

Asset Management Plan

Town of Atikokan

2020

1.1.1 Acknowledgements

The Town of Atikokan would like to acknowledge the efforts of the staff across the Town's service areas for their contribution to the development of this Asset Management Plan. Staff have dedicated notable time and effort to provide their expertise and support in developing the Asset Management Plan. In particular, the publication was especially made possible through the guidance and continued support provided by Tyler Dziarmaga, Director of Public Works, and Brandy Coulson, Treasurer, in addition to other support staff.

This Asset Management Plan was prepared by:



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Key Statistics

Replacement cost of
asset portfolio

\$163.8 million

Replacement cost of
infrastructure per household

\$111,885 (2021 census)

Percentage of assets in fair or
better condition

33 %

Percentage of assets with
assessed condition data

17 %

Annual capital
infrastructure deficit

\$2.3 million

Recommended timeframe
for eliminating annual
infrastructure deficit

20 Years

Target reinvestment
rate

2.6 %

Actual reinvestment
rate

1.2 %

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Executive Summary

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

Scope

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

This AMP include the following asset categories:



With the development of this AMP the Town has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2022. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2024 and 2025.

Findings

The overall replacement cost of the asset categories included in this AMP totals \$163.8 million. One-third of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 17% of assets. For the remaining 83% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals \$4.3 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately \$2.0 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of \$2.3 million.

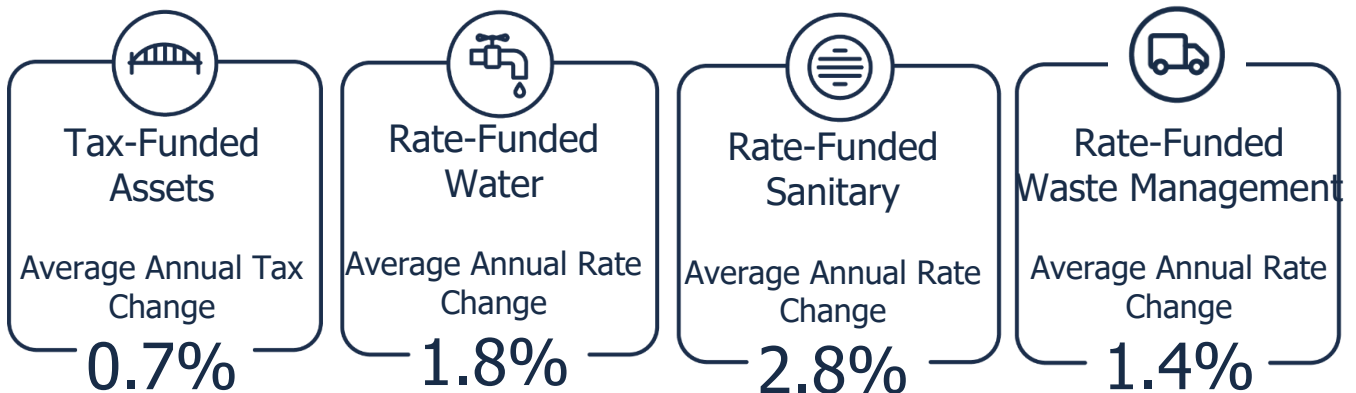
It is important to note that this AMP represents a snapshot in time based on a 2020 effective year and is based on the best available processes, data, and information at the Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Annual Increase
Per Household



Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Town's infrastructure deficit based on a 10-year plan for tax funded assets, and a 20-year plan for rate funded assets:



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

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

2 Introduction & Context

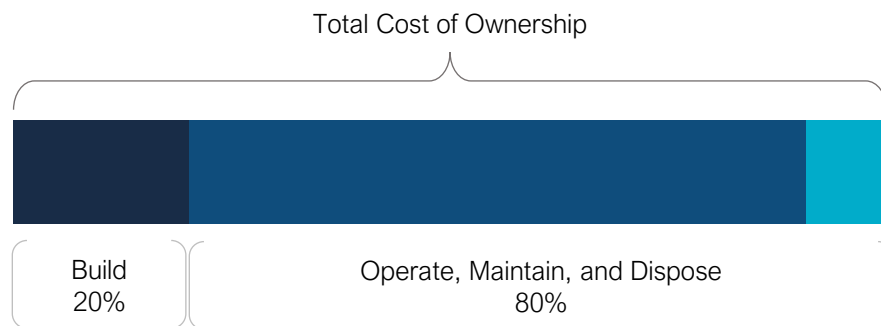
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The Town's Asset Management Policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An Asset Management Plan (AMP) 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

2.1 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.

Typically, 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 AMP 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.

2.1.1 Asset Management Policy

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

The Town adopted By-law No. 24-19 "A By-law to Adopt a Strategic Asset Management Policy" on June 24th, 2019, in accordance with Ontario Regulation 588/17.

The Policy seeks to incorporate several principles into the Town's day-to-day operations, including:

- Forward Looking
- Infrastructure Prioritization
- Transparency & Evidence Based Decisions
- Innovation
- Community Focused

2.1.2 Asset Management Strategy

An asset management strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. It provides greater detail than the policy on how the municipality plans to achieve asset management objectives through planned activities and decision-making criteria.

Several of the recommendations throughout this report highlight specific actions and practices that are expected to improve the Municipality's Asset management practices, internal capacity and cognizance, and resultant decisions. Thus, these recommendations serve informally as an Asset Management Strategy and provide a framework of planned activities to operationalize and support the delivery of the asset management objectives as defined in the policy.

2.1.3 Asset Management Plan

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

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

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

2.2 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 AMP and are described below in greater detail.

2.2.1 Lifecycle Management Strategies

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories: maintenance, rehabilitation, and replacement. The following table provides a description of each type of activity and the general difference in cost.

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

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

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

2.2.2 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 should it fail than a low volume rural road.

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 capital investments, 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.

2.2.3 Levels of Service

A level of service (LOS) is a measure of what the Town is providing to the community and the nature and quality of that service. Within each core asset category, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

These measures include a combination of those that have been outlined in O. Reg. 588/17 in addition to performance measures identified by the Town as worth measuring and evaluating. The Town measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (Roads, Bridges & Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Town has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

Technical levels of service are a measure of key technical attributes of the service being provided to the community. These include mostly quantitative measures and tend to reflect the impact of the municipality'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 & Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP.

Current and Proposed Levels of Service

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

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

2.3 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2024

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

2022

Asset Management Plan for Core Assets with the following components:

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

2025

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

1. Proposed LOS 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

2.3.1 O. Reg. 588/17 Compliance Review

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

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 5.2.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 5.2.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 5.2.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 – 5.2.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 5.2.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.2.6	Complete
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 B	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	6.1-6.2	Complete

2.4 Asset Management Roadmap

As part of PSD Citywide's Asset Management Roadmap, the Town of Atikokan committed to taking the necessary steps towards developing a systemic, sustainable, and intelligently structured asset management plan. This process involved the collaboration of PSD Citywide's industry-leading asset management team with municipal staff. The following summarizes key milestones/deliverables achieved throughout this project.

Asset Data Review and Refinement (April & May 2022)

Asset data review, refinement, and updates were completed over several working sessions with Town Staff. This process improved the quality and accuracy of inventory information, enabling better asset management outcomes.

Risk and Criticality Model Development (May 2022)

Risk models were developed to determine the relative criticality of assets based on their probability and consequence of failure. These models assist with the prioritization and ranking of infrastructure needs.

Lifecycle Model Development (May 2022)

The Town's lifecycle management strategies were reviewed and documented to determine current practices and identify opportunities for improvement and potential cost avoidance.

Level of Service Framework Development (April & May 2022)

A framework was developed to determine the current level of service provided to the community through municipal infrastructure.

AMP & Financial Strategy

This document represents the culminating deliverable of the Asset Management Roadmap.

3 Scope and Methodology

Key Insights

- This Asset Management Plan (AMP) 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

3.1 AMP Asset Categories

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

The AMP summarizes the state of the infrastructure for the Town’s asset portfolio. For Core assets the AMP also establishes current levels of service and the associated technical and customer-oriented metrics, and outlines lifecycle strategies for optimal asset management and performance. For all asset categories, financial strategies to reach sustainability are provided.

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

3.2 Deriving Replacement Costs

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

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

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets

where the total cost is reflective of the actual costs that the Town incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

3.3 Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Town expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

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

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

3.4 Reinvestment Rate

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

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

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

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

3.5 Deriving Asset Condition

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

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Town's asset portfolio. The table below outlines the condition rating system used in this AMP for all asset categories except roads 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. The road condition rating scale is provided in section 4.1.

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	60-79
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-59
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-39
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-19

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 E includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

4

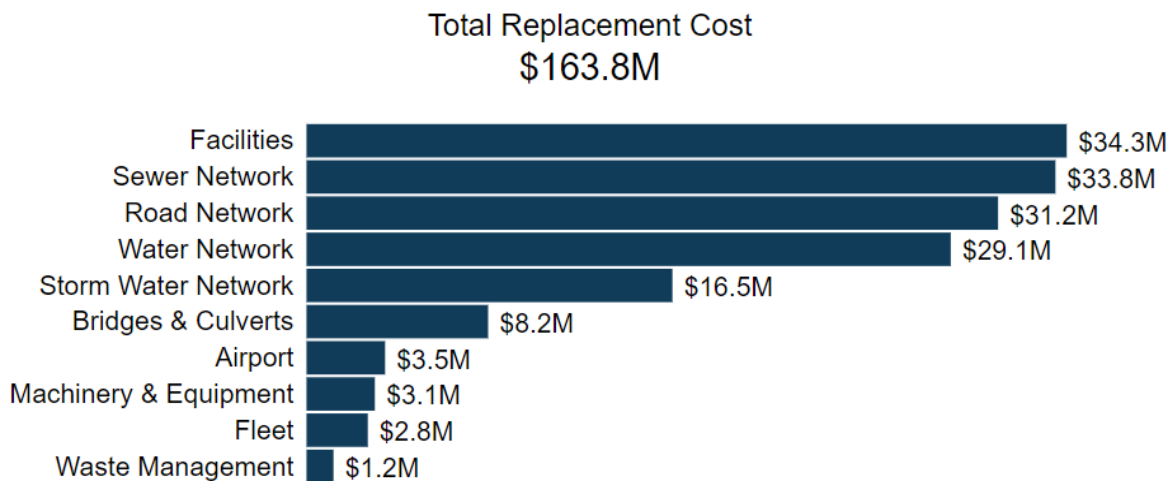
Portfolio Overview

Key Insights

- The total replacement cost of the Town's asset portfolio is \$163.8 million
- The Town's target re-investment rate is 2.6%, and the actual re-investment rate is 1.2%, contributing to an expanding infrastructure deficit
- One-third, or 33%, of all assets are in fair or better condition
- 41% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total \$4.3 million per year across all assets

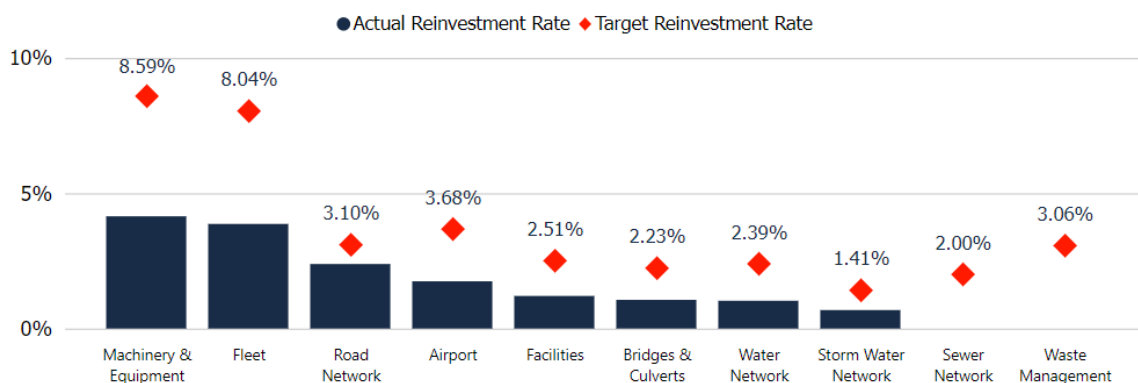
4.1 Total Replacement Cost of Asset Portfolio

The asset categories analysed in this AMP have a total replacement cost of \$163.8 million based on inventory data from 2020. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



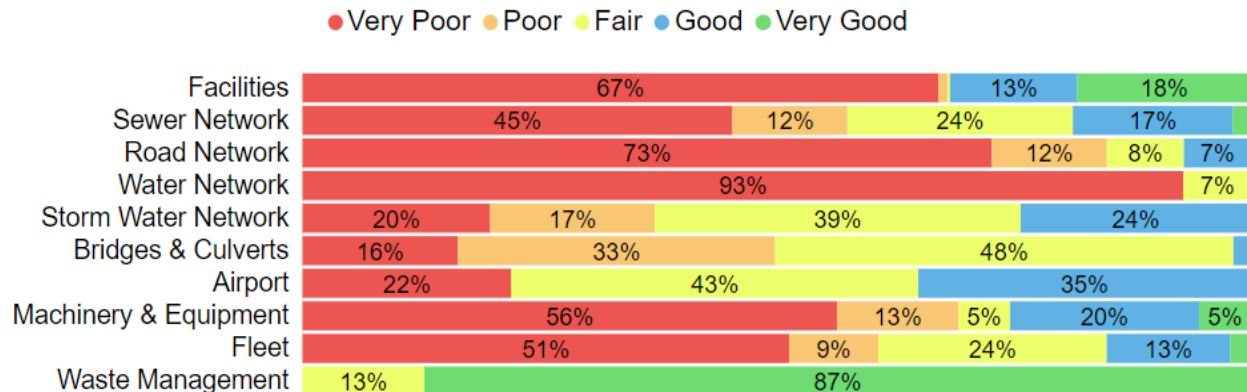
4.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Town should be allocating approximately \$4.27 million annually, for a target reinvestment rate of 2.61%. Actual annual spending on infrastructure totals approximately \$1.96 million, for an actual reinvestment rate of 1.19%.



4.3 Condition of Asset Portfolio

Understanding the current condition of assets under ownership is central to asset management planning. Collectively, 33% of assets in Atikokan are in fair or better condition. This estimate relies on both age-based and assessed condition data.



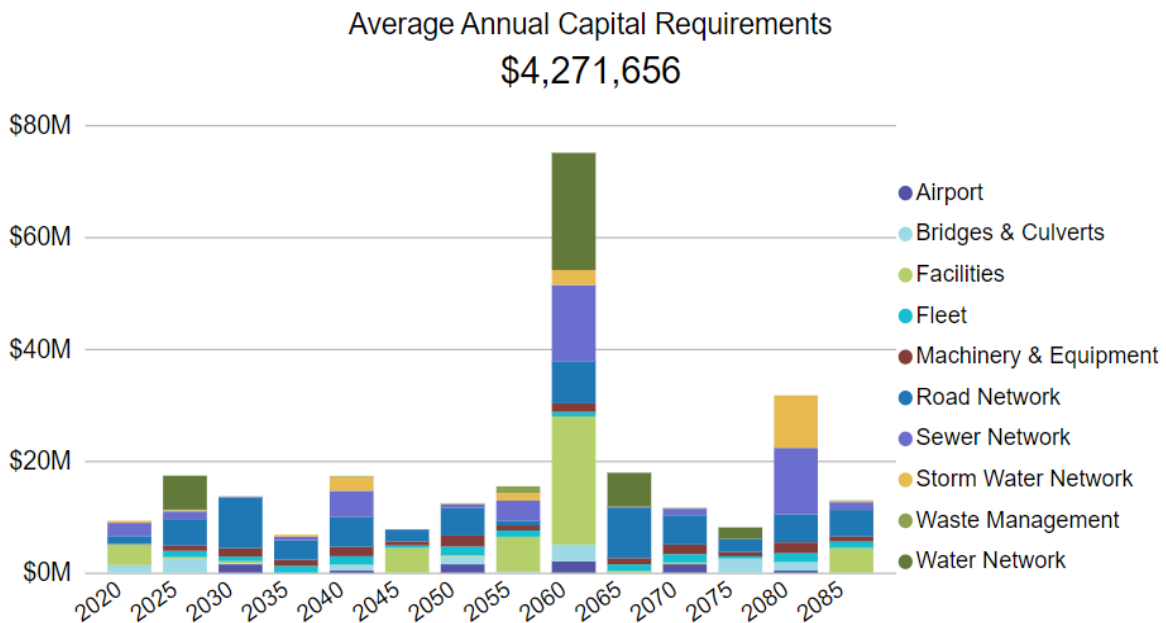
This AMP relies on assessed condition data for 17% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it better reflects the true condition of an asset and its ability to perform its functions. The 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	Paved Roads	82	Street Scan Data
	Bridges	100	2019 OSIM Report
Bridges & Culverts	Structural Culverts	100	2019 OSIM Report
	Pedestrian Bridges	100	2019 OSIM Report
Stormwater Network	All	0	Age-Based
Sanitary Sewer Network	All	0	Age-Based ¹
Facilities	All	0	Age-Based
Machinery & Equipment	All	0	Age-Based
Fleet	All	0	Age-Based
Land Improvements	All	0	Age-Based
Water Network	All	0	Age-Based
Airport	All	0	Age-Based
Waste Management	All	0	Age-Based

¹ It is noted that the Town recently completed condition assessments for many of their sanitary, and storm mains and are actively working on a data upload strategy.

