

# Asset Management Plan

Town of South Bruce Peninsula

2021

This Asset Management Plan was prepared by:



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

# Key Statistics

Replacement Cost of  
asset portfolio  
**\$277.8** million

Replacement Cost of  
infrastructure per household  
**\$40,000**

Percentage of assets in fair or  
better condition  
**50.0%**

Percentage of assets with  
assessed condition data  
**67%**

Annual Capital  
Infrastructure Deficit  
**\$4.2** million

Recommended timeframe  
for eliminating annual  
infrastructure deficit  
**15** Years

Target Reinvestment  
Rate  
**3.29%**

Actual Reinvestment  
Rate  
**1.21%**

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# Executive Summary










Municipal infrastructure supports 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.

## Scope

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

This AMP includes the following asset categories:

### Asset Categories

 Road Network	 Machinery & Equipment
 Bridges & Culverts	 Vehicles
 Stormwater Network	 Sanitary Network
 Buildings	 Water Network
 Land Improvements	

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, 2022, with substantial completion of the requirements necessary for the July 1, 2024 deadline. There are still additional requirements concerning current levels of service for all other capital assets and also proposed levels of service and growth that must be met by July 1, 2024 and 2025.

## Findings

The overall replacement cost of the asset categories included in this AMP totals \$277.8 million. 50.0% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 67% of assets. For the remaining 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 uses a combination of proactive lifecycle strategies (paved roads, bridges and culverts) 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 Town's average annual capital requirement totals \$9.2 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately \$4.1 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of \$5.1 million.

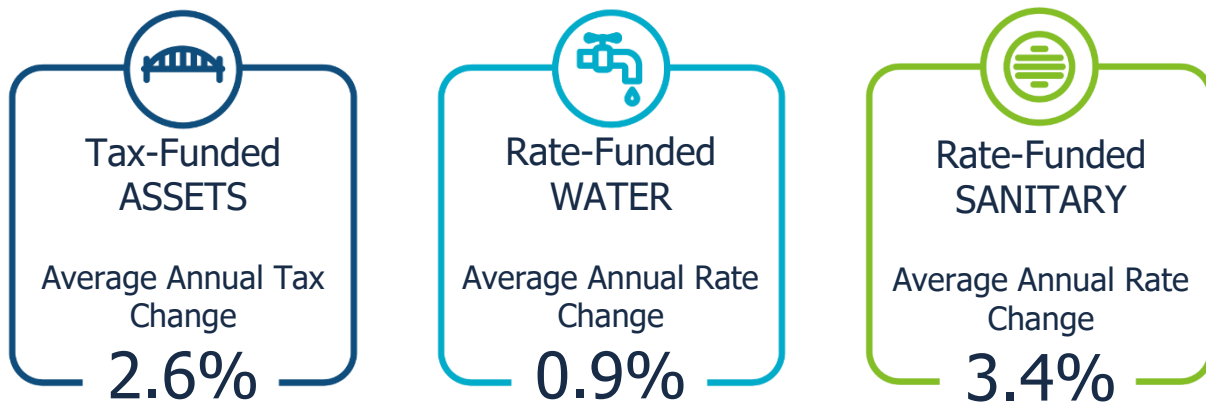
It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Annual Capital Requirements per Household



## Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Town's infrastructure deficit based on a 15-year plan for both tax-funded and rate-funded assets<sup>1</sup>:



Recommendations to guide continuous refinement of the Town's asset management program include the following:

- Continuously review and refine data to update and maintain a complete and accurate dataset
- Develop a condition assessment strategy with a regularly scheduled update and review process
- Build upon and review optimal lifecycle management strategies for all asset categories
- Develop and regularly review short- and long-term plans to meet capital requirements
- Continue to measure current levels of service and identify sustainable proposed levels of service for all asset categories

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<sup>1</sup> The average annual rate change for the Water Network incorporates the two water systems, Warton and Amabel, which are of differing ages. Staff will consider developing a financial strategy for each system for future iterations of the AMP.



# 1 Introduction & Context

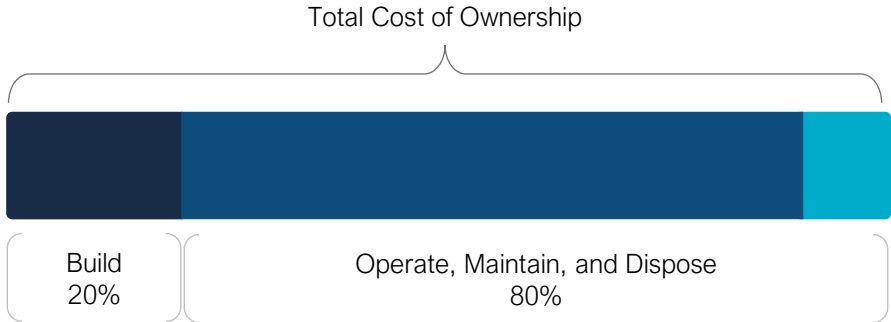
## Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value tax and ratepayers receive from the asset portfolio
- The Town'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, 2022 and 2025

# 1.1 An Overview of Asset Management

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

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



These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program. The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

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

## 1.1.1 Asset Management Policy

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

The Town adopted Policy TR.17.3 "Strategic Asset Management Policy" on June 18, 2019 in accordance with Ontario Regulation 588/17.

The purpose of the policy is to provide a framework for implementing asset management to enable strategic approach at all levels of the organization. As outlined in the policy, the Town seeks to leverage the lowest total lifecycle cost of ownership with regard to the service levels that best meet the needs of the community while being cognizant of the risk of failure that is acceptable.

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

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

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

# 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 generally fall within the categories of maintenance, rehabilitation, and replacement. The following table provides a description of each type of activity and the general difference in cost.

<b>Lifecycle Activity</b>	<b>Description</b>	<b>Example (Roads)</b>	<b>Cost</b>
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 Town’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. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

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

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

## 1.2.3 Levels of Service

A level of service (LOS) is a measure of what the Town 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 Town as worth measuring and evaluating. The Town measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

### Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (Road Network, Bridges & Culverts, Storm Services, Water Services, Sanitary Services) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP.

## Technical Levels of Service

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

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

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

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

# 1.3 Ontario Regulation 588/17

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

The diagram below outlines key reporting requirements under O. Reg 588/17 and the associated timelines.

**2019**

Strategic Asset Management Policy

**2024**

Asset Management Plan for Core and Non-Core Assets

**2022**

Asset Management Plan for Core Assets with the following components:

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

**2025**

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

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

### 1.3.1 O. Reg. 588/17 Compliance Review

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

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



# 2 Scope and Methodology

## Key Insights

- This asset management plan includes 9 asset categories and is divided between tax-funded and rate-funded categories
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life

# 2.1 Asset categories included in this AMP

This asset management plan for the Town of South Bruce Peninsula is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMP deadlines—requires analysis of only core assets (roads, bridges & culverts, water, wastewater, and stormwater).

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

Asset Category	Source of Funding
Roads Network	Tax Levy
Bridges and Culverts	
Stormwater Network	
Buildings	
Land Improvements	
Machinery & Equipment	
Vehicles	
Sanitary Network	User Rates
Water Network	

# 2.2 Deriving Replacement Costs

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

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

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

## 2.3 Estimated Useful Life

The estimated useful life (EUL) of an asset is the period over which the Town 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.

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

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

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

## 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 Town’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.

<b>Condition</b>	<b>Description</b>	<b>Criteria</b>	<b>Service Life Remaining (%)</b>
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

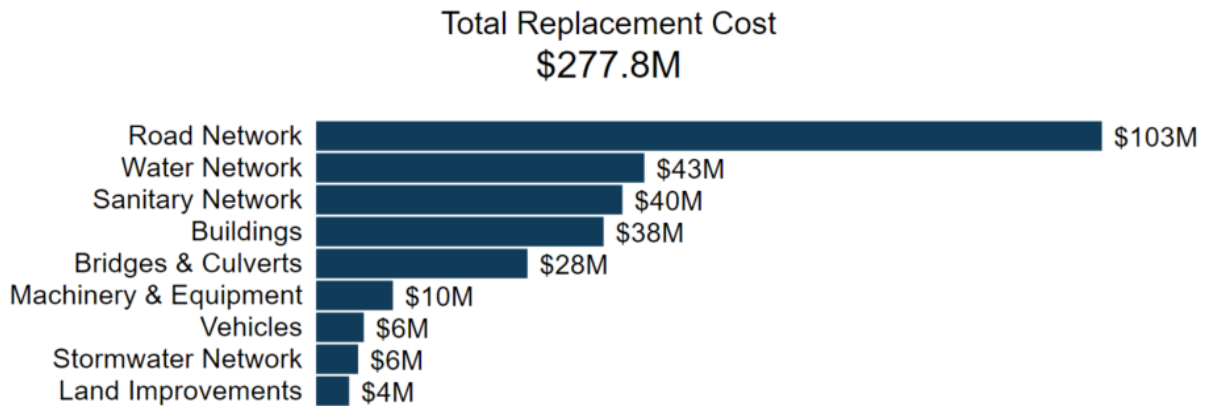
## Portfolio Overview

### Key Insights

- The total replacement cost of the Town's asset portfolio is \$277.8 million
- The Town's target re-investment rate is 3.29%, and the actual re-investment rate is 1.21%, contributing to an expanding infrastructure deficit
- 50.0% of all assets are in fair or better condition
- Average annual capital requirements total \$9.2 million per year across all assets

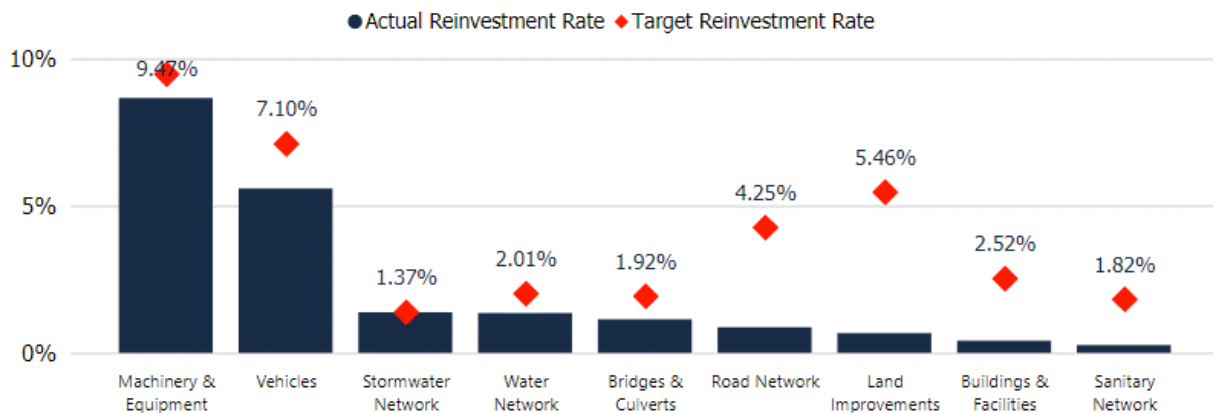
# 3.1 Total Replacement Cost of Asset Portfolio

The asset categories analysed in this AMP have a total replacement cost of \$277.8 million based on inventory data from 2020. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



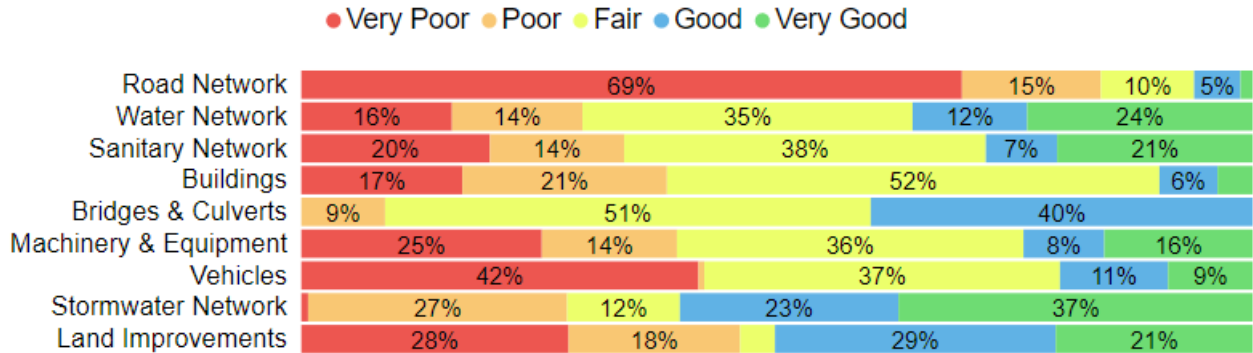
# 3.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Town should be allocating approximately \$9.2 million annually, for a target reinvestment rate of 3.29%. Actual annual spending on infrastructure totals approximately \$4.1 million, for an actual reinvestment rate of 1.21%.



### 3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 50.00% of assets in South Bruce Peninsula are in fair or better condition. This estimate relies on both age-based and field condition data.



This AMP relies on assessed condition data for 67% 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.

<b>Asset Category</b>	<b>Asset Segment</b>	<b>% of Assets with Assessed Condition</b>	<b>Source of Condition Data</b>
Roads Network	Paved Roads	77% Assessed	Roads Needs Assessment 2019
	Sidewalks	91% Assessed	Roads Needs Assessment 2019
	Signs	0%	Age-Based
	Streetlights & Traffic Signals	0%	Age-Based
Bridges and Culverts	Bridges	100%	OSIM 2020
	Culverts	100%	OSIM 2020
Stormwater Network	All Segments	0% <sup>2</sup>	Age-Based
Buildings	General Government	70% Assessed	Building Condition Assessment 2020
	Protection Services	73% Assessed	
	Recreational Services	82% Assessed	
	Transportation Services	77% Assessed	
Land Improvements	Landfill Assets	0%	Age-Based
	Parking Lots	0%	Age-Based
	Parks	17% Assessed	Staff Assessments
	Playground Structures	6% Assessed	Staff Assessments
	Signage	Age-Based	Age-Based
	Sport Structures	11% Assessed	Staff Assessments
	Landfill Assets	Age-Based	Age-Based
Machinery & Equipment	Environmental Services	86% Assessed	Staff Assessments
	General Government	24% Assessed	
	Protection Services	18% Assessed	
	Recreational Services	21% Assessed	
	Transportation Services	94% Assessed	
Vehicles	Protection Services	48% Assessed	Staff Assessments
	Transportation Services	100% Assessed	

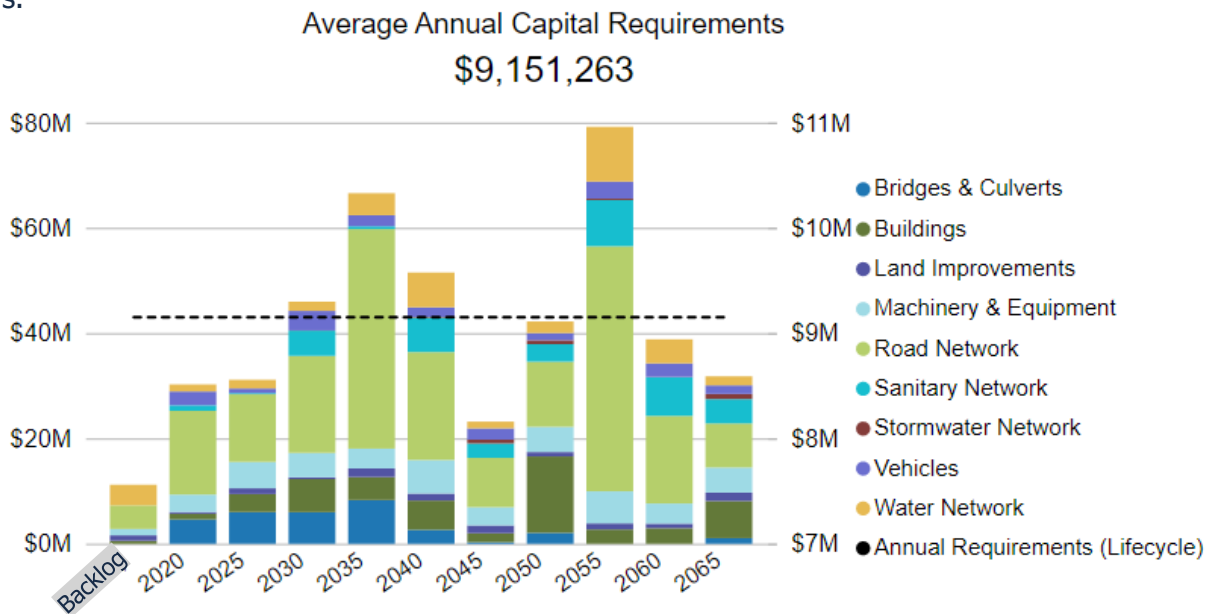
<sup>2</sup> Although CCTV inspections were performed on the storm mains in 2016, the information was deemed incomplete and was not utilized for this AMP.



Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Sanitary Network	Lagoons	99% Assessed	OCWA 2020
	Pumping Stations	0% Assessed	Age-Based
	Sewer mains	0% Assessed <sup>3</sup>	Age-Based
	Wastewater Treatment Plant	57% Assessed	OCWA 2020
Water Network	Hydrants	0% Assessed	Age-Based
	Pumping Stations	71% Assessed	OCWA 2020
	Tower/Booster Equipment	96% Assessed	OCWA 2020
	Treatment Equipment	65% Assessed	OCWA 2020
	Treatment Plants	28% Assessed	OCWA 2020
	Water Mains	0% Assessed	Age-Based
	Water Meters	0% Assessed	Age-Based

### 3.4 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Town can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 50 years.



<sup>3</sup> Although CCTV inspections were performed on the sanitary mains in 2016, the information was deemed incomplete and was not utilized for this AMP.

# 4 Analysis of Tax-funded Assets

## Key Insights

- Tax-funded assets are valued at \$194.6 million
- 42% 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 \$7.6 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

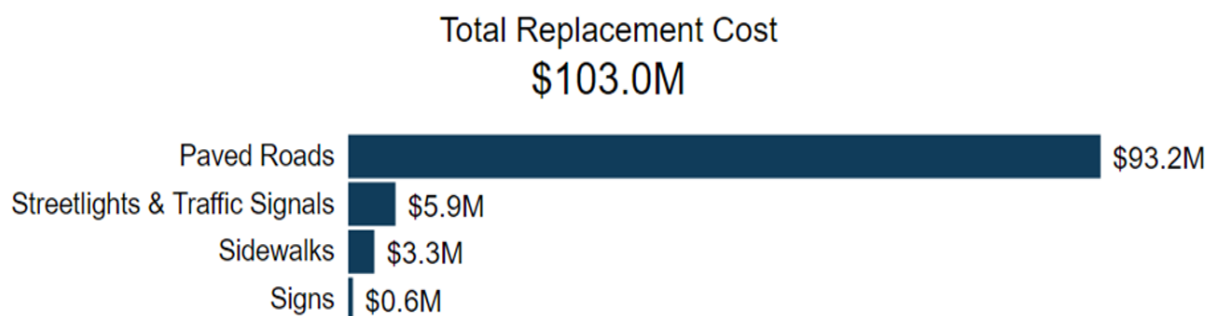
## 4.1 Roads Network

The Roads Network is a critical component of the provision of safe and efficient transportation services. Town staff completed a Road Needs Study Assessment in 2019 and plan on updating it every 5 years, when possible. The report provided detailed asset attribute information on the road segments, a detailed maintenance and resurfacing needs analysis, and a prioritization analysis.

