AMP2021

PSD RESEARCH CONSULTING SOFTWARE

The Asset Management Plan for the

Municipality of South Huron

SUBMITTED BY THE PUBLIC SECTOR DIGEST INC. (PSD)
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Key Statistics

$394 million Replacement cost of asset portfolio	**$92,802** Replacement cost of infrastructure per household (2016)
2.19% Target average annual infrastructure reinvestment rate	**1.07%** Actual average annual infrastructure reinvestment rate
61% Percentage of assets in fair or better condition	**24%** Percentage of assets with assessed condition data
24% Percentage of sustainable capital funding that comes from the Federal Gas Tax/OCIF	**49%** Percentage of annual infrastructure needs funded from sustainable revenue sources
$4.4 million Annual capital infrastructure deficit	**10 years** Recommended timeframe for eliminating annual infrastructure deficit

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Executive Summary

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.

All municipalities in Ontario are required to complete an asset management plan (AMP) in accordance with Ontario Regulation 588/17 (O. Reg. 588/17). This AMP outlines the current state of asset management planning in the Municipality of South Huron. It 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 can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

This AMP includes the following asset categories:

Asset Category	Source of Funding
Bridges & Culverts	Tax Levy
Buildings	
Land Improvements	
Machinery & Equipment	
Road Network	
Rolling Stock	
Storm Water Network	
Water Network	User Rates
Sanitary Sewer Network	
Waste Disposal	

The overall replacement cost of the asset categories included in this AMP totals $393.9 million. 61% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 24% of assets. For the remaining 76% 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 development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP has used a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (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 $8.6 million. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $4.2 million towards capital spending per year. As a result, there is currently an annual funding gap of $4.4 million.

A financial strategy was developed to address the annual capital funding gap. The following table compares to total and average annual tax/rate change required to eliminate the Municipality's infrastructure deficit:

Funding Source	Years Until Full Funding	Total Tax/Rate Change	Average Annual Tax/Rate Change
Tax-Funded Assets	10 Years	25.2%	2.5%
Rate-Funded (Water)	10 Years	22.8%	2.3%
Rate-Funded (Sanitary)	10 Years	20.4%	2%

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. Several recommendations have been developed to guide the continuous refinement of the Municipality's asset management program. These include:

a) regular and ongoing asset inventory data review to ensure that asset management planning and long-term projections are based on completed and accurate data
b) the development of a condition assessment strategy on a regular schedule according to defined criteria
c) the continuous review, development and implementation of optimal lifecycle management strategies
d) the development of short- and long-term capital plans for each asset category to ensure adequate revenue is available to meet capital requirements
e) the measurement of current levels of service across all asset categories and eventually the identification of proposed levels of service that are realistic and sustainable

The evaluation of the above items and further development of a data-driven, best-practice approach to asset management is recommended to ensure the Municipality is providing optimal value through its management of infrastructure and delivery of services.

With the development of this AMP the Municipality has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2021. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2023 and 2024.

AM Program Recommendations

Asset management is an ongoing practice that requires dedicated time and resources across all departments. The above recommendations include many key activities designed to enhance the accuracy and reliability of asset management planning.

However, it is far from a comprehensive list of all activities required to manage a municipal asset management program. Timelines, resources and effort for the above recommendations and all regular asset management activities should be reviewed regularly. Roles and responsibilities should be clearly defined and delegated to assigned resources to ensure that the Municipality's asset management program is progressing towards its strategic goals and objectives.

The following table provides a summarized list of recommendations to further the development of the Municipality's asset management program. A more detailed description of each recommendation can be found within the appropriate Asset Category in Section 4 of the AMP.

Recommendation Category	Recommendation Details	Applicable Asset Categories
Asset Inventory	Develop a Component-Based Inventory	Waste Disposal
	Review Replacement Costs	Buildings Roads Machinery & Equipment Land Improvements Water Network Sanitary Sewer Network Waste Disposal
Condition Assessment Strategies	Develop a Condition Assessment Strategy	Roads Stormwater Network Buildings Machinery & Equipment Rolling Stock Land Improvements Sanitary Sewer Network Waste Disposal
	Review Backlog Assets	Buildings Machinery & Equipment Rolling Stock Water Network
Lifecycle Management Strategies	Develop a Short-Term Capital Plan	Machinery & Equipment Rolling Stock Land Improvements
	Develop a Long-Term Capital Plan	Storm Water Network Buildings
	Review Lifecycle Management Strategy	Road Network Stormwater (Retention Ponds)
Levels of Service	Measure Current Levels of Service	Road Network Bridges & Culverts Storm Water Network Water Network Sanitary Sewer Network
	Identify Additional LOS Metrics	Bridges & Culverts
	Identify Proposed Levels of Service	Road Network Bridges & Culverts Storm Water Network Water Network Sanitary Sewer Network
	Identify Current Levels of Service Metrics	Buildings Machinery & Equipment Rolling Stock Land Improvements Waste Disposal

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

- The Municipality's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management

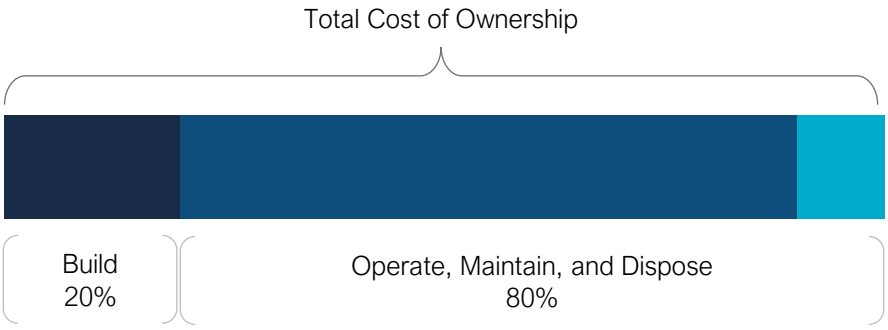
- An asset management plan is a living document that should be updated regularly to inform long-term planning

- Ontario Regulation 588/17 outlines several key milestones and requirements for asset management plans in Ontario between July 1, 2021 and 2024

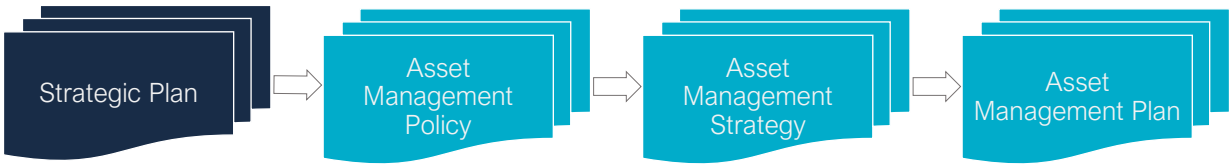
1.1 An Overview of Asset Management

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% comes 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 a broader asset management program. The diagram below depicts an industry-standard approach and sequence to developing a practical asset management program.



The diagram, adopted from the Institute of Asset Management (IAM), illustrates the concept of 'line of sight', or 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's Asset Management Policy was developed in 2019 (By-law No. 23-2019) in satisfaction of the requirements outlined in O. Reg. 588/17.

This Asset Management Plan satisfies the policy statement outlined in Section 8.0:

> "*The Municipality shall review and update the asset management plan at least every five years or as necessary. This step shall be endorsed by the Executive Lead and approved by Council resolution."*

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 Municipality's 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

The asset management plan (AMP) provides a snapshot in time of the current state of municipal infrastructure assets as well as the current strategies in place to assist with planning and decision-making.

The focus of the AMP is not simply about identifying the money or resources that are required to meet lifecycle needs of infrastructure and maintain an adequate level of service. It should also identify the processes and strategies that are and can be implemented to improve decision-making outcomes.

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.

Initiative	Purpose	Status
Corporate Strategic Plan	The strategic plan illustrates the broader direction of the municipality and key priorities identified by elected officials. It guides which services and programs will be prioritized. The Municipality's latest strategic plan was approved in 2016.	In place Approved in 2016
Asset Management Policy	The asset management policy formalizes and institutionalizes asset management and ensures its continuity across different councils.	In place Completed in 2019 in accordance with O. Reg 588/17.
Asset Management Strategy	A documented asset management strategy adds more granularity to the asset management policy. It identifies how the municipality will use various resources to build an asset management program by outlining key initiatives to be undertaken.	Not Completed
Asset Management Plan	The AMP focuses on individual asset classes and how the municipality will reach financial sustainability, deliver current or proposed levels of service, while mitigating risk.	In place Previous iteration was completed in 2016.

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.

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
Maintenance	Activities that prevent defects or deteriorations from occurring	Crack Seal	$
Rehabilitation/ Renewal	Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	Mill & Re-surface	$$
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	$$$

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 a proactive lifecycle strategy 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

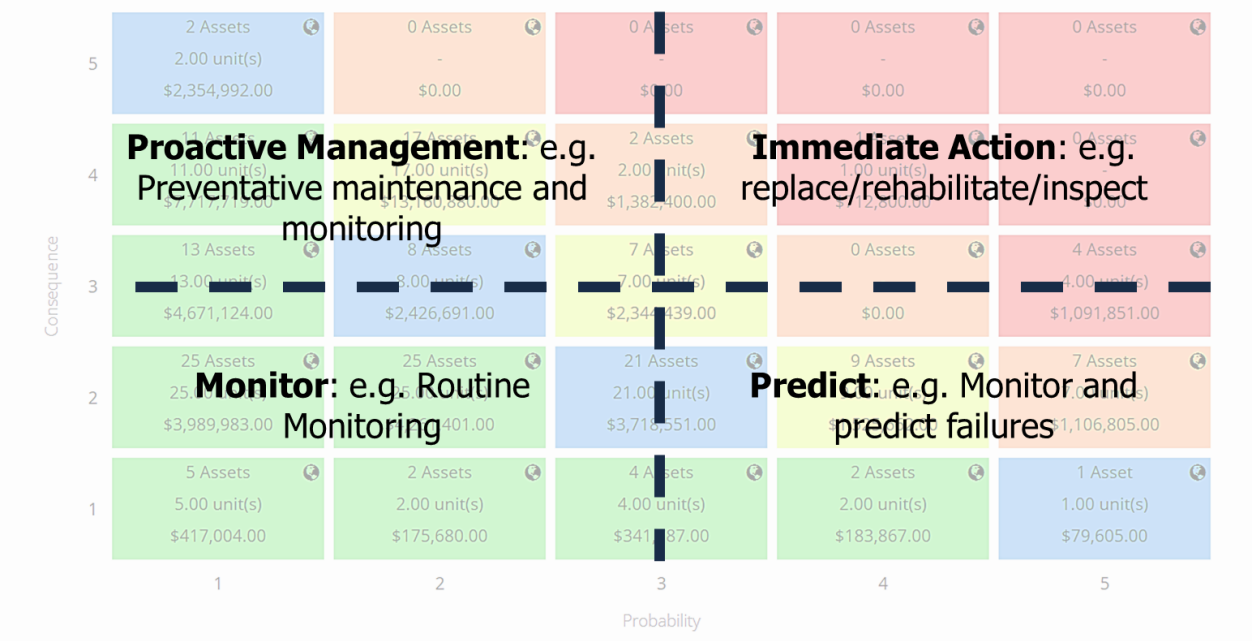
Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal, and some assets pose a greater risk to service delivery if they were to fail.

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 servicing a handful of properties. Asset risk and criticality is a key component of both short and long-term planning.

$$\textbf{\textit{Risk Rating}} = \textit{Probability of Failure x Consequence of Failure}$$

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.

Risk matrices are a useful tool used to visualize risk across a group of assets. The following image provides an example of the actions or strategies that may be considered depending on an asset's risk rating.



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

Definition: a simple, plain language description or measure of the service that the community receives.

Example: Description or images that illustrate the different levels of road class pavement condition

Technical Levels of Service

Definition: 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.

Example: Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)

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 will need to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17.

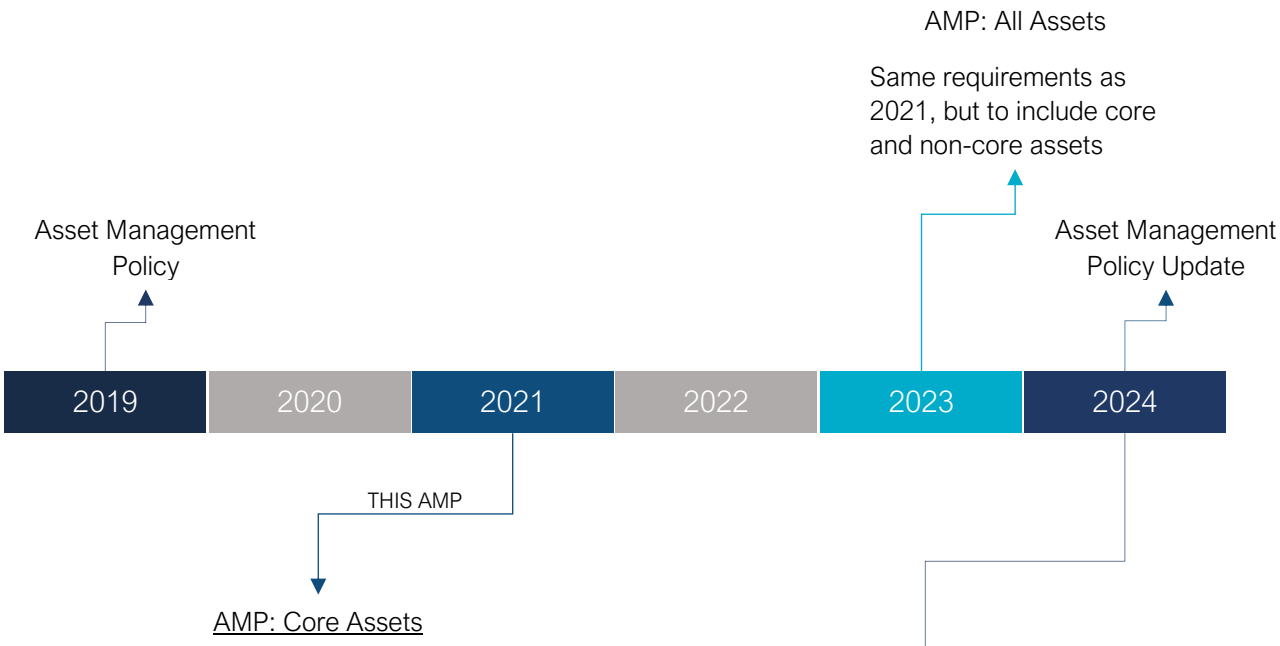
Proposed levels of service should be realistic and achievable within the timeframe outlined by the Municipality. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability.

Once proposed levels of service have been established, and prior to July 2024, 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.



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

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 strategy

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, 2021. 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 - 5.3.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 5.3.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 5.3.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 – 5.3.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 5.3.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.3.6	Complete for Core Assets Only
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.3.6	Complete for Core Assets Only
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.3.4	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 10 asset categories and is divided between tax-funded and rate-funded categories
- 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 Data Hierarchy

This asset management plan uses a two-tier asset hierarchy to sort assets into both a primary functional category (e.g. Road Network) and a secondary departmental or characteristic-based segment (e.g. Paved Roads (HCB) or Transportation Services).

2.1.1 Asset Categories

This asset management plan for the Municipality of South Huron is produced in compliance with Ontario Regulation 588/17. The July 2021 deadline under the regulation—the first of three AMP updates—requires analysis of only core assets (roads, bridges & culverts, water, wastewater, and stormwater). This AMP includes both core and non-core asset categories.

The AMP summarizes the state of the infrastructure for the Municipality's asset portfolio, establishes current levels of service and the associated technical and community 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
Bridges & Culverts	Tax Levy
Facilities	
Land Improvements	
Equipment	
Road Network	
Rolling Stock	
Storm Sewer System	
Water System	User Rates
Waste Disposal	
Sanitary Sewer System	

2.1.2 Asset Segments

Within each asset category a series of segments have been developed to allow for a more granular level of analysis. This secondary level of the asset data hierarchy aims to group assets together based on either departmental ownership or assets with similar characteristics. Examples of both approaches are found in the tables below

Asset Category	Asset Segment (Departmental)
Equipment	Recreation
	General Government
	Protective Services

Asset Category	Asset Segment (Characteristics)
Water System	Watermains
	Water Towers
	Booster Pumping Stations

2.2 Deriving Replacement Costs

Replacement costs should reflect the total costs associated with the full replacement or reconstruction of an asset. They should include the combined cost of materials, plant, labour, engineering and administrative costs.

This AMP relies on two methods to determine asset replacement costs:

- Unit Cost: A unit-based cost (e.g. per metre) determined through a review of recent contracts, reports and/or staff estimates

- Historical Cost Inflation: Inflation of the asset cost recorded at the time it was initially acquired to today's value using an index (e.g. CPI or NRBCPI)

Historical cost inflation is typically used in the absence of reliable unit cost data. It is a fairly reliable method for recently purchased and/or constructed assets where the cost is reflective of the total capital costs that the Municipality incurred. As assets age, and new products and technologies impact procurement costs and construction methods, cost inflation becomes a less reliable technique to determine replacement cost.

The following table identifies the methods employed to determine replacement costs across each asset category:

Asset Category	Replacement Cost Method	
	Unit Cost	Cost Inflation
Bridges & Culverts	100%	-
Facilities	26%	74%
Land Improvements	-	100%
Equipment	-	100%
Road Network	98%	2%
Rolling Stock	60%	40%
Storm Water System	99%	1%
Water System	90%	10%
Sanitary Sewer System	56%	44%
Waste Disposal	-	100%
Overall:	**77%**	**23%**

All unit costs were reviewed by Municipality of South Huron staff and determined to be the best available cost estimates at the time this AMP was developed.

2.3 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:

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

2.4 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:

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

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

2.5 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.

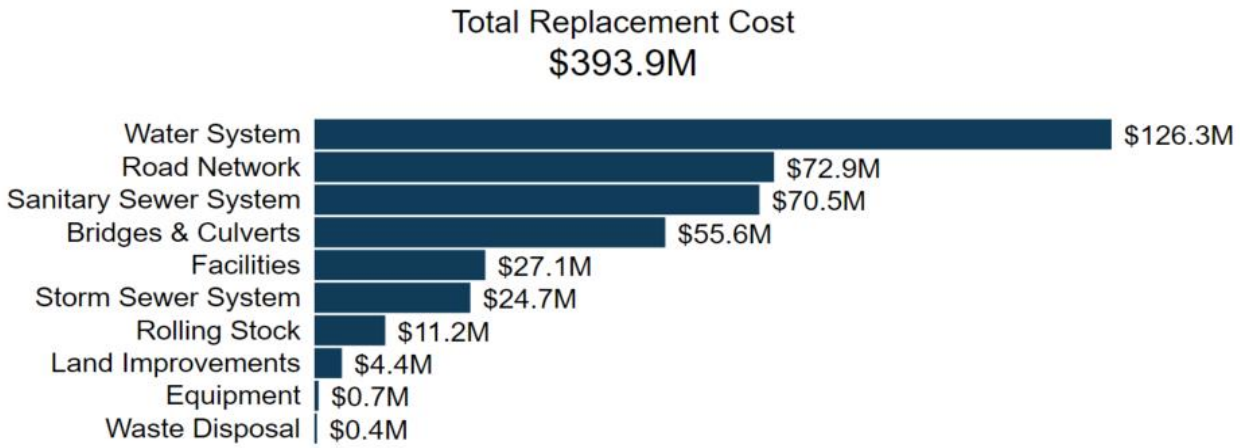
3 Portfolio Overview

Key Insights

- The total replacement cost of the Municipality's asset portfolio is $393.9 million
- The Municipality's target re-investment rate is 2.19%, and the actual re-investment rate is 1.07%, contributing to an expanding infrastructure deficit
- 62% of all assets are in fair or better condition
- 19% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $8.6 million per year across all assets

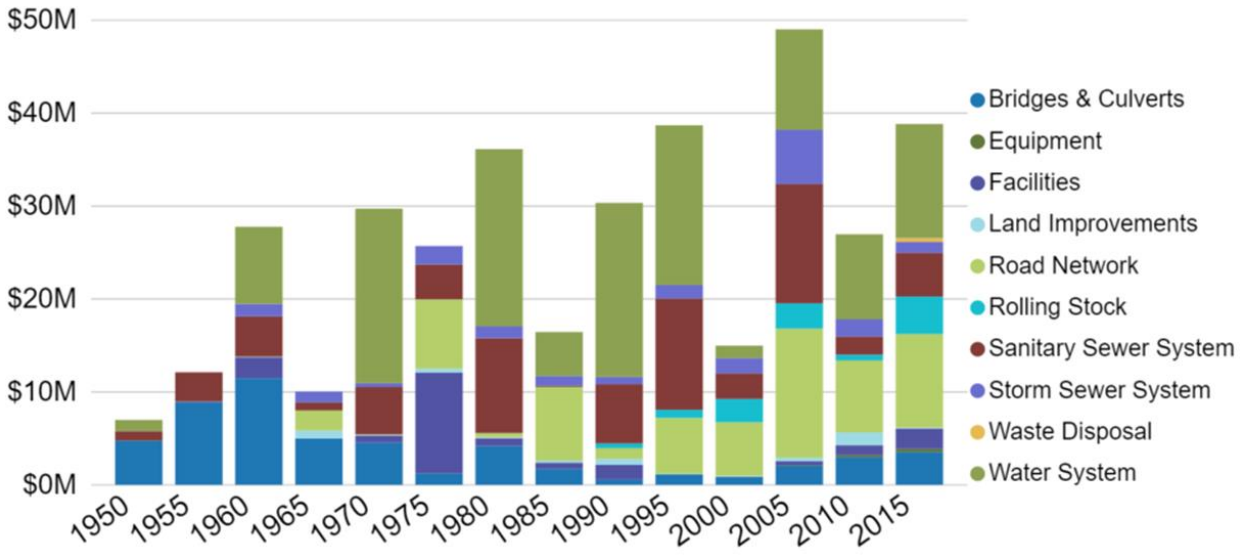
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $393.9 million. This total was determined based on a combination of unit costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



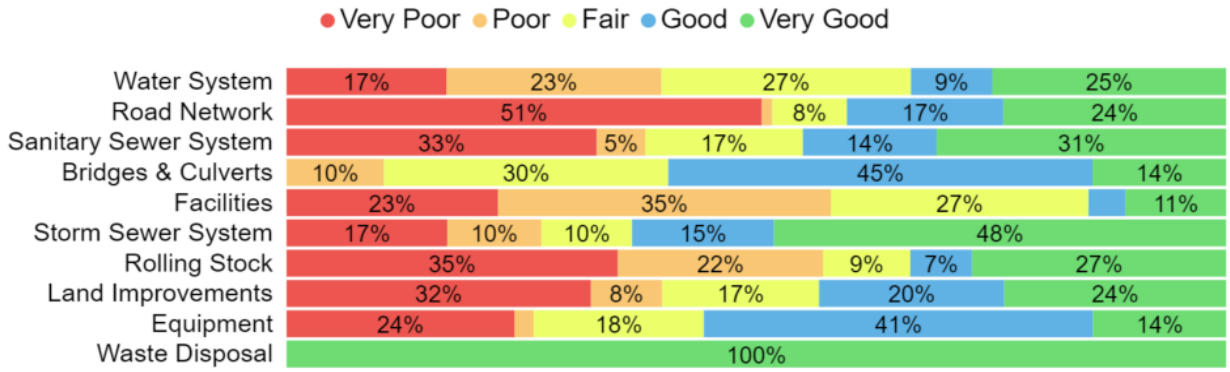
3.2 Installation Profile

The following graph illustrates the installation profile for the assets analyzed in this AMP based on their in-service date and current replacement value.



3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, **61%** of assets in South Huron are in fair or better condition. This estimate relies on both age-based and assessed condition data.



This AMP relies on assessed condition data for **24%** 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.

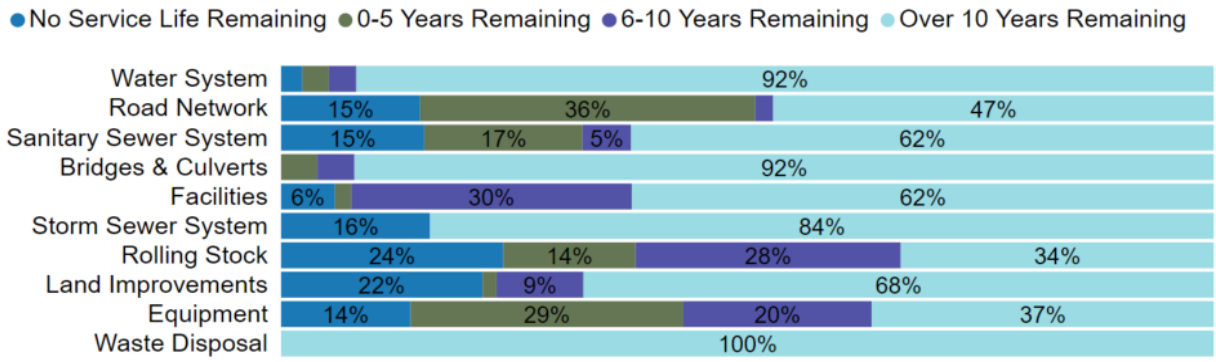
Asset Category	% of Assets with Assessed Condition	Source of Condition Data
Water System	0%	80% risk-based estimates[1]
Road Network	0%	Age-based estimates
Sanitary Sewer System	12%	CCTV by GM BluePlan 79% risk-based estimates[2]
Bridges & Culverts	96%	2018 OSIM Inspections
Facilities	83%	Staff & Facilities Assessment
Storm Sewer System	20%	CCTV by GM Blue Plan
Rolling Stock	0%	Age-based estimates
Land Improvements	0%	Age-based estimates
Equipment	0%	Age-based estimates
Waste Disposal	0%	Age-based estimates
Overall:	**23%**	

The development of a condition assessment program across all asset categories is critical to confidence in long-term asset management planning. **Appendix D** provides a high-level overview of the role of asset condition data and key considerations in the development of a condition assessment program.

