The Corporation of the Municipality of Brockton

By-Law 2022-078

Being a By-Law to Adopt the Asset Management Plan for
the Municipality of Brockton.

Whereas the *Municipal Act, 2001, S.O. 2001, c. 25*, Section 5(1), as amended, provides that the powers of a municipal corporation are to be exercised by its council;

And Whereas the *Municipal Act, 2001, S.O. 2001, c. 25*, Section 5(3), as amended, provides that a municipal power, including a municipality's capacity rights, powers and privileges under section 9; shall be exercised by By-Law;

And Whereas the Corporation of the Municipality of Brockton deems it desirable to adopt the Asset Management Plan as prepared by Public Sector Digest;

Now Therefore the Council of the Corporation of the Municipality of Brockton **Enacts as Follows:**

1.0 That the Corporation of the Municipality of Brockton Council hereby adopts the Asset Management Plan as contained in the attached Schedule "A" to this By-Law, and forming an integral part of this By-Law

2.0 That this By-Law shall come into effect upon final passage.

3.0 This By-Law may be cited as the "Adopt Asset Management Plan By-Law".

Read, Enacted, Signed and Sealed this 24th day of May, 2022.

Original Signed By
Mayor – Chris Peabody

Original Signed By
Clerk – Fiona Hamilton

Asset Management Plan

Municipality of Brockton

2021

Document Revision History

2022-01-17	Version 1
2022-02-15	Version 2
2022-03-29	Version 3

Brockton
Come home to community

This Asset Management Plan was prepared by:

Empowering your organization through advanced asset management, budgeting & GIS solutions

Key Statistics

Replacement cost of asset portfolio

$432.9 million

Replacement cost of infrastructure per household

$98,250 (2016 Census)

Percentage of assets in fair or better condition

65%

Percentage of assets with assessed condition data

57%

Annual capital infrastructure deficit

9.2 million

Recommended timeframe for eliminating annual infrastructure deficit

20 years

Target reinvestment rate

2.73%

Actual reinvestment rate

0.61%

Municipal infrastructure provides the foundation for the economic, social, and environmental health and growth of a community through the delivery of critical services. The goal of asset management is to deliver an adequate level of service in the most cost-effective manner. This involves the development and implementation of asset management strategies and long-term financial planning.

Background

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). Following this regulation, every municipality shall prepare an Asset Management Plan (AMP) in respect of its core municipal infrastructure assets by July 1, 2021, The municipalities shall report on specific current levels of service being provided by core municipal infrastructure assets, determined in accordance with qualitative descriptions and technical metrics defined by the regulation. The data reported should be from at most the two calendar years prior to the year in which all information required is included in the asset management plan. Therefore, a need to update the Municipality's asset management plan has been identified.

Scope

This (AMP) identifies the current practices and strategies that are in place to manage public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Municipality of Brockton can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

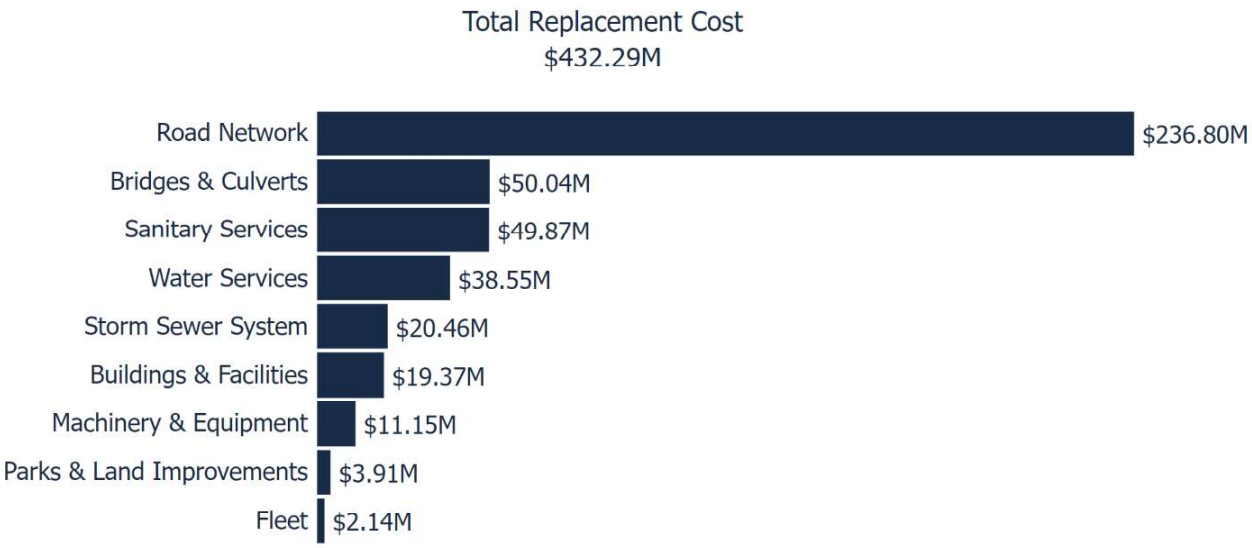
This AMP include the following asset categories:

Asset Category

With the development of this AMP the Municipality of Brockton has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2022. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2024 and 2025.

Findings

The overall replacement cost of the asset categories includes in this AMP totals to $432.9 million. This is based on asset information in the portfolio as of the end of 2020.



About 65% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 57% of assets. For the remaining 43% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

The accuracy and completeness of the asset inventory is another critical input to accurate asset management planning. It is important to review and update the primary asset inventory to ensure that it is at a higher level of data maturity for the next iteration of the AMP.

The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (for Hot Mix Roads and Surface Treated Roads) and replacement only strategies (for all other assets) to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Municipality's average

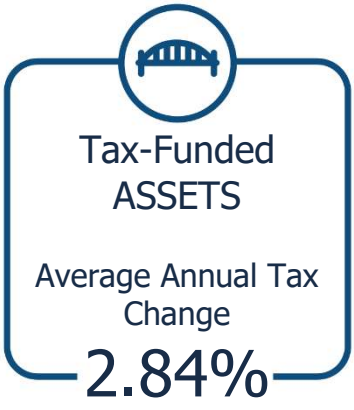
annual capital requirement totals $11.84 million. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $2.63 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $9.2 million.

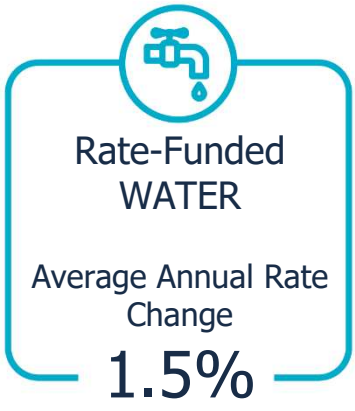
Annual Capital Requirements Per Household

It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Municipality. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Municipality's infrastructure deficit based on a 20-year period:





Recommendations to guide continuous refinement of the Municipality's asset management program. These include:

- Reviewing asset data to update and maintain a complete and accurate centralized asset inventory
- Developing a condition assessment strategy with a regular schedule
- Reviewing and updating lifecycle management strategies
- Developing and regularly reviewing short- and long-term plans to meet capital requirements

- Continuing to measure current levels of service and identify sustainable proposed levels of service

1 Introduction & Context

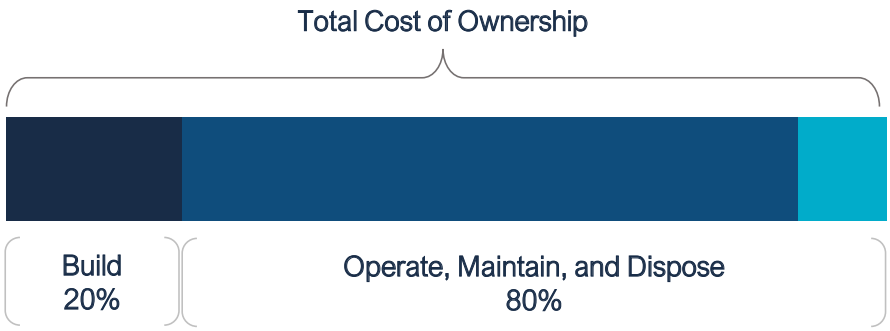
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- A municipal asset management program is a combination of several disciplines or business functions, including management, financial and economic analyses, engineering and operations and maintenance
- The Municipality's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a dynamic document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 An Overview of Asset Management

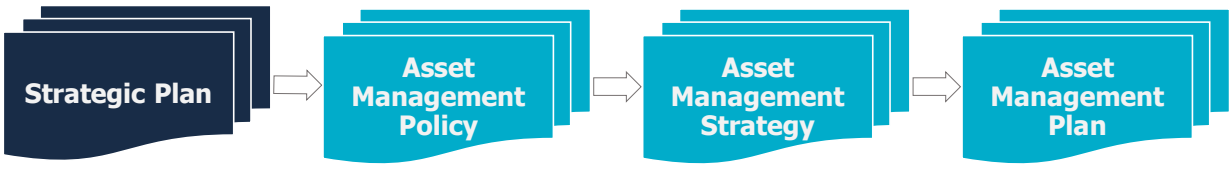
Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

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



These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program.

The diagram below depicts an industry standard approach and sequence developing a practical asset management program. Beginning with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.



This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

1.1.1 Asset Management Policy

An asset management policy represents a statement of the principles guiding the municipality'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.

The Municipality of Brockton adopted **Policy Number: F06-0500-18** "Strategic Asset Management Policy", on September 10th, 2018 in accordance with accordance with Ontario Regulation 588/17.

The stated objectives of the policy are to:

- Provide a framework for implementing asset management to enable a consistent and strategic approach to all levels of the organization
- Demonstrate Council's commitment to support the implementation of asset management methods that are consistent with their priorities and objectives
- Provide guidance to staff responsible for asset management
- Provide transparency and accountability and demonstrate the validity of decision-making process which combine strategic plans, budgets, service levels and risks

The policy provides a foundation for the development of an asset management program within the Municipality. It covers key components that define a comprehensive asset management policy:

- The policy's objectives dictate the use of asset management practices to ensure all assets meet the agreed levels of service in the most efficient and effective manner;
- the policy commits to, where appropriate, incorporating asset management in the Municipality's other plans;
- there are formally defined roles and responsibilities of internal staff and stakeholders;
- the policy statements are well defined.

1.1.2 Asset Management Strategy

An Asset Management Strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. It provides greater detail than the policy on how the municipality plans to achieve asset management objectives through planned activities and decision-making criteria.

The strategy provides a long-term outlook on the overall asset management program development and strengthening key elements of its framework. Unlike the asset management plan, the asset management strategy should not evolve and change frequently

The Municipality's Strategic Asset Management Policy contains many of the key components of an asset management strategy and may be expanded on in future revisions or as part of a separate strategic document.

1.1.3 Asset Management Plan (AMP)

The AMP presents the outcomes of the municipality's asset management program and identifies the resource requirements needed to achieve a defined level of service. The AMP typically includes the following content:

- State of Infrastructure
- Asset Management Strategies
- Levels of Service
- Financial Strategies

The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. This will allow the municipality to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

This document is an AMP that uses the updated asset inventory and has been prepared in accordance with O. Reg. 588/17.

1.2 Key Concepts in Asset Management

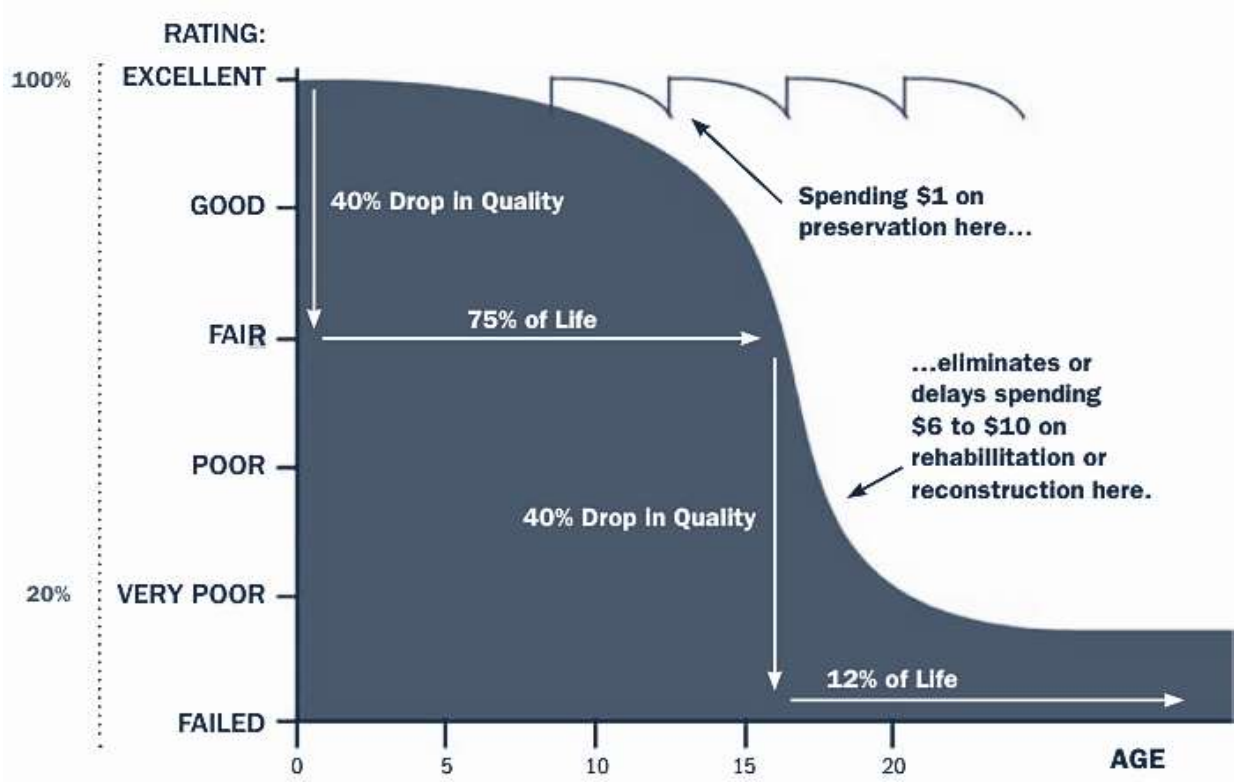
Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

1.2.1 Lifecycle Management Strategies

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. Since costs to rehabilitate tend to increase towards the end of life of an asset, proactive and timely intervention will lead to lower lifecycle costs.

This concept is further illustrated by the graphic below, highlighting the cost impact of a maintenance activity contrasted by the cost impact of a rehabilitative activity later in the life of the asset.



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. The following table provides a description of each type of activity and the general difference in cost.

Lifecycle Activity	Description	Example (Roads)	Cost
Preventative Maintenance	Activities that prevent defects or deteriorations from occurring	Crack Seal	$
General Maintenance	Activities that focus on current defects or inhibit deterioration	Pothole Repairs	$
Rehabilitation/ Renewal	Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	Mill & Re-surface	$$
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	$$$
Replacement Upgrade	Asset end-of-life activities that involve the replacement of an asset to an 'upgraded' asset	Gravel Road to a Surface Treated Road	$$$

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 these activities will have on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

The Municipality's approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing proactive lifecycle strategies will help staff to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

1.2.2 Risk Management Strategies

Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

By identifying the various impacts of asset failure and the likelihood that it will fail, risk management strategies can identify critical assets, and determine where maintenance efforts, and spending, should be focused.

This AMP includes a high-level evaluation of asset risk and criticality. Each asset has been assigned a probability of failure score and consequence of failure score based on available asset data. These risk scores can be used to prioritize maintenance, rehabilitation and replacement strategies for critical assets.

1.2.3 Levels of Service

A level of service (LOS) is a measure of what the Municipality is providing to the community and the nature and quality of that service. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service 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 Municipality as worth measuring and evaluating. The Municipality measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives.

For core asset categories (Roads, Bridges & Culverts, Water, Sanitary, Storm Water) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP.

For non-core asset categories (Buildings & Facilities, Machinery & Equipment, Fleet, as well as Parks & Land Improvements), the Municipality will define the qualitative descriptions that will be used to determine the community level of service by the July 2024 deadline.

Technical Levels of Service

Technical levels of service 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 municipality'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 & Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP.

For non-core asset categories (Buildings & Facilities, Machinery & Equipment, Fleet, as well as Parks & Land Improvements), the Municipality will define the technical metrics that will be used to determine the technical level of service by the July 2024 deadline.

Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community. Once current levels of service have been measured, the Municipality plans to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17.

Proposed levels of service should be realistic and achievable within the timeframe outlined by the Municipality. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability. Once proposed levels of service have been established, and prior to July 2025, the Municipality must identify a lifecycle management and financial strategy which allows these targets to be achieved.

1.3 Ontario Regulation 588/17

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (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 diagram below outlines key reporting requirements under O. Reg 588/17 and the associated timelines.

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 (same components as 2022)

2025

A Strategic 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

1.3.1 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2022. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 5.2.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 5.2.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 5.2.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 – 5.2.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 5.2.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.2.6	Complete for Core Assets Only
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete for Core Assets Only
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.2.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix A	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	6.1-6.2	Complete

2 Scope and Methodology

Key Insights

- This asset management plan includes 9 asset categories and is divided between tax-funded and rate-funded categories
- Asset data from various data sources was consolidated into the Municipality's tangible capital asset inventory to establish it as the primary asset inventory
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- 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

2.1 Asset categories included in this AMP

This asset management plan for the Municipality of Brockton is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges & culverts, water, sanitary, and storm).

The AMP summarizes the state of the infrastructure for the Municipality's asset portfolio, establishes current levels of service and the associated technical and customer oriented key performance indicators (KPIs), outlines lifecycle strategies for optimal asset management and performance, and provides financial strategies to reach sustainability for the asset categories listed below.

Asset Category	Source of Funding
Road Network	Tax Levy
Bridges & Culverts	
Storm Sewer System	
Buildings & Facilities	
Machinery & Equipment	
Fleet	
Land Improvements	
Water Services	User Rates
Sanitary Services	

2.2 The Asset Inventory

The asset information presented in this AMP has been developed from the asset inventory in CityWide Asset Manager™.

The asset inventory was restructured through the establishment of an industry standard asset hierarchy, and critical asset fields were standardized. In addition to this, and where possible, duplicate data was removed and asset data gaps were addressed.

2.3 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 AMP relies on two 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; staff estimates based on knowledge and experience
Cost Inflation/CPI Tables: Historical/Adjusted 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 Municipality incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.4 Estimated Useful Life and Service Life Remaining

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

By using an asset's in-service data and its EUL, the Municipality can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Municipality can more accurately forecast when it will require replacement. The SLR is calculated as follows:

$$Service\ Life\ Remaining\ (SLR) = In\ Service\ Date + Estimated\ Useful\ Life(EUL) - Current\ Year$$

2.5 Deriving Annual Capital Requirements

By dividing the replacement cost of an asset with the asset's estimated useful life and factoring in the cost and impact of any lifecycle activities, the average annual capital requirements can be derived. The average annual requirement is calculated as follows:

$$Annual\ Capital\ Requirement\ (Lifecycle\ Scenario) = \\ = \frac{(Replacement\ Cost + Cost\ of\ Lifecycle\ Activities)}{(Estimated\ Useful\ Life\ (EUL) + Impact\ of\ Lifecycle\ Activities)}$$

$$Annual\ Capital\ Requirement\ (Replacement\ Only\ Scenario) = \frac{Replacement\ Cost}{Estimated\ Useful\ Life\ (EUL)}$$

2.6 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 Municipality can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:

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

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

2.7 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 Municipality's asset portfolio. The table below outlines the condition rating system used in this AMP 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.

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 AMP 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. Appendix D includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

3 Portfolio Overview

Key Insights

The total replacement cost of the Municipality's asset portfolio is $432.29 million

The Municipality's target re-investment rate is 2.73%, and the actual re-investment rate is 0.61%, contributing to an expanding infrastructure deficit

65% of all assets are in fair or better condition

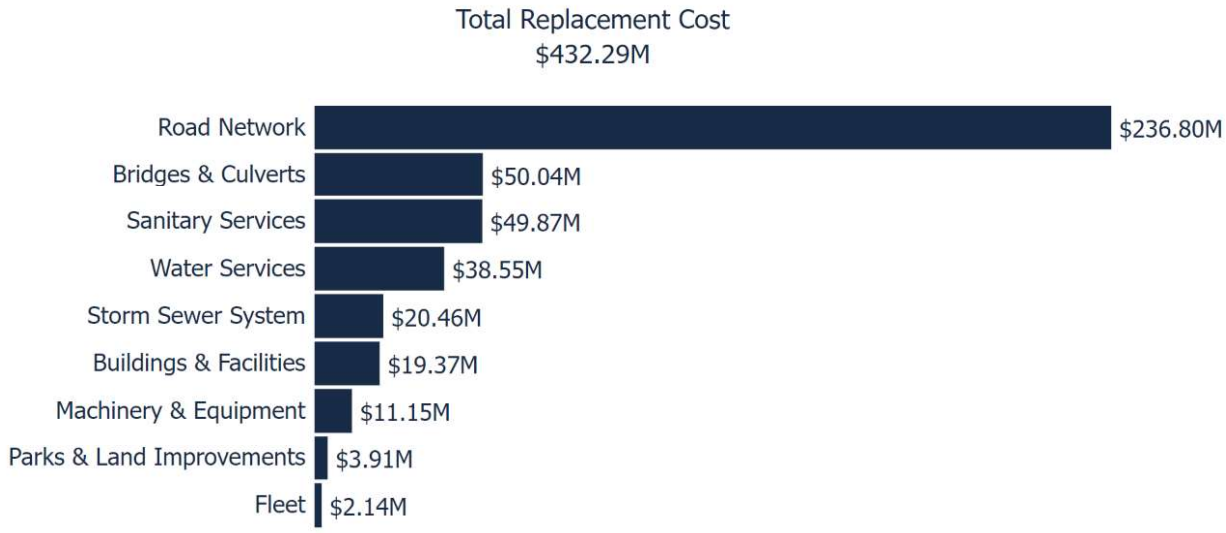
32% of assets are projected to require replacement in the next 10 years

Average annual capital requirements total $11.84 million per year across all assets

Annual capital funding available by the Municipality totals $2.63 million across all assets

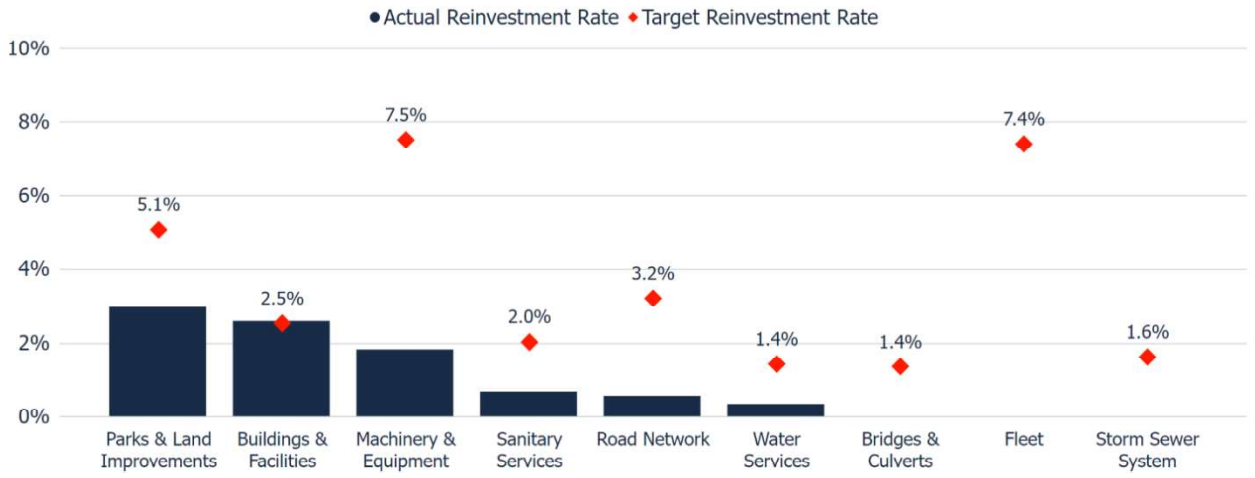
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $432.29 million based on inventory data at the end of 2020. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



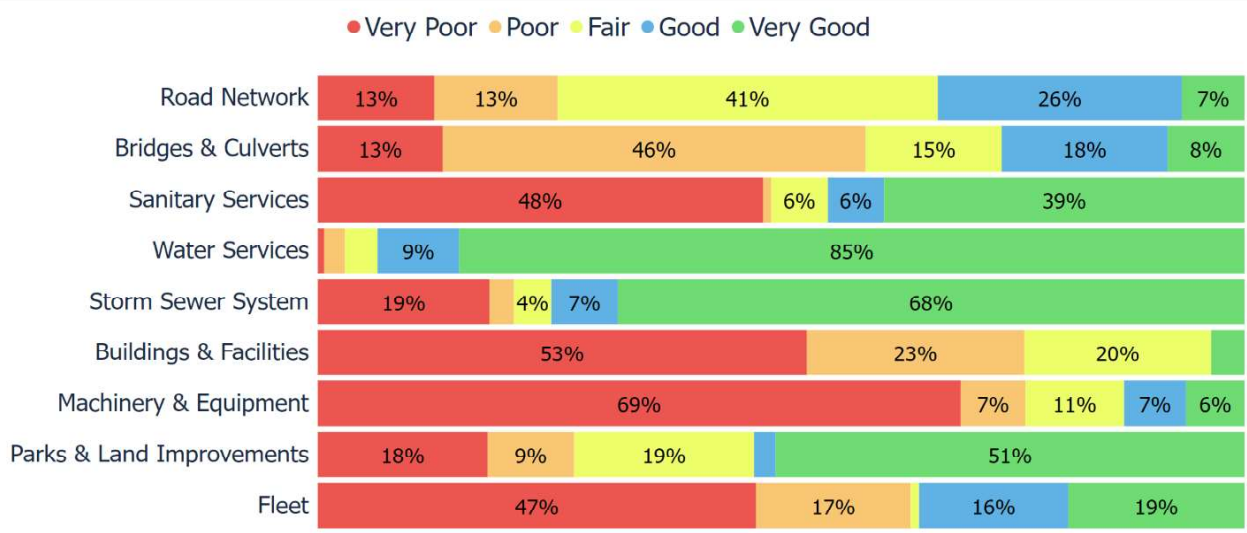
3.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing the target vs the actual reinvestment rate. To meet the long-term replacement needs, the Municipality should be allocating approximately $11.84 million annually, for a target reinvestment rate of 2.73%. Actual annual spending on infrastructure totals approximately $2.63 million, for an actual reinvestment rate of 0.61%.



3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 66% of assets in Brockton are in fair or better condition. This estimate relies on both age-based and field condition data. It is also important to acknowledge that for certain larger assets such as facilities and park structures, having a componentized inventory will produce a more accurate condition and forecast, rather than just an asset.