### 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 Town's Road Network inventory.

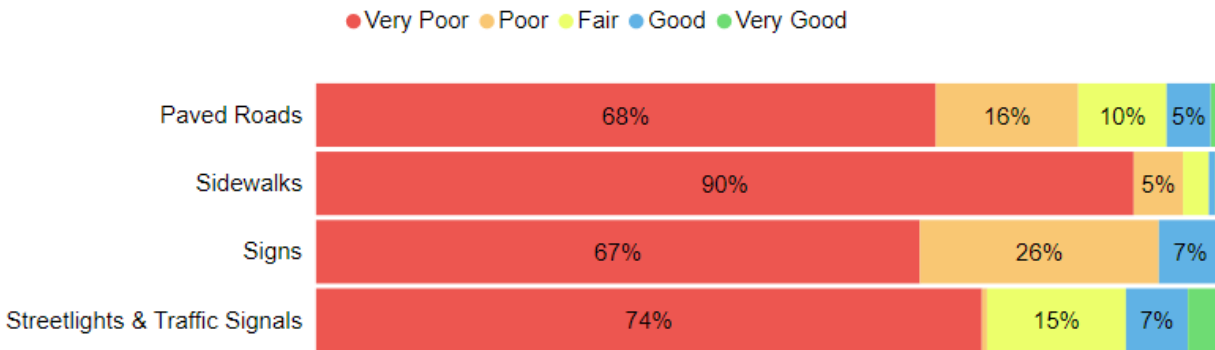
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Paved Roads	215 km	CPI/ Cost/Unit	\$93,240,086
Sidewalks	19.7 km	CPI/ Cost/Unit	\$3,275,025
Signs	7,048	CPI Tables	\$623,426
Streetlights & Traffic Signals	1,931	CPI/User-Defined Cost	\$5,900,823
Unpaved Roads	176 km	Not Planned For Replacement	
			<b>\$103,039,360</b>



## 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	58%	Fair	77% Assessed
Sidewalks	20%	Poor	91% Assessed
Signs	12%	Very Poor	Age-Based
Streetlights & Traffic Signals	16%	Very Poor	Age-Based
	<b>54%</b>	<b>Fair</b>	<b>72% Assessed</b>



### 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:

- The Town completed a Roads Needs Assessment in 2019 and plans on updating it every 5 years, when possible. The report provided detailed asset attribute information on the road segments and sidewalks, a detailed maintenance and resurfacing needs analysis, and a prioritization analysis.

### 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
Paved Roads	15-20	46.0
Sidewalks	20	41.0
Signs	30	26.0
Streetlights & Traffic Signals	25	20.0
		<b>43.0</b>

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.

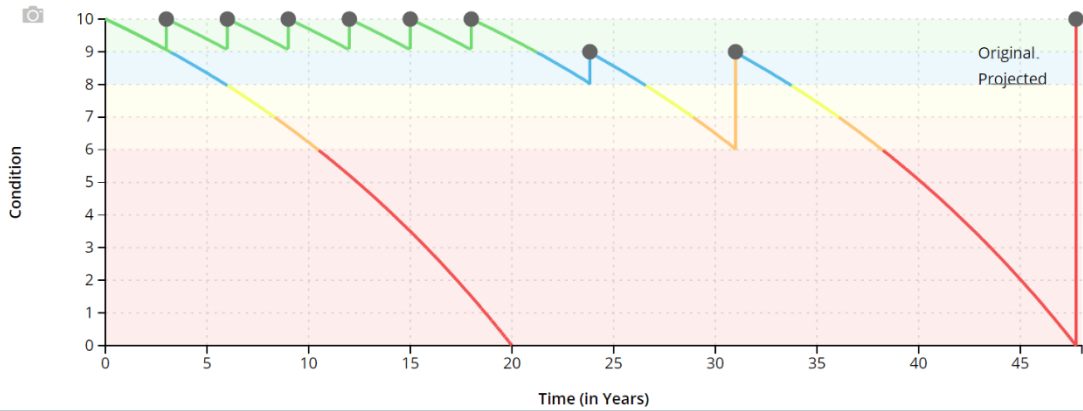
### 4.1.4 Lifecycle Management Strategy

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 LCB and HCB roads. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

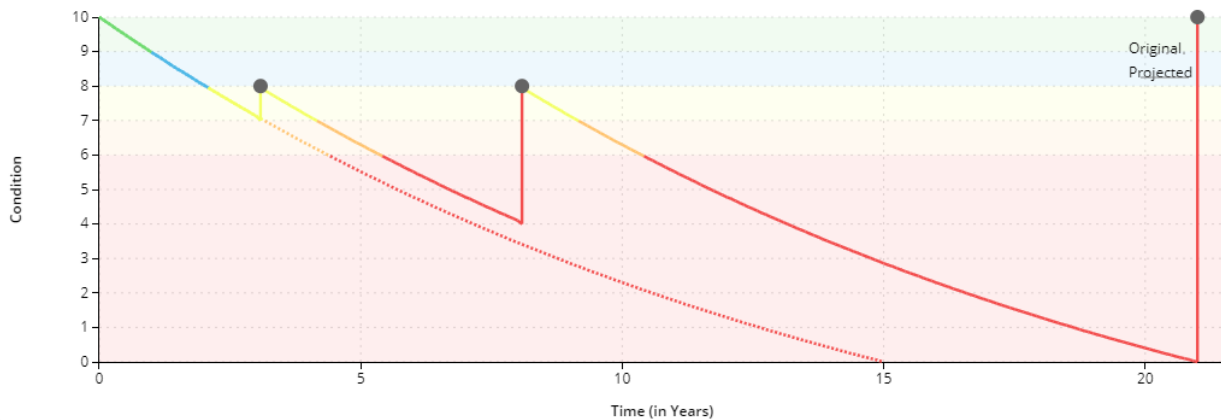
### Paved Roads (HCB)

Event Name	Event Class	Event Trigger
Crack Sealing & Patching (as-needed)	Preventative Maintenance	Every 3 Years
Resurfacing	Rehabilitation	Condition: 8
Pulverize & Pave	Rehabilitation	Condition: 6
Full Road Reconstruction	Replacement	Condition: 0



### Paved Roads (LCB)

Event Name	Event Class	Event Trigger
Single Resurface	Rehabilitation	Condition: 7
Double Surface	Rehabilitation	Condition: 4
Full Road Reconstruction	Replacement	Condition: 0



The following table further expands on the Town’s current approach to lifecycle management:

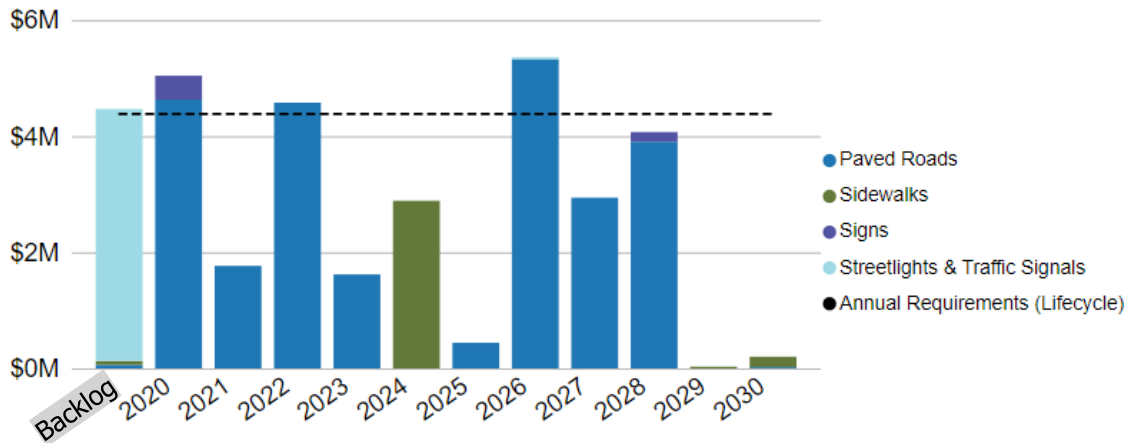
Activity Type	Description of Current Strategy
Maintenance	Annual winter control activities to meet Minimum Maintenance Standards including road and sidewalk plowing, and snow removal.
	Activities such as crack sealing and shallow patching are done on an as-needed basis depending on the performance and condition of the road segments. Staff will implement a crack sealing program to extend service life of paved roads.
	Gravel roads undergo ongoing maintenance activities including: <ul style="list-style-type: none"> <li>• Dust Control/Calcium Chloride Application (annually)</li> <li>• Grading (multiple times annually)</li> <li>• Re-gravelling is done on an as-needed basis. Staff plan to develop a strategic, rotating schedule for re-gravelling depending on the criticality of the road segment.</li> </ul>
Rehabilitation	Surface treatments are performed every 6-8 years on surface treated roads.
	Surface treated roads with an annual daily traffic count of 1000 or more are viable candidates for an upgrade to asphalt or to receive an extra lift.
Replacement	Full road reconstruction is coordinated effectively with other Right-of-Way assets, including linear underground assets.

## Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for paved Roads, 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 Town should allocate towards funding rehabilitation and replacement needs to meet future capital needs.

### Average Annual Capital Requirements \$4,383,924



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

### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

	1	2	3	4	5
5	0 Assets - \$0.00	0 Assets - \$0.00	4 Assets 5,644.00 m \$5,587,560.00	2 Assets 6,052.00 m \$5,991,480.00	1 Asset 2,200.00 m \$2,178,000.00
4	2 Assets 1,414.00 m \$1,020,570.00	3 Assets 409.00 unit(s), m \$1,252,427.00	2 Assets 592.00 m \$586,080.00	0 Assets - \$0.00	5 Assets 9,314.11 unit(s), m \$6,430,561.46
3	0 Assets - \$0.00	9 Assets 2,000.37 m \$1,693,430.31	8 Assets 6,934.24 unit(s), m \$2,795,602.43	20 Assets 13,108.47 m \$5,878,181.19	124 Assets 100,107.51 unit(s), m \$46,460,716.82
2	3 Assets 543.00 m, unit(s) \$284,045.00	5 Assets 1,873.00 unit(s), m \$999,258.00	5 Assets 1,315.82 unit(s), m \$935,659.69	21 Assets 5,453.48 m \$2,276,529.02	120 Assets 35,040.57 unit(s), m \$12,449,159.05
1	4 Assets 1,144.00 m, unit(s) \$48,751.00	18 Assets 2,633.67 unit(s), m \$1,069,609.85	10 Assets 935.00 unit(s), m2, m \$189,558.00	13 Assets 4,794.58 unit(s), m \$885,276.36	170 Assets 26,133.00 unit(s), m \$4,026,905.02
	1	2	3	4	5



## Risks to Current Asset Management Strategies

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



### **Climate Change & Extreme Weather Events**

An increase in freeze/thaw cycles causes road pavement to heave and settle. This can cause the accelerated deterioration of road surface pavement which leads to an increased need for maintenance and rehabilitation. The uncertainty surrounding the impact of extreme weather events can make changing conditions difficult to plan for.



### **Lifecycle Management Strategies**

The current lifecycle management strategy for roads is considered more reactive than proactive. It is a challenge to find the right balance between maintenance, capital rehabilitation and the reconstruction of roads. Staff hope to develop better defined strategies that will extend pavement lifecycle and a lower total cost. These strategies will require sustainable annual funding to minimize the deferral of capital works.



### **Budget Restraints**

Major capital rehabilitation projects for roads are subject to budget restraints and competing priorities. Therefore, many projects may get postponed, delayed, or canceled.

## 4.1.6 Levels of Service

The following tables identify the Town's current level of service for the Roads 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 Town has selected for this AMP.

## Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix B
Quality	Description or images that illustrate the different levels of road class pavement condition	As illustrated in Appendix B, the Municipality assessed the condition of their roads on a 0-100 scale in accordance with the MTO's Method and Inventory Manual. Each road segment was scored on a 1-10 scale, with any rating value below 6 considered Very Poor condition, and anything above 8 is considered Good-Very Good.

## Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km <sup>2</sup> )	0.035
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km <sup>2</sup> )	0.041
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km <sup>2</sup> )	0.690
Quality	Average pavement condition index for paved roads in the municipality	58%
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Good
Performance	Capital reinvestment rate	0.87%

## 4.1.7 Recommendations

### Asset Inventory

- Continue to review and refine the road and sidewalk asset inventory to ensure new assets and betterments are reflected and attributes are detailed.
- Pooled assets, streetlights, traffic signals, and regulatory signs, should be reviewed on a regular basis to ensure their accuracy in quantity and cost.

### Condition Assessment Strategies

- A comprehensive assessment of the roads and sidewalk network was recently completed and there are plans to conduct a network-wide assessment every 5 years. Prioritize regular cursory inspections in between comprehensive assessments using consistent and standardized condition rating criterion. Develop and conduct condition assessment programs for all other transportation assets (streetlight, traffic signals, and signs).

### Lifecycle Management Strategies

- Update and refine replacement cost information based on latest tender or project prices, every 2-5 years.
- Implement the identified lifecycle management strategies for paved roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Town's lifecycle management strategies at regular intervals to determine the impact to cost, performance, and risk.
- Re-evaluate the gravel road maintenance strategy with the goal of achieving the lowest total cost of ownership while meeting desired levels of service.

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to the availability of additional data and also an evolving understanding of the probability and consequences of asset failure.

### Levels of Service

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

## 4.2 Bridges & Culverts

Bridges & Culverts represent a critical portion of the transportation services provided to the community. The Town is responsible for 26 structural bridges and culverts. The asset inventory contains assessed condition values, replacement cost and other information from completed OSIM inspections. The most recent inspection report was completed in 2020.

### 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 Town's Bridges & Culverts inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	11	User-Defined Costs	\$19,976,500.00
Culverts	15	User-Defined Costs	\$7,754,545.00
	<b>26</b>		<b>\$27,731,045.00</b>

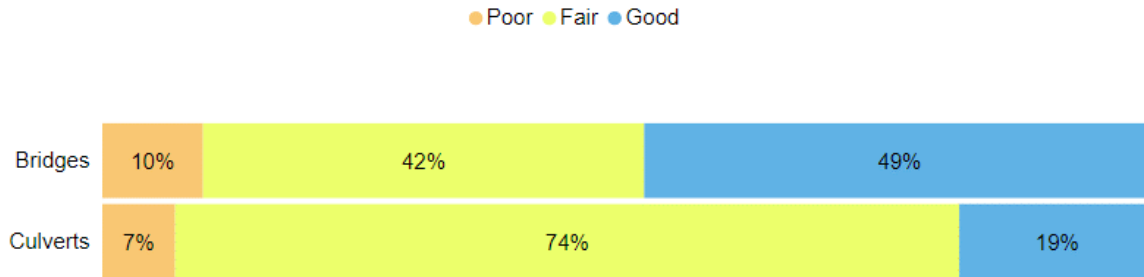
Total Replacement Cost  
\$27.7M



### 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	68%	Fair	100% Assessed
Culverts	64%	Fair	100% Assessed
	<b>67%</b>	<b>Fair</b>	<b>100% Assessed</b>



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

### Current Approach to Condition Assessment

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

- Staff perform visual inspections regularly
- Bridges and culverts are required to be inspected every 2 years according to the Ontario Structure Inspection Manual (OSIM). The latest inspections were performed in 2020

### 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
Bridges	40-80	50.2
Culverts	40-75	47.4
		<b>48.7</b>

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

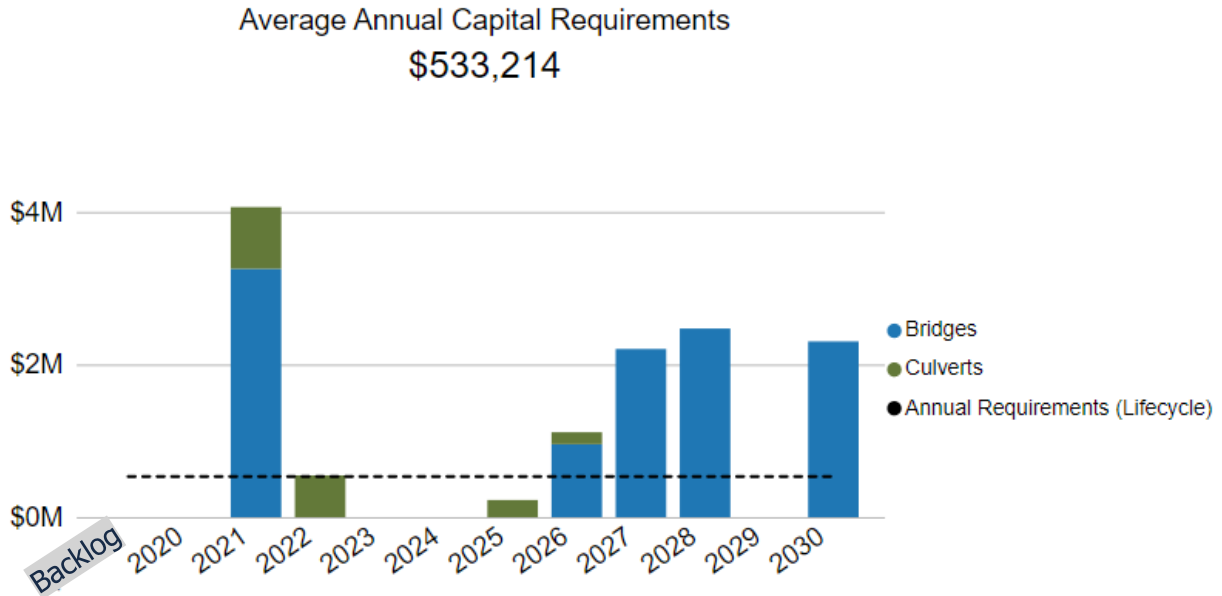
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance, Rehabilitation and Replacement	Staff perform visual inspections regularly. Routine bridge sweeping, washing of decks, drains and girders, and erosion repairs are performed  Lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM). Staff perform lifecycle activities (ex: deck replacements, concrete patch repairs, guard rail repairs, etc.) depending on recommendations through OSIM and/or staff inspections.

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town 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

#### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

Consequence	5	1 Asset 1.00 unit(s) \$1,044,472.30	2 Assets 850.60 m2 \$4,652,191.39	1 Asset 165.90 m2 \$2,006,000.00	0 Assets - \$0.00	0 Assets - \$0.00
	4	0 Assets - \$0.00	2 Assets 421.40 m2 \$3,893,000.00	1 Asset 1.00 unit(s) \$836,500.00	0 Assets - \$0.00	0 Assets - \$0.00
	3	1 Asset 1.00 unit(s) \$356,500.00	2 Assets 1.00 unit(s) \$776,500.00	13 Assets 523.70 m2, unit(s) \$11,306,000.00	1 Asset 1.00 unit(s) \$536,500.00	0 Assets - \$0.00
	2	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	2 Assets 114.70 m2 \$1,913,000.00	0 Assets - \$0.00
	1	3 Assets 57.00 m2, unit(s) \$340,572.70	1 Asset 1.00 unit(s) \$69,808.61	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
		1	2	3	4	5
		Probability				

## Risks to Current Asset Management Strategies

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



### Aging Infrastructure

As municipal bridges continue to age, there are a handful of structures that are approaching their original useful life. There is currently no decision-making process in place to determine how to plan for structures that will require replacement or disposal.



### Capital Funding Strategies

Major capital rehabilitation projects for bridges and culverts are entirely dependant on the availability of grant funding opportunities. When grants are not available, bridge rehabilitation projects may be deferred. An annual capital funding strategy reduce dependency on grant funding and help prevent deferral or capital works.