[1] A recent report completed for the Municipality included a risk-based evaluation of the condition of water and sanitary mains. This analysis was based on parameters including age, pipe material, location, design, and others. While this provides value for renewal planning it is not considered a condition assessment.
[2] See Footnote 1

3.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, **19%** of the Municipality's assets are projected to require replacement within the next 10 years. Capital requirements over the next 10 years are identified in **Appendix A**.



Category	Estimated Useful Life Range (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Water Network	9 -100Years	38.2	35.4
Sanitary Sewer System	10 - 100 Years	36.1	41.9
Facilities	15 - 75 Years	43.0	11.4
Road Network	25 -100 Years	45.0	2.9
Storm System	75 Years	42.9	36.8
Land Improvements	25 - 50 Years	24.4	22.2
Equipment	3-49 Years	5.2	6.6
Bridges & Culverts	50 – 80 Years	48.9	43.9
Waste Disposal	25 – 84 Years	2.1	45.1
Rolling Stock	4 - 25 Years	9.2	3.8
Total:		**39.3**	**27.8**

While capital planning horizons tend to be short (<10 Years), a sustainable lifecycle and financial strategy should consider the full lifecycle of all assets.

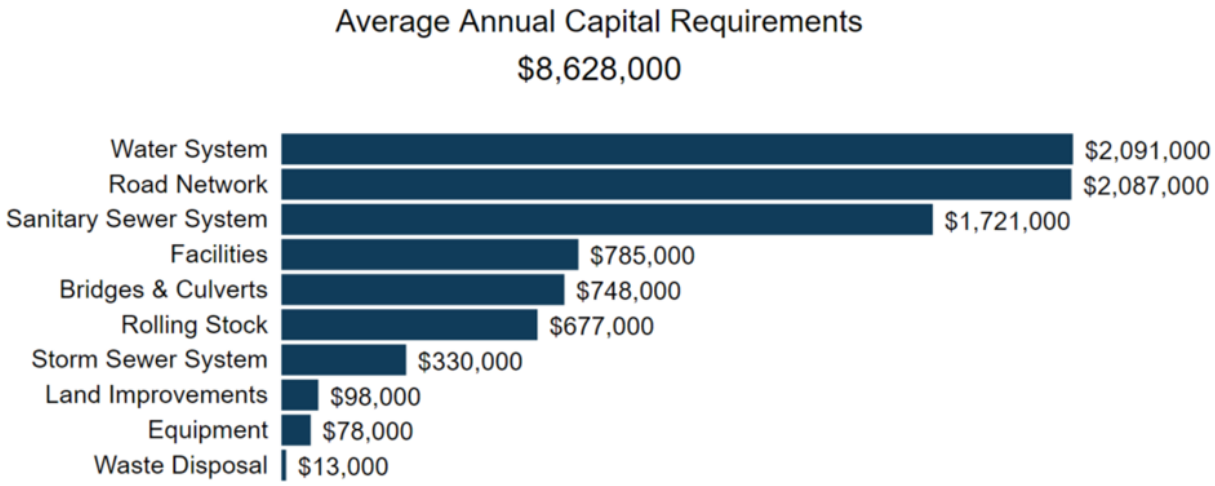
Short-term capital costs may be low for asset categories with long useful lives where infrastructure is relatively new. However, planning and saving for long-term capital costs is a key component of asset management planning.

The calculation of an average annual capital requirement considers the estimated useful life and cost of infrastructure to identify the amount that the Municipality should be allocating to meet capital needs regardless of whether the project costs will be incurred in the short- or long-term.

3.5 Forecasted Capital Requirements

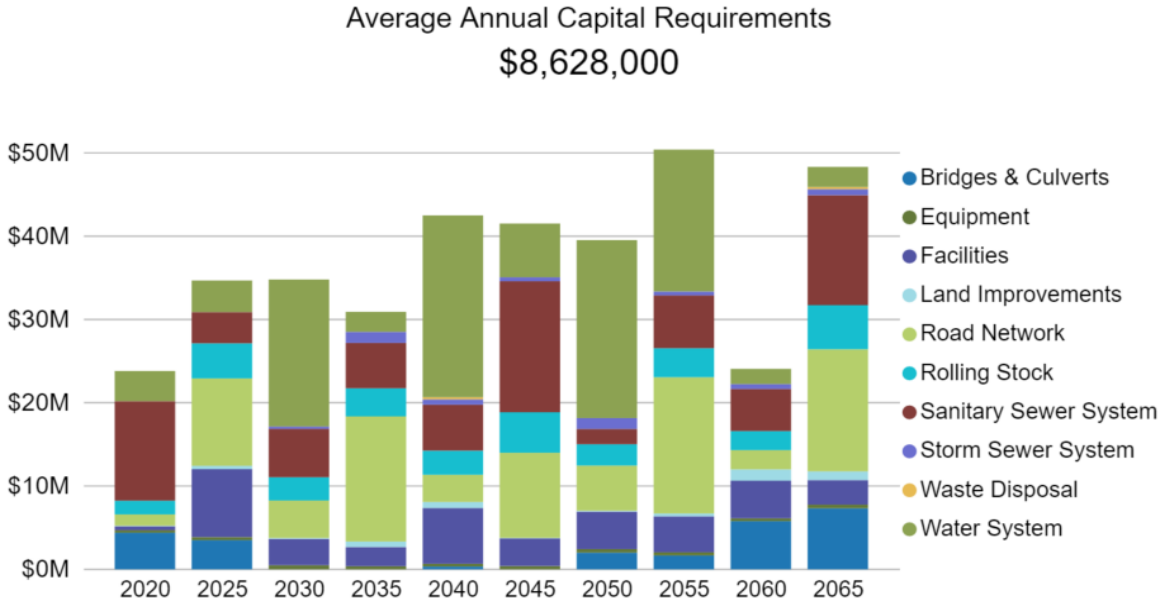
3.5.1 Average Annual Capital Requirements

Annual capital 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 $8.6 million annually to address capital requirements for the assets included in this AMP.

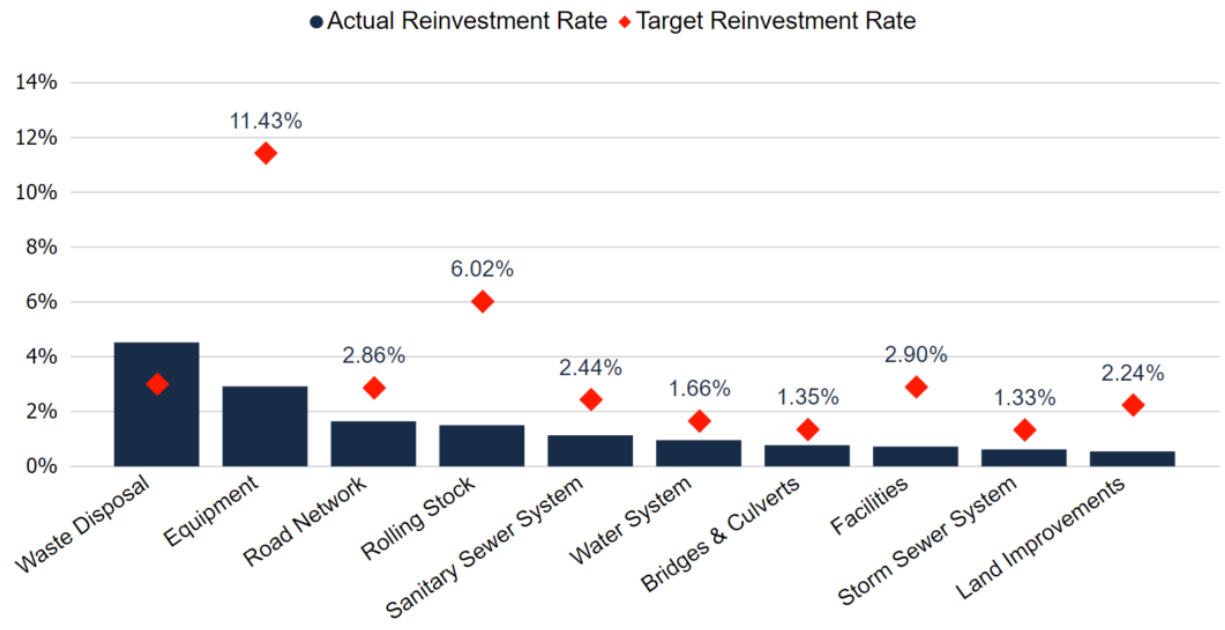
3.5.2 Projected Capital Requirements (50 Years)



The 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.

3.6 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Municipality should be allocating approximately $8.6 million annually, for a target reinvestment rate of 2.19%. Actual annual spending from sustainable revenue sources totals approximately $4.2 million, for an actual reinvestment rate of 1.07%.



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $197 million
- 62% 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 $4.8 million

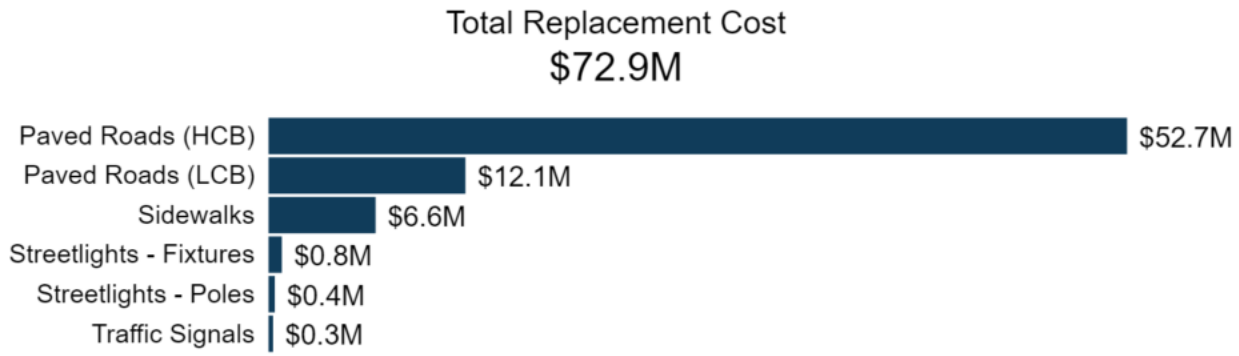
4.1 Road Network

The Road Network is a critical component of the provision of safe and efficient transportation services. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure, streetlights, sidewalks, and traffic signals.

4.1.1 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
Paved Roads (HCB)	131.1 km	Cost/Unit	$52,682,100
Paved Roads (LCB)	41.6 km	Cost/Unit	$12,091,050
Gravel Roads	177.3 km	Not Planned for Replacement[3]	
Sidewalks	39.2 km	Cost/Unit	$6,578,880
Streetlights - Fixtures	867	Cost Inflation	$826,953
Streetlights - Poles	280	Cost Inflation	$396,983
Traffic Signals	16	Cost Inflation	$287,957
			$72,863,923

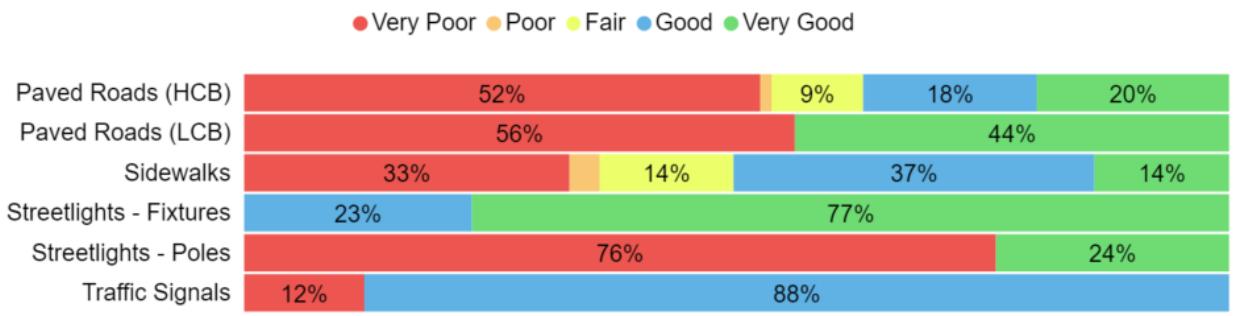


[3] Gravel roads have been included as they comprise a significant portion of the Municipality's road network. However, the lifecycle management strategies for these assets consist of perpetual maintenance activities and do not require capital costs for rehabilitation or replacement.

4.1.2 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
Paved Roads (HCB)	37%[4]	Poor	Age-based
Paved Roads (LCB)	42%[5]	Fair	Age-based
Sidewalks	48%	Fair	Age-based
Streetlights - Fixtures	86%	Very Good	Age-based
Streetlights - Poles	22%	Poor	Age-based
Traffic Signals	59%	Fair	Age-based
	39%	**Good**	**100% Age-based**



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:

- Visual inspections are completed by Municipality staff; new processes are being developed to leverage this information to inform roads condition scores in the future.

- Network-wide assessments are expected to be completed every five years. A 2020 Transportation Master Plan will include Pavement Condition Index (PCI) scores for each road, and gravel roads will be assessed to determine if upgrades are required.

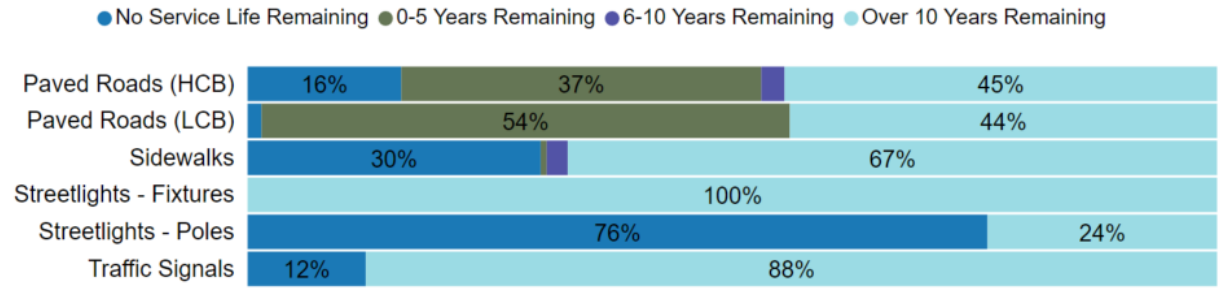
[4] This AMP uses only age-based estimates to determine the current condition of paved roads. The Municipality is updating the Transportation Master Plan which will include an assessment of all roads. Until this data is available the current age-based estimates are not considered a reliable source of condition data.
[5] See Footnote 4

4.1.3 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)
Paved Roads (HCB)	Surface: 25 Years Base: 100 Years	46.0	1.5
Paved Roads (LCB)	Surface: 12 Years Base: 100 Years	25.1	3.3
Sidewalks	50 years	48.2	4.3
Streetlights - Fixtures	25 years	3.6	21.4
Streetlights - Poles	25 years	19.6	5.4
Traffic Signals	25 years	20.7	4.3
		45.0	**2.9**



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.

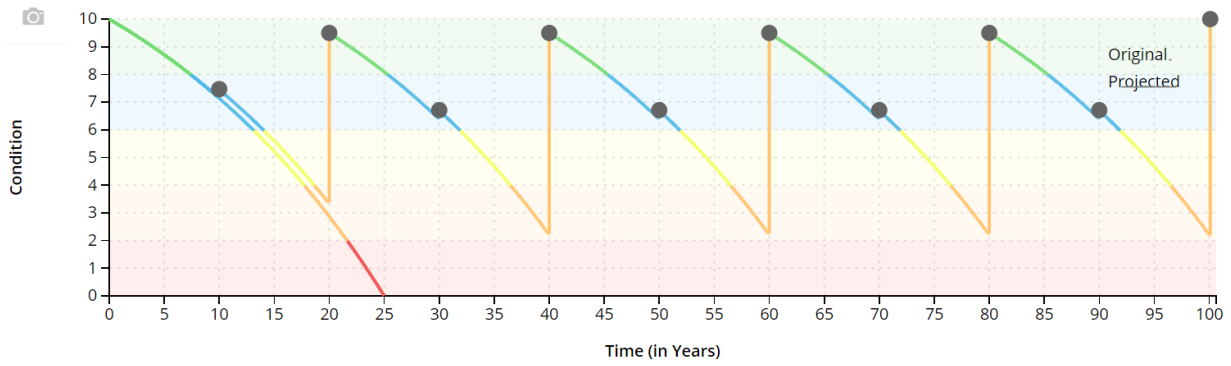
4.1.4 Lifecycle Management Strategy

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 following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of Paved Roads. Instead of allowing the roads to simply deteriorate until replacement is required, strategic intervention is expected to extend the service life of roads at a lower total cost. Preventative maintenance activities will also provide for a further riding surface, improving the performance of these assets.

Paved Roads (HCB)

Event Name	Event Class	Event Trigger
Cold Patch Asphalt Repair	Preventative Maintenance	Year 10, 30, 50, 70, 90
Pulverize and Pave	Rehabilitation	Year 20, 40, 60, 80
Full Reconstruction	End of Life Replacement	Year 100

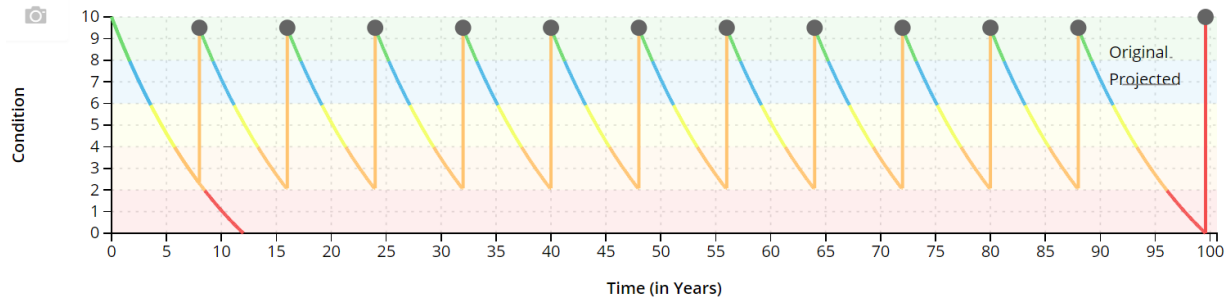


The following table further expands on the Municipality's current approach to lifecycle management:

Activity Type	Description of Current Strategy
Maintenance	Cold patcing is applied as needed, typically 2% - 5% of the road surface.
	Crack sealing will be re-evaluated and possibly included in future strategies
Rehabilitation	Pulverize and pave applies 40mm of HL-4. Locations are chosen based on location. The upcoming 2020 Transportation Masterplan will evaluate the strategy.
Replacement	Full replacement occurs after ~100 years, when deformation of the road base is excessive and requires reconstruction.

Paved Roads (LCB)

Event Name	Event Class	Event Trigger
Surface Treatment	Rehabilitation	Every 8 years
Full Reconstruction	End of Life Replacement	Year 100



The following table further expands on the Municipality's current approach to lifecycle management:

Activity Type	Description of Current Strategy
Maintenance	Cold patching is applied as needed, typically 2% - 5% of the road surface.
	Crack sealing will be re-evaluated and possibly included in future strategies
Rehabilitation	LCB roads are maintained perpetually through single surface treatments.
Replacement	Over time LCB roads are expected to gradually be converted to HCB roads as an end-of-life strategy.

Gravel Roads

Event Name	Event Class	Event Trigger
Dust Control	Maintenance	Every 2 years
Grading	Maintenance	Five times per year
Re-Graveling	Preventative Maintenance	Every 2 years

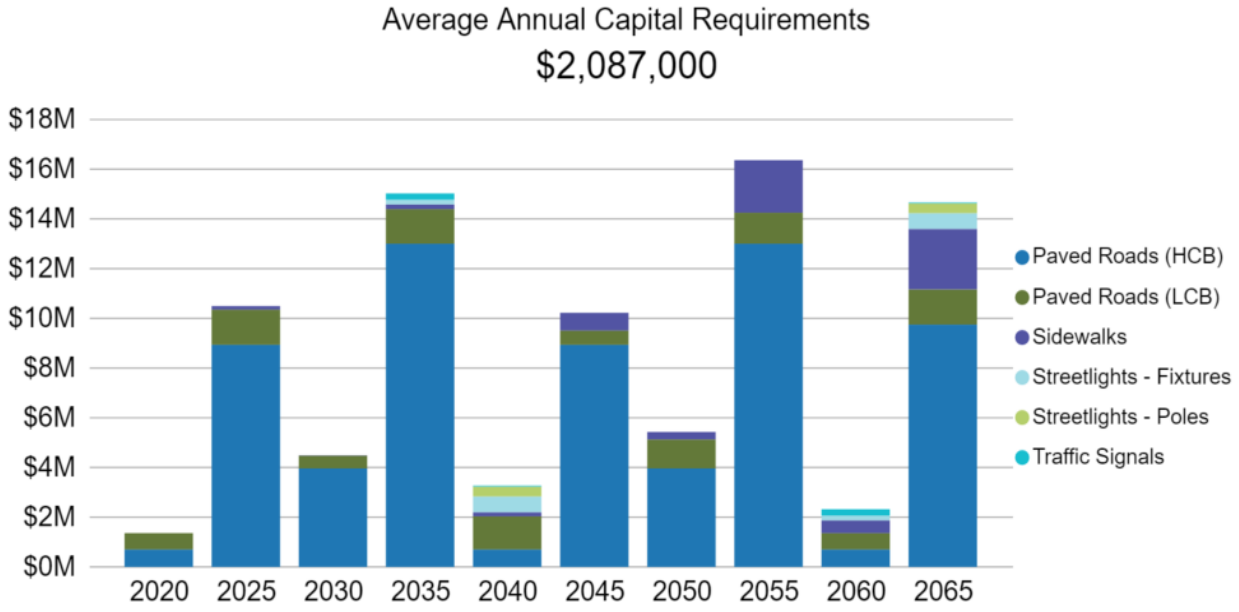
The following table further expands on the Municipality's current approach to lifecycle management:

Activity Type	Description of Current Strategy
Maintenance	Dust Control is applied every two years. Although there is no impact on the condition of the road, it improves service provision by reducing improving visibility to commuters.
	Grading is applied five times per year to provide a smoother riding surface
Preventative Maintenance	An application of a new gravel surface every 2 years provides for a smoother, more even riding surface. Surface distresses, such as rutting and bald spots can be resolved.
Replacement	Gravel roads are not scheduled for replacement but are instead maintained until it is time for disposal or repurposing.

Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for Paved Roads (HCB and LCB), and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the Road Network.

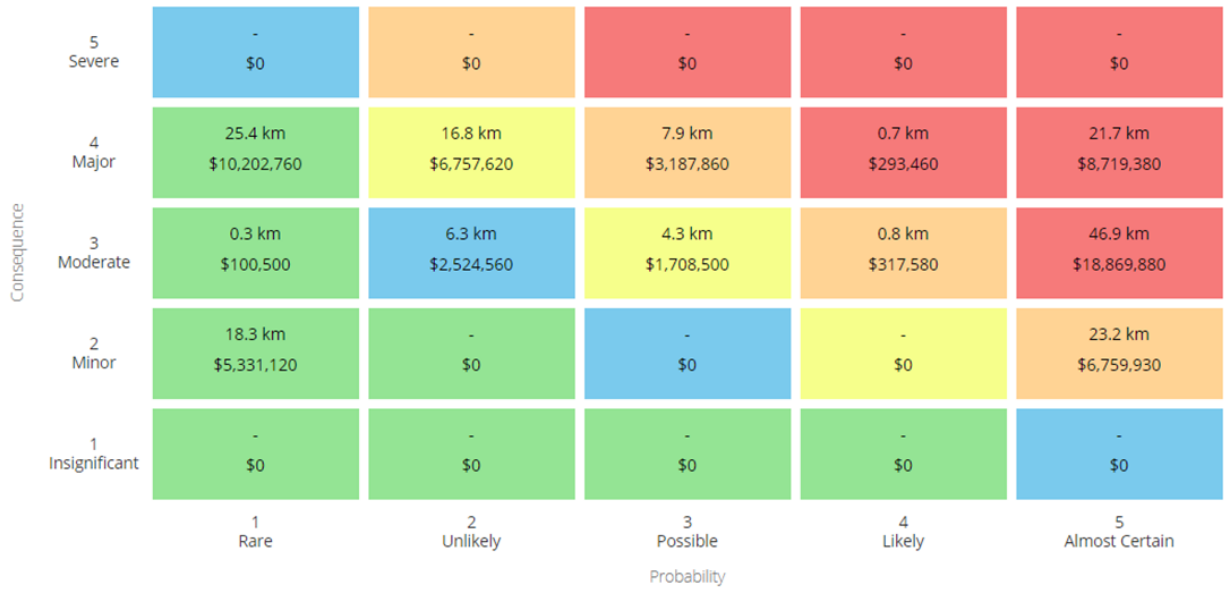
The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs to meet future capital needs.



