Levels of Service Report

Township of Hamilton

June 2023

psdcitywide

Contents

LEGAL NOTICE

Introduction & Background

The Township of Hamilton engaged PSD Citywide as an asset management advisor to guide and develop lifecycle strategies, review, and evaluate risk, and establish and measure current levels of service (LOS) for its infrastructure assets. This report is a culmination of PSD Citywide's engagement with Hamilton Township as it relates to **levels of service**. The report identifies and discusses LOS selected by the Township.

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

PSD engaged staff, generally on a departmental basis, and reviewed current levels of service. To determine which level of service metrics were most valuable for the Township to monitor and which asset categories they applied to, the strategic plan was reviewed, and staff were engaged to better understand relevant measurements and data available to support.

Identification of useful technical and community levels of service are key elements of good asset management practices and programs. A clear understanding of what levels of service metrics are suitable and what they communicate provides a means of measuring performance overtime. This enables more proactive and strategic asset management considerations and actions, including preparing the Township to develop proposed levels by 2025 in accordance with O. Reg. 588/17.

Project Scope

This project focused on documenting the current levels of service for Hamilton Township assets. This report focuses on the core and non-core asset categories as defined by Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure. For Hamilton Township, these asset categories 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

Overview of Levels of Service

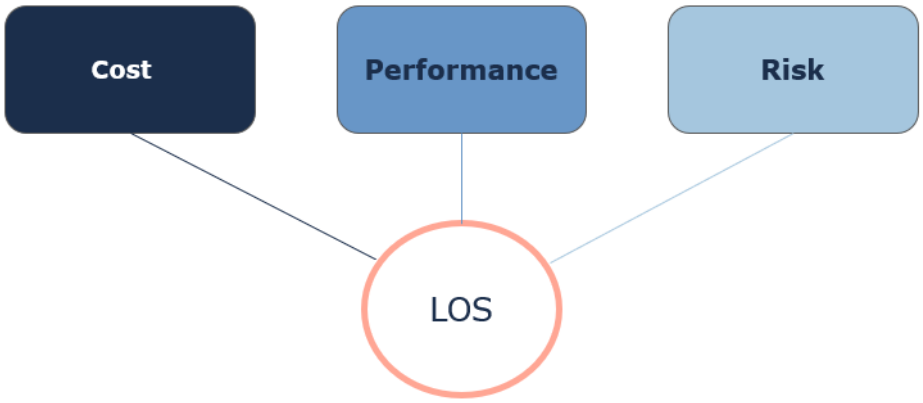
The primary responsibility of a township is to provide adequate and sustainable services to their community. This responsibility is supported by organizational objectives, mission statements, and Strategic Plans as well as through municipal services, which are often delivered by infrastructure assets.

To ensure that organizational objectives align with expected service outcomes, it is necessary to develop a process for the systematic measurement, monitoring, and evaluation of an organization's level of service. A level of service (LOS) is a means of measuring an asset's current and target performance.

Managing current LOS and establishing target LOS involves balancing three key factors: cost, performance, and risk. Any decision to increase or decrease the provided LOS will have an impact on each factor. For example, increasing a level of service, like the condition of roads, usually results in increased costs but also reduced risk of asset failure and improved asset performance. Conversely, a decrease in level of service typically reduces cost but increases assets risks and decreases asset performance.

Therefore, managing your LOS is about understanding the trade-offs involved and aligning cost, performance, and risk with organizational objectives and the desires of community stakeholders.

Levels of Service (LOS)



Level of Service Framework

Municipalities exist to service residents and assets are a crucial means of delivering service to residents. Measuring the LOS for municipal assets reflects the service outcomes that the community receives, and that the municipality provides.

The Institute of Asset Management (IAM) defines level of service as parameters, or combination of parameters, which reflect social, political, environmental, and economic outcomes that the organization delivers. Parameters commonly include safety, customer satisfaction, quality, reliability, cost, availability, and capacity.

A level of service (LOS) is a measure of what the Township is providing to the community and the nature and quality of that service. Within each asset category in this report, technical metrics and qualitative descriptions that measure both technical and community LOS have been established and measured as data is available.

These measures include a combination of those that have been outlined in O. Reg. 588/17, in addition to performance measures identified by the Township as worth measuring and evaluating. The Township measures the level of service provided at two levels: Community LOS, and Technical LOS.

Community Levels of Service

The public may not have the technical background necessary to understand asset performance metrics. Recognizing this, a customer level of service framework is established to translate the service attribute a municipality may seek to advance

with a qualitative description – the Community LOS— the public can understand. The Community LOS is connected to a technical level of service that can reliably measure actual asset performance.

Community LOS are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, stormwater), the Province, through O. Reg. 588/17, has provided qualitative description frameworks that are required to be included in an AMP. For non-core asset categories, the Township has determined the qualitative descriptions that will be used to determine the Community LOS provided, as a result of the workshops conducted to complete this report. These descriptions can be found in the LOS subsection within each asset category.

Technical Levels of Service

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

For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in an AMP. For non-core asset categories, the Township has selected the technical metrics.

The LOS framework structure is summarized below:

	Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service
Definition	The service attribute that is being measured.	A high-level statement that describes the desired service outcome.	A simple, plain language description of what the customer receives.	A key performance indicator measured internally that indicates how an organization is performing in relation to the level of service.
Example	Reliable	A reliable water supply is provided with minimal service disruptions and system failures are responded to promptly.	Description of boil water advisories and service interruptions.	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.
Process	Establish and define core values based on stakeholder expectations	Guided by selected core value with consideration and alignment to strategic goals and/or departmental mandates.	Describe service being provided by the municipality and technical LOS metrics in laymen terms.	Reliable and quantifiable measurement of the service provided and its alignment with the level of service statement. Based on collection of asset data.

Core Values

The selected core value represents what the public generally values in the provision of municipal services. Table 1 provides an overview of core values that are commonly held by the public.

Table 1: Core Values

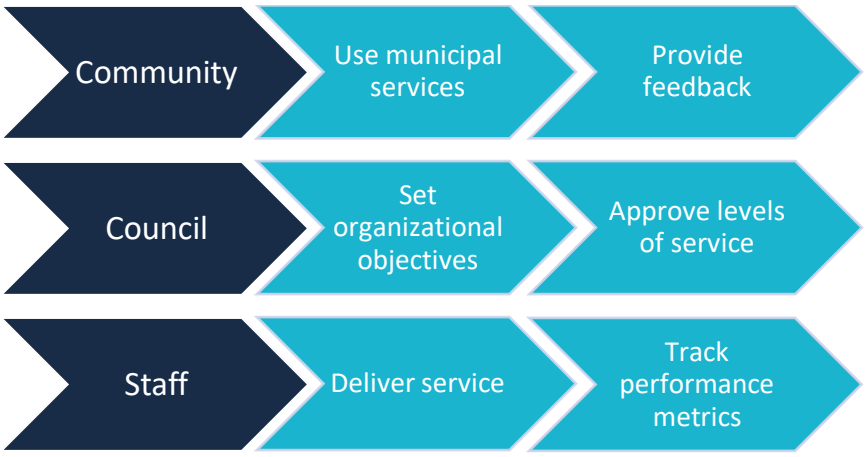
Value	Description
Accessible	Services are available and accessible for customers who require them.
Reliable	Services are provided with minimal service disruption and are available to customers in line with needs and expectations.
Safe	Services are delivered such that they minimize health, safety, and security risks.
Regulatory	Services meet regulatory requirements of all levels of government.
Affordable	Services are delivered at an affordable cost for both the organization and customer.
Sustainable	Services are designed to be used efficiently and long-term plans are in place to ensure that they are available to all customers into the future.

LOS Stakeholders & Roles

Levels of Service are an important measurement tool for municipalities and their infrastructure assets. The establishment of LOS, the tracking and reporting of them, and the experience of end users are all typically conducted by various municipal stakeholders, but sometimes without realizing it. The following describes common municipal stakeholders and their interactions and roles as it relates to LOS:

- Community members *experience how assets are performing*. For example, they may have sentiments such as:
    - "I consistently get clean water that I am confident is safe to consume."
- Councilors *approve budgets which largely inform feasible standards of asset performance.* Often decisions will be based on what they believe their constituents would accept and support. Common sentiments may include:
    - "I believe my constituents are willing to accept a tax rate of X to deliver services A-Z."
- Staff *enable service delivery, and report on cost and performance*. Often service delivery is constrained by budgetary and policy decisions. Common sentiments may include:
    - "Our annual roads budget is Y, and our 2020 average road condition was X."

The primary stakeholders within the municipal context that interact and/or affect LOS are described as follows:



LOS Metrics Selection Considerations

Municipalities are required to report on mandated LOS metrics for core assets and may select other additional LOS metrics. For non-core assets, all LOS metrics are to be selected by each municipality. When selecting LOS metrics, their suitability, feasibility of collection, and reliability as a metric should be carefully explored. This process can be guided by the following questions:

1. For each asset category, what data is available?
2. Is this available data sufficiently accurate and traceable?
3. Is there a realistic means of regularly collecting the data required?
4. Is the LOS locally relevant and/or connected to other strategic goals or plans?
5. What is the staff capacity to collect and report on LOS metrics, and does the municipality have the resources necessary to collect and report on the proposed LOS metrics?