4.4 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Town can produce an accurate long-term capital forecast. The following graph identifies capital requirements between 2020 and 2090, reported in 5-year cumulative bins, and the average annual capital requirement at \$4.2 million.



5 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at \$163.8 million
- 33% 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 \$4.3 million
- Assets identified as high risk of failure should be evaluated to determine appropriate risk mitigation activities and treatment options

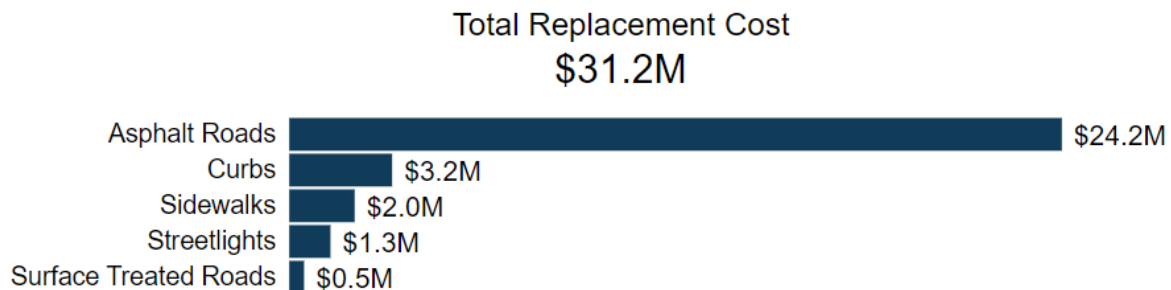
5.1 Road Network

The Road Network is a critical component of the provision of safe and efficient transportation services and is one of the highest value asset categories. It includes all municipally owned and maintained roadways as well as sidewalks, road culverts and streetlights. The Town's road assets are maintained by the Public Works department.

5.1.1 Asset Inventory & Replacement Cost

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

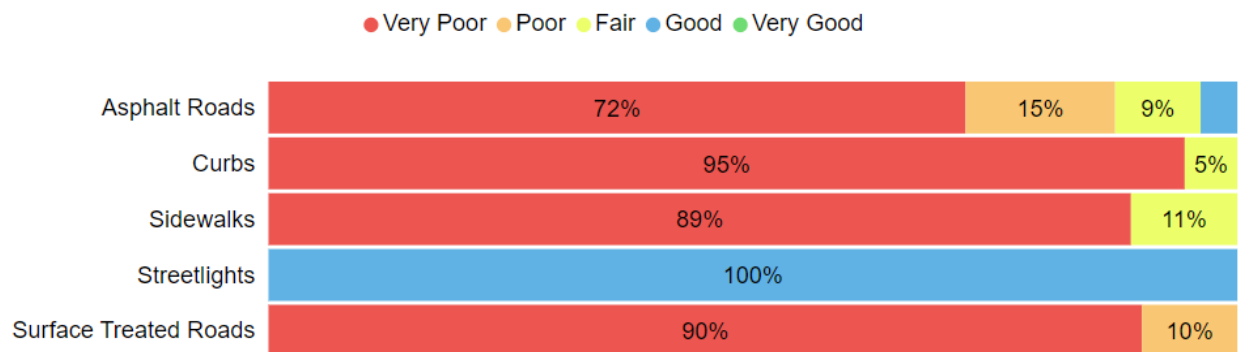
Asset Segment	Quantity (meters)	Replacement Cost Method	Total Replacement Cost
Asphalt Roads	38,220	User-Defined	\$24,196,000
Surface Treated Roads	1,220	User-Defined	\$464,000
Curbs	21,478	User-Defined	\$3,222,000
Sidewalks	16,218.4	5% CPI Tables 95% User-Defined	\$2,049,000
Streetlights	630 units	Cost/Unit	\$1,292,000
Total			\$31,223,000



5.1.2 Asset Condition

The table below identifies the 2020 average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Asphalt Roads	33	Very Poor	82% Assessed
Surface Treated Roads	5	Very Poor	10% Assessed
Curbs	4	Very Poor	Age-Based
Sidewalks	6	Very Poor	Age-Based
Streetlights	63	Good	Age-Based
Average:	29	Very Poor	63% Assessed



Current Approach to Condition Assessment

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

- Using Street Scan Atikokan staff collected Pavement Condition Index (PCI) scores for nearly all asphalt and surface treated roads
- Going forward, staff intend to complete updated assessments at least every 4-5 Years
- Road Condition scores range from very good to very poor based on the following scale:

Condition Description	Score Range
Very Good	85-100
Good	70-84
Fair	55-69
Poor	40-54
Very Poor	0-39

5.1.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Asphalt Roads	30	36.0
Surface Treated Roads	30	58.5
Curbs	20	33.8
Sidewalks	25	43.2
Streetlights	100	37.5
Average:		37.1

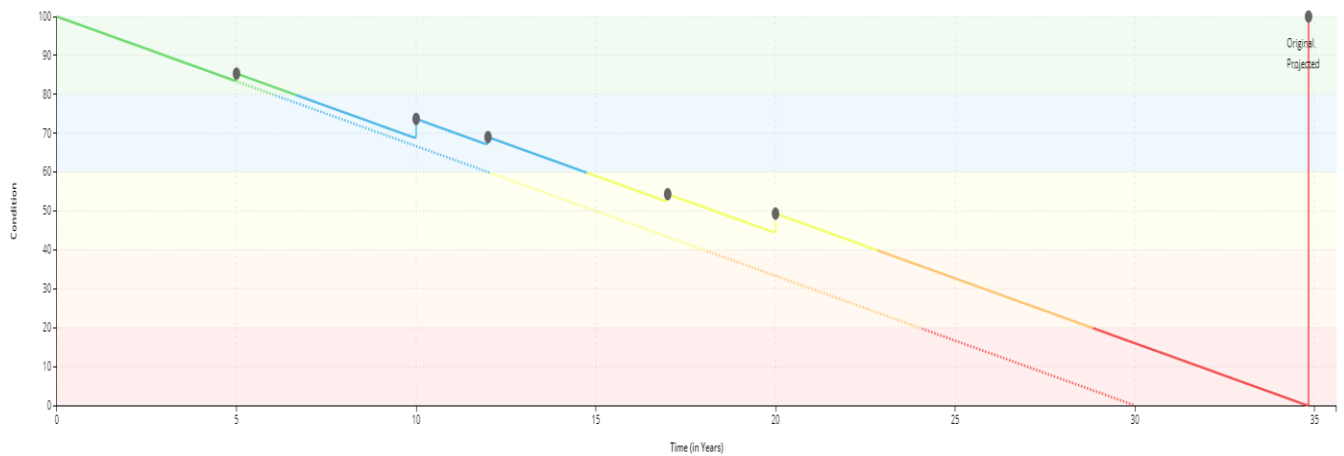
Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

5.1.4 Lifecycle Management Strategy

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

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of asphalt roads. Through these maintenance activities the roads service life is expected to be extended from 30 to nearly 35 years.

Asphalt Roads			
Event Name	Event Class	Event Trigger	Event Impact
Crack Sealing	Maintenance	Years 5, 12, & 17	Adds 2 % Condition
Patching	Maintenance	Years 10 & 20	Adds 5% Condition
Full Surface Reconstruction	Replacement	35 Years (rounded)	Condition to 100%

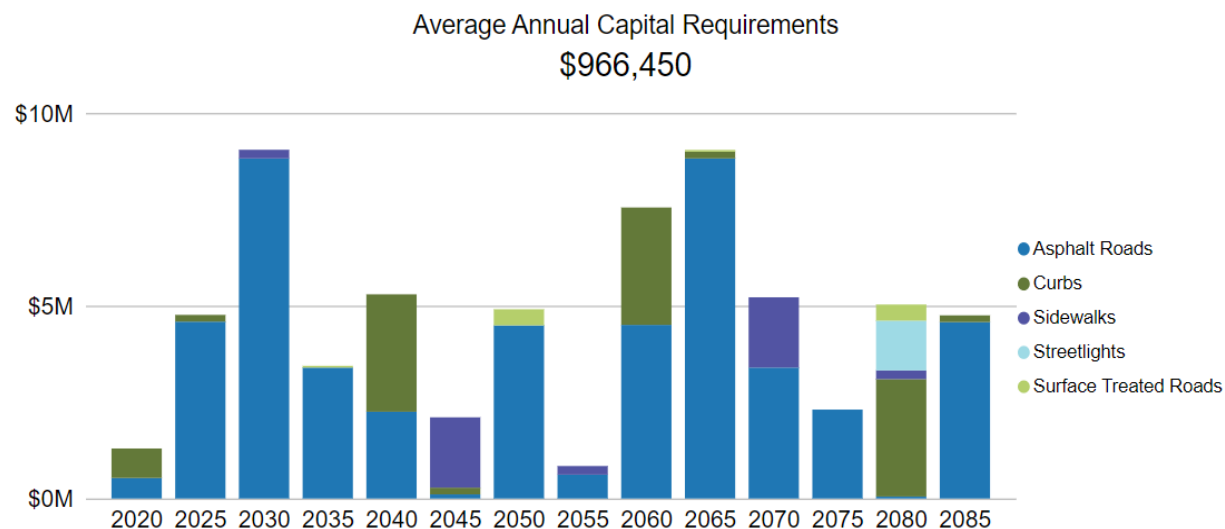


The Town's surface treated roads comprise a small portion of the Town's road network. Surface treated roads receive pothole repairs as needed, which preserves the assets expected service life but does not extend it.

Gravel roads receive ongoing maintenance which includes regular regrading, dust control and re-gravelling. Gravel roads are typically managed through perpetual maintenance which, if completed as required can theoretically enable the asset to hold a limitless service life.

Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for asphalt roads, and assuming the end-of-life replacement of all other assets in this category, the average annual capital requirement is \$966,450. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs to meet future capital needs.



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

5.1.5 Risk & Criticality

Risk Matrix

The following risk matrix details the relationship between the probability and the consequence of failure for road assets based on 2020 inventory data.

Consequence	5	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	4	0 Assets - \$0.00	0 Assets - \$0.00	1 Asset 900.00 m \$631,516.00	3 Assets 3,850.00 m \$2,451,699.00	3 Assets 7,300.00 m \$4,080,446.00
	3	0 Assets - \$0.00	4 Assets 1,830.00 m, unit(s) \$2,415,719.00	1 Asset 750.00 m \$543,424.00	11 Assets 6,200.00 m \$4,211,251.00	4 Assets 3,200.00 m \$1,326,485.00
	2	0 Assets - \$0.00	8 Assets 1,700.00 m \$1,224,896.00	18 Assets 4,471.00 m, unit(s) \$3,073,625.00	38 Assets 9,000.00 m \$5,565,501.00	3 Assets 1,700.00 m \$341,276.00
	1	0 Assets - \$0.00	5 Assets 352.00 m, unit(s) \$452,741.00	16 Assets 2,095.10 m, unit(s) \$780,166.17	1 Asset 100.00 m \$38,150.00	96 Assets 32,180.30 m, unit(s) \$4,682,119.91
		1	2	3	4	5
		Probability				

These risk scores are computed based on the following parameters:

Probability of Failure Criteria	Weighting (%)	Consequence of Failure Criteria	Weighting (%)
Condition	80	Replacement Cost	75
Service Life Remaining	20	Repair Priority	20
		Road Class	5

Risks to Current Asset Management Strategies

In addition to the asset specific risks noted above, the road network is susceptible to other risks that tend to affect a group of assets rather than specific assets. The following section summarizes these key trends, challenges, and risks to service:



Fiscal Capacity & Budget Constraints

Fiscal capital and budget constraints within the municipality has affected the level of service provided by the road network. Historically sufficient funds have not been allocated to the rehabilitation and replacement of road assets, resulting in poor condition and significant investment backlogs.



Organizational Change and Capacity

Some changes in senior management have occurred in the municipality in the last 10 years, which has resulted in a loss of asset information due to limited documentation. Additional staff turnover is expected in the next five (5) years due to upcoming retirements of senior management staff. Staff are working towards reducing risks of such significant staff changes; mitigation strategies include the development of more formal information documentation and hand-over processes.

5.1.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	The Town's road network includes various pedestrian infrastructure throughout the core settlement areas in addition to a road network comprised of local and provincial highways throughout the Municipal boundaries. For a map view of the road network please refer to Appendix C
Quality	Description or images that illustrate the different levels of road class pavement condition	Road conditions are assessed using street scan and are rated on a 0-100 scale. Assets are classified in 5 condition ranges as follows: Very Good (85-100): In excellent condition with few visible defects. Good (70-84): In good condition with accumulating slight defects. Fair (55-69): In fair condition with intermittent patterns of slight to moderate defects. Poor (40-54): In poor condition with frequent patterns of moderate defects. Very Poor (0-39): In very poor condition with extensive severe defects.

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)	6.54
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km ²)	0.81
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km ²)	26.10
Quality	Average pavement condition index for paved roads in the municipality	HCB: 29% LCB: 7%
	Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	13% ²
Performance	Current vs. Target Capital reinvestment rate	Current: 2.39% Target: 3.10%

² The condition of gravel roads tends to change quickly and is often significantly affected by weather events. Actual gravel road condition may be in some instances better than reported.

5.1.7 Recommendations

Asset Inventory

- Align the asset inventory in Citywide to the Street Scan inventory so that Street Scan data can be more efficiently uploaded to Citywide and asset segmentation and attribute information is improved.
- Ensure any updates to the inventory are reflected on the asset upon which they occurred. For example, patching should be reflected in the road asset to which it occurred rather than created as a new asset.

Condition Assessment Strategies

- Continue to collect updated road condition information. Ensure this information is updated into Citywide in a timely fashion so that it can be incorporated into asset management decisions.
- Evaluate the feasibility and the cost- benefit of collecting assessed condition information for sidewalks, curbs, and streetlights.

Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for asphalt and surface treated roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the value of the Town's lifecycle management strategies at regular intervals to determine the impact cost, condition, and risk.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the determination of risk tolerance and risk mitigation strategies alongside the regular review of high-risk assets, and the risk models themselves.

Levels of Service

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

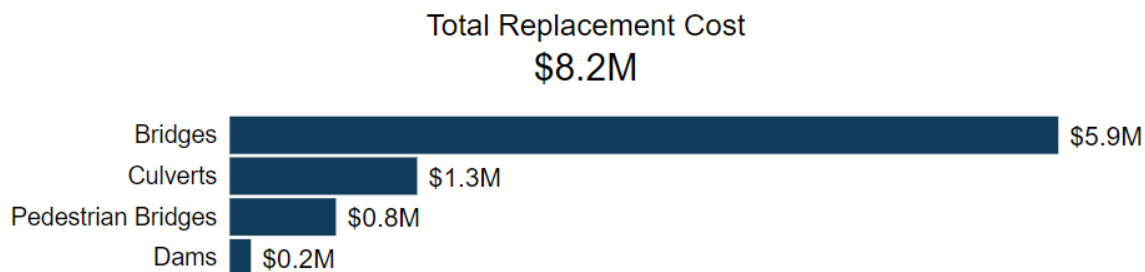
5.2 Bridges & Culverts

Bridges & Culverts 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.

