Lifecycle Strategies Report

Township of Hamilton

June 2023

psdcitywide

Table of Contents

LEGAL NOTICE

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Introduction & Background

The Township of Hamilton engaged PSD Citywide as an asset management consultant to guide and develop lifecycle strategies, review, and evaluate risk, and establish and measure current levels of service for its infrastructure assets. This report is a culmination of PSD Citywide's engagement with Hamilton Township as it relates to **lifecycle strategies.** The report identifies and discusses relevant lifecycle activities and reviews their results.

Hamilton Township's staff provided key insights and information to inform this report's findings and the models developed.

Project Scope

This project focused on documenting current lifecycle management strategies for Hamilton Township's infrastructure assets. This report focuses on core and non-core asset categories as defined by Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure. For Hamilton Township, these are as follows:

Core Asset Categories	Non-Core Asset Categories
Road Network	Facilities
Bridges & Culverts	Land Improvements
Stormwater Network	Machinery & Equipment
Water Network	Fleet & Fleet Equipment[1]

PSD Citywide engaged staff, generally on a departmental basis, to provide information about lifecycle management including its definition, informational inputs, intended outcomes, and benefits. Following this, PSD Citywide collected information about current lifecycle management practices by asset category (i.e., roads, machinery, facilities etc.). To the extent possible asset information including related reports and Master Studies was gathered, reviewed, and incorporated into this report.

[1] Due to differences in legislative requirements and some lifecycle strategies, in this report fire fleet and fire machinery and equipment assets are discussed separately from all other fleet and machinery and equipment assets.

Overview of Asset Management & Lifecycle Strategies

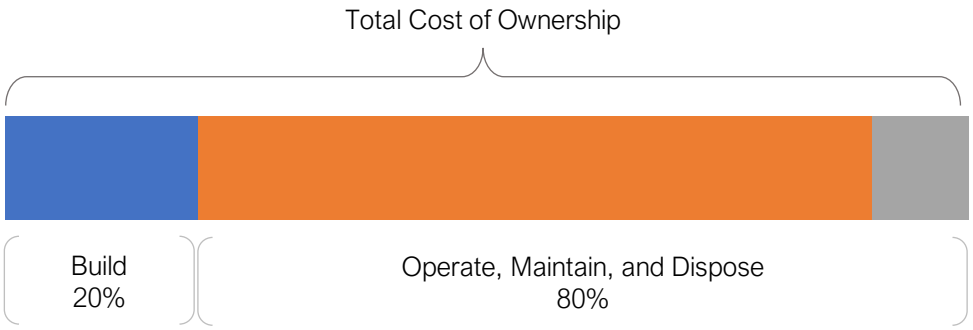
Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets that deliver services to the community. While municipalities have always managed their assets through various interventions (i.e., maintenance, repairs, and larger rehabilitations or replacements) sometimes this is without connection to organizational goals and objectives. Asset Management is the practice of aligning organizational goals with asset decisions that consider and balance asset costs, opportunities, and risks against performance. This involves coordinated activities, including lifecycle management, that aid an organization in realizing value from their assets.

Lifecycle Strategies: Total Lifecycle Cost

Managing assets involves various activities beginning with asset acquisition, transitioning to asset maintenance and rehabilitation decisions, and ending with disposal decisions.

Often, asset acquisition costs are a primary consideration to lifecycle decisions. However, when reviewing total cost of ownership, operation, maintenance, and rehabilitation activities account for most cost throughout an asset's lifecycle and can significantly impact its performance, risk, and total cost of ownership.

Generally, the acquisition of capital assets accounts for only 10-20% of their total cost of ownership. The remaining 80-90% derives from operations, maintenance, and rehabilitation. This report focuses its analysis on the capital costs to maintain, rehabilitate and replace existing municipal infrastructure assets.



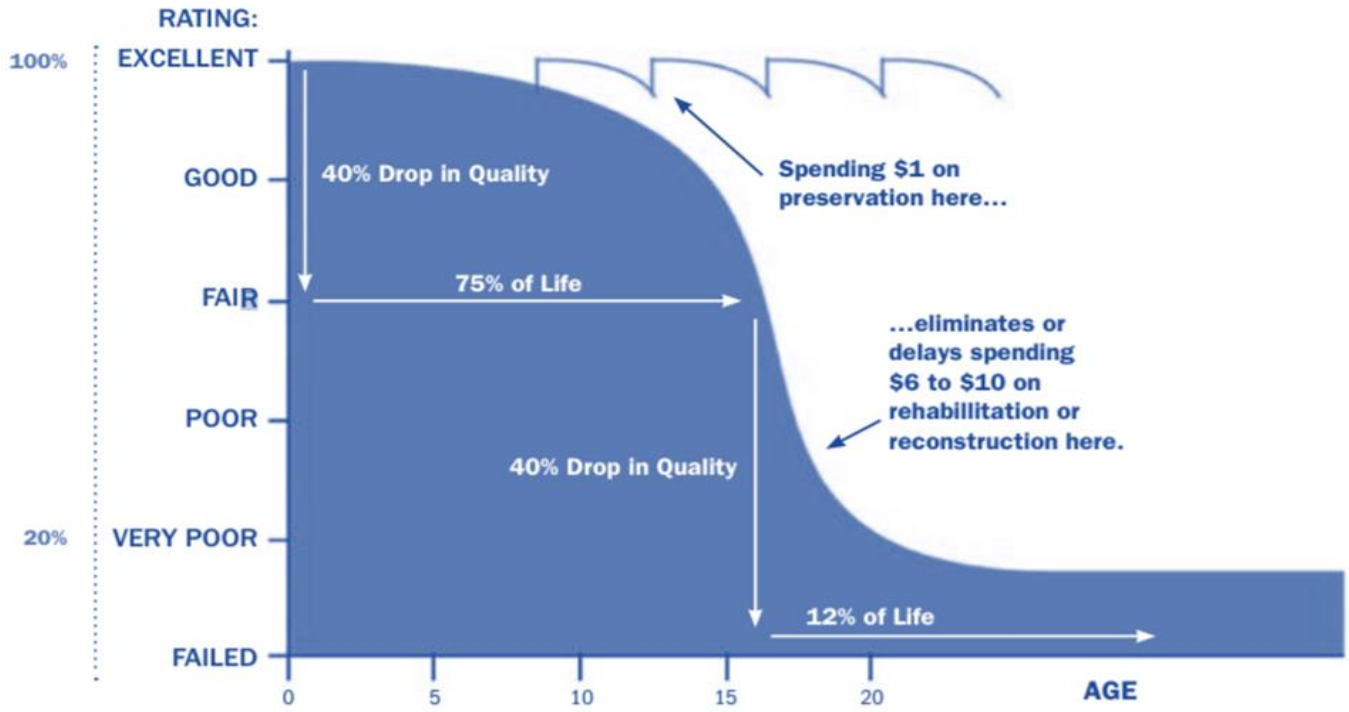
Asset lifecycle cost costs can (and often do) span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations.

This report and the analysis completed is critical to this planning, and an essential element of broader asset management program.

Lifecycle Management Strategies: Condition Deterioration

The condition or performance of assets will deteriorate over time. Asset deterioration is affected by a range of factors including an asset's characteristics (i.e., material, design), location, utilization, maintenance history and environment. Asset deterioration has a negative effect on performance, and may be characterized by increased cost, risk and even service disruption.

In most cases, the rate of deterioration is not perfectly linear. Instead, assets tend to maintain a fair or better condition in the first half or so of their life and then begin to decline in condition more rapidly. For this reason, the timing of investment to assets can impact the amount of betterment obtained per unit of investment. This is illustrated below:



Recognizing that the impact of asset investment is affected by the asset's condition, reliable and up to date asset condition, information becomes a very important input to effective lifecycle management strategies.

Lifecycle Management Strategies: Activity Model Framework

A lifecycle activity model framework, when applied to infrastructure assets, seeks to provide a sophisticated scheduling model for lifecycle activities.

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories: maintenance, rehabilitation, and replacement.

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect lifecycle activities have on assets, and their cost, enables more prudent lifecycle management decisions. Often, this also provides a better balance of asset cost, risk, and performance in alignment with organizational goals. The following table provides a description of common types of lifecycle activities and the general difference in cost:

Table 1: Lifecycle Activity Types & Descriptions

Event Class	Description	Example	Cost
Maintenance	Any activities that preserve asset function or prevent defects or deteriorations from occurring.	Oil Change (Heavy Equipment) Crack Seal (Roads)	**$**
Rehabilitation	Any activities that rectify defects or deficiencies that are already present and may be affecting asset performance. Performing the rehabilitation may significantly improve asset condition and expected remaining service life.	Engine Rebuild (Heavy Equipment) Mill & Resurface (Roads)	**$$**
Replacement	Asset end-of-life activities that often involve the complete replacement of an asset.	Full Reconstruction	**$$$**

Through staff interviews, typical lifecycle strategies were identified by asset category and function. These are further discussed in the relevant asset category section. This is noting that the lifecycle report is a living document that should be updated regularly. This will allow the Township to re-evaluate the state of infrastructure and review how the organization's asset management and financial strategies are progressing.

Key Definitions & Concepts

Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. This report focuses on lifecycle management. In this report, several concepts and definitions are explored. These concepts are outlined below.

Asset Categories & Segments

In this report, asset information is reported in a two-tier hierarchy: the category and segment level. Asset categories are the first tier of categorization and are based on the general function of the asset. Asset segments are the second tier of categorization and are typically grouped by similar function and/or department; this structure provides a more detailed and tailored level of analysis. As an example, the road network category and segment are detailed below:

Asset Category	Segment
Road Network	Curb & Gutter
	Guard Rails
	Paved Roads LCB
	Paved Roads HCB
	Small Culverts
	Streetlights

As per O. Reg. 588/17 requirements assets reported must meet the Municipalities Tangible Capital Asset (TCA) Policy threshold. Therefore, a municipality may have some features in their Municipality that are generally appreciated but do not meet the TCA threshold and are therefore excluded from asset management reporting. For example, walking trails that do not meet the TCA threshold are not by O.Reg. 588/17 requirements an asset to be included.

Data Effective Date

It is important to note that this report is based on *data as of December 2021*. All data, including replacement cost and condition, is reported as of this date. Informational inputs are based on the best available processes, data, and information at the Township. Assets included are also as of December 2021; therefore, any asset acquisitions or disposals since December 2021 are not reflected in report figures. Strategic asset management planning is an ongoing and dynamic process that requires continuous data updates and dedicated data management

resources. Future updates to asset replacement cost, condition, and planned capital events will be needed.

Deriving Replacement Costs

A significant lifecycle event is asset replacement. Estimating the cost of asset replacement is pivotal to appropriate budget and project planning. There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. This report relies on two costing methodologies:

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

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

Estimated Useful Life

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

Average Annual Requirement

This is the average amount of annual capital investment that is required. It accounts for all capital investments which may include asset rehabilitation activities. It is calculated by determining the total investment required over the life of an asset and then dividing this amount by the assets EUL. Average Annual requirement is most often reported at the category level; in this case, it is based on the total capital investment requirements over the life of all assets within the respective asset category.

Reinvestment Rate

As assets age and deteriorate, they require additional investment to maintain a state of good repair. The reinvestment of capital funds, through asset renewal or replacement, is necessary to sustain an adequate level of service. The reinvestment rate is a measurement of available or required funding relative to the total replacement cost.

By comparing the actual vs. target reinvestment rate, the Township can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:

$$Target\ Reinvestment\ Rate = \frac{Annual\ Capital\ Requirement}{Total\ Replacement\ Cost}$$

$$Actual\ Reinvestment\ Rate = \frac{Annual\ Capital\ Funding}{Total\ Replacement\ Cost}$$

Deriving Asset Condition

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

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Township's asset portfolio. The table below outlines a condition rating system used commonly for assets in this report. This rating system is aligned with the Canadian Core Public Infrastructure Survey which is used to develop the Canadian Infrastructure Report Card. When assessed condition data is not available, service life remaining is used to approximate asset condition.

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well maintained, good condition, new or recently rehabilitated	80-100
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	60-79
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-59
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-39
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-19

The analysis in this report is based on assessed condition data only as available. In the absence of assessed condition data, asset age and estimated useful life (EUL) is used as a proxy to determine asset condition.

The following table summarizes the source of assessed condition and the percentage of assets with assessed condition by asset category. Where condition information is as of an earlier date than the data effective date, it is projected to the data effective date based on the reported condition and the assets EUL.

Asset Category	Asset Segment	% of Assets with Assessed Condition[2]	Source of Condition Data
Road Network	All	91%	2019 Road Appraisals
Bridges & Culverts	All	100%	2020/2021 OSIM Report
Storm Network	All	4%	Staff Assessments
Water Network	All	57%	2020 Water Systems Capital Needs Assessment Report
Facilities	All	100%	Staff Assessments
Land Improvements	All	96%	Staff Assessments
Machinery & Equipment	All	93%	Staff Assessments
Fleet & fleet Equipment	All	100%	Staff Assessments

[2] In absence of physical inspection, staff expertise was used to provide condition assessment, where possible

Ontario Regulation 588/17 Requirements

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

The regulation has four reporting requirements for Ontario Municipalities these are as follows:

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

1. Current levels of service
2. Inventory analysis
3. Lifecycle activities to sustain LOS.
4. Cost of lifecycle activities
5. Population and employment forecasts
6. Discussion of growth

2024

Asset Management Plan for Core and Non-Core Assets

2025

Asset Management Policy Update and an Asset Management Plan for All Assets with the following additional components:

1. Proposed levels of service for next 10 years
2. Updated inventory analysis.
3. Lifecycle management strategy
4. Financial strategy and addressing shortfalls.
5. Discussion of how growth assumptions impacted lifecycle and financial.

This report focuses on the identification of typical lifecycle activities conducted by asset class that are required to sustain the current Level of Service (LOS). The accompanying risk and LOS reports focus on the other components required under O.Reg. 588/17.

O. Reg. 588/17 defines municipal infrastructure asset as directly owned by a municipality or included on the consolidated financial statements of a municipality. Assets must meet the capitalization threshold as defined in the Tangible Capital

Asset (TCA) Policy to be recognized on the financial statements. Therefore, some inventory within the Township may not be included in the asset management inventory because they are not a Tangible Capital Asset. Typically, these are assets funded from operational budgets.

O. Reg. 588/17 2024 Compliance

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2024. Next to each requirement, a page or section reference is included to indicate status and appliable report.

Requirement	O. Reg. Section	Report Reference	Status
Summary of assets in each category	S.5(2), 3(i)	All Reports	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	All Reports	Complete
Average age of assets in each category	S.5(2), 3(iii)	Lifecycle Report	Complete
Condition of core assets in each category	S.5(2), 3(iv)	All Reports	Complete
Description of Township's approach to assessing the condition of assets in each category	S.5(2), 3(v)	All Reports	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	Levels of Service Report	Complete
Current performance measures in each category	S.5(2), 2	Levels of Service Report	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	Lifecycle Report	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Lifecycle Report	Complete
Risks associated with lifecycle activities to maintain current levels of service	S.5(2), 4(iii)	Risk Report	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	N/A	Not Included
AMP is publicly available	S.10	N/A	Pending
AMP is approved by Council	S.8 (b)	N/A	Pending
AMP is endorsed by executive lead at the Township	S.8 (a)	N/A	Pending

As noted on page 10, in 2025 there are additional requirements for reporting on proposed LOS and the required lifecycle strategies to support. More details on the legislative requirements are provided in Appendix 2.

Report Reference Material

Township Plans & Documents Review

Lifecycle management strategies were developed through extensive consultation with Hamilton Township staff who are directly involved and/or responsible for the management of the Township's assets. PSD Citywide staff conducted interviews with Township staff to discuss, review, and confirm the maintenance, rehabilitation, and replacement activities performed on their assets. Through these sessions, staff identified the typical lifecycle activities conducted by asset category and function (i.e., Fire assets vs. Recreational assets) and the factors commonly considered when making replacement and rehabilitation decisions.

To support these discussions and this report several Strategic documents were also reviewed, these include:

- 2021 Northumberland Fire Services Review
- 2022 Hamilton Township Master Fire Plan
- 2022 Hamilton Township Master Fire Plan Public Presentation
- Hamilton Township Parks and Recreation Master Plan 2022
- Township of Hamilton Strategic Plan (2018-2023)
- Service Delivery Review of the Water Department, 2022
- 2019 Roads Needs Study
- 2020 and 2021 Ontario Structural Inspection Manual (OSIM) Bridge Reports
- Historic Review of Capital Budgets

In addition, capital replacement schedules were obtained from Township staff. These replacement events and dates were appending to their corresponding asset in the Township's Asset management software. Where available reports and studies were reviewed, and recommended rehabilitation and replacement activities were appended to each asset and reflected in the financial forecasts discussed herein.

Where asset replacement events were not officially planned, the estimated replacement date was calculated based on the assets in-service date, its estimated life, and, where available, the assets assessed condition.

Asset Management Policy

An asset management policy represents a statement of the principles guiding the Township's approach to asset management activities. It aligns with the organizational strategic plan and provides clear direction to municipal staff on their roles and responsibilities as part of the asset management program.

In March 2019, the Township adopted a Strategic Asset Management Policy in accordance with Ontario Regulation 588/17. The policy provides leadership and

commitment to the development and implementation of the Township's asset management program to facilitate logical and evidence-based decision-making. It identifies the importance of linking service outcomes to infrastructure investment decisions to enable service focused rather than budget-driven asset management approaches. It also advances 13 principles for asset management decisions. Relevant principles to lifecycle management strategies include:

- Infrastructure planning and investment should take a *long-term view*, and decisionmakers should consider the needs of citizens by being mindful of, among other things, demographic, and economic trends.
- Infrastructure planning and investment should consider any *applicable budgets or fiscal plans*.
- Infrastructure planning and investment should *foster innovation* by creating opportunities to make use of innovative technologies, services and practices, particularly where doing so would utilize technology, techniques and practices developed in Ontario.

Alignment with the Strategic Plan

The Township adopted a Strategic Plan on July 16th, 2019. The plan is effective until 2023 and guides the decisions and actions of Council and municipal administration. The Strategic Plan has a major influence on the Township's course of action over a four-to-six-year period.

The Strategic Plan cites the following Vision and Mission Statements:

Vision: "Hamilton Township – making life better by supporting and enhancing a safe, healthy and active community."

Mission: "To provide professional, effective and efficient services within a collaborative governance model to promote the social and economic development of our community while creating an active and safe environment."

Council and staff identified the following four major pillars required to meet the Township's Vision and Mission Statements while supporting its core values:

1 Effective Governance
2 Environment
3 Physical Assets
4 Recreation, Culture, and Social Well-being

The four pillars are supported directly (i.e., Physical Asset) or indirectly through the development of an asset management program.

Township of Hamilton Budgeting Process

The Township's capital and operating budgets are determined each year. The process is thereby a year-round undertaking where the budget preparations for the next year are commenced soon after the approval of the current year's budget.

Prior to council deliberations on budgets, a Resident Budget survey is sent to gather resident information on desired services and willingness to pay for service. The results of the survey are provided to Council for their review and consideration during budget deliberations.

Most capital projects are one-year in duration. In some instances, however, projects span more than one year. Where this occurs, capital budget for the entire project period is approved in one budget year and capital funds are carried forward into subsequence budget years as needed.

After budget approval, infographics describing what the budget is, how it is allocated by asset category, and the tax implications of the changes are developed and made available to the public. Please refer to Appendix 1 for the 2022 budget infographic as an example of typical public budget communications.

