Asset Management Plan

Town of Amherstburg

2022

This Asset Management Program was prepared by:

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

Key Statistics

Replacement cost of asset portfolio
$1.0 billion

Replacement cost of infrastructure per household
$105,141 (2021)

Percentage of assets in fair or better condition
71%

Percentage of assets with assessed condition data
50%

Annual capital infrastructure deficit
$10.3 million

Recommended timeframe for eliminating annual infrastructure deficit
15 years

Target reinvestment rate
2.4%

Actual reinvestment rate
1.4%

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Executive Summary

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

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 include the following asset categories:

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

Findings

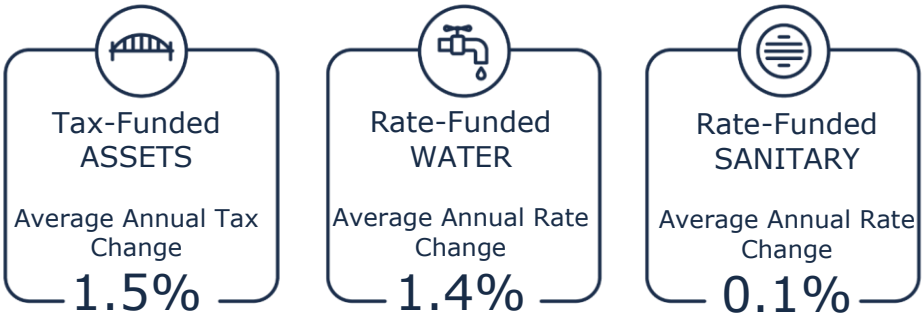
The overall replacement cost of the asset categories included in this AMP totals $1.0 billion. 71% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 50% of assets. For the remaining 50% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.
The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals $24.3 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $13.98 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $10.32 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.

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:



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

- Review data to update and maintain a complete and accurate dataset
- Develop a condition assessment strategy with a regular schedule
- Review and update lifecycle management strategies
- Development and regularly review short- and long-term plans to meet capital requirements
- Measure current levels of service and identify sustainable proposed levels of service

1 Introduction & Context

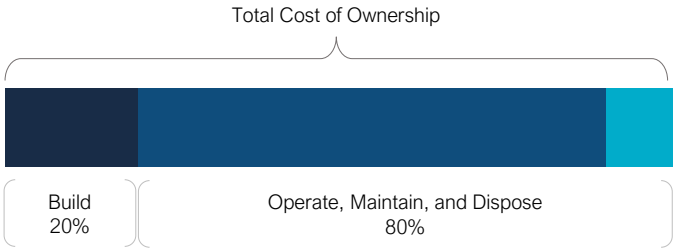
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- 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 milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 An Overview of Asset Management

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

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



These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program. The 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 Town'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 their Asset Management Policy on February 13th, 2013, in accordance with Ontario Regulation 588/17.

This Asset Management Plan satisfies item 2.4 of the Asset Management Policy:

> *"This policy ensures compliance required under Provincial regulation (O.Reg. 588/17 - Asset Management Planning for Municipal Infrastructure) that the Town prepare and adopt an Asset Management Policy."*

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 Town 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 Town'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 Town 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 be generally placed into one of three categories: maintenance, rehabilitation and replacement. The following table provides a description of each type of activity and the general difference in cost.

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

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

The 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 (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in

this AMP. For non-core asset categories, the Town has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

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 Town's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the Town has determined the technical metrics that will be used to determine the technical level of service provided. These metrics can be found in the Levels of Service subsection within each asset category.

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

2022

Asset Management Plan for Core Assets with the following components:

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

2024

Asset Management Plan for Core and Non-Core Assets (same components as 2022) and Asset Management Policy Update

2025

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, 2024. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1 - 12.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1 – 12.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.2 – 12.2	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.2 – 12.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.2.1 – 12.2.1	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.5 – 12.5	Complete
Current performance measures in each category	S.5(2), 2	4.5 – 12.5	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.3 – 12.3	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)	13.1-13.2	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 Amherstburg is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of core assets (roads, bridges and culverts, water, wastewater, and stormwater) and non-core assets.

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
Road Network	Tax Levy
Bridges & Culverts	
Stormwater Network	
Buildings & Facilities	
Vehicles	
Machinery & Equipment	
Land Improvements	
Water Network	User Rates
Wastewater 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 and Service Life Remaining

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.

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

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the 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.

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

The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition. Appendix C includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

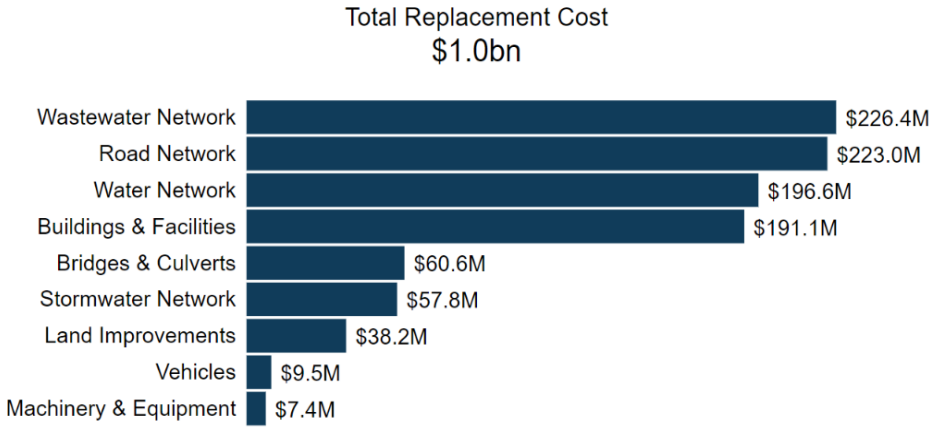
3 Portfolio Overview

Key Insights

- The total replacement cost of the Town's asset portfolio is $1.0 billion
- The Town's target re-investment rate is 2.4%, and the actual re-investment rate is 1.4%, contributing to an expanding infrastructure deficit
- 71% of all assets are in fair or better condition
- 18% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $24.3 million per year across all assets

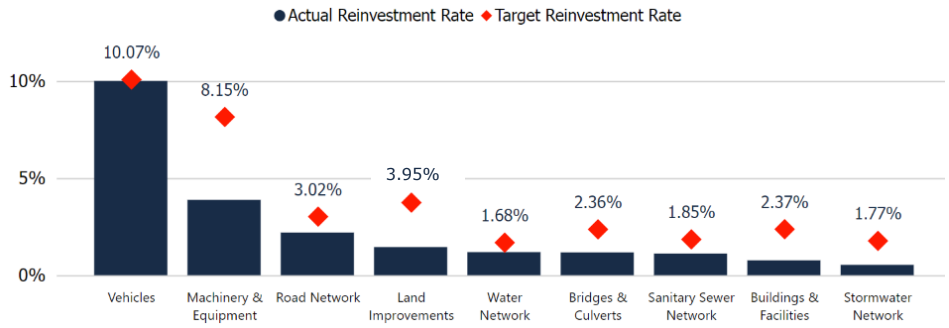
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $1.0 billion based on inventory data from 2021. 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.



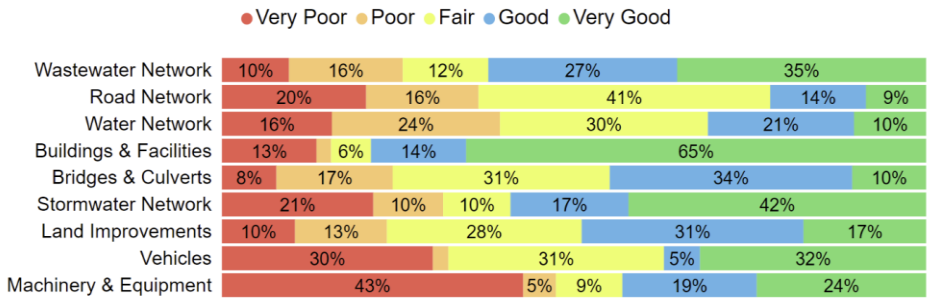
3.2 Target vs. Actual Reinvestment Rate

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 $23.9 million annually, for a target reinvestment rate of 2.4%. Actual annual spending on infrastructure totals approximately $13.98, for an actual reinvestment rate of 1.4%.


Actual Reinvestment Rate
Target Reinvestment Rate
10%
5%
0%
10.07%
8.15%
3.02%
3.95%
1.68%
2.36%
1.85%
2.37%
1.77%
Vehicles
Machinery & Equipment
Road Network
Land Improvements
Water Network
Bridges & Culverts
Sanitary Sewer Network
Buildings & Facilities
Stormwater Network

3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 71% of assets in Amherstburg 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 50% 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.

Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	Road Surfaces	100%	2021 Road Needs Study
	Sidewalks, Streetlights	0%	Age-based
Bridges & Culverts	All	100%	2020 OSIM Report
Storm Water Network	All	0%	Age-based
Buildings	All	98%	2020 Building Condition Assessment; augmented by staff input
Vehicles	Fire	100%	Staff Assessments
Vehicles	Public Works, Bylaw, Building	0%	Age-based
Machinery & Equipment	All	0%	Age-based
Water Network	All	0%	Age-based

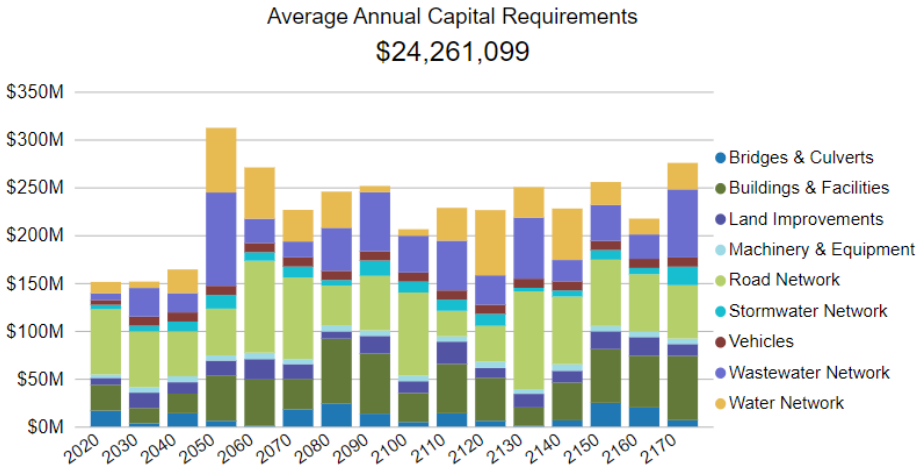
Wastewater Network	All	0%	Age-based

3.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 18% of the Town's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix A.

3.5 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 150 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.


Average Annual Capital Requirements
$24,261,099
$350M
$300M
$250M
$200M
$150M
$100M
$50M
$0M
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
Bridges & Culverts
Buildings & Facilities
Land Improvements
Machinery & Equipment
Road Network
Stormwater Network
Vehicles
Wastewater Network
Water Network

4 Road Network

The road network is a critical component of the provision of safe and efficient transportation services. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including sidewalks and streetlights.

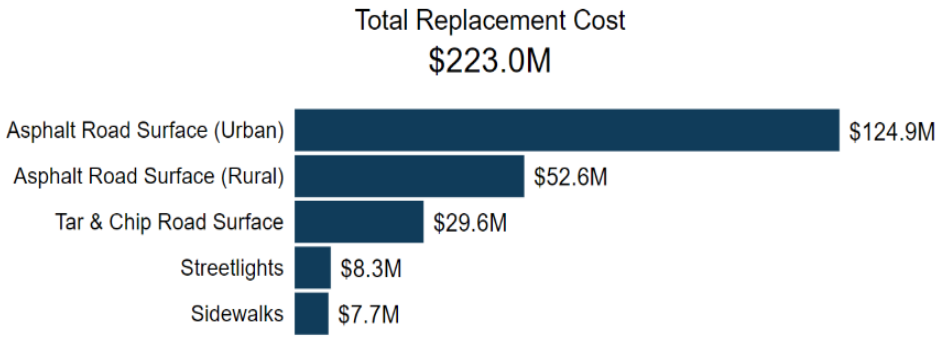
The state of the infrastructure for the road network is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$223 million	Fair (54%)	Annual Requirement:	$6.7 million
		Funding Available:	$4.9 million
		Annual Deficit:	$1.8 million

4.1 491Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's road network inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Asphalt Road Surface (Rural)	105.7 kms	$52,605,000	$2,192,000
Asphalt Road Surface (Urban)	94.6 kms	$124,873,000	$3,433,000
Sidewalks	53.1 kms	$7,724,000	$257,000
Streetlights	1597	$8,261,000	$278,000
Tar & Chip Road Surface	32.3 kms	$29,568,000	$569,000
Total		**$223,030,000**	**$6,730,000**



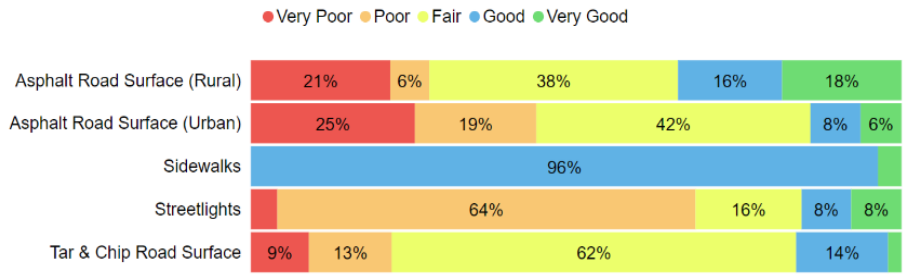
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Asphalt Road Surface (Rural)	25	19.1	Fair (60%)
Asphalt Road Surface (Urban)	25	19.9	Fair (51%)
Sidewalks	30	6.9	Good (63%)
Streetlights	20-30	53.5	Poor (42%)
Tar & Chip Road Surface	15-30	24.8	Fair (57%)
Average		**46.5**	Fair (54%)

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



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

Each asset's estimated useful life should also 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.

4.2.1 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 Town's current approach:

- A Road Needs Study was completed in 2021 that included a detailed assessment of the condition of each road segment. The Town is currently determining a suitable frequency going forward, to complete future Road Needs Studies
- The Road Network, including sidewalks, is assessed by internal staff on an as-needed basis, primarily to identify maintenance requirements.
- Streetlights do not currently have a proactive inspection process in place

In this AMP the following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

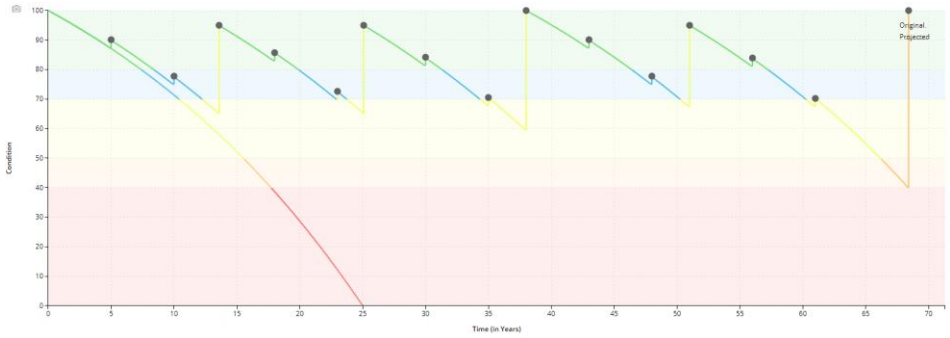
Condition	Rating
Very Good	80-100
Good	70-80
Fair	50-70
Poor	40-50
Very Poor	0-40

4.3 Lifecycle Management Strategy

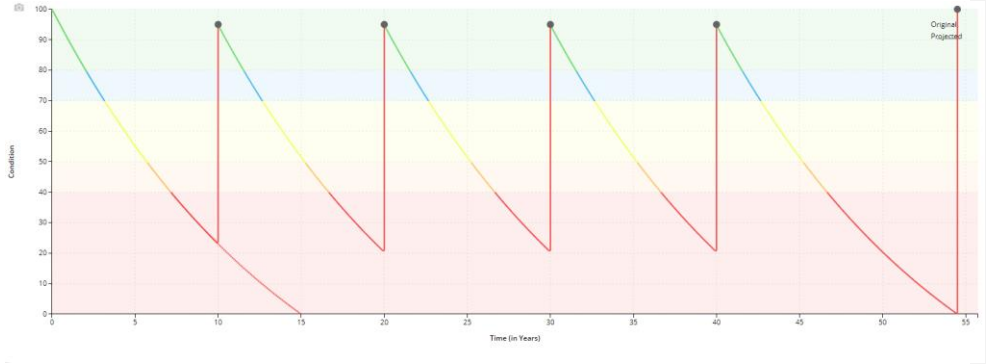
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of Rural-Collector Roads, Tar & Chip Roads, and Urban-Semi Urban 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.