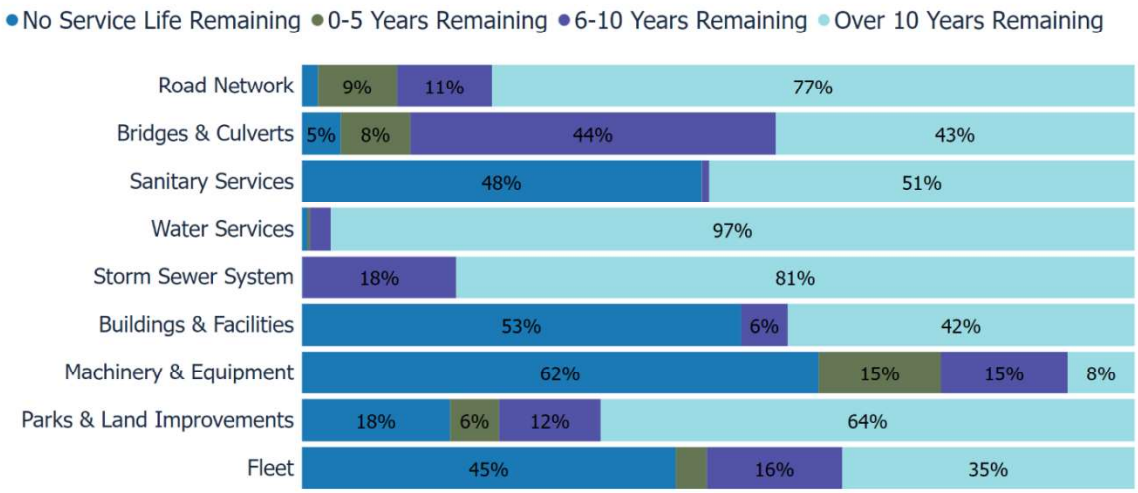


This AMP relies on assessed condition data for 58% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	% of Assets with Assessed Condition	Source of Condition Data
Road Network	88%	B. M. Ross and Associates Limited 2019 Sidewalk Study 2019-20
Bridges & Culverts	72%	2020 OSIM Report
Storm Sewer System	0%	Age-based
Buildings & Facilities	0%	Age-based
Machinery & Equipment	0%	Age-based
Parks & Land Improvements	0%	Age-based
Water Services	0%	Age-based
Sanitary Services	0%	Age-based

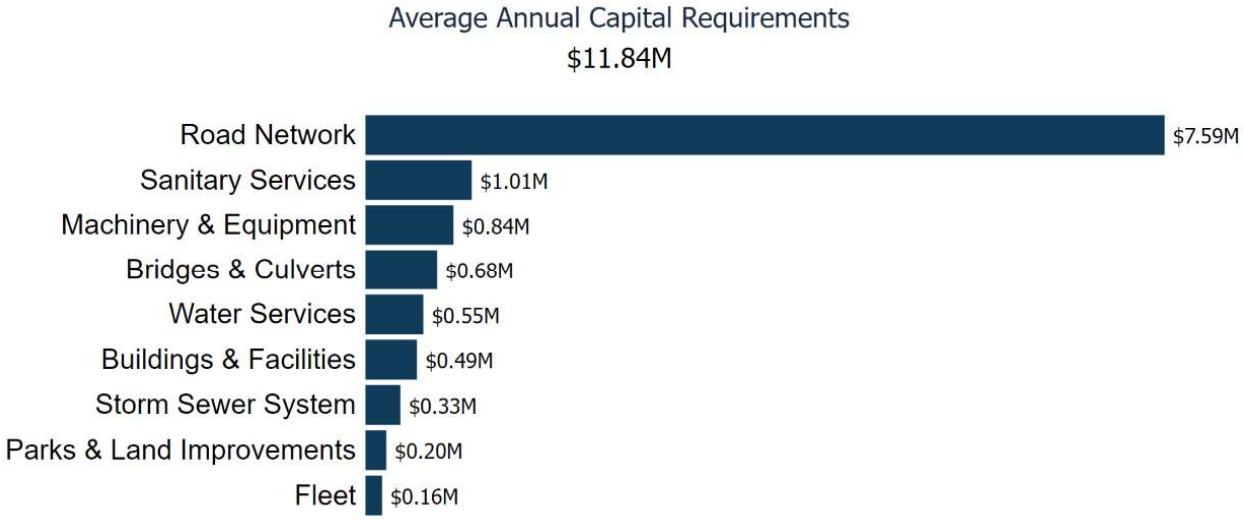
3.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 32% of the Municipality's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B.



3.5 Annual Capital Requirements

Based on the replacement cost of the assets, the estimated useful life, the cost and impact of lifecycle activities, the average annual capital requirements can be calculated for each category in the asset portfolio. This is the average annual amount required to maintain the current level of service that the Municipality is providing.



3.6 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events and the refinement of the asset inventory, the Municipality can produce an accurate short- and long-term capital forecast.

The following graph identifies the average annual capital requirements required over the next 90 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 10-year bins and are based on the Municipality's asset inventory as of 2020 and do not include assets that may be required for growth. The trend line represents the average 10-year capital requirements.

The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

3.7 Risk & Criticality

Advanced risk models for core linear assets and high-level risk models for all other assets were developed as part of this asset management plan. The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the asset portfolio based on 2020 inventory data.

Municipal staff also identified and grouped assets based on service areas, including those that support the delivery of fire and emergency services, with a higher risk rating attribute to ensure that a prioritization process is in place.

See Appendix C for the criteria used to determine the risk rating of each asset.

4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $343.8 million
- 65% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $10.3 million
- To reach sustainability, tax revenues need to be increased by 3.8% annually for the next 20 years to eliminate annual deficits

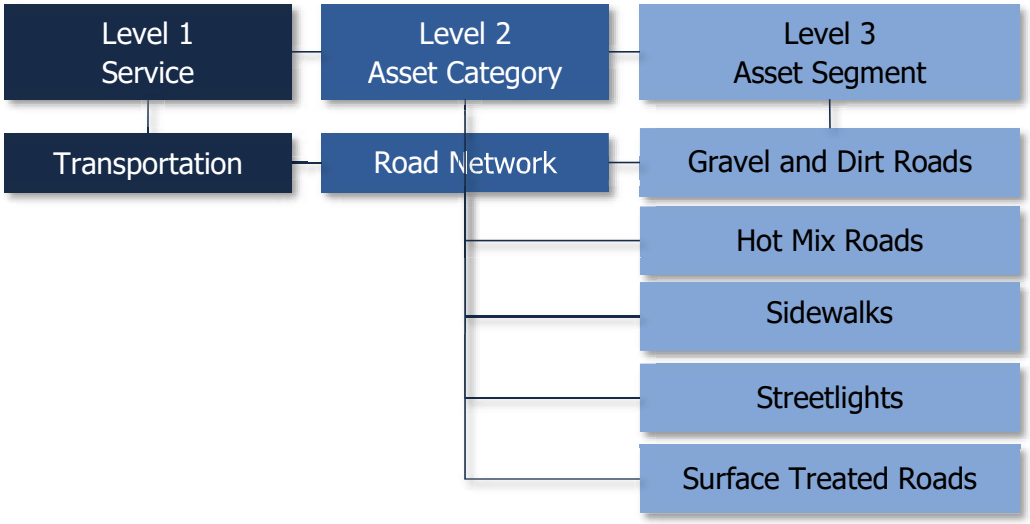
4.1 Road Network

The Municipality's Road Network inventory is managed in CityWide™, and comprises of 374 kilometres of paved and unpaved roads, around 30 kilometres of sidewalks, and roadway appurtenances such as streetlights.

The Brockton Roads Department, along with supporting assets such as facilities, fleet and machinery & equipment, is responsible for planning and managing the road network. The department is also responsible for municipal bridges.

4.1.1 Asset Hierarchy and Segmentation

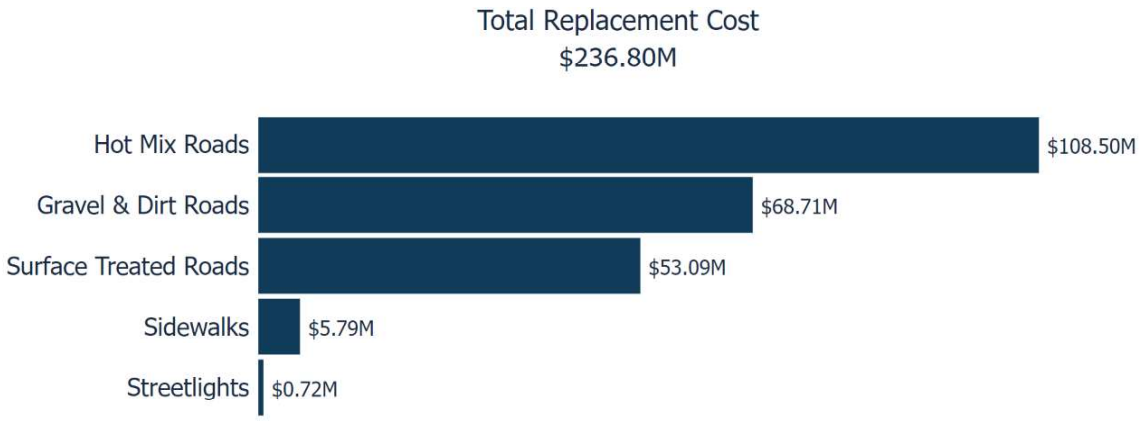
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.1.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's road network inventory.

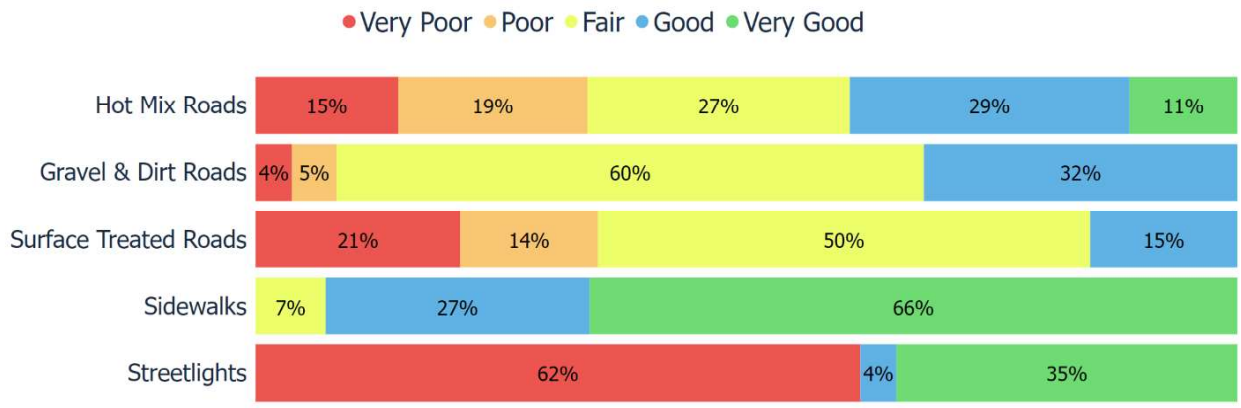
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Gravel & Dirt Roads	142 km	Cost per Unit	$68,706,506
Hot Mix Roads	149 km	Cost per Unit	$108,495,120
Sidewalks	30 km	Cost per Unit	$5,794,465
Streetlights	954	Historical Cost Inflation	$719,230
Surface Treated Roads	83 km	Cost per Unit	$53,088,628
			$236,803,948



4.1.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Gravel & Dirt Roads	65%	Fair	98% Assessed
Hot Mix Roads	59%	Fair	86% Assessed
Sidewalks	82%	Very Good	74% Assessed
Streetlights	34%	Poor	Age-based
Surface Treated Roads	51%	Fair	92% Assessed
	59%	**Fair**	



Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

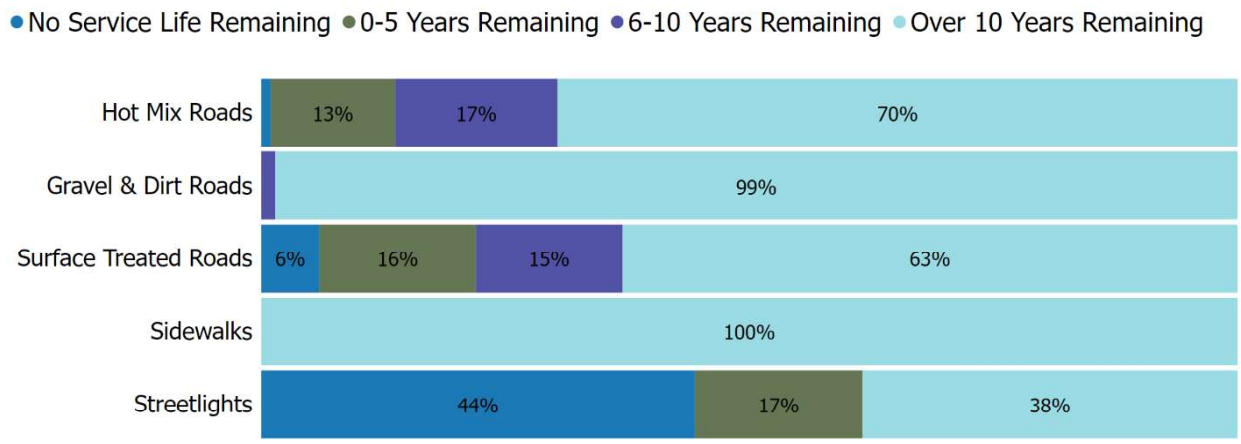
- Route patrols and inspections occur on all our roads on an annual basis. Additional inspections occur based on public feedback and concerns. The Municipality conducts Urban and Rural Roads Needs studies to assist in these assessments occurring every 5 to 10 years or as needed.
- Internal staff perform the road inspections. The Municipality of Brockton uses external contractors to perform our Roads Needs Study.

- 2018 Urban Roads Need Study performed by BM Ross.
- 2019 Rural Roads Need Study performed by BM Ross.
- Road crews conduct visual inspections for cracks, potholes, washouts etc. The Roads Needs Studies focus on priority scores including structure, surface and drainage ratings.
- A Sidewalk Assessment was completed in 2019/20.

4.1.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Road Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Gravel & Dirt Roads	50	38.3	37.9
Hot Mix Roads	7 - 80	26.8	13.3
Sidewalks	30	18.8	24.7
Streetlights	2 - 30	8.8	13.6
Surface Treated Roads	7 - 35	30.4	17.5
		18.3	**17.3**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.1.5 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

The Municipality uses a proactive approach for renewal and rehabilitation projects based on Roads Need Studies. Road assessments from road crews would use a reactive approach based on visual inspections.

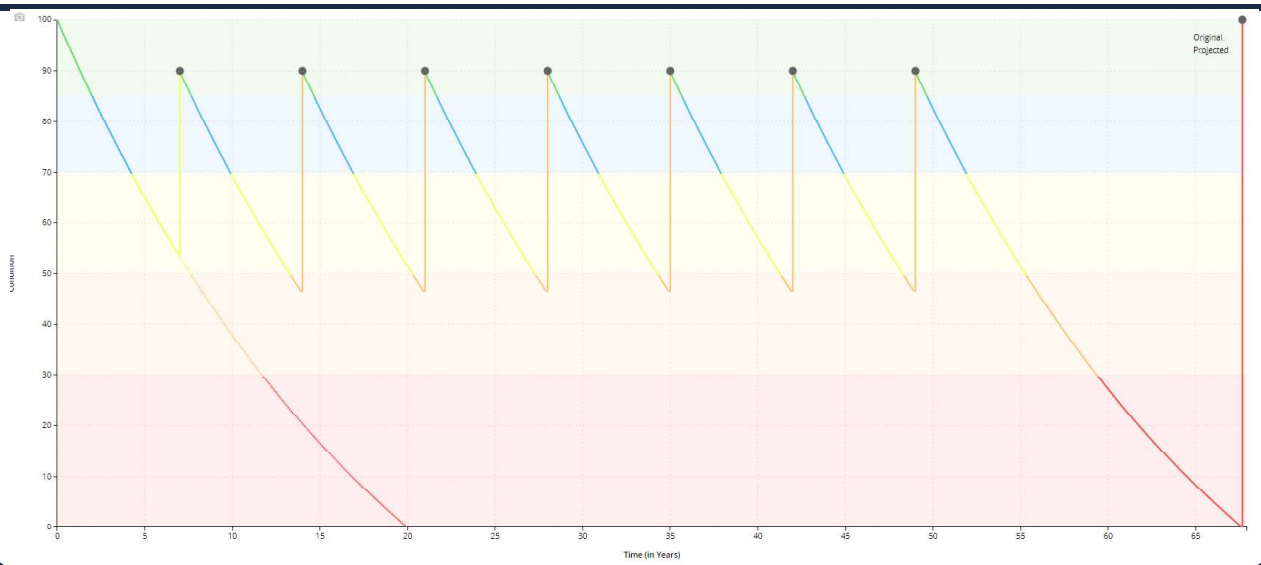
The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Municipal roads crews apply patching, crack sealing, chip sealing on an as needed and severity basis. The frequency of maintenance activities occurs on an as needed basis. Road crews respond to requests in areas of higher priority.
Rehabilitation	The Municipality follows the standards provided by the Roads Needs Studies and Provincial Regulation procedures. This will include single and double surface treatment procedures. Traffic counts and road conditions influence the prioritization of activities.
Replacement	Road reconstruction projects are identified based on road condition and traffic count.

The following lifecycle strategies have been developed to formalize the current approach to manage the lifecycle of Surface Treated and HL4 roads. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

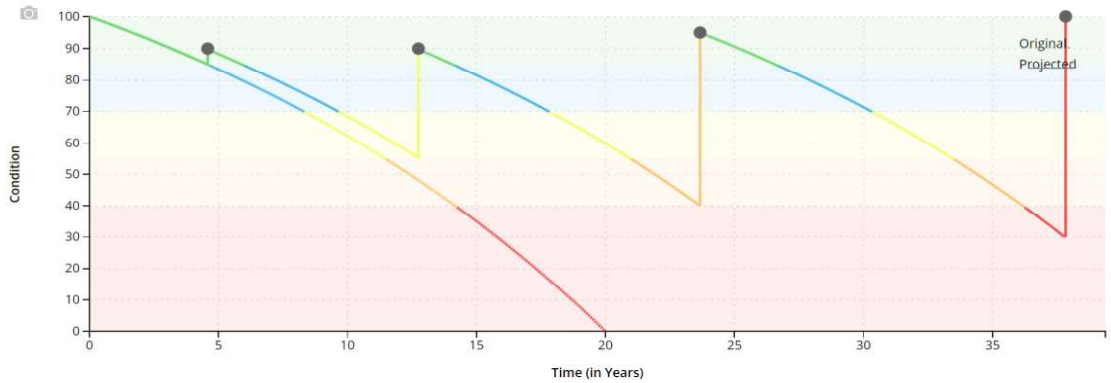
Surface Treated Roads

Event Name	Event Class	Event Trigger
Single Surface Treatment	Rehabilitation	Every seven years (seven times)
Full Reconstruction	Replacement	Condition: 0

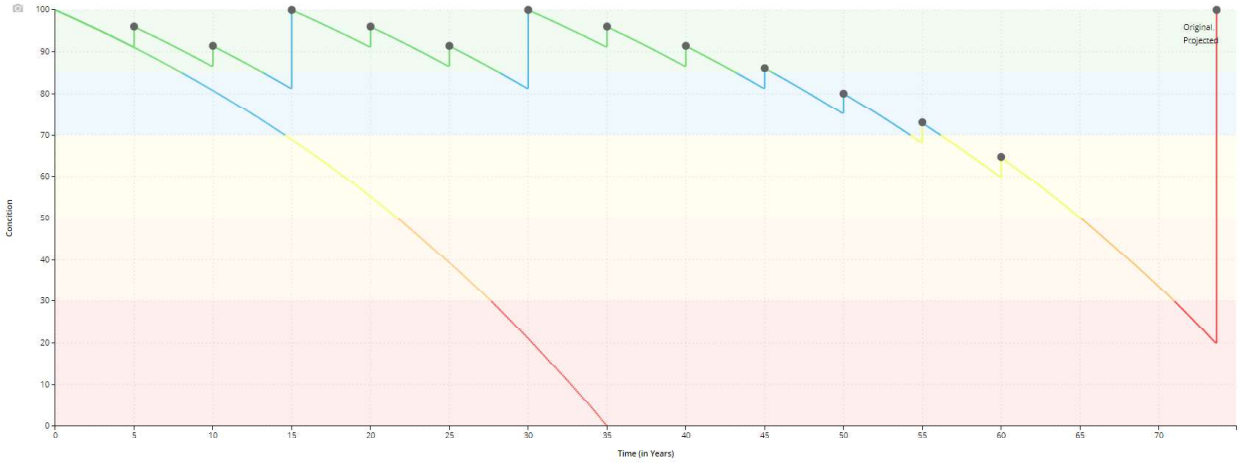


Rural Roads (HL4)

Event Name	Event Class	Event Trigger
Crack Sealing	Preventative Maintenance	Every five years (13 times)
Mill & Pave	Rehabilitation	Every 20 years (two times)
Full Reconstruction	Replacement	Condition: 20



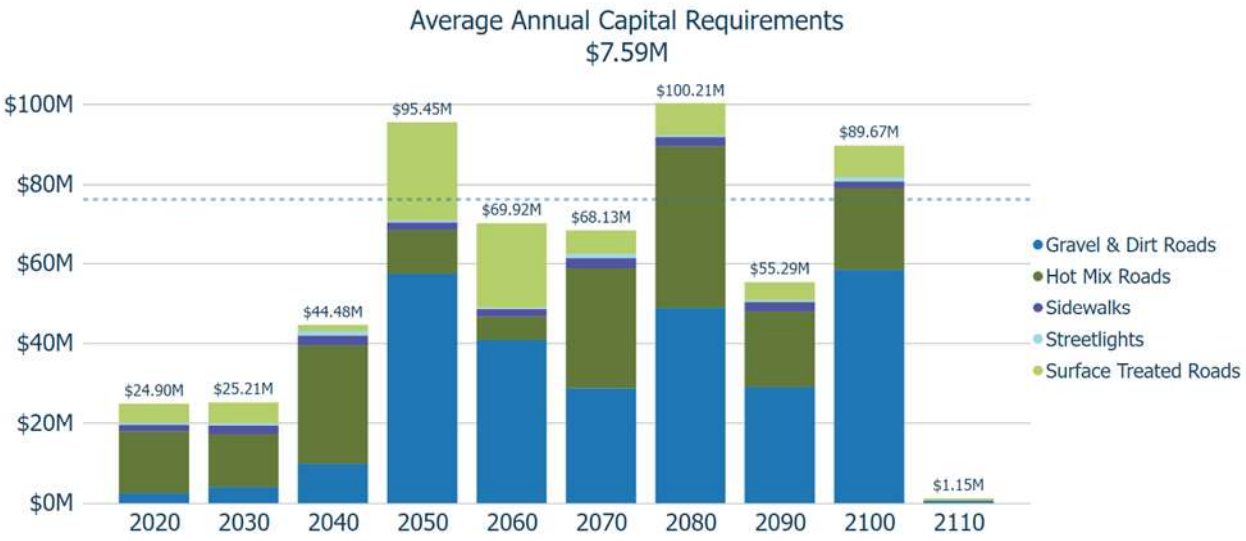
Urban Roads (HL4)		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Preventative Maintenance	Every five years (12 times)
Mill & Pave	Rehabilitation	Every 15 years (two times)
Full Reconstruction	Replacement	Condition: 20



Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for surface treated and HL4 roads, and assuming the end-of-life replacement of all other assets in this category

The following graph identifies the average annual capital requirements required over the next 90 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 10-year bins and are based on the Municipality's asset inventory as of 2020 and do not include assets that may be required for growth. The trend line represents the average 10-year capital requirements.



The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

4.1.6 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Consequence	1	2	3	4	5
5	2 Assets 3,975.28 m $2,516,352.24	0 Assets - $0.00	1 Asset 1,750.00 m $1,107,750.00	0 Assets - $0.00	3 Assets 5,161.31 unit(s), m $3,400,480.23
4	8 Assets 11,055.70 m3, unit(s), m $7,025,230.02	26 Assets 54,387.21 m $34,427,103.93	41 Assets 100,265.74 m $59,254,077.42	6 Assets 15,566.34 m $9,062,678.22	8 Assets 15,008.90 m $7,968,022.20
3	36 Assets 6,148.50 m3, m $3,647,163.24	27 Assets 15,524.88 m3, m $8,364,476.65	48 Assets 81,733.90 m $40,937,389.60	12 Assets 16,265.90 m $8,995,372.30	6 Assets 2,650.00 m $1,829,450.00
2	160 Assets 8,612.79 m3, m, unit(s) $6,573,318.01	75 Assets 6,742.16 m3, m $5,376,087.79	109 Assets 18,960.50 m3, m $14,911,552.61	87 Assets 12,023.15 m $12,040,363.35	48 Assets 5,982.13 m $5,908,239.69
1	331 Assets 755.23 m3, unit(s), m $484,348.11	30 Assets 429.38 m3, unit(s), m $283,158.49	18 Assets 1,368.57 m3, m $1,035,455.07	19 Assets 1,627.30 m $1,333,094.00	242 Assets 344.30 unit(s), m $322,784.90

Probability

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Infrastructure Re-investment

The Municipality is always looking for acquiring grants/additional external funding for the road network capital projects. Some projects related to rehabilitation and renewal could be subject to funding opportunities.

Lifecycle Management Strategies

The Municipality relies on conditional ratings from Road Needs Study. The Municipality have invested in PSD CityWide™ and is working towards developing asset lifecycle strategies.

Organizational Knowledge & Capacity

Both short- and long-term planning require the regular collection, storage and maintenance of infrastructure data to support asset management decision-making. Staff note that it is an ongoing process to build internal capacity. Geographic Information System (GIS) will be taking to take a lead in building this capacity.

4.1.7 Levels of Service

The following tables identify the Municipality's current level of service for the Road Network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Road Network.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix B
Quality	Description or images that illustrate the different levels of road class pavement condition	The Municipality completed an urban Roads Need Assessment Study in 2018 and a rural Roads Needs Assessment Study in 2019 in coordination with BM Ross. The Condition Rating number is a visual assessment of the structural condition or integrity of the road. The rating numbers were assigned on a scale of 1 to 10 with the lower numbers describing those roads with the most structural distress or poorest shaped road cross section. (1-5) Road surface exhibits moderate to significant deterioration and requires improvement. (6-10) Road surface is in generally good condition, with localized deficiencies.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Road Network.

Service Attribute	Technical Metric	Current LOS (2020)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0.01 km/km^2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0.04 km/km^2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	1.3 km/km^2
Quality	Average pavement condition index for paved roads in the municipality	7.56
	Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	Good
Performance	Capital reinvestment rate	0.57%

4.1.8 Recommendations

Asset Inventory

- Review inventory to determine whether all municipal assets within all asset segments have been accounted for.
- Continue to consolidate critical asset information from other asset data sources into the Municipality's centralized asset inventory.

Lifecycle Management Strategies

- Gather unit costs for assets that have relied primarily on historical inflation such as streetlights and review periodically to ensure a higher level of accuracy and within the context of current market condition.
- Evaluate the efficacy of the Municipality's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Municipality believes to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.2 Bridges & Culverts

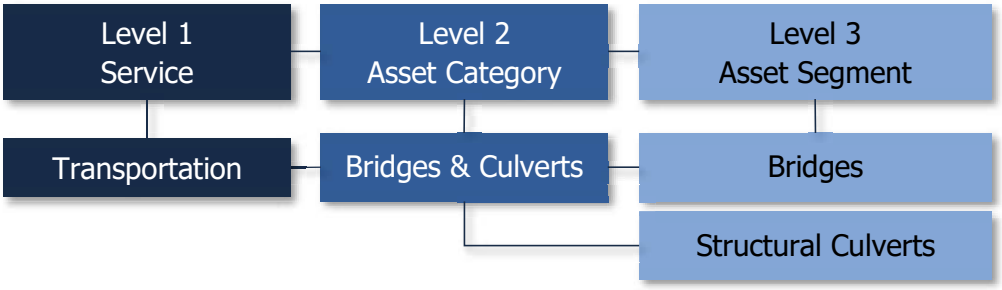
The Municipality's Bridges and Culverts inventory is managed in CityWide™ and comprises of 35 structures that have a span of 3 meters or more and are therefore categorized as a bridge or a structural culvert asset.

The Public Works department is responsible for the planning and managing of all bridges and structural culverts located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

Based on the requirements outlined by the Ministry of Transportation, the most recent Bridge and Culvert inspection was conducted by B. M. Ross and Associates Limited in 2021.

