



August 2020

# The Asset Management Plan for the Township of Hornepayne

# Key Statistics

<p><b>\$72.8 million</b></p> <p>Replacement cost of asset portfolio</p>	<p><b>\$179,748</b></p> <p>Replacement cost of infrastructure per household (2016)</p>
<p><b>2.66%</b></p> <p>Target average annual infrastructure reinvestment rate</p>	<p><b>0.63%</b></p> <p>Actual average annual infrastructure reinvestment rate</p>
<p><b>64%</b></p> <p>Percentage of assets in fair or better condition</p>	<p><b>23%</b></p> <p>Percentage of assets with assessed condition data</p>
<p><b>48%</b></p> <p>Percentage of sustainable capital funding that comes from the Federal Gas Tax/OCIF</p>	<p><b>24%</b></p> <p>Percentage of annual infrastructure needs funded from sustainable revenue sources</p>
<p><b>\$1.48 million</b></p> <p>Annual capital infrastructure deficit</p>	<p><b>20 years</b></p> <p>Recommended timeframe for eliminating annual infrastructure deficit</p>

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# Executive Summary

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

All municipalities in Ontario are required to complete an asset management plan (AMP) in accordance with Ontario Regulation 588/17 (O. Reg. 588/17). This AMP outlines the current state of asset management planning in the Township of Hornepayne. It identifies the current practices and strategies that are in place to manage public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Township can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

This AMP includes the following asset categories:

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

The overall replacement cost of the asset categories included in this AMP totals \$72.8 million. 64% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 23% of assets. For the remaining 77% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP has used a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township’s average annual capital requirement totals \$1.9 million. Based on a historical analysis of revenue sources and capital spending, the Township is committing approximately \$457,000 towards capital projects per year. As a result, there is currently an annual funding gap of \$1.48 million. However, the Township’s recent capital spending is heavily reliant on grant funding programs from other levels of government. There is significant concern that a reduction in grant funding will contribute to an expanding infrastructure deficit.

A financial strategy was developed to address the annual capital funding gap. The following table identifies the annual tax/rate change required to eliminate the Township’s infrastructure deficit:

Funding Source	Years Until Full Funding	Total Tax/Rate Change	Average Annual Tax/Rate Change
Tax-Funded Assets	20 Years	33.6%	1.7%
Rate-Funded (Water)	20 Years	62.6%	3.1%
Rate-Funded (Sanitary)	20 Years	92.5%	4.6%

This AMP represents a snapshot in time and is based on the best available processes, data, and information at the Township. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources. Several recommendations have been developed to guide the continuous refinement of the Township’s asset management program. These include:

- a) asset inventory data review and validation to ensure that asset management planning and decision-making is based on the best available data on municipal infrastructure
- b) the development of condition assessment strategies for all asset categories to increase confidence in the accuracy and reliability of projected capital requirements
- c) the development of both short- and long-term capital plans that account for projected capital requirements and are supported by a financial strategy
- d) the development of a levels of service framework across all asset categories and the identification of both current and proposed levels of service

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

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

# AM Program Recommendations

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

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

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

## AM Program Recommendations

Recommendation Category	Recommendation Details	Applicable Asset Categories
<b>Asset Inventory/Data Refinement</b>	Develop Sidewalk Inventory	Road Network
	Review Scope & Quality of Inventory	Storm Water Network
	Develop a Component-Based Inventory	Buildings & Facilities
	Review Replacement Costs	Buildings & Facilities
		Machinery & Equipment
		Vehicles
Review GIS/TCA Data Management	Land Improvements	
	Waste Disposal	
<b>Condition Assessment Strategies</b>	Develop a Condition Assessment Strategy	Water Network Sanitary Sewer Network
	Review Backlog Assets	All Asset Categories
		Machinery & Equipment
		Vehicles
		Land Improvements
Waste Disposal		
<b>Lifecycle Management Strategies</b>	Develop a Short-Term Capital Plan	Water Network Sanitary Sewer Network
	Develop a Long-Term Capital Plan	Road Network Machinery & Equipment Vehicles
	Identify Proactive Lifecycle Strategy	Buildings & Facilities
		Water Network
<b>Levels of Service</b>	Measure Current Levels of Service	Sanitary Sewer Network
	Identify Additional LOS Metrics	Road Network
		Bridges & Culverts
		Storm Water Network
	Identify Proposed Levels of Service	Water Network
		Sanitary Sewer Network
Identify Current Levels of Service Metrics	Buildings & Facilities Machinery & Equipment Vehicles Land Improvements	

# 1 Introduction & Context

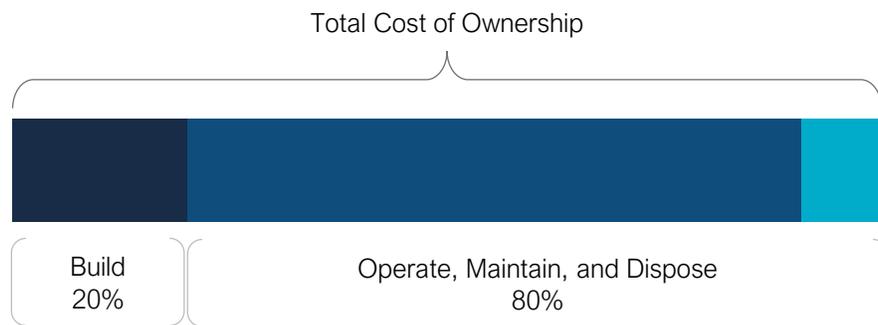
## Key Insights

- 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 Township'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, 2021 and 2024

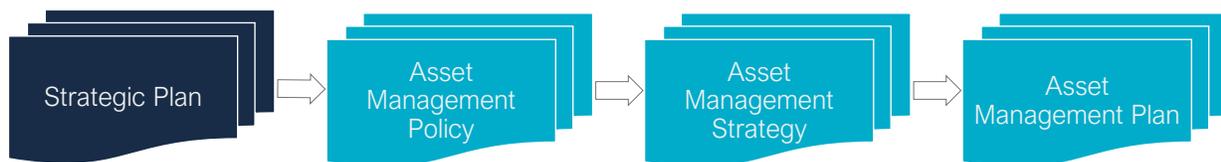
# 1.1 An Overview of Asset Management

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

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



These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program. The diagram below depicts an industry-standard approach and sequence to developing a practical asset management program.



The diagram, adopted from the Institute of Asset Management (IAM), illustrates the concept of 'line of sight', or alignment between the corporate strategic plan and various asset management documents. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

### 1.1.1 Asset Management Policy

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

The Township's Asset Management Policy was adopted in 2019 (By-Law No. 1739) and it aligns with the key principles outlined under the Infrastructure for Jobs and Prosperity Act, 2015. This Asset Management Plan is a key component of the activities outlined within the 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 municipality plans to achieve asset management objectives through planned activities and decision-making criteria.

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

### 1.1.3 Asset Management Plan

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

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

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

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

## 1.2.2 Risk Management Strategies

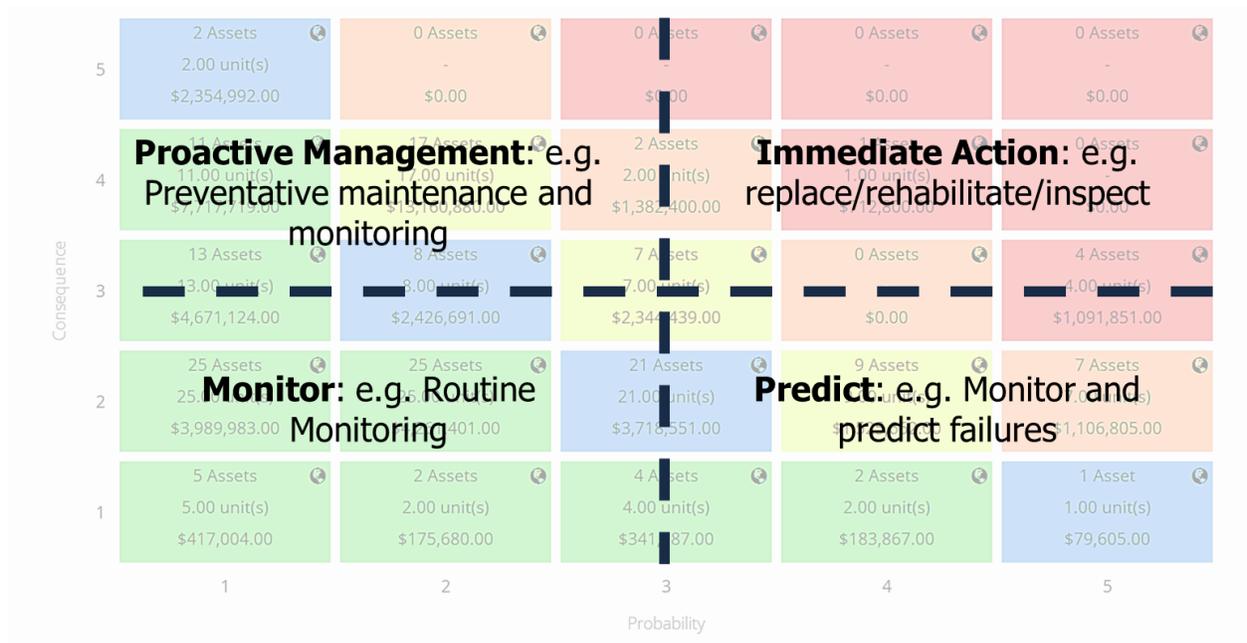
Municipalities generally take a ‘worst-first’ approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal, and some assets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

For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road servicing a handful of properties. Asset risk and criticality is a key component of both short- and long-term planning.

$$\text{Risk Rating} = \text{Probability of Failure} \times \text{Consequence of Failure}$$

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

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



## 1.2.3 Levels of Service

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

### Community Levels of Service

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

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

### Technical Levels of Service

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

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

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

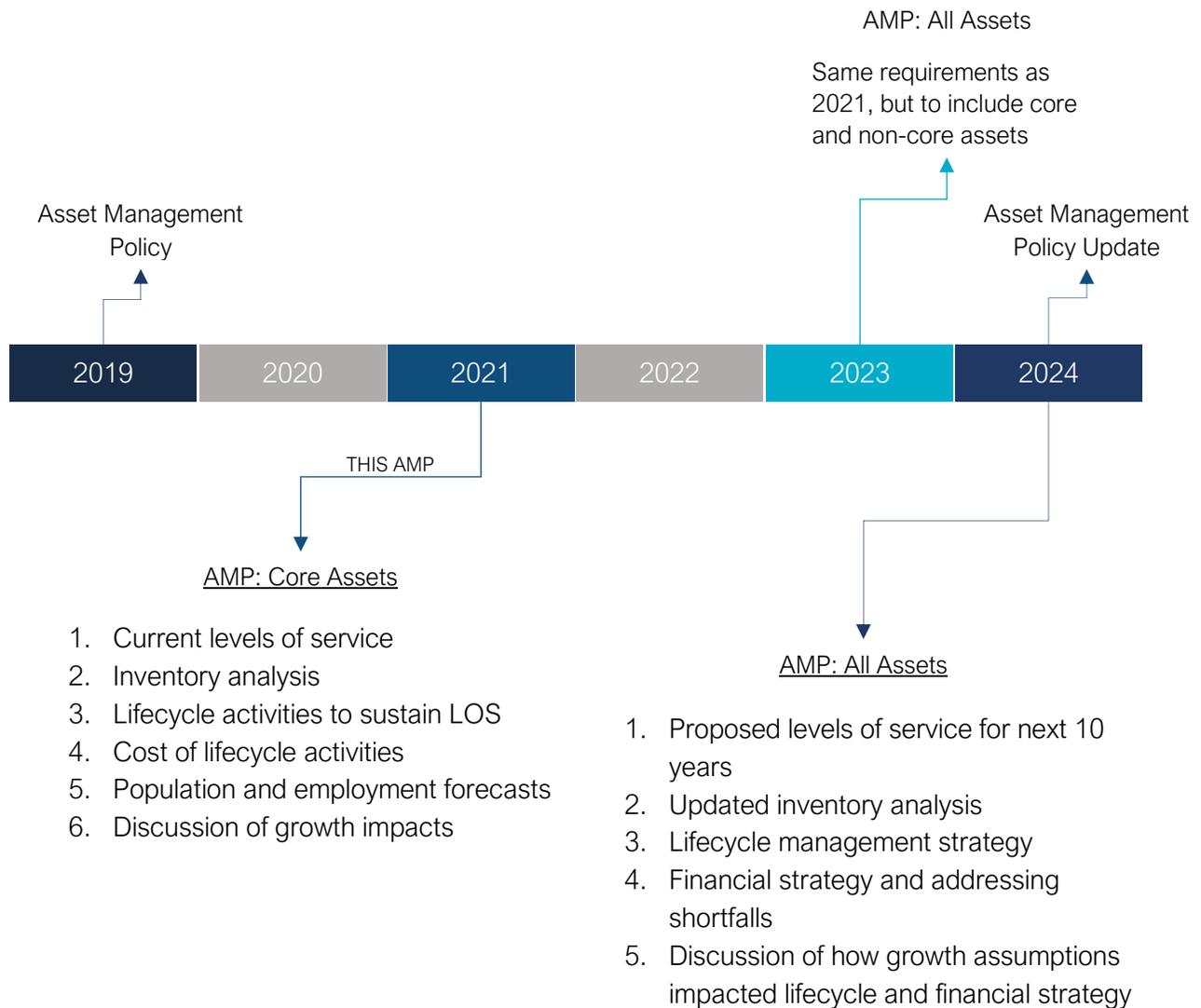
Proposed levels of service should be realistic and achievable within the timeframe outlined by the Township. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability.

Once proposed levels of service have been established, and prior to July 2024, the Township must identify a lifecycle management and financial strategy which allows these targets to be achieved.

# 1.3 Ontario Regulation 588/17

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

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



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

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2021. Next to each requirement a page or section reference is included in addition to any necessary commentary.

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

# 2 Scope and Methodology

## Key Insights

- This asset management plan includes 10 asset categories and is divided between tax-funded and rate-funded categories
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life

## 2.1 Asset Data Hierarchy

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

### 2.1.1 Asset Categories

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

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

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

### 2.1.2 Asset Segments

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

Asset Category	Asset Segment (Departmental)
Vehicles	Airport Vehicles
	Fire Vehicles
	Public Works Vehicles

Asset Category	Asset Segment (Characteristics)
Storm Water Network	Catch Basins
	Storm Sewers

## 2.2 Deriving Replacement Costs

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

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

- **Unit Cost:** A unit-based cost (e.g. per metre) determined through a review recent contracts, reports and/or staff estimates
- **Historical Cost Inflation:** Inflation of the asset cost recorded at the time it was initially acquired to today's value using an index (e.g. CPI or NRBCPI)

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

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

Asset Category	Replacement Cost Method	
	Unit Cost	Cost Inflation
Bridges & Culverts	100%	-
Buildings & Facilities	-	100%
Land Improvements	-	100%
Machinery & Equipment	-	100%
Road Network	94%	6%
Vehicles	-	100%
Storm Water Network	-	100%
Waste Disposal	-	100%
Water Network	35%	65%
Sanitary Sewer Network	73%	27%
<b>Overall:</b>	<b>49%</b>	<b>51%</b>

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

## 2.3 Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Township expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this 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 Township can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Township can more accurately forecast when it will require replacement. The SLR is calculated as follows:

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

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

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

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

## 2.5 Deriving Asset Condition

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

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Township's asset portfolio. The table below outlines the condition rating system used in this AMP to determine asset condition. This rating system is aligned with the Canadian Core Public Infrastructure Survey which is used to develop the Canadian Infrastructure Report Card. When assessed condition data is not available, service life remaining is used to approximate asset condition.

