FINAL REPORT

PREPARED BY HEMSON FOR THE MUNICIPALITY OF MARMORA AND LAKE

ASSET MANAGEMENT PLAN

June 2022

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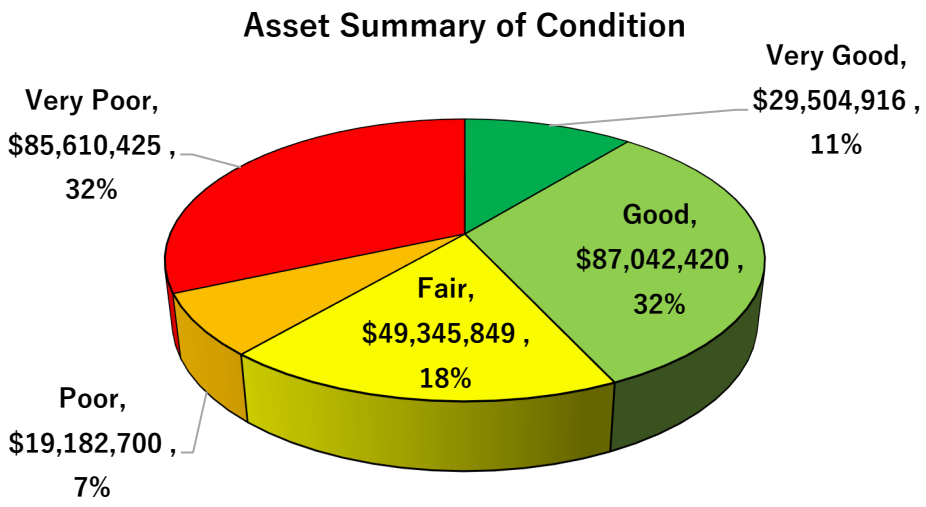
EXECUTIVE SUMMARY

The following summarizes the findings of the Municipality of Marmora and Lake's Asset Management Plan (2022 Plan). The 2022 Plan follows the format set out in the *Building Together: Guide for Municipal Asset Management Plans* and it has also been developed to be consistent with the requirements of *Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure* (*O. Reg. 588/17*) with consideration to the Municipality's Strategic Asset Management Policy. This 2022 Plan defines the current levels of service for all core and non-core assets in compliance with the asset management regulation.

The 2022 Plan incorporates all assets that the Municipality is responsible for to provide a comprehensive overview. All figures are in constant 2022 dollars and should be adjusted annually to account for the effects of inflation.

A. STATE OF LOCAL INFRASTRUCTURE

- The Municipality's infrastructure has an estimated total replacement value of $270.7 million.
    - Roads represent $159.1 million (59%) and bridges represents $34.1 million (13%) of the total value;
    - The remaining tax supported assets represent $35.3 million (13%); and
    - Engineering infrastructure related to water and sewer assets accounts for approximately $42.1 million (16%).
- Overall, the Municipality's assets are considered to be in "Fair" condition.
    - Of the total asset value, about 43% or $116.5 million of the Municipality's assets are considered to be in "Good" or "Very Good" condition.
    - Conversely, about 39% ($104.8 million) of infrastructure is considered to be in "Poor" to "Very Poor" condition. Most of these assets in this category relate to roads.
    - The remaining 18% ($49.3 million) of the assets are considered to be in "Fair" condition.



B. LEVEL OF SERVICE

- The Municipality's current levels of service have been defined based on the condition of assets and the measures required as per *O. Reg. 588/17*:
    - Overall the Municipality's asset base is considered to be in Fair condition.
    - The Municipality's stormwater (culverts and catchbasins), and streetlights are in "Good" condition.
    - The Municipality's buildings, bridges, sidewalks, roads, water, sewer, vehicles, machinery and equipment, and library infrastructure, are maintained in "Fair" condition.
    - Specific level of service measures related to *O. Reg. 588/17* are discussed in Section 3.

C. FINANCING STRATEGY

- The analysis indicates a spending need of about $157 million for tax supported assets and about $53.2 million for rate supported assets – this figures represent the cumulative 30-year investment needs across the service areas for the various lifecycle activities identified in this plan.

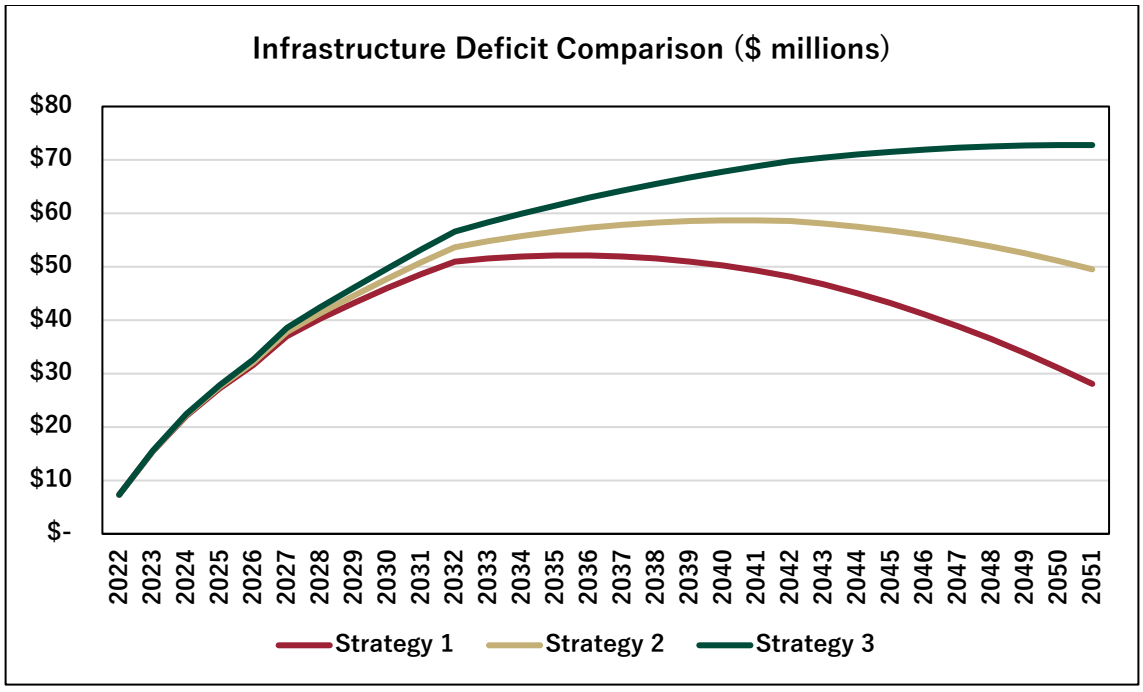
- It is unrealistic in the current fiscal context to expect the Municipality to fully address the infrastructure deficit in the short-medium term;
    - Three financing strategies were developed to determine what capital contributions would be required to meet asset replacement needs (Note: in any given year, actual

capital expenditures may be greater or less than the noted capital contributions as reserves are assumed to accommodate variances between the contributions and actual expenditures);

- Please note, the increases calculated would be in addition to the 2022 budgeted funding identified and should be adjusted annually to account for the effects of inflation. The Financing Strategy section of this 2022 AMP provides further details on each strategy.

Summary of Financing Strategies		
Financing Strategy	**Tax Supported Strategy Parameters**	**Rate Supported Strategy Parameters**
Strategy 1 **Close in-year Funding Gap by 2036**	▪ Increase annual capital contributions by approximately $187,800 per year.	▪ Increase annual capital contributions by approximately $76,800 per year.
Strategy 2 **Close in-year Funding Gap by 2041**	▪ Increase annual capital contributions by approximately $138,400 per year.	▪ Increase annual capital contributions by approximately $55,700 per year.
Strategy 3 **Close in-year Funding Gap by 2051**	▪ Increase annual capital contributions by approximately $85,000 per year.	▪ Increase annual capital contributions by approximately $22,200 per year.

- Of the three financing strategies identified for both tax and rate supported assets, strategy 3 poses the greatest risk to the Municipality as the infrastructure deficit continues to grow to 2051. Strategies 1 and 2 demonstrate the infrastructure deficit being controlled over the planning period. Detailed tables of each strategy are provided in Appendix D; however, the tax supported cumulative infrastructure gaps are summarized in the graph below.