Core Assets

Road Network

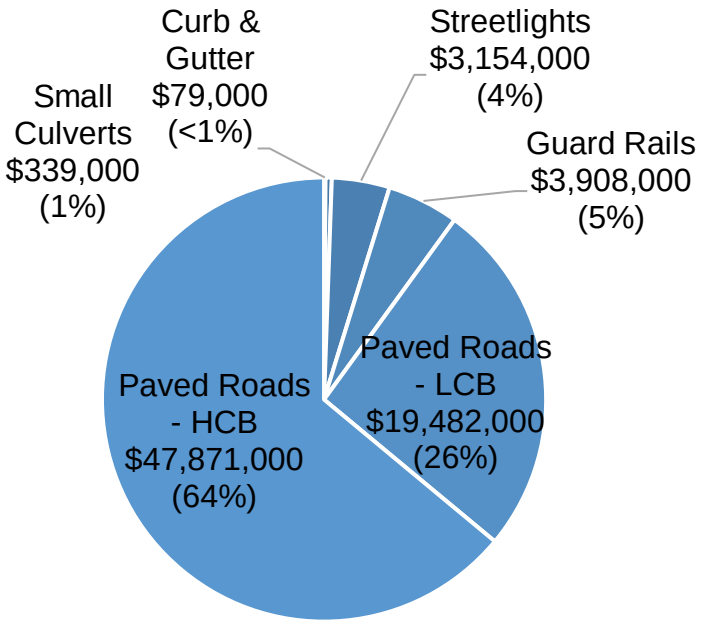
Asset Overview

The Road Network is a critical component of the provision of safe and efficient transportation services and represents the highest value asset category in the Township's asset portfolio. The Township is responsible for the operations and capital upkeep of road network assets. Primarily this consists of paved roads, but also includes other roadside supportive infrastructure like streetlights, guard rails, curbs and gutters, and roadside culverts. The paved roads are broken into two categories: High Class Bituminous (HCB)—asphalt roads—and Low Class Bituminous (LCB)—surface treated roads. The Township's road network assets are maintained by the Public Works department.

The Township's road network assets are recorded in an asset management software system. The following table provides asset summary information:

Asset Segment	Quantity	Average Age (Years)	Replacement Cost
Curb & Gutter	0.9 KM	2	$79,000
Guard Rails	9 KM	11	$3,908,000
Paved Roads – HCB	115 KM	22	$47,871,000
Paved Roads – LCB	146 KM	20	$19,482,000
Small Culverts	10 Assets	4	$339,000
Streetlights	407 Assets	12	$3,154,000
Unpaved Roads	32 KM	19	Not Planned for Replacement[3]
Total			**$74,834,000**

[3] Unpaved road (i.e., gravel) undergo perpetual operating and maintenance activities. If maintained properly, they can theoretically have a limitless service life. Since this asset is not funded by capital dollars it is not included.

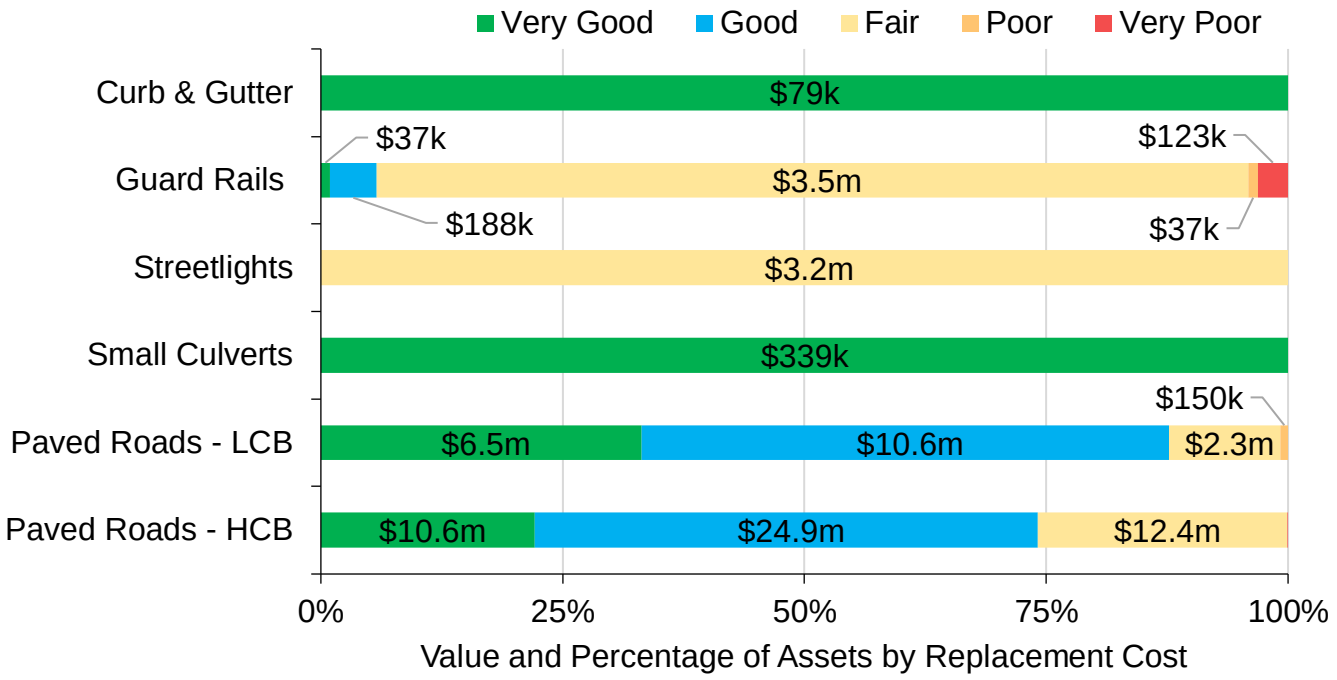


Total Current Replacement Cost: $74,834,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed, update asset information, including assessed condition.

Overall, 92% of assets (weighted by replacement value) were assessed for condition. The following graph details the condition of road network assets reported by category and weighted against asset replacement cost. In most instances, assessed condition is based on the 2019 Road Needs Study completed by D.M. Wills. The 2019 Road Needs Study included the scoring of physical condition and confirmation of road attributes. From this review, a listing of paved road asset needs was compiled, with recommendations listed by asset, treatment type, and recommended year.

Condition results from the 2019 Road Needs Study have been projected to 2021. In instances where roads have been rehabilitated since the 2019 Road Needs Study, assessed condition is updated and based on staff assessments. Where assessed condition information was not available age-based condition, derived from the assets age relative to its expected service life, is used to estimate asset condition.



As indicated by the graph above, most road network assets are in fair or better condition. Condition information is more reliable for some asset classes than others. For example, streetlights and curb and gutters are represented by one pooled asset and condition is based on the pooled assets age relative to its expected service life. However, within the pool of assets, there is some level of condition variation. Conversely, paved road assets (which represent most of the segment's value) have very reliable assessed condition information based on a rigorous Road Needs Study.

Current Lifecycle Approach

The following describes the current lifecycle activities that are typically conducted on road network assets.

Event Class	Description
Maintenance & Testing	• Sign reflectivity testing is performed annually in accordance with Minimum Maintenance Standards (MMS) Regulation 239/02 • Route and Seal, Slurry Seals, Micro-surfacing, and Pothole Patching maintenance activities are performed on an as-needed basis and in coordination with the County, where applicable. • The Municipality carries out road shouldering on an annual basis to re-gravel the shoulders and maintain the structural integrity of the road by preventing cracks originating from the sides. • The Municipality conducts several seasonal maintenance activities. Summer maintenance activities include ditching and clearing, grading, re-gravelling, dust control, and line painting. Winter maintenance activities include snow plowing and salting.
Rehabilitation	• Rehabilitation activities such as Pulverize & Pave, Mill & Overlay, Single Surface Treatment, and Double Surface Treatment are performed proactively to extend the life of the road surface until the road base requires full reconstruction also. Staff follow the strategies outlined within the 2019 Road Needs Study and supplement it with their own expertise.
Replacement	• Major road repair and reconstruction are prioritized by pavement condition, traffic volume, public input, recommendations from 2019 Road Needs Study, and staff judgement. • Asset replacements are coordinated with other underground assets renewal whenever reasonably possible.

Recommended Capital Rehabilitations

The 2019 Roads Need Study contained several asset rehabilitation recommendations tailored to specific roads, primarily based on their condition and traffic rating. Where Road Need Study recommendations could be attributed to an asset in the asset management software scheduled lifecycle activities were appended to each asset and incorporated into forecasted capital requirements. Costs are based on values provided by the 2019 study with inflationary adjustment to 2021. A general description of the lifecycle activities and their estimated impact are as follows:

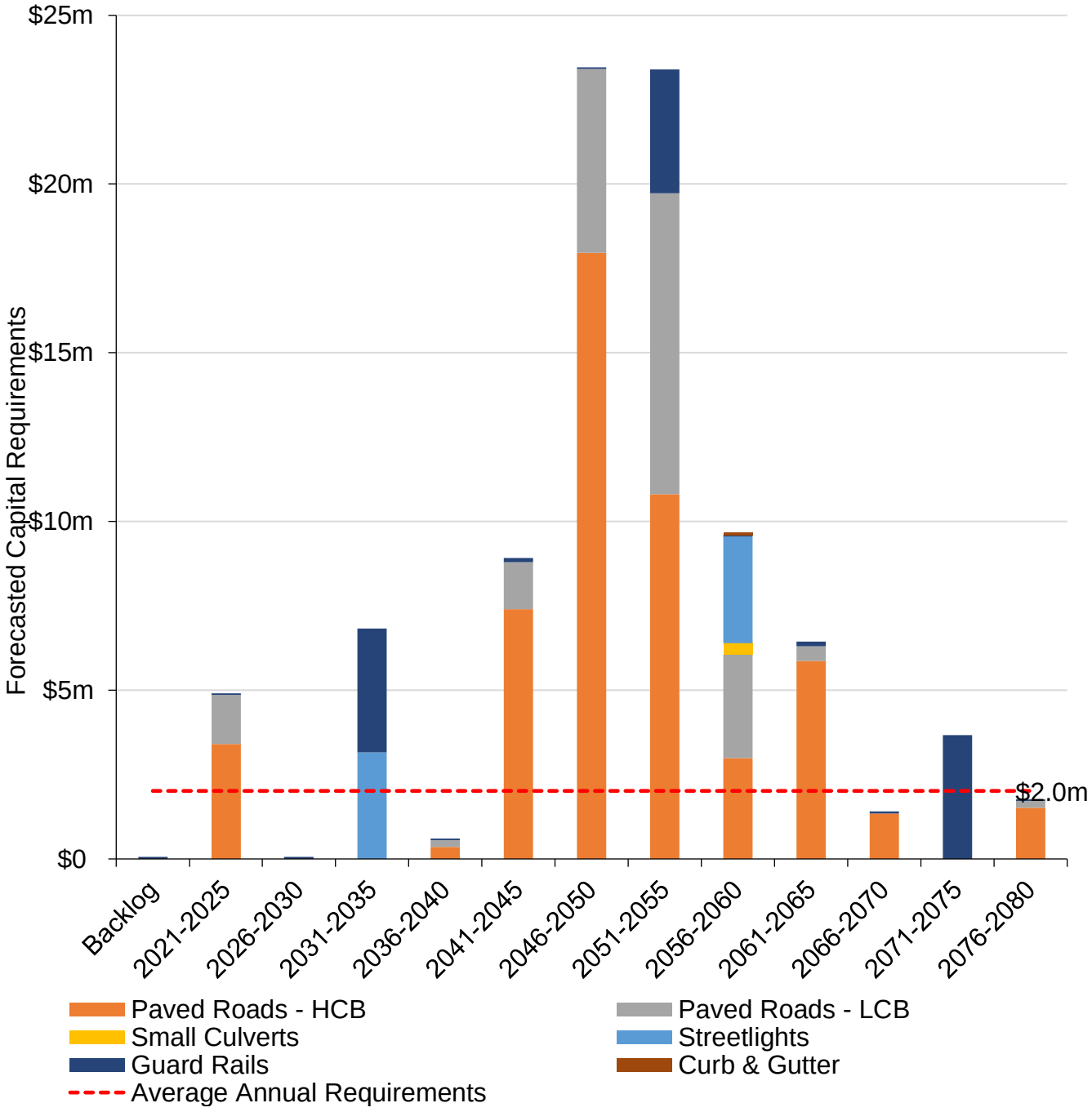
Surface Type	Intervention	Years Added (Impact)
LCB	• Double Surface Treatment	5
	• Single Surface Treatment	3
	• PP1 - Pulverize and Pave 1 Lift	8
HCB	• PP1 - Pulverize and Pave 1 Lift	20
	• Recon 1R - Full Reconstruction + 1 Lift	30

Forecasted Capital Requirements

Over the next 60 years, every existing road network asset will require rehabilitation (as described above) and/or replacement. This period was determined based on assets scheduled replacement and rehabilitation dates. Over this period, the total average annual capital requirement is $2,016,000. This is detailed by asset category in the table below and represents the average capital requirement per year, by asset category and cumulatively for the road network.

Asset Segment	Average Annual Capital Requirement
Guard Rails	$195,000
Paved Roads - HCB	$1,197,000
Paved Roads - LCB	$487,000
Small Culverts	$8,000
Streetlights	$126,000
Curb & Gutter	$2,000
Total	**$2,016,000**

Reporting in 5-year cumulative bins, the chart below summarizes the forecasted capital requirements by period and by asset category. As indicated below, capital requirements fluctuate over time, spiking significantly between 2046-2055. Most capital requirements are for HCB paved roads, followed by LCB roads. This is mostly due to the fact the HCB and LCB roads represent 90% of the road networks total replacement value. On an average annual basis, the road network requires a capital investment of just over $2.0 million, as represented by the red trend line.



Lifecycle Strategy Recommendations

- As a regular data practice, review the road network asset inventory for completeness; ensure every asset has basic attributes including asset length. Balance asset inventory information in the asset management software inventory with other data verification reports, like the Road Needs study. Work to improve data usability through the following database activities:
    - For each road asset, include the Street from and Street to information as an attribute; currently some asset names also include reference to street from and/or street to.
    - Identify data gaps like missing road width and quantities (e.g., asset 2555) and work to acquire data when completing other related studies and/or verification activities. Thereafter, complete database updates.
    - Continue to review and update the condition of roads over time and as capital projects are completed.
- When procuring external reports for any assets, particularly roads where there are many assets, require that reports be drafted based on the existing asset management software inventory listing and structure, that data is collected with reference to the Asset ID and that data is provided in an excel format so that data uploads, sync, and other asset data activities can be most effectively conducted.
- To avoid double counting road assets, clearly delineate between the original road asset and road rehabilitation events. This can be achieved by adding the road rehabilitation to the existing asset as a betterment, through naming conventions (i.e., indicating “Rehab” in the asset name), or by selecting "No AMP Category”. For all approaches, ensure that the original road asset condition is updated to reflect any rehabilitation activities that may have occurred to the asset.
- Ensure that all capital recommendations are appended to a specific asset and that recommendations includes at least details on the recommended intervention date, estimated cost of intervention, scope, estimated impact (i.e., increased condition or EUL) and a clear outline of the costing inclusions, exclusions, and other relevant assumptions. Ensure that these events are uploaded to the asset management software system so that capital forecasts reflect these recommendations. This is crucially important to the accuracy of capital projections, the scoping of projects, and the ease of integrating report information into the Asset Management software system.
- When developing draft capital budgets and engaging in budget deliberations include information about current and future forecasted capital requirements of road network assets. Ensure there is information about how budget decisions may impact asset condition (performance) and any resultant risks.

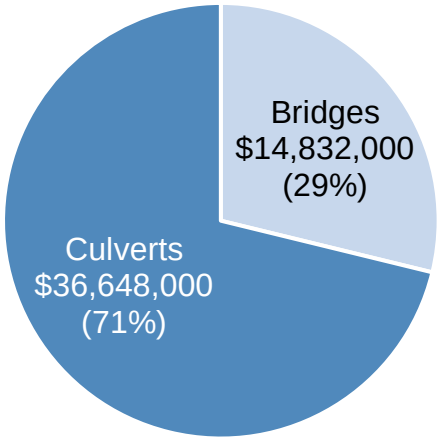
Bridges & Culverts

Asset Overview

Bridges & Culverts represent a critical portion of the transportation services provided to the community. The Township is responsible for the operations and capital upkeep of bridge and culverts. There are a total of 94 of structures in inventory as of December 2021. The Department of Public Works is responsible for the maintenance of all bridges and culverts located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

Bridges and structural culverts are recorded in an asset management software system. The following table provides summary information based on a December 2021 effective date:

Asset Segment	Quantity	Average Age (Years)	Replacement Cost
Bridges	20	59	$14,832,000
Culverts	74	52	$36,648,000
Total			**$51,480,000**



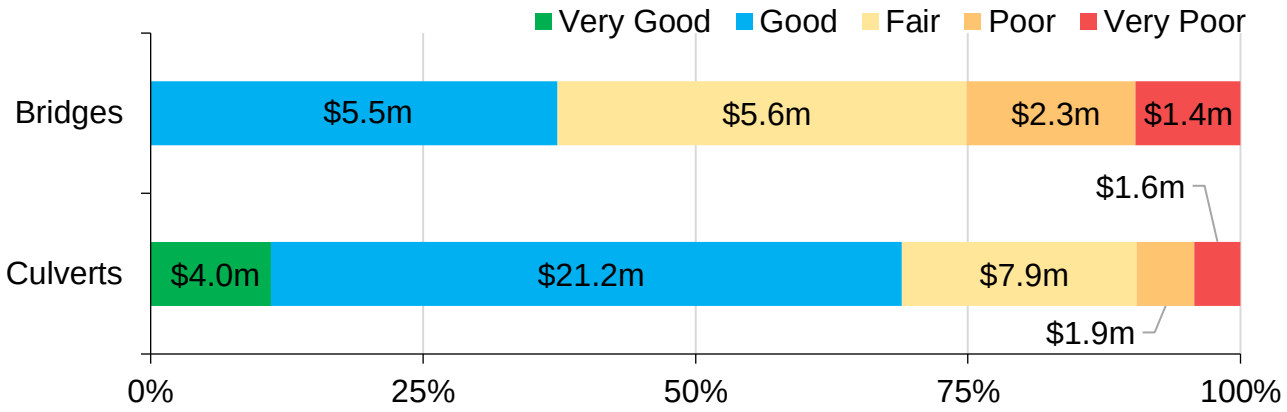
Total Current Replacement Cost: $51,480,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed, update asset information, including updated reports.

As per Regulation 104/97 Standards for Bridges, every municipal bridge and structural culvert requires inspection for structural integrity, safety, and condition at least bi-annually. Each year, half of the Township's bridge and structural culvert

assets are inspected. This report utilizes inspection information from the 2020 and 2021 reports, both of which were completed by Jewell Engineering.

Like with roads, bridge and structural culvert condition information is projected to December 2021 as required, for the bridges with 2020 assessments. As indicated in the graph below, the condition of bridge and structural assets ranges from very poor to very good, however most assets (three quarters) are in fair or better condition.



Value and Percentage of Assets by Replacement Cost

Current Lifecycle Approach

The following describes the current lifecycle activities that are typically conducted on facility assets.