Municipalities may wish to informally select LOS metrics in advance of the 2024 deadline and complete a "trial run" where they internally collect and report on the metric. This will provide the municipality an opportunity to truly determine if the LOS metric is suitable, reliably measurable and collectable, and, based on this, if it should become a publicly recognized LOS metric. It may also point to adjustments that may be needed to make the LOS metric more reliable and/or feasible to collect and report on.

Key Definitions & Concepts

Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. These concepts are applied throughout an asset management plan. This report focuses on levels of service which is described below in greater detail.

Line of Sight

ISO 55000 defines asset management as the "*coordinated* activity of an organization to realize value from assets". The ability to deliver value requires an understanding of the goals and objectives of the asset owners. For municipalities, strategic plans most often outline these goals. Through the identification of strategic goals, asset management practices and decisions can be aligned to support strategic goal advancement. LOS metrics can also be selected to measure asset performance in relation to strategic goal advancement.

The process of aligning an organization's strategic plan and asset management activities delivered by staff is referred to by the Institute of Asset Management as the "line of Sight". Having a "line of sight" provides staff with an understanding of the purpose to their actions and why they are needed.

Asset Categories

This report for the Township of Hamilton is produced in compliance with Ontario Regulation 588/17. The 2024 deadline under the regulation requires analysis of both core (roads, bridges & culverts, water, and storm water) and non-core assets (facilities, land improvements, machinery & equipment, fleet & fleet equipment).

The report summarizes the LOS metrics and their 2021 performances for all of the Township's asset categories as listed below:

Core	Non-Core
Road Network	Facilities
Bridges & Culverts	Land Improvements
Stormwater Network	Machinery & Equipment
Water Network	Fleet & Fleet Equipment

Deriving Replacement Costs

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

1. **User-Defined Cost and Cost/Unit**: Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience.

2. **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.

Accurate replacement costs are an important step in understanding asset investment requirements. Accurate determination of investment requirements is an important component of determining target reinvestment rates which are a common LOS metric.

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 was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

Asset EUL is a factor in determining age-based condition. Age-based condition is a common LOS metric.

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:

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

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

Reinvestment rate and/or target reinvestment rate is a commonly used LOS metric as it reflects the assets investment relative to its need. This can help explain asset performance and provide predictive indicators of future asset performance and risk. For example, if an asset category is currently under funded, it is very likely that asset condition and performance will decline overtime and, concurrently, risks will rise.

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 the condition rating system used in this report to determine asset condition. 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.

Asset condition is a commonly used LOS metrics as it reflects the state of the inventory, which is related to the cost, performance, and risks held by infrastructure assets.

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	60-80
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-60
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-40
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-20

The analysis in this report is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition.

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 which include the 2024 requirement to report for all asset categories, the following:

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 impacts

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 levels of service conducted by asset class. Where possible, capital replacement and rehabilitation activities, including their estimated cost and dates are identified against the asset they apply to. The accompanying lifecycle and risk 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 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 applicable 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

O. Reg. 588/17 2025 Requirements for Levels of Service

O. Reg 588/17 Asset Management Planning for Municipal Infrastructure mandates for core assets (water, storm, bridges & culverts, roads) specific LOS metrics. All Ontario municipalities must report on their current LOS performance for core assets by 2022 and expand to non-core assets by 2024.

By 2025, municipalities are also required to report on the proposed LOS for each selected LOS metric. Current LOS represent current municipal performance; proposed LOS reflect the target level of performance.

This report's scope and the accompanying risk and lifecycle reports are specific to the 2024 O.Reg requirements. However, 2025 requirements are noted in Appendix A for information purposes.

Report Development & Reference Material

In early 2023, PSD Citywide met with numerous Hamilton Township staff to develop a customized levels of service (LOS) framework. The initial presentation and discussion illustrated the importance of LOS in an asset management program and the role that it should play in decision-making moving forward. Second, the workshop focused on developing meaningful level of service statements, technical and customer LOS, that take into consideration the availability of data and the ability of these indicators to provide reliable and actionable data.

Several strategic documents were reviewed and used to help inform the selection of LOS metrics and the findings of this report.

Township Plans & Documents Review

Several Township documents and plans were reviewed and considered with the development of this report. These documents and plans include:

- Township of Hamilton Master Fire Plan 2022
- Township of Hamilton Parks and Recreation Master Plan July 2022
- Township of Hamilton Strategic Plan (2018-2023)

These reports provided asset and departmental specific information that provided important context, background, and history to guide PSD Citywide's engagement with Township of Hamilton staff.

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.

Much of the content of the Strategic Plan provides practical considerations for LOS development. These considerations are detailed below.

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."

- LOS Considerations:
  - Safety identified as important attribute; applies to all asset categories.
  - Efficiency described as generally important; applies to all asset categories.
  - Mission to promote an active environment is supported by most land improvement assets and many facilities assets.

Four Pillars:

1 Effective Governance: To deliver efficient and cost-effective governance in a timely manner through leadership and respect—administer with an unbiased view.
2 Environment: To provide sustainable growth while protecting the natural features of the Township.
3 Physical Assets: To acquire and maintain necessities used to provide services to the Township.
4 Recreation, Culture, and Social Well-being: To promote a social & healthy environment made available for a wide variety of activities in clean, efficient, functional facilities and parks.

- LOS Considerations:
  - To the greatest extent possible, decisions should be based on evidence (Pillar 1).
  - Protecting the environment is important to the Township (Pillar 2).
  - Physical assets are recognized for their importance to service provisions; to support this pillar asset, investment is necessary (Pillar 3).
  - Assets that support physical activity and social interactions are especially valued (Pillar 4).
- Associated with each of these pillars are goals with priority activities. The goal, listed numerically, and the associated priority activities, listed alphabetically, that are specifically relevant to LOS are as follows:
  - 1.3, A: Improve communication with the public across the entire Municipality.
  - 1.3, C: Identify the technological improvements and social media opportunities to connect the Township and its ratepayers.
  - 3.2, A: Manage and maintain all Municipal infrastructure with an emphasis on continuous improvement and greater efficiencies.

- 4.4, C: Maintain an appropriate standard of care that balance risk and fiscal responsibility while fulfilling statutory requirements, winter control, road patrol, signage, maintenance, etc.
- 4.4, E: Maintain quality core asset systems.
- 4.4, F: Maintain programs, practices, and approaches in support of property and building standards and fire services that address the needs and expectation of the community.
- Proposed LOS Applications:
  - Public engagement is valued and, to the extent possible, should be incorporated into determining proposed LOS (1.3, A).
  - Digital communication and online platforms are a valued platform for public engagement and could be leveraged to gather public input into proposed LOS (1.3, C).
  - In line with continuous improvement, proposed LOS may need to be modest initially and increase over time (3.2, A).
  - Understanding the cost, risk, and performance expected at various LOS is important to determining the selected proposed LOS (4.4, C).
  - Core assets are a priority (4.4, E).
  - It is important to understand the needs and expectations of the public (4.4, F).

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. Content and considerations relevant to LOS include:

- The Township's existing supply of recreation facilities are sufficient to service the existing population and near-term population growth.
- Recreation assets are used frequently by the Township's residents.
- About half of persons surveyed indicated they would pay more fees to use recreation services.

LOS Applications:

- Based on survey results, the cost of increased service levels for recreational assets could be funded, at least to some degree, through user-fees.
- Recreational assets are valued by the community; a target LOS lower than the current LOS may not be favourable to residents.

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 11 policy statements for asset management decisions. Relevant statements to LOS include:

- The Township will develop meaningful performance metrics and reporting tools to transparently communicate and display the current state of asset management practice to Council and the community (Statement 7).
- The Township will develop processes and provide opportunities for municipal residents and other interested parties to offer input into asset management planning wherever and whenever possible (Statement 11).

Core Assets

Road Network

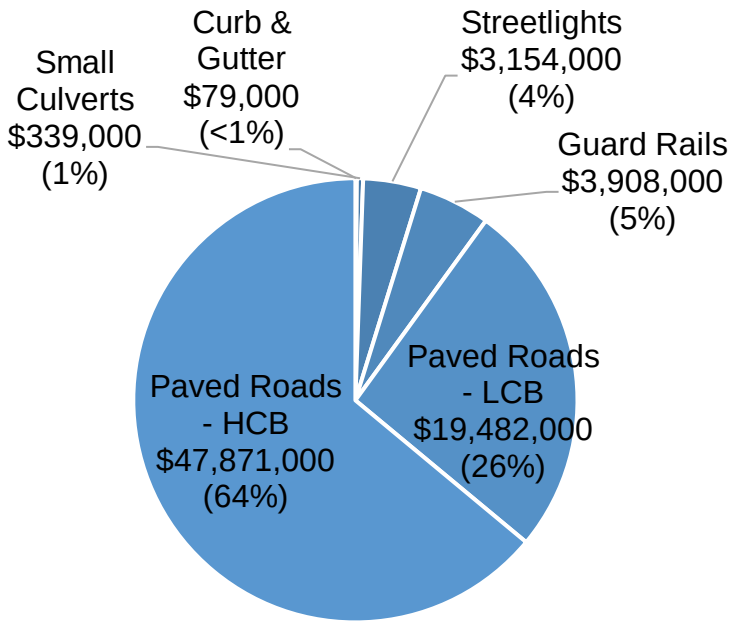
Asset Overview

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[1]
Total			**$74,834,000**

[1] 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 and quantitative asset risks. Updating asset data enables more accurate LOS reporting. The following table provides summary information for the road network's condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[2]
Curb & Gutter	92	1 / 25
Guard Rails	47	3.4 / 25
Paved Roads - HCB	68	7.49 / 25
Paved Roads - LCB	73	5.98 / 25
Small Culverts	91	1 / 25
Streetlights	52	15 / 25
Total	**68**	**7.17 / 25**

[2] Weighting is based on asset replacement value.