5.2.1 Asset Inventory & Replacement Cost

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

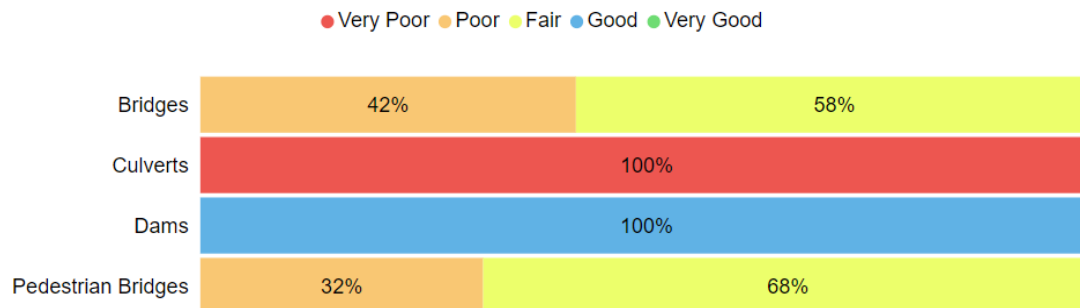
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	3	7% CPI Tables 93% User-Defined	\$5,941,000
Culverts	1	User-Defined	\$1,344,000
Dams	1	CPI Tables	\$152,000
Pedestrian Bridges	5	CPI Tables	\$762,000
Total			\$8,199,000



5.2.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Bridges	45	Fair	100% Assessed
Culverts	16	Very Poor	100% Assessed
Dams	63	Good	Age-Based
Pedestrian Bridges	45	Fair	100% Assessed
Average:	41	Fair	98% Assessed



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

Current Approach to Condition Assessment

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

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

5.2.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Bridges & Culverts assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Bridges	50	29.1
Culverts	30	43.5
Dams	60	22.1
Pedestrian Bridges	50	24.3
Average:		27.5

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

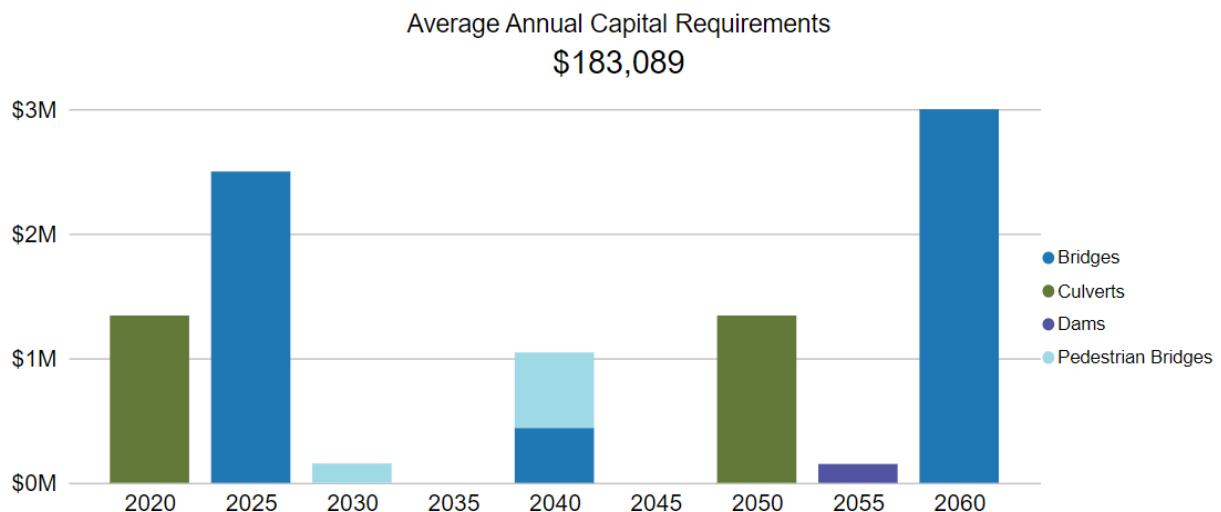
5.2.4 Lifecycle Management Strategy

Lifecycle management strategies are integral to improve asset performance and proactively managing asset deterioration. The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	On an annual basis bridge and structural culvert decks and joints are cleaned. Thereafter, additional cleaning is compelled as needed.
Inspection	The most recent inspection report was completed in 2021 by Kresin Engineering Corporation.
Rehabilitation and Replacement	All major lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM)

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$183,089 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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

5.2.5 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the risks held by bridges and structural culverts assets. These risks are computed based on the parameters detailed in the table below.



Probability of Failure Criteria	Weighting (%)	Consequence of Failure Criteria	Weighting (%)
Condition	80	Replacement Cost	72
		Road Class	8
		Average Annual Daily Traffic (AADT)	14
		Detour Length (km)	4
Service Life Remaining	20	Special Routes (Bicycle, School, Truck)	2

Risks to Current Asset Management Strategies

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



Aging Infrastructure

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



Regulatory Requirements

Regulatory and reporting requirements have become more intense and time consuming for assets in the municipality. This is creating a greater strain on resources and staff capacity, effecting the ability to deliver adequate service levels.

5.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Of the Town's four road bridges and structural culvert assets one bridge (White Street) has loading restrictions which is largely due to it being a single lane bridge. For the remaining assets most types of vehicles, including heavy transport, motor vehicles, and emergency vehicles , can cross them without restriction.

Quality	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	The condition of vehicle bridges ranges from very good (80) to very poor (10). The weighted average condition of bridges is Fair (47). The condition of the Town's only structural culvert is poor (10). See Appendix C for images.
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Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of bridges in the Town with loading or dimensional restrictions	25%
Quality	Average bridge condition index value for bridges in the Town	47.5
	Average bridge condition index value for structural culverts in the Town	10
Performance	Current vs. Target Capital re-investment rate	Current: 1.06% Target: 2.23%

5.2.7 Recommendations

Data Review/Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all bridges and structural culverts upon the completion of OSIM inspections every 2 years.
- As part of OSIM inspections, require the successful Proponent to provide replacement costs for bridge and structural culvert assets as well as the estimated costs of all recommended rehabilitation events and studies. This is expected to improve the accuracy of capital projections.

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

- Continue to complete the timely and ongoing maintenance and inspection of bridge and structural culverts and to the extent possible complete recommended repairs and rehabilitation projects in a timely manner to protect against more severe asset deterioration.

Levels of Service

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

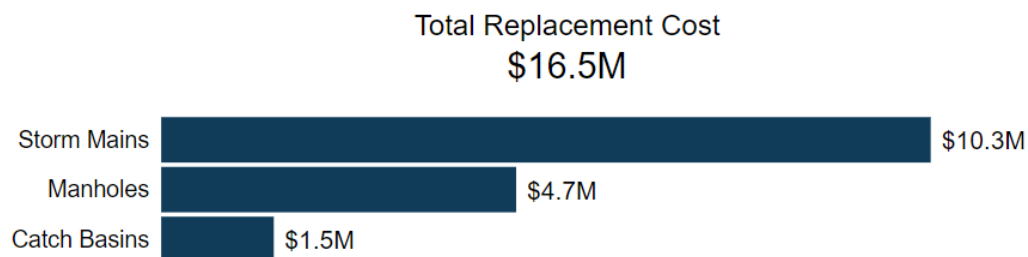
5.3 Stormwater Network

The Town's stormwater network consists of storm mains, manholes and catch basins. These assets are owned and operated by the Town's Public Works Department.

5.3.1 Asset Inventory & Replacement Cost

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

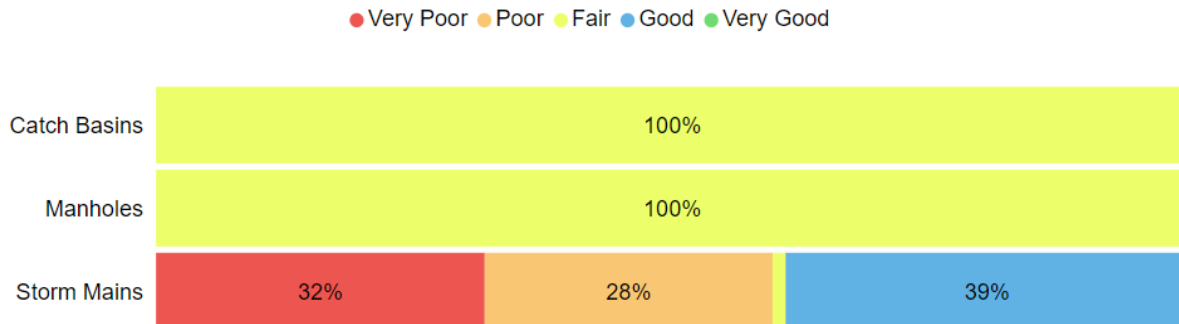
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Catch Basins	537 units	Cost/Unit	\$1,504,000
Manholes	298 units	User-Defined	\$4,740,000
Storm Mains	27,846 m	Cost/Unit	\$10,276,000
Total			\$16,519,000



5.3.2 Asset Condition

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

	Average Condition (%)	Average Condition Rating	Condition Source
Catch Basins	60	Good	Age-Based
Manholes	60	Good	Age-Based
Storm Mains	37	Poor	Age-Based
Average:	45	Fair	Age-Based



To ensure that the Town's Stormwater Network continues to provide an acceptable level of service, the average condition of all assets should be regularly monitored. If the average condition declines, a review of the existing lifecycle management strategy is recommended. Such a review may identify current practices that could be extended or additional practices that would be of benefit.

Current Approach to Condition Assessment

Accurate and reliable condition data is central to developing effective lifecycle strategies. The following describes the municipality's current approach to condition assessments:

- CCTV inspections of the storm mains began in 2021 and focused on storm mains adjacent to critical road assets
- In 2022, the Town plans to complete additional storm mains which were not previously assessed and have a history of issues
- In the long-term it is the Town's intention to collect CCTV information across the network

5.3.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Stormwater Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Catch Basins	100	40.5
Manholes	100s	40.5
Storm Mains	60	40.6
Average:		40.6

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

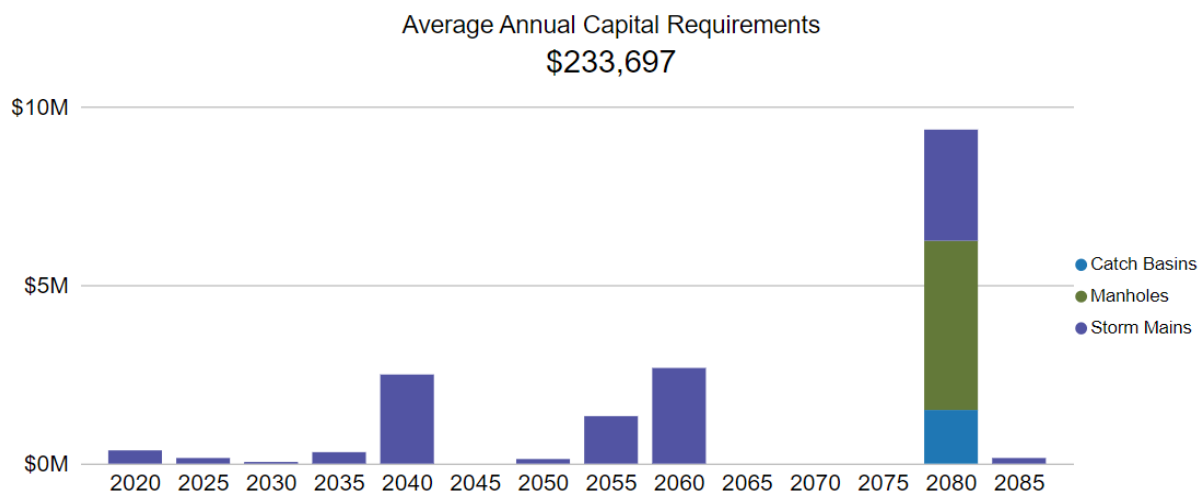
5.3.4 Lifecycle Management Strategy

The lifecycle management strategies for stormwater assets are comprised of the following maintenance and inspection activities and replacement considerations:

Activity Type	Description of Current Strategy
Maintenance	Storm ditches are inspected annually and cleaned as needed.
	Select portions of the storm mains are cleaned and flushed annually in advance of CCTV inspections. The latest CCTV inspections were completed in 2021.
	To ensure proper functioning storm main frames and grates are reset as needed based on call-in requests and field observations.
Inspection	In 2021 CCTV inspections of storm mains located adjacent to major roads were completed. In 2022, Atikokan plans to complete other storm mains that were not assessed in 2021 and are identified as problematic. In the long-term the Town intends to assemble CCTV condition information on the entire network.
Replacement	Storm main replacement decisions are primarily based on coordinating replacement with other related linear assets (i.e., roads, water, sewer) and are otherwise premised on CCTV information where available and/or identifiable issues (i.e., ponding).

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements, reported in 5-year cumulative buckets until 2085. The average annual capital requirement is \$233,697 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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

5.3.5 Risk & Criticality

Risk Matrix

The risks associated with storm main assets is assessed based on the probability and consequence of failure parameters listed in the Table below.

Probability of Failure Criteria	Weighting (%)	Consequence of Failure Criteria	Weighting (%)
Condition	70	Replacement Cost	80
Material	30	Diameter	20

Based on these parameters, risk scores for storm main assets are as follows:

Consequence	5	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	4	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00
	3	4 Assets 393.70 m \$222,440.50	0 Assets - \$0.00	4 Assets 1,023.70 unit(s), m \$6,362,481.00	10 Assets 1,129.50 m \$665,460.70	0 Assets - \$0.00
	2	100 Assets 8,109.23 m \$3,166,313.95	5 Assets 411.00 m \$163,750.00	32 Assets 2,911.44 m \$1,056,536.60	88 Assets 7,770.65 m \$2,830,289.40	0 Assets - \$0.00
	1	53 Assets 1,858.47 m \$580,964.50	1 Asset 15.00 m \$6,150.00	35 Assets 1,824.10 m \$520,056.90	68 Assets 3,234.87 m \$944,821.95	0 Assets - \$0.00
		1	2	3	4	5
		Probability				

Risks to Current Asset Management Strategies

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



Fiscal Capacity & Budget Constraints

Fiscal capital and budget constraints within the municipality have affected the level of service provided by the stormwater network. The stormwater network is the least funded, in part due to limited legislation towards storm sewers, and lack of understanding of the importance of maintaining stormwater assets. The service

level of the stormwater network is declining due to the limited funding allocated for maintenance and rehabilitation.



Aging Infrastructure & Asset Condition

A large portion of the storm water assets are passed their service life and failing. The material choice used for the storm water network has experienced pre-mature wear, resulting in asset condition deteriorating much faster and failure prior to the end of the assets useful life.

5.3.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	Stormwater Infrastructure is located throughout the core areas of the Town. This infrastructure generally provides protection from flooding events to the extent of the systems design limits. See Appendix C for maps.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties in municipality resilient to a 100-year storm	TBD

	% of the municipal stormwater management system resilient to a 5-year storm	TBD ³
	% of stormwater network flushed annually	14.4%
Quality	Average condition rating for stormwater network	45.20
Performance	Current vs. Target Capital reinvestment rate	Current: 0.68% Target: 1.41%

³ The Municipality is working to gather information on the percentage of the system that is resilient to a 5-year storm. The Municipality is also seeking to increase their storm water resilience design standard.

5.3.7 Recommendations

Asset Inventory

- The Town's Stormwater manholes and catch basins are currently pooled assets. As a next step, the Town would benefit from disaggregation of pooled assets so that there is increased segmentation and more specific attribute information (i.e., material, condition, etc.). Non-pooled asset information improves lifecycle planning, risk analysis, and capital planning.

Condition Assessment Strategies

- Condition information is a valuable datapoint in asset management. To realize such benefits, work to append collected CCTV assessments to each stormwater main assets. This will help to ensure that asset decisions are made based on the best available information.