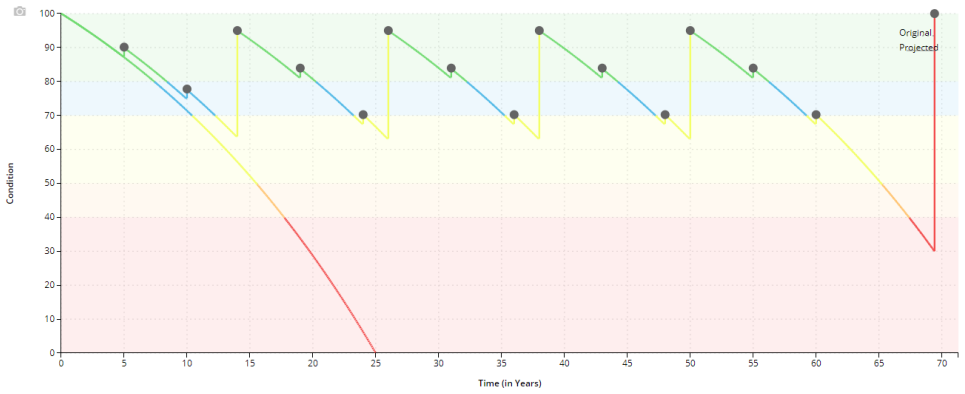
Rural-Collector Roads		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Maintenance	5 Years (Repeated while in good condition)
Double Lift Mill and Pave	Rehabilitation	65 Condition
Single Lift Mill and Pave	Rehabilitation	65 Condition
Cold in Place and Overlay	Rehabilitation	38 Years
Single Lift Mill and Pave 2	Rehabilitation	51 Years
Full Reconstruction	Replacement	40 Condition



Tar & Chip Roads		
Event Name	**Event Class**	**Event Trigger**
Single Surface Treatment 1	Maintenance	10 Years
Double Surface Treatment 1	Maintenance	20 Years
Single Surface Treatment 2	Maintenance	30 Years
Double Surface Treatment 2	Maintenance	40 Years
Full Reconstruction	Replacement	0 Condition



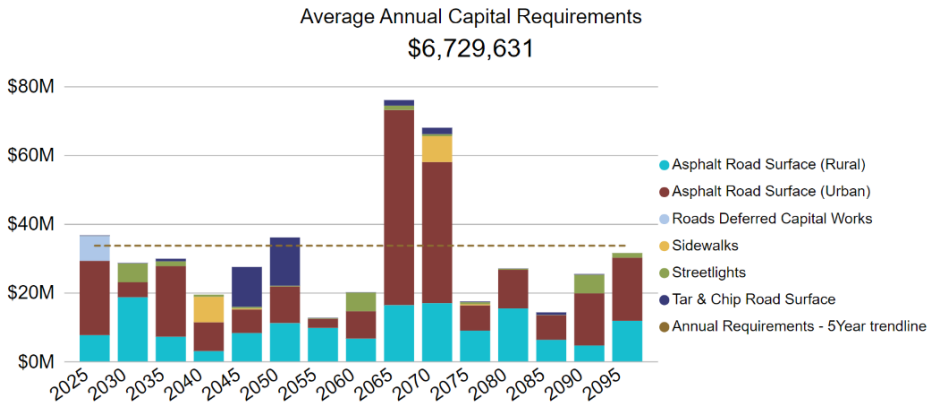
Urban – Semi Urban Roads		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Maintenance	5 Years (Repeated while in good condition)
Single Lift Mill and Pave 1	Rehabilitation	14 Years
Double Lift Mill and Pave	Rehabilitation	26 Years
Full Depth Asphalt Removal and Overlay	Rehabilitation	38 Years
Single Lift Mill and Pave 2	Rehabilitation	50 Years
Full Reconstruction	Replacement	30 Condition



4.3.1 Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for Rural-Collector Roads, Tar & Chip Roads, and Urban-Semi Urban 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 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 following graph identifies capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



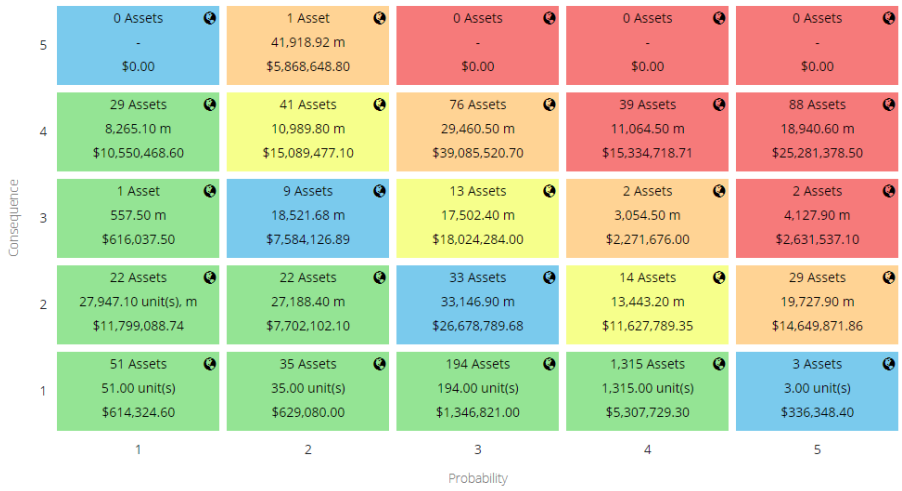
The road network has a considerable backlog of capital works. The 2020 Roads Needs Study identifies $36 million of deferred capital works, primarily consisting of resurfacing and road reconstruction. In addition to the long-term annual capital requirements of $6.7 million, the Town may need to deliver an additional $7.2 million each year for the first five years to account for this work.

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 Risk & Criticality

4.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.



This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the road network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Curb Gutter (Economic)
Service Life Remaining	Roadside Environment (Economic)
	Highway Class (Social)
AADT	Function Road Class (Social)
	Speed Limit (Health and Safety)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

4.4.2 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
Aging infrastructure is the most significant risk Amherstburg faces, as many sections of road are approaching their useful life. This requires timely renewal programs to ensure that roads are in a suitable condition to accommodate traffic loading. Historically, Amherstburg has managed roads reactively, and is now currently developing proactive maintenance and renewal programs. A proactive lifecycle strategy will extend the life of roads and reduce the risk of unexpected failures.

4.5 Levels of Service

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

4.5.1 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 (2021)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix B
Safe & Regulatory	Description of minimum maintenance standards for road network (road surfaces and sidewalks) and Winter Maintenance Level of Service Policy	The Town complies with the Minimum Maintenance Standards at a minimum, and goes above the minimum mintenance standards in many cases for the road network.
Quality	Description or images that illustrate the different levels of road class pavement condition	The Town completed a Road Management Study in 2021 in coordination with Golder Associates Ltd. Every road section received a surface condition rating (0-100) based on the types, severities and densities of the distress observed. The PCI is rated on a scale from 0 to 100, with 0 being very poor and 100 being excellent.

4.5.2 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 (2021)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0.13
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	2.4
	# of O&M FTEs per 10km of road network	6
Safe & Regulatory	% of signs inspected for reflectivity	100%
Affordable	Winter control costs / lane-km	$201,050/lane-km
	Annual capital reinvestment rate	2.2%
Quality	Average pavement condition index for paved roads in the municipality	54%
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Good

4.6 Recommendations

Asset Inventory

- Review road culverts and sidewalk inventory to determine whether all municipal assets within these asset segments have been accounted for.
- The sidewalk inventory includes several pooled assets that should be broken into discrete segments to allow for detailed planning and analysis.

Condition Assessment Strategies

- Although many of the streetlight bulbs have been replaced, the majority of poles are still original assets. The Town should proactively assess street lights to understand the true life remaining of the poles.

Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for HCB and LCB 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 cost, condition and risk.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- The roads capital renewal backlog should be resourced and prioritized using the risk frameworks developed.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the 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.

5 Bridges & Culverts

Bridges and culverts represent a critical portion of the transportation services provided to the community.

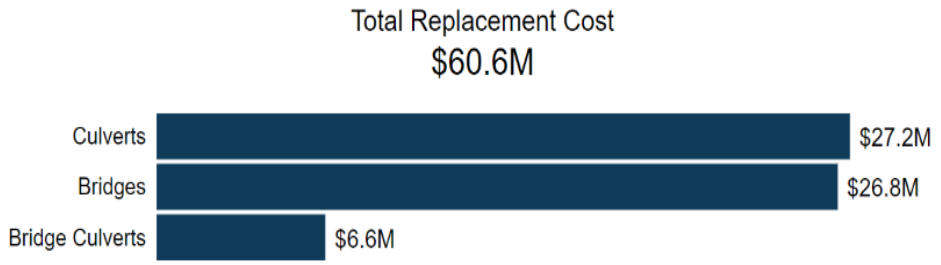
The state of the infrastructure for bridges and culverts is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$60.6 million	Fair (67%)	Annual Requirement:	$1.4 million
		Funding Available:	$716,000
		Annual Deficit:	$715,000

5.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's bridges and culverts inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Bridge Culverts	10	$6,631,000	$157,000
Bridges	26	$26,754,000	$516,000
Culverts	69	$27,233,000	$759,000
Total		**$60,618,000**	**$1,431,000**



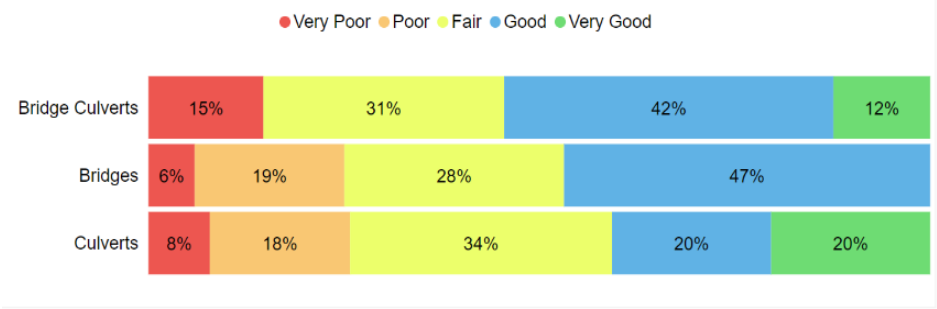
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost, utilizing the bridge condition index (BCI) scores from the 2021 OSIM report.

Asset Segment	Estimated Usefu Life (Years)	Average Age (Years)	Average Condition
Bridge Culverts	35-80	37.3	Fair (69%)
Bridges	75-80	55.9	Fair (64%)
Culverts	35-80	32.7	Fair (69%)
Average		**38.9**	**Fair (67%)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.



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

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

5.2.1 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 Town's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)

In this AMP, the following rating criteria is used to determine the current condition of bridges and culverts and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	70-80
Fair	60-70
Poor	50-60
Very Poor	0-50

5.3 Lifecycle Management Strategy

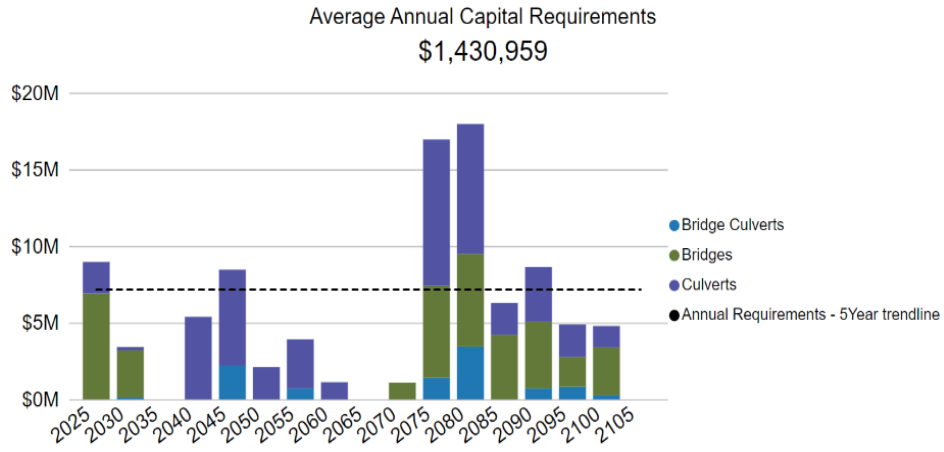
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)

5.3.1 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 following graph identifies capital requirements over the next 85 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

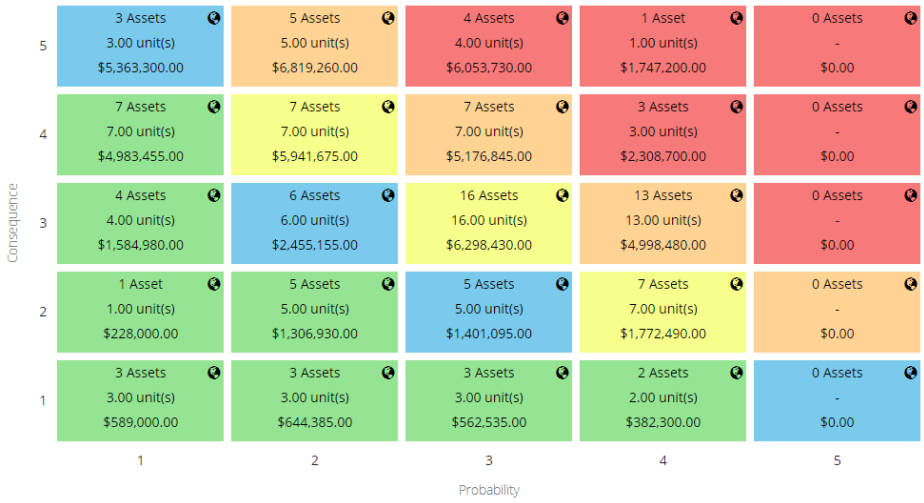


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

5.4 Risk & Criticality

5.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.



This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of bridges and culverts are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Roadside Environment (Economic)
Segment	Replacement Cost (Economic)
Service Life Remaining	Highway Class (Social)
AADT	Functional Road Class (Social)
Loading Restrictions	Detour Distance (Social)
	Speed Limit (Health and Safety)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

5.4.2 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 Strategies

Amherstburg owns and maintains a significant number of structural bridges and culvert, which many are approaching the end of their service life. Rehabilitating these structures are costly, often requiring external grant funding, such as the Ontario Community Infrastructure Fund (OCIF). Uncertainty with senior government could pose a risk of deferring critical repairs. Prioritizing bridges that are higher risk can optimize the limited funding available.

5.5 Levels of Service

The following tables identify the Town's current level of service for bridges and 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.

5.5.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by bridges and culverts.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. None of the Town's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, emergency vehicles, and cyclists can cross them without restriction.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	See Appendix B

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5.5.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by bridges and culverts.