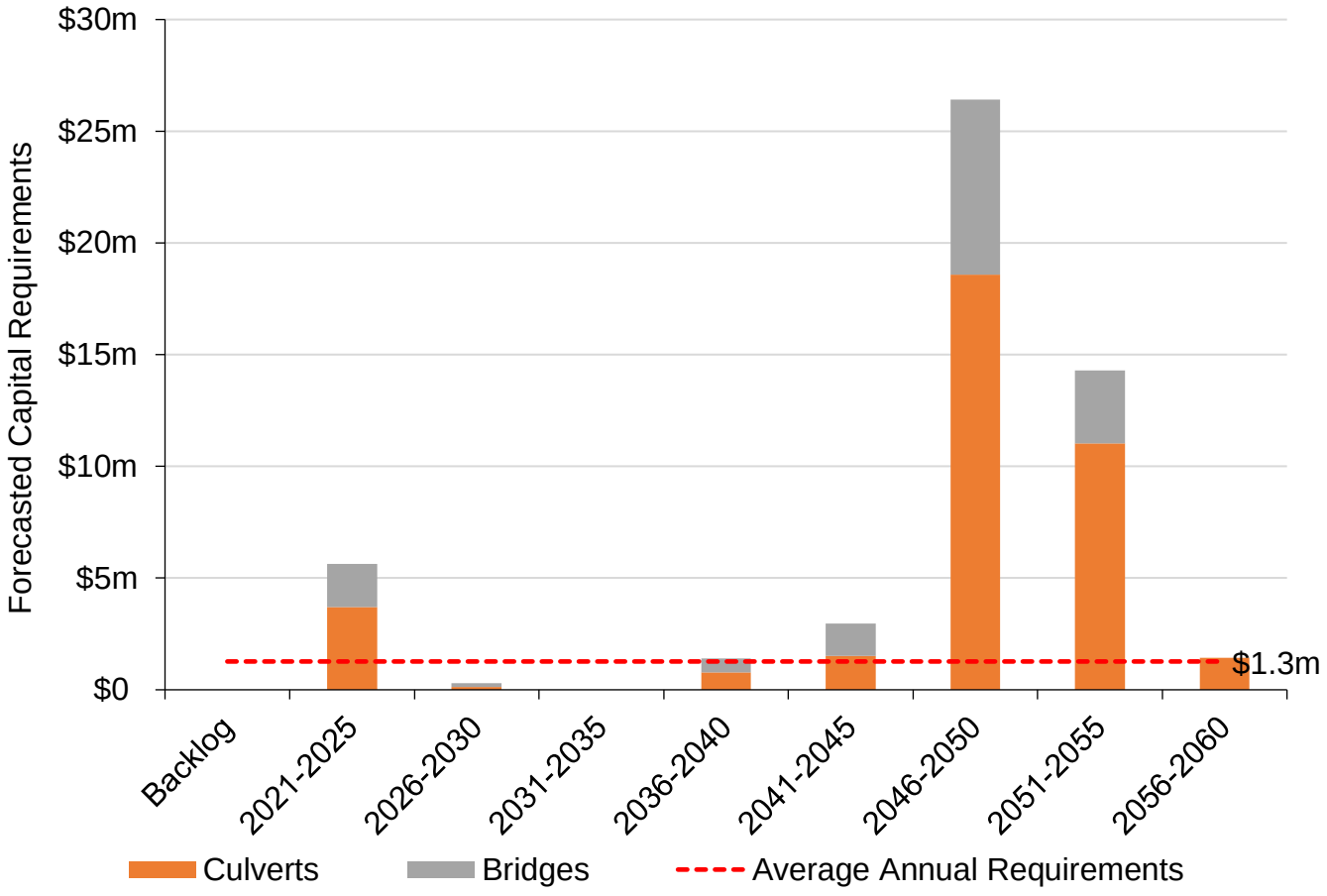
Event Class	Description
Maintenance, Rehabilitation & Replacement	• All lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM). This includes recommended rehabilitations projects. OSIM Report recommendations are appended to assets in the asset management software system and represented in this report's findings.
Rehabilitation	• Data, including recommended rehabilitation activities, dates, and estimated costs, in this report is as per OSIM reports completed in 2020 and 2021 by Jewell Engineering

Forecasted Capital Requirements

Over the next 40 years (until 2060) every bridge and structural culvert asset will require capital investment, including replacement. Using this period, the average annual capital requirement is $1,267,000. This is detailed in the table below and represents the average capital requirement per year, by asset segment and cumulatively.

Asset Segment	Average Annual Capital Requirement
Bridges	$371,000
Culverts	$896,000
Total	**$1,267,000**

The capital requirements, reported in 5-year cumulative bins, for bridges and structural culverts is summarized below. In this graph, capital requirements fluctuate over time. In the period of 2031-2035, there are no forecasted capital requirements while in other time periods, capital requirements are significant (i.e., 2046-2050, $26.4 M)



Lifecycle Strategy Recommendations

- Continue to append the capital cost and recommended date of bridge rehabilitations to assets in the asset management software system so that capital forecasts account for these costs.
- Require that all structural reports detail what is included and excluded in the costing estimates. As necessary, adjust the estimated costs of capital events (i.e., add in overhead if not included). Clarity on costing inclusions and exclusions will improve the accuracy of budget projections and asset management analysis.
- Currently, OSIM reports include recommendations for rehabilitations but do not report on expected impact to asset condition or age. Consider requiring inclusion of the anticipated impact either for all rehabilitations, certain types of rehabilitations (i.e., major rehabs) or for rehabilitations above an estimated cost threshold (i.e., more significant in nature)
- Review the process of actioning OSIM report identified maintenance requirements (i.e., creation of work orders etc.) to ensure that maintenance activities are completed.
- When procuring OSIM reports, require that inspection information be appended to the bridge's asset ID in the asset management software system. Consider providing the successful proponent an extract of asset IDs from the asset management software database. This will improve ease of updates to and reduce risk of incorrect matching of OSIM report information to asset IDs.
- Ensure that capital budgets are developed with clear reference to identified asset capital requirements as driven by OSIM, alongside an understanding of asset risk and expected asset performance impacts from underfunded or delayed investment.

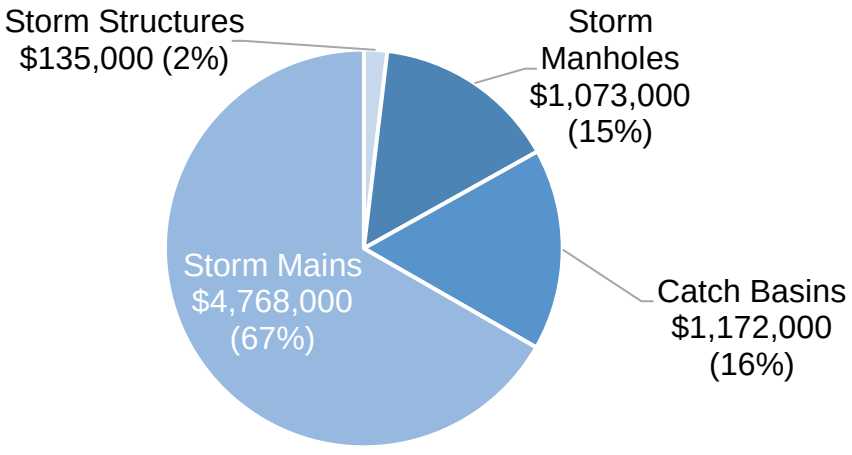
Stormwater Network

Asset Overview

The Township is responsible for the operations and capital upkeep of the stormwater network. The network consists of stormwater mains, manholes, catch basins, and storm structures (stormwater management ponds, oil grit separators, and storm drains). Storm structure mostly consist of storm ceptors which are used to capture trash, debris, oils, and suspended solids from stormwater runoff. Staff are working towards improving the accuracy and reliability of their stormwater network asset information to improve long-term asset management planning.

Stormwater assets are recorded in an asset Management software system. The following table summarizes the stormwater inventory based on a December 2021 effective date:

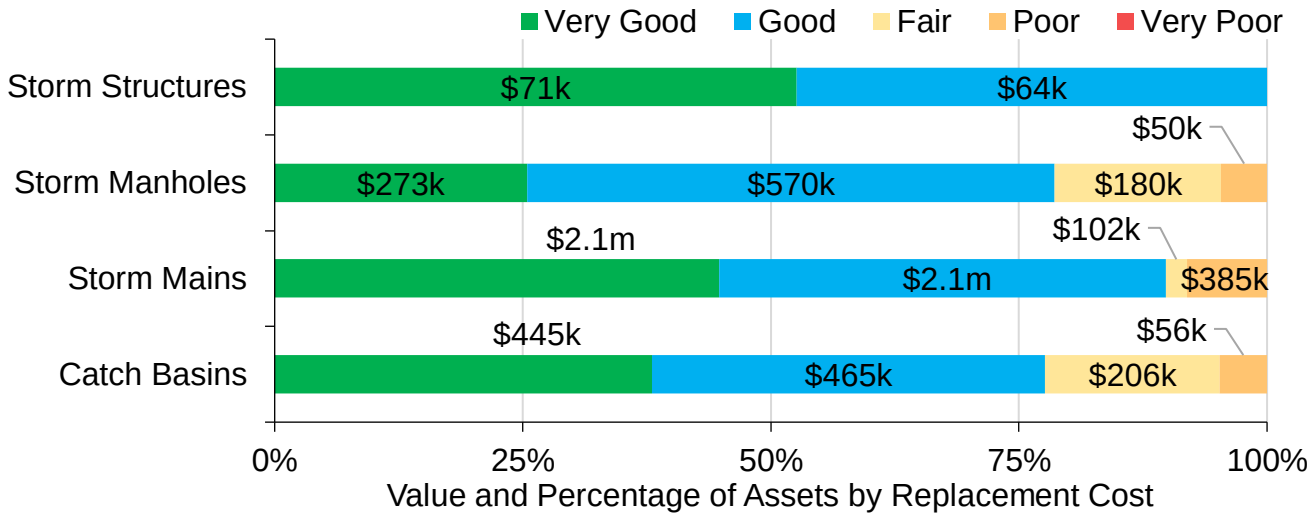
Asset Segment	Quantity (assets)	Average Age (Years)	Replacement Cost
Catch Basins	316	24	$1,172,000
Storm Mains	15,661 m	22	$4,768,000
Storm Manholes	173	25	$1,073,000
Storm Structures	4	12	$135,000
Total			**$7,148,000**



Total Current Replacement Cost: $7,148,000

At this time, most stormwater assets (95%) use age-based condition, which is calculated based on the assets age relative to its expected service life. In the next few years, the Township hopes to procure CCTV assessments of their stormwater mains so they have more accurate condition information.

Using age-based condition, 93% of all stormwater assets are in fair or better condition. By asset segment condition varies, with storm structures having all assets in good or very good condition and all other segments with assets ranging from poor to very good condition. Based on the 2021 data effective date, no assets are in very poor condition.



Current Lifecycle Approach

The following describes the current lifecycle activities that are typically conducted on facility assets.

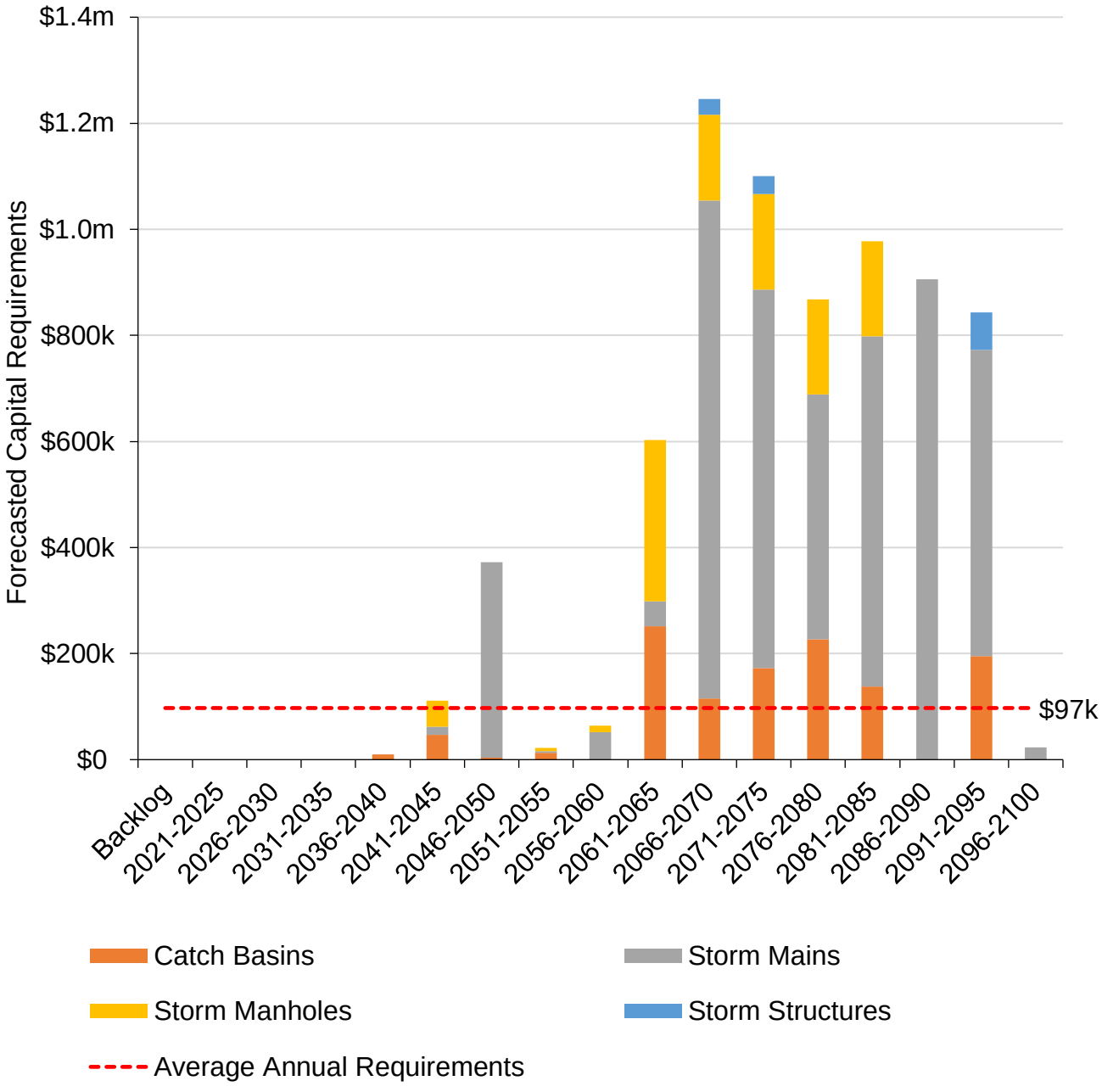
Event Class	Description
Maintenance	• Primary maintenance activities include catch basin cleaning and stormwater flushing. Staff are in the process of developing a dedicated program for their preventative maintenance and have recently increased their operating budget to do so effectively. • Closed Circuit Television Video (CCTV) inspections are completed on a project-by-project basis, and the information from those inspections informs capital plans. • Storm structures such as stormwater management ponds undergo regular maintenance activities such as debris removal and clearing of vegetation.
Rehabilitation & Replacement	• Staff are currently in the process of developing a Stormwater Master Plan (for the Baltimore area) to identify flow patterns, drainage issues, and capacity issues. • Stormwater mains are typically replaced/reconstructed at end-of-life and/or in coordination with other asset replacements (road, water). Trenchless relining has not been a viable option for stormwater mains in the past.

Forecasted Capital Requirements

Stormwater network assets are forecasted to all require replacement at some point until 2096. This was determined based on each assets in-service date, and it's estimated useful life. Over this period, the average annual capital requirement is $97,000. This represents the forecasted capital investment requirement on an average annual basis. This is detailed by asset segment as well in the table below.

Asset Segment	Average Annual Capital Requirement
Catch Basins	$17,000
Storm Mains	$64,000
Storm Manholes	$15,000
Storm Structures	$2,000
Total	**$97,000**

The capital requirements, however, fluctuate significantly by time-period. Reporting in 5-year cumulative bins, the chart below summarizes the forecasted capital requirements by period and asset segment. As indicated below capital requirements slowly build between 2036 until 2056 after which point, they spike significantly until 2096-2100. Most capital requirements are for the storm main assets, which have the largest proportion of replacement value for the stormwater network category.



Lifecycle Strategy Recommendations

- Identify stormwater assets that are most critical and prioritize CCTV assessments[4] to these assets first. As condition information is obtained, ensure it is updated in the asset management software so that it can be incorporated into lifecycle management decision making and planning.
- Append relevant asset information collected for the Stormwater Master Plan into the asset management software so that it can be leveraged to better support the Township's asset management program.
- As a Township, identify what asset information (i.e., pipe material and diameter) is most valuable to decision making and asset knowledge (i.e., calculation of risk). When completing projects, work to confirm and/or collect this information where possible.
- Review the cost of acquiring the identified valuable information for all stormwater assets against the expected benefit to determining if a larger data collection project is viable. To whatever extent data is collected, complete data updates to the asset management software with the collected and/or confirmed asset details.
- Ensure capital budget development considers the current and future forecasted capital requirements of stormwater network assets and how capital budget decisions may impact asset risk and performance.

[4] CCTV inspections are a no-dig method of analysing the physical condition of mains. Instruments capture video and images which are connected to a computer that feeds real-time information back to the operator and is stored for future reference. Collectable information includes identification of internal corrosion, determination of leak locations, identification of blockages (impacting flow), and general data collection to materially aid in the determination of reliable condition assessment ratings.

Water Network

Asset Overview

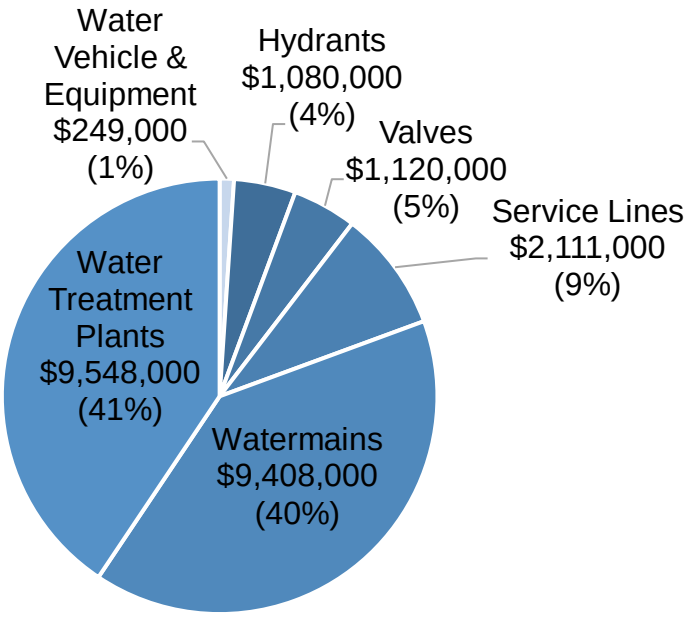
The Township is responsible for maintaining a water network that is comprised of watermains, water treatment plants, and other supportive water infrastructure like valves, service lines, the water vehicle and equipment, and hydrants. The Waterworks department is responsible for the management and operation of the Camborne and Creighton Heights (Baltimore) Water Treatment Plant and distribution system along with supporting infrastructure. Lakefront Utility Services Inc (LUSI), an external operating authority, is responsible for the Buttersfield Distribution System.

As the operating authority for the Township of Hamilton's drinking water systems, the Waterworks department is committed to providing safe drinking water to consumers, in compliance with the Drinking Water Act.

