Asset Management Plan

2022

This Asset Management Program was prepared by:

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

Key Statistics

Replacement cost of asset portfolio
$285.8 million

Replacement cost of infrastructure per household
$125,536 (2021)

Percentage of assets in fair or better condition
65%

Percentage of assets with assessed condition data
54%

Annual capital infrastructure deficit
$5.2 million

Recommended timeframe for eliminating annual infrastructure deficit
20 Years

Target reinvestment rate
2.3%

Actual reinvestment rate
0.44%

Table of Contents

Executive Summary

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

Scope

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

This AMP include the following asset categories:

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

Findings

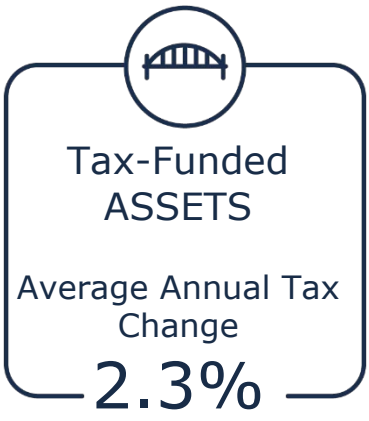
The overall replacement cost of the asset categories included in this AMP totals $285.8 million. 65% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 54% of assets. For the remaining 46% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.
The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

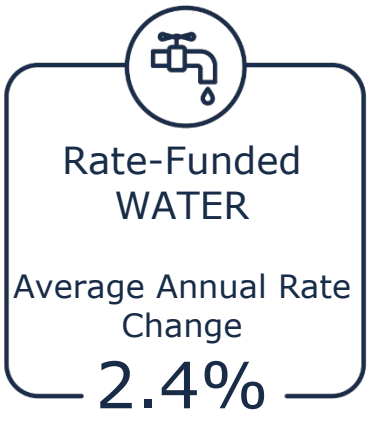
To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $6.5 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $1.3 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $5.2 million.

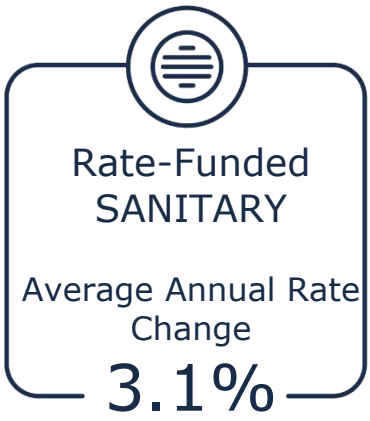
It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Township. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Township's infrastructure deficit based on a 20-year plan for tax-funded assets and sanitary assets, and a 15-year plan for water assets:







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

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

1 Introduction & Context

Key Insights

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

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

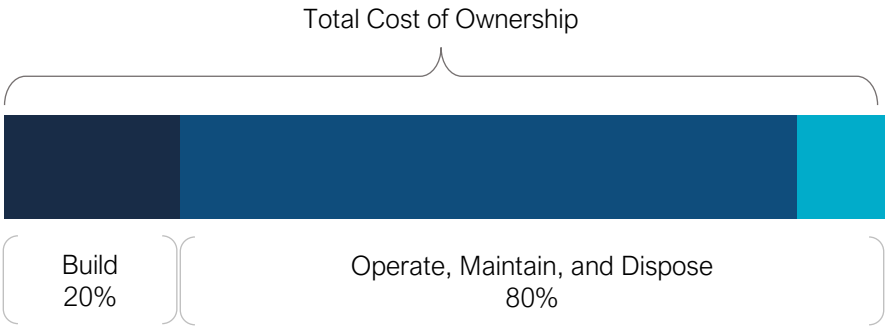
- An asset management plan is a living document that should be updated regularly to inform long-term planning

- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 An Overview of Asset Management

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

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



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

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

1.1.1 Asset Management Policy

An asset management policy represents a statement of the principles guiding the Township'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 adopted By-law No. 54-2019 "A By-law to Adopt a Strategic Asset Management Policy for the Township of North Huron" on June 3rd, 2019 in accordance with Ontario Regulation 588/17.

The objectives of the policy are to provide a framework for implementing asset management, and to provide guidance to staff responsible for asset management.

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

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

The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. This will allow the Township 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. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

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

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

1.2.3 Levels of Service

A level of service (LOS) is a measure of what the 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

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges, water, wastewater, storm) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core

asset categories, the Township has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

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

Current and Proposed Levels of Service

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

Proposed levels of service should be realistic and achievable within the timeframe outlined by the 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 2025, 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.

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

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

2025

Asset Management Plan for All Assets with the following additional components:

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

1.3.1 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2024. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 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 Township's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 5.2.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.2.6	Complete
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.2.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix A	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	6.1-6.2	Complete

2 Scope and Methodology

Key Insights

- This asset management plan includes 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 Categories Included in this AMP

This asset management plan for the Township of North Huron is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of all assets.

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

Asset Category	Source of Funding
Road Network	Tax Levy
Bridges	
Storm Network	
Buildings	
Vehicles	
Machinery & Equipment	
Information Technology	
Land Improvements	
Water Network	User Rates
Sanitary Network	

2.2 Deriving Replacement Costs

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

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

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

2.3 Estimated Useful Life and Service Life Remaining

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

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

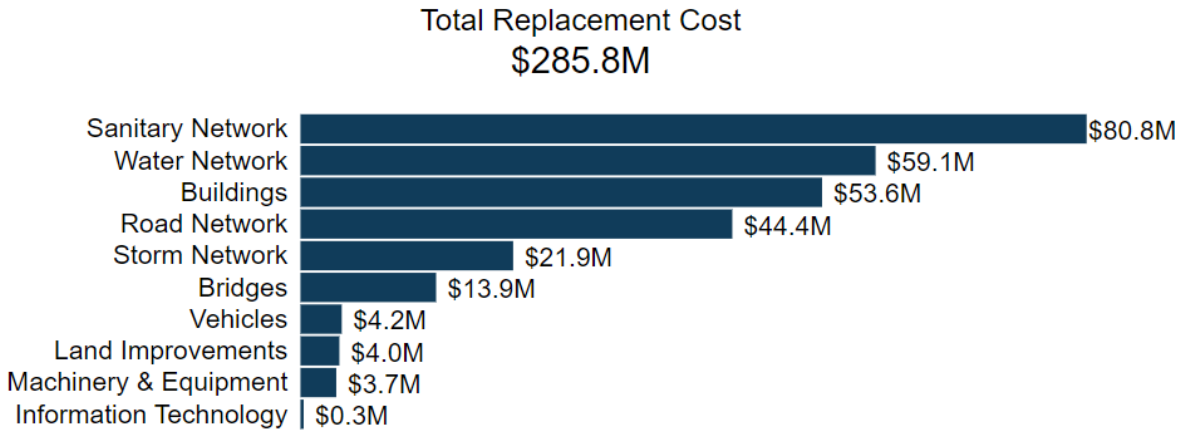
3 Portfolio Overview

Key Insights

- The total replacement cost of the Township's asset portfolio is $285.8 million
- The Township's target re-investment rate is 2.3%, and the actual re-investment rate is 0.44%, contributing to an expanding infrastructure deficit
- 65% of all assets are in fair or better condition
- 24% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $6.5 million per year across all assets

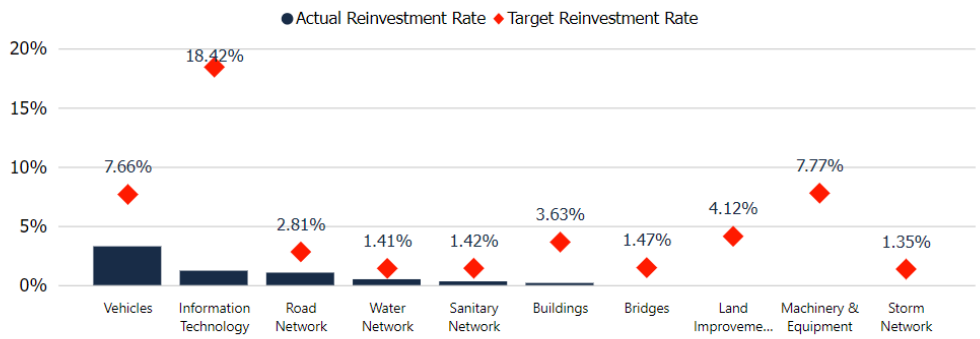
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $285.8 million based on inventory data from 2021. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



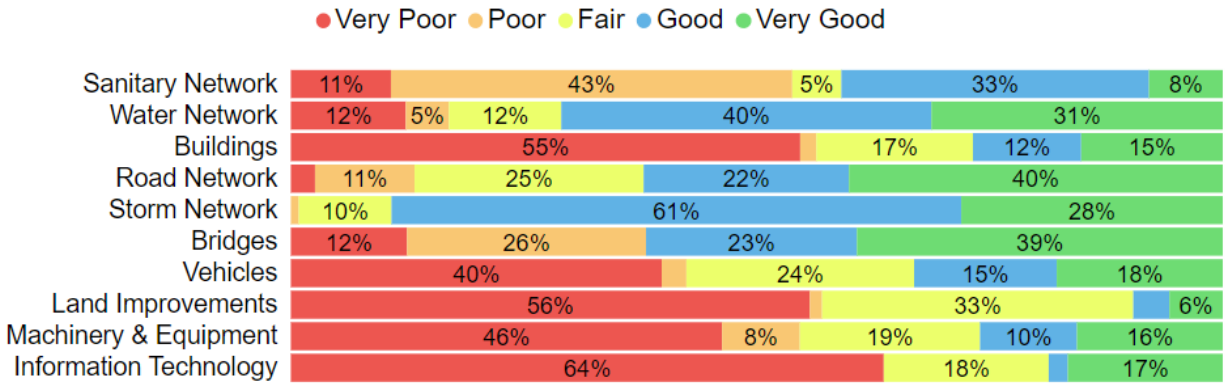
3.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Township should be allocating approximately $6.5 million annually, for a target reinvestment rate of 2.3%. Actual annual spending on infrastructure totals approximately $1.3 million, for an actual reinvestment rate of 0.44%.



3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 65% of assets in North Huron are in fair or better condition. This estimate relies on both age-based and field condition data.



This AMP relies on assessed condition data for 54% 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.

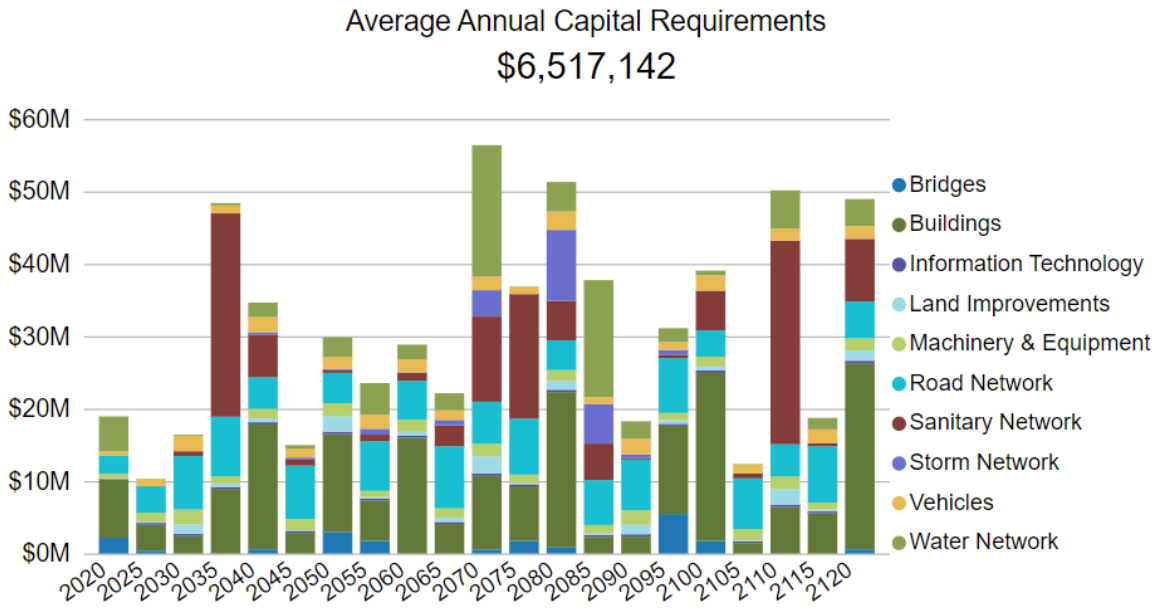
Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	All	84%	2016 Road Needs Study & Staff Assessments
Bridges	All	88%	2020 OSIM Report
Storm Network	All	79%	Staff Assessments
Buildings	All	0%	N/A
Machinery & Equipment	All	0%	N/A
Information Technology		0%	N/A
Vehicles	All	0%	N/A
Land Improvements	All	0%	N/A
Water Network	All	96%	Staff Assessments
Sanitary Network	All	48%	Staff Assessments

3.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 24% of the Township's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix A.

3.5 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Township can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 100 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $146 million
- 67% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $4.5 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

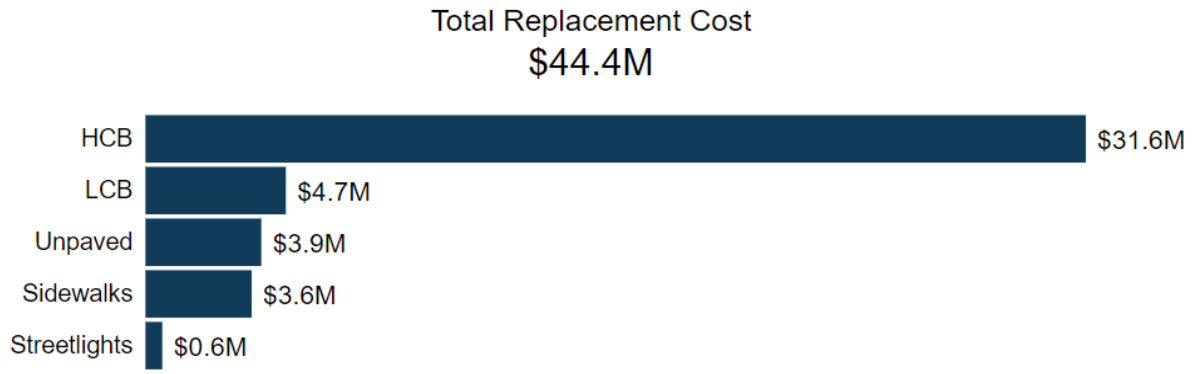
4.1 Road Network

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 and streetlights.

4.1.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
HCB Roads	47,898 m	$31,615,496	$948,629
LCB Roads	11,268 m	$4,720,459	$131,541
Sidewalks	24,478 m	$3,570,282	$61,314
Streetlights	603 (count)	$565,705	$30,257
Unpaved Roads	120,253 m	$3,894,600	$75,343
	Total	**$44,366,542**	**$1,247,084**



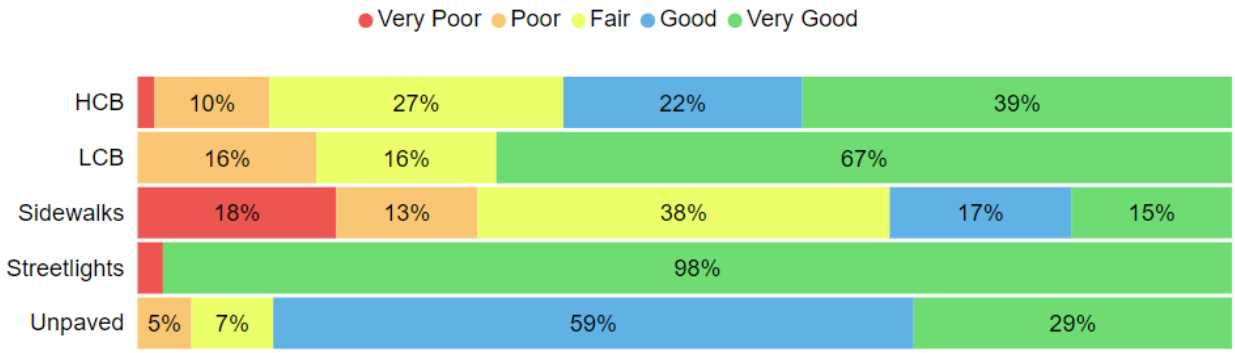
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.1.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
HCB Roads	20 Years	45.7	Good (67%)
LCB Roads	10-20 Years	1.2	Good (73%)
Sidewalks	10-60 Years	35.4	Fair (49%)
Streetlights	5-20 Years	3.9	Very Good (81%)
Unpaved Roads	20-100 Years	108.9	Good (77%)
	Average	**45.9**	**Good (67%)**

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



To ensure that the Township's road 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 roads.