Infrastructure Deficit Comparison ($ millions)
$80
$70
$60
$50
$40
$30
$20
$10
$-
2022
2023
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2025
2026
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Strategy 1
Strategy 2
Strategy 3

1. INTRODUCTION

The Municipality of Marmora and Lake's 2022 Asset Management Plan (2022 Plan) provides the Municipality with a tool to assist in capital financing decisions. The Plan covers all municipal assets: buildings, machinery and equipment, vehicles, land improvements, library materials, roads and related (streetlights, sidewalks), stormwater (catchbasins and small culverts), water, and sewer systems.

The 2022 Plan follows the format set out by the Ministry of Infrastructure through the Building Together: Guide for Municipal Asset Management Plans and it has also been developed to be consistent with the requirements of Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure (O. Reg. 588/17) and the Municipality's Strategic Asset Management Policy. All figures reported in this 2022 Plan are in constant 2022 dollars and therefore should be adjusted annually to account for the effects of inflation.

An Excel based asset management financial model has been developed as part of the 2022 Plan. The model contains the Municipality's asset inventory and it is intended to be updated on a regular basis to inform future capital investment decisions. The model contains the information required to update the State of the Local Infrastructure Report Cards presented in Appendix B, which can be reproduced annually to help Council and the public understand the state of assets and overall funding levels.

A. ASSET MANAGEMENT OVERVIEW

Well-managed public infrastructure is vital to the prosperity and quality of life of communities. Given the range and scope of services provided, Ontario municipalities have a special responsibility in ensuring that infrastructure is planned, built, and maintained in a sustainable way. A detailed asset management plan is essential to carry out this responsibility. Asset management has several benefits, including:

- Municipality can make informed and traceable decisions;
- Municipality has the opportunity to coordinate and plan accordingly by taking a risk-based approach to asset management;
- Higher customer satisfaction is possible;
- Documents a funding plan and strategy to manage infrastructure; and
- Demonstrates compliance with regulations and legislation.

Asset management is an ongoing practice in the Municipality of Marmora and Lake. Council and staff have applied sound asset management principles to maintain records on tangible capital assets, monitor asset performance, and plan for infrastructure acquisition, repair, rehabilitation, and replacement over the long-term.

The purpose of the 2022 Plan is to build on existing practices by identifying how best to manage municipal infrastructure over the planning period to 2051. A strategy for maintaining infrastructure so that existing service levels are maintained is an important element. In this respect, the 2022 Plan has been prepared to be consistent with the Municipality's Strategic Asset Management Policy. Ultimately, the 2022 Plan will provide Council with information that can guide sustainable infrastructure investment decisions.

B. ONTARIO'S ASSET MANAGEMENT REGULATION (O. REG. 588/17)

In 2015, the Province of Ontario established the Infrastructure for Jobs and Prosperity Act. The purpose of this Act is to establish mechanisms to encourage principled, evidence-based and strategic long-term infrastructure planning that supports job creation and training opportunities, economic growth, protection of the environment, and incorporate design excellence into infrastructure planning.

In December 2017, Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure (O. Reg. 588/17) was passed under the Infrastructure for Jobs and Prosperity Act. The regulation requires municipalities to develop a Strategic Asset Management Policy, which will help municipalities document the relationship between their Asset Management Plan and existing policies and practices as well as provide guidance for future capital investment decisions. Municipality Council approved the Strategic Asset Management Policy in 2019.

The regulations also contain more specific requirements on the type of analyses municipal asset management plans should include. The aim is to provide guidance to municipalities so that asset management plans are more consistent across the Province. Furthermore, in March 2021 the Province amended the regulation to extend the regulatory timelines by one year. Table 1 provides a summary of the key regulatory timelines as outlined by Regulation 588/17 and where the Municipality currently stands in the timeline.

Table 1 O. Reg. 588/17 Timeline		
Regulation Timeline	**Requirement**	**Progress**
July 1, 2019	▪ Municipalities shall prepare their first strategic asset management policy. ▪ Municipalities shall review, and if necessary, update the policy every 5 years.	▪ Municipality Council approved the Strategic Asset Management Policy in 2019. ▪ The next review is expected in 2024, although earlier reviews are encouraged whenever a change in policy directives occurs.
July 1, 2022	▪ Every municipality shall prepare an asset management plan in respect of its core municipal infrastructure assets. ▪ The current levels of service must be defined for all core assets.	▪ This 2022 Plan has incorporated the information from the Municipality's asset inventory. The inventory has incorporated condition data for the engineered services of roads, stormwater, water and sewer. ▪ Current level of service measures have been identified through this plan, with the Municipality expecting to develop other metrics on an ongoing basis. ▪ It is expected that service level data continue to be monitored and refined over the long-term.
July 1, 2024	▪ Every municipality shall prepare an asset management plan in respect of all other municipal infrastructure assets. ▪ The current levels of service must be defined for all other municipal assets	▪ This 2022 Plan has incorporated non-core assets contained in the Municipality's inventory. Some of these assets include condition assessments based on internal staff reviews. ▪ Current level of service measures have been identified through this plan, with the Municipality expecting to develop other metrics on an ongoing basis.
July 1, 2025	▪ Municipalities must establish proposed levels of service for a minimum of 10 years. ▪ A lifecycle management and financial strategy that covers a minimum of 10 years.	▪ The Municipality is expecting to further develop their asset management program to establish the proposed levels of service and a financial plan to achieve the proposed levels of service. ▪ The proposed levels of service will be established through consultation with Council and the public in a subsequent update of this 2022 Plan.

C. ASSET MANAGEMENT PLAN STRUCTURE

The 2022 Plan is developed to be consistent with the structure recommended through the *2013 Building Together: Guide for Municipal Asset Management Plans*. At the same time, it has been developed to meet the requirements of O. Reg. 588/17. Table 2 below provides a guide to the sections of the 2022 Plan.

Table 2
Guide to the 2022 Asset Management Plan

Section	Requirement
Section 2 - State of Local Infrastructure	Summarizes the state of the Municipality's infrastructure with reference to infrastructure quantity and quality. Additional details are provided in Appendix B.
Section 3 - Level of Service	A summary of the current levels of service is presented as well as recommendations on additional metrics the Municipality can look to track in the future.
Section 4 - Asset Management Strategy	Sets out several strategies that will assist the Municipality in maintaining assets so that current service levels are maintained. This section also includes a risk analysis of Municipality assets. Additional details are provided in Appendix C.
Section 5 - Financing Strategy	Establishes how asset management can be delivered in a financially sustainable way for both tax and utility rate supported services. Additional details are provided in Appendix D.
Section 6 – Continuous Improvements and Updates	Provides key recommendations on how to administer the 2022 Plan and keep it up to date.
Section 7 - Conclusions and Recommendations	Provides recommendations based on the analysis undertaken.

Please refer to Appendix A for a list of definitions for commonly used terms throughout this 2022 Asset Management Plan.

2. STATE OF LOCAL INFRASTRUCTURE

This section provides a summary of the Municipality's assets with reference to asset quantity and quality. Some assets have condition assessments based on engineering inspections (roads, water and sewer), while the balance of assets considered are based on the useful life of the asset relative to its age as well as independent staff assessments. Useful life assumptions for the assets considered under this 2022 Plan were acquired from the Municipality's tangible capital asset information. Detailed technical information on the asset inventory, remaining useful life and conditions for each asset category is provided in Appendix B.