Water network assets are recorded in an asset manager software system. The following table provides summary information based on a December 2021 effective date:

Asset Segment	Quantity (Assets)	Average Age (Years)	Replacement Cost
Hydrants	90	23	$1,080,000
Service Lines	451	27	$2,111,000
Valves	114	24	$1,120,000
Water Treatment Plants	2 (3,320)[5]	18	$9,548,000
Water Vehicle & Equipment	74	8	$249,000
Watermains	21,664 linear Meters	25	$9,408,000
Total			**$23,516,000**

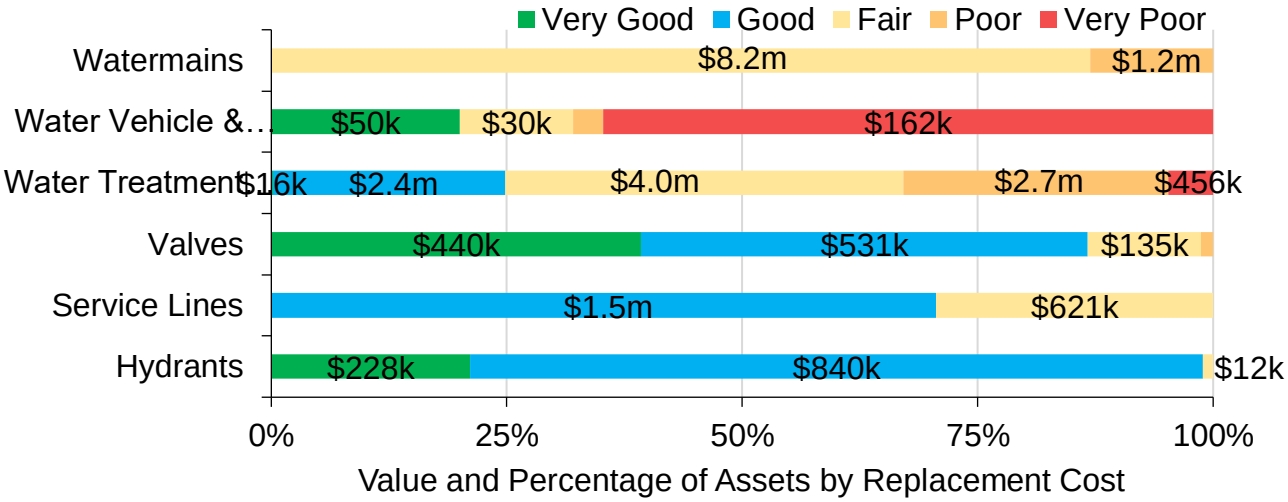
[5] There are two water treatments plants (Creighton Heights & Camborne) which each contain various building components. The figure in brackets represents the total number of various building components (i.e., roofing, doors, pumps, control values, filtration system etc.) contained within or connected to (i.e., associated parking lot) the treatment plants.



Total Current Replacement Cost: $23,516,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed, update asset information.

Weighted by asset replacement value, 70% of water network assets are assessed for condition. Assessments are completed either by GM Blue Plan or the Water Operations Manager. Where assessed condition is not available, age-based condition based is used. The condition of water network assets by segment is summarized below.



Current Lifecycle Approach

The following describes the current lifecycle activities that are typically conducted on water network assets.

Event Class	Description
Maintenance & Testing	• Main flushing occurs throughout the year to prevent static water in dead-end areas. In Camborne and Creighton Heights, flushing is typically done once per month. • Valve turning is completed annually; in larger areas, such as Creighton, approximately 35% of the valves are exercised annually. • Periodic pressure testing is performed to identify deficiencies and potential leaks. • The water treatment plant and pumping stations are maintained on a regular basis, with a proactive maintenance program that complies with the Safe Drinking Water Act, 2002.
Rehabilitation & Replacement	• Staff developed a water systems capital needs assessment report which identified all rehabilitation and replacement needs of linear and vertical assets. These have been incorporated into this asset management report for more accurate capital projections. • Replacement of watermains is typically coordinated with road reconstruction and renewal whenever reasonably possible. Trenchless relining is not typically a viable option as much of the Township's mains are plastic or polyvinyl chloride (PVC). • Staff also prioritize looping watermains to reduce dead ends and prevent stagnation of water.

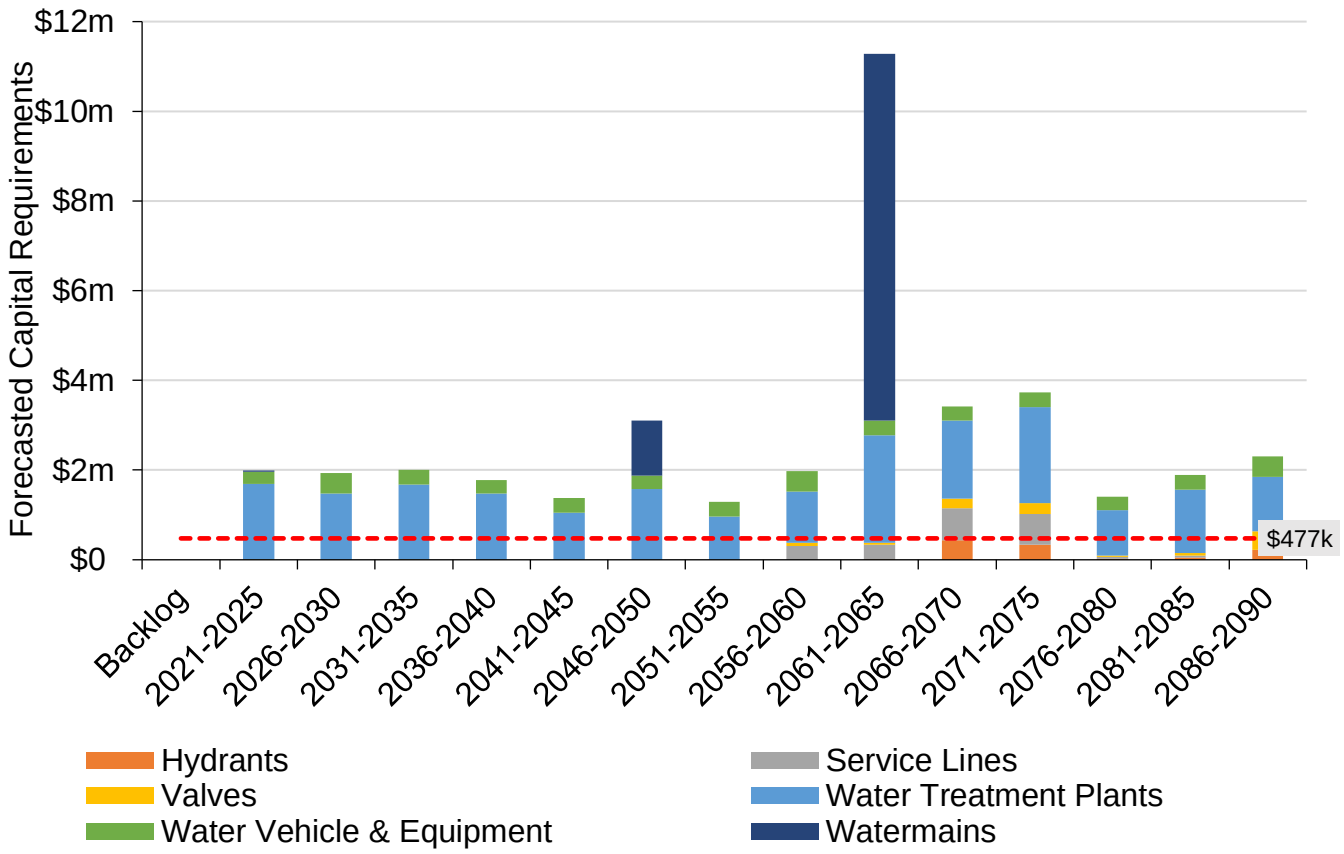
Forecasted Capital Requirements

The time over which every existing water network asset would be scheduled for replacement was determined based on each assets in-service date and its estimated useful life. Additionally, rehabilitation events were identified by asset based on the GM Blue Plan report and recommendations for existing assets over the period of 2021-2030. Over this period, the total average annual capital requirement was determined to be $477,000. This is detailed by asset category in the table below

and represents the average capital requirement per year, cumulatively and by asset category.

Asset Segment	Average Annual Capital Requirement
Hydrants	$14,000
Service Lines	$28,000
Valves	$15,000
Water Treatment Plants	$280,000
Water Vehicle & Equipment	$14,000
Watermains	$125,000
Total	**$477,000**

Reporting in 5-year cumulative bins, the chart below summarizes the forecasted capital requirements by period and by asset segment. As indicated below, capital requirements fluctuate by period; in most 5-year periods capital requirements are about $2 million, but in 2061-2065 costs spike significantly most of which is attributed to watermain assets. On an average annual basis, capital requirements for the water network are $477,000; this is described by asset segment above.



Lifecycle Strategy Recommendations

- Continue to advance and refine information on all water network assets so that lifecycle planning is most accurate and effective. This should be an ongoing data practice.
- Ensure that budget decisions consider the impacts on asset risk and performance of not investing in assets as needed.
- Continue to dedicate time and resources to review and plan for the management of water network asset information. Recommended data management considerations include confirming roles and responsibilities, data management standards (i.e., what system, what frequency of update, verification processes), reporting standards and frequency, and how the above will support the Township's broader asset management goals and values (as outlined in the Asset Management Policy).
- Ensure any decisions on the service delivery model reflect the principles of lifecycle management, that is managing assets at the lowest total cost of ownership by completing maintenance and rehabilitation activities and extending asset life to the greatest extent possible.

Non-Core Assets

Facilities

Asset Overview

The Township is responsible for the operations and capital upkeep of several facilities used both for municipal operations and public services. Facilities include:

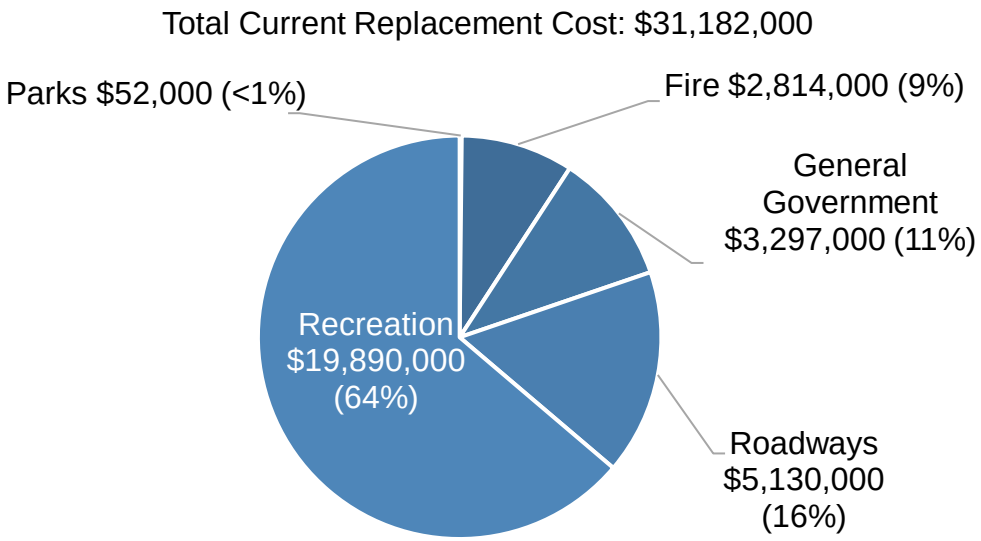
- Township Municipal Office
- Fire Halls
- Recreation and Community Centres
- Public Work Garages

The Township's facility assets are recorded in an asset management software system. The following table provides summary information about facility assets based on a December 2021 effective date:

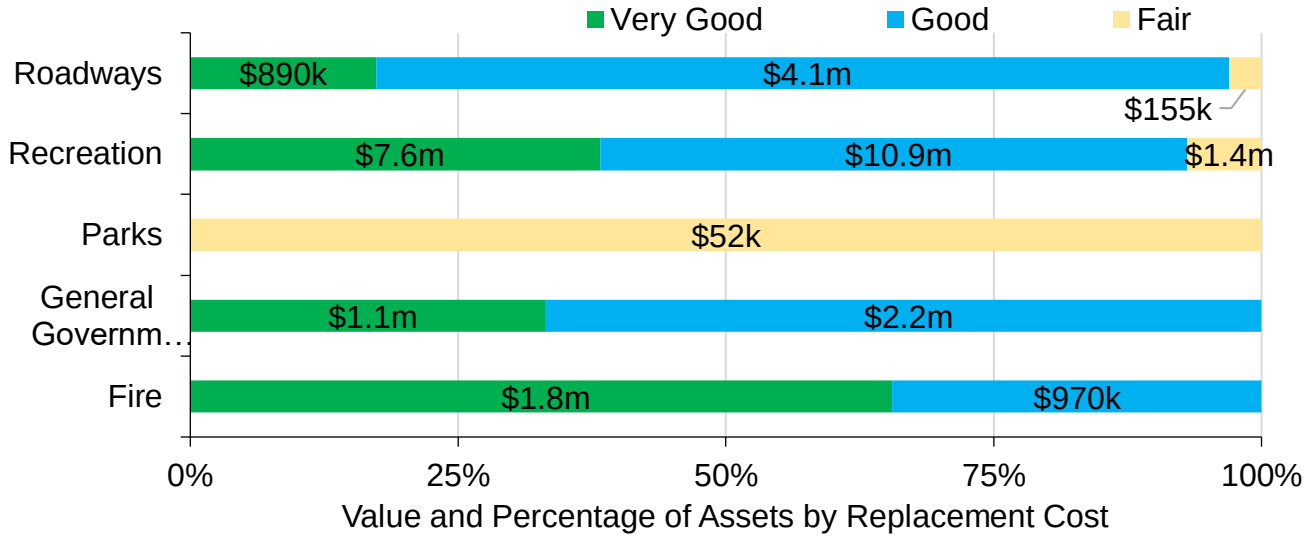
Asset Segment	Quantity (# Facilities)	Average Age (Years)	Replacement Cost
Fire	4	26	$2,814,000
General Government	2	21	$3,297,000
Parks	1	9	$52,000
Recreation	4 (33[6])	21	$19,890,000
Roadways	6	20	$5,130,000
Total	**46**		**$31,182,000**

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed update the assessed condition of their assets.

[6] In most instances, facility assets are recorded as a single asset for each building. For recreation assets, however the Baltimore Recreation Centre is represented by multiple assets that each represent a various building component (i.e., lighting, floors etc.).



The following graph details the assessed condition of facility assets, reported by category, and weighted against asset replacement cost. All facility assets were assessed by Hamilton Township staff for condition, and all assets were as at least fair or better.



Current Asset Structure

Currently, most major components of a facility (i.e., HVAC, roof) are recorded as a single asset in Asset Manager, however not all building components (i.e., windows, doors) are recorded as an asset. In most cases, replacement costs are the building's insured replacement value and information on specific asset interventions (i.e., repairs, replacements) is limited. The Township would benefit from a more comprehensive and consistent componentization of their asset so that all components are appropriately accounted for, and replacement schedules are tailored to each assets estimated useful life and relevant details (i.e., poor condition

may prompt earlier replacement). More details on recommendation componentization approach and considerations are provided.

Current Lifecycle Approach

The following describes the current lifecycle activities that are typically conducted on facility assets.

Event Class	Description
Maintenance & Testing	• Heating Ventilation and Air Conditioning (HVAC) units across the Township's facilities are inspected quarterly by Carmichael Engineering. Identified deficiencies are detailed in reports to the Township. • Elevators across the Townships facilities are inspected semi-annually by Bruce Elevators and annually by the Technical Standards and Safety Association (TSSA). Bruce Elevators provides inspection reports which identify any found deficiencies and recommendations for their remediation. • Fire Alarms and sprinklers are regularly inspected and tested. • The Townships facilities are maintained primarily through the annual operating budget, which was $15,000 in 2021.
Rehabilitation	• The Township's Accessibility Advisory Committee[7] submits accessibility concerns and related improvement requests to the Township. These are reviewed and actioned as appropriate and feasible. In 2020 and 2021, the following accessibility upgrades occurred at facilities: ➢ Cold Springs Washroom renovated to have push button doors, tap handles, grabs bars, and widened doorways. ➢ Installation of emergency cardiac kits. ➢ Third-party funding received for four accessible doors at Township Office.
Replacement	• Within each Facility there are a variety of building components (i.e., windows, doors, roofs) which require replacement at different times due to varying in-service dates and estimated useful lives. When determining if

[7] The Accessibility committee is comprised of five to seven persons who work to advance the objective to promote public awareness and understanding of the needs of disabled person and encourage improved services that enable persons with disabilities to live a full and productive life.

Event Class	Description
	replacement is appropriate, staff consider the assets risk to occupant health and safety, legislative compliance, cost and construction feasibility of rehabilitation as an alternative, and cost of replacement. • Most capital replacement projects are planned one year in advance. Capital budgets are determined annually. • The Capital budget for facilities varies by year based on asset specific capital requests. In 2020, the capital budget was $7,500, and in 2021 and 2022 there was no capital budget identified for building assets.

Township of Hamilton Parks and Recreation Master Plan

In 2022, the Township published their Parks and Recreation Plan. The plan serves as a forward-thinking strategy to provide long-term direction to Township staff and Council. The plan reviews and outlines considerations and recommendations for the future development, redevelopment, and enhancement of the Township's park system, open spaces, recreational facilities, and programs until 2031. These recommendations consider the Township's existing resources, and their suitability based on population trends, and consultation from the public and community organizations about how assets and recreational programs are utilized and their perceived adequacy. Key findings relating to parks and recreation infrastructure (i.e., not program recommendations) include the following:

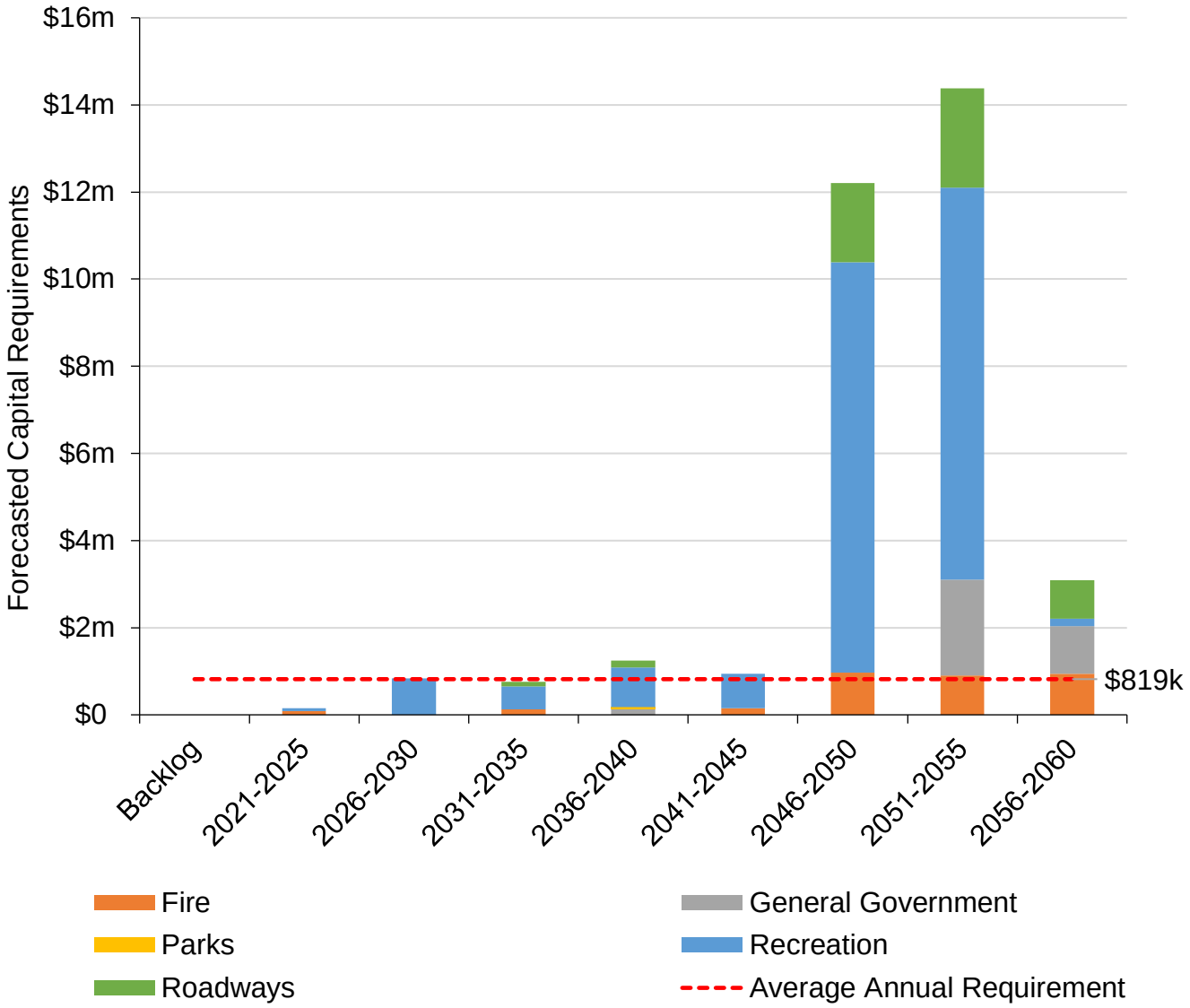
- The most frequented recreation facility is the Baltimore Recreation Centre, especially the arena, ball diamond, and indoor artificial turf field.
- The Bewdley Community Centre is the second most utilized recreation asset.
- The Township's existing supply of recreation facilities are sufficient to service the existing population and near-term population growth.