4.2.1 Asset Hierarchy and Segmentation

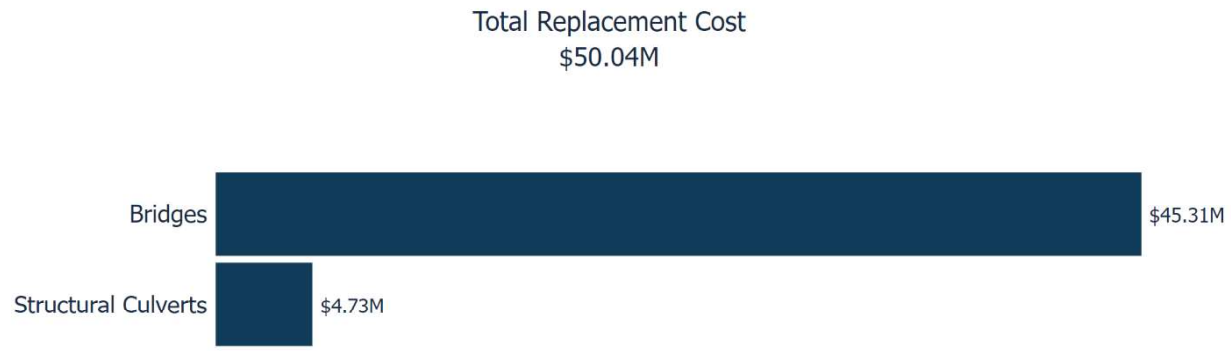
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.2.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Bridges & Culverts inventory.

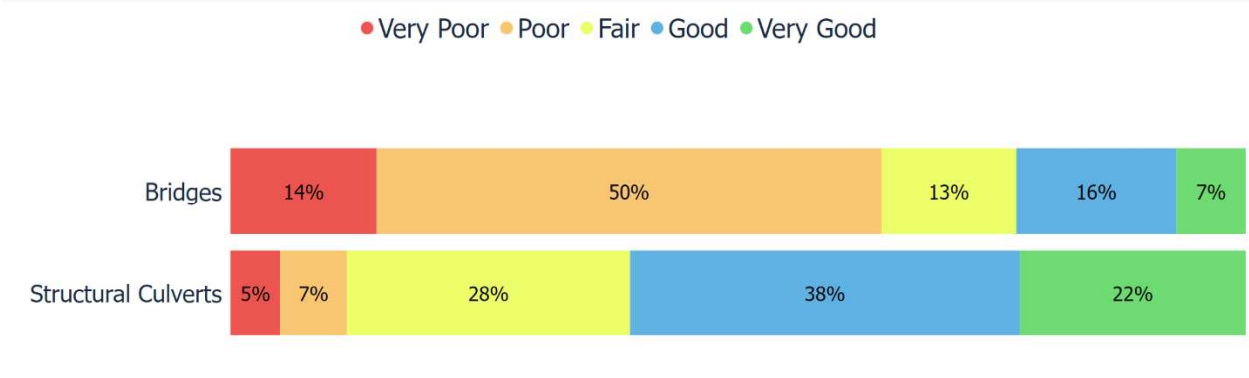
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	25	Cost per Unit	$45,306,775
Structural Culverts	10	Cost per Unit	$4,731,775
			$50,038,550



4.2.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Bridges	53%	Fair	76% Assessed
Structural Culverts	75%	Good	37% Assessed
	55%	**Fair**	



To ensure that the Municipality's Bridges & Culverts continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation, and replacement activities is required to increase the overall condition of the Bridges & Culverts.

Current Approach to Condition Assessment

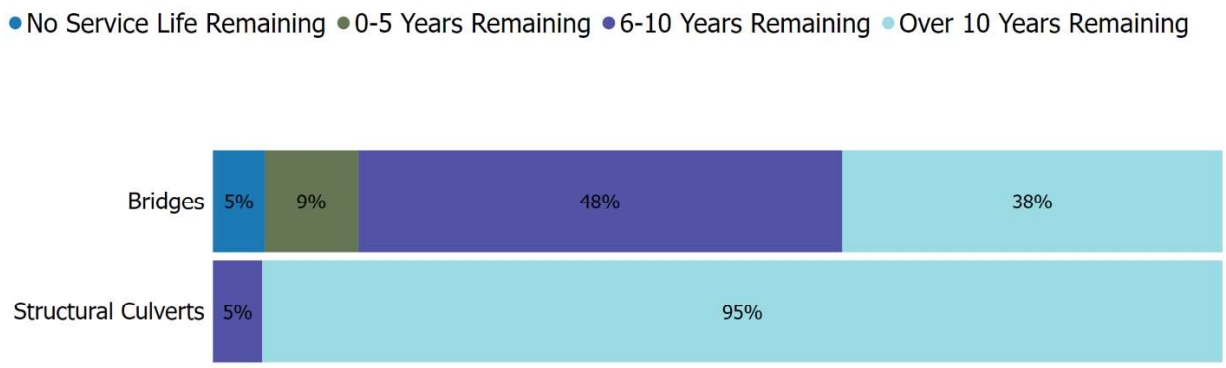
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM).
- The 2020 Rural Bridge Study was performed by GM BluePlan.
- The 2021 Municipality of Walkerton (Urban) Bridge Study performed was performed B. M. Ross and Associates Limited.

4.2.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Bridges & Culverts assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Bridges	75	53.4	12.0
Structural Culverts	75	38.1	33.5
		48.9	**18.3**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.2.5 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	The Municipality performs maintenance activities and treatments such as guardrail inspections, grass cutting, debris removal, patching/sealing on a need's basis. Load weights and traffic volumes are usually collected periodically.
Rehabilitation / Replacement	Biennial OSIM inspection identifies recommended rehabilitation and replacement activities with estimated costs. OSIM reports will determine priority bridges and culverts to address based on traffic counts, condition ratings, and types of traffic. The Municipality relies on our OSIM reports to identify highest priority bridges and culverts. The highest priority bridges and culverts will inform and influence capital project investments.
Inspection	The most recent inspection reports were completed by B. M. Ross and Associates Limited in 2021 and Associates Limited and by GM BluePlan in 2020

Forecasted Capital Requirements

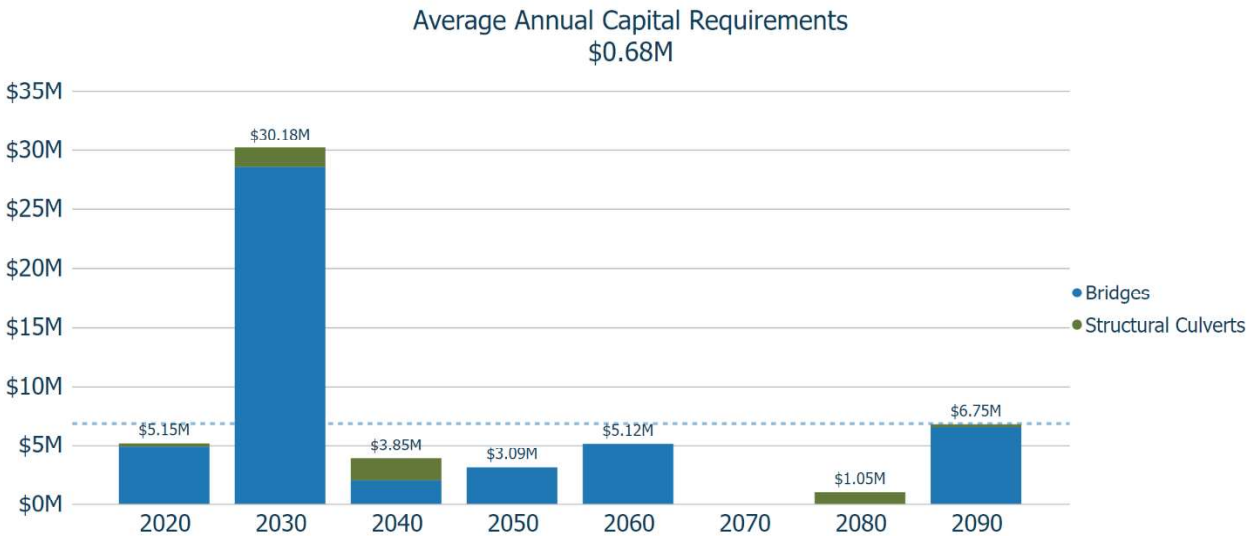
Based on the lifecycle activities identified in the 2020 inspection report, and assuming end-of-life replacement for all assets, the following graph forecasts short- and long-term capital requirements for the Bridges & Culverts category.

The annual capital requirement represents the average amount per year that the Brockton should allocate towards funding rehabilitation and replacement needs to meet future capital needs.

The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

The graph below provides a 70-year forecast. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth. The forecasted requirements are aggregated into 10-year bins and are

based on the Municipality's asset inventory as of 2020. The trend line represents the average 10-year capital requirements.



4.2.6 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Aging Infrastructure

As municipal bridges and culverts continue to age and deteriorate, the 2020/2021 OSIM inspections have indicated a number of assets that have a low bridge condition index (BCI) and will require significant capital investment over the next 10 years.

Climate Change & Extreme Weather Events

Flooding and extreme weather can cause damage to multiple elements of the Municipality's bridges including the deck, superstructure, substructure, and approaches. The rising levels of freshwater and the increased frequency and intensity of precipitation events are likely to advance the deterioration of bridge components. Bridges that have been replaced in the last 10 years have followed Environmental Assessments to address a changing climate. Staff continue to monitor older bridges to understand the impacts of climate change and extreme weather events.

Infrastructure Re-investment

The Municipality is always looking for acquiring grants/additional external funding for the road network capital projects. Some projects related to rehabilitation and renewal could be subject to funding opportunities.

Lifecycle Management Strategies

The Municipality relies on conditional ratings from Road Needs Study. The Municipality have invested in PSD CityWide™ and is working towards developing asset lifecycle strategies.

Organizational Knowledge & Capacity

Both short- and long-term planning require the regular collection, storage, and maintenance of infrastructure data to support asset management decision-making. Staff note that it is an ongoing process to build internal capacity. Geographic Information System (GIS) will be taking to take a lead in building this capacity.

4.2.7 Levels of Service

The following tables identify the Municipality's current level of service for Bridges & Culverts. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Bridges & Culverts.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	The majority of the bridges in the Municipality of Brockton supports local residential traffic, emergency vehicles, pedestirans and cyclists. Many of the rural bridges and culverts are used by farming equipment and vehicles supporting agricultural transport. Most heavy transport vehicles use the County and Provincial roads throughout the Municipality.
Quality	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	Good (BCI 70-100): Generally considered to be in good-excellent condition, and repair or rehabilitation work is not usually required within the next 5 years. Routine maintenance, such as sweeping, cleaning, and washing are still recommended. Fair (BCI 50-70): Generally considered to be in good-fair condition. Repair or rehabilitation work recommended is ideally scheduled to be completed within the next 5 years. Poor (BCI Less than 50): Generally considered poor with lower numbers representing structures nearing the end of their service life. The repair or rehabilitation of these structures is ideally best scheduled to be completed within approximately 1 year. However, if it is determined that the replacement of the structure would be a more viable, the structure can be identified for continued monitoring and scheduled for replacement within the short-term.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by Bridges & Culverts.

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of bridges in the Municipality with loading or dimensional restrictions	8%
Quality	Average bridge condition index value for bridges in the Municipality	Good
	Average bridge condition index value for structural culverts in the Municipality	Good
Performance	Capital re-investment rate	0%

4.2.8 Recommendations

Data Review/Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all bridges and structural culverts upon the completion of OSIM inspections every 2 years.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Lifecycle Management Strategies

- Continue to incorporate the recommended maintenance, rehabilitative and renewal activities from the OSIM inspections.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Municipality believe to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.3 Storm Sewer System

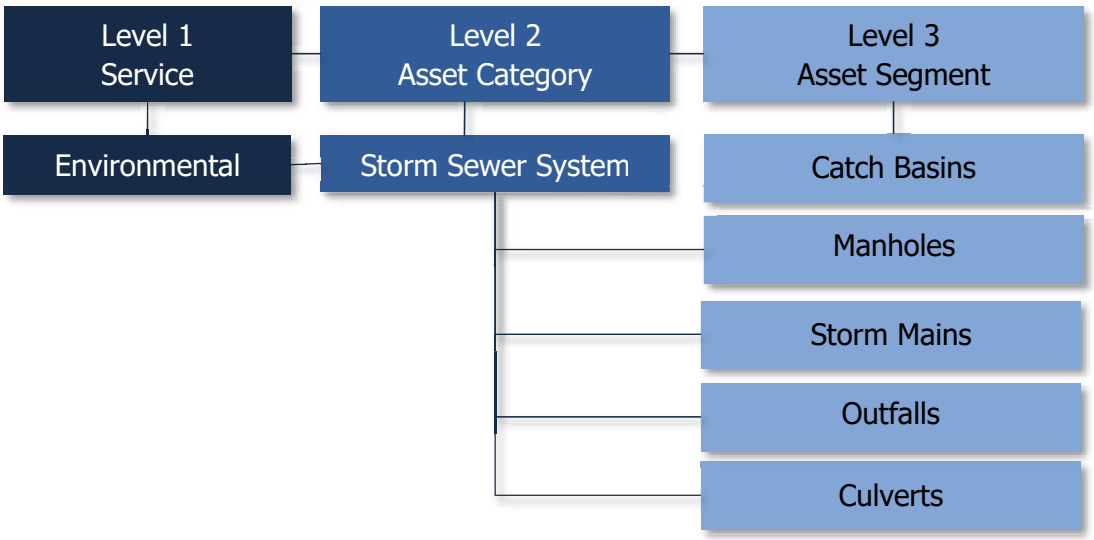
The Municipality's Storm Sewer inventory is managed in CityWide™, and comprises of 920 catch basins, 105 manholes, 17 outfalls, 474 culverts, and around 30 kilometres of mains.

The Public Works department, along with supporting assets such as facilities, fleet, and machinery & equipment, is responsible for planning and managing the Storm Sewer System.

Storm Sewer System infrastructure generals poses the greatest uncertainty for municipalities, including Brockton. Staff have expressed a lack of confidence in the current inventory but are working towards improving the accuracy and reliability of the Storm Sewer inventory to assist with long-term asset management planning.

4.3.1 Asset Hierarchy and Segmentation

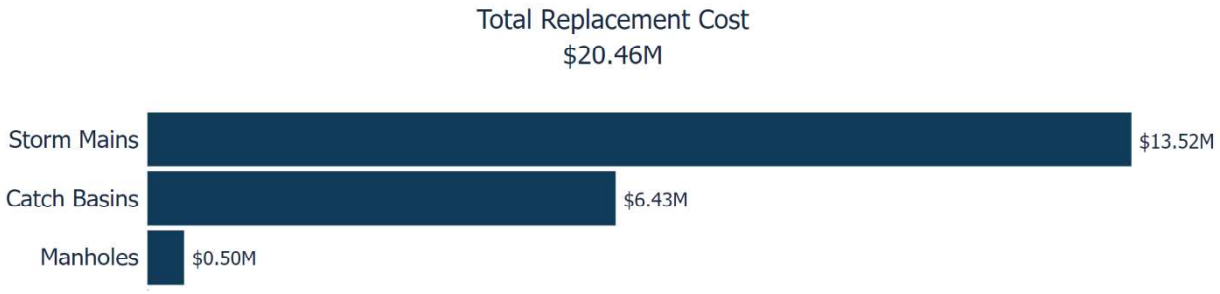
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.3.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Storm Sewer System inventory.

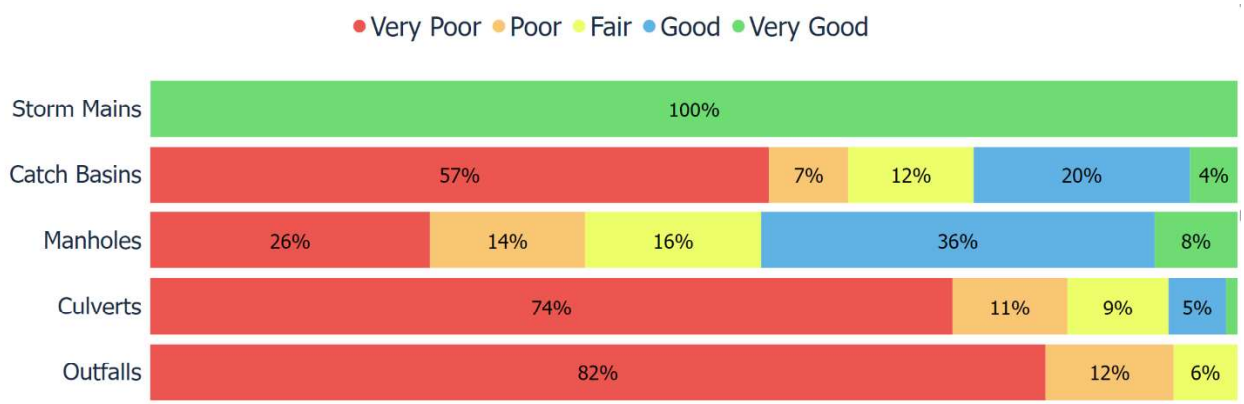
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Catch Basins	920	Cost per unit	$6,433,000
Manholes	105	Cost per unit	$504,000
Storm Mains	30 km	Cost per unit	$13,518,340
Outfalls	17	Not Capitalized	
Culverts	474		
			$20,455,340



4.3.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Catch Basins	35%	Poor	Age-based
Manholes	49%	Fair	Age-based
Storm Mains	91%	Very Good	Age-based
Outfalls	7%	Very Poor	Age-based
Culverts	13%	Very Poor	Age-based
	72%	**Good**	



To ensure that the Municipality's Storm Sewer System continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Storm Sewer System.

Current Approach to Condition Assessment

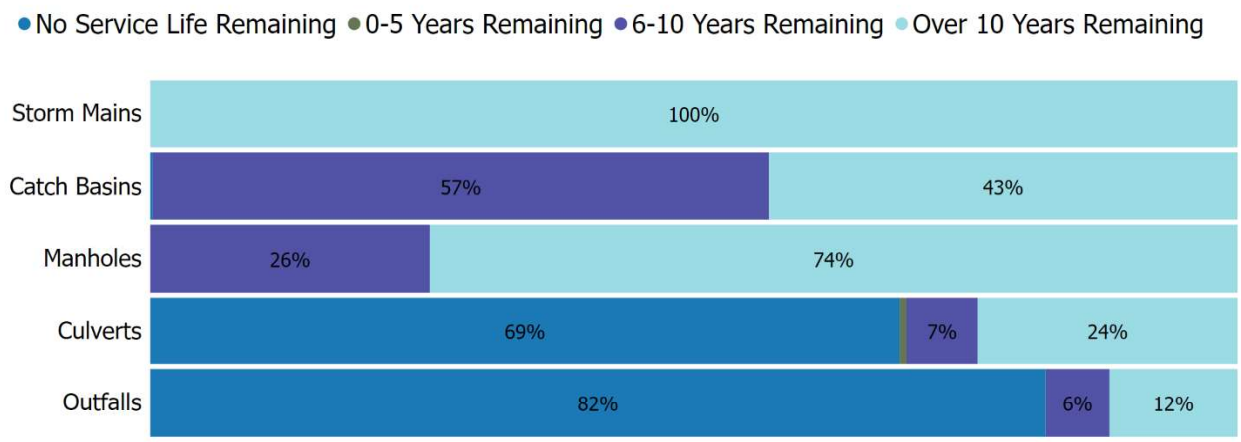
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- There is no condition assessment program in place for storm sewer infrastructure currently and CCTV inspections are not complete regularly. Age-based estimates of condition are used to project current condition, although confidence in accuracy of these estimates is low. Through major capital reconstruction projections storm water assets will be assessed and replaced as needed. This is an ongoing process as staff continue to build and develop the Municipality's asset management database.

4.3.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Storm Sewer System assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Catch Basins	50	32.3	17.8
Manholes	50 - 80	35.6	4.4
Storm Mains	80	25.3	25.2
Outfalls	35	37.6	-2.6
Culverts	40	31.2	48.8
		32.3	**27.4**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.3.5 Lifecycle Management Strategy

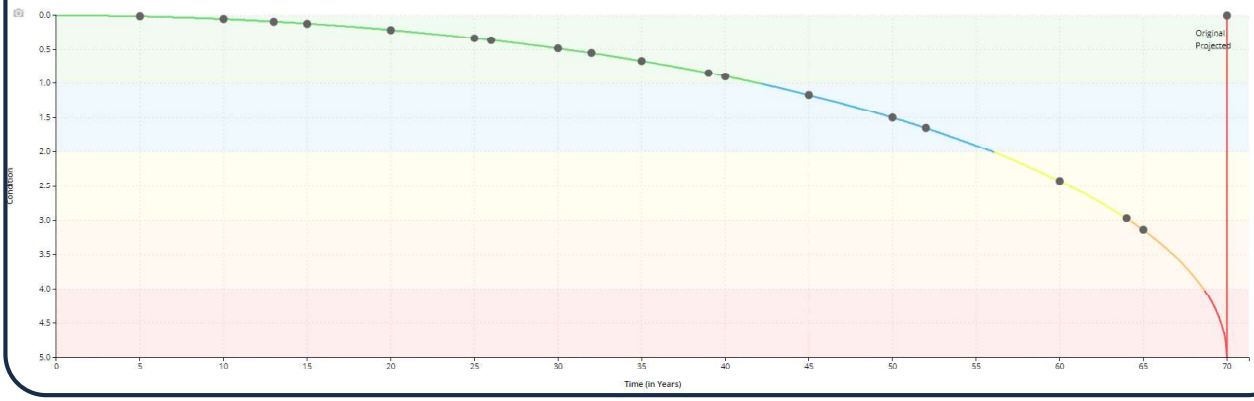
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Maintenance is perfomed on a as needs basis. These activities typically include flushing. Street sweepers are used to minimize the need for flushing.
Rehabilitation	As needed or identified within a capital project.
Replacement	As needed or identified within a capital project.

The following lifecycle strategy has been documented to formalize the current strategy used to manage the lifecycle of storm mains.

Storm Mains		
Event Name	**Event Class**	**Event Trigger**
Flushing/Cleaning	Maintenance	20% of the total network per year (four year cycle)
Smoke Testing	Maintenance	Every 15 years (five times)
Camera Inspection	Preventative Maintenance	6.5% of the total network per year (15-year cycle)
Rodding / Boring	Maintenance	3% of the total network per year (32-year cycle)
Full Reconstruction	Replacement	Condition: 0



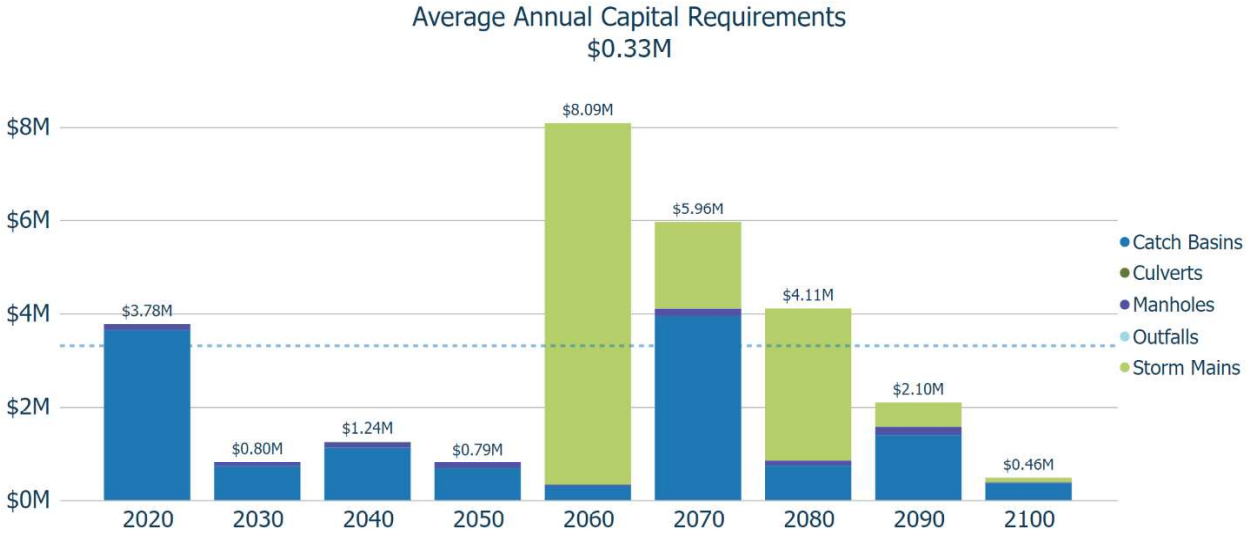
Forecasted Capital Requirements

Based on the lifecycle activities identified in this report, and assuming end-of-life replacement for all assets, the following graph forecasts short- and long-term capital requirements for the Storm Sewer System category.

The annual capital requirement represents the average amount per year that the Brockton should allocate towards funding rehabilitation and replacement needs to meet future capital needs.
The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

The graph below provides an 80-year forecast. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth. The forecasted requirements are aggregated into 10-year bins and are

based on the Municipality's asset inventory as of 2020. The trend line represents the average 10-year capital requirements.



4.3.6 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Infrastructure Re-investment

The Municipality is always looking for acquiring grants/additional external funding for the road network capital projects. Some projects related to rehabilitation and renewal could be subject to funding opportunities.

Lifecycle Management Strategies

The Municipality has no identified lifecycle strategies yet. The Municipality has invested in PSD CityWide™ and is working towards developing asset lifecycle strategies.

Organizational Knowledge & Capacity

Both short- and long-term planning requires the regular collection, storage, and maintenance of infrastructure data to support asset management decision-making. Staff note that it is an ongoing process to build internal capacity. Geographic Information System (GIS) will be taking to take a lead in building this capacity.

4.3.7 Levels of Service

The following tables identify the Municipality's current level of service for Storm Sewer System. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Storm Sewer System.

Service Attribute	Qualitative Description	Current LOS (2020)
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 Services	The Municipality of Brockton has Stormwater services for the Town of Walkerton. Brockton has approximately 30 km of stormwater main piping. Please refer to the attached map (Appendix B) for visual representation of the Town of Walkerton and Flood Fringe zones for a 100-year flood.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Storm Sewer System.

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties in municipality resilient to a 100-year storm	85%
	% of the municipal stormwater management system resilient to a 5-year storm	95%
Performance	Capital reinvestment rate	0%

4.3.8 Recommendations

Asset Inventory

- Review inventory to determine whether all municipal assets within all asset segments have been accounted for.
- Continue to consolidate critical asset information from other asset data sources into the Municipality's centralized asset inventory.

