen the replacement cycle.

Data Improvements	As the Municipality's asset management practices mature, data quality and asset inventory information should improve as well. Improved data on replacement values, estimated useful lives, and asset characteristics will help sharpen financial forecasting.
Grant Opportunities	Clarington has invested several resources in identifying and pursuing external grant opportunities. Leveraging outside funding sources to finance asset management activities will reduce the need for tax levy funding. Currently, the only annual recurring grant that the Municipality receives is the Canada Community Building Fund allocation.
Additional User Fees	While Council has provided authority for staff to pursue a stormwater fee, additional charges could potentially be added to existing user fees to provide additional revenue toward asset management activities.

Obtaining physical condition ratings for the assets that do not yet have physical condition ratings could potentially have a significant impact on the infrastructure gap. It is possible that the physical condition of an asset is better than what is suggested by the asset's age. This could lengthen the time between asset replacements, which would lower the average annual allocation required. It is also possible that the physical condition is worse than the age predicts, leading to an increase in the average annual allocation requirement.

Appendix A

Corporate Facilities

Corporate Facilities Overview

Corporate Facilities include all the facilities owned by the Municipality, used for public administration purposes and not for community programming. Corporate Facilities include the various administrative facilities, such as the Municipal Administration Centre, the Animal Services Building, and the Shaw House, along with various Fire stations and Public Works depots. The Municipality's Corporate Facilities are operated and managed by the Facilities division of the Public Services Department.

The majority of asset management information for Corporate Facilities has been derived from the Building Condition Assessments (BCAs) completed in late 2023 and early 2024. The Municipality contracted Nadine International Inc, an external engineering consultant, to conduct detailed condition assessments of all major facilities within the Municipality. The BCAs provide updated replacement values, condition assessments, and lifecycle management costs.

The Municipality's Corporate Facilities have been divided into three different sub-asset types, based on similar characteristics and functions. The different sub-types are provided and defined in the tables below.

Table A1 – Corporate Facilities Assets

Asset Type	Asset Sub-Type	Purpose
Corporate Facilities	Municipal Administration Facilities	Includes the Municipality's main administration building, the Bowmanville branch of the Clarington Public Library, the Animal Services Building and the Shaw House, which serves as office space for Emergency Services administrative staff.
	Fire Stations	Includes five fire stations located across the Municipality, operated by Clarington Emergency and Fire Services.
	Public Works Depots	Includes three Public Works depots used for both administration purposes and storage of municipal fleet and equipment.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for Corporate Facilities is presented in the table below. Replacement costing is based on a full reconstruction of the corresponding facilities. Replacement costing has been estimated by applying an estimated cost per square foot to the size of each facility. The square foot costs have been derived using a combination of the Altus Group 2025 Canadian Cost Guide and internal staff estimates based on recent tenders.

Table A2 - Summarized Asset Inventory – Corporate Facilities

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Corporate Facilities	Administrative Facilities	3	119.23	$76,275,000
	Fire Stations	5	25.34	47,793,000
	Public Works Depots	3	51.00	23,569,000
Total		**11**	**77.9**	**$147,637,000**

As shown in the table, the total replacement cost for the Municipality's Corporate Facilities is approximately $147.6 million. Administrative facilities account for over half of the total replacement cost, with the Municipal Administrative Centre (MAC) accounting for most of the cost. The MAC is the main administrative building for the Municipality and is where most administrative staff are located.

Asset Age

The table below summarizes the average age of Corporate Facilities within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Corporate Facilities is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

Table A3 – Average Age and Condition – Corporate Facilities

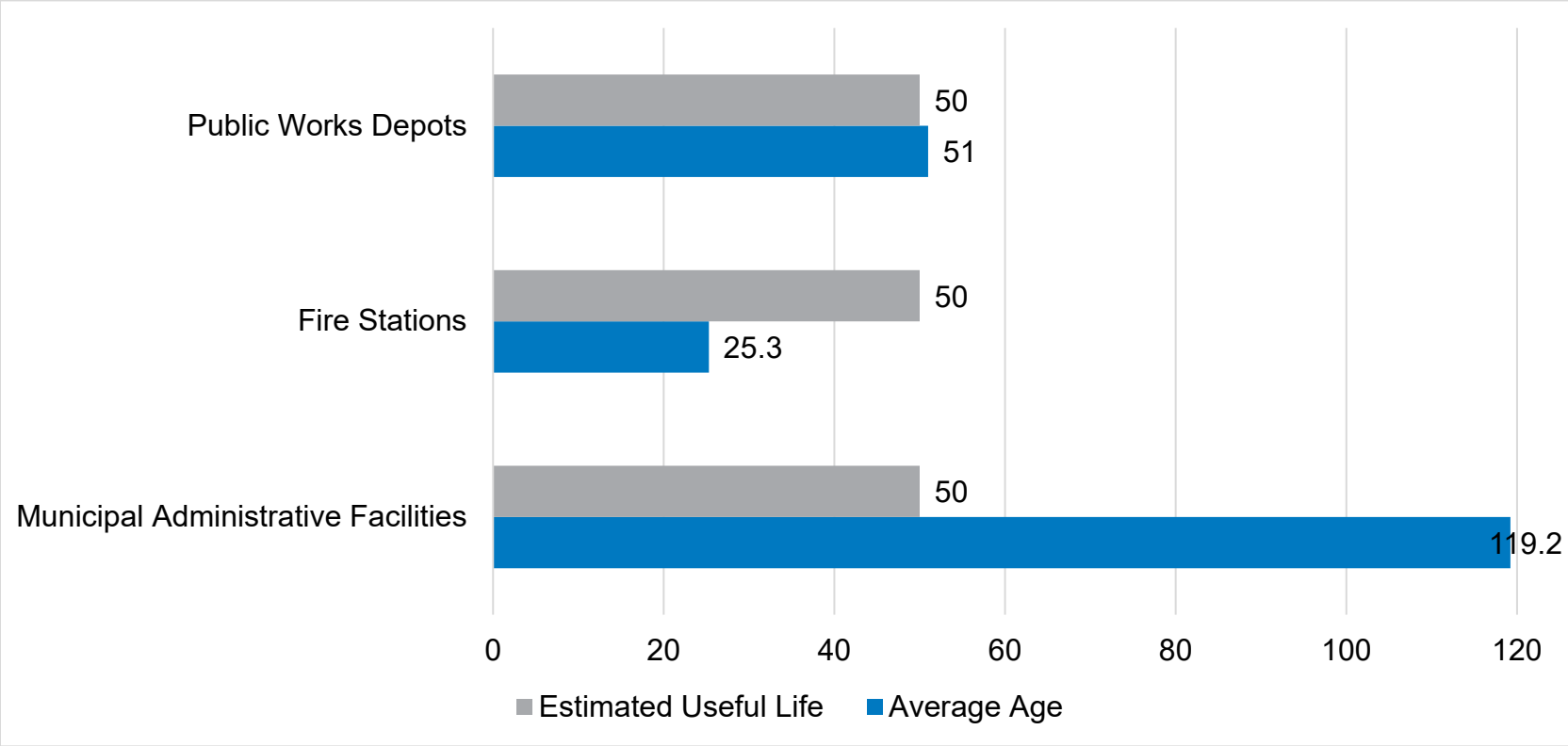
Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Estimated Useful Life[1]	Average Condition (FCI%)	Average Condition State
Corporate Facilities	Administrative Facilities	3	119.2	50	3.94%	Good
	Fire Stations	5	25.3	50	2.34%	Good
	Public Works Depots	3	51	50	5.46%	Fair
Total		**11**	**77.9**	**50**	**3.81%**	**Good**

[1] Estimated useful life based on the structure of the facility.

The age for each individual facility represents the age of the original portion of the building. For example, the MAC was originally constructed in 1903, with additional components added in 1988 and 2003. The AMP uses the date of the original construction as the basis for the age calculation.

Each asset has also been assigned an estimated useful life based on industry standards and the Municipality's current Capitalization Policy. Facilities are typically comprised of several large components with varying lifecycles. The estimated useful lives in the table above represent the average for the structure of the facility. The figure below compares the average age with the average estimated useful life for each asset sub-type.

Figure A1 – Average Age (Years) and Estimated Useful Life (Years) – Corporate Facilities



The average age for many of the Corporate Facilities exceeds the estimated useful life. However, the average age is based on the original construction date of the facility. All facilities undergo routine rehabilitation and maintenance activities to ensure the buildings remain in good working order.

The figure above also uses the estimated useful life of the building structure to compare against the average age. The estimated useful life of the entire facility is difficult to assess given the various underlying components. The Municipality's Capitalization Policy assigns different useful life assumptions to different facility components. The various estimated useful life assumptions are provided in the table below.

Table A4 – Estimated Useful Life – Various Building Components

Asset Class	Sub-class	Type	Estimated Useful Life
Buildings	Structure	Overall	50 years
	Roof	As per material and condition	Variable
	Structure	Interior	25 years
	Structure	Mechanical (includes HVAC, heat pumps, water heaters, etc.)	Variable
	Specialized	Indoor pool; ice pad	30 years
	Specialized	Indoor field	15 years
	Site Improvement	Parking lot, landscaping	20 years
	Whole	Sand domes, salt shed, Quonset hut, sheds	25 years

Asset Condition

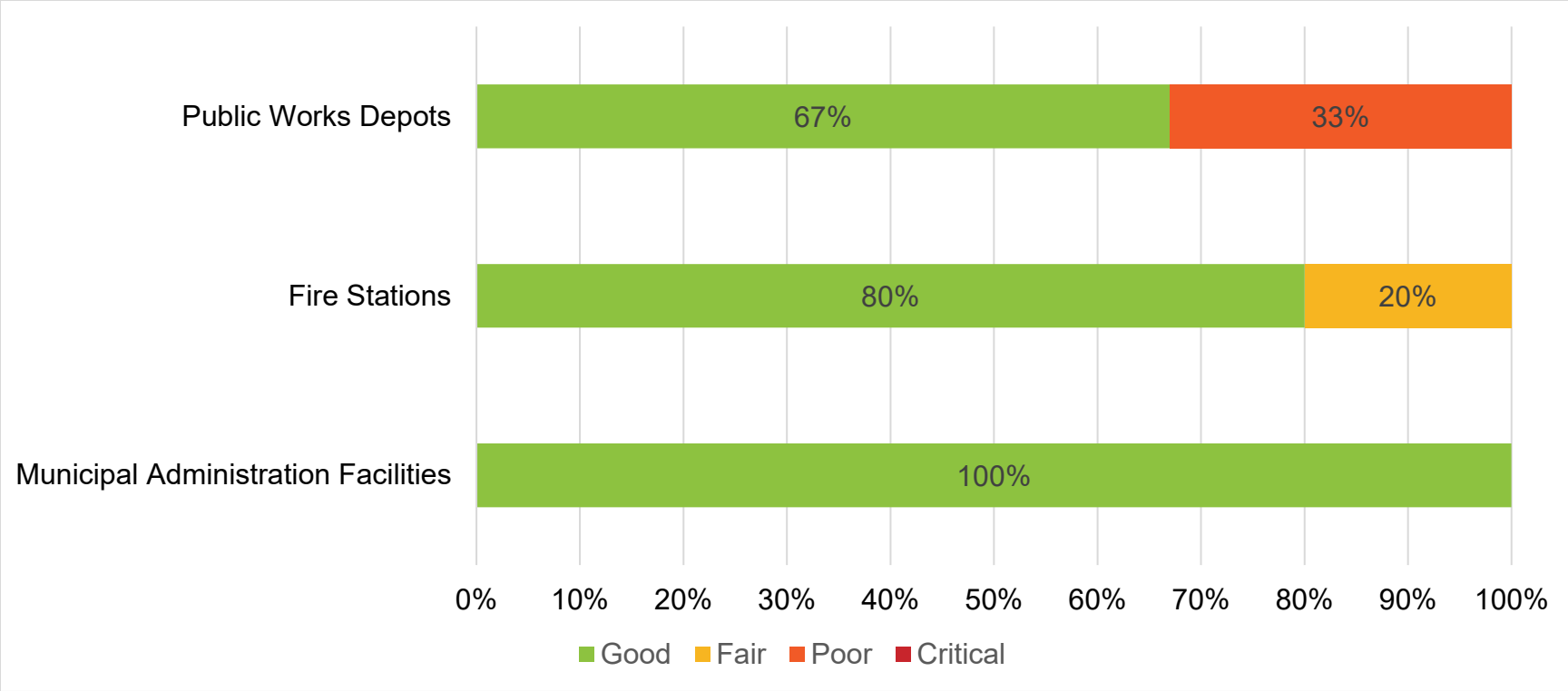
Table A3 also provides the average condition rating for each of the asset sub-types within Corporate Facilities. Corporate Facilities are assessed using the Facility Condition Index (FCI) methodology to determine their overall condition. The FCI is an industry standard used to assess the condition of building assets.

As described in the Municipality's BCAs, the Facility Condition Index (FCI) is a comparative indicator of the relative condition of facilities. The FCI is expressed as a ratio of the cost of remedying maintenance deficiencies to the current replacement value. Calculating the FCI, for a particular year, requires dividing the cost of renewal needs in that particular year by the total estimated replacement cost.

The FCI condition ratings are calculated using the average annual investment need, over the next ten years, relative to the current replacement value identified in the BCAs. The average condition for all Corporate Facilities is rated as Good. The average condition rating for Corporate Facilities was derived using a weighted average based on the replacement cost of each asset sub-type.

The figure below provides the condition distribution for each of the asset sub-types. Although the average condition for all Corporate Facilities is Good, the condition rating distribution, within each sub type, varies.

Figure A2 – Condition Distribution – Corporate Facilities



Levels of Service

The levels of service for Corporate Facilities were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service target are provided in the table below.

Table A5 – Current Levels of Service – Corporate Facilities

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Quality	Ensuring Corporate Facilities are in a suitable condition for public administration	% of Corporate Facilities in fair or better condition (FCI)	90%	> 80%
Sustainability	Providing public administrative services in an environmentally sustainable manner	GHG emissions reductions since 2018 base year	11%	35% by 2030 Net-zero by 2050

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes four main types of lifecycle activities to ensure Corporate Facilities' assets maintain their current level of service.

Inspection activities are completed periodically to assess the overall condition of each facility, along with the condition of each major component part (e.g. roof, plumbing, electrical, etc.). Routine inspections are completed by

staff, including quarterly mechanical inspections and monthly visual building inspections. Detailed BCAs are completed approximately every 5 years and help identify the potential maintenance requirements over a forecast horizon.

Minor repair and maintenance activities are performed throughout the useful life of an asset. These activities include the general maintenance required to ensure the assets remain in good working order. Minor expenses are funded through repair and maintenance accounts in the Municipality's operating budget. Major expenses are funded through the Municipality's capital budget.

Major repair and maintenance activities are also performed throughout the lifecycle of the assets. Major repairs and maintenance occur when the cost to perform the activity exceeds $5,000 and the cost becomes a capital expense.

The BCAs provide a ten-year forecast for repair and maintenance activities required to maintain the facilities in good working order. The forecasts from the BCAs have been used as the basis for the lifecycle costing estimates in the AMP. The AMP assumes that minor costs ($5,000 or less) will flow through the municipal operating budget and are captured in current operating budget allocations.

Replacement activities involve the full replacement of an asset at the end of its useful life. The AMP does not plan for the full replacement of any Corporate Facilities over the ten-year forecast period.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Corporate Facilities. The total annual capital investment is approximately $1.8 million, and the total annual operating investment is approximately $2.1 million. The average annual operating investment for Corporate Facilities includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance. The costs in the table below reflect the asset management activities required for the current assets in the inventory.

Table A6 – Average Annual Capital and Operating Investment ($2025)

Asset Type	Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Corporate Facilities	Municipal Administrative Facilities	$793,000		
	Fire Stations	247,000	$1,973,000	$3,433,000
	Public Works Depots	420,000		
GHG Reductions	GHG Replacements	297,000	152,000	449,000
	GHG Expansions	52,000	(27,000)	25,000
Total		**$1,809,000**	**$2,098,000**	**$3,907,000**

The GHG reduction activities include the average annual capital and operating investment required to meet the corporate GHG reduction goals established through the Corporate Climate Action Plan. Clarington has set a target to reduce corporate greenhouse gas emissions by 35% by 2030 (from 2018 levels) and achieve net zero GHG emissions by 2050. These metrics have been included in the proposed levels of service.

The GHG activity costs identified in the table above are drawn from the GHG reduction pathways study conducted by Sustainable Projects Group and include the activities identified over the next ten years. The average annual GHG replacement activities include the increment cost of replacing current facility assets with assets that provide enhanced GHG reductions. The average annual GHG expansion activities include the cost of replacing new assets within corporate facilities that further enhance GHG reduction. These activities generate a net reduction in average annual operating costs as many of these activities generate their own energy resulting from reduced utility costs.

Lifecycle Expansion Activities

In addition to repair and general maintenance activities associated with existing assets, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The average annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table A7 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$193,000
Operating Investment	129,000
Total	**$322,000**

The expansion costs outlined above represent a current estimate based on the growth-related infrastructure included in the 2025 Development Charge Study. As these costs are anticipated for the future, it's possible that the costs, scope, or timing could change. Any change to these variables could alter the investment requirements provided below.

The cumulative annual capital allocation required by 2034 is approximately $1.9 million, while the cumulative operating requirement by 2034 is approximately $1.3 million.

Appendix B

Corporate Fleet

Corporate Fleet Overview

The Municipality of Clarington owns and operates a variety of fleet assets, including vehicles and equipment. Fleet assets are all managed by the Public Works Division, within the Public Services Department, but are operated by various departments and divisions. The Municipality requires a diverse set of vehicles and equipment to ensure it can effectively deliver a variety of services to residents.

The Municipality's vehicles and equipment have been divided into different asset sub-types, based on similar characteristics and functions. The different sub-types are provided and defined in the tables below.

Table B1 – Fleet Vehicle Types

Asset Type	Asset Sub-type	Purpose
Vehicles	Aerials	A type of fire apparatus, operated by the Emergency Services Division, that is equipped with an extendable ladder or boom.
	Pumpers	A type of fire truck, operated by the Emergency Services Division, that carries water and is equipped with a pump to deliver water directly to a fire.
	Tankers	A type of fire truck, operated by the Emergency Services Division, primarily used to transport water to emergencies for use by other vehicles or equipment.
	Cars & Vans	Includes the vehicles used for various municipal purposes, such as Municipal Law Enforcement and Building Inspections.
	Heavy Duty Vehicles	Includes the Municipality's largest vehicles, used by the Public Works Division, such as snowplows and garbage trucks
	Medium Duty Vehicles	Includes vehicles with at least one ton of payload capacity. This includes several trucks used by the Operations Division.
	Light Duty Vehicles	Includes vehicles with less than one ton of payload capacity. Includes many pick-up trucks used for operations activities.

Table B2 – Fleet Equipment Types

Asset Type	Asset Sub-type	Purpose
Equipment	Ice Resurfacers	Used by the Community Services Division to smooth the ice service in the various arenas.
	Loaders & Graders	Includes chippers, backhoes, and graders used by the Public Works Division for forestry activities.
	Tractors & Mowers	Includes sidewalk tractors for snow clearing and mowers for grass cutting operations.
	Trailers	Includes trailers used for transporting equipment, such as pressure washers and steamers.
	Small Equipment	Includes small tools and equipment such as chainsaws, trimmers, blowers, and compressors.
	Unlicensed Equipment	Includes various items of miscellaneous equipment, such as gators, excavators, and groomers.

State of Local Infrastructure

Asset Inventory

The asset inventory summary for Corporate Fleet is provided in the table below. Most of the replacement costing has been estimated using a combination of recent tenders for similar vehicles and estimates provided by subject matter experts from the Municipality's Public Works Division. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing.

Table B3 – Summarized Asset Inventory – Corporate Fleet

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Vehicles	Aerials	2	14.5	$4,944,000
	Cars & Vans	33	5.8	2,113,000
	Heavy Duty Vehicles	42	8.9	13,317,000
	Medium Duty Vehicles	13	12.1	1,628,000
	Light Duty Vehicles	37	8.4	3,775,000
	Pumpers	8	10.8	8,240,000
	Tankers	4	3.5	2,212,000
Equipment	Ice Resurfacers	6	10.8	1,035,000
	Loaders & Graders	12	7.5	5,087,000
	Tractors & Mowers	31	5.7	3,065,000
	Trailers	21	10.7	6,925,000
	Small Equipment	92	5.1	100,000
	Unlicensed Equipment	8	9.6	560,000
Total		**309**	**10.2**	**$53,001,000**

As shown in the table above, the total replacement cost for the Municipalities corporate fleet is approximately $53 million. The total replacement cost for vehicles is approximately $36.2 million, while the estimated replacement cost for equipment is roughly $16.8 million. The replacement costing is based on an inventory of 139 vehicles and 170 units of equipment.

Emergency Services vehicles, namely Aerials, Pumpers, Tankers, and Heavy-Duty Vehicles account for over half of the total estimated replacement cost for corporate fleet. These vehicles provide a critical health and safety function for the Municipality, including the delivery of emergency services and winter maintenance.

The asset inventory includes only the vehicles and equipment that are being actively maintained by the Municipality and are forecasted for replacement at the end of their useful life. The Municipality retains a small subset of vehicles that are beyond their estimated useful life and are not scheduled for replacement. These vehicles are typically retained by the Municipality for training purposes or because they still provide some alternative benefit to the Municipality. Once these vehicles reach a state where they can no longer perform even their alternative function, they will be disposed and will not be replaced. Therefore, these assets have been excluded from the asset inventory for AMP purposes.

Asset Age

The table below summarizes the average age of Corporate Fleet within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Corporate Fleet is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

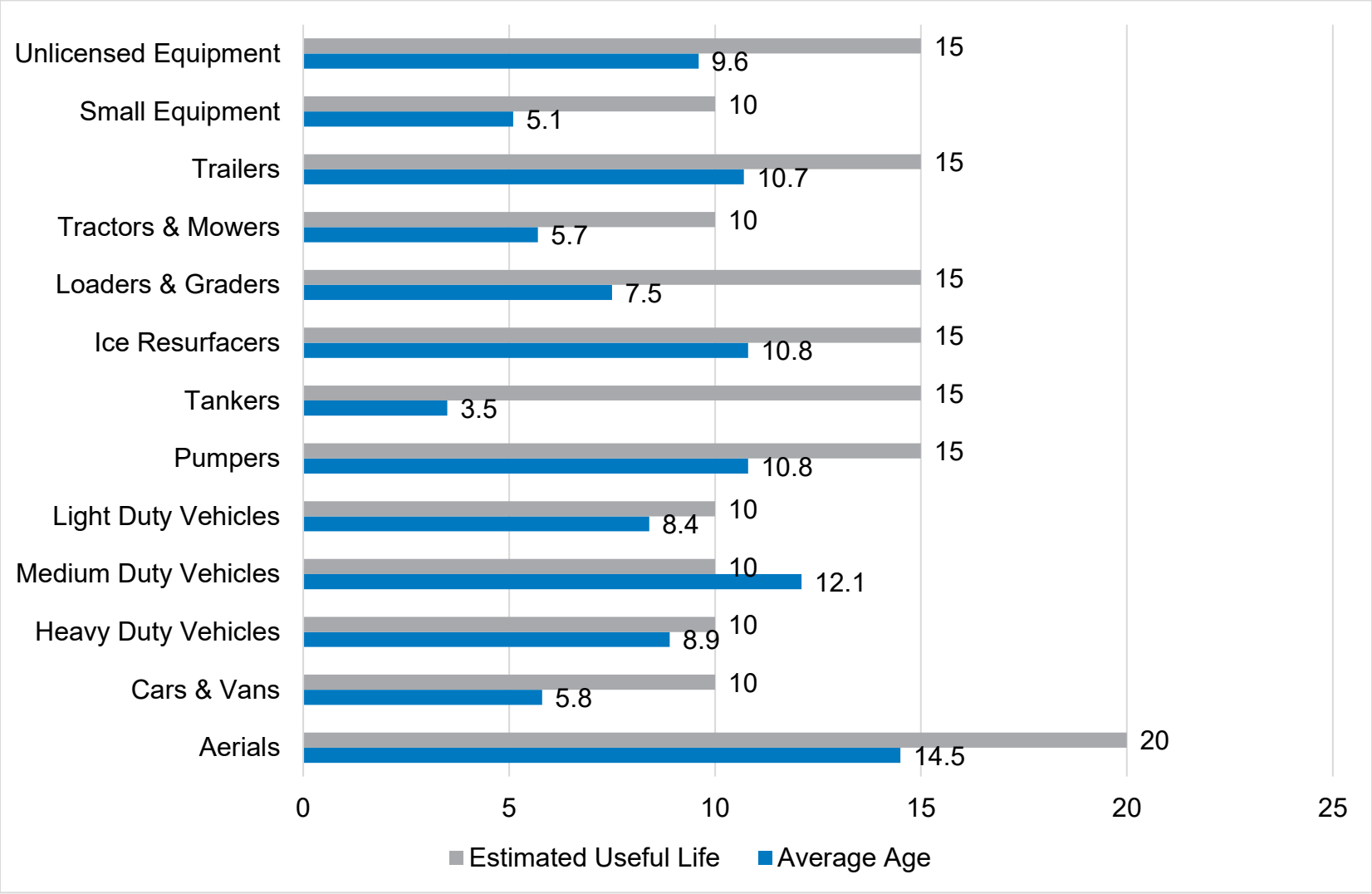
Table B4 – Average Age and Condition – Corporate Fleet Assets

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
Vehicles	Aerials	2	14.5	20	81%	Good
	Cars & Vans	33	5.8	10	58%	Good
	Heavy Duty Vehicles	42	8.9	10	89%	Good
	Medium Duty Vehicles	13	12.1	10	121%	Poor
	Light Duty Vehicles	37	8.4	10	79%	Good
	Pumpers	8	10.8	15	72%	Good
	Tankers	4	3.5	15	23%	Very Good
Equipment	Ice Resurfacers	6	10.8	15	72%	Good
	Loaders & Graders	12	7.5	15	50%	Good
	Tractors & Mowers	31	5.7	10	57%	Good
	Trailers	21	10.7	15	71%	Good

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
	Small Equipment	92	5.1	10	51%	Good
	Unlicensed Equipment	8	9.6	15	64%	Good
Total[1]		**309**	**10.2**		**73.3%**	**Good**

Each vehicle has also been assigned an estimated useful life based on industry standards and the Municipality's current Capitalization Policy. The figure below compares the average age with the average estimated useful life for each fleet type. The average age for most of the Municipality's fleet assets is within the estimate useful life.

Figure B1 – Average Age (Years) and Estimated Useful Life (Years) – Corporate Fleet



Asset Condition

Table B4 also provides the average condition rating for each of the fleet types within the Municipality. The condition percentages are derived using the ULC% methodology. The average condition rating for the entire stock of corporate fleet has been assessed as Good. This rating was derived using a weighted average of all asset sub-types, based on total replacement cost.

The average condition rating for each fleet type varies from Good to Very Poor. The condition rating of the individual assets within each sub-type also varies from Very Good to Very Poor. The figures below illustrate the condition distribution within each fleet asset sub-type.