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

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

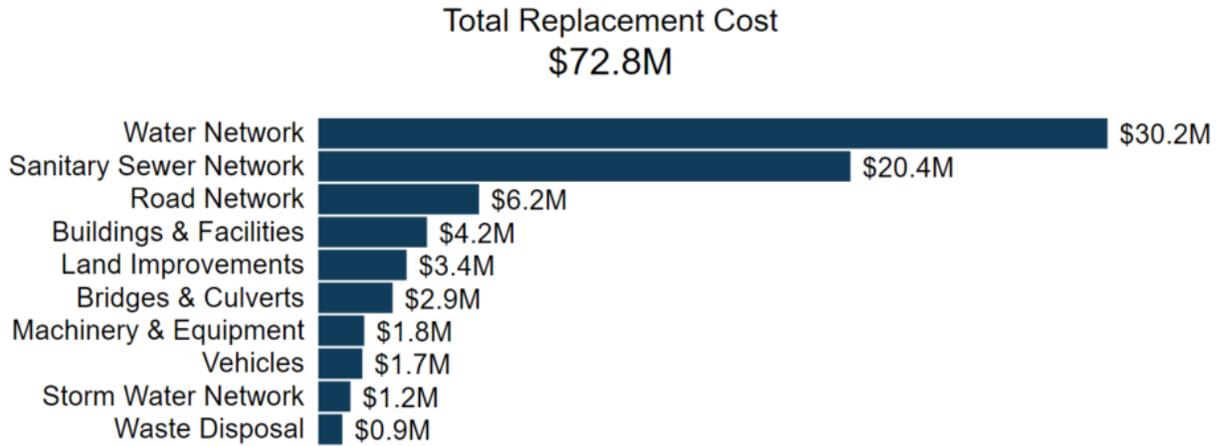
# 3 Portfolio Overview

## Key Insights

- The total replacement cost of the Township's asset portfolio is \$72.8 million
- The Township's target re-investment rate is 2.66%, and the actual re-investment rate is 0.63%, contributing to an expanding infrastructure deficit
- 64% of all assets are in fair or better condition
- 28% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total \$1.9 million per year across all assets

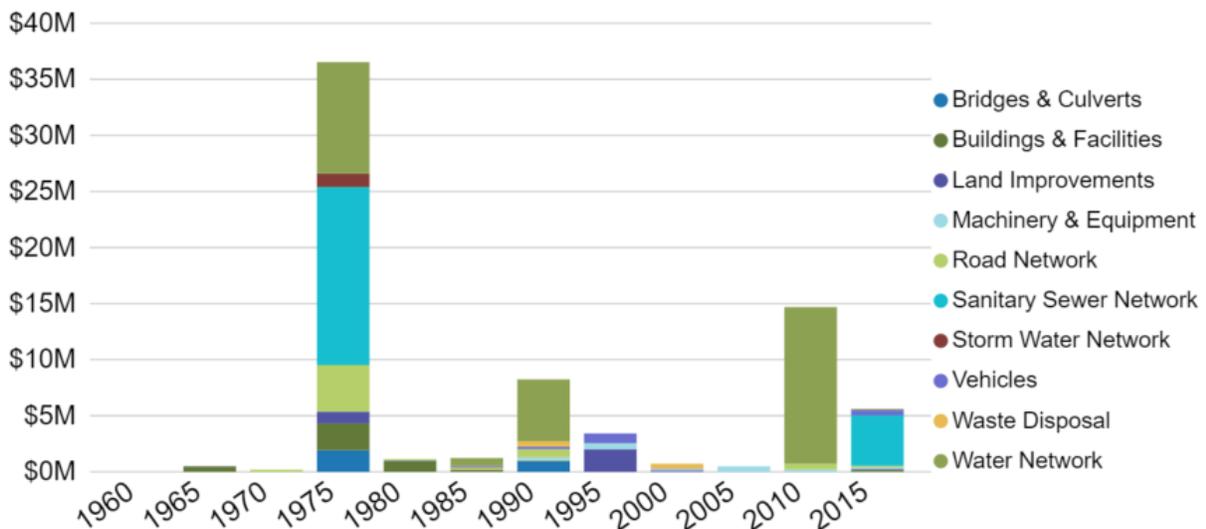
### 3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of \$72.8 million. This total was determined based on a combination of unit costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



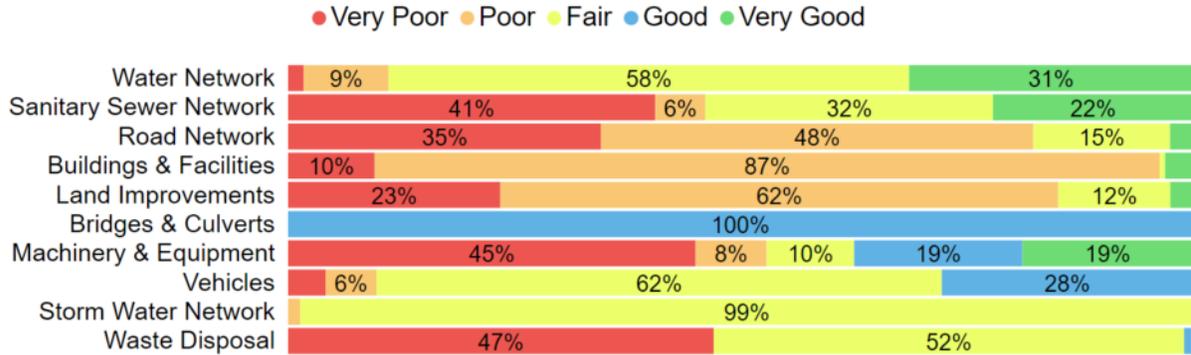
### 3.2 Installation Profile

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



### 3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, **64%** (\$46.5 million) of assets in Hornepayne are in fair or better condition. This estimate relies on both age-based and assessed condition data.



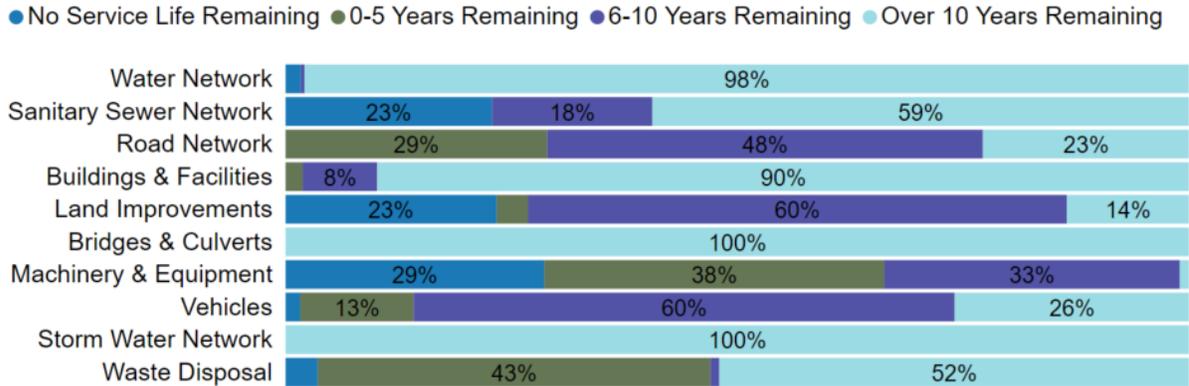
This AMP relies on assessed condition data for **23%** of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	% of Assets with Assessed Condition	Source of Condition Data
Water Network	0%	Asset Age
Sanitary Sewer Network	0%	Asset Age
Road Network	97%	Staff Assessments
Buildings & Facilities	96%	Staff Assessments
Land Improvements	75%	Staff Assessments
Bridges & Culverts	100%	2019 OSIM Inspection
Machinery & Equipment	57%	Staff Assessments
Vehicles	70%	Staff Assessments
Storm Water Network	0%	Asset Age
Waste Disposal	0%	Asset Age
<b>Overall:</b>	<b>23%</b>	

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

### 3.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 28% of the Township’s assets totalling (\$20.5 million) are projected to require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix A.



Category	Estimated Useful Life Range (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Water Network	20-75 Years	42.6	20.3
Sanitary Sewer Network	20-75 Years	42.3	24.4
Road Network	30-40 Years	37.2	8.4
Buildings & Facilities	5-50 Years	27.7	15.4
Land Improvements	10-25 Years	35.5	8.8
Bridges & Culverts	50 Years	34.8	37.5
Machinery & Equipment	5-20 Years	10.3	4.0
Vehicles	7-15 Years	17.7	4.3
Storm Water Network	60-75 Years	43.4	31.4
Waste Disposal	10-20 Years	16.6	6.4
<b>Total:</b>		<b>41.6</b>	<b>21.0</b>

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

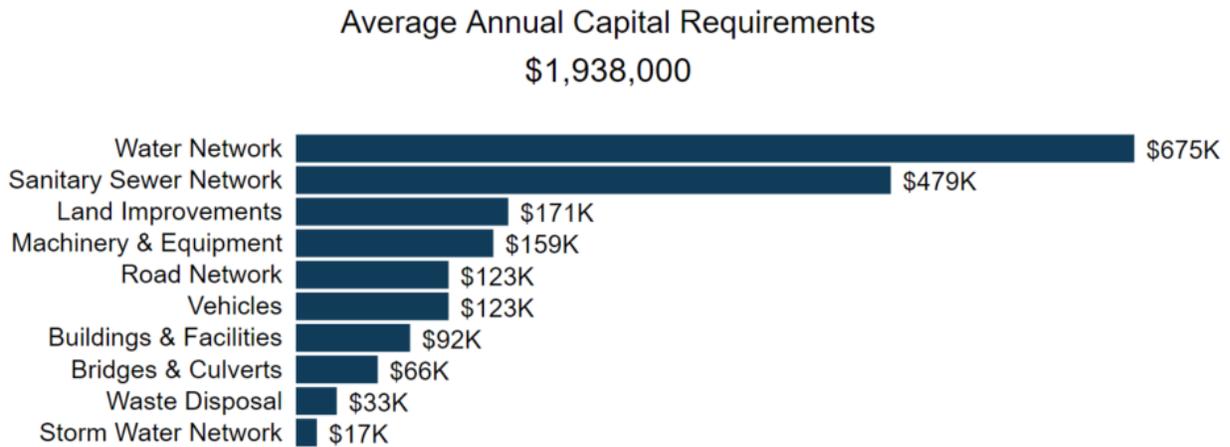
Short-term capital costs may be low for asset categories with long useful lives where infrastructure is relatively new. However, planning and saving for long-term capital costs is a key component of asset management planning.

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

## 3.5 Forecasted Capital Requirements

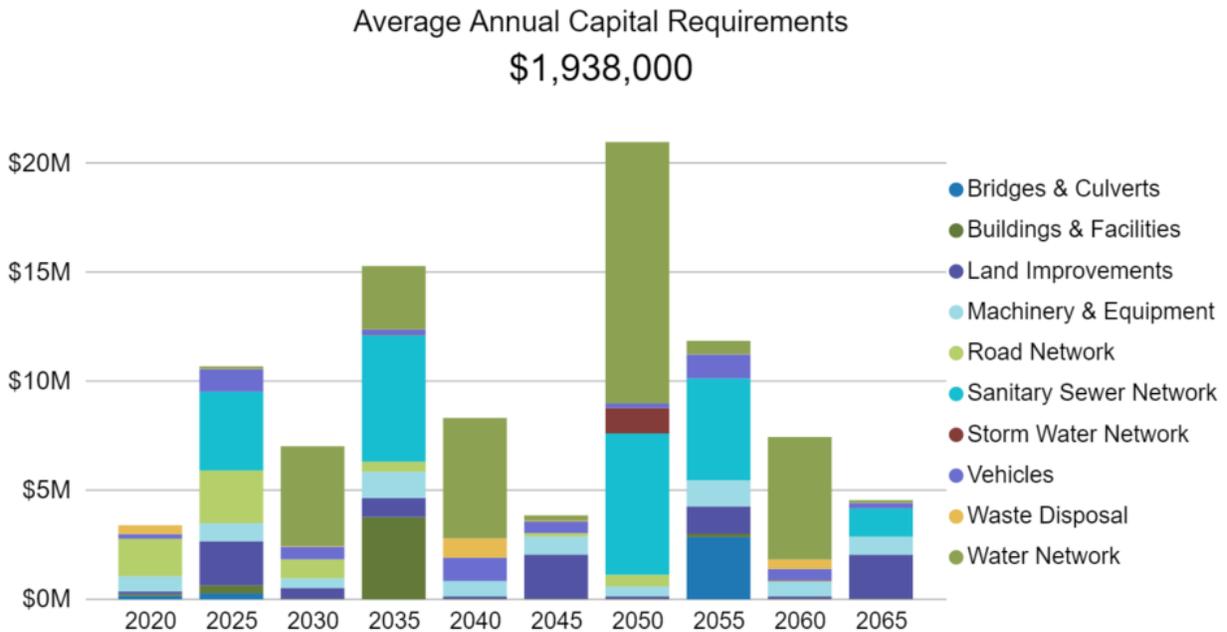
### 3.5.1 Average Annual Capital Requirements

Annual capital requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability.



### 3.5.2 Projected Capital Requirements (50 Years)

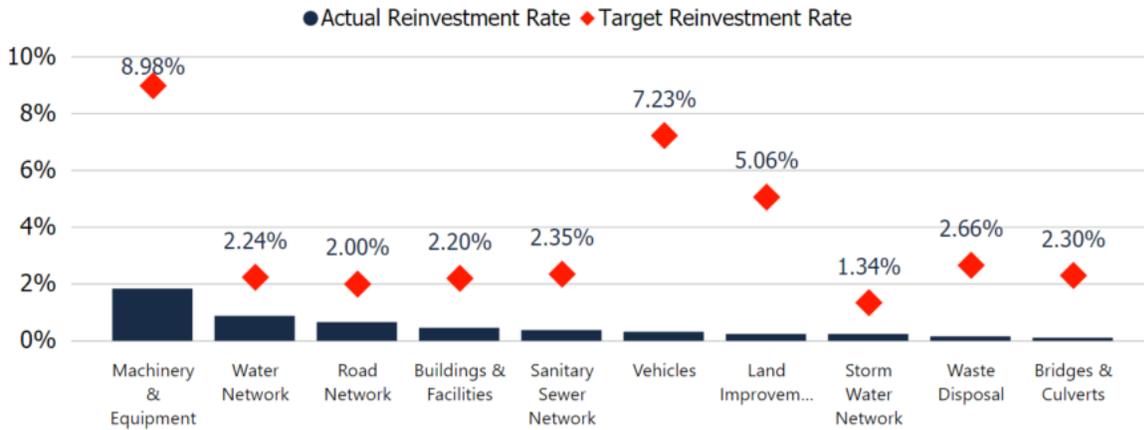
The following graph identifies projected capital requirements over the next 50 years.



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

### 3.6 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Township should be allocating approximately \$1.9 million annually, for a target reinvestment rate of 2.66%. Actual annual spending from sustainable revenue sources totals approximately \$457,000, for an actual reinvestment rate of 0.63%.



# 4 Analysis of Tax-funded Assets

## Key Insights

- Tax-funded assets are valued at \$22.2 million
- 38% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately \$783,000

## 4.1 Road Network

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

The Township’s Road Network is maintained by the Public Works Department who are responsible for:

- Roadway and sidewalk maintenance
- Winter maintenance; plowing, sanding and snow removal
- Maintenance of trees on Township road allowances and laneways
- Street name and traffic signs, guide rails and traffic control signals

### 4.1.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township’s Road Network inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Paved Roads	13,875m	94% Cost/Unit 6% CPI Tables	\$6,004,373
Gravel Roads	13,102m	Not Planned for Replacement <sup>1</sup>	
Streetlights	1 (pooled asset)	CPI Tables	\$155,586
			\$6,159,959

**Total Replacement Cost  
\$6.2M**

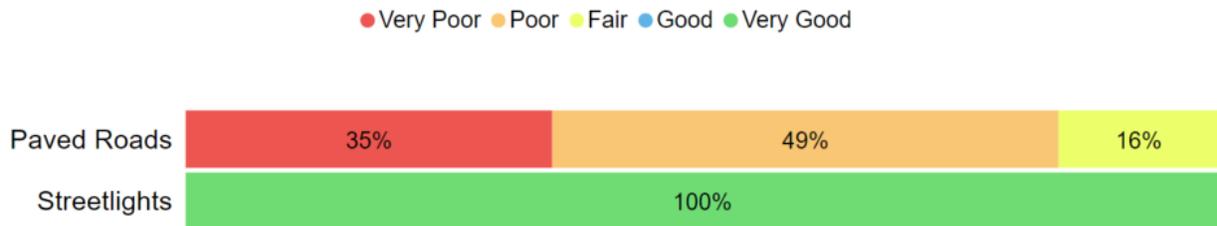


<sup>1</sup> Gravel roads have been included as they comprise a significant portion of the Township’s road network. However, the lifecycle management strategies for these assets consist of perpetual maintenance activities and do not require capital costs for rehabilitation or replacement.

### 4.1.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Paved Roads	27%	Poor	100% Assessed
Streetlights	85%	Very Good	Age-Based
	<b>29%</b>	<b>Poor</b>	<b>97% Assessed</b>



### Current Approach to Condition Assessment

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

- Daily road patrols enable staff to identify of distresses/deficiencies; required lifecycle activities are conveyed to staff on an as-needed basis
- Public Works staff are still in the process of collecting and refining asset data before the implementation of a more formal approach to condition assessment

### 4.1.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Paved Roads	40	37.6	8.2
Streetlights	30	4.5	25.4
		<b>37.2</b>	<b>8.4</b>

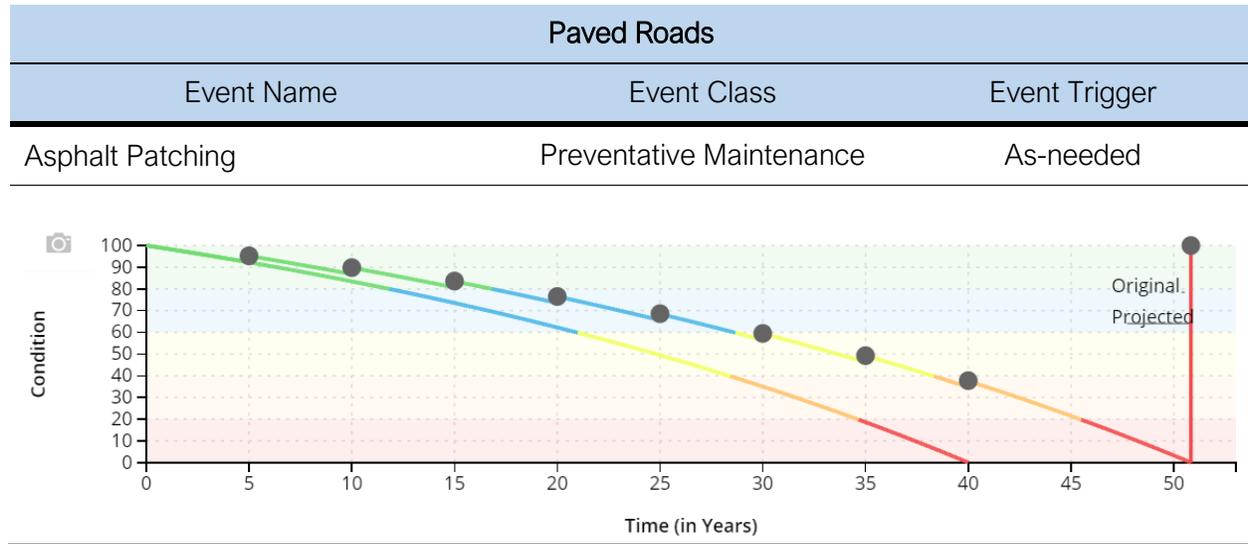


Each asset’s Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

### 4.1.4 Lifecycle Management Strategy

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

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of Paved Roads. Instead of allowing the roads to simply deteriorate until replacement is required, strategic intervention is expected to extend the service life of roads at a lower total cost.