LOS Framework

Ontario municipalities were first required to report on LOS for their core assets in July 2022. At a minimum, municipalities must report all LOS metrics as mandated by O. Reg. 588/17. Hamilton Township LOS, reported with a data effective date of 2021, are as follows:

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
Scope	Description, which may include maps, of the road network in the Township and its level of connectivity.	Please refer to Appendix C	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2): 49 lane-km / 256 km^2
			Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2): 224 lane-km / 256 km^2
			Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2): 234 lane-km / 256 km^2
Quality	Description or images that illustrate the different levels of road class pavement condition.	The Township completed a Road Needs Study in 2019 in coordination with D.M. Wills. Every road section received a surface condition rating (0-10) and a condition rating (0-100). The condition rating is derived from a mix of other point ratings that considers alignment, surface condition, surface width, level of service, structural adequacy, drainage, and maintenance demands.	Average pavement condition index for paved roads in the Township: HCB: 68% LCB: 73%
			Average surface condition for unpaved roads in the Township (e.g., excellent, good, fair, poor): Fair

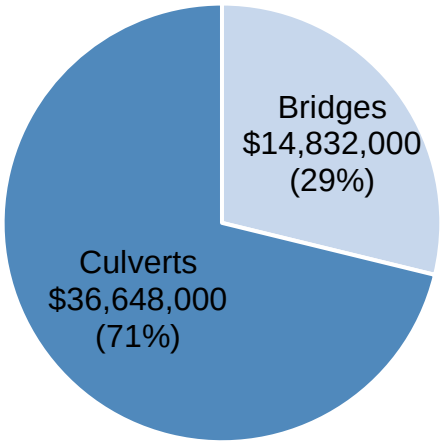
Bridges & Culverts

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 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	Replacement Cost
Bridges	20	$14,832,000
Culverts	74	$36,648,000
Total	**94**	**$51,480,000**



Total Current Replacement Cost: $51,480,000

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.

As part of the project engagement, PSD Citywide worked with Hamilton Township staff to review and, as needed, update asset information, including updated reports. Updating asset information enables LOS reporting that is as accurate as possible. The following table provides summary information for the bridges and structural culverts' condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[3]
Bridges	65	13.53 / 25
Structural culverts	71	8.87 / 25
Total	**69**	**10.21 / 25**

[3] Weighting is based on asset replacement value.

LOS Framework

Ontario municipalities were first required to report on LOS for their core assets in July 2022. At a minimum, municipalities must report all LOS metrics as mandated by O. Reg. 588/17. Hamilton Township LOS, reported with a data effective date of 2021, are as follows:

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. Only a few of the Township's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, motor vehicles, emergency vehicles and cyclists can cross them without restriction.	% of bridges in the Township with loading or dimensional restrictions: 20%
Quality	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts.	Every structure is given a condition rating from 0-100. On average, all Township bridges and culverts are in Good condition. **Very Good (75-100):** considered to be in excellent condition, and repair or rehabilitation work is rarely required within the next 5 years. Routine maintenance is still recommended.	Average bridge condition index value for bridges in the Township: 65

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
		Good (70-75): considered to be in good condition, and repair or rehabilitation work is not usually required within the next 5 years. Routine maintenance is still recommended. **Fair (60-70):** Generally considered to be in good-fair condition. Repair work is ideally scheduled to be completed within the next 5 years. **Poor (50-60):** Generally considered poor and nearing the end of service life. The rehabilitation of these structures is ideally best scheduled to be completed within 1 year. However, if the replacement of the structure is more viable, the structure can be scheduled for replacement within the short-term. **Very Poor (0-50):** Generally considered very poor and at the end of service life. The rehabilitation of these structures is ideally best scheduled immediately. However, if the replacement of the structure is more viable, the structure can be scheduled for replacement within the short-term.	Average bridge condition index value for structural culverts in the Township: 71

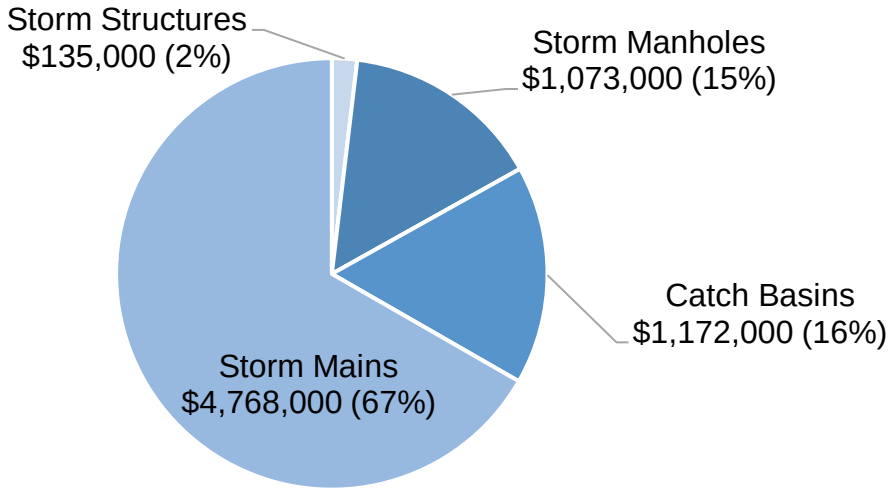
Stormwater Network

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). The Storm structures segment primarily includes stormceptor assets, 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 data to improve long-term asset management planning.

Stormwater network 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	Replacement Cost
Catch Basins	316	$1,172,000
Storm Mains	15,661 Meters	$4,768,000
Storm Manholes	173	$1,073,000
Storm Structures	4	$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.

Age-based condition is generally not as accurate as assessed condition. Currently condition is not included as a LOS metric. If it is in the future, accuracy of data should be noted. The following table provides summary information for the stormwater network's condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[4]
Catch Basins	74	1.98 / 25
Storm Mains	74	6.37 / 25
Storm Manholes	70	2.01 / 25
Storm Structures	83	1.47 / 25
Total	**73**	**4.91 / 25**

LOS Framework

Ontario municipalities were first required to report on LOS for their core assets in July 2022. At a minimum, municipalities must report all LOS metrics as mandated by O. Reg. 588/17. Hamilton Township LOS, reported with a data effective date of 2021, are as follows:

[4] Weighting is based on asset replacement value.

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
Scope	Description, which may include map, of the user groups or areas of the Municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	Most of the Township's landscape is comprised of rural countryside and agricultural land where stormwater runoff is conveyed through a series of rural ditches and culverts. Urban developments include commercial, industrial, and residential areas that are designed with an urban road right-of-way cross section and may be serviced by storm sewers and facilities.	% of properties in Township resilient to a 100-year storm: TBD % of the municipal stormwater management system resilient to a 5-year storm[5]: 20%

[5] The Ganaraska Region Conservation Authority (GRCA) works with municipalities, including the Township of Hamilton, to prevent, eliminate, or reduce the risk to life and property from flooding and erosion In support of this, they developed a Technical and Engineering Guidelines for Stormwater Management Submissions document. This document outlines storm infrastructure design requirements including system sizing. It notes that all residential and industrial developments are to be sized for a 5-year flow. Based on this, it is assumed that all stormwater infrastructure constructed in 2014 or later, when the document was published, is sized to support a 5-year storm. The reported figure is based on the mains with an in-service date of 2014 or later. However, it is likely that the mains installed prior to this date are sized to a 5-year storm and that, therefore, a larger percentage of the stormwater management system is sized to a 5-year storm.