Forecasted Capital Requirements

The time over which every facility asset would be replaced was determined based on the existing data and data structure. Using this period, the total average annual capital requirement was determined to be $819,000. This is detailed by asset category in the table below and represents the average capital requirement per year, cumulatively and by asset category.

Asset Segment	Annual Capital Requirement
Fire	$70,000
General Government	$82,000
Parks	$1,000
Recreation	$537,000
Roadways	$128,000
Total	**$819,000**

Reporting in 5-year cumulative bins, the chart below summarizes the forecasted capital requirements by period and by asset category. As indicated below, capital requirements are low until 2045 and then sharply spike from 2046 onwards. In line with recreation having the highest average annual capital requirement ($537,000), most of the cost associated with capital requirement in 2046-2055 are associated with recreation segment assets.



Please note that a comprehensive Building Condition Assessment (BCA) is likely to unveil much more detailed information about recommended interventions, including schedule, and estimated cost, which may result in changes to the average annual requirement and/or the capital requirements by period.

Lifecycle Strategy Recommendations

- The Township would benefit from capturing more detailed building condition information and documenting it in a consistent manner across all facility assets. This process, known as a Building Condition Assessment (BCA), is most often completed to help asset owners better inventory their facility assets, more clearly and defensibly understand the near- and long-term requirements, and, as a result, facilitate requisite budgeting and planning.
- Following industry best practice, a BCA could be completed so that building components are categorized based on the standard format of ASTM UNIFORMAT II Standard E1557 classification of building elements. This classification system is based on major building groups and nested within that based on component groups and then specific components. As an example, common substructure building components and their respective Level 2, and 3 groups are shown below:

Uniformat II Level 1 (Major Group)	Uniformat II Level 2 (Component Group)	Uniformat II Level 3 (Component)
A SUBSTRUCTURE	A10 Foundations	A10101 Standard Foundations
		A1020 Special Foundations
		A1030 Slab on Grade
	A20 Basement Construction	A2010 Basement Excavation
		A2020 Basement Walls

- Through the completion of a BCA, the Township will have more accurate information on their facilities near and long-term capital requirements. The identified capital requirements should be strongly considered when setting budgets and determining any required changes (i.e., taxation and user fee rates, reserve contributions) to meet the identified capital needs.
- Recommendations and findings from the Recreation Master plan should be considered and, to the extent possible, incorporated into asset investment decisions. For example, if an asset is deemed less critical to the Town, its priority for replacement may be lower than a comparable asset deemed more critical to the Town.
- The capital budget should consider the current and future forecasted capital requirements of facility assets; dedicated and consistent capital funding is needed to maintain facility assets and prolonged deferral of work is likely to reduce the expected life and/or the performance of facility assets.

Land Improvements

Asset Overview

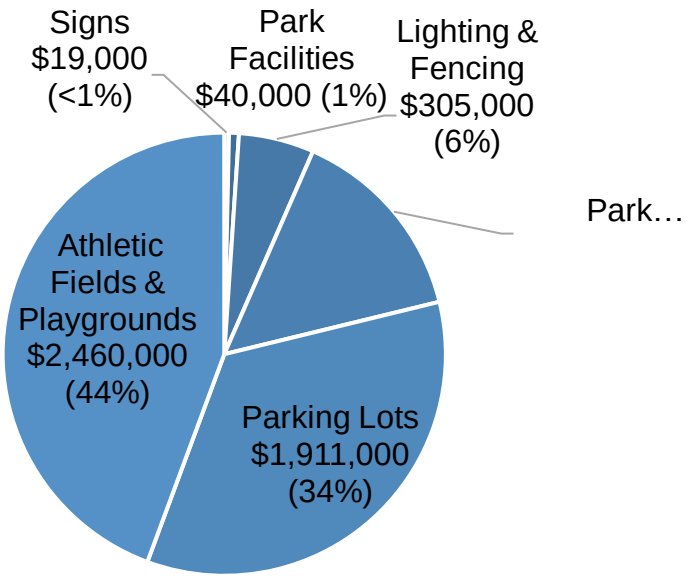
The Township is responsible for the operations and capital upkeep of a diverse array of land improvement assets. For reporting purposes these assets have been segmented based on similar function. These segments, and examples of common assets included in them, is detailed below:

- Athletic Fields & Playgrounds: outdoor playgrounds and play equipment, outdoor playing courts and fields.
- Lighting & Fencing: outdoor lighting
- Park Facilities: non-enclosed structures like gazebos
- Park Fixtures: benches, picnic tables, waste receptables, boardwalk and retaining walls.
- Parking Lots: parking lots associated with buildings and parks
- Signs: various outdoor signs[8]

The Township's land improvement assets are recorded in an asset management software system. The following table provides summary information based on a December 2021 effective date:

Asset Segment	Quantity	Average Age (Years)	Replacement Cost
Athletic Fields & Playgrounds	12	24	$2,460,000
Lighting & Fencing	6	9	$305,000
Park Facilities	1	22	$40,000
Park Fixtures	13	7	$812,000
Parking Lots	11	20	$1,911,000
Signs	9	13	$19,000
Total	**52**	**16**	**$5,546,000**

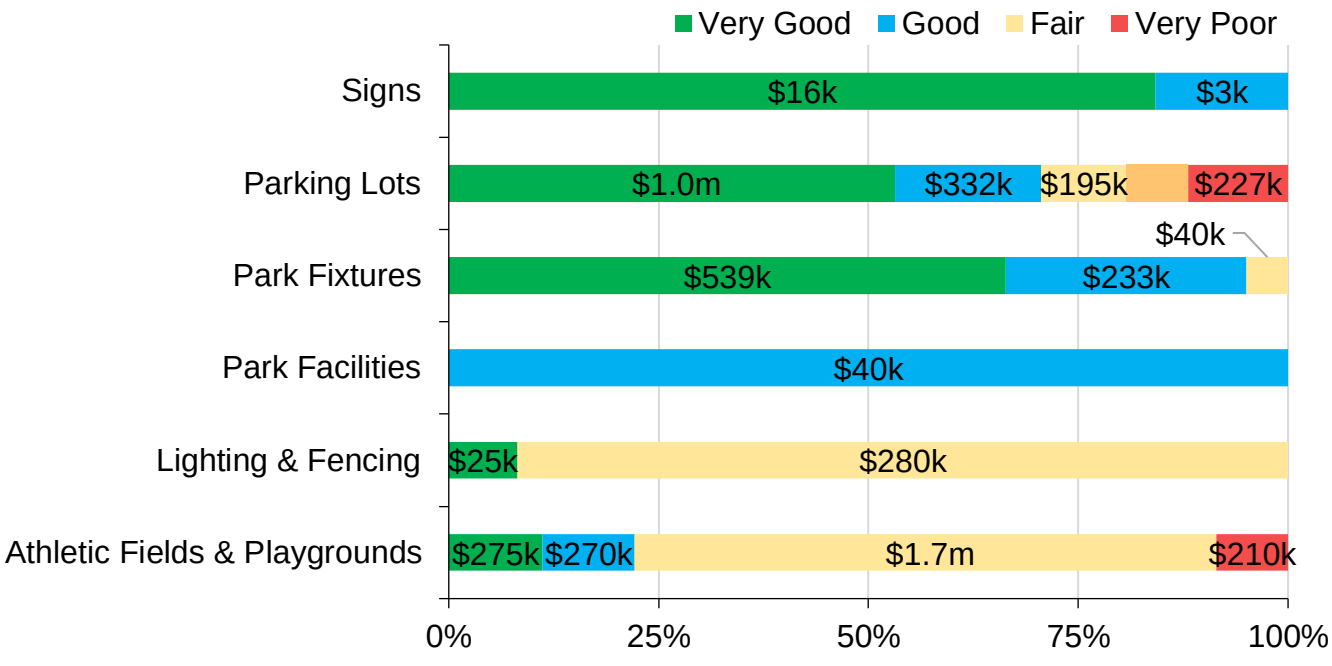
[8] Please note that while the Township may own other land improvements like walking trails, they may not all be represented in this table. This will, in most cases be due to not meeting the Township's TCA threshold.



Total Current Replacement Cost: $5,546,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed, update the assessed condition of their assets.

The following graph details the assessed condition for land improvement assets, reported by category, and weighted against asset replacement cost. Most land improvement assets are in fair or better condition.



Value and Percentage of Assets by Replacement Cost

Current Lifecycle Approach

Event Class	Description
Maintenance & Inspection	• The Townships playgrounds are inspected monthly by a Canadian Standards Act (CSA) certified staff member. Inspections focus on safety and were last completed in August 2022. Identified safety issues are repaired by Parks and Recreation staff. • Staff complete regular visual inspection on ball diamonds and tennis courts. Identified deficiencies are noted and put on a list to repair.
Rehabilitation	• Tennis courts are resurfaced as needed based on their age and/or condition.
Replacement	• Asset replacement decisions consider the assets condition and expected future utility alongside its rate of use and the volume of public complaints regarding the assets condition, safety, and/or suitability. These factors are considered alongside the replacement cost. • The Township's understanding of asset use is based on the 2022 Recreation Master Plan which included telephone survey of residents and community organizations to gather information about what assets they utilize. • Asset capital replacements and rehabilitation activities are informally planned about 8 years in advance. • The 2020 capital budget for land improvement assets was $75,000 and funded the Recreation Master Plan only.

Township of Hamilton Parks and Recreation Master Plan

The Recreation Master Plan considers several land improvement assets, including tennis courts, playground structures, and athletic fields. The report offers several valuable insights in relation to lifecycle management, which include:

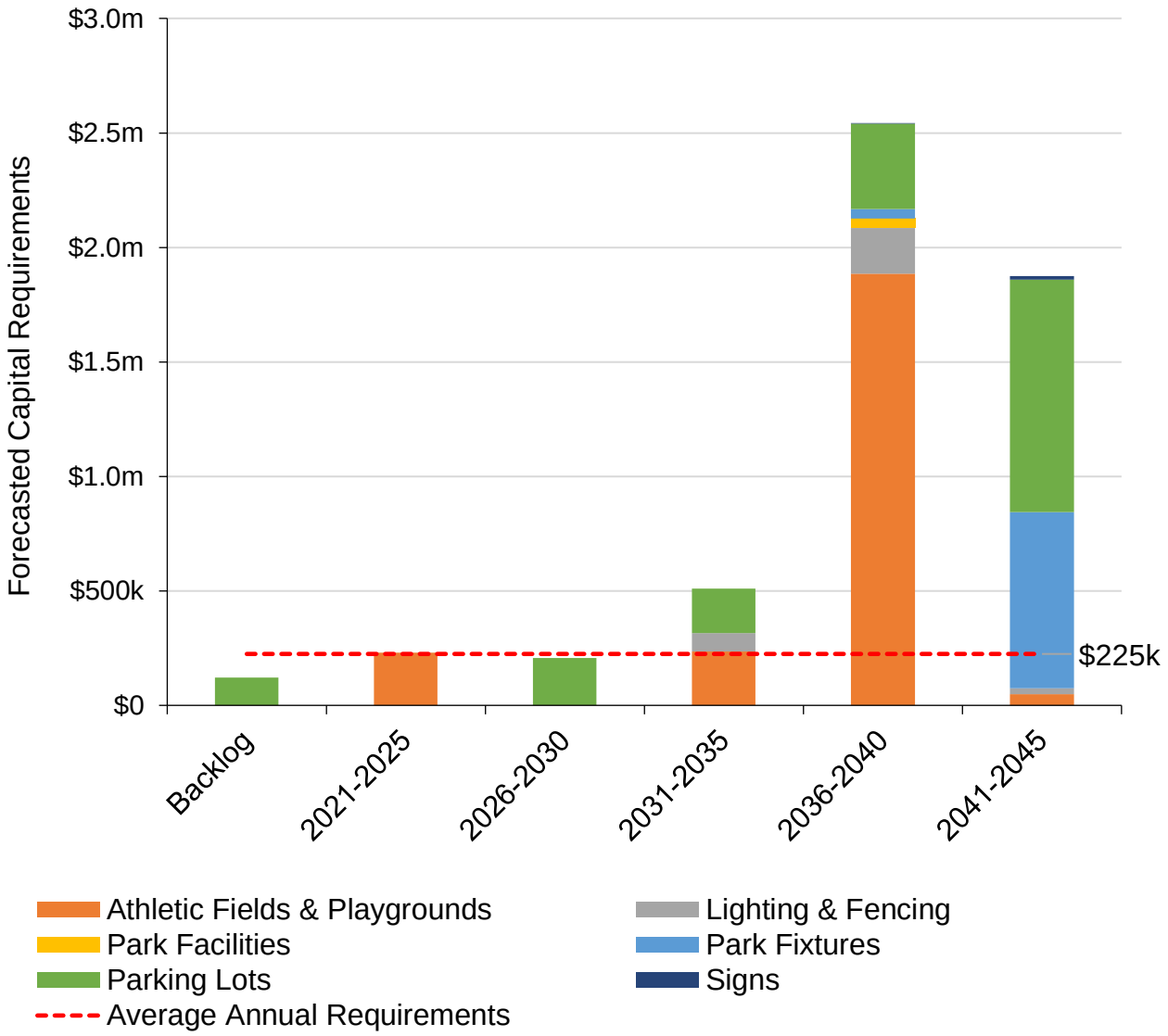
- Assuming no major residential development, the current supply of parks, when supplemented with access to private outdoor space, is sufficient for the near future. Therefore, investments should generally focus on existing assets rather than the creation of new assets.
- For most land improvement assets, about half of survey respondents indicated they believe asset improvements are required.
- Popular land improvement assets include baseball diamonds and playgrounds.

Forecasted Capital Requirements

The time over which every land improvement asset would be scheduled for replacement was determined to be 2045 based on planned replacements and/or the assets in-service date and EUL. Using this period, the total average annual capital requirement was determined to be $227,000. This is detailed by asset category in the table below and represents the average capital requirement per year, cumulatively and by asset category.

Asset Segment	Average Annual Capital Requirement
Athletic Fields & Playgrounds	$104,000
Lighting & Fencing	$12,000
Park Facilities	$2,000
Park Fixtures	$32,000
Parking Lots	$76,000
Signs	$1,000
Total	**$227,000**

Reporting in 5-year cumulative bins, the chart below summarizes the forecasted capital requirements by period and by asset category. As indicated in the chart below, forecasted capital requirements for land improvement assets spike most significantly in 2036-2040 and remain relatively high into 2041-2045. Most capital costs are associated with athletic fields and playgrounds, as indicated by the orange bars.



Lifecycle Strategy Recommendations

- Review internal processes for assessing asset condition and ensure that the considerations are appropriate for each asset and have a structured process with appropriate reference documentation for evaluation criteria. Such documentation will assist in more objective analysis and, in the event of staff changes, will be valuable to the new incumbent and the sustainability of the asset management program.
- Assess the suitability of rehabilitation for certain assets, especially those that may be more costly to replace and can be cost-effectively rehabilitated (i.e., Tennis courts). If the Township has limited rehabilitation projects to analyze, consider engaging other Municipalities in the region to gather information and insights.
- When developing capital budgets and presenting them to Council for deliberations, incorporate the results of projected capital requirements. Ensure the implications of not investing in assets is understood and, where investment may be obtained, ensure associated project management requirements are also sufficiently resourced.
- Recognizing that capital requirements are forecasted to spike significantly in future years explore opportunities to establish (as needed) and contribute to capital reserves now so that future capital requirements can be more sustainably funded.
- Incorporate the results of the Parks and Recreation Master Plan into asset investment decisions. For example, consider the popularity of parks and baseball diamonds when determining asset investment prioritization.

Machinery & Equipment

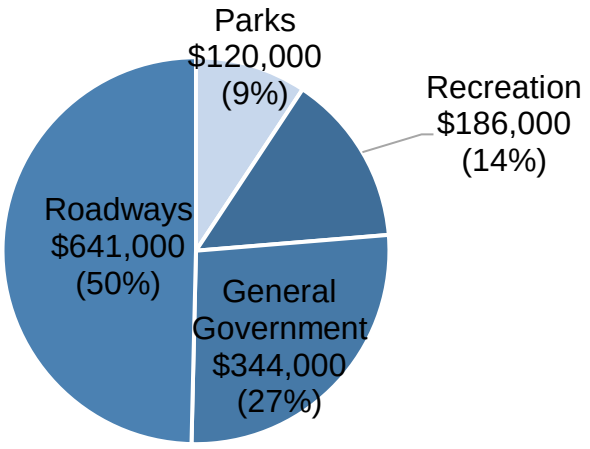
Asset Overview

Machinery and equipment assets are diverse and serve various functions to the Municipality. The following segments are within the machinery and equipment category, and can be defined as follows:

- General Government: software and hardware (i.e., tablets, communications) used to support the Township's operations.
- Parks: various equipment to maintain parks (i.e., lawn mowers)
- Recreation: a diverse array of assets including security systems, and re-fueling systems used to support the operational of recreation programs and infrastructure.
- Roadways: primarily larger machinery and equipment assets including fuel management system and water tanks that serve important functions to daily road operations.
  Fire: assets are also included in the machinery & equipment category; these are discussed in a Fire specific section that follows.

Machinery and equipment assets are recorded in an asset management software system. The following table provides summary information based on a December 2021 effective date:

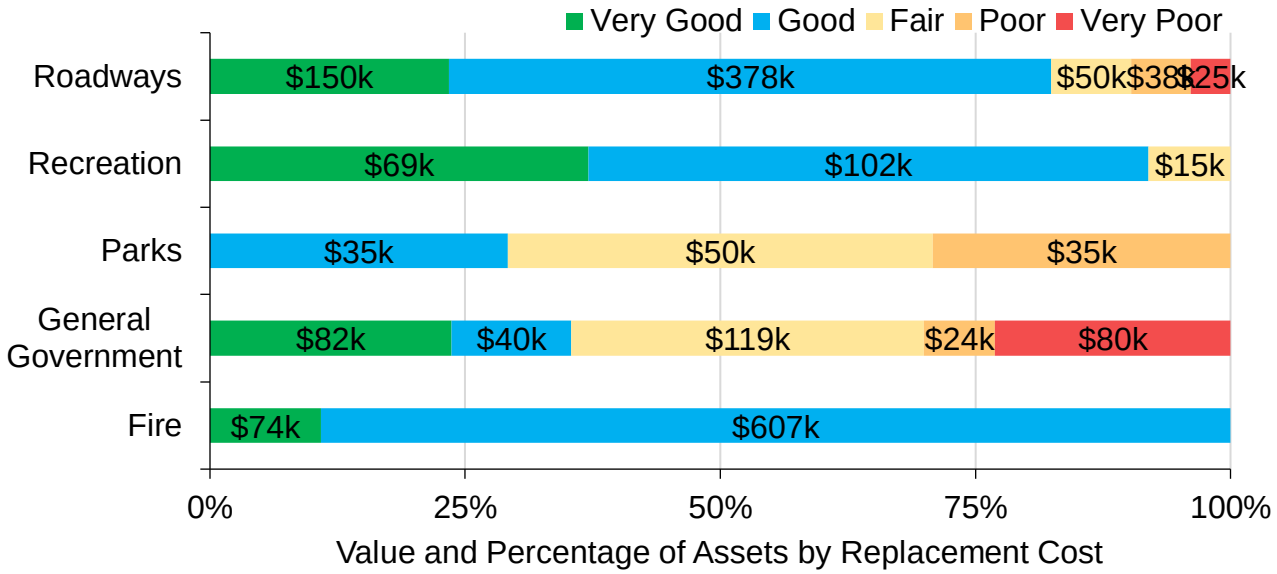
Asset Segment	Quantity	Average Age (Years)	Replacement Cost
General Government	12	4	$344,000
Parks	3	6	$120,000
Recreation	251	6	$186,000
Roadways	26	8	$641,000
Total	**292**	**6**	**$1,291,000**



Total Current Replacement Cost: $1,291,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed update the assessed condition of their assets.