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

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 Township's current approach:

- A Road Needs Study was completed in 2016 by external contractors that included a detailed assessment of the condition of each road segment
- A street scan was completed in 2020 however, the data has not yet been uploaded to Citywide
- Staff assessments are completed based on Minimum Maintenance Standard
- In the future staff are aiming to perform Road Needs Studies internally

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

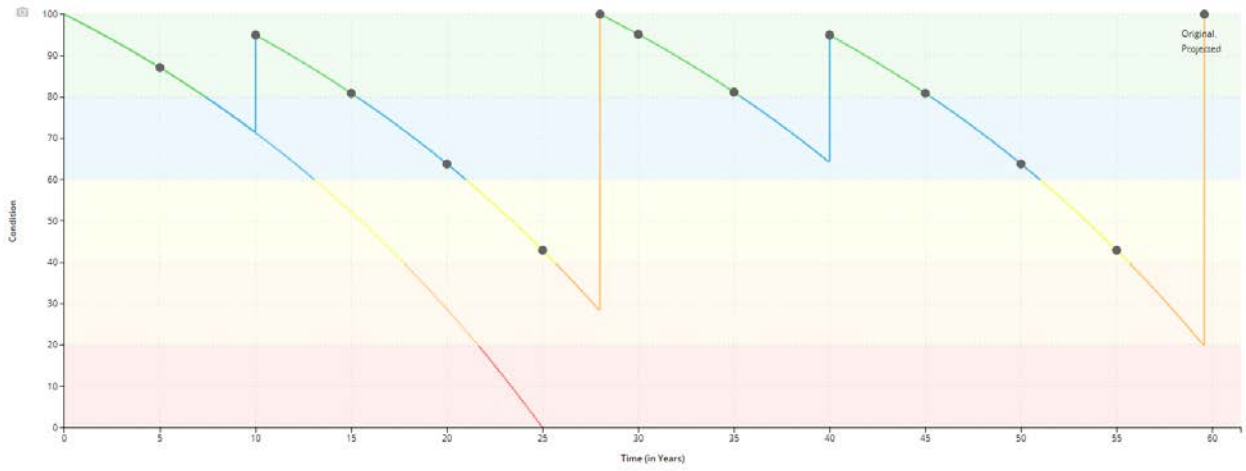
Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

4.1.3 Lifecycle Management Strategy

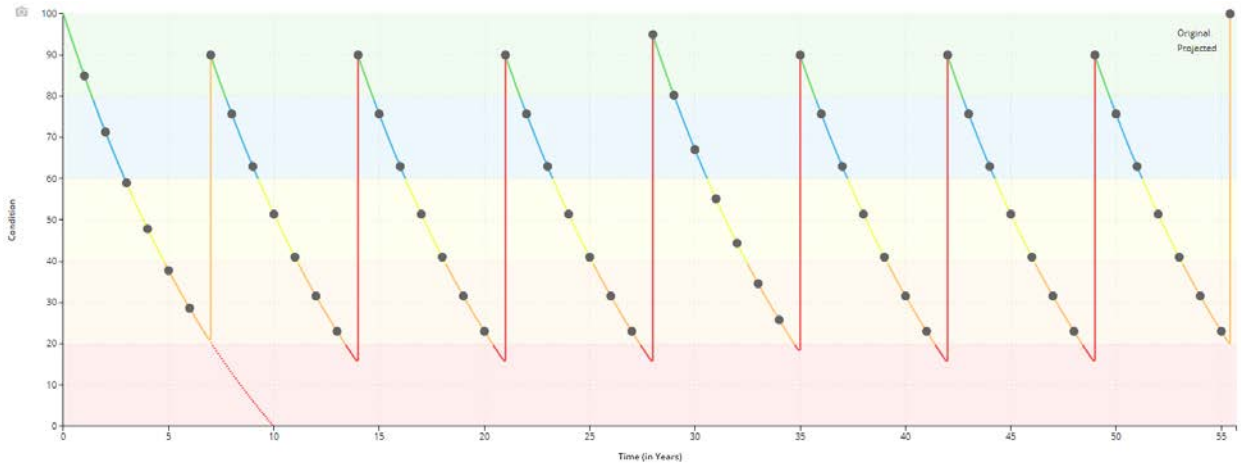
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

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

Paved Roads (HCB)		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Maintenance	5 Years (Repeated)
Single Lift 1	Rehabilitation	10 Years
Double Lift	Rehabilitation	28 Years
Single Lift 2	Rehabilitation	40 Years
Full Reconstruction	Replacement	Condition



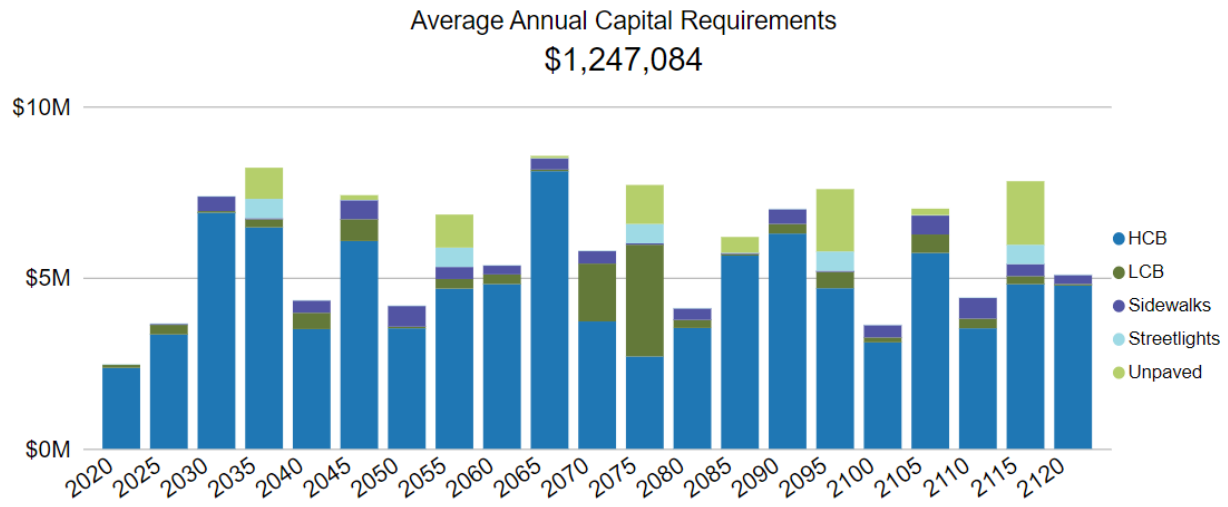
Paved Roads (LCB)		
Event Name	**Event Class**	**Event Trigger**
Patching	Maintenance	1 Year (Repeated)
Pulverizing and Repaving	Rehabilitation	28 Years
Single Surface Treatment – 1st Cycle	Rehabilitation	7 Years (Repeated)
Single Surface Treatment – 2nd Cycle – 1st Application	Rehabilitation	35 Years
Single Surface Treatemnt – 2nd Cycle – 2nd Application	Rehabilitation	42 Years
Single Surface Treatment – 2nd Cycle – 3rd Application	Rehabilitation	49 Years
Full Reconstruction	Replacement	Condition



Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for HCB and LCB roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the road network.

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 100 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

4.1.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)

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

Risks to Current Asset Management Strategies

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

Lifecyle Management Strategies

There is some concern that the lack of defined lifecycle management strategy for roads in the past resulted in the inadequate maintenance of road pavement structures. Staff are working on the development of a suitable lifecycle management strategy for roads that accounts for their current condition and how they have been historically maintained.

Organizational Cognizance/Capacity

There is presently not enough staff capacity to manage capital projects relating to the road network. Due to staffing constraints, the Township is not able to engage in proactive management of the road network assets.

Financial Reinvestment

The current level of financial reinvestment does not sufficiently address maintenance and capital rehabilitation requirements to ensure roads remain in an adequate state of repair and achieve their intended service life. The financial strategy in this report addresses the extent of this underfunding.

4.1.5 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 (2021)
Scope	Description, which may include maps, of the road network in the Township and its level of connectivity	See Appendix B
Safe & Regulatory	Description of minimum maintenance standards for road network (road surfaces and sidewalks)	The Township maintains its road network according to the Minimum Maintenacne Standards (MMS)
Quality	Description or images that illustrate the different levels of road class pavement condition	The Township completed a Road Needs Study in 2016. Every road section received a Pavement Condition Index (PCI) from 0-100. (0-60) Road surface exhibits moderate to significant deterioration (60-100) Road surface is in good condition or has been recently re-surfaced

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	969
Quality	% of sidewalks inspected	100%
	% of road network inspected	28%
	Average pavement condition index for paved roads in the Township	HCB: 67% LCB: 73%
	Average surface condition for unpaved roads in the Township (e.g. excellent, good, fair, poor)	Good
Performance	Capital reinvestment rate	1.05%

4.1.6 Recommendations

Asset Inventory

- Review sidewalk inventory to determine whether all municipal assets within these asset segments have been accounted for.

Condition Assessment Strategies

- The last comprehensive assessment of the road network was completed in 2016. A condition assessment of the road network was completed in 2020 but has not yet been uploaded to Citywide. The most up to date condition information should be uploaded to Citywide to accurately reflect asset inventory and condition.

Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for HCB and LCB roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Township's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

Risk Management Strategies

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

Levels of Service

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

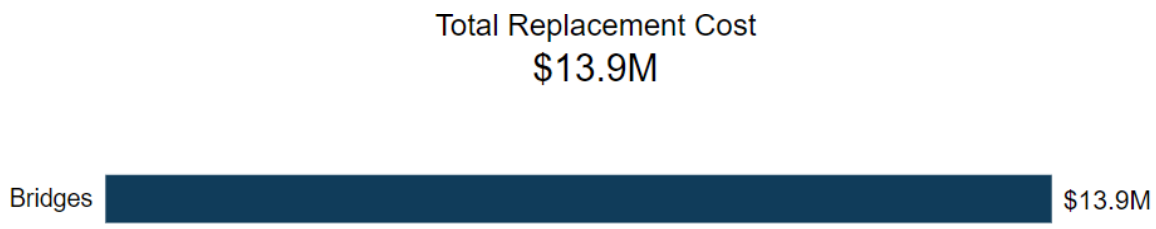
4.2 Bridges

Bridges represent a critical portion of the transportation services provided to the community. The Department of Public Works is responsible for the maintenance of all bridges and culverts located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

4.2.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Bridges	12	$13,935,910	$205,370
Total	**12**	**$13,935,910**	**$205,370**



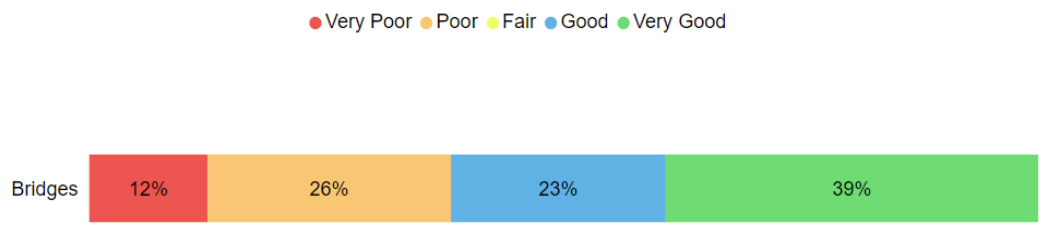
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.2.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Bridges	41-80 Years	54	Good (60%)
Average		**54**	**Good (60%)**

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



To ensure that the Township's Bridges 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 bridges.

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

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 Township's current approach:

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

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

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

4.2.3 Lifecycle Management Strategy

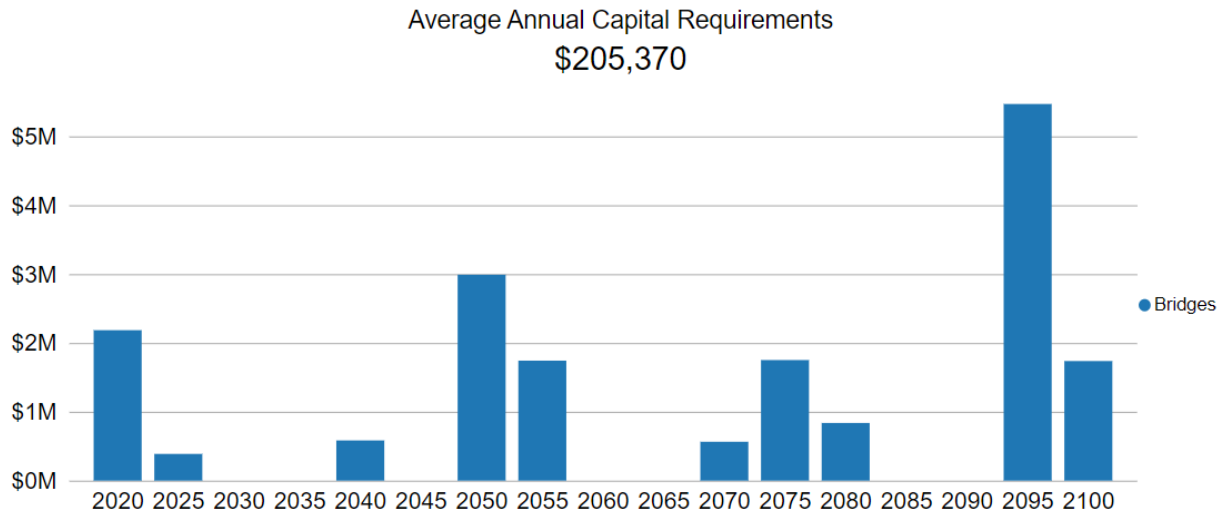
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)
Inspection	The most recent inspection report was completed in 2020 by BM Ross

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 following graph identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

4.2.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)

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

Risks to Current Asset Management Strategies

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

Environmental

The Township's bridges are experiencing significant erosion due to an increase in rainfall amounts. This is causing the assets to deteriorate much quicker, resulting in more frequent rehabilitation and replacement of the Township's bridges.

Capital Funding Strategies

The current level of investment in infrastructure is not sufficient to meet lifecycle requirements and maintain a good state of repair. There is no budget set aside to address rehabilitation and replacement needs for the Township's bridges.

4.2.5 Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges are a key component of the municipal transportation network. The traffic that is supported by the Township's bridges includes motor vehicles, emergency vehicles, pedestrians and cyclists
Safe & Regulatory	Description o the OSIM inspection process	OSIM inspections are completed every two years acccording to the regulations. The inspections are performed by an external contractor
Quality	Description or images of the condition of bridges and how this would affect use of the bridges	See Appendix B

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of bridges in the Township with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the Township	60%
	% of bridges inspected every two years	100%
Performance	Capital re-investment rate	0%

4.2.6 Recommendations

Data Review/Validation

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

Risk Management Strategies

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

Lifecycle Management Strategies

- The Township should work towards identifying projected capital rehabilitation and renewal costs for bridges and integrating these costs into long-term planning.

Levels of Service

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

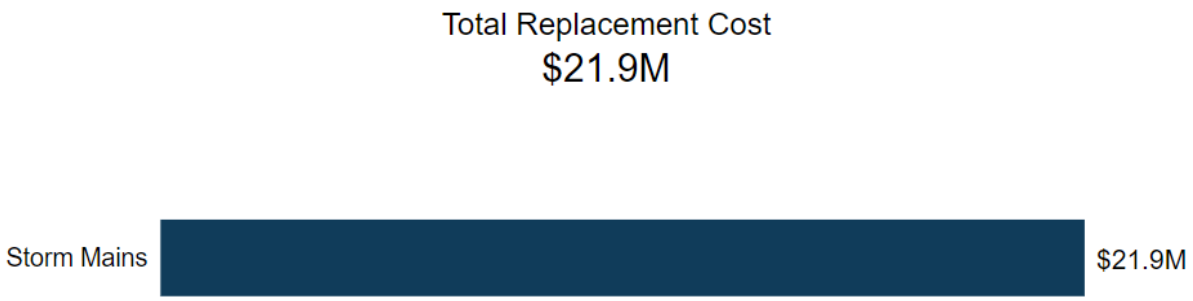
4.3 Storm Network

The Township is responsible for owning and maintaining a storm network of approximately 20,000 m of storm mains.