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, especially intervention costs and impacts, for the Stormwater Network on a regular basis. The review and collection of such information will aid in achieving the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

5.4 Non-Core Asset Categories

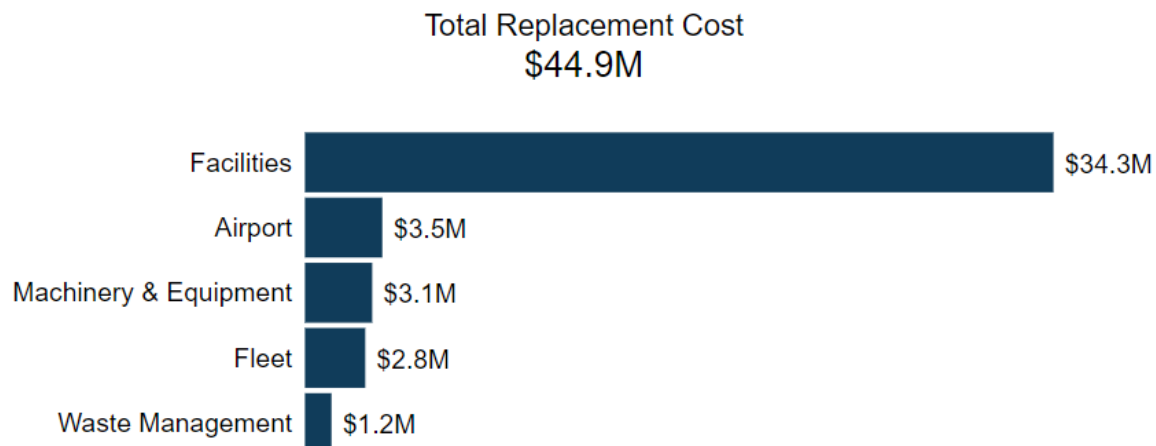
This AMP primarily focuses on core asset categories as defined in O. Reg. 588/17. The following asset categories are not considered core municipal infrastructure:

- Facilities
- Fleet
- Machinery & Equipment
- Waste Management
- Airport

5.4.1 Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each non-core asset category in the Town's inventory.

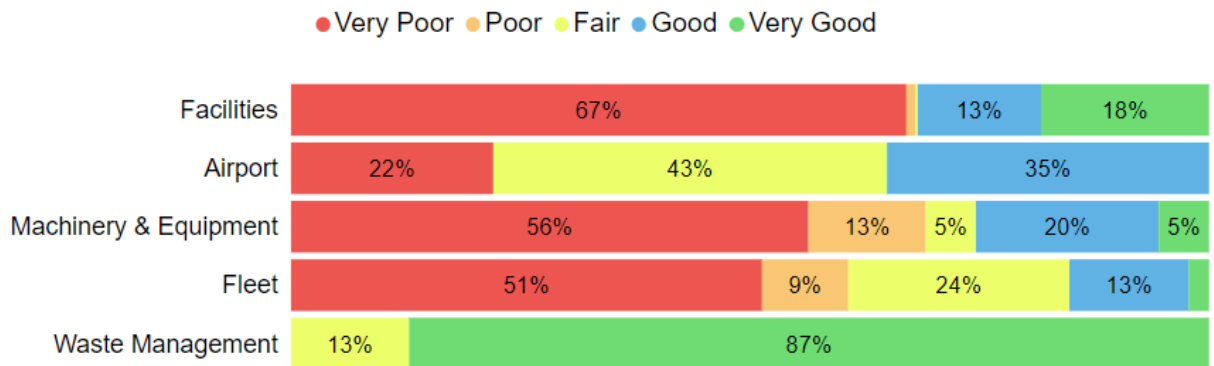
Asset Category	Quantity	Replacement Cost Method	Total Replacement Cost
Facilities	44	82% User-Defined 18% CPI Tables	\$34,321,000
Fleet	38	28% User-Defined 72% CPI Tables	\$2,767,000
Machinery & Equipment	85	35% User-Defined 65% CPI Tables	\$3,085,000
Airport	8	12% User-Defined 88% CPI Tables	\$3,547,000
Waste Management	2	CPI Tables	\$1,218,000
Total	177		\$44,938,000



5.4.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Facilities	27	Poor	Age-Based
Fleet	26	Poor	Age-Based
Machinery & Equipment	26	Poor	Age-Based
Airport	48	Fair	Age-Based
Waste Management	92	Very Good	Age-Based
	30	Poor	Age-Based



5.4.3 Estimated Useful Life & Average Age

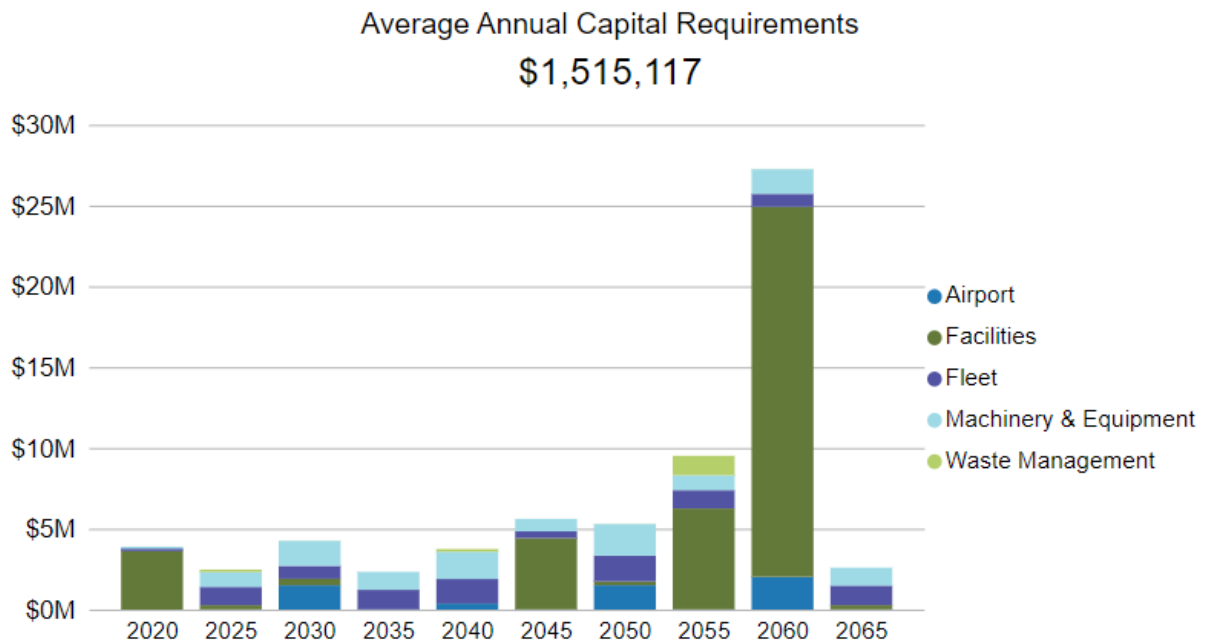
The Estimated Useful Life for non-core assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Asset Category	Estimated Useful Life (Years)	Average Age (Years)
Facilities	40	36
Fleet	10-15	14
Machinery & Equipment	10-15	15
Airport	20-50	30
Waste Management	10-40	6
		32

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

5.4.4 Forecasted Capital Requirements (Replacement Only)

The following graph forecasts long-term capital requirements for non-core assets. Capital costs are projected until 2065 and reported in cumulative 5-year bins. The average annual capital requirement is \$1.5 million and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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

5.4.5 Levels of Service

As per. O. Reg. 588/17 Ontario Municipalities are required to report on levels of service (LOS) for all municipal infrastructure assets by 2024. In advance of this deadline the Town of Atikokan has identified the actual vs the target annual reinvestment rate as the technical LOS for their non-core assets. The results, based on 2020 inventory date, are as follows:

Technical LOS: Non-Core Assets			
Category	Actual Reinvestment Rate (%)	Target Reinvestment Rate (%)	Differential (%)
Facilities	1.21	2.51	1.3
Fleet	3.87	8.04	4.17
Machinery & Equipment	4.15	8.59	4.44
Airport	1.75	3.68	1.93
Waste Management	0	3.06	3.06

5.4.6 Recommendations

Asset Inventory

- Regularly review data to ensure it remains accurate and comprehensive
- Begin to collect any missing data on all non-core assets; this would include information on the Town's four playground structures (Don Park, Lone Pine, Balsam Court and Dunbar Heights)

Condition Assessment Strategies

- Consider completing Building Condition Assessments for facility assets so that there is more detailed and accurate inventory, replacement cost, and condition information. This is expected to better inform long-term capital requirements and provide a long-term strategy for asset investment and betterment.

Risk Management Strategies

- Begin to identify the Town's risk tolerance across all asset categories and based on this risk mitigation and response measures
- Review risk models on a regular basis and adjust according to data available for analysis and an evolving understanding of probability and consequence of failure
- Consider risk results while completing capital budgeting and project selection

Levels of Service

- Begin to consider potential Level of Services (LOS) to collect and report on for non-core assets. Review any exiting KPI's for their suitability as a LOS. When reviewing potential LOS consider the availability of data to regularly and reliably collect and report on LOS.

6

Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at nearly \$63 million
- Rate funded assets are on average in poor condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately \$1.3 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

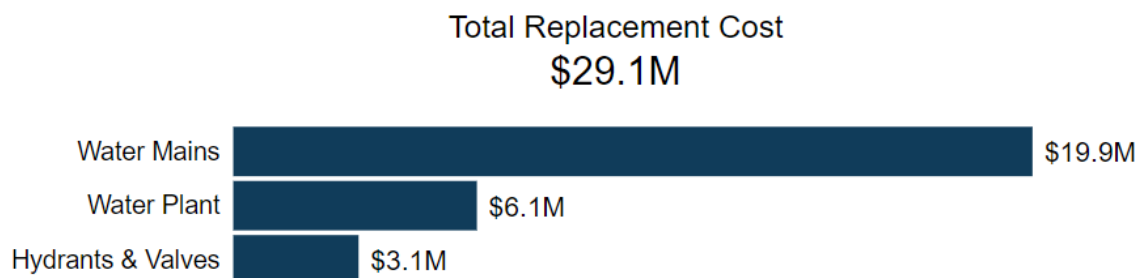
6.1 Water Network

The Town of Atikokan water infrastructure assets are maintained by the Public Works Department and Northern Waterworks Incorporated (NWI). NWI is the Overall Responsible Operator (ORO) for the Water Treatment Plant while the Town is the ORO for the distribution system. A dedicated Public Works foreman oversee the distribution systems maintenance and is also responsible for the preparation of contracts and the supervision of works for distribution repair, replacement, and rehabilitation projects.

6.1.1 Asset Inventory & Replacement Cost

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

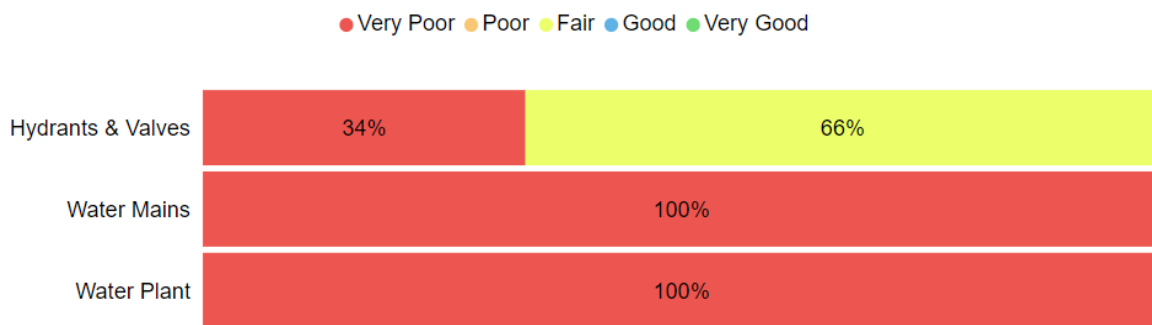
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Hydrants	264 units	66% User-Defined 34% Cost/Unit	\$3,121,000
Water Mains	31,973 meters	Cost/Unit	\$19,900,000
Water Plant	2 Plants	CPI Tables	\$6,066,000
Total			\$29,087,000



6.1.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Hydrants & Valves	36	Poor	Age-Based
Water Mains	0	Very Poor	Age-Based
Water Plant	16	Very Poor	Age-Based
Average:	7	Very Poor	Age-Based



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

Current Approach to Condition Assessment

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

- Staff primarily rely on the age and material of water mains to determine the projected condition of water mains
- There are no formal condition assessment programs in place for the Water Network
- NWI reviews the condition of water treatment equipment assets; this often informs replacement recommendations

6.1.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Hydrants & Valves	40-100	56.0
Water Mains	40	66.4
Water Plant	40	33.5
Average:		65.9

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

6.1.4 Lifecycle Management Strategy

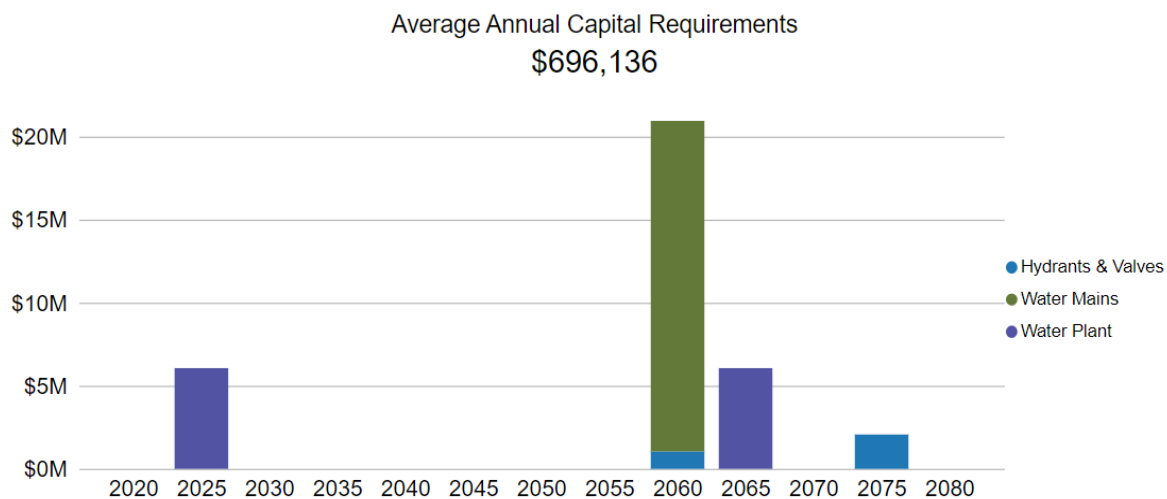
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on 100% of the network twice per year using in-house resources.
	Routine hydrant maintenance is completed annually; additional maintenance is completed based on results of main flushing.
	A leak detection surey for the entire distribution network was approved in 2021 and work is anticipated to begin in 2022.
	Northern Waterworks Incorporated (NWI) is the Overall Responsible Operator for the water treatment plant and completes regular operation and maintenance of the plants machinery, equipment, and buildings.
	NWI completes regular flow meter verification.
Rehabilitation	Annually NWI provides a list of recommended capital rehabilitation and replacements projects at the Water treatment plant. Projects are reviewed and may be approved by the Town of Atikokan.
	Watermain relining was completed extensively in 1996 but no new projects have been completed since. Based on findings from the leak detection study, main relining may be considered as a rehabilitation approach.
Replacement	Watermain replacements are completed when other related linear assets are also planned for replacement (i.e., road replacement). Replacement decisions also consider the history of main brakes and the assets condition.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements for water assets. Capital requirements are reported in 5-year cumulative bins. As displayed, requirements vary significantly over time and spike in 2060, largely due to water main replacement requirements. Most watermains were installed within a 10-year period creating a large cluster of replacements due in a short period. The annual capital requirement is \$696,136 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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

6.1.5 Risk & Criticality

Risk Matrix

Risks associated with watermain assets are calculated based on the parameters in the Table below.