Condition Assessment Strategies

- The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all assets in the Storm Sewer System through CCTV inspections.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Lifecycle Management Strategies

- Document and review lifecycle management strategies for the Storm Sewer System on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

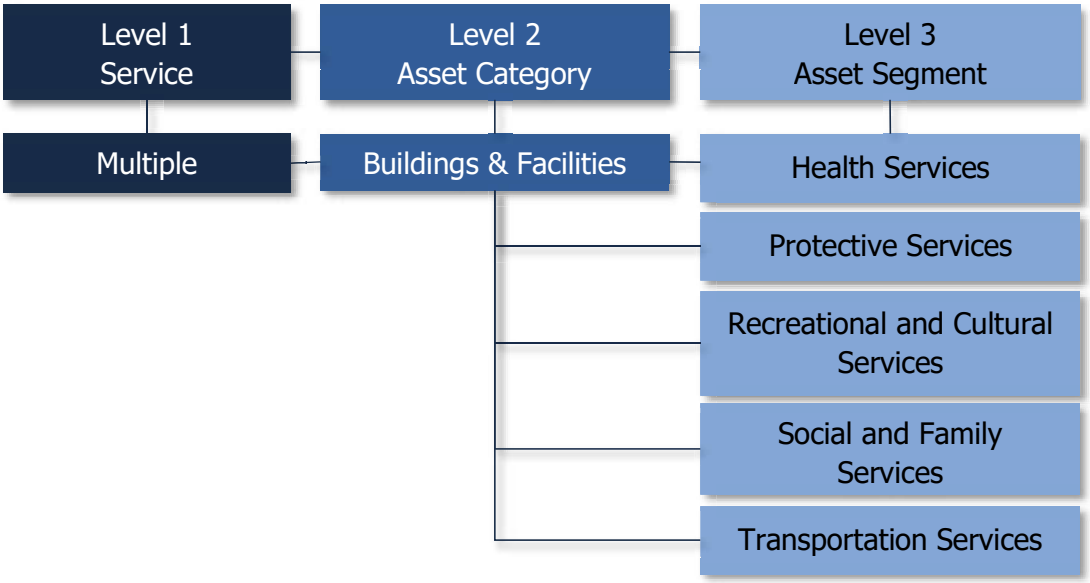
- Begin measuring current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Municipality believe to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.4 Buildings & Facilities

The Municipality's Buildings & Facilities inventory is managed in CityWide™, and comprises of 32 individual facilities. These are owned by the Municipality and maintained by various departments that provide key administrative, protective, recreational and cultural services to the community.

4.4.1 Asset Hierarchy and Segmentation

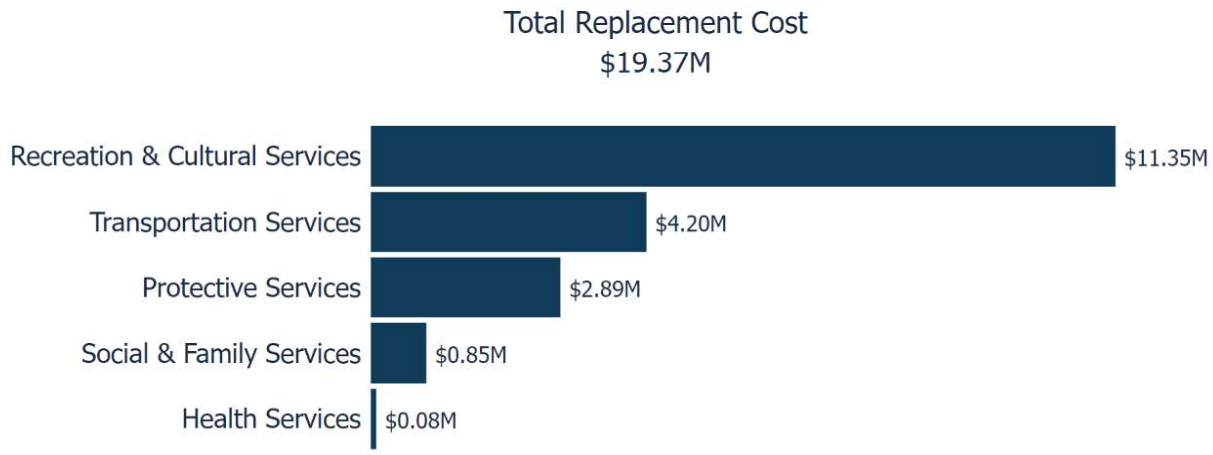
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.4.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Buildings & Facilities inventory.

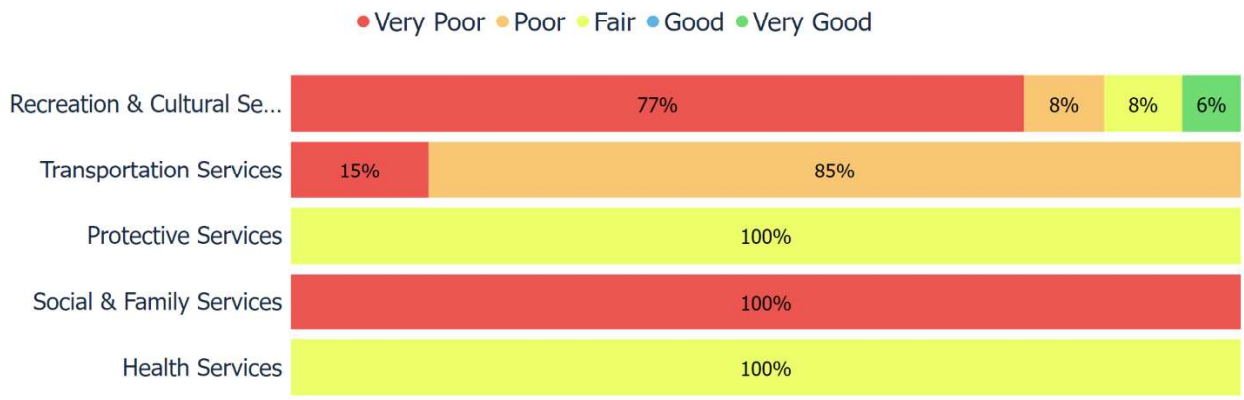
Asset Segment	Number of Facilities	Replacement Cost Method	Total Replacement Cost
Health Services	2	User-Defined Cost	$82,700
Protective Services	2	User-Defined Cost	$2,889,500
Recreation and Cultural Services	18	98% User-Defined Cost	$11,351,403
Social and Family Services	1	User-Defined Cost	$847,500
Transportation Services	9	User-Defined Cost	$4,201,300
			$19,372,403



4.4.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Health Services	59%	Fair	Age-based
Protective Services	54%	Fair	Age-based
Recreation and Cultural Services	11%	Very Poor	Age-based
Social and Family Services	0%	Very Poor	Age-based
Transportation Services	27%	Poor	Age-based
	21%	**Poor**	



To ensure that the Municipality's Buildings & Facilities continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Buildings & Facilities.

Current Approach to Condition Assessment

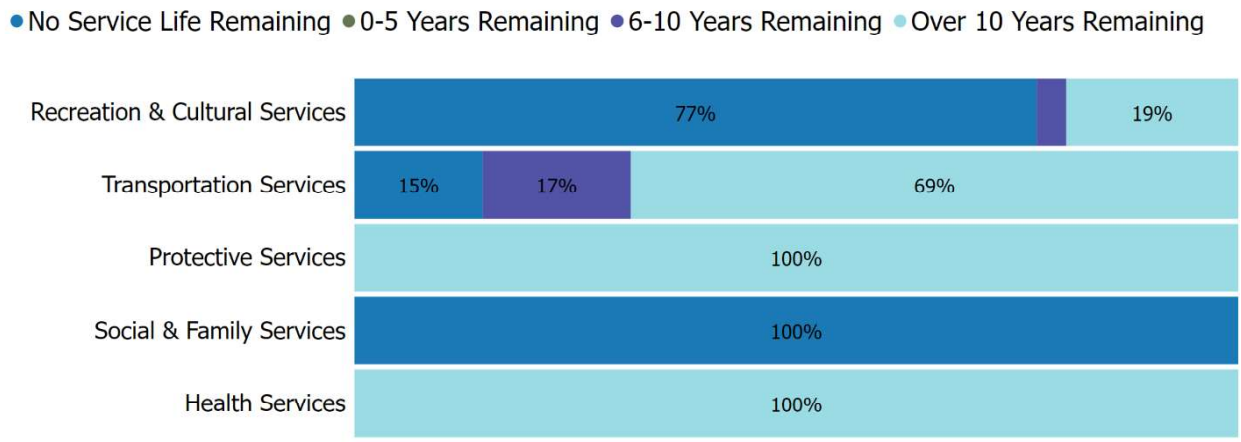
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- High-level assessments by internal staff are performed annually to determine the condition of facilities.
- An external review has been completed on some recreation facilities (Pecman Review). Furthermore, a third-party review from Cowan was performed on selected facilities.

4.4.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Buildings & Facilities assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Health Services	40	16.5	23.5
Protective Services	40	18.3	21.6
Recreation and Cultural Services	10 - 40	29.1	5.8
Social and Family Services	40	100.6	-60.6
Transportation Services	40	35.9	4.1
		33.3	**3.8**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.4.5 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention.
Replacement	Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate.

Forecasted Capital Requirements

Based on the current buildings and facilities inventory and assuming end-of-life replacement for all assets, the AMP forecasts short- and long-term capital requirements for the Buildings & Facilities category.

The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

The graph below provides a 50-year forecast. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth. The forecasted requirements are aggregated into 10-year bins and are based on the Municipality's asset inventory as of 2020. The trend line represents the average 10-year capital requirements.

4.4.6 Risk & Criticality

Buildings & Facilities is considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the risk and criticality associated to assets within this category.

4.4.7 Levels of Service

Buildings & Facilities is considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.4.8 Recommendations

Asset Inventory

- The Municipality's asset inventory contains a single or a few assets for all facilities. Facilities consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all facilities to allow for component-based lifecycle planning.

Condition Assessment Strategies

- A comprehensive structural assessment of all buildings & facilities is highly recommended to gain a better understanding of the overall heath and condition of each facility to identify accurate short- and long-term capital requirements.

Risk Management Strategies

- Work towards developing risk models and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.5 Machinery & Equipment

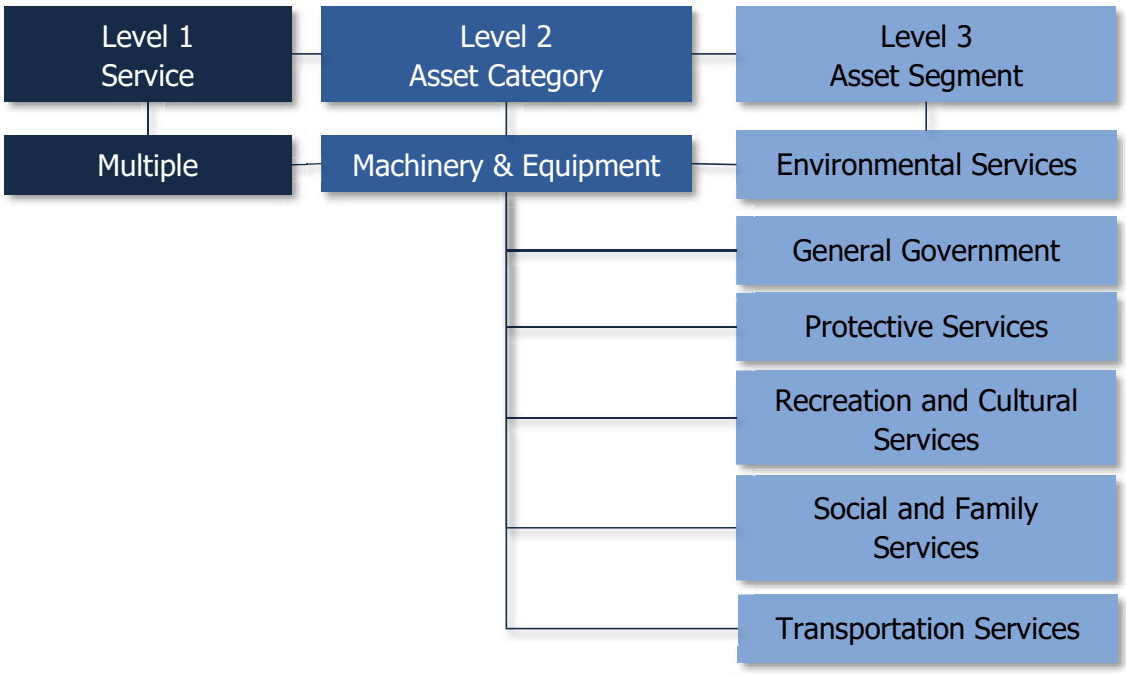
The Municipality's Machinery & Equipment inventory is managed in CityWide™ and comprises of 229 assets. In order to maintain the high quality of public infrastructure and support the delivery of core and non-core services, Staff own and employ machinery and equipment assets which are used for:

- Environmental Services
- General Government
- Protective Services
- Recreation & Cultural Services
- Social & Family Services
- Transportation Services

Keeping machinery & equipment in an adequate state of repair is important to maintain a high level of service.

4.5.1 Asset Hierarchy and Segmentation

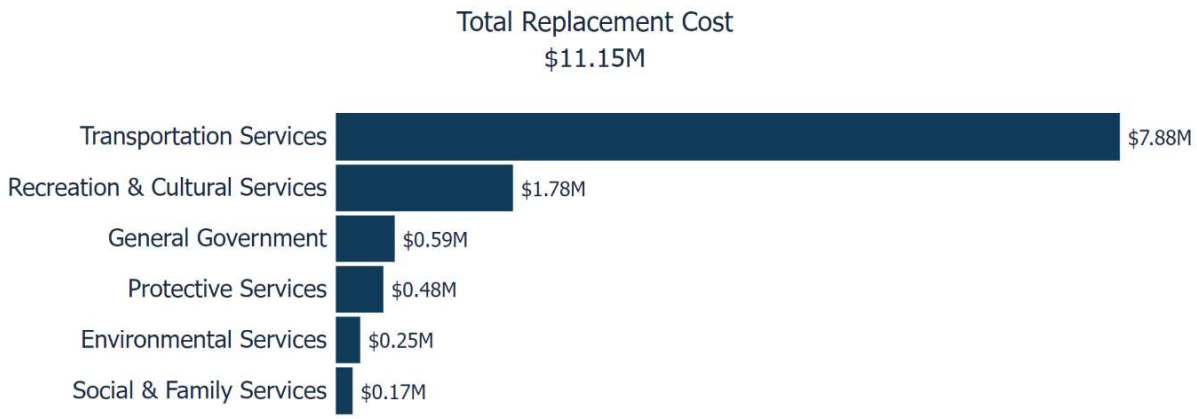
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.5.2 Asset Inventory & Replacement Cost

The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Machinery & Equipment inventory.

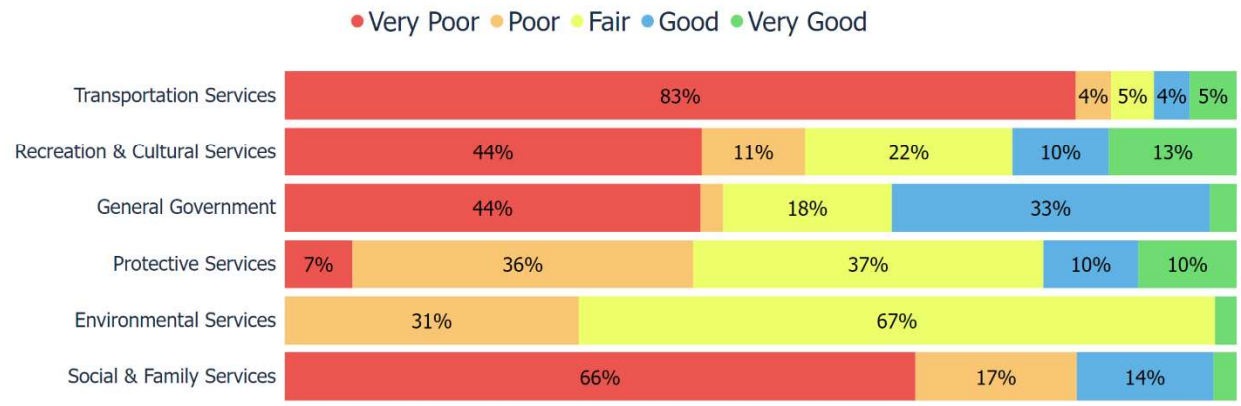
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Environmental Services	4	Historical Cost Inflation	$245,892
General Government	28	Historical Cost Inflation	$592,125
Protective Services	34	Historical Cost Inflation	$478,543
Recreation and Cultural Services	84	Historical Cost Inflation	$1,781,556
Social and Family Services	17	Historical Cost Inflation	$169,950
Transportation Services	62	Historical Cost Inflation	$7,883,197
			$11,151,263



4.5.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Environmental Services	47%	Fair	Age-based
General Government	37%	Poor	Age-based
Protective Services	48%	Fair	Age-based
Recreation and Cultural Services	34%	Poor	Age-based
Social and Family Services	19%	Very Poor	Age-based
Transportation Services	11%	Very Poor	Age-based
	19%	**Very Poor**	



To ensure that the Municipality's Machinery & Equipment continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Machinery & Equipment.

Current Approach to Condition Assessment

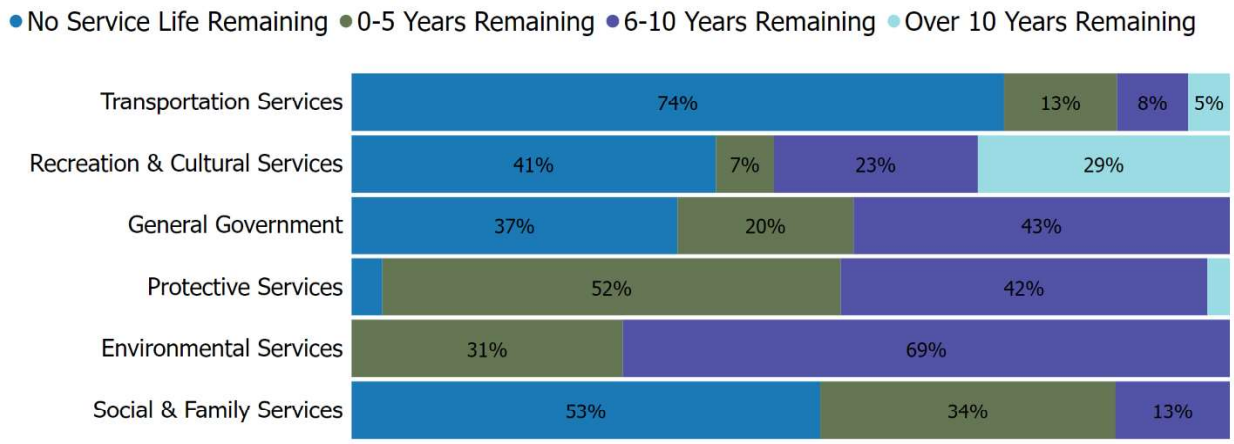
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Staff complete regular inspections of machinery & equipment to ensure they are in state of adequate repair.
- Some equipment such as the recreation refrigeration system are reviewed annually based on requirements and needs.
- Recreation equipment is inspected according to the Technical Standards and Safety Authority (TSSA) to meet provincial requirements.

4.5.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Machinery & Equipment assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Environmental Services	10 - 15	4.8	6.4
General Government	5 - 50	9.5	-0.1
Protective Services	5 - 20	5.1	5.6
Recreation and Cultural Services	5 - 50	11.8	4.6
Social and Family Services	5 - 25	14.4	-1.6
Transportation Services	10 - 15	15.1	-1.5
		11.5	**2.0**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.5.5 Lifecycle Management Strategy

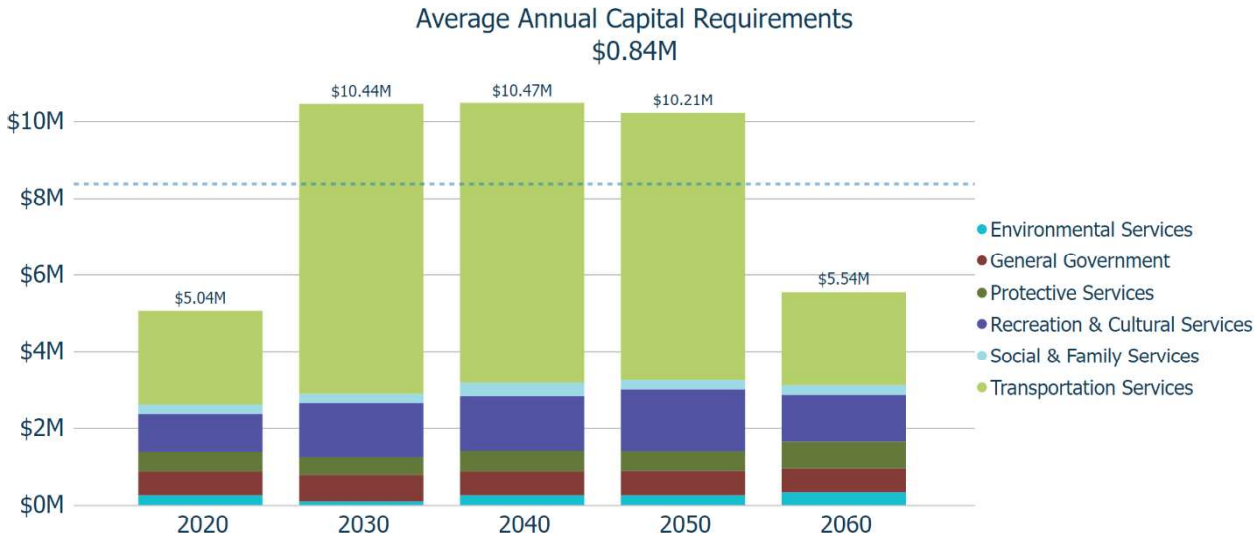
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Maintenance program varies by department
	Fire Protection and Emergency Services equipment is subject to a much more rigorous inspection and maintenance program compared to most other departments
	Machinery & equipment are maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff
Replacement	The replacement of machinery & equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks. Furthermore, staff monitor any increase in maintenance costs to identify if an asset replacement is required.

Forecasted Capital Requirements

Based on the current machinery & equipment inventory, and assuming end-of-life replacement for all assets, The graph below provides a 40-year forecast for the Machinery & Equipment category. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth. The forecasted requirements are aggregated into 10-year bins and are based on the Municipality's asset inventory as of 2020. The trend line represents the average 10-year capital requirements.



The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

4.5.6 Risk & Criticality

Risk Matrix

Machinery & Equipment is considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the risk and criticality associated to assets within this category.

4.5.7 Levels of Service

Machinery & Equipment is considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.5.8 Recommendations

Asset Inventory

- The Municipality should conduct an inventory review, collect, and consolidate asset data to ensure all relevant assets are accounted for.

Replacement Costs

- All replacement costs used in this AMP were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Identify condition assessment strategies for high value machinery and equipment assets.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

- Work towards developing risk models and adjust these models according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

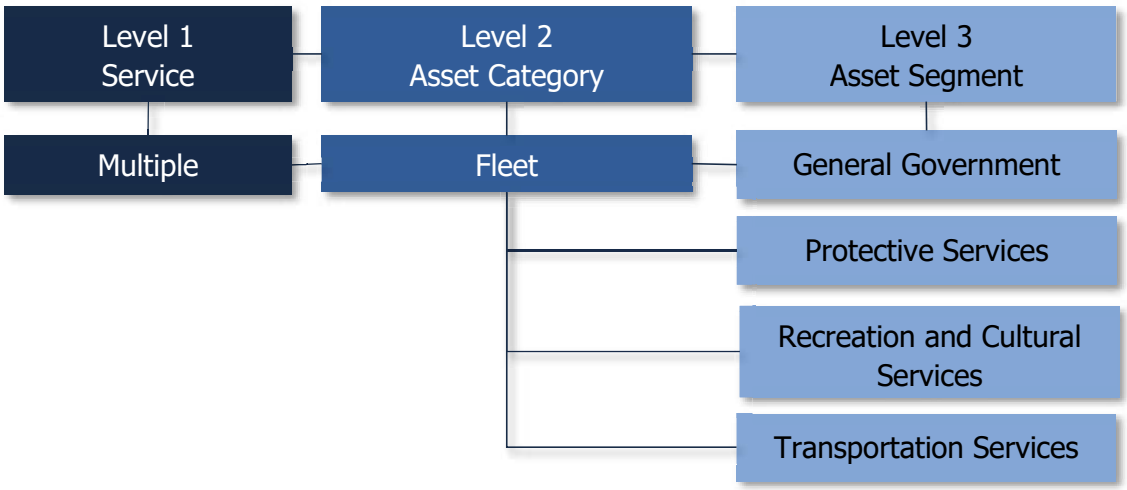
4.6 Fleet

The Municipality's Fleet inventory is managed in CityWide™ and comprises of 17 assets. Like Machinery and Equipment assets, Fleet assets allow staff to efficiently deliver municipal services and personnel. Municipal fleet assets are used to support several service areas, some of which are:

- General Government
- Protective Services
- Recreation and Cultural Services
- Transportation Services

4.6.1 Asset Hierarchy and Segmentation

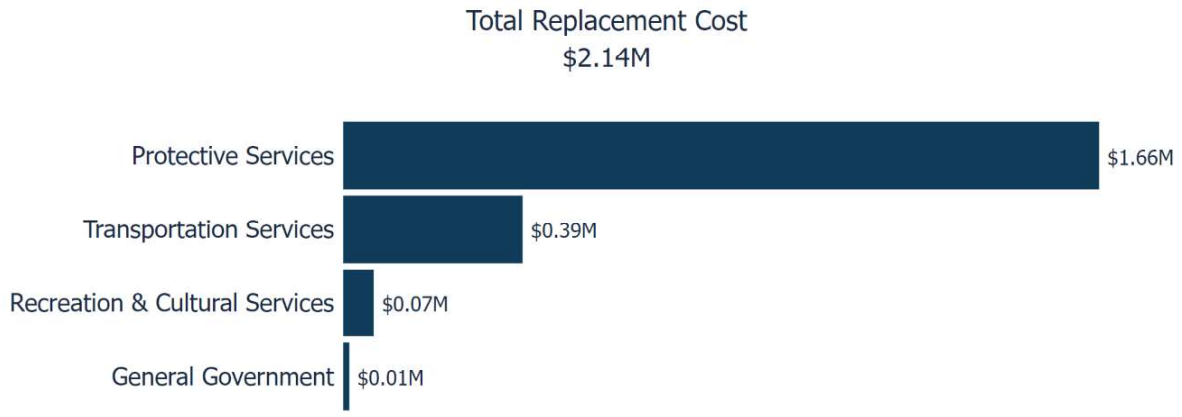
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.6.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Fleet category.

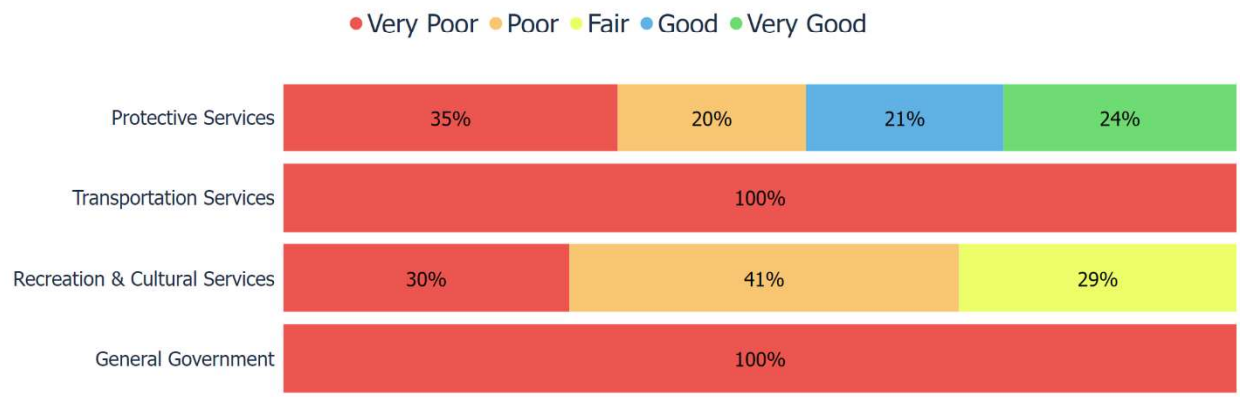
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
General Government	1	Historical Cost Inflation	$13,476
Protective Services	4	Historical Cost Inflation	$1,661,337
Recreation and Cultural Services	4	Historical Cost Inflation	$67,072
Transportation Services	8	Historical Cost Inflation	$394,225
			$2,136,110



4.6.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
General Government	2%	Very Poor	Age-based
Protective Services	46%	Fair	Age-based
Recreation and Cultural Services	27%	Poor	Age-based
Transportation Services	2%	Very Poor	Age-based
	37%	**Poor**	



To ensure that the Municipality's Fleet assets continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Vehicles.