4.3.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Storm Mains	19,920 m	$21,825,149	$295,948
Total		**$21,825,149**	**$295,948**



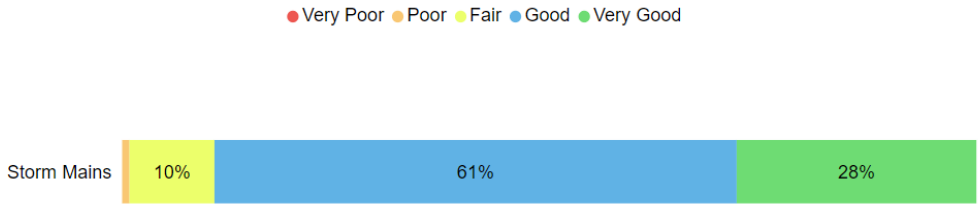
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.3.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Storm Mains	50-75 Years	31.5	Good (76%)
Average		**31.5**	**Good (76%)**

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



To ensure that the Township's storm 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 network.

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

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 Township's current approach:

- No formal inspection program is in place for the Township's storm network

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

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

4.3.3 Lifecycle Management Strategy

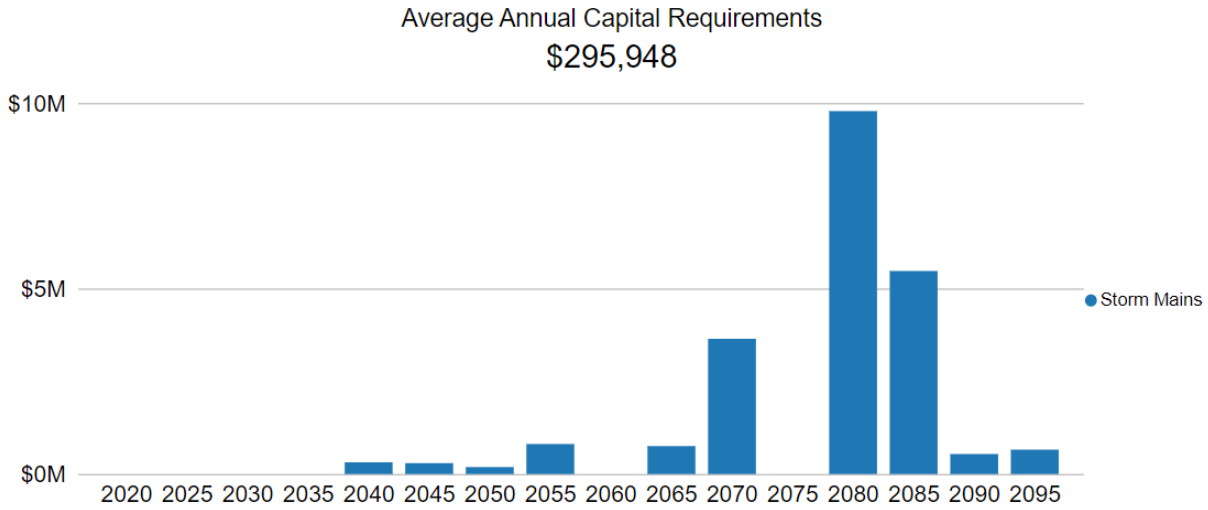
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Catch basin cleaning is completed on a yearly basis. Flushing occurs on an ad-hoc basis.
Rehabilitation	No formal rehabilitation program is in place for the storm network
Replacement	Replacement of the storm network is completed in alignment with water and sanitary renewals

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 following graph identifies capital requirements over the next 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

4.3.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Pipe Material	Pipe Diameter (Operational)

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

Risks to Current Asset Management Strategies

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

Climate Change & Extreme Events

Increased storm intensity has resulted from climate change and extreme weather events and created additional strain on the Municipalities storm network.

Asset Data Confidence

Township staff have very little confidence in the asset data available for the storm network. A lack of data and confidence in that data provides challenges to the Township's asset management planning.

Infrastructure Design

Most of the material that has been used for the storm network does not have a long estimated useful life. This results in more frequent renewal and replacement required of the Township's storm mains.

4.3.5 Levels of Service

The following tables identify the Township's current level of service for the storm 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 storm network.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include map, of the user groups or areas of the Township that are protected from flooding, including the extent of protection provided by the municipal storm system	See Appendix B
Safe & Regulatory	Description of the level of storm intensity that the municipal stormwater network is designed to handle (e.g. 1 in 5-year).	Most of the system is designed to handle 1 in 5-year to 1 in 25-year storms. However, most of the system is not capable handle a 1 in 100-year storm.
Quality	Description of the current condition of the stormwater network and the plans that are in place to maintain or improve the provided level of service	The overall condition of the storm network in the Township is in good condition. A Lidar Scan was completed by the municipality 5 years ago to assess the condition of the storm water network.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties in Township resilient to a 100-year storm	Approximatly 25%
	% of the municipal storm management system resilient to a 5-year storm	Less than 5%
	% of storm main flushed/cleaned per year	To Be Determined
Performance	% of the storm network that is in good or very good condition	89%
	% of the storm network that is in poor or very poor condition	0.9%
	Capital reinvestment rate	0%

4.3.6 Recommendations

Asset Inventory

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Lifecycle Management Strategies

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

Levels of Service

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

4.4 Buildings

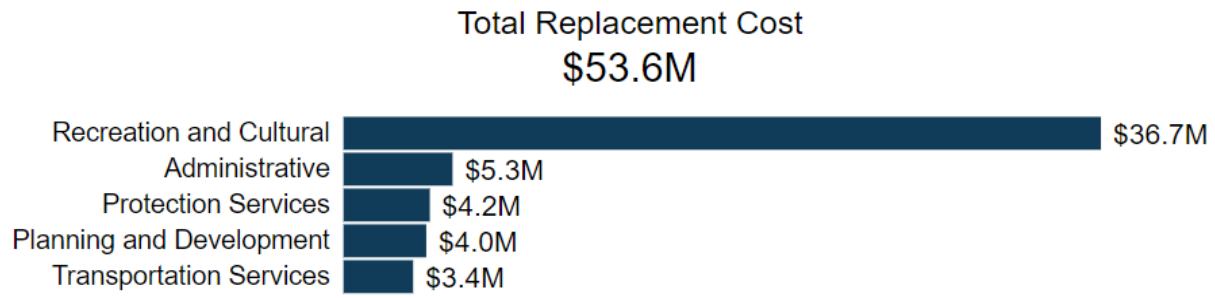
The Township of North Huron owns and maintains several buildings and recreation centres that provide key services to the community. These include:

- Community centers
- Public libraries
- Fire halls
- Public works and transportation services buildings

4.4.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Administration	3 (17)	$5,286,774	$185,296
Planning and Development	4 (24)	$4,013,653	$128,519
Protection Services	3 (39)	$4,186,391	$147,172
Recreation and Cultural	16 (76)	$36,725,108	$1,382,967
Transportation Services	5 (26)	$3,376,908	$103,895
Total		**$53,588,834**	**$1,947,849**



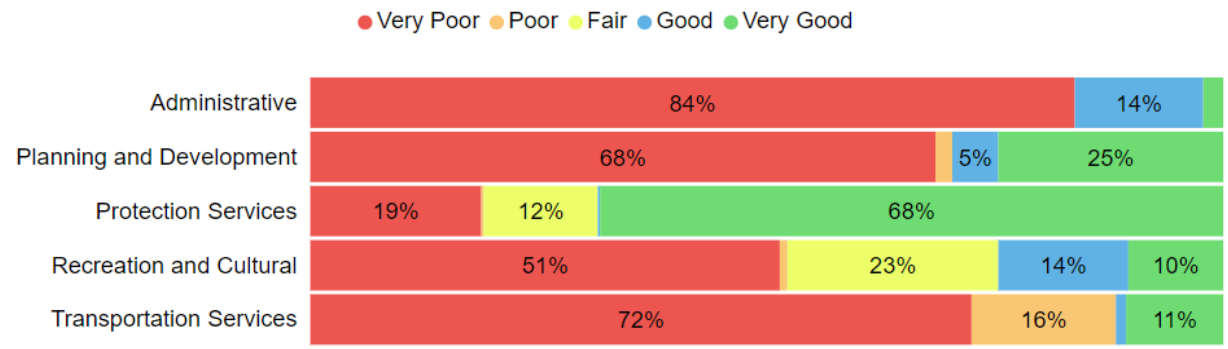
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.4.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Administration	5-75 Years	52.6	Very Poor (12%)
Planning and Development	10-75 Years	36.0	Poor (28%)
Protection Services	15-100 Years	2.5	Good (77%)
Recreation and Cultural	10-75 Years	33.5	Poor (32%)
Transportation Services	15-50 Years	46.5	Very Poor (16%)
Average		**30.7**	**Poor (32%)**

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



To ensure that the Township's buildings 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 buildings.

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

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 Township's current approach:

- A Building Condition Assessment (BCA) was completed in 2020 for the most frequently used buildings in the Township but has not yet been uploaded to CityWide
- Asbestos audits and building audits were completed 7 years ago by external contractors. Blyth district community center and North Huron Westcast community complex received condition assessments 2 years ago.
- Health and safety walkthroughs are performed on a monthly basis by internal staff

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

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

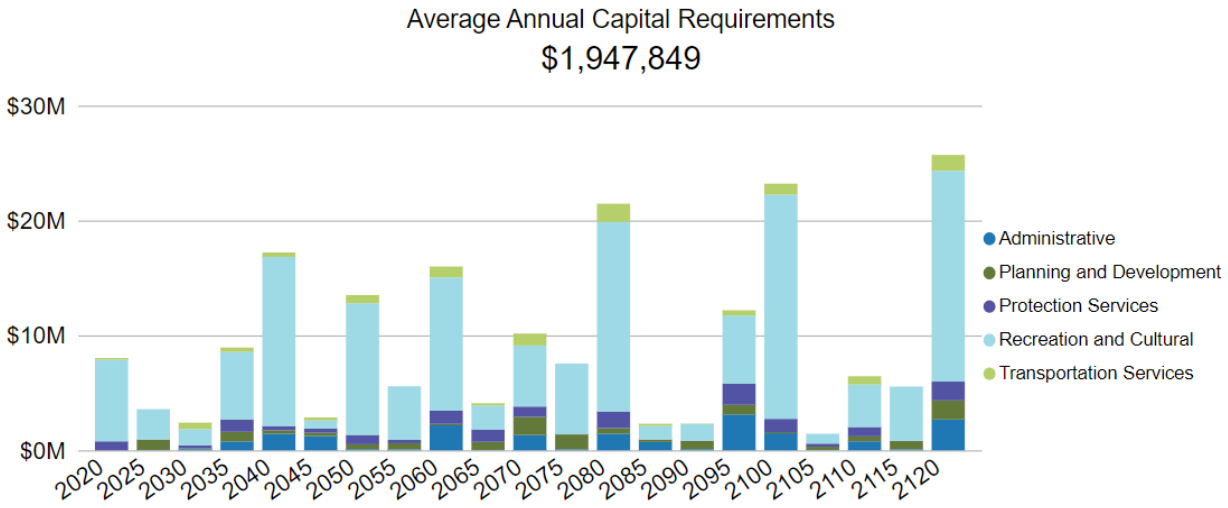
4.4.3 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention
	External contractor competes inspection and maintenance on the HVAC systems bi-annually
Replacement	The Township reviews the repair costs for buildings, and if the repair costs are significant, the facility or component will be replaced
	Service life remaining is also considered when determining which assets are eligible for replacement

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 following graph identifies capital requirements over the next 100 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

4.4.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)

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

Risks to Current Asset Management Strategies

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

Asset Data Confidence

No regular inspections are performed to the Township's buildings, resulting in very low confidence in the data available. This has impacted the ability to support asset management planning

Capital Funding Strategies

The Township has recently been dependent on funding from both the provincial and federal government for capital projects. Staff are always looking for other funding opportunities. The recent hike in construction costs has also affected the ability to invest in reconstruction. The Township is heavily reliant on funding opportunities, and having these funds available is a risk

Growth

Staff in the Township are outgrowing the townhall. Renovations or replacement will be required in order to accommodate the growing number of Township staff.

4.4.5 Levels of Service

The following tables identify the Township's current level of service for the buildings. These metrics include the technical and community level of service metrics 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 buildings.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the current condition of municipal facilities and the plans that are in place to maintain or improve the provided level of service	A Building Condition Assessment (BCA) was completed in 2020 for the most frequently used buildings however this information has not yet been uploaded to Citywide. Staff aim to have results uploaded in Citywide for the next iteration of the AMP to most accurately reflect the condition of the buildings
Quality	Description of initiatives that aim to make facilities more accessible	Staff are aiming to complete an accessibility audit for the facilities assets. The county's accessibility community has already identified a few steps prior to the Covid-19 outbreak. Staff are working towards addressing these issues. The programs offered are suitable for most demographics. However, the financial barriers may be preventing some people from accessing the services offered.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	# of buildings that are energy efficient	1
Performance	% of the buildings that is in good or very good condition	27%
	% of the buildings that is in poor or very poor condition	56%
	Average Risk Rating associated to buildings	14.45 - High
	Capital reinvestment rate	0.18%

4.4.6 Recommendations

Asset Inventory

- The Township should incorporate Building Condition Assessment results into the Citywide software system to ensure most accurate building conditions are reflected.
- The Township staff should continue to work towards further breaking down and componentizing their buildings inventory to ensure a comprehensive buildings inventory is documented in Citywide. All new buildings are being componentized, and staff are working to upload these components in Citywide.

Replacement Costs

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

Condition Assessment Strategies

- The Township should implement regular condition assessments for all facilities to better inform short- and long-term capital requirements.

Risk Management Strategies

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

Levels of Service

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

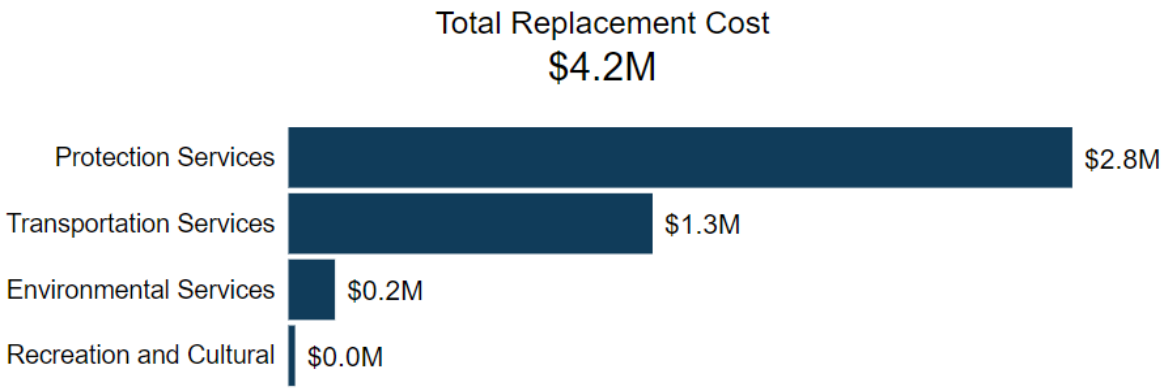
4.5 Vehicles

Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including protection services, transportation services, environmental services, and recreation and cultural services.

4.5.1 Asset Inventory & Costs

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	Annual Capital Requirement
Environmental Services	1	$164,423	$11,236
Protection Services	10	$2,767,396	$190,048
Recreation and Cultural	1	$23,579	$1,965
Transportation Services	12	$1,285,727	$121,811
		$4,241,125	**$325,060**



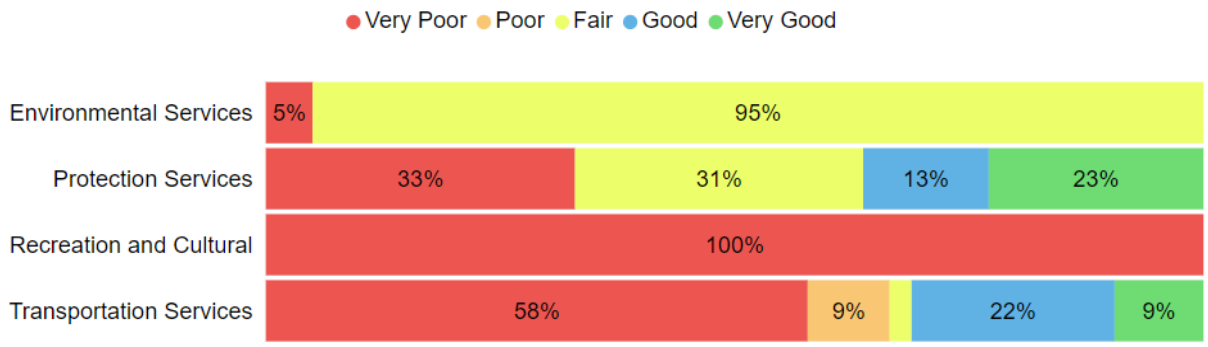
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.5.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Environmental Services	10-15 Years	9.8	Fair (50%)
Protection Services	5-20 Years	8.5	Fair (51%)
Recreation and Cultural	12 Years	14.0	Very Poor (0%)
Transportation Services	1-15 Years	9.1	Poor (29%)
		9.1	**Fair (44%)**

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



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.