Figure B2 – Condition Distribution – Vehicles

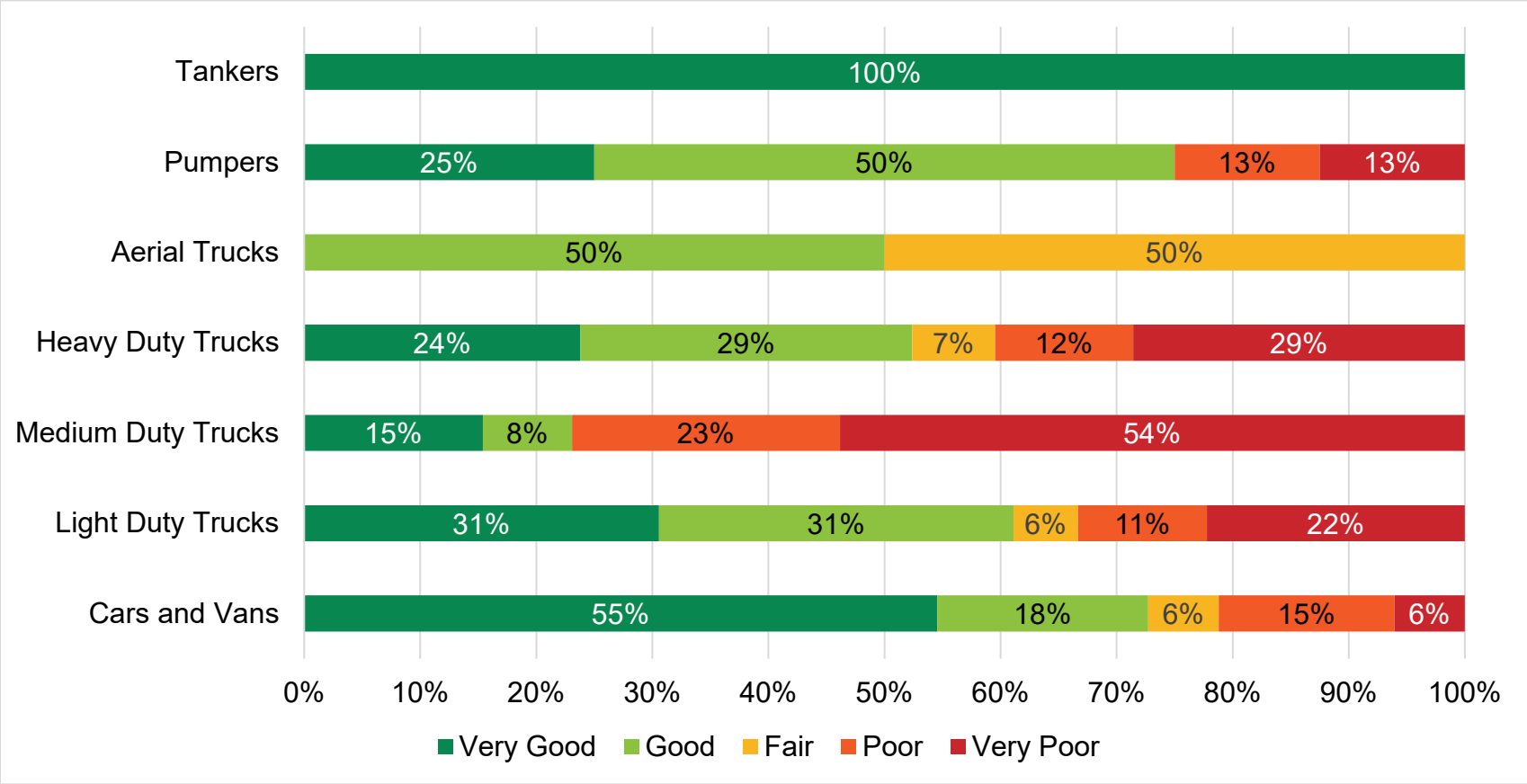
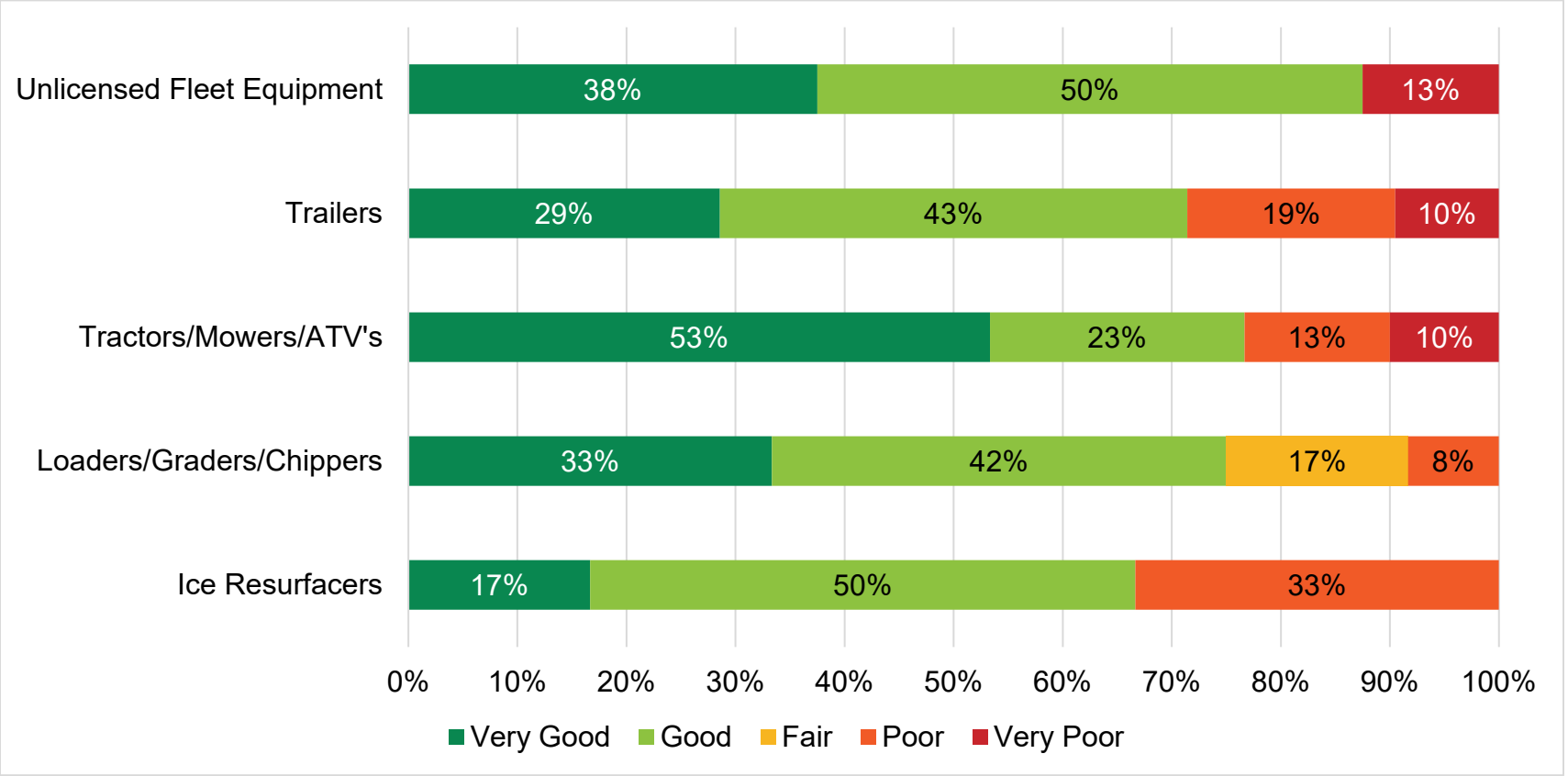


Figure B3 – Condition Distribution – Equipment



As previously stated, vehicles and equipment that are no longer being actively maintained and are not scheduled to be replaced have been excluded from the asset inventory. These assets are well passed their estimated useful life and would typically be assessed as Very Poor. Excluding these assets provides a more accurate reflection of the condition state of the Municipality's vehicles and equipment.

It should also be noted that Emergency Services Vehicles, such as Aerials, Pumpers, and Tankers, receive annual inspections to ensure the vehicles are able to perform their required service. Although some of these vehicles may be approaching the end of their useful life, the annual inspections ensure that the vehicles remain in working order.

Levels of Service

The levels of service for Corporate Fleet were developed to reflect the desires, values, and expectations of the community. The Level of Service statement is intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service target are provided in the table below.

Table B5 – Current Levels of Service – Corporate Fleet

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level
Safety	Providing vehicles and equipment that are safe for use in the community	% of legislated MTO safety inspections completed	100%	100%
		% of legislated MTO safety inspections met	93%	100%
Quality	Providing corporate fleet assets in an acceptable condition	% of heavy-duty vehicles in Fair or better condition	60%	90%
		% of aerials, pumpers, and tankers in Fair or better condition	86%	90%
		% of ice resurfacers in Fair or better condition	67%	80%
		% of vehicles and equipment, excluding heavy-duty, ice resurfacers, and aerials/pumpers/tankers, in Fair or better condition	90%	80%
Sustainability	Providing environmentally sustainable fleet services for the community	% of vehicles capable of being fully electric that are fully electric (EV)	16%	90%

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes three main types of lifecycle activities to ensure fleet assets maintain their current level of service.

Inspection activities are completed annually, as a requirement of the Ontario Ministry of Transportation, on all municipal fleet vehicles included under the Commercial Vehicle Operator's Registration. These inspections are done for safety purposes and are completed both in-house and by external contractors. The cost of performing these inspections is financed through the operating budget. In addition to annual inspections, assessments are completed on all vehicles during routine maintenance.

General repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance activities that would typically be performed on a vehicle, such as oil changes and repairs of major component parts (engine, brakes, etc.). Most of these activities are performed in-house, with the expense flowing through a specific repair and maintenance account in the Municipality's operating budget.

Replacement activities involve the full replacement of vehicles or equipment at the end of their useful life. The replacement of vehicles and equipment represent a significant capital expense and form the basis of the annual capital lifecycle costing identified in the AMP. The Municipality's proposed level of service and the annual vehicle inspection will dictate the appropriate time for asset replacement to occur.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Corporate Fleet. The total annual capital investment is approximately $3.3 million, and the total annual operating investment is approximately $2.0 million. The average annual operating investment for Corporate Fleet includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance. The costs in the table below reflect the asset management activities required for the current assets in the inventory.

Table B6 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Vehicles	$590,000		
Heavy-Duty Vehicles	1,283,000		
Aerials, Pumpers, and Tankers	1,298,000	$1,851,000	$5,787,000
Ice Resurfacers	77,000		
Equipment	688,000		
Total	**$3,936,000**	**$1,851,000**	**$5,787,000**

Lifecycle Expansion Activities

In addition to repair and general maintenance activities associated with existing assets, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table B7 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$140,000
Operating Investment	78,000
Total	**$218,000**

The expansion costs outlined above represent a current estimate based on the growth-related infrastructure included in the 2025 Development Charge Study. As these costs are anticipated for the future, it's possible that the costs, scope, or timing could change. Any change to these variables could alter the investment requirements provided below.

The cumulative annual capital allocation required by 2034 is approximately $1.9 million, while the cumulative operating requirement by 2034 is approximately $1.3 million.

Appendix C

Emergency Services

Emergency Services Overview

Clarington Emergency and Fire Services (CEFS) owns and operates several infrastructure assets that are used for the essential services provided by the fire crews. These assets include items used for the front-line delivery of fire protection services, along with items used for the training of front-line fire fighters.

Some of the largest assets associated with CEFS are the fire stations and fire trucks. Although these assets are operated by CEFS, they are managed by other divisions within the organization. To ensure a consistent grouping of assets within each asset category, fire stations have been included under Corporate Facilities and fire trucks have been included under Corporate Fleet.

The remaining assets pertaining to Emergency Services have been divided into separate asset sub-types. The different sub-types are provided and defined in the tables below.

Table C1 – Emergency Services Assets

Asset Type	Asset Sub-Type	Purpose
Suppression Gear	Bunker Suits	Includes fire protection gear, such as jackets and pants, used by fire fighters when responding to an emergency. Full-time fire fighters have two sets of gear; part-time firefighters have one.
	Helmets	Includes the helmets used by front line fire fighters when responding to an emergency.
	Self-Contained Breathing Apparatus (SCBA's)	Apparatus that provides an autonomous supply of atmospheric air when fighting fires. The SCBA includes the actual unit, along with one cylinder.
Equipment	Suppression Equipment	Includes equipment used in fire suppression or in the maintenance of suppression gear. Includes thermal imaging cameras, air compressors (for SCBA cylinders), SCBA fit testers, and bunker gear washers/dryers.

Asset Type	Asset Sub-Type	Purpose
	Defibrillators	Apparatus is used to control heart fibrillation by application of an electric current to the chest wall or heart. Includes the defibrillators located on trucks and in the stations.
	Digital Pagers	Pagers used by fire fighters to notify volunteer fire fighters of an emergency.
	Harris Radios	The radio's used in emergency services vehicles to receive dispatch calls. Includes both mobile and portable radios for each vehicle.
Training Infrastructure	Training Equipment	Includes various equipment used in firefighting training, such as wired headsets, voice enunciators, training props, and extinguisher training unit.

State of Local Infrastructure

Asset Inventory

The asset inventory summary for Emergency Services is provided in the table below. Most of the replacement costing has been estimated using a combination of recent tenders for similar assets and estimates provided by staff within CEFS. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing. Table C2 - Summarized Asset Inventory – Emergency Services

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Suppression Gear	Bunker Suits	250	3.9	$875,000
	Helmets	187	3.7	97,000

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
	SCBA's	43	7.0	389,000
Equipment	Suppression Equipment	26	11.2	619,000
	Defibrillators	12	6.0	40,000
	Digital Pagers	135	7.0	139,000
	Harris Radios	120	6.8	618,000
Training Infrastructure	Training Equipment	10	6.7	99,000
Total		**783**	**6.8**	**$2,876,000**

As shown in the table above, the total replacement cost for Emergency Services assets (excluding fire stations and fire trucks) is approximately $2.9 million.

Asset Age

The table below summarizes the average age of Emergency Services within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Emergency Services is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

Table C3 – Average Age and Condition – Emergency Services

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Average Estimated Useful Life	Average Condition (ULC%)[1]	Average Condition State
Suppression Gear	Bunker Suits	250	3.9	10.0	Assessed	Very Good
	Helmets	187	3.7	10.0	Assessed	Very Good
	SCBA's	43	7.0	15.0	Assessed	Very Good

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Average Estimated Useful Life	Average Condition (ULC%)[1]	Average Condition State
Equipment	Suppression Equipment	26	11.2	14.2	79%	Good
	Defibrillators	12	6.0	7.0	Assessed	Very Good
	Digital Pagers	135	8.0	10.0	80%	Good
	Harris Radios	120	6.8	10.0	68%	Good
Training Infrastructure	Training Equipment	10	6.7	8.3	95%	Fair
Total		**783**	**6.9**		**59%**	**Good**

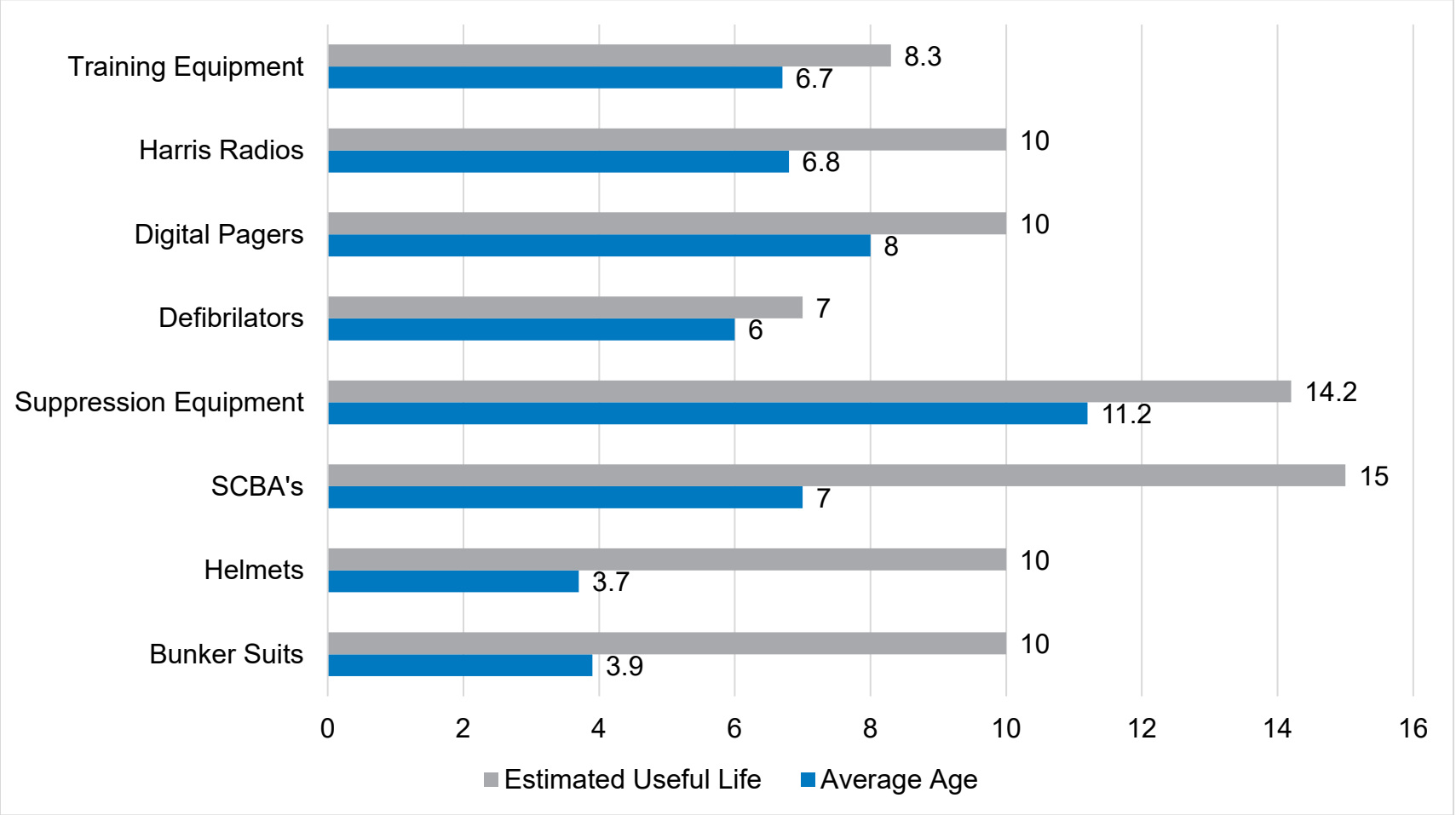
[1]Average condition labelled “Assessed” indicates the asset is assessed annually to ensure it remains in Very Good condition.

Each asset has also been assigned an estimated useful life based on a combination of industry standards and the Municipality’s current Capitalization Policy.

The Suppression Equipment and Training Equipment sub-types include various pieces of equipment, as identified in Table C1. These various equipment types also include various useful life estimates. The estimated useful life for these sub-types reflects a weighted average of the estimated useful life of each contributing component.

The figure below compares the average age with the average estimated useful life for each asset sub-type. The average age for all sub-types is within the estimate useful life.

Figure C1 – Average Age (Years) and Estimated Useful Life (Years) – Emergency Services



Asset Condition

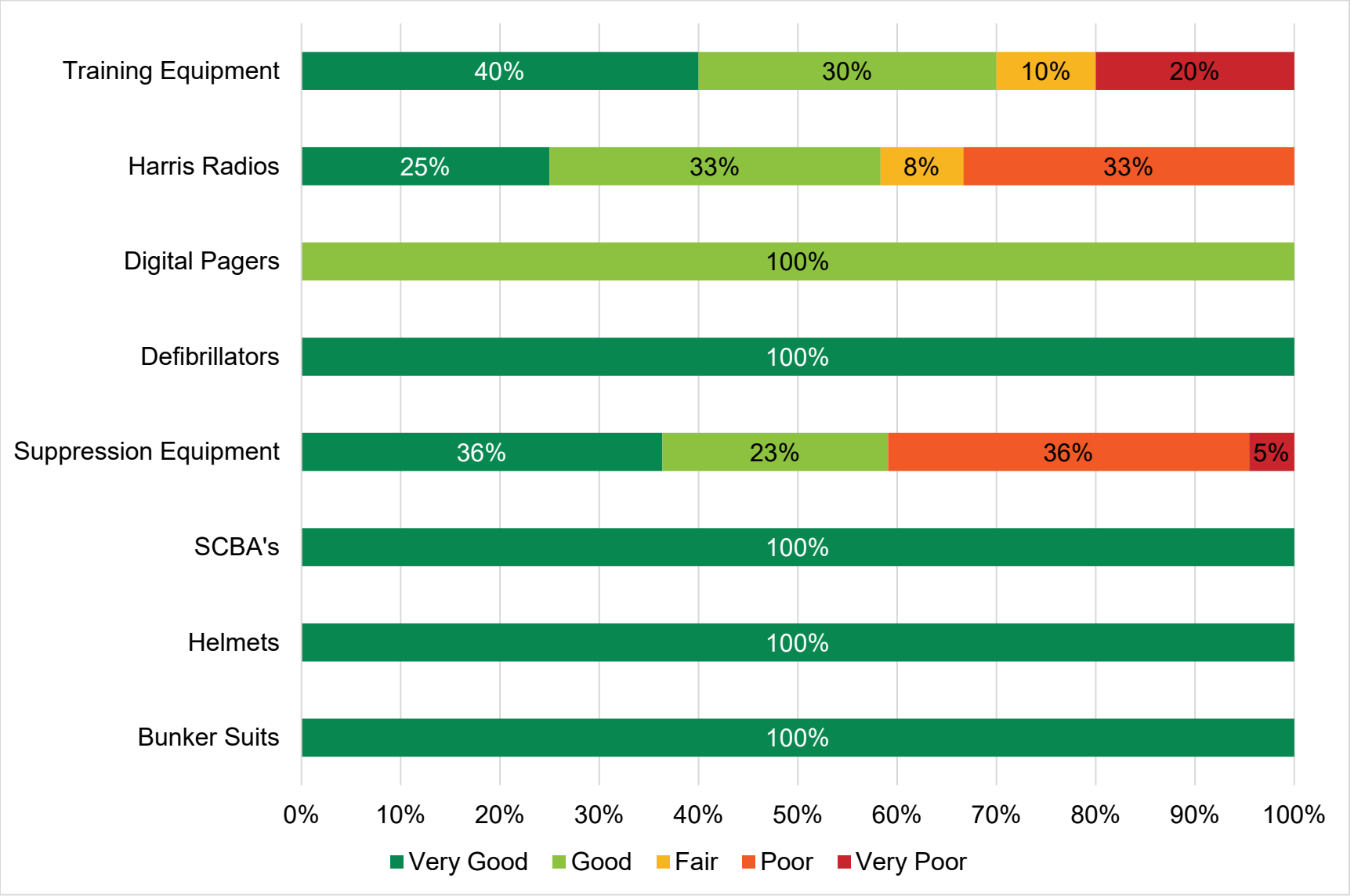
Table C3 also provides the average condition rating for each of the asset sub-types within Emergency Services. The condition percentages are derived using the ULC% methodology.

Certain asset types have a condition rating labelled as “Assessed”. This is to reflect the fact that these assets are subject to annual condition inspections to ensure the assets are always maintained in Very Good condition. These assets pose a significant health and safety risk if they are not maintained in Very Good condition. If a particular asset fails inspection, the asset will be immediately repaired or replaced.

The average condition for all Emergency Services assets is rated as Good. The average condition rating for Emergency Services was derived using a weighted average based on the replacement value of each asset sub-type. The total average condition was derived by applying a 45% ULC% to the assets rated as “Assessed”, which equates to a Very Good condition rating.

The condition of each individual asset with an “Assessed” condition rating is rated as Very Good. However, for the other asset sub-types, the condition of each individual asset varies. The figure below illustrates the condition distribution within each asset sub-type.

Figure C2 – Condition Distribution – Emergency Services



Levels of Service

The levels of service for Emergency Services were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service target are provided in the table below.

Table C4 – Current Levels of Service – Emergency Services

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Reliability	Providing Emergency Services in a reliable and efficient manner.	Average response time for areas near a Fire Station.	4 - 6 minutes	< 4 minutes
		Average response time for areas not near a Fire Station.	8 - 12 minutes	< 8 minutes
Quality	Ensuring Emergency Services assets are in a suitable condition for emergency response	% of emergency services assets related to fire suppression in Fair or better condition (To ensure bunker gear, SCBA, etc. is in working condition).	100%	100%

The National Fire Protection Association (NFPA) provides an internationally recognized travel time best practice of 4 minutes for an initial crew of 4 firefighters to arrive on a fire scene 90% of the time, and a travel time of 8 mins for a total of 15 firefighters to arrive on scene 90% of the time.

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes three main types of lifecycle activities to ensure Emergency Services assets maintain their current level of service.

Inspection activities are completed on all suppression gear and life saving devices, such as defibrillators. These inspections are completed annually to ensure the assets remain in Very Good condition. The Municipality contracts out the inspections of these assets and the expense is funded through the municipal operating budget.

General repair and maintenance activities are performed throughout the useful life of the assets. These activities include the general maintenance required to ensure the assets reach their estimated useful life. These expenses are funded through repair and maintenance accounts in the municipal operating budget.

Replacement activities involve the full replacement of assets at the end of their useful life, including the assets that are assessed on an annual basis. The replacement of Emergency Services assets represents a capital expense and forms the basis of the annual capital lifecycle costing identified in the AMP. Replacement activities are completed in accordance with the proposed level of service.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Emergency Services. The total annual capital investment is approximately $282,000 and the total annual operating investment is approximately $398,000. The average annual operating investment for Emergency Services includes repair and maintenance activities. The costs in the table below reflect the asset management activities required for the current assets in the inventory.

Table C5 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Suppression Gear	$167,000		
Equipment	109,000	$398,000	$680,000
Training Infrastructure	6,000		
Total	**$282,000**	**$398,000**	**$680,000**

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table C6 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$2,000
Operating Investment	3,000
Total	**$5,000**

The expansion costs outlined above represent a current estimate based on the growth-related infrastructure included in the 2025 Development Charge Study. As these costs are anticipated for the future, it's possible that the costs, scope, or timing could change. Any change to these variables could alter the average annual investment requirements.

The cumulative annual capital allocation required by 2034 is approximately $24,000, while the cumulative operating requirement by 2034 is approximately $26,000.

Appendix D

Information Technology

Information Technology Overview

Information Technology (IT) infrastructure includes various pieces of hardware and software used by the departments and divisions throughout the Municipality. IT asset inventory also includes the telecommunications infrastructure located throughout the Municipality to ensure communication channels remain open and accessible. IT infrastructure is managed by the Information & Technology division of the Finance and Technology Department but is operated by the various departments within the municipality.

The AMP also includes the IT hardware owned and operated by the Clarington Library, Museums, and Archives (CLMA). The CLMA has responsibility for its own IT network, which is financed through the annual grant allocation from the Municipality.

IT infrastructure has been divided into various sub-types, based on similar characteristics and functions. The different sub-types are provided and defined in the table below.

Table D1 – IT Infrastructure Assets

Asset Type	Asset Sub-type	Description
Communications	Communication Towers	Tower structures equipped with antennas, transmitters, and receivers that facilitate wireless communication.
	Wireless Links	Wireless radio links used to connect remote offices to the Municipal Administration Building, allowing staff access to Internet local applications required for service delivery.
	Phone System	Phone system used for internal and external communication.

Asset Type	Asset Sub-type	Description
Software	Software Systems	Includes the various pieces of software used by the departments for operating activities (e.g. budgeting, scheduling, accounting, etc.). Includes only the major software systems that resulted in an initial capital cost.
Hardware – End User Computing	Various	Various devices and hardware used by staff to perform their day-to-day activities. Includes laptops, desktops, monitors, smart phones, tablets, and docking stations.
Hardware – Critical Infrastructure	Various	Various equipment used for the secure operation of the Municipality's IT network. Includes firewalls, servers, network switches/routers, Uninterrupted Power Supply's, etc.
Hardware - CLMA	Various	Various equipment used for both the day-to-day activities of staff and the secure operation of the CLMA IT network. Both end-user computing and critical infrastructure.

State of Local Infrastructure

Asset Inventory

Summarized asset inventories for both Corporate IT infrastructure and CLMA IT infrastructure are presented in the tables below. Most of the replacement costing has been estimated using a combination of recent tenders for similar assets and estimates provided by staff within the corporate IT division.