## 4.2.6 Levels of Service

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

### Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the Municipality's transportation network, and support the movement of pedestraints, trucks, emergency vehicles, and motor vehicles in and around South Bruce Peninsula.
Quality	Description or images of the condition of bridges and culverts and how this would affect their use	<p>Good (BCI 70-100): A bridge with a BCI greater than 70 is generally considered to be in good to excellent condition, and repair or rehabilitation work is not usually required within the next 5 years. Routine maintenance, such as sweeping, cleaning are still recommended.</p> <p>Fair (BCI 50-70): A bridge with a BCI between 50 and 70 is generally considered to be in good to fair condition. Repair or rehabilitation work recommended is scheduled to be completed within the next 5 years.</p> <p>Poor (BCI Less than 50): A bridge with a BCI rating of less than 50 is generally considered poor with lower numbers representing structures nearing the end of life. The repair of these structures is best scheduled to be completed within a year. However, if the replacement of the structure is more viable, it is identified for continued monitoring and scheduled for replacement within 1 to 10-years.</p>

## Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2020)</b>
Scope	% of bridges in the Town with loading or dimensional restrictions	26%
Quality	Average bridge condition index value for bridges in the Town	68%
	Average bridge condition index value for structural culverts in the Town	65%
Performance	Capital re-investment rate	1.14%

## 4.2.7 Recommendations

### Data Review/Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all bridges and structural culverts upon the completion of OSIM inspections every 2 years.
- Update current asset replacement and event costs on a cyclical basis.

### Condition

- Ensure that bridge condition indices (BCIs) from OSIMs are updated regularly in the inventory to support planning for deterioration modeling.

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

### Lifecycle Management Strategies

- Maintenance, rehabilitation, and replacement projects recommended by OSIM cannot all be met due to budget constraints. Incorporate recommendations, including timing and cost, in order to develop a realistic capital forecast, that will ensure capital rehabilitation and maintenance is achieved on schedule.

## Levels of Service

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

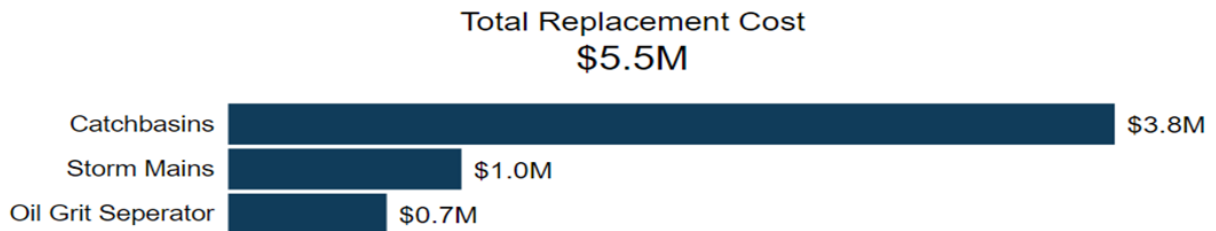
## 4.3 Stormwater Network

The Town is responsible for owning and maintaining a stormwater network of storm sewer mains and other supporting infrastructure. Staff are working towards improving the accuracy and reliability of their Stormwater Services inventory to assist with long-term asset management planning.

### 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 Town’s Stormwater Network inventory.

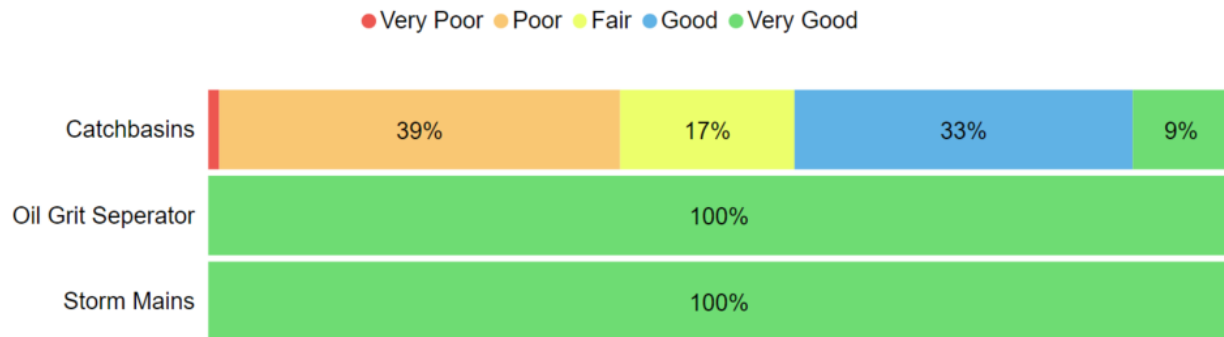
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Catchbasins	228	CPI Tables	\$3,818,797
Oil Grit Separator	1	CPI Tables	\$683,471
Storm Mains	1,221m	CPI/ Cost/Unit	\$1,005,146
			<b>\$5,507,414</b>



## 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
Catchbasins	55%	Fair	Age-Based
Oil Grit Separator	99%	Very Good	Age-Based
Storm Mains <sup>4</sup>	96%	Very Good	Age-Based
	<b>68%</b>	<b>Good</b>	<b>Age-Based</b>



To ensure that the Town's Stormwater Network continues to provide an acceptable level of service, the Town 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 Stormwater 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 camera inspections are completed on an as-needed basis

<sup>4</sup> Staff acknowledge that there is an old storm system in existence, but no data is available at this time.

### 4.3.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Stormwater 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Asset Age (Years)</b>
Catchbasins	75	38.0
Oil Grit Separator	60	1.5
Storm Mains	75	4.4
		<b>33.9</b>

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.

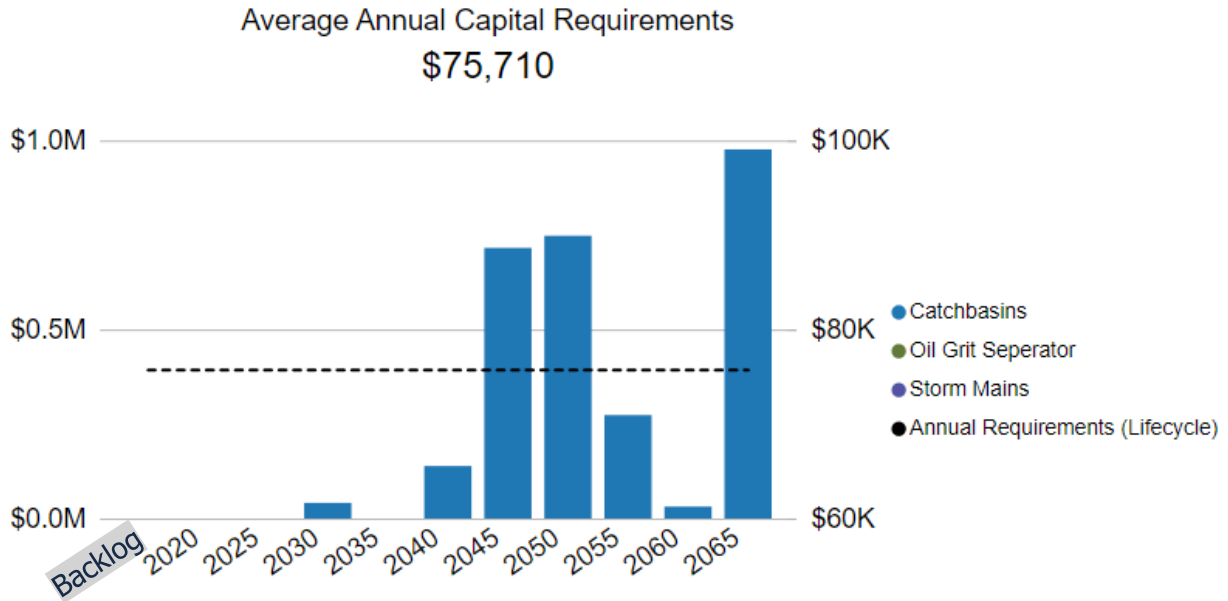
### 4.3.4 Lifecycle Management Strategy

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 Town’s current lifecycle management strategy.

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance	CCTV camera inspections are completed on an as-needed basis to assess condition of pipes.
	Staff perform periodic catchbasins cleanout and flushing of stormwater mains.
	Manhole repairs and cleaning is performed regularly.
	Oil grit separators are inspected on a monthly basis and are cleaned out bi-annually, or as required.
Rehabilitation/ Replacement	Trenchless Relining is performed on viable main candidates, when applicable. Staff prioritize the rehabilitation and/or replacement of storm sewers in coordination with other underground linear assets, condition, and capacity

## Forecasted Capital Requirements

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



Due to the relatively recent in-service dates for the storm assets, none of the assets are due for replacement within the next 10 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.

### 4.3.5 Risk & Criticality

#### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

Consequence	5	2 Assets 160.00 m \$224,000.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	4	3 Assets 112.00 m, unit(s) \$838,871.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	3	4 Assets 465.00 m \$291,100.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	2	11 Assets 373.00 m, unit(s) \$313,234.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	1	18 Assets 145.70 m, unit(s) \$383,469.00	60 Assets 60.00 unit(s) \$1,264,511.00	34 Assets 34.00 unit(s) \$652,078.00	98 Assets 98.00 unit(s) \$1,498,784.00	3 Assets 3.00 unit(s) \$41,367.00
		1	2	3	4	5
		Probability				

## Risks to Current Asset Management Strategies

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



### Asset Data & Information

There is a lack of confidence in the available inventory data for stormwater network. Staff plan to prioritize data refinement efforts to increase confidence in the accuracy and reliability of asset data and information. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs.



### 4.3.6 Levels of Service

The following tables identify the Town’s current level of service for the Stormwater 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 Town 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 Stormwater Services.

<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current LOS (2020)</b>
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 Stormwater Services.

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2020)</b>
Scope	% of properties in municipality resilient to a 100-year storm	TBD <sup>5</sup>
	% of the municipal stormwater management system resilient to a 5-year storm	25
Performance	Capital reinvestment rate	1.38%

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<sup>5</sup> The Town does not currently have data available to confidently determine the resilience of the stormwater management system.

## 4.3.7 Recommendations

### Asset Inventory

- The Town's Stormwater Network inventory remains at a basic level of maturity and staff do not have a high level of confidence in its accuracy or reliability. The development of a comprehensive inventory of the Stormwater Network should be priority.

### Condition Assessment Strategies

- The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all assets in the Stormwater Network through CCTV or zoom camera inspections. The collection of CCTV inspection footage should be prioritized to develop a risk-driven and evidence-based maintenance, rehabilitation and replacement program that optimizes the allocation of limited capital funding. Once assessed, condition data is gathered a proactive rehabilitation and replacement program can be developed to manage infrastructure with the goal of achieving the lowest total cost of ownership.

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to the availability of data and also an evolving understanding of the probability and consequences of asset failure.

### Lifecycle Management Strategies

- Document and review lifecycle management strategies for the Stormwater Network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.
- Consider the development of preventative maintenance programs.

### Levels of Service

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

## 4.4 Buildings

The Town owns and maintains several facilities and recreation centres that provide key services to the community. These building fall under the following categories:

- General Government
- Protection Services
- Recreational Services
- Transportation Services

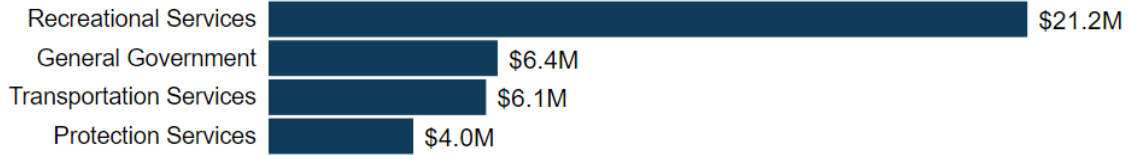
### 4.4.1 Asset Inventory & Replacement Cost

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

<b>Asset Segment</b>	<b>Name</b>	<b>Quantity (# of Components)</b>	<b>Replacement Cost Method</b>	<b>Total Replacement Cost</b>
General Government	Bayview Cemetery Mortuary	1	CPI/ User-Defined Costs	\$6,397,152
	Elsinore Community Centre	1		
	Park Head Community Centre	1		
	Purple Valley Community Centre	1		
	Ross Whicher Centre	51		
	Wiaraton Willie House	1		
	Town Hall	56		

<b>Asset Segment</b>	<b>Name</b>	<b>Quantity (# of Components)</b>	<b>Replacement Cost Method</b>	<b>Total Replacement Cost</b>
Protection Services	Sauble Beach OPP & Fire Station	50	CPI/ User-Defined Costs	\$4,043,025
	Wiaraton Fire Station	37		
Recreational Services	Wiaraton Arena & Community Centre	75	CPI/ User-Defined Costs	\$21,180,287
	Berford Lake Park	4		
	Bluewater Park	113		
	Hepworth Community Centre	4		
	Hope Bay Washrooms	3		
	Louisa Street Storage	1		
	North Beach Washrooms	1		
	Old Info Booth/Washroom	3		
	Oliphant Park	3		
	Red Bay Washroom	3		
	Sauble Beach Community Centre (Library)	38		
	Sauble Beach Community Centre	62		
	Sauble Beach Lawn Bowling	37		
	South Beach Washroom	1		
	Train Station	24		
Transportation Services	Albemarle Public Works Shop	40	CPI/ User-Defined Costs	\$6,074,957
	Amabel Public Works Shop	37		
	Amabel Landfill Weigh Station	1		
	Wiaraton Public Works Shop	34		
				<b>\$37,695,421</b>

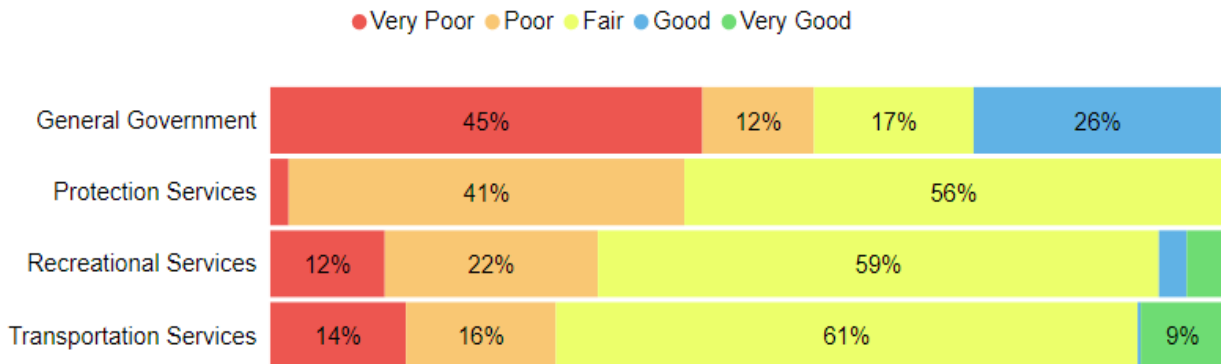
Total Replacement Cost  
\$37.7M



### 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
General Government	39%	Poor	70% Assessed
Protection Services	47%	Fair	73% Assessed
Recreational Services	50%	Fair	82% Assessed
Transportation Services	51%	Fair	77% Assessed
	<b>48%</b>	<b>Fair</b>	<b>78% Assessed</b>



To ensure that the Town’s Buildings continue to provide an acceptable level of service, the Town 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.

## 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:

- A building condition assessment was conducted in 2020 for all critical buildings. This provided staff with building condition indices (BCIs) and a list of repair and/or renewal recommendations.

### 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
General Government	8-50	26.8
Protection Services	10-80	28.2
Recreational Services	10-100	22.1
Transportation Services	15-80	26.7
		<b>24.4</b>

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

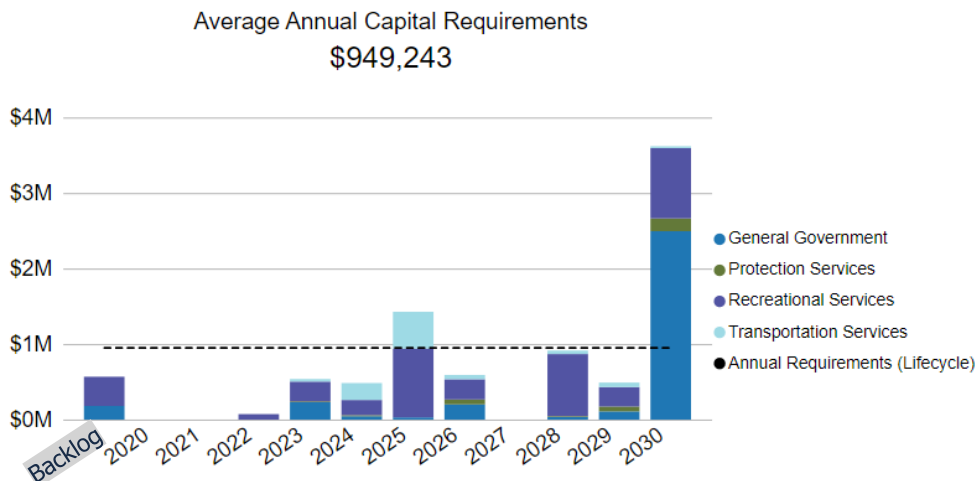
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Town’s current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	<p>Municipal buildings are subject to regular inspections to identify health &amp; safety requirements as well as structural deficiencies that require additional attention. Since the componentization of many of the Town’s buildings, staff will be able to proactively maintain and plan for the rehabilitation/replacement of assets.</p> <p>Critical buildings have a detailed maintenance and rehabilitation schedule, while the maintenance of other facilities are dealt with on a case-by-case basis.</p>
Replacement	<p>Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate. Staff prioritize capital projects based on health and safety issues, public feedback, and funding restraints.</p> <p>As a supplement to the knowledge and expertise of municipal staff the Municipality works with contractors to complete assessments of the buildings and facilities and address replacement needs</p>

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town 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.

## 4.4.5 Risk & Criticality

### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

Consequence	5	0 Assets - \$0.00	1 Asset 1.00 unit(s) \$1,663,037.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	4	0 Assets - \$0.00	0 Assets - \$0.00	2 Assets 2.00 unit(s) \$1,175,069.00	2 Assets 2.00 unit(s) \$1,071,558.00	2 Assets 2.00 unit(s) \$1,300,834.00
	3	3 Assets 3.00 unit(s) \$646,195.00	2 Assets 2.00 unit(s) \$356,814.00	2 Assets 13,126.00 unit(s), sq ft \$412,680.00	1 Asset 25,700.00 sq ft \$642,500.00	2 Assets 2.00 unit(s) \$445,324.00
	2	2 Assets 2.00 unit(s) \$266,471.00	2 Assets 2.00 unit(s) \$154,549.00	6 Assets 7.00 unit(s) \$1,932,629.00	4 Assets 32,952.00 unit(s), sq ft \$425,487.00	6 Assets 6.00 unit(s) \$1,319,982.00
	1	18 Assets 23.00 unit(s) \$491,161.00	9 Assets 40.00 unit(s) \$125,843.00	339 Assets 222,098.00 unit(s), sq ft, feet, m2, m \$15,977,207.00	181 Assets 307,773.00 unit(s), sq ft, m2, feet \$5,963,291.00	100 Assets 86,218.00 unit(s), sq ft, feet \$3,324,790.00
		1	2	3	4	5
		Probability				

### Risks to Current Asset Management Strategies

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



#### Organizational Capacity

Both short and long-term planning requires the regular collection of infrastructure data to support asset management decision-making. Staff find it a continuous challenge to dedicate staff resource time towards data collection to ensure that building components are documented, and condition and asset attribute data is regularly reviewed and updated.