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

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 Township's current approach:

- A fleet management report has been prepared and presented to council by the Public Works department to evaluate the condition and estimated useful lives of the vehicles and determine their current levels of service
- An external contractor completes annual yearly safety inspections
- Fire vehicles are inspected monthly

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

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

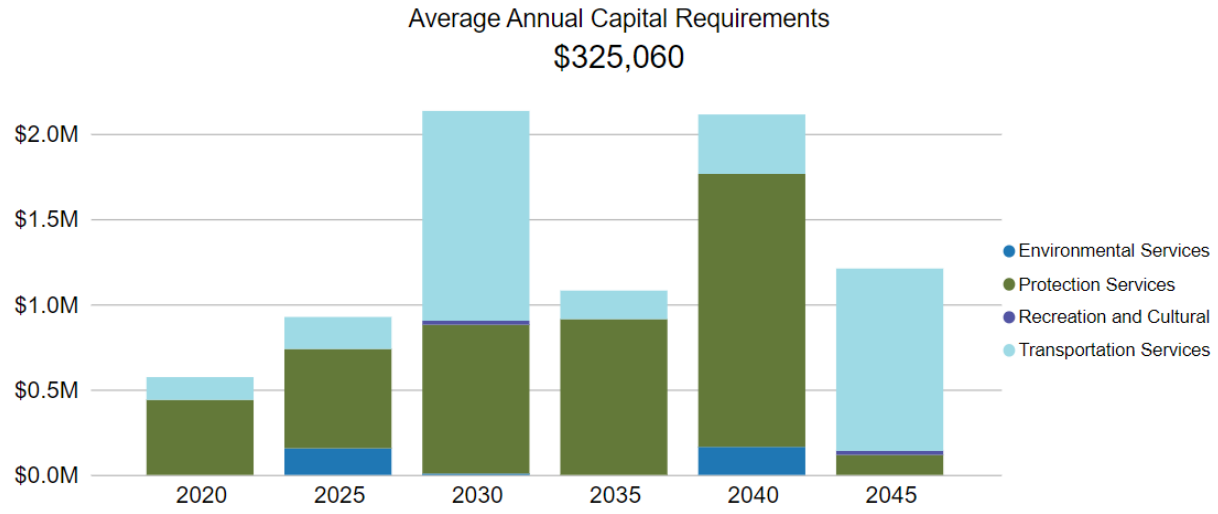
4.5.3 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Maintenace on vehicles is performed based on the typical maitnenance activities outlined in the MOT standards
Replacement	Insurance policies dictate the age at which fire vehicles must be replaced. All other vehicles are run to failure

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



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.

4.5.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)

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

Risks to Current Asset Management Strategies

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

Regulatory Compliance

Insurance policy requirements dictate the age at which fire vehicles must be replaced. To comply with these regulations, fire vehicles are often replaced prematurely, prior to the end of their useful life. This requires significant funding to meet regulatory requirements.

4.5.5 Levels of Service

The following tables identify the Township's current level of service for the vehicles. These metrics include the technical and community level of service metrics 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 vehicles.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the current condition of municipal vehicles and the plans that are in place to maintain or improve the provided level of service	Aside from the fire department, Public Works presented a fleet management report to council to discuss EULs and Conditions to better represent the real data. The fire department is following an insurance recommended guideline of 20 years for front line vehicles and 25 years for non-front line vehicles

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of vehicles where asset age exceeds estimated useful life (excluding fire vehicles)	49%
	% of fire vehicles where asset age exceeds estimated useful life	17%
Performance	% of vehicles that are in good or very good condition (excluding fire vehicles)	27%
	% of fire vehicles that are in good or very good condition	36%
	% of vehicles that are in poor or very poor condition (excluding fire vehicles)	60%
	% of fire vehicles that are in poor or very poor condition	33%
	Average Risk Rating associated to vehicles (excluding fire vehicles)	13.13 – High
	Average Risk Rating associate to fire vehicles	13.67 – High
	Capital reinvestment rate	3.28%

4.5.6 Recommendations

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.6 Machinery & Equipment

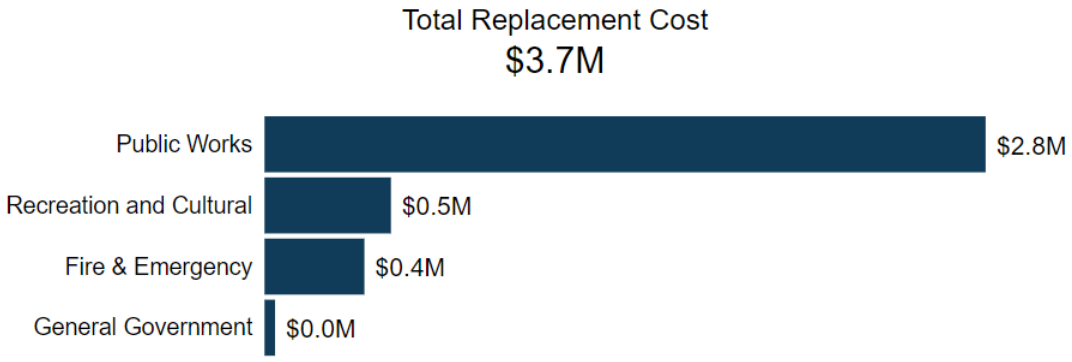
In order to maintain the high quality of public infrastructure and support the delivery of core services, Township staff own and employ various types of machinery and equipment. This includes:

- Landscaping equipment to maintain public parks
- Fire equipment to support the delivery of emergency services
- Plows to provide winter control activities

4.6.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Fire & Emergency	101	$383,512	$36,609
General Government	1	$40,457	$4,046
Public Works	52	$2,768,977	$196,817
Recreation and Cultural	37	$485,370	$48,404
Total		**$3,678,316**	**$285,876**



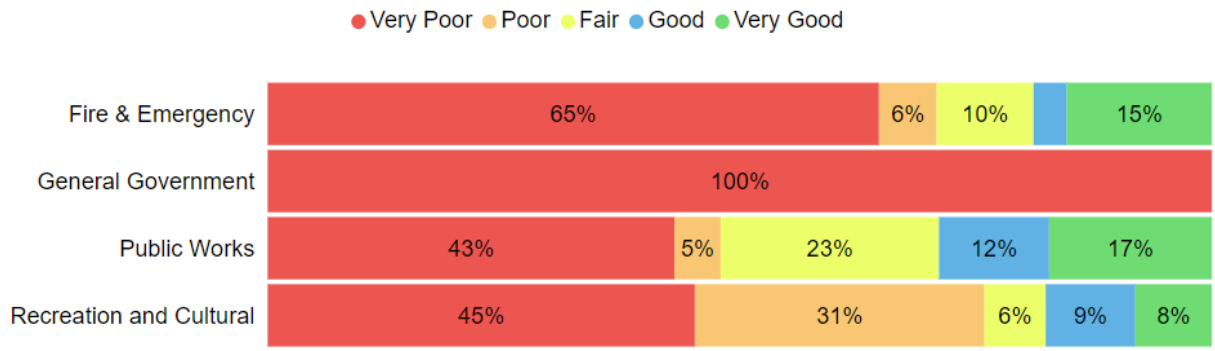
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.6.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire & Emergency	5-20 Years	9.2	Poor (26%)
General Government	10 Years	18.0	Very Poor (0%)
Public Works	5-20 Years	10.7	Poor (39%)
Recreation and Cultural	5-15 Years	7.6	Poor (29%)
Average		**9.8**	**Poor (36%)**

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



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

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

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 Township's current approach:

- Recreation and cultural machinery & equipment assets are assessed on a yearly basis
- Fire machinery & equipment assets are also assessed annually by external contractors, with additional assessments completed every month by internal staff

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

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

4.6.3 Lifecycle Management Strategy

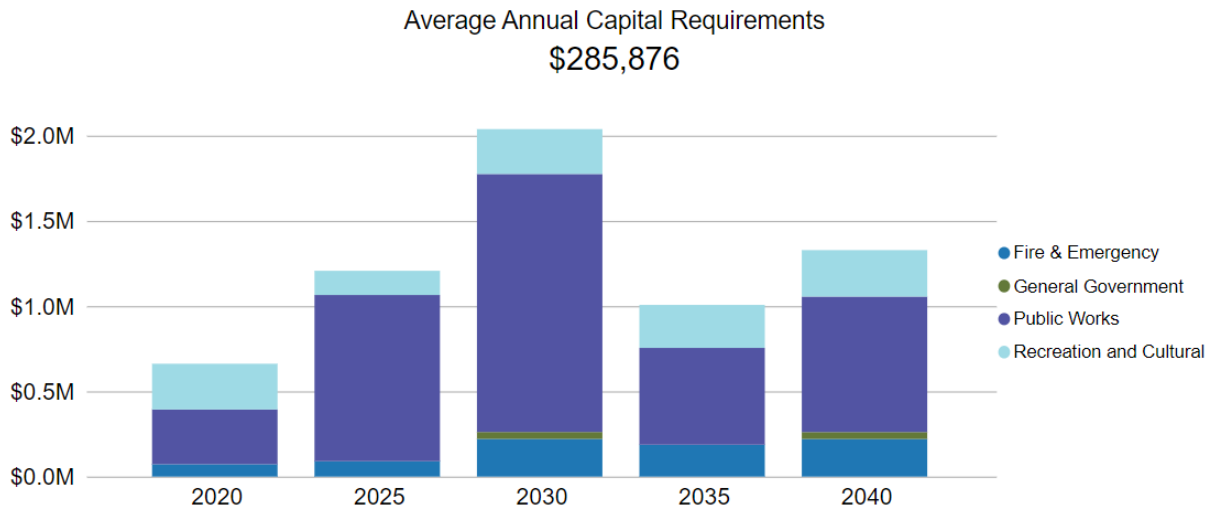
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Maintenance program varies by department
	Fire Protection Services equipment is inspected annually by an external contractor
	External contractors perform mainteance on the Arena equipment on a regular bassi, and Fitness equipment is maintanced by an external contractor on a quaterly basis
Replacement	The replacement of machinery and equipment depends on deficiencies identified by operators

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 following graph identifies capital requirements over the next 20 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

4.6.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)

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

Risks to Current Asset Management Strategies

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

Climate Change & Extreme Weather Events

Due to the change in humidity and higher temperatures, machinery and equipment are having to work harder to Startup. The rapid change in seasons is also causing more wear and tear to the machinery & equipment.

4.6.5 Levels of Service

The following tables identify the Township's current level of service for the machinery & equipment. These metrics include the technical and community level of service metrics 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 machinery & equipment.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the current condition of municipal machinery & equipment and the plans that are in place to maintain or improve the provided level of service	Ice re-surfacers are usually run to failure. The fitness department is looking at developing a replacement schedule for their fitness equipment. Self-contained breathing apparatus (SCBA) units get replaced regularly, and all fire equipment is replaced according to regulations.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Performance	% of machinery & equipment in good or very good condition	26%
	% of machinery & equipment in poor or very poor condition	55%
	Average Risk Rating associate to machinery & equipment	12.59 - High
	Capital reinvestment rate	0%

4.6.6 Recommendations

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

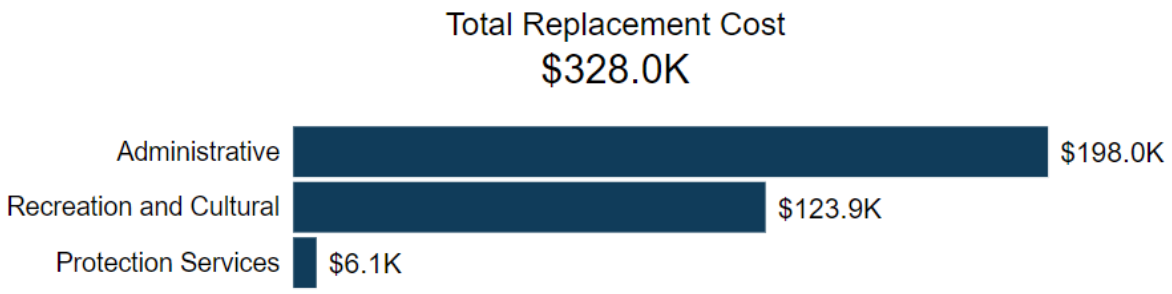
4.7 Information Technology

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 information technology.

4.7.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Township's information technology inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Administrative	13	$198,000	$39,084
Protection Services	1	$6,118	$1,224
Recreation and Cultural	14	$123,917	$20,133
Total		**$328,035**	**$60,440**



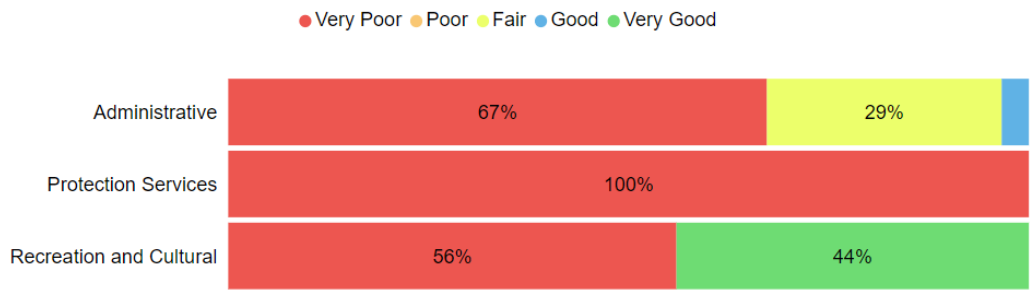
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.7.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Administrative	3-10 Years	7.8	Poor (20%)
Protection Services	5 Years	12.4	Very Poor (0%)
Recreation and Cultural	4-10 Years	8.6	Fair (40%)
Average		**8.3**	**Poor (27%)**

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



To ensure that the Township's information technology 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 information technology.

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

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 Township's current approach:

- An independent contractor is responsible for all Information Technology assets in the Township

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

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

4.7.3 Lifecycle Management Strategy

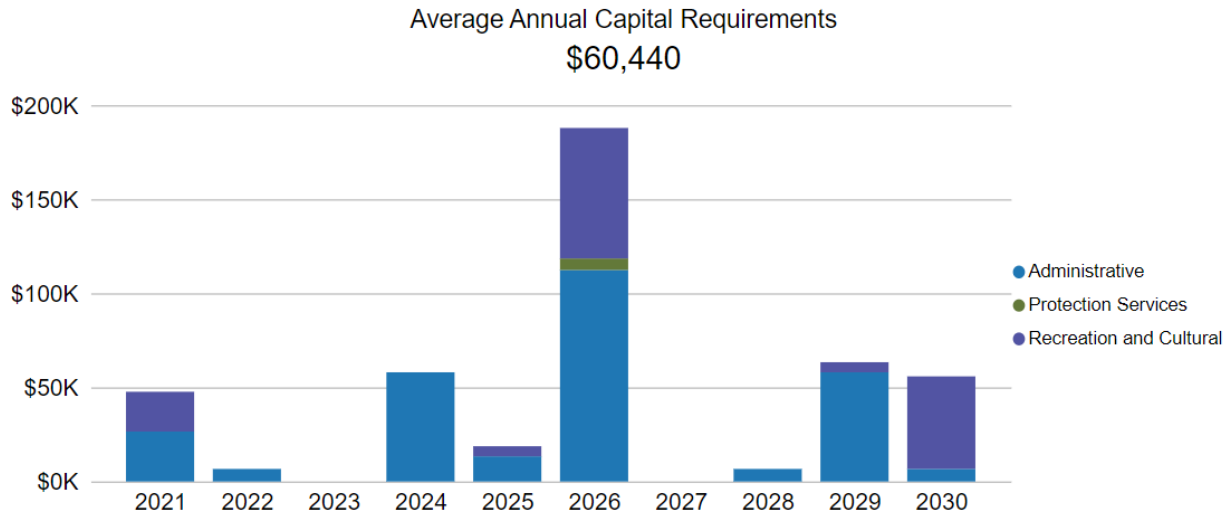
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilition & Replacement	An independent contractor is responsible for all IT assets in the Township. The contractor provides a report on what asset require renewal or replacement.

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 following graph identifies capital requirements over the next 10 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 1-year bins.



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.