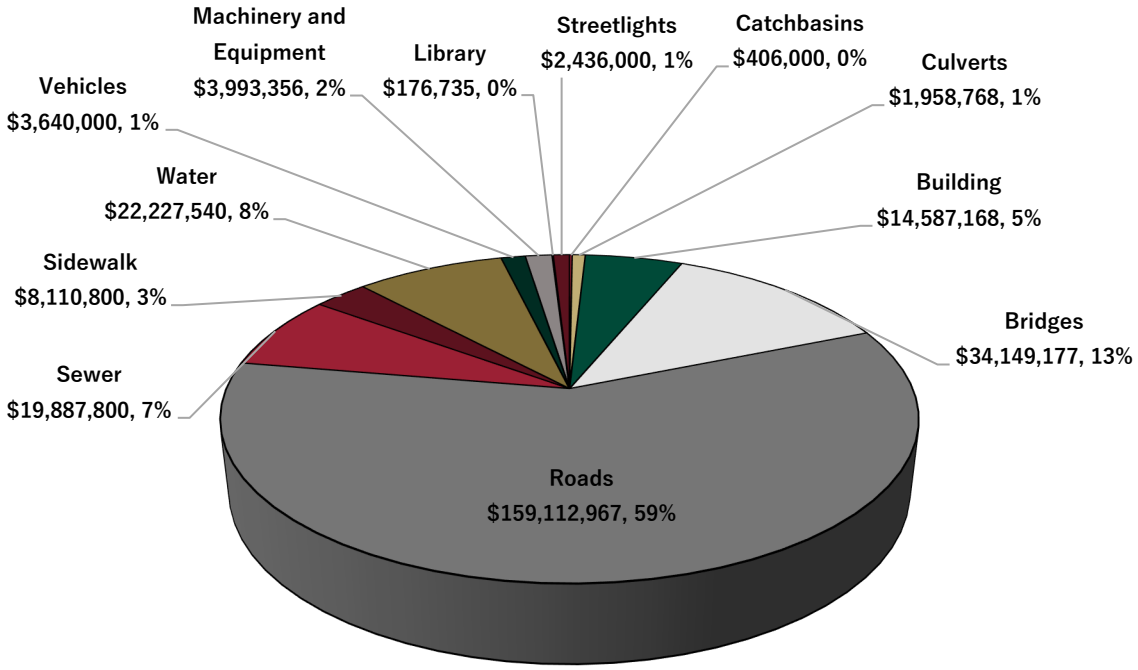
A. REPLACEMENT COST OF INFRASTUCTURE

The replacement cost for all Municipality assets considered in the 2022 Plan is estimated at $270.7 million (represented in constant 2022 dollars). The largest share is related to roads and accounts for about $159.1 million (59%) of the total replacement cost. The next highest share is attributed bridges at $34.1 million (13%) and this is followed by the water system at $22.2 million (8%) and sewer system at $19.9 million (7%).

The other asset categories in the Municipality's asset portfolio make up the remaining $35.3 million (13%). These are made up of $14.6 million (5%) for the buildings, $8.1 million (3%) for sidewalks, $3.9 million (1%) for machinery and equipment, $3.6 million (1%) for vehicles, $2.4 million (1%) in streetlights, $1.9 million (1%) for culverts, $406,000 (<$1%) in catchbasins, and $176,735 (<1%) in library assets.

The replacement costs have been developed based on historical information maintained by staff in the asset inventory, recent benchmark costs and costs based on the development charges background study. Where information was not available, historical acquisition costs were inflated to current 2022 dollars at a rate of 2%. Detailed replacement cost for each asset category is provided in Appendix B.

Figure 1 – Summary of Assets by Total Replacement Values (2022 $)



Note: Replacement costs are expressed in constant 2022 dollars.

B. SUMMARY OF STATE OF LOCAL INFRASTRUCTURE

Table 3 provides a summary of the state of local infrastructure for all asset categories considered in this study which is valued at $270.7 million. The weighted remaining useful life (WRUL) and weighted average condition (WAC) for each asset category has been derived relative to the replacement value of each asset. Detailed information is provided in Appendix B. The table illustrates several key findings:

- **Weighted Remaining Useful Life:** the WRUL of the Municipality's assets is approximately 10 years. The weighted average is largely driven by the relative age of buildings, culverts, vehicles and water systems, which are all considered overdue assets. Roads, which includes paved roads and related infrastructure, show 13 years of remaining useful life on average, however, this value does not reflect the condition of the road network, and is solely based on the acquisition year recorded in the asset inventory.

- **Weighted Condition:** Overall, the Municipality's assets are determined to be in Fair condition. Culverts, catchbasins and the streetlights assets are maintained in Good condition, while the remaining assets are considered to be in Fair condition.

Table 3 Summary State of Local Infrastructure				
Asset Type	**Replacement Cost 2022**	**Weighted Remaining Useful Life**	**Weighted Condition**	
Buildings	$ 14,587,168	Overdue	**Fair**	2.9
Bridges	$ 34,149,177	17	**Fair**	2.6
Culverts	$ 1,958,768	Overdue	**Good**	2.0
Catchbasins	$ 406,000	10	**Good**	2.0
Sidewalk	$ 8,110,800	18	**Fair**	3.3
Roads	$ 159,112,967	13	**Fair**	3.4
Water	$ 22,227,540	Overdue	**Fair**	2.7
Sewer	$ 19,887,800	9	**Fair**	3.1
Vehicles	$ 3,640,000	Overdue	**Fair**	3.1
Machinery & Equipment	$ 3,993,356	3	**Fair**	3.3
Library	$ 176,735	3	**Fair**	3
Streetlights	$ 2,436,000	18	**Good**	2
Total	**$ 270,686,310**	**10**	**Fair**	**3.2**

C. CONDITION ASSESSMENTS

Consistent with the Canadian National Infrastructure Report Card, as well as other major organization and institution reporting formats, a five-point rating scale was used to assign a condition to all assets. This methodology provides a standard and easy to understand way of reporting on the condition of assets. Table 4 summarizes the assumed parameters.

Table 4 Condition Assessment Parameters	
Condition Rating	**Definition**
Very Good	▪ Well maintained, good condition, new or recently rehabilitated asset.
Good	▪ Good condition, few elements exhibit existing deficiencies.
Fair	▪ Some elements exhibit significant deficiencies. Asset requires attention.
Poor	▪ A large portion of the system exhibits significant deficiencies. Asset mostly below standard and approaching end of service life.
Very Poor	▪ Widespread signs of deterioration, some assets may be unusable. Service is affected.

Assets were categorized in the 5-tier rating system on an asset by asset basis. Three approaches have been utilized for the assets considered in this asset management plan.

1. Condition rating systems based on engineered metrics and professional standards. For example, Facility Condition Index for buildings, Pavement Condition Index for roads or professional mechanic inspections for vehicles. These metrics can then be translated into a 5-tier rating system. The municipality should continually update the conditions in the asset inventory to reflect changes in conditions or when assets are replaced.

    a. Condition assessments for the roads, bridges and some buildings are based on the engineered assessments developed through independent studies such as: 2018 Roads Needs Study, Bridge OSIM Report and 2020 Facilities Review. These conditions were adapted to the 5-tier system where appropriate.

2. Estimates based on expert staff opinion. This approach is important where there is low confidence that age and useful life represents a particular set. This method has already been used as part of the 2022 AMP and should continue to be utilized.

3. Estimates based on age and the remaining useful life of the asset. This has been used for all assets, which the Municipality was not able to provide a condition assessment based on existing knowledge or inspection. It is the intention that the Municipality move towards a condition assessment methodology using approach 1 and 2 as needed. With this said, this methodology can be utilized for lower valued assets that have a shorter useful life.

3. LEVEL OF SERVICE

Asset management decisions must be made with reference to the level of service planned for by the Municipality. Current service levels in Marmora and Lake have been developed based on a combination of internal asset management practices, community expectations, statutory requirements, and industry operation and safety standards. Typically, the level of asset investment made by the Municipality in any one year has been determined by funding availability. That said, the Municipality has in the past been responsive to repair needs to address immediate environmental or health risks. The Municipality has therefore done a good job in assessing and maintaining levels of service.

The community expects that services be delivered in a cost effective and efficient way. Generally, community expectations revolve around the Municipality's accessibility of "soft" services (e.g. recreation facilities; libraries; fire stations) within neighbourhoods. However, safety and performance are also important for core services such as roads, stormwater, water, and sewer infrastructure.

Developing levels of service and tracking over time is essential to measuring the success of service delivery and the asset management strategy overall. This section outlines current levels of service as they relate to the requirements outlined in Ontario Regulation 588/17.

A. CURRENT LEVELS OF SERVICE

The Municipality has determined the current levels of service through the analysis and model developed in this 2022 Plan. The current level of service measures for each asset category are summarized in Table 5. It is noted that the information in Table 5 represents a blended approach of levels of service and performance measures which represent the best available information at this time:

- **Weighted Condition:** the condition of the Municipality's assets are determined to be in Fair condition overall. The Municipality's culverts, catchbasins, and streetlights are in Good condition. Buildings, bridges, sidewalks, roads, water system, sewer system, vehicles, machinery and equipment, and library infrastructure are considered to be in Fair condition.

  It is important to note that assets in Fair condition may transition into the Poor or Very Poor category in the near future and may require attention in the short to medium term, if proper asset maintenance and rehabilitation is not achieved. It will be important for the Municipality to determine which assets in the Fair category should be prioritized to ensure that current levels of service do not decline.