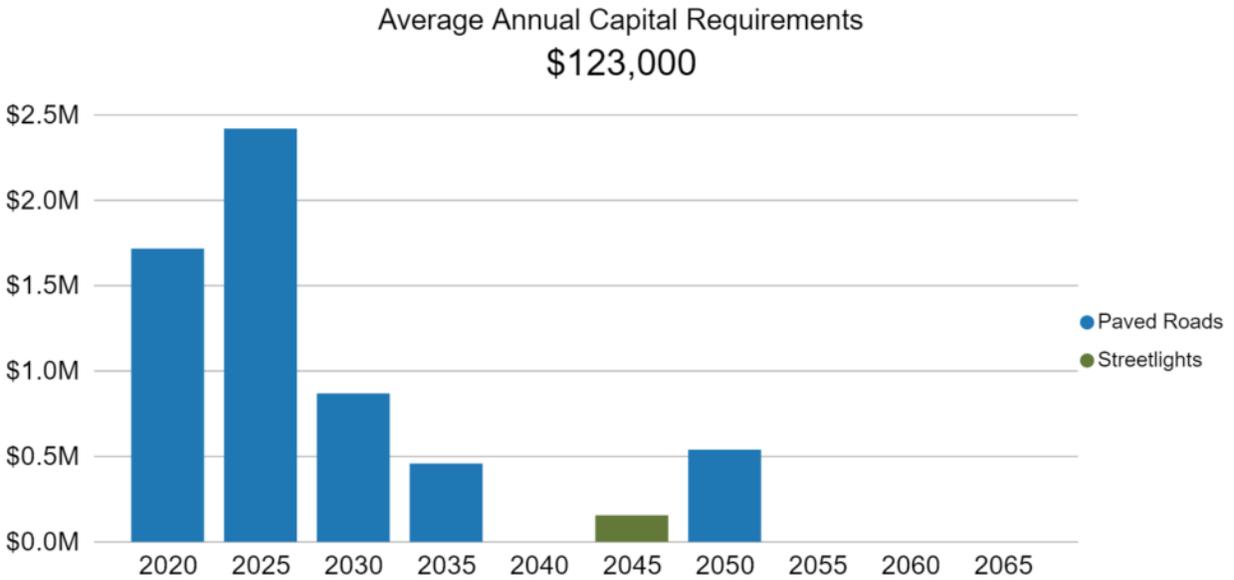
The following table further expands on the Township’s current approach to lifecycle management:

Activity Type	Description of Current Strategy
Maintenance	Most lifecycle activities are reactive due to limited resources and capacity <b>Paved Roads:</b> Asphalt patching as needed <b>Gravel Roads:</b> Re-gravelling as needed; reviewing dust control measures to determine most effective application methods
Rehabilitation	Road re-surfacing isn’t common, but is coordinated with water/sewer projects to reduce costs when possible When there is no money available for water/sewer projects the cost of road work is too high to justify Would like to try and do a kilometre per year although cost for re-surfacing is higher than average municipality due to mobilization costs The high costs for equipment, mobilization and accommodations for staff pose challenges to a more regular re-surfacing strategy
Replacement	Planning is year-to-year, but there often isn’t money available for a capital program

## Forecasted Capital Requirements

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

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



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

### 4.1.5 Risk & Criticality

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

Consequence	5 Severe	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	4 Major	0 Assets - \$0	0 Assets - \$0	9 Assets 1,157 m \$578,500	5 Assets 1,072 m \$536,085	4 Assets 767 m \$383,500
	3 Moderate	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	2 Minor	0 Assets - \$0	0 Assets - \$0	5 Assets 705 m \$352,500	30 Assets 4,747 m \$2,405,984	21 Assets 3,158 m \$1,612,804
	1 Insignificant	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain

### Critical Assets

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

The above matrix provides a high-level overview of the level of risk present according to the criteria outlined in Appendix C. This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

### 4.1.6 Levels of Service

The following tables identify the Township’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 Township has selected for this AMP.

#### Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix B
Quality	Description or images that illustrate the different levels of road class pavement condition	<p>Very Good - Pavement is in excellent condition with few visible defects. Riding quality is very smooth with not more than a few areas of very slight distortion.</p> <p>Good - Pavement is in good condition with accumulating slight defects and distortions. Riding quality is smooth with intermittent slightly rough and uneven sections.</p> <p>Fair - Pavement is in fair condition with intermittent patterns of slight to moderate defects. Riding quality is comfortable with intermittent bumps or depressions.</p> <p>Poor - Pavement is in poor condition with frequent patterns of moderate defects. Riding quality is uncomfortable, and surface is rough and uneven.</p> <p>Very Poor - Pavement is in very poor condition with extensive severe defects. Riding quality is very uncomfortable, and surface is very rough and uneven.</p>

## Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km <sup>2</sup> )	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km <sup>2</sup> )	0.13
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km <sup>2</sup> )	0.11
Quality	Average pavement condition index for paved roads in the municipality	27 (Poor)
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Fair
Performance	Capital reinvestment rate	0.67%

## 4.1.7 Recommendations

### Asset Inventory/Data Refinement

- **Develop Sidewalk Inventory** – Develop an inventory of municipally owned and maintained sidewalks to ensure that the asset inventory is a complete record of all infrastructure assets.

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** – Staff completed a cursory assessment of the condition of paved roads for this AMP (1-5 rating). The development of a regular condition assessment schedule according to a defined criterion will assist with lifecycle and financial planning requirements. This may be completed using a combination of both internal staff assessments and external expertise as required.

### Lifecycle Management Strategies

- **Develop a Short-Term Capital Plan** - Increased capital costs are expected for paved roads over the next 5-10 years due to their relatively poor condition and age. Staff will need to identify high priority roads, determine project timelines and revenue sources to meet projected capital requirements.

### Levels of Service

- **Measure Current Levels of Service** – This AMP contains a basic measurement of the Township’s current level of service according to the metrics established in O. Reg. 588/17 Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning
- **Identify Additional LOS Metrics** – Staff should identify additional LOS metrics that would inform both short- and long-term asset management planning
- **Identify Proposed Levels of Service** - Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

## 4.2 Bridges & Culverts

Bridges & Culverts are a critical component of the provision of the transportation service provided by the Township. The Jackfish Creek Bridge and Jackfish Creek Culverts are designed to permit the passage of a diverse array of both vehicular and pedestrian traffic.

The Township’s Bridges & Culverts are maintained by the Public Works Department.

### 4.2.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Jackfish Creek Culverts	1	User-Defined Cost	\$1,930,000
Jackfish Creek Bridge	1	User-Defined Cost	\$925,000
			<b>\$2,855,000</b>

Total Replacement Cost  
\$2.9M



## 4.2.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Jackfish Creek Culverts	71%	Good	100% Assessed
Jackfish Creek Bridge	79%	Good	100% Assessed
	<b>74%</b>	<b>Good</b>	<b>100% Assessed</b>

● Very Poor ● Poor ● Fair ● Good ● Very Good



## Current Approach to Condition Assessment

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

- OSIM Inspection Reports completed every 2 years as per provincial regulation by a licensed engineer
- A Bridge Condition Index (BCI) rating is provided for both structures
- Staff visually inspect structures throughout the year and note any major issues that require attention

### 4.2.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Jackfish Creek Culverts	50	43.5	35.4
Jackfish Creek Bridge	50	26.2	39.5
		<b>34.8</b>	<b>37.5</b>

● No Service Life Remaining ● 0-5 Years Remaining ● 6-10 Years Remaining ● Over 10 Years Remaining



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

### 4.2.4 Lifecycle Management Strategy

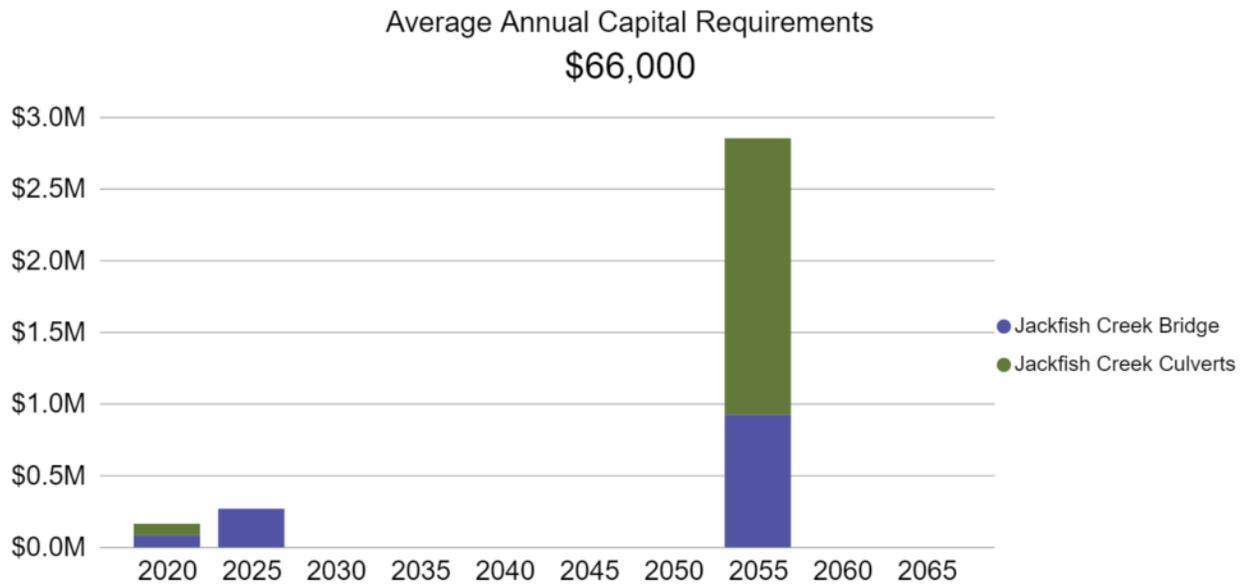
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Minor repairs and cleaning is completed as needed
Rehabilitation	Structures are generally in good condition and minimal rehabilitation work is required
Replacement	No major cost requirements expected in near term

### Forecasted Capital Requirements

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



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

### 4.2.5 Risk & Criticality

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

Consequence	5 Severe	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0
	4 Major	0 Assets \$0	1 Asset \$1,930,000	0 Assets \$0	0 Assets \$0	0 Assets \$0
	3 Moderate	0 Assets \$0	1 Asset \$925,000	0 Assets \$0	0 Assets \$0	0 Assets \$0
	2 Minor	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0
	1 Insignificant	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
		Probability				

### Critical Assets

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

The above matrix provides a high-level overview of the level of risk present according to the criteria outlined in Appendix C. This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

## 4.2.6 Levels of Service

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

### Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description or images of the condition of bridges and how this would affect use of the bridges	See Appendix B
Quality	Description or images of the condition of culverts and how this would affect use of the culverts	See Appendix B

### Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of bridges and structural culverts in the municipality with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the municipality	72
	Average bridge condition index value for structural culverts in the municipality	80
Performance	Capital reinvestment rate	0.11%

## 4.2.7 Recommendations

### Levels of Service

- **Measure Current Levels of Service** – This AMP contains a basic measurement of the Township’s current level of service according to the metrics established in O. Reg. 588/17 Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning
- **Identify Additional LOS Metrics** – Staff should identify additional LOS metrics that would inform both short- and long-term asset management planning
- **Identify Proposed Levels of Service** - Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

## 4.3 Storm Water Network

The Township is responsible for the maintenance of a Storm Water Network consisting of 2.1 kilometres of storm sewer mains, catch basins, and open ditches.

The Storm Water Network is maintained throughout the year by the Public Works Department.

### 4.3.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township’s Storm Water Network inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Catch Basins	2	Cost/Unit	\$17,000
Storm Sewers	2,132 m	Cost/Unit	\$1,223,265
			<b>\$1,240,265</b>

Total Replacement Cost  
\$1.2M

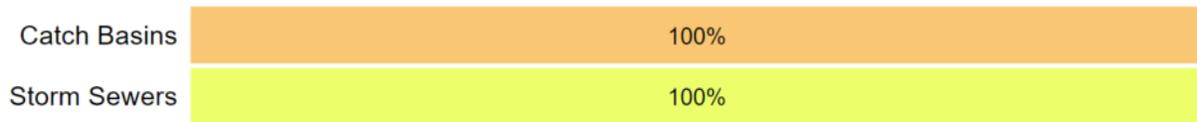


### 4.3.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Catch Basins	27%	Poor	Age-Based
Storm Sewers	42%	Fair	Age-Based
	<b>42%</b>	<b>Fair</b>	<b>Age-Based</b>

● Very Poor ● Poor ● Fair ● Good ● Very Good



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

### Current Approach to Condition Assessment

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

- Constructed infrastructure is limited, and stormwater network consists mainly of open ditches instead of sewers
- No formal condition assessment strategies in place

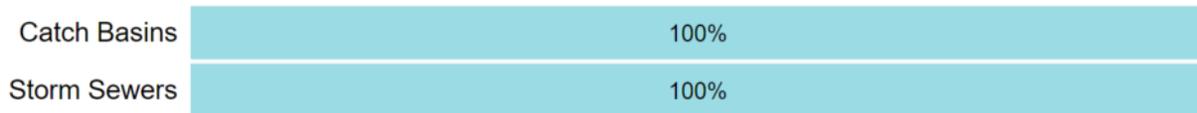
### 4.3.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Catch Basins	60	44.0	16.0
Storm Sewers	75	43.4	31.6
		<b>43.4</b>	<b>31.4</b>

● No Service Life Remaining ● 0-5 Years Remaining ● 6-10 Years Remaining ● Over 10 Years Remaining



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

### 4.3.4 Lifecycle Management Strategy

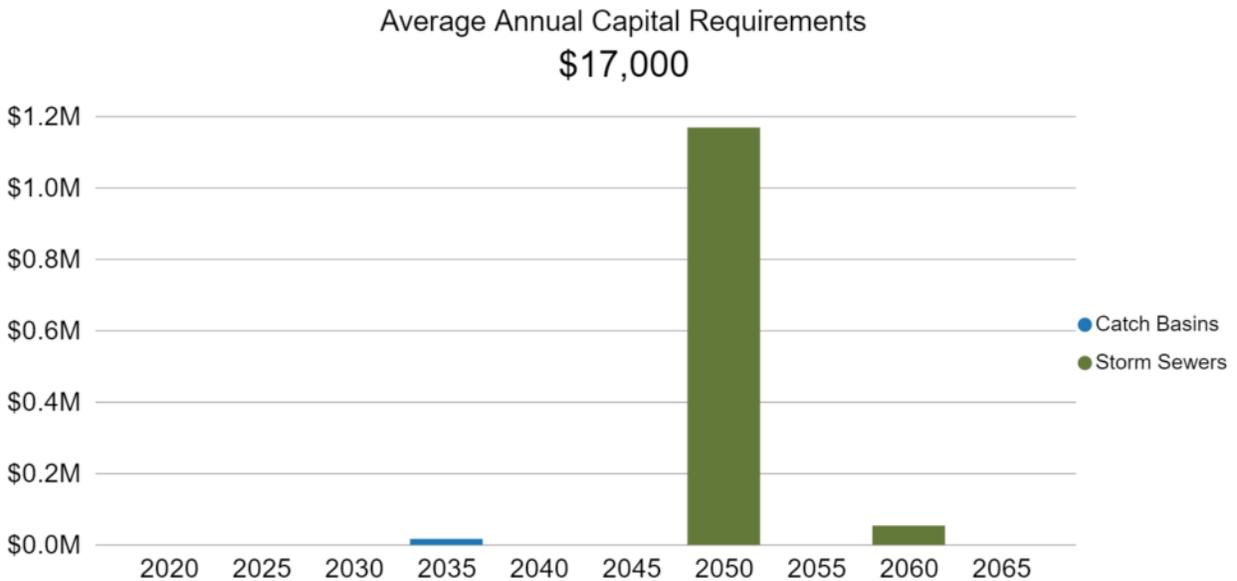
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Few operations and maintenance activities, but operational issues are addressed on an as needed basis
Rehabilitation /Replacement	Recently replaced a section of culverts that were causing operational issues (partial blockages and corrosion); all new culverts have been upsized to 3 feet pipe diameter where they were previously smaller

### Forecasted Capital Requirements

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



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

### 4.3.5 Risk & Criticality

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

Consequence	5 Severe	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0
	4 Major	0 Assets \$0	0 Assets \$0	1 Asset \$32,535	0 Assets \$0	0 Assets \$0
	3 Moderate	0 Assets \$0	0 Assets \$0	73 Assets \$637,817	0 Assets \$0	0 Assets \$0
	2 Minor	0 Assets \$0	0 Assets \$0	91 Assets \$453,154	0 Assets \$0	0 Assets \$0
	1 Insignificant	0 Assets \$0	0 Assets \$0	34 Assets \$99,759	0 Assets \$0	0 Assets \$0
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
		Probability				

#### Critical Assets

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

The above matrix provides a high-level overview of the level of risk present according to the criteria outlined in Appendix C. This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

### 4.3.6 Levels of Service

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

#### Community Levels of Service

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

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

#### Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of properties in municipality resilient to a 100-year storm	95% <sup>2</sup>
	% of the municipal stormwater management system resilient to a 5-year storm	100% <sup>3</sup>
Performance	Capital reinvestment rate	0.24%

<sup>2</sup> 35 total properties in flood zone

<sup>3</sup> Assumption based on minimum design standards for existing storm sewers and expected protection provided by open ditch system

## 4.3.7 Recommendations

### Asset Inventory/Data Refinement

- **Review Scope & Quality of Inventory** – The Storm Network includes 2,132m of storm sewers but only 2 catch basins and no manholes or cross-drainage culverts. Staff should review the current asset inventory to determine if it includes all municipal infrastructure assets that the Township is responsible for.

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** - This AMP relies entirely on age-based estimates of asset condition. The Township should develop a formal condition assessment strategy which may include the use of CCTV cameras to inspect storm sewer mains. The data gathered from inspections will inform short-term lifecycle strategies and long-term financial planning.

### Lifecycle Management Strategies

- **Identify Proactive Lifecycle Strategy** - Most storm sewers were built in the 1970s and capital/operating needs have been minimal to date. Storm sewer replacement isn't expected for at least another 30 years according to estimated useful life. While short-term capital costs may be minimal, Township staff identified that there are few maintenance programs in place and needs are only addressed when issue arise. To extend asset lifecycle and ensure the stormwater network functions to its full capacity, staff should review preventative maintenance strategies (e.g. inspection, cleaning, debris removal) as needed.