Table D2 - Summarized Asset Inventory – Corporate IT Infrastructure

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Communications	Communication Towers	5	15.6	$329,000
	Wireless Links	16	19.0	56,000
	Phone System	1	6.5	37,000
Software	Software Systems	24	10.7	5,132,000
Hardware -	Laptops	316	2.8	474,000
End User Computing	Desktops	126	4.2	139,000
	Monitors	448	6.1	85,000
	Smartphones	207	2.8	202,000
	Tablets	109	2.5	109,000
Hardware -	Servers	6	2.5	150,000
Critical Infrastructure	Switches	52	5.1	130,000
	Wireless Access Points	54	3.2	70,000
	Firewalls	3	10.3	150,000
	Network Routers	2	6.0	40,000
	SAN Appliance and Switches	4	1.5	1,000,000
	Backup Recovery Solution	1	1.0	225,000
	Datacenter UPS	3	11.3	90,000
	Uninterrupted Power Supply	34	2.1	41,000
Total		**1,411**	**8.3**	**$8,459,000**

Table D3 - Summarized Asset Inventory – CLMA IT Infrastructure

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Hardware - CLMA	Laptops	52	4.4	78,000
	Desktops	95	7.4	105,000
	Servers	8	3.6	200,000
	Switches	8	5.0	20,000
	Tablets	19	2.8	19,000
	Wireless Access Points	20	5.0	26,000
	Firewalls	6	5.0	300,000
	Backup and Recovery Solution	1	5.0	225,000
Total		**209**	**4.7**	**$973,000**

As shown in the tables above, the total replacement cost for Corporate IT infrastructure is approximately $8.5 million, while the estimated replacement cost for CLMA IT infrastructure is just under $1 million. Most of the total corporate IT replacement cost relates to software infrastructure. Software systems are an important component of IT infrastructure as they are used for accounting, budgeting, building permits, and various other forms of service delivery.

The Municipality uses many pieces of software to perform a variety of functions. The software assets presented in the AMP include only the major software assets that resulted in a significant capital cost at acquisition. The replacement costing for software is difficult to estimate, given the rapidly changing technology and the variety of options available. IT software replacement costing, for the purposes of the AMP, was estimated by inflating the original purchase price by the Software and Software Licensing component of the Statistics Canada Informatics Professional Services Price Index. Historical data was analyzed to determine an average annual increase.

The AMP also assumes that software systems will transition to subscription-based models in the future. In this case, software subscriptions would be provided for a monthly fee as opposed to purchasing physical systems from a supplier. This would convert software replacement from a capital to an operating cost. The same assumption is being used for the corporate phones system.

Asset Age

The tables below include a summary of the average age of the various IT assets within each asset sub-type. The age of each asset in the inventory is assessed and given equal weighting when deriving the average age for each sub-type. The average age for each sub-type represents the simple average of the various components within that category. The total average age for all IT assets represents a weighted average of the different sub-types, based on total replacement cost.

Table D4 – Average Age and Condition – Corporate IT Assets

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
Communications	Communication Towers	5	15.6	40	Assessed[1]	Very Good
	Wireless Links	16	19.0	7	271%	Very Poor
	Phone System	1	6.5	7	93%	Fair
Software	Software Systems	24	10.7	5	N/A[2]	Very Good
Hardware - End User Computing	Laptops	316	2.8	3	93%	Fair
	Desktops	126	4.2	4	106%	Poor
	Monitors	446	6.1	7	88%	Good
	Smartphones	207	2.8	3	93%	Fair
	Tablets	109	2.5	3	83%	Good
Hardware - Critical Infrastructure	Servers	6	2.5	5	50%	Good
	Switches	52	5.1	6	85%	Good
	Wireless Access Points	54	3.2	6	53%	Good
	Firewalls	3	10.3	5	206%	Very Poor
	Network Routers	2	6.0	6	100%	Fair

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
	SAN Appliance and Switches	4	1.5	5	30%	Very Good
	Backup Recovery Solution	1	1.0	5	20%	Very Good
	Datacenter UPS	3	11.3	8	141%	Very Poor
	Uninterrupted Power Supply	34	2.1	8	26%	Very Good
Total		**1,411**	**8.3**		**55%**	**Good**

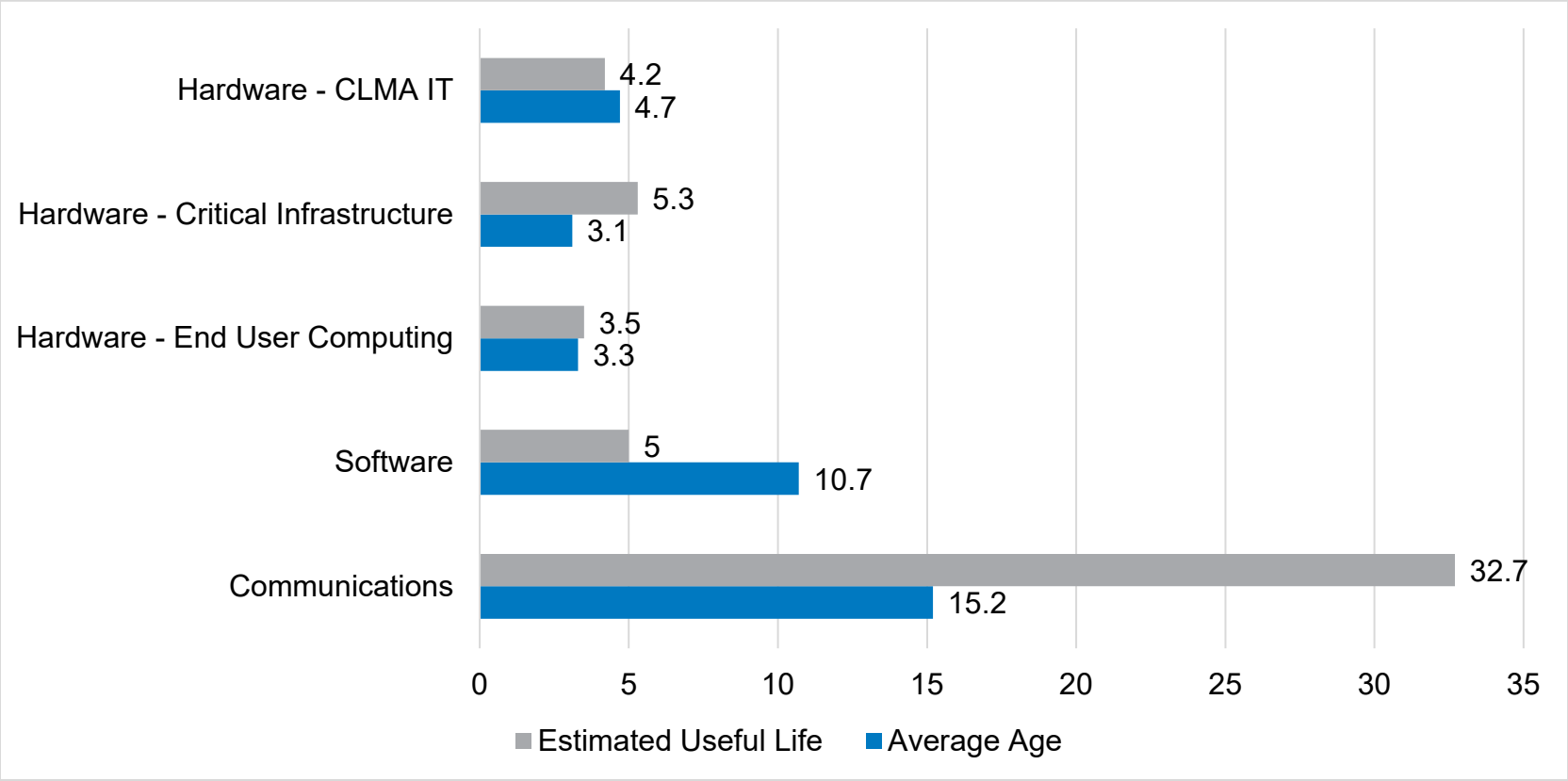
[1]Average condition labelled "Assessed" indicates the asset is assessed annually to ensure it remains in Very Good condition.
[2]Condition rating for Software Systems is not provided as these assets are continuously maintained to ensure they remain in Very Good condition.

Table D5 – Average Age and Condition – CLMA IT Assets

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
Hardware - CLMA	Laptops	52	4.4	3	145%	Very Poor
	Desktops	95	7.4	4	185%	Very Poor
	Servers	8	3.6	5	73%	Good
	Switches	8	5.0	6	83%	Good
	Tablets	19	2.8	3	94%	Fair
	Wireless Access Points	20	5.0	6	83%	Good
	Firewalls	6	5.0	5	100%	Fair
	Backup and Recovery Solution	1	5.0	5	100%	Fair
Total		**209**	**4.7**		**106%**	**Poor**

Each asset has also been assigned an estimated useful life based on industry best practice. The figure below compares the average age with the average estimated useful life for each asset sub-type. The average age, for most of the Municipality's IT assets, is within the estimated useful life.

Figure D1 – Average Age (Years) and Estimated Useful Life (Years) – IT Assets



Asset Condition

The tables above also provide the average condition rating for each of the asset sub-types within IT. The condition percentages are derived using the ULC% methodology.

Communication Towers have been assigned a condition rating of “Assessed”. This reflects the fact that the towers are inspected on an annual basis to ensure they remain in Very Good condition. If a structural deficiency is identified during the inspection, corrective action is taken immediately. These assets will always be maintained in Very Good condition.

Software Systems have been assigned a condition rating of “N/A”. This is to reflect the fact that all software systems retained by the Municipality are updated and maintained on a consistent basis to ensure security and integrity of the systems. Although these systems are not assessed for condition, they are consistently supported and maintained by the supplier to ensure they continue to meet the requirements of the IT division. Therefore, these assets will always be maintained in Very Good condition.

The average condition for all IT assets is rated as Good. The average condition rating for IT infrastructure was derived using a weighted average of all asset sub-types, based on total replacement cost. The total average was derived by applying a 45% ULC% to the assets rated as “Assessed”, which equates to a Very Good condition rating. The software assets rated as “N/A” have been excluded from the total average condition rating.

The condition of each individual asset with an “Assessed” and “N/A” condition rating is Very Good. However, for the Hardware sub-asset categories, the condition of each individual asset varies. The figures below illustrate the condition distribution within the Hardware sub-asset type.

Figure D2 – Condition Distribution – Corporate IT Infrastructure – Hardware

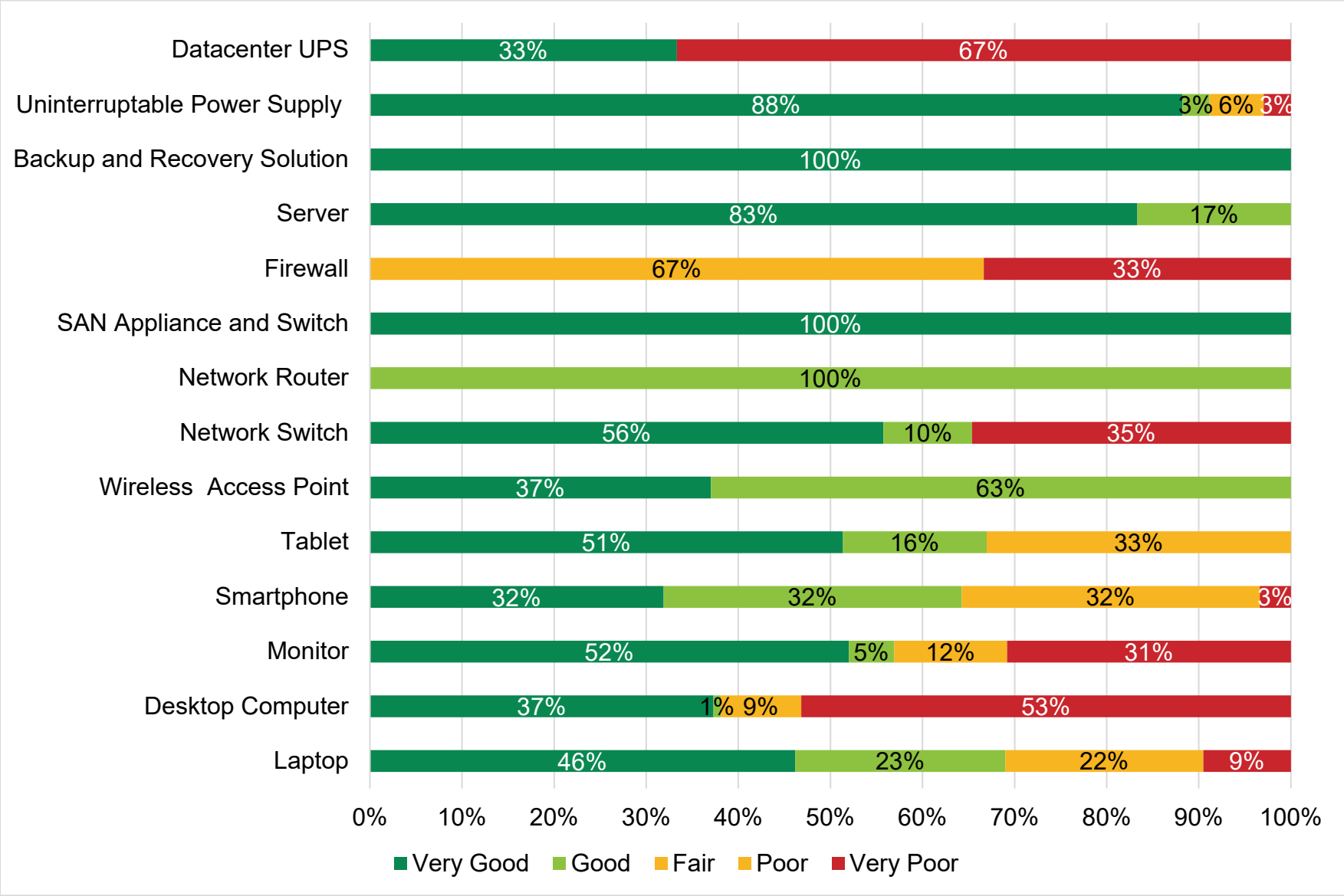
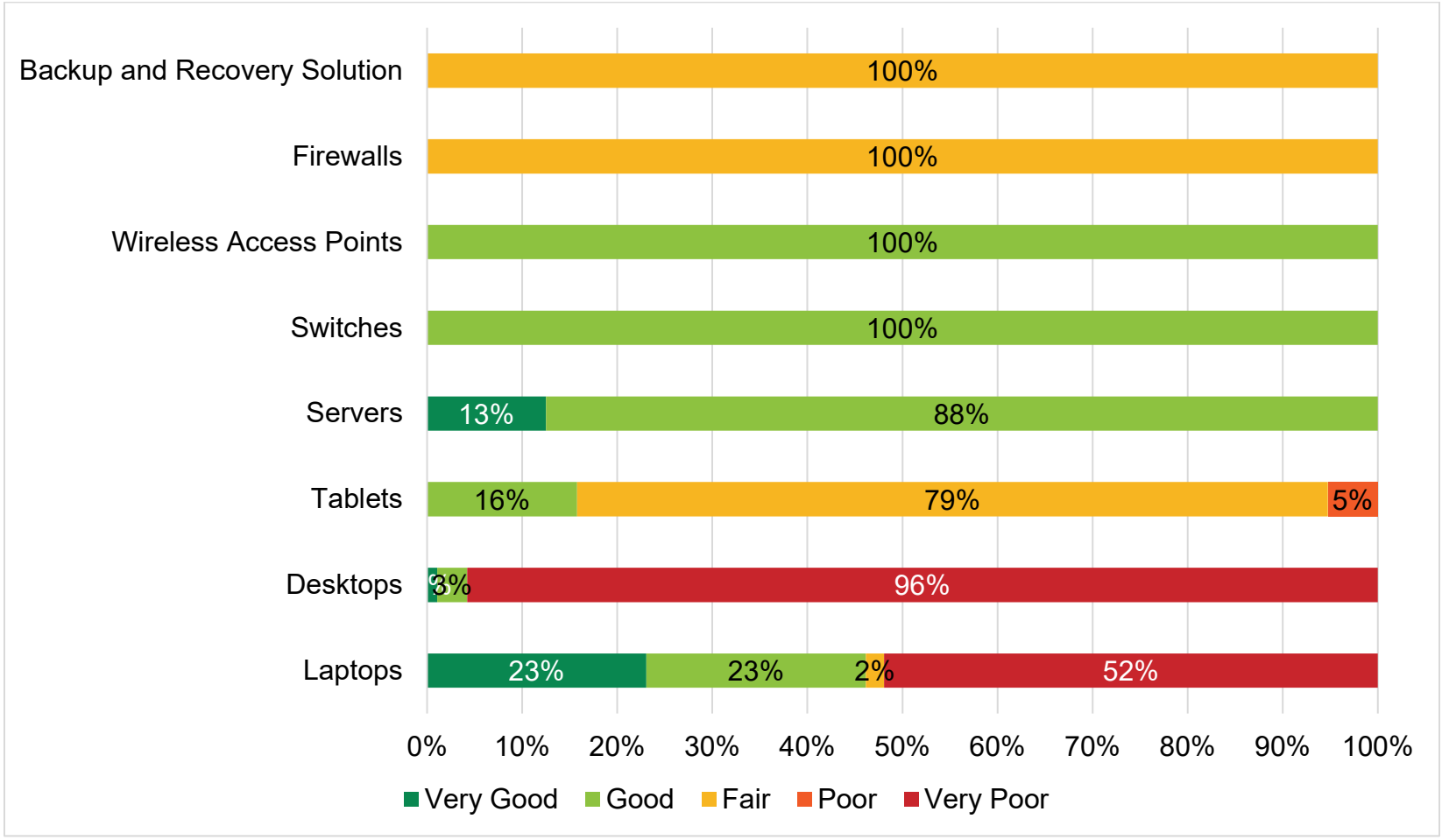


Figure D3 – Condition Distribution – CLMA IT Infrastructure – Hardware



Levels of Service

The levels of service for IT were developed in an effort to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service targets are provided in the table below.

Table D6 – Current Levels of Service – IT Assets

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
	Provide responsive IT support to municipal staff	% of IT Hardware assets in Fair or better condition	63%	100%
		First contact resolution rate	68%	75%
		First response compliance with Service Level Agreement	80%	85%

The first contact resolution rate represents the percentage of support tickets or requests that are fully resolved during the initial contact with the IT service desk, without requiring escalation or follow-up. This measure indicates service desk efficiency and user satisfaction.

The first response compliance with the Service Level Agreement represents the percentage of support requests where the initial response was provided within the timeframe defined by the Service Level Agreement. This measure tracks how well the IT team meets its commitment to timely communication.

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes three main types of lifecycle activities to ensure IT assets maintain their current level of service.

Inspection activities are completed annually on all communication towers. These inspections are done to ensure the structural integrity of this critical infrastructure and to ensure the condition rating remains Very Good. The Municipality contracts out the inspections of these assets and the expense is funded through the operating budget.

General repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance required to ensure the assets reach their estimated useful life. These expenses are funded through repair and maintenance accounts in the Municipality's operating budget.

Replacement activities involve the full replacement of assets at the end of their lifecycle, including the assets that are assessed on an annual basis. The replacement of IT assets represents a capital expense and forms the basis of the annual lifecycle costing identified in the AMP. Replacement activities are completed in accordance with the proposed level of service.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for IT. The total annual capital investment is approximately $758,000 and the total annual operating investment is approximately $2.37 million. The average annual operating investment for IT includes salaries, and repair and maintenance activities.

Table D7 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
End User Computing	$349,000	$1,971,000	$2,729,000
Critical Infrastructure	306,000		
Library IT	103,000		
Software Upgrades	0	400,000	400,000
Total	**$758,000**	**$2,371,000**	**$3,129,000**

Software upgrades reflect the increased costs of converting physical software systems to subscription-based solutions. Converting to a subscription-based system would change the replacement activities from capital to operating as the additional cost would represent a monthly or annual subscription fee.

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. Most of the Information Technology infrastructure is not eligible for DC financing. As such, all capital acquisition costs, along with subsequent replacements and general maintenance activities, would require financing through tax levy funded reserve funds.

The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The cumulative annual capital allocation required by 2034 is approximately $380,000, while the cumulative operating requirement by 2034 is approximately $579,000.

Table D8 - Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$38,000
Operating Investment	58,000
Total	**$96,000**

The estimates were derived using a per capita assumption as IT infrastructure is not eligible to be included in a DC study. While it's understood that expansion activities related to end-user computing would be tied to increased staffing levels, the increase in staffing over the next ten years is unknown. Therefore a per capita approach has been taken to provide a high-level estimate.

The expansion costs outlined above represent a high-level estimate based on population growth and current IT infrastructure per capita. It is possible that the costs, scope, or timing could change in the future as the needs for IT infrastructure evolve. Any change to these variables could alter the investment requirements provided above.

Appendix E

Parking Infrastructure

Parking Infrastructure Overview

Parking Infrastructure includes all the assets used to provide parking services within the Municipality, including parking lots, parking lot lights, central parking meters, and EV chargers. The Municipality recently replaced all coin-based parking meters with new on-street meters. These new meters have been included in the parking asset inventory.

The Municipality's Parking Infrastructure assets have been divided into different asset sub-types, based on similar characteristics and functions. The different sub-types are provided and defined in the Table below.

Table E1 – Parking Infrastructure Assets

Asset Type	Asset Sub-type	Description
Parking Lots	Paved Parking Lots	Various parking lots throughout the Municipality, paved with asphalt.
	Gravel Parking Lots	Various parking lots throughout the Municipality, consisting of a gravel base.
Parking Lot Infrastructure	Parking Lot Lights	Includes the light poles and luminaires used to provide lighting to municipally owned parking lots.
	Central Parking Lot Meters	Centralized pay stations used in municipally owned parking lots. Does not include on-street parking.
	On-Street Parking Meters	Includes the coin and card based on-street parking meters.
	EV Charging Stations	Stations used to charge electric vehicles. Includes both the charging units and pedestals.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for Parking Infrastructure is presented in the table below. Replacement costing has been derived using a combination of recent tenders for similar assets and estimates provided by municipal staff. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing.

Table E2 - Summarized Asset Inventory – Parking Infrastructure

Asset Type	Asset Sub-type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Parking Lots	Paved Parking Lots	56	22.9	22,295,000
	Gravel Parking Lots	28	32.4	4,426,000
Parking Lot Infrastructure	Parking Lot Lights[1]	186	32.0	1,341,000
	Central Parking Lot Meters	5	11.4	41,000
	On-street Parking Meters	99	-	111,000
	EV Charging Stations	15	4.0	206,000
Total		**389**	**24.6**	**$28,420,000**

[1] Quantity refers to the number of parking lot light poles. Replacement cost includes both light poles and luminaires. Certain light poles may have multiple luminaires.

As shown in the table above, the total replacement cost for Parking Infrastructure assets is approximately $28.4 million. Most of the replacement costing relates to the replacement of parking lots, which account for over 94% of the total replacement costing.

The replacement costing for parking lots is based on an average cost per square meter that has been applied to the total square meters of each parking lot. The cost includes full replacement of the parking lot, including

excavation work. The same cost per square meter was applied to estimating the replacement cost of gravel parking lots. Gravel lots are not typically replaced. They are maintained and managed through operating budget allocations. However, in order to assign a replacement a value to gravel lots, the same replacement costing methodology used for paved lots was applied to gravel.

Replacement costing for parking lot lights assumes a full replacement of both the pole and luminaire. New light poles are now coming equipped with lifetime warranties while new LED luminaires have an estimated useful life of 15-20 years.

Asset Age

The table below summarizes the average age of Parking Infrastructure within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Parking Infrastructure is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

Table E3 – Average Age and Condition – Parking Infrastructure

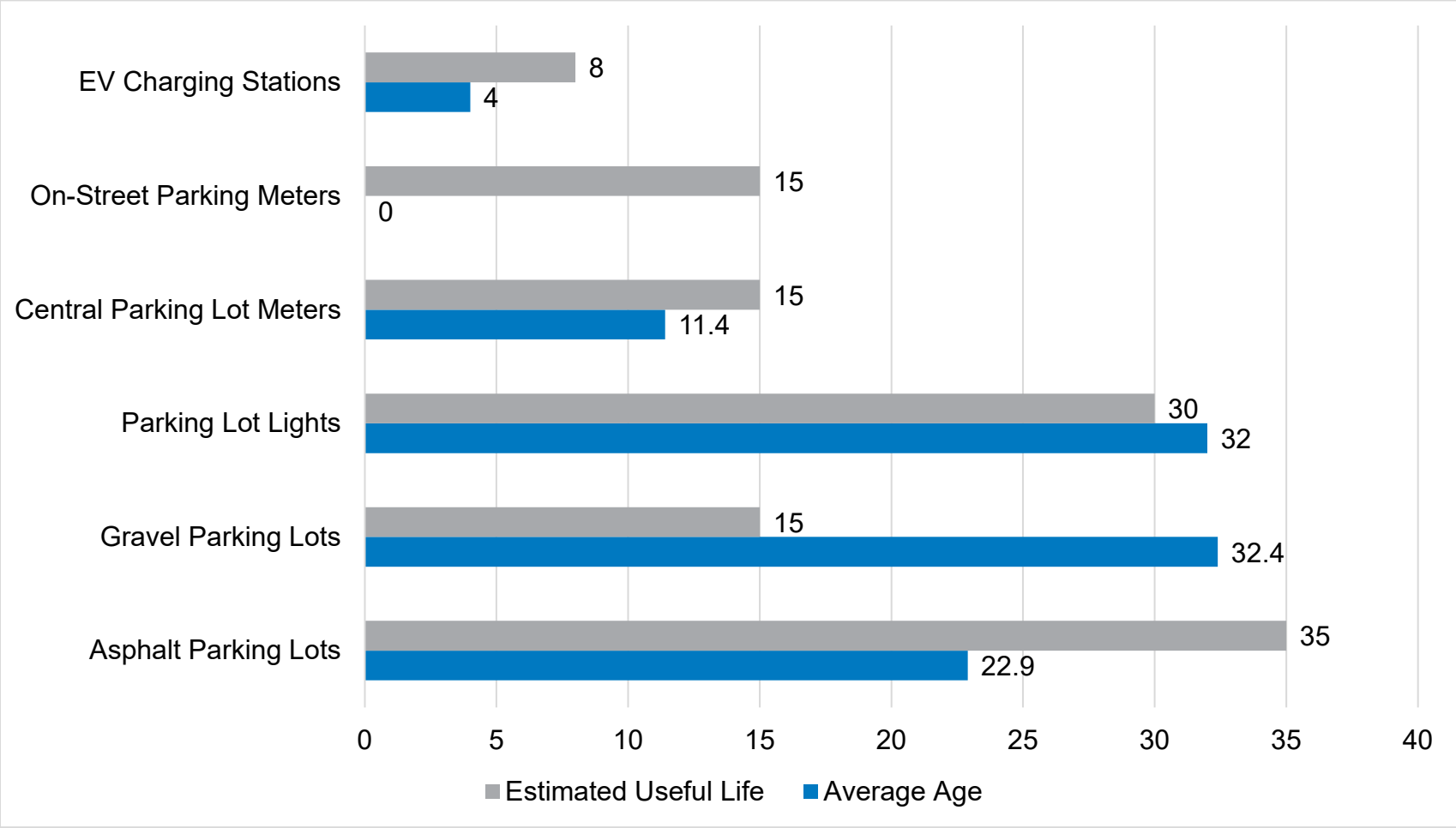
Asset Type	Asset Sub-type	Quantity	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
Parking Lots	Paved Parking Lots	56	22.9	35	65%	Good
	Gravel Parking Lots	28	32.4	15	N/A	N/A
Parking Lot Infrastructure	Parking Lot Lights	186	32.0	30	107%	Poor
	Central Parking Lot Meters	5	11.4	15	76%	Good
	On-street Parking Meters	99	-	15	0%	Very Good
	EV Charging Stations	15	4.0	8	50%	Very Good
Total		**389**	**24.6**		**67%**	**Good**

The age of certain individual parking lot lights is unknown. In this circumstance, the age has been estimated based on the age of the facility in which the lights are located. The age also reflects the age of the light pole as the luminaires have likely been replaced a few times throughout the lifecycle.