The following graph details the assessed condition for machinery and equipment assets, reported by category, and weighted against asset replacement cost. The condition of machinery and equipment assets is somewhat mixed, with recreation assets having the highest average condition of machinery and equipment segments.



Current Lifecycle Approach

The following describes the current lifecycle activities that are typically conducted on machinery and equipment assets.

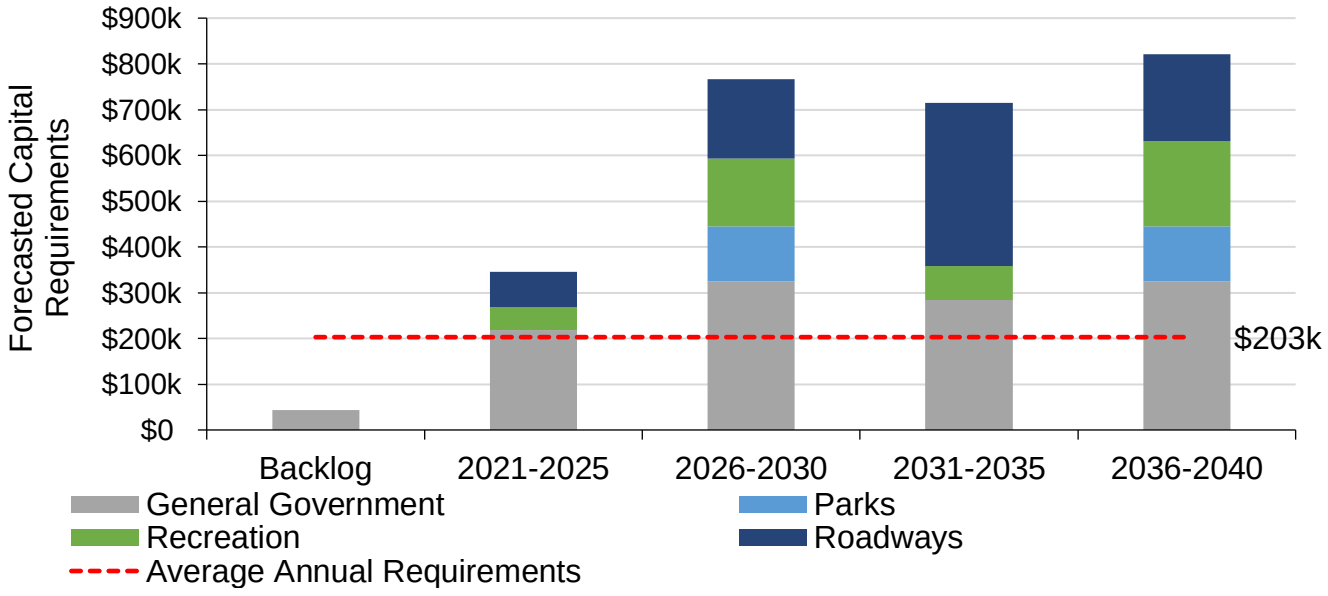
Event Class	Description
Maintenance & Inspection	• The Township's staff complete basic maintenance and inspection on small machinery and equipment assets. • An external contractor is used to service ice resurfacers, tractors, and lawn mowers. • The operating budget for machinery and equipment assets is departmentally based. • There are no formal maintenance or rehab programs currently in place for IT equipment. However, lower-requirement, older assets are re-assigned where appropriate when upgrades occur.
Condition Assessments	• Machinery and equipment assets are most often reviewed for condition by the Staff mechanic. Assets are rated on a 0-100 scale based on considerations of assets function, failure history, and age. • IT assets are not formally assessed; however, they are serviced as needed by IT staff.
Replacement	• The annual capital budget for machinery and equipment assets varies by year based on departmentally identified capital needs. • Asset replacement decisions primarily consider asset condition and criticality. • Considerations for replacing IT equipment include age, compatibility with the current environment, possible future need, cost/benefit ratio, and current standards. • For IT assets, the Township is planning to move to a 3-year replacement schedule where devices are replaced as the typical 3-year warranty expires.

Forecasted Capital Requirements

The time over which every machinery and equipment asset will require replacement is until 2040. This was determined based on the identified replacement schedules or the assets in-service date and EUL. Using this period, the total average annual capital requirement was determined to be $147,000[9]. This is detailed by asset category in the table below and represents the average capital requirement per year, cumulatively and by asset category.

Asset Segment	Average Annual Capital Requirement
General Government	$61,000
Parks	$12,000
Recreation	$26,000
Roadways	$48,000
Total	**$147,000**

Reporting in 5-year cumulative bins, the chart below summarizes the forecasted capital requirements by period and by asset segment. As indicated in the chart below, forecasted capital requirements for machinery and equipment assets spike most significantly in 2021-2025. Most capital costs are associated with general governments and roadways.



[9] The average annual capital requirement increases to $203,000 when including fire machinery and equipment assets.

Lifecycle Strategy Recommendations

- Review projected replacement dates and estimated cost for machinery and equipment assets. If they do not appear reasonable, update the date, and adjust capital requirement projections accordingly.
- When developing capital budgets, consider identified capital requirements and determine if existing revenues are sufficient and, if not, what changes may need to occur (e.g., changes in taxation rates, special funding applications) so that capital budgets meet asset requirements.
- As part of the lifecycle strategy and in particular, replacement considerations, review and consider assets risk when making investment decisions.
- Review inventory, especially for IT assets, to determine if all capital IT assets are included and asset information is accurate; adjust data as necessary.
- Ensure that when assets are reviewed for condition, staff apply a consistent set of criteria. Consider the development of supportive guides and documentation.

Fleet & Fleet Equipment

Asset Overview

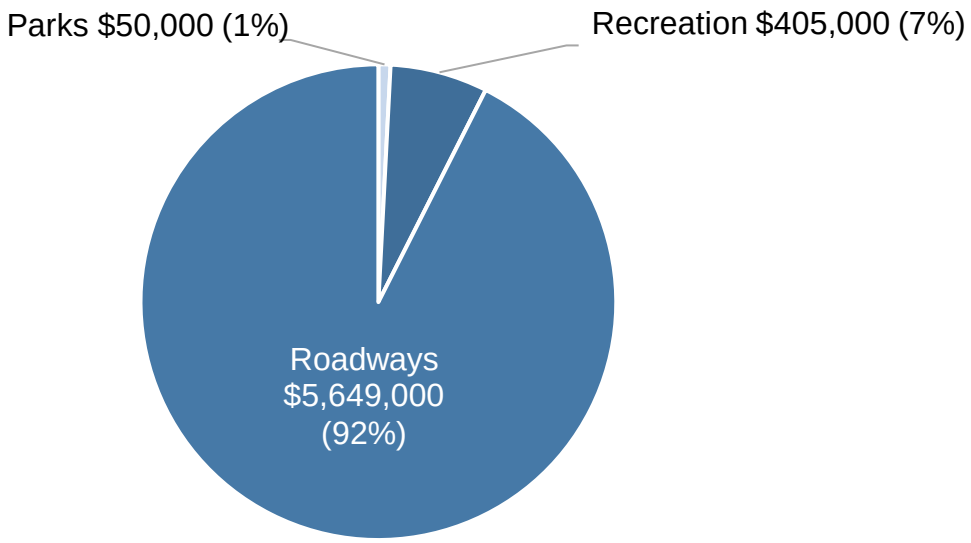
The Township owns a variety of fleet and fleet equipment assets that are central to the Townships daily operations. For reporting purposes these assets have been segmented based on similar function. These segments, and examples of common assets included in them, is detailed below:

- Roadways: predominately comprised of pick-up and dump trucks and trailers and various small utility vehicles including excavators and tractors.
- Recreation: ice resurfacing machines and trucks used specifically to support recreational programs.
- Parks: a small assortment of pick-up trucks to support the transportation and work requirements of parks and recreation staff.

Fire assets are also included in fleet and fleet equipment category; these assets are discussed in the Fire Fleet Asset section.

The Township's fleet and fleet equipment assets are recorded in an asset management software system. The following table provides summary information based on a December 2021 effective date:

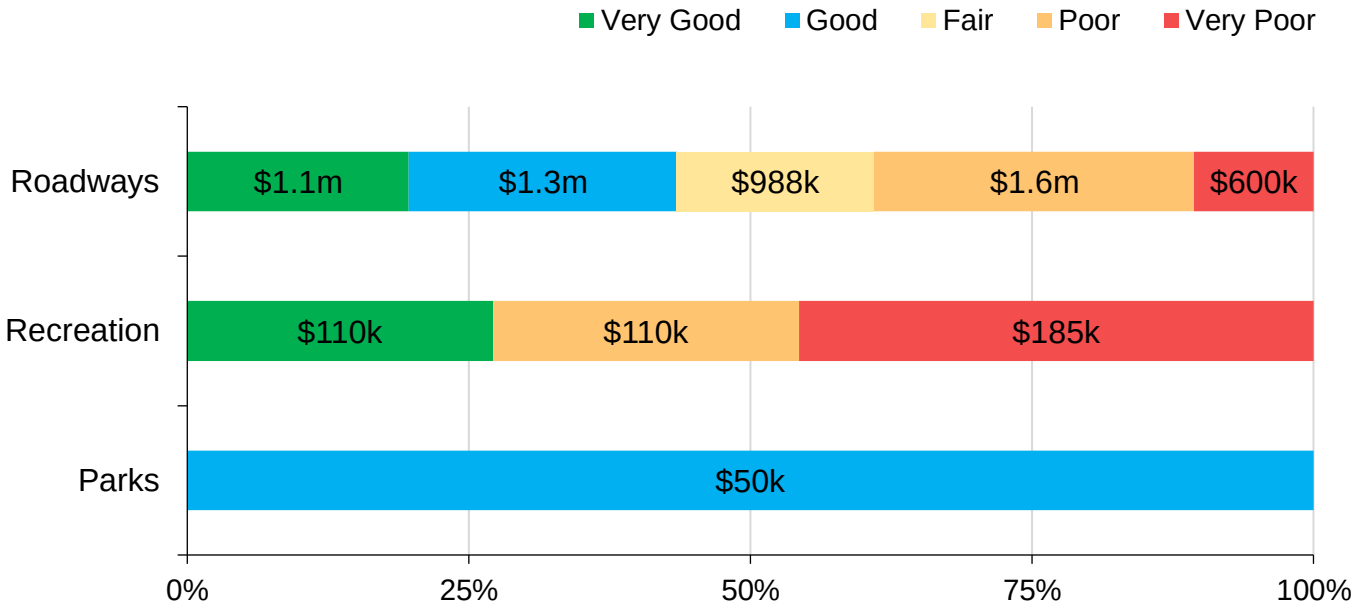
Asset Segment	Quantity	Average Age (Years)	Replacement Cost
Parks	1	5	$50,000
Recreation	6	13	$405,000
Roadways	33	10	$5,649,000
Total	**40**	**10**	**$6,104,000**



Total Current Replacement Cost: $6,104,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed, update the assessed condition of their assets.

The following graph details the assessed condition for fleet and fleet equipment assets, reported by category, and weighted against asset replacement cost. The condition of fleet and fleet equipment assets is somewhat mixed, with recreation assets having the lowest average condition of fleet segments.



Value and Percentage of Assets by Replacement Cost

Please note: Fire fleet assets are discussed in the following sections.

Current Lifecycle Approach

Event Class	Description
Maintenance & Inspection	• A staff mechanic completes regular maintenance and inspection for the Township's fleet and fleet equipment assets. Maintenance schedules are as per manufacturer's recommendations with additional maintenance completed as needed based on mileage or hours of use. • The Township's mechanic completes annual safeties as required by the Ministry of Transportation of Ontario (MTO). • All work is completed by the Township's staff mechanic unless the work is covered under a warranty term. • Assets are reviewed for condition on a regular basis and for the purposes of asset management reporting, rated on a 0 to 100 scale. Condition assessments are typically completed by the Township's mechanic. Currently condition assessments are not formally documented. • The 2021 operating budget for fleet assets is sub-divided by asset function.
Rehabilitation	• Rehabilitations are considered on a case by base basis; generally fleet assets are infrequently rehabilitated.
Replacement	• Replacement decisions consider the asset's age, condition, and maintenance cost and history (i.e., if there is a trend of increasing maintenance). • Replacement also considers the utility of the existing asset against the utility of potential replacements. For example, if a new fleet asset has multiple functions and can thereby replace multiple existing assets, replacement may be favourable even if the existing assets are functional.

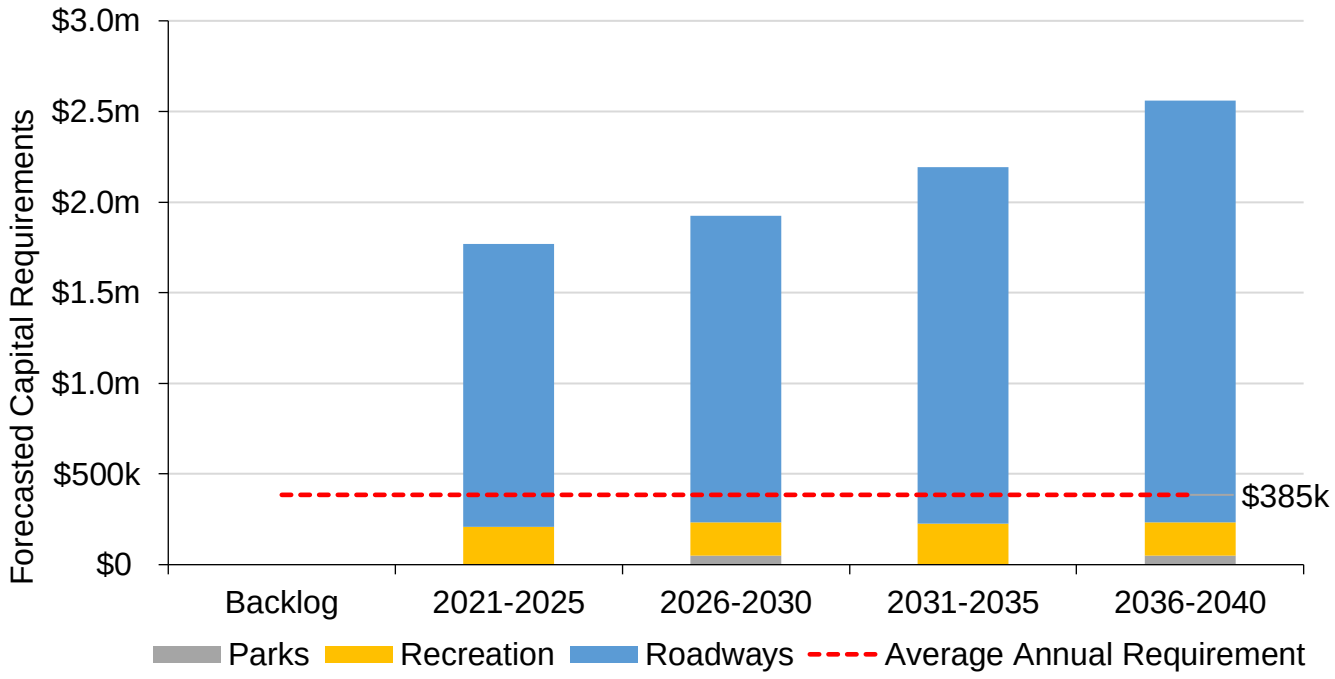
Forecasted Capital Requirements

The Township has identified a schedule and estimated cost for the replacement of fleet and fleet equipment assets for the period of 2021- 2034. Using this information, replacement events have been appended to assets in the asset management software system. For assets not specifically identified for replacement, estimated dates of replacement are determined based on the assets in-service date and its expected service life.

Using this approach, the period over which every asset in the category would be replaced was determined to be until 2040. On an annual basis, the average capital requirement is $385,000. This is detailed by asset segment as follows:

Asset Segment	Average Annual Capital Requirement
Parks	$5,000
Recreation	$40,000
Roadways	$341,000
Total	**$385,000**

Reporting in 5-year cumulative bins, the chart below summarizes the forecasted capital requirements by period and by asset segment. As indicated in the chart below, forecasted capital requirements are relatively similar overall. By asset category, capital requirements are most significant for roadway assets who also carry most (88%) of the replacement cost total for fleet and fleet equipment assets.



Lifecycle Strategy Recommendations

- To ensure capital projections are as accurate as possible, regularly review and update replacement costs, especially for assets of high value. Wherever possible, obtain estimates based on comparable recent purchases or quotes.
- Review projected capital requirements against current capital funding amounts to determine if funding adjustments may be needed and if so, to enable adjustments to be made more sustainably over time.
- Consider aligning asset management categorization of assets with budgeting structure so that analysis is more streamlined.
- Ensure that the process for assessing asset condition is uniform across fleet assets so that meaningful comparisons and inferences can be drawn from condition data. A manual detailing the factors reviewed, with supportive information like photographs and scales would be helpful, especially in the event of staff changes.
- Work towards the digitization of assessed condition and thereafter the regular updating of asset condition to the asset management software system.
- Consider digitizing service records so that review and costing analysis can be streamlined, and more easily documented.

Fire Assets

The Township's Fire department serves an integral function to the safety of the Township and its residents. A variety of assets are used to delivery protection services; this includes Fire fleet and fleet equipment assets.

The Township's fire department is required to meet extensive and stringent legislative requirements and standards including the Fire Prevention and Protection Act (FPPA)[10] and the National Fire Protection Association (NFPA).

Fire Fleet and Fleet Equipment Asset Overview

Fire fleet and fleet equipment assets are comprised of a variety of assets including:

- Pumpers
- Pumpers/Tankers
- Tankers
- Emergency Support Units (ESU's) – including pickup trucks, UTVs, marine unit

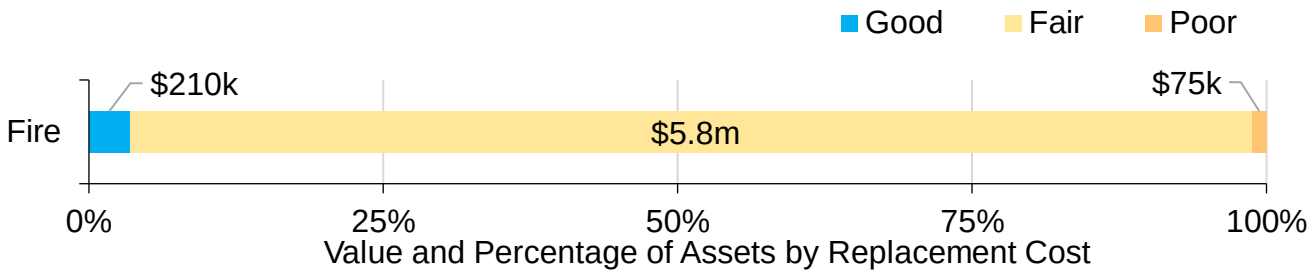
The Township's fire fleet assets are recorded in an asset management software system. The following table provides summary information about fire fleet assets based on a December 2021 effective date:

Asset Category: Segment	Quantity	Average Age (Years)	Replacement Cost
Fleet & Fleet Equipment: Fire	18[11]	10	$6,055,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and as needed, update the assessed condition of their assets.