### Levels of Service

- **Measure Current Levels of Service** – This AMP contains a basic measurement of the Township's current level of service according to the metrics established in O. Reg. 588/17 Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning
- **Identify Additional LOS Metrics** – Staff should identify additional LOS metrics that would inform both short- and long-term asset management planning
- **Identify Proposed Levels of Service** - Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

## 4.4 Buildings & Facilities

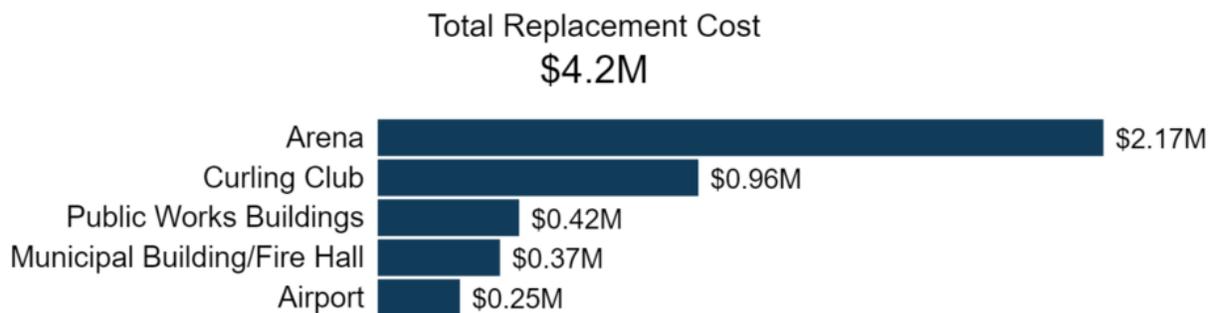
The Township of Hornepayne owns and maintains several buildings & facilities that provide key services to the community. These include:

- an airport
- an arena and curling club
- a municipal building and fire hall
- public works shop, garage and storage

### 4.4.1 Asset Inventory & Replacement Cost

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

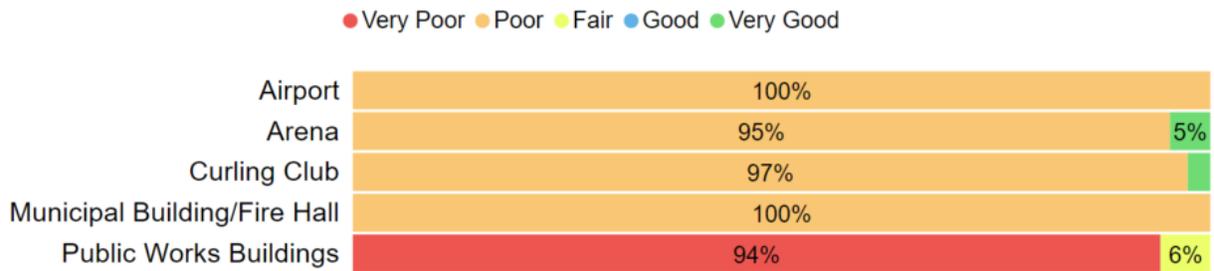
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Airport	2	CPI Tables	\$246,561
Arena	1	CPI Tables	\$2,172,771
Curling Club	1	CPI Tables	\$960,289
Municipal Building/Fire Hall	2	CPI Tables	\$366,638
Public Works Buildings	3	CPI Tables	\$423,885
			<b>\$4,170,144</b>



### 4.4.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Airport	40%	Fair	100% Assessed
Arena	42%	Fair	95% Assessed
Curling Club	41%	Fair	97% Assessed
Municipal Building/Fire Hall	40%	Fair	100% Assessed
Public Works Buildings	19%	Very Poor	94% Assessed
	<b>39%</b>	<b>Poor</b>	<b>96% Assessed</b>



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

### 4.4.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Airport	50	35.5	19.9
Arena	20-50	12.2	18.9
Curling Club	20-50	19.8	19.3
Municipal Building/Fire Hall	50	53.0	19.9
Public Works Buildings	5-50	30.6	5.6
		<b>27.7</b>	<b>15.4</b>

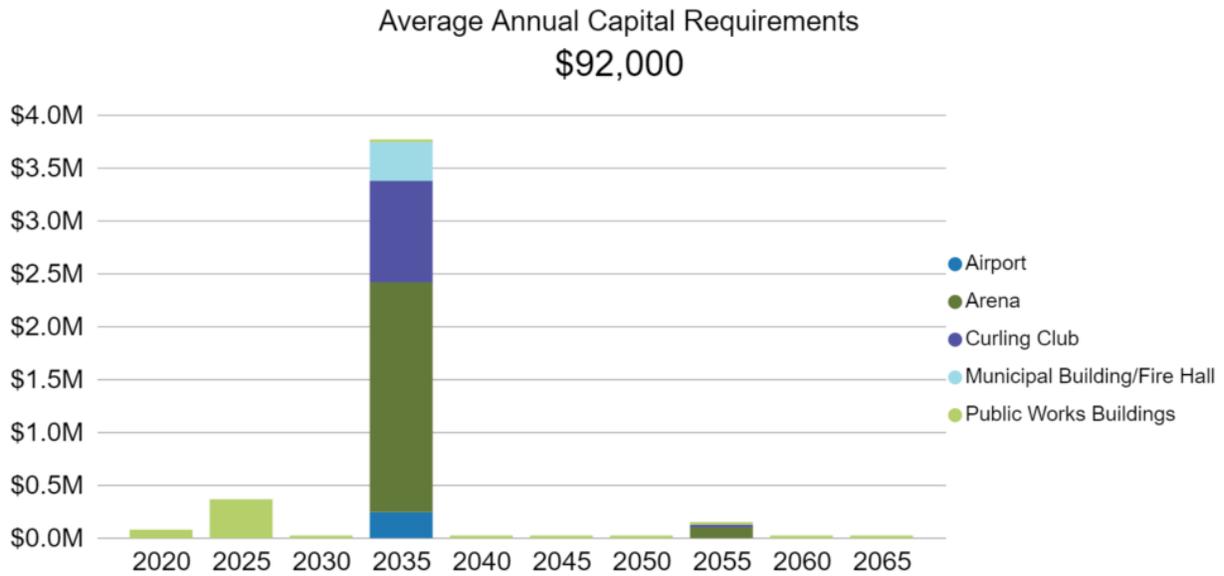


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

### 4.4.4 Lifecycle Management Strategy

#### Forecasted Capital Requirements

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



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

### 4.4.5 Risk & Criticality

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

### 4.4.6 Levels of Service

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

## 4.4.7 Recommendations

### Asset Inventory

- **Develop a Component-Based Inventory** - The Township's asset inventory contains a single record for most facilities. Facilities consist of several major components that have unique useful lives and require asset-specific lifecycle strategies (e.g. roof, HVAC, foundation). The rehabilitation of these major components often requires capital costs prior to the replacement of the full structure. Staff should work towards a component-based inventory of all facilities to allow for component-based lifecycle strategies and financial planning.
- **Review Replacement Costs** - All replacement costs for Buildings & Facilities were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** - Township staff completed a cursory review of facility condition (96% of structures) to inform the development of this AMP. The Township should implement regular condition assessment procedures for all facilities to better inform short- and long-term capital requirements. Detailed component-based facility assessments should be considered for structures that exhibit moderate to severe signs of deterioration.

### Lifecycle Management Strategies

- **Develop a Long-Term Capital Plan** - Based on the condition date provided by Township staff, most municipal facilities are projected to require replacement in the next 15-20 Years. The reliability of lifecycle costs in this AMP is limited due to the lack of a component-based facilities inventory. Detailed facility assessments are required to determine the true extent of lifecycle requirements. Upon completion a long-term capital plan should be developed to start planning for projected lifecycle requirements.

### Levels of Service

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

## 4.5 Machinery & Equipment

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

- Printers, servers, computers and software to support administrative services
- A fuel and lighting system and the airport
- Bunker suits, radios, cylinders and compressors to provide fire protection services
- Library books for public loan
- Public works equipment including trailers, tractors and fuel tanks
- Recreation equipment including chillers, a zamboni and fitness equipment

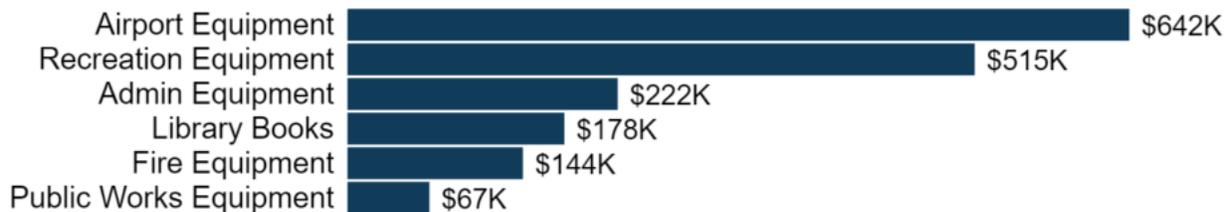
Keeping machinery & equipment in an adequate state of repair is important to maintain a high level of service.

### 4.5.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Admin Equipment	15	CPI Tables	\$221,851
Airport Equipment	2	CPI Tables	\$641,739
Fire Equipment	52	CPI Tables	\$144,026
Library Books	1	CPI Tables	\$177,992
Public Works Equipment	5	CPI Tables	\$67,217
Recreation Equipment	14	CPI Tables	\$514,857
			<b>\$1,767,682</b>

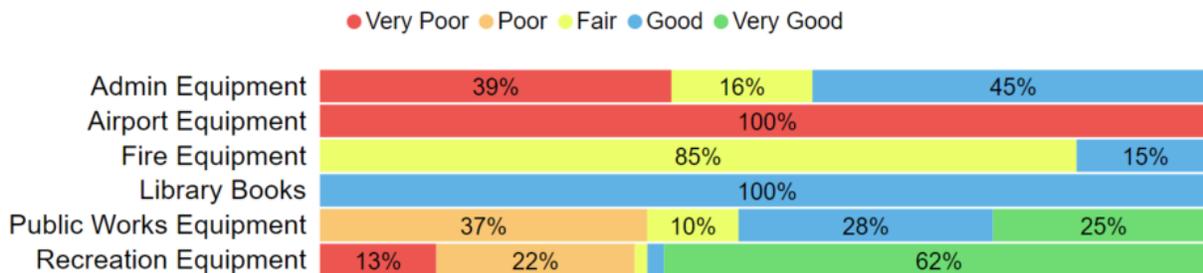
Total Replacement Cost  
\$1.8M



### 4.5.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Admin Equipment	39%	Poor	40% Assessed
Airport Equipment	0%	Very Poor	42% Assessed
Fire Equipment	53%	Fair	74% Assessed
Library Books	69%	Good	100% Assessed
Public Works Equipment	59%	Fair	Age-Based
Recreation Equipment	64%	Good	71% Assessed
	<b>37%</b>	<b>Poor</b>	<b>57% Assessed</b>



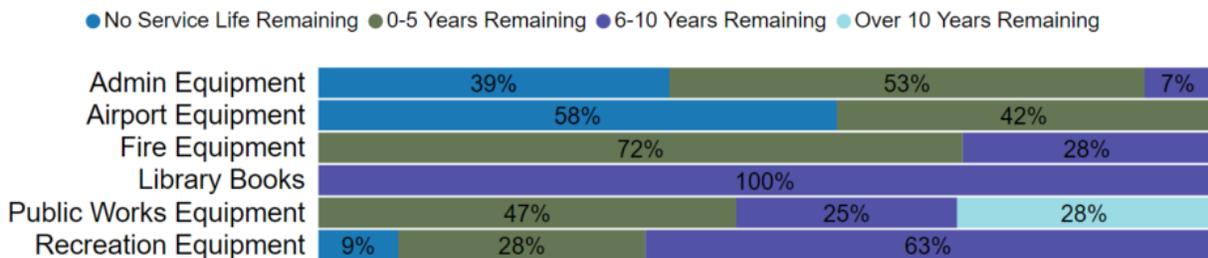
To ensure that the Township’s Machinery & Equipment continues to provide an acceptable level of service, the Township should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

### 4.5.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Admin Equipment	5-10	8.4	1.3
Airport Equipment	20	24.2	-0.7
Fire Equipment	10	11.6	5.3
Library Books	10	14.0	6.9
Public Works Equipment	10-20	5.1	6.8
Recreation Equipment	10	10.7	4.9
		<b>10.3</b>	<b>4.0</b>

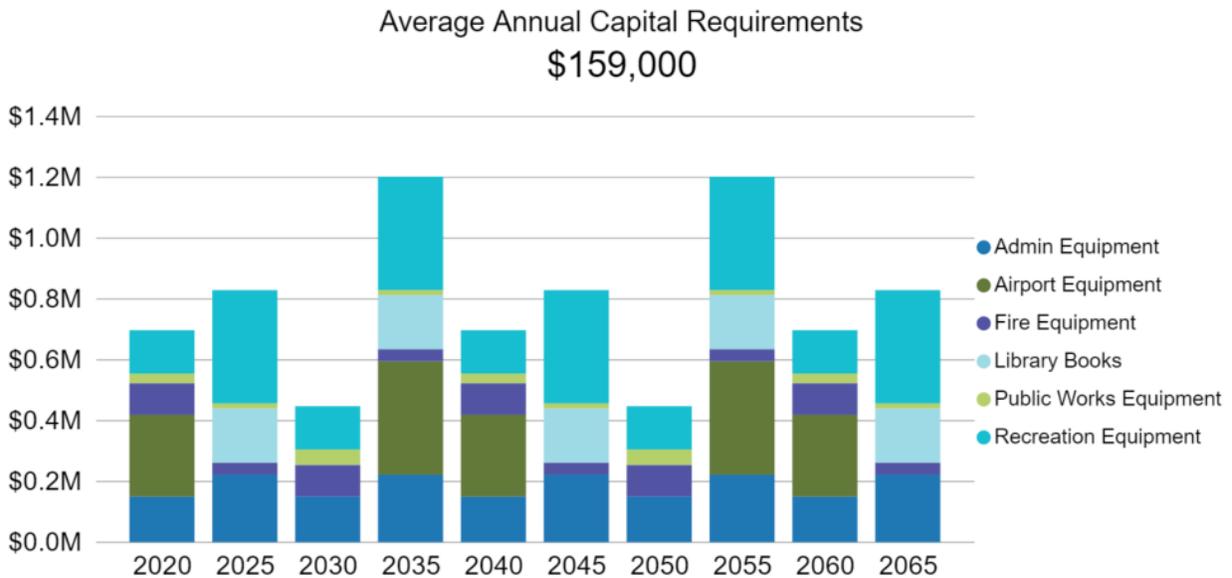


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

## 4.5.4 Lifecycle Management Strategy

### Forecasted Capital Requirements

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



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

## 4.5.5 Risk & Criticality

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

## 4.5.6 Levels of Service

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

## 4.5.7 Recommendations

### Asset Inventory/Data Refinement

- **Review Replacement Costs** - All replacement costs for Machinery & Equipment were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

### Condition Assessment Strategies

- **Develop Condition Assessment Strategy** – Develop a condition assessment strategy that is prioritized based on high value and high-risk equipment.
- **Review Backlog Assets** - Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

### Lifecycle Management Strategies

- **Develop a Short-term Capital Plan** – Given the relatively short useful life of equipment (5-20 Years) a short-term capital plan should be prepared and updated annually to ensure capital funds are available to meet projected requirements.

### Levels of Service

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

## 4.6 Vehicles

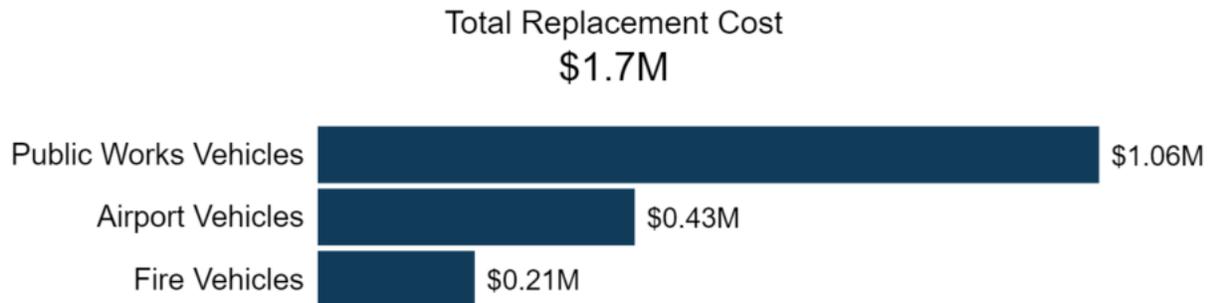
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal Vehicles are used to support several service areas, including:

- A loader and snow blower at the airport
- Fire trucks and rescue vehicles
- Heavy and light-duty trucks, backhoes and sanders to support public works

### 4.6.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township’s Vehicles.

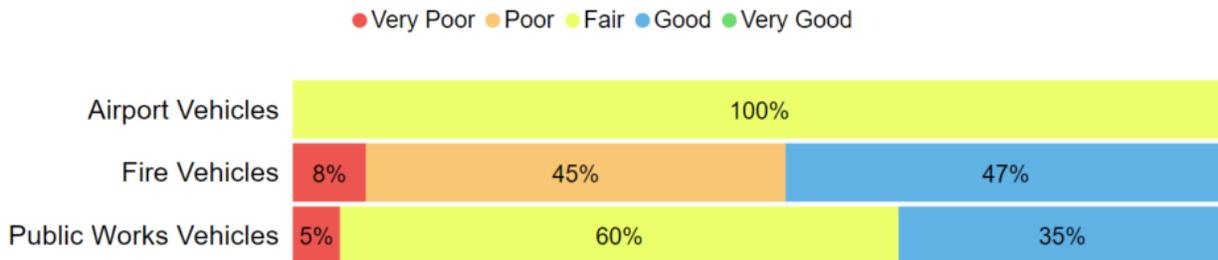
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Airport Vehicles	1	CPI Tables	\$428,673
Fire Vehicles	2	CPI Tables	\$212,402
Public Works Vehicles	15	CPI Tables	\$1,056,240
			<b>\$1,697,315</b>



### 4.6.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Airport Vehicles	49%	Fair	100% Assessed
Fire Vehicles	46%	Fair	92% Assessed
Public Works Vehicles	54%	Fair	54% Assessed
	<b>52%</b>	<b>Fair</b>	<b>70% Assessed</b>



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

### 4.6.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Airport Vehicles	15	22.9	7.4
Fire Vehicles	15	26.3	1.9
Public Works Vehicles	7-15	14.6	4.7
		17.7	4.3



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

## 4.6.4 Lifecycle Management Strategy

### Forecasted Capital Requirements

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



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

## 4.6.5 Risk & Criticality

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

## 4.6.6 Levels of Service

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

## 4.6.7 Recommendations

### Asset Inventory/Data Refinement

- **Review Replacement Costs** - All replacement costs for Machinery & Equipment were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** - Township staff provided assessed condition data for many vehicles (70%) during the development of this AMP. Formal condition assessment procedures should be developed to ensure that asset management planning is based on the best available data regarding asset condition.
- **Review Backlog Assets** - Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

### Lifecycle Management Strategies

- **Develop a Short-term Capital Plan** – Given the relatively short useful life of vehicles (7-15 Years) a short-term capital plan should be prepared and updated annually to ensure capital funds are available to meet projected requirements.