#### Aging Infrastructure

As municipal buildings continue to age, there are a handful of structures that are approaching their original useful life. There is currently no decision-making process in place to determine how to plan for structures that will require replacement or disposal.



## 4.4.6 Levels of Service

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

## 4.4.7 Recommendations

### Data Review/Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all buildings.

### Condition

- Ensure that the condition ratings from the building condition assessments are entered into the asset inventory on continuous basis to support planning for deterioration modeling.

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

### Lifecycle Management Strategies

- Maintenance, rehabilitation, and replacement projects recommended by building condition assessments cannot all be met due to budget constraints. Keep on prioritizing capital projects based on health and safety issues, as well as public feedback.

### Levels of Service

- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service by July 1st, 2024.

## 4.5 Land Improvements

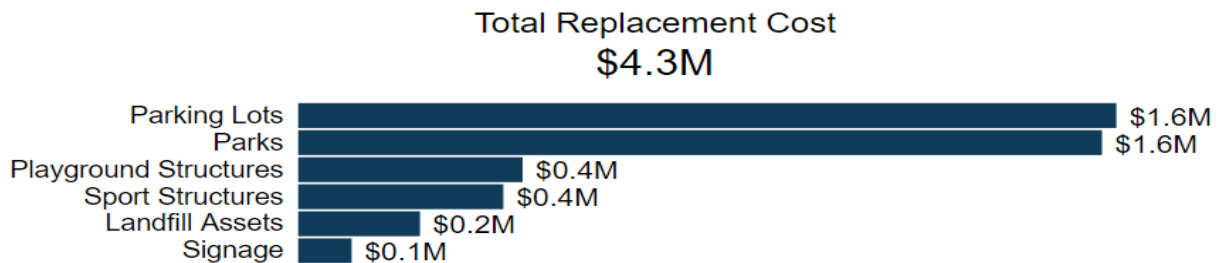
The Town owns and operates several assets that are considered Land Improvements. This category includes:

- Landfill Assets
- Parking Lots
- Parks
- Playground Structures
- Signage
- Sport Structures

### 4.5.1 Asset Inventory & Replacement Cost

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

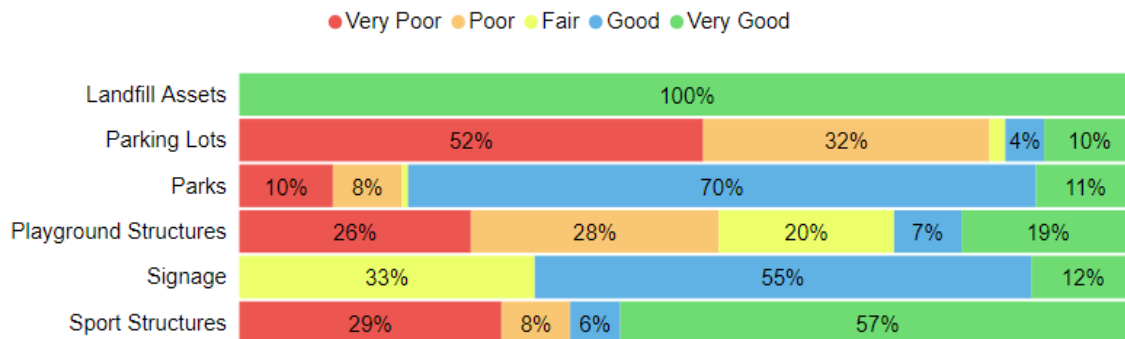
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Landfill Assets	3	CPI Tables	\$237,455.00
Parking Lots	32	CPI Tables	\$1,591,114.00
Parks	55	CPI/ User-Defined Costs	\$1,563,200.00
Playground Structures	13	CPI Tables	\$436,967.00
Signage	8	CPI Tables	\$104,564.00
Sport Structures	9	CPI Tables	\$399,534.00
			<b>\$4,332,834.00</b>



## 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
Landfill Assets	98%	Very Good	Age-Based
Parking Lots	24%	Poor	Age-Based
Parks	62%	Good	17% Assessed
Playground Structures	40%	Fair	6% Assessed
Signage	65%	Good	Age-Based
Sport Structures	59%	Fair	11% Assessed
	<b>48%</b>	<b>Fair</b>	<b>8% Assessed</b>



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

### Current Approach to Condition Assessment

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

- Staff perform visual inspections for most of the assets on regular basis

### 4.5.3 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
Landfill Assets	25	1.5
Parking Lots	15-50	31.3
Parks	10-35	7.0
Playground Structures	15	9.0
Signage	25	7.0
Sport Structures	20-25	26.8
		<b>17.2</b>

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

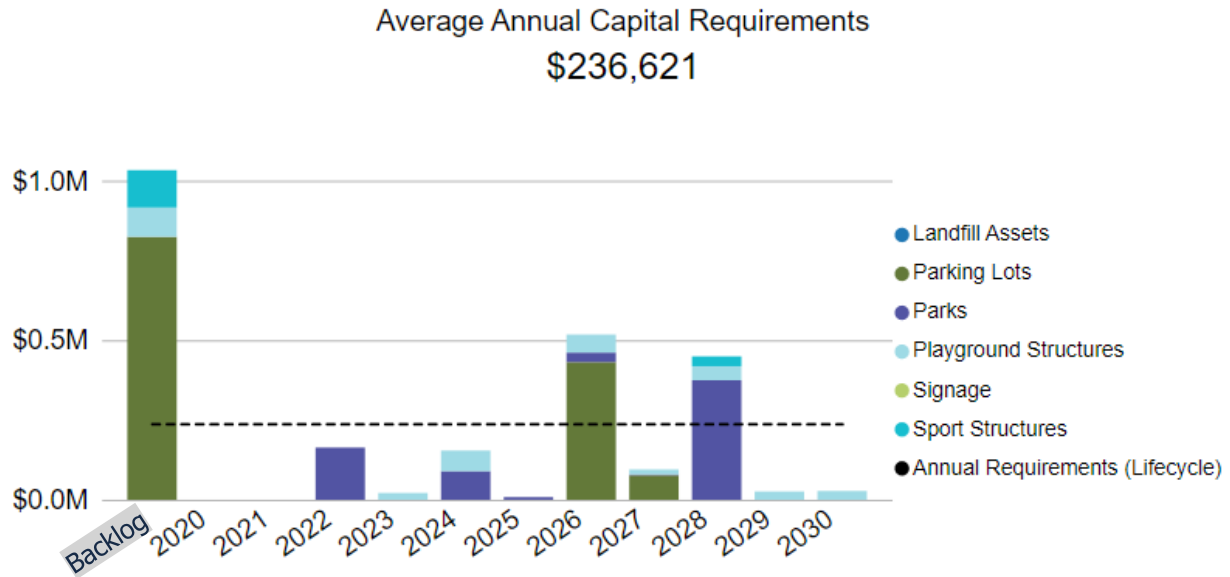
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Town’s current lifecycle management strategy.

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance, Rehabilitation & Replacement	The Land Improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis
	Staff have developed a Parks, Recreation & Culture Master Plan in order to identify service level needs and asset lifecycle requirements in order to meet community expectations.

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town 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.

### 4.5.5 Risk & Criticality

#### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

Consequence	5	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	4	0 Assets - \$0.00	1 Asset 1.00 unit(s) \$58,781.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	3	0 Assets - \$0.00	1 Asset 1.00 unit(s) \$374,814.00	1 Asset 1.00 unit(s) \$26,103.00	0 Assets - \$0.00	0 Assets - \$0.00
	2	2 Assets 2.00 unit(s) \$402,780.00	1 Asset 1.00 unit(s) \$20,756.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	1	22 Assets 45.00 unit(s) \$494,830.00	19 Assets 19.00 unit(s) \$823,304.00	8 Assets 8.00 unit(s) \$132,561.00	11 Assets 13.00 unit(s) \$780,502.00	29 Assets 29.00 unit(s) \$1,218,403.00
		1	2	3	4	5
		Probability				

## Risks to Current Asset Management Strategies

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



### Asset Data & Information

There is a lack of confidence in the available inventory and condition data for land improvement assets. Staff plan to prioritize data refinement efforts to increase confidence in the accuracy and reliability of asset data and information. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs.



### Public Expectations

The Land Improvements assets are citizen facing. Therefore, the service levels must be maintained at a certain level at all times to meet public expectations.

### 4.5.1 Levels of Service

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

## 4.5.2 Recommendations

### Data Review/Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all Land Improvements assets.

### Condition

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

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

### Lifecycle Management Strategies

- Work towards developing lifecycle models to prolong estimated useful life and optimize funding.

### Levels of Service

- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service by July 1st, 2024.

## 4.6 Machinery & Equipment

In order to maintain the high quality of public infrastructure and support the delivery of core services, the Town’s staff own and employ various types of machinery and equipment. These core services include:

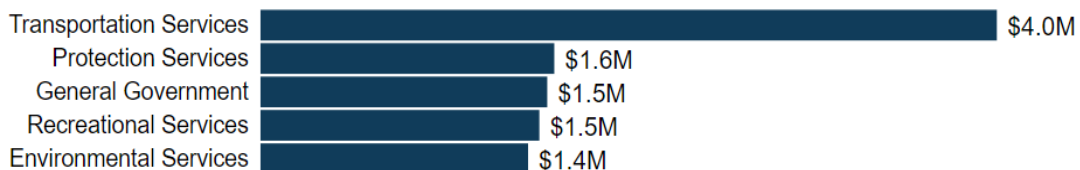
- Environmental Services (ex: Landfill Weigh Scales, Utility Meter Reader)
- General Government (ex: Office Furniture, Computer Hardware)
- Protection Services (ex: Generators, Personal Protective Equipment, Portable Radios)
- Recreational Services (ex: Mowers, Zamboni Ice Resurfacers, Portable Stage)
- Transportation Services (ex: Loaders, Graders, Streetsweeper)

### 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 Town’s Machinery & Equipment inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Environmental Services	26	CPI/ User-Defined Costs	\$1,446,041
General Government	2456	CPI/ User-Defined Costs	\$1,549,513
Protection Services	1264	CPI/ User-Defined Costs	\$1,587,589
Recreational Services	298	CPI/ User-Defined Costs	\$1,506,906
Transportation Services	145	CPI/ User-Defined Costs	\$3,978,262
			<b>\$10,068,311</b>

Total Replacement Cost  
\$10.1M

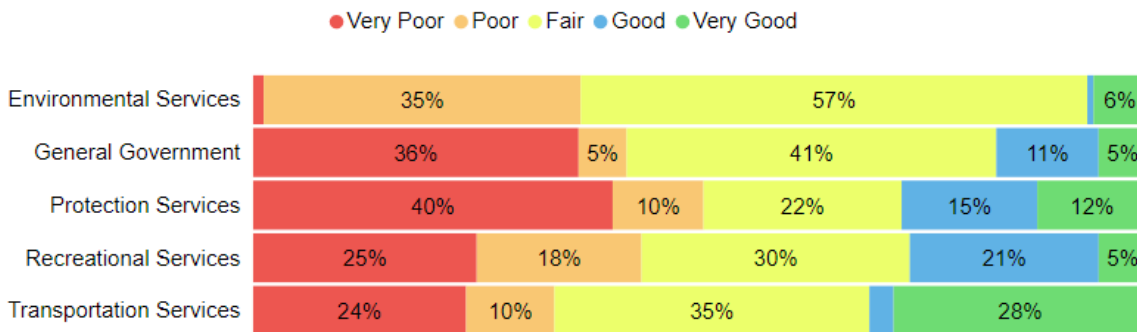




## 4.6.2 Asset Condition

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
Environmental Services	42%	Fair	86% Assessed
General Government	38%	Poor	24% Assessed
Protection Services	37%	Poor	18% Assessed
Recreational Services	41%	Fair	21% Assessed
Transportation Services	52%	Fair	94% Assessed
	<b>44%</b>	<b>Fair</b>	<b>59% Assessed</b>



### Current Approach to Condition Assessment

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

- Staff conduct condition assessments in accordance with National Fire Protection association (NFPA) codes and standards for fire department related machinery and equipment.
- Staff complete regular visual inspections of other Machinery & Equipment to ensure they are in a state of adequate repair.
- There are no formal condition assessment programs in place for the full inventory, although some Machinery & Equipment were assigned cursory condition ratings for this AMP.

### 4.6.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Machinery and 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
Environmental Services	5-15	7.3
General Government	3-20	11.7
Protection Services	5-20	10.4
Recreational Services	7-35	9.2
Transportation Services	5-20	14.9
		<b>11.4</b>

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

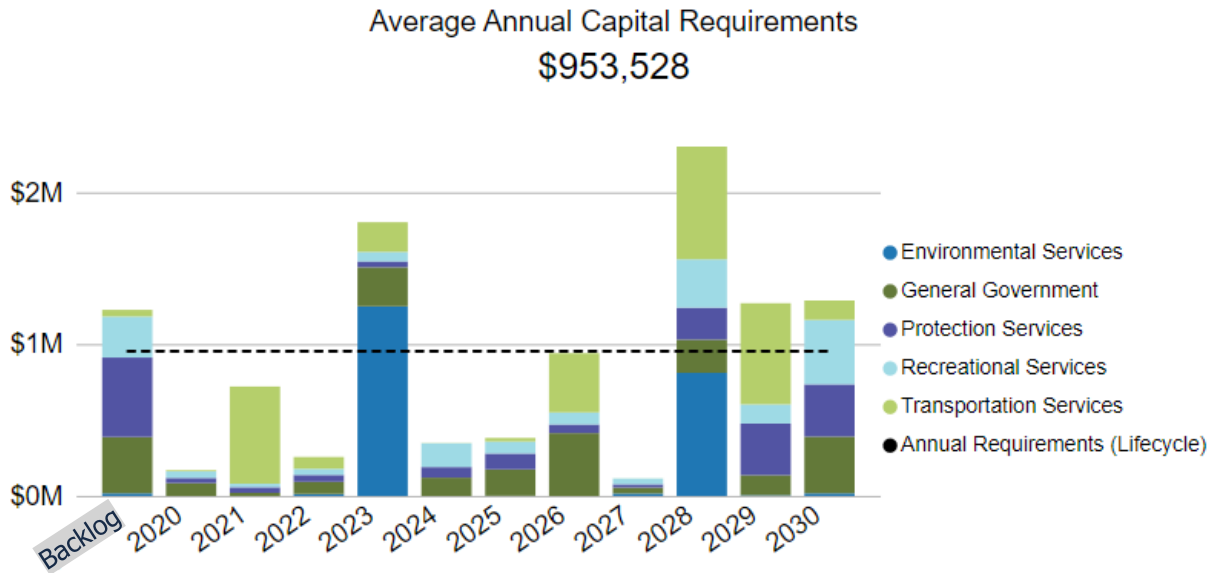
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset’s characteristics, location, utilization, maintenance history and environment.

The following table further expands on the Town’s current approach to lifecycle management:

<b>Activity Type</b>	<b>Description of Current Strategy</b>
	Maintenance program varies by department.
Maintenance/ Rehabilitation	Fire Protection Services equipment is subject to a much more rigorous inspection and maintenance program compared to most other departments. Machinery & equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff.
Replacement	The replacement of machinery & equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks.

## Forecasted Capital Requirements

Based on the lifecycle strategies identified previously, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the Machinery and Equipment Assets.



The annual capital requirement represents the average amount per year that the Town 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.

### 4.6.5 Risk & Criticality

#### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

Consequence	5	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	4	0 Assets - \$0.00	0 Assets - \$0.00	1 Asset 2.00 unit(s) \$71,021.00	0 Assets - \$0.00	0 Assets - \$0.00
	3	1 Asset 1.00 unit(s) \$474,163.00	0 Assets - \$0.00	1 Asset 1.00 unit(s) \$750,000.00	0 Assets - \$0.00	0 Assets - \$0.00
	2	3 Assets 3.00 unit(s) \$413,195.00	2 Assets 2.00 unit(s) \$240,798.00	2 Assets 2.00 unit(s) \$221,853.00	3 Assets 3.00 unit(s) \$480,057.00	1 Asset 1.00 unit(s) \$470,000.00
	1	84 Assets 468.00 unit(s) \$685,268.00	89 Assets 445.00 unit(s) \$613,732.00	116 Assets 662.00 unit(s) \$2,622,542.00	69 Assets 220.00 unit(s) \$947,904.00	256 Assets 2,377.00 unit(s) \$2,077,778.00
		1	2	3	4	5
		Probability				

## Risks to Current Asset Management Strategies

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



### Organizational Capacity

Both short- and long-term planning requires the regular collection of infrastructure data to support asset management decision-making. Staff find it a continuous challenge to dedicate staff resource time towards data collection to ensure that machinery and equipment components are documented and condition and asset attribute data is regularly reviewed and updated.

### 4.6.6 Levels of Service

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

## 4.6.7 Recommendations

### Asset Inventory

- Continue to review and refine the Machinery and Equipment asset inventory to ensure new assets and betterments are reflected and attributes are detailed.

### Condition Assessment Strategies

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

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

### Levels of Service

- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service by July 1st, 2024.

## 4.7 Vehicles

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

- Protection Services
- Transportation Services

### 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 Town’s Vehicles inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Protection Services	11	CPI/ User-Defined Costs	\$2,883,000.00
Transportation Services	29	CPI/ User-Defined Costs	\$3,312,555.00
			<b>\$6,195,555.00</b>

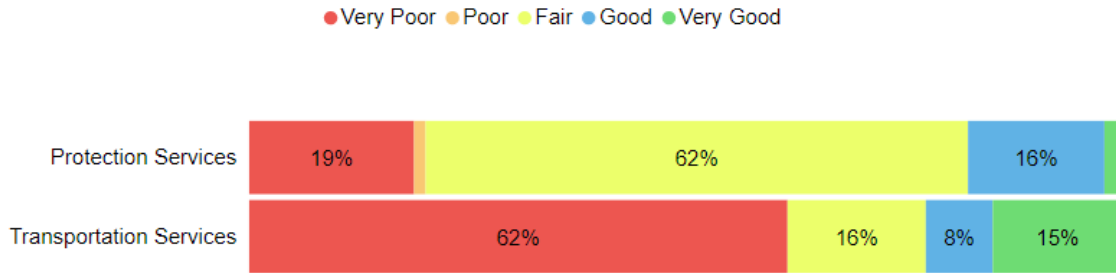
Total Replacement Cost  
\$6.2M



### 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
Protection Services	50%	Fair	48% Assessed
Transportation Services	28%	Poor	100% Assessed
	<b>38%</b>	<b>Poor</b>	<b>76% Assessed</b>



To ensure that the Town’s Vehicles continue to provide an acceptable level of service, the Town 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 assets.

## Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation and the mileage of vehicles is used as a proxy to determine remaining useful life and relative vehicle condition.
- Condition assessments are conducted on vehicles in accordance with regulations for health and safety regulations including NFPA codes and standards for fire department related vehicles.

### 4.7.3 Estimated Useful Life & Average Age

The Estimated Useful Life for vehicles 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
Protection Services	6-25	14.3
Transportation Services	10-12	6.9
		<b>9.1</b>

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

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 Town’s current lifecycle management strategy.