On-street parking meters were all replaced in late 2024 and early 2025, meaning they are all less than one year old. Although the new meters are still coin based, they also support card transactions.

Each asset has also been assigned an estimated useful life based on industry standards and the Municipality's current Capitalization Policy. The figure below compares the average age to the average estimated useful life for each asset sub-type. The average age, for most Parking Infrastructure sub-types, is within the estimated useful life.

Figure E1 – Average Age (Years) and Estimated Useful Life (Years) – Parking Infrastructure



Asset Condition

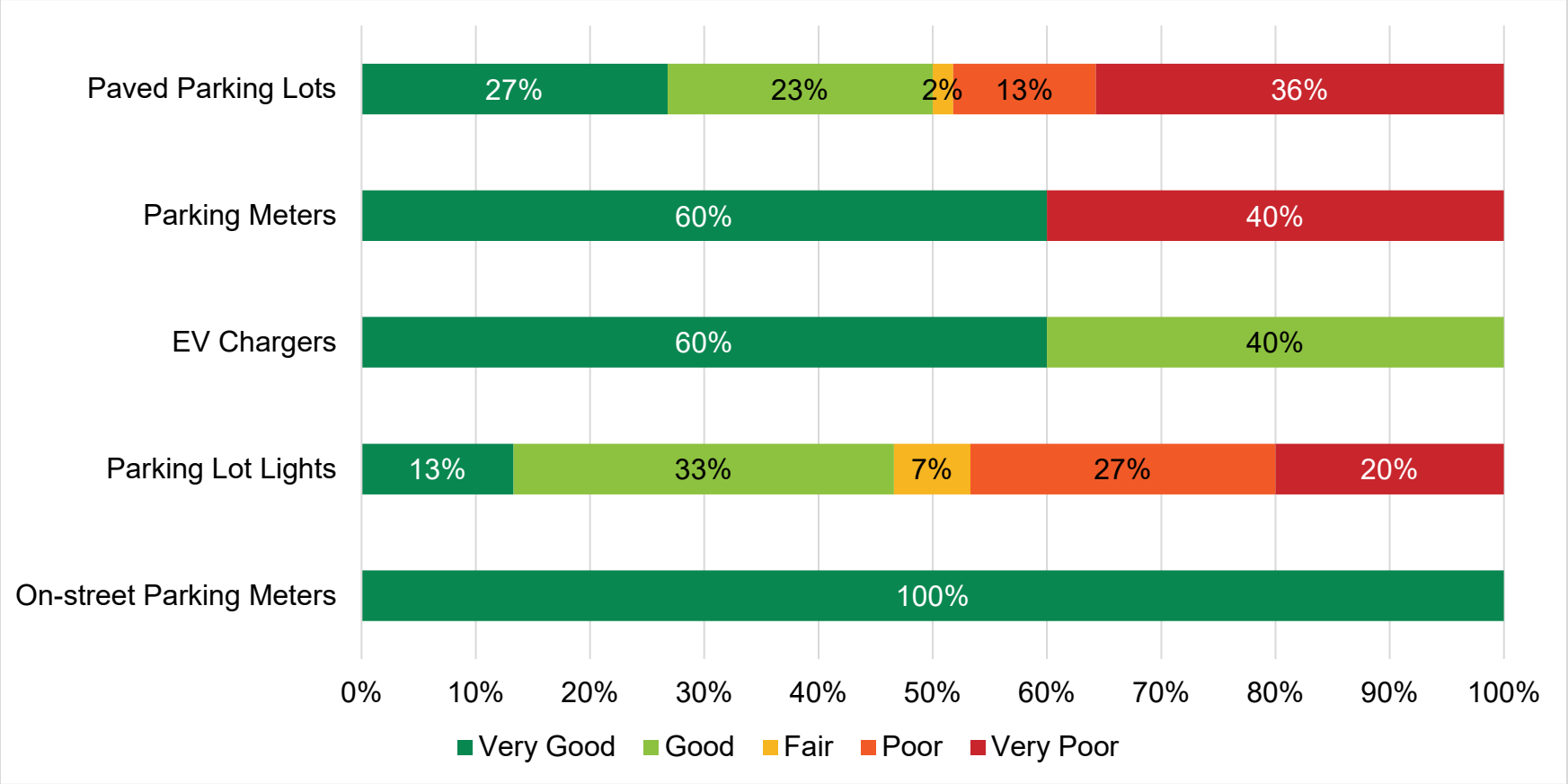
Table E3 also provides the average condition rating for each of the asset sub-types within Parking Infrastructure. The condition assessments have been derived using the ULC% methodology.

Gravel parking lots have been assigned a condition of N/A as the assets are maintained annually, and the age of the asset is not a reflective indication of actual condition.

The average condition for all Parking Infrastructure assets is rated as Good. This average condition rating was derived using a weighted average based on the replacement cost of each asset sub-type.

Although the overall condition is assessed as Good, the actual condition of the various assets within each sub-type varies. The figure below illustrates the condition distribution within each specific sub-asset type.

Figure E2 – Condition Distribution – Parking Infrastructure



Levels of Service

The levels of service for Parking Infrastructure were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect the key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service target are provided in the table below.

Table E4 – Current Levels of Service – Parking Infrastructure

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Quality	Providing Parking Infrastructure assets in an acceptable condition	% of asphalt parking lots in fair or better condition	52%	Minimum 50%
		% of parking infrastructure in fair or better condition	74%	Minimum 70%

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes three main types of lifecycle activities to ensure Parking Infrastructure assets maintain their current level of service.

Inspection activities are completed periodically to assess the overall condition of parking lots and to determine the level of maintenance activity required. These inspections have historically been completed by consultants. However, in the future annual visual inspections are expected to be completed by staff. As these inspections become incorporated into staff responsibilities, there will be no additional cost to the Municipality beyond staff time.

General repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance required to ensure the assets remain in good working order. General repair and maintenance activities are either completed in-house or are funded through the annual operating budget.

Replacement activities involve the full replacement of assets at the end of their lifecycle. The replacement of Parking Infrastructure assets represents a capital expense and forms the basis of the annual lifecycle costing identified in the AMP. Replacement activities are completed in accordance with the proposed level of service.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Parking Infrastructure. The total annual capital investment is approximately $766,000 and the total annual operating investment is approximately $38,000. The average annual operating investment for Parking Infrastructure includes repair and maintenance activities.

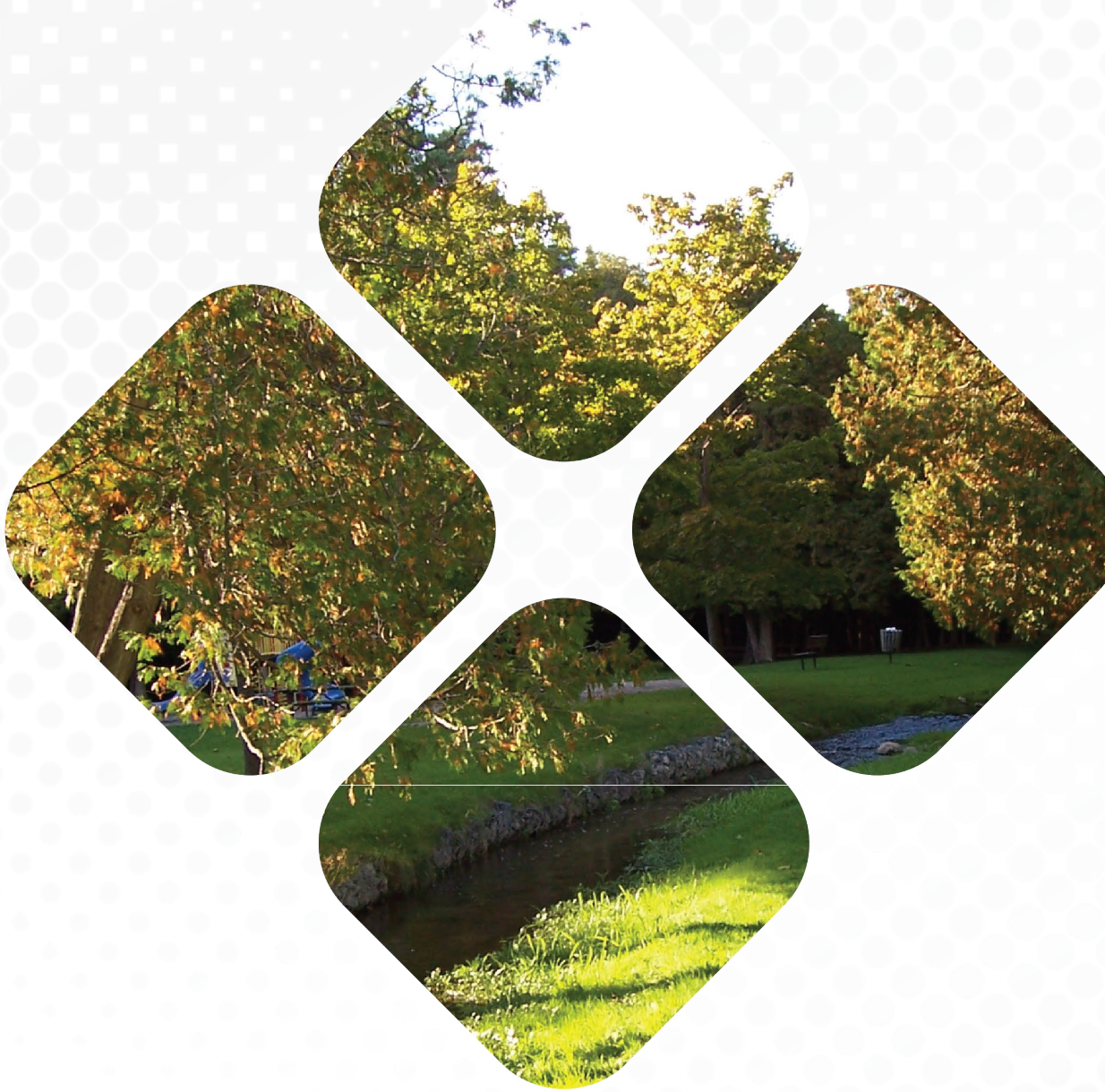
Table E5 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Parking Lots	$753,000	$38,000	$804,000
Parking Lot Infrastructure	13,000		
Total	**$766,000**	**$38,000**	**$804,000**

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. Most parking infrastructure is not eligible for DC financing. As such, all capital acquisition costs, along with subsequent replacements and general maintenance activities, would require financing through tax levy funded reserve funds.

An analysis was completed to estimate the average annual capital and operating allocations required for future replacements of growth-related infrastructure. The estimates were derived using a per capita assumption as parking infrastructure is not eligible to be included in a DC study. Based on the analysis, the estimated future investment requirement was quite minimal such that an annual allocation is not necessary until future infrastructure is assumed.



Appendix F

Parks

Parks Overview

Parks infrastructure includes all the infrastructure used to provide parks services within the Municipality, including outdoor sporting activities and outdoor recreation. Included in Parks infrastructure are playgrounds, sports fields (soccer, baseball, etc.), courts (tennis, basketball, etc.), along with various other assets related to outdoor activities. Most Parks assets are maintained by the Public Works division within the Public Services Department.

The Municipality's Parks assets have been divided into different asset sub-types, based on similar characteristics and functions. The different sub-types are provided and defined in the table below.

Table F1 – Park Assets

Asset Type	Asset Sub-type	Purpose
Courts	Tennis Courts	Various outdoor tennis courts across the Municipality. Includes a combination of asphalt and acrylic surfaces.
	Basketball Courts	Includes both full basketball courts and half courts. Includes a combination of asphalt and acrylic surfaces.
	Pickleball Courts	Various pickleball courts across the Municipality. Includes a combination of asphalt and acrylic surfaces.
Sports Fields	Softball Fields	Various softball fields across the Municipality. Includes a combination of red clay and dirt infield surfaces.
	Baseball Fields	Various baseball fields across the Municipality. Includes a combination of red clay and dirt infield surfaces.
	Soccer Fields	Includes both full size and mini soccer fields across the Municipality.
	Lacrosse Bowl	Outdoor bowl intended for lacrosse. Includes paved surface, boards, and netting.
	Football Fields	Includes a grass-surface, full sized football field.
	Cricket Field (concrete pad)	Includes a concrete pad located on former soccer fields intended for cricket use.
Playgrounds	Playground Equipment	Includes the play structures and the wood chip/sand base at various playground locations.

Asset Type	Asset Sub-type	Purpose
Park Structures/Amenities	Outdoor Fitness Equipment	Includes various equipment, such as outdoor step climbers, ladders, inclined crunch bench, and pullup bars.
	Splashpads	Includes various splash pad play structures and rubber surfaces. Various locations across the Municipality
	Sports Field Lights	Includes both the pole and luminaire used to illuminate tennis courts, soccer fields, and baseball/softball fields.
	Park Lights	Luminaires used to illuminate various parks across the Municipality.
	Shade Structures	Includes both steel and wood gazebos and pergolas located at various parks across the Municipality.
	Park Washrooms	Washroom facilities located at various parks across the Municipality
	Miscellaneous Structures	Includes the Rotary Park clock tower, Bowmanville Valley wooden staircase, and viewing decks at the Samuel Wilmot Nature Area.
Trails	Park Trails/Walkways	Includes paved, brick, and granular trails located at various parks across the Municipality.
	Non-Park Trails	Includes paved and granular trails located outside the Municipality's Park network.
	Waterfront Trails	Includes paved and granular trails that run along the Municipality's waterfront.
	Multi-Use Paths	Includes off-road multi-use paths at various locations across the Municipality.
Miscellaneous	Columbarium's	Structures for the public storage of funerary urns.
	Skateboard Parks	Various skateboard parks and associated infrastructure located throughout the Municipality
	Underground Waste Containers	Large waste containers with underground storage capacity.
	Other Miscellaneous	Includes fountains/monuments, fish ladder equipment, scoreboards, boat launches, trail netting, and cricket equipment.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for Parks assets is presented in the table below. Replacement costing has been derived using a combination of recent tenders for similar assets and estimates provided by municipal staff. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing.

Table F2 - Summarized Asset Inventory – Parks

Asset Type	Asset Sub-type	Quantity	Length (KM)	Average Age (Years)	Replacement Cost ($2025)
Courts	Tennis Courts	13		15.6	$970,000
	Basketball Courts	23		18.8	1,346,000
	Pickleball Courts	10		2.7	514,000
Play Fields	Softball	24		30.6	3,152,000
	Baseball	8		26.3	2,710,000
	Soccer	44		25.2	10,421,000
	Lacrosse Bowl	1		20.0	402,000
	Football	1		17.0	228,000
	Cricket (Concrete pad)	1		2.0	19,000
Playgrounds	Playground Equipment	67		9.8	9,132,000
	Outdoor Fitness Equipment	13		4.0	131,000
	Splashpads	17		12.0	4,091,000
Park Structures/Amenities	Field Lights	110		24.9	2,525,000
	Park Lights	119		17.6	2,686,000
	Shade Structures	41		16.2	2,077,000

Asset Type	Asset Sub-type	Quantity	Length (KM)	Average Age (Years)	Replacement Cost ($2025)
	Park Washrooms	6		26.8	5,512,000
	Miscellaneous Structures	3		21.7	612,000
Trails	Park Trails/Walkways		21.4	17.2	6,530,000
	Non-Park Trails		11.3	11.5	5,046,000
	Waterfront Trails		30.5	18.0	2,113,000
	Multi-Use Paths		3	4.7	612,000
Miscellaneous	Columbariums	5		8.8	845,000
	Skateboard Parks	5		14.8	1,412,000
	Underground Waste Containers	15		11.9	178,000
	Other Miscellaneous	11		17.1	1,907,000
Total		**537**	**66.3**	**18.4**	**$65,171,000**

As shown in the table above, the total replacement cost for all Parks assets is approximately $65.2 million. Playgrounds and play fields account for almost half of the total replacement value ($30.3 million)

Asset Age

The table below summarizes the average age of Parks assets within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Parks assets is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

Table F3 – Average Age and Condition – Parks

Asset Type	Asset Sub-Type	Quantity	Length (KM)	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
Courts	Tennis Courts	13		15.6	25	63%	Good
	Basketball Courts	23		18.8	25	77%	Good
	Pickleball Courts	10		2.7	25	10%	Very Good
Play Fields	Softball	24		30.6	28.7	110%	Poor
	Baseball	8		26.3	21.3	124%	Poor
	Soccer	44		25.2	30	86%	Good
	Lacrosse Bowl	1		20.0	40	50%	Good
	Football	1		17.0	20	85%	Good
	Cricket (Concrete pad)	1		2.0	40	5%	Very Good
Playgrounds	Playground Equipment	67		9.8	15	66%	Good
	Outdoor Fitness Equipment	13		4.0	15	19%	Very Good
	Splashpads	17		12.0	20	60%	Good
Park Structures/ Amenities	Field Lights	110		24.9	30	83%	Good
	Park Lights	119		17.6	15	117%	Poor
	Shade Structures	41		16.2	27	63%	Good
	Park Washrooms	6		26.8	35	77%	Good
	Miscellaneous Structures	3		21.7	37	53%	Good

Asset Type	Asset Sub-Type	Quantity	Length (KM)	Average Age (Years)	Estimated Useful Life (Years)	Average Condition (ULC%)	Average Condition State
Trails	Park Trails/Walkways		21.4	17.2	22	82%	Good
	Non-Park Trails		11.3	11.5	19	82%	Good
	Waterfront Trails		30.5	18.0	19	127%	Very Poor
	Multi-Use Paths		3	4.7	20	29%	Very Good
Miscellaneous	Columbarium's	5		8.8	75	18%	Very Good
	Skateboard Parks	5		14.8	25	59%	Good
	Underground Waste Containers	15		11.9	20	60%	Good
	Other Miscellaneous	11		17.1	24.1	71%	Good
Total		**537**	**66.3**	**18.4**		**82%**	**Good**

Each asset has also been assigned an estimated useful life based on industry standards and the Municipality's current Capitalization Policy.

Although the asset sub-types are structured to include similar assets, some sub-types include different estimated useful lives for the underlying assets. This is largely the result of different materials being used to produce the same asset (e.g. wooden shade structure versus a steel structure). This being the case, an average estimated useful life has been provided for each asset sub-type. Averages represent the average of the useful lives of the underlying assets within the asset sub-type, based on total replacement cost.

The Other Miscellaneous sub-type includes a wide variety of assets with a wide variety of estimated useful lives. The average age for this sub-type represents a weighted average for the various components within the sub-type, based on total replacement cost.

The figures below compare the average age with the average estimated useful life for each asset sub-type. The average age, for most Parks infrastructure sub-types, is within the estimate useful life.

Figure F1 – Average Age (Years) and Estimated Useful Life (Years) – Courts, Fields, and Playgrounds

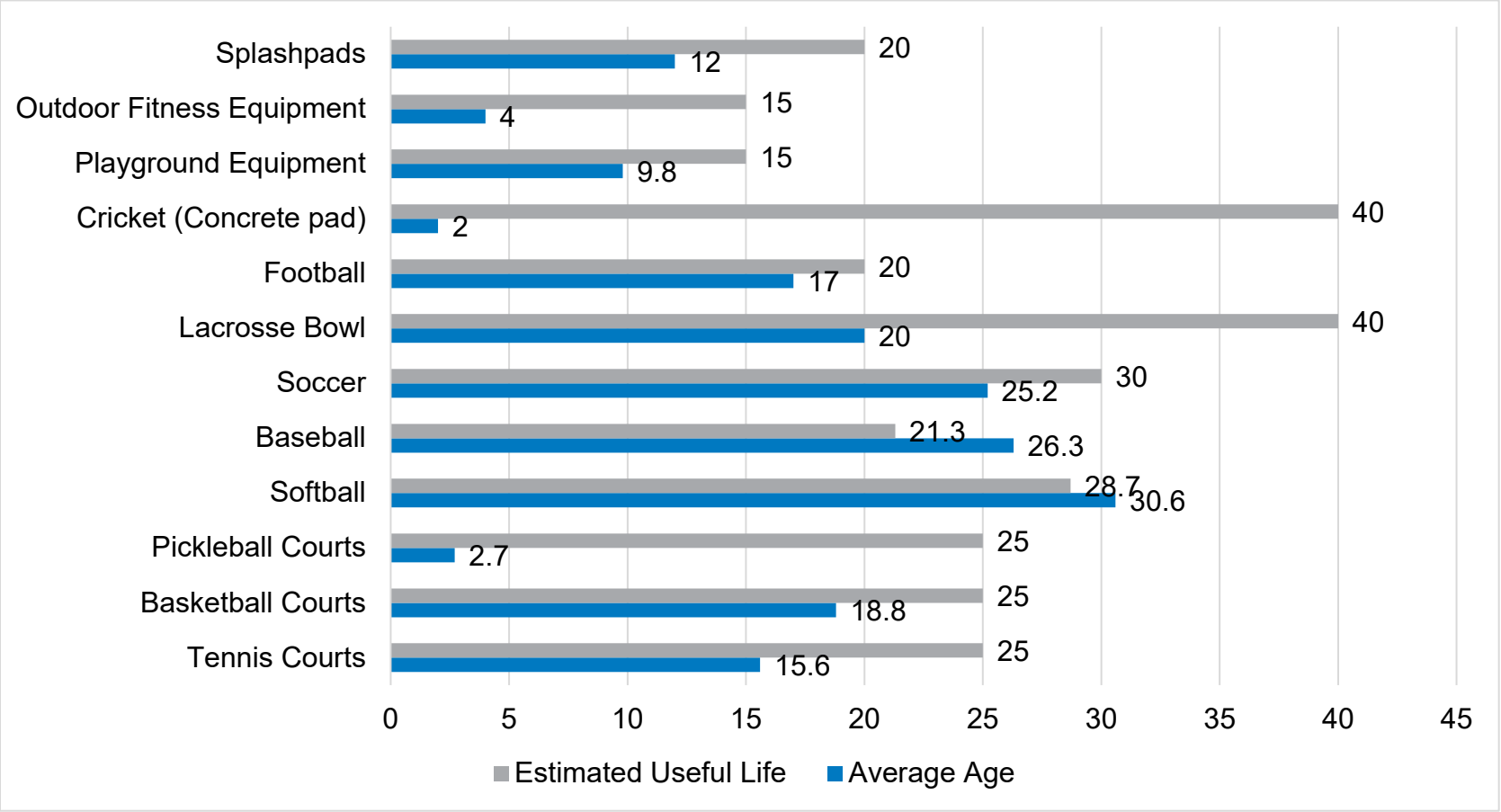
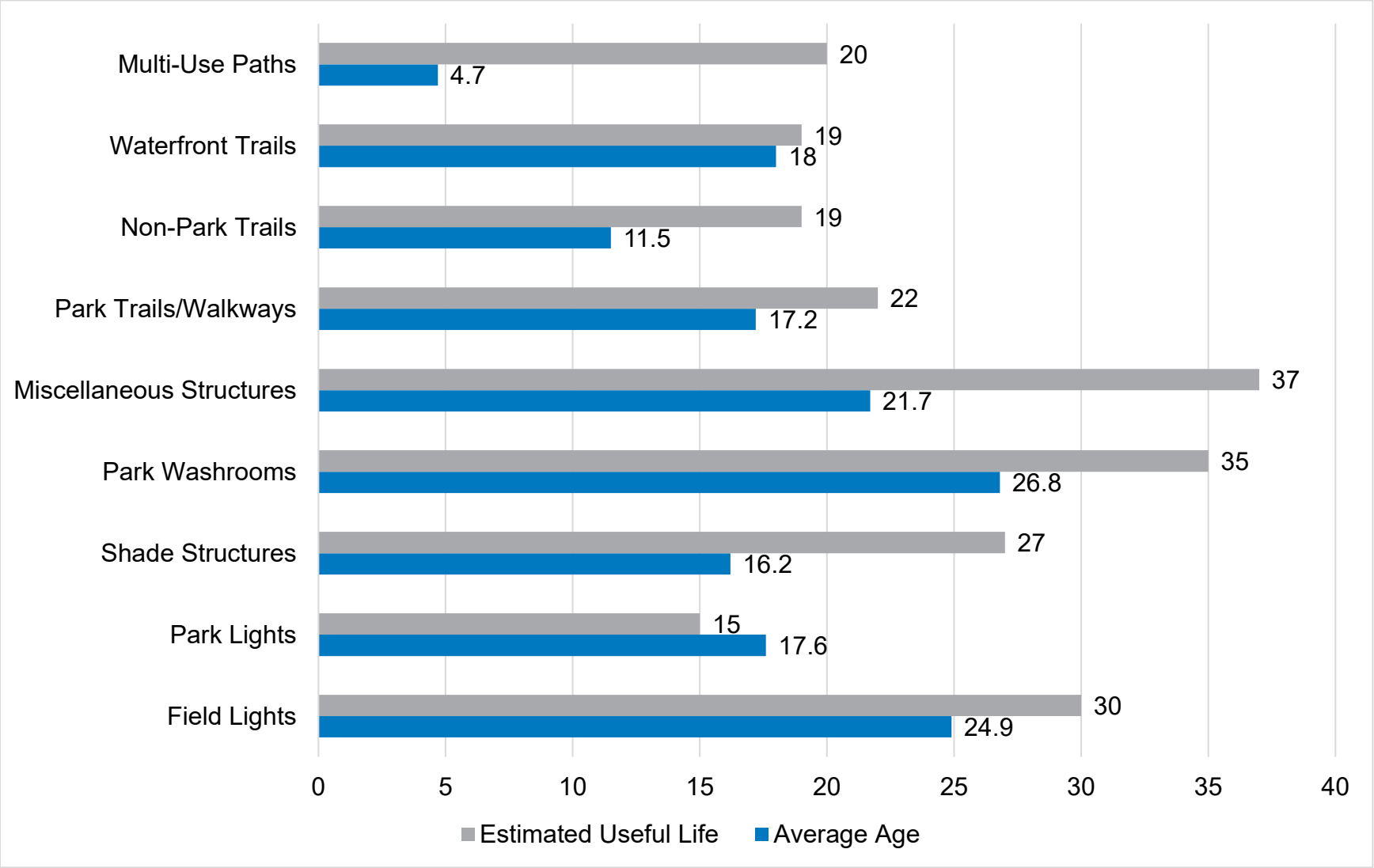


Figure F2 - Average Age (Years) and Estimated Useful Life (Years) – Structures and Trails



Asset Condition

Table F3 also provides the average condition rating for each of the Parks asset sub-types. The condition assessments have been derived using the ULC% methodology. The average condition for all Parks assets is rated as Good. This average condition rating was derived using a weighted average based on the replacement cost of each asset sub-type.

Although the overall condition is assessed as Good, the actual condition of the various assets within each sub-type varies. The figures below illustrate the condition distribution within each specific sub-type.