### Levels of Service

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

## 4.7 Land Improvements

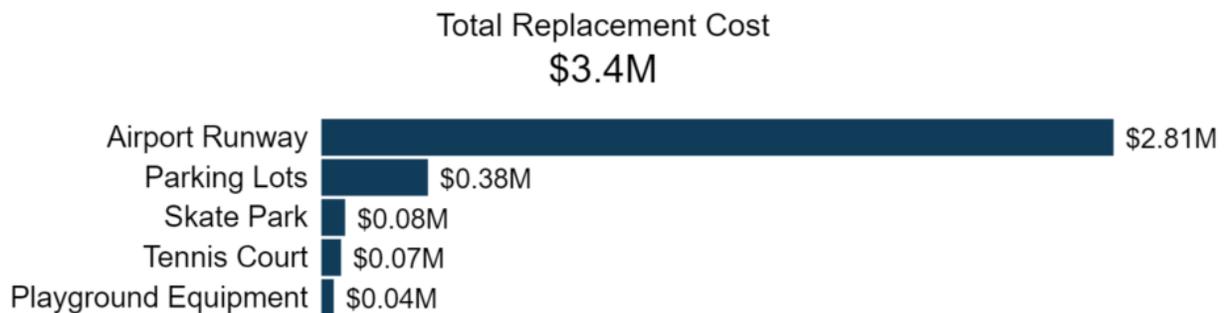
The Township of Hornepayne owns a small number of assets that are considered Land Improvements. This category includes:

- The airport runway
- 12 parking lots
- Playground equipment, a tennis court and skate park

### 4.7.1 Asset Inventory & Replacement Cost

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

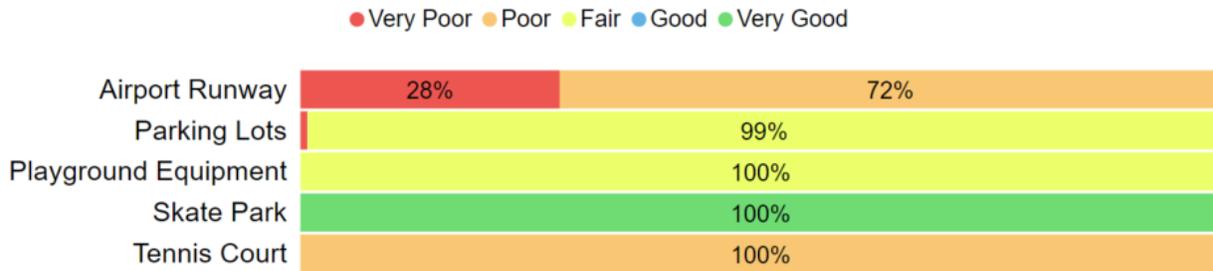
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Airport Runway	1	CPI Tables	\$2,811,755
Parking Lots	12	CPI Tables	\$378,712
Playground Equipment	1	CPI Tables	\$44,425
Skate Park	1	CPI Tables	\$84,714
Tennis Court	1	CPI Tables	\$70,331
			<b>\$3,389,937</b>



### 4.7.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Airport Runway	21%	Poor	72% Assessed
Parking Lots	49%	Fair	100% Assessed
Playground Equipment	49%	Fair	100% Assessed
Skate Park	93%	Very Good	Age-Based
Tennis Court	29%	Poor	100% Assessed
	<b>27%</b>	<b>Poor</b>	<b>75% Assessed</b>



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

### 4.7.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Airport Runway	20	30.8	-7.2
Parking Lots	25	41.8	11.5
Playground Equipment	10	19.5	4.9
Skate Park	20	1.3	18.7
Tennis Court	10	19.5	2.9
		<b>35.5</b>	<b>8.8</b>

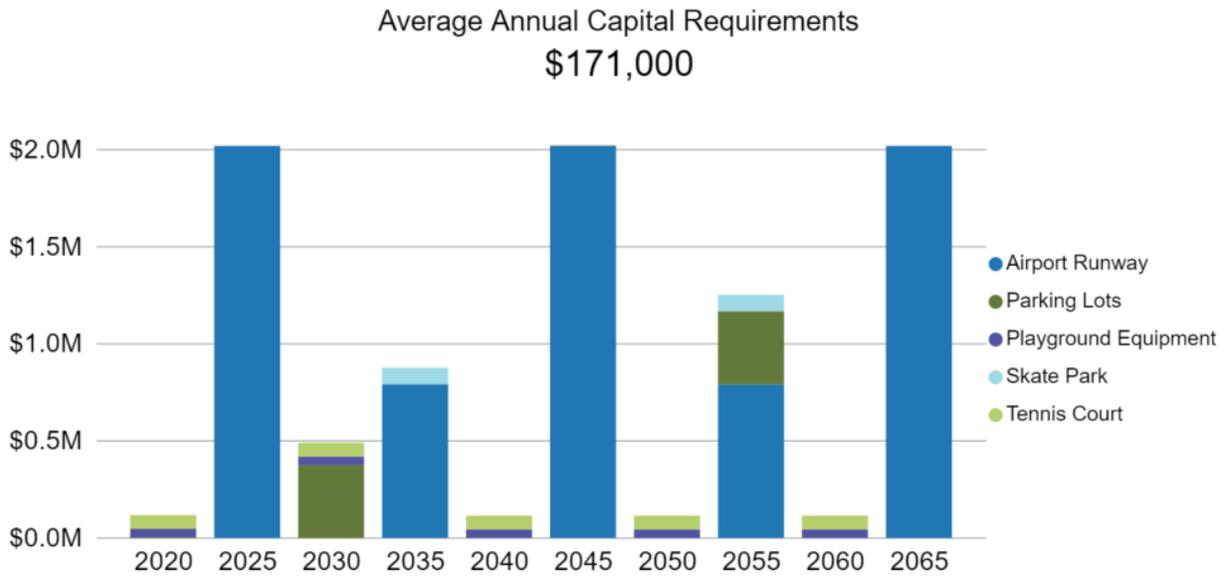


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

### 4.7.4 Lifecycle Management Strategy

#### Forecasted Capital Requirements

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



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

## 4.7.5 Risk & Criticality

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

## 4.7.6 Levels of Service

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

## 4.7.7 Recommendations

### Asset Inventory/Data Refinement

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

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** - - Township staff provided assessed condition data for many Land Improvements (75%) during the development of this AMP. Formal condition assessment procedures should be developed to ensure that asset management planning is based on the best available data regarding asset condition.
- **Review Backlog Assets** - Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

### Levels of Service

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

## 4.8 Waste Disposal

The Township owns several assets used in waste collection and disposal services provided to the community. They include:

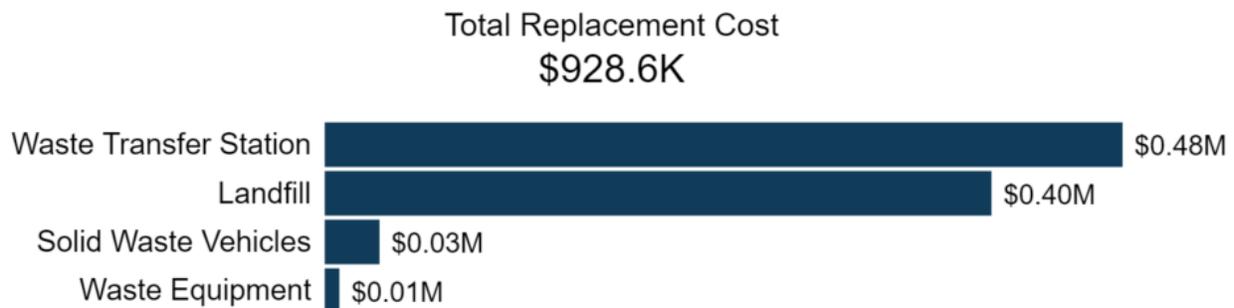
- A landfill and waste transfer station
- A landfill compactor and additional equipment

While the overall operation of the Landfill Site and Transfer Station are under the purview of the Public Works Department, a contractor is responsible for providing the service.

### 4.8.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township’s Waste Disposal.

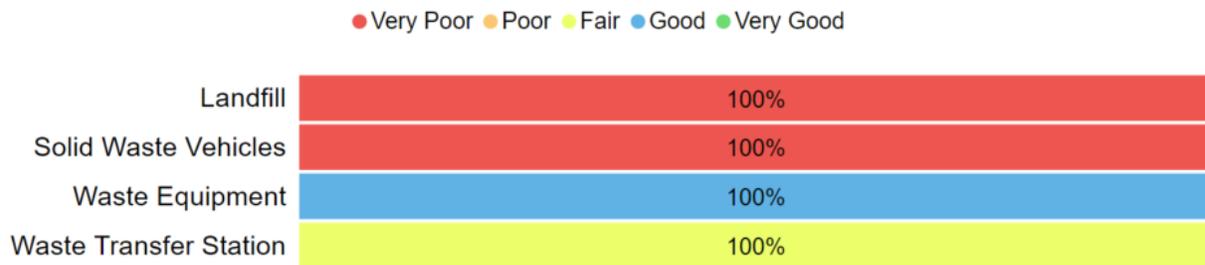
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Landfill	1	CPI Tables	\$403,522
Solid Waste Vehicles	1	CPI Tables	\$33,267
Waste Equipment	1	CPI Tables	\$8,989
Waste Transfer Station	1	CPI Tables	\$482,810
			<b>\$928,588</b>



## 4.8.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Landfill	10%	Very Poor	Age-Based
Solid Waste Vehicles	0%	Very Poor	Age-Based
Waste Equipment	75%	Good	Age-Based
Waste Transfer Station	47%	Fair	Age-Based
	<b>29%</b>	<b>Poor</b>	Age-Based



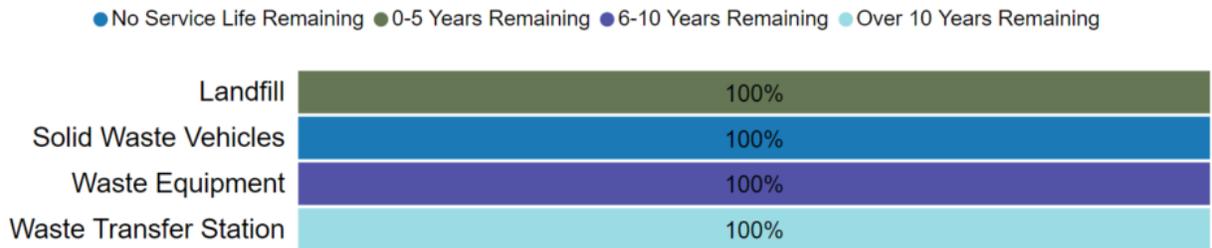
To ensure that the Township’s Waste Disposal continue to provide an acceptable level of service, the Township should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

### 4.8.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Landfill	20	18.2	5.0
Solid Waste Vehicles	15	17.7	-2.7
Waste Equipment	10	2.5	7.5
Waste Transfer Station	50	26.5	23.5
		<b>16.6</b>	<b>6.4</b>

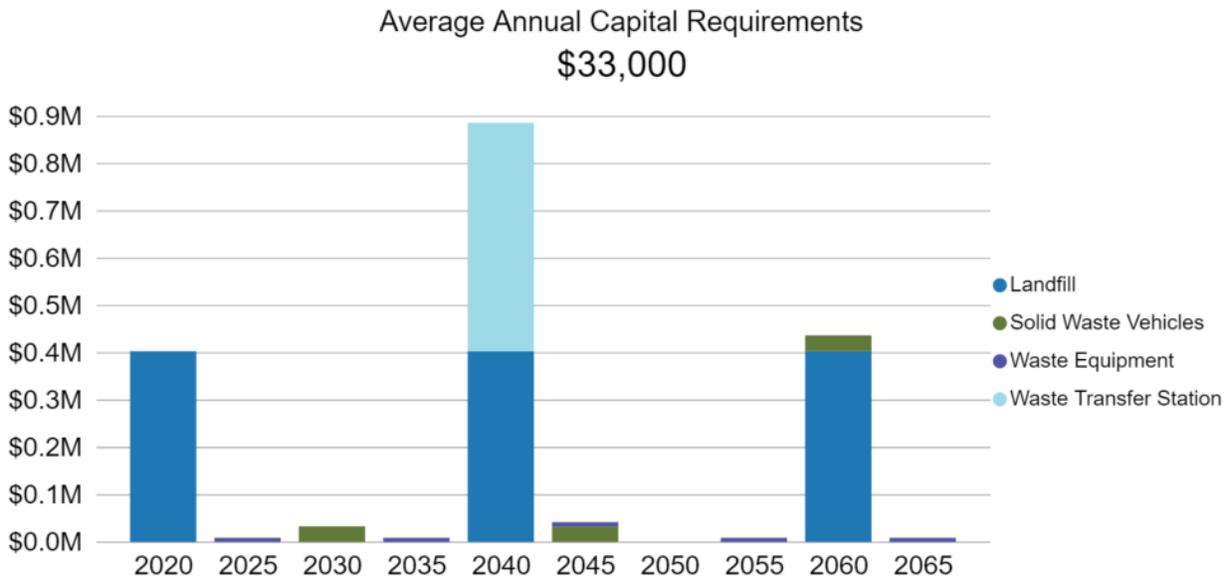


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

## 4.8.4 Lifecycle Management Strategy

### Forecasted Capital Requirements

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



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

### 4.8.5 Risk & Criticality

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

### 4.8.6 Levels of Service

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

## 4.8.7 Recommendations

### Asset Inventory/Data Refinement

- **Review Replacement Costs** - All replacement costs for Waste Disposal assets were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** - Township staff provided assessed condition data for all vehicles during the development of this AMP. Formal condition assessment procedures should be developed to ensure that asset management planning is based on the best available data regarding asset condition.
- **Review Backlog Assets** - Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

### Levels of Service

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

# 5 Analysis of Rate-funded Assets

## Key Insights

- Rate-funded assets are valued at \$50.5 million
- 75% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately \$1.15 million

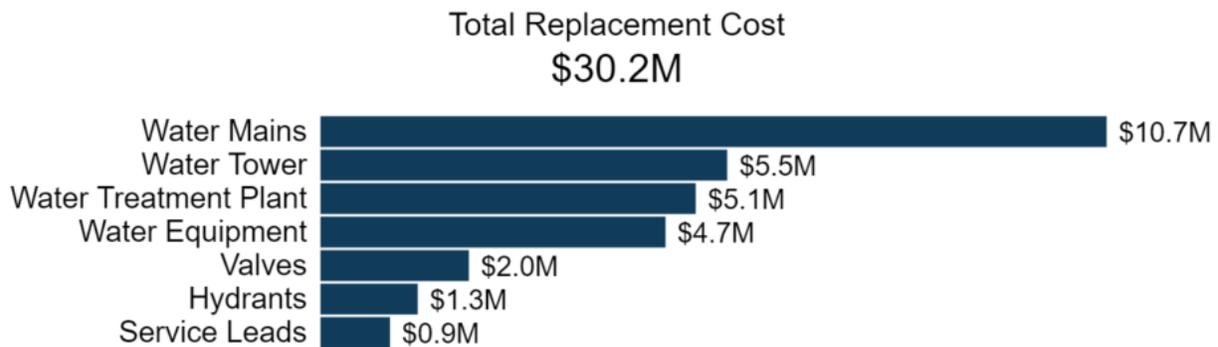
## 5.1 Water Network

The Township of Hornepayne owns a water treatment and distribution system while operations are handled by the Ontario Clean Water Agency. The Water Network includes 13 kilometres of water mains, 4.5 kilometres of service leads, a water tower and treatment plant, in addition to other supporting linear and non-linear infrastructure.

### 5.1.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township’s Water Network inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Hydrants	67	41% Cost/Unit 59% CPI Tables	\$1,320,020
Service Leads	4,505 m	Cost/Unit	\$943,841
Valves	678	99% Cost/Unit 1% CPI Tables	\$2,012,800
Water Equipment	3	CPI Tables	\$4,677,176
Water Mains	13,145 m	67% Cost/Unit 33% CPI Tables	\$10,657,242
Water Tower	1	CPI Tables	\$5,514,081
Water Treatment Plant	1	CPI Tables	\$5,087,690 <sup>4</sup>
			<b>\$30,212,851</b>

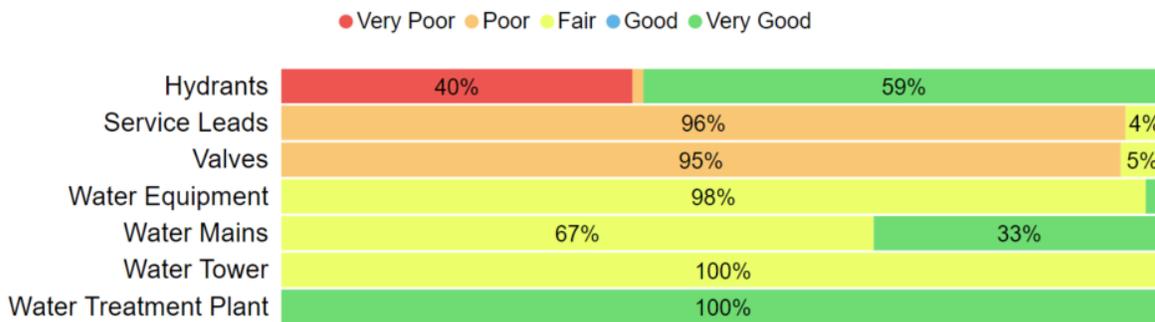


<sup>4</sup> The replacement cost of the Water Treatment Plant is under review and will be updated as part of future iterations of the Asset Management Plan.