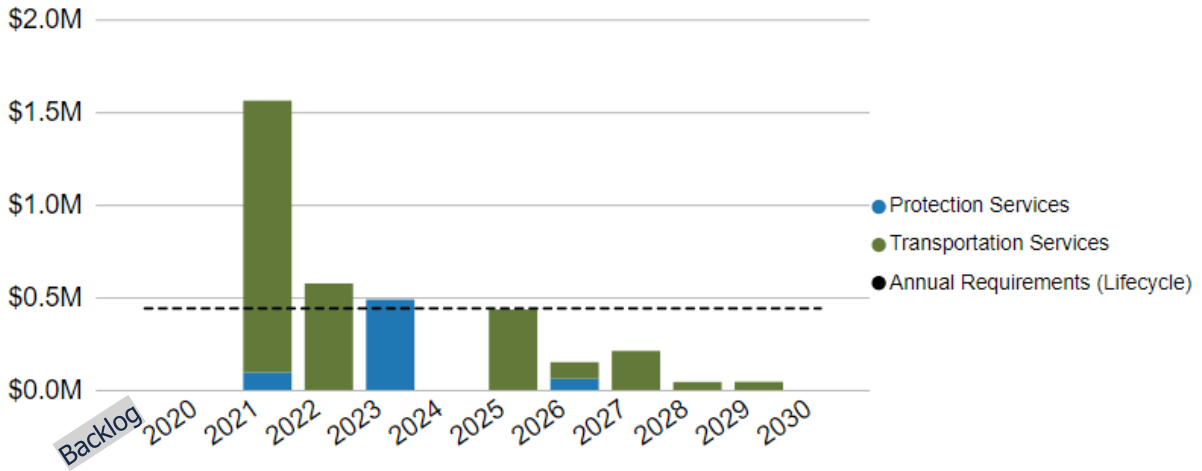
<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance / Rehabilitation	Visual inspections completed and documented daily; fluids inspected at every fuel stop; tires inspected monthly.
	Annual preventative maintenance activities include system components check and additional detailed inspections.
Replacement	Vehicle age, kilometres and annual repair costs are taken into consideration when determining appropriate treatment options.

### Forecasted Capital Requirements

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



### Average Annual Capital Requirements \$440,096



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.

## 4.7.5 Risk & Criticality

### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

	1	2	3	4	5
5	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
4	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
3	0 Assets - \$0.00	1 Asset 1.00 unit(s) \$450,000.00	1 Asset 1.00 unit(s) \$450,000.00	0 Assets - \$0.00	0 Assets - \$0.00
2	2 Assets 2.00 unit(s) \$405,168.00	0 Assets - \$0.00	5 Assets 5.00 unit(s) \$1,615,000.00	0 Assets - \$0.00	7 Assets 7.00 unit(s) \$2,165,000.00
1	4 Assets 4.00 unit(s) \$147,291.00	7 Assets 7.00 unit(s) \$313,666.00	4 Assets 4.00 unit(s) \$249,430.00	1 Asset 1.00 unit(s) \$38,000.00	8 Assets 8.00 unit(s) \$362,000.00
	1	2	3	4	5

Probability

## Risks to Current Asset Management Strategies

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



### **Aging Infrastructure & Capital Funding**

As municipal vehicles continue to age, there are a handful of assets that are approaching their original useful life. There is currently no decision-making process in place to determine how to budget for asset replacement.

## 4.7.6 Levels of Service

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

## 4.7.7 Recommendations

### Asset Inventory

- Continue to review and validate inventory data, assessed condition data and replacement costs for all Land Improvements assets.

### Condition Assessment Strategies

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

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to the availability of data and also an evolving understanding of the probability and consequences of asset failure.

### Levels of Service

- Work towards identifying current and proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service by July 1st, 2024.

# 5

## Analysis of Rate-funded Assets

### Key Insights

- Rate-funded assets are valued at \$83.2 million
- 68.5% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately \$1.6 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

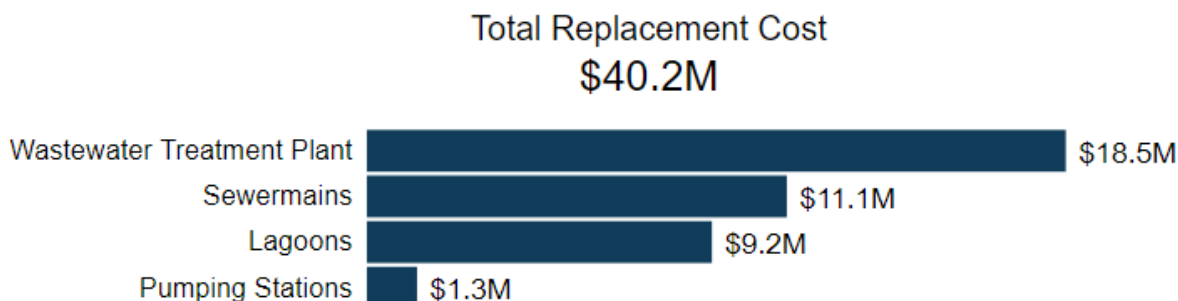
## 5.1 Sanitary Network

The Town is responsible for approximately 22 kilometres of sanitary sewer mains, 17 lagoons, 2 sewer pumping stations, and 1 wastewater treatment plant. The Ontario Clean Water Agency (OCWA) maintains the Town's above ground structures. The attribute information is mostly populated with length, pipe size, material, slope, and node to/node from (manholes).

### 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 Town's Sanitary Network inventory.

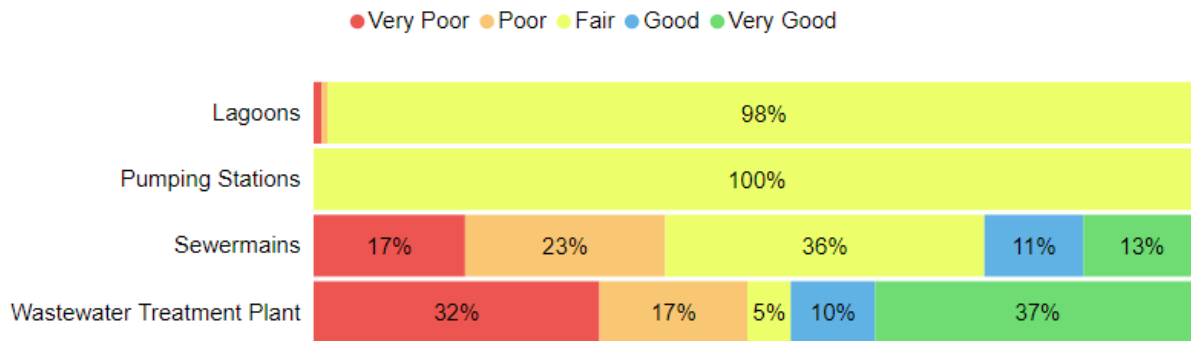
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Lagoons	17	CPI/ User-Defined Costs	\$9,154,074.00
Pumping Stations	2	CPI Tables	\$1,337,978.00
Sewermains	22,413m	Cost/Unit	\$11,140,059.00
Wastewater Treatment Plant	1 (178)	CPI/ User-Defined Costs	\$18,534,593.00
			<b>\$40,166,704.00</b>



## 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
Lagoons	59%	Fair	99% Assessed
Pumping Stations	53%	Fair	Age-Based
Sewermains	50%	Fair	Age-Based
Wastewater Treatment Plant	52%	Fair	57% Assessed
	<b>53%</b>	<b>Fair</b>	<b>12% Assessed</b>



To ensure that the Town’s Sanitary Network continues to provide an acceptable level of service, the Town 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 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:

- OCWA performs regular inspections and assessments on the Town’s wastewater treatment plant, lagoon systems, and pumping stations.
- CCTV camera inspections are completed on an as-needed basis.

### 5.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Sanitary Sewer Services assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
Lagoons	45-65	44.7
Pumping Stations	50	25.5
Sewermains	75	40.2
Wastewater Treatment Plant	15-50	27.3
		33.2

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.

### 5.1.4 Lifecycle Management Strategy

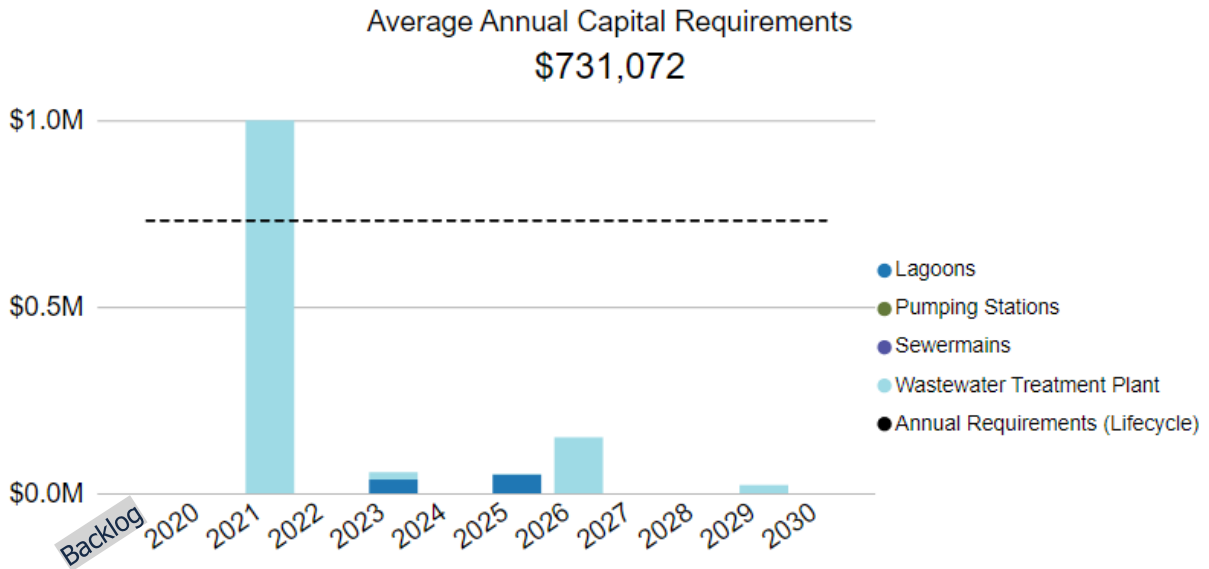
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset’s characteristics, location, utilization, maintenance history and environment. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Town’s current lifecycle management strategy.

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance	Annual sanitary sewer flushing, and inspection activities are completed regularly. Sanitary manhole repairs and inspections are performed as-needed (grouting & sealing). Furthermore, OCWA monitors and calibrates equipment as per manufacturer’s recommendations, on an annual basis. Preventative Maintenance activities are scheduled and performed, on a monthly basis, for pumping stations and lagoon systems. These activities are scheduled within the work order system, MAXIMO.
Rehabilitation	CCTV camera inspections are completed on an-as needed basis. However, Staff plan to conduct a network-wide camera inspection of their sewer systems.

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town 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

#### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

Consequence	5	6 Assets 22.00 m, unit(s) \$6,846,607.00	1 Asset 105.00 m \$78,750.00	3 Assets 353.00 m \$264,750.00	1 Asset 40.00 m \$30,000.00	4 Assets 471.00 unit(s), m \$5,137,939.00
	4	2 Assets 540.00 m \$313,200.00	1 Asset 1.00 unit(s) \$1,042,923.00	0 Assets - \$0.00	1 Asset 138.00 m \$80,040.00	0 Assets - \$0.00
	3	8 Assets 1,005.90 m, unit(s) \$554,495.00	5 Assets 3,126.00 m, unit(s) \$2,166,041.00	9 Assets 777.00 unit(s), m \$9,703,731.00	9 Assets 1,085.00 m \$540,980.00	3 Assets 655.00 m \$379,900.00
	2	13 Assets 1,483.90 m, unit(s) \$980,432.00	15 Assets 2,173.00 m \$912,660.00	6 Assets 1,720.00 unit(s), m \$1,236,287.00	31 Assets 5,639.00 m \$2,368,380.00	1 Asset 580.00 m \$243,600.00
	1	11 Assets 1,426.00 unit(s), m \$674,320.00	21 Assets 100.00 unit(s), m \$367,916.00	67 Assets 67.00 unit(s) \$1,387,979.00	80 Assets 1,077.00 unit(s), m \$3,575,358.00	25 Assets 25.00 unit(s) \$1,280,416.00
		1	2	3	4	5
		Probability				

## Risks to Current Asset Management Strategies

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



### Lifecycle Management Strategies

There are still a handful of cracked sanitary mains in the Town that are a high priority for replacement to insure that no stormwater can enter the sanitary network. Staff aim to reduce the amount of stormwater that is conveyed to wastewater treatment plants.

## 5.1.6 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 Water Services.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	The Warton Wastewater Treatment plant services 1,100 households in the Town of South Bruce Peninsula.
	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	Not Applicable. No combined sewers present.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	Not Applicable. No combined sewers present.
Reliability	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter into sanitary sewers due to cracks in sanitary mains, manholes, private services or through indirect connections (e.g. weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to backup into homes.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.

<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current LOS (2020)</b>
Reliability	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants. Municipal staff adhere to the Design Guidelines for Sewage Works (MOECC, 2008); the effluent is discharged with established minimum requirements for critical parameters such as the organic loading rate, hydraulic retention time, CBOD5, pH levels, and phosphorus and sulfur levels.

## Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2020)</b>
Scope	% of properties connected to the municipal wastewater system	15%
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	N/A
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	3
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
Performance	Capital re-investment rate	0.26%

## 5.1.7 Recommendations

### Asset Inventory

- There are a number of buildings including pumping stations and treatment plants that require further segmentation. Buildings consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all sanitary buildings to allow for component-based lifecycle planning.

### Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk Sanitary Network assets.

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to the availability of new data and also an evolving understanding of the probability and consequences of asset failure.

### Lifecycle Strategies

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

### Levels of Service

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

## 5.2 Water Network

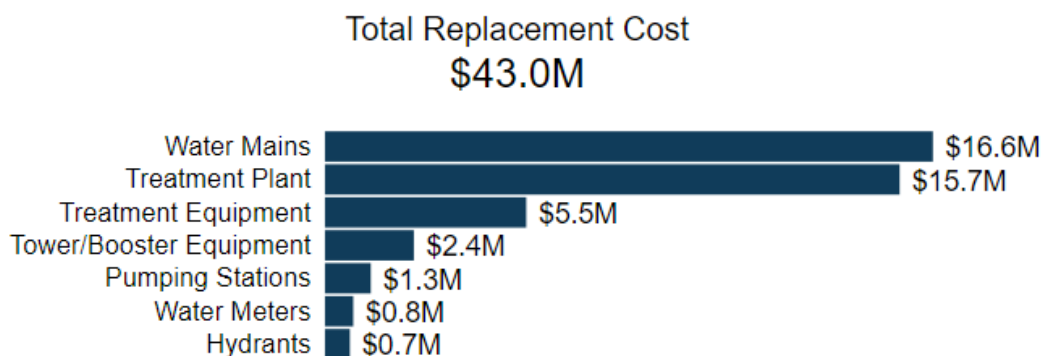
The Town is responsible for approximately 32 kilometres of water mains, 89 hydrants, 1,077 water meters, 9 water pumping stations, 62 tower/booster equipment, 457 treatment equipment, and 5 water treatment plants. These assets are broken out into the two water systems, Warton and Amabel. The asset inventory is somewhat populated with data on pipe material, length, pipe size, and includes a node from/node using a combination of valves and hydrants that signify the start and end of each segment.

Staff completed their 2020 Rate Study and retained a contractor to develop their Water Financial Plan in accordance with O.Reg. 453/07. Staff have identified opportunities for capacity upgrades and expansions in the Amabel Sauble Drinking system.

### 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 Town's Water Network inventory.

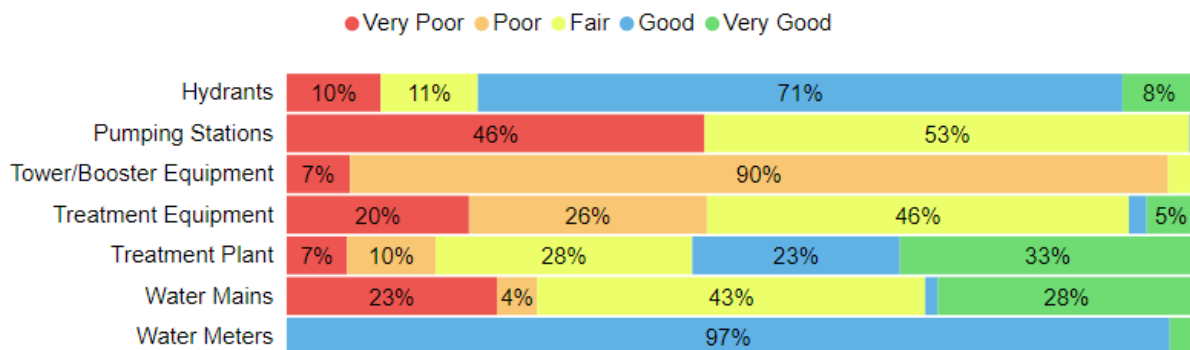
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Hydrants	89	CPI/ User-Defined Costs	\$688,598
Pumping Stations	9	CPI/ User-Defined Costs	\$1,260,785
Tower/Booster Equipment	62	CPI/ User-Defined Costs	\$2,439,372
Treatment Equipment	457	CPI/ User-Defined Costs	\$5,512,973
Treatment Plant	5	CPI/ User-Defined Costs	\$15,724,207
Water Mains	32,178 m	CPI/ Cost/Unit	\$16,633,960
Water Meters	1,077	CPI/User-Defined/ Cost/Unit	\$781,745
			<b>\$43,041,640</b>



## 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
Hydrants	60%	Good	Age-Based
Pumping Stations	35%	Poor	71% Assessed
Tower/Booster Equipment	38%	Poor	96% Assessed
Treatment Equipment	40%	Fair	66% Assessed
Treatment Plants	62%	Good	28% Assessed
Water Mains	49%	Fair	Age-Based
Water Meters	79%	Good	Age-Based
	<b>52%</b>	<b>Fair</b>	<b>32% Assessed</b>



To ensure that the Town's Water Network continues to provide an acceptable level of service, the Town 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:

- OCWA performs regular visual inspections and condition assessments of the water treatment plants, water tower, and booster/pumping stations.

### 5.2.3 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. 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.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>
Hydrants	25-75	34
Pumping Stations	50	38
Tower/Booster Equipment	45	33
Treatment Equipment	5-45	26
Treatment Plants	10-75	16
Water Mains	40-75	29
Water Meters	20-40	7
		<b>24</b>

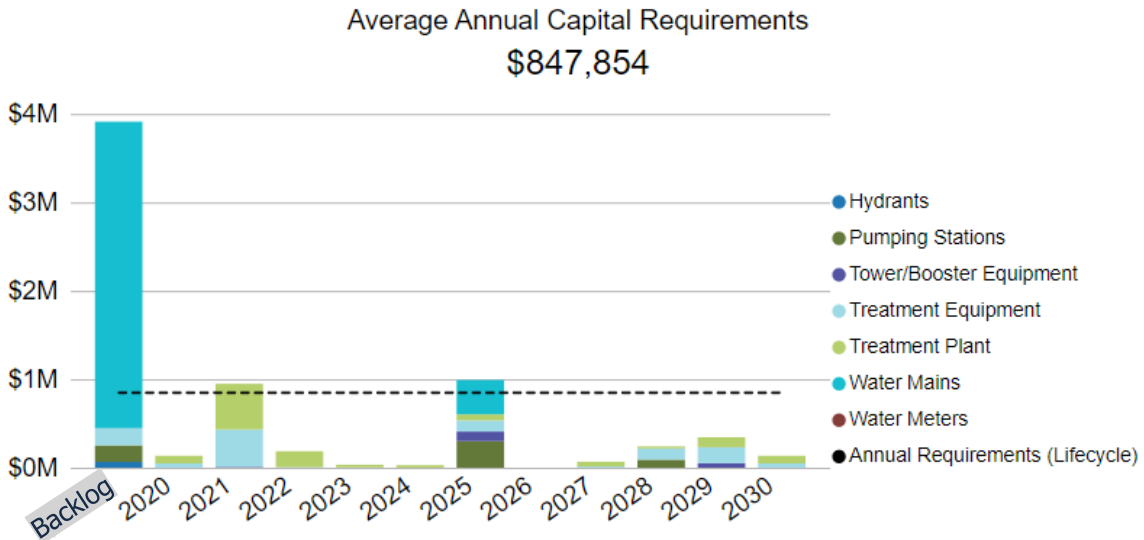
### 5.2.4 Lifecycle Management Strategy

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 Town’s current lifecycle management strategy.