The following graph details the assessed condition for fire fleet assets, reported by category, and weighted against asset replacement cost. The condition of fire assets ranges from good to poor with most fire fleet assets in fair condition. This is summarized below:

[10] The FPPA is of particular importance and outlines the minimum standards for provision of life safety systems in a municipality.
[11] Please note that four of the fire fleet assets are not planned for replacement. For this reason, the replacement cost noted does not account for the cost of replacing these four assets.



Current Lifecycle Management Activities

Various asset interventions are completed on fire fleet assets based on their specific needs, legislative requirements, and current condition and function. These interventions are described in the table below.

Event Class	Description
Maintenance & Inspection	• Maintenance requirements for fire fleet assets are most often based on the National Fire Protection Association (NFPA) 1901 and 1911 requirements[12]. • A staff mechanic completes regular maintenance and inspection for the Township's Fire fleet and equipment assets that are not considered an emergency vehicle[13]. • The annual maintenance budget for all fire fleet and fleet equipment assets is $20,000. • Assets are reviewed and rated for condition based on a 0-100 scale. Currently condition assessments are typically completed by the Township's Fire Chief or Director of Emergency Services.
Replacement	• The replacement of fire fleet and fleet equipment assets is a two-step consideration process. First, it is determined if the asset is governed by NFPA (1) and if so when replacement is required. Next, for assets not governed by NFPA or for assets not yet at the NFPA required replacement date staff review the decision matrix which assesses the following: ➢ Asset condition: Asset is deemed good (no immediate investment required), repair (immediate investment needed), or replace (asset reliability may be low; replacement is needed)

[12] NFPA 1911 is applicable to any public or private organization that uses fire apparatus and works to ensure that fire apparatuses are serviced and maintained to keep them in safe operating condition.
[13] Emergency Vehicles are required to be worked on by a registered emergency vehicle technician.

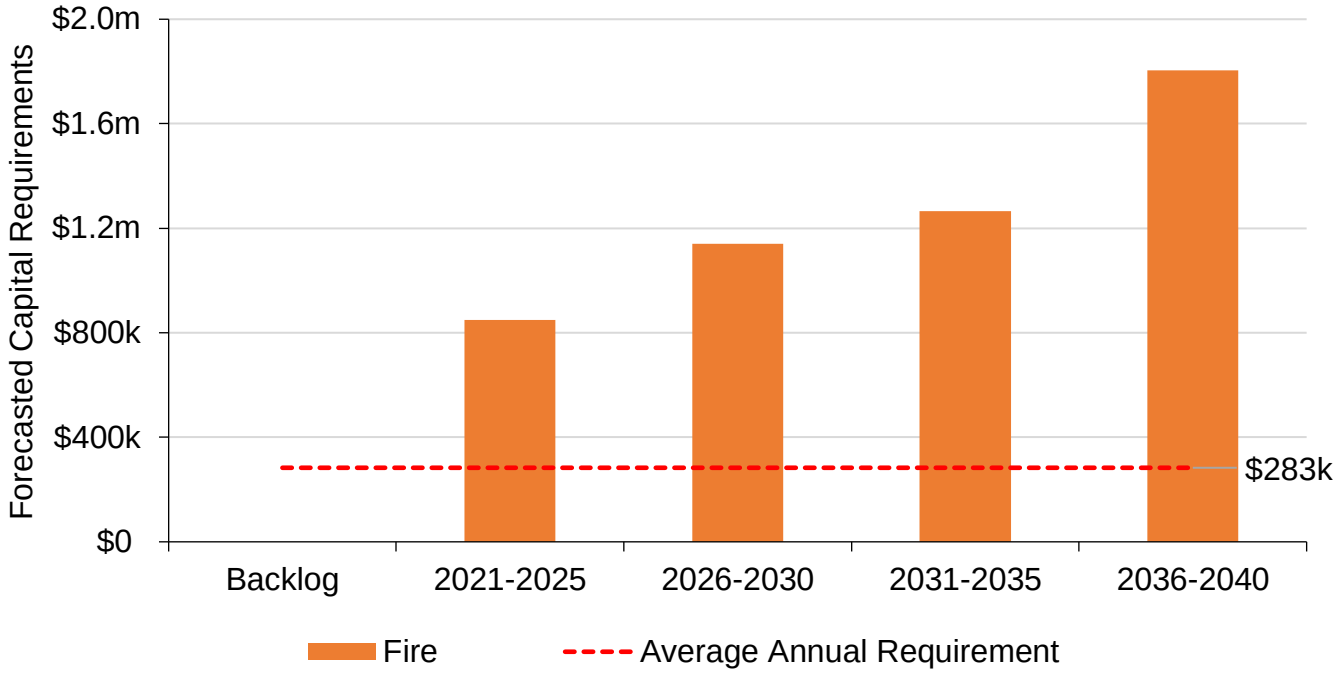
Event Class	Description
	➢ Asset Type: criticality to provision of protective services ➢ Redundancy: Availability of back-up assets in the event of failure of the primary asset. ➢ Trade in Value: Value expected upon trade-in of the existing asset. ➢ Delivery time: expected time for the delivery of a replacement of the subject asset. • In some cases, based on the above decision matrix an asset governed by NFPA may be replaced in advance of the NFPA required replacement date. • The decision-making matrix was implemented in late 2019 following the Township's directive to review capital budget programs and schedules for efficiency and effectiveness.
Capital Budgets & Forecasting	• Capital replacement requirements are forecasted for a period of 20 years. In 2021 the Township's fire department capital reserve contribution was $160,000. Capital reserve contributions are scheduled to increase by $10,000 annually. The 2021 capital reserve contribution ($160,000) was a significant increase from the 2013 capital reserve contribution ($90,000) but slightly less than the identified capital need. • In the event of insufficient capital funds, the Township's fire department may use general reserves, but are required to replenish them in subsequent years.

Forecasted Capital Requirements

The Township has identified a schedule and estimated cost for the replacement of fleet and fleet equipment assets for the period of 2021- 2040. Using this information, replacement events have been appended to assets in the asset management software system. For assets not identified, estimated dates of replacement are determined based on the assets in-service date and its expected service life.

Asset Segment	Average Annual Capital Requirement
Fire Fleet	$283,000

Using this approach, the period over which every asset in the category would be replaced was determined to be 2021-2040. On an annual basis the average capital requirement is determined $283,000. As indicated in the chart below, forecasted capital requirements for fire fleet assets fluctuate by year and grow incrementally over time.



Lifecycle Strategy Recommendations

- To ensure capital projections are as accurate as possible regularly review and update replacement costs, especially for assets of high value. Wherever possible, obtain estimates based on comparable recent purchases or quotes.
- Continue the use of the decision matrix when determining which assets to replace and when. Consider testing the matrix in other departments with fleet and fleet equipment assets.
- For all asset categories, ensure that the long-term costs of asset ownership are known and incorporated into financial deliberations and plans. This is especially important for critical assets that are under stringent requirements and often costly to replace, like fire assets. Ensure that long-term capital planning incorporates forecasted asset requirements and that the implications of not investing in asset replacement is clearly understood, documented, and appropriately considered when presenting budgets to council.

Fire Machinery & Equipment

Fire machinery and equipment assets are comprised of a variety of assets.

- Fire and Bunker Gear
- Emergency Extraction Equipment
- Communications Equipment

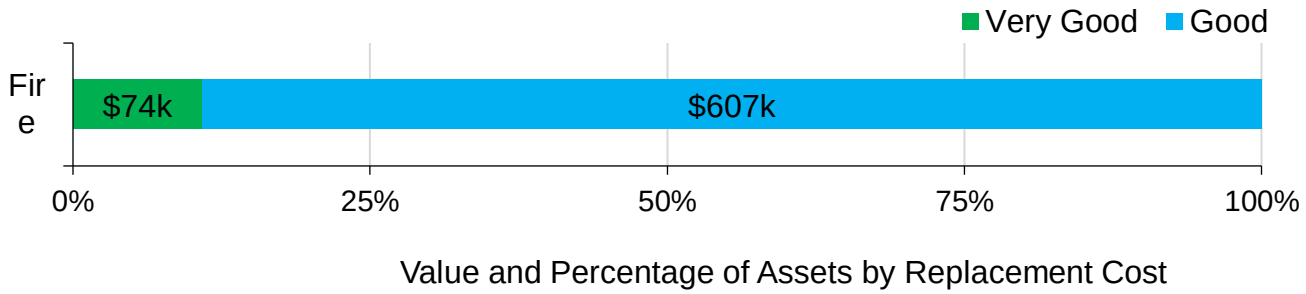
Fire Machinery & Equipment Asset Overview

The Township's fire machinery & equipment assets are recorded in Asset Manager. The following table provides summary information about fire machinery & equipment assets based on a December 2021 effective date:

Asset Category: Segment	Quantity	Average Age (Years)	Replacement Cost
Machinery & Equipment: Fire	50	5	$681,000

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and, as needed, update the assessed condition of their assets.

The following graph details the assessed condition for fire machinery & equipment assets, reported by category, and weighted against asset replacement cost. Fire machinery and equipment assets are all (as of 2021) in either good or very good condition, as indicated by the graph below:



Value and Percentage of Assets by Replacement Cost

Current Lifecycle Management Activities

Various asset interventions are completed on these assets based on their specific needs, legislative requirements, and current condition and function. These interventions are described in the table below.

Event Class	Description
Maintenance & Inspection	• Maintenance requirements for fire machinery and equipment assets are most often based on the National Fire Protection Association (NFPA) 1851 requirements[14]. • A staff mechanic completes regular maintenance and inspection for some of the Township's Machinery and Equipment assets. • Other assets like self contained breathing apparatus (SCBA) equipment, thermal imaging equipment, water storage, and jaws of life assets are tested for performance by a third party. • Assets are reviewed and rated for condition based on a 0-100 scale. Condition assessments are typically completed by the Township's mechanic. • The maintenance budget for fire machinery and equipment was $25,000 in 2021.
Replacement	• Replacement decisions consider anticipated expected life of each asset, performance trends from annual testing, and the cost effectiveness of repairing an asset or replacing it. • Generally, all assets are retained if they meet NFPA regulations and/or pass annual testing. • Many machinery and equipment assets are replaced through operational funding. Other machinery and equipment assets may be replaced using the minor capital budget of $15,000 annually.

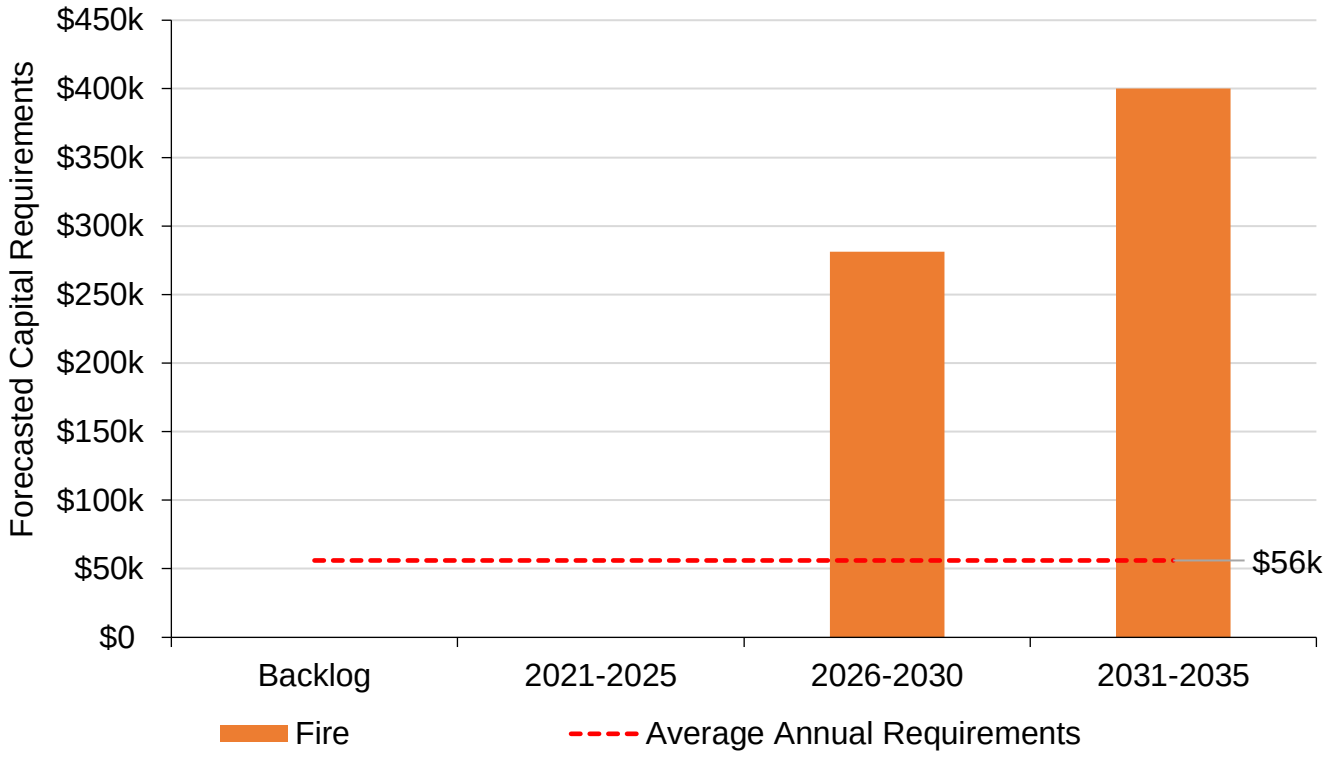
[14] NFPA 1851 establishes requirements for the selection, care, and maintenance of firefighting protective gear.

Forecasted Capital Requirements

The Township has identified a schedule and estimated cost for the replacement of fleet and fleet equipment assets for the period of 2021- 2035. Using this information, replacement events have been appended to assets in the asset management software system. For assets not identified, estimated dates of replacement are determined based on the assets in-service date and its expected service life.

Asset Category: Segment	Average Annual Capital Requirement
Machinery & Equipment: Fire	$56,000

Using this approach, the period over which every asset in the category would be replaced was determined to be 2021-2035. On an annual basis the average capital requirement is determined $56,000. As indicated in the chart below, forecasted capital requirements for fire machinery and equipment assets fluctuate by year. While no capital requirements are indicated for 2021-2035, they spike in 2026-2030 and increase again in 2031-2035.



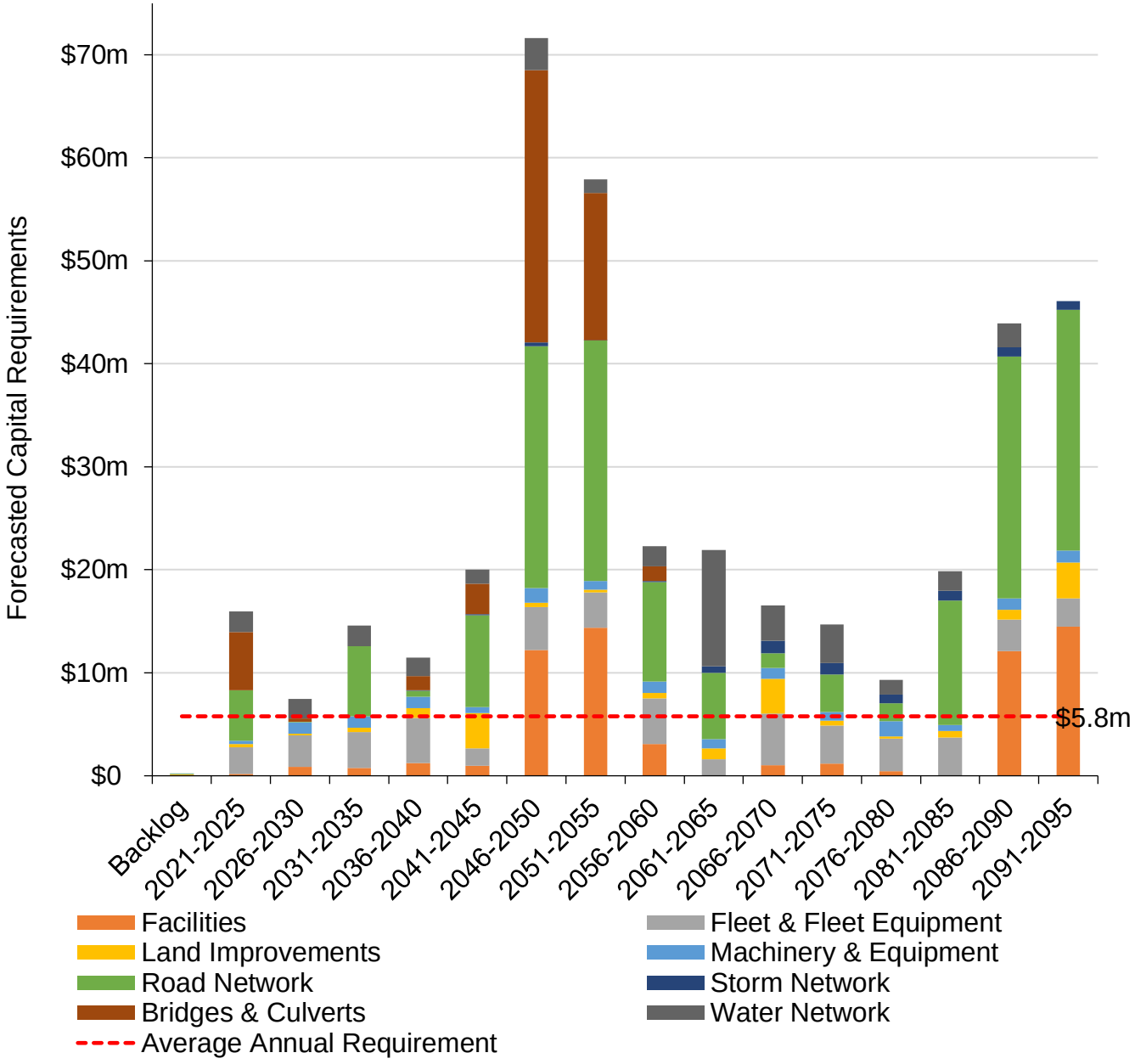
Lifecycle Strategy Recommendations

- To ensure capital projections are as accurate as possible, regularly review and update replacement costs, especially for assets of high value. Wherever possible, obtain estimates based on comparable recent purchases or quotes.
- Review existing asset information, particularly as it relates to asset quantities and contents, to ensure it remains accurate and useful.
- Review process and criteria for determining if an asset is considered a capital asset based on the TCA policy. Work to determine if the current threshold is appropriate and adhered to, or if changes to the policy may be merited so that assets actual lifespan is most accurately represented.

Conclusions and Recommendations

Capital Costs

Based on planned replacement dates and costs provided by the Township and projected replacement dates based on assets in-service date and estimated useful life, the following graph illustrates cumulative capital requirements for the period of 2021-2095. This period has been selected as it allows every asset to go through one-iteration of replacement. The average annual capital requirement for both core and non-core assets is $5,775,000 or when rounded, $5,800,000. Please note that fleet & fleet equipment and machinery & equipment both include fire assets.