## 5.1.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Hydrants	52%	Fair	Age-Based
Service Leads	29%	Poor	Age-Based
Valves	29%	Poor	Age-Based
Water Equipment	52%	Fair	Age-Based
Water Mains	58%	Fair	Age-Based
Water Tower	44%	Fair	Age-Based
Water Treatment Plant	80%	Very Good	Age-Based
	<b>55%</b>	<b>Fair</b>	<b>Age-Based</b>



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

### Current Approach to Condition Assessment

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

- OCWA operates the municipal water network and is responsible for inspecting network infrastructure on a regular basis, including linear and plant infrastructure assets
- Plant infrastructure assets are assessed regularly; next steps will involve the assessment of mains, valves and hydrants
- The Township receives quarterly reports on system condition and capacity from OCWA and is in contact with them daily

### 5.1.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Hydrants	40	42.3	-2.3 <sup>5</sup>
Service Leads	60	42.8	17.2
Valves	60	42.8	17.3
Water Equipment	20	6.9	9.7
Water Mains	75	42.7	32.3
Water Tower	50	28.1	21.9
Water Treatment Plant	50	9.8	40.2
		<b>42.6</b>	<b>20.3</b>



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

<sup>5</sup> Substantial work was completed in 2014 to replace and/or refurbish many fire hydrants. Additional detail is required in the Township's asset inventory/GIS database until this work can be reflected in the AMP.

### 5.1.4 Lifecycle Management Strategy

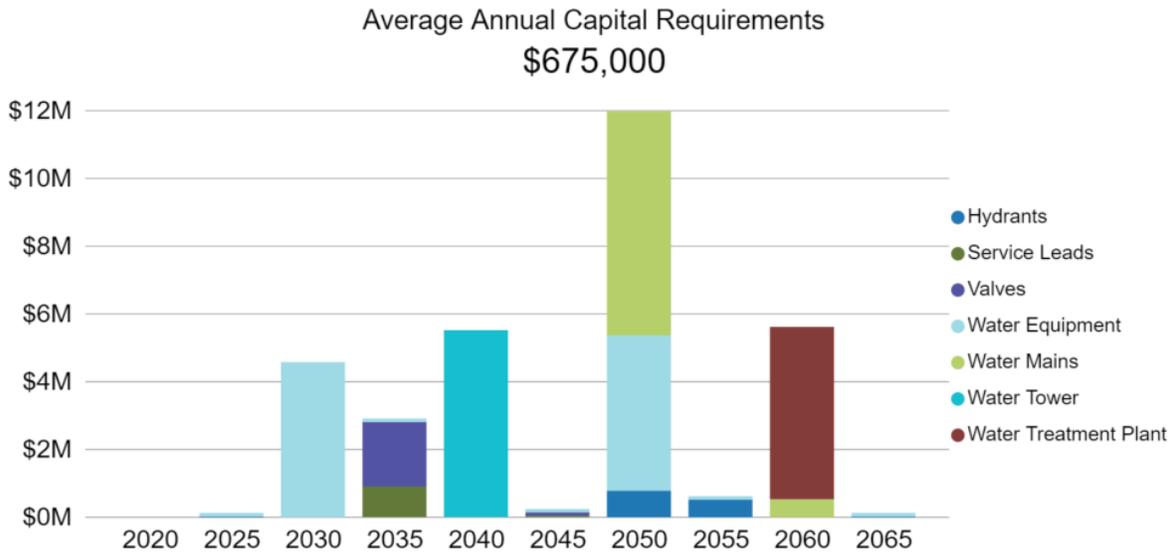
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Flushing twice per year on entire network (Spring & Fall) Valve turning and leak detection completed as part of preventative maintenance
Rehabilitation /Replacement	OCWA creates a 10-year capital plan, although it is subject to change depending on the level of funding available Water Plant is relatively new; water tower upgrade recently completed Curb stops and main valves may require replacement soon (~50% are predicted to be non-operational) and both service and main leaks have become a recurring operational concern

### Forecasted Capital Requirements

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



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

### 5.1.5 Risk & Criticality

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

Consequence	5 Severe	0 Assets - \$0	0 Assets - \$0	15 Assets 792 m \$522,757	0 Assets - \$0	0 Assets - \$0
	4 Major	0 Assets - \$0	0 Assets - \$0	6 Assets 257 m \$159,343	0 Assets - \$0	0 Assets - \$0
	3 Moderate	0 Assets - \$0	0 Assets - \$0	92 Assets 3,929 m \$2,219,825	0 Assets - \$0	0 Assets - \$0
	2 Minor	0 Assets - \$0	0 Assets - \$0	328 Assets 8,137 m \$4,231,183	0 Assets - \$0	0 Assets - \$0
	1 Insignificant	0 Assets - \$0	0 Assets - \$0	2 Assets 30 m \$15,237	0 Assets - \$0	0 Assets - \$0
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
		Probability				

### Critical Assets

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

The above matrix provides a high-level overview of the level of risk present according to the criteria outlined in Appendix C. This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

### 5.1.6 Levels of Service

The following tables identify the Township’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 Township has selected for this AMP.

#### Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix B
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix B
Reliability	Description of boil water advisories and service interruptions	<p>In June 2019 a watermain was shut off to allow for service line repairs.</p> <p>This led to a temporary service interruption and a boil water advisory that affected &lt;50 houses.</p> <p>As repairs were completed, service was restored, and the boil water advisory was lifted.</p>

## Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of properties connected to the municipal water system	67% <sup>6</sup>
	% of properties where fire flow is available	97%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0.1094 <sup>7</sup>
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0 <sup>8</sup>
Performance	Capital re-investment rate	0.93%

<sup>6</sup> Includes vacant properties

<sup>7</sup> ~50 connections impacted by boil water advisory during service line repairs

<sup>8</sup> There were 8 distribution breaks (service leads), but no water main breaks in 2019

## 5.1.7 Recommendations

### Asset Inventory/Data Refinement

- **Review GIS/TCA Data Management Process** – The primary source of Water Network inventory was GIS data that the Township provided. This data was cross-referenced with the TCA inventory used for financial reporting. There is some misalignment between these two inventories that will need to be investigated further. To maintain alignment between both inventories a process will need to be developed to ensure that they match. As new projects are completed an identical record of the work completed should be reflected across both information systems. Pooled capital project costs will need to be split between individual assets.

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** - This AMP relies on age-based condition data for all water network infrastructure. The development of a network-wide condition assessment program will provide greater reliability in the accuracy of the current condition data.
- **Review Backlog Assets** - Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

### Lifecycle Management Strategies

- **Develop a Long-Term Capital Plan** - Similar to other sub-surface infrastructure, most of the Water Network was built around the same time (1970s). While capital costs are expected to be minimal in the short-term (5-10 Years), capital costs are projected to increase in 15-30 years when more substantial rehabilitation and/or replacement of water infrastructure is required. To ensure that money is available to meet future replacement requirements a long-term capital plan should be developed, and a reserve contribution strategy should be explored.

### Levels of Service

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

- **Identify Additional LOS Metrics** – Staff should identify additional LOS metrics that would inform both short- and long-term asset management planning
- **Identify Proposed Levels of Service** - Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

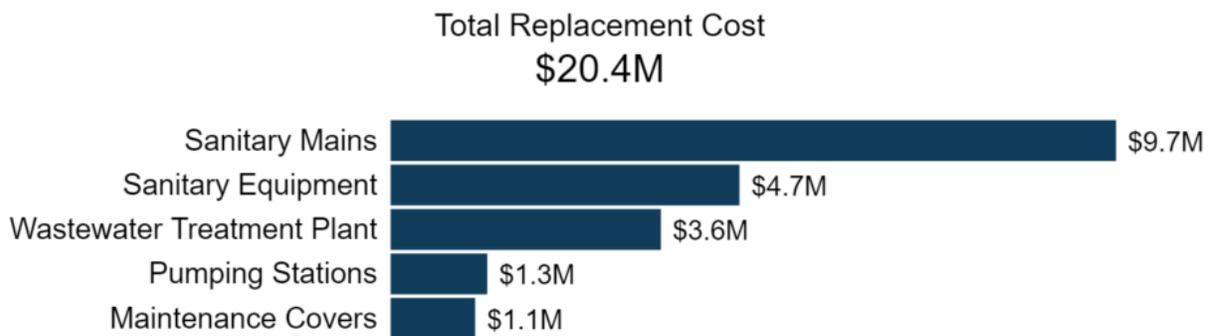
## 5.2 Sanitary Sewer Network

The Township of Hornepayne owns a sanitary sewer collection and wastewater treatment system while operations are handled by the Ontario Clean Water Agency. The Sanitary Sewer Network includes 11.6 kilometres of sewer mains, 6 pumping stations, a wastewater treatment plant, in addition to other supporting linear and non-linear infrastructure.

### 5.2.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township’s Sanitary Sewer Network inventory.

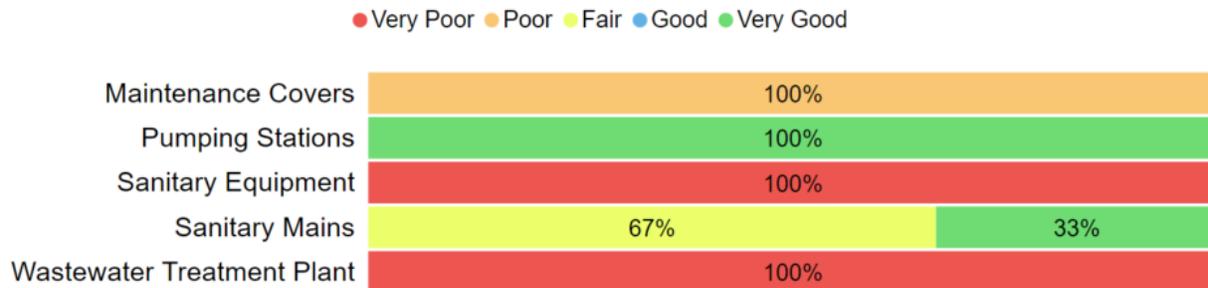
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Maintenance Covers	137	Cost/Unit	\$1,130,250
Pumping Stations	6	CPI Tables	\$1,293,349
Sanitary Equipment	7	CPI Tables	\$4,658,826
Sanitary Mains	11,593 m	Cost/Unit	\$9,684,753
Wastewater Treatment Plant	1	CPI Tables	\$3,609,170
			<b>\$20,376,348</b>



## 5.2.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Maintenance Covers	28%	Poor	Age-Based
Pumping Stations	94%	Very Good	Age-Based
Sanitary Equipment	0%	Very Poor	Age-Based
Sanitary Mains	60%	Good	Age-Based
	<b>38%</b>	<b>Poor</b>	<b>Age-Based</b>



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

### Current Approach to Condition Assessment

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

- OCWA operates the municipal wastewater network and is responsible for inspecting network infrastructure on a regular basis, including the Wastewater Treatment Plant (WWTP) and sewage collection system
- WWTP is assessed regularly by operators; the assessment of sanitary sewer mains through CCTV inspection is part of the next steps planned by OCWA

### 5.2.3 Estimated Useful Life & Average Age

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

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Maintenance Covers	60	43.3	16.7
Pumping Stations	50	2.8	47.1
Sanitary Equipment	20	44.0	-24.0
Sanitary Mains	75	42.8	32.1
		<b>42.3</b>	<b>24.4</b>



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

## 5.2.4 Lifecycle Management Strategy

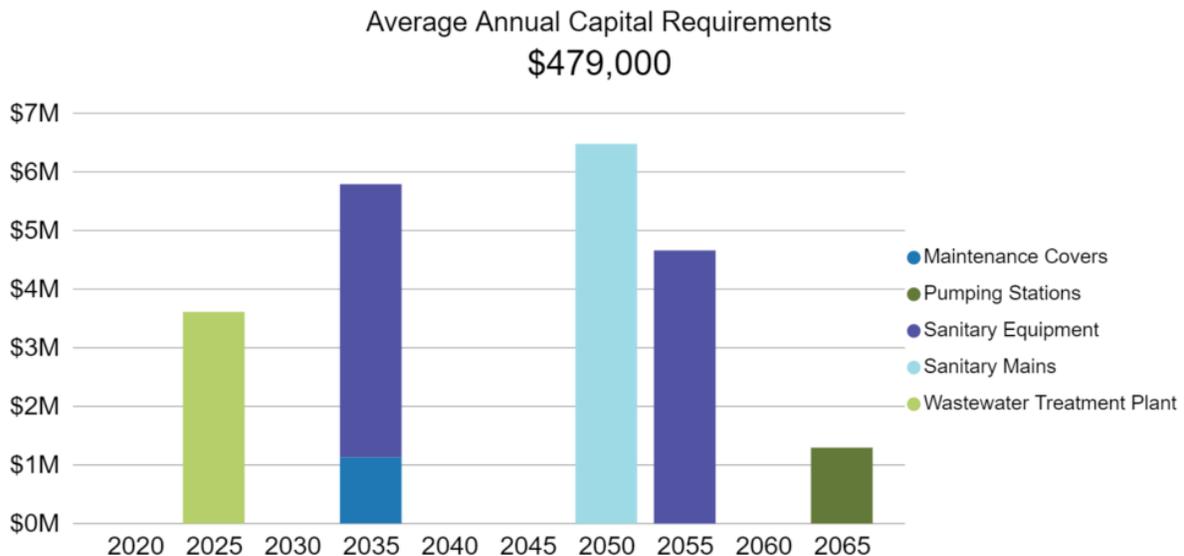
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Not many proactive maintenance strategies in place for wastewater collection system Inflow and infiltration is an ongoing concern that can be better understood through CCTV inspections
Rehabilitation	Trenchless re-lining has been discussed to address leaking; options are currently under evaluation CCTV inspections are required before a proactive renewal strategy can be determined
Replacement	Wastewater Treatment Plant is ~45 years old; and would likely need major retrofit within 10-12 years OCWA creates a 10-year capital plan, although it is subject to change depending on the level of funding available

### Forecasted Capital Requirements

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



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

## 5.2.5 Risk & Criticality

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

Consequence	5 Severe	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	4 Major	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	3 Moderate	0 Assets - \$0	0 Assets - \$0	2 Assets 18 m \$13,787	0 Assets - \$0	0 Assets - \$0
	2 Minor	0 Assets - \$0	0 Assets - \$0	153 Assets 10,728 m \$6,067,733	0 Assets - \$0	0 Assets - \$0
	1 Insignificant	0 Assets - \$0	0 Assets - \$0	15 Assets 845 m \$394,936	0 Assets - \$0	0 Assets - \$0
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
		Probability				

### Critical Assets

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

The above matrix provides a high-level overview of the level of risk present according to the criteria outlined in Appendix C. This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

## 5.2.6 Levels of Service

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

### Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2019)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix B
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Township 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 Township does not own any combined sewers.
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g. weeping tiles).  In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity and a manual bypass of the treatment plant may be required.  The disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.

Service Attribute	Qualitative Description	Current LOS (2019)
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	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.

### Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2019)
Scope	% of properties connected to the municipal wastewater system	66%
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	0.0044 <sup>9</sup>
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0022 <sup>10</sup>
Performance	Capital re-investment rate	0.45%

<sup>9</sup> 2 wastewater backups in 2019

<sup>10</sup> 1 effluent violation in 2019

## 5.2.7 Recommendations

### Asset Inventory/Data Refinement

- **Review GIS/TCA Data Management Process** – The primary source of Sanitary Sewer Network inventory was GIS data that the Township provided. This data was cross-referenced with the TCA inventory used for financial reporting. There is some misalignment between these two inventories that will need to be investigated further. To maintain alignment between both inventories a process will need to be developed to ensure that they match. As new projects are completed an identical record of the work completed should be reflected across both information systems. Pooled capital project costs will need to be split between individual assets.

### Condition Assessment Strategies

- **Develop a Condition Assessment Strategy** - This AMP relies on age-based condition data for all sanitary infrastructure. The development of a network-wide condition assessment program will provide greater reliability in the accuracy of the current condition data.
- **Review Backlog Assets** - Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

### Lifecycle Management Strategies

- **Develop a Long-Term Capital Plan** – While capital costs are projected to be limited for linear infrastructure over the next 30+ years, a major retrofit of the Wastewater Treatment Plant is expected in the next 10-15 years. To ensure that money is available to meet both short-term and long-term requirements a long-term capital plan should be developed and updated annually.

### Levels of Service

- **Measure Current Levels of Service** – This AMP contains a basic measurement of the Township’s current level of service according to the metrics established in O. Reg. 588/17 Staff should continue to measure the current level of service according to these metrics to allow for trend analysis that informs long-term planning
- **Identify Additional LOS Metrics** – Staff should identify additional LOS metrics that would inform both short- and long-term asset management planning
- **Identify Proposed Levels of Service** - Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

# 6 Impacts of Growth

## Key Insights

- Understanding the key drivers of growth and demand will allow the Township to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure
- Long-term growth planning will depend on the evolving local economy and size of labour force
- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

## 6.1 Description of Growth Assumptions

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

### 6.1.1 Housing Needs and Demand Study (2019)

A Housing Needs and Demand Study was prepared in 2019 in coordination with SHS Consulting<sup>11</sup>. The purpose of this study was to identify the current need for housing in Hornepayne and forecast future demand for affordable housing.

Three population forecasts were developed (low, moderate, and high growth). The likelihood of these scenarios is heavily dependent on an evolving economy and the availability of jobs. Each scenario represents different growth assumptions that must be accounted for in long-term planning.