The 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.

4.1.5 Risk & Criticality

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



The risk matrix was developed for the purposes of this AMP and Municipality staff should review and adjust the risk model criteria to reflect an evolving understanding of both the probability and consequences of asset failure. Results from this analysis can be used to prioritize assets within capital plans to reduce the overall risk of the road network.

4.1.6 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 (2019)
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	An updated condition assessment will be completed for the road network as part of the upcoming Transportation Master Plan which will include a Pavement Condition Index (PCI) rating for each road. In this version of the Municipality's AMP we rely on age-based estimates of pavement condition, according to a 5-tier rating scale (Very Good, Good, Fair, Poor, Very Poor). At this time these ratings are not considered to be representative of the actual condition of roads.

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 (2019)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0.015
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	1.644
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.000
Quality	Average pavement condition index for paved roads in the municipality	68.5 – Good
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Fair
Performance	Capital reinvestment rate	1.65%
	# of O&M full time equivalent staff per 100 km of roads	3.12
	Operating costs of paved roads per lane kilometer	$2741.82
	Operating costs of unpaved roads per lane kilometer	$2688.18
	% of signs inspected for reflectivity per year	85.5%
	% of sidewalks inspected per year	100%

4.1.7 Recommendations

Asset Inventory/Data Refinement

- Unit Costing for Streetlights and Traffic Signals: These are key components of the transportation network, affecting the overall performance of traffic functions within the Municipality. Accurate unit costs will ensure that capital forecasts for these assets match closely with true project costs.

Condition Assessment Strategies

- Develop a Condition Assessment Strategy – Currently, all roads assets rely on age-based condition, rather than assessments. Age-based condition is not as reliable as assessed condition, as structural defects and rideability scale with factors outside of age, such as usage, soil condition, and construction practices. Inaccurate condition scores can result in premature replacement, unexpected asset failure, and sub-optimal capital planning projections. Incorporating a network-wide condition assessment program is recommended to ensure budgets are best utilized and service is optimized.

Lifecycle Management Strategies

- Review Lifecycle Management Strategy – The Municipality currently uses a proactive lifecycle strategy for paved roads, considering cold patching, rehabilitation, and replacement. Rehabilitation activities, such as re-surfacing, has only been used on select sections of road. The upcoming 2020 Master Plan should provide direction to delivering a consistent lifecycle program, with clear criteria for specific lifecycle activities.

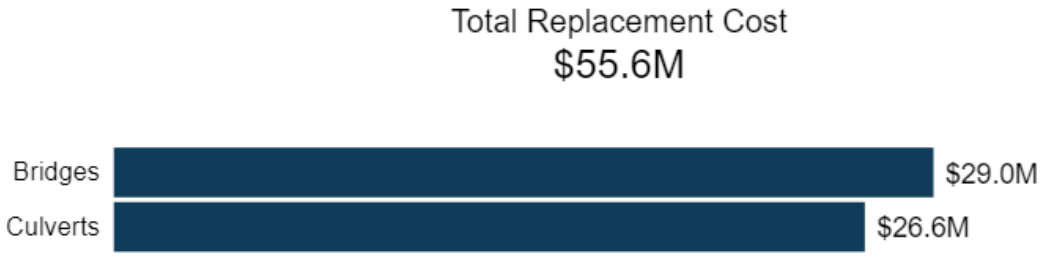
4.2 Bridges & Culverts

Bridges & Culverts are a critical component of the Municipality's transportation network. They facilitate the movement of passenger vehicles, trucks, pedestrians and cyclists. All bridge and structural culverts (>=3m in span) are subject to biennial inspections as per the Ontario Bridge Inspection Manual (OSIM).

4.2.1 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.

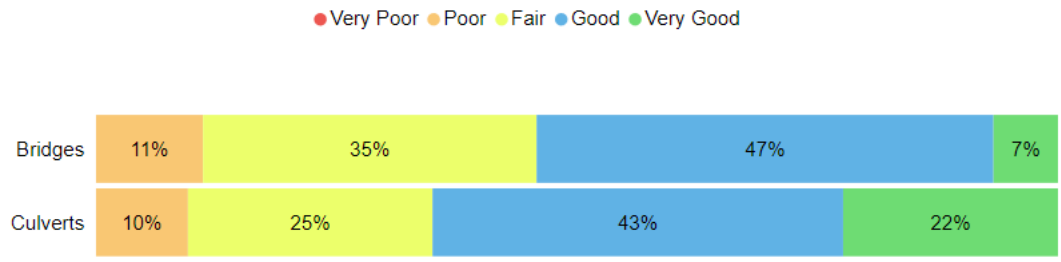
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	27	User-Defined Cost	$29,028,000
Culverts	55	User-Defined Cost	$26,597,000
			$55,625,000



4.2.2 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	62%	Good	93% Assessed
Culverts	65%	Good	98% Assessed
	63%	**Good**	**96% Assessed**



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:

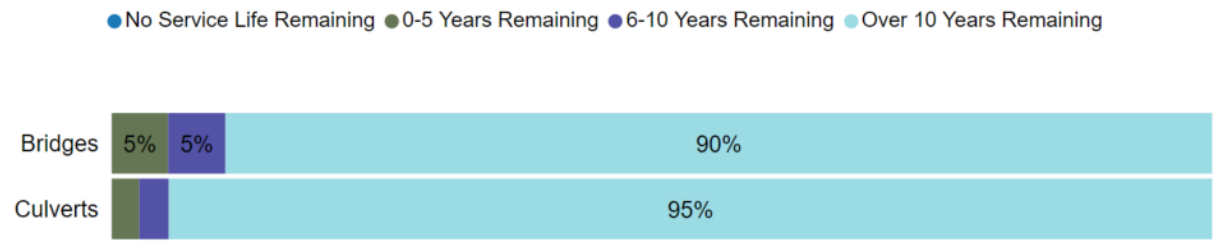
- OSIM Inspections completed every two years as per regulatory requirements by external consultants
- BCI ratings provided for each structure, along with the replacement cost and recommended lifecycle activities

4.2.3 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 years	50.6	41.7
Culverts	50-80 years	48.1	45.0
		48.9	**43.9**



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.

4.2.4 Lifecycle Management Strategy

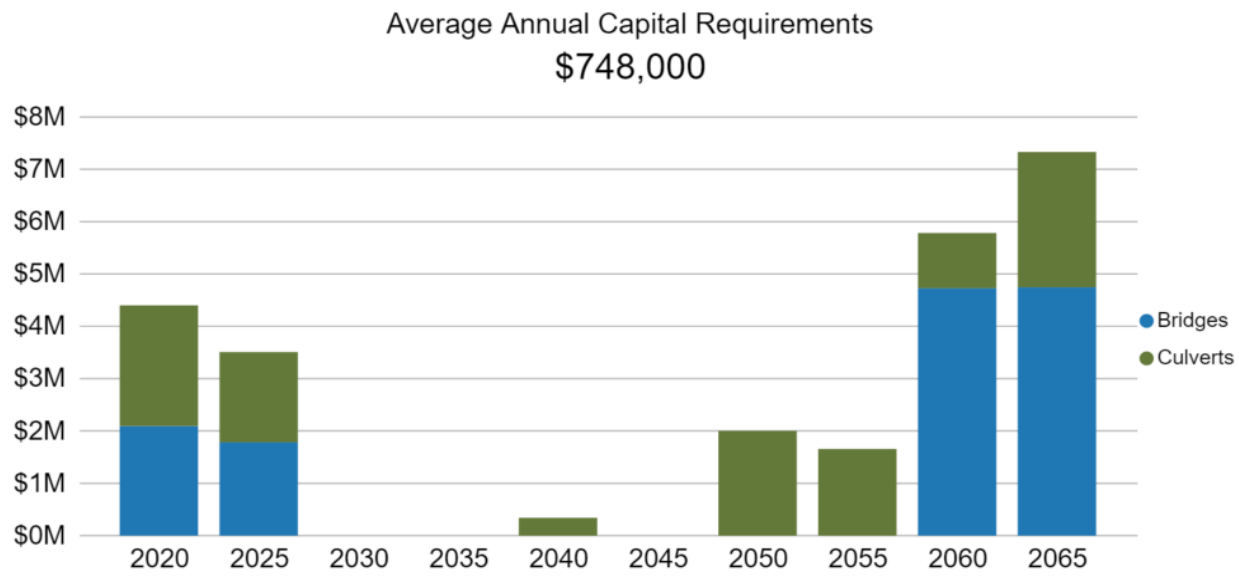
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Annual maintenance is completed by the Roads Department, and includes deck cleaning in spring, and guiderail and signage repairs.
	Other more significant maintenance items are contracted out as required.
Rehabilitation	The OSIM recommendations are generally followed, typically completing renewal/rehabilitation of 1 – 2 structure per year.
Replacement	Structures are prioritized by three factors: priorities in the OSIM report, grant funding opportunities, and coordination opportunities.
	The Municipality follows the 10-year planning horizon of the OSIM report.

Forecasted Capital Requirements

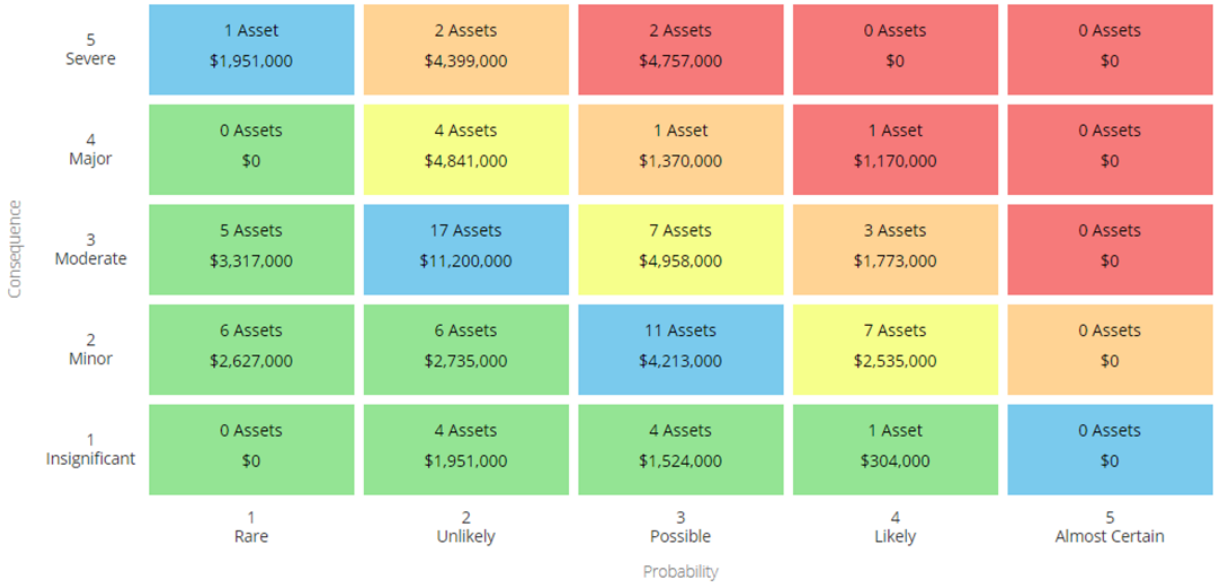
The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.2.5 Risk & Criticality

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



The risk matrix was developed for the purposes of this AMP and Municipality staff should review and adjust the risk model criteria to reflect an evolving understanding of both the probability and consequences of asset failure. Results from this analysis can be used to prioritize assets within capital plans to reduce the overall risk of the road network.

4.2.6 Levels of Service

The following tables identify the Municipality's current level of service for the 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 the Bridges & Culverts.

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. Only one of the municipality's structures has a loading restriction, meaning that most types of vehicles, including heavy transport, motor vehicles, emergency vehicles and cyclists can cross them without restriction. Many structures also support pedestrian traffic.
Quality	Description or images of the condition of bridges and how this would affect use of the bridges	See Appendix B
	Description or images of the condition of culverts and how this would affect use of the culverts	See Appendix B

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of bridges and structural culverts in the municipality with loading or dimensional restrictions	3%
Quality	Average bridge condition index value for bridges in the municipality	58.5
	Average bridge condition index value for structural culverts in the municipality	64.8
Performance	Capital reinvestment rate	2%
	# of unplanned bridge closures per total number of bridges	1%

4.2.7 Recommendations

Levels of Service

- Measure Current Levels of Service – This AMP contains a basic measurement of the Municipality's current level of service according to the metrics established in O. Reg. 588/17 Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning.
- Identify Additional LOS Metrics – Staff should identify additional LOS metrics that would inform both short and long-term asset management planning.
- Identify Proposed Levels of Service - 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.

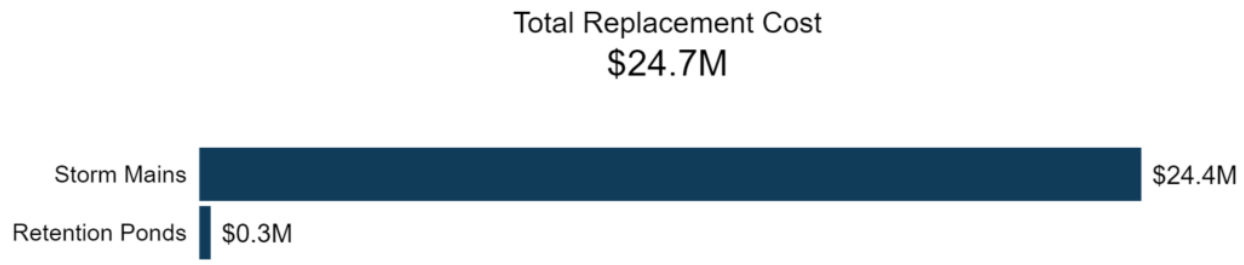
4.3 Storm Water Network

The Municipality is responsible for owning and maintaining a Storm Water Network consisting of 43km kilometres of storm sewer mains and 1 retention pond.

4.3.1 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 Water Network inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Retention Ponds	1[6]	CPI Tables	$298,739
Storm Mains	43,188 m	Cost/Unit	$24,436,625
			$24,735,364

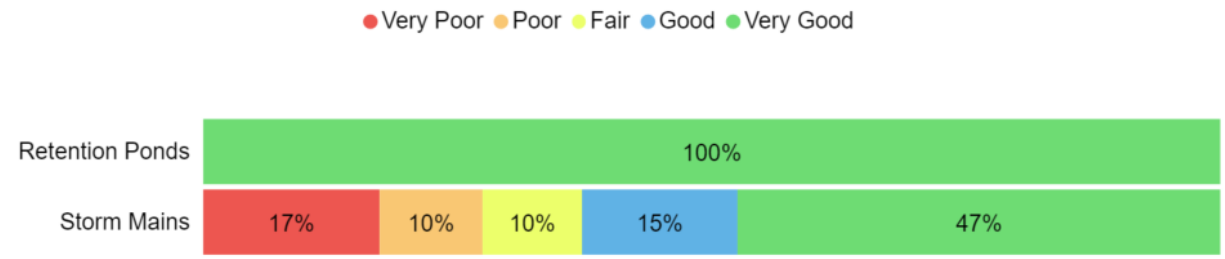


[6] There are two retention ponds that have recently been assumed by the Municipality and will be included in the next iteration of the asset management plan.

4.3.2 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
Retention Ponds	81%	Very Good	Age-based
Storm Mains	61%	Good	20% Assessed
	61%	**Good**	**20% Assessed**



To ensure that the Municipality's Storm Water Network 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 Water Network.

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:

- CCTV inspections have not yet been completed across the entire storm sewer network. Although a portion was inspected in 2019 with more planned in the future.

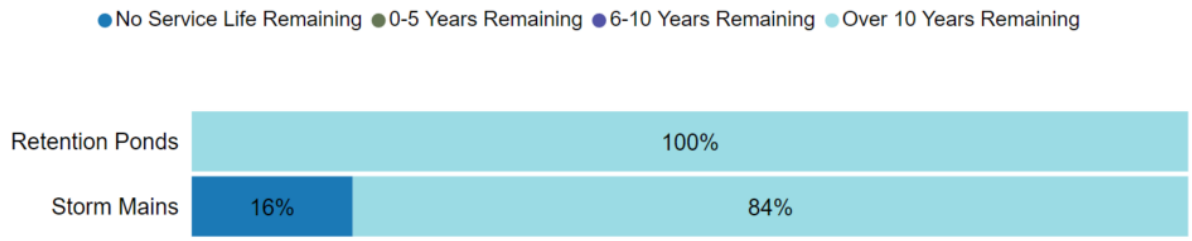
- CCTV inspections are completed in coordination with larger planned projects to rehabilitate or replace other infrastructure (water, sanitary, roads etc.)

4.3.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Storm Water 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)
Retention Ponds	75 years	14.1	60.8
Storm Mains	75 years	42.9	36.8
		42.9	**36.8**



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.

4.3.4 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	Catchbasins are cleaned annually and repaired on an as-needed basis
	Currently evaluating maintenance strategy for retention ponds as these are a fairly new asset type that will require unique maintenance and rehab techniques
Renewal/ Replacement	All storm sewer replacements are based on coordinated projects with other asset types (roads, water, sewer)

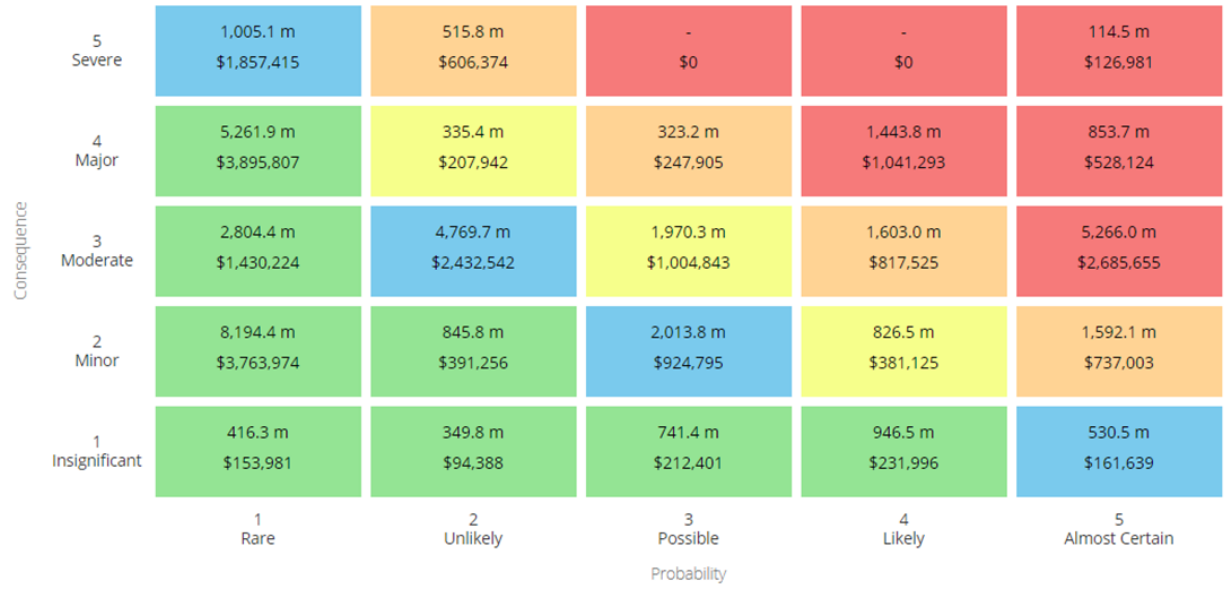
Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.

The 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.

4.3.5 Risk & Criticality

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



The risk matrix was developed for the purposes of this AMP and Municipality staff should review and adjust the risk model criteria to reflect an evolving understanding of both the probability and consequences of asset failure. Results from this analysis can be used to prioritize assets within capital plans to reduce the overall risk of the road network.

4.3.6 Levels of Service

The following tables identify the Municipality's current level of service for Storm Water 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 Storm Water Network.

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	See Appendix B

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of properties in municipality resilient to a 100-year storm	TBD[7]
	% of the municipal stormwater management system resilient to a 5-year storm	TBD[8]
Performance	Capital reinvestment rate	0.62%

[7] Current analysis is not sufficient to guarantee whether any parts of the Municipality is resilient to the 100-year storm. Huron Park and Exeter may have pockets of areas resilient due to the extensive piped system.
[8] The Town of Exeter and Huron Park are expected to be resilient to a 5-year storm due to the piped system.

4.3.7 Recommendations

Condition Assessment Strategies

- Develop a Condition Assessment Strategy - This AMP mostly on age-based estimates of asset condition for the Storm Water Network. While there have been some recent CCTV inspections of storm sewer mains, they have only been completed for 20% of linear assets. A network-wide condition assessment strategy is required.

Lifecycle Management Strategies

- Develop a Long-Term Capital Plan - While short-term capital project costs are minimal (next 10 years), increased capital costs are projected within 15-20 years based on the current age and condition of infrastructure. Staff should start planning for future requirements to ensure that adequate reserves are available when those needs become realized.

- Evaluate a Proactive Lifecycle Strategy for Retention Ponds – Retention Ponds currently receive maintenance activities ad hoc, as needs arise. Detailing the lifecycle activities required over the whole life of these assets will ensure that adequate capital and operating budgets are set aside for these activities. Further, reviewing the timing of maintenance events will allow the Municipality to balance the affordability of undertaking activities with the improved service these activities bring.

Levels of Service

- Measure Current Levels of Service – This AMP contains a basic measurement of the Municipality's current level of service according to the metrics established in O. Reg. 588/17 Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning.

- Identify Additional LOS Metrics – Staff should identify additional LOS metrics that would inform both short and long-term asset management planning.

- Identify Proposed Levels of Service - 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

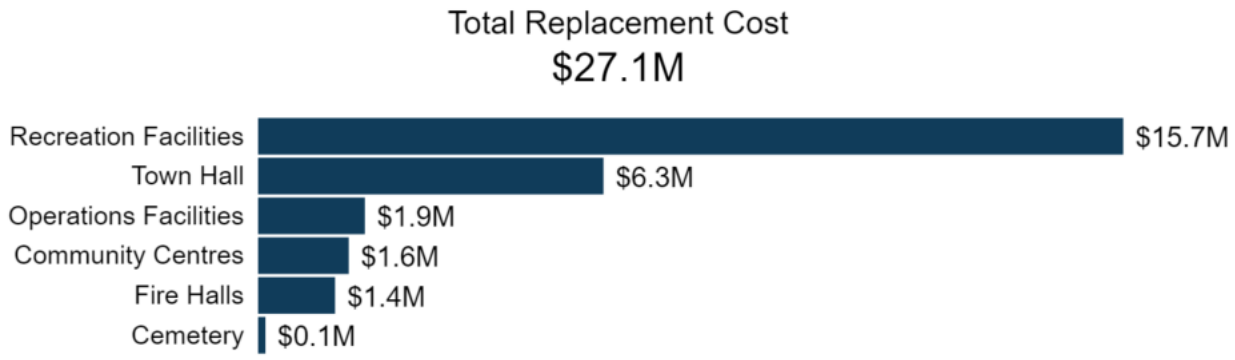
The Municipality of South Huron owns and maintains several facilities and community centres that provide key services to the community. These include:

- a cemetery
- fire halls to provide emergency services
- operations buildings to support the delivery of public works and operations
- a municipal building to provide municipal services
- recreation facilities and community centres

4.4.1 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 inventory.