Finally, it is important to note *that O. Reg. 588/17* includes a prescribed set of level of service measures. Table 5 includes these level of service measures as required in the regulation, a brief summary is provided below:

- **Roads:** Out of a 10 rating scale, the average pavement condition index value of the roads is 5.94 (or Poor condition) while the average condition gravel roads is 5.51 (or Poor condition). This information was obtained from the Roads Needs Study. Please note, although, the regulation requires the PCI be documented for the purposes of the LOS analysis, the road conditions used in the AMP in the SOLI report reflect the Overall Condition Index (OCI) which indicated an overall "Fair" condition. The OCI considers other conditions such as: drainage, structural adequacy and surface width (AADT).
- **Storm System:** It is assumed that the current system is resilient to 5-year and 100-year storms based on conversations with municipal staff. Staff have identified only a few properties in a potential flood zone, with this said there has not been any floods in recent years and the risk remains low.
- **Water System:** The Municipality ensures the water system operates in a safe and efficient manner and provides for clean drinking water to residents that exceeds standards. As only parts of the Municipality is serviced about 50% of residents are connected to the system and fire flow is available throughout the Municipality. No water boil advisories or watermain breaks have occurred in the past few years.
- **Sewer System:** The Municipality ensures the sewer system operates in a safe and efficient manner and meets all Provincial regulatory requirements. There are no events of sewer flow exceeding capacity or sewer backups in the last few years. There have been some issues with ammonia discharge, however, it is still within acceptable range and municipal staff continues to monitor this closely on a regular basis.

B. COSTS TO MAINTAIN CURRENT LEVELS OF SERVICE

The Municipality undergoes reviews of the levels of service and services it provides on an annual basis through the budget process. Therefore, the Municipality considers the short-term implications of any changes in the level of service with consideration to the availability of funds and impacts to residents through the tax and water/wastewater rates. The AMP considers the longer term costs of maintaining levels of service over a 30-year period. To do so the financing strategy considers three financing strategy scenarios which are discussed further in Section 5.

Table 5 Municipalty of Marmora and Lake Level of Service Tracker					
Asset Category	**Value to Residents**	**Corporate Level of Service/Objective**	**Community Level of Service (as per O. Reg. 588/17)**	**Description of LOS Measure**	**Current LOS**
Machinery & Equipment (includes Land Improvements)	Reliability	Providing reliable equipment.		Average weighted condition assessment ("Very Poor" to "Very Good")	**Fair**
				% of assets at or above "Good" or "Very Good" condition	38%
				% of assets beyond their useful life	25%
Vehicles	Reliability	Providing reliable vehicles.		Average weighted condition assessment ("Very Poor" to "Very Good")	**Fair**
				% of assets at or above "Good" or "Very Good" condition	31%
				% of assets beyond their useful life	46%
Buildings	Reliability	Providing reliable buildings.		Average weighted condition assessment ("Very Poor" to "Very good")	**Fair**
				% of assets at or above "Good" or "Very Good" condition	20%
				% of assets beyond their useful life	39%
Roads	Legislative	To meet reporting requirements of O. Reg. 588/17	Please refer to the 2018 Roads Needs Study for proper mapping	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality (O. Reg. 588/17).	
				Arterial	1%
				Collector	17%
				Local	82%
			The 2018 Roads Needs Study provides the road distinctions	1. For paved roads in the municipality, the average pavement condition index value (O. Reg. 588/17).	5.94
				2. For unpaved roads in the municipality, the average surface condition (O. Reg. 588/17).	5.51
	Safety	Providing safe roads for residents.		# of road closures per year (not weather related)	No road closurers.
				% of signs found missing or ineffective per year	0
	Quality	Providing roads at the appropriate quality.		% of assets that meet capacity/required standards	100%
				% of km of unpaved roads that are unpaved that should be paved	

Table 5 Municipalty of Marmora and Lake Level of Service Tracker					
Asset Category	**Value to Residents**	**Corporate Level of Service/Objective**	**Community Level of Service (as per O. Reg. 588/17)**	**Description of LOS Measure**	**Current LOS**
Bridges and Large Culverts	Legislative	To meet reporting requirements of O. Reg. 588/17	Infrastructure generally serves local traffic with some truck traffic pending on the intersections. The roads and bridges do serve amunicipal and provincial operations	Percentage of bridges in the municipality with loading or dimensional restrictions (O. Reg. 588/17).	21%
			Please refer to OSIM Report for description of condition of each bridge. Images are also included in this report	1. For bridges in the municipality, the average bridge condition index value (O. Reg. 588/17).	69.37
			Please refer to OSIM Report for description of condition of each culvert. Images are also included in this report	2. For structural culverts in the municipality, the average bridge condition index value (O. Reg. 588/17).	53.78
Stormwater (Small Culverts & Catchbasins)	Legislative	To meet reporting requirements of O. Reg. 588/17	The Municiaplity will be be working towards preparing detailed mapping of the flood zones. At this time, most properties would not be impacted by a floor and therefore a municipal-wide map is sufficient for this purpose.	1. Percentage of properties in municipality resilient to a 100-year storm (O. Reg. 588/17).	Estimated at 80%-90% based on discussion with staff with review of assets and mapping.
				2. Percentage of the municipal stormwater management system resilient to a 5-year storm (O. Reg. 588/17).	estimated at 100%
	Reliability	Providing reliable stormwater infrastructure.		Average weighted condition assessment ("Very Poor" to "Very good")	Good
				% of assets at or above "Good" or "Very Good" condition	100%
				% of assets beyond their useful life	85%

Table 5 Municipalty of Marmora and Lake Level of Service Tracker					
Asset Category	**Value to Residents**	**Corporate Level of Service/Objective**	**Community Level of Service (as per O. Reg. 588/17)**	**Description of LOS Measure**	**Current LOS**
Water	Legislative	To meet reporting requirements of O. Reg. 588/17	Most of the servicable population is residential related, however there are a number of non-residential users receiving service.Nearly 90% of connections are residential with the remaning attributed to ICI customers.	1. Percentage of properties connected to the municipal water system (O. Reg. 588/17).	Estimated at 50% based on existing connections to total HH in municipality. Almost 100% of serviced area.
			same description as above	2. Percentage of properties where fire flow is available (O. Reg. 588/17).	All areas which are serviced have fire flow. The allocation is similar to above.
			The municiaplity would tyoucally issue a notice of boil water advisory - this informaiton would appear on the municipal website.	1. The number 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 (O. Reg. 588/17).	There are typically no connection-days where a boil water advisory is in place
				2. The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system (O. Reg. 588/17).	No watermain breaks in 2021
	Reliability	Providing reliable water services		Average weighted condition assessment ("Very Poor" to "Very Good")	Fair
				% of assets at or above "Good" or "Very Good" condition	70%
				% of assets beyond their useful life	79%
Wastewater (Sewer)	Legislative	To meet reporting requirements of O. Reg. 588/17	Most of the servicable population is residential related, however there are a number of non-residential users receiving service.Nearly 90% of connections are residential with the remaning attributed to ICI customers.	Percentage of properties connected to the municipal wastewater system (O. Reg. 588/17).	Estimated at 50% based on existing connections to total HH in municipality. Almost 100% of serviced area.
			The municipality's website includes reports which on safety standards and maping	1. The number 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 (O. Reg. 588/17).	No events in recent record.
			The municipality's website includes reports which on safety standards and maping	2. The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system (O. Reg. 588/17).	No wastewater backups occurred.
			The municipality's website includes reports which on safety standards and maping	3. The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system (O. Reg. 588/17).	No effluent violations recorded in recent years.
			The municipality's website includes reports which on safety standards and maping		
			The municipality's website includes reports which on safety standards and maping		
	Reliability	Providing reliable wastewater services		Average weighted condition assessment ("Very Poor" to "Very good")	Fair
				% of assets at or above "Good" or "Very Good" condition	58%
				% of assets beyond their useful life	0%

4. Asset Management Strategy

This section sets out an action plan that will assist the Municipality in maintaining assets so that current service levels are maintained. The asset management strategy relates to a set of actions that, taken together, has the lowest total cost to maintain assets in a state of good repair as defined in the Building Together: Guide for Municipal Asset Management Plans.