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of bridges in the Town with loading or dimensional restrictions	0
	# of FTEs per 10 structures	6
Safe & Regulatory	% of bridges and structural culverts inspected every two years	100%
Affordable	Annual capital reinvestment rate	1.1%
Quality	Average bridge condition index value for bridges in the Town	64
	Average bridge condition index value for structural culverts in the Town	69

5.6 Recommendations

Data Review/Validation

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

Risk Management Strategies

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

Lifecycle Management Strategies

- This AMP assumes that the Town will undertake the reconstruction and renewal activities specified in the 2020 OSIM report, during the recommended timelines. The Town should update these projections to account for coordination opportunities, resourcing, and true project costs.

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.

6 Stormwater Network

The Town is responsible for owning and maintaining a stormwater network of 96 kms of storm mains, catch basins and other supporting infrastructure.

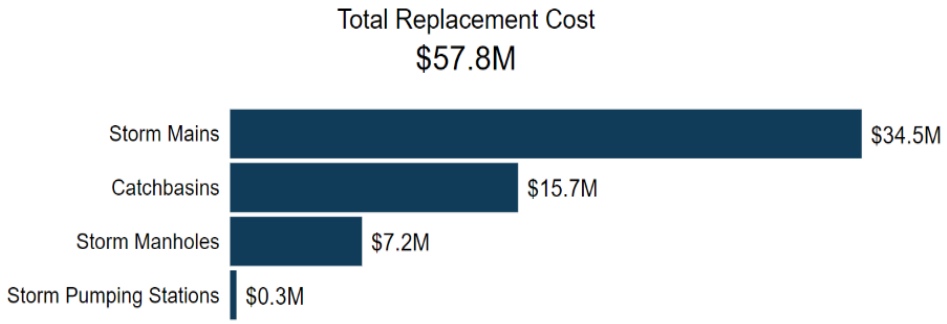
The state of the infrastructure for the stormwater network is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$57 million	Good (61%)	Annual Requirement:	$1.0 million
		Funding Available:	$309,000
		Annual Deficit:	$713,000

6.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's stormwater network inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Catchbasins	4680	$15,737,000	$315,000
Storm Mains	96.4 kms	$34,500,000	$566,000
Storm Manholes	1047	$7,208,000	$144,000
Storm Pumping Statio	8	$349,000	$7,000
	Total	**$57,794,000**	**$1,022,000**



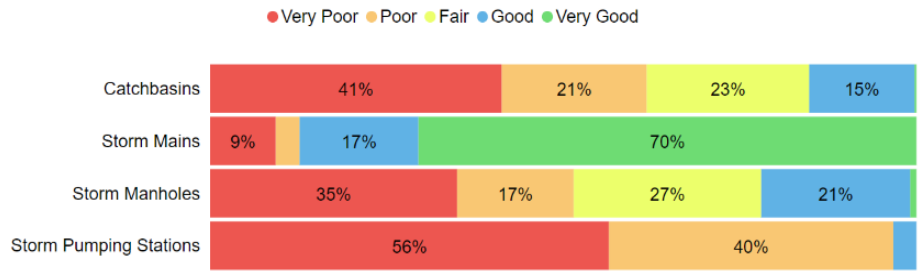
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

6.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. All stormwater assets rely on age and useful life to determine condition.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Catchbasins	50	32.6	Poor (32%)
Storm Mains	75	38.3	Very Good (80%)
Storm Manholes	50	34.2	Poor (36%)
Storm Pumping Stations	50	34.2	Poor (26%)
Average		**33.9**	**Good (61%)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



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.

Each asset's estimated useful life should also 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.

6.2.1 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 Town's current approach:

- CCTV inspections are performed on select sewer mains on a project basis
- There are no formal condition assessment programs in place for the stormwater network

In this AMP the following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

6.3 Lifecycle Management Strategy

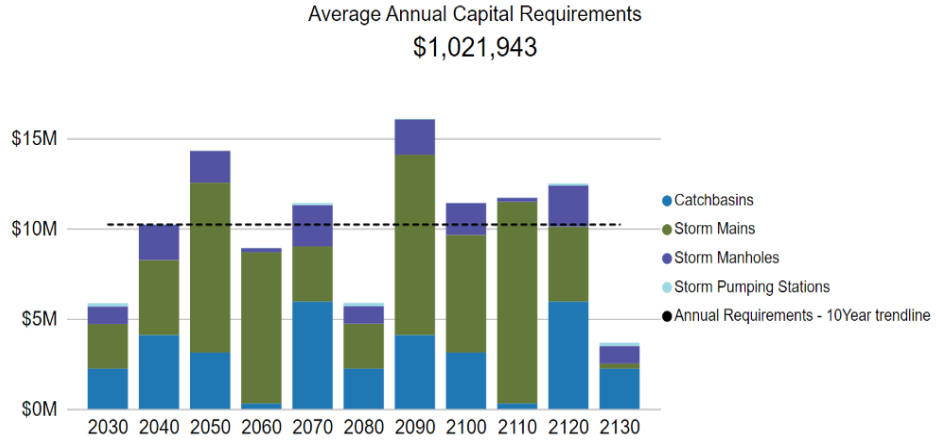
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	CCTV inspections occur on select sewer mains on a project basis currently
Preventative Maintenance	System flushing is performed 20% annually
Rehabilitation/ Replacement	Relining is considered as an option instead of replacement only on busier roads

6.3.1 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 following graph identifies capital requirements over the next 110 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 10-year bins and the trend line represents the average 10-year capital requirements.



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.

6.4 Risk & Criticality

6.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the stormwater network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Pipe Material	Roadside Environment (Financial)
Service Life Remaining	AADT (Social)
	Diameter (Social)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

6.4.2 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 Events
Climate change and extreme weather are the biggest risk factors when managing the stormwater network. Heavier rainfall in recent years has led to basement flooding, with at least 30 homes reporting in October of 2018. During heavy rainfall events, stormwater can infiltrate into the wastewater system, effectively reducing the capacity of these pipes. Planning for these uncertain events is critical. The Essex Regional Conservation Authority is currently investigating whether design standards need to be revised to be relevant to current conditions.

6.5 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.

6.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	See Appendix B

6.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	% of residents serviced by stormwater network	100%
	# of O&M FTEs / 10 km of Sewers	7
Safe & Regulatory	% of properties in municipality resilient to a 100-year storm	TBD
	% of the municipal stormwater management system resilient to a 5-year storm	TBD
Affordable	Annual capital reinvestment rate	0.5%
Sustainable	% of the stormwater network that is in good or very good condition	59%
	% of the stormwater network that is in poor or very poor condition	31%
	Condition Assessment Cycle (report as a percentage. For example, if the network is assessed every 4 years, report as 25%)	10%

6.6 Recommendations

Asset Inventory

- The Town's stormwater mains inventory should be further reviewed for duplicates and missing sections. Some assets were missing location information, and could not be verified.

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 inspections.

Risk Management Strategies

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

Lifecycle Management Strategies

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

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.

7 Buildings & Facilities

The Town of Amherstburg owns and maintains several facilities and recreation centres that provide key services to the community. These include:

- administrative offices
- public libraries
- fire stations and associated offices and facilities
- public works garages and storage sheds
- police station

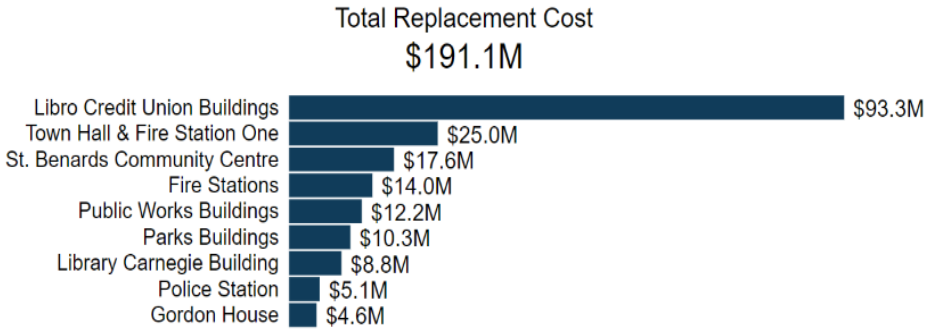
The state of the infrastructure for the buildings and facilities is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$191 million	Good (76%)	Annual Requirement:	$4.5 million
		Funding Available:	$1.5 million
		Annual Deficit:	$3.0 million

7.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's buildings and facilities inventory.

Asset Segment	Quantity (components)	Replacement Cost	Annual Capital Requirement
Fire Stations	2 (107)	$14,000,000	$256,000
Gordon House	1 (51)	$4,629,000	$88,000
Library Carnegie Building	1 (54)	$8,807,000	$153,000
Libo Credit Union Buildings	2 (112)	$93,316,000	$2,328,000
Parks Buildings	6 (217)	$10,300,000	$221,495
Police Station	1	$5,144,000	$129,000
Public Works Buildings	4 (154)	$12,225,000	$236,000
St. Bernards Community Center	1 (77)	$17,649,000	$391,000
Town Hall & Fire Station One	1 (74)	$25,000,000	$724,000
Total		**$191,069,000**	**$4,527,000**



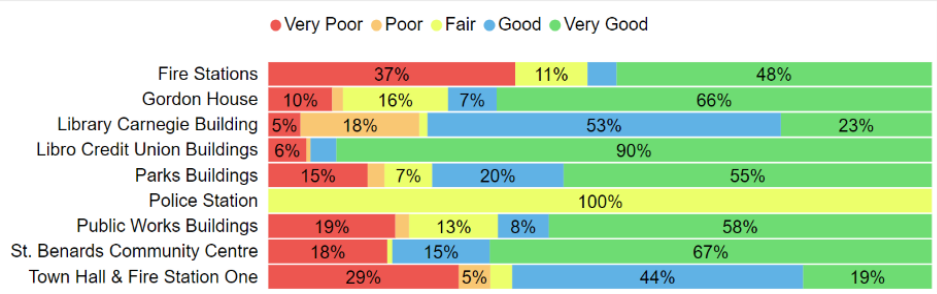
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

7.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost, utilizing staff assessments and the 2021 Building Condition Assessment.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire Stations	15-80	40.8	Fair (55%)
Gordon House	20-150	39.0	Good (79%)
Library Carnegie Building	20-100	45.9	Good (65%)
Libo Credit Union Building	5-75	12.0	Very Good (90%)
Parks Buildings	2-100	32.2	Good (76%)
Police Station	40	36.0	Fair (45%)
Public Works Buildings	15-75	36.5	Good (72%)
St. Bernards Community Center	5-100	24.1	Good (75%)
Town Hall & Fire Station One	2-90	31.6	Fair (53%)
Average		**31.9**	Good (76%)

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's buildings and facilities 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 buildings and facilities.

Each asset's estimated useful life should also 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.

7.2.1 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 Town's current approach:

- A detailed third-party facility condition assessment was undertaken in 2021. The overall condition, costs, and recommended work is summarized at a building component level. The Town is currently considering a suitable frequency to undertake these assessments into the future.
- Municipal buildings are subject to internal inspections on an as-needed basis. Health and safety inspections are undertaken monthly.

In this AMP the following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

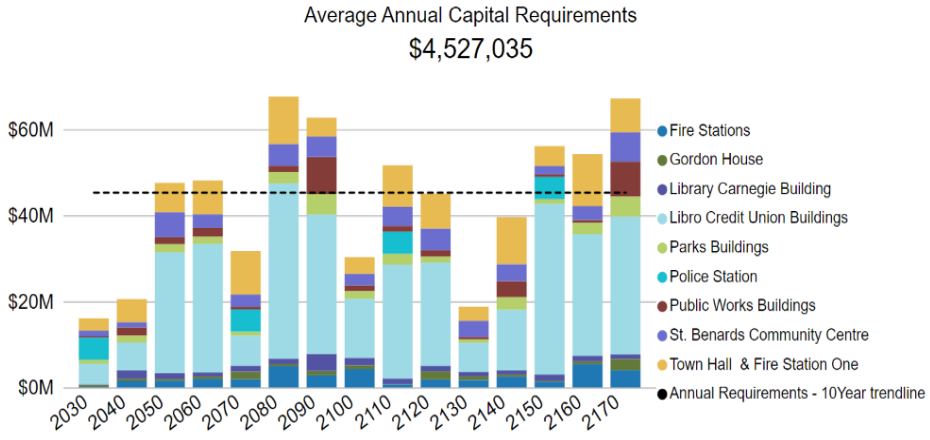
7.3 Lifecycle Management Strategy

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	Municipal buildings are subject to internal inspections on an as-needed basis. Health and safety inspections are undertaken monthly.
	Maintenance activities are undertaken as a result of internal inspections, prioritizing activities related to health and safety, and regulatory compliance.
	A detailed third-party facility condition assessment was undertaken in 2021. The overall condition, costs, and recommended work is summarized at a building component level. The Town is currently considering a suitable frequency to undertake these assessments into the future.
Replacement	Historically, refurbishments and replacements are only projected out for the next 1 – 2 years. However, the Township is moving towards a 5 – 10-year proactive planning horizon, utilizing findings from the building condition assessment.

7.3.1 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 following graph identifies capital requirements over the next 140 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 10-year bins and the trend line represents the average 10-year capital requirements.



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.

7.4 Risk & Criticality

7.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of buildings and facilities are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Economic)
	Service Category (Health and Safety)
	Average Daily Occupancy (Operational)
Service Life Remaning	Building Component (Operational)
	Retrofit Identified (Operational)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

7.4.2 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 & Available Data
Staff have noted that the aging infrastructure, and lack of reliable records/data, are the largest risk factors when managing the facilities portfolio. A building condition assessment has only been undertaken quite recently in 2019, and then updated in 2021. This study identified significant mid-to-long-term requirements.

7.5 Levels of Service

The following tables identify the Town's current level of service for the buildings and facilities. These metrics include the performance measures that the Town has selected for this AMP.

7.5.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the buildings and facilities.

Service Attribute	Qualitative Description	Current LOS (2021)
Safe & Regulatory	Description of monthly and annual facilities inspection process	Refer to Section 7.3
Sustainable	Description of the current condition of municipal facilities and the plans that are in place to maintain or improve the provided level of service	Buildings are generally in fair to good condition. The 2021 Building Condition Assessment outlines a proactive renewal plan at a building component level.

7.5.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the buildings and facilities.

Service Attribute	Technical Metric	Current LOS (2021)
Sustainable	Average annual reinvestment rate (%)	0.8%
	% of buildings and facilities having a comprehensive building condition assessment over the last (10) years	100%
	% of facilities that are in good or very good condition	79%
	% of facilities that are in poor or very poor condition	15%

7.6 Recommendations

Replacement Costs

- Building replacement costs have changed significantly between the 2019 assessment and the 2021 assessment. Staff should continue to review and refine replacement cost estimates to ensure projected capital needs remain valid.

Condition Assessment Strategies

- Staff have indicated that the condition scores provided within the 2019 & 2021 Building Condition Assessment may be too optimistic. Further investigation may be required to validate condition ratings
- The Town should consider conducting building condition assessments in the future, following a 5 – 10 year cycle.

Risk Management Strategies

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

Levels of Service

- Staff have identified several other suitable technical levels of service metrics as part of the Asset Management Roadmap project with PSD Citywide. However results for they measures have not been consolidated to this report, and will likely appear in future updates of the AMP.
- 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.