Figure F3 – Condition Distribution – Courts and Sports Fields

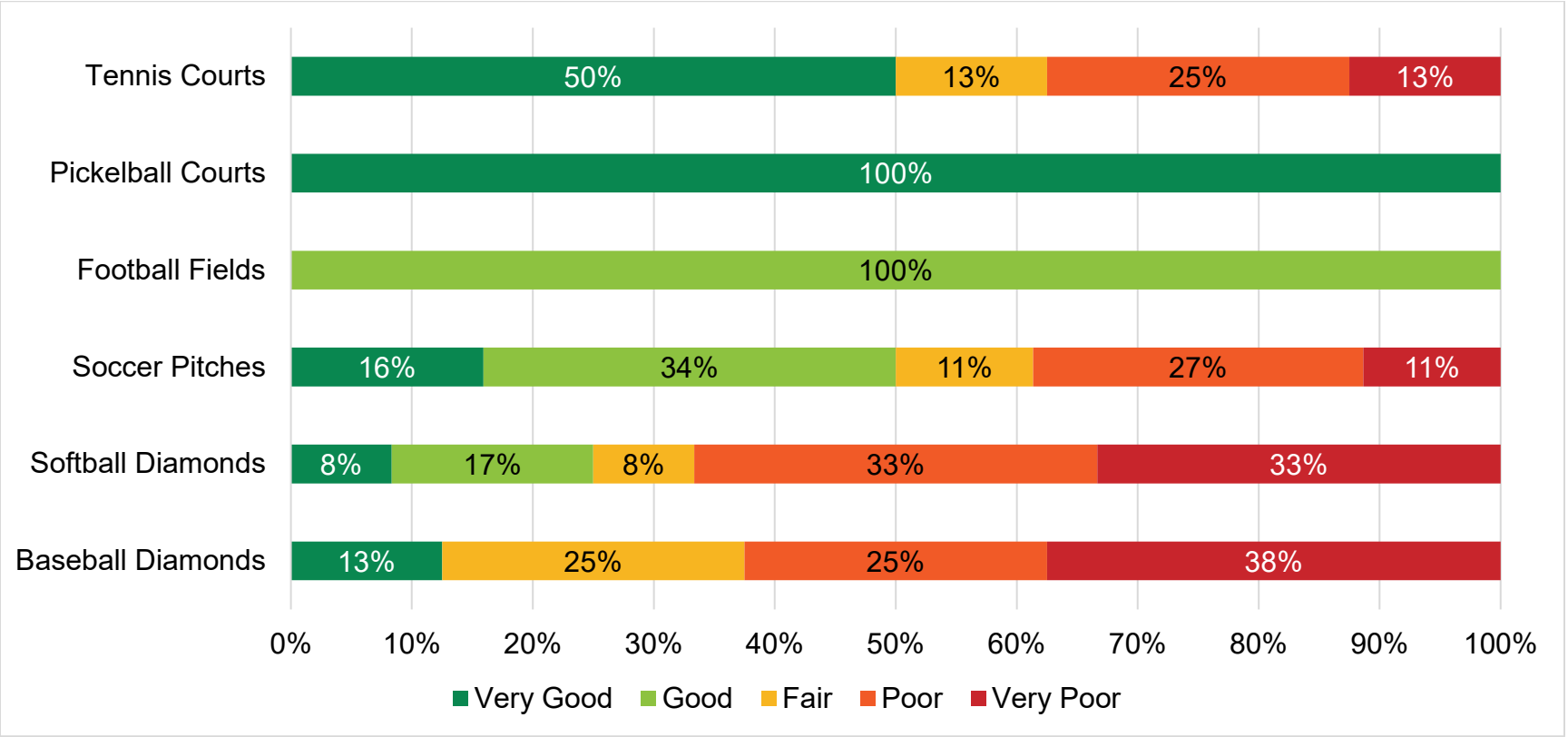
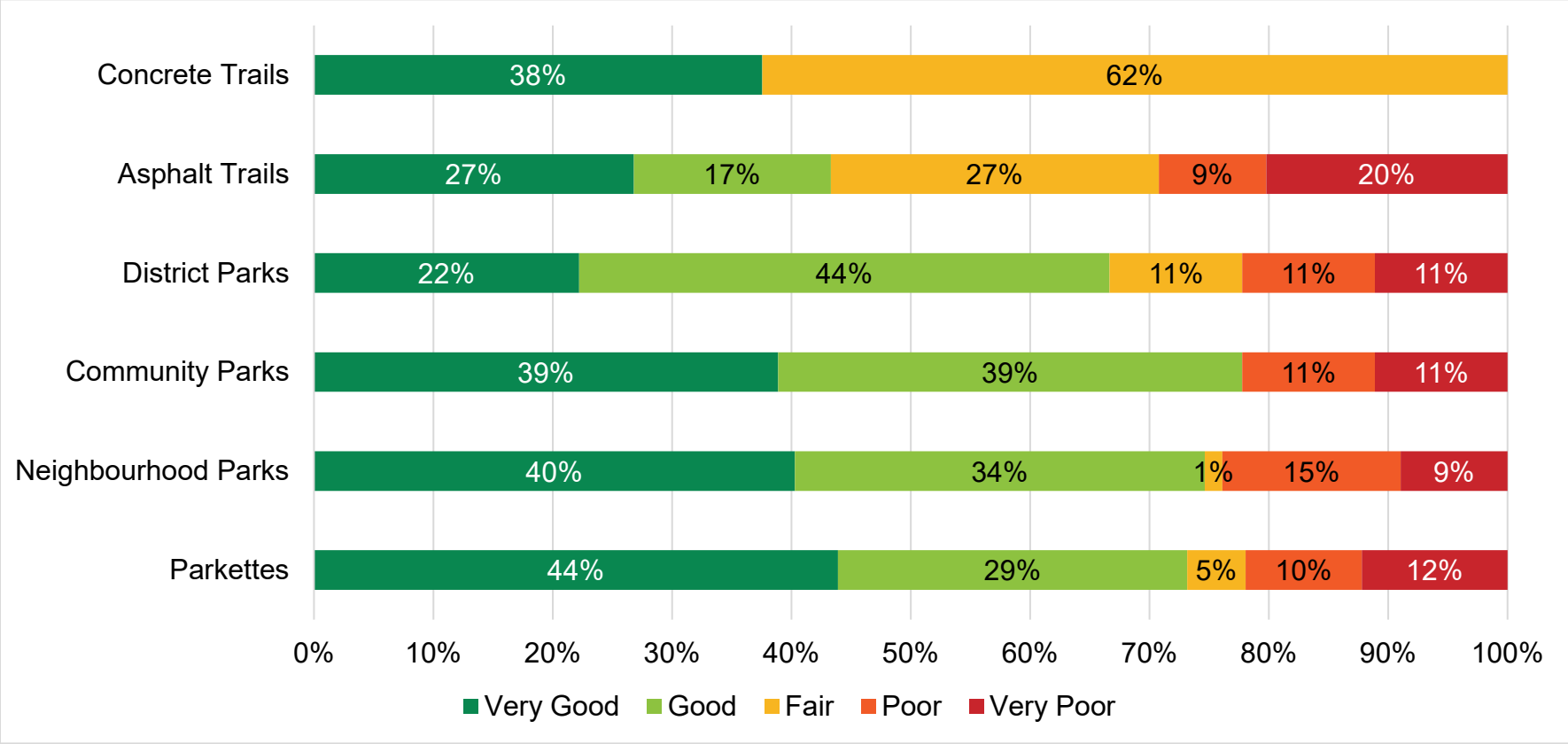


Figure F4 – Condition Distribution – Parks and Trails



The underlying assets in the various parks categories in the above distribution table include playgrounds, splashpads, and shade structures.

The condition of the asset is largely dependent on the asset age. The asset age is based on the year of initial installation. Many assets undergo routine maintenance activities (e.g. soccer fields, baseball fields, etc.) to ensure the asset is suitable for activity. It is possible that, given the routine maintenance of the asset, the actual structural condition of the asset is better than what is reflected in the ULC%.

Levels of Service

The levels of service for Parks were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service target are provided in the table below.

Table F4 – Levels of Service Measures – Parks

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Quality	Providing Parks assets in an acceptable condition	% of sports fields/courts in permit parks in fair or better condition (age based)	51%	90%
		% of sports fields/courts in non-permit parks in fair or better condition (age based)	74%	70%
		% of playgrounds, shade structures, and splashpads in parkettes in fair or better condition (age based)	78%	75%
		% of playgrounds, shade structures, and splashpads in neighbourhood parks in fair or better condition (age based)	76%	80%
		% of playgrounds, shade structures, and splashpads in community parks in fair or better condition (age based)	78%	90%

		% of playgrounds, shade structures, and splashpads in district parks in fair or better condition (age based)	78%	90%

It's important to note that the current performance referenced above is based on age-based condition ratings. It is possible that the physical condition of the assets are much closer to the proposed level of service. Physical condition assessments are not currently conducted on any park assets so the actual physical condition is unknown.

The Municipality recently completed a Parks, Recreation, and Culture Master Plan that identified a set of service level metrics. The table below provides the metrics, along with the current service level performance and proposed service level targets.

Table F5 – Current Levels of Service – Parks – 2024 PRC Master Plan

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Accessibility	Ensuring reasonable availability of park amenities for the community	Park supply – municipal wide parks	0.9 hectares per 1,000 residents	1.1 hectares per 1,000 residents
		Park supply – community parks	0.3 hectares per 1,000 residents	(combined municipal wide and community parks)
		Park supply – neighbourhood parks	0.7 hectares per 1,000 residents	0.75 hectares per 1,000 residents
		Park supply – parkettes/urban parks and squares	0.2 hectares per 1,000 residents	0.15 hectares per 1,000 residents
		Park supply – overall	2.0 hectares per 1,000 residents	2.0 hectares per 1,000 residents
		Number of ball diamonds	32	54
		Number of Cricket Fields	1	1
		Number of Tennis Courts	13	32
		Number of Pickleball Courts	10	32
		Number of Basketball Courts	23	32
		Number of Splash Pads	17	30
		Number of Skate Parks and Pump Tracks	5	5

	Number of Skate Zones	0	5
	Number of Leash Free Dog Parks	3	4
	Number of Compact Leash Free Dog Parks	0	2
	Number of Community Garden	3	3
	Number of Playgrounds	67	93
	Number of Outdoor Fitness Equipment	2	6
	Number of Refrigerated Outdoor Skating Surfaces	3	3
	Number of Outdoor Lacrosse Box	1	1

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes four main types of lifecycle activities to ensure Parks assets maintain their current level of service.

Inspection activities are completed periodically to assess the condition of various assets and to determine the level of maintenance activity required. Visual inspections are currently completed by staff and physical condition assessments are planned for the future.

General repair and maintenance activities are performed throughout the lifecycle of an asset. These activities include the general maintenance required to ensure the assets remain in good working order. General repair and maintenance activities are either completed in-house or externally and are funded through the annual operating budget.

Rehabilitation activities include larger preventative maintenance activities typically performed on the asset at mid-life. Rehabilitation activities include planned activities that are performed on assets to ensure they reach their estimated useful life. These activities result in a capital cost to the Municipality and have been included in the lifecycle costing identified in the AMP. Regularly scheduled rehabilitation activities are only performed on a small sub-set of asset types as most Parks assets will reach their estimated useful life through minor repair and maintenance activities.

Replacement activities involve the full replacement of assets at the end of their lifecycle. The replacement of Parks assets represents a capital expense and forms the majority of the annual lifecycle costing identified in the AMP. Replacement activities are completed in accordance with the proposed level of service.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Parks. The total annual capital investment is approximately $3.2 million and the total annual operating investment is approximately $4.1 million. The average annual operating investment for Parks includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance.

Table F6 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Courts	$139,000		
Playfields	532,000		
Playgrounds	754,000	$4,116,000	$7,339,000
Park Structures/Amenities	297,000		
Trails	1,438,000		
Miscellaneous	63,000		
Total	**$3,223,000**	**$4,116,000**	**$7,339,000**

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table F7 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$329,000
Operating Investment	555,000
Total	**$884,000**

The expansion costs outlined above represent a current estimate based on the growth-related infrastructure included in the 2025 Development Charge Study. As these costs are anticipated for the future, it's possible that the costs, scope, or timing could change. Any change to these variables could alter the investment requirements provided below.

The cumulative annual capital allocation required by 2034 is approximately $3.3 million, while the cumulative operating requirement by 2034 is approximately $5.6 million.

Appendix G

Recreation, Community, and Culture

Recreation, Community, and Culture Overview

Recreation, Community, and Culture (RCC) infrastructure includes all the facilities owned by the Municipality and used for community programming or community use. RCC facilities include arenas, aquatic centres, community halls, and certain libraries. The Bowmanville Library is included under the Corporate Facilities asset category as the Bowmanville branch is connected to, and included with, the Municipal Administration Centre. The Courtice library has been included with the Courtice Community Centre as the Courtice branch is part of this facility.

Also included in RCC are the various pieces of equipment associated with recreation activities, such as fitness equipment and miscellaneous recreation equipment. The Municipality's RCC facilities are operated and managed by the Facilities division of the Public Services Department, while the equipment is owned and operated by the Community Services division within Public Services.

The majority of asset management information for RCC Facilities has been derived from the Building Condition Assessments (BCAs) completed in late 2023 and early 2024. The Municipality contracted an external engineering consultant to conduct detailed condition assessments on all major facilities within the Municipality. The BCAs provide updated replacement values, condition assessments, and lifecycle management costs.

The Municipality's RCC assets have been divided into different asset sub-types, based on similar characteristics and functions. The different sub-types are provided and defined in the table below.

Table G1 – Recreation, Community, and Culture Assets

Asset Type	Asset Sub-Type	Purpose
Facilities	Arenas	Includes any sports complex that is equipped with at least one ice pad. The entire sports complex would be considered an arena.
	Aquatic Centre	Includes any sports or community complex that is equipped with at least one swimming pool and the primary activity is aquatic programming.
	Community Centre	Includes any sports or community complex that is equipped with three or more recreation amenities (swimming pool, refrigerated ice surface, gymnasium, fitness centre, library branch). The entire complex would be considered a Community Centre.

Asset Type	Asset Sub-Type	Purpose
	Hamlet/Neighbourhood Facility	Includes all community halls that are used for special events.
	Unoccupied Heritage Facilities	Unoccupied designated heritage properties that are owned by the Municipality, including Camp 30 and the building on the site of the future Operations Depot and Fire Station.
	Culture Facilities	Includes three museums, one visual arts centre, and the Orono and Newcastle branches of the Clarington Public Library.
Equipment	Fitness Equipment	The various pieces of strength and cardio equipment located in the Municipality's fitness centres. Fitness centres are located within certain arenas and aquatic centres.
	Recreation Equipment	Equipment used for the purpose of providing recreation services. This includes small equipment, such as floor scrubbers, that would not be included in the Municipality's broader inventory of fleet and equipment.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for RCC is presented in Table G2 below. Replacement costing for RCC facilities is based on a full reconstruction of the corresponding facilities. Replacement costing has been estimated by applying an estimated cost per square foot to the size of each facility. The square foot costs have been derived using a combination of the Altus Group 2025 Canadian Cost Guide, the Parks, Recreation, and Culture Master Plan, and internal staff estimates.

Replacement costing for equipment has been derived using a combination of recent tenders for similar assets and estimates provided by staff within Community Services. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing.

Table G2 - Summarized Asset Inventory – Recreation, Community, and Culture

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Facilities	Arenas	5	36.7	$252,642,000
	Aquatic Centres	1	49.0	25,002,000
	Community Centres	2	23.0	137,996,000
	Unoccupied Heritage Facilities	2	N/A	N/A
	Hamlet/Neighbourhood Facilities	13	81.00	102,157,000
	Culture Facilities	6	89.7	56,201,000
Equipment	Fitness Equipment	110	7.9	428,000
	Recreation Equipment	29	8.2	421,000
Total		**168**	**47.0**	**$574,847,000**

As shown in the table above, the total replacement cost for RCC assets is approximately $574.8 million. Most of the replacement costing relates to the RCC facilities, with arenas and community centres accounting for the largest share of the cost. Asset Age

The table below summarizes the average age of RCC assets within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all RCC assets is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

Table G3 – Average Age and Condition – Recreation, Community, and Culture

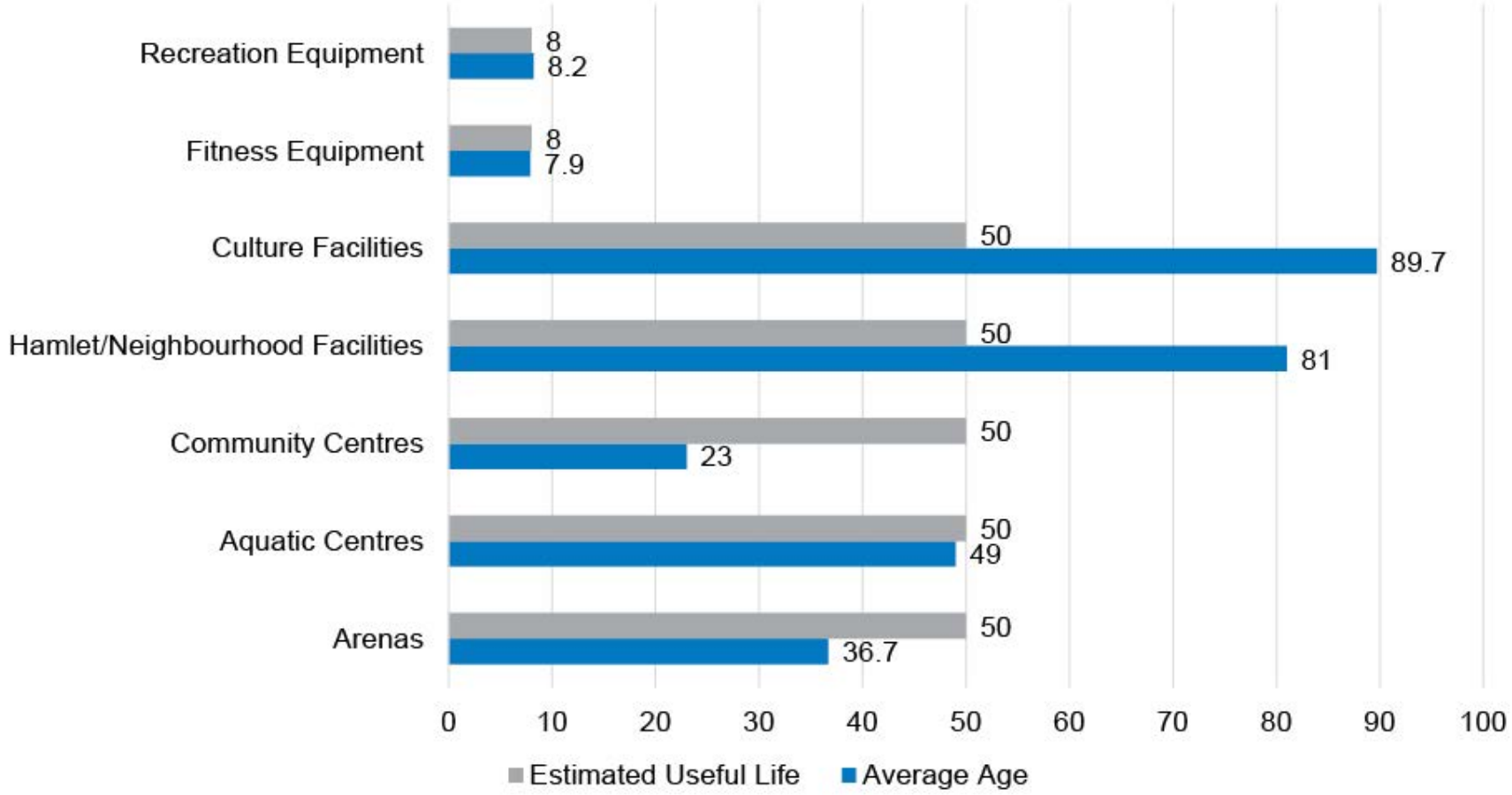
Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Average Estimated Useful Life (Years)	Average Condition (FCI)	Average Condition State
Facilities	Arenas	5	36.7	50	1.50%	Good
	Aquatic Centres	1	49.0	50	2.70%	Good
	Community Centres	2	23.0	50	1.19%	Good
	Unoccupied Heritage Facilities	2	N/A	N/A	N/A	N/A
	Hamlet/Neighbourhood Facilities	13	81.00	50	2.28%	Good
	Culture Facilities	6	89.7	50	2.86%	Good
Equipment[1]	Fitness Equipment	110	7.9	8	95%	Fair
	Recreation Equipment	29	8.2	8	107%	Poor
Total[2]		**168**	**47.0**		**1.70%**	**Good**

[1] Average condition for equipment assets is based on the ULC% methodology.
[2] Total average condition includes only the FCI condition ratings for Facilities as Facilities account for 99% of RCC replacement costs.

The age for each of the facilities within each facility sub-type represents the age of the original portion of the building. Some facilities may have undergone additions or significant renovations over the years; however, the AMP uses the date of the original construction as the basis for the age calculation.

Each asset has also been assigned an estimated useful life based on industry standards and the Municipality's current Capitalization Policy. The figure below compares the average age with the average estimated useful life for each asset sub-type.

Figure G1 – Average Age (Years) and Estimated Useful Life (Years) – Recreation, Community, and Culture



The average age for many of the RCC facilities exceeds the estimated useful life. However, the average age is based on the original construction date of the facility. All facilities undergo routine rehabilitation and maintenance activities to ensure the buildings remain in good working order.

The figure above uses the estimated useful life of the building structure to compare against the average age. The estimated useful life of the entire facility is difficult to assess given the various underlying components. The

Municipality's Capitalization Policy assigns different useful life assumptions to different facility components. The various estimated useful life assumptions are provided in the table below.

Table G4 – Estimated Useful Life – Various Building Components

Asset Class	Sub-class	Type	Estimated Useful Life
Building	Structure	Overall	50 years
	Roof	As per material and condition	Variable
	Structure	Interior	25 years
	Structure	Mechanical (includes HVAC, heat pumps, water heaters, etc.)	Variable
	Specialized	Indoor pool; Ice pad	30 years
	Specialized	Indoor field	15 years
	Site Improvement	Parking lot, Landscaping	20 years
	Whole	Sand domes, Salt shed, Quonset hut, Sheds	25 years

Asset Condition

Table G3 also provides the average condition rating for each of the asset sub-types within RCC. RCC Facilities use the Facilities Condition Index (FCI) methodology to assess condition. The FCI is an industry standard used to assess the condition of building assets. The condition of the equipment assets was derived using the ULC% methodology.

As described in the Municipality's BCAs, the Facility Condition Index (FCI) is a comparative indicator of the relative condition of facilities. The FCI is expressed as a ratio of the cost of remedying maintenance deficiencies to the current replacement value.

The average condition for all RCC assets is rated as Good. The average condition rating for RCC assets reflects only the facility component and was derived using a weighted average based on the replacement cost of each

sub-type. The FCI rating is calculated by dividing the average annual renewal needs over the next ten years by the total replacement cost.

Equipment assets were excluded from the total average condition rating as the facility component accounts for 99.8% of the total RCC asset replacement costing.

The unoccupied heritage buildings have also been excluded from the average condition as BCAs have not been performed on these sites.

The figures below provide the condition distribution for each of the sub-asset types. All the facilities, within each asset sub-type, have an FCI rating of Good for 2025. The condition of the individual equipment assets varies from Very Poor to Very Good.

Figure G2 – Condition Distribution – Recreation, Community, and Culture - Facilities

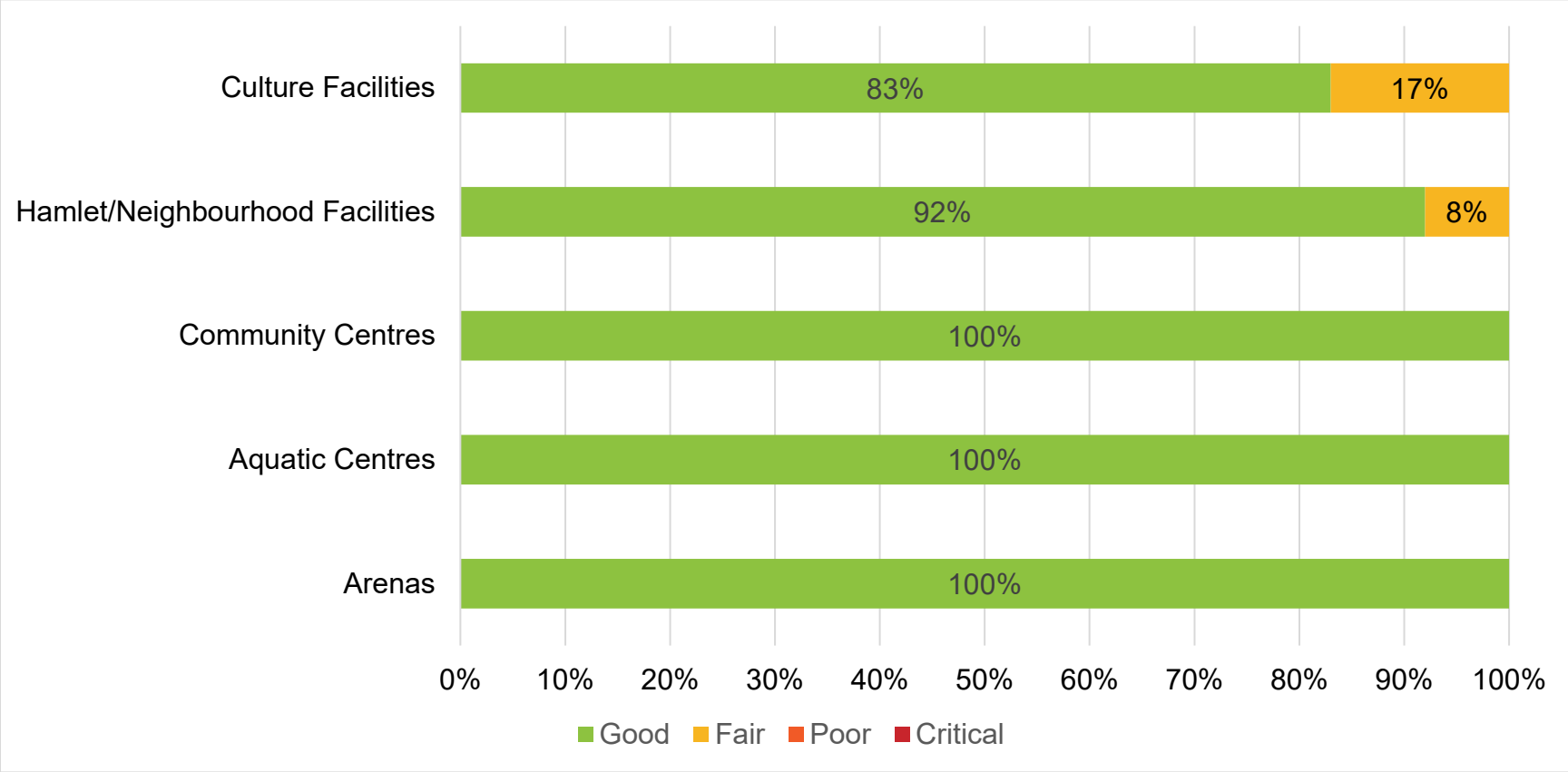
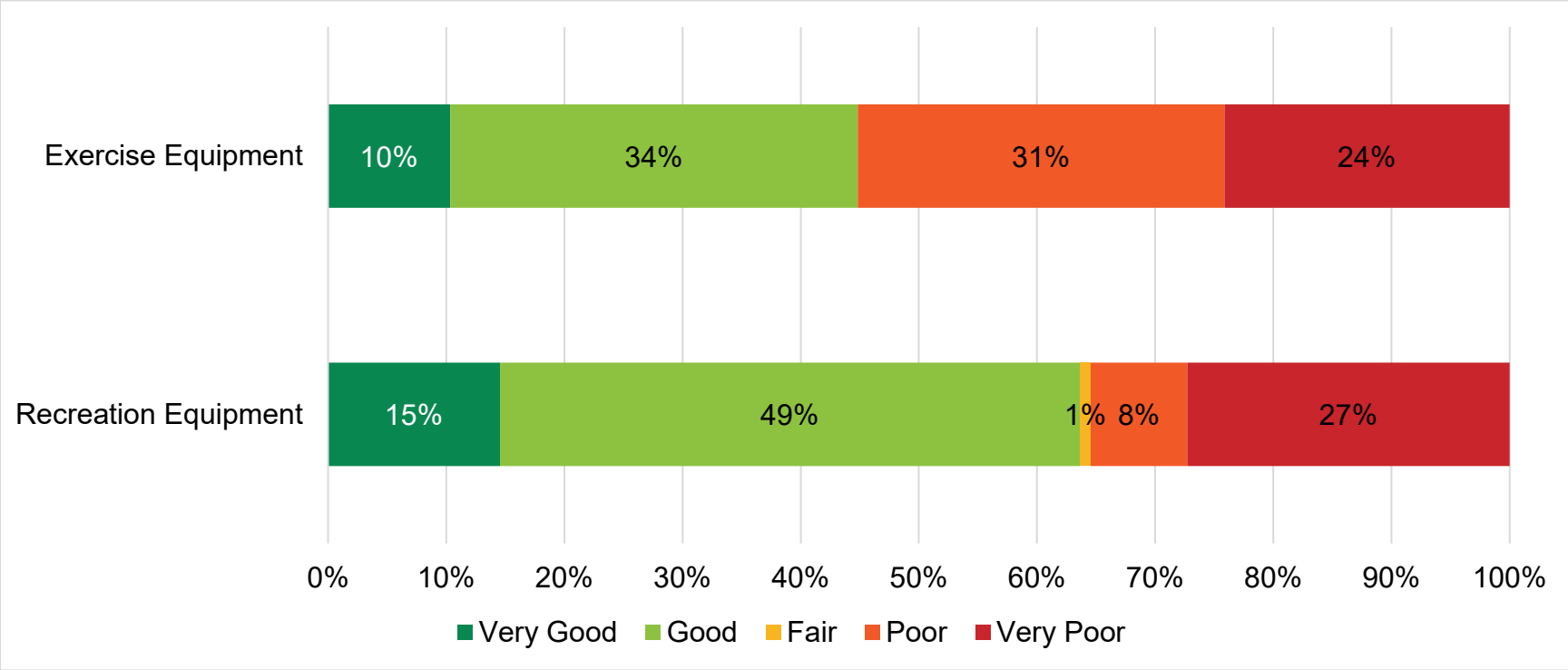


Figure G3 – Condition Distribution – Recreation, Community, and Culture – Equipment



Levels of Service

The levels of service for RCC were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service target are provided in the table below.