The asset management strategy includes current practices and potential future practices related to non-infrastructure solutions, maintenance activities, renewal/rehabilitation, disposal, and expansion activities. The final component of this section includes a risk analysis, which can be used to assist Municipal staff and Council measure and manage risks to assets to maintain current levels of service.

A. OVERVIEW OF FULL LIFE-CYCLE COST MODEL

As part of the Asset Management Plan, the Municipality, along with Hemson, have identified the total full life cycle costs of an asset that corresponds to the requirements of the regulation. This would entail a cost estimation throughout the assets life including planning, design, construction, acquisition, operation, maintenance, renewal (and disposal). In addition, the analysis also takes into consideration the inclusion of expansion related infrastructure into the lifecycle management strategy. This approach ensures that the additional lifecycle costs associated with newly constructed/acquired assets are accounted for in the long-term forecast.

A “lifecycle management approach” in asset management planning not only includes estimating future lifecycle costs, but also embeds the process of monitoring how the asset performs over its life while providing affordable services.

These lifecycle activities can be segmented into six (6) categories: non-infrastructure solutions, operations/maintenance, renewal/rehabilitation, replacement, disposal, and expansion activities. While this AMP looks to address the various cost elements, it is important to recognize that as the maturity level increases, the costs associated with each lifecycle activity will strengthen and improve the expenditure outlook. The table below provides a description of each lifecycle category and the specific approach used to forecast expenditures in this AMP.

Table 6 Overview of the Full Life Cycle Cost Activities and AMP Approach		
Category	**Description**	**AMP Approach**
Non-infrastructure Solutions	▪ Actions or policies that can lower costs or extend asset life (e.g., better integrated infrastructure planning and land use planning, demand management, insurance, process optimization, managed failures, etc.).	▪ Based on review of recent budgets. ▪ Provision of $50,000 per annum included for tax supported assets and $10,000 for rate supported assets.
Maintenance Activities	▪ Servicing assets on a regular basis in order to fully realize the original service potential. Maintenance will not extend the life of an asset or add to its value. Not performing regular maintenance may reduce an asset's useful life.	▪ Based on a review of recent budgets by service area. ▪ In most instances, does not include general operating costs associated with the new asset acquisition (example: new staff to carry out programming in a new facility). ▪ Annual capital related maintenance activities of $360,700 per annum for tax supported assets and $35,200 for rate supported assets is included in the analysis moving forward. ▪ These figures are based on 2022 budget and is deemed appropriate to use in the forecast moving forward as it generally represents the costs from previous year's budgets.

Table 6 Overview of the Full Life Cycle Cost Activities and AMP Approach		
Category	**Description**	**AMP Approach**
Renewal/ Rehabilitation Activities	▪ Mostly associated to significant repairs designed to extend the useful life of an asset. These types of activities are typically done at key points in the lifecycle of an asset to ensure the asset reaches it designed useful life.	▪ Renewal expenditures calculated based on those costs identified in the roads needs study and OSIM reports. ▪ Moving forward, Hemson applied the average renewal expenditure determined through the Roads Needs Study to other road works to rehabilitate and renew existing assets.
Replacement Activities	▪ Activities that are expected to occur once an asset has reached the end of its useful life and renewal/ rehabilitation is no longer an option.	• Incorporating the average annual investment required to replace assets when they reach the end of their useful life (age/condition replacement schedule). ▪ This method is applied to all assets, except for roads, which is based on a more advanced rehabilitation schedule.
Disposal Activities	▪ The activities associated with disposing of an asset once it has reached the end of its useful life, or is otherwise no longer needed. Typically, disposal costs are accounted under replacement activities. Some assets, such as landfills, may have perpetual maintenance costs.	▪ Analysis assumes any costs associated with “disposal” is included for in the replacement value and captured in the capital replacement requirements.

Table 6 Overview of the Full Life Cycle Cost Activities and AMP Approach		
Category	**Description**	**AMP Approach**
Expansion Activities	▪ Planned activities required to extend or expand municipal services to accommodate the demands of growth.	▪ New "first-round" capital expenditures are typically excluded from the calculation in municipalities that use DCs to fund capital. ▪ Very limited expansion related assets are included in the analysis - assumed $50,000 per year in new expansion related acquisitions required due to growth. ▪ As the municipality does not have other funding sources to emplace new capital, the asset management related expense, plus the assumed first round capital acquisition, is included for in the calculation of the funding need.

It should be noted that the Municipality undertakes all the activities described above, however, the Municipality's budget generally accounts for these expenditures in different categories. Specific asset management strategies based on existing practices in the Municipality are documented in Appendix C. It is recommended that the Municipality continue to track the asset management activities required to continue to maintain levels of service.

B. RISK ANALYSIS

It is important to assess the risk associated with each asset and the likelihood of asset failure. Asset failure can occur as the asset reaches its limits and can jeopardize public/environmental safety. In addition, certain assets have a greater consequence of failure than others. A risk matrix can help prioritize which assets should be repaired/replaced, even those which the Municipality has already identified to be in Poor or

Very Poor condition. The evaluation rating is then linked to the condition assessment parameter discussed in Section II. The formula to determine asset risk is as follows:

(Probability of Failure) X (Consequence of Failure) = (Risk Rating)

Each of the components of the Risk Rating methodology is defined as follows:

- **Probability of Failure:** is directly linked to the condition of an asset. For example, an asset in Very Poor condition would have the probability of asset failure in the short term be high. This type of asset may be near the end of its useful life or has deteriorated significantly. Conversely it would be considered rare for an asset to fail in the short term if it is considered to be in Good or Very Good condition. Table 7 below outlines the definition of probability of failure used for the Municipality's assets.

Table 7
Probability of Failure

Condition	Probability of Failure	Description
Very Good	1	Rare
Good	2	Unlikely
Fair	3	Possible
Poor	4	Likely
Very Poor	5	Almost Certain

Note: Definitions are based on the MFOA Asset Management Framework.

Consequence of Failure: refers to the impact on the Municipality if an asset were to fail. The consequence of failure has been determined separately for each asset category, as the impact to the Municipality differs greatly by asset type. For example, if a fire emergency vehicle was not available for service, the potential impact could be severe compared to a vehicle used for administrative purposes. For the purposes of this analysis, assets were assigned a consequence of failure based on an assessment of the relative importance of the asset. Table 8 below outlines the definition of consequence of failure used for the Municipality's assets. The consequence of failure, rated on a 1-5 scale, was weighted relative to each category in Table 8 depending on how impactful the consequence may be to the Municipality.

Table 8 Consequence of Failure	
Consequence of Failure	**Description**
1- Insignificant	No impact to operations.
2 - Minor	Minor impact to operations, all major operations can continue to function.
3 - Moderate	Moderate impact to operations some critical operations may need to stop functioning temporarily.
4 - Major	Major operations seize and some damage control necessary.
5 - Significant	All operations seize to function and major damage control is necessary.

Note: The consequence of failure was developed based on the description of assets.

- **Risk Rating:** categorizes assets based on the level of risk to the Municipality. The risk rating provides a guide to prioritize assets by determining which assets require attention first and which capital works can be deferred. Higher risk assets should be prioritized for attention in the short term by determining which of the lifecycle actions is required to be performed on the asset (see Appendix C). Table 9 below provides a summary of the risk matrix.

Table 9 Risk Matrix							
Evaluation Rating		**Consequence of failure**					**Color Code**
		1	**2**	**3**	**4**	**5**	
Probability of Failure	**1**	**1**	**2**	**3**	**4**	**5**	Very Low Risk
	2	**2**	**4**	**6**	**8**	**10**	Low Risk
	3	**3**	**6**	**9**	**12**	**15**	Moderate Risk
	4	**4**	**8**	**12**	**16**	**20**	High Risk
	5	**5**	**10**	**15**	**20**	**25**	Very High Risk

Table 10 presents the findings of the risk analysis and illustrates the Municipality's assets rated from low to high risk. Most of the Municipality's assets continue to have relatively low risk, and indication of good maintenance practices overall. Only sidewalks are considered to have high risk, largely based on the condition of the assets and their age.

The risk of each asset and asset category has been determined with reference to the parameters outlined in Table 9 above. It is important to note, that the Municipality will need to continue regular maintenance activities and capital works moving forward to maintain current levels of service – this ensures assets do not further deteriorate posing greater risk to the corporation. Please note that bridges, large culverts and roads have been excluded

from the risk analysis in Table 10 as the infrastructure needs and timing of repair and replacement has been informed based on detailed engineered assessments.