Current Approach to Condition Assessment

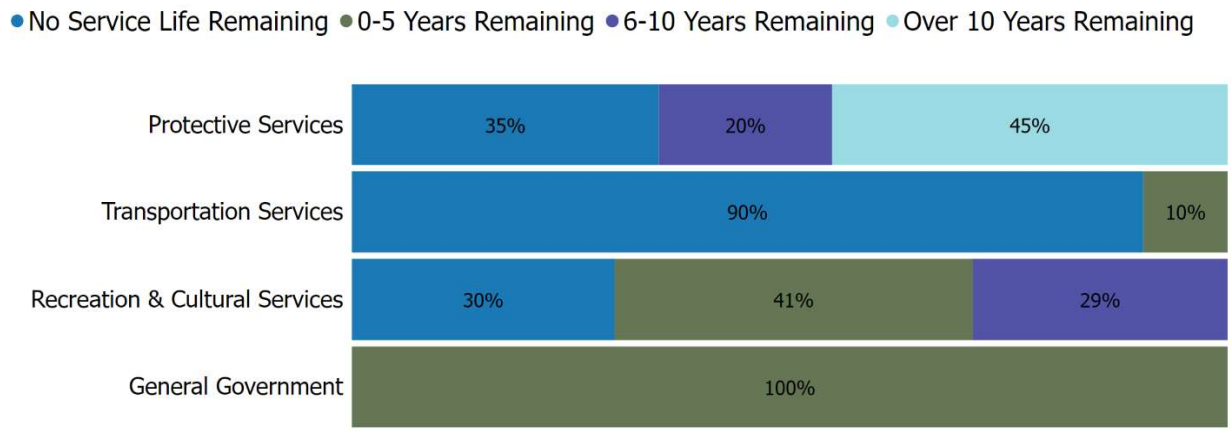
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Staff complete regular visual inspections of fleet assets to ensure they are in state of adequate repair prior to operation.

4.6.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Vehicles assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
General Government	10	9.8	0.2
Protective Services	15 - 25	12.4	12.3
Recreation and Cultural Services	10 - 15	8.5	2.8
Transportation Services	10	18.2	-5.3
		14.1	**1.1**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

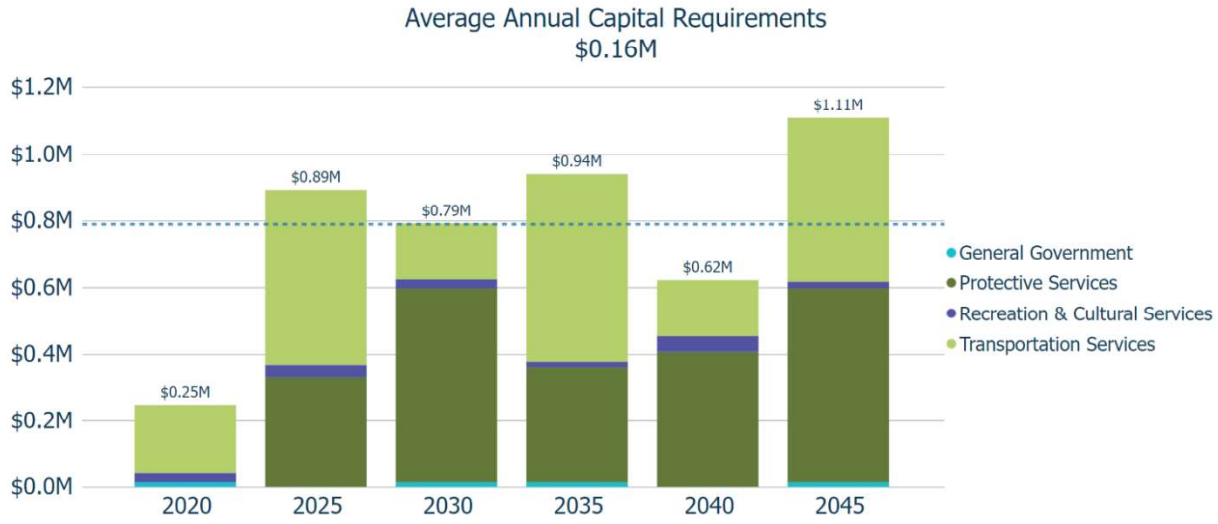
4.6.5 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Visual inspections completed and documented daily; fluids inspected at every fuel stop; tires inspected monthly
	Detailed inspections, including tire rotation and oil change are carried out on a regular basis. The km ranges that are used to identify when an inspection is needed vary according the vehicle's size and function.
	Annual preventative maintenance activities include system components check and additional detailed inspections
Replacement	Vehicle age, kilometres and annual repair costs are taken into consideration when determining appropriate treatment options

Forecasted Capital Requirements

Based on the current fleet inventory, and assuming end-of-life replacement for all assets, the graph below provides a 25-year forecast. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth. The forecasted requirements are aggregated into 5-year bins and are based on the Municipality's asset inventory as of 2020. The trend line represents the average 5-year capital requirements.



The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

4.6.6 Risk & Criticality

Fleet is considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the risk and criticality associated to assets within this category.

4.6.7 Levels of Service

Fleet assets are considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.6.8 Recommendations

Replacement Costs

- All replacement costs used in this AMP were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Consider developing and Adopting a Fleet Management Plan.
- Identify condition assessment strategies for high value fleet.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

- Work towards developing risk models and adjust these models according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

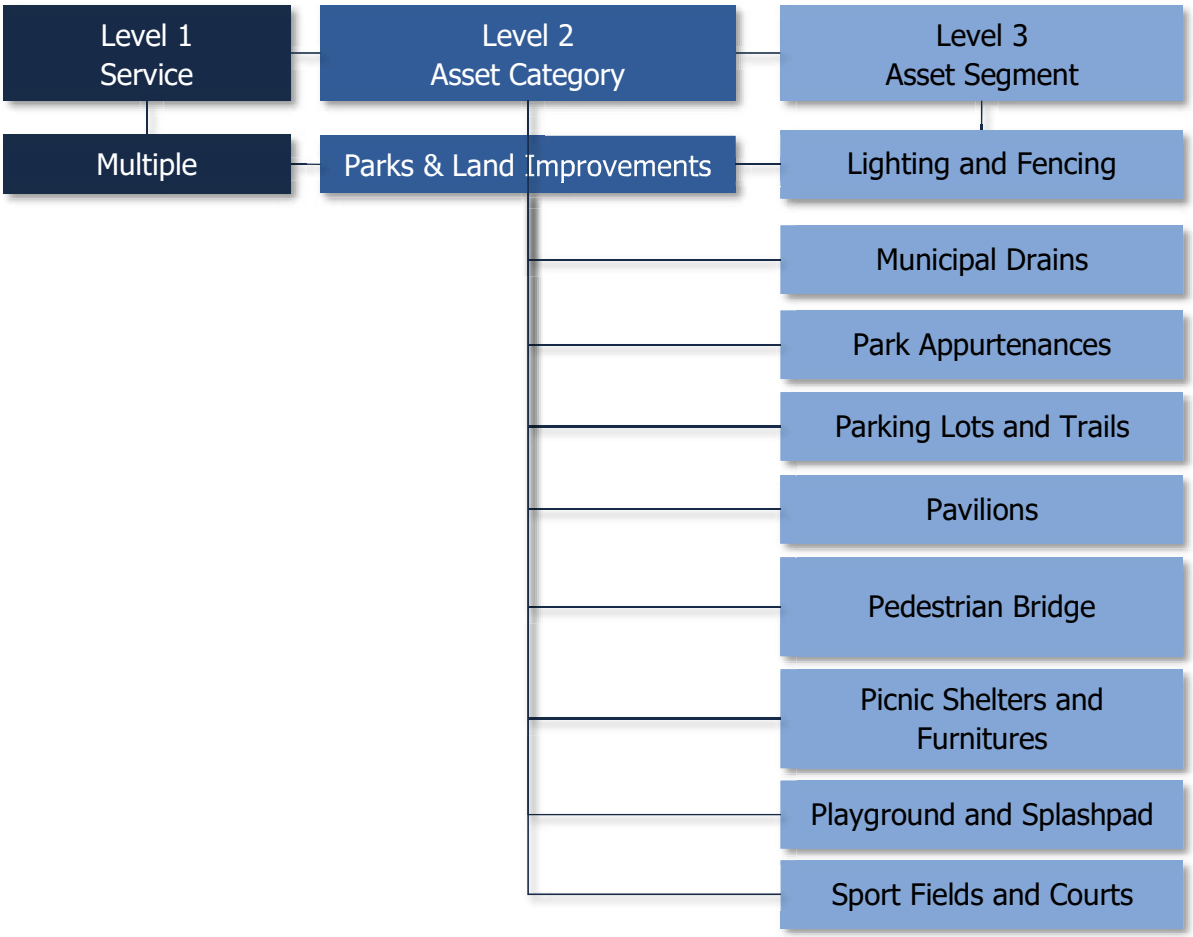
- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.7 Parks & Land Improvements

The Parks & Land Improvements inventory is managed in CityWide™ and comprises of 59 assets that assist the Municipality in providing community recreation, cultural and natural outdoor space.

4.7.1 Asset Hierarchy and Segmentation

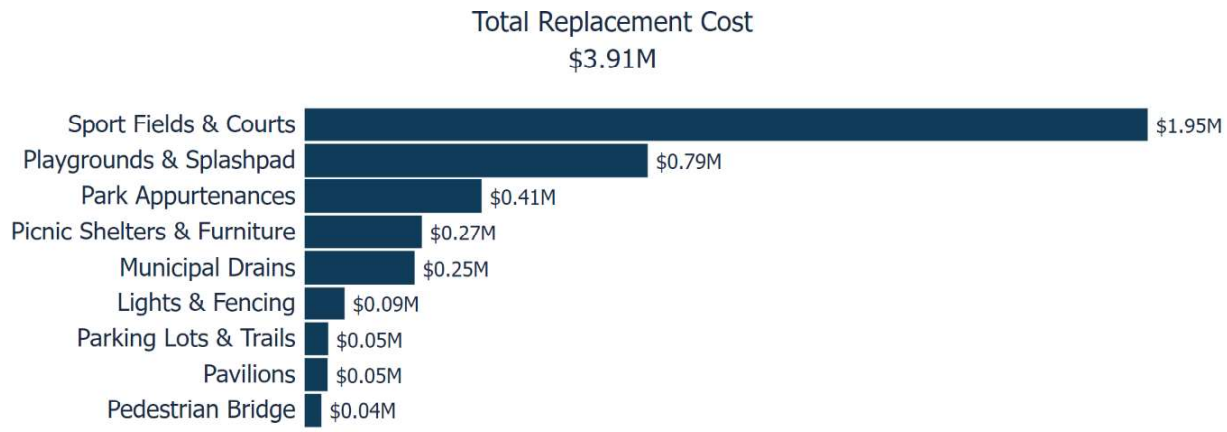
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.7.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Land Improvements inventory.

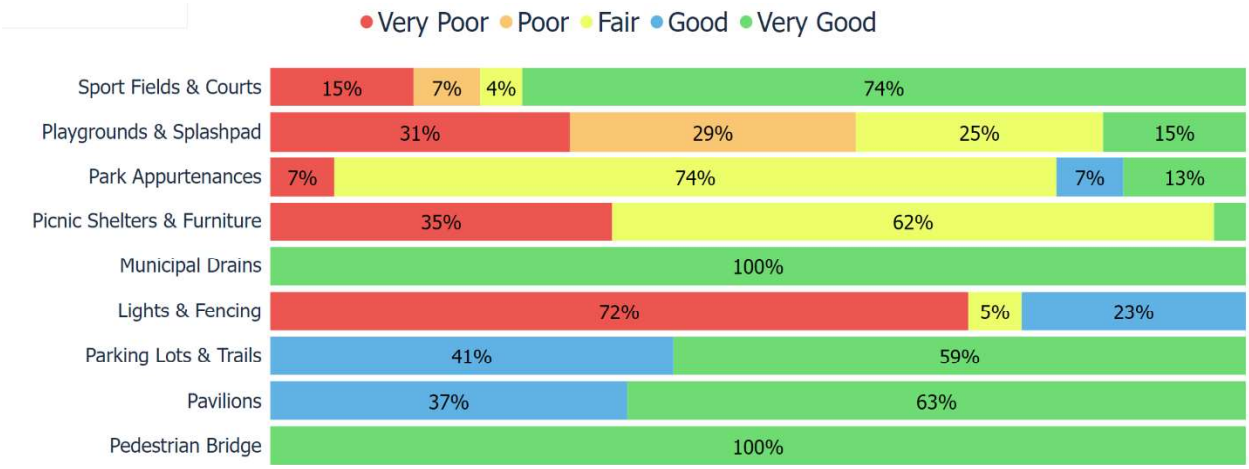
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Lights and Fencing	6	Historical Cost Inflation	$92,341
Municipal Drains	6	Historical Cost Inflation	$253,748
Park Accessories	7	Historical Cost Inflation	$408,434
Parking Lots and Trails	4	Historical Cost Inflation	$54,354
Pavilions	5	Historical Cost Inflation	$53,097
Pedestrian Bridge	1	Historical Cost Inflation	$38,851
Picnic Shelters and Furniture	12	Historical Cost Inflation	$270,425
Playgrounds and Splashpad	10	Historical Cost Inflation	$791,800
Sport Fields and Courts	8	Historical Cost Inflation	$1,945,245
			$3,908,295



4.7.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Lights and Fencing	20%	Poor	Age-based
Municipal Drains	91%	Very Good	Age-based
Park Appurtenances	51%	Fair	Age-based
Parking Lots and Trails	82%	Very Good	Age-based
Pavilions	81%	Very Good	Age-based
Pedestrian Bridge	93%	Very Good	Age-based
Picnic Shelters and Furniture	35%	Poor	Age-based
Playgrounds and Splashpad	31%	Poor	Age-based
Sport Fields and Courts	71%	Good	Age-based
	59%	**Fair**	



To ensure that the Municipality's Parks & Land Improvements continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Land Improvements.

Current Approach to Condition Assessment

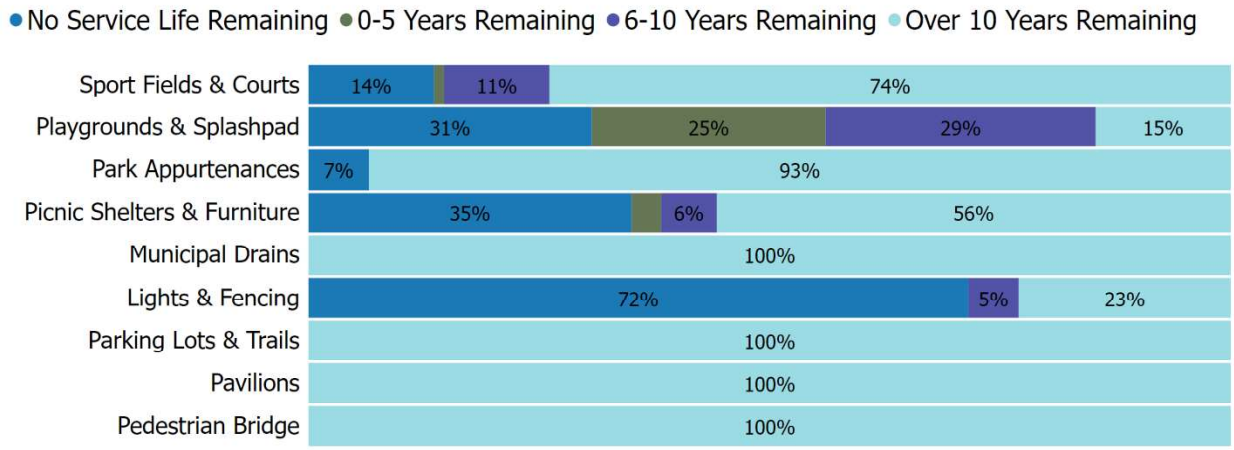
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Staff complete regular visual inspections of parks and land improvements assets to ensure they are in state of adequate repair
- Staff conduct formal inspections of outdoor play space, fixed play structures and surfacing in accordance with CAN/CSA-Z614 and required as per O. Reg. 137/15
- There are no formal condition assessment programs in place for other parks and land improvements assets

4.7.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Land Improvements assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Lights and Fencing	10 - 15	14.8	-2.3
Municipal Drains	35 - 40	3.6	34.8
Park Appurtenances	10 - 75	17.1	23.9
Parking Lots and Trails	25	4.1	19.3
Pavilions	15 - 40	9.3	30.7
Pedestrian Bridge	75	28.0	47.0
Picnic Shelters and Furniture	10 - 40	13.9	6.8
Playgrounds and Splashpad	10 - 15	14.3	2.0
Sport Fields and Courts	10 - 30	14.1	4.7
		12.6	**12.8**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.7.5 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation & Replacement	The Parks & Land Improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis

Forecasted Capital Requirements

Based on the current parks and land improvements inventory, and assuming end-of-life replacement for all assets, the graph below provides a 60-year forecast. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth. The forecasted requirements are aggregated into 10-year bins and are based on the Municipality's asset inventory as of 2020. The trend line represents the average 10-year capital requirements.

The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

4.7.6 Risk & Criticality

Fleet is considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the risk and criticality associated to assets within this category.

4.7.7 Levels of Service

Parks & Land Improvements is considered a non-core asset category. As such, the Municipality has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.7.8 Recommendations

Asset Inventory

- The Municipality should conduct an inventory review, collect, and consolidate asset data to ensure all relevant assets are accounted for.

Replacement Costs

- All replacement costs used in this AMP were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk assets.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

- Work towards developing risk models and adjust these models according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5 Analysis of Rate-funded Assets

Key Insights

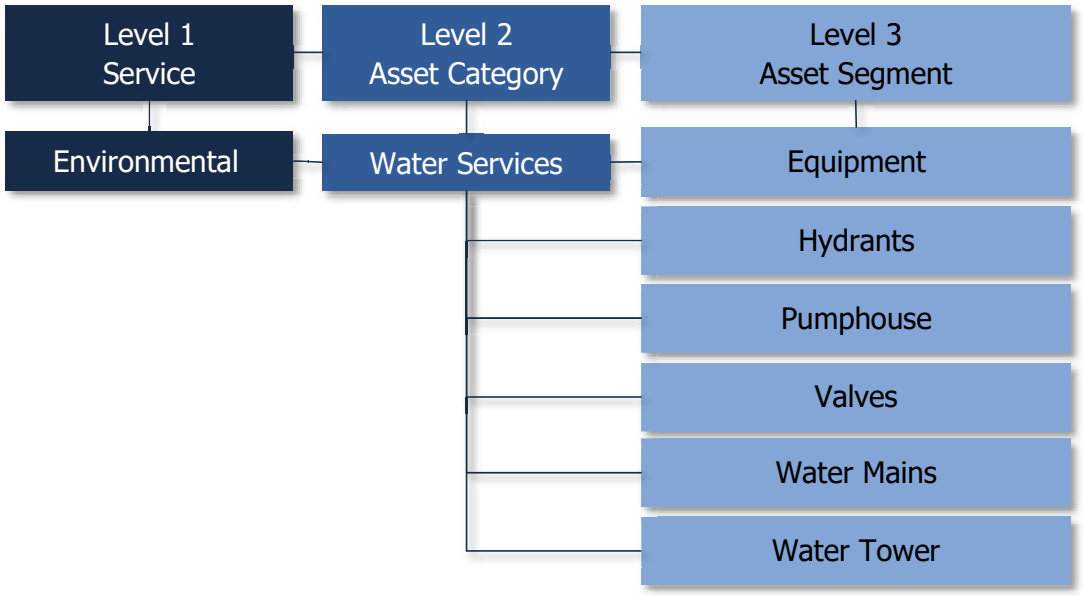
- Rate-funded assets are valued at $88.42 million
- 71.13% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately $1.56 million

5.1 Water Services

The Municipality's Water Services inventory is managed in CityWide™, and comprises of 702 unique assets, including 40 kilometres of water mains, approximately 237 hydrants and 1,012 valves, as well as several water facilities like water towers, pumphouses and equipment.

5.1.1 Asset Hierarchy and Segmentation

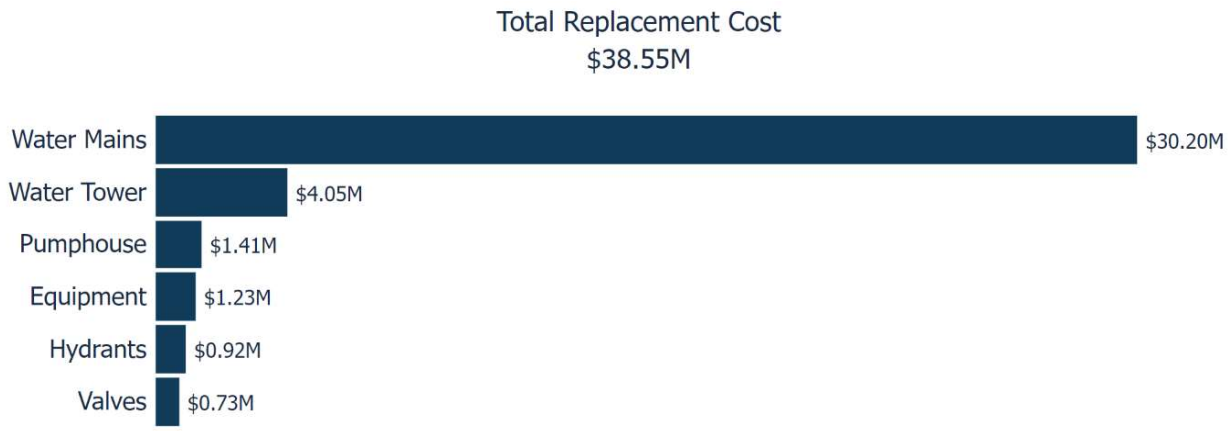
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



5.1.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Water Services inventory.

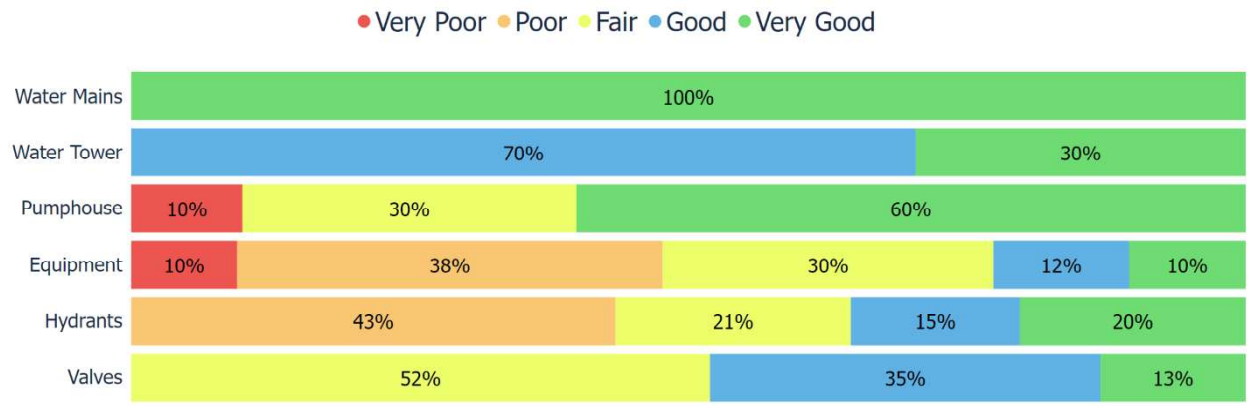
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Equipment	24	Historical Cost Inflation	$1,229,700
Hydrants	237	Cost per unit	$924,300
Pumphouse	4	Historical Cost Inflation	$1,411,800
Valves	1,912	Cost per unit	$726,560
Water Mains	40 km	Cost per unit	$30,203,422
Water Tower	2	Historical Cost Inflation	$4,052,914
			$38,548,696



5.1.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Equipment	46%	Fair	Age-based
Hydrants	51%	Fair	Age-based
Pumphouse	71%	Good	Age-based
Valves	62%	Good	Age-based
Water Mains	92%	Very Good	Age-based
Water Tower	79%	Good	Age-based
	86%	**Very Good**	



To ensure that the Municipality's Water Services continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Water Services.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

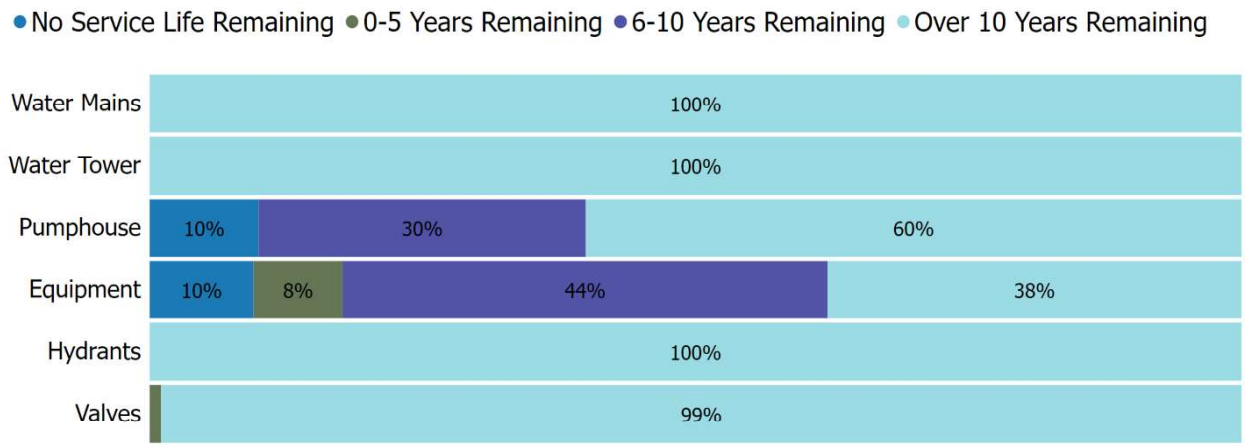
- Staff primarily rely on the age and material of watermains to determine the projected condition of watermains. Aside from the inspections required under O. Reg. 170/3, there are no formal condition assessment programs in place for the Water Services. The Municipality in collaboration with our external partner Veolia North America will perform feasibility studies on capacity as well as a needs study to understand growth and gaps

within our network. Water condition assessments and replacement will occur in accordance with capital projects.