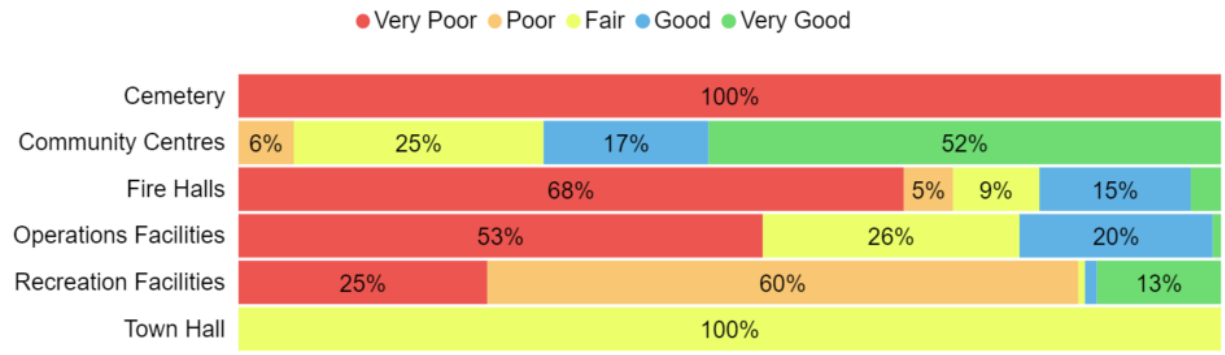
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Cemetery	2 structures; 1,500 sq. ft.	Cost Inflation	$137,884
Community Centres	4 structures; 16,970 sq. ft.	Cost Inflation	$1,649,062
Fire Halls	3 structures; 15,610 sq. ft.	Cost Inflation	$1,400,874
Operations Facilities	5 structures; 32,500 sq. ft.	Cost Inflation	$1,941,461
Recreation Facilities	9 structures; 119,006 sq. ft.	70% User-Defined Cost	$15,700,009
Town Hall	1 structure; 10,400 sq. ft.	Cost Inflation	$6,270,498
			$27,099,788



4.4.2 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
Cemetery	1%	Very Poor	Age-based
Community Centres	77%	Good	100% Assessed
Fire Halls	21%	Poor	1% Assessed
Operations Facilities	32%	Poor	Age-based
Recreation Facilities	42%	Fair	94% Assessed
Town Hall	50%	Fair	98% Assessed
	44%	**Fair**	**83% Assessed**



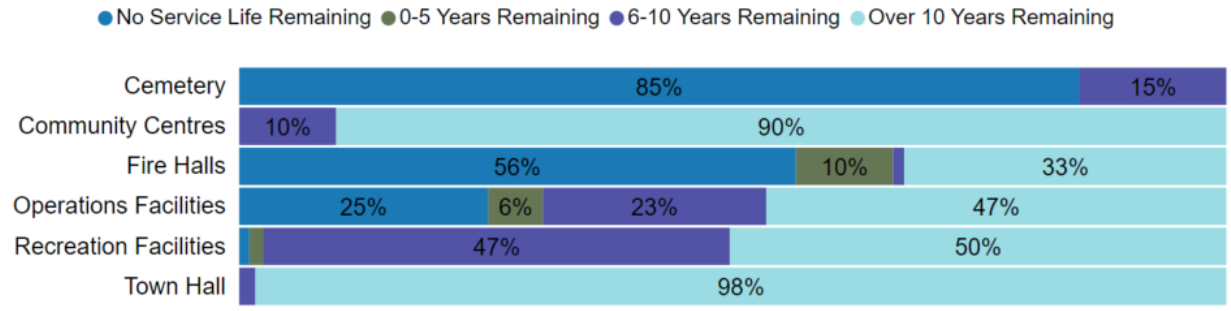
To ensure that the Municipality's Buildings continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

4.4.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Buildings 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)
Cemetery	15-95 years	87.5	-50.3
Community Centres	15-95 years	32.8	29.9
Fire Halls	15-95 years	34.2	4.6
Operations Facilities	15-95 years	24.5	18.0
Recreation Facilities	10-95 years	38.7	13.7
Town Hall	15-95 years	116.8	18.9
		43.0	**11.4**

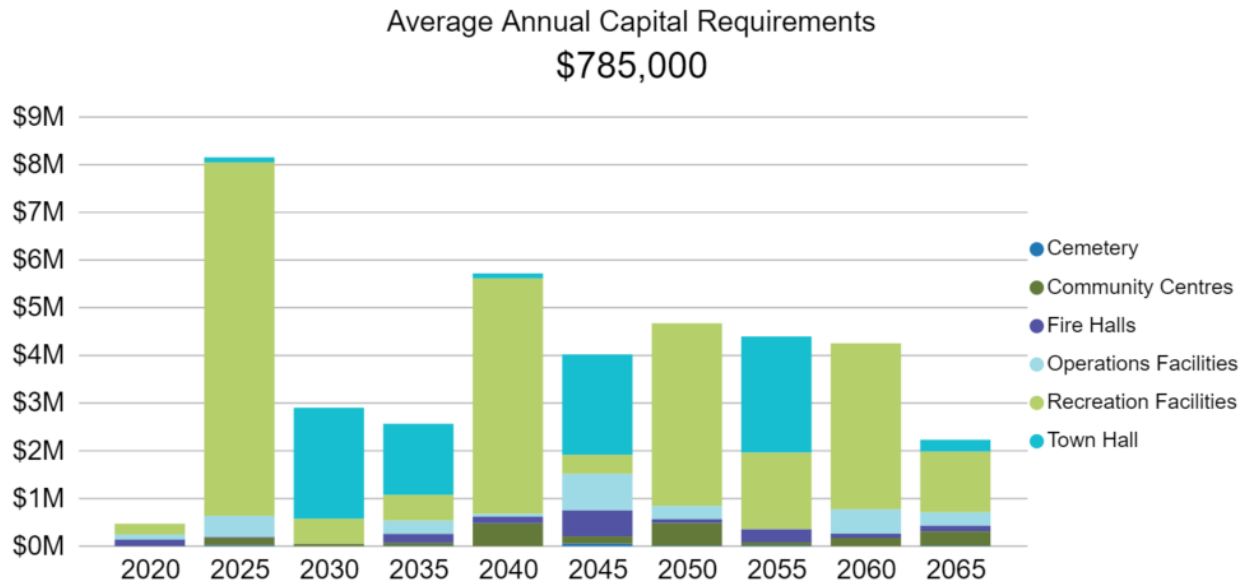


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.4.4 Lifecycle Management Strategy

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



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4.4.5 Risk & Criticality

Buildings are considered a non-core asset category. As such, the Municipality has until July 1, 2023 to identify asset risk and determine asset criticality.

4.4.6 Levels of Service

Buildings are considered a non-core asset category. As such, the Municipality has until July 1, 2023 to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.4.7 Recommendations

Asset Inventory/Data Refinement

- Review Replacement Costs – The replacement costs developed for Facilities in this AMP are almost entirely based on the inflation of historical costs. 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

- Develop a Condition Assessment Strategy - Staff completed a cursory review of facility condition to inform the development of this AMP (83% assessed). The Municipality should implement regular condition assessment procedures for all facilities to better inform short- and long-term capital requirements. Detailed component-based facility assessments should be considered for structures that exhibit moderate to severe signs of deterioration. Additional guidance can be found in Appendix D.

- Review Backlog 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.

Lifecycle Management Strategies

- Develop a Long-Term Capital Plan – Based on age and condition, there are a handful of facilities that are projected for rehabilitation or replacement in the near future. A long-term capital plan should be developed to meet projected capital requirements. Detailed facility assessments are required to determine the true extent of lifecycle requirements.

Levels of Service

- Identify Current Levels of Service Metrics - Municipality staff need to identify the qualitative descriptions and technical metrics that will measure the current level of service provided by facilities by July 1, 2023 according to O. Reg. 588/17.

4.5 Machinery & Equipment

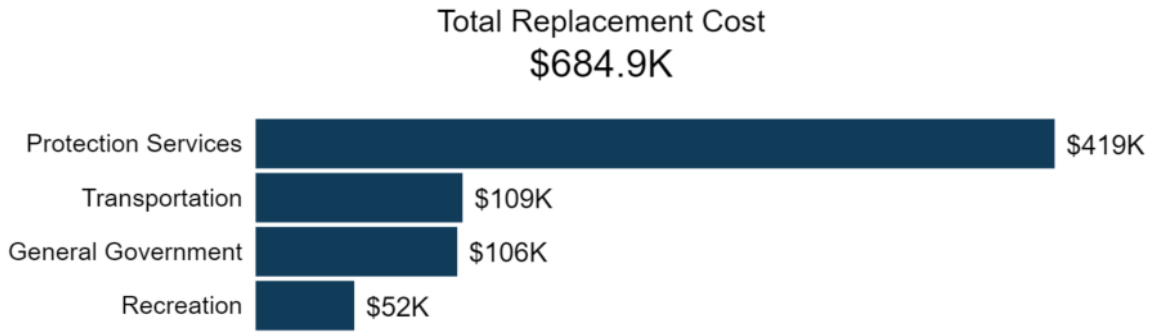
In order to maintain the high quality of public infrastructure and support the delivery of core services, municipalities own and employ various types of machinery and equipment. This includes:

- Office equipment and hardware to support administration
- Fire equipment to support the delivery of protective services
- Accessible lifts and stage equipment to provide recreation services
- Lift attachments, snow blowers, and sanders to support transportation services

4.5.1 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.

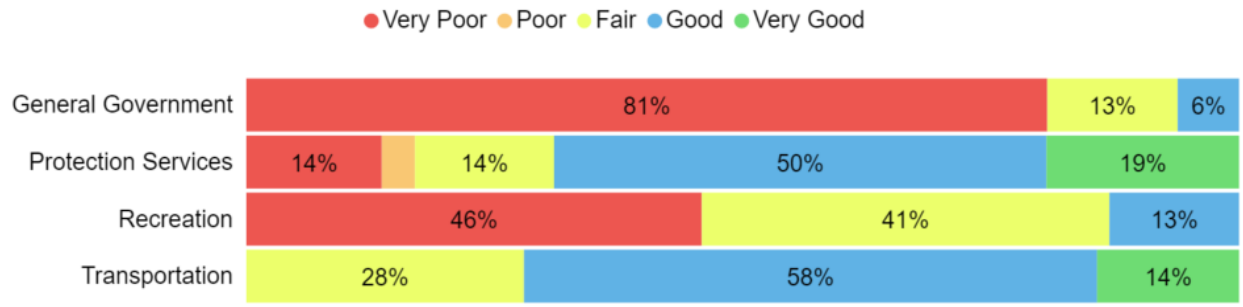
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
General Government	8	Cost Inflation	$105,731
Protection Services	82	Cost Inflation	$418,874
Recreation	9	Cost Inflation	$51,750
Transportation	11	Cost Inflation	$108,509
			$684,864



4.5.2 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	13%	Very Poor	Age-based
Protection Services	63%	Good	Age-based
Recreation	35%	Fair	Age-based
Transportation	76%	Good	Age-based
	55%	**Fair**	**100% Age-based**



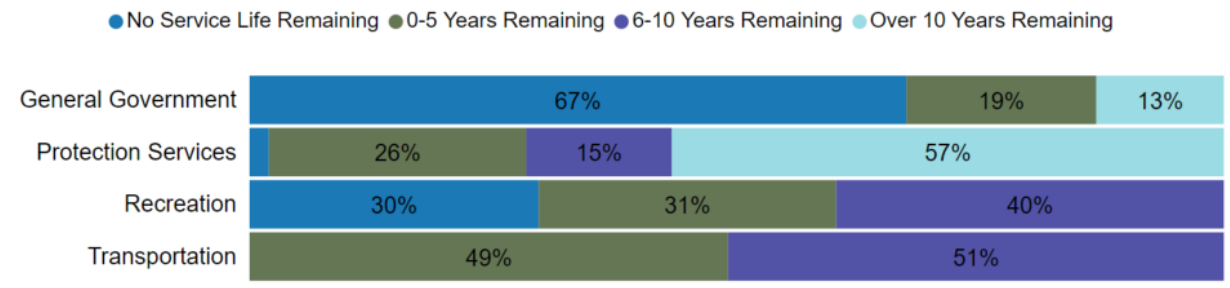
To ensure that the Municipality's Machinery & Equipment continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination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

4.5.3 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)
General Government	3-30 years	9.3	-1.8
Protection Services	5-49 years	4.0	10.7
Recreation	5-20 years	8.1	1.4
Transportation	5-10 years	1.1	4.8
		5.2	**6.6**

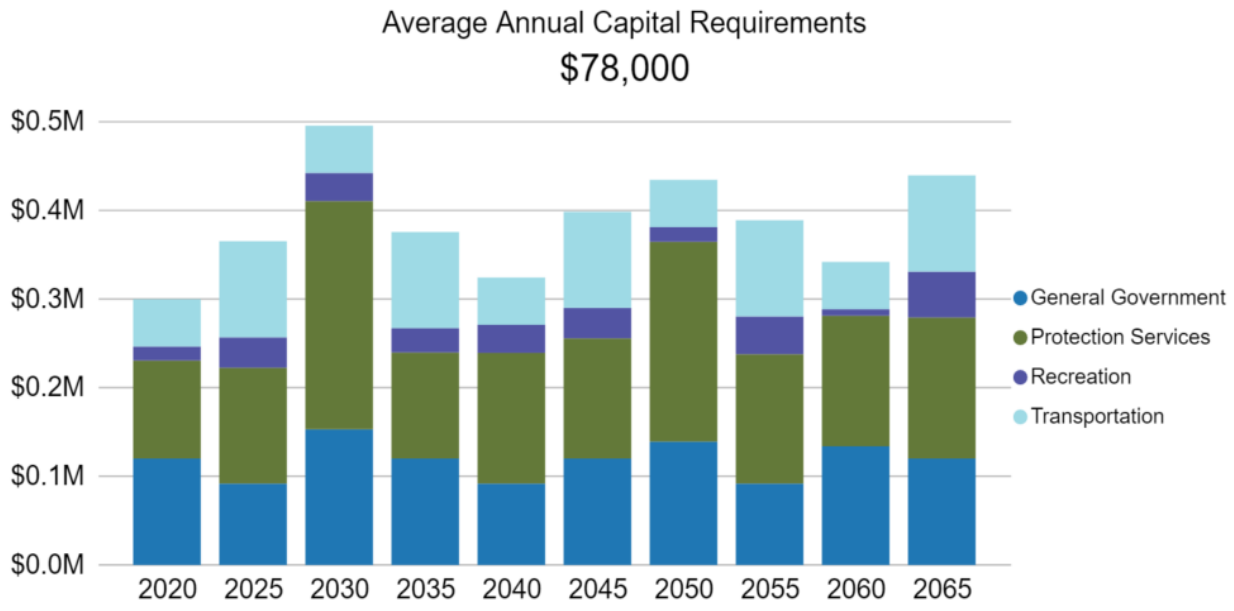


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.5.4 Lifecycle Management Strategy

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



4.5.5 Risk & Criticality

Machinery & Equipment is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to identify asset risk and determine asset criticality.

4.5.6 Levels of Service

Machinery & Equipment is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.5.7 Recommendations

Asset Inventory/Data Refinement

- **Review Replacement Costs** - The replacement costs developed for Machinery & Equipment in this AMP are entirely based on the inflation of historical costs. 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

- **Develop a Condition Assessment Strategy** – There have been no condition assessments to date; staff rely on age-based estimates of condition. The Municipality should implement regular condition assessment procedures for all equipment to better inform short- and long-term capital requirements.

Lifecycle Management Strategies

- **Develop a Short-Term Capital Plan -** Given the relatively short useful life of most equipment a short-term capital plan should be prepared and updated annually to ensure capital funds are available to meet projected requirements.

Levels of Service

- **Identify Current Levels of Service Metrics** - Municipality staff need to identify the qualitative descriptions and technical metrics that will measure the current levels of service provided by machinery & equipment by July 1, 2023 according to O. Reg. 588/17.

4.6 Rolling Stock

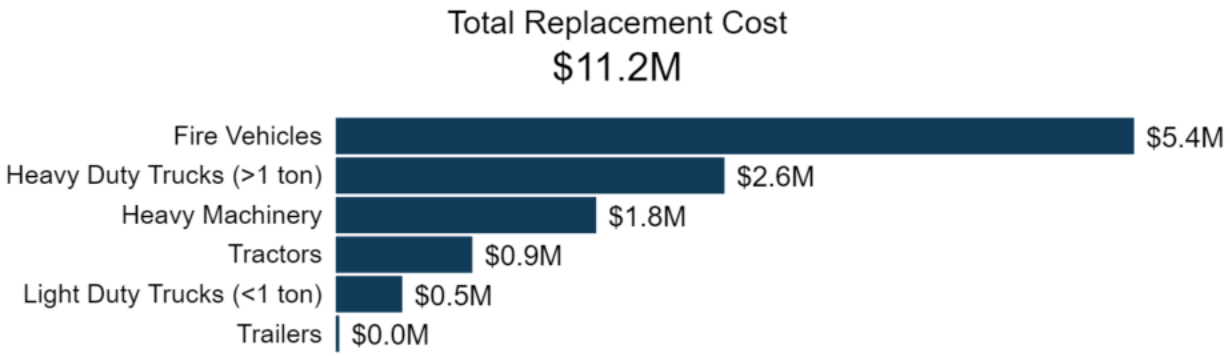
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- Graders, Backhoes, and Tractors to support road construction and maintenance
- Trucks and trailers to support municipal operations
- Plows for winter maintenance
- Pumpers/Tankers and Rescue Vans to provide protection services

4.6.1 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 Vehicles.

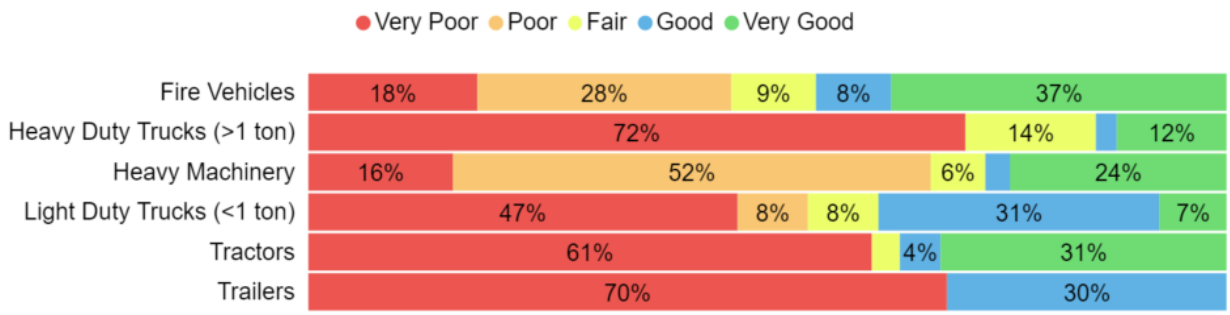
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Fire Vehicles	11	37% Cost Inflation 63% User-Defined Cost	$5,427,995
Heavy Duty Trucks (>1 ton)	11	23% Cost Inflation 77% User-Defined Cost	$2,642,862
Heavy Machinery	10	26% Cost Inflation 74% User-Defined Cost	$1,770,969
Light Duty Trucks (<1 ton)	13	93% Cost Inflation 7% User-Defined Cost	$452,075
Tractors	18	Cost Inflation	$928,561
Trailers	3	Cost Inflation	$23,752
			$11,246,214



4.6.2 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
Fire Vehicles	50%	Fair	Age-based
Heavy Duty Trucks (>1 ton)	22%	Poor	Age-based
Heavy Machinery	45%	Fair	Age-based
Light Duty Trucks (<1 ton)	39%	Fair	Age-based
Tractors	35%	Fair	Age-based
Trailers	21%	Poor	Age-based
	41%	**Fair**	**Age-based**



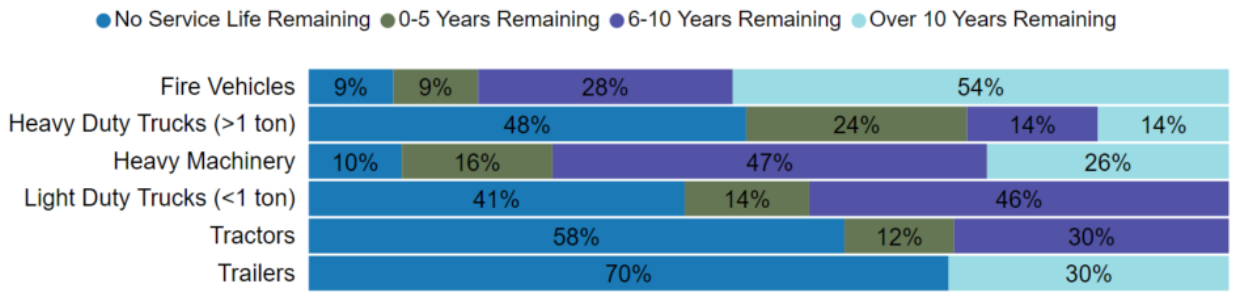
To ensure that the Municipality's Vehicles continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

4.6.3 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)
Fire Vehicles	10-25 years	12.3	10.4
Heavy Duty Trucks (>1 ton)	10-20 years	11.6	3.4
Heavy Machinery	8-20 years	8.4	5.6
Light Duty Trucks (<1 ton)	10 years	7.3	2.8
Tractors	5-10 years	6.6	0.7
Trailers	4-20 years	16.4	-1.8
		9.2	**3.8**

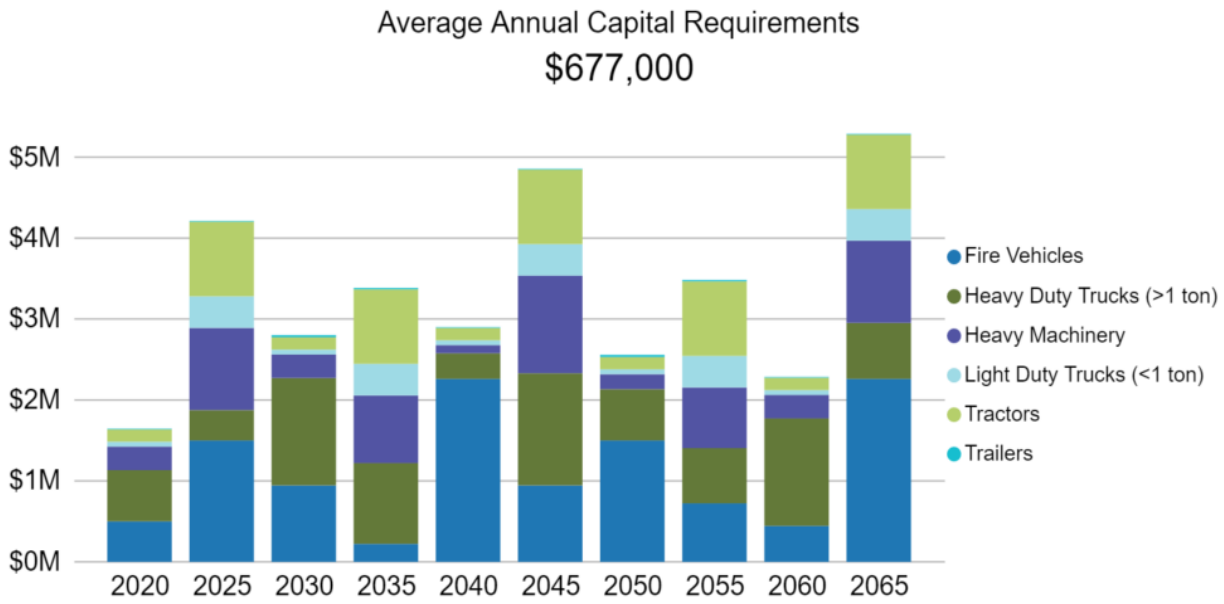


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.6.4 Lifecycle Management Strategy

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



4.6.5 Risk & Criticality

Vehicles is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to identify asset risk and determine asset criticality.

4.6.6 Levels of Service

Vehicles is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.6.7 Recommendations

Condition Assessment Strategies

- Develop a Condition Assessment Strategy - Staff rely on age-based condition for all rolling stock assets within the AMP. Formal condition assessment procedures should be developed to ensure that asset management planning is based on the best available data regarding asset condition. See Appendix D for additional guidance.

- Review Backlog 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.

Lifecycle Management Strategies

- Develop a Short-Term Capital Plan - Given the relatively short useful life of vehicles (5-25 years) a short-term capital plan should be prepared and updated annually to ensure capital funds are available to meet projected requirements.

Levels of Service

- Identify Current Levels of Service Metrics - Municipality staff need to identify the qualitative descriptions and technical metrics that will measure the current levels of service provided by vehicles by July 1, 2023 according to O. Reg. 588/17.

4.7 Land Improvements

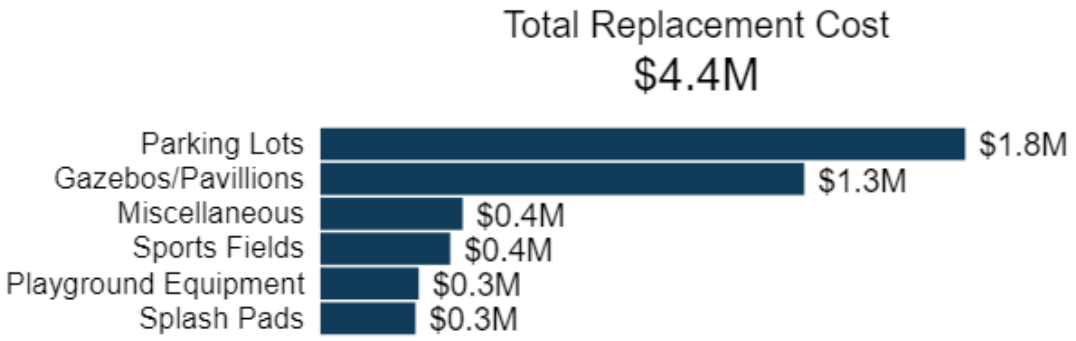
The Municipality of South Huron owns a small number of assets that are considered Land Improvements. This category includes:

- Parking Lots
- Playground Equipment
- Gazebos and Pavilions
- Lighting and Bleachers
- Splash Pad
- Sports Fields

4.7.1 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.