Table G5 – Levels of Service – Recreation, Community, and Culture

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Quality	Ensuring Recreation, Community, and Culture assets remain in a suitable condition for public use	% of Recreation, Community, and Culture facilities in Fair or better condition (FCI)	100%	> 80%
		% of Recreation, Community, and Culture equipment in Fair or better condition	61%	> 70%
Sustainability	Providing Recreation, Community, and Culture services in an environmentally sustainable manner	GHG emissions reduction since 2018 base year	6%	35% by 2030 net-zero by 2050

The Municipality recently completed a Parks, Recreation, and Culture Master Plan that identified a set of service level metrics. The table below provides the metrics, along with the current service level performance and proposed service level targets.

Table G6 - Levels of Service – Recreation, Community, and Culture – PRC Master Plan

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Accessibility	Ensuring recreation and culture activities are accessible to all members of the community	Number of ice pads	7	9
		Number of indoor pools	3	4
		Number of indoor walking tracks	1	2
		Number of gymnasiums	3	3
		Number of multi-purpose / group fitness space	31	32
		Number of dedicated youth and older adult spaces	4	4
		Number of squash courts	2	5
		Number of indoor artificial turf fields	1	1
		Number of outdoor rectangular fields	50	81
		Number of refrigerated outdoor skating surfaces	3	3
		Library space	4 branches (47,704 sq ft)	80,004 sq ft plus bookmobile
		Museum and archive space	3	3

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes four main types of lifecycle activities to ensure RCC assets maintain their current level of service.

Inspection activities are completed periodically to assess the overall condition of each facility, along with the condition of each major component part (e.g. roof, plumbing, electrical, etc.). Routine inspections are completed by staff, including quarterly mechanical inspections and monthly visual building inspections. Detailed BCAs are completed approximately every five years and help identify the potential maintenance requirements over a forecast horizon.

Minor repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance required to ensure the assets remain in good working order. Minor expenses are funded through repair and maintenance accounts in the Municipality's operating budget. Major expenses are funded through the Municipality's capital budget.

Major repair and maintenance activities are also performed throughout the lifecycle of the asset. Major repairs and maintenance occur when the cost to perform the activity exceeds $5,000 and the cost becomes a capital expense.

The BCAs provide a ten-year forecast for repair and maintenance activities required to maintain the facilities in good working order. The forecasts from the BCAs have been used as the basis for the facility lifecycle costing estimates in the AMP.

Replacement activities involve the full replacement of assets at the end of their useful life. Replacement activities constitute a capital cost and have been included in the AMP for equipment assets. The AMP does not forecast the full replacement of any RCC facilities over the ten-year forecast period.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for RCC. The total annual capital investment is approximately $3.4 million and the total

annual operating investment is approximately $3.7 million. The average annual operating investment for RCC includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance across all facility types.

Table G7 – Average Annual Capital and Operating Investment ($2025)

Asset Type	Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
RCC	Recreation and Community Facilities	$1,643,000		
	Hamlet/Neighbourhood Facilities	730,000	$3,571,000	$6,298,000
	Culture Facilities	287,000		
	Recreation Equipment	67,000		
GHG Reductions	GHG Replacements	502,000	258,000	760,000
	GHG Expansions	182,000	(95,000)	87,000
Total		**$3,411,000**	**$3,734,000**	**$7,145,000**

The GHG activities include the average annual capital and operating investment required to meet the corporate GHG reduction goals established through the corporate climate action plan. Clarington has set a target to reduce corporate greenhouse gas emissions by 35% by 2030 (from 2018 levels) and achieve net zero GHG emissions by 2050.

The costs identified in the table above are drawn from the GHG reduction pathways study conducted by Sustainable Projects Group and include the activities identified over the next ten years. The average annual GHG replacement activities include the increment cost of replacing current facility assets with assets that provide enhanced GHG reduction.

The average annual GHG expansion activities include the cost of emplacing new assets within corporate facilities that further enhance GHG reduction. These activities generate a net reduction in average annual operating costs as any of these activities generate their own energy resulting from reduced utility costs.

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table G8 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$262,000
Operating Investment	127,000
Total	**$389,000**

The expansion costs outlined above represent a current estimate based on the growth-related infrastructure included in the 2025 Development Charge Study. As these costs are anticipated for the future, it is possible that the costs, scope, or timing could change. Any change to these variables could alter the investment requirements provided below.

The cumulative annual capital allocation required by 2034 is approximately $2.6 million, while the cumulative operating requirement by 2034 is approximately $1.3 million.

Appendix H

Transportation Infrastructure

Transportation Infrastructure Overview

Transportation Infrastructure includes all the assets used to ensure the safe and efficient transportation of pedestrians, cyclists and vehicles. Transportation Infrastructure includes items such as sidewalks, streetlights, traffic signals, and guiderails. Transportation Infrastructure does not include the municipal road network as the road network is captured in its own asset category.

The Municipality's Transportation Infrastructure assets have been divided into different asset sub-types, based on similar characteristics and functions. The different sub-types are provided and defined in the table below. Transportation Infrastructure is overseen by both the Planning and Infrastructure Services Department and the Public Works division of the Public Services Department.

Table H1 – Transportation Infrastructure Assets

Asset Type	Asset Sub-Type	Purpose
Guiderails	Steel Beam Guiderails	Steel guiderails used to guide traffic along a roadway and away from hazardous situations, such as drop-offs or fixed objects.
	Guideposts / Post & Cable	Serve the same purpose as steel guiderails but are constructed using wood posts and steel cables.
	Concrete Barriers	Serve the same purpose as steel guiderails but are constructed from reinforced concrete.
Sidewalks	Concrete Sidewalks	Portion of the Municipality's sidewalk network constructed with a concrete base.
	Asphalt Sidewalks	Portion of the Municipality's sidewalk network constructed with an asphalt base.
Streetlighting	Concrete Standard Poles	Concrete poles used to support the streetlight luminaires.
	Wood Poles	Wood poles used to support the streetlight luminaires.
	Aluminum Poles	Aluminum poles used to support the streetlight luminaires.

Asset Type	Asset Sub-Type	Purpose
	Concrete Decorative Poles	Concrete poles used to support the streetlight luminaires. Typically made of spun-concrete to provide aesthetic appeal.
	Steel Decorative Poles	Steel poles, enhanced with decorative features, used to support the streetlight luminaires.
	Standard LED Luminaire	Light fixture, secured to a streetlight pole, to illuminate the roadway.
	Decorative LED Luminaire	Decorative light fixture, secured to a streetlight pole, to illuminate the roadway.
Traffic Controls	Traffic Signals	Signaling infrastructure used at roadway intersections to allow safe passage of motor vehicles. Includes traffic lights, cabinets, and pedestrian signals.
	Pedestrian Crossings	Signaling infrastructure used to stop traffic and allow pedestrians safe passage across a roadway.
Equipment	Radar Message Boards	Electronic traffic devices used to enhance safety by displaying vehicle speed and displaying information to drivers.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for Transportation Infrastructure is presented in the table below. Replacement costing has been derived using a combination of recent tenders for similar assets and estimates provided by municipal staff. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing.

Table H2 - Summarized Asset Inventory – Transportation Infrastructure

Asset Type	Asset Sub-Type	Quantity	Length (Km)	Average Age (Years)	Replacement Cost ($2025)
Guiderails	Steel Beam Guiderails		23.3	18.0	$8,582,000
	Guideposts / Post & Cable		7.6	25.7	1,167,000
	Concrete Barriers		0.02	40.0	13,000
Sidewalks	Concrete Sidewalks		349.5	24.8	162,854,000
	Asphalt Sidewalks		6.8	25.6	3,901,000
Streetlighting	Concrete Standard Poles	4,121		22.6	27,166,000
	Wood Poles	139		N/A	641,000
	Aluminum Poles	230		N/A	1,789,000
	Concrete Decorative Poles	787		17.2	6,120,000
	Steel Decorative Poles	243		N/A	1,890,000
	Standard LED Luminaire	4,490		4.0	2,468,000
	Decorative LED Luminaire	1,030		2.0	1,283,000
Traffic Controls	Traffic Signals	18		22.1	4,938,000
	Pedestrian Crossings	5		5.0	256,000
Equipment	Radar Message Boards	21		5.9	78,000
Total		**11,084**	**387.2**	**23.61**	**$223,146,000**

As shown in the table above, the total replacement cost for Transportation Infrastructure assets is approximately $223.1 million. Most of the replacement costing relates to the sidewalk network, which accounts for over $167 million of the total replacement cost. The Municipality also owns over 4,000 concrete streetlight poles, totaling over $27 million in replacement costing.

Replacement costing is based on the full replacement of each asset. In terms of traffic signals, this includes all components of a signalized intersection (e.g. LED lights, cabinet, electrical work, light poles, automated pedestrian signals, etc.). The Municipality recently completed an LED conversion program on streetlight luminaires; therefore, the luminaire replacement costing assumes an LED replacement.

Asset Age

The table below summarizes the average age of Transportation Infrastructure assets within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Transportation Infrastructure assets is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

Table H3 – Average Age and Condition – Transportation Infrastructure

Asset Type	Asset Sub-Type	Quantity	Length (Km)	Average Age (Years)	Average Estimated Useful Life	Average Condition (ULC%)	Average Condition State
Guiderails	Steel Beam Guiderails		23.3	18.0	75	24%	Very Good
	Guideposts / Post & Cable		7.6	25.7	75	34%	Very Good
	Concrete Barriers		0.02	40.0	75	53%	Good
Sidewalks	Concrete Sidewalks		349.5	24.8	75	33%	Very Good
	Asphalt Sidewalks		6.8	25.6	75	34%	Very Good
Streetlighting	Concrete Standard Poles	4,121		22.6	75	30%	Very Good
	Wood Poles	139		N/A	75	N/A	N/A
	Aluminum Poles	230		N/A	75	N/A	N/A
	Concrete Decorative Poles	787		17.2	75	23%	Very Good

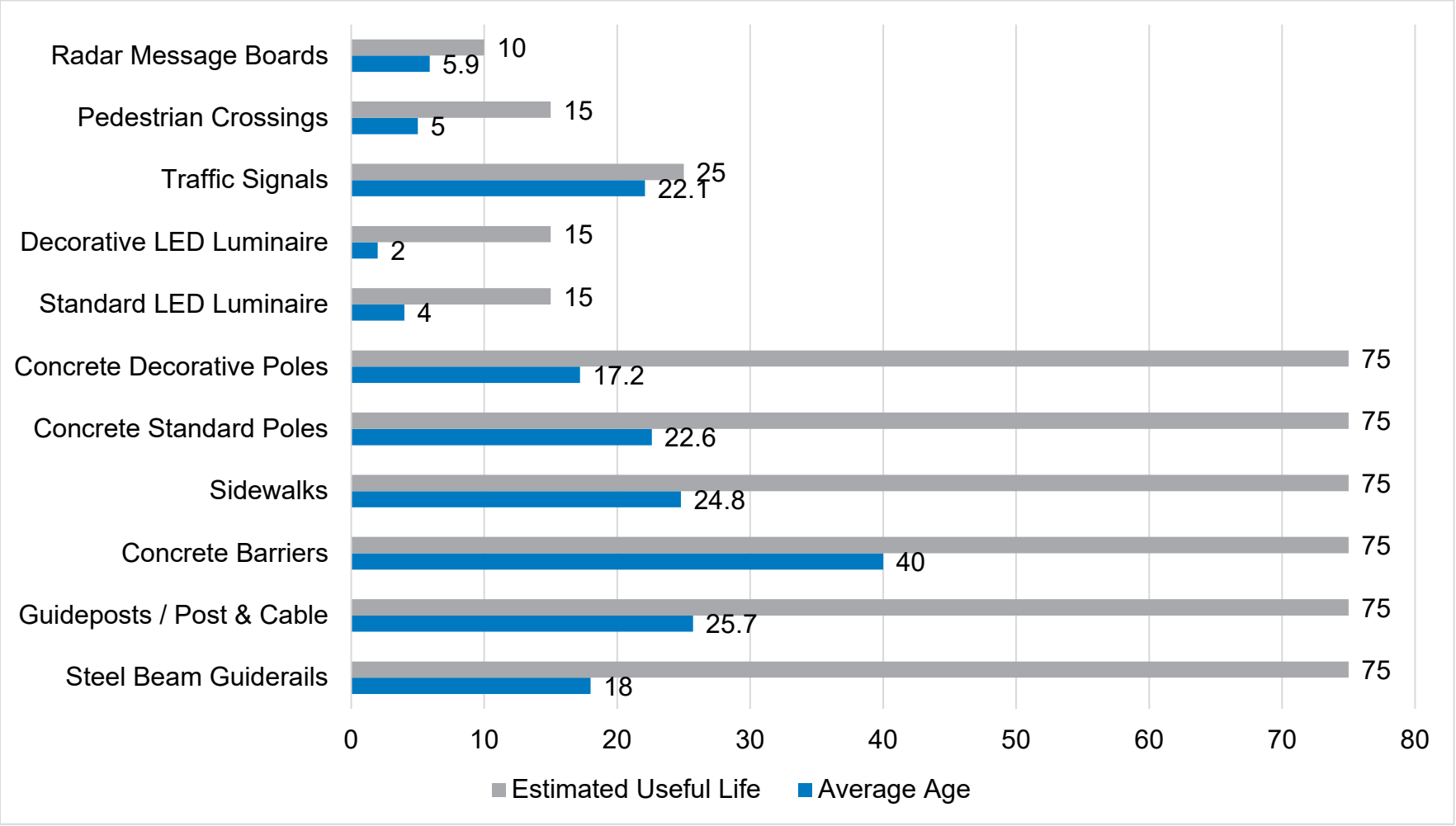
Asset Type	Asset Sub-Type	Quantity	Length (Km)	Average Age (Years)	Average Estimated Useful Life	Average Condition (ULC%)	Average Condition State
	Steel Decorative Poles	243		N/A	75	N/A	N/A
	Standard LED Luminaire	4,490		4.0	15	27%	Very Good
	Decorative LED Luminaire	1,030		2.0	15	13%	Very Good
Traffic Controls	Traffic Signals	18		22.1	25	88%	Good
	Pedestrian Crossings	5		5.0	15	33%	Very Good
Equipment	Radar Message Boards	21		5.9	10	59%	Good
Total		**11,084**	**387.2**	23.61		**33.2%**	**Very Good**

In terms of streetlight poles, the only age and condition information available is for concrete poles (standard and decorative). The other streetlight pole types represent a much smaller proportion of the total streetlight pole inventory. The majority of the non-concrete streetlight poles were likely installed before the Municipality instituted electronic tracking. Non-concrete streetlight poles have been assigned an age of “N/A” to reflect the fact that no data is available.

Each asset has also been assigned an estimated useful life based on industry standards and the Municipality’s current Capitalization Policy. The estimated useful life for guiderails, sidewalks, and streetlight poles has been set to 75 years to match the estimated useful life of a road. These assets have very long-life spans and will not typically be subject to a large-scale replacement unless a major road replacement occurs. Large road replacements may require the removal of the adjacent sidewalk, streetlights, and guiderails, in which new infrastructure would then be installed in its place.

The figure below compares the average age with the average estimated useful life for each asset sub-type. Based on the long estimated useful life assigned to many of the asset categories, the average age for most of the Transportation Infrastructure is well within the estimated useful life. The figure excludes the assets in which the age is unknown.

Figure H1 – Average Age (Years) and Estimated Useful Life (Years) – Transportation Infrastructure



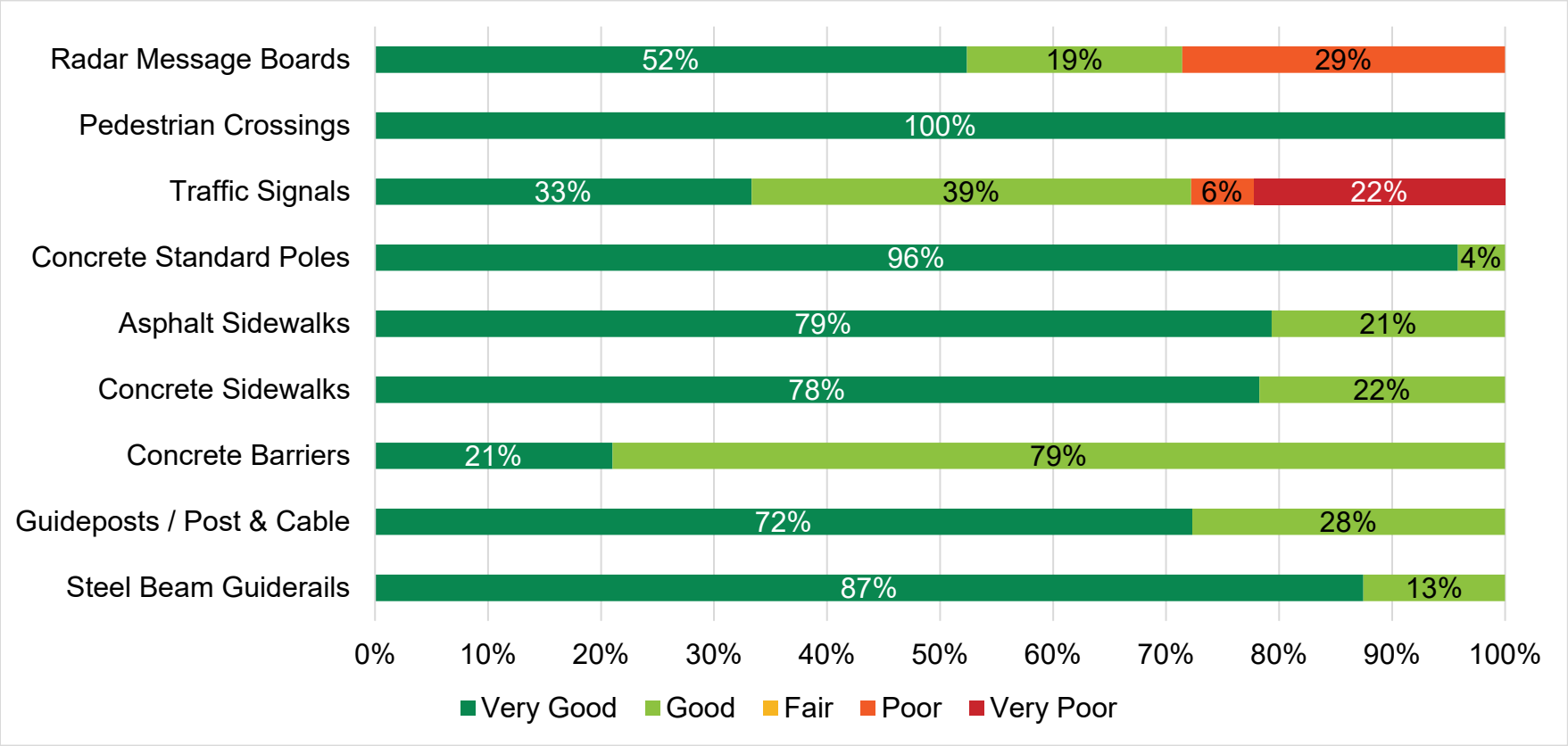
Asset Condition

Table H3 also provides the average condition rating for each of the asset sub-types within Transportation Infrastructure. The condition assessments have been derived using the ULC% methodology. The average condition for all Transportation Infrastructure assets is rated as Very Good. This average condition rating was derived using a weighted average of all asset sub-types, based on total replacement cost.

The Very Good condition rating stems from the fact that many assets have a very long estimated useful life. Many of the assets holding a large share of the overall replacement cost (streetlights and sidewalks) do not typically get replaced unless they are severely damaged or because they are part of a road segment being replaced.

Although the overall condition is assessed as Very Good, the actual condition of the various assets within each asset sub-type varies. The figure below illustrates the condition distribution within each specific sub-type.

Figure H2 – Condition Distribution – Transportation Infrastructure



Levels of Service

The levels of service for Transportation Infrastructure were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The Municipality's current levels of service performance and the proposed levels of service target are provided in the table below.

Table H4 – Current Levels of Service – Transportation Infrastructure

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Service Level Target
Accessibility	Providing Transportation Infrastructure that is accessible for all	% of sidewalks that comply with AODA minimum clearance width of 1.5m	86%	> 85%
Quality	Providing major Transportation Infrastructure assets in an acceptable condition	% of sidewalks in Fair or better condition	100%	> 60%
		Minimum maintenance standards met for sidewalks	All minimum maintenance standards met	All minimum maintenance standards met
		Frequency of streetlight luminaire inspections	Twice per year	Twice per year
		Streetlight luminaire replacement	Replaced based on inspections	Replaced based on inspections

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes three main types of lifecycle activities to ensure Transportation Infrastructure assets maintain their current level of service.

Inspection activities are completed periodically to assess the overall condition of Transportation Infrastructure assets. Sidewalks receive frequent visual inspections to determine whether maintenance activity is required. Other assets are also visually inspected to determine the level of maintenance required. These inspections are typically completed at the staff level and do not represent an additional cost to the Municipality. There are no inspection costs included in annual lifecycle costing.

General repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance required to ensure the assets remain in good working order. Sidewalk infrastructure is generally subject to general repair and maintenance to ensure they remain in suitable condition. General repair and maintenance are typically performed on a sidewalk as opposed to a full sidewalk replacement.

Replacement activities involve the full replacement of assets at the end of their useful life. The replacement of Transportation Infrastructure assets can represent either a capital expense or an operating expense. Certain assets, such as streetlight poles, do not form a significant expense on an individual basis. If an individual streetlight pole or luminaire requires replacement, it would form an operating expense. If a large pool of streetlight poles and luminaires required replacement, the total would reflect a capital expense.

As many of the Transportation Infrastructure assets are replaced on a case-by-case basis (i.e.: funded through the operating budget) and do not require full replacement on a routine basis, the estimated lifecycle capital costing is quite minimal relative to the overall replacement cost. Only the routine end-of-life replacements are included in the average annual capital investment requirement. The unplanned, case-by-case replacements are included in the average annual operating requirement.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Transportation Infrastructure. The total annual capital investment is approximately $528,000 and the total annual operating investment is approximately $2.2 million. The average annual operating investment for Transportation Infrastructure includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance.

Table H5 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Traffic Controls	$323,000		
Traffic Calming	50,000		
Equipment	5,000	$2,218,000	$2,746,000
Sidewalks	100,000		
Guiderails	25,000		
Streetlighting	25,000		
Total	**$528,000**	**$2,218,000**	**$2,746,000**

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table H6 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$24,000
Operating Investment	16,000
Total	**$40,000**

The expansion costs outlined above represent a current estimate based on the growth-related transportation infrastructure included in the 2025 Development Charge Study, such as sidewalks and streetlights. As these costs are anticipated for the future, it's possible that the costs, scope, or timing could change. Any change to these variables could alter the investment requirements provided below.

The cumulative annual capital allocation required by 2034 is approximately $235,000, while the cumulative operating requirement by 2034 is approximately $157,000.

Appendix I

Bridges and Culverts

Bridges and Culverts Overview

The Municipality's Bridges and Culverts inventory contains all the various bridges and culverts that are owned and operated by the Municipality. The maintenance and inspections of these assets are jointly overseen by both the Public Works division, with the Public Services Department, and the infrastructure division within the Planning and Infrastructure Department.

Most of the data on Bridges and Culverts assets is derived from the 2023 Clarington Municipal Structure Inventory and Inspection report conducted by GHD Limited. In 1997, the Province of Ontario passed amendments to the Highway Traffic Act, the Bridge Act, and the Public Transportation and Highway Improvement Act that require all bridge and culvert structures, with a span greater than 3.0 meters, to be inspected under the direction of a Professional Engineer at no greater than two (2) year intervals. The latest report for the Municipality of Clarington was completed in May 2024.

The table below defines the assets that are included in the bridges and culvert asset category.

Table I1 – Bridges and Culvert Assets

Asset Type	Asset Sub-Type	Purpose
Bridges	Bridges	Structures that provide a roadway or walkway for the passage of vehicles, pedestrians, or cyclists across an obstruction, gap or facility and is greater than or equal to 3 metres in span. Bridges are typically constructed of concrete (precast or cast in place), steel, or wood.
	Pedestrian Bridges	Intended for pedestrian traffic only and enables pedestrians to cross wet, fragile, or marshy lands and railways.
Culverts	Culverts	Structures that form an opening through soil for the passage of water, vehicles or pedestrians/cyclists and has a span of 3 metres or more.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for Bridges and Culverts is presented in Table I2 below. Replacement costing has been derived using a combination of the 2023 Clarington Municipal Structure Inventory and Inspection report and estimates provided by municipal staff. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing.

Table I2 - Summarized Asset Inventory – Bridges and Culverts

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Replacement Cost ($2025)
Bridges	Bridges - C - Cast in Place	80	51.0	72,427,000
	Bridges – P- Precast Concrete	13	31.0	51,237,000
	Bridges - S - Steel	4	36.0	5,555,000
	Bridges - T - Timber/Wood	2	56.0	1,343,000
	Pedestrian Bridges	26	19.0	6,313,000
Culverts	Culverts	149	45.0	88,835,000
Total		**274**	**42.9**	**225,710,000**

As shown in Table I2, the total replacement cost for Bridges and Culvert assets is approximately $225.7 million. Approximately 60% of the replacement costing is comprised of the bridge component and 40% represents the culvert component.