Water Network

Asset Overview

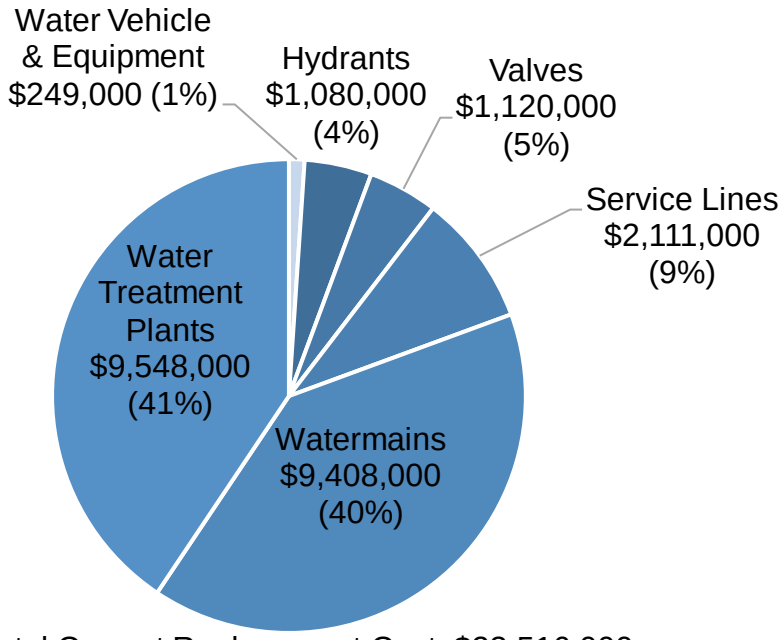
The Township is responsible for maintaining a water network that is comprised of watermains, water treatment plants, and other supportive water infrastructure like valves, service lines, water vehicles and equipment, and hydrants. The water network is managed and operated by the Waterworks department staff at the Township. The Waterworks department is responsible for 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 management software system. The following table provides summary information based on a December 2021 effective date:

Asset Segment	Quantity (Assets)	Replacement Cost
Hydrants	90	$1,080,000
Service Lines	451	$2,111,000
Valves	114	$1,120,000
Water Treatment Plants	2 (3,320)[6]	$9,548,000
Water Vehicle & Equipment	74	$249,000
Watermains	21,664 linear Meters	$9,408,000
Total		**$23,516,000**

[6] 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. Like with other asset categories, accurate asset data is central to accurate LOS reporting. The following table provides summary information for the water network's condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[7]
Hydrants	71	2.32 / 25
Service Lines	62	3.34 / 25
Valves	74	1.9 / 25
Water Treatment Plants	52	5.59 / 25
Water Vehicle & Equipment	33	7.21 / 25
Water Mains	56	8.62 / 25
Total	**56**	**6.29 / 25**

[7] Weighting is based on asset replacement value.

LOS Framework

Ontario municipalities were first required to report on LOS for their core assets in July 2022. At a minimum, municipalities must report all LOS metrics as mandated by O. Reg. 588/17. Hamilton Township LOS, reported with a data effective date of 2020, are as follows:

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2020)
Scope	Description, which may include maps, of the user groups or areas of the Township that are connected to the municipal water system	Please refer to Appendix C	% of properties connected to the municipal water system: 59% for Camborne 50% for Creighton Heights
	Description, which may include maps, of the user groups or areas of the Township that have fire flow	Please refer to Appendix C	% of properties where fire flow is available: 0% for Camborne 50% for Creighton Heights
Reliability	Description of boil water advisories and service interruptions	The Township has not experienced any service interruptions in 2021.	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties[8] connected to the municipal water system 0 days: 562
			# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system: 0 days: 562

[8] Total number of properties connected to the water system is estimated to be 562.

Non-Core Assets

Facilities

Asset Overview

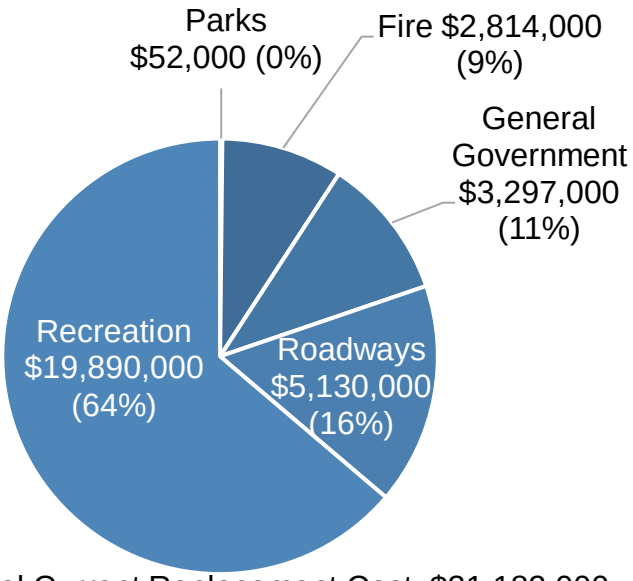
The Township is responsible for the operations and capital upkeep of several facilities used both for municipal operations and public services. Facilities include:

- 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	Replacement Cost
Fire	4	$2,814,000
General Government	2	$3,297,000
Parks	1	$52,000
Recreation	4 (33[9])	$19,890,000
Roadways	6	$5,130,000
Total	**46**	**$31,182,000**

[9] 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.).



Total Current Replacement Cost: $31,182,000

As part of the project engagement PSD Citywide worked with Hamilton Township staff to review and as needed update asset information, including assessed condition of their assets. Typically, assessed condition is more accurate than age-based condition which relies purely on the assets estimated useful life relative to its age. Asset condition is a data attribute used for LOS reporting of facility assets. The following table provides summary information for the facilities' condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[10]
Fire	80	6.59 / 25
General Government	80	6.99 / 25
Parks	47	3.38 / 25
Recreation	74	6.38 / 25
Roadways	74	6.54 / 25
Total	**75**	**6.49 / 25**

[10] Weighting is based on asset replacement value.

Asset Componentization Considerations for LOS Reporting

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). If this data enhancement is completed, it is possible that future LOS values may differ from what is reported here.

LOS Framework

By 2024, municipalities throughout Ontario are required to report on LOS for all assets. For non-core assets, municipalities must select all metrics. The following table outlines metrics selected and the current LOS, reported with a data effective date of 2021:

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of Facility assets. Facility assets are diverse and serve the needs of residents and the operations of the Municipality.	Using age-based condition, facility assets range in condition from very poor (16) to very good (92) and are on average in good (75) condition: Recreation focused facility assets include recreation facilities, outdoor pavilions, halls, and park washrooms. Municipal operations facilities include fire halls, public works garage, and the Township Office.	Weighted Average Condition of Assets: Good: 75%
Sustainable	There are long-term plans in place for the renewal and replacement of facilities assets.	Facility asset rehabilitation and replacement decisions are predominantly based on opportunities for accessibility improvement, risk to occupant health and safety, legislative compliance, and cost and construction feasibility. Currently, decisions to replace components of facilities through capital investment projects are forecasted ten (10) years in advance and formally planned one year in advance of project initiation.	Current vs Target Capital Reinvestment Rate: 0.21% vs. 2.63%

Land Improvements

Asset Overview

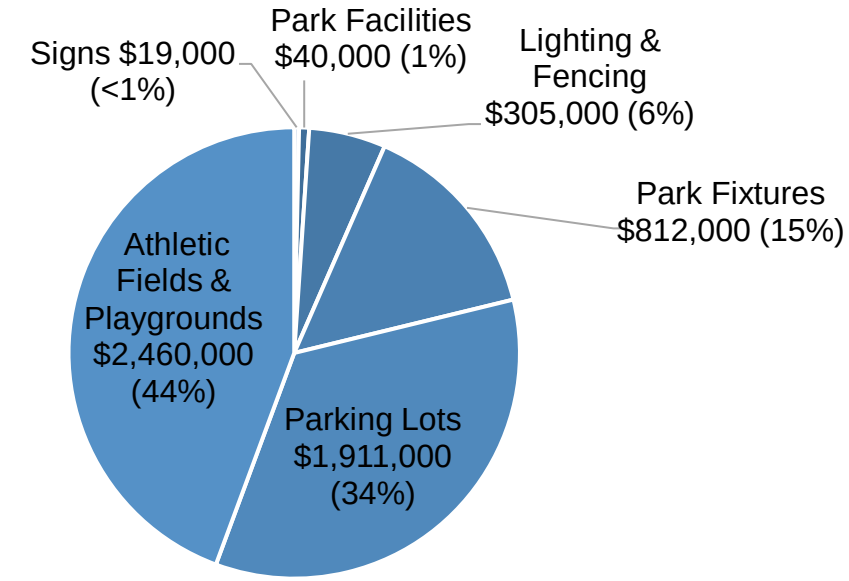
The Township is responsible for the operations and capital upkeep of a diverse array of land improvement assets. For reporting purposes these assets have been segmented based on similar function. These segments, and examples of common assets included in them, is detailed below:

- 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[11]

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	Replacement Cost
Athletic Fields & Playgrounds	12	$2,460,000
Lighting & Fencing	6	$305,000
Park Facilities	1	$40,000
Park Fixtures	13	$812,000
Parking Lots	11	$1,911,000
Signs	9	$19,000
Total	**52**	**$5,546,000**

[11] 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 asset information such as assessed condition. Typically, assessed condition is more accurate than age-based condition which relies purely on the assets estimated useful life relative to its age. The following table provides summary information for the land improvements' condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[12]
Athletic Fields & Playgrounds	61	13.36 / 25
Lighting & Fencing	60	6.28 / 25
Park Facilities	75	4.64 / 25
Park Fixtures	84	4.14 / 25
Parking Lots	65	7.98 / 25
Signs	87	1.16 / 25
Total	**66**	**9.66 / 25**

[12] Weighting is based on asset replacement value.