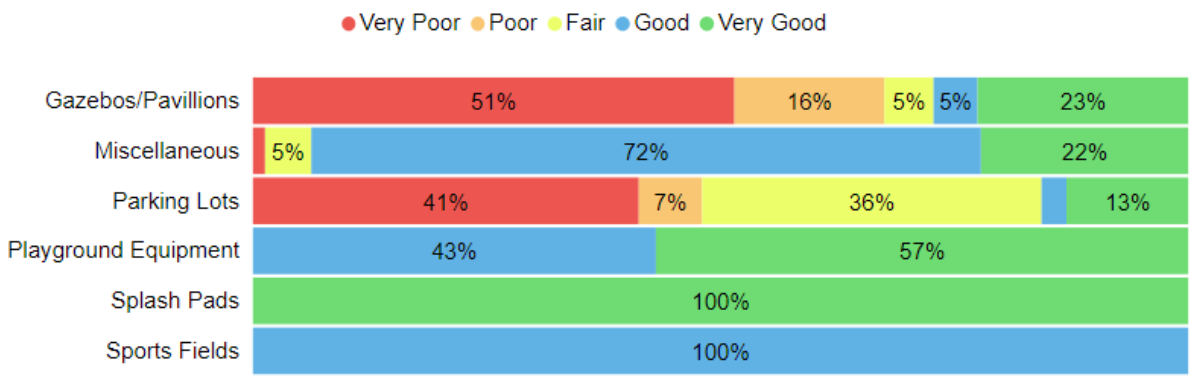
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Gazebos/Pavillions	10	Cost Inflation	$1,328,378
Miscellaneous	8	Cost Inflation	$391,308
Parking Lots	17	Cost Inflation	$1,769,821
Playground Equipment	6	Cost Inflation	$270,741
Splash Pads	1	Cost Inflation	$261,782
Sports Fields	1	Cost Inflation	$357,128
			$4,379,158



4.7.2 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
Gazebos/Pavillions	32%	Poor	Age-based
Miscellaneous	73%	Good	Age-based
Parking Lots	35%	Poor	Age-based
Playground Equipment	80%	Very Good	Age-based
Splash Pads	90%	Very Good	Age-based
Sports Fields	68%	Good	Age-based
	46%	**Fair**	**100% Age-based**



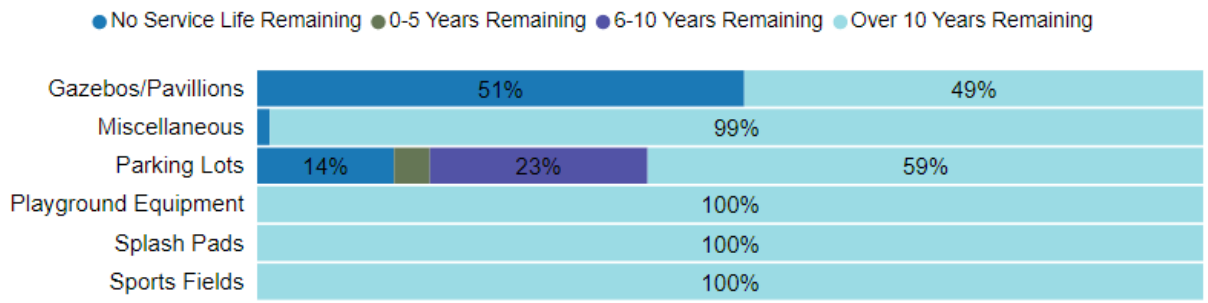
To ensure that the Municipality's Land Improvements continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of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

4.7.3 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)
Gazebos/Pavillions	50 years	25.0	25.0
Miscellaneous	0-50 years	13.0	22.0
Parking Lots	50 years	36.4	13.6
Playground Equipment	50 years	10.6	39.3
Splash Pads	50 years	5.1	44.8
Sports Fields	25 years	8.1	16.8
		24.4	**22.2**

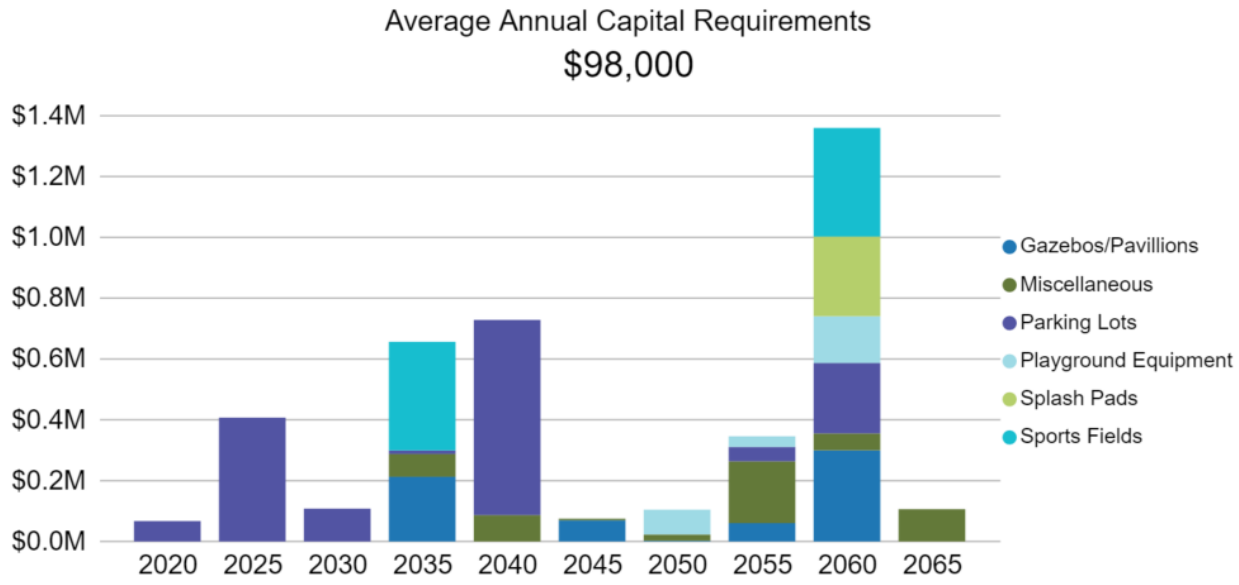


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.7.4 Lifecycle Management Strategy

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



4.7.5 Risk & Criticality

Land Improvements is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to identify asset risk and determine asset criticality.

4.7.6 Levels of Service

Land Improvements is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

4.7.7 Recommendations

Asset Inventory/Data Refinement

- **Review Replacement Costs -** The replacement costs developed for Land Improvements in this AMP are entirely based on the inflation of historical costs. 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

- **Develop a Condition Assessment Strategy** - Staff relied on age-based condition data for all Land Improvement Assets within the AMP. Formal condition assessment procedures should be developed to ensure that asset management planning is based on the best available date regarding asset condition. See Appendix D for additional guidance.

Lifecycle Management Strategies

- **Develop a Short-Term Capital Plan -** Given the wide range in useful life of land improvements (0-50 years) a short-term capital plan should be prepared and updated annually to ensure capital funds are available to meet projected requirements.

Levels of Service

- **Identify Current Levels of Service Metrics** - Municipality staff need to identify the qualitative descriptions and technical metrics that will measure the current levels of service provided by facilities by July 1, 2023 according to O. Reg. 588/17.

5 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $196.9 million
- 61% 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 $3.8 million

5.1 Water Network

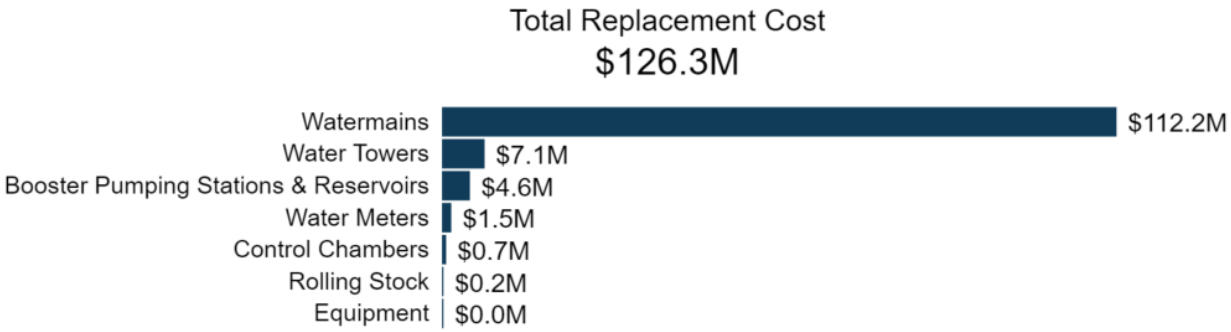
The Environmental Services Division is responsible for maintenance and operation of the Municipality's water distribution system, water booster pumping stations, underground reservoirs and elevated water towers.

South Huron water is distributed from the Lake Huron Primary Water Supply Systems, owned by member Municipalities, including South Huron, providing water to over 350,000 people in the region. The water network is subject to numerous Acts and Regulations and is regularly subjected to compliance-based certification processes.

5.1.1 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 Network inventory.

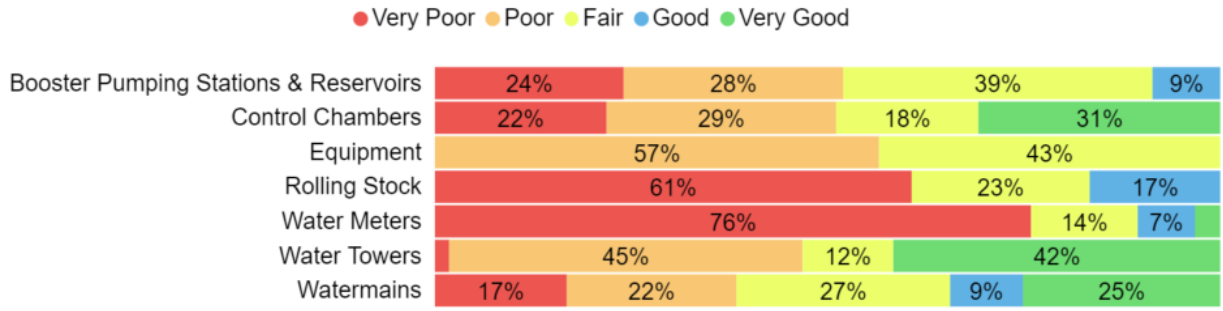
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Booster Pumping Stations & Reservoirs	3 Structures (12 Components)	Cost Inflation	$4,639,930
Control Chambers	4 structures (10 components)	Cost Inflation	$686,142
Equipment	3	Cost Inflation	$28,771
Rolling Stock	7	Cost Inflation	$187,764
Water Meters	4,121	Cost/Unit	$1,541,254
Water Towers	2 structures (16 components)	Cost Inflation	$7,084,406
Watermains	206,377 m	Cost/Unit	$112,178,200
			$126,346,467



5.1.2 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
Booster Pumping Stations & Reservoirs	37%	Poor	Age-based
Control Chambers	48%	Fair	51% Assessed
Equipment	40%	Fair	Age-based
Rolling Stock	26%	Poor	Age-based
Water Meters	16%	Very Poor	Age-based
Water Towers	54%	Fair	Age-based
Watermains	54%	Fair	90% Risk-Based Assessment[9]
	53%	**Fair**	**80% Risk-Based Assessment**



To ensure that the Municipality's Water Network 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 Network.

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:

- Water mains were assessed by GM Blue Plan, using risk as a proxy for condition scores. Factors included age, material, average break rates, fire protection, installation practice,

[9] A recent report completed for the Municipality included a risk-based evaluation of the condition of water and sanitary mains. This analysis was based on parameters including age, pipe material, location, design, and others. While this provides value for renewal planning it is not considered a condition assessment.

quality of information, pipe diameter, and social impacts. A break report is completed annually as a proxy to estimate pipe condition

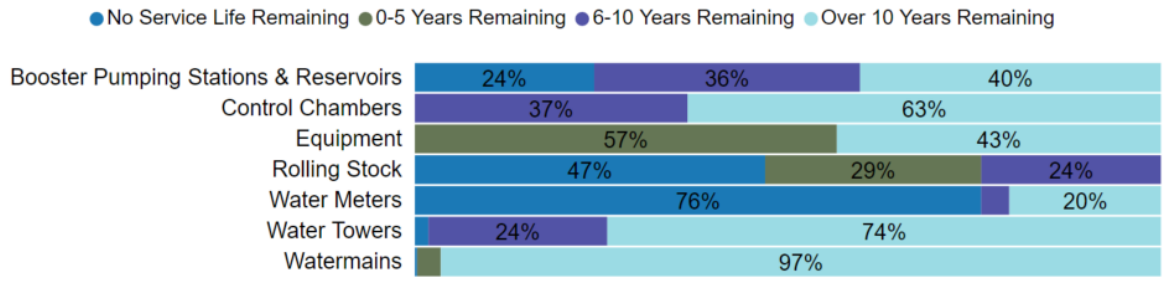
- Water towers are inspected on a five-year cycle, identifying maintenance work and defects, which is compiled into a numerical condition score
- Hydrants and valves are checked twice annually for fire flow and condition (good, fair, poor).
- The Municipality intends to expand the condition assessment program for water facilities in 2021.

5.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Water 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)
Booster Pumping Stations & Reservoirs	15-60 years	61.7	-3.3
Control Chambers	15-60 years	8.5	27.3
Equipment	10-30 years	9.4	7.3
Rolling Stock	9-10 years	7.3	2.8
Water Meters	20-32 years	8.8	11.1
Water Towers	15-60 years	26.6	16.0
Watermains	60-100 years	39.3	37.2
		38.2	**35.4**



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.

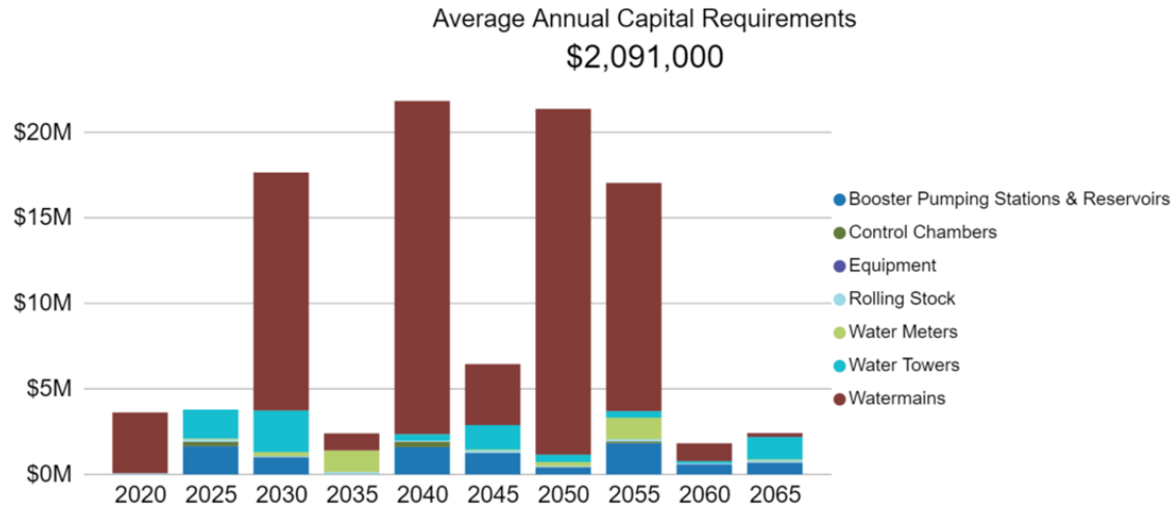
5.1.4 Lifecycle Management Strategy

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	Water towers undergo a five-year maintenance inspection cycle, report reommendations include tank cleaning, rust removal, exterior epoxy coating and repairs.
	Hydrants and dead-ends are flushed, and valves excercised, twice per year.
	Booster stations are inspected annually, identifying maintenance and repairs. Minor repairs identified are carried out immediately. Generators are tested monthly and generally maintenance performed annually.
	Watermain leaks are monitored continually, indicating non-revenue water and future repairs.
Rehabilitation /Replacement	The linear system is generally only replaced near end-of-life, prioritizing sections where coordination opportunities with roads and sewer exist, as well as those segments that were not installed using design criteria.

Forecasted Capital Requirements

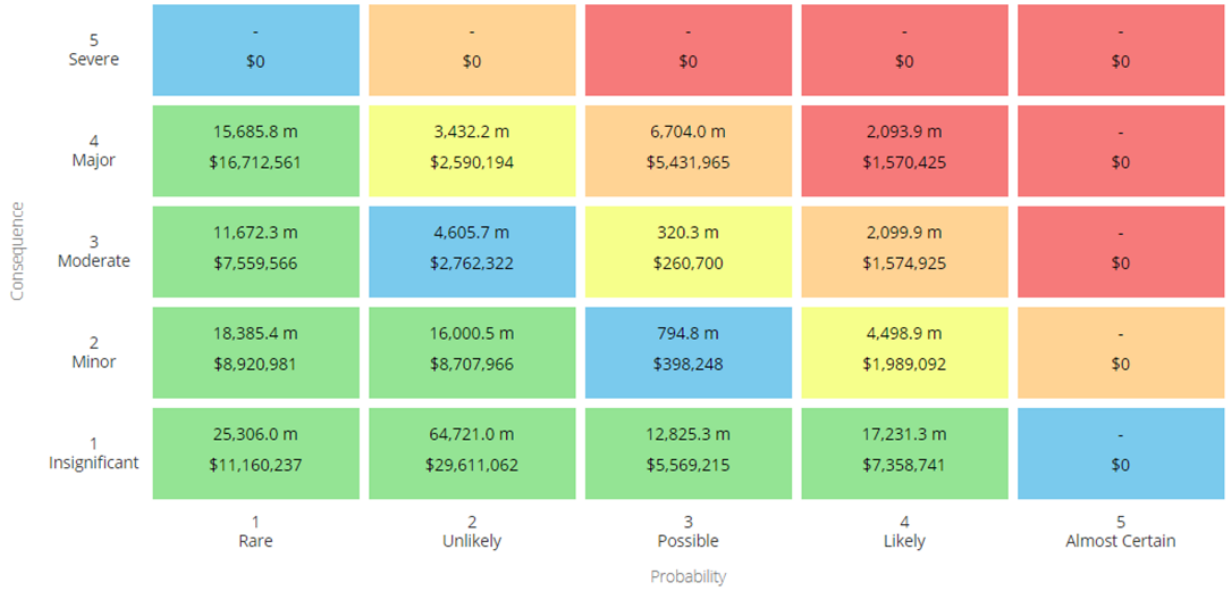
The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

5.1.5 Risk & Criticality

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



The risk matrix was developed for the purposes of this AMP and Municipality staff should review and adjust the risk model criteria to reflect an evolving understanding of both the probability and consequences of asset failure. Results from this analysis can be used to prioritize assets within capital plans to reduce the overall risk of the road network.

5.1.6 Levels of Service

The following tables identify the Municipality's current level of service for the Water 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 Water Network.

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix B
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix B
Reliability	Description of boil water advisories and service interruptions	There were no boil water advisories issued in 2019. There were 11 water main breaks and 10 service leaks in 2019. All water main breaks were repaired within the same day that they occurred and extended service disruptions were avoided.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of properties connected to the municipal water system	79%
	% of properties where fire flow is available	62%
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 system	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 system	0.0017
Performance	Number of water main breaks / km of water main	0.1005
	Number of successful bacteriological tests per total number of samples taken	100%

5.1.7 Recommendations

Condition Assessment Strategies

- Review the Risk-Based Condition Scores – Condition scores have been developed by GM Blue Plan, taking into account pipe attributes and break rates, as a proxy for condition. Staff should review these attributes and weightings to ensure projected conditions match break rates found in the field.

- Review Backlog 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.

Levels of Service

- Measure Current Levels of Service – This AMP contains a basic measurement of the Municipality's current level of service according to the metrics established in O. Reg. 588/17. Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning.

- Identify Proposed Levels of Service - 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.

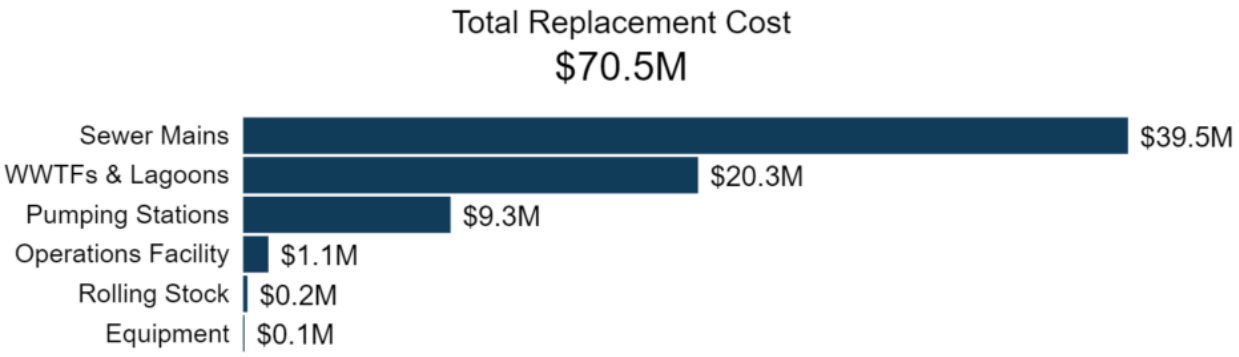
5.2 Sanitary Sewer Network

The Municipality of South Huron operates and maintains a sanitary sewer network including a wastewater collection system (66 km of sewer mains) consisting of gravity mains, pumping stations, operations facilities, and equipment and rolling stock. The Grand Bend Sewage Treatment Plant is jointly owned between South Huron and Lambton Shores, having cost allocated by design capacity.

5.2.1 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 Sewer Network inventory.

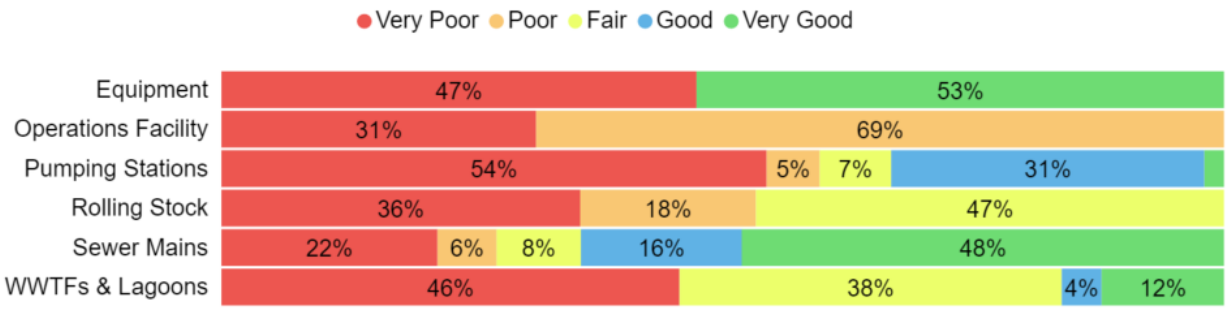
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Equipment	2	Cost Inflation	$65,372
Operations Facility	1 structure (4 components)	Cost Inflation	$1,135,669
Pumping Stations	6 structures (24 components)	Cost Inflation	$9,274,362
Rolling Stock	4	Cost Inflation	$200,443
Sewer Mains	66,139 Length (m)	Cost/Unit	$39,535,225
WWTFs & Lagoons	2 structures (16 components)	Cost Inflation	$20,330,971
			$70,542,042



5.2.2 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	52%	Fair	Age-based
Operations Facility	17%	Very Poor	Age-based
Pumping Stations	33%	Poor	Age-based
Rolling Stock	35%	Poor	Age-based
Sewer Mains	62%	Good	21% Assessed; 79% Risk-Based Assessment[10]
WWTFs & Lagoons	38%	Poor	Age-based
	51%	**Fair**	**12% Assessed; 44% Risk-Based Assessment**



To ensure that the Municipality's Sanitary Sewer Network 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 Sewer Network.

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:

[10] A recent report completed for the Municipality included a risk-based evaluation of the condition of water and sanitary mains. This analysis was based on parameters including age, pipe material, location, design, and others. While this provides value for renewal planning it is not considered a condition assessment.