5.1.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Water Services assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Equipment	10 - 40	12.1	9.3
Hydrants	70 - 80	34.0	36.2
Pumphouse	40	27.3	12.8
Valves	80	30.8	49.2
Water Mains	50 - 80	30.0	49.6
Water Tower	85	60.0	40.0
		30.8	**47.7**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

5.1.5 Lifecycle Management Strategy

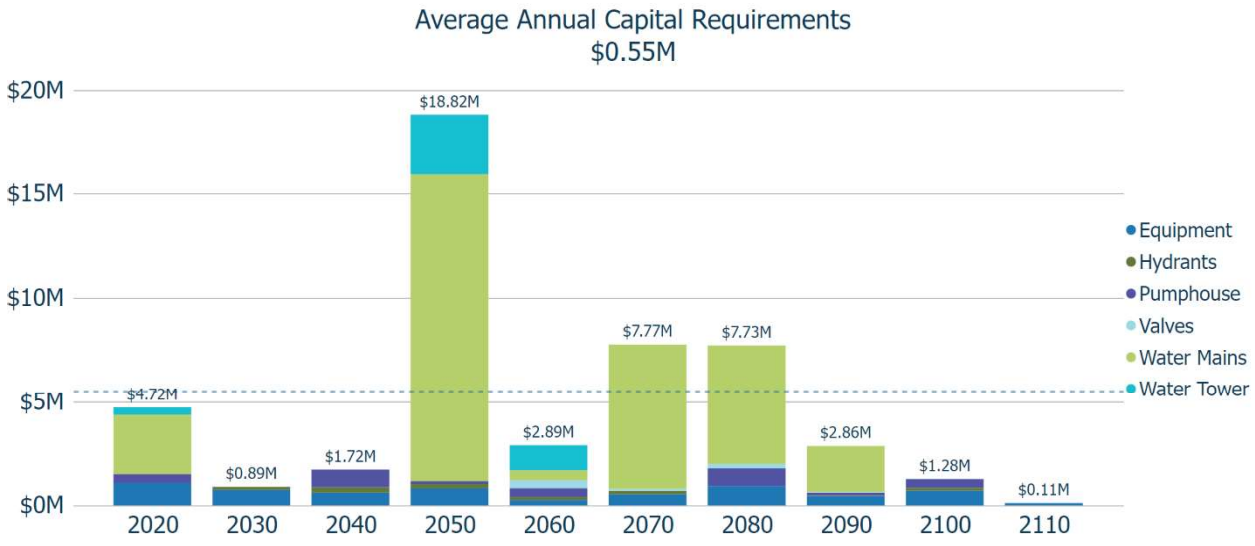
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Flushing, valve turning and fire flow testing comprise of the Municipality's current O&M strategy. Water towers and wells are inspected by Veolia on a 5-year cycle and on a need's basis. Approximately, 300 valves/year or 50% of the water valves are turned each year. The watermain system is flushed annually. Fire flow & pressure testing occurs periodically. The last complete Fire flow testing on the entire system was completed September 25, 2015.
Rehabilitation & Replacement	Rehabilitation projects are prioritized primarily by main breaks, critical and coordinated with other assets to prioritize. Water services are replaced through road reconstruction projects. High priority areas are identified, assessed, and strategized.

Forecasted Capital Requirements

Based on the current water services inventory, and assuming end-of-life replacement for all assets, the graph below provides a 90-year forecast. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth.



The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

5.1.6 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Infrastructure Re-investment

The system is funded through the non-taxable levy. The Municipality has a financial plan that addresses current and future repairs. The Municipality is always looking for acquiring grants/additional external funding for the road network capital projects. Some projects related to rehabilitation and renewal could be subject to funding opportunities.

Lifecycle Management Strategies

The Municipality has invested in PSD CityWide™ and is working towards developing asset lifecycle strategies.

Organizational Knowledge & Capacity

Both short- and long-term planning require the regular collection, storage, and maintenance of infrastructure data to support asset management decision-making. Staff note that it is an ongoing process to build internal capacity. Geographic Information System (GIS) will be taking to take a lead in building this capacity.

5.1.7 Levels of Service

The following tables identify the Municipality's current level of service for Water Services. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Water Services.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal Water Services	The Municipality of Brockton has Water services for the Town of Walkerton and partial services for the hamlets of Chepstow and Marl Lake. Brockton has approximately 50.96 km of watermain piping and there are 4135 active water service accounts. Please refer to the attached map (appendix B) for visual representation.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	Brockton has fire flow services for the Town of Walkerton and partial services for the hamlet of Marl Lake. There is a total of 244. Hydrants in the Municipality of Brockton. Please refer to the attached map (appendix B) for visual representation
Reliability	Description of boil water advisories and service interruptions	There have been zero water boil advisories and 6 temporarily service disruptions caused by Watermain breaks. All breaks were minimal and did not affect the main trunk distribution lines.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Water Services.

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties connected to the municipal Water Services	51%
	% of properties where fire flow is available	5%
Reliability	# 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 Services	0
	# 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 Services	0
Performance	Capital re-investment rate	0.35%

5.1.8 Recommendations

Asset Inventory

- Continue to refine and consolidate asset data into the central asset inventory to ensure all relevant assets are accounted for.
- Review and revise replacement costs and critical asset attribute data on a regular basis.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk Water Services assets.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

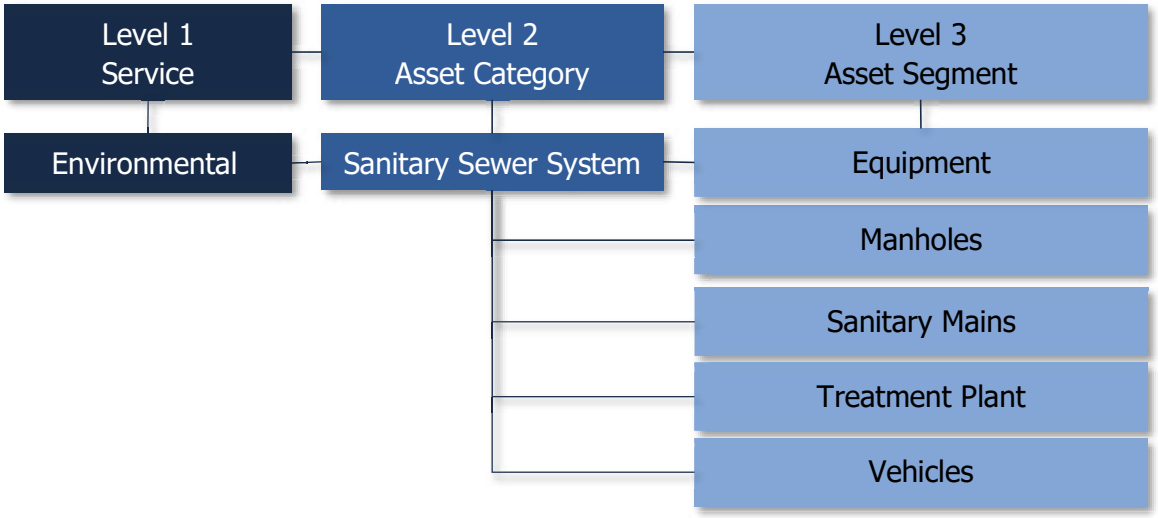
- Continue to measure current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5.2 Sanitary Services

The Municipality's Sanitary Services inventory is managed in CityWide™, and comprises 37 kilometres of sanitary mains, approximately 450 manholes, several sanitary facilities like treatment plants, and one vehicle.

5.2.1 Asset Hierarchy and Segmentation

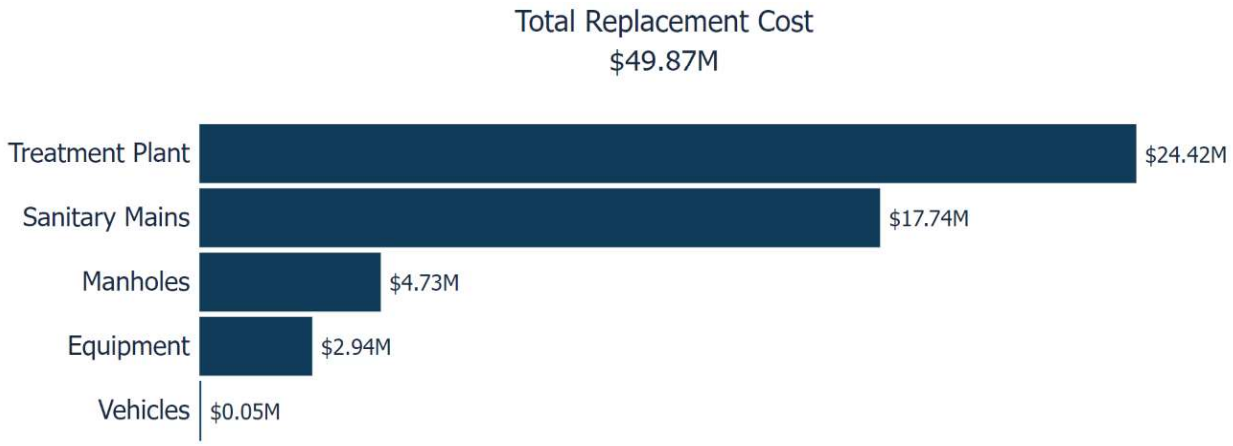
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



5.2.2 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Sanitary Services inventory.

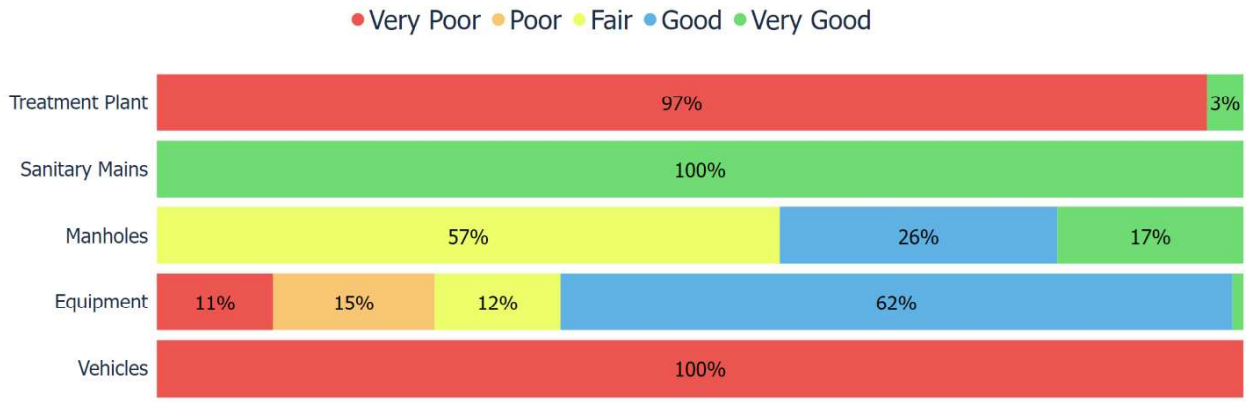
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Equipment	19	Historical Cost Inflation	$2,939,879
Manholes	450	Cost per unit	$4,725,000
Sanitary Mains	37 km	Cost per unit	$17,743,084
Treatment Plant	2	Historical Cost Inflation	$24,417,508
Vehicles	1	Historical Cost Inflation	$46,644
			$49,872,115



5.2.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Equipment	61%	Good	Age-based
Manholes	61%	Good	Age-based
Sanitary Mains	90%	Very Good	Age-based
Treatment Plant	3%	Very Poor	Age-based
Vehicles	0%	Very Poor	Age-based
	43%	**Fair**	



To ensure that the Municipality's Sanitary Services continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Sanitary Services.

Current Approach to Condition Assessment

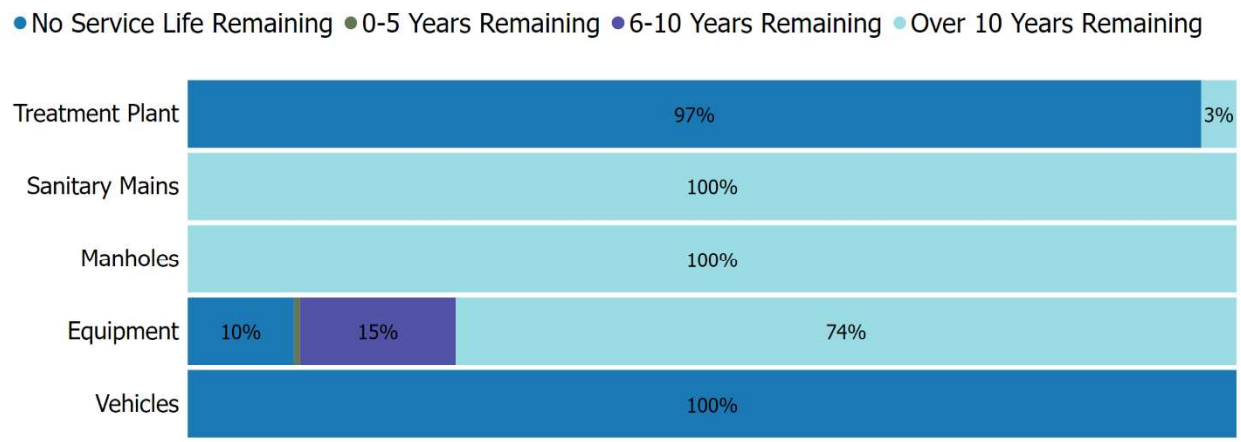
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:
There is no condition assessment program in place for the sanitary system currently and CCTV inspections are not completed regularly. Age-based estimates of condition are used to project current condition, although confidence in accuracy of these estimates is low.
Recent Condition Assessment Investments include:

- 2018 - CCTV inspections of main network.
- 2019 – Infratech CT zoom camera of manholes and inspection of sanitary network.
- 2022 – B.M. Ross (ongoing study) inflow and infiltration study in the town of Walkerton

5.2.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Sanitary Services assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Equipment	25 - 45	23.8	12.0
Manholes	35 - 80	31.1	48.8
Sanitary Mains	35 - 80	32.6	46.5
Treatment Plant	40	27.6	17.5
Vehicles	10	11.8	-1.8
		31.7	**46.8**



Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

5.2.5 Lifecycle Management Strategy

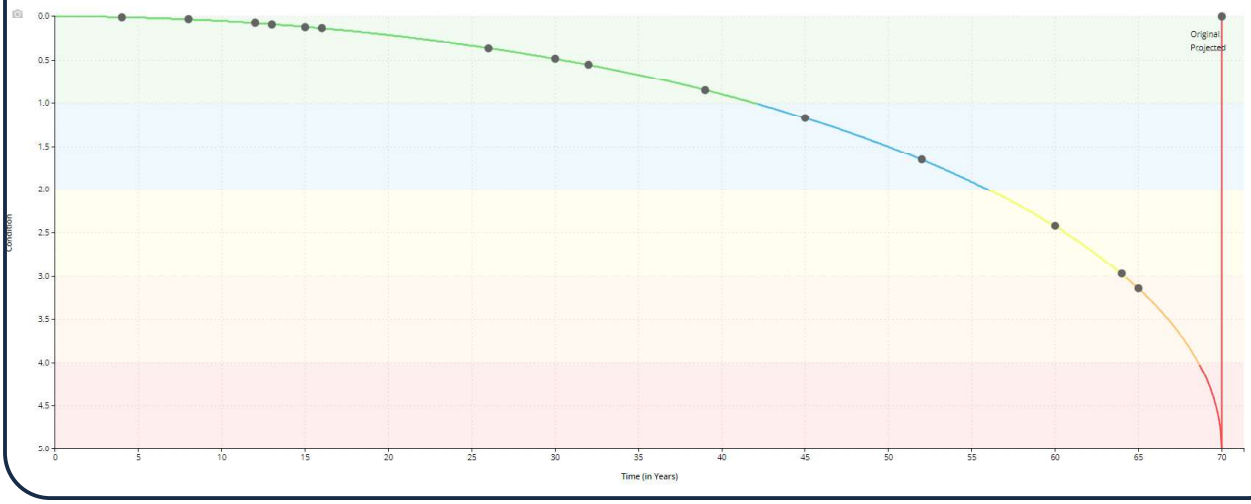
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Sewer flushing occurs annually with high priority areas to receive multiple flushing.
	Rodding boring is performed as needed as a response to reports/studies and inspections. Recommendations from the 2022 inflow and infiltration study will influence O&M strategies.
Rehabilitation/ Replacement	Rehabilitation projects are prioritized primarily by growth and capacity considerations, in addition to age
	Sanitary services are replaced through road reconstruction projects. High priority areas are identified, assessed, and strategized. Full reconstruction is based on the condition, surcharge/blockage events and growth etc.

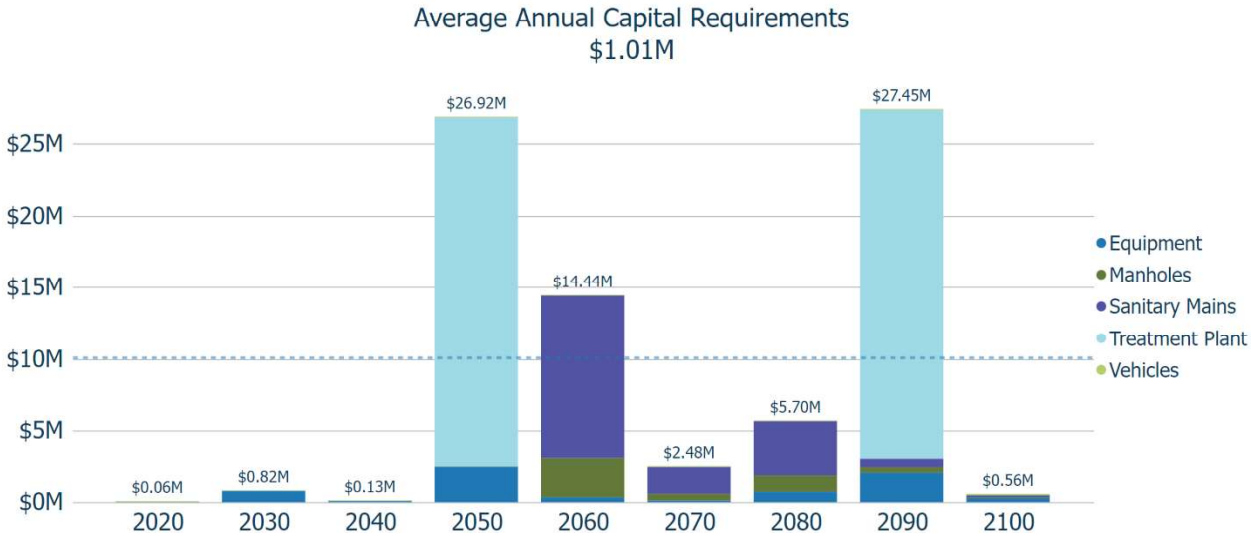
The following lifecycle strategy has been documented to formalize the current strategy used to manage the lifecycle of sanitary mains.

Sanitary Mains		
Event Name	**Event Class**	**Event Trigger**
Flushing/Cleaning	Maintenance	25% of the total network per year (four year cycle)
Smoke Testing	Preventative Maintenance	Repeat five times (every 13 years)
Camera Inspection	Preventative Maintenance	6.5% of the total network per year (15-year cycle)
Rodding/Boaring	Maintenance	3% of the total network per year (32-year cycle)
Asset Replacement	Replacement	Condition: 0



Forecasted Capital Requirements

Based on the current water services inventory, and assuming end-of-life replacement for all assets, the graph below provides an 80-year forecast. This projection is used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth.



The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

5.2.6 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Aging Infrastructure

The Municipality has an aging Wastewater Treatment Plant (WWTP) and aging sewage pumps which will impact capital investments in the future.

Infrastructure Re-investment

The system is funded through the non-taxable levy. The Municipality has a financial plan that addresses current and future repairs. The Municipality is always looking for acquiring grants/additional external funding for the road network capital projects. Some projects related to rehabilitation and renewal could be subject to funding opportunities.

Lifecycle Management Strategies

The Municipality has invested in PSD CityWide™ and is working towards developing asset lifecycle strategies.

Organizational Knowledge & Capacity

Both short- and long-term planning require the regular collection, storage, and maintenance of infrastructure data to support asset management decision-making. Staff note that it is an ongoing process to build internal capacity. Geographic Information System (GIS) will be taking to take a lead in building this capacity.

5.2.7 Levels of Service

The following tables identify the Municipality's current level of service for Sanitary Services. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Sanitary Services.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal Wastewater Services	The Municipality of Brockton has Wastewater services for the Town of Walkerton. Brockton has approximately 41.76 km of Wastewater main piping Please refer to the attached map (appendix B) for visual representation.
Reliability	Description of how combined sewers in the municipal Wastewater Services are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	There are no known combined sewers in Walkerton
Safety	Description of the frequency and volume of overflows in combined sewers in the municipal Wastewater Services that occur in habitable areas or beaches	There have been no recent sewer overflows (none since 2006)
Safety	Description of how stormwater can get into sanitary sewers in the municipal Wastewater Services, causing sewage to overflow into streets or backup into homes	There are like illegal connections such as roof drains, or sump pump connection that are connected to the sanitary sewers.

Service Attribute	Qualitative Description	Current LOS (2020)
Safety	Description of how sanitary sewers in the municipal Wastewater Services are designed to be resilient to stormwater infiltration	Periodic replacement of again sanitary sewers has taken place. In addition, budget is being reserved for a sewage infiltration study.
Safety	Description of the effluent that is discharged from sewage treatment plants in the municipal Wastewater Services	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Sanitary Services.

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties connected to the municipal Wastewater Services	49%
Reliability	# of events per year where combined sewer flow in the municipal Wastewater Services exceeds system capacity compared to the total number of properties connected to the municipal Wastewater Services	0
Reliability	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal Wastewater Services	0
Reliability	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal Wastewater Services	0
Performance	Capital re-investment rate	0.68%

5.2.8 Recommendations

Asset Inventory

- Continue to refine and consolidate asset data into the central asset inventory to ensure all relevant assets are accounted for.
- Review and revise replacement costs and critical asset attribute data on a regular basis.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk sanitary sewer assets.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Lifecycle Management Strategies

- A trenchless re-lining strategy is expected to extend the service life of sanitary mains at a lower total cost of ownership and should be implemented to extend the life of infrastructure at the lowest total cost of ownership.
- Evaluate the efficacy of the Municipality's lifecycle management strategies at regular intervals to determine the impact cost, condition, and risk.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

6 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure

- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

6.1 Description of Growth Assumptions

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

6.1.1 Walkerton Community Official Plan (October 2009)

Walkerton is a thriving centre of 5,000 people situated in the southeast corner of Bruce County along the banks of the Saugeen River. In 1999 the Town of Walkerton amalgamated with the Townships of Brant and Greenock to form the new Municipality of Brockton.

The Municipality adopted the Official Plan for the Walkerton Community in October 2009. This Plan contains goals, objectives and policies established primarily to manage and direct physical change and the effects on the social, economic, built, and natural environment of the municipality. These goals include:

- To strengthen the downtown area as the commercial, entertainment and administrative centre of Brockton and the surrounding area.
- To ensure sufficient lands are provided for highway commercial uses and provide a balanced commercial base that serves the need of area residents and visitors.
- To promote a mixed and affordable supply of housing to meet the present and future needs of all segments of the community.
- To provide a positive economic climate to attract industry, encourage private investment, create a wide range of employment opportunities, and enhance a balanced municipal assessment base.
- To promote the attraction and retention of light and environmentally clean industry
- to diversify the economic base and provide employment opportunities.
- To support and maintain Walkerton's position as a focal point in Bruce County by enhancing existing regional and community institutions for their economic, social, and cultural importance.
- To protect and preserve lands exhibiting sensitive natural heritage features.
- To protect and preserve lands having inherent physical and environmental constraints to development, in order to avoid potential danger to life or property from the use of such lands.
- To ensure a broad range of recreation and open space opportunities are available for all residents and visitors.
- To protect and enhance Walkerton's built, landscape and archaeological heritage, for its cultural, historic, aesthetic, and economic value.
- To protect and enhance Walkerton's healthy environment by minimizing air, water, and land pollution, and through the wise use of the area's natural resources.
- To improve community facilities and infrastructure to address social, environmental, and economic needs of the community.

- To provide a full range of affordable municipal services to meet the economic, social, and environmental needs of the community.
- To provide a transportation network which allows for the efficient movement of goods and people and facilitates economic activities within the community.
- To encourage the enhancement and, where possible, protect and preserve those lands comprising the Walkerton Natural Heritage System.

The Official Plan is based on a planning period to the year 2026. The designation of lands in this Plan should allow an ample surplus to provide for effective market operation, competition, and choice.

The population forecast for the Walkerton community is set out as follows:

Year	Population	Data Type
2006	4,905	Historical
2016	4,778	Forecast
2026	5,778	Forecast

the Community would require approximately 417 new housing units between 2016 and 2026.

In terms of water and wastewater:

- The Walkerton Water Treatment System (WTS) has a capacity of 7,500m3/day and the current average use is around 2,300m3/day (2016 data). The WTS has sufficient capacity to handle the projected increase in population to 2026.
- The Walkerton Sewage Treatment Plant (STP) has a capacity of 7,550m3/day and the current average is around 2,500m3/day (2016 data). The STP has sufficient capacity to handle the projected increase in population to 2026.

The most recent consolidation of the plan occurred in September of 2017.

6.1.2 County of Bruce Official Plan (May 1997)

In 1997, the County Council of Bruce County adopted the Official Plan to establish a policy framework to guide the physical, social, and economic development of the County and to protect the natural environment with the County to the year 2021.

The most recent consolidation of the plan occurred in September of 2017.

Through this Official Plan it is County Council's intent to:

- Achieve an orderly pattern of settlement
- Protect and conserve good agricultural land
- Protect and when possible, enhance the quality of the natural environment
- Encourage economic development and prosperity
- Encourage necessary social, cultural, and educational facilities and services.

The Counties is responsible for the allocation of growth to the local municipalities, which is based on a combination of local factors including: local planning policy; historic and recent growth trends; market demand; and the capacity to accommodate growth from land supply and servicing perspectives.

The following table outlines the population and employment forecasts allocated to Brockton.

	2011	2016	2021
Population Forecast – Brockton	9,087	8,905	8,727
Population Forecast – Bruce County	66,101	67,818	67,866
Employment Forecast – Brockton	4,995	4,895	4,798
Employment Forecast – Bruce County	35,390	36,309	36,335

The Official Plan projects the population of Brockton to decline at a slow rate or remain stable as a result of the aging of the population and slower growth in agricultural employment.

New extended forecasted growth projections to the year 2046 are available from the Good Growth Discussion Paper forming part of the Plan the Bruce, Bruce County Official Plan Review. The population forecast for the Municipality of Brockton from the Good Growth Discussion Paper are set out as follows:

Total Employment Forecast Projections Brockton Good Growth Discussion Paper

Period	Population	Total	N.F.P.O.W. *	Total Employment (Including N.F.P.O.W.)
2016	9,700	3,830	590	4,420
2021	10,000	4,050	620	4,670
2026	10,700	4,350	680	5,030
2031	11,500	4,620	730	5,350
2036	12,200	4,880	770	5,650
2041	12,800	5,100	810	5,910
2046	13,200	5,260	830	6,090
		Incremental Change		
2016 - 2021	300	220	30	250
2016 - 2026	1,000	520	90	610
2016 - 2036	2,500	1,050	180	1,230
2016 - 2046	3,500	1,430	240	1,670

Statistics Canada defines no fixed place of work (N.F.P.O.W.) employees as "persons who do not go from home to the same workplace location at the beginning of each shift". Such persons include building and landscape contractors, travelling salespersons, independent truck drivers, etc.

6.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, the Municipality's asset management plan must include a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy.