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance	Annual watermain unidirectional flushing, hydrant maintenance, and valve exercising is completed by OCWA.
Rehabilitation /Replacement	The Town has experienced very few main breaks historically and so staff rely on a proxy of age, pipe material and diameter, and location to determine the severity of the pipe. Watermains are redesigned to improve efficiency. Fire Hydrants are added to increase fire flow protection in the Town. Prioritization focuses on affordability, coordination with other projects, and criticality as key indicators. OCWA develops a 5-year capital plan that it provides to Town staff for any upcoming capital projects.

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town 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

### Risk Matrix

The following risk matrix provides a visual representation of the level of risk exposure for this asset category. It considers both the probability of failure and consequence of failure. The metrics that have been used to determine both can be found in Appendix C.

#### Warton Water Network

		1 Asset 363.00 m \$192,390.00	8 Assets 3,848.00 m \$4,414,540.00	0 Assets - \$0.00	2 Assets 535.00 m \$909,500.00	0 Assets - \$0.00
5		5 Assets 680.80 m \$360,824.00	2 Assets 1,840.00 m \$975,200.00	1 Asset 1.00 unit(s) \$1,900,377.00	0 Assets - \$0.00	0 Assets - \$0.00
4		8 Assets 1,874.80 m, unit(s) \$750,129.00	21 Assets 4,155.00 m \$1,578,900.00	4 Assets 787.00 m \$268,260.00	20 Assets 5,842.00 m \$2,219,960.00	0 Assets - \$0.00
3		1 Asset 6.00 m \$10,200.00	3 Assets 1,084.00 unit(s), m \$573,524.60	1 Asset 185.00 m \$55,500.00	10 Assets 1,731.00 m \$519,300.00	0 Assets - \$0.00
2		28 Assets 208.00 unit(s), m \$429,901.74	86 Assets 145.00 unit(s), m \$680,397.16	258 Assets 258.00 unit(s) \$2,882,674.00	129 Assets 214.00 unit(s), m \$3,685,431.00	86 Assets 160.00 unit(s), m \$1,330,072.00
1						
	Consequence					
		1	2	3	4	5
		Probability				

### Risks to Current Asset Management Strategies

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



#### Asset Data & Information

There is a lack of confidence in the available inventory and condition data for water network assets. Staff plan to prioritize data refinement efforts to increase confidence in the accuracy and reliability of asset data and information. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs.



#### Assessed Condition Data

Watermains are much more difficult to inspect unlike sanitary and storm sewers mains where CCTV camera inspection is possible. Currently staff rely on age-based estimates of current condition and pipe material to try and predict when pipes need to be replaced.



## 5.2.6 Levels of Service

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

### Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	<p>The Town has multiple distribution system; they are listed below:</p> <ul style="list-style-type: none"> <li>• Wiarton Drinking Water System is a Class III Treatment and Class II Distribution system that is supplied by Colpoy's Bay.</li> <li>• Oliphant Drinking Water System transports its drinking water from the Wiarton system</li> <li>• Huron Woods Drinking Water System is a Class II Water Treatment and Class I Distribution System that is supplied by a GUDI well.</li> <li>• Foreman Drinking Water System is a Class II Water Treatment and Class I Distribution System that is supplied by a GUDI well.</li> <li>• Amabel-Sauble Drinking Water System is a Class II Water Treatment and Class II Distribution System that is supplied by multiple GUDI wells.</li> </ul>
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix A for a map of areas of the municipality that have fire flow. Staff have an annual flushing and replacement program to ensure that hydrants are replaced and maintained appropriately.
Reliability	Description of boil water advisories and service interruptions	The Municipality has not experienced any boil water advisories in 2019. Staff maintain the system following their Drinking Water Quality Management System (DWQMS), in regulation with the Safe Drinking Water Act, 2002.

## Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2020)</b>
Scope	% of properties connected to the municipal water system	21%
	% of properties where fire flow is available	18%
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
Performance	Capital re-investment rate	1.35%

## 5.2.7 Recommendations

### Asset Inventory

- Develop a more streamlined and refined breakdown of assets within the Water Network. Small equipment can be pooled to improve data accuracy.
- Water treatment plant assets and equipment, assets managed by OCWA, should be refined and cross-referenced with OCWA's inventory on a regular basis to ensure reliability and traceability.

### Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk water network assets. Update condition ratings of assets that are inspected by OCWA on an annual basis, or when possible.

### Risk Management Strategies

- Review risk models on a regular basis and adjust according to the availability of new data and also an evolving understanding of the probability and consequences of asset failure.

## Lifecycle Strategies

- Determine the efficacy of the re-lining strategy to rehabilitate pipes that are approaching their end-of-life and continue to replace old cast iron and ductile iron pipes with PVC to address the potential for water main breaks.

## Levels of Service

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

# 6

## Impacts of Growth

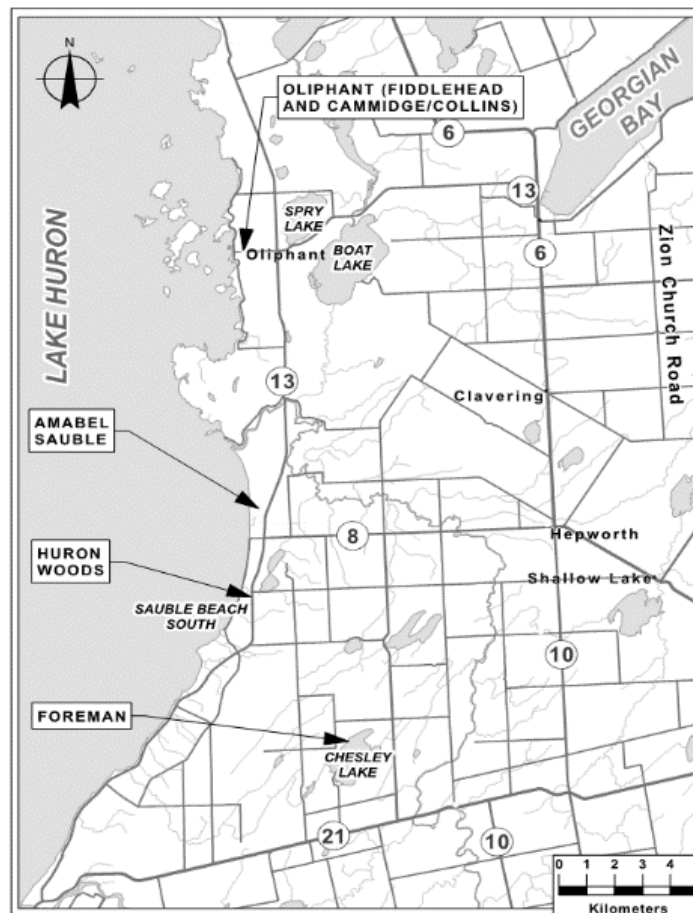
### Key Insights

- Understanding the key drivers of growth and demand will allow the Town to more effectively plan for new infrastructure and the upgrade or disposal of existing infrastructure
- Moderate population and employment growth is expected
- 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 Town to plan for new infrastructure more effectively, 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.

The Town of South Bruce Peninsula has initiated a Water, Wastewater and Stormwater Master Servicing Plan (MSP) for Wiarton to identify a preferred strategy to support existing servicing needs and projected growth. This strategy will accommodate anticipated demands as identified through the Town’s Official Plan. This long-term plan will address current service levels, policy, practices and procedures as well as identify gaps and opportunities to improve efficiency and effectiveness at present and in the future. The Town is currently undertaking a Water Service Master Plan for the area within and adjacent to the Sauble Beach Settlement Area in the former Township of Amabel. The Study will consider solutions that provide servicing capacity for potential development and lower per capita cost for users of the existing systems. The approximate Study Area locations are shown on the map below.



This Asset Management Plan contains essential information regarding levels of service metrics that are fundamental to the development of the Master Servicing Plans for sanitary and water infrastructure. Furthermore, the findings of these Master Servicing Plans will be used to guide the development of future iterations of the Town's Asset Management Plan.

### 6.1.1 Official Plan of the Town of South Bruce Peninsula (February 2001)

In 2003, the Municipal Council of the Town of South Bruce Peninsula adopted the Official Plan to guide and shape development and land use planning. The Official Plan establishes goals, objectives and land use, transportation, and servicing policies to direct the physical growth of the Town of South Bruce Peninsula within the context of relevant social, economic and environmental constraints, in order to obtain the most desirable living environment for present and future residents. The most recent consolidation of the plan was done in January of 2019.

The formulation of more detailed land use policies which guide and control development while clearly defining settlement area boundaries is delegated to the formulation of local Official Plans. The Town of South Bruce Peninsula Official Plan indicates that in 1996, the population for the town equalled. This Official Plan predicts a population increase to 9,800 persons by the year 2021 which represents an increase of approximately 821 units based on an assumed household size of 2.8 persons per unit. Similar to the County of Bruce Official Plan, the growth policies for the South Bruce Peninsula Official Plan requires that the "majority of growth be directed towards areas serviced with municipal sewer and water, such as Wiarton".

### 6.1.1 County of Bruce Official Plan (1997)

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

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

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

The policies of the Bruce County Official Plan encourage and strengthen the role of Primary Urban Communities, including Wiarton and Sauble Beach as regional service centres within the County. It is further specified that the majority of anticipated permanent population growth

shall be directed to Primary Urban Communities. Industrial growth particularly that which requires municipal water and sanitary services is also encouraged to locate within Primary Urban Communities. Section 4.4.2 of the Bruce County Official Plan specifies that the County is expected to grow by approximately 21,300 permanent residents to the year 2016. These projections are based on those population projections supplied by the Ontario Ministry of Finance. Based on an average household size of 2.7 persons per unit, the County anticipates a total of 7,900 additional units will be required to house the projected population growth in the County over this period. It is the policy of this official plan to direct the majority of this growth to Primary and Secondary Urban Communities and Hamlet Communities.

The following table demonstrate population and employment projections for the Town of South Bruce Peninsula and Bruce County dating back to the years 2009 and 2006 as seen below:

<b>Forecast</b>	<b>2011</b>	<b>2016</b>	<b>2021</b>
Population – South Bruce Peninsula	8,583	8,840	8,840
Employment – South Bruce Peninsula	4,161	4,286	4,286
Population – Bruce County	66,101	67,818	67,866
Employment – Bruce County	35,390	36,309	36,335

## 6.1.2 Growth Management Report - Warton South Settlement Area (2009)

The purpose of this study is to estimate how much residential and employment land is required to accommodate long-term growth in the community and recommend its preferred location.

The study has also been undertaken to assist the Town in addressing other issues, such as the allocation of future infrastructure servicing and the overall desire to provide sufficient employment opportunities for residents to foster a self-sustaining economic base for the Town.

The purpose of this report is to provide a review of projected population growth and associated housing and employment land demand anticipated for the municipality for the planning period ranging from 2009-2029. This population, housing and employment forecast will allow for a comparison against the amount of land presently designated and available to accommodate this anticipated growth.

Warton is presently the only fully serviced settlement area in the municipality and the Official Plan for the Town of South Bruce Peninsula stipulates that the majority of growth be directed towards areas serviced with municipal sewer and water, such as Warton.

The following table demonstrates low, medium, and high growth scenarios as seen below:

<b>Historical &amp; Forecast</b>	<b>2009</b>	<b>2019</b>	<b>2029</b>
Low Population Growth – Deduction Method	8,706	9,417	10,134
Medium Population Growth – Linear Method	8,830	9,660	10,491
Population Growth – Dwelling Occupancy Method	8,425	9,572	10,720

By 2029, 840 additional homes will be required to accommodate for the anticipated population growth, of which 629 are in the Warton area.

On the other hand, employment is expected to grow by 1,072 from 2009 to 2029, which represents an increase of more than 26%.

## 6.2 Impact of Growth on Lifecycle Activities

By July 1, 2024, the Town’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 Town’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 Town 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 Town is committing approximately \$4.1 million towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of \$9.2 million, there is currently a funding gap of \$5.1 million annually
- For tax-funded assets, we recommend increasing tax revenues by 2.6% each year for the next 15 years to achieve a sustainable level of funding
- For the Sanitary Services, we recommend increasing rate revenues by 3.4% annually for the next 15 years to achieve a sustainable level of funding
- For the Water Services, we recommend increasing rate revenues by 0.9% annually for the next 15 years to achieve a sustainable level of funding

# 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).<sup>6</sup> The development of a comprehensive LTFP plan will allow South Bruce Peninsula to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

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

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

If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town's approach to the following:

1. In order to reduce financial requirements, consideration has been given to revising service levels downward.
2. All asset management and financial strategies have been considered. For example:

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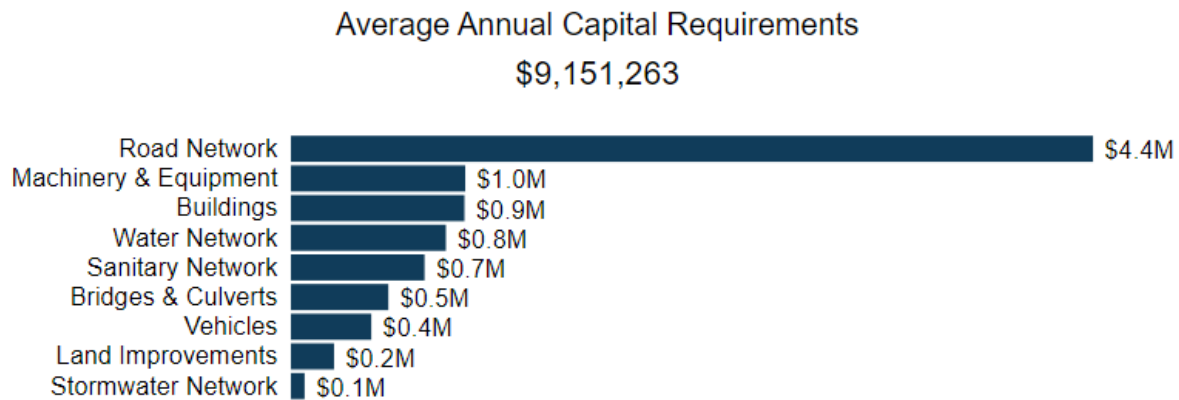
<sup>6</sup> PSD understands the Town has not prepared a corporate-wide Long-term Financial Plan (LTFP).

- 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 Town 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 Town must allocate approximately \$9.2 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 Road Network, lifecycle management strategies have been developed to identify CapEx that are realized through strategic rehabilitation and renewal of the Town’s roads. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented.

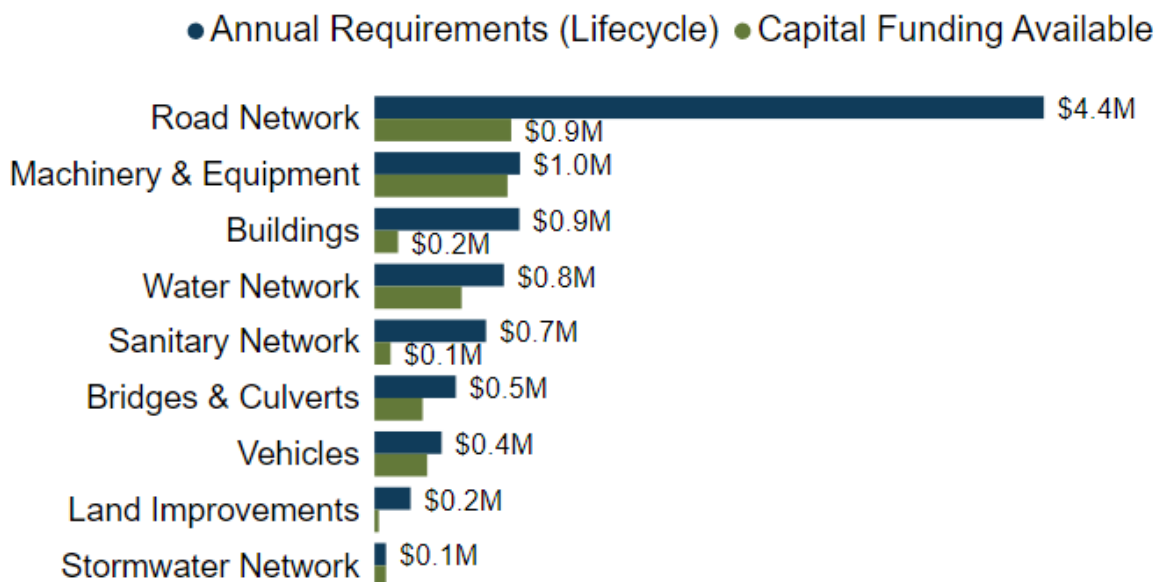
1. **Replacement Only Scenario:** Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario:** Based on the assumption that lifecycle activities are performed at strategic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

The implementation of a proactive lifecycle strategy for roads can lead to a potential annual cost avoidance for the Road Network. The effectiveness of the lifecycle strategy depends on

many factors, such as timing, current material and labour costs, and condition of underground infrastructure.

## Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately \$4.1 million towards capital projects per year. Given the annual capital requirement of \$9.2 million there is currently a funding gap of \$5.1 million annually.



## 7.2 Funding Objective

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

- **Tax Funded Assets:** Road Network, Stormwater Network, Bridges & Culverts, Buildings, Machinery & Equipment, Land Improvements Vehicles
- **Rate-Funded Assets:** Water Network, Sanitary Network

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

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

## 7.3 Financial Profile: Tax Funded Assets

### 7.3.1 Current Funding Position

The following tables show, by asset category, South Bruce Peninsula’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	4,384,000	896,000	524,000	204,000	1,624,000	2,760,000
Stormwater Network	76,000	76,000	0	0	76,000	0
Bridges & Culverts	533,000	316,000	0	0	316,000	217,000
Buildings	949,000	155,000	0	0	155,000	794,000
Machinery & Equipment	954,000	872,000	0	0	872,000	82,000
Land Improvements	237,000	29,000	0	0	29,000	208,000
Vehicles	440,000	346,000	0	0	346,000	94,000
	<b>7,573,000</b>	<b>2,690,000</b>	<b>524,000</b>	<b>204,000</b>	<b>3,418,000</b>	<b>4,155,000</b>

The average annual investment requirement for the above categories is \$7.6 million. Annual revenue currently allocated to these assets for capital purposes is \$3.4 million leaving an annual deficit of \$4.2 million. Put differently, these infrastructure categories are currently funded at 45% of their long-term requirements.