Probability of Failure Criteria	Weighting (%)	Consequence of Failure Criteria	Weighting (%)
Condition	50	Replacement Cost	80
Service Life Remaining	10	Diameter	20
Material	40		

These parameters determine the risks scores which are summarized for the water main assets in the matrix below:

Consequence	5	0 Assets - \$0.00	0 Assets - \$0.00	1 Asset 768.10 m \$960,125.00	2 Assets 1,005.84 m \$1,257,300.00	1 Asset 1.00 unit(s) \$6,028,628.00
	4	0 Assets - \$0.00	0 Assets - \$0.00	0 Assets - \$0.00	4 Assets 1,684.61 m \$1,555,467.50	0 Assets - \$0.00
	3	0 Assets - \$0.00	0 Assets - \$0.00	7 Assets 3,128.85 m \$1,792,465.00	52 Assets 13,520.72 m \$7,914,293.50	0 Assets - \$0.00
	2	0 Assets - \$0.00	0 Assets - \$0.00	29 Assets 2,695.13 unit(s), m \$3,514,342.20	78 Assets 8,383.90 m \$4,620,133.10	0 Assets - \$0.00
	1	0 Assets - \$0.00	0 Assets - \$0.00	3 Assets 614.76 m \$276,642.00	2 Assets 172.18 m \$77,481.00	2 Assets 264.00 unit(s) \$1,089,679.00
		1	2	3	4	5
		Probability				

Risks to Current Asset Management Strategies

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

Aging Infrastructure & Asset Condition



A large portion of the water assets are passed their service life and failing. The material choice used for the water network has experienced pre-mature wear, resulting in asset condition deteriorating much faster and failure prior to the end of the assets useful life.

Climate Change & Extreme Weather Events



Staff need a better sense of the impacts of climate change on the water network to inform retrofitting and replacement planning. Additional data will help address concerns with system capacity and the ability of the water network to handle any potential increase in the intensity, frequency, and duration of rainfall events. Incorporating a monitoring and maintenance program for all water infrastructure into the asset management plan can further support infrastructure resiliency and reduce risk.

6.1.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	The Municipal water system provides water to a variety of users including residential, commercial, and light industrial. The distribution system primarily services the Town's central neighbourhoods bound by Mackenzie Ave to the South, O'Brien street to the North, Spring Avenue to the west, and Highway 622 to the east. See Appendix C for maps
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	Most properties within the Town's central neighbourhoods are connected to municipal water. At this time, the Town does not have a comprehensive Fire Flow study, but it is assumed that properties with a 15-meter radius of a fire hydrant have adequate fire flow. See Appendix C for map of the water main network.
Reliability	Description of boil water advisories and service interruptions	In 2021 there were four (4) boil water advisories (BWA) notices issued which included two precautionary boil water advisory notice. Anticipated cause of issues was either a split bell (2/4) break, circumferential break, or a pinhole leak. Remediation of these incidences involved hydrant flushing in two instances. There were no damages to private property in any instances. In all instances, services were returned to normal within the day of the occurrence.

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	93%
	% of properties where fire flow is available	93%
Quality	Average condition rating for water network	15.37
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 days vs. 1421 Connected Properties
	# 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	1421 Connected Properties 220 Connection Days Affected
Performance	Current vs. Target Capital re-investment rate	Current: 1.03% Target: 2.39%

6.1.7 Recommendations

Asset Inventory

- Review the asset inventory to ensure it is accurate and comprehensive (i.e., water valves are included). Non-pooled water main assets should be reviewed to ensure asset information is comprehensive and accurate.
- Water Hydrants are currently a pooled asset. To improve asset inventory information and accuracy, they should be disaggregated.

Condition Assessment Strategies

- Accurate condition information is integral to effective asset management decisions; completing CCTV assessments of water mains is recommended. The Town may wish to start with assets that are most critical, have a history of failure, and/or are nearing their Estimate Useful Life.

Risk Management Strategies

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

Levels of Service

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

6.2 Sanitary Sewer Network

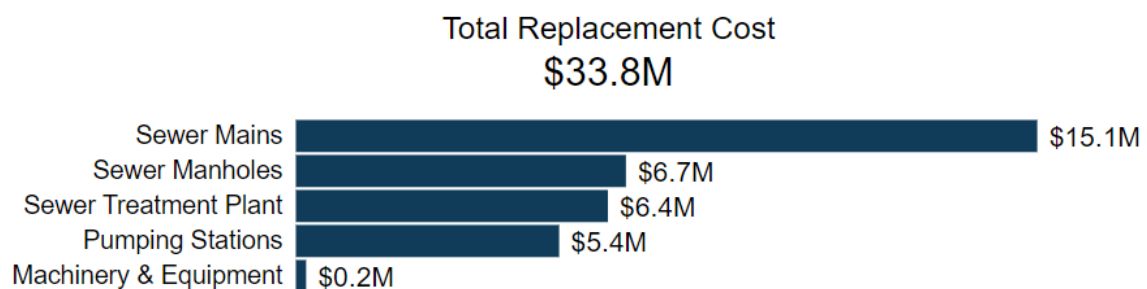
The collection components of the sanitary sewer network are managed by the Town of Atikokan. The treatment plant and pump stations are managed by Northern Waterworks Incorporated.

The tables to follow provide an overview of sanitary sewer network assets.

6.2.1 Asset Inventory & Replacement Cost

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

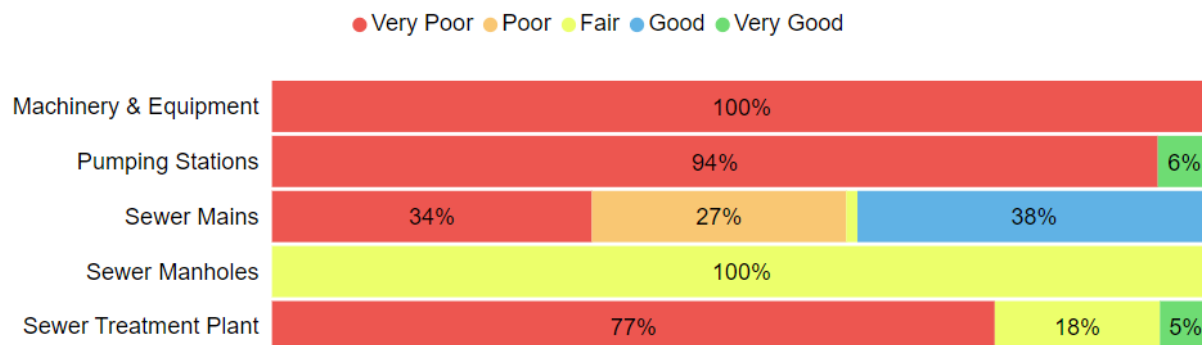
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Machinery & Equipment	3	CPI Tables	\$210,000
Pumping Stations	11	CPI Tables	\$5,372,000
Sewer Mains	27,609 m	User-Defined	\$15,128,000
Sewer Manholes	449	Cost/Unit	\$6,735,000
Sewer Treatment Plant	3	CPI Tables	\$6,368,000
Total			\$33,812,000



6.2.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Machinery & Equipment	0	Very Poor	Age-Based
Pumping Stations	6	Very Poor	Age-Based
Sewer Mains	35	Poor	Age-Based
Sewer Manholes	60	Good	Age-Based
Sewer Treatment Plant	15	Very Poor	Age-Based
Average:	31	Poor	Age-Based



To ensure that the Town's Sanitary Sewer Network continues to provide an acceptable level of service, the average condition of all assets should be regularly monitored and reviewed. In some instances, the age-based condition may inaccurately represent the assets condition. In this case, the Town may wish to begin collecting assessed condition information. If the average condition of assets decline, a review of lifecycle management strategies may aid in improving the overall condition of the sanitary sewer network.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff is a valuable tool when making asset replacement decisions. The following describes the municipality's current approach to condition assessments for their sanitary network assets:

- In 2021 CCTV inspections were completed for approximately 15% of the sanitary mains. The mains selected were mostly located adjacent to major roads.
- In 2023 the Town plans to complete additional CCTV inspections of water mains with a focus on inspection of problematic mains
- Thereafter, the Town intends to work through the remaining watermains
- Condition assessments scores are derived from the information collected by CCTV and the assessment of an external consultant
- The Town is actively working on an upload strategy for the assessed condition information collected to date.
- NWI manages the water treatment plant and the pump stations and considers asset condition when making rehabilitation and replacement recommendations. At this time, there is limited formal condition documentation provided to the Town.

6.2.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Machinery & Equipment	5-15	17.2
Pumping Stations	40	34.1
Sewer Mains	60	40.6
Sewer Manholes	100	40.5
Sewer Treatment Plant	15-40	18.8
Average:		40.1

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

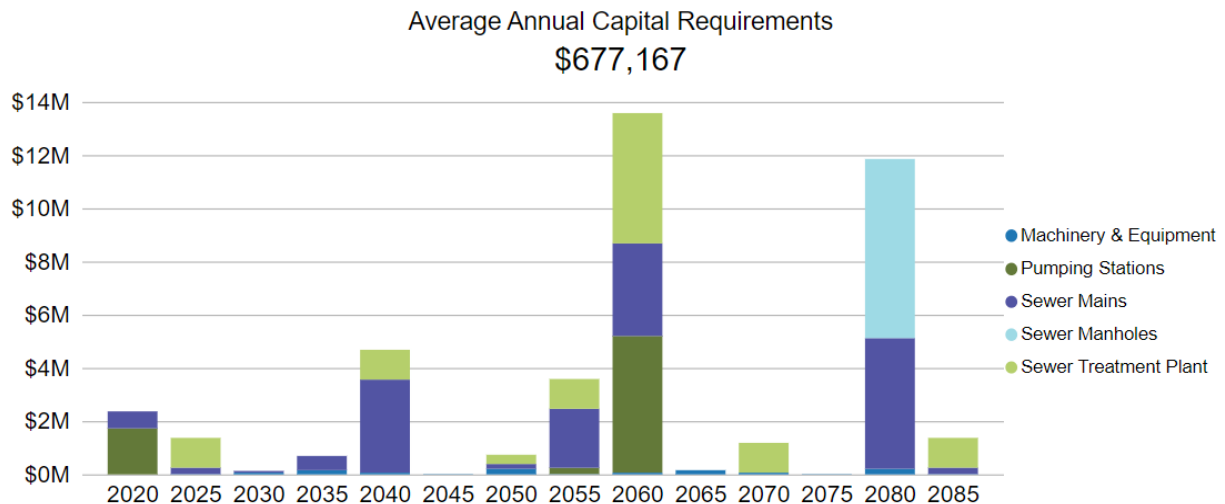
6.2.4 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance & Inspection	On annual basis the entire collection network is flushed and as needed rodded, to clear any obstructions. At this time, manholes are also inspected and issues are remediated as required.
	Northern Waterworks Incorporated (NWI) is the Overall Responsible Operator for the waste water treatment plant and pump stations. NWI completes regular operation and maintenance of the plants machinery, equipment, and buildings.
	In 2021 CCTV inspections were completed on approximately 15% of the collection network. In 2023, the Town intends to complete additional CCTV inspections, focusing on problematic mains. Thereafter, the Town intends to complete inspections of remaining mains so that they have comprehensive condition information.
Rehabilitation	Annually NWI provides a list of recommended capital rehabilitation and replacements projects at the wastewater treatment plant. Projects are reviewed and may be approved by the Town of Atikokan.
	Wastewater main relining has not been completed to date, but it is a rehabilitation strategy that the Town is actively investigating.
Replacement	Wastewater asset replacement decisions have historically been based on meeting legislative compliance. In more recent years considerations have broadened to also include a review of asset condition and coordinated replacement with other linear assets. Currently replacement decisions are formally planned a year in advance.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements reported in cumulative 5-year bins until 2085 when each asset has gone through one iteration of replacement. The annual capital requirement is \$677,167 and represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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

6.2.5 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 sanitary main assets. These scores are based on the parameters identified in the Table below.

Probability of Failure Criteria	Weighting (%)	Consequence of Failure Criteria	Weighting (%)
Condition	75	Replacement Cost	50
Service Life Remaining	10	Diameter	50
Material	15		

Consequence	5	0 Assets - \$0.00	0 Assets - \$0.00	1 Asset - unit(s) \$1,119,807.00	0 Assets - \$0.00	1 Asset 1.00 unit(s) \$4,900,357.00
	4	7 Assets 7.00 unit(s) \$391,132.00	0 Assets - \$0.00	10 Assets 458.00 unit(s) \$7,411,352.00	1 Asset 1.00 unit(s) \$57,150.00	0 Assets - \$0.00
	3	62 Assets 62.00 unit(s) \$2,858,846.00	4 Assets 4.00 unit(s) \$172,660.00	34 Assets 34.00 unit(s) \$1,815,111.00	31 Assets 31.00 unit(s) \$1,871,940.00	0 Assets - \$0.00
	2	91 Assets 90.00 unit(s) \$3,029,544.00	1 Asset 1.00 unit(s) \$8,250.00	54 Assets 54.00 unit(s) \$1,542,272.00	105 Assets 105.00 unit(s) \$3,283,264.00	10 Assets 10.00 unit(s) \$5,211,680.00
	1	1 Asset - unit(s) \$70,568.00	0 Assets - \$0.00	0 Assets - \$0.00	1 Asset 1.00 unit(s) \$4,869.00	2 Assets 2.00 unit(s) \$65,475.00
		1	2	3	4	5
		Probability				

Risks to Current Asset Management Strategies

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



Regulatory Requirements

New Environmental Compliance Approval (ECA) regulations have been affecting the sanitary sewer network in the municipality. To mitigate this risk and ensure regulatory compliance, Northern Water ensure the municipality is following all changing regulations and provides training to staff to ensure regulatory compliance.



Climate Change & Extreme Weather Events

Staff need a better sense of the impacts of climate change on the sanitary network to inform retrofitting and replacement planning. Additional data will help address concerns with system capacity and the ability of the sanitary network to handle any potential increase in the intensity, frequency, and duration of rainfall events.

6.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	The Municipal wastewater system provides water to a variety of users including residential, commercial, and light industrial. The collection system primarily services the Town's central neighbourhoods bound by Mackenzie Ave to the South, O'Brien street to the North, Spring Avenue to the west, and Highway 622 to the east. See Appendix C for maps.
	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Town does not own any combined sewers
Reliability	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Town does not own any combined sewers

Service Attribute	Qualitative Description	Current LOS (2021)
Reliability	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g., weeping tiles and roof drain connections). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. The disconnection of weeping tiles and roof drain connections from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	All effluent compliance limits and objectives were achieved throughout the reporting period for the effluent parameter's carbonaceous biochemical oxygen demand, total ammonia nitrogen, E. coli and pH. Effluent compliance limits and design objectives were not achieved for the effluent parameters total suspended solids and total phosphorus.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal wastewater system	92%
	% of sanitary sewer network flushed annually	100%
Quality	Average condition rating for sanitary sewer network	43.35
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	N/A - The Town does not own any combined sewers.
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	2021: 0 back-ups ⁴
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0035
Performance	Current vs. Target Capital re-investment rate	Current: 0.00% Target: 2.00%

⁴ There were no wastewater back-ups that occurred on the publicly owned infrastructure side.

6.2.7 Recommendations

Asset Inventory

- Sanitary manholes are currently a pooled asset. To improve asset inventory information and accuracy it is recommended that these be disaggregated.

Condition Assessment Strategies

- When completing CCTV assessments of sanitary mains utilize the asset segmentation in citywide and reference the asset Citywide asset ID for streamlined information upload.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the identification of risk tolerance by asset class and further by asset category alongside the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis; adjust as understanding of probability and consequence of failure change and/or as data availability and refinement is advanced.

Lifecycle Management Strategies

- Evaluate the efficacy of the Town's lifecycle management strategies at regular intervals to determine the impact cost, condition, and risk.

Levels of Service

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

7

Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand better equips the Town to plan for changed in infrastructure needs.
- The Town has experienced population decline since 2001 and today the population is predominantly comprised of persons 50-65
- This demographic make-up contributes to longer term population projections of decline
- Due to recent and potential economic drivers the Town of Atikokan, however, may be less impacted by population loss than the surrounding region of Rainy River district.

7.1 Description of Growth Assumptions

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

7.1.1 Atikokan Official Plan

As of December 2021, the Town of Atikokan was actively working on an amendment to their 2002 Official Plan. The Official Plan, and any amendments to it, are formal mechanism to establish a vision, guiding principles, objectives, and policies for the Town and its future development. It is also an integral document to guide the physical development and the effect of change on the social, cultural, economic, and natural environment over 20 years.

The Official Plan directs residential development to areas with existing water and wastewater servicing. Directing development to areas with existing servicing promotes an efficient form of residential development and helps preserve the natural environment and features. The Official Plan also outlines objectives of residential development including addressing housing needs specific to an aging community and supporting and integrating active transportation within residential communities.