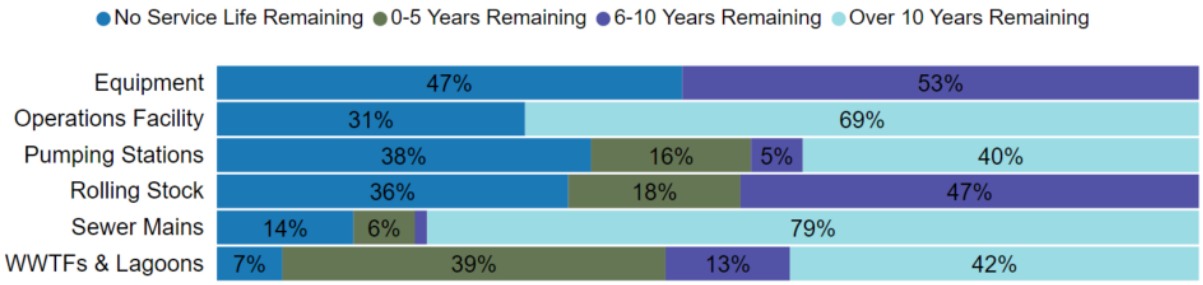
- CCTV inspections have not yet been completed across the entire gravity sewer network. Although a portion was inspected in 2019 with more planned in the future.
- An acoustic assessment, Sewer Line Rapid Assessment Tool (SLRAT), is targeted towards select problem areas. This assessment notifies staff of leaks, which informs the overall condition of the pipe.
- Lagoons and the associated building and equipment assts are inspected throughout the year by internal staff.
- Similar to water assets, the Generator Station is inspected every week internally, and bi-annually by a contractor

5.2.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Sanitary Sewer 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)
Equipment	10-15 years	8.6	3.9
Operations Facility	15-60 years	45.1	-6.3
Pumping Stations	15-60 years	22.7	15.3
Rolling Stock	10 years	6.8	3.2
Sewer Mains	50-100 years	37.9	45.5
WWTFs & Lagoons	15-60 years	18.7	19.9
		36.1	**41.9**



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.

5.2.4 Lifecycle Management Strategy

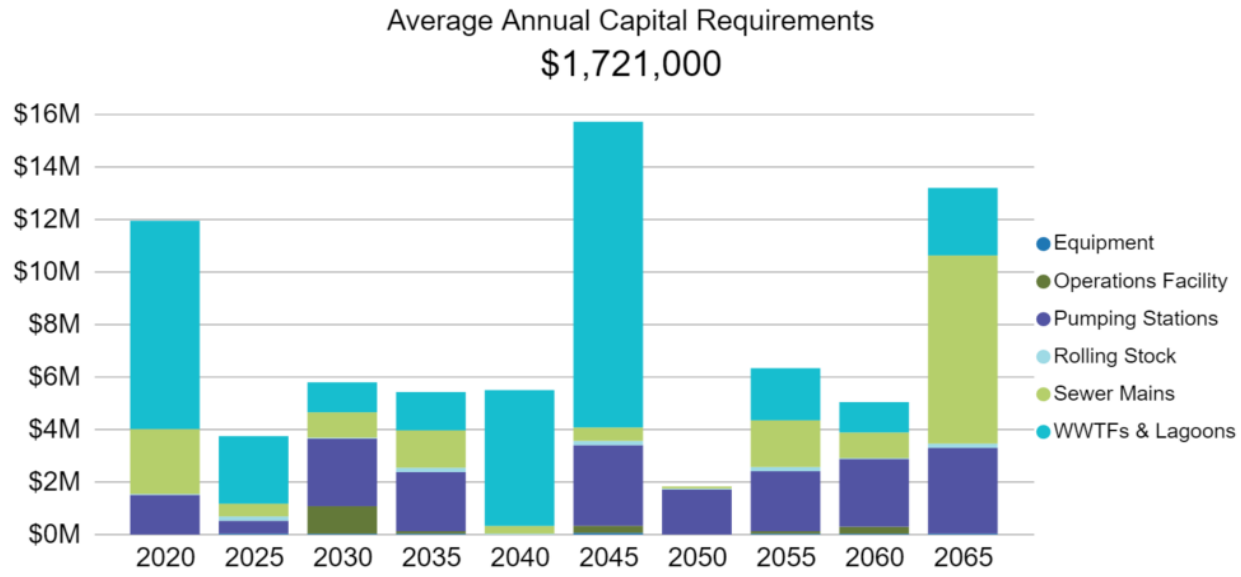
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Gravity mains flushed and reamed as issues are identified through the SLRAT data.
	Inflow and Infiltration monitored in Exeter, identified through analysis of flow rate to pumping stations during wet weather events.
	Blower system and aeration system rebuilt based on consultant's review.
	Sand filters at the lagoons are constantly maintained.
Replacement	A 15-year long-term capital plan is updated annually, identifying replacement requirements across the system. Replacement considers age, material, and service area.
	The Water and Wastewater Master Plan identifies capacity and performance requirements long-term.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

5.2.5 Risk & Criticality

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

The risk matrix was developed for the purposes of this AMP and Municipality staff should review and adjust the risk model criteria to reflect an evolving understanding of both the probability and consequences of asset failure. Results from this analysis can be used to prioritize assets within capital plans to reduce the overall risk of the road network.

5.2.6 Levels of Service

The following tables identify the Municipality's current level of service for Sanitary Sewer 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 Sanitary Sewer Network.

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix B
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	Overflows are located at each of the six municipal sewage pumping stations. During wet weather events, each pumping station is designed at an elevation to overflow before any basement backups occur.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	In 2019 one sewage overflow occurred due to a mechanical failure. Typically, not more than six overflows occur annually at sewage pumping stations.
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	In older serviced areas, building foundation drains and roof water leaders were directly connected to the sanitary sewer system. During rain events, storm water collected by eavestroughs, roof drains and foundation drains flow directly into the sanitary sewer system. Ground water also enters the sanitary sewer system from leaking pipe joints and at manhole penetrations. Illegal sump pump connections to internal sanitary plumbing also contributes storm water to the sanitary sewer system.

Service Attribute	Qualitative Description	Current LOS (2019)
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The Ministry of the Environment design factor for Inflow and infiltration factor is included in the design of sanitary sewers. New sewers have improved specifications to reduce I&I in pipes and manholes.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent quality generally meets all regulatory requirements set out in the ECA. In 2019 there was one regulatory effluent quality limit exceeded and was reported to the MECP.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of properties connected to the municipal wastewater system	62%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0.00031
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.00031
Performance	% of treated wastewater vs rated capacity of wastewater treatment facility	45%
	Volume of wastewater treated per household (ML/year)	243.6

5.2.7 Recommendations

Asset Inventory/Data Refinement

- Review Replacement Costs – Unit costs have been reviewed and applied to all linear sanitary infrastructure. Non-linear infrastructure, including lagoons and equipment, rely on the inflation of historical costs. These costs should be reviewed and updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Develop a Condition Assessment Strategy - This AMP relies on age-based and risk-based condition data for all sanitary network infrastructure. The development of a network-wide condition assessment program will provide greater reliability in the accuracy of the current condition data.

Levels of Service

- Measure Current Levels of Service – This AMP contains a basic measurement of the Municipality's current level of service according to the metrics established in O. Reg. 588/17. Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning.
- Identify Proposed Levels of Service - 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.

5.3 Waste Disposal

The Municipality of South Huron operates one landfill site. The assets within Waste Disposal allow for the disposal of solid waste from businesses and residents.

The Waste Disposal is operated and maintained throughout the year by Environmental Services Division.

5.3.1 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 Sewer Network inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Landfill Site/Scale House	4	Cost Inflation	$419,966
			$419,966

5.3.2 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
Landfill Site/Scale House	94%	Very Good	Age-based
	94%	**Very Good**	**Age-based**

To ensure that the Municipality's Sanitary Waste Disposal 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 Sewer Network.

5.3.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Waste Disposal 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.

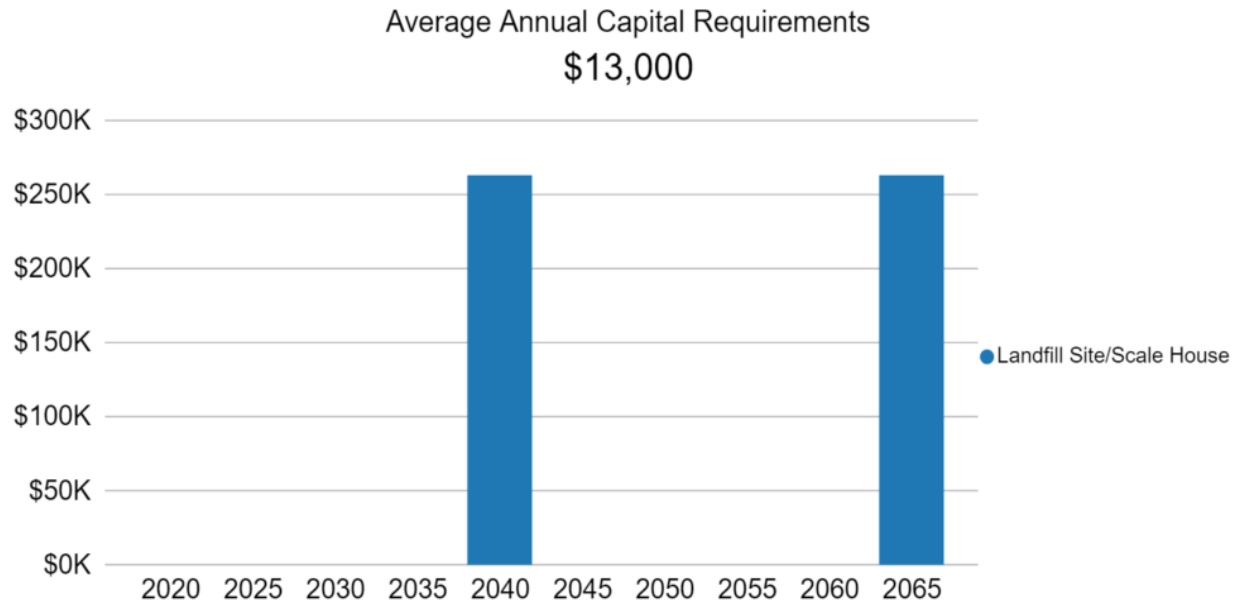
Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Equipment	25-84 years	2.1	45.1
		2.1	**45.1**

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.

5.3.4 Lifecycle Management Strategy

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

5.3.5 Risk & Criticality

Land Improvements is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to identify asset risk and determine asset criticality.

5.3.6 Levels of Service

Land Improvements is considered a non-core asset category. As such, the Municipality has until July 1, 2023 to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

5.3.7 Recommendations

Asset Inventory/Data Refinement

- Review Replacement Costs – All waste disposal assets rely on the inflation of historical costs. These costs should be reviewed and updated according to the best available information on the cost to replace the asset in today's value.

- Develop a Component-Based Inventory – Landfills are complex assets, consisting of the land, buildings, and associated equipment. Further componentizing the inventory will enable the Municipality to develop component-based lifecycle plans.

Condition Assessment Strategies

- Develop a Condition Assessment Strategy - This AMP relies on age-based condition data for all Waste Disposal assets. The development of a condition assessment program will provide greater reliability in the accuracy of the current condition data.

Levels of Service

- Identify Current Levels of Service Metrics - Municipality staff need to identify the qualitative descriptions and technical metrics that will measure the current levels of service provided by facilities by July 1, 2023 according to O. Reg. 588/17.

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 Development Charges Background Study (2020)

The Municipality recently completed the development of a Development Charges Background Study in alignment with the requirements of the *Development Charges Act 1997*. This included a chapter identifying growth forecasts for the anticipated development for which the Municipality will be required to provide services over a 10-year, 20-year and buildout time horizon.

The following table outlines the residential growth forecast:

Year	Population	Total Households	Employment
2006	10,220	4,055	3,975
2011	10,190	4,172	3,615
2016	10,340	4,245	3,825
2020	10,550	4,344	3,992
2030	11,700	4,852	4,358
2040	12,610	5,271	4,686
Buildout	22,160	9,275	6,563

6.2 Impact of Growth on Lifecycle Activities

By July 1, 2024 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

Key Insights

- The Municipality is committing approximately $4.2 million towards capital projects per year from sustainable revenue sources

- Given the annual capital requirement of $8.6 million, there is currently a capital funding gap of $4.4 million annually

- For tax-funded assets, we recommend increasing tax revenues by 2.5% each year for the next 10 years to achieve a sustainable level of funding

- For the Water Services, we recommend increasing rate revenues by 2.3% annually for the next 10 years to achieve a sustainable level of capital investment

- For the Sanitary Services, we recommend increasing rate revenues by 2.0% annually for the next 10 years to achieve a sustainable level of capital investment

7.1 Financial Strategy Overview

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

This report serves as a starting point for initial financial planning, specific for existing capital assets, by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following.

1. The financial obligations 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:[11]
    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.

[11] The traditional funding sources modeled without consideration for growth or change in policies.

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:

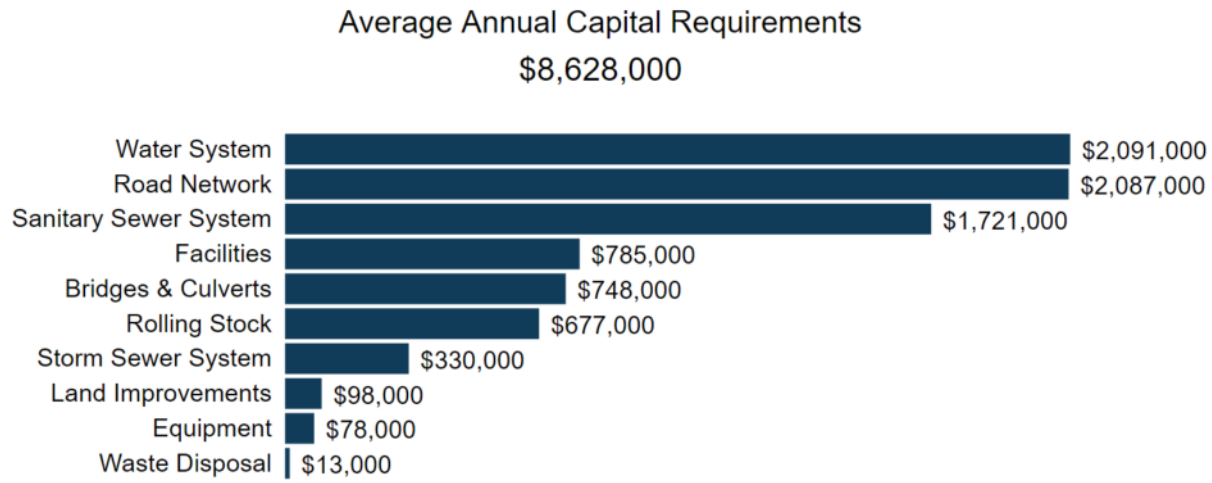
1. consideration given to revising service levels downward; and
2. asset management and financial strategies considered. For example:
    a. If a zero-debt policy is in place, is it warranted? If not the use of debt should be considered.
    b. Do user fees reflect the cost of the applicable service? 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 (as defined for the purpose of this AMP).

In total, based on the approach of this AMP, the Municipality may require approximately $8.6 million annually to address capital expenditures (CapEx) 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 CapEx are only incurred at the construction and replacement of each asset.

However, for the Transportation infrastructure (Road Network and Bridges & Culverts), lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal programs.

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 Bridges & Culverts:

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.

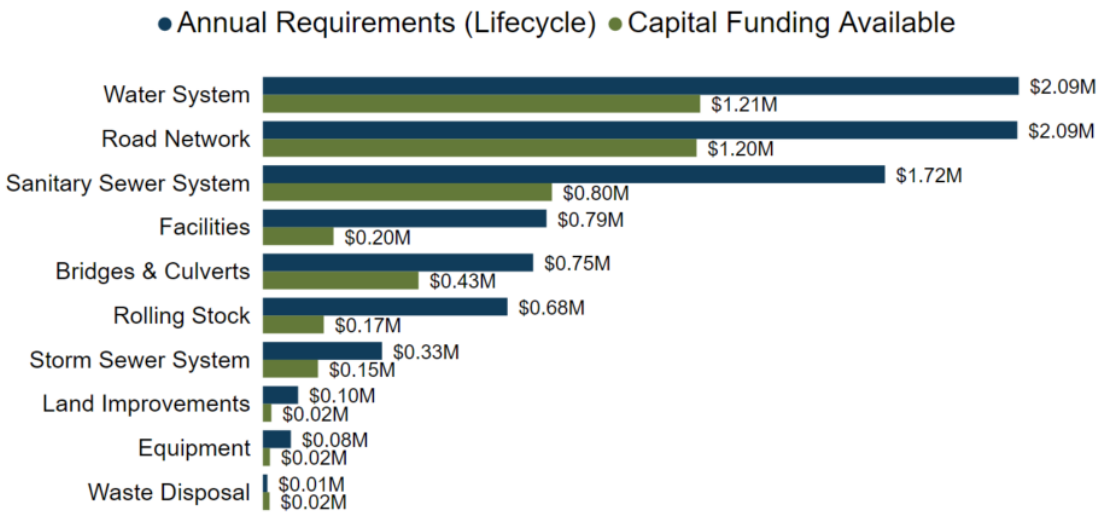
2. Lifecycle Strategy Scenario: Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$3,307,000	$2,087,000	**$1,220,000**
Bridges & Culverts	$751,000	$748,000	**$3,000**

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $1.2 million for the Road Network and $3,000[12] for the Bridges & Culverts. 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 $4.2 towards capital projects per year. Given the annual CapEx requirement of $8.6 million, there is currently a funding gap of $4.4 million annually.



[12] This figure is based on an analysis including the 10-year capital recommendations identified in the most recent OSIM inspection. However, our analysis does not quantify the expected increase to average condition of bridge structures, nor any capital rehabilitation activities beyond the next 10 years. Recommendations in the OSIM inspections restore the condition of the assets and do not typically extend the useful life.

7.2 Funding Objective

We have developed a scenario that would enable the Municipality to achieve full funding within 5 to 20 years for the following assets:

1. **Tax Funded Assets:** Road Network, Storm Sewer System, Bridges & Culverts, Facilities, Equipment, Land Improvements, Rolling Stock

2. **Rate-Funded Assets:** Water System, Sanitary Sewer System, Waste Disposal

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.

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

The following tables show, by asset category, South Huron's average annual asset investment 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	Total Available	
Road Network	2,087,000	521,000	225,000	454,000	1,200,000	887,000
Storm Sewer System	330,000	82,000	-	71,000	153,000	177,000
Bridges & Culverts	748,000	187,000	81,000	163,000	431,000	317,000
Facilities	785,000	196,000	-	-	196,000	589,000
Equipment	78,000	20,000	-	-	20,000	58,000
Land Improvements	98,000	24,000	-	-	24,000	74,000
Rolling Stock	677,000	169,000	-	-	169,000	508,000
	4,803,000	**1,199,000**	**306,000**	**688,000**	**2,193,000**	**2,610,000**

The average annual investment requirement for the above categories is $4,803,000. Annual revenue currently allocated to these assets for capital purposes is $2,193,000 leaving an annual deficit of $2,610,000. Put differently, these infrastructure categories are currently funded at 46% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2020, the Municipality of South Huron has budgeted annual tax revenues of $9,664,000. 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
Road Network	9.2%
Storm Sewer System	1.8%
Bridges & Culverts	3.3%
Facilities	6.1%
Equipment	0.6%
Land Improvements	0.8%
Rolling Stock	5.3%
	27.1%

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

a) South Huron's debt payments for these asset categories will be decreasing by $183,000 over the next 5 years and by $170,000 over the next 10 years. Although not shown in the table, debt payment decreases will be $235,000 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	2,610,000	2,610,000	2,610,000	2,610,000	2,610,000	2,610,000	2,610,000	2,610,000
Change in Debt Costs	N/A	N/A	N/A	N/A	-170,000	-170,000	-235,000	-235,000
Resulting Infrastructure Deficit:	**2,610,000**	**2,610,000**	**2,610,000**	**2,610,000**	**2,440,000**	**2,440,000**	**2,375,000**	**2,375,000**
Tax Increase Required	27.0%	27.0%	27.0%	27.0%	25.2%	25.2%	24.6%	24.6%
Annually:	**5.4%**	**2.7%**	**1.8%**	**1.4%**	**5.0%**	**2.5%**	**1.6%**	**1.2%**

7.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 10-year option. This involves full funding being achieved over 10 years by:

a) reallocating the debt cost reductions (if and when realized) to the infrastructure deficit as outlined above;

b) increasing tax revenues dedicated to CapEx by approx. 2.5% each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP;

c) allocating the government transfer revenues for capital assets as outlined in section 7.3.1; and

d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

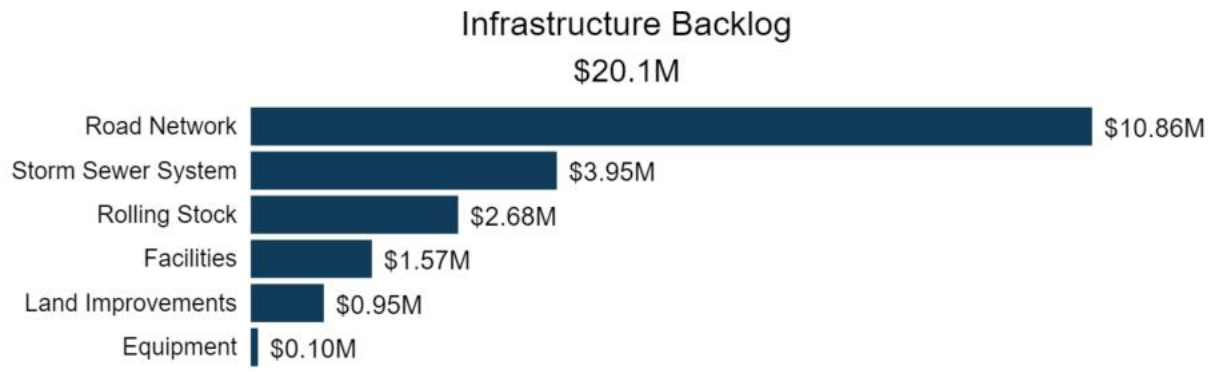
1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. Based on best practices, this periodic funding should not be incorporated into an AMP unless there are firm commitments in place. We have included the government transfer funding, as provided by the Municipality[13].

2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes may be challenging. However, a lack of intentional asset funding planning today may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding envelope available.

Current data shows a pent-up investment demand for various service areas including the Transportation Infrastructure and Storm Water Management. The most significant areas of capital investment requirements that are primarily tax funded are:

[13] The Municipality should take advantage of all available grant funding programs and transfers from other levels of government. The financial strategy within this AMP has only included the known capital funding as provided by the Municipality's finance department, and there is an expectation the Municipality should be eligible for additional capital funding from senior governments within the next twenty years that could reduce the tax burden. Depending on the outcome of this review, there may be changes that impact its availability.



Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no additional increase in debt financing, the results of the condition-based analysis may require otherwise and should be considered in the future.

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

The following tables show, by asset category, South Huron's average annual CapEx requirements, current funding positions, and the annual deficit across the rate funded utilities.

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit
		Rates	To Oper	Total Available	
Water System	2,091,000	3,786,000	-2,576,000	1,210,000	881,000
Sanitary Sewer System	1,721,000	2,527,000	-1,727,000	800,000	921,000
Waste Disposal	13,000	1,199,000	-1,180,000	19,000	-6,000
	3,812,000	**7,512,000**	**-5,483,000**	**2,029,000**	**1,796,000**

The average annual investment requirement for the above categories is $3,812,000. Annual revenue currently allocated to these assets for capital purposes is $2,029,000 leaving an annual deficit of $1,796,000. Put differently, the utility infrastructure categories are currently funded at 53% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2020, South Huron has budgeted for sanitary revenues of $2,527,000, water revenues of $3,786,000 and an annual waste disposal revenue of $1,199,000. 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	Rate Change Required for Full Funding
Water System	23.3%
Sanitary Sewer System	36.4%
Waste Disposal	-0.5%

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:

a) Debt payments for the Water System will be decreasing by $786,000 over the next 20 years.

b) Debt payments for the Sanitary Sewer System will be decreasing by $569,000 over the next 20 years.

Our recommendations include capturing the above changes and allocating them to the infrastructure deficit outlined. The following table outlines this concept and presents several options without considering the re-allocation of returning debt costs.