LOS Framework

By 2024, municipalities throughout Ontario are required to report on LOS for all assets. For non-core assets, municipalities must select all metrics. The following table outlines metrics selected and the current LOS, reported with a data effective date of 2021:

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of Land Improvements assets.	Using age-based condition, land improvement assets range in condition from very poor (0) to very good (90) and are in average in fair (66) condition. Land improvement assets include active and passive parkland, waterfront parks, and trails. Wherever possible, assets are designed to serve a wide range of users.	Weighted Average Condition of Assets: Fair: 66
			% of Playgrounds that are Accessible: 75%
Sustainable	There are long-term plans in place for the renewal and replacement of land improvement assets	Land improvement asset investment decisions are predominantly based on asset condition and expected future utility alongside existing rate of use and relevant Master Plan findings. Land improvement capital investment projects are formally and publicly identified one year in advance and internally identified ten (10) years in advance.	Current vs Target Capital Reinvestment Rate: 0% Vs. 4.09%

Machinery & Equipment

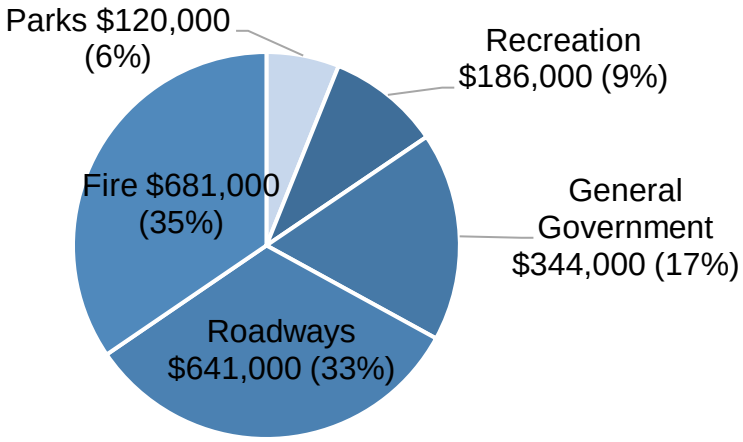
Asset Overview

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: includes various fire and bunker gear, emergency extraction equipment and communications equipment

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	Replacement Cost
Fire	50	$681,000
General Government	12	$344,000
Parks	3	$120,000
Recreation	251	$186,000
Roadways	26	$641,000
Total	**342**	**$1,973,000**



Total Current Replacement Cost: $1,973,000

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. Typically, assessed condition is more accurate than age-based condition which relies purely on the assets estimated useful life relative to its age. The following table provides summary information for the machinery and equipment's condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[13]
Fire	72	7.92 / 25
General Government	49	7.39 / 25
Parks	59	6.67 / 25
Recreation	77	3.62 / 25
Roadways	69	7.27 / 25
Total	**67**	**7.14 / 25**

Asset condition is a LOS metric for machinery and equipment assets, so it is helpful to understand condition when reviewing the LOS metric.

[13] Weighting is based on asset replacement value.

LOS Framework

By 2024, municipalities throughout Ontario are required to report on LOS for all assets. For non-core assets, municipalities must select all metrics. The following table outlines metrics selected and the current LOS, reported with a data effective date of 2021:

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of machinery & equipment assets.	Using assessed condition data as available, and age-based condition otherwise machinery & equipment assets range in condition from very poor (0) to very good (96) and are on average in good condition (67). Machinery and equipment assets are diverse and service the needs of fire, parks and recreation, and public works.	Weighted Average Condition of Assets: 67
Sustainable	There are long-term plans in place for the renewal and replacement of machinery & equipment assets	Machinery & equipment asset replacement decisions predominantly consider asset condition, criticality, and legislative compliance. Machinery & equipment investments are currently identified and forecasted five (5) to ten (10) years in advance and presented for council approval one-year in advance with budgets determined based on departmentally identified need.	Current vs Target Capital Reinvestment Rate: 5.22% Vs. 10.29%

Fleet & Fleet Equipment

Asset Inventory & Background Information

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:

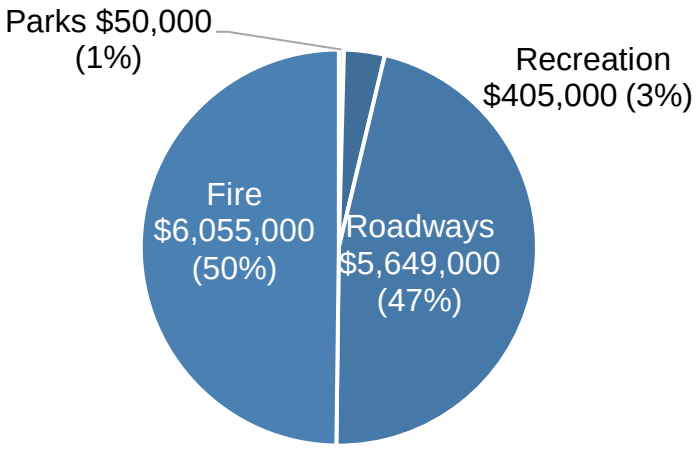
- Roadways: predominately comprised of pick-up and dump trucks and trailers and various small utility vehicles including excavators and tractors.
- Recreation: ice resurfacing machines and trucks used specifically to support recreational programs.
- Parks: a small assortment of pick-up trucks to support 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	Replacement Cost
Fire	18[14]	$6,055,000
Parks	1	$50,000
Recreation	6	$405,000
Roadways	33	$5,649,000
Total	**58**	**$12,159,000**

[14] 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.



Total Current Replacement Cost: $12,159,000

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. Typically, assessed condition is more accurate than age-based condition which relies purely on the assets estimated useful life relative to its age. The following table provides summary information for the fleet and fleet equipment's condition and asset risks.

Asset Segment	Average Condition (%)	Risk Rating[15]
Fire	53	14.07 / 25
Parks	74	2.5 / 25
Recreation	35	3.9 / 25
Roadways	53	10.09 / 25
Total	**53**	**11.83 / 25**

Like other non-core assets, asset condition is a LOS metric selected for fleet and fleet equipment assets.

[15] Weighting is based on asset replacement value.

LOS Framework

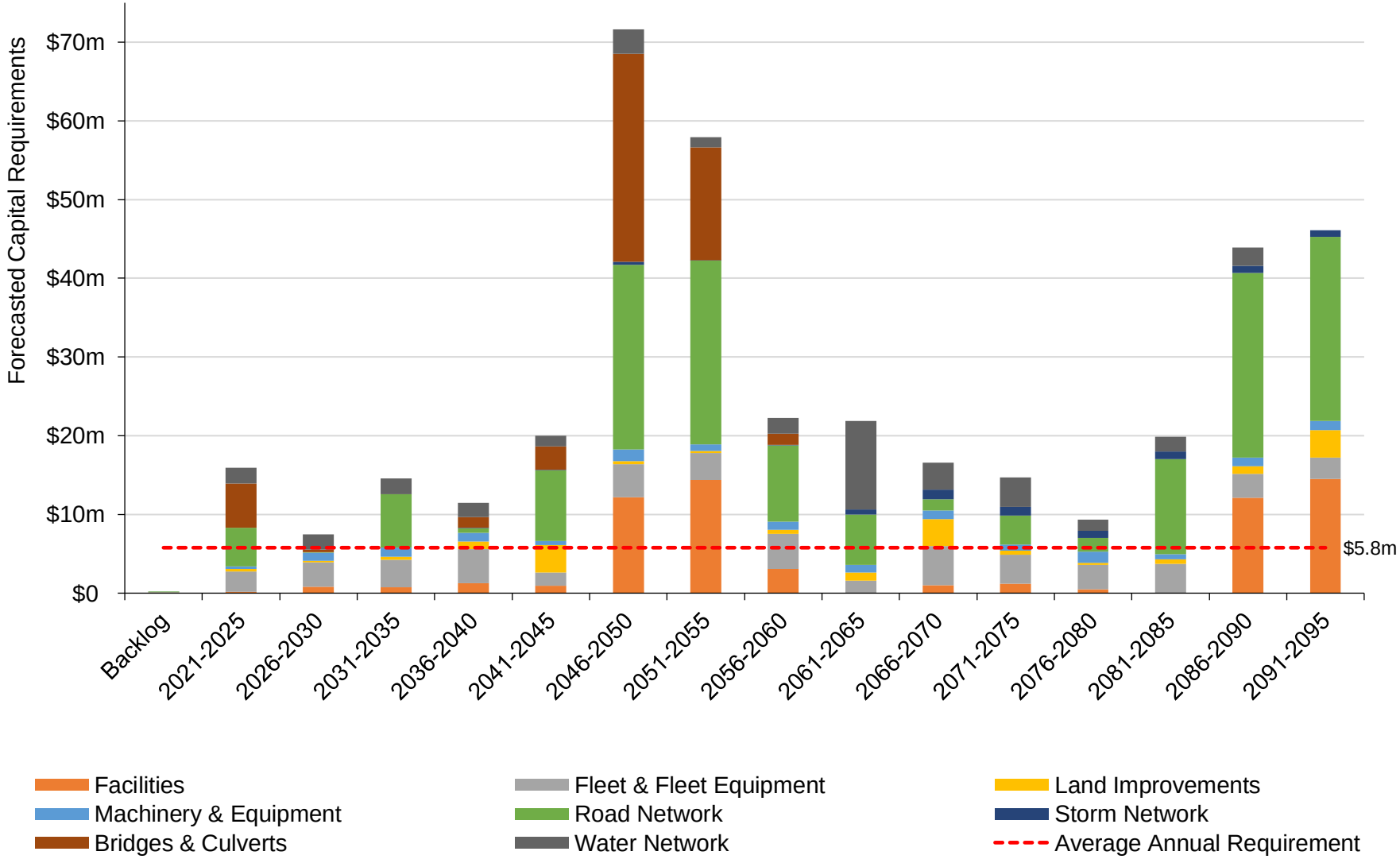
By 2024, municipalities throughout Ontario are required to report on LOS for all assets. For Non-core assets, municipalities must select all metrics. The following table outlines metrics selected and the current LOS, reported with a data effective date of 2021:

Core Value	Level of Service Statement	Community Level of Service	Technical Level of Service (2021)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of fleet assets so that they can provide important services.	Using recent assessed condition information vehicle assets range from poor (17%) to very good (91%) and are on average in fair (53%) condition. Fleet assets include diverse assets that service the Township's fire, public works, and parks and recreation departments.	Weighted Average Condition of Assets: 53
Sustainable	There are long-term plans in place for the renewal and replacement of fleet assets	Fleet investments are generally planned 10 years out and consider the asset's age, condition, utility, and cost-benefit analysis of replacement.	Current vs Target Capital Reinvestment Rate: 3.49% Vs. 5.50%

Conclusions

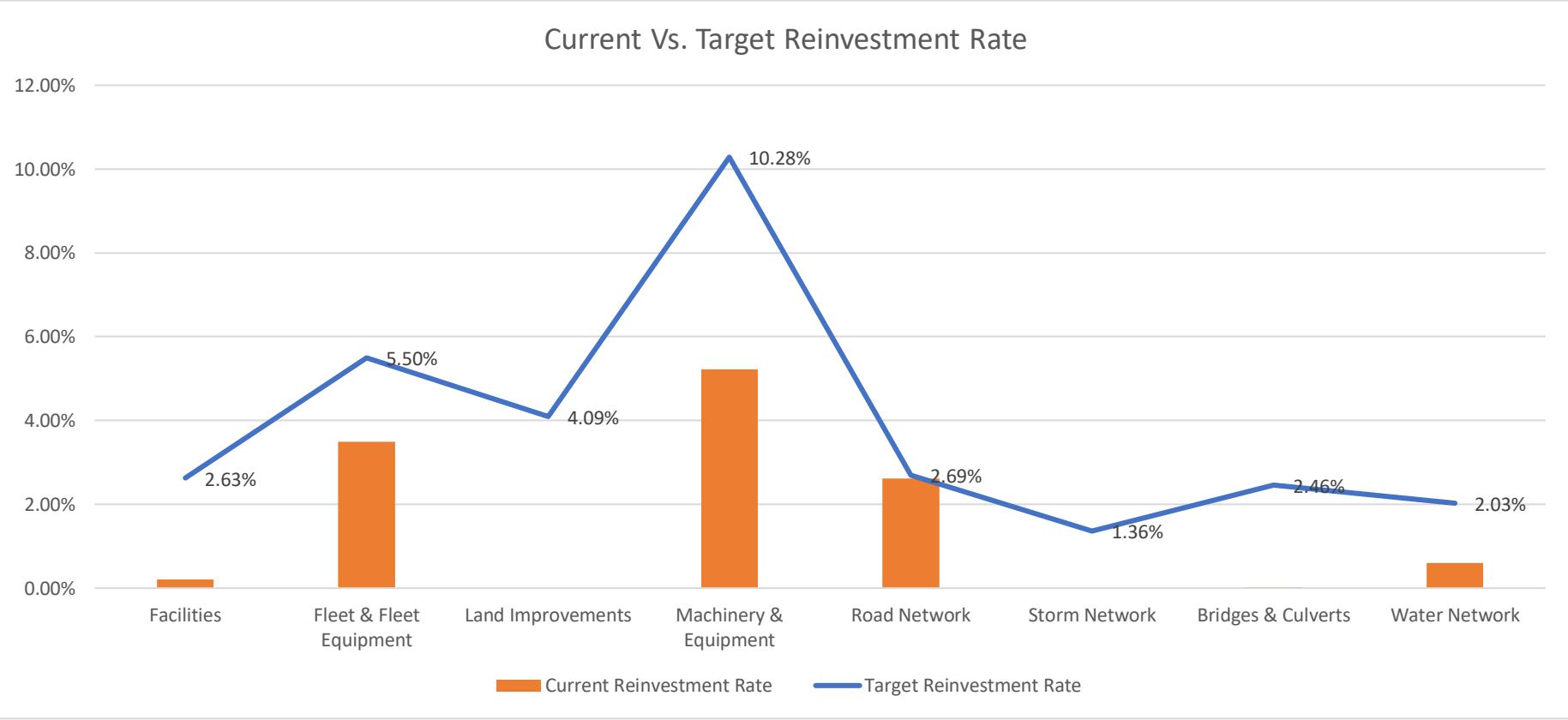
Asset performance, risk, and investments are three closely intertwined factors in infrastructure management. The general dynamic is an increase in asset investment results in an increase in asset performance and a reduction in asset risk. In the same manner, a reduction in asset investment brings reduced asset performance and increased asset risks.

Municipalities are confronted with the challenge of balancing these three highly competitive factors based on their understanding of required performance against available (and publicly feasible) funding and risk tolerance. To effectively govern such decisions, information about municipal assets is a crucial aid. Informational aids often include projected long-term capital investment requirements. For the Township of Hamilton, on an average annual basis a total capital investment of $5.8 Million is needed. This is illustrated, with costs detailed by asset category and overtime, below.



Currently the level of capital funding to the Township's asset categories is less than the identified capital investment requirement. For some asset categories, the level of underfunding is significant. This finding is supported by conversations with staff who identified capital funding as a severe risk to infrastructure (as discussed in the Risk Report).

When comparing the target capital reinvestment rate to the actual capital reinvestment rate (refer to page 11 for reinvestment rate calculation method) every asset category has less funding than is needed. In some cases (i.e., land improvements, storm network, bridges and culverts), the disparity between the actual and target reinvestment rate is more severe. This is summarized below:



In other words, the actual capital investment[16] to assets is much less than the actual need. This is summarized in the table below.

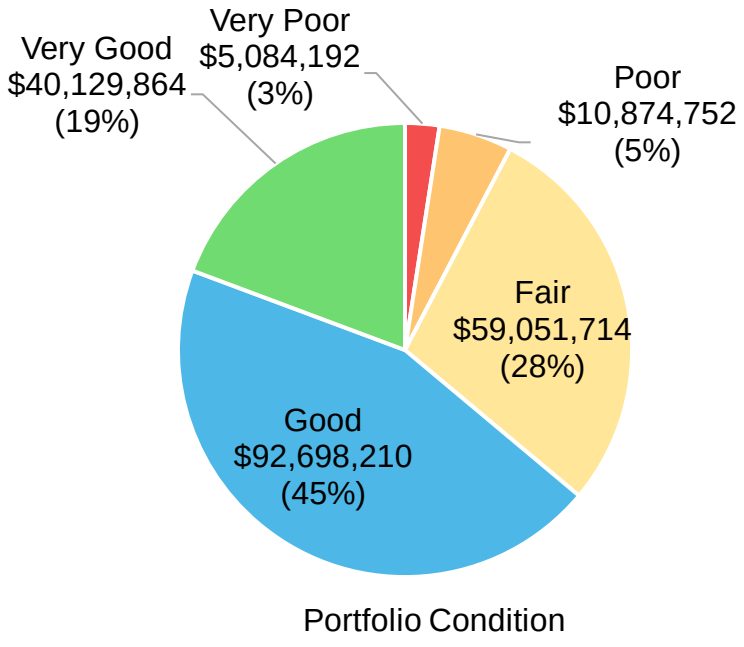
Asset Category	Average Annual Capital Investment Required	Average Annual Capital Investment Allocation	Average Annual Deficit
Road Network	$2,016,000	$1,955,000	$61,000
Bridges & Culverts	$1,267,000	$12,000	$1,255,000
Water Network	$477,000	$141,000	$336,000
Stormwater Network	$97,000	$0	$97,000
Facilities	$819,000	$64,000	$755,000
Land Improvements	$227,000	$0	$227,000
Machinery & Equipment	$203,000	$103,000	$100,000
Fleet & Fleet Equipment	$669,000	$424,000	$245,000
Total	**$5,775,000**	**$2,699,000**	**$3,076,000**

[16] As required by O. Reg 588/17 capital investment may only consider sustainable sources of funding. Therefore, one-time grants are not, and cannot be, included. For this reason, in some years asset categories may receive more capital funding than indicated through the receipt of grants or other one-time funding.

As discussed in the risk report as of 2021, the Township's assets hold a moderate (8/25) degree of risk. As indicated below, some asset categories carry more risks than others. Such differences are typical and reflect the inherent differences in the probability and consequence of failure within a diverse portfolio of infrastructure types.

Asset Category	Weighted Average Risk Rating
Road Network	7.17 / 25
Bridges & Culverts	10.21 / 25
Water Assets	6.29 / 25
Stormwater Network	4.91 / 25
Facilities	6.49 / 25
Land Improvements	9.66 / 25
Machinery & Equipment	7.14 / 25
Fleet & Fleet Equipment	11.83 / 25

The performance of assets is also varied. In many cases, performance is measured by asset condition. As we can see in the table below, conditions vary. As of 2021, about 36% of assets were in fair or poorer condition.