The Plan also outlines areas for other types of growth, particularly mineral exploration and mining activities which are prevalent in the area. The plan outlines conditions, like appropriate buffering and access considerations, required for mineral operations

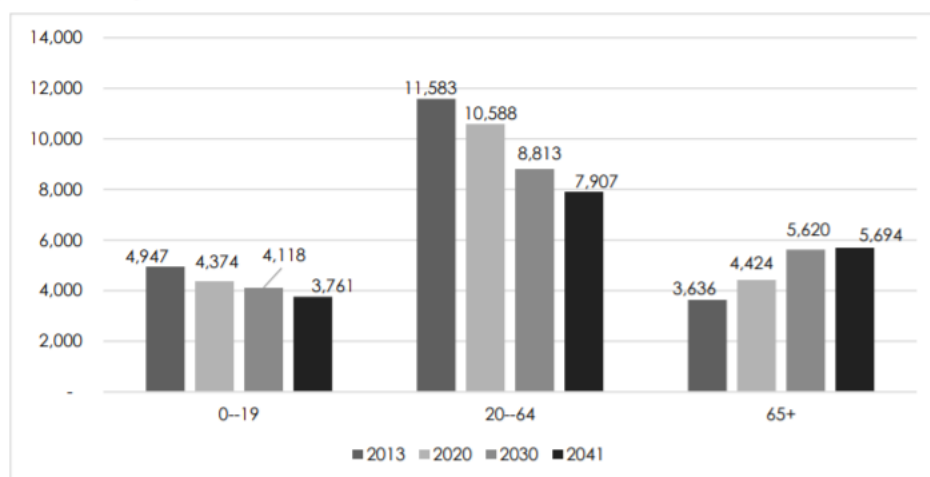
7.1.2 Population & Economic Growth Projections

Atikokan's population has been in decline since 2001. Rainy River District, which Atikokan is a part of, also had a population decline of 12% between 1996 and 2011. For both Atikokan and Rainy River, the population is aging and is predominantly composed of persons between the ages of 50 and 65 years. Atikokan's population statistics are summarized below:

Town of Atikokan Population				
2001	2006	2011	2016	2021
3,632	3,293	2,787	2,753	2, 642

Population projections are only available for the Rainy River district, which includes Atikokan. Population decline is projected from 20,166 person in 2013 to 17,362 in 2041. This loss is largely driven by a predominately aging population, a small proportion of younger population, and a relatively low birth rate. This pattern of persons 65 and older increasing in the next 10

and 20 years while the percentage of the population between 20 and 64 decreases, is illustrated in the graph below.



There is some speculation that population decline may not be as severe in Atikokan specifically as it is for the broader Rainy River District (Northern Policy Institute, 2017, page 13). This speculation is largely driven by recent economic projects in Atikokan, specifically:

- Osisko Hammond Reef & Bending Lake Iron Ore Group: Identified as a low-grade gold deposit location; permits pending production target 2027
- 10 Year Power Purchase Agreement with Ontario Power Authority & Ontario Power Generation

If successful, these projects are likely to be economic drivers, especially for the Town of Atikokan. This may create some population growth

7.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, the Town's asset management plan must include a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy.

Atikokan's Official Plan has accounted for growth and its potential impacts on infrastructure availability and capacity. Development principles that target growth to areas with existing services, allow the Town's population to expand while utilizing existing infrastructure like roads and underground utilities. If municipal services require expansion because of growth (i.e., outside of the existing servicing) financial mechanisms like development charges should be explored and utilized as a cost recovery strategy.

If 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 may need to review the lifecycle costs of growth-related infrastructure to ensure that any cost recovery mechanisms (i.e., Development charges) fulsomely recover the lifecycle costs of any additional infrastructure requirements. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

8

Financial Strategy

Key Insights

- The Town is committing approximately \$1,955,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of \$4,270,000 there is currently a funding gap of \$2,315,000 annually
- For tax-funded assets, we recommend increasing tax revenues by 0.7% each year for the next 10 years to achieve a sustainable level of funding
- For the Sanitary Sewer Network, we recommend increasing rate revenues by 2.8% annually for the next 20 years to achieve a sustainable level of funding
- For the Water Network, we recommend increasing rate revenues by 1.8% annually for the next 20 years to achieve a sustainable level of funding
- For Waste Management, we recommend increasing rate revenues by 1.4% annually for the next 20 years to achieve a sustainable level of funding

8.1 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 Town of Atikokan to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

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

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

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

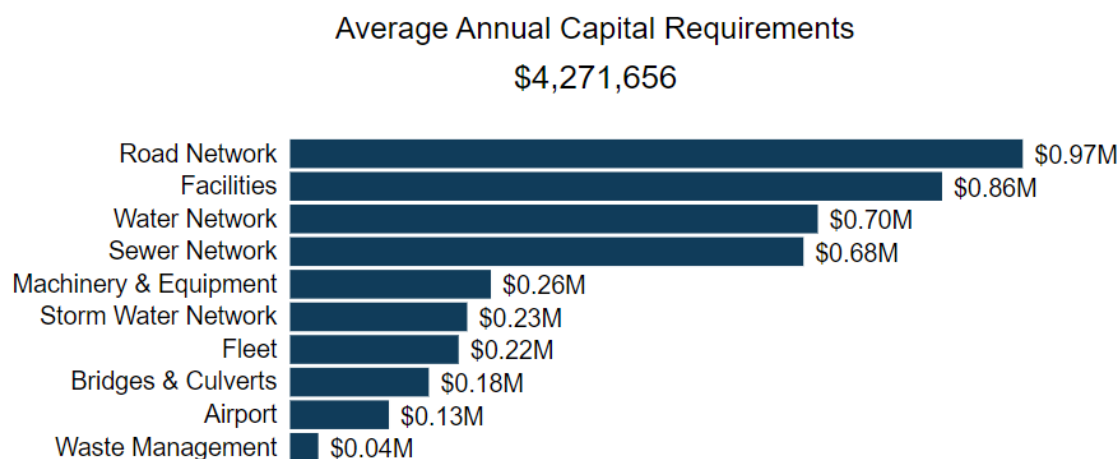
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town's approach to the following:

1. 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.

8.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. In total, the Town must allocate approximately \$4.3 million annually to address capital requirements for the assets included in this AMP.



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

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

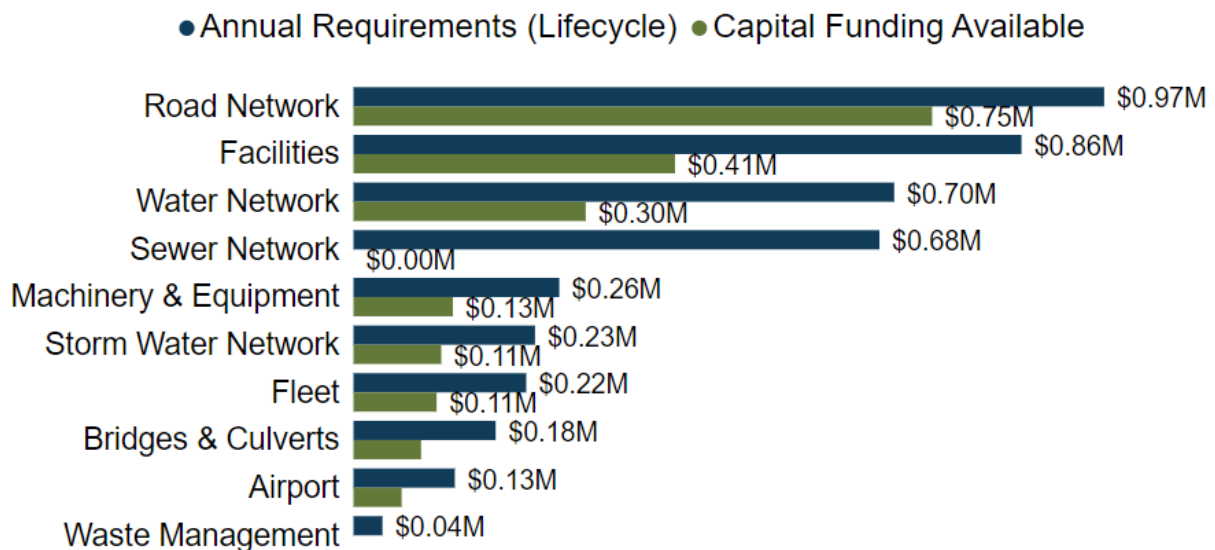
1. **Replacement Only Scenario:** Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario:** Based on the assumption that lifecycle activities are performed at strategic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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	\$1,077,969	\$966,450	\$111,519

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of \$111,519 for the Road Network. This represents an overall reduction of the annual requirements for each category by 10%. As the lifecycle strategy scenario represents the lowest cost option available to the Town, 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 Town is committing approximately \$1,955,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of \$4,271,656, there is currently an annual funding gap of \$2,316,656.



⁵ Recently capital investments to the sewer network have been funded using debt. All user fees are currently used to cover operating costs.

8.2 Funding Objective

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

1. **Tax Funded Assets:** Airport, Bridges & Culverts, Facilities, Fleet, Machinery & Equipment, Road Network, Storm Water Network
2. **Rate-Funded Assets:** Sewer Network, Waste Management, Water 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.

8.3 Financial Profile: Tax Funded Assets

8.3.1 Current Funding Position

The following tables show, by asset category, Atikokan'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	
Airport	\$130,000	\$62,000	\$0	\$0	\$62,000	\$68,000
Bridges & Culverts	\$183,000	\$87,000	\$0	\$0	\$87,000	\$96,000
Facilities	\$860,000	\$414,000	\$0	\$0	\$414,000	\$446,000
Fleet	\$222,000	\$107,000	\$0	\$0	\$107,000	\$115,000
Machinery & Equipment	\$265,000	\$128,000	\$0	\$0	\$128,000	\$137,000
Road Network	\$966,000	\$465,000	\$280,000	\$0	\$745,000	\$221,000
Storm Water Network	\$234,000	\$113,000	\$0	\$0	\$113,000	\$121,000
		\$2,861,000	\$1,376,000	\$280,000	\$0	\$1,656,000
						\$1,204,000

The average annual investment requirement for the above categories is \$2,861,000. Annual revenue currently allocated to these assets for capital purposes is \$1,656,000 leaving an annual deficit of \$1,204,000. Put differently, these infrastructure categories are currently funded at 58% of their long-term requirements.

8.3.2 Full Funding Requirements

In 2021, \$8,775,000 in annual tax revenues was budgeted to capital. 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
Airport	0.8%
Bridges & Culverts	1.1%
Facilities	5.1%
Fleet	1.3%
Machinery & Equipment	1.6%
Road Network	2.5%
Storm Water Network	1.4%
13.8%	

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

- a) Atikokan's debt payments for these asset categories will be decreasing by \$422,000 over the next 5 years and by \$615,000 over the next 10 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	1,204,000	1,204,000	1,204,000	1,204,000	1,204,000	1,204,000	1,204,000	1,204,000
Change in Debt Costs	N/A	N/A	N/A	N/A	-422,000	-615,000	-615,000	-615,000
Change in OCIF Grants	N/A	N/A	N/A	N/A	0	0	0	0
Resulting Infrastructure Deficit	5	10	15	20	5	10	15	20
Tax Increase Required	13.7%	13.7%	13.7%	13.7%	8.9%	6.7%	6.7%	6.7%
Annually	2.7%	1.3%	0.9%	0.7%	1.8%	0.7%	0.5%	0.4%

8.3.3 Financial Strategy Recommendations

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

- a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
- b) increasing tax revenue by 0.7% each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- c) 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 commitment⁶.
- 2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full CapEx funding on an annual basis in 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of \$782,000 for the Airport, \$19,154,000 for the Facilities, \$1,401,000 for the Fleet, \$1,681,000 for the Machinery & Equipment, \$9,016,000 for the Road Network, and \$2,742,000 for the Storm Water 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.

⁶ The Municipality 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.

8.4 Financial Profile: Rate Funded Assets

8.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Sewer Network	677,000	606,000	-606,000	0	0	677,000
Waste Management	37,000	120,000	-120,000	0	0	37,000
Water Network	696,000	970,000	-970,000	299,000	299,000	397,000
	1,410,000	1,696,000	-1,696,000	299,000	299,000	1,111,000

The average annual investment requirement for the above categories is \$1,410,000. Annual revenue currently allocated to these assets for capital purposes is \$299,000 leaving an annual deficit of \$1,111,000. Put differently, these infrastructure categories are currently funded at 21% of their long-term requirements.

8.4.2 Full Funding Requirements

In 2021, Atikokan's all rate funded revenues collected for both the sewer network and waste management were fully allocated to operations. As a result, the annual deficit was \$677,000, for the sewer network and \$37,000 for the waste management network. Using OCIF funding the water network receive an annual capital investment of \$299,000 and after funding operations had an annual deficit of \$397,000. 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
Sewer Network	111.7%
Waste Management	30.8%
Water Network	40.9%

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:

Sewer Network				
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	677,000	677,000	677,000	677,000
Less: decrease in debt payments	-18,000	-231,000	-231,000	-231,000
Tax Increase Required	108.7%	73.6%	73.6%	73.6%
Annually:	15.9%	5.7%	3.8%	2.8%

Waste Management				
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	37,000	37,000	37,000	37,000
Less: decrease in debt payments	0	0	0	0
Tax Increase Required	30.8%	30.8%	30.8%	30.8%
Annually:	5.6%	2.8%	1.9%	1.4%

Water Network				
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	397,000	397,000	397,000	397,000
Less: decrease in debt payments	0	0	0	0
Tax Increase Required	40.9%	40.9%	40.9%	40.9%
Annually:	7.2%	3.5%	2.4%	1.8%

8.4.3 Financial Strategy Recommendations

Considering 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 for the Sewer Network to its infrastructure deficit
- b) increasing rate revenues by 2.8% for Sewer Network, 1.4% for Waste Management, & 1.8% for the Water Network each year for the next 20 years.
- c) these rate revenue increases are solely for the purpose of phasing in full funding to the respective asset categories covered in this AMP.
- d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this 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 \$20,952,000 for the Water Network and \$12,722,000 for the Sewer Network.

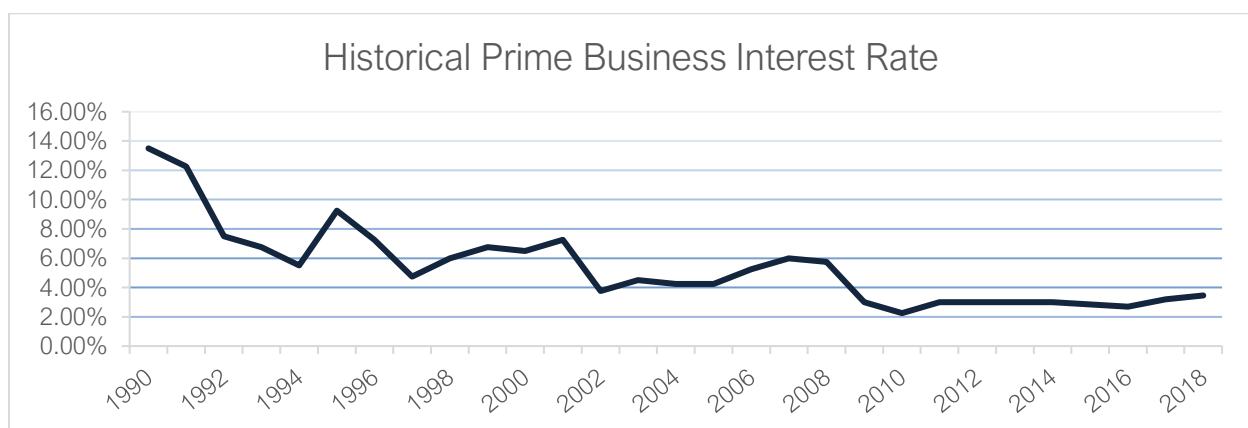
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

8.5 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%⁷ 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:



⁷ 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 Atikokan has historically used debt for investing in the asset categories as listed. There is currently \$4,397,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of \$846,000, well within its provincially prescribed maximum of \$1,546,000.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2017	2018	2019	2020	2021
Airport	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0
Facilities	641,000	1,133,000	0	0	0	0
Fleet	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Road Network	1,956,000	1,501,000	0	0	0	0
Storm Water Network	0	0	0	0	0	0
Total Tax Funded:	2,597,000	2,634,000	0	0	0	0
Sewer Network	1,800,000	0	0	0	0	0
Waste Management	0	0	0	0	0	0
Water Network	0	0	0	0	0	0
Total Rate Funded:	1,800,000	0	0	0	0	0

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2023	2024	2025	2026	2027	2028	2033
Airport	0	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0	0
Facilities	94,000	92,000	90,000	87,000	85,000	83,000	0
Fleet	0	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0	0
Road Network	521,000	518,000	515,000	116,000	113,000	110,000	0
Storm Water Network	0	0	0	0	0	0	0
Total Tax Funded:	615,000	610,000	605,000	203,000	198,000	193,000	0
Sewer Network	231,000	228,000	224,000	221,000	217,000	213,000	0
Waste Management	0	0	0	0	0	0	0
Water Network	0	0	0	0	0	0	0
Total Rate Funded:	231,000	228,000	224,000	221,000	217,000	213,000	0

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

8.6 Use of Reserves

8.6.1 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 Atikokan.