Planning for forecasted population growth may require the expansion of existing infrastructure and services. As growth-related assets are constructed or acquired, they should be integrated into the Municipality's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Municipality will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

7 Financial Strategy

7.1 Financial Strategy Overview

For an asset management plan to be effective and meaningful, it must be integrated with a long-term financial plan (LTFP). The development of a comprehensive financial plan will allow Municipality of Brockton to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

This report develops such a financial plan by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following components:

1) The financial requirements for:
    a) Existing assets
    b) Existing service levels
    c) Requirements of contemplated changes in service levels (none identified for this plan)
    d) Requirements of anticipated growth (none identified for this plan)
2) Use of traditional sources of municipal funds:
    a) Tax levies
    b) User fees
    c) Reserves
    d) Debt
    e) Development charges
3) Use of non-traditional sources of municipal funds:
    a) Reallocated budgets
    b) Partnerships
    c) Procurement methods
4) Use of Senior Government Funds:
    a) Gas tax
    b) Annual grants

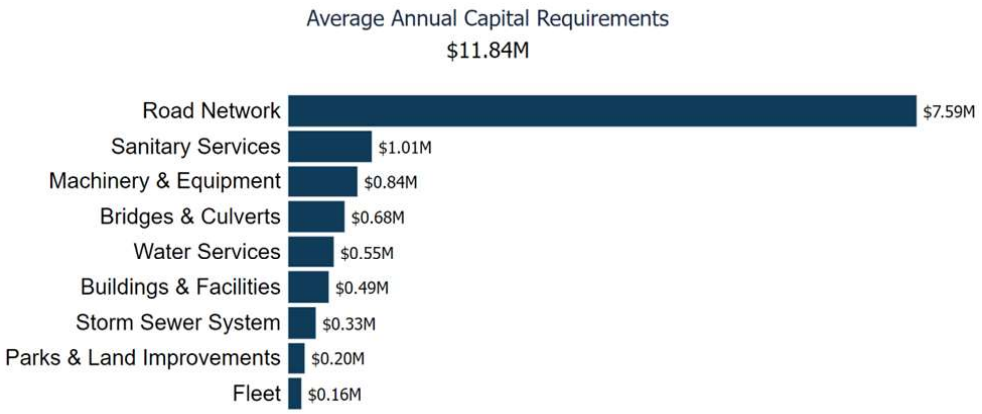
Note: Periodic grants are normally not included due to Provincial requirements for firm commitments. However, if moving a specific project forward is wholly dependent on receiving a one-time grant, the replacement cost included in the financial strategy is the net of such grant being received.

If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Municipality's approach to the following:
In order to reduce financial requirements, consideration has been given to revising service levels downward.
All asset management and financial strategies have been considered. For example:
If a zero-debt policy is in place, is it warranted? If not the use of debt should be considered.
Do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Municipality should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. In total, the Municipality must allocate approximately $11.84 million annually to address capital requirements for the assets included in this AMP.



For most asset categories the annual requirement has been calculated based on a "replacement only" scenario, in which capital costs are only incurred at the construction and replacement of each asset.

However, for the Road Network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Municipality's roads and sanitary sewer mains respectively. The development of these strategies

allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the Road Network and Sanitary Sewer Network:

1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$9,451,986	$7,585,201	$1,866,785

The implementation of a proactive lifecycle strategy roads leads to an annual cost avoidance of $1,867,000 for Road Network. This represents an overall decrease of the annual requirement of 20% for Road Network. As the lifecycle strategy scenario represents the lowest cost option available to the Municipality, we have used these annual requirements in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $2.16 million towards capital projects per year. Given the annual capital requirement of $10.28 million, there is currently a funding gap of $8.12 million annually.

7.2 Funding Objective

We have developed a scenario that would enable Brockton to achieve full funding within 1 to 20 years for the following assets:

Tax Funded Assets: Bridges & Culverts, Buildings & Facilities, Fleet, Machinery & Equipment, Parks & Land Improvements, Road Network and Storm Sewer System
Rate-Funded Assets: Sanitary Services and Water Services

Note: For the purposes of this AMP, we have excluded gravel roads since they are a perpetual maintenance asset and end of life replacement calculations do not normally apply. If gravel roads are maintained properly, they can theoretically have a limitless service life.

For each scenario developed we have included strategies, where applicable, regarding the use of cost containment and funding opportunities.

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

The following tables show, by asset category, Brockton's average annual asset capital expenditure (Capex) requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement	Annual Funding Available					Annual Deficit
		Taxes	Gas Tax	OCIF	Capital Reserve	Total Available	
Bridges & Culverts	$681,000	$0	$0	$0	$0	$0	$681,000
Builldings & Facilities	$489,000	$109,000	$0	$0	$392,000	$501,000	($12,000)
Fleet	$158,000	$0	$0	$0	$0	$0	$158,000
Machinery & Equipment	$836,000	$33,000	$0	$0	$171,000	$204,000	$632,000
Parks & Land Improvements	$198,000	$18,000	$0	$0	$98,000	$116,000	$82,000
Road Network	$7,585,000	$76,000	$287,000	$302,000	$675,000	$1,340,000	$6,245,000
Storm Sewer System	$332,000	$0	$0	$0	$0	$0	$332,000
	$10,279,000	**$236,000**	**$287,000**	**$302,000**	**$1,336,000**	**$2,161,000**	**$8,118,000**

The average annual investment requirement for the above categories is $10.28 million. Annual revenue currently allocated to these assets for capital purposes is $2.16 million leaving an annual deficit of $8.12 million. Put differently, these infrastructure categories are currently funded at 21% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2020, Municipality of Brockton has annual tax revenues of $9.68 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Bridges & Culverts	7%
Buildings & Facilities	-0.1%
Fleet	1.6%
Machinery & Equipment	6.5%
Parks & Land Improvements	0.8%
Road Network	64.5%
Storm Sewer System	3.4%
Total	**83.7%**

The following changes in costs and/or revenues over the next number of years should also be considered in the financial strategy:

a) Brockton's formula based OCIF grant is scheduled to grow from $296,000 in 2019 to $302,000 in 2020.
b) Brockton's debt payments for these asset categories will be decreasing by $488,000 over the next 5 years and by $389,000 over the next 10 years. Although not shown in the table, debt payment decreases will be $291,000 and $95,000 over the next 15 and 20 years respectively.

Our recommendations include capturing the above changes and allocating them to the infrastructure deficit outlined above. The table below outlines this concept and presents several options:

	Without Capturing Changes				With Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$8,118,000	$8,118,000	$8,118,000	$8,118,000	$8,118,000	$8,118,000	$8,118,000	$8,118,000
Change in Debt Costs	N/A	N/A	N/A	N/A	($446,000)	-($545,000)	($643,000)	($839,000)
Change in OCIF Grants	N/A	N/A	N/A	N/A	-	-	-	-
Resulting Infrastructure Deficit:	**$8,118,000**	**$8,118,000**	**$8,118,000**	**$8,118,000**	**$7,672,000**	**$7,573,000**	**$7,475,000**	**$7,279,000**
Tax Increase Required	83.8%	83.8%	83.8%	83.8%	79.2%	78.2%	77.2%	75.2%
Annually:	**12.93%**	**6.27%**	**4.14%**	**3.09%**	**12.34%**	**5.94%**	**3.88%**	**2.84%**

7.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 20-year option. This involves full Capex funding being achieved over 20 years by:

a. when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
b. increasing tax revenue by 2.84% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c. adjusting tax revenue increases in future year(s) when allocations to Capex exceed or fail to meet budgeted amounts.
d. allocating the current gas tax and OCIF revenue as outlined previously.
e. allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
f. reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
g. increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included any applicable OCIF formula-based funding since this funding is a multi-year commitment[1].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full Capex funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $2.33 million for the Bridges & Culverts, $10.22 million for Buildings & Facilities, $959,000 for the Fleet, $5.86 million for Machinery & Equipment, $720,000 for Parks & Land Improvements, $2.19 million for Road Network and $14,000 Storm Sewer System.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

1 The Municipality should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. This review may impact its availability.

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

The following tables show, by asset category, Brockton's average annual Capex investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.[2]

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations and Debt Payment	Allocated to Reserves	Total Available	
Sanitary Services	$1,010,000	$1,295,000	$955,000	$340,000	$340,000	$670,00
Water Services	$550,000	$1,199,000	$1,066,000	$133,000	$133,000	$417,000
	$1,560,000	**$2,494,000**	**$2,021,000**	**$473,000**	**$473,000**	**$1,087,000**

The average annual Capex requirement for the above categories is $1.56 million. Annual revenue currently allocated to these assets for capital purposes is $473,000 leaving an annual deficit of $1.09 million. Put differently, these infrastructure categories are currently funded at 30% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2020, Brockton had annual Sanitary Services revenues of $1.29 million and annual Water Services revenues of $1.2 million. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Tax Change Required for Full Funding
Sanitary Services	51.7%
Water Services	34.8%

In the following tables, we have expanded the above scenario to present multiple options. Due to the significant increases required, we have provided phase-in options of up to 20 years:

[2] The Municipality has developed a financial plan spanning to 2025 for sanitary and water services. The financial plan includes growth requirements. On the other hand, this asset management plan focuses on existing infrastructure and the funding levels required to maintain the current levels of service provided by the Municipality.

	Sanitary Services				Water Services			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$670,000	$670,000	$670,000	$670,000	$417,000	$417,000	$417,000	$417,000
Tax Increase Required	51.7%	51.7%	51.7%	51.7%	34.8%	34.8%	34.8%	34.8%
Annually:	**8.69%**	**4.26%**	**2.82%**	**2.11%**	**6.15%**	**3.03%**	**2.01%**	**1.5%**

7.4.3 Financial Strategy Recommendations

Considering the above information, we recommend the 20-year option. This involves full Capex funding being achieved over 20 years by:

a) increasing rate revenues by 2.11% for Water Services & by 1.5% for Sanitary Services each year for the next 20 years.
b) these rate revenue increases are solely for the purpose of phasing in full funding to the respective asset categories covered in this AMP.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. This periodic funding should not be incorporated into an AMP unless there are firm commitments in place.
2. We realize that raising rate revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this strategy achieves full Capex funding for rate-funded assets over 20 years, the recommendation does require prioritizing capital projects to fit the annual funding available. Current data shows a pent-up investment demand of $23.9 million for the Sanitary Services and $185,000 for the Water Services.

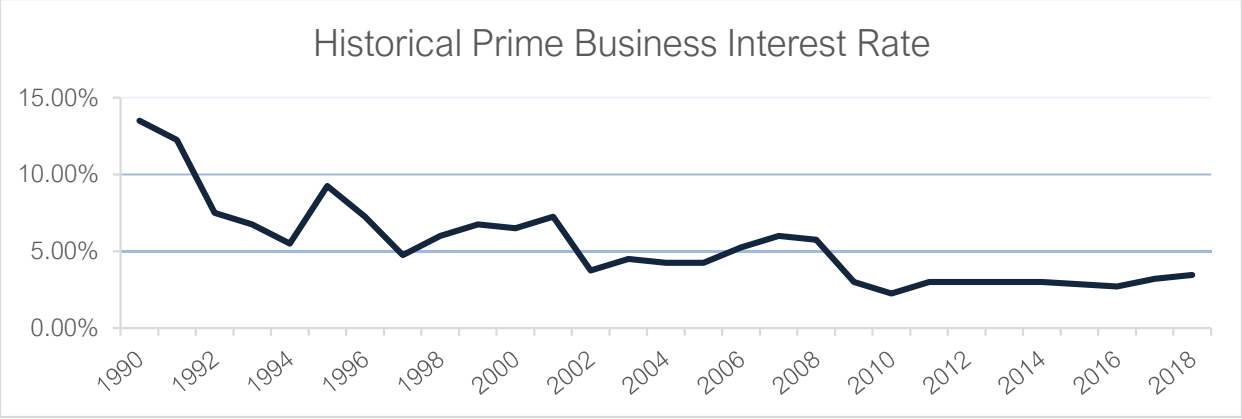
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

7.6 Use of Debt

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 3.0%[3] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

Interest Rate	Number of Years Financed					
	5	10	15	20	25	30
7.0%	22%	42%	65%	89%	115%	142%
6.5%	20%	39%	60%	82%	105%	130%
6.0%	19%	36%	54%	74%	96%	118%
5.5%	17%	33%	49%	67%	86%	106%
5.0%	15%	30%	45%	60%	77%	95%
4.5%	14%	26%	40%	54%	69%	84%
4.0%	12%	23%	35%	47%	60%	73%
3.5%	11%	20%	30%	41%	52%	63%
3.0%	9%	17%	26%	34%	44%	53%
2.5%	8%	14%	21%	28%	36%	43%
2.0%	6%	11%	17%	22%	28%	34%
1.5%	5%	8%	12%	16%	21%	25%
1.0%	3%	6%	8%	11%	14%	16%
0.5%	2%	3%	4%	5%	7%	8%
0.0%	0%	0%	0%	0%	0%	0%

It should be noted that current interest rates are near all-time lows. Sustainable funding models that include debt need to incorporate the risk of rising interest rates. The following graph shows where historical lending rates have been:



[3] Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

A change in 15-year rates from 3% to 6% would change the premium from 26% to 54%. Such a change would have a significant impact on a financial plan.

The following tables outline how Brockton has historically used debt for investing in the asset categories as listed. There is currently $6.96 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $934,000, well within its provincially prescribed maximum of $3 million.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2016	2017	2018	2019	2020
Bridges & Culverts	$0	$0	$0	$0	$0	$0
Buildings & Facilities	$1,379,000	$1,620,00	$0	$0	$0	$0
Fleet	$0	$0	$0	$0	$0	$0
Machinery & Equipment	$0	$0	$0	$0	$0	$0
Parks & Land Improvements	$1,290,000	$0	$0	$0	$0	$0
Road Network	$4,290,000	$0	$1,650,000	$650,000	$1,424,000	$316,000
Storm Sewer System	$0	$0	$0	$0	$0	$0
Total Tax Funded:	**$6,959,000**	**$1,620,00**	**$1,650,000**	**$650,00**	**$1,424,000**	**$316,000**
Sanitary Services	$0	$0	$0	$0	$0	$0
Water Services	$0	$0	$0	$0	$0	$0
Total Rate Funded:	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2020	2021	2022	2023	2024	2025	2030
Bridges & Culverts	$0	$0	$0	$0	$0	$0	$0
Buildings & Facilities	$241,000	$426,000	$102,000	$140,000	$81,000	$81,000	$81,000
Fleet	$0	$0	$0	$0	$0	$0	$0
Machinery & Equipment	$0	$0	$0	$0	$0	$0	$0
Park & Land Improvements	$191,000	$178,000	$158,000	$158,000	$131,000	$93,000	$63,000
Road Network	$502,000	$520,000	$508,00	$478,000	$458,000	$314,000	$245,000
Storm Sewer System	$0	$0	$0	$0	$0	$0	$0
Total Tax Funded:	**$934,000**	**$1,124,000**	**$768,000**	**$776,000**	**$670,000**	**$488,000**	**$389,000**
Sanitary Services	$0	$0	$0	$0	$0	$0	$0
Water Services	$0	$0	$0	$0	$0	$0	$0
Total Rate Funded:	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

The revenue options outlined in this plan allow Brockton to fully fund its long-term infrastructure requirements without further use of debt.

7.7 Use of Reserves

7.7.1 Available Reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
b) financing one-time or short-term investments
c) accumulating the funding for significant future infrastructure investments
d) managing the use of debt
e) normalizing infrastructure funding requirement

By asset category, the table below outlines the details of the reserves currently available to Brockton.

Asset Category	Balance on December 31, 2020
Bridges & Culverts	$0
Buildings & Facilities	$950,000
Fleet	$402,000
Machinery & Equipment	$550,000
Parks & Land Improvements	$119,000
Road Network	$3,496,000
Storm Sewer System	$0
Total Tax Funded:	**$5,517,000**
Sanitary Services	$437,000
Water Services	$0
Total Rate Funded:	**$437,000**

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Municipality should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should consider when determining their capital reserve requirements include:

a) breadth of services provided
b) age and condition of infrastructure
c) use and level of debt

d) economic conditions and outlook
e) internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Brockton's judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

7.7.2 Recommendation

In 2024, Ontario Regulation 588/17 will require Brockton to integrate proposed levels of service for all asset categories in its asset management plan update. We recommend that future planning should reflect adjustments to service levels and their impacts on reserve balances.

8 Appendices

Key Insights

- Appendix A identifies projected 10-year capital requirements for each asset category
- Appendix B includes several maps that have been used to visualize the current level of service
- Appendix C identifies the criteria used to calculate risk for each asset category
- Appendix D provides additional guidance on the development of a condition assessment program

8.1 Appendix A: 10-Year Capital Requirements

The following tables identify the capital cost requirements for each of the next 10 years in order to meet projected capital requirements and maintain the current level of service.

Road Network											
Asset Segment	**Backlog**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Gravel & Dirt Roads	$0	$0	$991,222	$0	$0	$991,222	$532,285	$0	$0	$0	$0
Hot Mix Roads	$6,249,165	$262,111	$1,600,854	$826,327	$2,427,140	$1,011,226	$2,550,450	$0	$50,145	$376,433	$313,058
Sidewalks	$1,257,889	$120,505	$190,179	$414,187	$0	$0	$357,382	$0	$367,365	$0	$294,417
Streetlights	$319,646	$0	$123,398	$0	$123,398	$0	$0	$123,398	$0	$123,398	$0
Surface Treated Roads	$83,621	$105,209	$1,910,154	$0	$275,328	$138,988	$400,548	$83,621	$105,209	$1,910,154	$0
	$7,910,321	**$487,824**	**$4,815,806**	**$1,240,514**	**$2,825,865**	**$2,141,436**	**$3,840,666**	**$207,019**	**$522,719**	**$2,409,984**	**$607,475**

Bridges & Culverts											
Asset Segment	**Backlog**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Bridges	$2,328,500	$292,500	$1,373,000	$2,525,750	$0	$695,000	$0	$0	$0	$0	$21,720,955
Structural Culverts	$0	$0	$37,500	$0	$0	$0	$231,000	$0	$0	$0	$0
	$2,328,500	**$292,500**	**$1,410,500**	**$2,525,750**	**$0**	**$695,000**	**$231,000**	**$0**	**$0**	**$0**	**$21,720,955**

Storm Sewer System

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Catch Basins	$14,000	$0	$0	$0	$0	$3,647,000	$0	$0	$0	$0	$119,000
Manholes	$0	$0	$0	$0	$0	$129,600	$0	$0	$0	$0	$28,800
Storm Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Outfalls	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$14,000	**$0**	**$0**	**$0**	**$0**	**$3,776,600**	**$0**	**$0**	**$0**	**$0**	**$147,800**

Buildings & Facilities

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Health Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protective Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation and Cultural Services	$8,761,600	$0	$0	$0	$0	$0	$0	$372,900	$0	$8,040	$585,000
Social and Family Services	$847,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation Services	$609,700	$0	$0	$0	$0	$0	$0	$704,800	$0	$0	$1,213,400
	$10,218,800	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,077,700**	**$0**	**$8,040**	**$1,798,400**

Machinery & Equipment

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Environmental Services	$0	$0	$0	$0	$75,980	$0	$9,021	$0	$155,329	$5,562	$0
General Government	$194,325	$64,377	$0	$13,975	$0	$65,714	$39,211	$146,065	$65,910	$210,848	$64,377
Protective Services	$16,805	$0	$17,241	$7,723	$189,277	$35,510	$57,206	$69,464	$83,286	$66,127	$0
Recreation & Cultural Services	$738,952	$0	$41,323	$8,223	$41,202	$166,078	$40,291	$30,061	$202,059	$423,810	$16,713
Social & Family Services	$112,608	$0	$0	$10,766	$73,233	$24,429	$0	$18,016	$0	$119,246	$0
Transportation Services	$5,855,552	$0	$382,353	$313,432	$292,886	$25,464	$0	$275,119	$350,133	$239,138	$0
	$6,918,242	**$64,377**	**$440,917**	**$354,119**	**$672,578**	**$317,195**	**$145,729**	**$538,725**	**$856,717**	**$1,064,731**	**$81,090**

Fleet											
Asset Segment	**Backlog**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
General Government	$0	$13,476	$0	$0	$0	$0	$0	$0	$0	$0	$13,476
Protective Services	$582,750	$0	$0	$0	$0	$0	$0	$0	$0	$328,409	$0
Recreation & Cultural Services	$20,122	$0	$0	$0	$27,431	$0	$0	$19,519	$0	$20,122	$0
Transportation Services	$356,259	$33,599	$33,599	$71,565	$33,599	$33,599	$33,599	$33,599	$33,599	$356,259	$33,599
	$959,131	**$47,075**	**$33,599**	**$71,565**	**$61,030**	**$33,599**	**$33,599**	**$53,118**	**$33,599**	**$704,790**	**$47,075**

Parks & Land Improvements

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Lights & Fencing	$66,072	$0	$0	$0	$0	$0	$5,047	$0	$0	$66,072	$0
Municipal Drains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Park Appurtenances	$26,776	$0	$0	$0	$0	$0	$0	$0	$0	$26,776	$0
Parking Lots & Trails	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pavilions	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pedestrian Bridge	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Picnic Shelters & Furniture	$94,753	$0	$0	$0	$0	$8,618	$7,548	$0	$0	$65,874	$0
Playgrounds & Splashpad	$243,258	$0	$0	$0	$0	$200,762	$99,324	$132,544	$0	$118,697	$0
Sport Fields & Courts	$285,673	$0	$0	$0	$132,828	$0	$83,853	$0	$0	$270,851	$0
	$716,532	**$0**	**$0**	**$0**	**$132,828**	**$209,380**	**$195,772**	**$132,544**	**$0**	**$548,270**	**$0**

Water Services

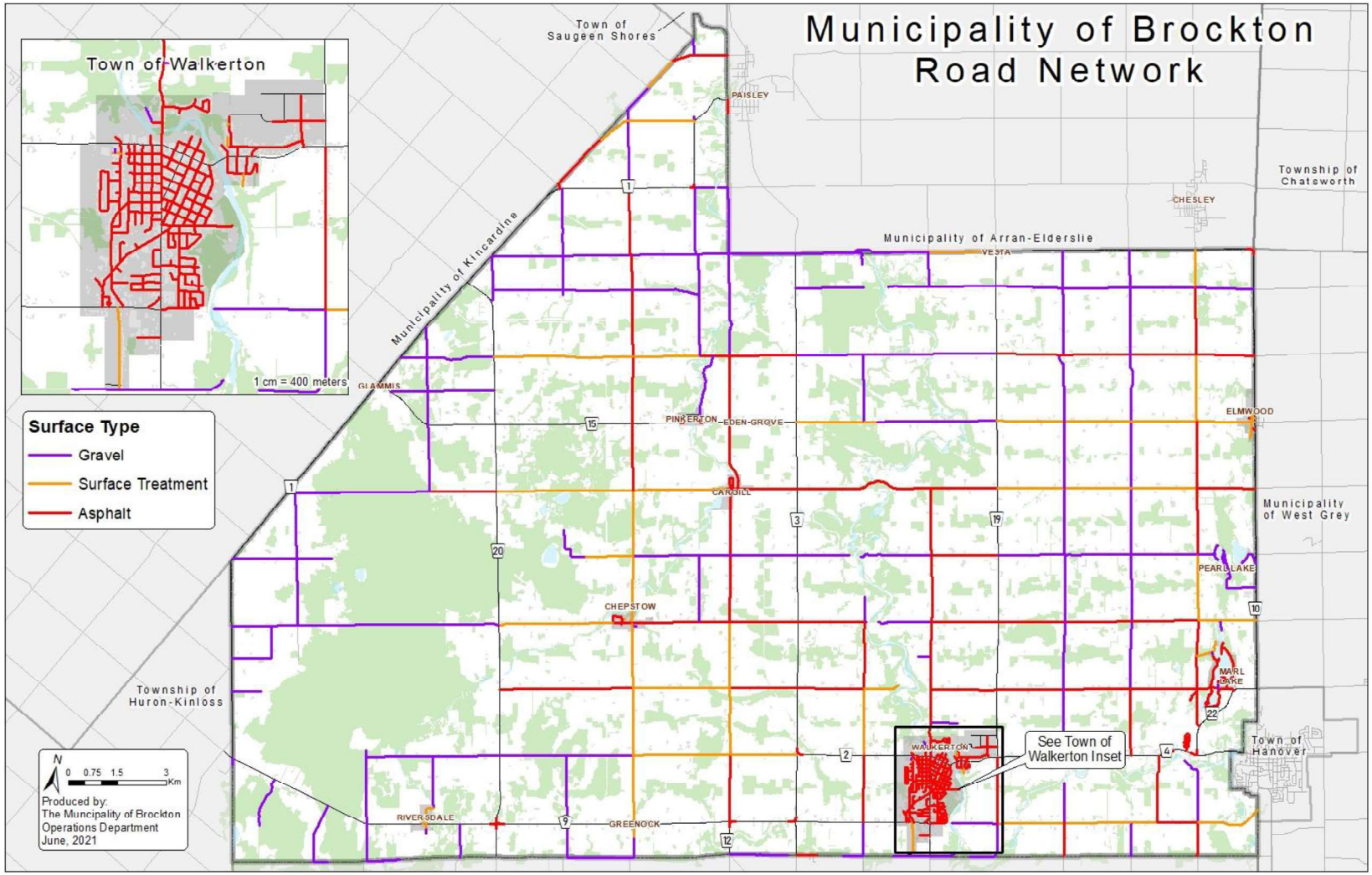
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Equipment	$100,030	$772,869	$0	$0	$0	$0	$29,919	$0	$92,663	$130,748	$448,951
Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pumphouse	$141,000	$0	$0	$0	$0	$0	$0	$0	$422,900	$0	$0
Valves	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Mains	$0	$315,000	$1,500,000	$0	$350,000	$350,000	$350,000	$0	$0	$0	$0
Water Tower	$0	$5,000	$0	$350,000	$0	$0	$0	$0	$0	$0	$0
	$241,030	**$1,092,869**	**$1,500,000**	**$350,000**	**$350,000**	**$350,000**	**$379,919**	**$0**	**$515,563**	**$130,748**	**$448,951**

Sanitary Services

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Equipment	$297,811	$0	$0	$0	$17,096	$0	$0	$0	$0	$0	$0
Manholes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Treatment Plant	$23,600,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Vehicles	$46,644	$0	$0	$0	$0	$0	$0	$0	$0	$46,644	$0
	$23,944,455	**$0**	**$0**	**$0**	**$17,096**	**$0**	**$0**	**$0**	**$0**	**$46,644**	**$0**