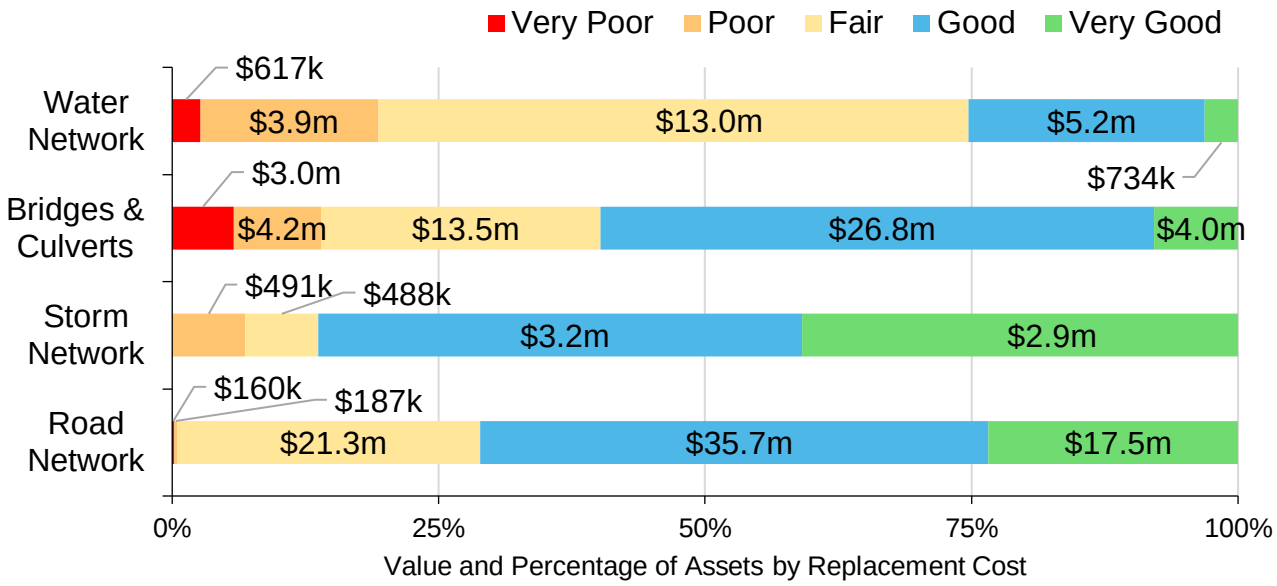


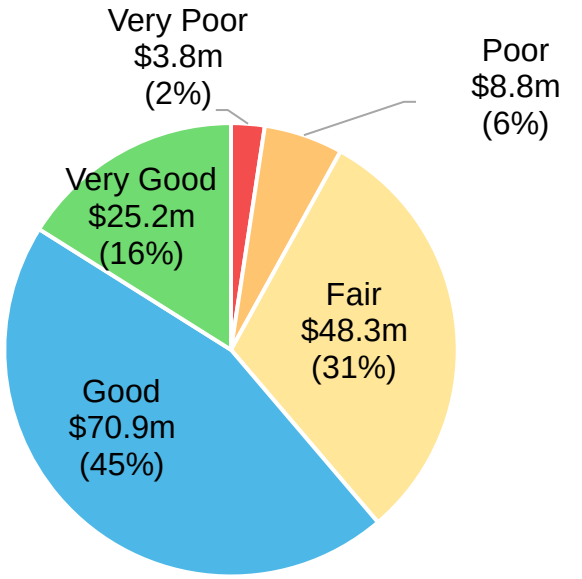
These estimates do not factor in inflation and are based on replacement dates as of December 2021. Please refer to Appendix 3 for a detailed breakdown of average annual capital requirements by category and segment.

Current vs. Projected Condition

The condition of assets generally deteriorates over-time however the rate of deterioration often changes based on the assets age (refer to Page 4) and its use and maintenance. For core assets, most road network and bridge and culvert assets utilized assessed condition; other core-assets rely on age-based condition.

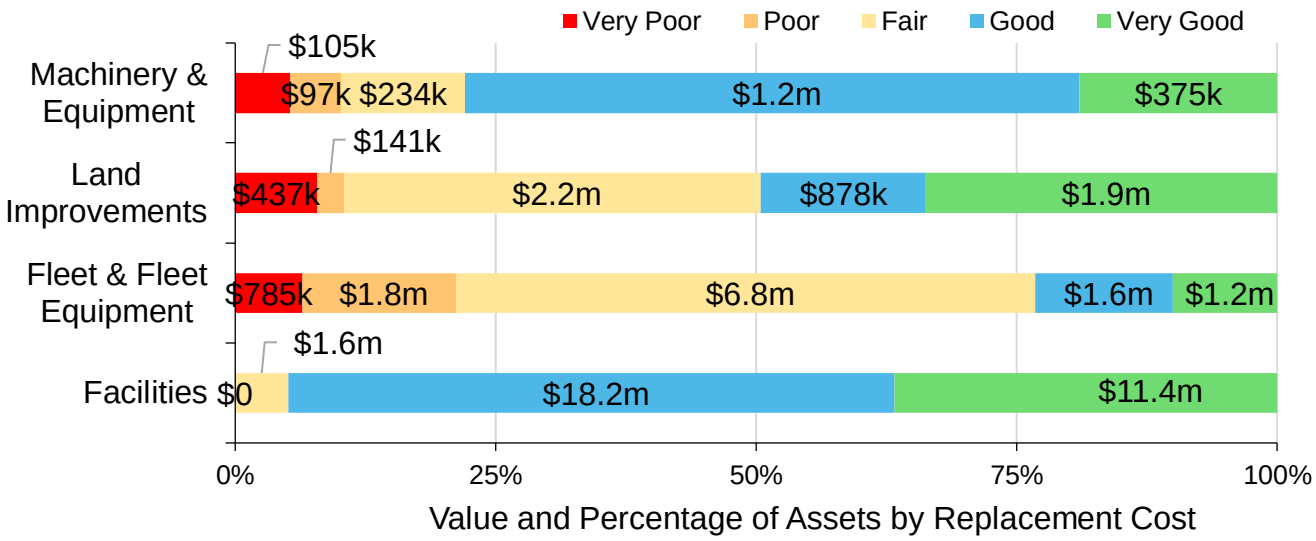
The condition of core assets is described below.



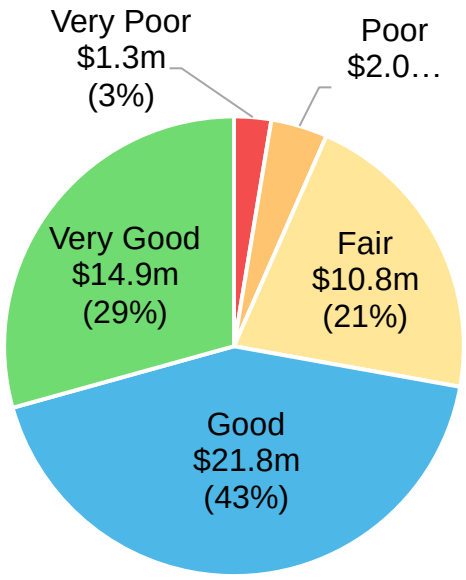


Core Asset Portfolio Condition

Using assessed condition where available and age-based condition otherwise, the Townships non-core assets are, on average, in good condition. The condition by asset category and overall is detailed below.



Value and Percentage of Assets by Replacement Cost



Non-Core Asset Portfolio Condition

The condition of assets can be projected into the future, either based on no replacement occurring and if replacements occur as scheduled. The following graphs illustrate the projected condition of all assets (core and non-core) assuming *replacement occurs* as scheduled or based on the assets Estimated Useful Life (EUL).

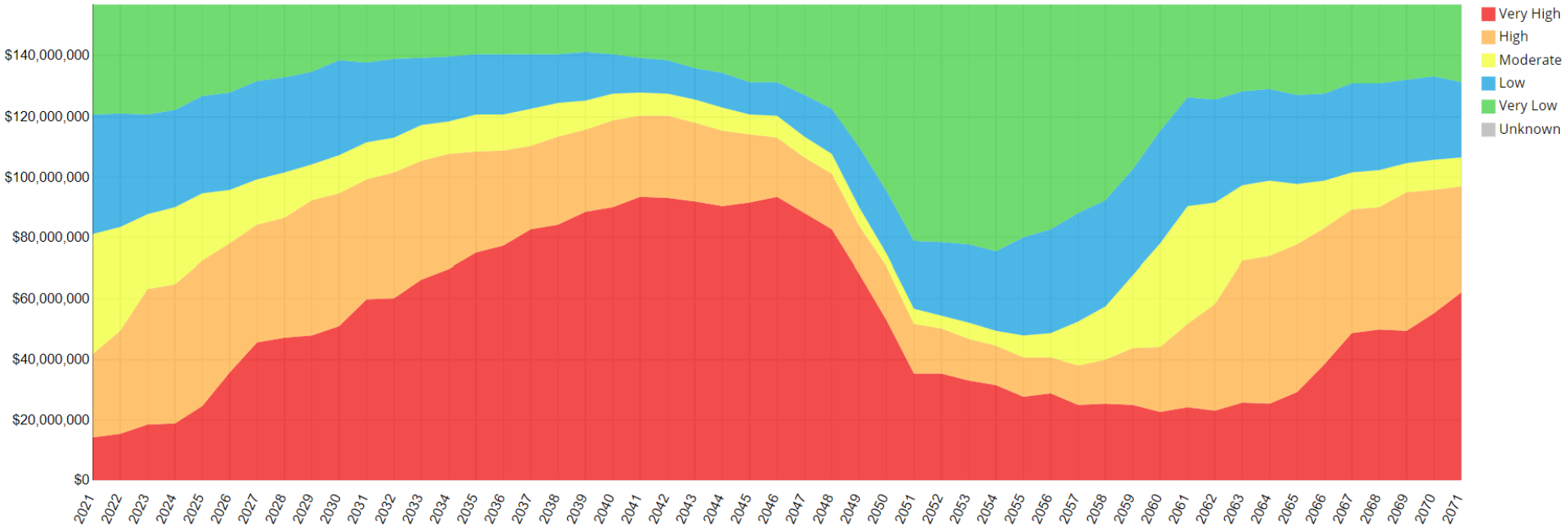


Figure 1: Core Asset Projected Condition Assuming Scheduled Replacement and Lifecycle Events

As indicated in the graph above, the condition of the portfolio assets will always fluctuate over time. However, with regular and suitable capital investment, the portfolio remains overall in reasonable condition. This often means that the extent of unexpected failures does not spike as it otherwise would where capital funding is not appropriate in amount and/or schedule of distribution.

The following graph illustrated the projected condition of assets based on replacements and rehabilitation *not* occurring at all:

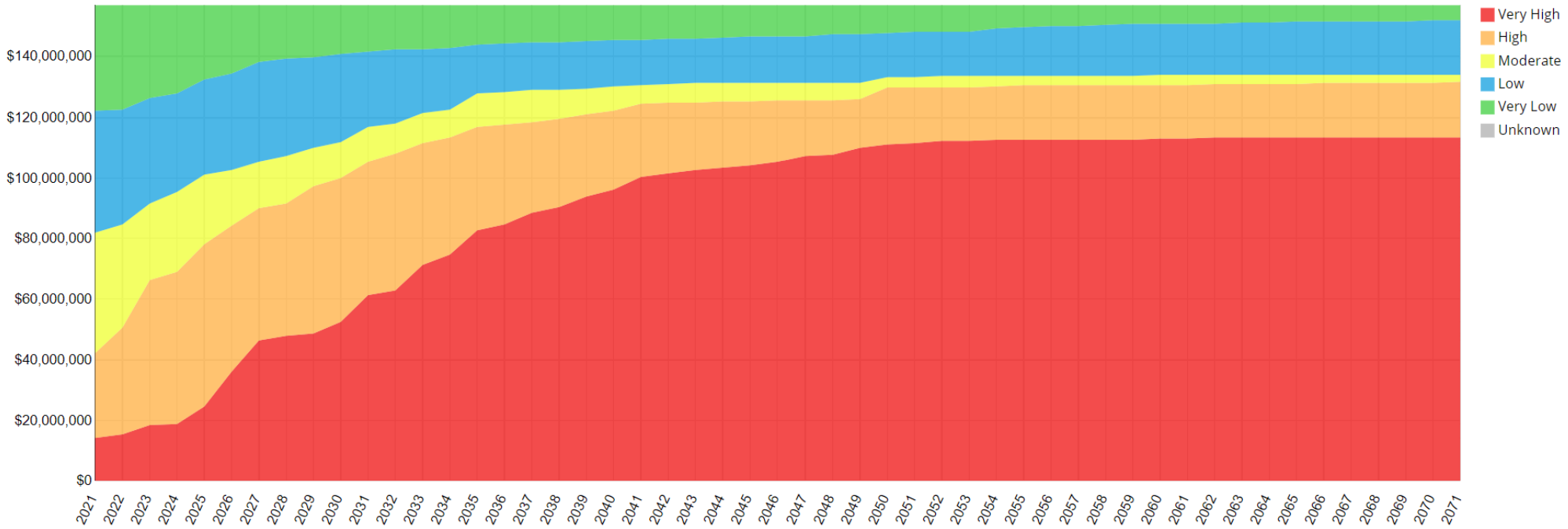


Figure 2: Core Assets Condition Assuming No Asset Replacement

As illustrated in Figure 2 above, the condition of assets deteriorates consistently over time when no asset replacement occurs. Assuming assets are not replaced, by 2055, almost all assets are in very poor condition. In contrast, when assets are replaced as scheduled and/or based on their Estimated Useful Life, the portfolio condition remains in overall good condition (Figure 1). While it is an exaggeration that asset replacement would cease to occur to any degree, Figure 2 does illustrate the importance of regular capital investment to the portfolio and the impact to asset condition of not investing.

Key Recommendations

This report is informed by meetings with Township staff, a detailed review, an update of asset information, review and integration of relevant documents, studies, and Municipal reports. From this, the following key recommendations are made:

- As an ongoing best practice, regularly evaluate lifecycle events and their associated schedule and costs. Such review may identify interventions identified in reports but not recorded in the asset management software or interventions that are not optimally scheduled (i.e., occur earlier or later than necessary) and could be adjusted so that asset life is extended for the lowest total cost.
- Since lifecycle strategies are most often triggered by asset condition, regular condition assessments and updates are recommended. For facility assets, which are of high relative value and complexity, procurement of professional Building Condition Assessments (BCA) is recommended. BCA's provide componentization of buildings based on Uniformat II coding which ensures that condition, estimate useful life, and replacement information are accurate for each specific building component. This would significantly improve the quality and comprehensiveness of asset information available to the Municipality, providing more accurate and informed long-term capital projections and the identification of near-term repairs.
- Review the internal condition assessment process across all asset categories to ensure that condition parameters, considerations, and procedures are appropriate for each asset category, well-documented and uniformly applied. In the event of staff retirements and turnover, this will be especially valuable to the municipality.
- Consider other and/or additional interventions to further extend asset life and reduce total lifecycle cost. For example, re-surfacing of tennis courts as an alternative to full replacement.
- Ensure capital budgets are appropriate for the near and long-term based on confirmed asset requirements. As noted in capital cost projections spikes in capital requirements are expected in 2036-2040 and then again in both 2046-2050 and 2051-2065. Using long-term capital forecasting tools can assist the Municipality in determining required taxation rates and reserve fund contributions. Such financial planning strategies can assist in more phased in and sustainable revenue collection that enables asset interventions to occur when needed.
- Begin to prepare for 2024 and 2025 O. Reg. 588/17 requirements now; work to establish current and proposed Levels of Service (LOS) and the lifecycle costs associated with achieving those LOS. To assist in preparing for future O. Reg. 588/17 requirements, please refer to the proposed LOS regulatory requirement details in Appendix 1.

Conclusion

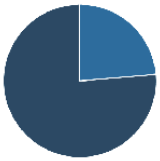
With the development of this report, the Municipality has documented their current lifecycle strategies as required by Ontario Regulation 588/17. Upon any updates to the lifecycle strategies deployed, this document should be updated accordingly. Regular review of the Municipality's lifecycle management strategies may improve the effectiveness of the approach. Many times, asset replacement decisions are largely premised on asset condition. For this reason, accurate condition information based on uniform assessments is central to the effectiveness of lifecycle management strategies. The more accurate condition information on assets is the timelier asset interventions can be, enabling asset ownership at the lowest total cost. To ensure the integrity of asset condition information, the process for determining asset condition, especially the parameters used, and the definitions of each level of condition should be clearly defined and documented.

As demonstrated by capital projections, Hamilton Township's assets carry significant capital costs. To ensure investments can occur when needed, long-term capital planning is important. Recognizing that public investment can be challenging to obtain, decisions should consider the implications of not investing in assets and explore which assets may be most critical to invest in. Further information on tools to aid in asset criticality discussions is presented in the accompanying risk report.

Appendix 1: 2022 Budget Infographic

Total Budget: $14.4M*

Operating Budget: $11M
Capital Budget: $3.4M
(M = Million)
*Excludes Water and Building Budgets



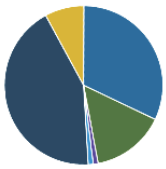
2022 Levy Increase

The 2022 Operating Budget proposes a 2.9% increase over the 2021 budget. Factoring in assessment growth from 2021 of 0.9% as provided by the Municipal Property Assessment Corporation (MPAC), the net levy increase for the 2022 consolidated budget is 2%.

2.0%

Investment By Department

Transportation Services (43%)
General Government (8%)
Protection Services (32%)
Recreation & Cultural Services (15%)
Community Grants, Committees (1%)
Planning and Development (1%)



Services are Funded By...

80% Property Taxes
2% Reserves
18% Revenues*

*Revenues include User Fees, Grants, etc.

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Appendix 2: Legislative Requirements

1. Asset Management Plan – All Assets (2025) [O. Reg. 6. (1).4.]

a. Must include a lifecycle management strategy that identifies the lifecycle activities that would need to be undertaken to provide the proposed levels of service over the next 10 years, according to an assessment of:

i. The full lifecycle of the assets.
ii. The options for which lifecycle activities could potentially be undertaken to achieve the proposed levels of service.
iii. The risks associated with the options referred to in sub-subparagraph ii
iv. The lifecycle activities referred to in sub-paragraph ii that can be undertaken for the lowest cost to achieve the proposed levels of service.
v. An estimate of the annual costs for each of the 10 years of undertaking the lifecycle activities identified in subparagraph i, separated into capital expenditures and significant operating costs.
vi. An identification of the annual funding projected to be available to undertake lifecycle activities and an explanation of the options examined by the Municipality to maximize the funding projected to be available.
vii. If, based on the funding projected to be available, the Municipality identifies a funding shortfall for the lifecycle activities identified in subparagraph i,
    A. an identification of the lifecycle activities, whether set out in subparagraph i or otherwise, that the Municipality will undertake.
viii. if applicable, an explanation of how the Municipality will manage the risks associated with not undertaking any of the lifecycle activities identified in subparagraph i

Interpretation: The costs (reported annually, over 10 years), of providing proposed levels of service shall be provided. Lifecycle strategies used to meet the proposed level of service shall be documented, including any risks they hold. All available funding will be documented and compared with the required funding. Strategies to meet any funding gaps will be included. Resultant risks of not undertaking identified lifecycle strategies shall be included, these may include heightened liability risks, reputational risks, and others.

Appendix 3: Average Annual Capital Requirement Breakdown

Asset Category	Average Annual Capital Requirement
Bridges & Culverts	$1,267,000
Bridges	$371,000
Culverts	$896,000
Road Network	$2,016,000
Curb & Gutter	$2,000
Guard Rails	$195,000
Paved Roads - HCB	$1,197,000
Paved Roads - LCB	$487,000
Small Culverts	$8,000
Streetlights	$126,000
Storm Network	$97,000
Catch Basins	$17,000
Storm Mains	$64,000
Storm Manholes	$15,000
Storm Structures	$2,000
Water Network	$477,000
Hydrants	$14,000
Service Lines	$28,000
Valves	$15,000
Water Treatment Plants	$280,000
Water Vehicles & Equipment	$14,000
Watermains	$125,000
Facilities	$819,000
Fire	$70,000
General Government	$82,000
Parks	$1,000
Recreation	$537,000
Roadways	$128,000

Asset Category	Average Annual Capital Requirement
Fleet & Fleet Equipment	$669,000
Fire	$283,000
Parks	$5,000
Recreation	$40,000
Roadways	$341,000
Land Improvements	$227,000
Athletic Fields & Playgrounds	$104,000
Lighting & Fencing	$12,000
Park Facilities	$2,000
Park Fixtures	$32,000
Signs	$76,000
Machinery & Equipment	$203,000
Fire	$56,000
General Government	$61,000
Parks	$12,000
Recreation	$26,000
Roadways	$48,000
Total	**$5,775,000**