Asset Category	Balance at December 31, 2021
Airport	71,000
Bridges & Culverts	191,000
Facilities	1,302,000
Fleet	350,000
Machinery & Equipment	149,000
Road Network	1,911,000
Storm Water Network	71,000
Total Tax Funded:	4,045,000
Sewer Network	571,000
Waste Management	71,000
Water Network	71,000
Total Rate Funded:	713,000

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Town should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should consider when determining their capital reserve requirements include:

- a) breadth of services provided
- b) age and condition of infrastructure
- c) use and level of debt

- d) economic conditions and outlook
- e) internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Atikokan'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.

8.6.2 Recommendation

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

9

Appendices

Key Insights

- Appendix A includes a one-page report card with an overview of key data from each asset category
- Appendix B identifies projected 10-year capital requirements for each asset category
- Appendix C includes several maps that have been used to visualize the current level of service
- Appendix D identifies the criteria used to calculate risk for each asset category

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	\$31.2	Very Poor	Annual Requirement:	\$966,000
			Funding Available:	\$745,000
			Annual Deficit:	\$221,000
Bridges & Culverts	\$8.2	Fair	Annual Requirement:	\$183,000
			Funding Available:	\$87,000
			Annual Deficit:	\$96,000
Stormwater Network	\$16.5	Fair	Annual Requirement:	\$234,000
			Funding Available:	\$113,000
			Annual Deficit:	\$121,000
Non-Core Assets	\$44.9	Poor	Annual Requirement:	\$1,515,000
			Funding Available:	\$711,000
			Annual Deficit:	\$804,000
Water Network	\$29.1	Very Poor	Annual Requirement:	\$696,000
			Funding Available:	\$299,000
			Annual Deficit:	\$397,000
Sanitary Sewer Network	\$33.8	Poor	Annual Requirement:	\$677,000
			Funding Available:	\$0
			Annual Deficit:	\$677,000
Overall	\$163.8	Poor	Annual Requirement:	\$4,270,000
			Funding Available:	\$1,955,000
			Annual Deficit:	\$2,315,000

Appendix B: 10-Year Capital Requirements

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

Road Network											
Asset Segment	Backlog	Backlog 2020	Backlog 2021	2022	2023	2024	2025	2026	2027	2028	2029
Asphalt Roads	\$4,492,304	\$0	\$54,152	\$406,138	\$212,793	\$116,276	\$967,104	\$3,506,149	\$1,606,705	\$4,753,148	\$2,029,545
Curbs	\$2,281,500	\$285,000	\$270,000	\$0	\$0	\$210,000	\$0	\$0	\$0	\$0	\$175,200
Sidewalks	\$1,014,024	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Streetlights	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Surface Treated Roads	\$418,560	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$8,206,388	\$285,000	\$324,152	\$406,138	\$212,793	\$326,276	\$967,104	\$3,506,149	\$1,606,705	\$4,753,148	\$2,204,745

Bridges & Culverts											
Asset Segment	Backlog	Backlog 2020	Backlog 2021	2022	2023	2024	2025	2026	2027	2028	2029
Bridges	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,500,000	\$0	\$0	\$0
Culverts	\$0	\$0	\$0	\$0	\$0	\$1,344,000	\$0	\$0	\$0	\$0	\$0
Dams	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pedestrian Bridges	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$0	\$0	\$0	\$0	\$0	\$1,344,000	\$0	\$2,500,000	\$0	\$0	\$0

Stormwater Network

Asset Segment	Backlog	Backlog 2020	Backlog 2021	2022	2023	2024	2025	2026	2027	2028	2029
Catch Basins	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Manholes	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storm Mains	\$2,741,766	\$371,479	\$0	\$0	\$0	\$0	\$110,247	\$0	\$47,350	\$0	\$0
	\$2,741,766	\$371,479	\$0	\$0	\$0	\$0	\$110,247	\$0	\$47,350	\$0	\$0

Non-Core Assets

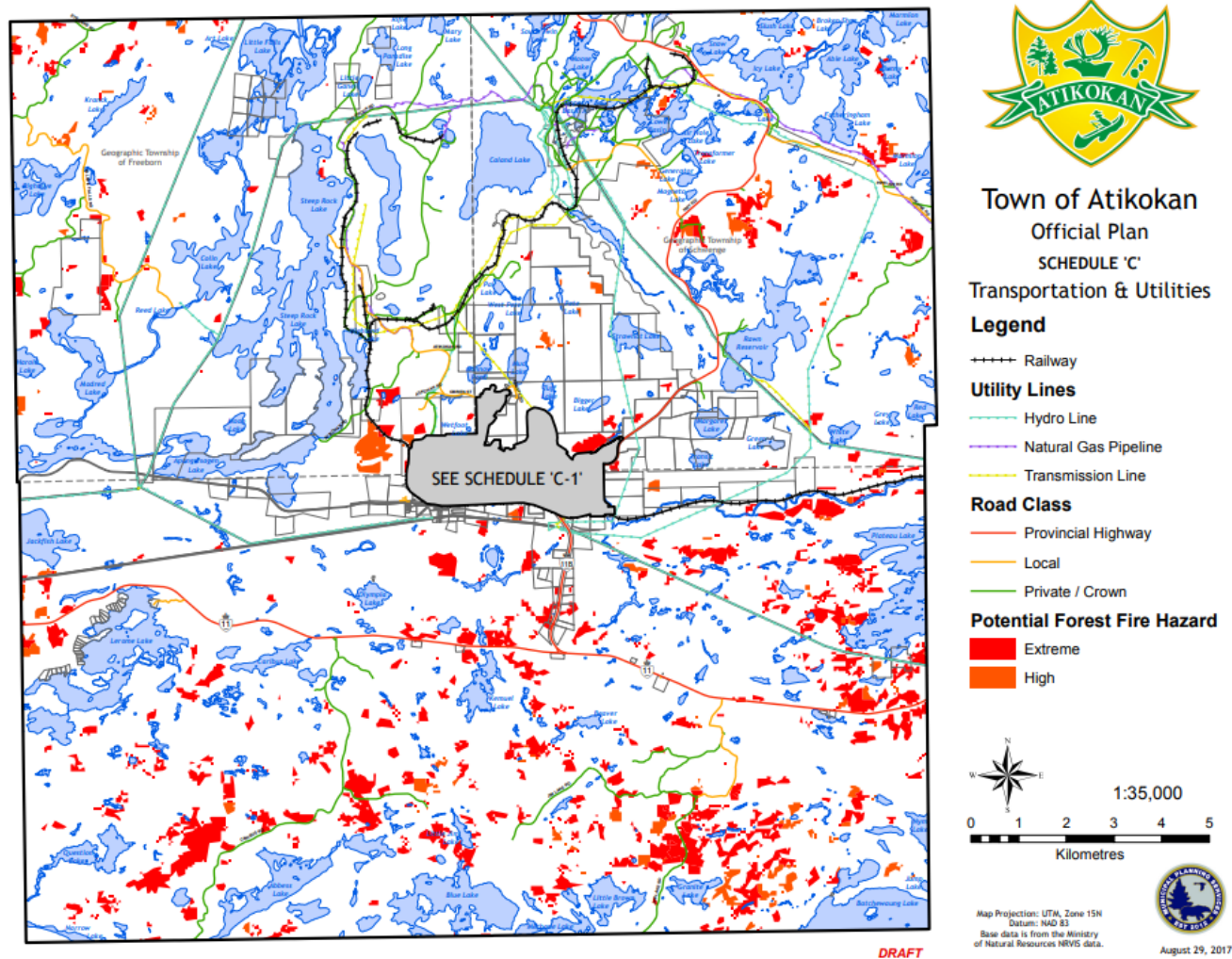
Asset Segment	Backlog	Backlog 2020	Backlog 2021	2022	2023	2024	2025	2026	2027	2028	2029
Facilities	\$19,153,560	\$39,075	\$2,468,715	\$0	\$1,114,009	\$0	\$0	\$0	\$55,228	\$204,528	\$0
Fleet	\$1,401,047	\$0	\$18,450	\$0	\$105,000	\$35,000	\$35,000	\$120,000	\$234,841	\$714,478	\$25,270
Machinery & Equipment	\$1,681,017	\$16,282	\$13,485	\$27,975	\$20,602	\$37,215	\$136,647	\$372,773	\$166,985	\$204,786	\$40,089
Airport	\$781,707	\$0	\$0	\$0	\$0	\$0	\$0	\$13,160	\$0	\$0	\$0
Waste Management	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$151,026
	\$23,017,331	\$55,357	\$2,500,650	\$27,975	\$1,239,611	\$72,215	\$171,647	\$505,933	\$457,054	\$1,123,792	\$216,385

Water Network											
Asset Segment	Backlog	Backlog 2020	Backlog 2021	2022	2023	2024	2025	2026	2027	2028	2029
Hydrants & Valves	\$1,052,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Mains	\$19,899,749	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Plant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,066,307	\$0	\$0
	\$20,951,749	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,066,307	\$0	\$0

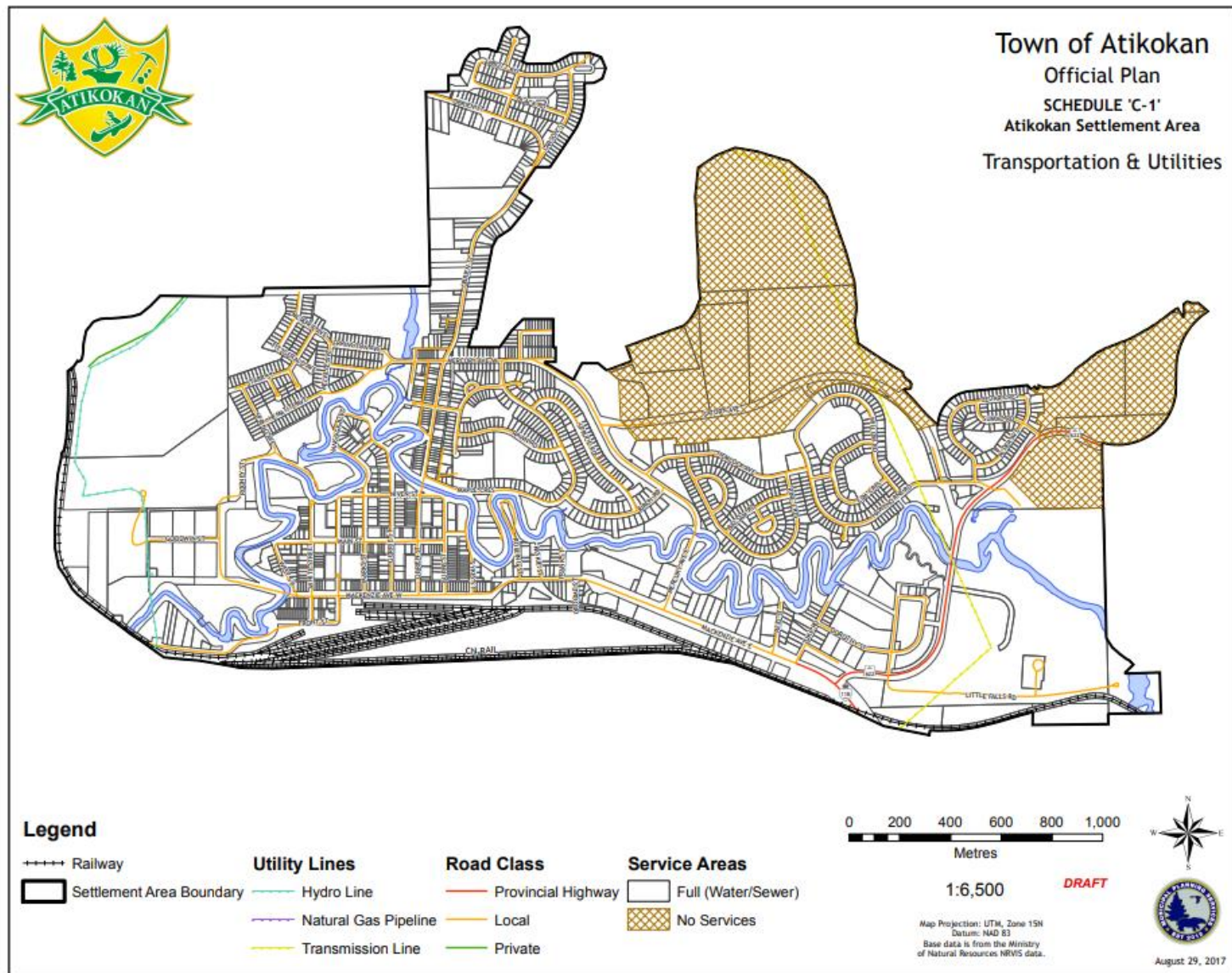
Sanitary Sewer Network											
Asset Segment	Backlog	Backlog 2020	Backlog 2021	2022	2023	2024	2025	2026	2027	2028	2029
Machinery & Equipment	\$209,823	\$0	\$0	\$0	\$0	\$0	\$13,593	\$0	\$0	\$0	\$0
Pumping Stations	\$3,337,324	\$571,804	\$1,158,204	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sewer Mains	\$4,274,177	\$638,495	\$0	\$0	\$0	\$0	\$152,481	\$0	\$86,595	\$0	\$0
Sewer Manholes	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sewer Treatment Plant	\$4,900,357	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,119,807
	\$12,721,681	\$1,210,299	\$1,158,204	\$0	\$0	\$0	\$166,074	\$0	\$86,595	\$0	\$1,119,807