8.2 Appendix B: Level of Service Maps/Images

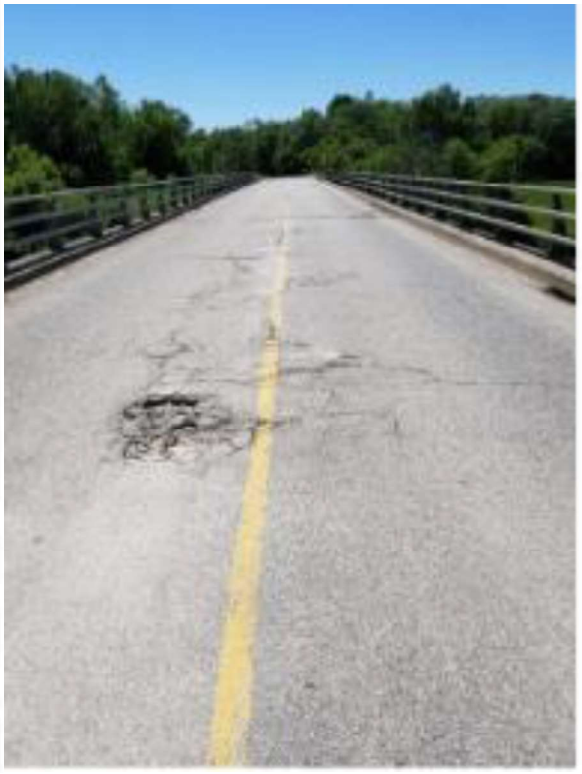
Road Network Maps



Bridges & Culverts Images

Weis Memorial Bridge – BCI: 65

Weis Memorial Bridge – BCI: 65

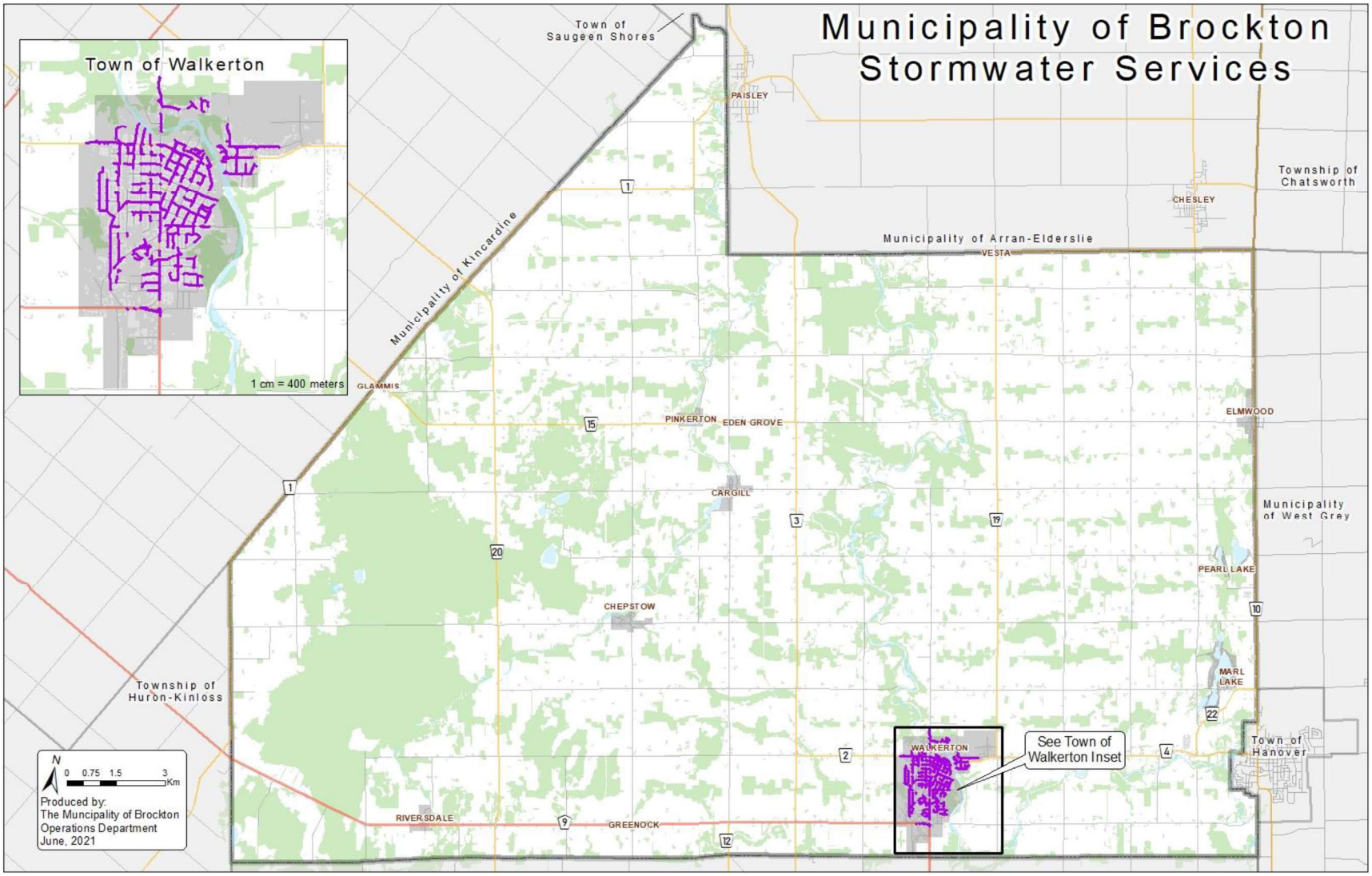


Riversdale Bridge – BCI: 33

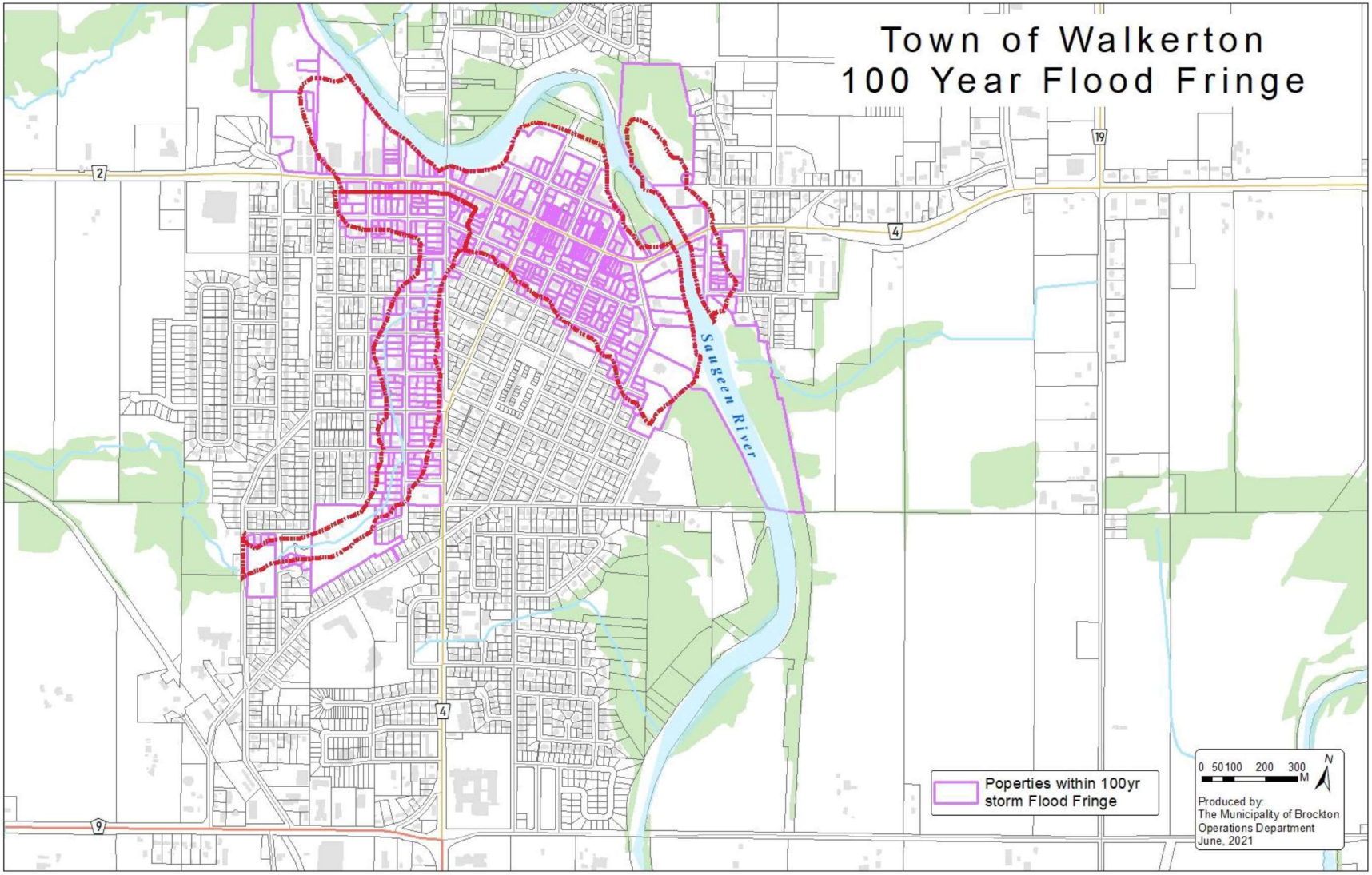
Riversdale Bridge – BCI: 33

Storm Sewer System Maps

Storm Sewer System Map – Brockton

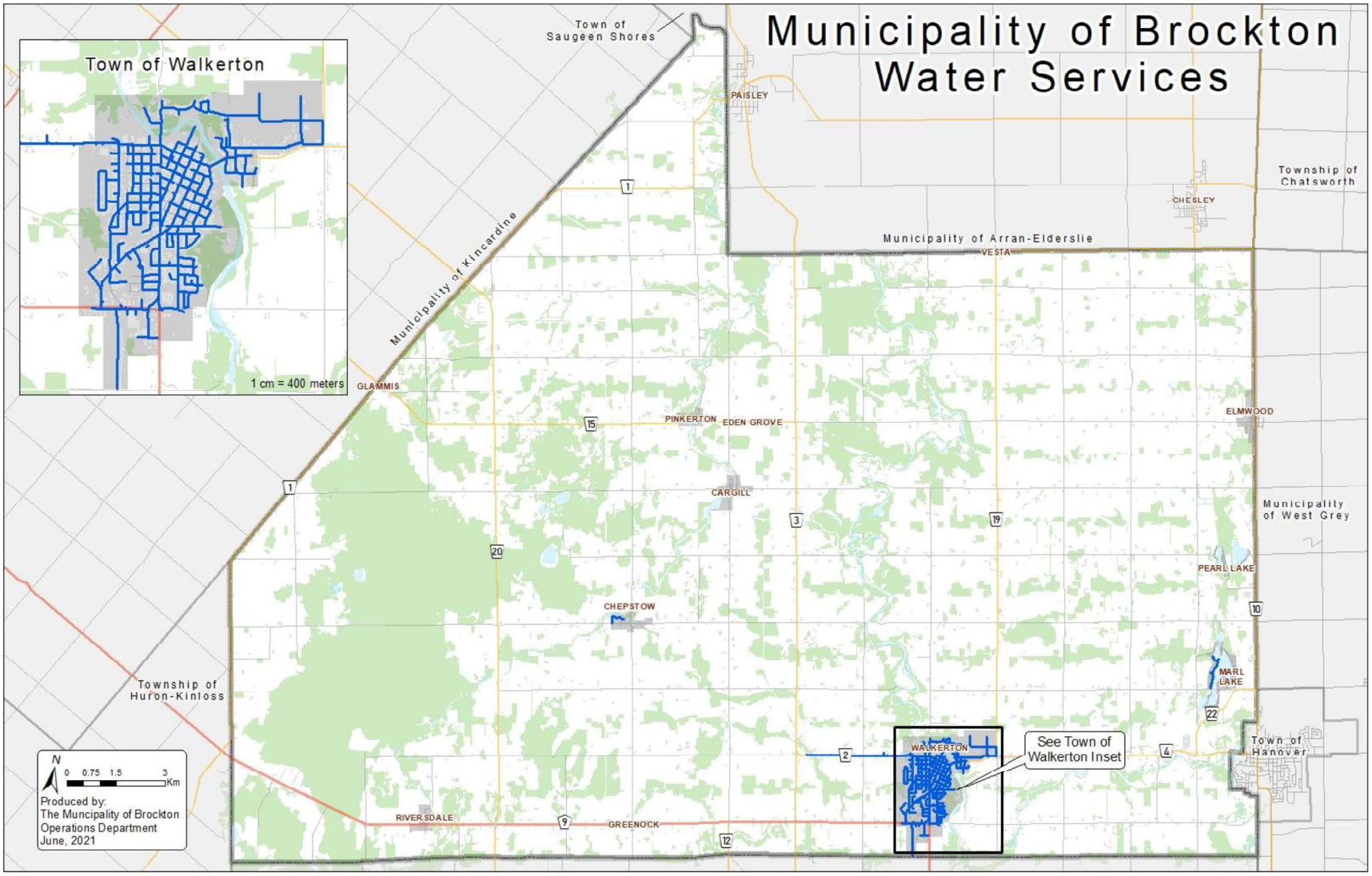


Flood Fringe Map – Brockton

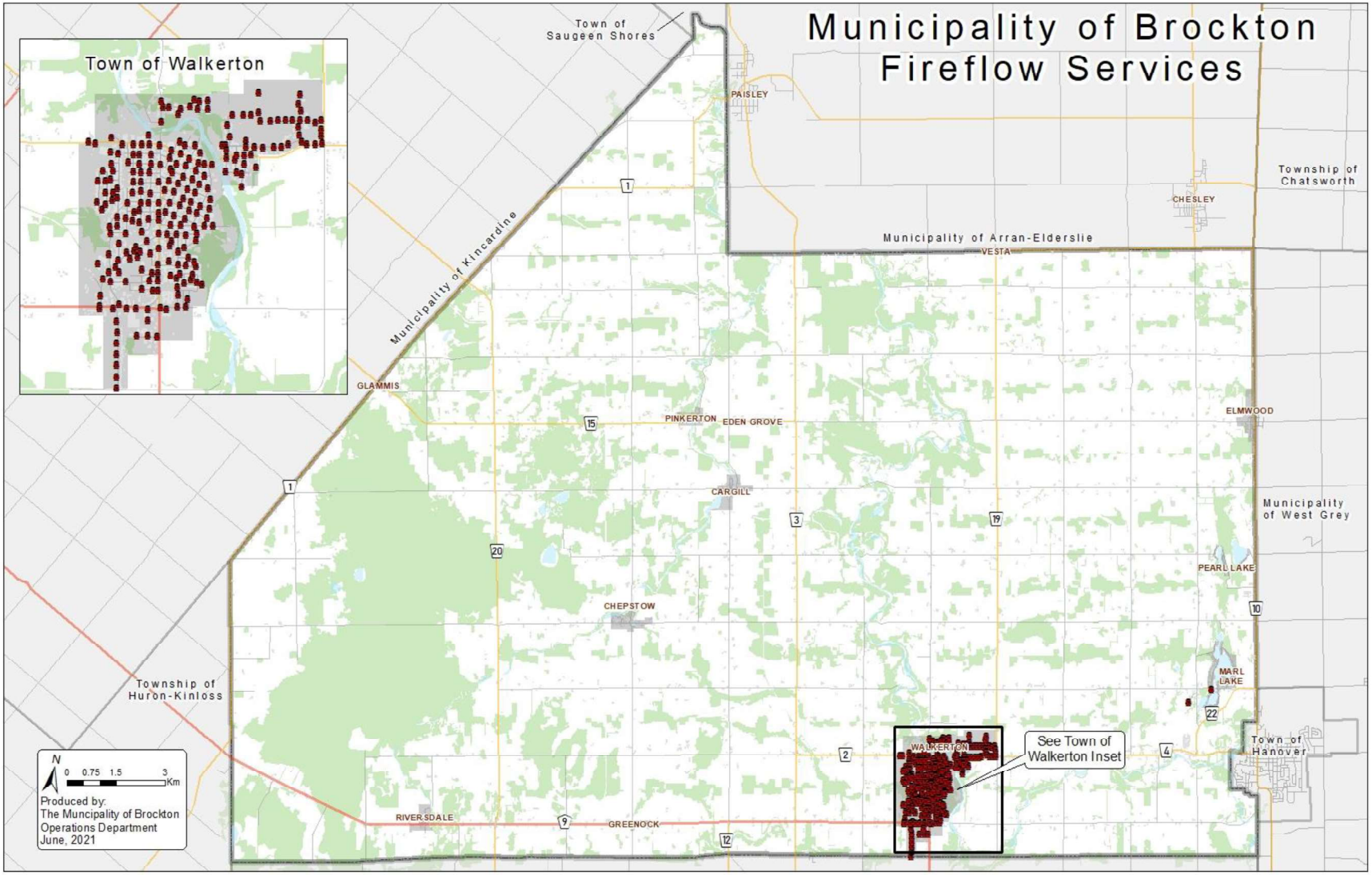


Water Services Maps

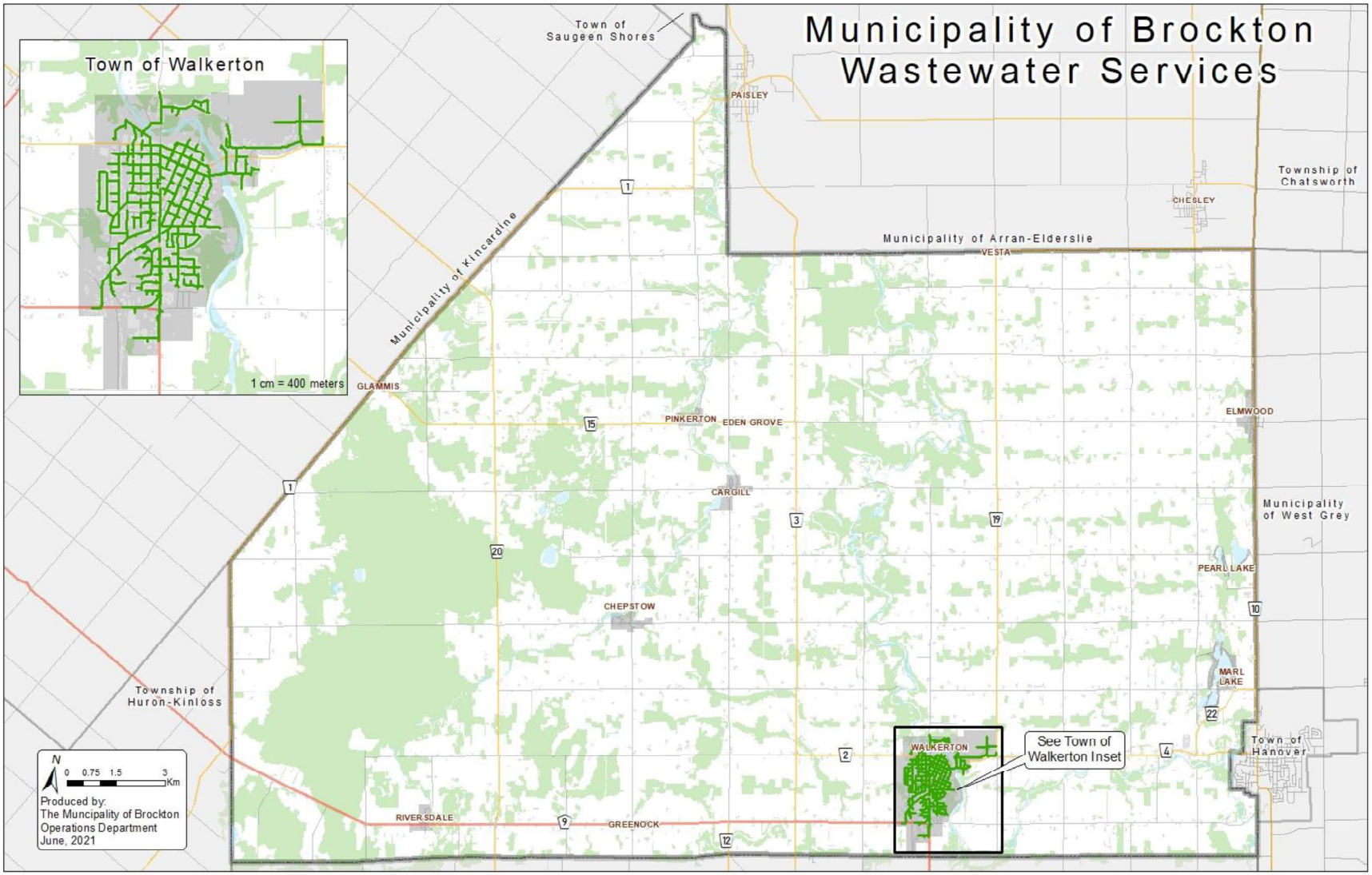
Water Services Map



Fire Flow Map



Sanitary Services Maps



8.3 Appendix C: Risk Rating Criteria

PROBABILITY OF FAILURE

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Roads)	Condition	80%	85-100	1
			70-84	2
			50-69	3
			30-49	4
			0-29	5
	Service Life Remaining (%)	20%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Bridges & Structural Culverts	Condition	80%	80-100	1
			70-79	2
			60-69	3
			40-59	4
			0-39	5
	Service Life Remaining (%)	20%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Sanitary Services (Mains)	Condition	80%	0-0.9	1
			1-1.9	2
			2-2.9	3
			3-3.9	4
			4-5	5
	Service Life Remaining (%)	20%	80-100	1
			60-79	2
			40-59	3

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
			20-39	4
			0-19	5
Water Services (Mains)	Condition	80%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Watermain Pipe Material	20%	Unknown	2
			PVC	2
			PVC Bionax	2
			Ductile Iron	4
			Copper	5
Storm Sewer System (Mains)	Condition	80%	80-100	1
			70-79	2
			60-69	3
			40-59	4
			0-39	5
	Service Life Remaining (%)	20%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Road Network (Other) Storm Sewer System (Other) Water Services (Other) Sanitary Services (Other)	Condition	80%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Service Life Remaining (%)	20%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Buildings & Facilities Machinery & Equipment Fleet Parks & Land Improvements	Condition	80%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Service Life Remaining (%)	20%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Economic (50%)	Replacement Cost (100%)	$0-$50,000	1
			$50,000-$150,000	2
			$150,000-$500,000	3
			$500,000-$1,000,000	4
			$1,000,000+	5
	Operational (20%)	Road Maintenance Class (100%)	1	5
			2	4
			3	3
			4	2
			5	1
			6	1
	Social (20%)	Road Design Class (100%)	Arterial	5
			Collector	4
			Local	3
			Local Residential	3
			Rural	2
	Health and Safety (10%)	Speed Limit (100%)	40	1
			50	2
			60	2
			70	3
			80	4
			90	5
Bridges & Culverts	Economic (60%)	Replacement Cost (100%)	$0-$100,000	1
			$100,000-$249,000	2
			$250,000-$749,000	3
			$999,000-$1,490,000	4
			$1,490,000+	5
	Operational (20%)	Number of Spans (100%)	1	1
			2	2
			3	3
			4	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			5	5
	Social (20%)	Detour Distance (100%)	0-2	1
			2-4	2
			4-6	3
			6-8	4
			8-10+	5
Sanitary Services (Mains)	Economic (40%)	Replacement Cost (100%)	$0-$50,000	1
			$50,000-$149,000	2
			$150,000-$499,000	3
			$500,000-$999,000	4
			$1,000,000+	5
	Operational (30%)	Pipe Diameter (100%)	0-149	1
			150-299	2
			300-449	3
			450-599	4
			600-1000	5
			1000+	5
	Environmental (20%)	Sewer Main Type (100%)	Gravity Main	3
			Force Main	5
	Social (10%)	Sanitary Pipe Material (100%)	Unknown	1
			VC	1
			PE	2
			PVC	2
			STEEL	3
			CONC	4
			AC	5
Water Services (Mains)	Economic (75%)	Replacement Cost (100%)	$0-10,000	1
			$10,000-$25,000	2
			$25,001-$50,000	3
			$50,001-$250,000	4
			$250,001-$1,000,000	5
			$1,000,000+	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
	Environmental (25%)	Pipe Diameter (100%)	0-49	1
			50-99	2
			100-149	3
			150-249	4
			250-999	5
			1000+	5
Storm Sewer System (Mains)	Economic (60%)	Replacement Cost (100%)	$0-25,000	1
			$25,001-$50,000	2
			$50,001-$100,000	3
			$100,001-$250,000	4
			$250,001-$1,000,000	5
			$1,000,000+	5
	Social (30%)	Pipe Diameter (100%)	0-149	1
			150-299	2
			300-449	3
			450-599	4
			600-1000	5
			1000+	5
	Operational (10%)	Storm Sewer Material (100%)	Unknown	2
			PVC	2
			STEEL	3
			CONC	4
			AC	5
Road Network (Other) Storm Sewer System (Other) Water Services (Other) Sanitary Services (Other)	Economic (100%)	Replacement Cost (100%)	$0-$50,000	1
			$50,000-$150,000	2
			$150,000-$250,000	3
			$250,000-$500,000	4
			$500,000+	5
Buildings & Facilities	Economic (75%)	Replacement Cost (100%)	$0-$50,000	1
			$50,001-$100,000	2
			$100,001-$300,000	3
			$300,001-$1,000,000	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			$1,000,000+	5
	Operational (25%)	Function (100%)	General Government	2
			Planning and Development	2
			Health Services	3
			No Function	3
			Recreation and Cultural Services	3
			Social and Family Services	3
			Transportation Services	4
			Environmental Services	4
			Protection Services	5
Fleet	Economic (75%)	Replacement Cost (100%)	$0-$25,000	1
			$25,000-$60,000	2
			$60,000-$100,000	3
			$100,000-$300,000	4
			$300,000-$500,000+	5
	Operational (25%)	Function (100%)	General Government	2
			Planning and Development	1
			Health Services	3
			No Function	1
			Recreation and Cultural Services	3
			Social and Family Services	3
			Transportation Services	4
			Environmental Services	4
			Protection Services	5
Machinery & Equipment	Economic (75%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$25,000	2
			$25,000-$80,000	3
			$80,000-$200,000	4
			$200,000-$500,000+	5
	Operational (25%)	Function (100%)	General Government	2
			Planning and Development	1

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			Health Services	3
			No Function	1
			Recreation and Cultural Services	3
			Social and Family Services	3
			Transportation Services	4
			Environmental Services	4
			Protection Services	5
Parks & Land Improvements	Economic (75%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$20,000	2
			$20,000-$35,000	3
			$35,000-$80,000	4
			$80,000-$5,000,000+	5
	Social (25%)	Park Type (100%)	Open Space	1
			Parkette	2
			Campground	2
			Community Park	3
			Neighbourhood Park	3
			Trails	3
			Special Use Park	4
			Sport Fields	4
Furniture & Fixtures	Economic (80%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$50,000	2
			$50,000-$100,000	3
			$100,000-$250,000	4
			$250,000-$1,000,000+	5
	Operational (20%)	Function (100%)	General Government	2
			Planning and Development	1
			Health Services	3
			No Function	1
			Recreation and Cultural Services	3
			Social and Family Services	3
			Transportation Services	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			Environmental Services	4
			Protection Services	5

8.4 Appendix D: Condition Assessment Guidelines

The foundation of good asset management practice is accurate and reliable data on the current condition of infrastructure. Assessing the condition of an asset at a single point in time allows staff to have a better understanding of the probability of asset failure due to deteriorating condition.

Condition data is vital to the development of data-driven asset management strategies. Without accurate and reliable asset data, there may be little confidence in asset management decision-making which can lead to premature asset failure, service disruption and suboptimal investment strategies. To prevent these outcomes, the Municipality's condition assessment strategy should outline several key considerations, including:

- The role of asset condition data in decision-making
- Guidelines for the collection of asset condition data
- A schedule for how regularly asset condition data should be collected

Role of Asset Condition Data

The goal of collecting asset condition data is to ensure that data is available to inform maintenance and renewal programs required to meet the desired level of service. Accurate and reliable condition data allows municipal staff to determine the remaining service life of assets, and identify the most cost-effective approach to deterioration, whether it involves extending the life of the asset through remedial efforts or determining that replacement is required to avoid asset failure.

In addition to the optimization of lifecycle management strategies, asset condition data also impacts the Municipality's risk management and financial strategies. Assessed condition is a key variable in the determination of an asset's probability of failure. With a strong understanding of the probability of failure across the entire asset portfolio, the Municipality can develop strategies to mitigate both the probability and consequences of asset failure and service disruption. Furthermore, with condition-based determinations of future capital expenditures, the Municipality can develop long-term financial strategies with higher accuracy and reliability.

The example below shows the difference between using age-based condition in comparison to the assessed condition for the Municipality's sidewalks in terms of capital replacement projections. The assessed condition reflected that the assets are in better shape than expected, which would eventually extend the actual remaining service life of these assets and reduce risk as the probability of failure as it is directly related to the condition scores.

Road Network											
Asset Segment	**Backlog**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Sidewalks (Age-based Condition)	$1,257,889	$120,505	$190,179	$414,187	$0	$0	$357,382	$0	$367,365	$0	$294,417
Sidewalks (Assessed Condition)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent and objective assessment criteria. Without proper guidelines for the completion of condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.
There are many options available to the Municipality to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

Condition assessments and general data collection can be both time-consuming and resource-intensive. It is not necessarily an effective strategy to collect assessed condition data across the entire asset inventory. Instead, the Municipality should prioritize the collection of assessed condition data based on the anticipated value of this data in decision-making. The International Infrastructure Management Manual (IIMM) identifies four key criteria to consider when making this determination:

1. **Relevance**: every data item must have a direct influence on the output that is required
2. **Appropriateness**: the volume of data and the frequency of updating should align with the stage in the assets life and the service being provided
3. **Reliability**: the data should be sufficiently accurate, have sufficient spatial coverage and be appropriately complete and current
4. **Affordability**: the data should be affordable to collect and maintain