Asset Age

The table below summarizes the average age of Bridges and Culverts assets within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Bridge and Culvert assets is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

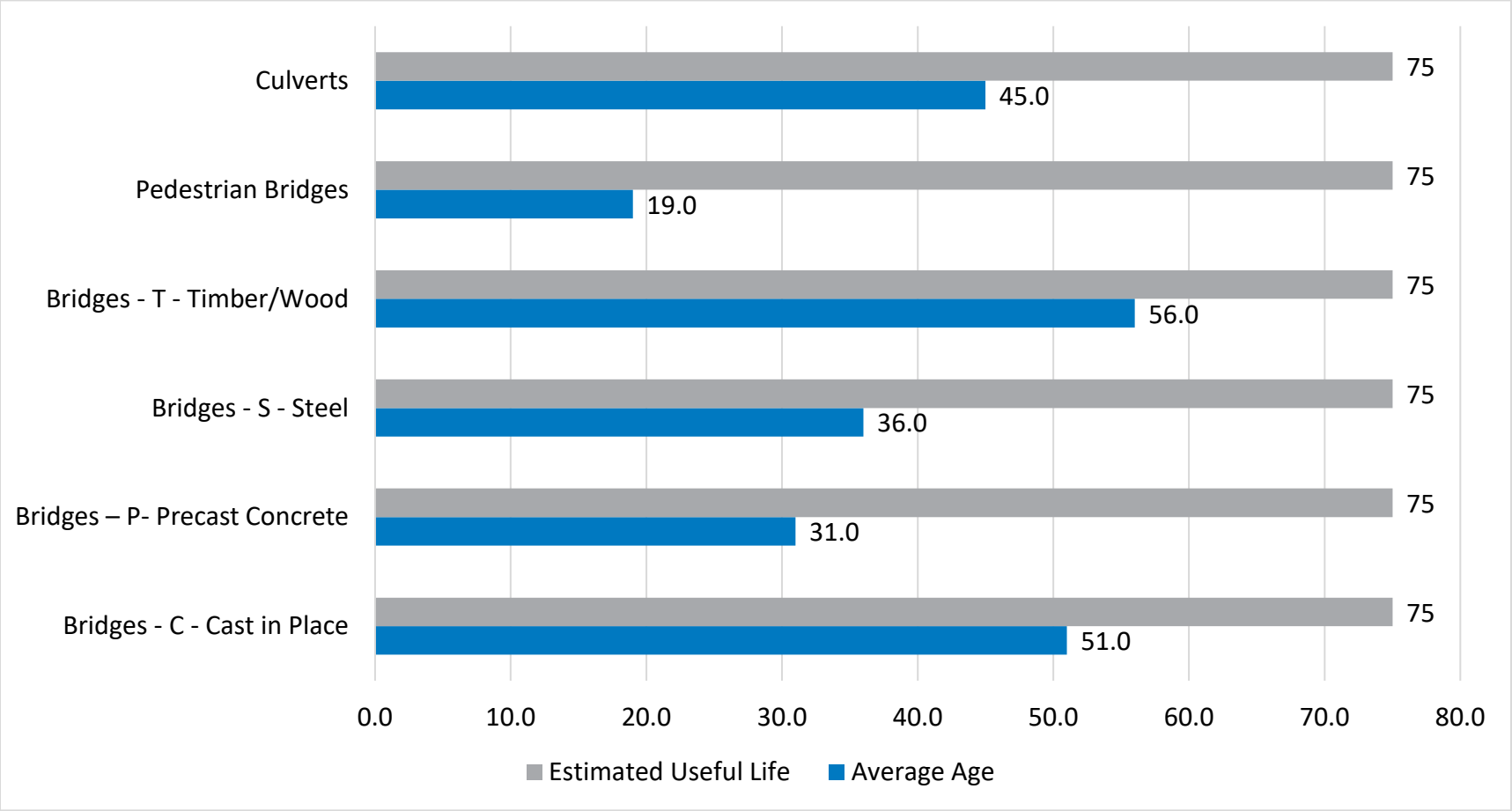
Table I3 – Average Age and Condition – Bridges and Culverts

Asset Type	Asset Sub-Type	Quantity	Average Age (Years)	Average Estimated Useful Life	Average Condition (BCI%)	Average Condition State
Bridges	Bridges - C - Cast in Place	80	51.0	75	72.23%	Good
	Bridges – P- Precast Concrete	13	31.0	75	72.78%	Good
	Bridges - S - Steel	4	36.0	75	66.77%	Fair
	Bridges - T - Timber/Wood	2	56.0	75	74.39%	Good
	Pedestrian Bridges	26	19.0	75	77.78%	Good
Culverts	Culverts	149	45.0	75	71.42%	Good
Total		**274**	**42.9**	**75**	**72.07%**	Good

Both bridges and culverts have an estimated useful life of 75 years. The estimated useful life is defined in the inventory and inspection report and is based on the design life of the structure extended by appropriately timed maintenance and rehabilitation works.

Figure I1 below compares the average age with the average estimated useful life for each asset sub-type. Based on the long estimated useful life assigned to the asset categories, the average age of all infrastructure is well within the estimated useful life.

Figure I1 – Average Age (Years) and Estimated Useful Life (Years) – Bridges and Culverts



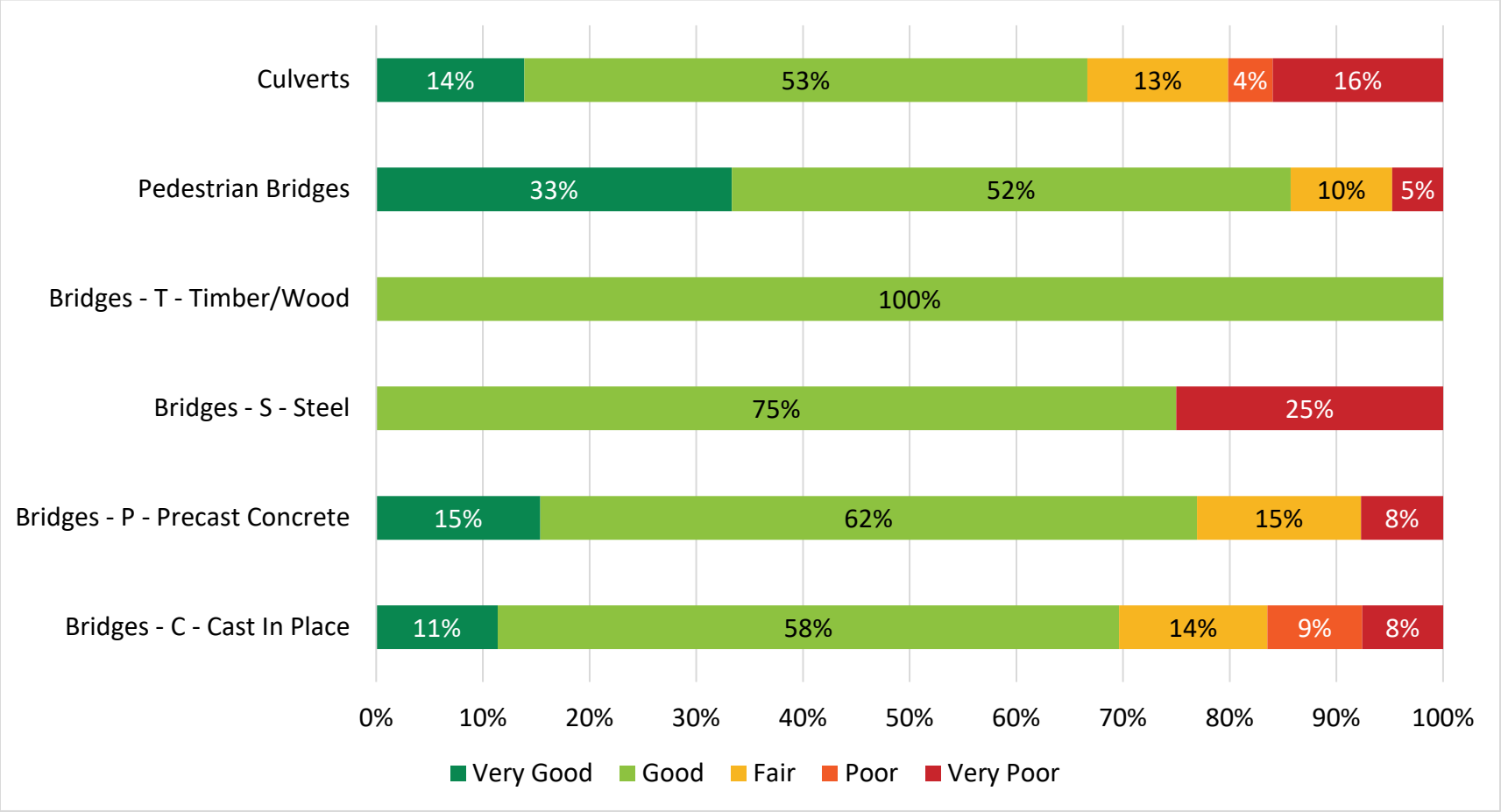
Asset Condition

Table I3 also provides the average condition rating for each of the asset sub-types within Bridges and Culverts. Bridges and Culverts use the Bridge Condition Index (BCI) methodology to assess condition ratings. The BCI values are derived for each component using a material condition rating determined by engineering consultants. The BCI is an industry standard used to assess the condition of bridges and culverts.

The average condition for all bridges and culverts is rated as Good. The average condition rating for bridges and culverts was derived using a weighted average based on the replacement cost of each asset sub-type.

Although the overall condition is assessed as Good, the actual condition of the various assets within each asset sub-type varies. The figure below illustrates the condition distribution within each specific sub-type.

Figure I2 – Condition Distribution – Bridges and Culverts



Levels of Service

The levels of service for Bridges and Culverts were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The levels of service represent a combination of required measures, as per O. Reg. 588/17, and measures developed by staff. The table below provides both the current level of service and the proposed service level target. A Map of all the municipally owned bridges and culverts is provided at the end of this appendix.

Table I4 – Levels of Service Measures – Bridges and Culverts

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Level of Service Target
Reliability	Maintain safe and reliable bridges and culverts and to meet reporting requirements of O. Reg. 588/17	Percentage of bridges in the Municipality with loading or dimensional restrictions	2.02%	< 2%
		Average bridge condition index value	71.54	> 70
		Average culvert condition index value	71.42	> 70
		Average pedestrian bridge condition index value	77.78	> 70

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes four main types of lifecycle activities to ensure Bridges and Culverts assets maintain their current level of service.

Inspection activities for bridges and culverts structures with a span greater than 3.0 meters are completed at least every two years by a Professional Engineer. The last inspection was performed in May 2024. The inspections help identify the potential maintenance requirements over a forecast horizon. The cost of these inspections represents a capital cost to the Municipality and have been captured in the annual lifecycle costing.

Minor repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance required to ensure the assets remain in good working order. Minor expenses are funded through repair and maintenance accounts in the Municipality's operating budget. Major expenses are funded through the Municipality's capital budget.

Major repair and maintenance activities are also performed throughout the lifecycle of the asset. Major repairs and maintenance occur when the cost to perform the activity exceeds $5,000 and the cost becomes a capital expense.

The inspection reports provide a ten-year forecast for repair and maintenance activities required to maintain the facilities in good condition. The forecasts from the inspection reports have been used as the basis for the average annual capital requirement in the AMP.

Replacement activities involve the full replacement of assets at the end of their useful life.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Bridges and Culverts. The total estimated annual capital investment is approximately $4.4 million, and the total annual operating investment is approximately $210,000. The average annual operating investment includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance.

Table I5 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Bridges and Culverts	$4,373,000	$210,000	**$4,583,000**

The average annual capital investment is derived from the 2023 Clarington Municipal Structure Inventory and Inspection report. The engineering consultants provided a 10-year forecast for major repair and rehabilitation. The AMP averages out the total to determine the average annual investment requirement.

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

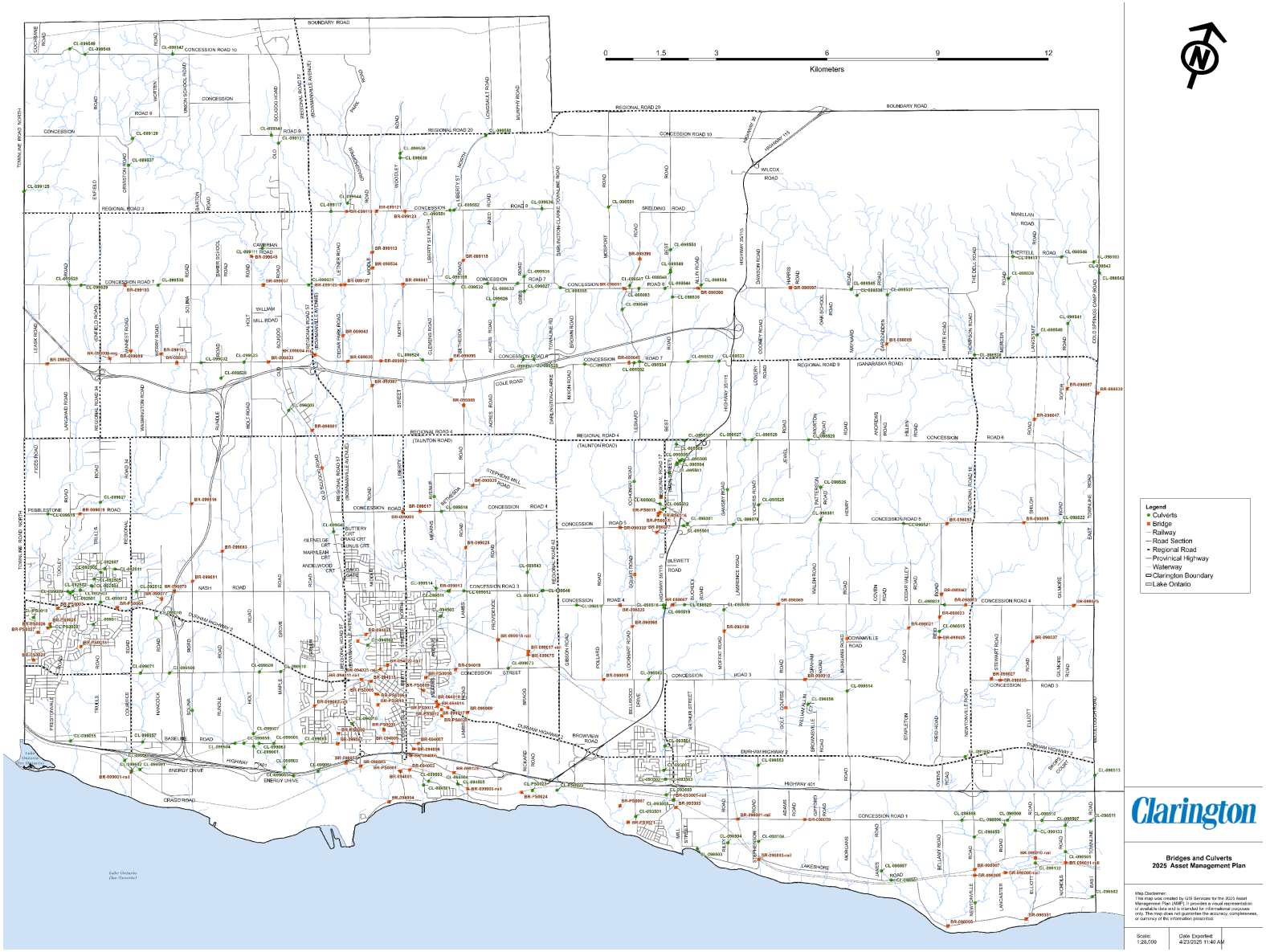
The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table I6 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$48,000
Operating Investment	4,000
Total	**$52,000**

The expansion costs outlined above represent a current estimate based on the growth-related infrastructure included in the 2025 Development Charge Study. As these costs are anticipated for the future, it's possible that the costs, scope, or timing could change. Any change to these variables could alter the investment requirements provided below.

The cumulative annual capital allocation required by 2034 is approximately $478,000, while the cumulative operating requirement by 2034 is approximately $39,000.


0 1.5 3 6 9 12
Kilometers
Legend
Culverts
Bridge
Railway
Road Section
Regional Road
Provincial Highway
Waterway
Clarington Boundary
Lake Ontario
Clarington
Bridges and Culverts
2025 Asset Management Plan
Map Disclaimer:
This map was created by GIS Services for the 2025 Asset Management Plan (AMP). It provides a visual representation of available data and is intended for informational purposes only. The map does not guarantee the accuracy, completeness, or currency of the information presented.
Scale: 1:28,000
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Appendix J

Roads

Roads Overview

The Municipality's Road network consists of critical components to provide safe and efficient transportation service throughout our community. The road network includes all municipality-owned and managed roadways which provide support for roadside infrastructure. The Public Services Department, along with the infrastructure division of the Planning and Infrastructure Department, are responsible for managing operational and rehabilitation processes for all our road infrastructure.

Most of the data on the municipal road network is drawn from the 2023 Roads Needs Study conducted by engineering consultant Golder and Associates. The purpose of the Study was to update the condition of the Municipality's road assets and to forecast the timing and estimates for major and minor rehabilitation strategies from 2024 – 2034. The consulting report uses Decision Optimization Technology (DOT) Roads software to determine the timing of optimized rehabilitation treatments.

Clarington's road network includes both urban and rural segments and is further divided by surface type. The table below defines the different surface types within the Municipality.

Table J1 – Roads Assets

Asset Type	Asset Sub-Type	Purpose
Surface Type	High Class Bitumen (HCB)	High class bituminous (HCB) surface is divided by four levels that is determined by the average daily traffic and the asphalt depth.
	Low Class Bitumen (LCB)	Low class bituminous (LCB) roads are lower grade local paved roads, utilized in more rural areas.
Roadside	Urban	Urban roadsides include curbs and gutters on at least one side of the road or served by storm/combination sewers. In subdivisions, the majority of lot frontages must be less than 30 metres
	Semi - Urban	Semi-Urban roadsides feature development exceeding 50% of the frontage for a minimum of 300 metres on one side or 200 metres on both. There are no curbs or gutters with our without storm/combination

Asset Type	Asset Sub-Type	Purpose
		sewers. In subdivisions, lot frontages exceed 30 meters and roads comply with the ministry's suburban area standards.
	Rural	Rural roadsides are areas with sparse development, or less than 50% of the frontage, including developed areas extending less than 300 meters on one side or 200 meters on both sides with no curbs and gutters.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for Roads is presented in the table below. Replacement costing has been derived using a combination of the 2023 Roads Needs Study report and estimates provided by municipal staff. In certain circumstances, replacement costing has been estimated by applying an inflation factor to historical costing.

Table J2 - Summarized Asset Inventory – Roads

Roadside	Asset Sub-Type	Length (KM's)	Average Age (Years)	Replacement Cost ($2025)
Rural	HCB – Asphalt Average	77.3	16.0	193,925,000
	LCB - Surface Treated	95.6	11.2	4,015,000
	Gravel	65.5	N/A	4,097,000
Semi-Urban	HCB – Asphalt Average	115.4	22.0	289,278,000
	LCB - Surface Treated	19.9	13.0	836,000
Urban	HCB – Asphalt Average	546.2	21.0	1,369,440,000
	LCB - Surface Treated	1.7	10.0	70,000

Roadside	Asset Sub-Type	Length (KM's)	Average Age (Years)	Replacement Cost ($2025)
Total		**921.6**	**20.6**	**1,861,661,000**

As shown in Table J2, the total replacement cost for Roads assets are approximately $1.86 billion. Most of the replacement cost is related to the asphalt roads in both the urban and rural areas. The roads account for approximately 98% of the cost, or over $1.8 billion.

Asset Age

The table below summarizes the average age of Roads assets within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Roads assets is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

Table J3 – Average Age and Condition – Roads

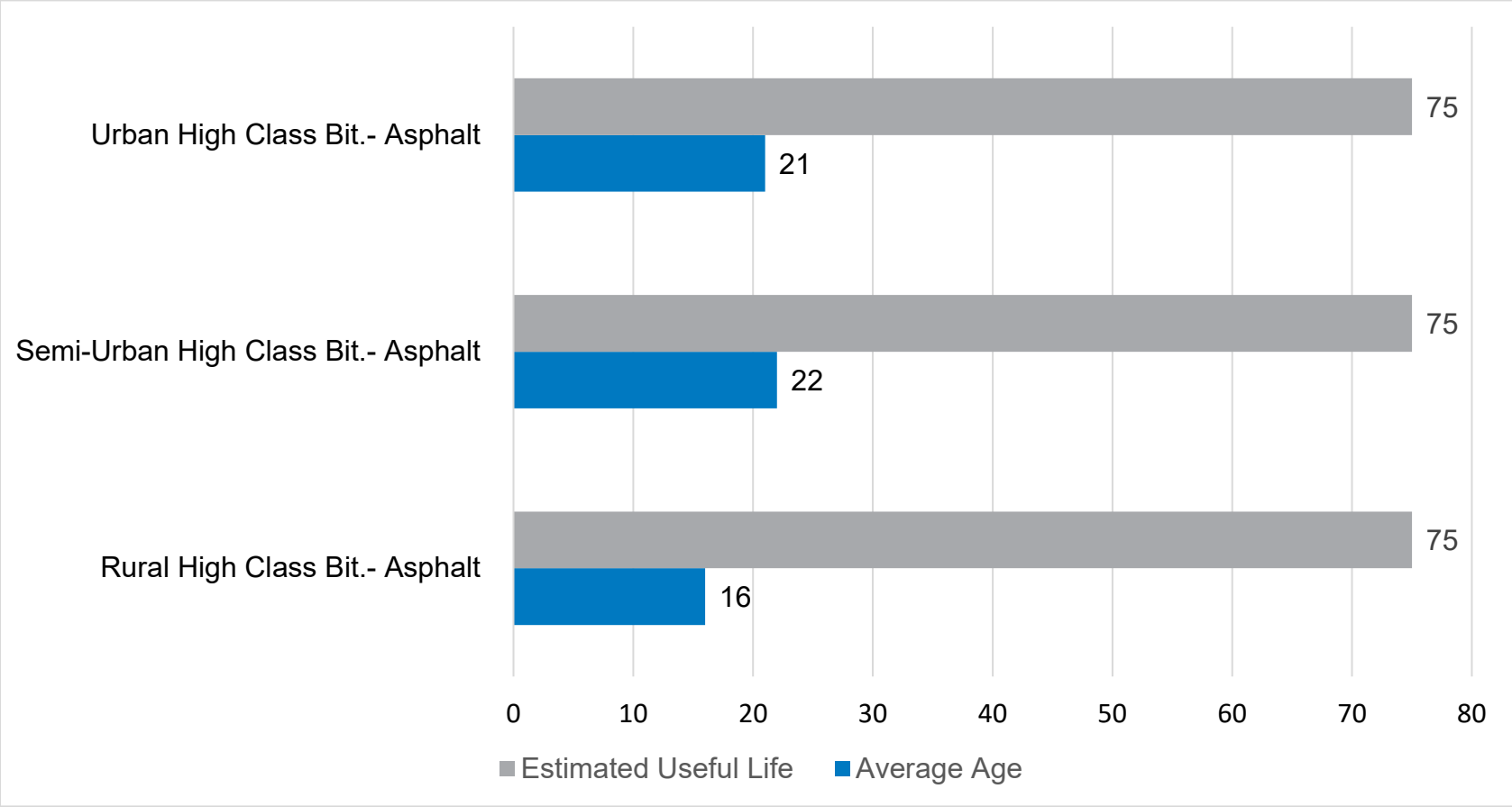
Roadside	Asset Sub-Type	Lane KM's	Average Age (Years)	Average Estimated Useful Life	Average Condition (PCI)	Average Condition State
Rural	HCB – Asphalt Average	77.3	16.0	75	56.9	Fair
	LCB - Surface Treated	95.6	11.2	N/A	67.0	Good
	Gravel	65.5	N/A	N/A	76.7	Very Good
Semi-Urban	HCB – Asphalt Average	115.4	22.0	75	59.4	Fair
	LCB - Surface Treated	19.9	13.0	N/A	72.0	Good
Urban	HCB – Asphalt Average	546.2	21.0	75	61.5	Good
	LCB - Surface Treated	1.7	10.0	N/A	57.5	Fair
Total		**921.5**	**19.1**		**60.8**	**Good**

The average estimated useful life represents the average length of time from initial construction to full replacement. Many lifecycle activities are needed within the 75-year period to ensure the asset meets its useful life estimate.

The surface of a road has a much shorter estimated useful life, depending on the surface. An asphalt surface has an estimated useful life of approximately 25 years, whereas a surface treated road has a useful life of 15 years. Roads are resurfaced once the surface has reached the end of its useful life.

Figure J1 below compares the average age with the average estimated useful life (reconstruction) for each asset sub-type. Based on the long estimated useful life assigned to the asset categories, the average age of all infrastructure is well within the estimated useful life.

Figure J1 – Average Age (Years) and Estimated Useful Life (Years) – Roads



Asset Condition

Table J3 also provides the average condition rating for each of the asset sub-types within the Roads asset category. Roads assets use the Pavement Condition Index (PCI) methodology to assess condition. The PCI is an industry standard for assessing the condition of road infrastructure. The PCI values were derived from the 2023 Roads Needs Study.

The Roads Needs Study provided a PCI for each road segment and was calculated by the engineering consultant using a combination of the Riding Condition Rating (RCR) and Distress Manifestation Index (DMI). The RCR measures the roughness of the road through a mobile application and is measured through the vehicle's suspension. The DCI is measured through visual inspection in accordance with Ontario Ministry of Transportation manuals.

The average condition for all roads is rated as Good. The average condition rating for roads was derived using a weighted average based on the replacement cost of each asset sub-type. Although the overall condition is assessed as Good, the actual condition of the various assets within each asset sub-type varies.

The figures below illustrate the condition distribution for each surface type and for each roadside environment.

Figure J2 – Condition Distribution by Surface Type – Roads

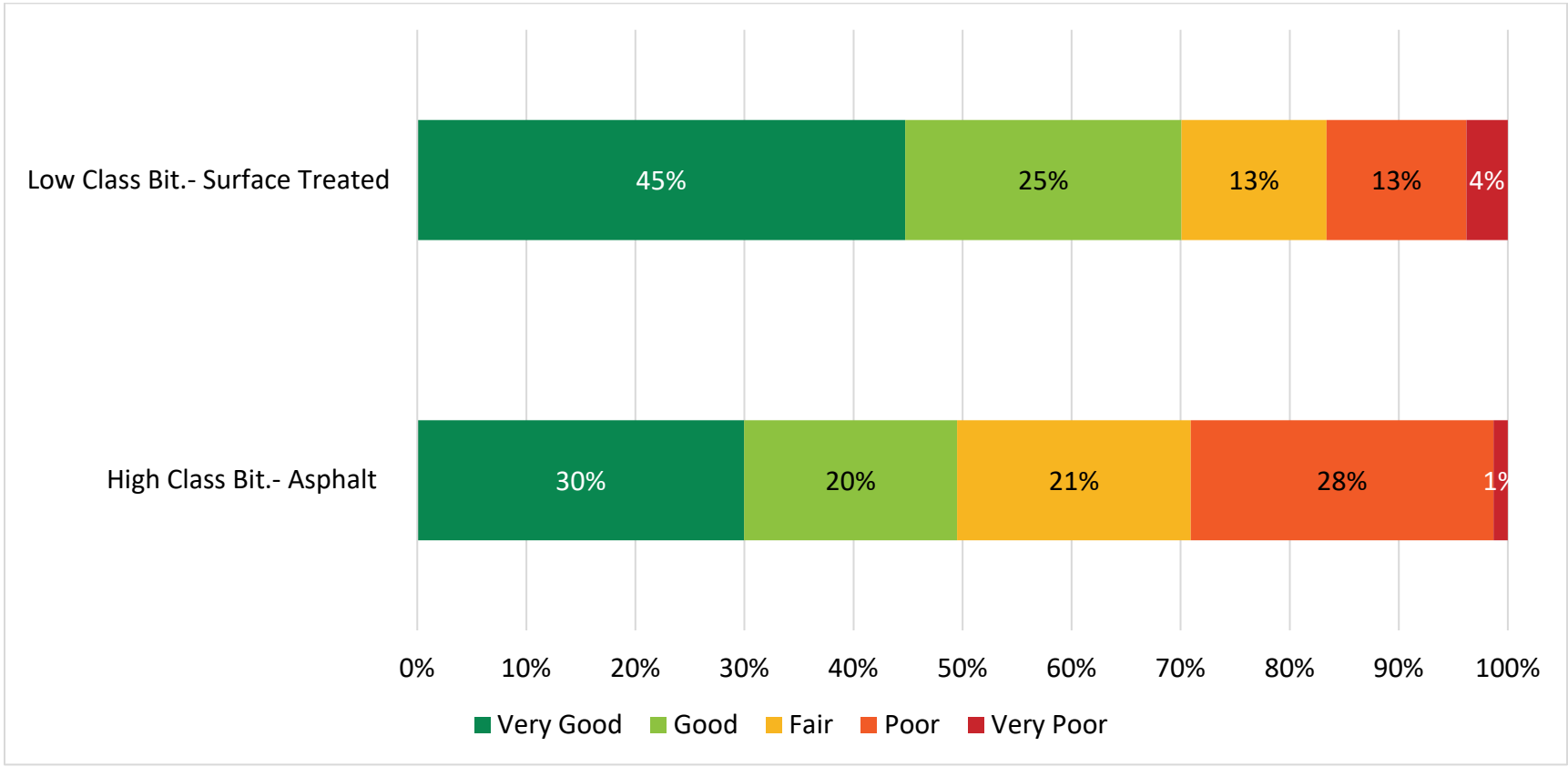


Figure J3 – Condition Distribution by Roadside Environment - Roads

Levels of Service

The levels of service for Roads were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The levels of service represent a combination of required measures, as per O. Reg. 588/17, and measures derived by staff. The table below provides both the current level of service and the proposed service level target. A Map of all the municipally owned road segments is provided at the end of this appendix.