	Water System				Sanitary Sewer System			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	881,000	881,000	881,000	881,000	921,000	921,000	921,000	921,000
Rate Increase Required	23.3%	23.3%	23.3%	23.3%	36.4%	36.4%	36.4%	36.4%
Annually:	**4.7%**	**2.3%**	**1.6%**	**1.2%**	**7.3%**	**3.6%**	**2.4%**	**1.8%**

	Waste Disposal			
	5 Years	10 Years	15 Years	20 Years
Infrastructure Surplus	-6,000	-6,000	-6,000	-6,000
Rate Increase Required	0.0%	0.0%	0.0%	0.0%
Annually:	**0.0%**	**0.0%**	**0.0%**	**0.0%**

The following table includes the re-allocation of returning debt costs to capital costs:

	Water System				Sanitary Sewer System			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	881,000	881,000	881,000	881,000	921,000	921,000	921,000	921,000
Change in Debt Costs	-19,000	-19,000	-786,000	-786,000	-33,000	-405,000	-405,000	-569,000
Resulting Deficit	**862,000**	**862,000**	**95,000**	**95,000**	**888,000**	**516,000**	**516,000**	**352,000**
Rate Increase Required	22.8%	22.8%	2.5%	2.5%	35.1%	20.4%	20.4%	13.9%
Annually:	**4.6%**	**2.3%**	**0.2%**	**0.1%**	**7.0%**	**2.0%**	**1.4%**	**0.7%**

	Waste Disposal			
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	-6,000	-6,000	-6,000	-6,000
Change in Debt Costs	0	0	0	0
Resulting Deficit	**-6,000**	**-6,000**	**-6,000**	**-6,000**
Rate Increase Required	0.0%	0.0%	0.0%	0.0%
Annually:	**0.0%**	**0.0%**	**0.0%**	**0.0%**

7.4.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 10-year option for the CapEx required on the utility rate funded assets. This involves full funding being achieved over the next 10 years by:

a) increasing rates, and revenues dedicated for CapEx purposes, by 2.3% for water services and 2% for sanitary services each year for the next ten years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.

b) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

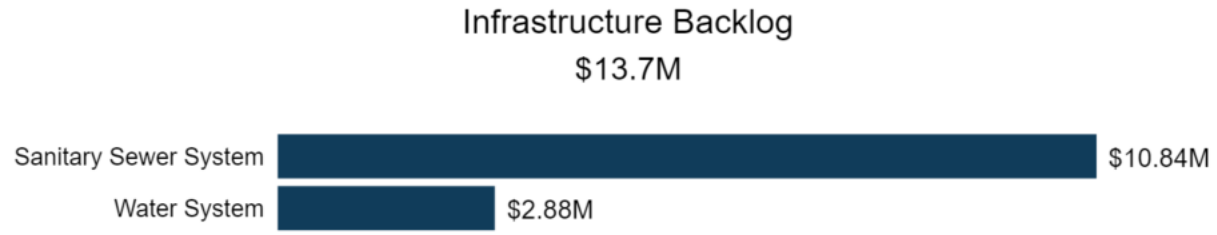
Notes:

1. It is reasonable to propose that periodic senior government infrastructure funding should be available during the phase-in period. However, this periodic funding has not been incorporated into an AMP unless there are firm commitments in place.

2. We realize that consistent raising rate revenues consistently for the next ten years to invest in infrastructure purposes may be challenging, especially for the water utilities. However, considering a longer phase-in window may have even greater consequences in terms of reasonably funding the services provided to the rate payers.

3. Any increase in rates required for future operations would be in addition to the above recommendations.

Although this option achieves full funding on an annual basis in 10 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 (infrastructure backlog) of $13.7 million for rate-funded assets.



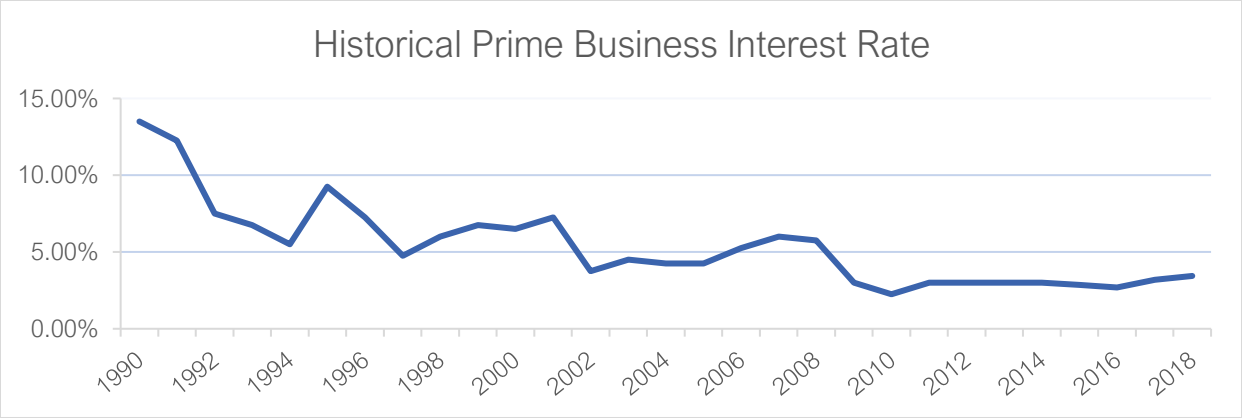
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

7.5 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%[14] 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:



[14] 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 South Huron has historically used debt for investing in the asset categories as listed. There is currently $21,147,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $2,029,000, well within its provincially prescribed maximum of $4,720,000.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2015	2016	2017	2018	2019
Road Network	0	0	0	0	0	0
Storm Sewer System	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0
Facilities	1,487,000	0	0	0	0	799,000
Equipment	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Rolling Stock	0	0	0	0	0	0
Total Tax Funded:	**1,487,000**	**0**	**0**	**0**	**0**	**799,000**
Water System	10,108,000	0	0	0	0	0
Sanitary Sewer System	9,552,000	0	0	2,451,000	0	0
Waste Disposal	0	0	0	0	0	0
Total Rate Funded:	**19,660,000**	**0**	**0**	**2,451,000**	**0**	**0**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2020	2021	2022	2023	2024	2025	2030
Road Network	0	0	0	0	0	0	0
Storm Sewer System	0	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0	0
Facilities	235,000	235,000	235,000	235,000	235,000	65,000	65,000
Equipment	0	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0	0
Rolling Stock	0	0	0	0	0	0	0
Total Tax Funded:	**235,000**	**235,000**	**235,000**	**235,000**	**235,000**	**65,000**	**65,000**
Water System	921,000	921,000	921,000	921,000	914,000	902,000	902,000
Sanitary Sewer System	873,000	873,000	873,000	873,000	857,000	840,000	468,000
Waste Disposal	0	0	0	0	0	0	0
Total Rate Funded:	**1,794,000**	**1,794,000**	**1,794,000**	**1,794,000**	**1,771,000**	**1,742,000**	**1,370,000**

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

7.6 Use of Reserves

7.6.1 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 South Huron.

Asset Category	Balance at December 31, 2019
Road Network	2,299,000
Storm Sewer System	432,000
Bridges & Culverts	585,000
Facilities	767,000
Equipment	304,000
Land Improvements	192,000
Rolling Stock	1,400,000
Total Tax Funded:	**5,929,000**
Water System	4,951,000
Sanitary Sewer System	1,305,000
Waste Disposal	191,000
Total Rate Funded:	**6,447,000**

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 South Huron'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.

7.6.2 Recommendation

In 2024, Ontario Regulation 588/17 will require South Huron 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

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	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Paved (HCB)	$8,353,560	$166,460	$46,690	$0	$487,200	$0	$3,733,170	$1,912,260	$1,274,840	$174,580	$1,841,210
Paved Roads (LCB)	$174,600	$330,400	$82,000	$0	$246,000	$0	$246,800	$0	$732,800	$354,400	$82,000
Sidewalks	$1,989,120	$0	$0	$0	$0	$0	$142,800	$0	$0	$0	$0
Streetlights - Fixtures	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights - Poles	$302,871	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Traffic Signals	$35,119	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total:	**$10,855,270**	**$496,860**	**$128,690**	**$0**	**$733,200**	**$0**	**$4,122,770**	**$1,912,260**	**$2,007,640**	**$528,980**	**$1,923,210**

Bridges & Culverts											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Bridges	$0	$710,000	$275,000	$70,000	$960,000	$80,000	$1,335,000	$394,000	$55,000	$0	$0
Culverts	$0	$0	$405,000	$135,000	$1,425,000	$340,000	$375,000	$1,269,000	$80,000	$0	$0
Total:	**$0**	**$710,000**	**$680,000**	**$205,000**	**$2,385,000**	**$420,000**	**$1,710,000**	**$1,663,000**	**$135,000**	**$0**	**$0**

Storm Water Network											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Storm Mains	$3,951,417	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total:	**$3,951,417**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Water Network											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Booster Pumping Stations & Reservoirs	$1,115,302	$0	$0	$0	$0	$0	$0	$976,738	$675,250	$0	$0
Control Chambers	$0	$0	$0	$0	$0	$0	$0	$250,705	$0	$0	$0
Equipment	$0	$0	$0	$16,266	$0	$0	$0	$0	$0	$0	$0
Rolling Stock	$88,124	$0	$25,806	$0	$0	$28,563	$13,973	$31,298	$0	$0	$0
Water Meters	$1,169,498	$0	$0	$0	$0	$0	$0	$0	$0	$34,782	$23,188
Water Towers	$129,466	$0	$0	$0	$0	$0	$1,311,399	$386,009	$0	$0	$0
Watermains	$372,196	$3,549,256	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total:	**$2,874,586**	**$3,549,256**	**$25,806**	**$16,266**	**$0**	**$28,563**	**$1,325,372**	**$1,644,750**	**$675,250**	**$34,782**	**$23,188**

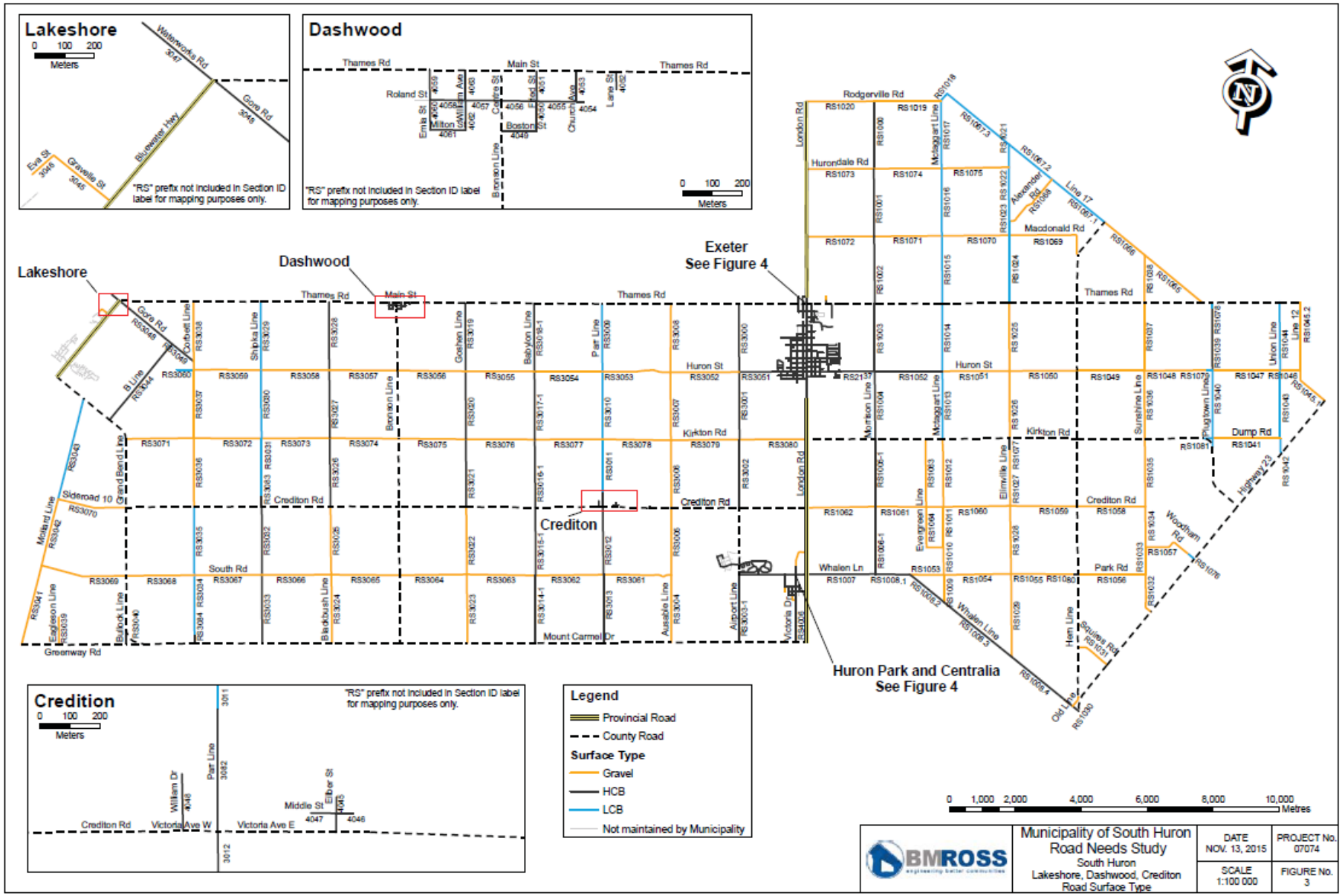
Sanitary Sewer Network											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Equipment	$30,964	$0	$0	$0	$0	$0	$0	$0	$0	$0	$34,408
Operations Facility	$356,286	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pumping Stations	$3,531,300	$0	$483,755	$1,026,322	$0	$0	$0	$216,607	$273,658	$0	$0
Rolling Stock	$71,700	$0	$0	$0	$35,115	$0	$93,628	$0	$0	$0	$0
Sewer Mains	$5,495,241	$2,473,855	$0	$0	$0	$0	$0	$0	$0	$0	$486,302
WWTFs & Lagoons	$1,351,688	$0	$0	$0	$0	$7,934,501	$0	$0	$0	$0	$2,572,964
Total:	**$10,837,179**	**$2,473,855**	**$483,755**	**$1,026,322**	**$35,115**	**$7,934,501**	**$93,628**	**$216,607**	**$273,658**	**$0**	**$3,093,674**

All Asset Categories											
Asset Category	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Bridges & Culverts	$0	$710,000	$680,000	$205,000	$2,385,000	$420,000	$1,710,000	$1,663,000	$135,000	$0	$0
Road Network	$10,855,270	$496,860	$128,690	$0	$733,200	$0	$4,122,770	$1,912,260	$2,007,640	$528,980	$1,923,210
Storm Water Network	$3,951,417	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Network	$2,874,586	$3,549,256	$25,806	$16,266	$0	$28,563	$1,325,372	$1,644,750	$675,250	$34,782	$23,188
Sanitary Sewer Network	$10,837,179	$2,473,855	$483,755	$1,026,322	$35,115	$7,934,501	$93,628	$216,607	$273,658	$0	$3,093,674
Total	$28,518,452	$7,229,971	$1,318,251	$1,247,588	$3,153,315	$8,383,064	$7,251,770	$5,436,617	$3,091,548	$563,762	$5,040,072

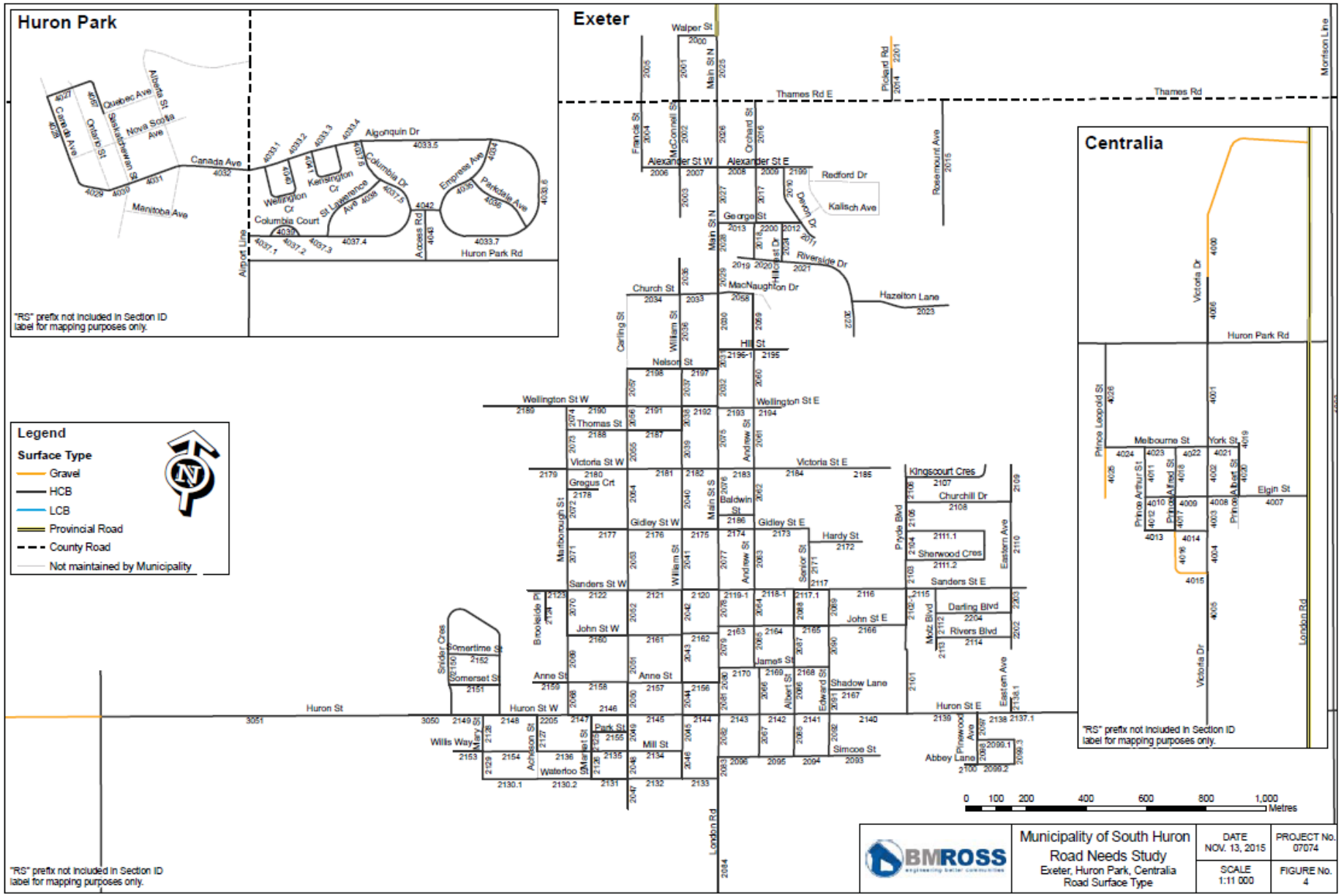
Note: Non-core asset categories have been excluded from this table, as staff are still in the process of refining inventory and condition data. These categories will be included in the next iteration of the AMP.

Appendix B: Level of Service Maps & Images

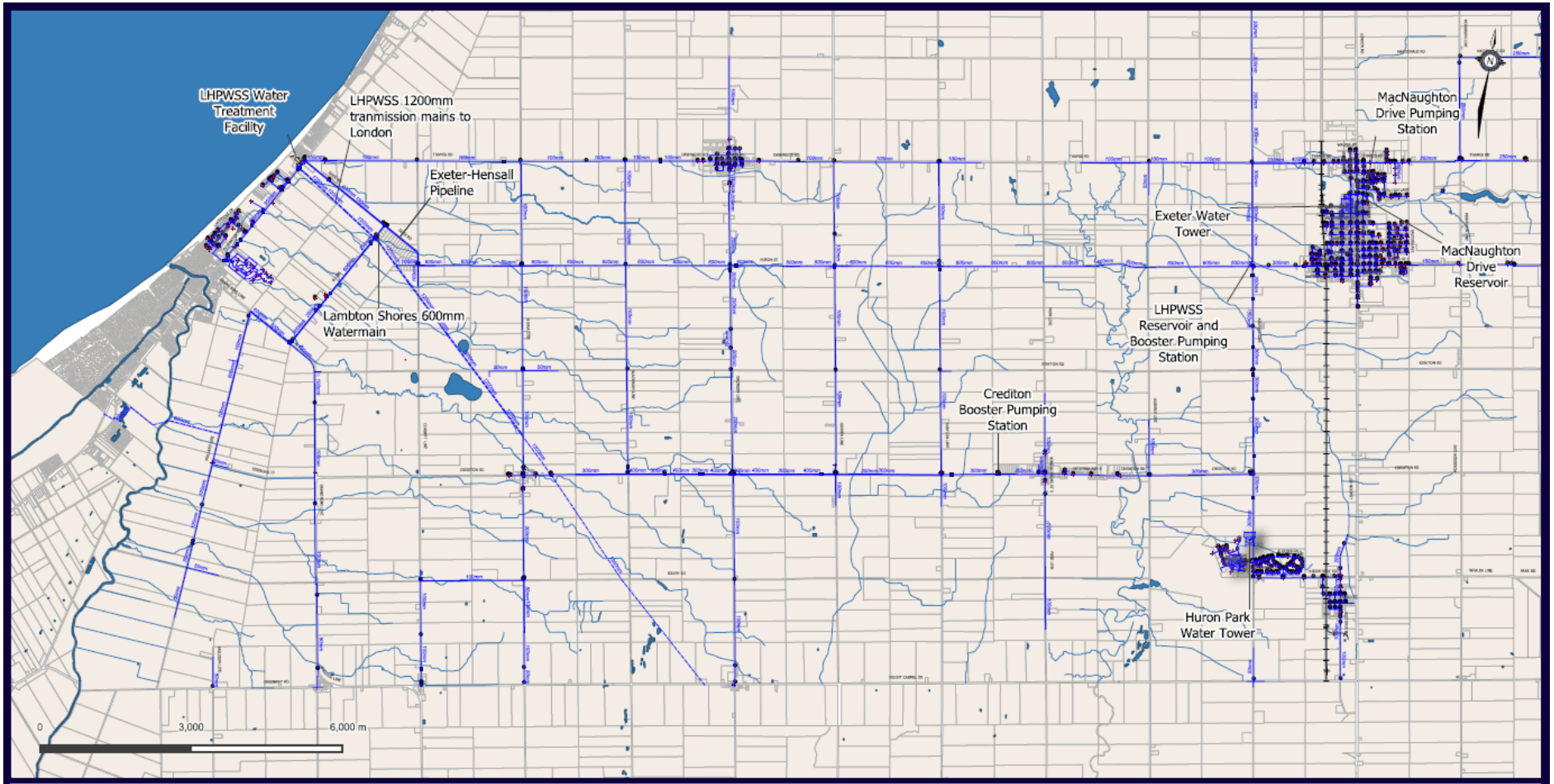
Map of South Huron's Road Network (All Roads)



Map of South Huron's Road Network (Huron Park/Exeter/Centralia)



Map of South Huron's Water Distribution System



MUNICIPALITY OF SOUTH HURON

Municipality of South Huron
Stephen Ward
Water Distribution System

No.	Revision Date	Revision Description	In-Service Date	Revised By
1	10/15/2015	Issued for MOECC Drinking Water Works Permit #054-201	N/A	D. Giberson
2	1/31/2017	Shipka Line (South Rd to Mount Carmel Dr) - 100mm	10/17/2016	D. Giberson
3	7/12/2018	Dashwood Rd (Hwy #21 to Shipka Line) - 150mm	5/18/2018	D. Giberson
	7/12/2018	Shipka Line (Crediton Rd to Kirkton Line) - 100mm	5/18/2018	D. Giberson
	7/12/2018	Dashwood Rd (Shipka Line to Dashwood Village) - 150mm	5/18/2018	D. Giberson
4	12/31/2019	Molland Line (between South Rd and Crediton Rd) - 100mm	2/15/2019	D. Giberson
	12/31/2019	Huron St (Corbett Line to west end) - 100mm	4/15/2019	D. Giberson
	12/31/2019	Parr Line (Crediton Rd to Kirkton Rd) - 100mm	4/26/2019	D. Giberson
	12/31/2019	Parr Line (Crediton Rd to South Rd) - 100mm	5/10/2019	D. Giberson
	12/31/2019	Shipka Line (Kirkton Rd to Dashwood Rd) - 100mm	5/31/2019	D. Giberson