Overall, asset costs as represented by the average annual requirement, asset risks, and asset condition can be summarized in the table below:

Asset Category	Average Condition (%)	Average Risk Rating[17]	Average Annual Capital Requirement
Road Network	68	7.17 / 25	$2,016,000
Bridges & Culverts	69	10.21 / 25	$1,267,000
Stormwater Network	73	6.29 / 25	$97,000
Water Network	56	4.91 / 25	$477,000
Facilities	75	6.49 / 25	$819,000
Land Improvements	66	9.66 / 25	$227,000
Machinery & Equipment	67	11.83 / 25	$203,000
Fleet & Fleet Equipment	53	7.14 / 25	$669,000
Total	**67**	**8.0/ 25**	**$5,775,000**

Based on the current capital funding deficit, as discussed earlier, it is very likely that the portfolio condition will decline over time. Similarly, other performance metrics not directly tied to asset condition but affected by it (e.g., number of water main breaks) are also likely to decline.

LOS metrics is an important tool to measure asset performance. Additionally, it helps to practically demonstrate the tradeoffs between asset performance, investment, and risk. Viewing asset performance with the understanding of the constraints brought by funding levels provides an important lens of context.

Ultimately, the Township decisions about infrastructure investment should seek to account for and balance the Township's risk appetite[18], infrastructure performance expectations, and feasible funding levels. Current LOS provides an indication of infrastructure asset performance relative to cost, performance, and risk factors.

[17] Weighting is based on asset replacement value.

[18] This is the amount and type of risk than an organization is willing to retain or accept.

Recommendations

The table to follow outlines key recommendations and associated timelines.

Table 2: Recommendations

Recommendations	Timeline
Measure & review Current LOS • Review current LOS at least on an annual basis to identify trends and as necessary adjust asset operations, investment decisions, or strategic plans. Consider historic LOS when informing proposed LOS[19]. • By 2024, municipalities are required to report on current LOS for all asset categories; current LOS must be included in the Township's AMP. • Begin measuring current LOS now and review the selected LOS in advance of the 2024 O. Reg. 588/17 deadline. If the selected LOS are deemed not feasible to report on (e.g., data reliability issues), or not meaningful, consider selecting for the 2024 deadline alternative LOS that are more appropriate. • Contact the Ganaraska Region Conservation Authority (GRCA) to request flood mapping for 100-year storms, as referenced on page 7 of the Technical and Engineering Guidelines for Stormwater Management report.	Core: Ongoing[20] Non-Core: July 1, 2024

[19] Reviewing LOS performance is recommended as a best practice.

[20] O. Reg. 588/17 requires AMPs for core assets by July 2022 and AMP for all asset categories in 2024. Current LOS must be reported within two calendar years from the report's data effective date (i.e., data date= 2021 LOS between 2019 and 2023).

Recommendations	Timeline
Determine Reporting Responsibility, Frequency, & Response Standards • Clearly define roles and responsibility for data update, review, and LOS reporting. Consider developing a standard for reporting frequency and as neccesary for reviewing, and responding to LOS. • To support LOS reporting, consider drafting budgets based on the asset management categorization to support asset management analysis and determination of investment allocations by asset category	Immediate[21]
Develop a Public Consultation Process for Proposed LOS[22] • Develop a public consultation process to support determination of proposed LOS as required by 2025. • Include information on the cost, risk, and performance impacts to increasing or decreasing a level of services when gathering input about suitable proposed LOS targets. • Wherever possible report in relation to existing costs (i.e. percentage increase on taxes and user-rates) that are of relevance to the public (e.g. based on average resdiential assessed value) • Consider using existing surveys like the budget or strategic plan as a tool to obtain public input on proposed LOS.	Mid-Term[23]

[21] Immediate is considered within the next 6-9 months.

[22] Proposed LOS reporting is required in 2025 by O. Reg 588/17. Reporting requirements are detailed in Appendix A and Public Engagement Considerations are detailed in Appendix B.

[23] Mid-Term is considered within the next 9-12 months.

Recommendations	Timeline
Determine Resource Requirements for Proposed LOS Reporting • By 2025, all municipalities AMP's must include proposed LOS each year over the next 10 years from when it is developed. • Begin preparing for this requirement. Consider what needs to be measured and reported, what information and tools are required to do so, and what staff resources are needed to manage the project. • If a capacity shortfall is identified, the Township may consider taking on new resources.	Immediate

Appendix A: Proposed Levels of Service O. Reg Requirements

O. Reg 588/17 Asset Management Planning for Municipal Infrastructure mandates specific LOS metrics and requires all Ontario municipalities to report on their current LOS performance for core assets (water, storm, bridges & culverts, roads) by 2022.

By 2024, municipalities must expand their reporting on current LOS to include *all asset classes*. LOS metrics for non-core assets are to be selected by each municipality. For both core and non-core assets, municipalities must report on the current performance for each LOS metric selected alongside the lifecycle activities required to maintain the current LOS. By 2025, municipalities are also required to report on the proposed LOS for each selected LOS metric. Current LOS represent current municipal performance; proposed LOS reflect the target level of performance.

The 2025 deadline requires that proposed LOS are demonstrated to be appropriate based on an assessment of:

1 Proposed LOS options (i.e., increase, decrease, or maintain current LOS) and the risks associated with these options (i.e., asset reliability, safety, affordability) when considering the long-term sustainability of the municipality.
2 How proposed LOS may differ from current LOS.
3 Whether proposed LOS are achievable.
4 The municipality's ability to afford proposed LOS.

In addition, a lifecycle management and financial strategy to support the proposed LOS must be identified for a period of 10 years with specific reporting on:

1 Identification of lifecycle activities needed to provide the proposed LOS with consideration for:
    a. Full lifecycle of assets.
    b. Lifecycle activities options available to meet proposed LOS.
    c. Risks associated with the options identified in sub-paragraph B, above.
    d. Identification of which lifecycle activities identified in sub-paragraph B carry the lowest cost.
2 An estimate of the annual cost of meeting proposed LOS for a period of 10 years, separated by capital and operating expense.

LOS Metrics Selection Considerations

Municipalities are required to report on mandated LOS metrics for core assets and may select other additional LOS metrics. For non-core assets, all LOS metrics are to be selected by each municipality. When selecting LOS metrics their suitability, feasibility of collection, and reliability as a metric should be carefully explored. This process can be guided by the following questions:

1. For each asset category, what data is available?
2. Is this available data sufficiently accurate and traceable?
3. Is there a realistic means of regularly collecting the data required?
4. Is the LOS locally relevant and/or connected to other strategic goals or plans?
5. What is the staff capacity to collect and report on LOS metrics, and does the municipality have the resources necessary to collect and report on the proposed LOS metrics?

Municipalities may wish to informally select LOS metrics in advance of the 2024 deadline and complete a "trial run" where they internally collect and report on the metric. This will provide the municipality an opportunity to truly determine if the LOS metric is suitable, reliably measurable and collectable, and based on this if it should become a publicly recognized LOS metric. It may also point to adjustments that may be needed to make the LOS metric more reliable and/or feasible to collect and report on.

Appendix B: Proposed LOS Selection & Public Engagement Considerations

By 2025, all Ontario municipalities must report on proposed LOS. This represents the targeted LOS which may be greater, less than, or the same as the current LOS. In the municipal context councillors make decisions on behalf of their constituents. In many cases, municipal deliberations provide opportunities for public comments which are often to some extent considered by councillors when making decisions.

Obtaining information about public preferences as it relates to the acceptable level of investment (cost), asset performance, and risk of municipal assets is important to a councillor's ability to make informed decisions about target LOS. However, obtaining data that is meaningful and representative of all constituents, is challenging in a debate forum.

For this reason, a best practice when establishing proposed level of service is developing meaningful polls that describe the trade-offs between different proposed LOS and impacts to asset cost, risk, and performance. Such engagement should seek to understand the taxpayer's willingness to pay for different LOS, by asset category. To encourage realistic response, information about cost and performance must be framed in understandable terms. For example, reporting cost escalations in relation to an average residential assessment value and/or as a percentage increase from existing rates. Performance can be discussed using descriptive, plain language potentially supplemented with photographs or other reference aids.

Collected data should be a reasonable sample size and representation (i.e., by ward and demographics). It is beyond the scope of this project to deliver proposed LOS consulting services; however, it is highly recommended that the Township begin preparing for the 2025 deadline now.