8 Vehicles

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

- fire rescue vehicles to provide emergency services
- heavy, light, and medium duty vehicles to support public works operations
- vehicles to support other municipal departments such s buildings, by-law, and parks and facilities

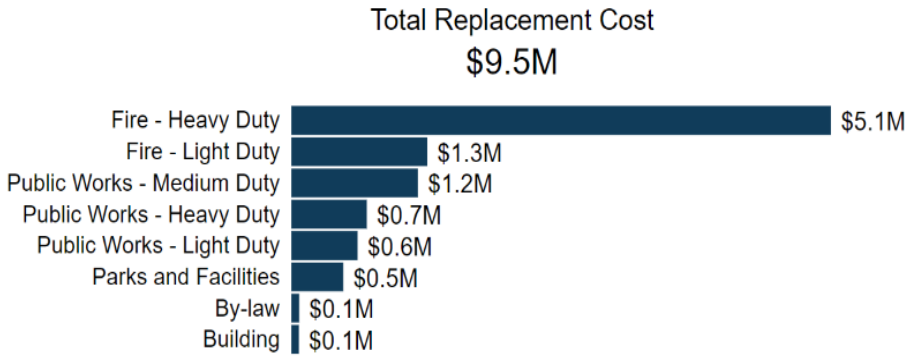
The state of the infrastructure for the vehicles is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$9.5 million	Fair (49%)	Annual Requirement:	$957,000
		Funding Available:	$950,000
		Annual Deficit:	$7,000

8.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Building	2	$70,000	$7,000
By-law	2	$73,000	$7,000
Fire – Heavy Duty	7	$5,060,000	$506,000
Fire – Light Duty	10	$1,275,000	$127,000
Parks and Facilities	12	$487,000	$49,000
Public Works – Heavy Duty	3	$708,000	$71,000
Public Works – Light Duty	13	$622,000	$71,000
Public Works – Medium Duty	5	$1,187,000	$119,000
	Total	**$9,482,000**	**$957,000**



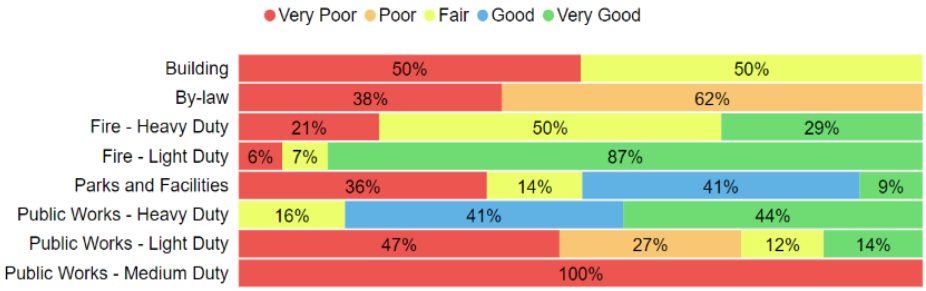
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

8.2 Asset Condition & Age

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. Fire vehicle condition is rated using staff assessments; all other vehicles rely on age and useful life.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Building	10	9.0	Poor (28%)
By-law	10	8.0	Poor (23%)
Fire – Heavy Duty	10	12.8	Fair (52%)
Fire – Light Duty	0-10	10.6	Very Good (82%)
Parks and Facilities	10	7.7	Fair (42%)
Public Works – Heavy Duty	10	3.1	Good (73%)
Public Works – Light Duty	5-10	7.3	Fair (30%)
Public Works – Medium Duty	10	38.0	Very Poor (0%)
	Average	**11.4**	**Fair (49%)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.



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.

Each asset's estimated useful life should also 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.

8.2.1 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 Town's current approach:

- Visual inspections on vehicles are completed and documented as part of circle inspections.
- CVOR vehicles have detailed inspections on an annual basis. Non-CVOR vehicle inspections have less formality and are completed mainly for safety on a regular basis.
- Fire apparatus on trucks have annual pump testing from emergency vehicle technicians. Pump functionality is tested on weekly basis in house.

In this AMP the following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

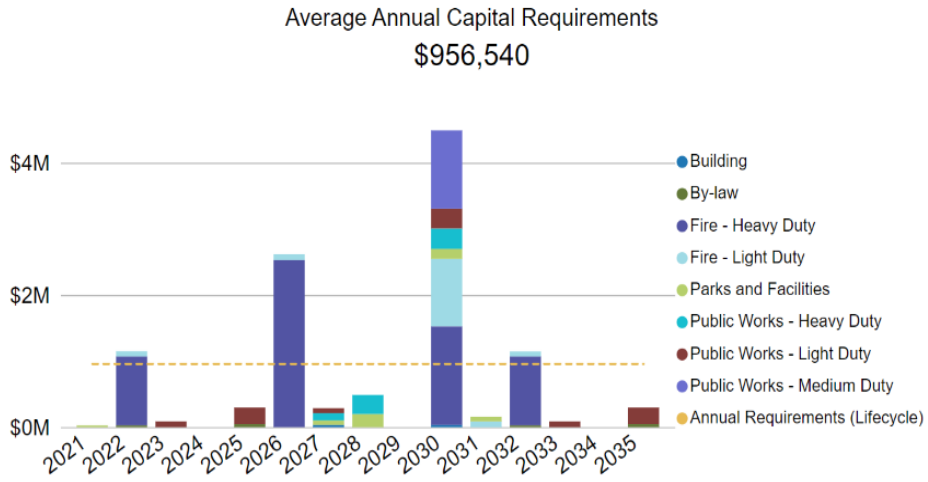
8.3 Lifecycle Management Strategy

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	Currently, most maintenance and recommendations are completed by 3rd party mechanics. Recommendations are considered.
	Oil changes are completed based on mileage driven.
	License stickers, and registration if needed under CVOR, are completed on an annual basis.
	Tire changes, fluid top up, minor component changes, such as wipers, are completed on an as needed basis. Certain specialty parts, such as electronics or sensors, have been cited to be scarce at times.
	Visual inspections on vehicles are completed and documented as part of circle inspections. CVOR vehicles have detailed inspections on an annual basis. Non-CVOR vehicle inspections have less formality and are completed mainly for safety on a regular basis.
	Fire apparatus on trucks have annual pump testing from emergency vehicle technicians. Pump functionality is tested on weekly basis in house.
Replacement	Fire department pumpers and tankers are replaced at the end of a 20-year lifecycle, fire support vehicles are replaced at the end of year 10.
	Generally, vehicles are operated past the industry standard recommendations for replacements.

8.3.1 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 following graph identifies capital requirements over the next 15 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 1-year bins and the trend line represents the average 1-year capital requirements.



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.

8.4 Risk & Criticality

8.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of vehicles are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Service (Strategic)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

8.4.2 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
Many vehicles are approaching their estimated useful lives (EUL). As vehicles age the operations and maintenance costs rise, resulting in larger budgets to maintain the fleet. With a lack of a vehicle maintenance program or fleet maintenance policy, this could translate to increased financial ramifications as many vehicles will have to be replaced soon.

8.5 Levels of Service

The following tables identify the Town's current level of service for vehicles. These metrics include the performance measures that the Town has selected for this AMP.

8.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Safe & Regulatory	Description of the vehicle inspection process undertaken each year	Refer to Section 8.3
Sustainable	Description of the current condition of vehicles and the plans that are in place to maintain or improve the provided level of service	Refer to Section 8.2 & 8.3

8.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	# of heavy duty public works vehicles	3
	# of tanker trucks	2
	# of pumper trucks	3
	% of vehicles with preventative maintenance overdue	0%
Safe & Regulatory	% of regulated MTO maintenance inspections complete	100%
	# of fleet vehicles involved in a collision per year	0
	# of vehicles safety inspections per year per vehicle per year	1
Sustainable	Average annual reinvestment rate	10%
	% of vehicles with less than 3 years remaining	39%
	% of fleet assets with 7 or more years remaining	49%

8.6 Recommendations

Asset Inventory

- Current Estimated Useful Life values are sourced from the Town's TCA Policy. These values may not reflect the true service life exhibited, as allowed by the Town's maintenance program and performance requirements. The Town may consider updating the TCA policy to include more suitable useful life values.

Replacement Costs

- Gather accurate replacement costs and update on a regular basis to ensure the accuracy of capital projections.

Condition Assessment Strategies

- 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

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

Levels of Service

- Begin measuring 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.

9 Machinery & Equipment

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

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

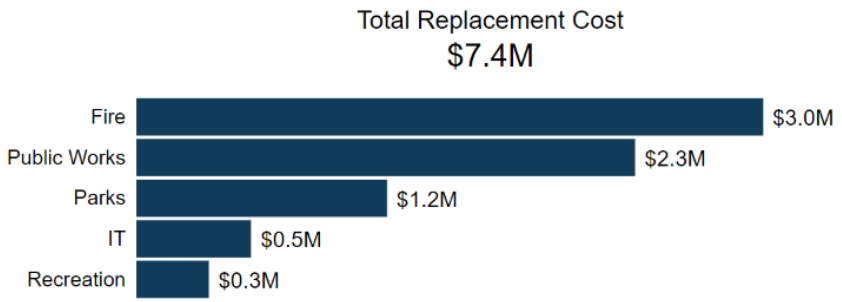
The state of the infrastructure for the machinery and equipment is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$7.3 million	Fair (43%)	Annual Requirement:	$603,000
		Funding Available:	$287,000
		Annual Deficit:	$316,000

9.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's machinery and equipment inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Fire	145	$2,952,000	$190,000
IT	473	$540,000	$96,000
Parks	93	$1,180,000	$83,000
Public Works	96	$2,349,000	$199,000
Recreation	12	$341,000	$34,000
	Total	**$7,362,000**	**$603,000**



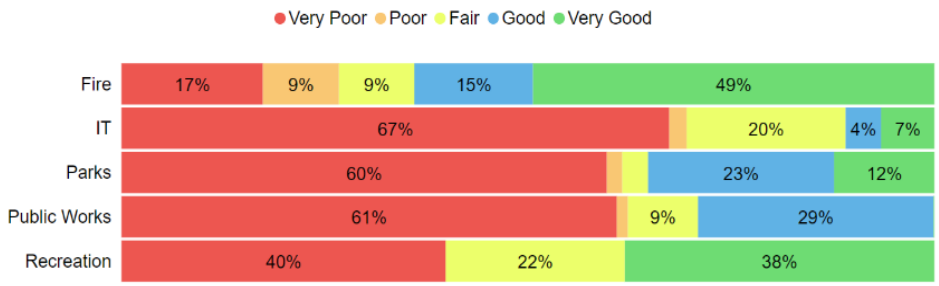
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

9.2 Asset Condition & Age

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. Some fire equipment assets have condition assessments available; however, most assets rely on age and useful life.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire	5-40	8.8	Good (64%)
IT	5-10	4.9	Very Poor (19%)
Parks	5-25	9.1	Poor (37%)
Public Works	10-20	11.8	Poor (26%)
Recreation	10-15	8.9	Fair (43%)
		6.9	**Fair (43%)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's machinery and equipment 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 machinery and equipment.

Each asset's estimated useful life should also 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.

9.2.1 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 Town's current approach:

- Public Works equipment is generally inspected and maintained on a seasonal, or as-needed basis. Significant equipment, such as plow blades, are managed for functionality as per the Minimum Maintenance Standards (MMS). However, there is no formal condition assessment program in place.
- Parks equipment is inspected every Spring. Smaller equipment is inspected on a daily basis as they are used. However, the Zamboni is inspected twice annually, and sent to the manufacturer for an overhaul if required.
- SCBAs are subject to annual bench testing to ensure functioning as per National Fire Protection Agency (NFPA) requirements.

In this AMP the following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

9.3 Lifecycle Management Strategy

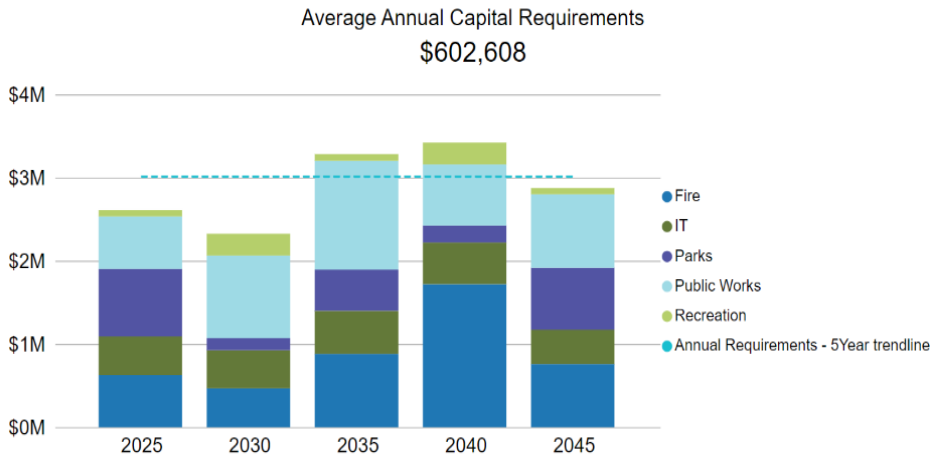
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Public Works equipment is generally inspected and maintained on a seasonal, or as-needed basis. Significant equipment, such as plow blades, are managed for functionality as per the Minimum Maintenance Standards (MMS). However, there is no formal condition assessment program in place.
	Parks equipment is inspected every Spring. Smaller equipment is inspected on a daily basis as they are used. However, the Zamboni is inspected twice annually, and sent to the manufacturer for an overhaul if required.
	SCBAs are subject to annual bench testing to ensure functioning as per NFPA requirements.
Replacement	The replacement of machinery & equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks.
	Bunker gear are replaced on a 10-year cycle based on manufacturer requirements.
	IT assets are generally replaced on a 5-year cycle. The specific timing of replacement considers obsolescence.

9.3.1 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 following graph identifies capital requirements over the next 25 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



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.

9.4 Risk & Criticality

9.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of machinery and equipment are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Service (Strategic)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

9.4.2 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
Equipment and machinery do not have a maintenance policy. Without a planned, proactive approach, these assets are at risk of requiring higher operations and maintenance costs as they age.

9.5 Levels of Service

The following tables identify the Town's current level of service for machinery and equipment. These metrics include the performance measures that the Town has selected for this AMP.

9.5.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by machinery and equipment.

Service Attribute	Qualitative Description	Current LOS (2021)
Accessible & Reliable	Description of redundancies available to ensure equipment is available for operations	Minimal back-up equipment is available due to the acquisition, maintenance, and operating costs of keeping equipment on standby. Fire Services does not have shared equipment with neighbouring municipalities. In the past, when critical failure occurs, neighbouring municipalities are asked if they have similar equipment that can be borrowed or rented for short term use. Changes to deployment procedures have been put in place to offset equipment out of service until repairs or replacement takes place.
Safe & Regulatory	Description of the work undertaken to ensure equipment is in good operating order	Refer to Section 9.3
Sustainable	Description of the current condition of equipment and the plans that are in place to maintain or improve the provided level of service	Since 2017 there have been significant initiatives to improve the levels of service for equipment.

9.5.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the machinery and equipment.

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	% of equipment with preventative maintenance overdue	0%
	% of Assets where Age > Useful Life (IT)	38%
	Ratio of service requests resolved comparted to total number of service requests	TBD[1]
Safe & Regulatory	% of regulated MTO maintenance and inspections activities completed	100%
	# of workplace injuries due to equipment issues	0%
	# of equipment safety inspections per year completed for safety and protective equipment (Fire)	36
Sustainable	Average annual reinvestment rate of equipment and IT assets	3.9%
	% of assets in poor or very poor condition	47%
	% of assets in good or very good condition	43%

[1] The Town is currently configuring their work order and service request system. This measure may be available in future iterations of the Plan.

9.6 Recommendations

Replacement Costs

- The majority of replacement costs were based on staff estimates. Public works estimates relied on purchases of similar equipment in the past, and may understate the true replacement value.

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

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

Levels of Service

- Begin measuring 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.