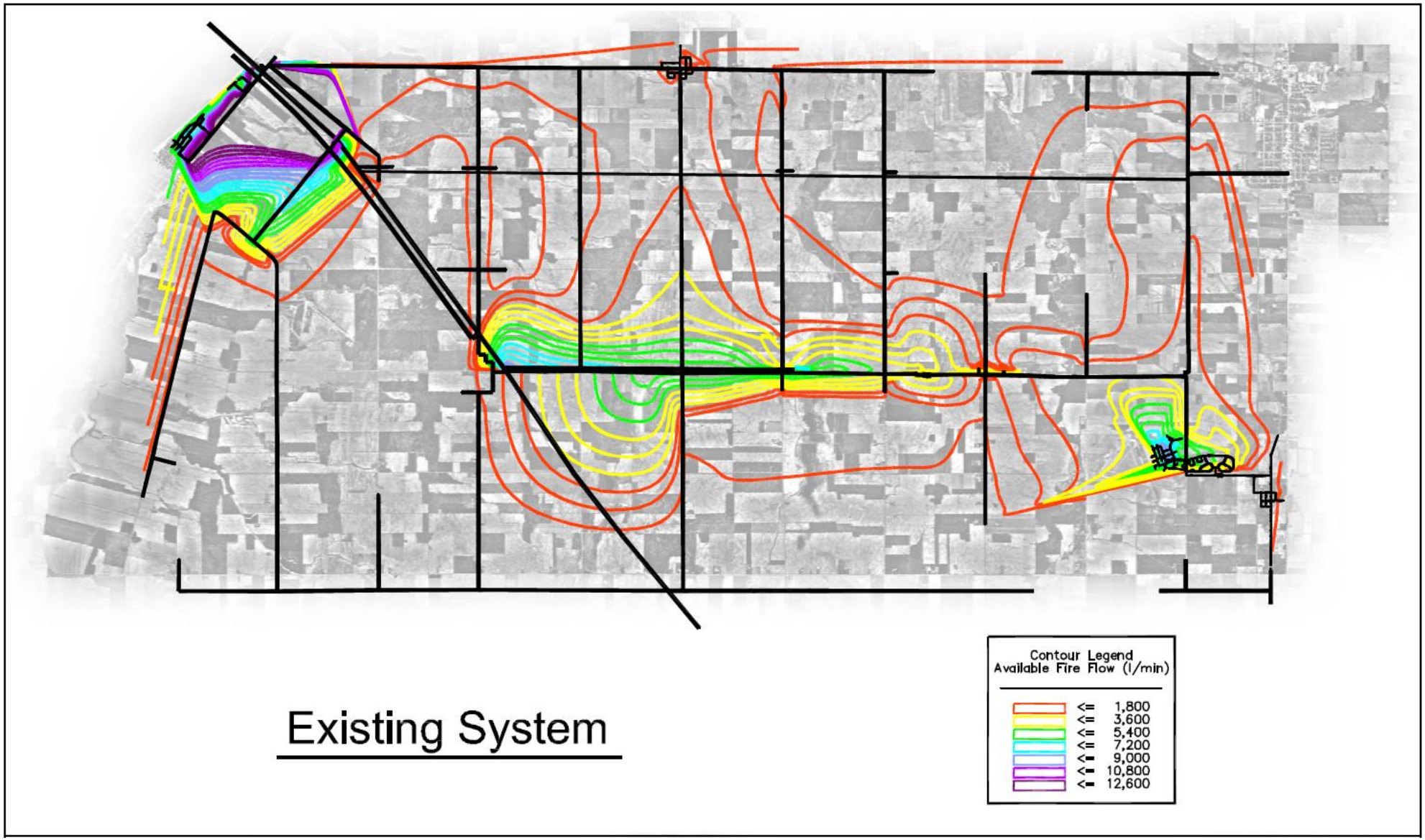
- Water Hydrant
- Water Valve
- Water Chamber
- Watermain
- LHPWSS Watermain
- Railway
- Watercourse
- Water Body

Facilities
- Water Tower
- Other Building

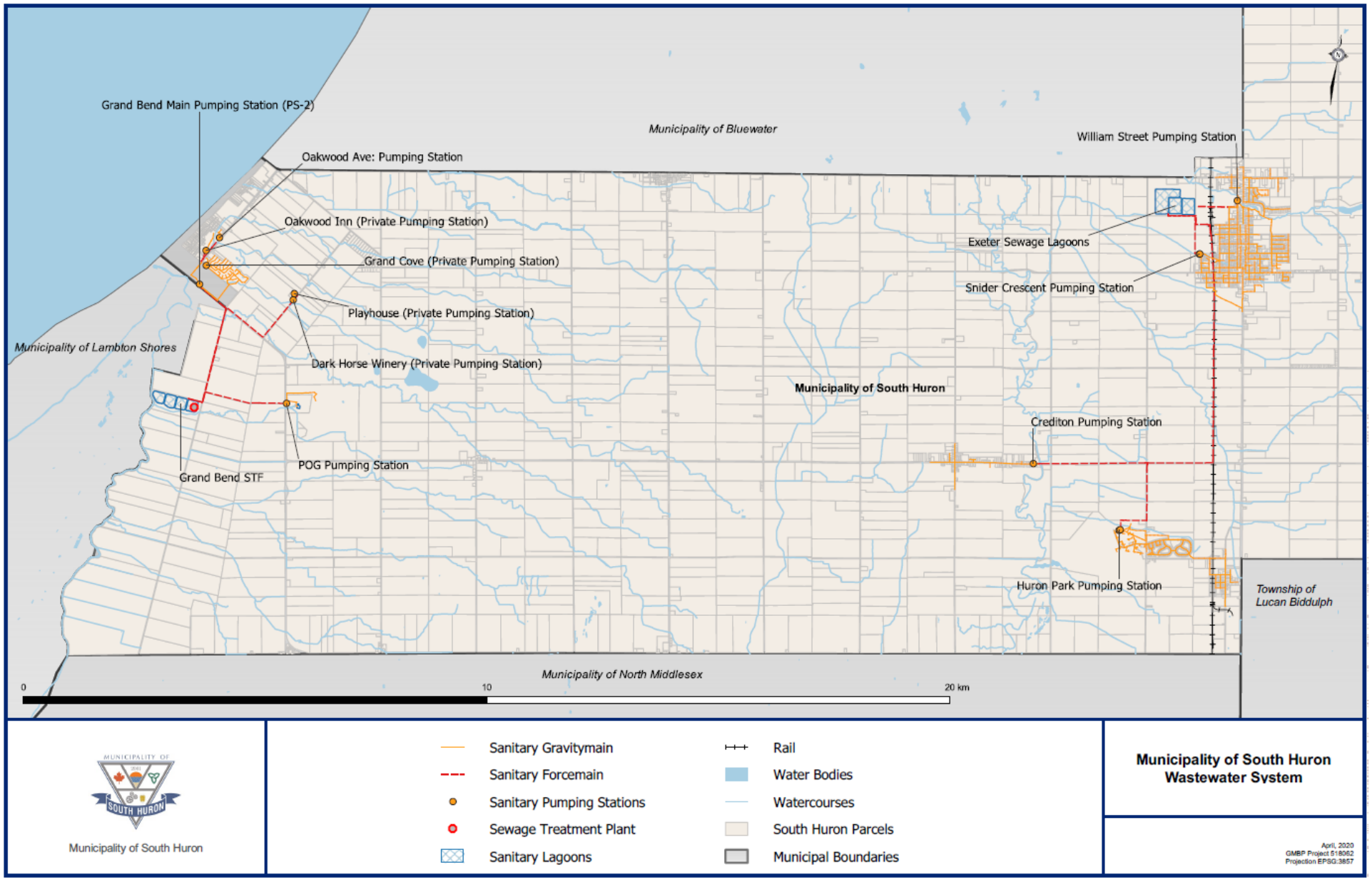
BluePlan ENGINEERING

Project 518062
Issued February 2020
EPSG: 26917

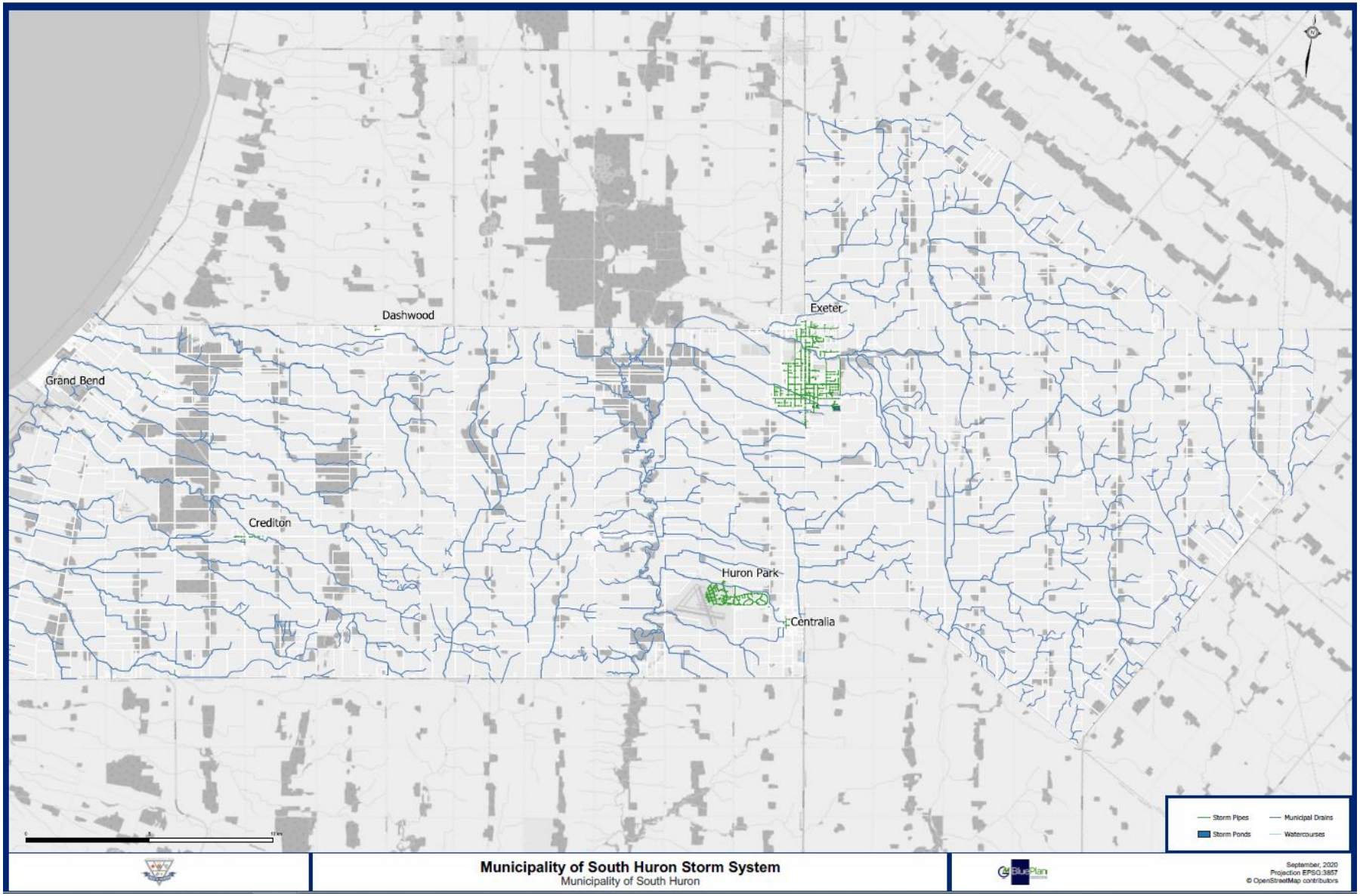
Map of Existing Fire Flows in South Huron's Water Network



Map of South Huron's Sanitary Sewer Network



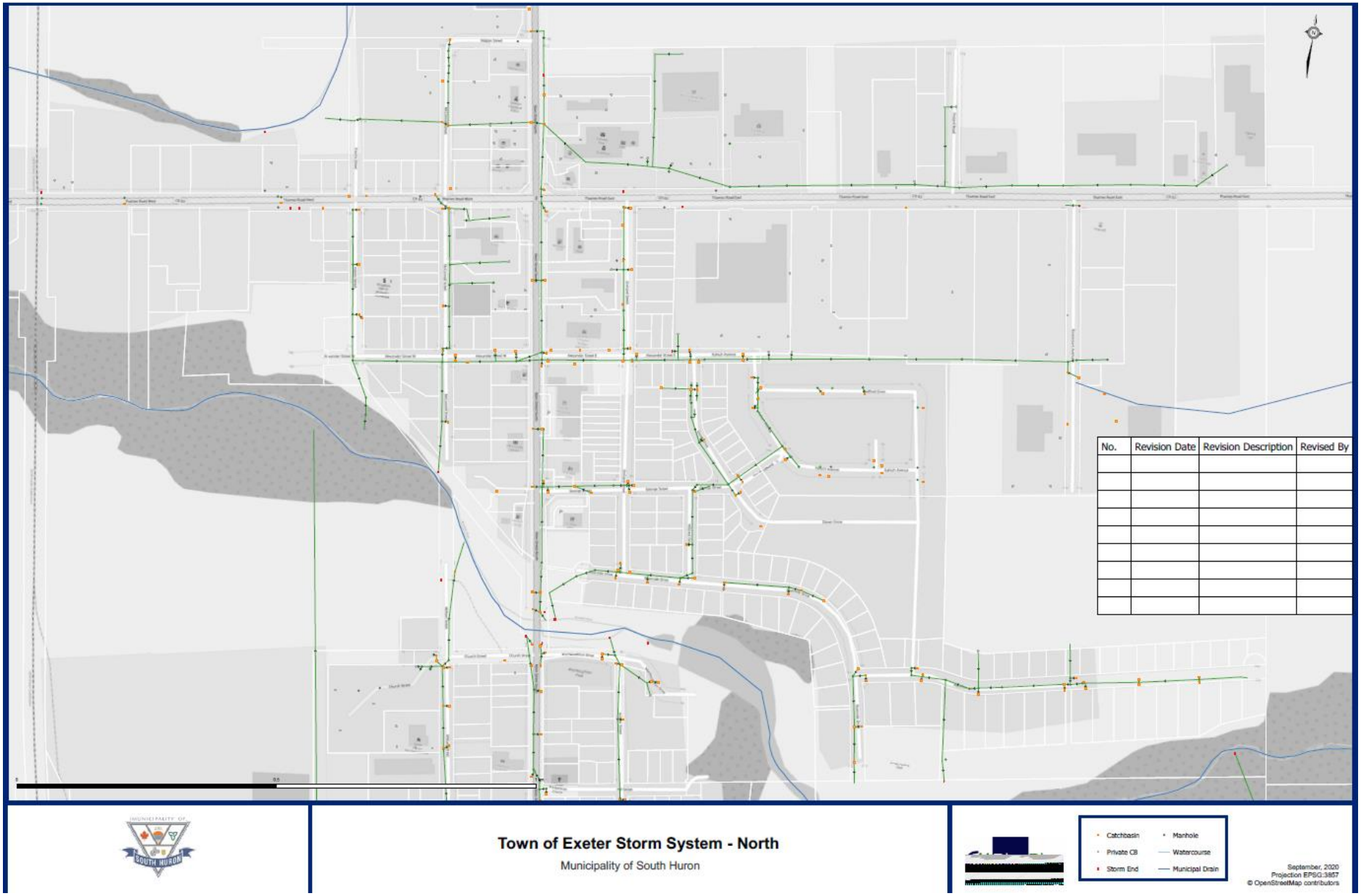
Map of South Huron's Stormwater Network (Entire Network)



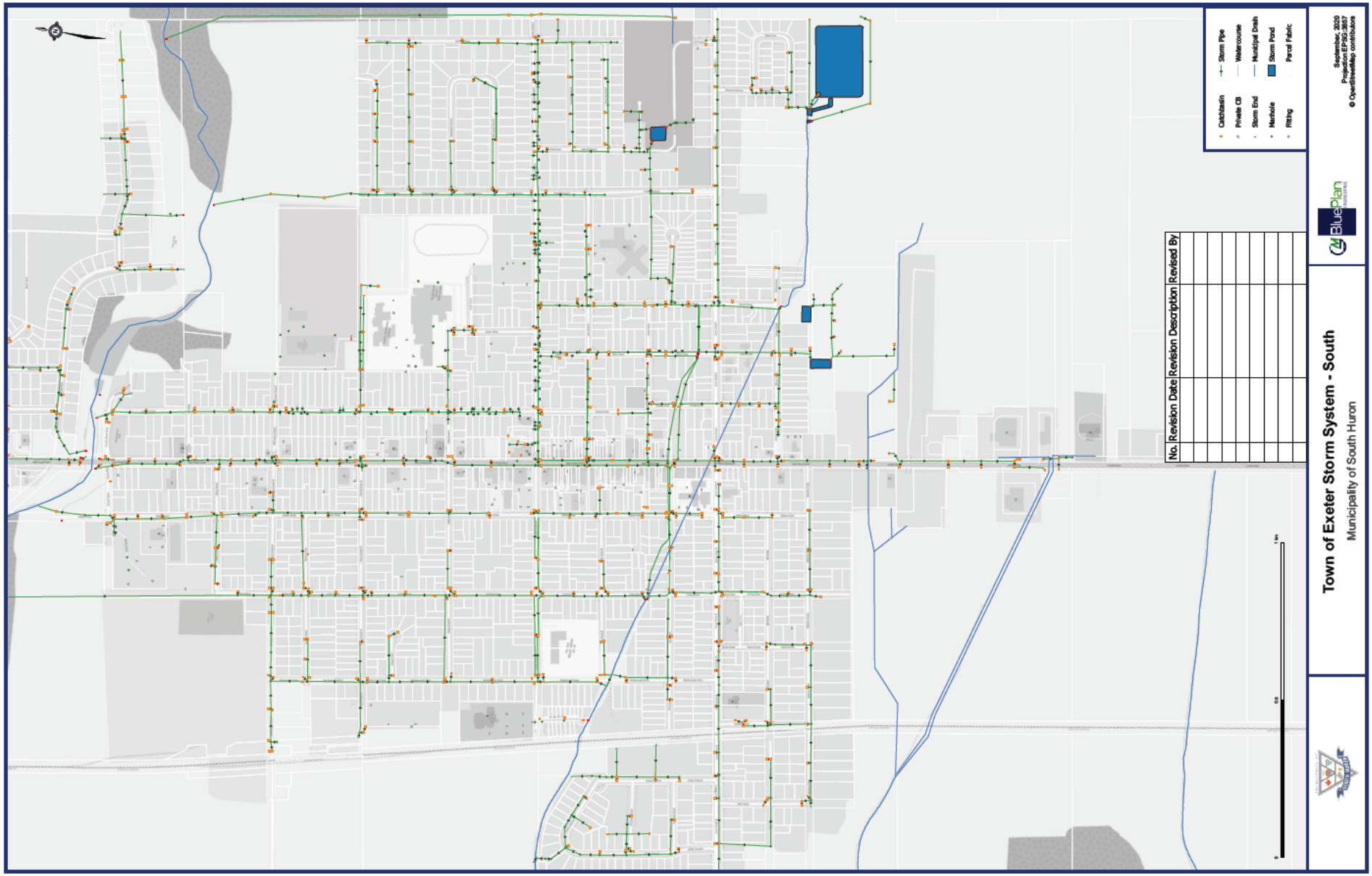
Map of South Huron's Stormwater Network (Centralia)

Map of South Huron's Stormwater Network (Dashwood)

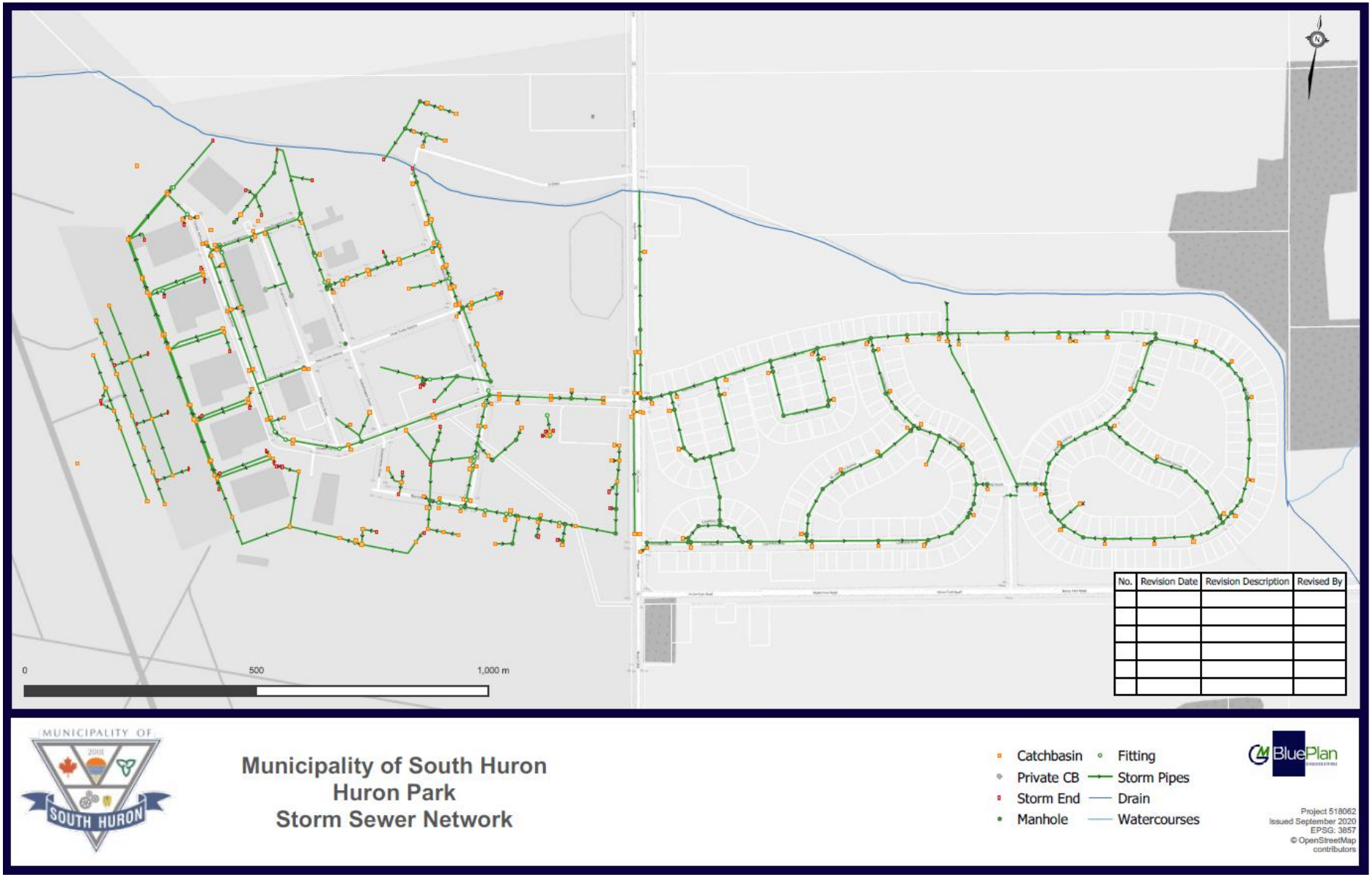
Map of South Huron's Stormwater Network (North)



Map of South Huron's Stormwater Network (South)



Map of South Huron's Stormwater Network (Huron Park)



Appendix C: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Value/Range	Probability of Failure Score
Road Network (Roads) Bridges & Culverts Storm Water System (Storm Mains)	Condition (100%)	0 - 19	5
		20 - 39	4
		40 - 59	3
		60 - 79	2
		80 - 100	1
Sanitary Sewer System (Sanitary Mains)	Condition (50%)	0 - 19	5
		20 - 39	4
		40 - 59	3
		60 - 79	2
		80 - 100	1
	Pipe Material (50%)	Unknown	5
		Asbestos Cement	5
		Steel	4
		Concrete	4
		Ductile Iron	3
		Reinforced Concrete	2
		Polyvinyl Chloride (PVC)	2
		PVC SDR35	1
		HDPE	1
Water Network (Mains)	Condition (25%)	0 - 19	5
		20 - 39	4
		40 - 59	3
		60 - 79	2
		80 - 100	1
	Pipe Material (25%)	Steel	4
		PVC - 160	3
		Cast Iron	3
		Ductile Iron	2
		PVC SDR35	1
		PVC SDR-18	1
		PVC	1
		PE	1
		Concrete	1

Asset Category	Risk Criteria	Value/Range	Probability of Failure Score
	Overal Structural Rating (40%)	0 - 19	5
		20 - 39	4
		40 - 59	3
		60 - 79	2
		80 - 100	1
	Installation Practice (5%)	No Record	5
		Stephen Township	3
		Municipality of South Huron	3
		OCWA	2
		Contractor	1
	Data Accuracy (5%)	No As-Built	5
		As-Built	1

Consequence of Failure

Asset Category	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Replacement Cost (50%)	Paved Roads (HCB)	4
		Paved Roads (LCB)	2
	Roadside Environment (50%)	Urban	4
		Semi-Urban	3
		Rural	2
Bridges & Culverts	Replacement Cost (100%)	$1,500,000+	5
		$1,500,000-$2,000,000	4
		$1,000,000-$1,500,000	3
		$500,000-$1,000,000	2
		$0 - $500,000	1
Storm Water Network (Mains)	Pipe Diameter (100%)	Over 1000mm	5
		1000mm	4
		500mm	3
		400mm	2
		250mm	1
Water Network (Mains)	Pipe Diameter (45%)	400mm	5
		300mm	4
		250mm	3
		150mm	2
		100mm	1
	Overall Criticality Rating	8 - 10	5

Asset Category	Risk Criteria	Value/Range	Consequence of Failure Score
	(45%)	6 - 8	4
		4 - 6	3
		2 - 4	2
		0 - 2	1
	Fire Protection Requirement (10%)	Yes	5
		No	1
Sanitary Sewer Network (Mains)	Pipe Diameter (70%)	600mm	5
		450mm	5
		375mm	5
		250mm	4
		200mm	3
	Sewer Type	Force Main	5
		Trunk Main	4
		Gravity Main	3

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.

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