Year	Low Growth	Medium Growth	High Growth
2016	-	980	-
2021	939	961	1250
2026	898	958	1275
2031	852	963	1253
2036	825	1005	1282
2041	800	1015	1289
<b>% Change 2016-2041</b>	<b>-18.4%</b>	<b>+3.6%</b>	<b>+31.5%</b>

Under the Low Growth scenario, a shrinking population will lead to a diminished tax base and an increasing burden on the remaining population to fund infrastructure requirements. The disposal of assets or a reduction of level of service would need to be considered.

Under the Medium Growth scenario, population growth would be minimal but steadily increasing. There may be a need for additional infrastructure to support growth, but requirements would likely be minimal.

Under the High Growth scenario, population would see rapid initial growth before plateauing. A population increase to this extent would likely require the expansion of infrastructure services and immediate planning is required.

<sup>11</sup> [https://www.townshipofhornepayne.ca/UserFiles/Servers/Server\\_12408788/Image/2019-528-1%20-%20Additional%20Document%20-%20Housing%20Needs%20and%20Demand%20Study%20-%20SHS%20Consulting%20Inc.pdf](https://www.townshipofhornepayne.ca/UserFiles/Servers/Server_12408788/Image/2019-528-1%20-%20Additional%20Document%20-%20Housing%20Needs%20and%20Demand%20Study%20-%20SHS%20Consulting%20Inc.pdf)

## 6.1.2 Workforce Development Issues in Hornepayne (2019)

In 2019 a report on Workforce Development issues in Hornepayne was prepared by the Hornepayne Economic Development Corporation<sup>12</sup>. The goal of the report was to identify the trends which have an impact on local labour markets and recognize how they will continue to affect Hornepayne's workforce.

The following changes in labour force size were identified based on data provided by Statistics Canada:

	Total Pop. 15 Years and Older	In the Labour Force	Not in the Labour Force
2006	950	690	260
2011	835	617	218
2016	800	565	240
<b>Net Change (2006-2016)</b>	<b>-150</b>	<b>-125</b>	<b>-20</b>

The report concluded by identifying Hornepayne's labour shortage as a growing problem while identifying several recommendations for consideration.

## 6.2 Impact of Growth on Lifecycle Activities

By July 1, 2024 the Township'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.

By this time a further evaluation of the trends and projections identified in both the Housing Needs and Demand Study and the Workforce Development Issues, will provide valuable insight into planning for the future.

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 Township'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 Township 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.

<sup>12</sup>[https://www.townshipofhornepayne.ca/UserFiles/Servers/Server\\_12408788/Image/Workforce%20Development%20Issues.pdf](https://www.townshipofhornepayne.ca/UserFiles/Servers/Server_12408788/Image/Workforce%20Development%20Issues.pdf)

# 7 Financial Strategy

## Key Insights

- The Township is committing approximately \$457,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of \$1,938,000, there is currently a funding gap of \$1,481,000 annually
- For tax-funded assets, we recommend increasing tax revenues by 1.7% each year for the next 20 years to achieve a sustainable level of capital funding
- For the Sanitary Sewer Network, we recommend increasing rate revenues by 4.6% annually for the next 20 years to achieve a sustainable level of capital funding
- For the Water Network, we recommend increasing rate revenues by 3.1% annually for the next 20 years to achieve a sustainable level of capital funding

## 7.1 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 Township of Hornepayne 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.

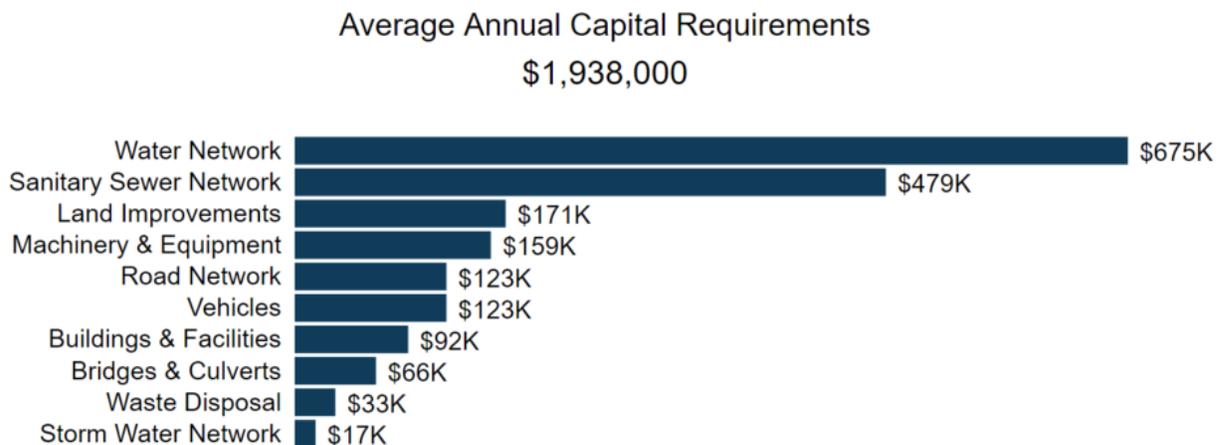
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Township's approach to the following:

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.

## 7.1.1 Annual Requirements & Capital Funding

### Annual Requirements

The annual requirements represent the amount the Township 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 Township must allocate approximately \$1.9 million annually to address capital requirements for the assets included in this AMP.



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

However, for the Road Network, lifecycle management strategies have been developed to identify capital cost savings that are realized through strategic rehabilitation and renewal. 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:

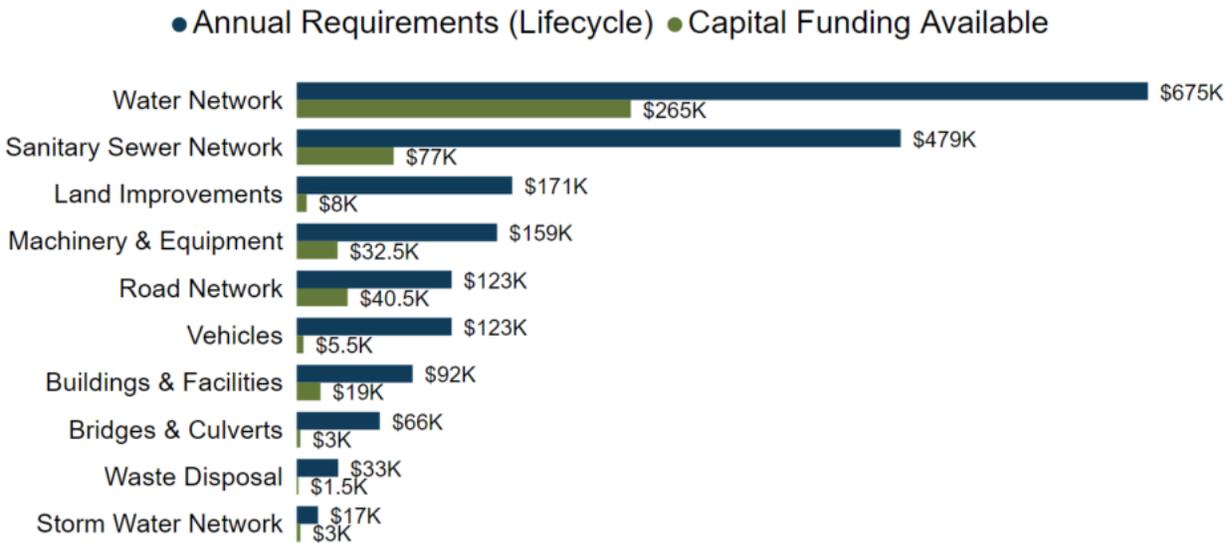
1. **Replacement Only Scenario:** Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario:** Based on the assumption that lifecycle activities are performed at strategic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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	\$155,000	\$123,000	\$22,000

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of \$22,000 for the Road Network. This represents an overall reduction of the annual requirements for each category by 14%. As the lifecycle strategy scenario represents the lowest cost option available to the Township, we have used these annual requirements in the development of the financial strategy.

### Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately \$457,000 towards capital projects per year. Given the annual capital requirement of \$1,938,000, there is currently a funding gap of \$1,481,000 annually.



## 7.2 Funding Objective

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

1. **Tax Funded Assets:** Bridges & Culverts, Road Network, Stormwater Network, Buildings & Facilities, Machinery & Equipment, Land Improvements, Vehicles, Waste Disposal
2. **Rate-Funded Assets:** Water Network, Sanitary Sewer Network

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

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

## 7.3 Financial Profile: Tax Funded Assets

### 7.3.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	Gas Tax	OCIF	Total Available	
Bridges & Culverts	66,000	3,000	0	0	3,000	63,000
Buildings & Facilities	92,000	4,000	15,000	0	19,000	73,000
Land Improvements	171,000	8,000	0	0	8,000	163,000
Machinery & Equipment	159,000	8,000	25,000	0	33,000	126,000
Road Network	123,000	6,000	20,000	15,000	41,000	82,000
Storm Water Network	17,000	1,000	0	2,000	3,000	14,000
Vehicles	123,000	6,000	0	0	6,000	117,000
Waste Disposal	33,000	2,000	0	0	2,000	31,000
	<b>784,000</b>	<b>38,000</b>	<b>60,000</b>	<b>17,000</b>	<b>115,000</b>	<b>669,000</b>

The average annual investment requirement for the above categories is \$784,000. Annual revenue currently allocated to these assets for capital purposes is \$115,000 leaving an annual deficit of \$669,000. Put differently, these infrastructure categories are currently funded at 15% of their long-term requirements.

### 7.3.2 Full Funding Requirements

In 2019, Township of Hornepayne has annual tax revenues of \$1,827,000. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Bridges & Culverts	3.4%
Buildings & Facilities	4.0%
Land Improvements	8.9%
Machinery & Equipment	6.9%
Road Network	4.5%
Storm Water Network	0.8%
Vehicles	6.4%
Waste Disposal	1.7%
	<b>36.6%</b>

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

- a) Hornepayne’s debt payments for these asset categories will be decreasing by \$1,000 over the next 5 years and by \$56,000 over the next 10 years. Although not shown in the table, debt payment decreases will be \$56,000 and \$56,000 over the next 15 and 20 years respectively.

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

	Without Capturing Changes				With Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	669,000	669,000	669,000	669,000	669,000	669,000	669,000	669,000
Change in Debt Costs	N/A	N/A	N/A	N/A	-1,000	-56,000	-56,000	-56,000
<b>Resulting Infrastructure Deficit:</b>	<b>669,000</b>	<b>669,000</b>	<b>669,000</b>	<b>669,000</b>	<b>668,000</b>	<b>613,000</b>	<b>613,000</b>	<b>613,000</b>
Tax Increase Required	36.6%	36.6%	36.6%	36.6%	36.6%	33.6%	33.6%	33.6%
<b>Annually:</b>	<b>7.3%</b>	<b>3.7%</b>	<b>2.4%</b>	<b>1.8%</b>	<b>7.3%</b>	<b>3.4%</b>	<b>2.2%</b>	<b>1.7%</b>

### 7.3.3 Financial Strategy Recommendations

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

- a) when realized, reallocating the debt cost reductions of \$56,000 to the infrastructure deficit as outlined above.
- b) increasing tax revenues by 1.7% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- c) allocating the current gas tax and OCIF revenue as outlined previously.
- d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment<sup>13</sup>.
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available.

Current data shows a pent-up investment demand of \$793,000 for Land Improvements, \$506,000 for Machinery & Equipment, \$33,000 for Waste Disposal and \$28,000 for Vehicles.

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

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<sup>13</sup> The Township should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

## 7.4 Financial Profile: Rate Funded Assets

### 7.4.1 Current Funding Position

The following tables show, by asset category, Hornepayne’s average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit
		Rates	To Operations	OCIF	
Water Network	675,000	655,000	-474,000	84,000	410,000
Sanitary Sewer Network	479,000	412,000	-395,000	60,000	402,000
	<b>1,154,000</b>	<b>1,067,000</b>	<b>-869,000</b>	<b>144,000</b>	<b>812,000</b>

The average annual investment requirement for the above categories is \$1,154,000. Annual revenue currently allocated to these assets for capital purposes is \$342,000 leaving an annual deficit of \$812,000. Put differently, these infrastructure categories are currently funded at 30% of their long-term requirements.

### 7.4.2 Full Funding Requirements

In 2019, Hornepayne had annual sanitary revenues of \$412,000 and annual water revenues of \$655,000. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water Network	62.6%
Sanitary Sewer Network	97.6%

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

- a) Hornepayne’s debt payments for the Sanitary Sewer Network will be decreasing by \$21,000 over the next 20 years.
- b) For the Water Network, there are no decreases to debt payments over the next 20 years.

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

Financial Strategy Financial Profile: Rate Funded Assets

	Water Network				Sanitary Sewer Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	410,000	410,000	410,000	410,000	402,000	402,000	402,000	402,000
Rate Increase Required	62.6%	62.6%	62.6%	62.6%	97.6%	97.6%	97.6%	97.6%
<b>Annually:</b>	<b>12.5%</b>	<b>6.3%</b>	<b>4.2%</b>	<b>3.1%</b>	<b>19.5%</b>	<b>9.8%</b>	<b>6.5%</b>	<b>4.9%</b>

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

	Water Network				Sanitary Sewer Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	410,000	410,000	410,000	410,000	402,000	402,000	402,000	402,000
Change in Debt Costs	0	0	0	0	-3,000	-21,000	-21,000	-21,000
<b>Resulting Deficit</b>	<b>410,000</b>	<b>410,000</b>	<b>410,000</b>	<b>410,000</b>	<b>399,000</b>	<b>381,000</b>	<b>381,000</b>	<b>381,000</b>
Rate Increase Required	62.6%	62.6%	62.6%	62.6%	96.8%	92.5%	92.5%	92.5%
<b>Annually:</b>	<b>12.5%</b>	<b>6.3%</b>	<b>4.2%</b>	<b>3.1%</b>	<b>19.4%</b>	<b>9.3%</b>	<b>6.2%</b>	<b>4.6%</b>

### 7.4.3 Financial Strategy Recommendations

Considering all of the above information, we recommend the 20-year option that includes debt cost reallocations. This involves full funding being achieved over 20 years by:

- a) when realized, reallocating the debt cost reductions of \$21,000 for sanitary services to the applicable infrastructure deficit.
- b) increasing rate revenues by 4.6% for sanitary services and 3.1% for water services each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- c) 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. The Township will continue to rely on grants and transfers from other levels of government to maintain current levels of service for existing infrastructure. Currently only the Federal Gas Tax and Ontario Community Infrastructure Fund provide a sustainable source of capital revenue. As the availability of these grants evolves, this must be integrated into long-term planning.
- 4. Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of \$484,000 for the Water Network and \$4,659,000 for the Sanitary Sewer Network.

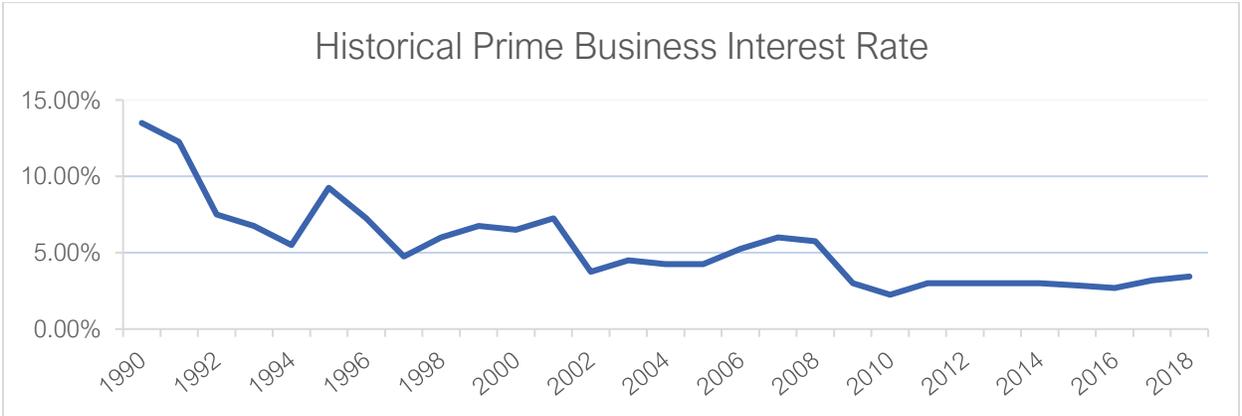
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

# 7.5 Use of Debt

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a \$1M project financed at 3.0%<sup>14</sup> over 15 years would result in a 26% premium or \$260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

Interest Rate	Number of Years Financed					
	5	10	15	20	25	30
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:



<sup>14</sup> Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

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

The following tables outline how Hornepayne has historically used debt for investing in the asset categories as listed. There is currently \$1,487,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of \$142,000, well within its provincially prescribed maximum of \$806,000.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2015	2016	2017	2018	2019
Bridges & Culverts	0	0	0	0	0	0
Buildings & Facilities	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Road Network	0	0	0	0	0	0
Storm Water Network	0	0	0	0	0	0
Vehicles	341,000	0	406,000	0	78,000	0
Waste Disposal	0	0	0	0	0	0
<b>Total Tax Funded:</b>	<b>341,000</b>	<b>0</b>	<b>406,000</b>	<b>0</b>	<b>78,000</b>	<b>0</b>
Water Network	1,005,000	0	0	0	0	0
Sanitary Sewer Network	141,000	0	0	0	166,000	0
<b>Total Rate Funded:</b>	<b>1,146,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>166,000</b>	<b>0</b>

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2020	2021	2022	2023	2024	2025	2030
Bridges & Culverts	0	0	0	0	0	0	0
Buildings & Facilities	0	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0	0
Road Network	0	0	0	0	0	0	0
Storm Water Network	0	0	0	0	0	0	0
Vehicles	56,000	56,000	56,000	55,000	55,000	55,000	0
Waste Disposal	0	0	0	0	0	0	0
<b>Total Tax Funded:</b>	<b>56,000</b>	<b>56,000</b>	<b>56,000</b>	<b>55,000</b>	<b>55,000</b>	<b>55,000</b>	<b>0</b>
Water Network	65,000	65,000	65,000	65,000	65,000	65,000	65,000
Sanitary Sewer Network	21,000	20,000	20,000	19,000	19,000	18,000	0
<b>Total Rate Funded:</b>	<b>86,000</b>	<b>85,000</b>	<b>85,000</b>	<b>84,000</b>	<b>84,000</b>	<b>83,000</b>	<b>65,000</b>