- Bridges and Large Culverts: the Township completed an OSIM Inspections Report recently which includes recommended works and costs for bridges and culverts over a 10-year period. These recommendations have been considered through the financing strategy in Section V.
- The 2018 Roads Needs Study (revised 2020) identifies the recommended works for each road segment on a case-by-case basis considering: surface type, average annual daily traffic, structural adequacy and drainage.

Table 10
Summary Risk Assessment

Asset Category	Replacement Cost 2022	Risk (Weighted Average)	
Buildings	$ 14,587,168	**Moderate**	9
Bridges	$ 34,149,177	**Based on OSIM**	
Culverts	$ 1,958,768	**Moderate**	8
Catchbasins	$ 406,000	**Low**	4
Sidewalk	$ 8,110,800	**High**	10
Roads	$ 159,112,967	**Based on RNS**	
Water	$ 22,227,540	**Moderate**	9
Sewer	$ 19,887,800	**Moderate**	9
Vehicles	$ 3,640,000	**Low**	7
Machinery & Equipment	$ 3,993,356	**Moderate**	9
Library	$ 176,735	**Very Low**	3
Streetlights	$ 2,436,000	**Moderate**	8
Total	**$ 270,686,310**	**Very Low**	**3**

It is important to recognize the risk associated with the Municipality's ability to deliver the plan while recognizing that any deviation may affect the overall ability to deliver service. Table 11 below provides a summary of the identified risks, potential impacts and mitigating actions associated with the asset management program.

Table 11 Risk Associated to the Plan		
Identified Risk	**Potential Impact**	**Mitigating Action**
Failed Infrastructure	▪ Delivery of service ▪ Asset and equipment damage	▪ Repair and rehabilitate as necessary ▪ Increase investment ▪ Non-infrastructure solutions
Inadequate funding	▪ Delivery of service ▪ Increased risk of failure ▪ Shorten asset life ▪ Defer funding to future generations	▪ Reductions of service ▪ Find additional revenue sources
Regulatory Requirements	▪ Non-compliance ▪ Mandatory investments ▪ Increased costs	▪ Find additional revenue sources ▪ Lobby actions
Plan is not followed or not undertaking required lifecycle activities	▪ Shorten asset life ▪ Inefficient investments ▪ Prioritization process failure ▪ Failure to deliver service	▪ Monitor and review ▪ Create asset management network ▪ Implement processes ▪ Investigate alternative lifecycle management options

C. CLIMATE CHANGE INTEGRATION

The management of a municipal assets plays a fundamental role in the delivery of services, which depends on the infrastructure available to deliver the service. Corporate asset management in municipalities largely relates to the management of existing assets to keep them in a state of good repair while planning for future repair and/or replacement of their assets across all service areas. Impacts of climate change are already being experienced around the world, including Canada. It is important for municipalities to begin considering and planning for future climates to ensure the delivery of services, especially as it pertains to the maintenance of key municipal infrastructure. As per *Ontario Regulation 588/17* s3(5), municipalities must include a commitment in their asset management planning to address the vulnerabilities of climate change with respect to operations, levels of service and lifecycle management. There must also be consideration for anticipated costs, mitigation and adaptation approaches and disaster planning to meet all regulatory requirements in Ontario municipal asset management. In response to the regulatory requirements, the Municipality of Marmora and Lake adopted its first Strategic Asset Management Policy and committed to integrating climate change as part of its asset management planning.

Expected climate change impacts include hotter, drier summers, warmer winters with increased precipitation, increased frequency and intensity of storms and increased intensity of extreme winds. These changes in climate will likely lead to increased risks associated with flooding, heatwaves, risk of infrastructure damage, health and safety of residents, the alteration or loss of habitats, etc.

Many of these risks are associated with municipal assets and may impact the levels of service. Climate change mitigation and adaptation planning is an important step for municipalities to take to begin managing risks associated with climate change. Therefore, the Municipality is taking steps towards the integration of climate change considerations into their asset management planning framework moving forward.

The table below considers municipal owned and operated assets, although, regional critical infrastructure related to roads or public health may also be impacted by the noted hazards. Table 11 provides a risk summary at this time for information purposes to help further propel climate change integration with asset management, although, recognizing the full utilization would still need to be applied and understood at the staff level. In asset management terms, this table shows the big picture effects that climate change hazards may have on the LOS for various service areas. The specific climate change impacts on LOS by service are to be developed further as part of upcoming Asset Management Plans.

Through further understanding of the anticipated extent of climate change events, climate change adaptation projects at the Municipality will provide additional parameters as to the likelihood and severity of events. At its most simplistic form, the table below provides a range from a “rare” occurrence to “almost certain”. A rare occurrence could be correlated to falling into the tenth percentile of probability, with an almost certain occurrence falling into the ninetieth percentile of probability.

Table 12 - Framework for Climate Change Integration with Risk

Hazards / Risks	Likelihood	Consequence	
		Service Area	Possible Critical Infrastructure Failure / Service Impacts
Freezing Rain / Ice Storm	Rare to almost certain	• Roads • Stormwater	• Reduced road and bridge conditions, potential for closures • Potential for increased flooding of stormwater infrastructure • Transit delays due to poor road and bridge conditions
Extreme Temperatures – Cold Wave	Rare to almost certain	• Parks & Recreation • Facilities • Water • Sewer	• Closures of outdoor amenities due to extreme weather conditions • Increased strain on indoor heating systems leading to reduced service life and functionality of components and systems
Tornado	Rare to almost certain	• All Services	• Potential damage to various municipal assets due to high winds
Intense Rain	Rare to almost certain	• Transportation • Stormwater	• Flooding of bridges and roadways leading to closures • Potential capacity of storm sewer systems exceeded frequently, leading to property damage • Disruptions to service due to flooding of roads, leading to decreased levels of service

Hazards / Risks	Likelihood	Consequence	
		Service Area	Possible Critical Infrastructure Failure / Service Impacts
Flood – Urban	Rare to almost certain	• Transportation • Stormwater • Parks • Wastewater	• Flooding of bridges and roadways leading to closures • Potential capacity of storm sewer systems exceeded frequently leading to property damage • Disruptions to service due to flooding of roads, leading to decreased levels of service • Flooding of Parks leading to closures and reduced levels of service
Extreme Temperatures – Heat Wave	Rare to almost certain	• Parks & Recreation • Facilities	• Potential closure/reduce used of outdoor amenities due to high temperatures (reduced levels of service). Lost habitats leading to reduced environmental diversity. • Increased strain on indoor cooling systems leading to reduced service life and functionality of components and systems
Windstorm	Rare to almost certain	• Parks & Recreation • Facilities	• Closure of outdoor assets due to potential hazards for residents • Increased strain on facility assets leading to potential damages and reduced service life and functionality of components and systems

Source: https://www.assetmanagementbc.ca/wp-content/uploads/Climate-Change-and-Asset-Management.pdf

5. FINANCING STRATEGY

The Municipality has continually contributed to capital over the past few years for both tax funded and rate funded services. In order to continue to maintain levels of service, the Municipality will need to monitor funding levels over the next few years.

This section of the 2022 Plan is intended to help the Municipality build on the existing asset management practices already in place. The financing strategies presented provide the Municipality with feasible options to increase capital funding in a sustainable manner to maintain service levels.

A. OPERATING BUDGET EXPENDITURES

The Municipality has historically set aside funds to maintain its capital assets in a state of good repair. This has meant that sufficient funds have typically been available to deal with immediate and critical asset repair and rehabilitation needs. Overall, the Municipality has aimed to increase its operational and capital budget expenditures to maintain assets and fund capital asset repair and replacement over the past few years, although, the COVID pandemic has somewhat strained resources and limited the ability to increase the amount of funding dedicated to asset maintenance.

It is anticipated that the Municipality's operating expenditures will be adjusted annually, at minimum, to account for the effects of inflation. Although, if additional asset management strategies are adopted by the Municipality, annual costs could exceed regular inflationary adjustments. Using the 2022 budget as the basis, the analysis used in the financing strategy assumes about $361,000 per annum is related to asset maintenance funded through the tax base. A similar approach was used for rate supported services, in which costs associated with maintaining the water and wastewater infrastructure is estimated – this totals about $35,200 per annum included in the analysis.