### 7.3.2 Full Funding Requirements

In 2021, Town of South Bruce Peninsula has budgeted for annual tax revenues of \$10.97 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

<b>Asset Category</b>	<b>Tax Change Required for Full Funding</b>
Road Network	25.2%
Stormwater Network	0.0%
Bridges & Culverts	2.0%
Buildings & Facilities	7.2%
Machinery & Equipment	0.7%
Land Improvements	1.9%
Vehicles	0.9%
	<b>37.9%</b>

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

- a) South Bruce Peninsula's debt payments for these asset categories will be decreasing by \$18,000 over the next 20 years

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:

	<b>Without Capturing Changes</b>				<b>With Capturing Changes</b>			
	<b>5 Years</b>	<b>10 Years</b>	<b>15 Years</b>	<b>20 Years</b>	<b>5 Years</b>	<b>10 Years</b>	<b>15 Years</b>	<b>20 Years</b>
Infrastructure Deficit	4,155,000	4,155,000	4,155,000	4,155,000	4,155,000	4,155,000	4,155,000	4,155,000
Change in Debt Costs	N/A	N/A	N/A	N/A	66,000	60,000	53,000	48,000
Change in OCIF Grants	N/A	N/A	N/A	N/A	0	0	0	0
<b>Resulting Infrastructure Deficit:</b>	4,155,000	4,155,000	4,155,000	4,155,000	4,221,000	4,215,000	4,208,000	4,203,000
Tax Increase Required	37.9%	37.9%	37.9%	37.9%	38.5%	38.4%	38.3%	38.3%
<b>Annually:</b>	<b>7.6%</b>	<b>3.8%</b>	<b>2.5%</b>	<b>1.9%</b>	<b>7.7%</b>	<b>3.8%</b>	<b>2.6%</b>	<b>1.9%</b>

### 7.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option. This involves full funding being achieved over 15 years by:

- a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
- b) increasing tax revenues dedicated to CapEx by approx. 2.6% each year for the next 15 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 (e.g. Gas Tax and OCIF) for capital assets as outlined previously.
- 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. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment<sup>7</sup>.
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of \$4,470,000 for the Road Network, \$1,033,000 for Land Improvements, \$568,000 for the Buildings, and \$1,226,000 for Machinery & Equipment.

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.

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<sup>7</sup> The Town should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

## 7.4 Financial Profile: Rate Funded Assets

### 7.4.1 Current Funding Position

The following tables show, by asset category, South Bruce Peninsula'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
		Rates	To Oper	OCIF	Total Available	
Water Network	848,000	2,145,000	-1,574,000	0	571,000	277,000
Sanitary Network	731,000	1,124,000	-1,018,000	0	106,000	625,000
	<b>1,579,000</b>	<b>3,269,000</b>	<b>-2,592,000</b>	<b>0</b>	<b>677,000</b>	<b>902,000</b>

The average annual investment requirement for the above categories is \$1.6 million. Annual revenue currently allocated to these assets for capital purposes is \$677 thousand leaving an annual deficit of \$902 thousand. Put differently, these infrastructure categories are currently funded at 43% of their long-term requirements.

### 7.4.2 Full Funding Requirements

In 2021, South Bruce Peninsula has budgeted annual sanitary revenues of \$1.1 million and annual water revenues of \$2.1 million. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Tax Change Required for Full Funding
Water Network	12.9%
Sanitary Network	55.6%

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:

	Water Network				Sanitary Sewer Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	277,000	277,000	277,000	277,000	625,000	625,000	625,000	625,000
Tax Increase Required	12.9%	12.9%	12.9%	12.9%	55.6%	55.6%	55.6%	55.6%
<b>Annually:</b>	<b>2.6%</b>	<b>1.3%</b>	<b>0.9%</b>	<b>0.6%</b>	<b>11.1%</b>	<b>5.6%</b>	<b>3.7%</b>	<b>2.8%</b>



	Water Network				Sanitary Sewer Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	277,000	277,000	277,000	277,000	625,000	625,000	625,000	625,000
Less: decrease in debt payment	35,000	31,000	28,000	25,000	-43,000	-47,000	-51,000	-55,000
Tax Increase Required	14.5%	14.4%	14.2%	14.1%	51.8%	51.4%	51.1%	50.7%
<b>Annually:</b>	<b>2.9%</b>	<b>1.4%</b>	<b>0.9%</b>	<b>0.7%</b>	<b>10.4%</b>	<b>5.1%</b>	<b>3.4%</b>	<b>2.5%</b>

### 7.4.3 Financial Strategy Recommendations

Considering all of the above information, we recommend the 15-year option that includes debt cost reallocations. This involves full funding being achieved over 15 years by:

- a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
- b) increasing rate revenues by 3.4% for sanitary services and 0.9% for water services each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of \$3,913,000 for the Water Network and \$0 for the Sanitary Network.

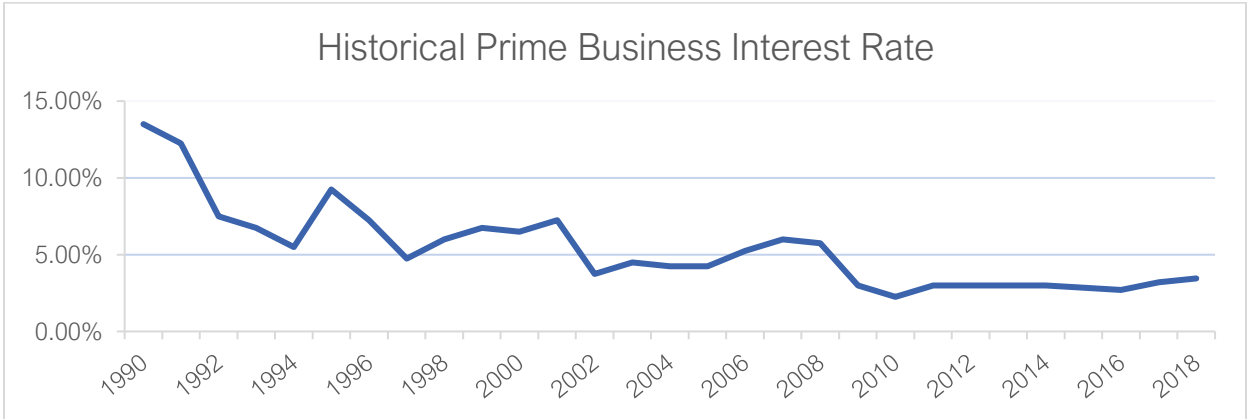
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

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



<sup>8</sup> 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 Bruce Peninsula has historically used debt for investing in the asset categories as listed. There is currently \$285,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of \$86,000 in 2021, well within its provincially prescribed maximum of \$3,861,000.

Asset Category	Current	Use of Debt over Five Years				
	Debt Outstanding	2016	2017	2018	2019	2020
Road Network	0	0	0	0	0	0
Stormwater Network	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0
Buildings	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0
<b>Total Tax Funded:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Water Network	0	0	0	0	0	0
Sanitary Network	285,000	0	0	0	0	0
<b>Total Rate Funded:</b>	<b>285,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2021	2022	2023	2024	2025	2026	2031
Road Network	0	39,000	38,000	37,000	36,000	36,000	33,000
Stormwater Network	0	33,000	32,000	31,000	30,000	30,000	27,000
Bridges & Culverts	0	0	0	0	0	0	0
Buildings	0	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0	0
<b>Total Tax Funded:</b>	<b>0</b>	<b>72,000</b>	<b>70,000</b>	<b>68,000</b>	<b>68,000</b>	<b>66,000</b>	<b>60,000</b>
Water Network	0	37,000	37,000	36,000	35,000	35,000	31,000
Sanitary Network	86,000	133,000	132,000	88,000	44,000	43,000	39,000
<b>Total Rate Funded:</b>	<b>86,000</b>	<b>170,000</b>	<b>169,000</b>	<b>124,000</b>	<b>79,000</b>	<b>78,000</b>	<b>70,000</b>

The revenue options outlined in this plan allow South Bruce Peninsula 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 Bruce Peninsula.

<b>Asset Category</b>	<b>Balance at December 31, 2020</b>
Road Network	2,140,000
Stormwater Network	520,000
Bridges & Culverts	939,000
Buildings	751,000
Machinery & Equipment	1,247,000
Land Improvements	1,042,000
Vehicles	695,000
<b>Total Tax Funded:</b>	<b>7,334,000</b>
Water Network	3,212,000
Sanitary Network	1,951,000
<b>Total Rate Funded:</b>	<b>5,163,000</b>

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Town 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 Bruce Peninsula'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 2025, Ontario Regulation 588/17 will require South Bruce Peninsula 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											
Segment	(Backlog)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Paved Roads	\$62,985.00	\$4,628,421.93	\$1,766,949.71	\$4,579,329.97	\$1,620,614.88	\$0.00	\$441,245.17	\$5,329,353.60	\$2,942,255.90	\$3,908,259.80	\$0.00
Sidewalks	\$67,350.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,889,895.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30,000.00
Signs	\$0.00	\$415,789.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$164,475.00	\$0.00
Streetlights & Traffic Signals	\$4,339,852.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$32,991.00	\$0.00	\$0.00	\$0.00
<b>Total</b>	<b>\$4,470,187.00</b>	<b>\$5,044,210.93</b>	<b>\$1,766,949.71</b>	<b>\$4,579,329.97</b>	<b>\$1,620,614.88</b>	<b>\$2,889,895.00</b>	<b>\$441,245.17</b>	<b>\$5,362,344.60</b>	<b>\$2,942,255.90</b>	<b>\$4,072,734.80</b>	<b>\$30,000.00</b>

Bridges & Culverts											
Segment	(Backlog)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Bridges	\$0.00	\$0.00	\$3,255,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$956,500.00	\$2,204,500.00	\$2,472,500.00	\$0.00
Culverts	\$0.00	\$0.00	\$808,500.00	\$548,500.00	\$0.00	\$0.00	\$225,000.00	\$157,000.00	\$0.00	\$0.00	\$0.00
<b>Total</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$4,064,000.00</b>	<b>\$548,500.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$225,000.00</b>	<b>\$1,113,500.00</b>	<b>\$2,204,500.00</b>	<b>\$2,472,500.00</b>	<b>\$0.00</b>

Stormwater Network											
Segment	(Backlog)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Catch basins	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Oil Grit Separator	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storm Mains	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

<b>Buildings</b>											
<b>Segment</b>	<b>Backlog</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>
General Government	\$180,707.00	\$0.00	\$0.00	\$0.00	\$230,000.00	\$44,800.00	\$29,482.00	\$201,648.00	\$0.00	\$35,500.00	\$108,900.00
Protection Services	\$0.00	\$0.00	\$0.00	\$0.00	\$12,000.00	\$14,400.00	\$0.00	\$64,775.00	\$0.00	\$11,400.00	\$64,500.00
Recreational Services	\$386,930.00	\$0.00	\$0.00	\$72,500.00	\$261,705.00	\$200,800.00	\$911,084.00	\$267,970.00	\$0.00	\$821,346.00	\$256,520.00
Transportation Services	\$0.00	\$0.00	\$0.00	\$0.00	\$33,500.00	\$223,949.00	\$486,500.00	\$57,000.00	\$0.00	\$46,000.00	\$60,400.00
<b>Total</b>	\$567,637.00	\$0.00	\$0.00	\$72,500.00	\$537,205.00	\$483,949.00	\$1,427,066.00	\$591,393.00	\$0.00	\$914,246.00	\$490,320.00

<b>Land Improvements</b>											
<b>Segment</b>	<b>(Backlog)</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>
<b>Landfill Assets</b>	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
<b>Parking Lots</b>	\$824,503.00	\$-	\$-	\$-	\$-	\$-	\$-	\$431,698.00	\$76,752.00	\$-	\$-
<b>Parks</b>	\$-	\$-	\$-	\$163,772.00	\$-	\$90,000.00	\$8,310.00	\$29,833.00	\$2,971.00	\$374,814.00	\$-
<b>Playground Structures</b>	\$91,633.00	\$-	\$-	\$-	\$21,464.00	\$64,428.00	\$-	\$56,484.00	\$15,342.00	\$44,046.00	\$26,103.00
<b>Signage</b>	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
<b>Sport Structures</b>	\$117,031.00	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$30,694.00	\$-
<b>Total</b>	\$1,033,167.00	\$0.00	\$0.00	\$163,772.00	\$21,464.00	\$154,428.00	\$8,310.00	\$518,015.00	\$95,065.00	\$449,554.00	\$26,103.00



**Machinery & Equipment**

<b>Segment</b>	<b>(Backlog)</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>
Environmental Services	\$17,564.00	\$0.00	\$0.00	\$13,200.00	\$1,249,585.00	\$0.00	\$1,326.00	\$0.00	\$16,247.00	\$811,187.00	\$5,046.00
General Government	\$371,127.00	\$85,177.00	\$20,614.00	\$80,229.00	\$257,395.00	\$120,839.00	\$173,788.00	\$414,268.00	\$39,403.00	\$218,999.00	\$132,033.00
Protection Services	\$523,487.00	\$33,492.00	\$36,817.00	\$45,231.00	\$38,556.00	\$69,875.00	\$104,652.00	\$57,001.00	\$21,387.00	\$210,675.00	\$340,084.00
Recreational Services	\$270,478.00	\$43,220.00	\$23,173.00	\$40,579.00	\$62,484.00	\$156,516.00	\$79,284.00	\$79,238.00	\$37,766.00	\$318,560.00	\$126,607.00
Transportation Services	\$43,341.00	\$7,565.00	\$640,500.00	\$77,733.00	\$195,728.00	\$1,600.00	\$23,031.00	\$390,000.00	\$500.00	\$742,328.00	\$666,200.00
<b>Total</b>	\$1,225,997.00	\$169,454.00	\$721,104.00	\$256,972.00	\$1,803,748.00	\$348,830.00	\$382,081.00	\$940,507.00	\$115,303.00	\$2,301,749.00	\$1,269,970.00

**Vehicles**

<b>Segment</b>	<b>(Backlog)</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>
Protection Services	\$0.00	\$0.00	\$95,000.00	\$0.00	\$488,000.00	\$0.00	\$0.00	\$60,000.00	\$0.00	\$0.00	\$0.00
Transportation Services	\$0.00	\$0.00	\$1,467,000.00	\$575,000.00	\$0.00	\$0.00	\$434,430.00	\$90,000.00	\$210,666.00	\$43,000.00	\$43,943.00
<b>Total</b>	\$0.00	\$0.00	\$1,562,000.00	\$575,000.00	\$488,000.00	\$0.00	\$434,430.00	\$150,000.00	\$210,666.00	\$43,000.00	\$43,943.00

**Sanitary Network**

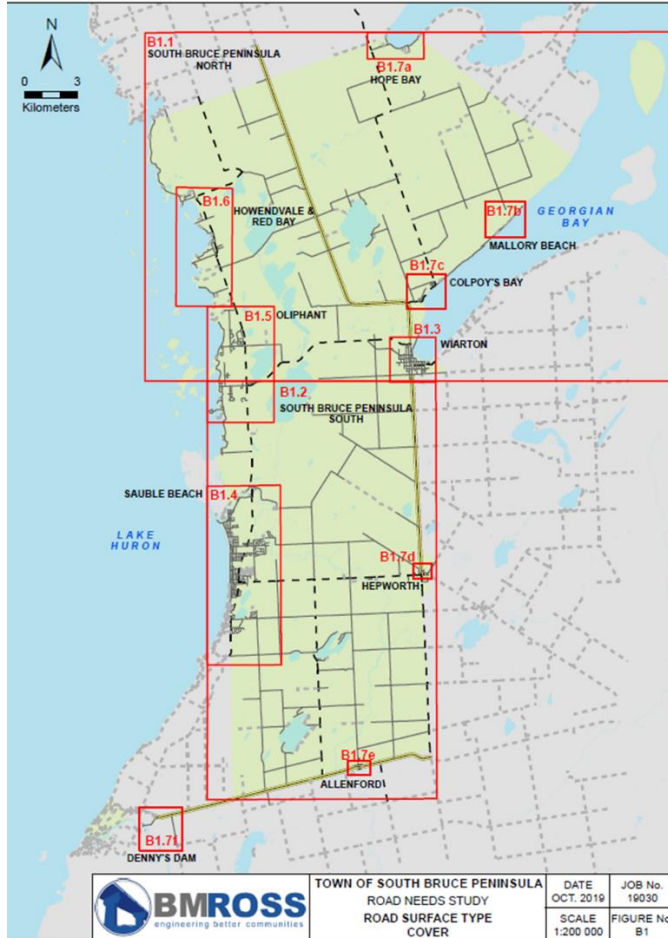
Segment	(Backlog)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Lagoons	\$0.00	\$0.00	\$0.00	\$0.00	\$36,856.00	\$0.00	\$50,000.00	\$0.00	\$0.00	\$0.00	\$0.00
Pumping Stations	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Sewer mains	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Wastewater Treatment Plant	\$0.00	\$0.00	\$1,000,000.00	\$0.00	\$19,560.00	\$0.00	\$2,000.00	\$150,000.00	\$0.00	\$0.00	\$22,000.00
<b>Total</b>	\$0.00	\$0.00	\$1,000,000.00	\$0.00	\$56,416.00	\$0.00	\$52,000.00	\$150,000.00	\$0.00	\$0.00	\$22,000.00

**Water Network**

Segment	(Backlog)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Hydrants	\$65,458.00	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
Pumping Stations	\$187,833.00	\$-	\$-	\$-	\$-	\$-	\$300,000.00	\$-	\$-	\$91,914.00	\$-
Tower/Booster Equipment	\$-	\$-	\$10,000.00	\$-	\$-	\$-	\$109,000.00	\$-	\$-	\$-	\$51,000.00
Treatment Equipment	\$194,105.00	\$49,139.00	\$422,000.00	\$6,659.00	\$4,000.00	\$-	\$126,000.00	\$-	\$14,883.00	\$126,938.00	\$181,000.00
Treatment Plant	\$-	\$86,211.00	\$517,000.00	\$179,971.00	\$30,000.00	\$28,670.00	\$70,000.00	\$-	\$53,200.00	\$22,223.00	\$113,200.00
Water Mains	\$3,465,940.00	\$-	\$-	\$-	\$-	\$-	\$386,460.00	\$-	\$-	\$-	\$-
Water Meters	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
<b>Total</b>	\$3,913,336.00	\$135,350.00	\$949,000.00	\$186,630.00	\$34,000.00	\$28,670.00	\$991,460.00	\$-	\$68,083.00	\$241,075.00	\$345,200.00