10 Land Improvements

The Town of Amherstburg owns a small number of assets that are considered land improvements. This category includes:

- Parking lots for municipal facilities
- Fencing
- Miscellaneous landscaping and other assets

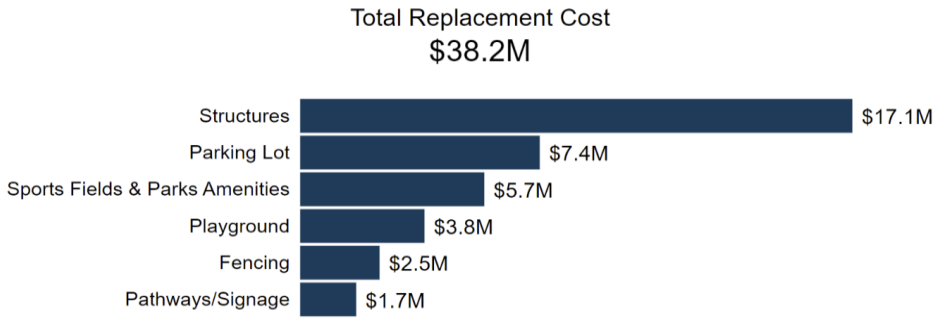
The state of the infrastructure for the land improvements is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$38 million	Good (63%)	Annual Requirement:	$1.5 million
		Funding Available:	$458,000
		Annual Deficit:	$1,042,000

10.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's land improvements inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Fencing	8	$2,459,000	$123,000
Parking Lot	16	$7,413,000	$364,377,000
Pathways/Signage	23	$1734,000	$77,000
Playgrounds	13 (25 components)	$3,847,000	$192,000
Sports Fields & Parks Amentities	46	$5,698,000	$317,000
Structures	32	$17,084,000	$439,000
	Total	**$38,235,000**	**$1,511,000**



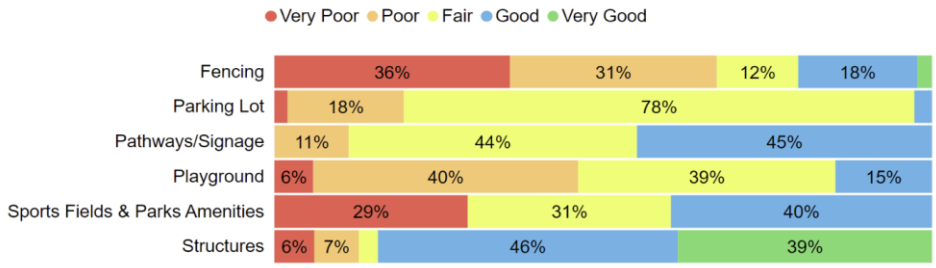
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

10.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. The majority of land improvement assets use staff judgement to determine condition scores.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fencing	20-21	23.9	Fair (41%)
Parking Lot	20-50	24.1	Fair (53%)
Pathways/Signage	20-25	21.1	Good (64%)
Playground	20	20.2	Fair (50%)
Sports Fields & Parks Amentities	15-30	26.6	Fair (50%)
Structures	20-70	23.3	Good (75%)
Average		**23.6**	**Good (62%)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



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.

Each asset's estimated useful life should also 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.

10.2.1 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 Town's current approach:

- Parks are subject to weekly inspections using internal resources. Play structures are inspected for CSA compliance monthly.
- Sports fields are inspected monthly, or in response to user group planning.

In this AMP the following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

10.3 Lifecycle Management Strategy

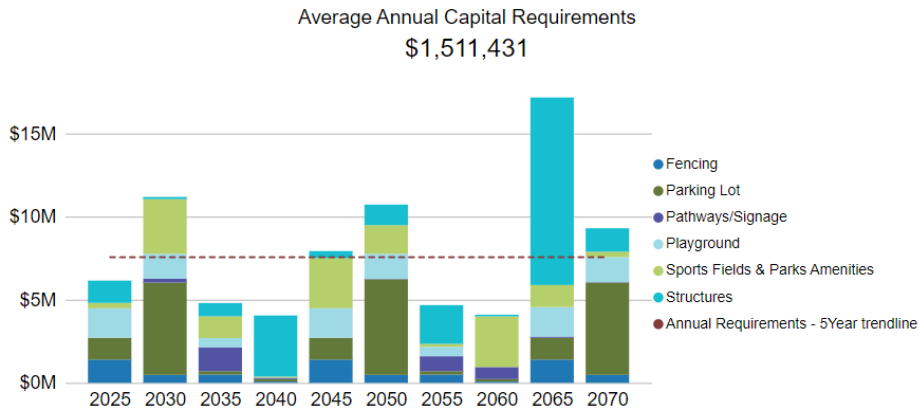
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenanace / Rehabilitation	Parks are subject to weekly inspections using internal resources. Play structures are inspected for CSA compliance monthly.
	Sports fields are inspected monthly, or in response to user group planning.
	Parks are subjected to scheduled mowing and landscaping, prescribed by asset usage and season.
Replacement	The 2017 Parks Master Plan provides a prioritized list of capital improvements that the Town can take.

10.3.1 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 following graph identifies capital requirements over the next 50 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



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.

10.4 Risk & Criticality

10.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of land improvements are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Park Use (Social)
Service Life Remaining	Segment (Strategic)
	Park Classification (Strategic)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-

specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

10.4.2 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
Many of the playground structures are dated and face the risk of obsolescence. These structures have been installed once, and only minimally monitored over time. Without a proactive repair schedule and upgrade plan, playground structures are at risk of liability. Development of the parks inventory will enable staff to better manage these assets.

Community Expectations
A secondary risk is managing accessibility and community expectations. There are relatively few sidewalks, parking lots, and other amenities to enable visitors to access and explore the parks. Over time the public has been using the parks more and expecting better access. Without addressing these issues, parks are at risk of receiving more complaints from the public.

10.5 Levels of Service

The following tables identify the Town's current level of service for land improvement assets. These metrics include the performance measures that the Town has selected for this AMP.

10.5.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by land improvement assets.

Service Attribute	Qualitative Description	Current LOS (2021)
Safe & Regulatory	Description of the parks inspection process and timelines for inspections	Parks are subject to weekly inspections using internal resources. Play structures are inspected for CSA compliance monthly. Sports fields are inspected monthly, or in response to user group planning.

10.5.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the land improvement assets.

Service Attribute	Technical Metric	Current LOS (2021)
Safe & Regulatory	% of playground equipment inspected for CSA compliance	100%
Sustainable	% of parks and recreation assets that are in good or very good condition	48.9%
	% of parks and recreation assets that are in poor or very poor condition	23.4%
	Average Annual Reinvestment rate	1.2%

10.6 Recommendations

Replacement Costs

- The majority of replacement costs, with the exception of structures assets, are derived from the 2017 Parks Master Plan, inflated to current value. Unit rates for land improvements have likely changed beyond inflation over the last five years. Staff should conduct a more detailed investigation of replacement costs, using unit pricing at current market value

Condition Assessment Strategies

- Condition scores have been developed based on staff judgement. However, the Town should work towards developing a condition assessment program with specific condition rating criteria to better ensure consistency and accuracy of condition ratings.

Risk Management Strategies

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

Levels of Service

- Begin measuring 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.

11 Water Network

The water services provided by the Town includes the following:

- Water Treatment Plant/distribution system
- Water Towers
- Water equipment, valves, and hydrants

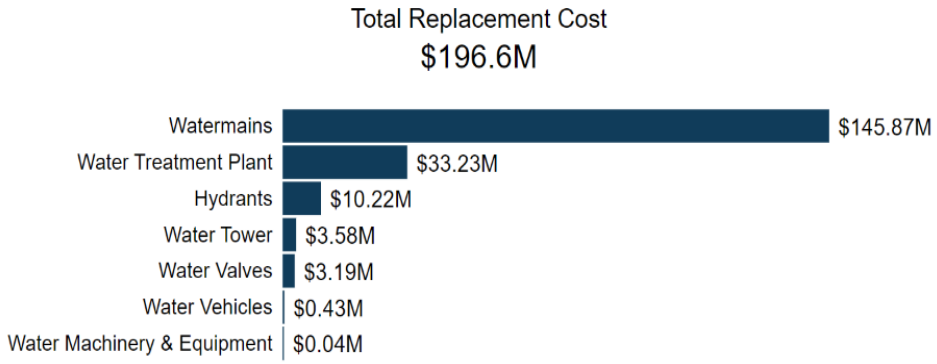
The state of the infrastructure for the water network is summarized in the following table:

Replacement Cost	Condition	Financial Capacity	
$196.6 million	Fair (46%)	Annual Requirement:	$3.3 million
		Funding Available:	$2.3 million
		Annual Deficit:	$1.0 million

11.1 Asset Inventory & Costs

The table below includes the quantity, replacement cost method, and annual capital requirements of each asset segment in the Town's water network inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Hydrants	1892	$10,216,000	$136,000
Water Machinery & Equipment	9	$43,000	$4,000
Water Tower	1 (2 components)	$3,576,000	$71,000
Water Treatment Plant	1 (40 components)	$33,228,000	$1,059,000
Water Valves	1396	$3,193,000	$43,000
Water Vehicles	8	$427,000	$43,000
Watermains	338 kms	$145,871,000	$1,941,000
	Total	**$196,554,000**	**$3,297,000**



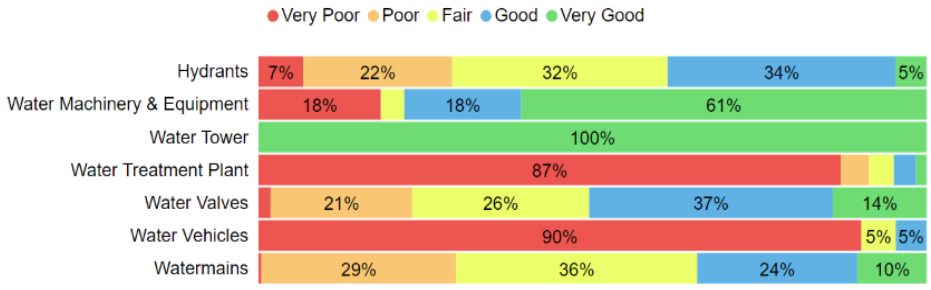
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

11.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. All condition scores for the water system relies on age and useful life.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Hydrants	75	33.9	Fair (52%)
Water Machinery & Equipment	10	15.3	Good (68%)
Water Tower	50	8.0	Very Good (83%)
Water Treatment Plant	15-60	20.8	Very Poor (8%)
Water Valves	75	33.1	Fair (58%)
Water Vehicles	10	9.7	Very Poor (12%)
Watermains	75-100	32.6	Fair (53%)
Average		**32.8**	**Fair (46%)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.



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.

Each asset's Estimated Useful Life should also 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.

11.2.1 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 Town's current approach:

- Staff primarily rely on the age and material of water mains to determine the projected condition of water mains.
- OCWA manages the operations and routine inspections of the treatment plants.
- There are no formal condition assessment programs in place for the linear assets.

In this AMP the following rating criteria is used to determine the current condition of water network assets and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

11.3 Lifecycle Management Strategy

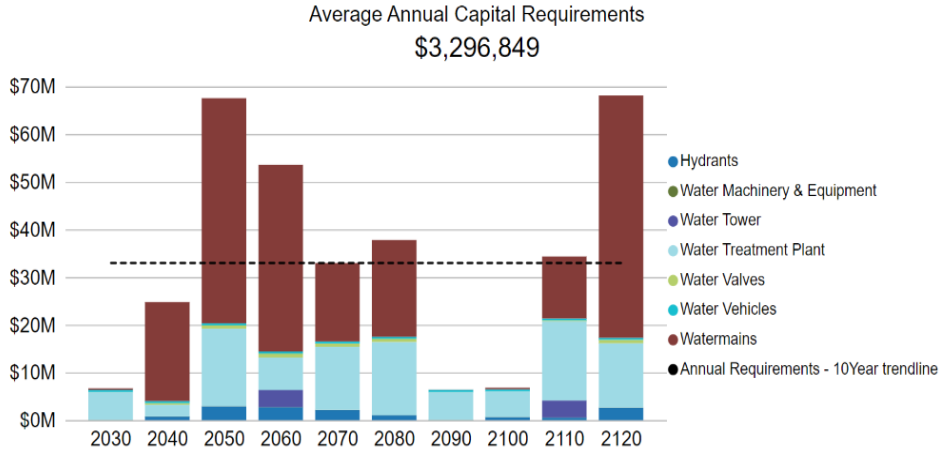
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on the network monthly (some areas are bimonthly)
	Annual valve turning program as well as hydrant inspections
Rehabilitation	A water relining program is not considered, as the network is relatively small and relining costs are significant.
Replacement	Watermain replacements are prioritized by age, material, diameter, and history of main breaks.
	The prioritized list of watermains is scheduled to align with work on the storm, wastewater, and roads networks

11.3.1 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 following graph identifies capital requirements over the next 100 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 10-year bins and the trend line represents the average 10-year capital requirements.

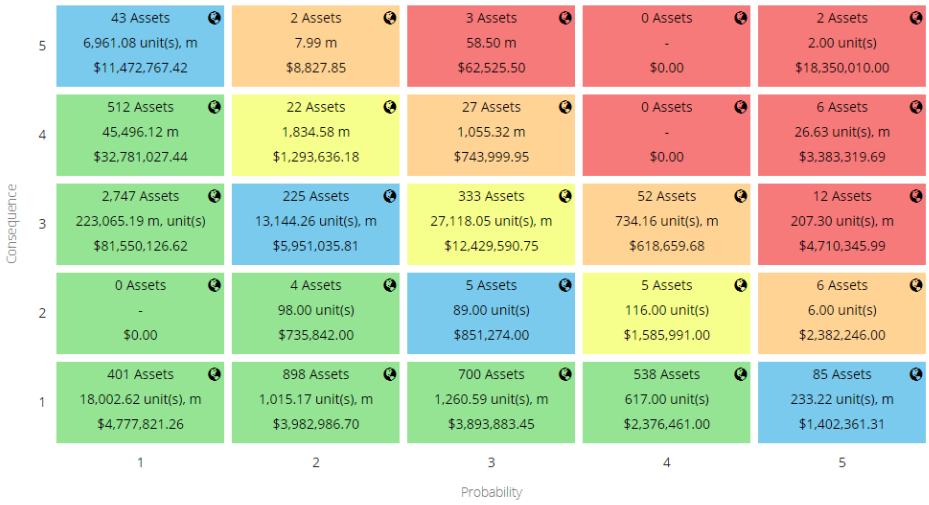


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

11.4 Risk & Criticality

11.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.



This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the water network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Material	Replacement Cost (Financial)
Service Life Remainng	Roadside Environment (Economic)
	AADT (Social)
Number of Watermain Breaks	Diameter (Social)
	Proximity to Critical Services (Health and Safety)

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

11.4.2 Risks to Current Asset Management Strategies

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

Infrastructure Design & Age

Both pipe material and aging infrastructure have been identified as the critical risk factors when managing the water network. Components of the treatment plant are deteriorating and have led to failures in recent years (i.e., clarifier failure 10 years ago). Ductile iron pipes are a concern; these pipes are brittle, which have led to unexpected breakages in recent years. Further, iron pipes corrode and can lead to color and odour issues with the supplied water. Currently, ductile iron pipes are prioritized for replacement to mitigate these risks.

11.5 Levels of Service

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

11.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix B
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix B
Reliability	Description of boil water advisories and service interruptions	Amherstburg generally has enough system pressure to prevent contamination during breaks, which usually does not require boil water advisories.

11.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal water system	88%
	% of fire hydrants and/or blow offs flushed annually	100%
	% of properties where fire flow is available	TBD
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	1/9042 = 0.01%
	# 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	5/9042 = 0.06%
	# of water quality customer complaints per capita related to the water system	5/9042 = 0.06%
	Annual capital reinvestment rate	1.1%
	% of the water system that is in good or very good condition	31%
	% of the water system that is in poor or very poor condition	39%

11.6 Recommendations

Asset Inventory

- Many of the treatment plant components are nearing, or have exceeded, their useful life. Staff should review and revise estimated useful life values to better reflect the true service life of water treatment components.
- There are a handful of watermains that could not be mapped (<5%), meaning the precise location is unknown. These assets should be reviewed to ensure there are no duplicate assets.

Replacement Costs

- Water treatment plant replacement costs are entirely based on inflated historical costs. Current market values should be used to ensure that the true replacement needs are known.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk water network assets.
- Consider developing proxy condition ratings for watermains.