As the municipality matures its asset management program, it is expected that service level adjustments and costs associated with achieving desired levels of services will be incorporated in the model. At this stage, no provisions for a level of service adjustments to account for requirements of *O. Reg. 588/17* to define and implement desired levels of service has been included in the analysis – this will be further addressed in the next plan to coincide with the regulatory deadline.

B. CAPITAL REPLACEMENT SCHEDULE

The 2022 Plan includes an estimate of the timing for replacement of all assets. Using the risk assessment discussed in Section 4, a schedule for the replacement of assets has been developed on an asset by asset basis. Assets with a higher risk rating are prioritized earlier in the schedule to reflect a higher priority, while assets with lower risk ratings are moved further out into the future forecast to reflect a more "smoothed" expenditure outlook. The timing is based on a percentage of the useful life of the asset. Table 13 below provides a summary of the risk thresholds used to calculate timing of replacement needs.

Table 13
Risk Thresholds for Asset Life Extension

Percentage of Useful Life					Color Code
100%	80%	60%	40%	20%	Very Low Risk
80%	65%	50%	30%	16%	Low Risk
60%	50%	35%	25%	10%	Moderate Risk
40%	30%	25%	15%	2%	High Risk
20%	16%	10%	2%	0%	Very High Risk

1. Tax Supported Assets

Figure 2 sets out the schedule of repair and replacement of assets, to maintain current levels of service for the tax supported assets considered in the 2022 Plan. Over the 30-year period, to 2051, the tax supported repair and replacement program totals about $89.9 million. The average yearly expenditure related to these assets amount to approximately $2.7 million per year.

Some larger valued assets have been identified over the next few years to require repair or replacement, in particular some major replacement projects include:

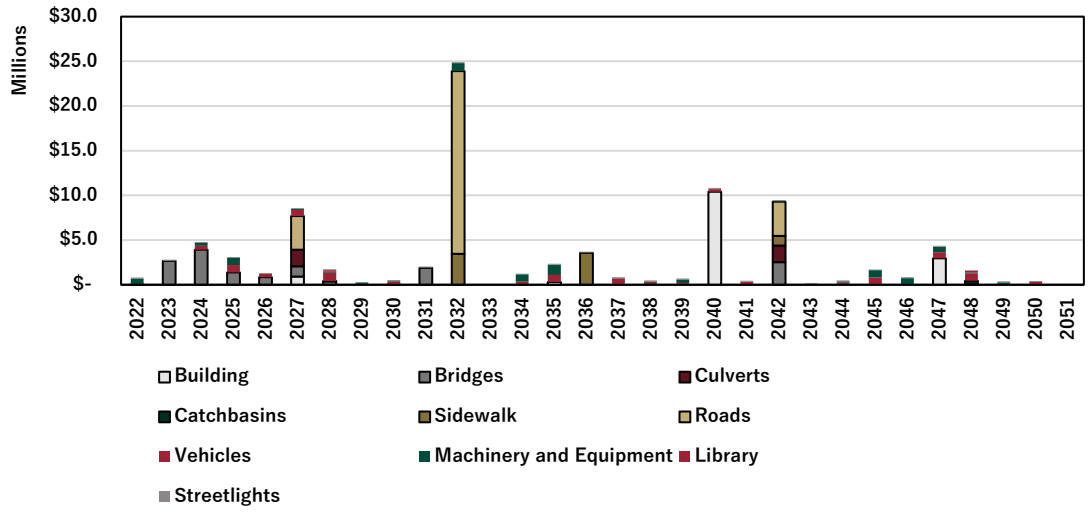
- **Bridges:** Over the next 5 years (2022-2026) replacement costs are set to total $8.8 million. This includes a replacement of Deep River Bridge in 2023 for $1.7 million, and the replacement of Shanick Bridge in 2024 for $3.1 million.
- **Roads:** In the 5 year period (2022-2026) portions of Fidlar Glen Road and Clemenger Road have been identified to be replaced for a total cost $19,316. However, directly after this 5 year period, various roads are set to be replaced for a total of $3.7 million in the year 2027.
- **Vehicles:** The 5 year period (2022-2026) has identified replacement of $1.4 million of assets, including three Dump/Plows and Tanker, a truck, a cub van, a tanker and a heavy rescue truck.

- **Machinery & Equipment:** The 5 year period (2022-2026) identified a replacement cost of $1.8 million. This includes replacement of a crawler/loader, computer equipment for water treatment (SCADA), a backhoe loader, holder, and some other smaller costed items.

- **Streetlights:** A replacement cost of $487,200 in the 5 year period (2022-2026) for streetlights has been identified, with an annual provision $97,440 applied for replacement.

- **Other:** Over the next 5 years (2022-2026), buildings, culverts & catchbasins, sidewalks, and library assets will not require replacement. However, significant replacement costs are set to incur after this period.

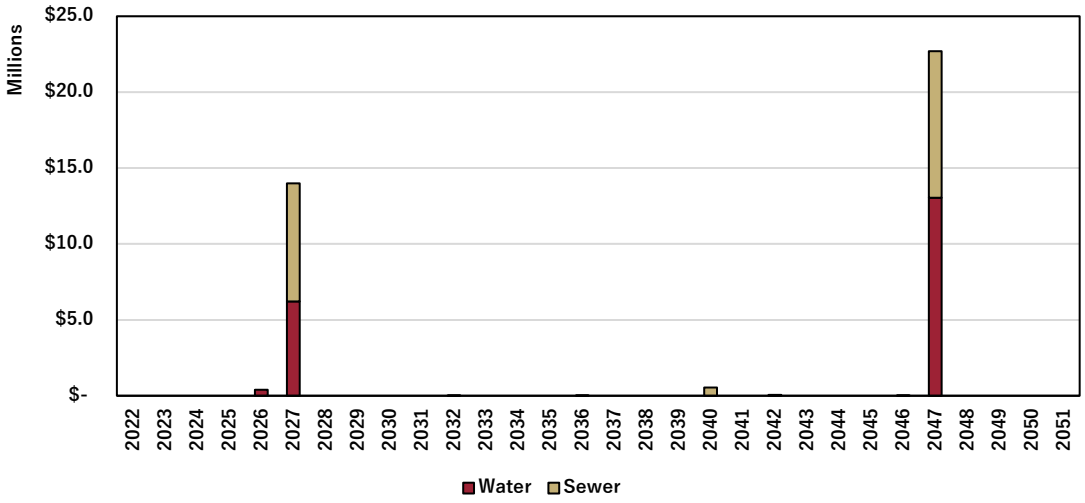
Figure 2
Replacement Schedule (Risk Based, Tax Services)



2. Rate Supported Assets

Figure 3 sets out the schedule of repair and replacement of assets, to maintain current levels of service for the rate supported (water and sewer) assets considered in the 2022 Plan. Over the 30-year period, to 2051, the rate supported repair and replacement program totals about $37.7 million. The average yearly replacement costs of these assets amount to approximately $1.1 million.

Figure 3
Replacement Schedule (Risk Based, Rate Services)



- **Water:** Over the next 5 years (2022-2026), water assets will require a replacement cost of $387,600, most notably for Marmora hydrants. However, 2027 will require the replacement of linear assets at a cost of $6.2 million.

- **Sewer:** Over the next 5 years (2022-2026), the analysis does not indicate any immediate replacement needs, although, linear asset needs are scheduled in 2027 for a cost $7.8 million.

The Municipality should closely monitor those assets scheduled for replacement just outside of the immediate 5-year period as they may require replacement sooner pending deterioration of the asset.

C. SUMMARY OF THE CUMULATIVE FULL LIFECYCLE COSTS

A key component of the financing strategy is to identify the level of expenditure required on an annual basis to pay for asset management. Costs to maintain and eventually repair or replace municipal assets need to be understood and contributions to reserves and reserve funds need to be quantified. In this section, provisions for repair and replacement are calculated for each asset based on its remaining useful life and the anticipated cost of replacement in constant 2022 dollars. The aggregate of all individual provisions form an annual contribution to reserves for the purpose of asset repair and replacement.

1. Tax Supported Assets

Over the next thirty years, the analysis indicates a spending need of about $157 million. Figure 4 below summarizes the cumulative 30-year investment needs across the tax supported service areas for the various lifecycle activities identified above. Of the total life cycle cost, most costs can be attributed to saving for the repair, renewal and replacement of existing infrastructure. About 7% of the total is related to operating and maintenance costs of the existing asset base. Please note no provisions for a level of service adjustments to account for requirements of O. Reg. 588/17 to define and implement desired levels of service has been included in the analysis – this will be further addressed in the next plan to coincide with the regulatory deadline.