# Appendix B: Level of Service Maps

## Roads Network Map

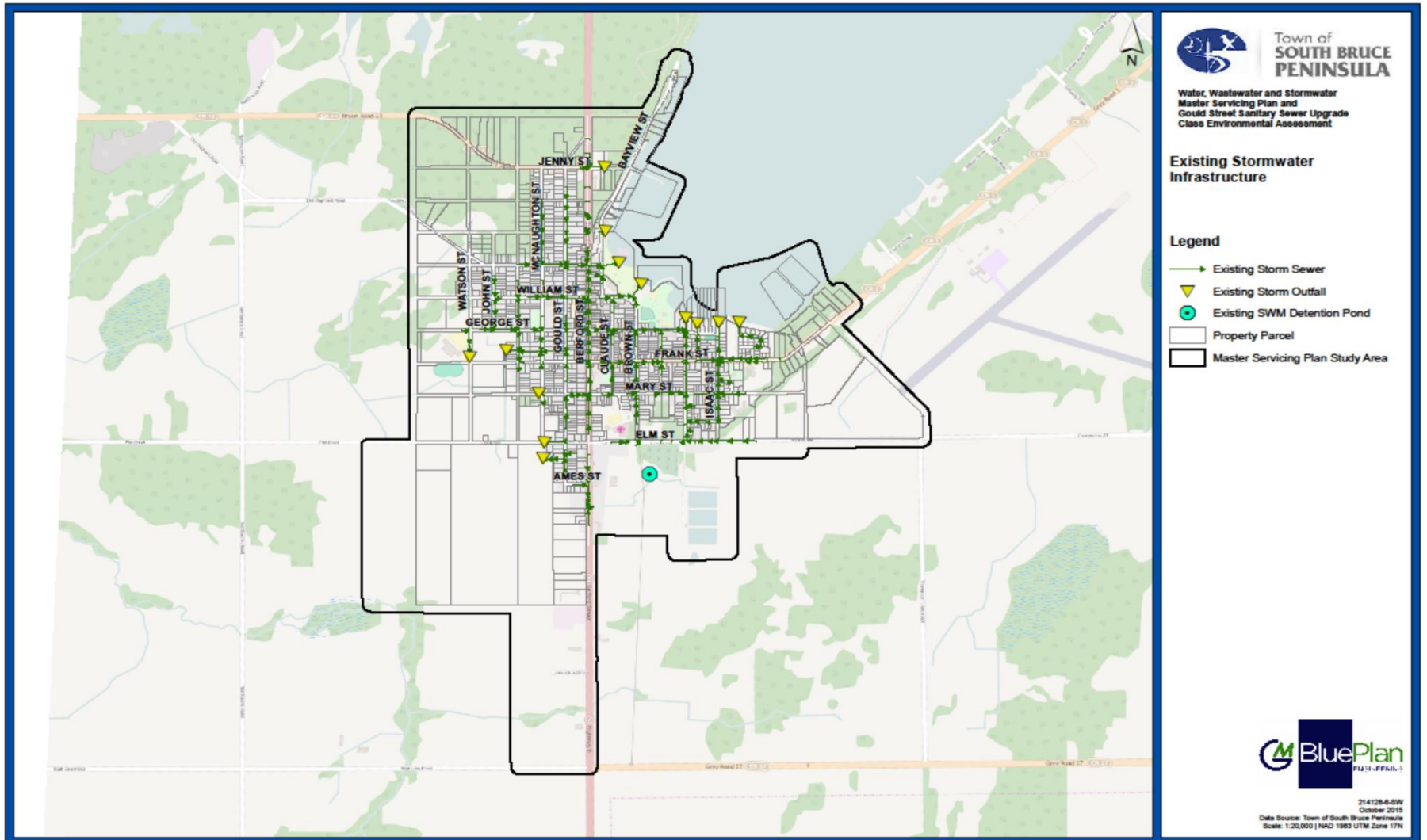


## Roads Network Condition Assessment

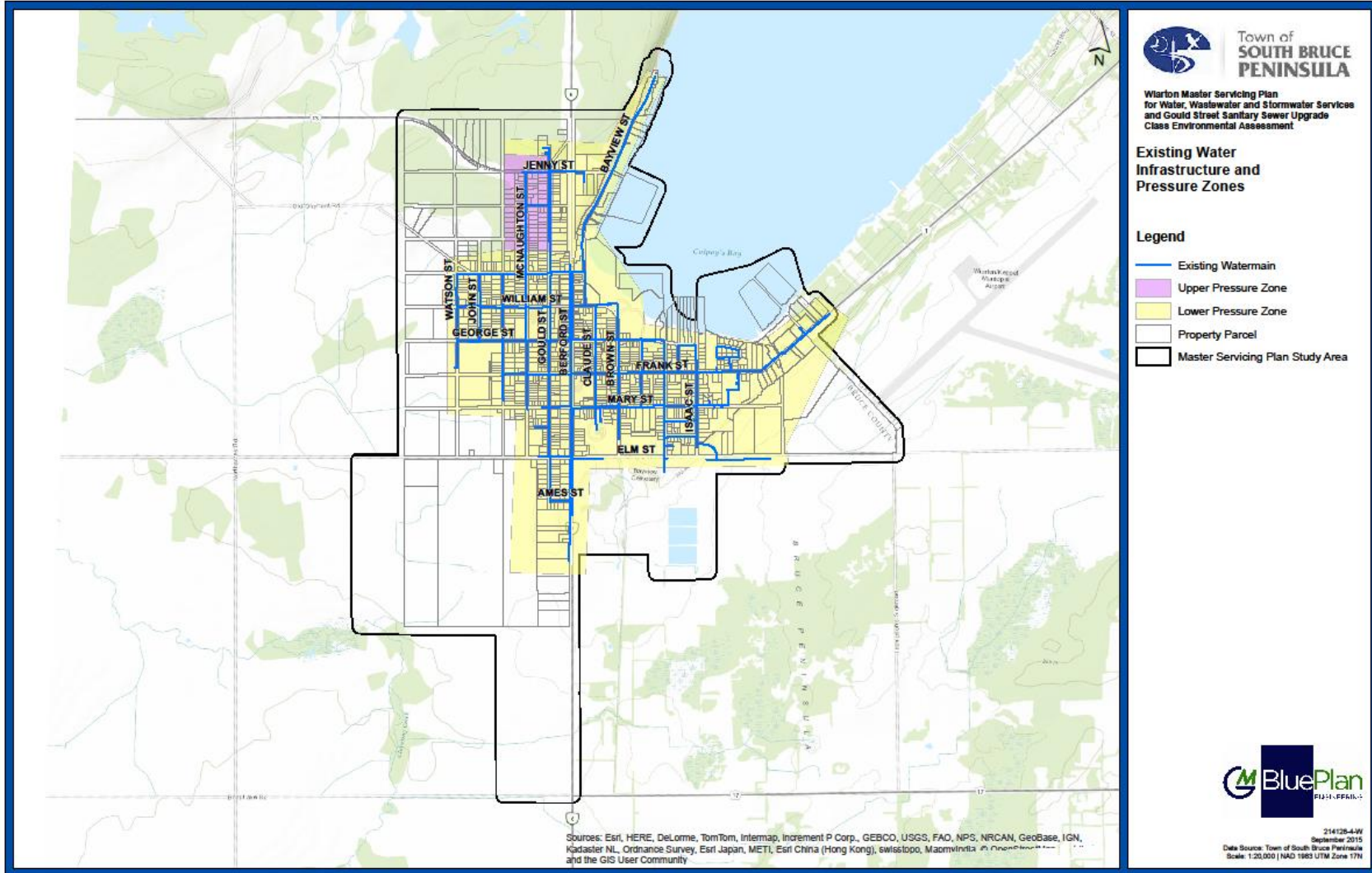
### Road Surface Rating Value

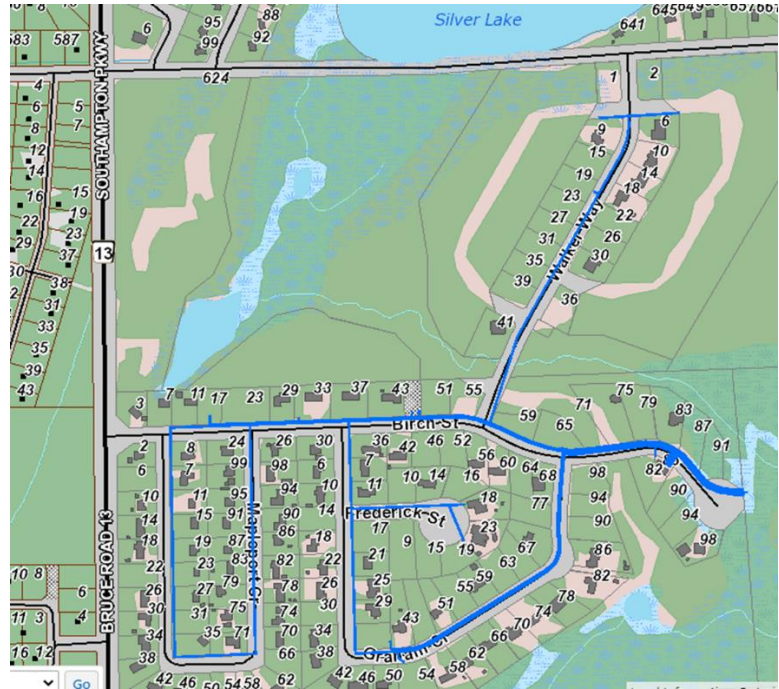
Rating	Value
$\geq 9$	1
8	2
7	3
6	4
$< 6$	5

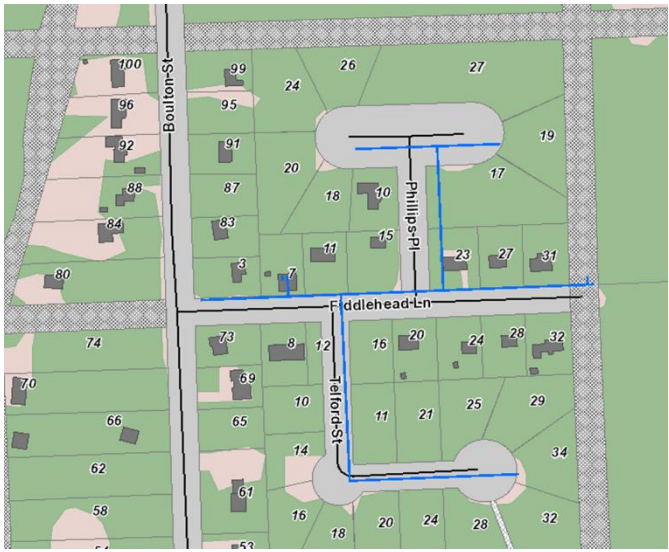
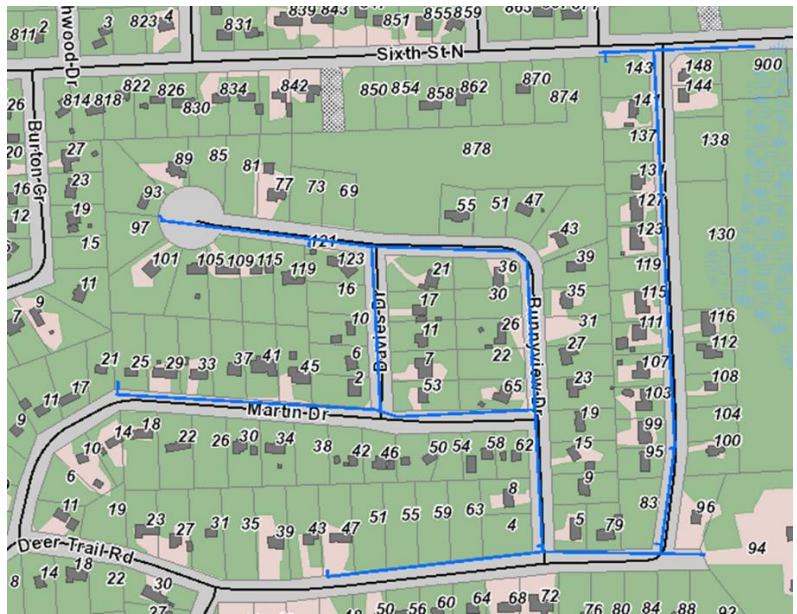
## Existing Stormwater Network - Connectivity

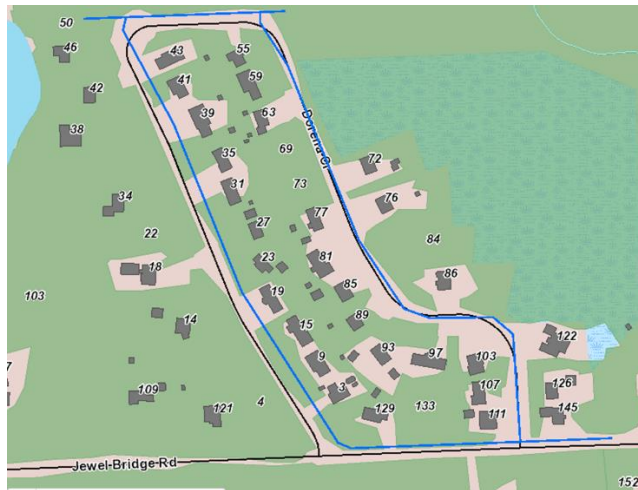


## Existing Stormwater Network - Connectivity

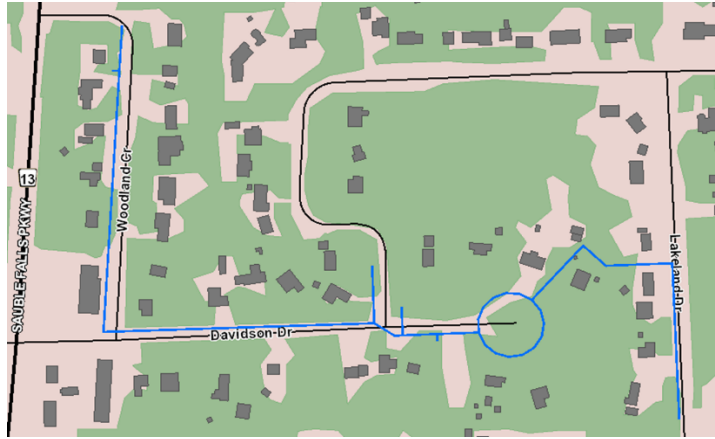














# Appendix C: Risk Rating Criteria

## Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Bridges & Culverts	Condition	60%	90-100	1
			70-89	2
			50-69	3
			10-49	4
			0-9	5
	Needs Time Frame	40%	>10 Years	2
			6-10 Years	3
			1-5 Years	4
<1 Years	5			
Roads Network (HCB Roads)	Condition	25%	9-10	1
			8-9	2
			7-8	3
			6-7	4
			0-6	5
	Drainage	25%	Good	1
			Fair	3
			Poor	5
	Road Structure	50%	8.5-10	1
			7.5-8.5	2
			6.5-7.5	3
			5.5-6.5	4
			0-5.5	5

<b>Asset Category</b>	<b>Risk Criteria</b>	<b>Criteria Weighting</b>	<b>Value/Range</b>	<b>Probability of Failure Score</b>
Roads Network (LCB Roads)	Condition	25%	9+	1
			8-9	2
			7-8	3
			6-7	4
			0-6	5
	Drainage	25%	Good	1
			Fair	3
			Poor	5
	Road Structure	50%	8.5-10	1
			7.5-8.5	2
6.5-7.5			3	
5.5-6.5			4	
0-6.5			5	
Stormwater Network (Storm Main)	Condition	60%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

<b>Asset Category</b>	<b>Risk Criteria</b>	<b>Criteria Weighting</b>	<b>Value/Range</b>	<b>Probability of Failure Score</b>
Stormwater Network (Storm Main)	Pipe Material	40%	PVC	1
			Concrete	3
			AC	4
Sanitary Network (Sewer Mains)	Condition	60%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Pipe Material	40%	PVC	1

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
			Clay	3
			Concrete	3
			AC	4
Water Network (Water Mains)	Condition	50%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Soil Corrosion	10%	Low	2
			Medium	3
			High	4
	Breaks/Segments	20%	0-2	1
			3-4	2
			5-6	3
			7-8	4
			9-10+	5
	Pipe Material	20%	PE	1
			PVC	1
Copper			4	
Ductile Iron			4	
Cast Iron			5	
Buildings Land Improvements Machinery & Equipment Vehicles	Condition	100%	80-100	1
			60-80	2
			40-60	3
			20-40	4
			0-20	5

## Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Bridges and Culverts	Economic (60%)	Replacement Cost (100%)	\$0-\$100,000	1
			\$100,001-\$250,000	2
			\$250,001-\$750,000	3
			\$750,001-\$1,000,000	4
			\$1,000,001+	5
	Operational (40%)	Structure Priority Number (100%)	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Roads Network (HCB Roads)	Economic (50%)	Replacement Cost (100%)	\$0-\$10,000	1
			\$10,001-\$50,000	2
			\$50,001-\$150,000	3
			\$150,001-\$500,000	4
			\$500,001-\$2,000,000+	5
	Operational (25%)	Traffic Range (100%)	0-49	1
			50-199	2
			200-499	3
			500-999	4
			1000+	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Roads Network (HCB Roads)	Strategic (25%)	Criticality (34%)	None	1
			Fire, Public Works, Commercial, EMO	3
			School, Hospital	5
Roads Network (LCB Roads)	Economic (50%)	Replacement Cost (100%)	\$0-\$10,000	1
			\$10,001-\$50,000	2

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score	
			\$50,001-\$150,000	3	
			\$150,001-\$500,000	4	
			\$500,001-\$2,000,000+	5	
	Operational (25%)	Traffic Range (100%)	0-49	1	
			50-199	2	
			200-499	3	
			500-999	4	
	Strategic (25%)	Density (33%)	0-0.34	1	
			0.35-0.75	2	
			0.76-1.19	3	
			1.20-1.93	4	
			1.93-3+	5	
		Connectivity (33%)	Dead End	1	
			Local Through Road	3	
			Connecting Road/Truck or Detour Route	5	
Criticality (34%)		None	1		
		Fire, Public Works, Commercial, EMO	3		
School, Hospital		5			
	Stormwater Network (Storm Main)	Economic (70%)	Replacement Cost (100%)	\$0-\$10,000	1
				\$10,001-\$20,000	2
				\$20,001-\$50,000	3
				\$50,001-\$100,000	4
\$100,001+				5	
Operational (30%)	Pipe Diameter – mm (100%)	0-250mm	1		
		250-300mm	2		
		300-450mm	3		
		450-675mm	4		
		>675mm	5		
Sanitary Network (Sewer Mains)			\$0-\$10,000	1	

<b>Asset Category</b>	<b>Risk Classification</b>	<b>Risk Criteria</b>	<b>Value/Range</b>	<b>Consequence of Failure Score</b>
	Economic (70%)	Replacement Cost (100%)	\$10,001-\$20,000	2
			\$20,001-\$50,000	3
			\$50,001-\$100,000	4
			\$100,001+	5
	Operational (30%)	Pipe Diameter – mm (60%)	<150mm	2
			200-250mm	3
			300-450mm	4
			>525mm	5
		Inflow and Infiltration (I&I) (40%)	Low	2
			Medium	3
Water Network (Water Mains)	Economic (60%)	Replacement Cost (100%)	\$0-\$10,000	1
			\$10,001-\$20,000	2
			\$20,001-\$50,000	3
			\$50,001-\$100,000	4
			\$100,001+	5
	Operational (40%)	Pipe Diameter – mm (100%)	<100mm	1
			100-150mm	2
			150-250mm	3
			250-350mm	4
			350mm+	5
Buildings Land Improvements Machinery & Equipment Vehicles	Economic (100%)	Replacement Cost (100%)	\$0-\$100,000	1
			\$100,001-\$250,000	2
			\$250,001-500,000	3
			\$500,001-\$1,000,000	4



# Appendix D: Condition Assessment Guidelines

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

Condition data is vital to the development of data-driven asset management strategies. Without accurate and reliable asset data, there may be little confidence in asset management decision-making which can lead to premature asset failure, service disruption and suboptimal investment strategies. To prevent these outcomes, the Town'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 Town'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 Town 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 Town 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 Town 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 Town 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