4.7.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)

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

Risks to Current Asset Management Strategies

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

Asset Data Confidence

The Information Technology inventor contains a pooled inventory of IT assets. To better understand the inventory, segmentation of the IT assets would be beneficial

Capital Funding Strategies

Sufficient funding is not available for additional software and technology adoption. As a result, the Township must work with outdated software that does not best suit their needs.

4.7.5 Levels of Service

The following tables identify the Township's current level of service for the information technology assets. These metrics include the technical and community level of service metrics 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 information technology assets.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the current condition of municipal IT assetsand the plans that are in place to maintain or improve the provided level of service	The Township has an IT strategic Plan with a 4-year cycle. The main server is planned to be upgraded this year (2022).

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Performance	% of IT assets in good or very good condition	19%
	% of IT assets in poor or very poor condition	64%
	Average Risk Rating associate to IT assets	6.76 – Low
	Capital reinvestment rate	1.22%

4.7.6 Recommendations

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.8 Land Improvements

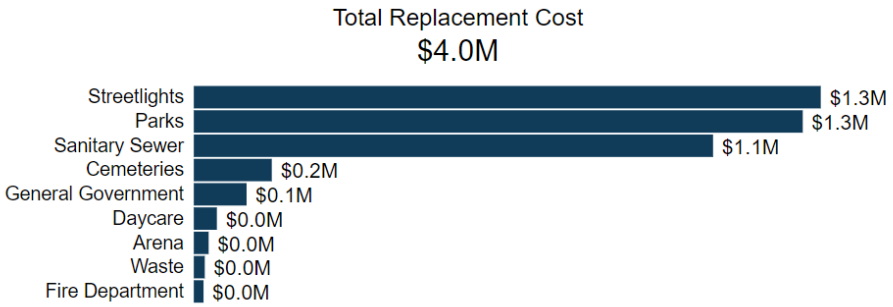
The Township of North Huron owns a small number of assets that are considered land improvements. This category includes:

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

4.8.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Arena	1	$30,517	$1,526
Cemeteries	5	$160,349	$3,207
Daycare	1	$47,450	$2,373
Fire Department	1	$20,000	$2,000
General Government	5	$108,558	$4,436
Parks	21	$1,252,101	$65,159
Sanitary Sewer	2	$1,067,673	$20,761
Streetlights	9	$1,289,106	$64,797
Waste	1	$22,578	$452
Total		**$3,998,332**	**$164,710**



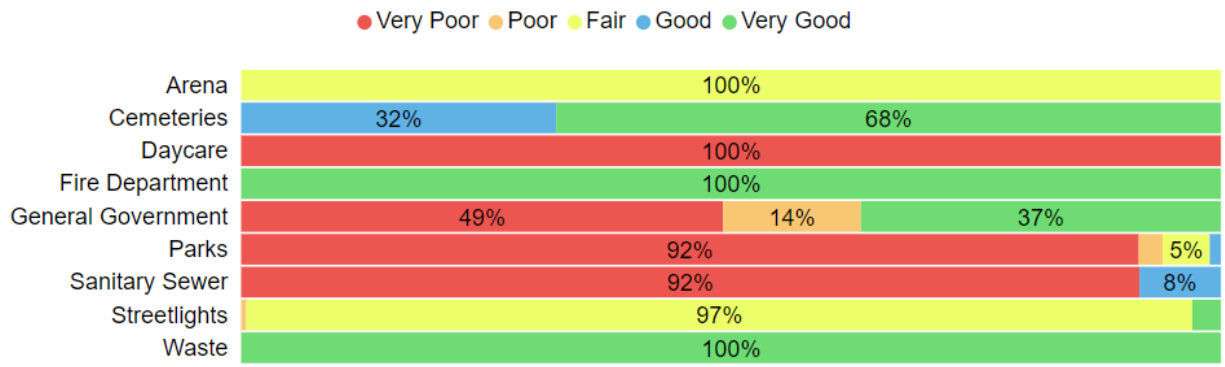
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.8.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Arena	20 Years	12.0	Fair (40%)
Cemeteries	50 Years	8.1	Very Good (86%)
Daycare	20 Years	21.0	Very Poor (0%)
Fire Department	10 Years	1.1	Very Good (89%)
General Government	20-75 Years	31.7	Fair (42%)
Parks	10-30 Years	22.3	Very Poor (4%)
Sanitary Sewer	50-75 Years	42.0	Very Poor (6%)
Streetlights	10-20 Years	7.1	Fair (51%)
Waste	50-149 Years	9.4	Very Good (81%)
Average		**20.1**	**Poor (25%)**

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



To ensure that the Township's land improvements 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 land improvements.

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

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 Township's current approach:

- Staff complete visual inspections of land improvements assets once a month to ensure they are in state of adequate repair
- Visual inspections for daycare asset are performed daily and an external contractor performs an inspection once a year according to the ministry of education requirements

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

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

4.8.3 Lifecycle Management Strategy

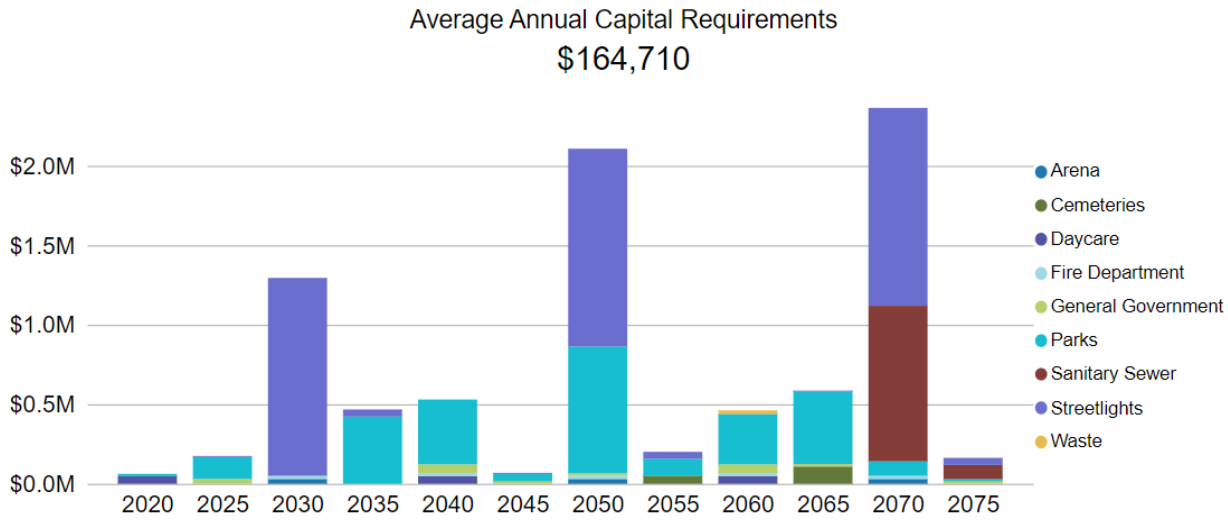
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

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

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 following graph identifies capital requirements over the next 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

4.8.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)

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

Risks to Current Asset Management Strategies

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

Capital Funding Strategies

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

4.8.5 Levels of Service

The following tables identify the Township's current level of service for the land improvement assets. These metrics include the technical and community level of service metrics 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 information technology assets.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the current condition of municipal land improvment assets and the plans that are in place to maintain or improve the provided level of service	The Township is in need of some ball diamond lights replacement to be completed this year as well as some fencing upgrades. Playground assets are aging, and the ground is in need for a replacement. The airport has been sold to a private entity which is anticipated to provide more jobs and more services. Additionally, a cultural and recreation master plan has been developed.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Performance	% of land improvement assets in good or very good condition	10%
	% of land improvement assets in poor or very poor condition	57%
	Average Risk Rating associate to IT assets	17.25 – Very High
	Capital reinvestment rate	0%

4.8.6 Recommendations

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

5 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $140 million
- 62% 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 $2.0 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

5.1 Water Network

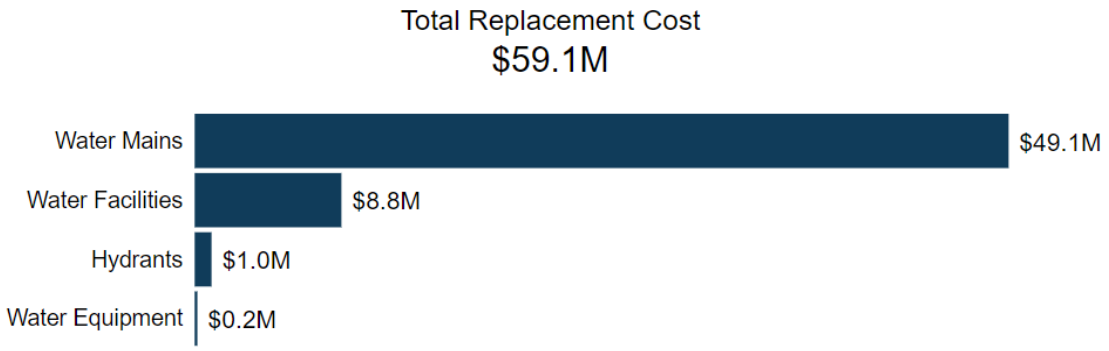
The water services provided by the Township include the following:

- Hydrants
- Water Equipment
- Water Facilities
- Water Mains

5.1.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Hydrants	203	$1,015,000	$20,300
Water Equipment	2	$162,142	$7,010
Water Facilities	12	$8,844,947	$139,021
Water Mains	44,243 m	$49,065,487	$668,616
Total		**$59,087,576**	**$834,948**



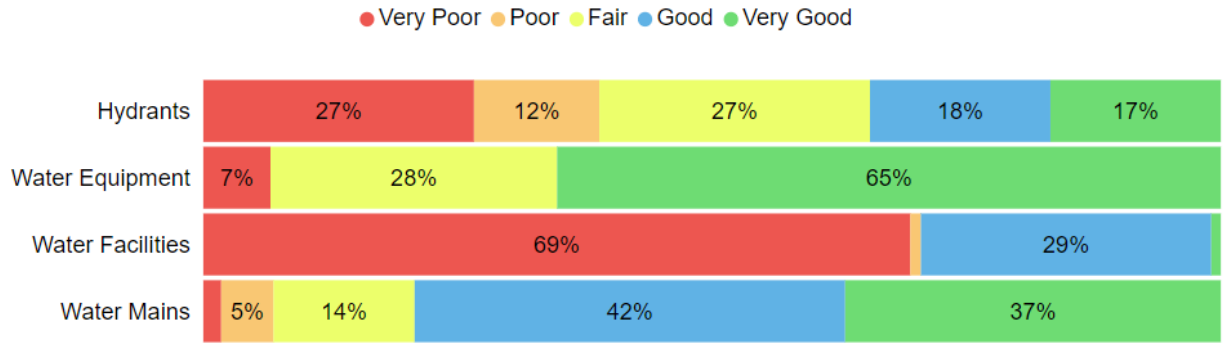
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.1.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Hydrants	50 Years	28.7	Fair (45%)
Water Equipment	5-50 Years	3.2	Very Good (80%)
Water Facilities	15-90 Years	27.4	Poor (22%)
Water Mains	32-75 Years	35.3	Good (72%)
Average		**33.1**	**Good (64%)**

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



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.

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

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 Township's current approach:

- Water assets are assessed once a year based on the age of the asset and the number of complaints received, the assets are determined to be either good or broken

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

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

5.1.3 Lifecycle Management Strategy

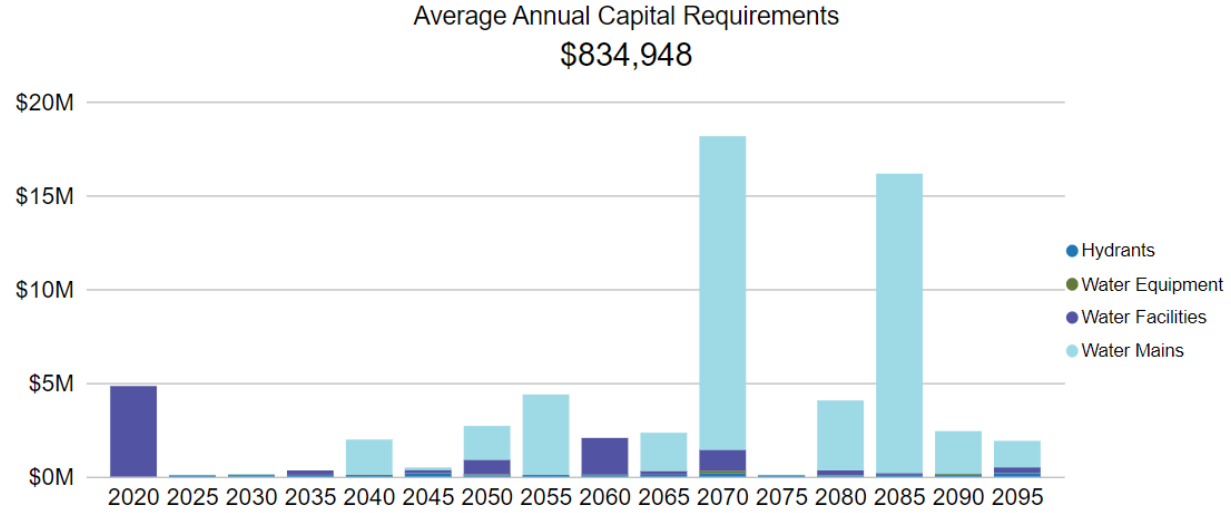
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed every spring. Valve turning is also compeleted.
Replacement	Replacement activities are identified based on the age and size of the water main.

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 following graph identifies capital requirements over the next 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

5.1.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Pipe Material	Pipe Diameter (Operational)

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

Risks to Current Asset Management Strategies

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

Financial Reinvestment

There is not sufficient funding available in the Township to perform the required maintenance on the water network. External contractors are required to perform these maintenance activities. It has also become difficult to find qualified staff, or qualified contractors to perform these tasks.

5.1.5 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 (2021)
Scope	Description, which may include maps, of the user groups or areas of the Township that are connected to the municipal water system	See Appendix B
	Description, which may include maps, of the user groups or areas of the Township that have fire flow	See Appendix B
Reliability	Description of boil water advisories and service interruptions	No boil water advisories were issued in 2021

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal water system	100%
	% of properties where fire flow is available	Greater than 95%
	% of water system that is in good or very good condition	71%
	% of water system that is in poor or very poor condition	17%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	2
Performance	Capital re-investment rate	0.50%

5.1.6 Recommendations

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

5.2 Sanitary Network

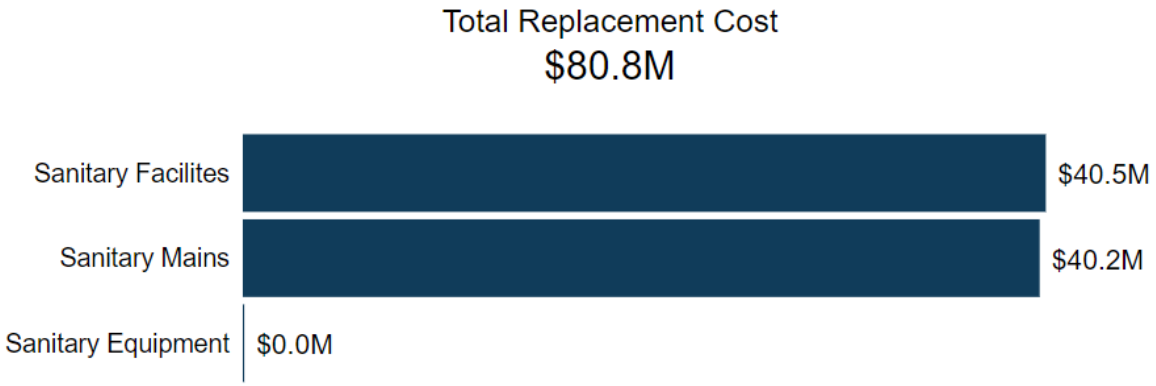
The sewer services provided by the Township include the following:

- Sanitary equipment
- Sanitary facilities
- Sanitary mains

5.2.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Sanitary Equipment	2	$26,123	$3,013
Sanitary Facilities	4	$40,527,314	$610,717
Sanitary Mains	36,961 m	$40,217,303	$536,128
Total		**$80,770,740**	**$1,149,858**



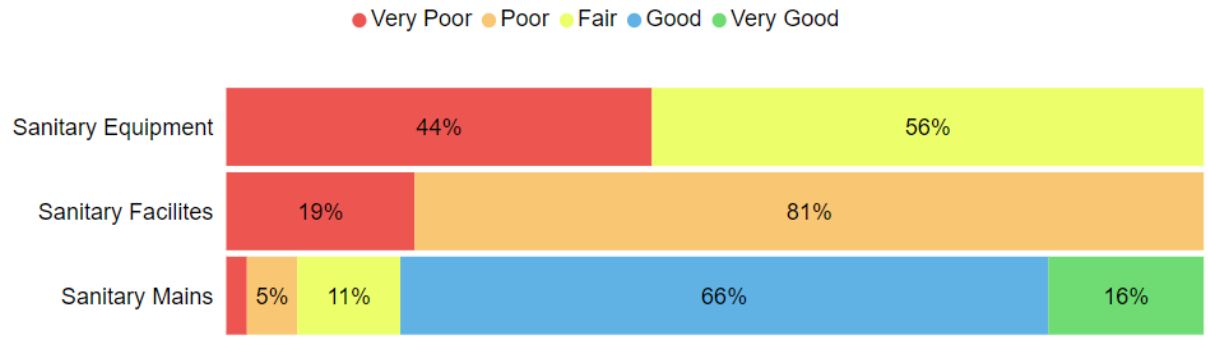
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.2.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age	Average Condition (%)
Sanitary Equipment	5-20 Years	7.3	Poor (34%)
Sanitary Facilities	50-75 Years	46.5	Poor (20%)
Sanitary Mains	75-78 Years	37.0	Good (71%)
Average		**36.9**	**Fair (45%)**

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



To ensure that the Township's sanitary 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 network.