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

## 7.6 Use of Reserves

### 7.6.1 Available Reserves

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

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

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

Asset Category	Balance at December 31, 2019
Bridges & Culverts	31,000
Buildings & Facilities	101,000
Land Improvements	44,000
Machinery & Equipment	95,000
Road Network	31,000
Storm Water Network	0
Vehicles	31,000
Waste Disposal	0
<b>Total Tax Funded:</b>	<b>333,000</b>
Water Network	145,000
Sanitary Sewer Network	145,000
<b>Total Rate Funded:</b>	<b>290,000</b>

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Township should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should take into account 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 Hornepayne's judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

## 7.6.2 Recommendation

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

# 8 Appendices

## Key Insights

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

# Appendix A: 10-Year Capital Requirements

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

Road Network											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Paved Roads	\$0	\$0	\$0	\$0	\$1,717,009	\$0	\$0	\$0	\$0	\$0	\$2,261,069
Streetlights	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,717,009</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,261,069</b>

Bridges & Culverts											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Jackfish Creek Culverts	\$0	\$0	\$20,500	\$0	\$0	\$0	\$61,500	\$0	\$0	\$0	\$0
Jackfish Creek Bridge	\$0	\$0	\$0	\$0	\$0	\$0	\$83,000	\$0	\$0	\$0	\$0
	<b>\$0</b>	<b>\$0</b>	<b>\$20,500</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$144,500</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Storm Water Network											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Catch Basins	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storm Sewers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$0</b>										

**Buildings & Facilities**

Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Airport	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Arena	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Curling Club	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Municipal Building/Fire Hall	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Public Works Buildings	\$0	\$0	\$55,566	\$0	\$24,697	\$0	\$0	\$0	\$0	\$24,697	\$0
	<b>\$0</b>	<b>\$0</b>	<b>\$55,566</b>	<b>\$0</b>	<b>\$24,697</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$24,697</b>	<b>\$0</b>

**Machinery & Equipment**

Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Admin Equipment	\$87,241	\$0	\$0	\$0	\$18,473	\$99,667	\$32,062	\$16,470	\$0	\$18,473	\$99,667
Airport Equipment	\$372,896	\$0	\$268,843	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fire Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$103,973	\$17,874	\$22,179	\$0	\$0
Library Books	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$177,992	\$0	\$0
Public Works Equipment	\$0	\$0	\$0	\$0	\$0	\$24,605	\$6,868	\$0	\$0	\$0	\$16,626
Recreation Equipment	\$46,092	\$0	\$21,026	\$0	\$72,974	\$41,231	\$7,264	\$0	\$9,585	\$0	\$316,685
	<b>\$506,229</b>	<b>\$0</b>	<b>\$289,869</b>	<b>\$0</b>	<b>\$91,447</b>	<b>\$165,503</b>	<b>\$150,167</b>	<b>\$34,344</b>	<b>\$209,756</b>	<b>\$18,473</b>	<b>\$432,978</b>

Vehicles											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Airport Vehicles	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$428,673	\$0
Fire Vehicles	\$16,700	\$0	\$0	\$0	\$0	\$0	\$95,472	\$0	\$0	\$0	\$0
Public Works Vehicles	\$11,254	\$0	\$42,585	\$0	\$0	\$74,798	\$0	\$33,856	\$30,419	\$522,988	\$0
	<b>\$27,954</b>	<b>\$0</b>	<b>\$42,585</b>	<b>\$0</b>	<b>\$0</b>	<b>\$74,798</b>	<b>\$95,472</b>	<b>\$33,856</b>	<b>\$30,419</b>	<b>\$951,661</b>	<b>\$0</b>

Land Improvements											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Airport Runway	\$792,294	\$0	\$0	\$0	\$0	\$0	\$0	\$2,019,461	\$0	\$0	\$0
Parking Lots	\$0	\$0	\$0	\$0	\$2,957	\$0	\$0	\$0	\$0	\$0	\$0
Playground Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$44,425	\$0	\$0	\$0	\$0
Tennis Court	\$0	\$0	\$0	\$0	\$70,331	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$792,294</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$73,288</b>	<b>\$0</b>	<b>\$44,425</b>	<b>\$2,019,461</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Waste Disposal											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Landfill	\$0	\$0	\$0	\$101,709	\$301,813	\$0	\$0	\$0	\$0	\$0	\$0
Solid Waste Vehicles	\$33,267	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Waste Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,989	\$0
Waste Transfer Station	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$33,267</b>	<b>\$0</b>	<b>\$0</b>	<b>\$101,709</b>	<b>\$301,813</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$8,989</b>	<b>\$0</b>

Water Network											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Hydrants	\$483,800	\$32,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,200	\$16,400
Service Leads	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Valves	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$99,944
Water Mains	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Tower	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Treatment Plant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$483,800</b>	<b>\$32,800</b>	<b>\$0</b>	<b>\$8,200</b>	<b>\$116,344</b>						

Sanitary Sewer Network											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Maintenance Covers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pumping Stations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sanitary Equipment	\$4,658,826	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Wastewater Treatment Plant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,609,170	\$0	\$0	\$0
	<b>\$4,658,826</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,609,170</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

All Asset Categories											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Road Network	\$0	\$0	\$0	\$0	\$1,717,009	\$0	\$0	\$0	\$0	\$0	\$2,261,069
Bridges & Culverts	\$0	\$0	\$20,500	\$0	\$0	\$0	\$144,500	\$0	\$0	\$0	\$0
Storm Water Network	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Buildings & Facilities	\$0	\$0	\$55,566	\$0	\$24,697	\$0	\$0	\$0	\$0	\$24,697	\$0
Machinery & Equipment	\$506,229	\$0	\$289,869	\$0	\$91,447	\$165,503	\$150,167	\$34,344	\$209,756	\$18,473	\$432,978
Vehicles	\$27,954	\$0	\$42,585	\$0	\$0	\$74,798	\$95,472	\$33,856	\$30,419	\$951,661	\$0
Land Improvements	\$792,294	\$0	\$0	\$0	\$73,288	\$0	\$44,425	\$2,019,461	\$0	\$0	\$0
Waste Disposal	\$33,267	\$0	\$0	\$101,709	\$301,813	\$0	\$0	\$0	\$0	\$8,989	\$0
Water Network	\$483,800	\$32,800	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,200	\$116,344
Sanitary Sewer Network	\$4,658,826	\$0	\$0	\$0	\$0	\$0	\$0	\$3,609,170	\$0	\$0	\$0
	<b>\$6,502,370</b>	<b>\$32,800</b>	<b>\$408,520</b>	<b>\$101,709</b>	<b>\$2,208,254</b>	<b>\$240,301</b>	<b>\$434,564</b>	<b>\$5,696,831</b>	<b>\$240,175</b>	<b>\$1,012,020</b>	<b>\$2,810,391</b>

# Appendix B: Level of Service Maps & Images

Township of Homepayne  
Jackfish Creek Bridge

19-1516  
July 13, 2019



Picture 3 – South Elevation

Township of Homepayne  
Roundhouse Road Culvert

19-1516  
July 13, 2019



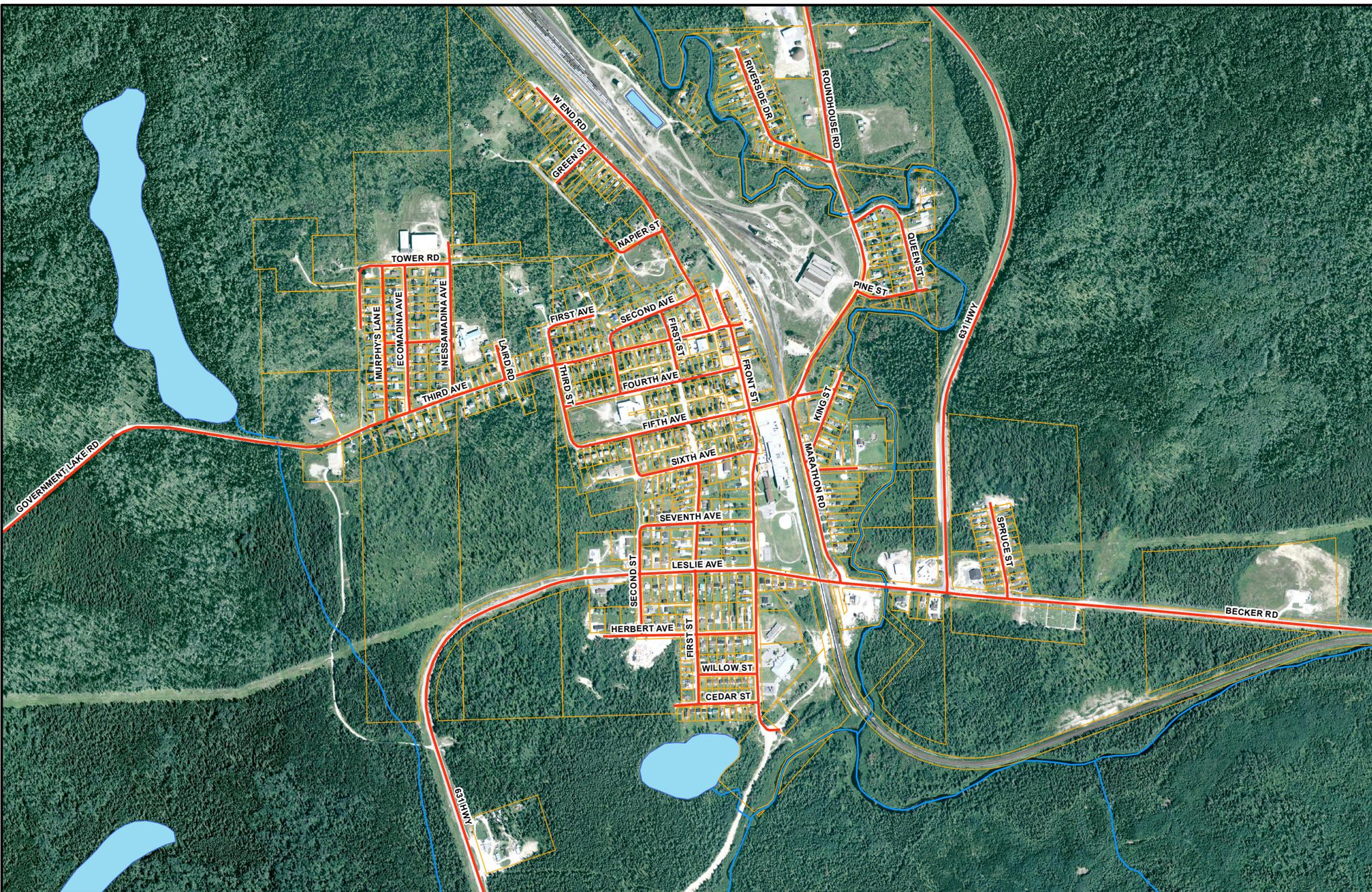
Picture 3 – West Elevation



Picture 4 – North Elevation



Picture 4 – East Elevation

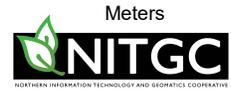


**Legend**

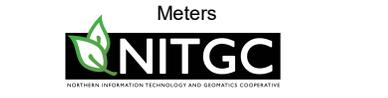
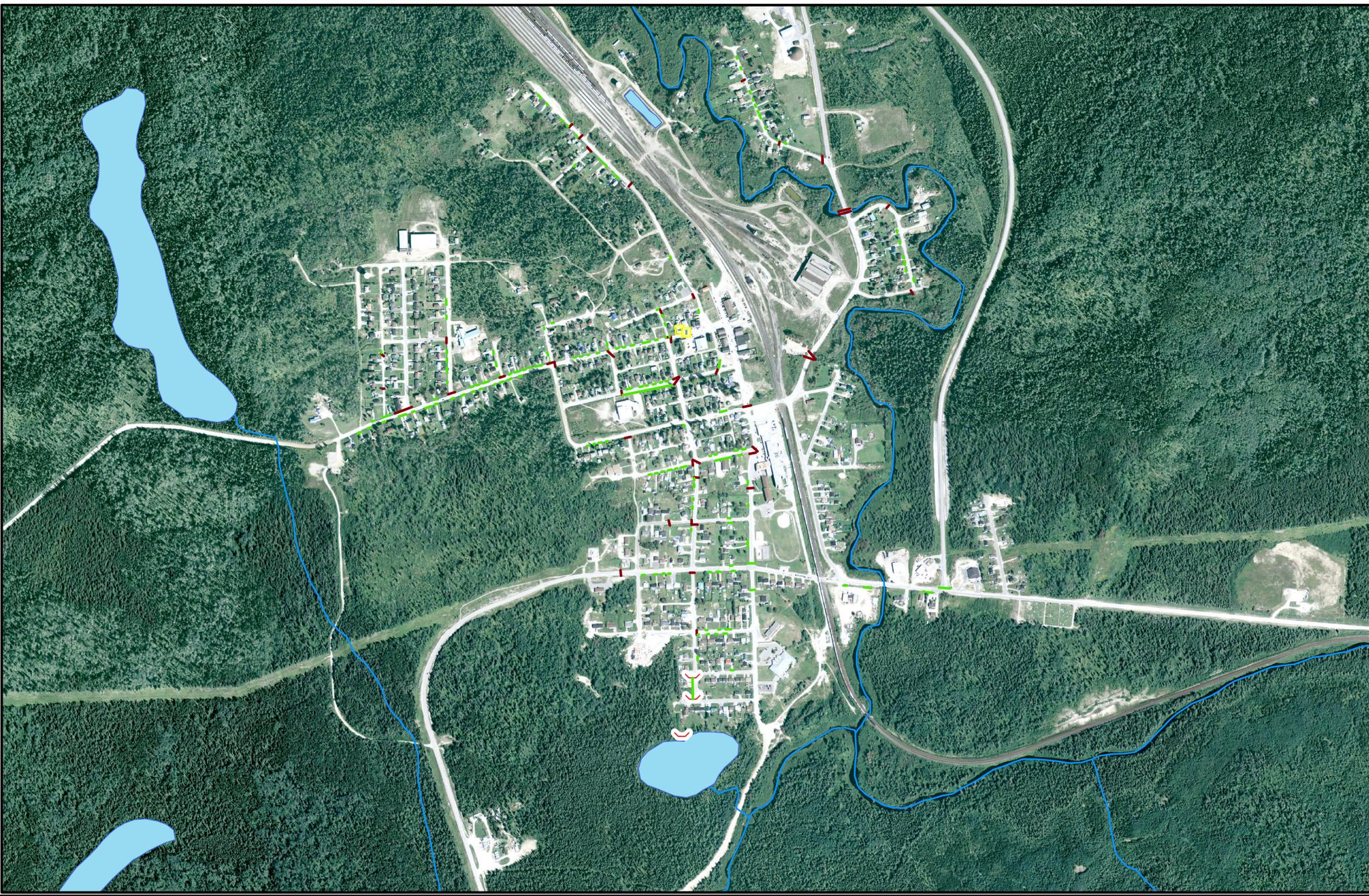
- Hornepayne Roads
- Parcel
- Lakes
- Rivers

# *Hornepayne Road Network*

## *Township of Hornepayne*



Maps are provided as a courtesy only and the Municipality of Wawa makes no warranties as to the accuracy of the information. This map is not intended to be used for conveyance, authoritative definition of the legal boundary, or property title. This is not a survey product.



**Legend**

<b>Culvert</b>	<b>IOStructType</b>
Cross	OtherIOStructure
Driveway	Catch Basin

*Hornepayne Storm Network*  
*Township of Hornepayne*

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**Legend**

- |                  |             |                           |
|------------------|-------------|---------------------------|
| --- Service Lead | ◆ Hydrant   | □ Production Well         |
| ⊙ Bend           | WTP WTP     | PS Pump Station           |
| ⌋ Cap            | ⊞ Tank      | ▶ Intake                  |
| ⊕ Cross          | ▭ Reservoir | — < 12" (300 mm) diameter |
| ▽ Reducer        |             | — > 12" (300 mm) diameter |
| ⊕ Tee            |             | — Unknown diameter        |

# Hornepayne Water Network

## Township of Hornepayne

0 87.5 175 350 525

Meters



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**Legend**

- Sanitary
- Sanitary, Gravity
- PS Pumping Station
- Sanitary, Chamber
- Sanitary, MH
- Bend
- PS Coupling
- \ Elbow\_11.25D
- / Elbow\_22.5D
- \ Elbow\_45D
- } Endcap
- Sanitary, Force Main

# Hornepayne Sewer Network

## Township of Hornepayne



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# Appendix C: Risk Rating Criteria

## Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Roads)	Condition	80%	80-100	1
Bridges & Culverts			60-79	2
Storm Water Network (Mains)			40-59	3
Water Network (Mains)			20-39	4
Sanitary Sewer Network (Mains)			0-19	5

## Consequence of Failure

Asset Category	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Road Class (100%)	Collector	4
		Local/Street	2
Bridges & Culverts	Replacement Cost (100%)	\$2,000,000+	5
		\$1,000,000 - \$2,000,000	4
		\$500,000 - \$1,000,000	3
		\$250,000 - \$500,000	2
		\$0 - \$250,000	1
Storm Water Network (Mains)	Pipe Size (mm) (100%)	900mm+	5
		600mm - 900mm	4
		450mm - 600mm	3
		300mm - 450mm	2
		0mm - 300mm	1
Sanitary Sewer Network (Mains)	Diameter (70%)	500mm+	5
		400mm-500mm	4
		250mm-400mm	3
		150mm-250mm	2
	Sewer Type (30%)	100mm-150mm	1
		FM	4
		OVFLW	3
Water Network (Mains)	Pipe Size (mm) (100%)	GRAV	2
		300mm	5
		250mm	4
		200mm	3
		150mm	2
		100mm	1

# Appendix D: Condition Assessment Guidelines

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

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