Risk Management Strategies

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

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the 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.

12 Wastewater Network

The Wastewater Network provided by the Town includes the following:

- Amherstburg Wastewater Treatment Plant
- Big Creek Marsh Wastewater Treatment Plant
- Boblo Island Wastewater Treatment Plant
- Mcleod Wastewater Treatment Plant
- A collection system consisting of pumping stations, manholes, sewer mains, vehicles and equipment.

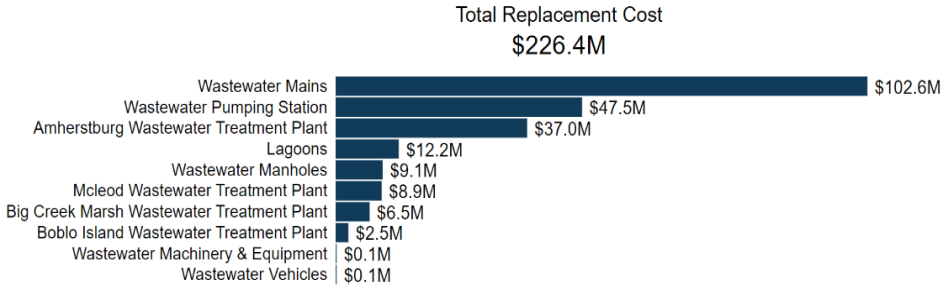
The state of the infrastructure for the wastewater network is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$226.4 million	Good (66%)	Annual Requirement:	$4.2 million
		Funding Available:	$2.5 million
		Annual Deficit:	$1.7 million

12.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Amherstburg Wastewater Treatment Plant	5	$36,956,000	$924,000
Big Creek Marsh Wastewater Treatment Plant	2	$6,548,000	$131,000
Boblo Island Wastewater Treatment Plant	3	$2,460,000	$49,000
Lagoons	5	$12,184,000	$406,000
Mcleod Wastewater Treatment Plant	3	$8,874,000	$177,000
Wastewater Machinery & Equipment	2	$92,000	$7,000
Wastewater Mains	190 kms	$102,603,000	$1,411,000
Wastewater Manholes	1317	$9,074,000	$121,000
Wastewater Pumping Station	62	$47,547,000	$951,000
Wastewater Vehicles	3	$70,000	$7,000
	Total	**$226,409,000**	**$4,184,000**



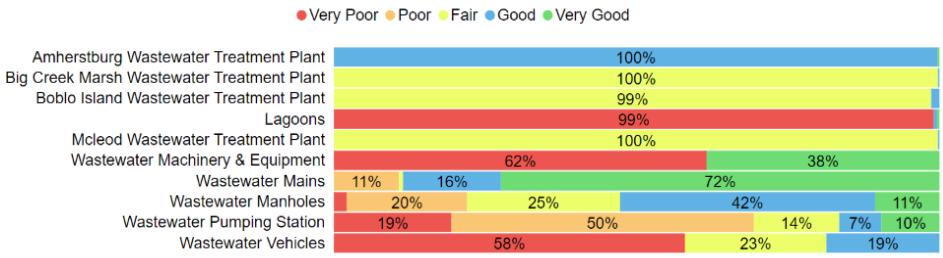
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

12.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. All wastewater networks rely on age and useful life to determine condition.

Asset Segment	Estimated Useful Life (Years)	Average Age	Average Condition (%)
Amherstburg Wastewater Treatment Plant	40-50	6.5	Good (79%)
Big Creek Marsh Wastewater Treatment Plant	40	13.0	Good (61%)
Boblo Island Wastewater Treatment Plant	50	12.8	Fair (53%)
Lagoons	30	19.7	Very Poor (1%)
Mcleod Wastewater Treatment Plant	50	11.5	Good (61%)
Wastewater Machinery & Equipment	10-40	6.0	Fair (44%)
Wastewater Mains	75	32.0	Very Good (84%)
Wastewater Manholes	75	31.8	Fair (58%)
Wastewater Pumping Station	50	25.2	Poor (38%)
Wastewater Vehicles	10	7.5	Poor (25%)
Average		**31.6**	Good (66%)

The graph below visually illustrates the average condition for each asset segment on a very good to very poor scale.



To ensure that the Town's wastewater 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 wastewater network.

Each asset's Estimated Useful Life should also 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.

12.2.1 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 Town's current approach:

- CCTV inspections occur on select sewer mains on a project basis currently. The Town is considering a network-wide proactive CCTV inspection program
- OCWA manages the operations and routine inspections of the treatment plants.

In this AMP the following rating criteria is used to determine the current condition of sewer network assets and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

12.3 Lifecycle Management Strategy

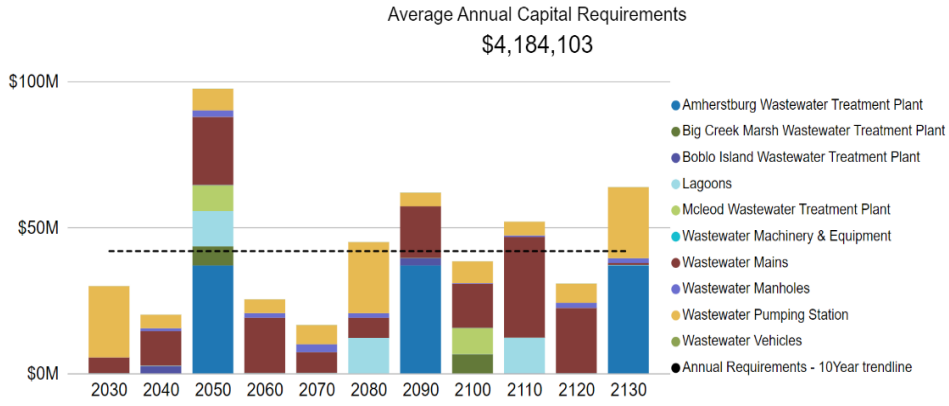
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	CCTV inspections occur on select sewer mains on a project basis currently
Preventative Maintenance	System flushing is performed on known flat areas
Rehabilitation	Relining is considered as an option instead of replacement at select locations. Pipes with known inflow and infiltration (I&I) issues are prioritized.

12.3.1 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 following graph identifies capital requirements over the next 110 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 10-year bins and the trend line represents the average 10-year capital requirements.

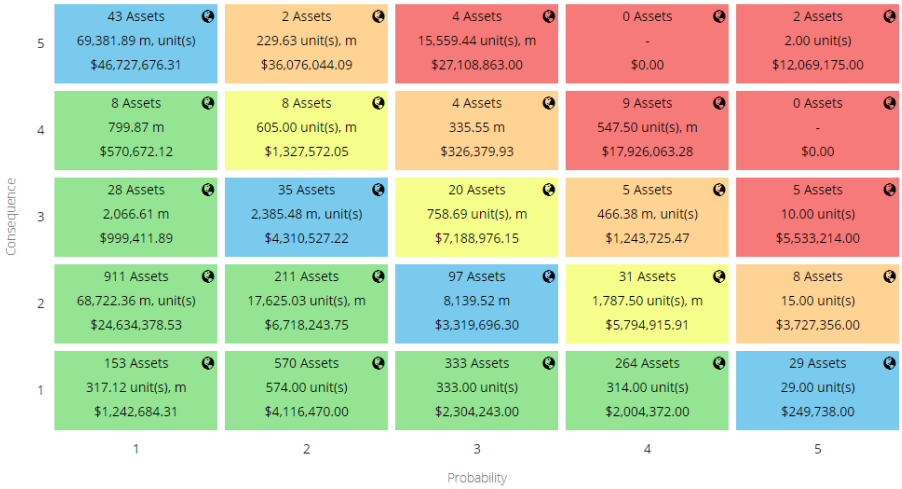


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

12.4 Risk & Criticality

12.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data.



This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the wastewater network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Material	Roadside Environment (Economic)
Service Life Remaining	AADT (Social)
Slope	
Number of surcharge/blockage events	Diameter (Social)
Undersize Pipe	

The identification of critical assets allows the Town to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

12.4.2 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 Events
With extreme weather events becoming more frequent, the town has experienced inflow & infiltration events from the stormwater system to the wastewater system. These events place a greater burden on the treatment plant since a greater volume of water needs to be treated. As a result, both the treatment plant and collection system will require upgrades to meet future demands.

12.5 Levels of Service

The following tables identify the Town's current level of service for wastewater 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.

12.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix B
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Town does not own any combined sewers
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Town does not own any combined sewers
	Description of how stormwater can get into wastewater sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter wastewater sewers due cross connections. Some stormwater is also able to enter the system from groundwater infiltration. The Town plans to investigate sources as part of a future program

Service Attribute	Qualitative Description	Current LOS (2021)
	Description of how wastewater sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	A By-Law is in place in the Town which forces residents to disconnect
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

12.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal wastewater system	70.5%
	% of mainline sanitary sewers flushed annually	4.2%
	# of O&M FTEs per 10km of sewer	8
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	0.0009
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0007
Performance	Capital re-investment rate	1.1%
	% of the wastewater system that is in good or very good condition	62%
	% of linear assets inspected annually	0%
	% of the wastewater system that is in poor or very poor condition	26%

12.6 Recommendations

Asset Inventory

- There are a handful of sewer mains that could not be mapped (<5%), meaning the precise location is unknown. These assets should be reviewed to ensure there are no duplicate assets.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk wastewater network assets.

Risk Management Strategies

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

Lifecycle Management Strategies

- A trenchless re-lining strategy is expected to extend the service life of wastewater 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 Town'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.

13 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

13.1 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 more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

13.1.1 The Corporation of the Town of Amherstburg Official Plan (February 2010)

The Town adopted a new Official Plan in 2010 to ensure conformance with the County of Essex Official Plan, and address matters of local planning interest. The Official Plan is a planning document for the purpose of guiding the future development of the Town of Amherstburg, which includes policies to direct the location and type of housing, industry, offices and sops, and streets, parks, transit, schools and recreational community facilities.

The Official Plan has been approved by the County of Essex on July 15, 2009 and the Ontario Municipal Board Approval Minutes of Settlement on February 3rd, 2010.

The Official Plan identifies area for new growth as areas that can be serviced with municipal sanitary sewer service and water supplies. The majority of the areas selected for future growth are extensions o established areas in order to efficiently provide services to residents of the community. The areas identified for residential development include the old Town of Amherstburg, lands south of the old Town, lands north of Texas Road, McGregor, Bois Blanc Island and Amherst Point. All these areas have sanitary sewer services available.

The majority of non-residential growth will be directed to the Town's Neighbourhood Commercial areas and General Commercial Areas, with some development permitted in Commercial Special Policy Areas, following the Commercial Land Use Designation Policies.

13.1.2 County of Essex Official Plan (April 2014)

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

The following table outlines the historical population, based on census data, and the population forecasts allocated to Amherstburg in the County of Essex Official Plan.

Year	Population
2011	21,556
2016	21,936
2021	23,524
2031	25,860

13.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, 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.

14 Financial Strategy

Key Insights

- The Town is committing approximately $14 million towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $24.3 million, there is currently a funding gap of $10.3 million annually
- For tax-funded assets, we recommend increasing tax revenues by 1.6% each year for the next 15 years to achieve a sustainable level of funding
- For the wastewater network, we recommend increasing rate revenues by 0.1% annually for the next 10 years to achieve a sustainable level of funding
- For the water network, we recommend increasing rate revenues by 1.4% annually for the next 10 years to achieve a sustainable level of funding

14.1 Financial Strategy Overview

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

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

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

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

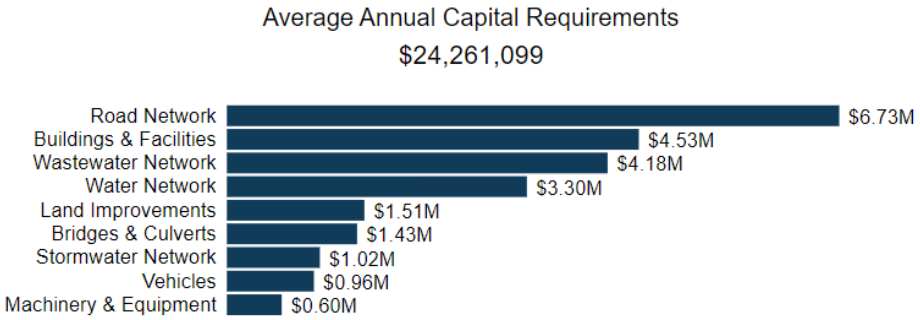
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town's approach to the following:

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:
    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.

14.1.1 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 $24.3 million annually to address capital requirements for the assets included in this AMP.



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

However, for the Road Network and Wastewater Network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Town's roads and wastewater mains respectively. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the Road Network and Wastewater Network:

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

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $13.98 million towards capital projects per year. Given the annual capital requirement of $24.3 million, there is currently a funding gap of $10.32 million annually.

14.2 Funding Objective

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

1. **Tax Funded Assets:** Road Network, Storm Network, Bridges & Culverts, Buildings & Facilities, Machinery & Equipment, Land Improvements and Vehicles.
2. **Rate-Funded Assets:** Water Network, Wastewater 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.

14.3 Financial Profile: Tax Funded Assets

14.3.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available					Annual Deficit
		Taxes	Gas Tax	OCIF	Taxes to Reserves	Total Available	
Road Network	6,730,000		1,132,000	1,732,000	2,048,000	4,912,000	1,818,000
Stormwater Network	1,022,000				309,000	309,000	713,000
Bridges & Culverts	1,431,000	58,000			658,000	716,000	715,000
Buildings & Facilities	4,527,000	107,000			1,370,000	1,477,000	3,050,000
Machinery & Equipment	603,000	32,000			255,000	287,000	316,000
Land Improvements	1,511,000	100,000			358,000	458,000	1,053,000
Vehicles	957,000	111,000			839,000	950,000	7,000
	16,780,000	**408,000**	**1,132,000**	**1,732,000**	**5,837,000**	**9,109,000**	**7,672,000**

The average annual CapEx requirement for the above categories is $16.78 million. Annual revenue currently allocated to these assets for capital purposes is $9.109 million leaving an annual deficit of $7.672 million. Put differently, these infrastructure categories are currently funded at 54.3% of their long-term requirements.

14.3.2 Full Funding Requirements

In 2022, the Town of Amherstburg has annual budgeted tax revenues of $26.829 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	6.8%
Stormwater Network	2.7%
Bridges & Culverts	2.7%
Buildings & Facilities	11.4%
Machinery & Equipment	1.2%
Land Improvements	3.9%
Vehicles	0.0%
	27.5%

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

a) Amherstburg's debt payments for these asset categories will be decreasing by $22 thousand over the next 5 years and 10 years, $671 thousand and $775 thousand over the next 15 and 20 years respectively.

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

	Without Capturing Changes				With Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	7,672,000	7,672,000	7,672,000	7,672,000	7,672,000	7,672,000	7,672,000	7,672,000
Change in Debt Costs	n/a	n/a	n/a	n/a	-22,000	-22,000	-671,000	-775,000
Resulting Deficit:	**5**	**10**	**15**	**20**	**5**	**10**	**15**	**20**
	7,672,000	7,672,000	7,672,000	7,672,000	7,650,000	7,650,000	7,001,000	6,897,000
Tax Increase Required	28.6%	28.6%	28.6%	28.6%	28.5%	28.5%	26.1%	25.7%
Annually:	**5.2%**	**2.6%**	**1.7%**	**1.3%**	**5.2%**	**2.6%**	**1.6%**	**1.2%**

14.3.3 Financial Strategy Recommendations

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

a) When realized, reallocating the debt cost reductions of $22 thousand to the infrastructure deficit as outlined above.
b) Increasing tax revenues by 1.6% 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) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
d) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
e) Allocating the current gas tax and OCIF revenue as outlined previously.
f) Allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.