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

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 Township's current approach:

- CCTV inspections are completed for sanitary mains, 80% of the system was reviewed in 2015
- The Township plans to conduct CCTV inspections every 5 years

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

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

5.2.3 Lifecycle Management Strategy

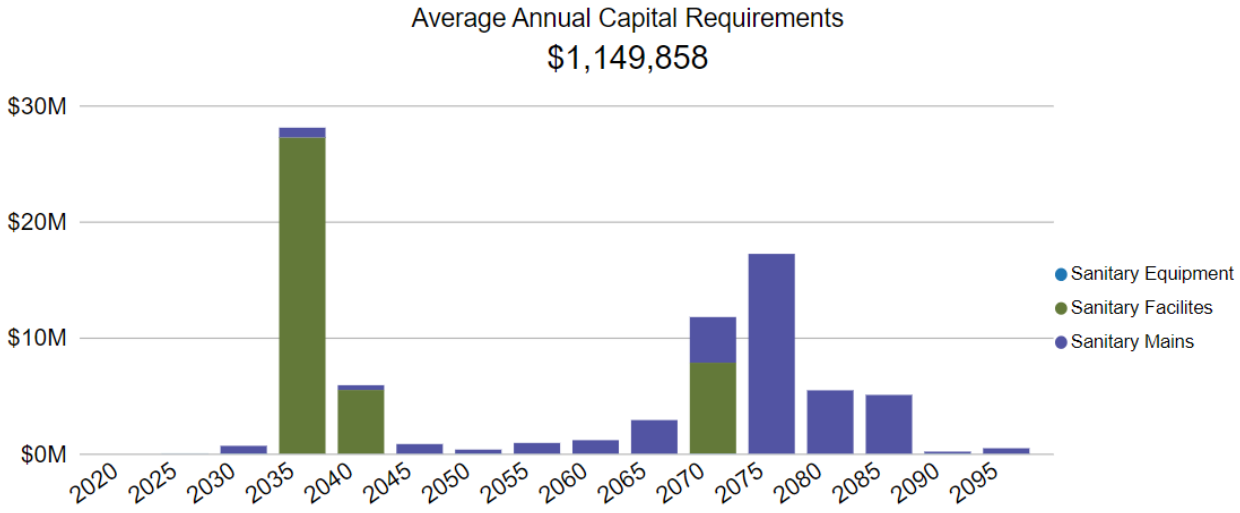
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	System flushing is performed every 5 years
Rehabilitation	The Township is planning to adopt a relining program
Replacement	Age and historical issues determine when sanitary network assets should be replaced

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 following graph identifies capital requirements over the next 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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.

5.2.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Pipe Material	Pipe Diameter (Operational)

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

Risks to Current Asset Management Strategies

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

Asset Data & Information

No recent condition data is available for the sanitary network. Staff plan to complete CCTV inspections every 5 years going forward

Lifecycle Management Strategies

There are currently no lifecycle management strategies in place for the sanitary network. It is a challenge to find the right balance between maintenance, capital rehabilitation, and the replacement of assets.

5.2.5 Levels of Service

The following tables identify the Township's current level of service for sanitary 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 network.

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the Township 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 storm can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	The Township does not own any combined sewers

Service Attribute	Qualitative Description	Current LOS (2021)
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to storm infiltration	The Township does not own any combined sewers
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Quality testing is performed. The Township has seen some issues in the Blyth area when there is a high volume of water.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal wastewater system	100%
	% of sanitary sewers flushed annually	10%
	# of sanitary sewer backups annually	0
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
	% of wastewater system that is in good or very good condition	41%
	% of wastewater system that is in poor or very poor condition	54%
Performance	Capital re-investment rate	0.32%

5.2.6 Recommendations

Condition Assessment Strategies

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

Risk Management Strategies

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

Lifecycle Management Strategies

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

Levels of Service

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

6 Impacts of Growth

Key Insights

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

- Small population and employment growth is expected

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

6.1 Description of Growth Assumptions

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

6.1.1 Township of North Huron Official Plan (December 2004)

The Township of North Huron adopted an Official Plan to provide a legislative basis to implement the community's visions and goals. The policies included in the Plan are consistent with the Provincial Policy Statement and conform with the County of Huron Official Plan. Such policies are intended to identify appropriate locations for residential, commercial, and industrial development, while ensuring the protection of resources and the community's health.

The Official Plan was adopted by the Township on December 20th, 2004 and approved by the County of Huron on January 11th, 2005.

The Township of North Huron was formed by the amalgamation of three smaller municipalities, and consists of agricultural areas, a small village, one town and several small hamlets. The Official Plan considers the desire to preserve the natural features of the Township, while promoting the longer-term future and flexibility of agriculture, and strengthening the economy.

The desire to live, work and retire in small communities is a driving factor in directing future development in North Huron. The settlement areas of Wingham and Blyth are the primary focus for urban development and will provide increased employment opportunities. Any new residential development proposed outside of these areas will be directed to already existing hamlets and the settlement area of Hutton Heights. East Wawanosh will remain a rural area for agricultural activities.

The development of urban places is promoted based on the level of service they provide. All non-farm uses are directed to urban settlement areas, to minimize conflicts with the agricultural area. The Township also intends to provide adequate land for recreational services to serve the needs of the residents.

6.1.2 Huron County Official Plan (October 2021)

The Huron County Official Plan was consolidated on October 18th, 2021. Population growth for the Township of North Huron is defined in the County Plan. The population of North Huron is expected to reach 5,057 people by 2041, an increase of 125 people from the year 2016. The Township's employment is expected to grow by 81 jobs between the years 2016 and 2041, resulting in a total number of 3,262 jobs by 2041.

The following table outlines the population and employment forecasts allocated to the Township of North Huron.

	2016	2021	2026	2031	2036	2041
Forecasted Population	4,932	4,982	5,040	5,082	5,082	5,057
Forecasted Employment	3,181	3,213	3,251	3,278	3,278	3,262

The above projections are based on 2016 census data. More recent population statistics from the 2021 Census is slightly higher than the suggested projections. The recorded population in the Township of North Huron is 5,052 in 2021.

6.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, 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.

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

7 Financial Strategy

Key Insights

- The Town is committing approximately $1,259,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $6,517,000, there is currently a funding gap of $5,258,000 annually
- For tax-funded assets, we recommend increasing tax revenues by 2.3% each year for the next 20 years to achieve a sustainable level of funding
- For rate-funded assets, we recommend increasing tax revenues by 2.4% each year for the next 15 years for the Water Network, and 3.1% for the Sanitary Network each year for the next 20 years to achieve a sustainable level of 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 Township of North Huron 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.

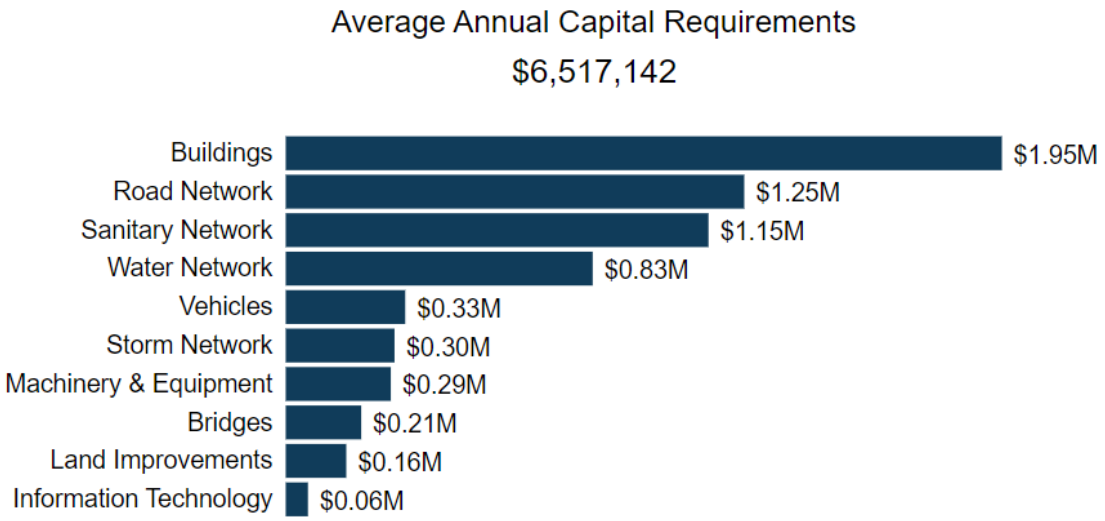
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Township's approach to the following:

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 $6,517,000 annually to address capital requirements for the assets included in this AMP.



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

However, for the Road Network and Bridges, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Township's roads and bridges respectively. The development of these strategies allows for a comparison of potential cost avoidance

if the strategies were to be implemented. The following table compares two scenarios for the Road Network and Sanitary Sewer Network:

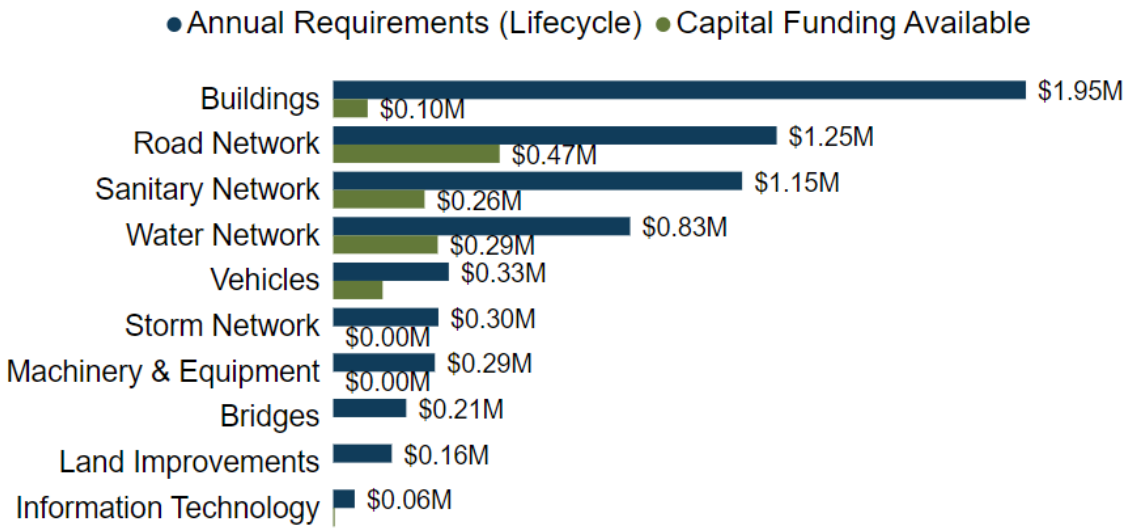
1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$1,904,000	$1,247,000	$657,000
Bridges	$195,000	$205,000	$10,000

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $657,000 for the Road Network and increase of $10,000 for the Bridges. This represents an overall reduction of the annual requirements for category by 35% and increase by 5% respectively. 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 $1,259,000 towards capital projects per year. Given the annual capital requirement of $6,517,000, there is currently a funding gap of $5,258,000 annually.



7.2 Funding Objective

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

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

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

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

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

The following tables show, by asset category, North Huron's average annual asset investment requirements (CapEx), 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	$205,000	$0	$0	$0	$0	$205,000
Buildings	$1,948,000	$97,000	$0	$0	$97,000	$1,851,000
Information Technology	$60,000	$4,000	$0	$0	$4,000	$56,000
Land Improvements	$165,000	$0	$0	$0	$0	$165,000
Machinery & Equipment	$286,000	$0	$0	$0	$0	$286,000
Road Network	$1,247,000	$39,000	$165,000	$264,000	$468,000	$779,000
Storm Network	$296,000	$0	$0	$0	$0	$296,000
Vehicles	$325,000	$139,000	$0	$0	$139,000	$186,000
	$4,532,084	**$279,000**	**$165,000**	**$264,000**	**$708,000**	**$3,824,000**

The average annual investment requirement for the above categories is $4,532,000. Annual revenue currently allocated to these assets for capital purposes is $708,000 leaving an annual deficit of $3,824,000. Put differently, these infrastructure categories are currently funded at 15.6% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2020, Township of North Huron has annual tax revenues of $6,126,000. 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	3.3%
Buildings	30.2%
Information Technology	0.9%
Land Improvements	2.7%
Machinery & Equipment	4.7%
Road Network	12.7%
Storm Network	4.8%
Vehicles	3.0%
	62.3%

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

a) North Huron's formula based OCIF grant is scheduled to grow from $264,000 in 2020 to $318,000 in 2021.[1]
b) North Huron's debt payments for these asset categories will be decreasing by $238,000 over the next 5 years and by $64,000 over the next 10 years. Although not shown in the table, debt payment decreases will be $0 and $0 over the next 15 and 20 years respectively.

[1] The OCIF Grant is also expected to grow to about $580,000 in 2022/2023. However, this increase has not been captured in the calculation as this may fluctuate due to multiple factors in the upcoming years.

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

	Without Capturing Changes				With Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$3,824,000	$3,824,000	$3,824,000	$3,824,000	$3,824,000	$3,824,000	$3,824,000	$3,824,000
Change in Debt Costs	N/A	N/A	N/A	N/A	-$30,000	-$204,000	-$268,000	-$268,000
Change in OCIF Grants	N/A	N/A	N/A	N/A	-$54,000	-$54,000	-$54,000	-$54,000
Resulting Infrastructure Deficit Closure Time:	**5**	**10**	**15**	**20**	**5**	**10**	**15**	**20**
Tax Increase Required	62.4%	62.4%	62.4%	62.4%	61.0%	58.2%	57.2%	57.2%
Annually:	**10.2%**	**5.0%**	**3.3%**	**2.5%**	**10.0%**	**4.7%**	**3.1%**	**2.3%**

7.3.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
b) increasing tax revenue by 2.3% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) adjusting tax revenue increases in future year(s) when allocations to CapEx exceed or fail to meet budgeted amounts.
d) allocating the current gas tax and OCIF revenue as outlined previously.
e) allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
f) reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
g) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full CapEx funding on an annual basis in 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 $0 for Bridges, $13,861,000 for Buildings, $154,000 for Information Technology, $2,116,000 for Land Improvements, $731,000 for Machinery & Equipment, $70,000 for Road Network, $0 for Storm Network, and $1,675,000 for Vehicles.

[2] 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. This review may impact its availability.