Table J4 – Levels of Service Measures – Bridges and Culverts

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Level of Service Target
Reliability	Maintain safe and reliable roads and to meet reporting requirements of O. Reg. 588/17	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the municipality	0.43 lane km/km²	Maintain current level of service
		Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the municipality	0.16 lane km/km²	Maintain current level of service
		Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the municipality	2.35 lane km/km²	Maintain current level of service
		Average pavement condition index value for rural paved roads	62.88	> 60

		Average pavement condition index value for semi-urban paved roads	60.24	> 60
		Average pavement condition index value for urban paved roads	59.02	> 60
		Average surface condition for unpaved roads	58.07	> 60

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes four main types of lifecycle activities to ensure Roads assets maintain their current level of service.

Inspection activities are completed periodically to assess the overall condition of Roads assets. Visual inspections are typically completed at the staff level. A Roads Needs Study is also conducted every 2 years. The last study was conducted in 2023.

Minor repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance required to ensure the assets remain in good working order. Minor expenses are funded through repair and maintenance accounts in the Municipality's operating budget. Major expenses are funded through the Municipality's capital budget.

Major repair and maintenance activities are also performed throughout the lifecycle of the asset. Major repairs and maintenance occur when the cost to perform the activity exceeds $5,000 and the cost becomes a capital expense.

Replacement activities involve the full replacement of assets at the end of their useful life. The replacement of Roads assets represents a capital expense.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Roads infrastructure. The total estimated annual capital investment is approximately $6.2 million and the total annual operating investment is approximately $5 million. The average annual operating investment includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance.

Table J5 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Roads Infrastructure	$6,184,000	$4,951,000	**$11,135,000**

The average annual capital investment is derived from the 2023 Roads Needs Study report. The engineering consultants provided a 10-year forecast for major repair and rehabilitation. The AMP averages out the total to determine the average annual investment requirement.

Lifecycle Expansion Activities

In addition to repair and general maintenance activities, expansion and upgrade activities are also required to maintain the proposed level of service as population growth occurs. In most cases, the first-round capital acquisition costs would be primarily financed through development charges. However, subsequent replacements and general maintenance activities would require financing through tax levy funded reserve funds.

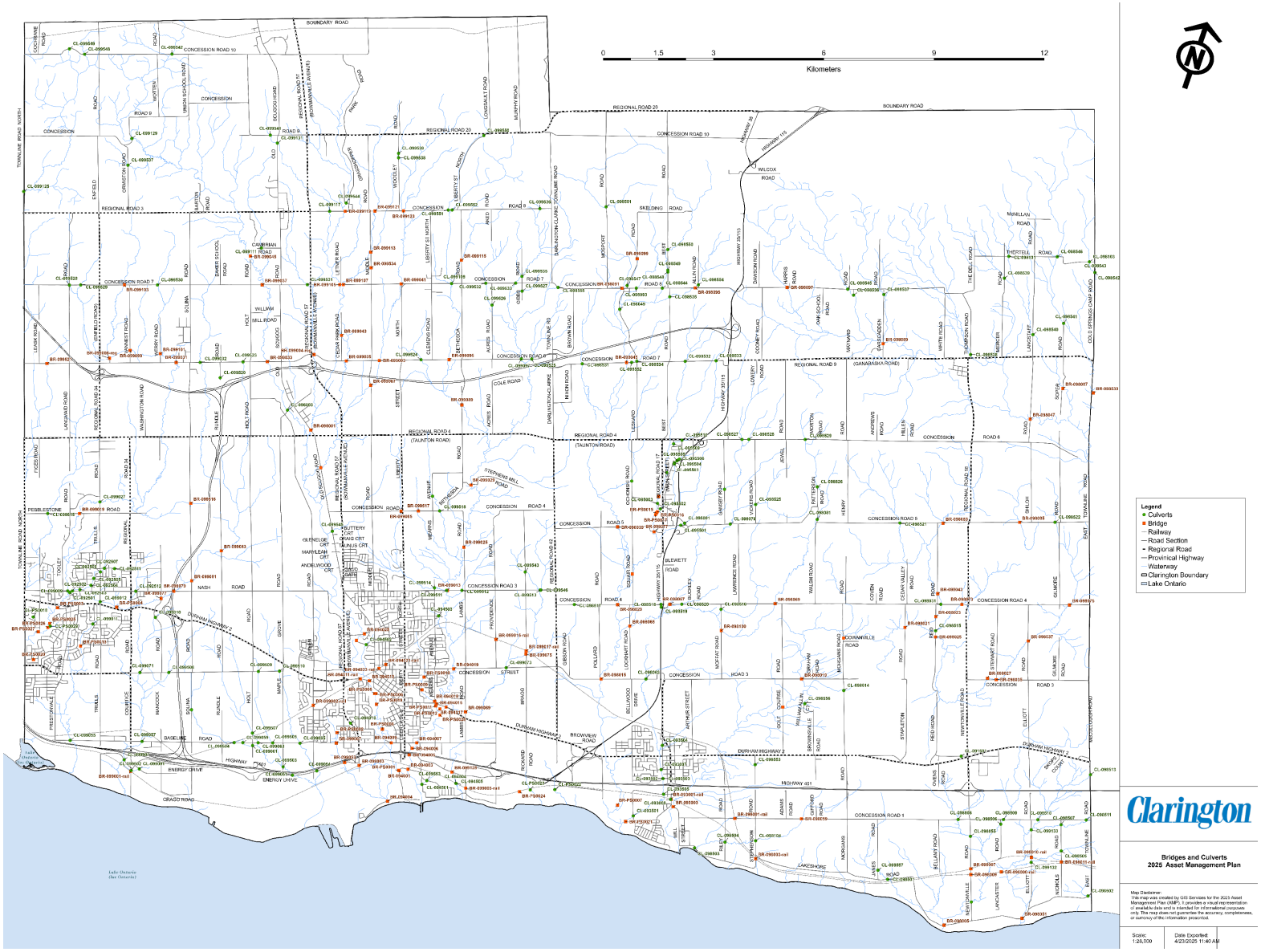
The table below provides an estimate of the average annual capital and operating expansion needs over the next ten years. The annual expansion activities are drawn from the Municipality's 2025 Development Charge Study.

Table J6 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$228,000
Operating Investment	76,000
Total	**$304,000**

The expansion costs outlined above represent a current estimate based on the growth-related infrastructure included in the 2025 Development Charge Study. As these costs are anticipated for the future, it's possible that the costs, scope, or timing could change. Any change to these variables could alter the investment requirements provided below.

The cumulative annual capital allocation required by 2034 is approximately $2.3 million, while the cumulative operating requirement by 2034 is approximately $761,000.


0 1.5 3 6 9 12
Kilometers
Legend
Culverts
Bridge
Railway
Road Section
Regional Road
Provincial Highway
Waterway
Clarington Boundary
Lake Ontario
Clarington
Bridges and Culverts
2025 Asset Management Plan
Map Disclaimer:
This map was created by GIS Services for the 2025 Asset Management Plan (AMP). It provides a visual representation of available data and is intended for informational purposes only. The map does not guarantee the accuracy, completeness, or currency of the information presented.
Scale: 1:25,000
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Appendix K

Stormwater Management

Stormwater Management Overview

The Municipality's stormwater inventory contains various assets, owned and operated by the Municipality, dealing with stormwater runoff. The maintenance and inspections of these assets are jointly overseen by both the Public Works division, within the Public Services Department, and the infrastructure division within the Planning and Infrastructure Department.

The Municipality's Stormwater assets have been divided into different asset sub-types, based on similar characteristics and functions. The different sub-types are provided and defined in the table below.

Table K1 – Stormwater Management Assets

Asset Type	Asset Sub-Type	Purpose
Stormwater Ponds	Wet and Dry Ponds	Detention basins are designed to temporarily store stormwater runoff and release it at a controlled rate. A wet pond maintains a permanent pool of water whereas a dry pond does not.
Conduits	Conduits	Mainline pipes where water is conveyed from a collection area to a discharge point.
Structures	Maintenance Holes	Acts as an access point for workers to inspect, clean, and maintain the stormwater system.
	Catch Basins	Structure designed to collect and channel excess water from paved surfaces and helps filter out debris or sediment.
	Inlet / Outlet Structures	Inlet structures collect stormwater runoff from surfaces such as roads, parking lots, etc. Outlet structures control the release of stormwater collection.
	Oil Grit Separators	Specialized devices used to remove pollutants from runoff.

State of Local Infrastructure

Asset Inventory

The summarized asset inventory for Stormwater infrastructure is presented in Table K2 below. Replacement costing has been derived using a combination of staff estimates and applying an inflation factor to historical costing. Replacement costing for stormwater ponds reflects an estimated average cost for a stormwater pond clean out. Stormwater ponds would never be subject to a full replacement; however, a clean out of the sediment build up would restore the pond back to its original condition.

Table K2 - Summarized Asset Inventory – Stormwater Management

Asset Type	Asset Sub-Type	Quantity	Length (KM)	Average Age (Years)	Replacement Cost ($2025)
Rural	Wet Pond	29		17.0	19,053,000
	Dry Pond	16		25.0	10,512,000
Conduits	Conduit (mainline pipe)		281.5	25.0	157,215,000
Structures	Maintenance Holes	4,328		27.0	42,935,000
	Catch Basins	6,660		24.8	14,939,000
	Inlet / Outlet Structures	163		24.3	244,000
	Oil Grit Separators	19		15.8	3,800,000
Total		**11,170**	**281.5**	**24.54**	**248,698,000**

As shown in Table K2, the total replacement cost for Stormwater assets is approximately $249 million. Most of the replacement cost is related to conduit infrastructure, which accounts for over 60% of the total replacement cost.

Asset Age

The table below summarizes the average age of Stormwater assets within each sub-category. The age of each asset is assessed and given equal weighting to calculate the simple average age for each asset sub-type. The overall average age of all Stormwater assets is calculated as a weighted average, based on the total replacement cost of each asset sub-type.

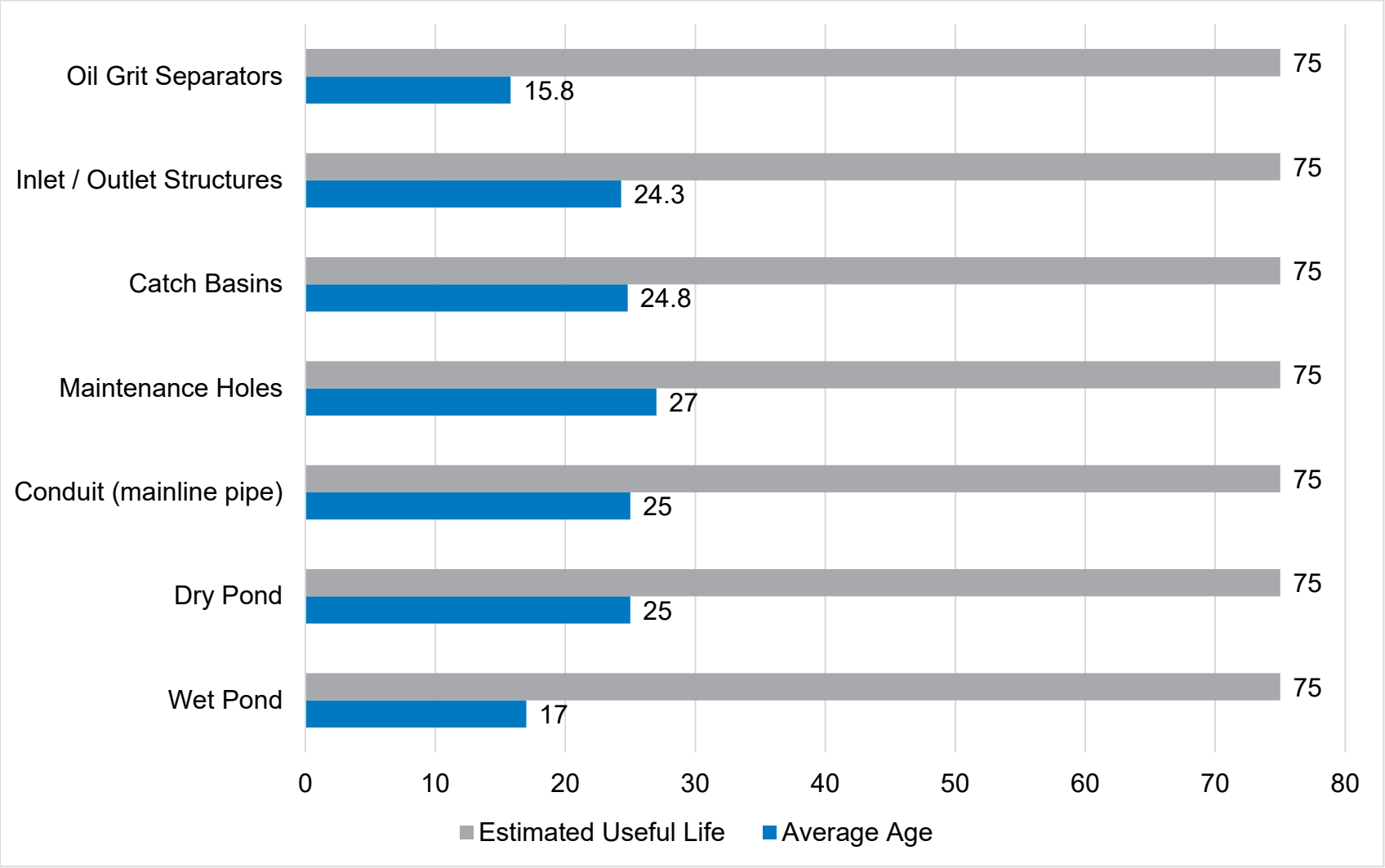
Table K3 – Average Age and Condition – Stormwater Management

Asset Type	Asset Sub-Type	Quantity	Length (KM)	Average Age (Years)	Average Estimated Useful Life	Average Condition (ULC%)	Average Condition State
Rural	Wet Pond	29		17.0	75	24%	Very Good
	Dry Pond	16		25.0	75	35%	Very Good
Conduits	Conduit (mainline pipe)		281.5	25.0	75	34%	Very Good
Structures	Maintenance Holes	4,328		27.0	75	34%	Very Good
	Catch Basins	6,660		24.8	75	33%	Very Good
	Inlet / Outlet Structures	163		24.3	75	31%	Very Good
	Oil Grit Separators	19		15.8	75	23%	Very Good
Total		**11,170**	**281.5**	**24.54**		**33%**	**Very Good**

The average age of the Municipality's stormwater assets is only 24.5 years, meaning the stormwater system is relatively young. The age is based on the time the assets are assumed as most of the infrastructure is contributed by developers.

The average estimated useful life is based on industry best practice and the Municipality's Capitalization Policy. The figure below compares the average age with the average estimated useful life for each asset sub-type. Based on the long estimated useful life assigned to the asset categories, the average age of all infrastructure is well within the estimated useful life.

Figure K1 – Average Age (Years) and Estimated Useful Life (Years) – Stormwater

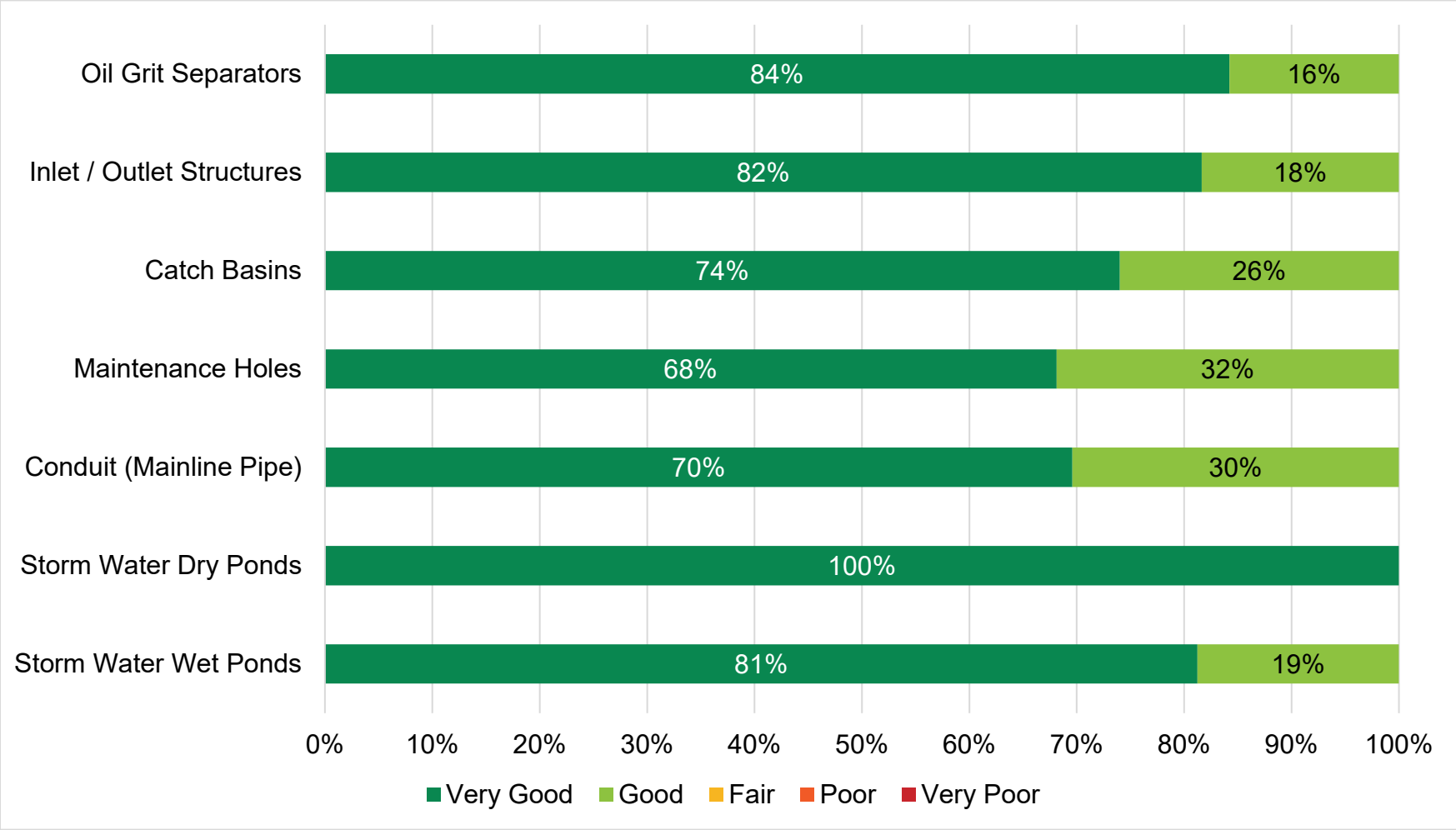


Asset Condition

Table K3 also provides the average condition rating for each of the asset sub-types within the Stormwater asset category. The condition of Stormwater assets is assessed based on age, using the ULC% methodology.

The average condition for all stormwater assets is rated as Very Good. The Very Good rating is due to the young age of the infrastructure relative to the long estimated useful life. The average condition rating for Stormwater was derived using a weighted average based on the replacement cost of each asset sub-type. Although the overall condition is assessed as Very Good, the actual condition of the various assets range between Very Good and Good, as illustrated in the condition distribution below.

Figure K2 – Condition Distribution – Stormwater Management



Levels of Service

The levels of service for Stormwater were developed to reflect the desires, values, and expectations of the community. The Level of Service statements are intended to capture the expectations of the community, while the performance measures are intended to quantify those expectations. The Levels of Service attributes are intended to reflect some of the key characteristics important to the organization.

The levels of service represent a combination of required measures, as per O. Reg. 588/17, and measures derived by staff. The table below provides both the current level of service and the proposed service level target.

Table K4 – Levels of Service Measures – Bridges and Culverts

Service Attribute	Level of Service Statement	Performance Measure	Current Performance	Proposed Level of Service Target
Reliability	To provide reliable stormwater management services and meet reporting requirements of O. Reg. 588/17	Percentage of properties in municipality resilient to a 100-year storm (O. Reg. 588/17).	91.5%	95 – 100%
		Percentage of the municipal stormwater management system resilient to a 5-year storm (O. Reg. 588/17).	98%	100%
		% Of Storm water assets in fair or better condition	100%	> 90%
		5-Year Km Average of storm sewer network CCTV inspected annually (Includes new assumptions/Capital replacements /O&M)	8.97	Maintain current level of service

		% Of inspections & routine minor maintenance carried out on Storm Water Management Facilities annually	100%	100%
		% Of Total Catch basins cleaned annually (3-year Avg)	26%	33%
		% Of streets with catch basins street swept twice annually	98%	100%

Lifecycle Management Strategies

Repair and Replacement Activities

The Municipality undertakes three main types of lifecycle activities to ensure Stormwater assets maintain their current level of service.

Inspection activities are completed periodically to assess the overall condition of new stormwater assets being assumed by the Municipality.

Minor repair and maintenance activities are performed throughout the lifecycle of the assets. These activities include the general maintenance required to ensure the assets remain in good working order. Minor expenses are funded through repair and maintenance accounts in the Municipality's operating budget. Major expenses are funded through the Municipality's capital budget.

Replacement activities involve the full replacement of assets at the end of their useful life. The replacement of Stormwater assets represents a capital expense.

Annual Capital and Operating Requirements

The table below provides a summary of the average annual capital and operating investment required to meet the proposed level of service for Stormwater management. The total estimated annual capital investment is

approximately $657,000 and the total annual operating investment is approximately $537,000. The average annual operating investment includes salaries, repair and maintenance activities, and other miscellaneous expenses associated with preventative maintenance.

Table K5 – Average Annual Capital and Operating Investment ($2025)

Asset Sub-Type	Average Annual Capital Investment	Average Annual Operating Investment	Total Average Annual Investment
Stormwater Management	$657,000	$537,000	**$1,194,000**

The Municipality's stormwater assets are relatively young and have very long useful lives. Most of the repair and replacement activities are completed through the annual operating budget allocation. Major replacements tend to only occur during the reconstruction of a road. Therefore, the average annual capital investments reflect only a capital allocation for stormwater pond clean outs.

Lifecycle Expansion Activities

As the average capital investment allocation pertains only to stormwater pond clean out, expansion activities would only include new stormwater pond construction. Stormwater ponds are typically a direct developer responsibility and do not require replacement. Therefore, no additional capital allocations are required for growth and expansion. The regular clean out of new stormwater ponds would become part of any future annual stormwater pond clean out program.

Should any future costs arise related to growth-related stormwater infrastructure, these costs would be offset, either in whole or in part, by the future stormwater fee.

In terms of operating cost impacts from expansion activities, the estimated annual operating allocation, based on a per capita approach, is approximately $13,000.

Table K6 – Average Annual Capital and Operating Investment – Expansion Activities ($2025)

	Average Annual Investment
Capital Investment	$0
Operating Investment	13,000
Total	**$13,000**

Appendix L

Natural Assets

Natural Assets Overview

The Municipality of Clarington has a range of Natural Assets that provide essential environmental, social, and economic services to the community. These assets include agricultural lands, wetlands, meadows, and forests. While not traditionally included in asset inventories, Natural Assets contribute significantly to stormwater management, erosion control, carbon storage, biodiversity, and recreational opportunities.

Stewardship of these assets involves collaboration across multiple departments, including Planning and Infrastructure Services and Public Services. Integrating Natural Assets into the asset management framework supports sustainable service delivery, enhances climate resilience, and can result in long-term cost savings when compared to grey infrastructure alternatives.

Asset Inventory

The asset inventory for Natural Assets has been compiled from reports provided by local conservation authorities and is summarized in Table L1. While current data beyond the inventory is limited, future iterations of the AMP will provide enhanced detail, including estimated useful lives, condition ratings, and levels of service.

The Municipality is committed to improving its understanding of Natural Assets through ongoing collaboration, data collection, and integration of natural capital valuation approaches. This initiative aligns with Clarington's sustainability goals and supports compliance with evolving provincial asset management requirements.

Table L1 – Summarized Asset Inventory – Natural Assets

Asset Type	Asset Sub Type	Area (m2)
Agriculture	Cultural Hedgerow	2,499,342.10
	Cultural Plantation	871.53
	Cultural Thicket	30.39
	Cultural Woodland	1,225.72
	Intensive Agriculture	154,555,814.92
	Non-Intensive Agriculture	13,176,120.45
	Not Specified	65,420,485.49
	Total Agriculture	**235,653,890.60**
Beach / Bluff	Open Beach / Bar	256,434.45
	Open Bluff	89,982.92
	Shrub Beach / Bar	4,115.08
	Shrub Bluff	155.49
	Treed Beach / Bar	8,390.82
	Treed Bluff	237.22
	Total Beach / Bluff	**359,315.97**
Forest	Coniferous Forest	12,509.06
	Cultural Plantation	1,701,147.05
	Cultural Thicket	10.63
	Cultural Woodland	1,442,790.02
	Deciduous Forest	30,555.80

	Forest Coniferous	1,042,441.54
	Forest Deciduous	10,768,292.60
	Forest Mixed	10,754,869.44
	Total Forest	**25,752,616.13**
Forest / Swamp	Coniferous Swamp	1,217,628.92
	Deciduous Swamp	700,130.20
	Mixed Swamp	13,406,395.92
	Total Forest / Swamp	**15,324,155.04**
Meadow	Cultural Meadow	157,543,414.79
	Cultural Savannah	7,989,538.51
	Cultural Thicket	50,396,288.47
	Forest Deciduous	3.05
	Total Meadow	**215,929,244.82**
Urban	Active Aggregate	211.73
	Cultural Plantation	0.43
	Cultural Thicket	13.20
	Forest Deciduous	0.40
	Inactive Aggregate	343.07
	Manicured Open Space	113,121.58
	Not Specified	916,539.76
	Railway	235.92
	Road	821,862.81

	Rural Development	10,854,323.51
	Urban Area	123,453.18
	Urban Development	2,459.74
	Total Urban	**12,832,565.34**
Water	Open Water	2,406,020.23
Wetland	Floating-leaved Shallow Aquatic	71.41
	Meadow Marsh	565,169.73
	Meadowed Marsh	634,525.32
	Not Specified	4,519.19
	Open Fen	3.41
	Shallow Marsh	601,927.16
	Submerged Shallow Aquatic	5,183,064.49
	Thicket Swamp	97,743,602.74
	Treed Bog	0.70
	Total Wetland	**107,138,904.37**

Asset Management Plan 2025

The Corporation of the Municipality of Clarington
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