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[2].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full CapEx funding on an annual basis in 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $6.844 million for the Stormwater Network, $2.262 million for Buildings, $1.936 million for Machinery & Equipment, $1.580 million for Vehicles and $538 thousand for Land Improvements.

[2] 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.

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.

14.4 Financial Profile: Rate Funded Assets

14.4.1 Current Funding Position

The following tables show, by asset category, Amherstburg's average annual asset CapEx requirements, current funding positions, and funding increases required to achieve full funding on assets funded by rates.

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit
		Rates	To Operations	Total Available	
Water Network	3,297,000	5,913,000	(3,568,000)	2,345,000	952,000
Wastewater Network	4,184,000	7,354,000	(4,832,000)	2,522,000	1,662,000
	7,481,000	**13,267,000**	**(8,400,000)**	**4,867,000**	**2,614,000**

The average annual CapEx requirement for the above categories is $7.481 million. Annual revenue currently allocated to these assets for capital purposes is $4.867 million leaving an annual deficit of $2.614 million. Put differently, these infrastructure categories are currently funded at 65.1% of their long-term requirements.

14.4.2 Full Funding Requirements

In 2022, Amherstburg had annual budgeted water revenues of $5.913 million and annual sanitary revenues of $7.354 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	16.1%
Wastewater Network	22.6%

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

a) Amherstburg's debt payments for the Water Network will be decreasing by $97 thousand over the next 5 and 10 years, $310 thousand and $354 thousand over the next 15 and 20 years respectively.
b) Amherstburg's debt payments for the Wastewater Network will be decreasing $293 thousand over the next 5 years, $1.614 million over the next 10 years,

$2.228 million over the next 15 and $2.302 million over the next 20 years respectively.

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							
	No reallocation of decrease in debt payment				Reallocation of decrease in debt payments			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	952,000	952,000	952,000	952,000	952,000	952,000	952,000	952,000
Decrease in debt payments	n/a	n/a	n/a	n/a	(97,000)	(97,000)	(310,000)	(354,000)
Resulting Infrastructure Deficit:	**5**	**10**	**15**	**20**	**5**	**10**	**15**	**20**
	952,000	952,000	952,000	952,000	855,000	855,000	642,000	598,000
Tax Increase Required	16.1%	16.1%	16.1%	16.1%	14.5%	14.5%	10.9%	10.1%
Annually:	**3.1%**	**1.6%**	**1.1%**	**0.8%**	**2.8%**	**1.4%**	**0.7%**	**0.5%**

	Wastewater Network							
	No reallocation of decrease in debt payment				Reallocation of decrease in debt payments			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	1,662,000	1,662,000	1,662,000	1,662,000	1,662,000	1,662,000	1,662,000	1,662,000
Decrease in debt payments	n/a	n/a	n/a	n/a	(293,000)	(1,614,000)	(2,228,000)	(2,302,000)
Resulting Infrastructure Deficit:	**5**	**10**	**15**	**20**	**5**	**10**	**15**	**20**
	1,662,000	1,662,000	1,662,000	1,662,000	1,369,000	48,000	-566,000	-640,000
Tax Increase Required	22.6%	22.6%	22.6%	22.6%	18.6%	0.7%	-7.7%	-8.7%
Annually:	**4.2%**	**2.1%**	**1.4%**	**1.1%**	**3.5%**	**0.1%**	**-0.6%**	**-0.5%**

14.4.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 5-year option for the Water Network and the 5-year option for the Wastewater Network that includes debt cost reallocations. This involves full CapEx funding being achieved by:

a) When realized, reallocating the debt cost reductions of $97 thousand for the Water Network and $293 thousand for the Wastewater Network to the infrastructure deficit as outlined above.
b) Increasing rate revenues by 1.4% for water services the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) Increasing rate revenues by 0.1% for wastewater services each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
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. 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 CapEx funding on an annual basis in 5 years for the Water and Wastewater Network, 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 $17.638 million for the Water Network and $12.117 million for the Wastewater 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.

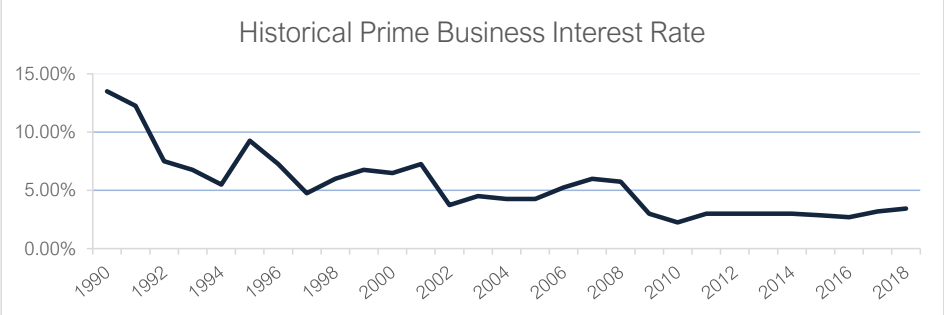
14.6 Use of Debt

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

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

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

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



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

The following tables outline how Amherstburg has historically used debt for investing in the asset categories as listed. There is currently $19.295 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $3.431 million, well within its provincially prescribed maximum of $7.165 million as of 2020. However, the Town's Council approved 2022 debt policy allows a remaining room for debt of $2.858 million.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2018	2019	2020	2021	2022
Road Network	3,837,000		1,554,000			
Stormwater Network						
Bridges & Culverts						
Buildings & Facilities	4,545,000					
Machinery & Equipment	42,000					
Land Improvements	266,000					
Vehicles	3,837,000					
Total Tax Funded:	**8,690,000**	**0**	**1,554,000**	**0**	**0**	**0**
Water Network	2,641,000					
Wastewater Network	16,654,000		1,147,000			
Total Rate Funded:	**19,295,000**	**0**	**1,147,000**	**0**	**0**	**0**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2022	2023	2024	2025	2026	2027	2032
Road Network							
Stormwater Network	366,000	366,000	366,000	366,000	366,000	366,000	366,000
Bridges & Culverts							
Buildings & Facilities	359,000	359,000	359,000	359,000	359,000	359,000	359,000
Machinery & Equipment	22,000	22,000	22,000	0	0	0	0
Land Improvements	28,000	28,000	28,000	28,000	28,000	28,000	28,000
Vehicles							
Total Tax Funded:	**775,000**	**775,000**	**775,000**	**753,000**	**753,000**	**753,000**	**753,000**
Water Network	354,000	344,000	328,000	257,000	257,000	257,000	257,000
Wastewater Network	2,302,000	2,010,000	2,010,000	2,009,000	2,009,000	2,009,000	688,000
Total Rate Funded:	**2,656,000**	**2,354,000**	**2,338,000**	**2,266,000**	**2,266,000**	**2,266,000**	**945,000**

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

14.7 Use of Reserves

14.7.1 Available Reserves

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

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

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

Asset Category	Balance on December 31, 2021
Road Network	3,478,000
Stormwater Network	521,000
Bridges & Culverts	730,000
Buildings & Facilities	3,940,000
Machinery & Equipment	824,000
Land Improvements	603,000
Vehicles	1,581,000
Total Tax Funded:	**11,677,000**
Water Network	1,696,000
Wastewater Network	1,934,000
Total Rate Funded:	**3,630,000**

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 Amherstburg'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.

14.7.2 Recommendation

In 2024, Ontario Regulation 588/17 will require Amherstburg 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.

15 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 provides additional guidance on the development of a condition assessment program

Appendix A: 10-Year Capital Requirements

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

Road Network

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Asphalt Road Surface (Rural)	$14.6 M	$9,136,084	$1,613,190	$2,311,098	$2,655,578	$2,945,315	$571,911	$386,862	$1,785,453	$1,924,748	$1,101,299
Asphalt Road Surface (Urban)	$21.1 M	$9,501,069	$4,265,813	$3,711,468	$4,677,735	$4,720,504	$7,576,020	$3,494,711	$5,332,080	$516,206	$1,450,510
Sidewalks	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights	$0	$259,678	$0	$0	$0	$0	$0	$76,670	$0	$0	$0
Tar & Chip Road Surface	$469,488	$201,235	$60,358	$44,246	$151,741	$72,311	$44,346	$20,604	$1,440	$0	$0
	$0	**$19,098,067**	**$5,939,360**	**$6,066,813**	**$7,485,055**	**$7,738,130**	**$8,192,277**	**$3,978,847**	**$7,118,973**	**$2,440,955**	**$2,551,810**

Bridges & Culverts

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Bridge Culverts	$0	$341,539	$738,810	$0	$0	$0	$0	$0	$0	$0	$113,950
Bridges	$0	$1,030,000	$0	$0	$1,817,125	$3,363,437	$726,200	$0	$2,815,905	$0	$3,072,895
Structural Culverts	$0	$779,970	$672,652	$766,608	$1,515,914	$0	$684,589	$494,320	$738,281	$142,020	$226,141
	$0	**$2,151,509**	**$1,411,462**	**$766,608**	**$3,333,039**	**$3,363,437**	**$1,410,789**	**$494,320**	**$3,554,186**	**$142,020**	**$3,412,986**

Stormwater Network

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Catchbasins	$2,534,049	$69,485	$0	$291,775	$393,876	$814,120	$1,307,075	$309,130	$81,200	$156,700	$190,825
Storm Mains	$3,208,442	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Manholes	$1,101,440	$89,492	$0	$61,956	$123,912	$234,056	$392,388	$172,100	$27,536	$82,608	$61,956
Storm Pumping Stations	$0	$0	$0	$37,082	$0	$0	$0	$36,644	$0	$42,197	$0
	$6,843,931	**$158,977**	**$0**	**$390,813**	**$517,788**	**$1,048,176**	**$1,699,463**	**$517,874**	**$108,736**	**$281,505**	**$252,781**

Buildings & Facilities

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fire Stations	$0	$0	$0	$17,603	$420,102	$1,243,493	$636,510	$376,635	$0	$2,377,682	$195,048
Gordon House	$0	$0	$0	$38,824	$0	$101,639	$0	$49,083	$25,926	$0	$0
Library Carnegie Building	$0	$0	$78,760	$127,848	$11,113	$0	$286,449	$0	$0	$203,189	$0
Libo Credit Union Building	$2,262,375	$0	$0	$88,372	$3,016,500	$0	$2,262,375	$588,024	$0	$0	$0
Parks Buildings	$0	$38,975	$25,512	$64,577	$409,417	$148,893	$394,260	$44,410	$5,330	$202,662	$31,923
Police Station	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Public Works Buildings	$0	$0	$0	$78,429	$1,039,949	$789,876	$168,377	$171,911	$0	$82,974	$0
St. Bernards Community Center	$0	$43,851	$0	$0	$1,373,179	$51,571	$362,783	$678,057	$0	$0	$0
Town Hall & Fire Station One	$0	$278,837	$1,436,898	$2,851,568	$241,689	$538,226	$297,389	$623,222	$917,804	$1,714,308	$97,730
	$2,262,375	**$361,663**	**$1,541,169**	**$3,267,220**	**$6,511,950**	**$2,873,699**	**$4,408,142**	**$2,531,343**	**$949,060**	**$4,580,815**	**$324,702**

Machinery & Equipment

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fire	$314,900	$19,500	$11,200	$45,000	$62,900	$261,700	$187,400	$104,500	$36,000	$35,500	$118,100
IT	$95,725	$112,175	$97,275	$62,999	$78,438	$22,510	$246,437	$57,475	$11,550	$126,600	$80,024
Parks	$52,936	$123,700	$2,790	$5,525	$1,500	$79,150	$444,790	$4,790	$11,040	$274,220	$74,425
Public Works	$1,336,219	$3,011	$7,720	$43,965	$24,394	$37,735	$38,855	$174,241	$378,400	$0	$0
Recreation	$136,200	$0	$0	$0	$0	$0	$0	$75,242	$0	$0	$130,000
	$1,935,980	**$258,386**	**$118,985**	**$157,489**	**$167,232**	**$401,095**	**$917,482**	**$416,248**	**$436,990**	**$436,320**	**$402,549**

Vehicles

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Building	$35,000	$0	$0	$0	$0	$0	$0	$35,000	$0	$0	$0
By-law	$0	$0	$28,146	$0	$0	$45,000	$0	$0	$0	$0	$0
Fire – Heavy Duty	$0	$0	$1,040,000	$0	$0	$0	$2,530,000	$0	$0	$0	$1,490,000
Fire – Light Duty	$0	$0	$81,000	$0	$0	$0	$85,000	$0	$0	$0	$1,020,000
Parks and Facilities	$151,434	$25,327	$0	$0	$0	$0	$0	$67,994	$197,319	$0	$0
Public Works – Heavy Duty	$0	$0	$0	$0	$0	$0	$0	$110,000	$288,126	$0	$310,000
Public Works – Light Duty	$206,584	$0	$0	$85,000	$0	$165,000	$86,106	$75,000	$0	$0	$90,000
Public Works – Medium Duty	$1,187,031	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$1,580,049	**$25,327**	**$1,149,146**	**$85,000**	**$0**	**$210,000**	**$2,701,106**	**$287,994**	**$485,445**	**$0**	**$2,910,000**

Land Improvements

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fencing	$25,000	$0	$0	$52,493	$0	$803,000	$0	$0	$0	$598,769	$175,000
Parking Lot	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$1,310,000	$60,000
Pathways/Signage	$0	$0	$0	$0	$0	$1,000	$0	$0	$0	$0	$0
Playground	$0	$2,000	$0	$0	$0	$225,000	$0	$0	$0	$1,550,000	$0
Sports Fields & Parks Amentities	$363,158	$824,500	$0	$0	$162,500	$5,000	$140,000	$180,000	$0	$0	$748,500
Structures	$0	$0	$0	$0	$0	$300,000	$439,000	$300,000	$0	$300,000	$0
	$438,158	**$826,500**	**$0**	**$52,493**	**$162,500**	**$1,334,000**	**$579,000**	**$480,000**	**$0**	**$2,638,769**	**$943,500**