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

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	Gas Tax	OCIF	Total Available	
Water Network	$835,000	4294,000	$0	$0	$294,000	$541,000
Sanitary Network	$1,150,000	$257,000	$0	$0	$257,000	$893,000
	$1,985,000	**$551,000**	**$0**	**$0**	**$551,000**	**$1,434,000**

The average annual investment requirement for the above categories is $1,985,000. Annual revenue currently allocated to these assets for capital purposes is $551,000 leaving an annual deficit of $1,434,000. Put differently, these infrastructure categories are currently funded at 28% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2020, North Huron had annual sanitary revenues of $1,069,000 and annual water revenues of $1,316,000. 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	Tax Change Required for Full Funding
Water Network	41.1%
Sanitary Network	83.5%

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

	Water Network				Sanitary Sewer Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$541,000	$541,000	$541,000	$541,000	$893,000	$893,000	$893,000	$893,000
Tax Increase Required	41.1%	41.1%	41.1%	41.1%	83.5%	83.5%	83.5%	83.5%
Annually:	**7.2%**	**3.6%**	**2.4%**	**1.6%**	**13%**	**6.3%**	**4.2%**	**3.1%**

7.4.3 Financial Strategy Recommendations

Considering the above information, we recommend the 15-year option for the Water Network & the 20-year option for the Sanitary Sewer Network. This involves full CapEx funding being achieved over 20 years by:

a) increasing rate revenues by 2.4% for the Water Network each year for the next 15 years & by 3.1% for the Sanitary Sewer Network each year for the next 20 years.
b) these rate revenue increases are solely for the purpose of phasing in full funding to the respective asset categories covered in this AMP.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this strategy achieves full CapEx funding for rate-funded assets over 10 years, the recommendation does require prioritizing capital projects to fit the annual funding available. Current data shows a pent-up investment demand of $2,335,000 for the Water Network and $7,824,000 for the Sanitary Network.

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

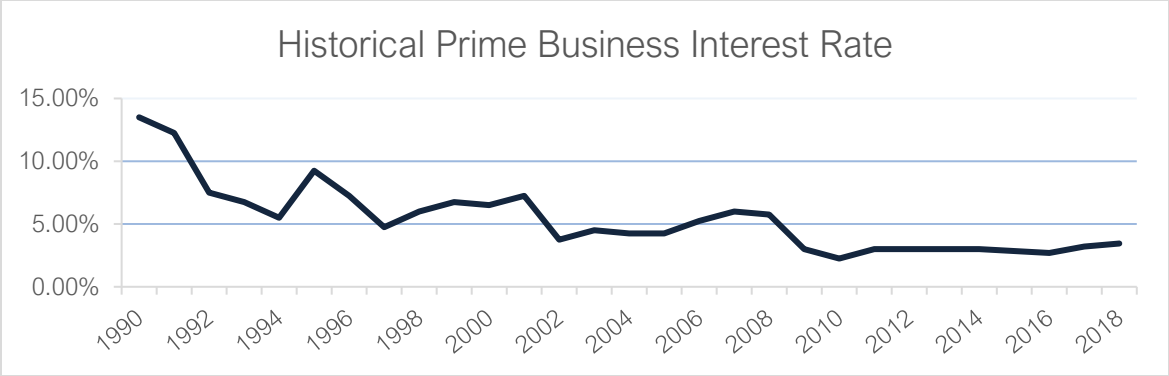
7.5 Use of Debt

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

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

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

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



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

The following tables outline how North Huron has historically used debt for investing in the asset categories as listed. There is currently $1,175,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $267,000, well within its provincially prescribed maximum of $2,454,000.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2016	2017	2018	2019	2020
Bridges	$0	$0	$0	$0	$0	$0
Buildings	$104,000	$0	$0	$0	$0	$0
Information Technology	$0	$0	$0	$0	$0	$0
Land Improvements	$0	$0	$0	$0	$0	$0
Machinery & Equipment	$591,000	$0	$250,000	$0	$267,000	$0
Road Network	$306,000	$0	$0	$393,000	$0	$0
Storm Network	$0	$0	$0	$0	$0	$0
Vehicles	$174,000	$0	$0	$0	$0	$0
Total Tax Funded:	**$1,175,000**	**$0**	**$250,000**	**$393,000**	**$267,000**	**$0**
Water Network	$0	$0	$0	$0	$0	$0
Sanitary Network	$0	$0	$0	$0	$0	$0
Total Rate Funded:	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2020	2021	2022	2023	2024	2025	2030
Bridges	$0	$0	$0	$0	$0	$0	$0
Buildings	$43,000	$43,000	$72,000	$57,000	$57,000	$57,000	$45,000
Information Technology	$0	$0	$0	$0	$0	$0	$0
Land Improvements	$0	$0	$0	$0	$0	$0	$0
Machinery & Equipment	$119,000	$100,000	$105,000	$105,000	$105,000	$105,000	$19,000
Road Network	$70,000	$58,000	$40,000	$40,000	$40,000	$40,000	$0
Storm Network	$0	$0	$0	$0	$0	$0	$0
Vehicles	$36,000	$36,000	$36,000	$36,000	$36,000	$36,000	$0
Total Tax Funded:	**$268,000**	**$237,000**	**$253,000**	**$238,000**	**$238,000**	**$238,000**	**$64,000**
Water Network	$0	$0	$0	$0	$0	$0	$0
Sanitary Network	$0	$0	$0	$0	$0	$0	$0
Total Rate Funded:	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

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

7.6 Use of Reserves

7.6.1 Available Reserves

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

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

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

Asset Category	Balance at December 31, 2020
Bridges	$417,000
Buildings	$685,000
Information Technology	$451,000
Land Improvements	$344,000
Machinery & Equipment	$596,000
Road Network	$777,000
Storm Network	$304,000
Vehicles	$450,000
Total Tax Funded:	**$4,024,000**
Water Network	$3,493,000
Sanitary Network	$3,323,000
Total Rate Funded:	**$6,916,000**

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 North Huron's judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

7.6.2 Recommendation

In 2025, Ontario Regulation 588/17 will require North Huron to integrate proposed levels of service for all asset categories in its asset management plan update. We recommend that future planning should reflect adjustments to service levels and their impacts on reserve

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	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
HCB	$0	$0	$0	$0	$207,259	$141,913	$0	$128,712	$0	$103,629	$145,873
LCB	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sidewalks	$69,452	$135,012	$0	$0	$0	$0	$0	$0	$28,336	$0	$327,367
Streetlights	$0	$13,145	$0	$0	$0	$0	$0	$0	$0	$0	$0
Unpaved	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$69,452	**$148,157**	**$0**	**$0**	**$207,259**	**$141,913**	**$0**	**$128,712**	**$28,336**	**$103,629**	**$473,240**

Bridges

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Bridges	$0	$0	$0	$0	$448,000	$1,737,018	$0	$0	$0	$388,000	$0
	$0	**$0**	**$0**	**$0**	**$448,000**	**$1,737,018**	**$0**	**$0**	**$0**	**$388,000**	**$0**

Storm Network

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Storm Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Buildings											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administration	$4,426,794	$0	$0	$0	$0	$0	$0	$0	$0	$0	$65,861
Planning and Development	$1,782,194	$0	$0	$0	$0	$31,379	$733,568	$0	$136,853	$274,658	$0
Protection Services	$0	$0	$0	$0	$783,954	$11,680	$0	$0	$0	$0	$0
Recreation and Cultural	$5,526,741	$2,949,288	$0	$4,062,263	$46,329	$124,688	$1,854,344	$0	$0	$573,184	$831,255
Transportation Services	$2,125,129	$0	$0	$115,287	$30,743	$0	$0	$0	$0	$0	$174,481
	$13,860,858	**$2,949,288**	**$0**	**$4,177,550**	**$861,026**	**$167,747**	**$2,587,912**	**$0**	**$136,853**	**$847,842**	**$1,071,597**

Vehicles											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Environmental Services	$8,240	$0	$0	$0	$0	$0	$0	$0	$0	$156,183	$0
Protection Services	$952,430	$0	$0	$0	$440,208	$0	$0	$0	$0	$0	$0
Recreation and Cultural	$23,579	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation Services	$691,272	$0	$51,811	$0	$64,679	$77,774	$0	$0	$0	$0	$0
	$1,675,521	**$0**	**$51,811**	**$0**	**$504,887**	**$77,774**	**$0**	**$0**	**$0**	**$156,183**	**$0**

Machinery & Equipment											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fire & Emergency	$186,166	$0	$11,225	$0	$61,310	$13,039	$0	$39,360	$0	$0	$0
General Government	$40,457	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Public Works	$429,651	$49,822	$26,135	$230,029	$15,292	$531,595	$104,878	$17,588	$223,413	$33,623	$372,256
Recreation and Cultural	$75,248	$0	$4,600	$147,268	$116,483	$24,837	$31,514	$0	$31,324	$31,460	$22,636
	$731,522	**$49,822**	**$41,960**	**$377,297**	**$193,085**	**$569,471**	**$136,392**	**$56,948**	**$254,737**	**$65,083**	**$394,892**

Information Technology											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administrative	$99,985	$26,557	$6,678	$0	$58,064	$6,716	$0	$0	$0	$0	$0
Protection Services	$6,118	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation and Cultural	$48,221	$21,151	$0	$0	$0	$5,362	$0	$0	$0	$0	$49,183
	$154,324	**$47,708**	**$6,678**	**$0**	**$58,064**	**$12,078**	**$0**	**$0**	**$0**	**$0**	**$49,183**

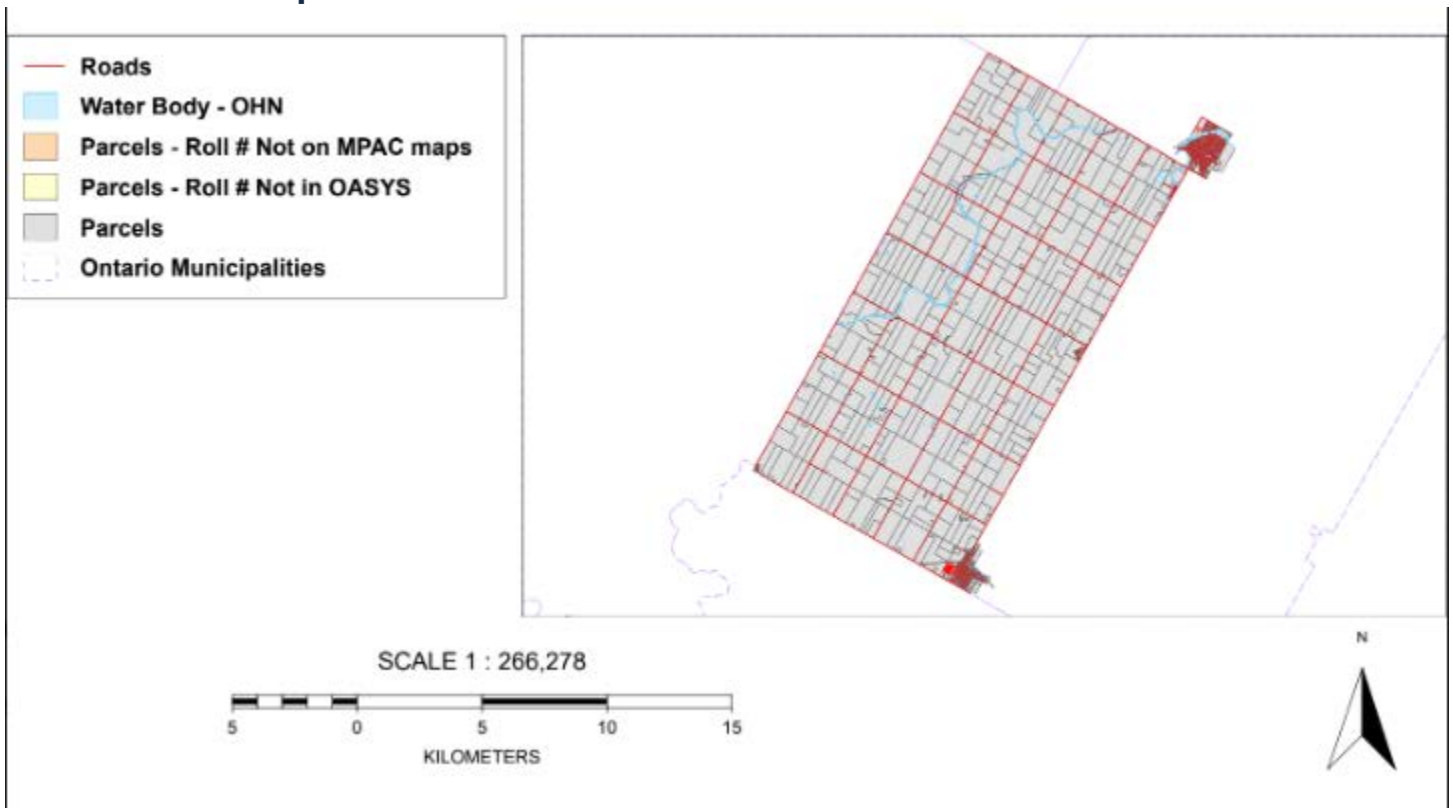
Land Improvements											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Arena	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30,517
Cemeteries	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Daycare	$0	$47,450	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fire Department	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$20,000
General Government	$38,148	$0	$0	$0	$0	$0	$0	$15,259	$15,259	$0	$0
Parks	$1,099,258	$0	$0	$15,259	$0	$0	$32,537	$30,504	$74,543	$0	$0
Sanitary Sewer	$978,793	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights	$0	$0	$0	$0	$0	$6,835	$0	$0	$0	$0	$0
Waste	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$2,116,199	**$47,450**	**$0**	**$15,259**	**$0**	**$6,835**	**$32,537**	**$45,763**	**$89,802**	**$0**	**$50,517**

Water Network											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Hydrants	$150,000	$0	$0	$5,000	$0	$15,000	$0	$50,000	$10,000	$0	$15,000
Water Equipment	$10,706	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Facilities	$1,312,442	$0	$0	$0	$4,833,000	$0	$0	$0	$0	$0	$0
Water Mains	$861,472	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$2,334,620	**$0**	**$0**	**$5,000**	**$4,833,000**	**$15,000**	**$0**	**$50,000**	**$10,000**	**$0**	**$15,000**

Sanitary Network											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Sanitary Equipment	$11,376	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Facilities	$7,812,946	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$7,824,322	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Appendix B: Level of Service Maps