Appendix C: Levels of Service Maps

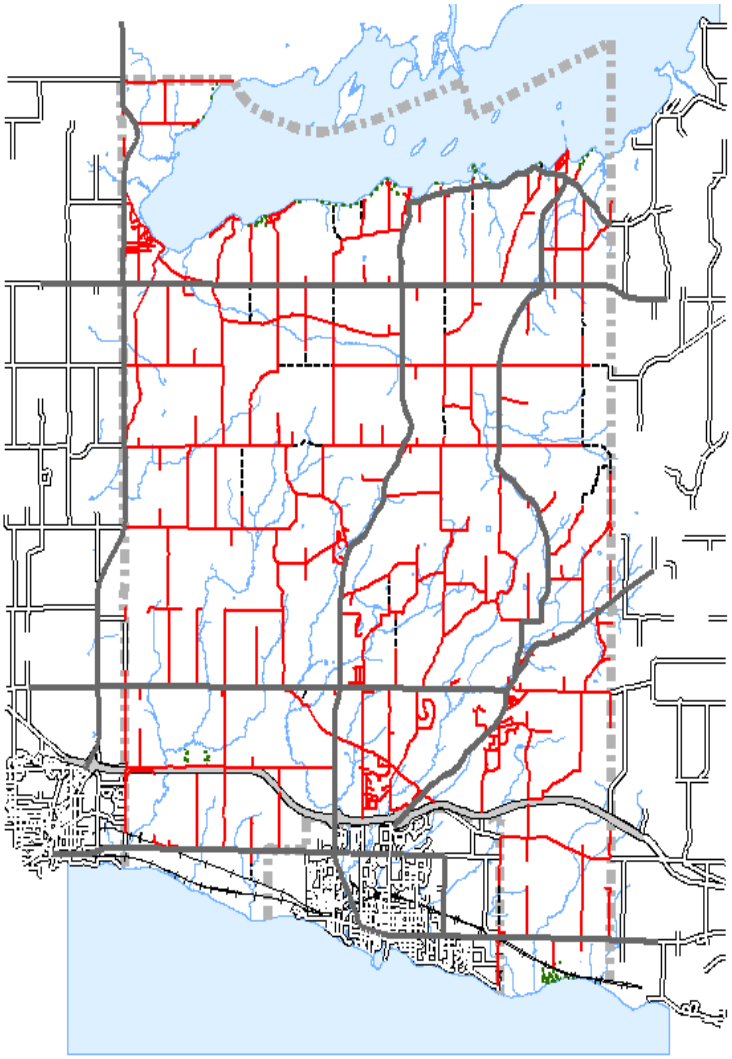


Figure 1: Road Network Map

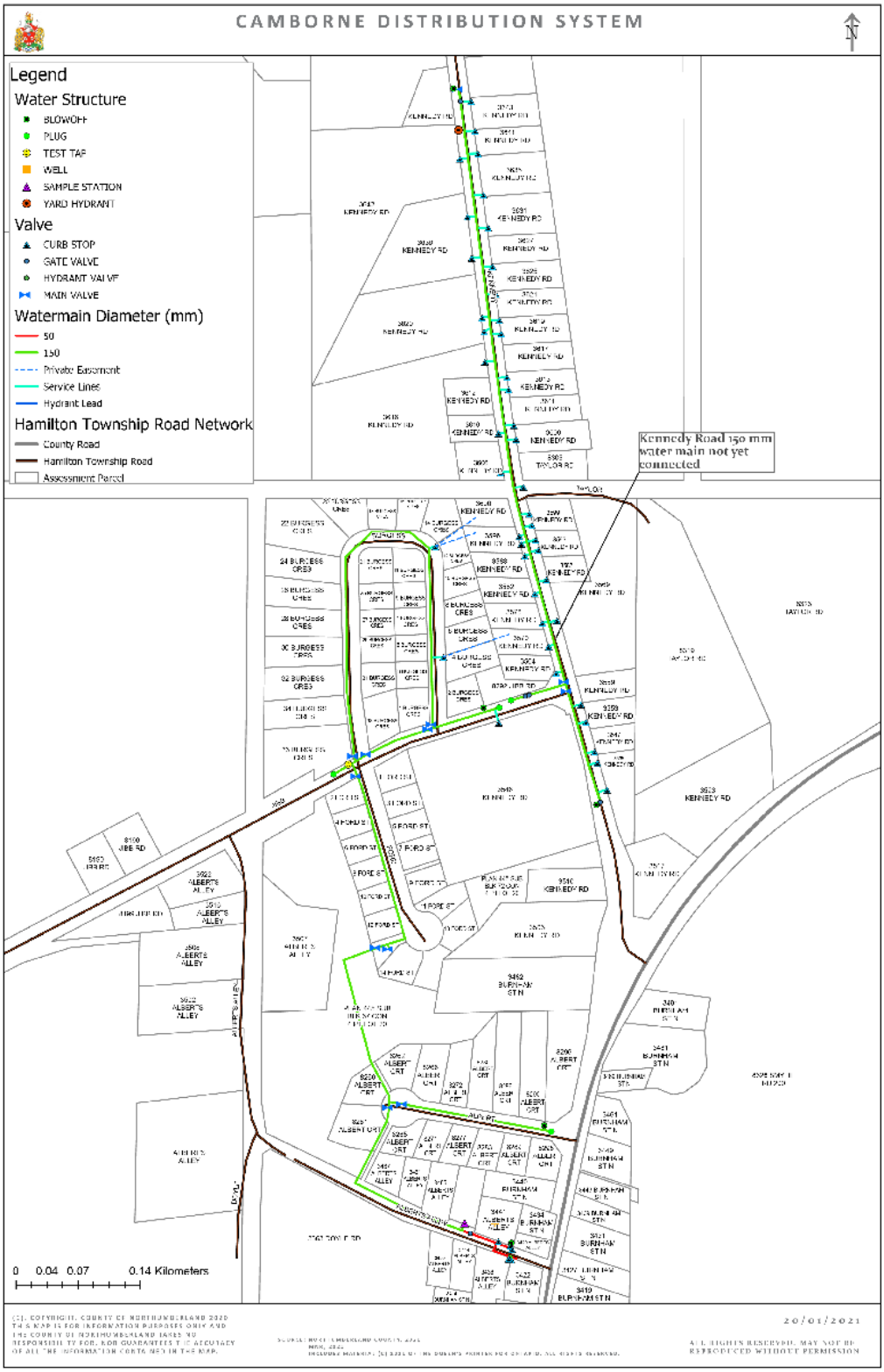


Figure 2: Camborne Water Distribution Map

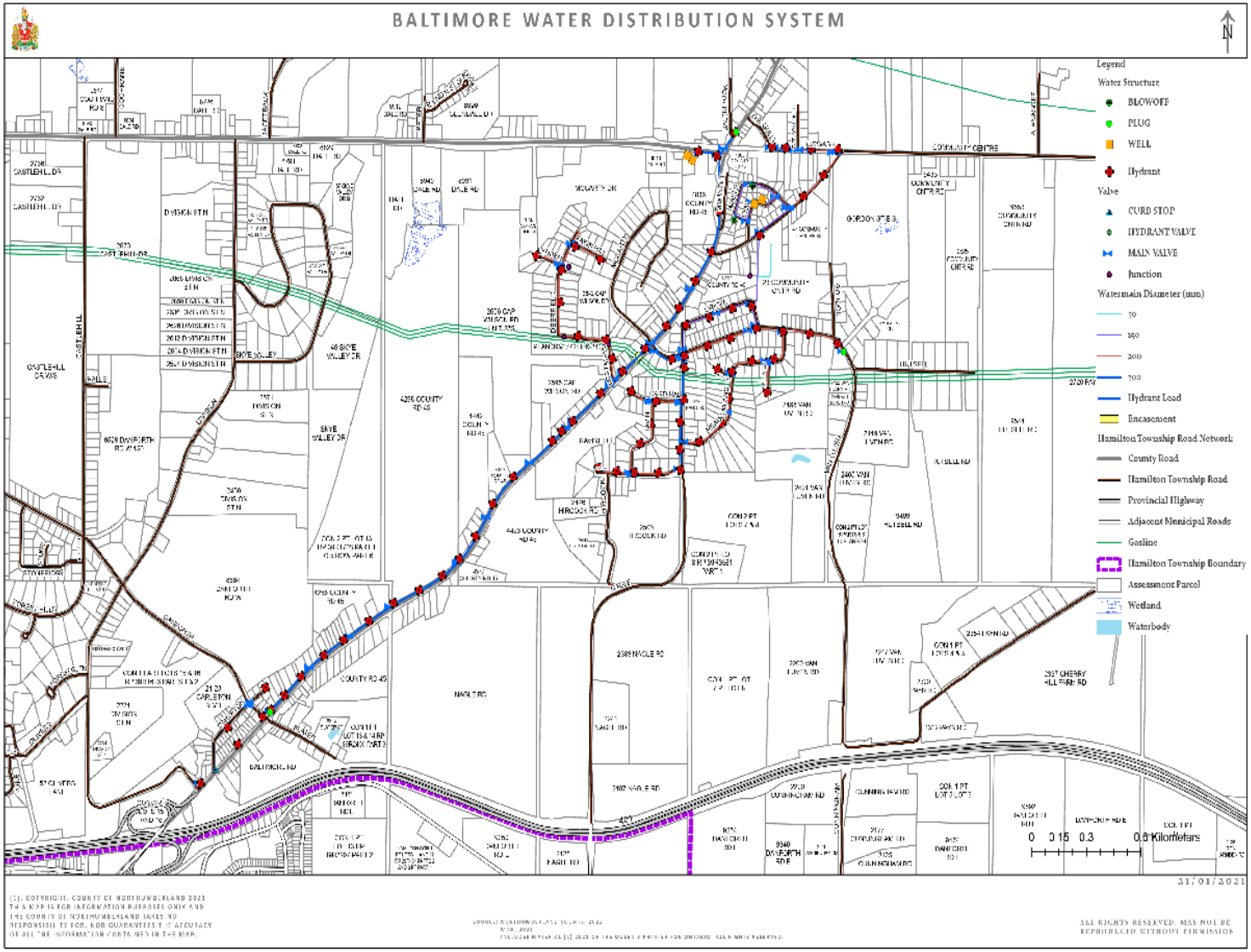


Figure 3: Baltimore Distribution Map

The preparation of this project was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.