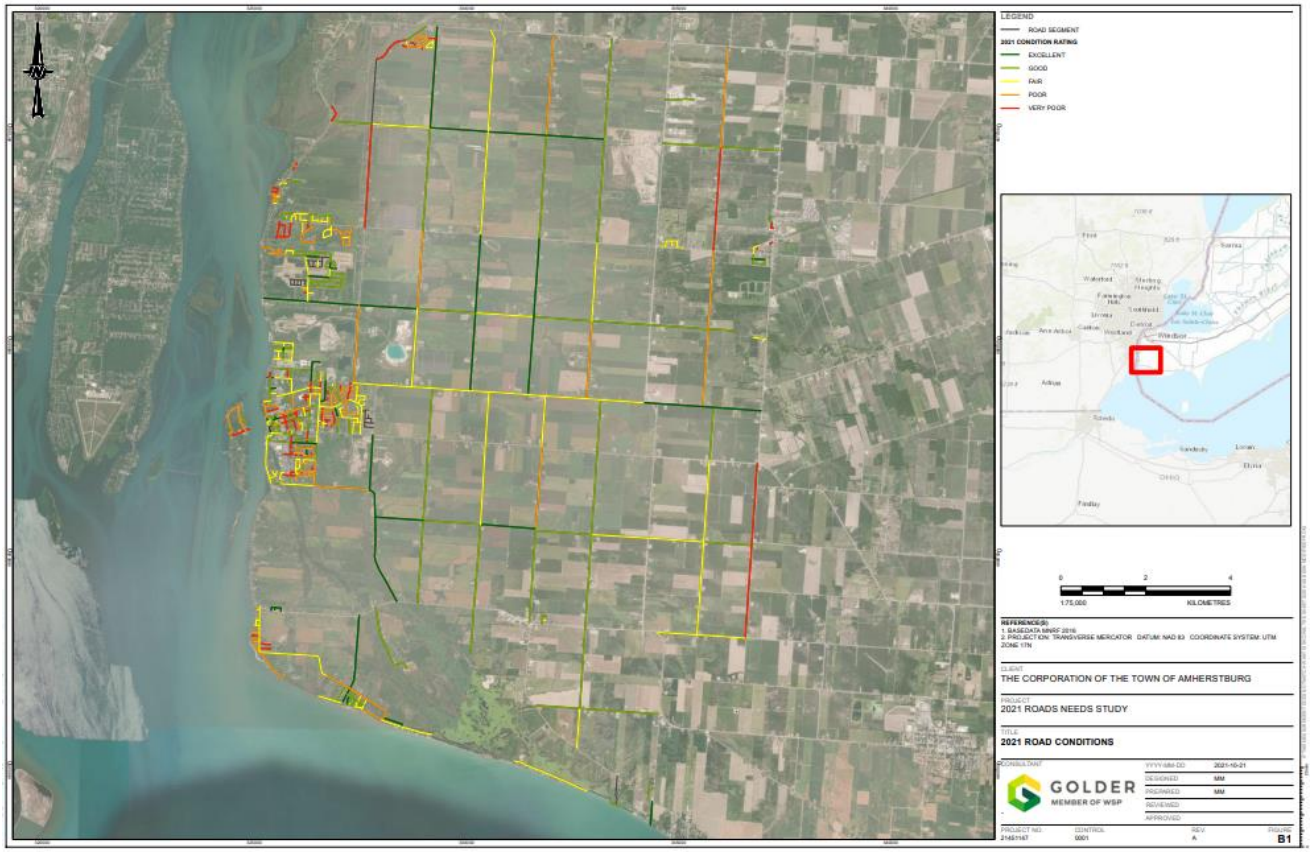
Water Network

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Hydrants	$14,553	$0	$0	$0	$0	$656,110	$0	$0	$0	$0	$0
Water Machinery & Equipment	$2,850	$0	$5,000	$0	$0	$0	$1,000	$0	$500	$0	$0
Water Tower	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Treatment Plant	$17,466,619	$9,900,017	$237,799	$0	$0	$0	$0	$0	$0	$555,331	$489,125
Water Valves	$24,000	$0	$0	$0	$0	$7,500	$0	$0	$0	$0	$0
Water Vehicles	$130,333	$63,381	$30,878	$160,782	$0	$0	$0	$22,095	$19,651	$0	$0
Watermains	$0	$0	$0	$0	$0	$309,002	$0	$0	$0	$0	$0
	$17,638,355	**$9,963,398**	**$273,677**	**$160,782**	**$0**	**$972,612**	**$1,000**	**$22,095**	**$20,151**	**$555,331**	**$489,125**

Wastewater Network											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Amherstburg Wastewater Treatment Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Big Creek Marsh Wastewater Treatment Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Boblo Island Wastewater Treatment Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Lagoons	$12,069,175	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Mcleod Wastewater Treatment Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Wastewater Machinery & Equipment	$0	$0	$0	$56,874	$0	$0	$0	$0	$0	$0	$0
Wastewater Mains	$0	$0	$0	$0	$0	$0	$83,395	$0	$75,399	$0	$0
Wastewater Manholes	$6,888	$0	$0	$0	$0	$82,656	$0	$0	$75,768	$0	$0
Wastewater Pumping Station	$0	$0	$0	$0	$0	$0	$0	$2,986,086	$0	$3,532,674	$1,236,992
Wastewater Vehicles	$40,465	$0	$0	$0	$0	$0	$0	$16,315	$13,049	$0	$0
	$12,116,528	**$0**	**$0**	**$56,874**	**$0**	**$82,656**	**$83,395**	**$3,002,401**	**$164,216**	**$3,532,674**	**$1,236,992**

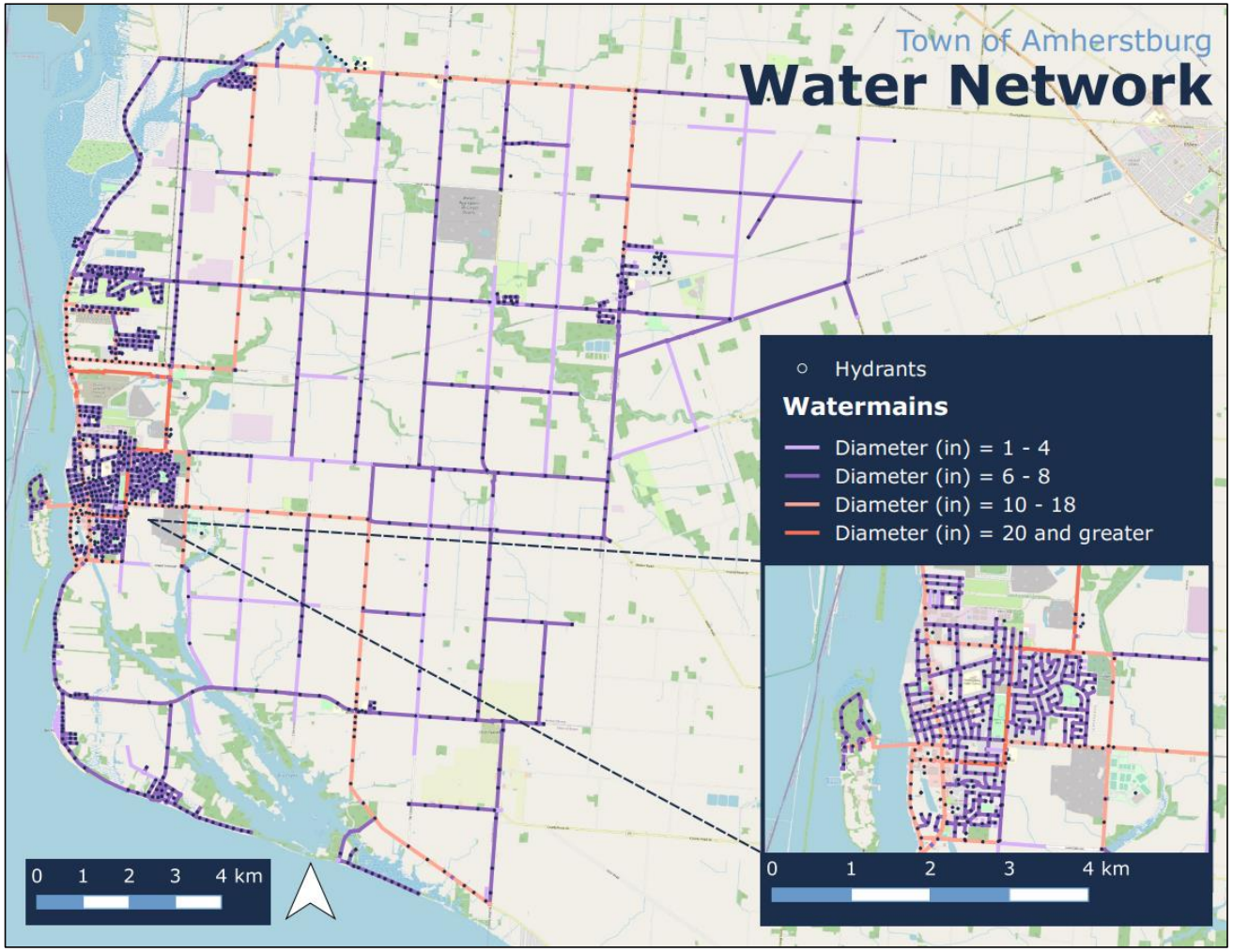
Appendix B: Level of Service Maps

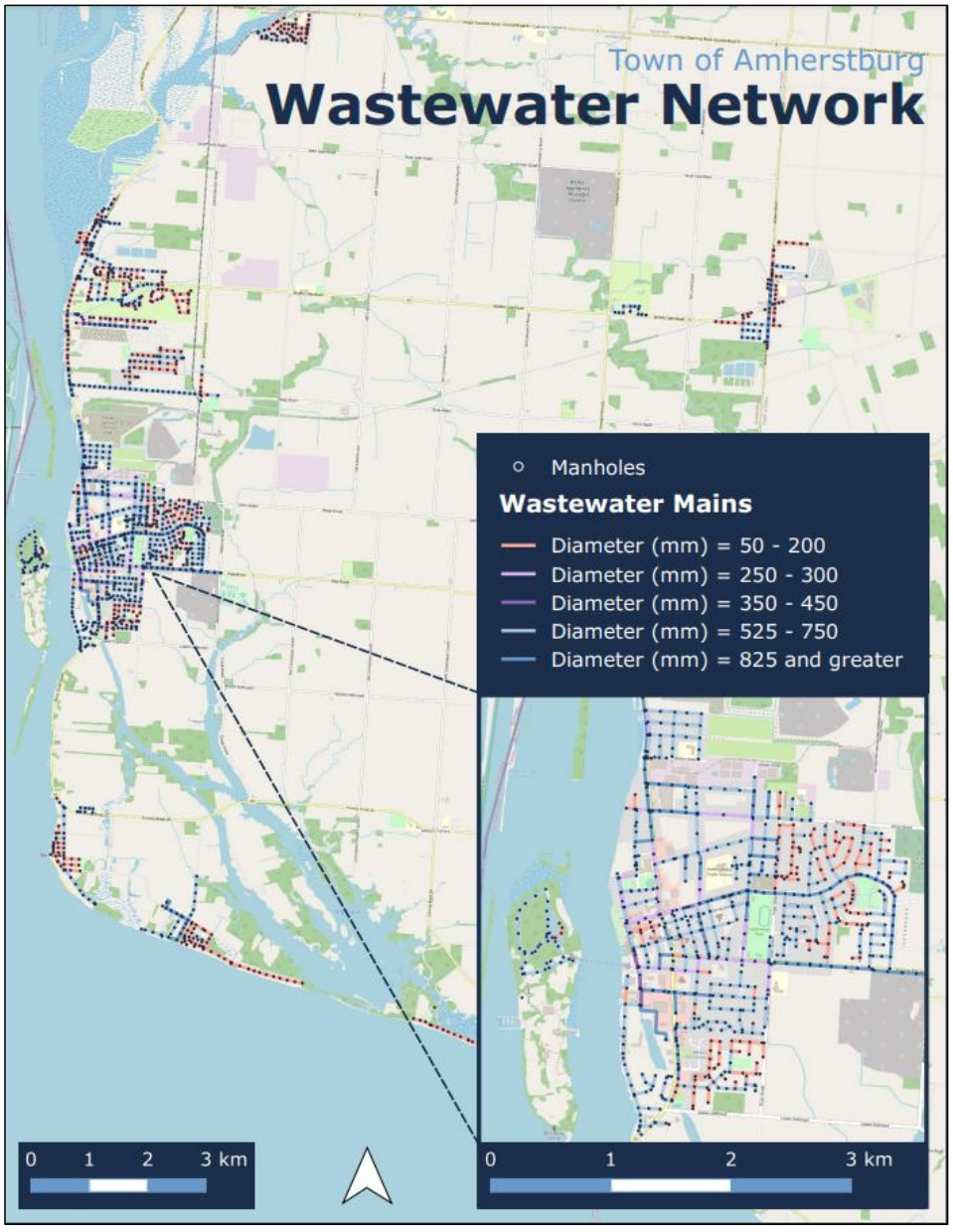
Road Network Map

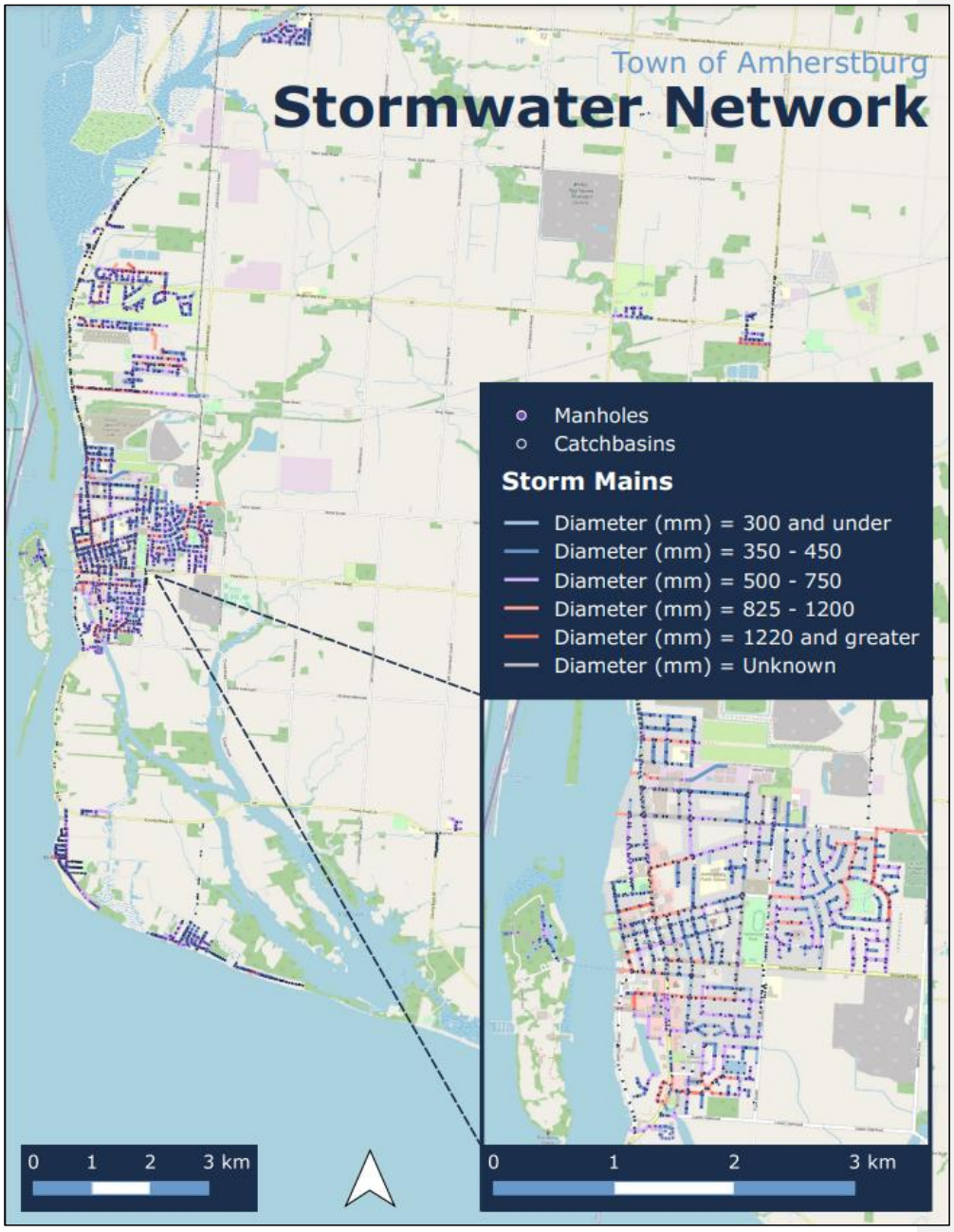


Images of Bridge in Good Condition

Images of Culvert in Fair Condition


Town of Amherstburg
Water Network
Hydrants
Watermains
Diameter (in) = 1 - 4
Diameter (in) = 6 - 8
Diameter (in) = 10 - 18
Diameter (in) = 20 and greater
0 1 2 3 4 km
0 1 2 3 4 km


Town of Amherstburg
Wastewater Network
Manholes
Wastewater Mains
Diameter (mm) = 50 - 200
Diameter (mm) = 250 - 300
Diameter (mm) = 350 - 450
Diameter (mm) = 525 - 750
Diameter (mm) = 825 and greater
0 1 2 3 km
0 1 2 3 km


Town of Amherstburg
Stormwater Network
Manholes
Catchbasins
Storm Mains
Diameter (mm) = 300 and under
Diameter (mm) = 350 - 450
Diameter (mm) = 500 - 750
Diameter (mm) = 825 - 1200
Diameter (mm) = 1220 and greater
Diameter (mm) = Unknown
0 1 2 3 km
0 1 2 3 km

Appendix C: 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