Appendix C: Level of Service Maps

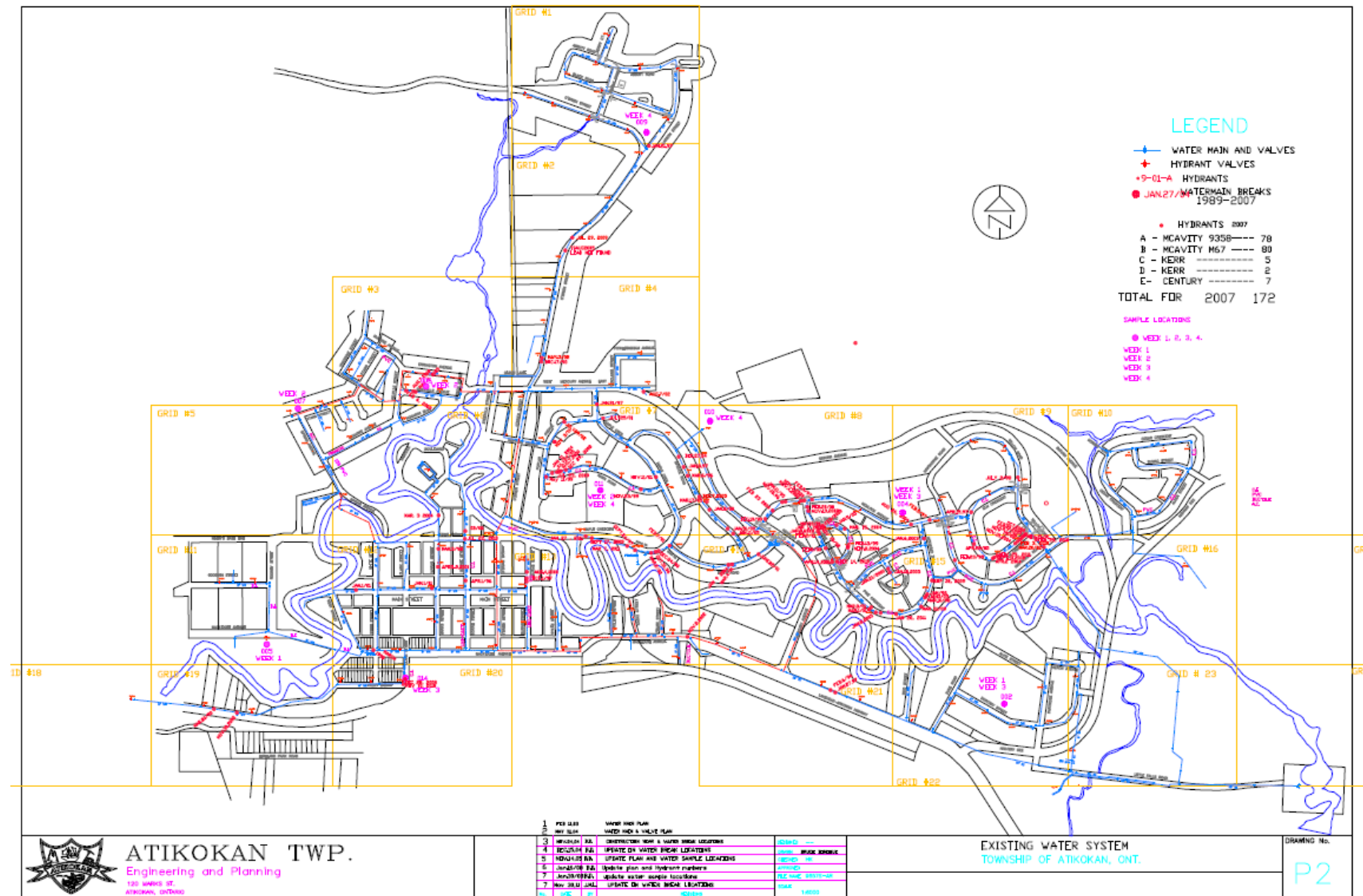
Road Network Map – Town of Atikokan



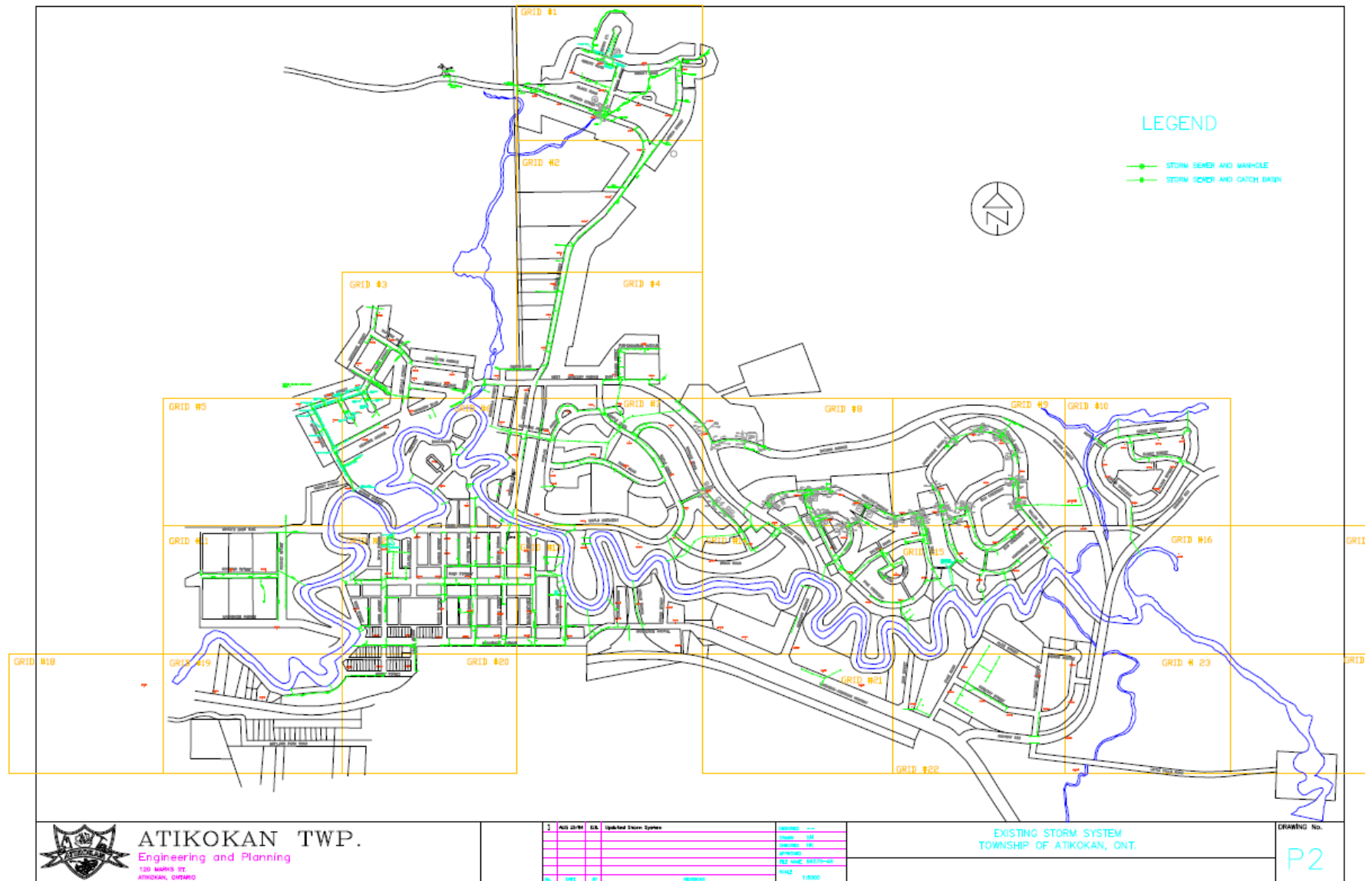
Road Network Map – Atikokan Settlement Areas



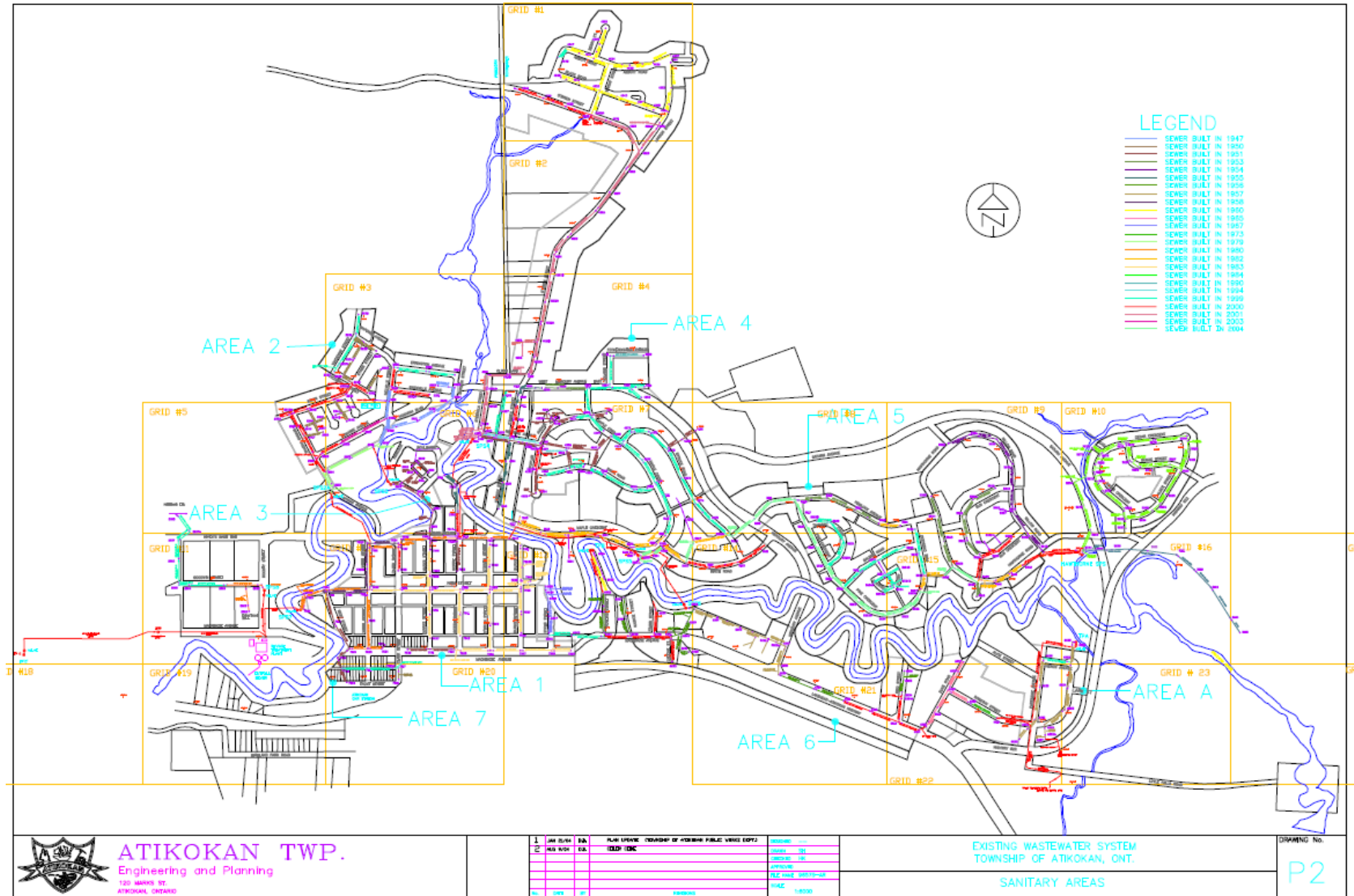
Town of Atikokan Water Main Map



Town of Atikokan Storm Main Map



Atikokan: Sewer Main Map



2021 Bridge Report – Condition Images



Figure 1: Don Park Foot Bridge - Fair Condition (40)



Figure 2: Little Falls Suspension Bridge - Fair Condition (40)



Figure 3: Mackenzie Avenue Bridge - Very Poor Condition (10)



Figure 4: Main Street Foot Bridge - Poor Condition (20)

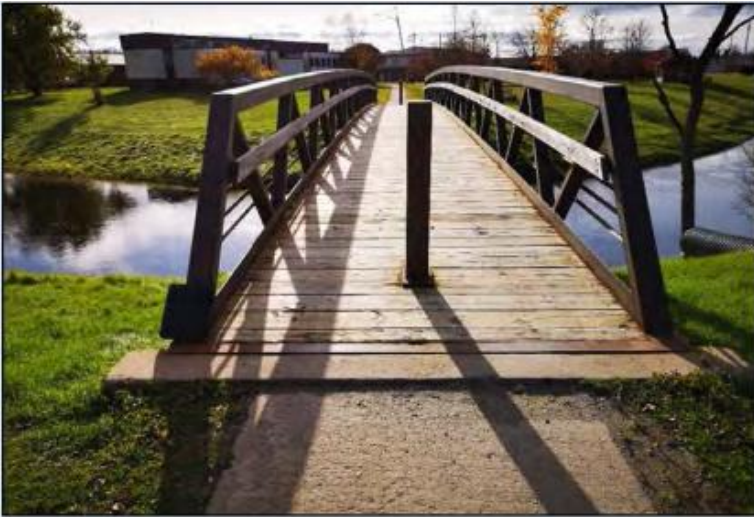


Figure 5: Maple Crescent Foot Bridge - Poor Condition (20)



Figure 6: Mercury Road Culvert - Very Poor Condition (10)



Figure 7: O'Brien Street Bridge - Good Condition (80)



Figure 8: Reid Street Foot Bridge - Fair Condition (40)



Figure 9: White Street Bridge - Fair Condition (40)

Appendix D: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Roads)	Condition	80	85-100	1
			70-84	2
			55-69	3
			40-54	4
			0-39	5
	Service Life Remaining (Years)	20	15+	1
			10-14	2
			5-9	3
			3-4	4
			0-2	5
Bridges & Culverts	Condition	80	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Service Life Remaining (Years)	20	80+	1
			60-79	2
			40-59	3
			10-39	4
			0-9	5
Airport Facilities Machinery & Equipment Fleet Waste Management	Condition	100	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Sanitary Sewer Network (Mains)	Condition	75	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Pipe Material	15	P.E	1
			PVC	1
			Cast Iron	3
			Class IV	3
			Concrete	3
			Ductile Iron	3
			AC	4
			Asbestos	4
			Concrete/Transite	4
			Transite	4
	Service Life Remaining (Years)	10	80+	1
			60-79	2
			30-59	3
			15-29	4
			0-14	5

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Water Network (Mains)	Condition	50	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Pipe Material	40	P.E	1
			PVC	1
			Ductile Iron	2
			AC	4
			Asbestos	4
			Cast Iron	4
			Concrete/Transite	4
			Concrete	4
			Transite	4
	Service Life Remaining (Years)	10	80+	1
			50-79	2
			30-49	3
			10-29	4
			0-9	5

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Stormwater Network (Mains)	Condition	70	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Material	30	P.E	1
			PVC	1
			Ductile Iron	2
			AC	4
			Asbestos	4
			Cast Iron	4
			Class IV	4
			Concrete	4
			Concrete/Transite	4
			Transite	4

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Economic (75%)	Replacement Cost (100%)	\$0-\$40,000	1
			\$41,000-\$150,000	2
			\$150,001-\$400,000	3
			\$400,001-\$600,000	4
			\$600,001-\$800,000	5
	Operational (30%)	Repair Priority (60%)	0-5	1
			6-10	2
			11-15	3
			16-25	4
			26-40	5
		Road Class (40%)	Local (Class 5 & 6)	2
			Collector (Class 3 & 4)	3
Bridges & Culverts (Foot Bridges)	Economic (80%)	Replacement Cost (100%)	Aterial (Class 1 & 2)	4
			\$0-\$200,000	1
			\$200,001-\$400,000	2
			\$400,001-\$1,000,000	3
			\$1,000,001-\$2,000,000	4
			\$2,000,001-\$3,000,000	5
	Social (20%)	Detour Length (60%)	1	1
			2	2
			3	3
			4	4
			5	5
		Special Routes (40%)	Bicycle	3
			School	4
			Truck	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Structural Bridges & Culverts	Economic (80%)	Replacement Cost (90%)	\$0-\$50,000	1
			\$50,000-\$150,000	2
			\$150,000-\$250,000	3
			\$250,000-\$500,000	4
			\$500,000+	5
		Road Class (10%)	Local (Class 5 & 6)	2
	Collector (Class 3 & 4)		4	
	Arterial (Class 1 & 2)		5	
	Social (20%)	Average Annual Daily Traffic (70%)	0-100	1
			101-500	2
			501-1,000	3
			1,001-3,000	4
			3,001-5,000	5
		Detour Length (20%)	1	1
			2	2
			3	3
			4	4
			5	5
		Special Routes (10%)	Bicycle	3
			School	4
			Truck	5
Airport Facilities		Economic (100%)	Historical Cost (100%)	\$0-\$100,000
\$100,001-\$250,000	2			
\$250,001-\$500,000	3			
\$500,001-\$1,000,000	4			
\$1,000,001+	5			

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Water Network (Mains)	Economic (20%)	Replacement Cost (100%)	\$0-\$50,000	1
			\$50,001-\$100,000	2
			\$100,001-\$190,000	3
			\$190,001-\$250,000	4
			\$250,001+	5
	Social (80%)	Pipe Diameter (100%)	0-50	1
			51-100	2
			101-250	3
			251-300	4
			301-500	5
Stormwater Network (Mains)	Economic (80%)	Replacement Cost (100%)	\$0-\$20,000	1
			\$20,001-\$50,000	2
			\$50,001-\$100,000	3
			\$100,001-\$150,000	4
			\$150,001+	5
	Social (20%)	Pipe Diameter (100%)	0-150	1
			151-200	2
			201-300	3
			301-400	4
			401-600	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Sanitary Network (Mains)	Economic (50%)	Replacement Cost (100%)	\$0-\$10,000	1
			\$10,001-\$50,000	2
			\$50,001-\$150,000	3
			\$150,001-\$250,000	4
			\$250,001+	5
	Social (50%)	Pipe Diameter (100%)	0-50	1
			51-100	2
			101-300	3
			301-400	4
			401-525	5
			50+	5

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