Road Network Map



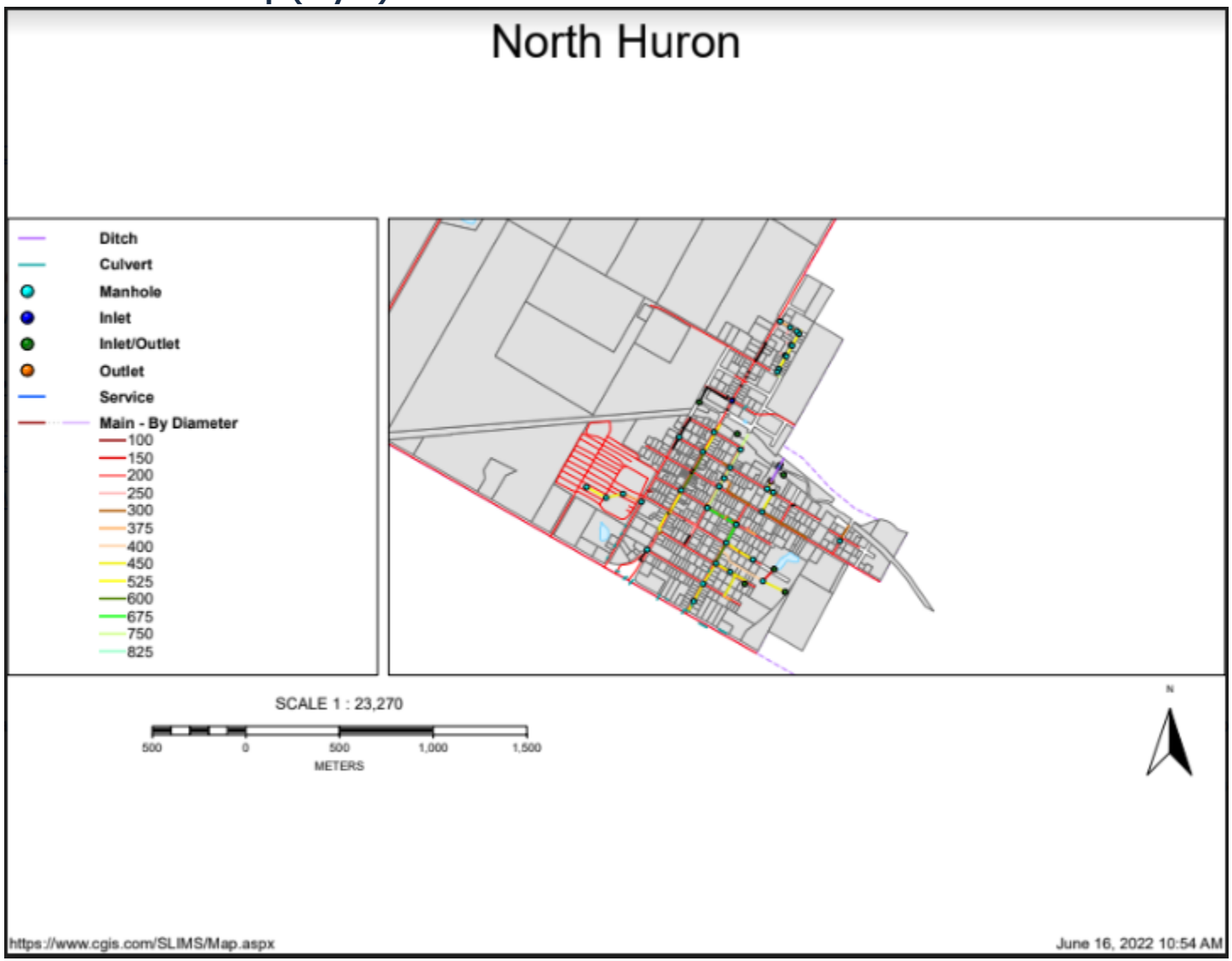
Images of Bridge in Excel Condition

10th Line Bridge

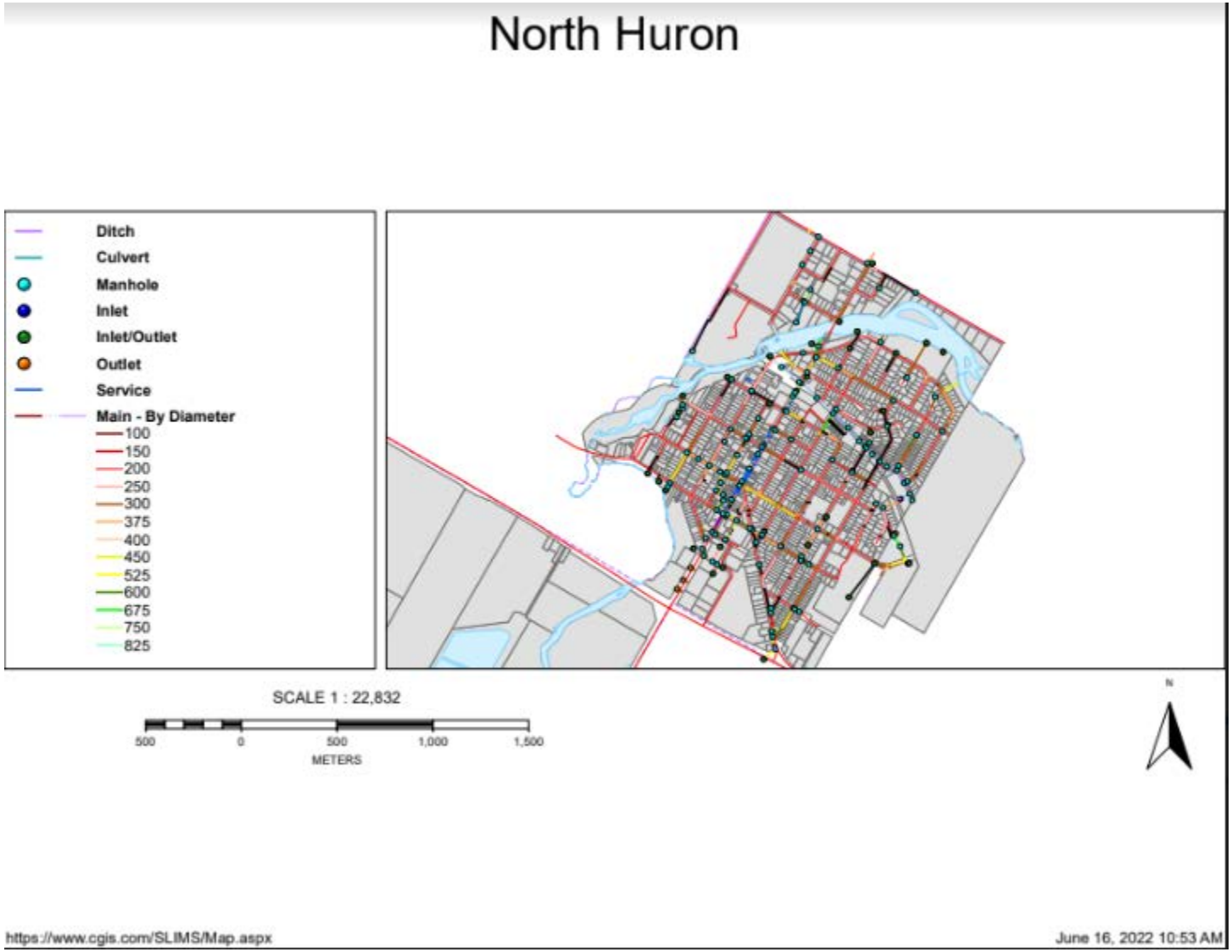
Images of Bridge in Poor Condition

Nature Center Road Bridge

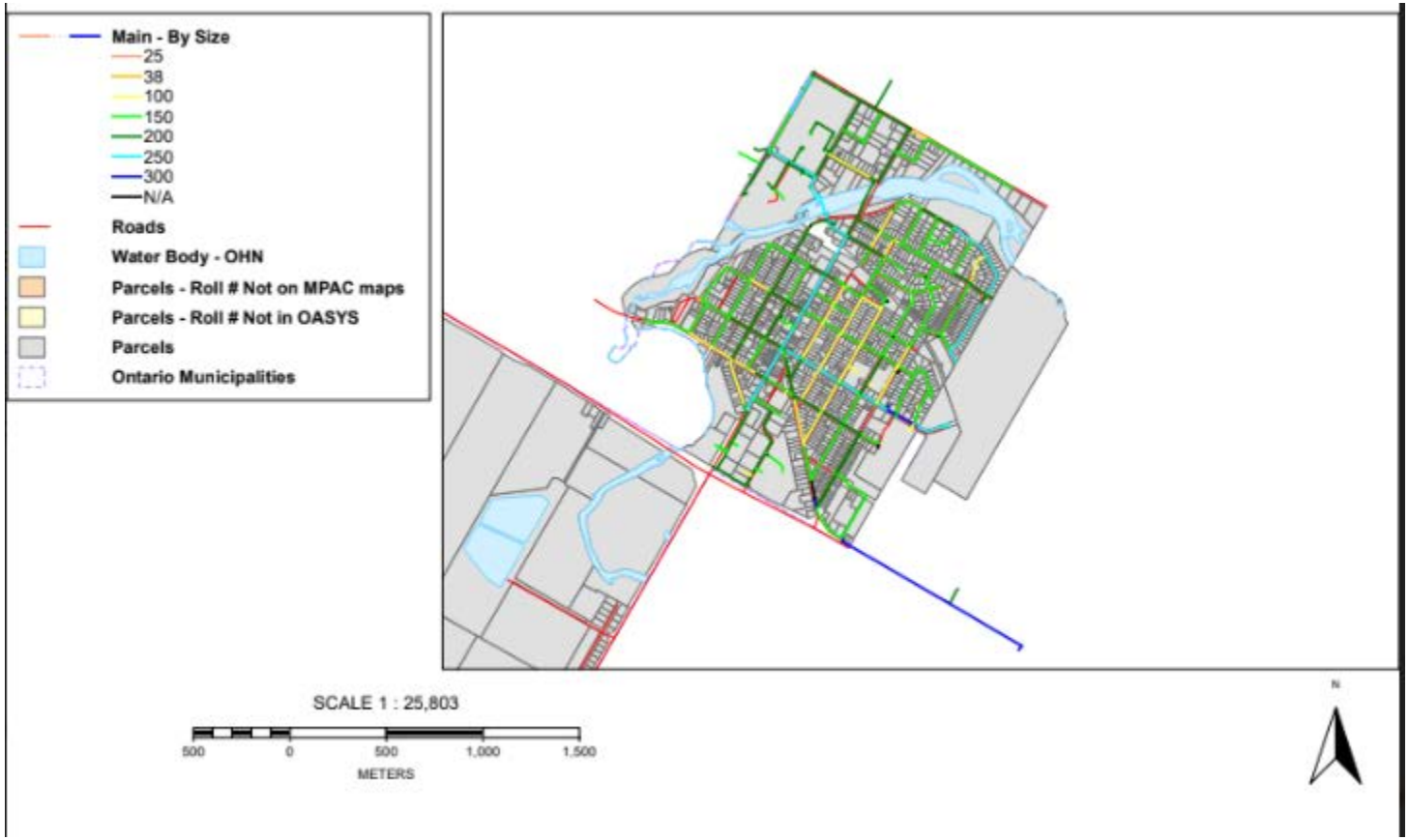
Storm Network Map (Blyth)



Storm Network Map (Wingham)



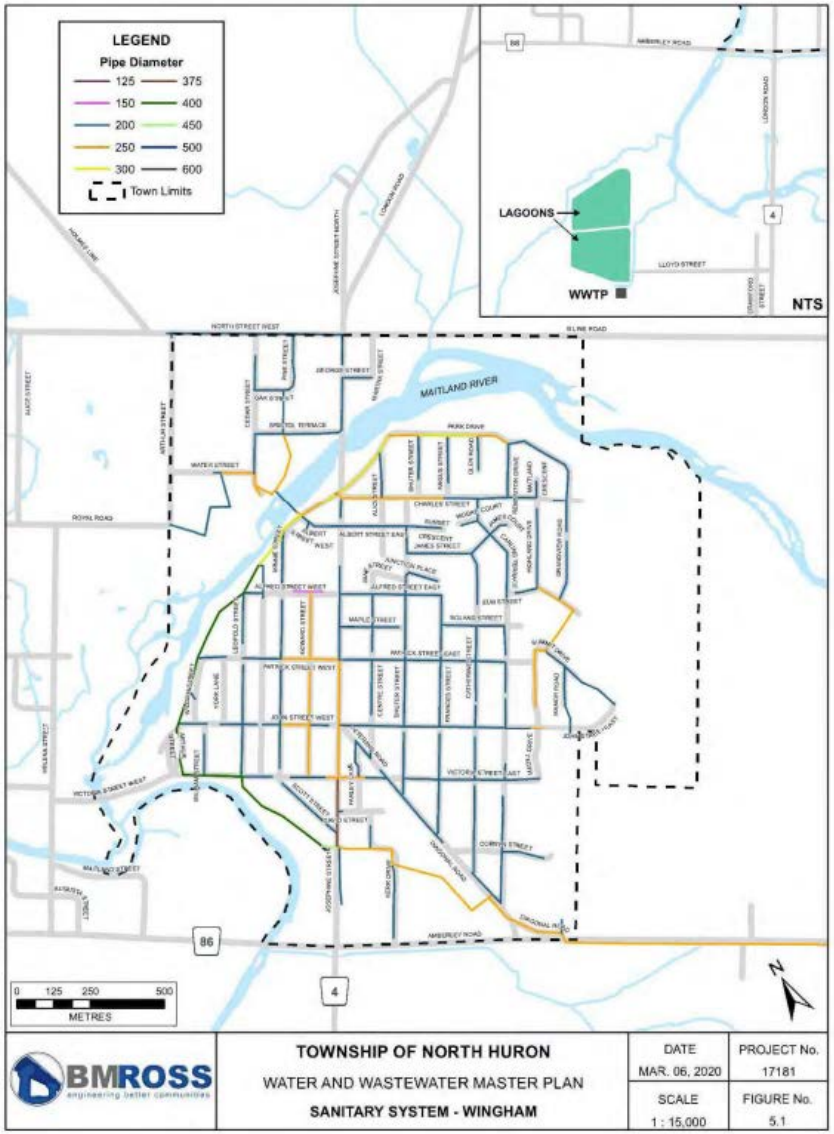
Water Network Map (Wingham)



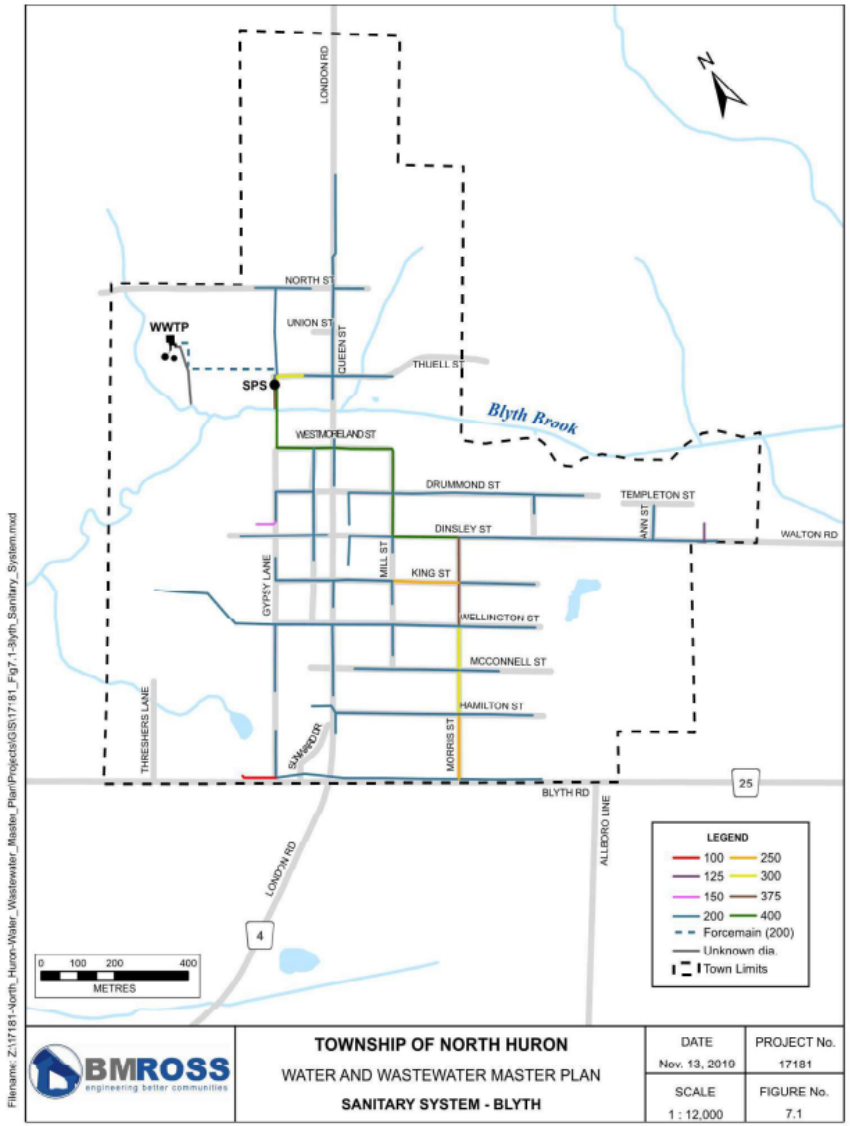
Water Network Map (Belgrave)

Water Network Map (Blyth)

Sanitary Network (Wingham)



Sanitary Network (Blyth)



Appendix C: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network Bridges Buildings Machinery & Equipment Vehicles Information Technology Land Improvements	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Sanitary Network (Mains)	Condition	80%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Pipe Material	20%	PVC	1
			AbC	2
			Concrete	2
			Clay	5
Water Network (Mains)	Condition	80%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Pipe Material	20%	Ductile Iron	3
			Plastic	3
			PVC	3
			Cast Iron	4

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Storm Network (Mains)	Condition	80%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Pipe Material	20%	AbC	2
			Cast Iron	2
			Ductile Iron	2
			Concrete	2
			PVC	2

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network Bridges Buildings Machinery & Equipment Vehicles Information Technology Land Improvements	Economic (100%)	Replacement Cost (100%)	$0-$25,000	1
			$25,000-$100,000	2
			$100,000-$250,000	3
			$250,000-$500,000	4
			$500,000+	5
Storm Network	Economic (80%)	Replacement Cost (100%)	$0-$25,000	1
			$25,000-$100,000	2
			$100,000-$250,000	3
			$250,000-$500,000	4
			$500,000+	5
	Operational (20%)	Pipe Diameter (100%)	0-200mm	1
			200-300mm	2
			300-525mm	3
			525-750mm	4
			750mm+	5
Water Network (Water Mains)	Economic (80%)	Replacement Cost (100%)	$0-$25,000	1
			$25,000-$100,000	2
			$100,000-$250,000	3
			$250,000-$500,000	4
			$500,000+	5
	Operational (20%)	Pipe Material (100%)	0-50mm	1
			50-100mm	2
			100-200mm	3
			200-250mm	4
			250mm+	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Sanitary Network (Sanitary Mains)	Economic (80%)	Replacement Cost (100%)	$0-$25,000	1
			$25,000-$100,000	2
			$100,000-$250,000	3
			$250,000-$500,000	4
			$500,000+	5
	Operational (20%)	Pipe Diameter (100%)	0-100mm	1
			100-200mm	2
			200-300mm	3
			300-375mm	4
			375mm+	5

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