Figure 4
Summary of Lifecycle Cost Model - Tax Supported Assets ($000)

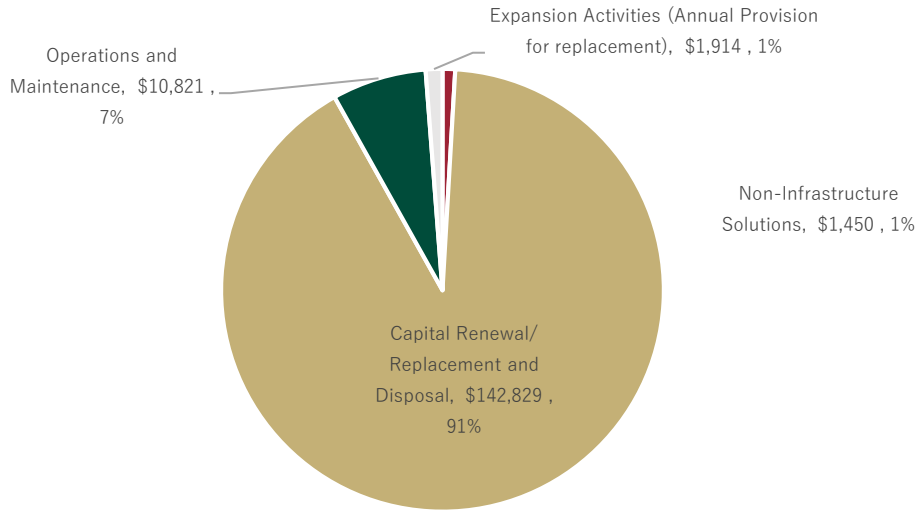
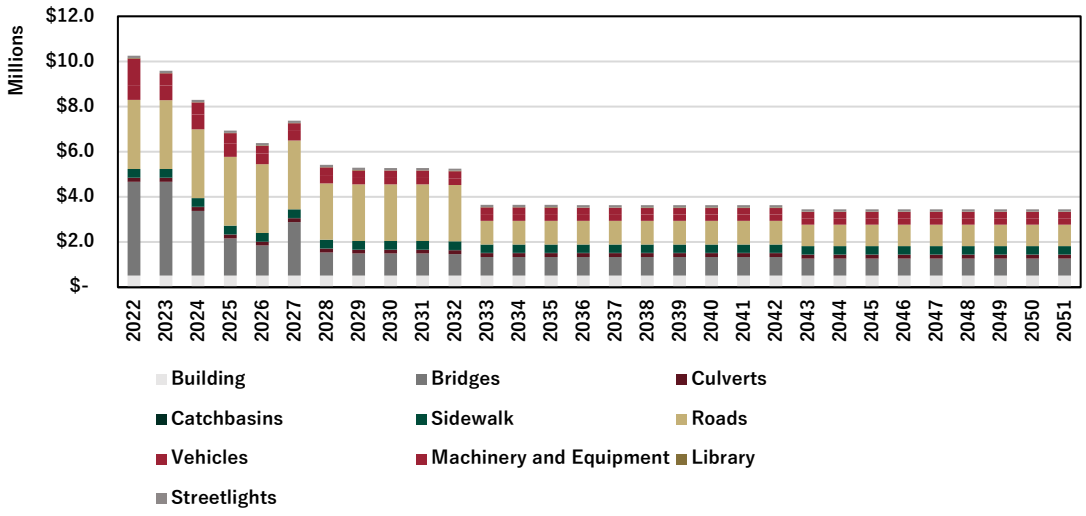


Figure 5 below provides an overview of the annual contributions related to the capital renewal and replacement requirements on an annualized basis over the planning period for tax supported infrastructure. Figure 5 shows the funds that would have to be contributed annually to reserves to maintain current levels of service for tax supported assets included in this 2022 Plan to 2051. Figure 5 demonstrates that:

- Average annual contributions over the 30-year period would have to be in the order of $4.8 million per year, with road works and bridge works as the most significant portion.

- This level of investment in municipal assets would need to increase from current funding levels. It should be noted that of the 2022 capital funding sources for this set of assets, tax supported revenues are the most secure form of recurring revenue for the Municipality as other funding sources could be subject to review by the Province and cannot be relied up as a secure funding source each year for financial planning.

Figure 5
Provision Schedule (Risk Based, Tax Services)



2. Rate Supported Assets

Over the next thirty years, the analysis indicates a spending need of about $53.2 million. Figure 6 below summarizes the cumulative 30-year investment needs across the utility rate service areas for the various lifecycle activities. Of the total life cycle cost, most costs can be attributed to saving for the repair, renewal and replacement of existing infrastructure. Similar to tax supported services, no provisions for a level of service adjustments to account for requirements of *O. Reg. 588/17* to define and implement desired levels of service has been included in the analysis – this will be further addressed in the next plan to coincide with the regulatory deadline.

Figure 6
Summary of Lifecycle Cost Model - Rate Supported Assets ($000)

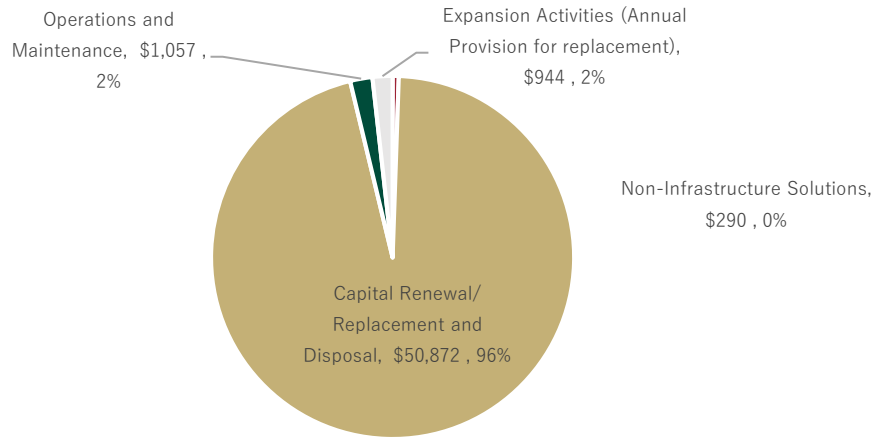
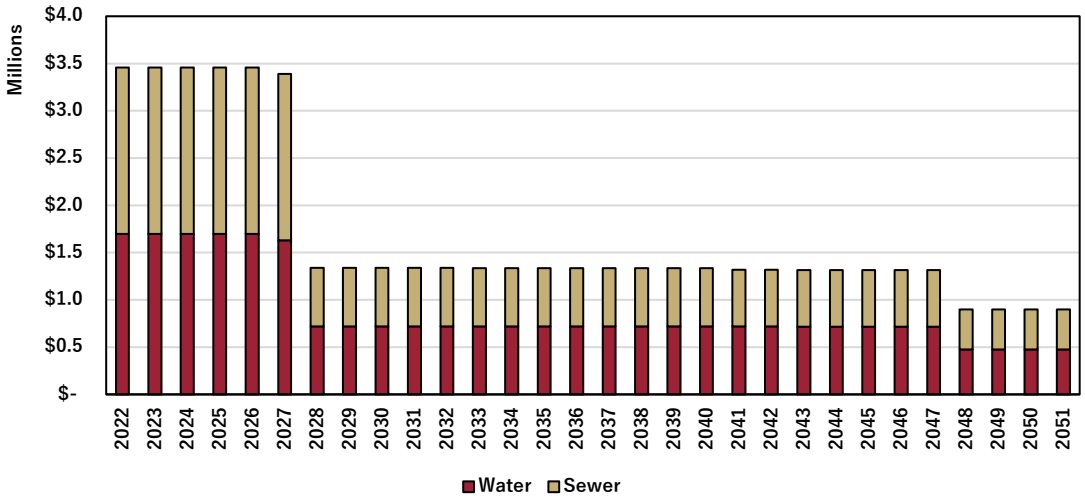


Figure 7 below provides an overview of the annual contributions related to the capital renewal and replacement requirements on an annualized basis over the planning period for rat supported infrastructure. Figure 7 shows the funds that would have to be contributed annually to reserves to maintain current levels of service for rate supported assets included in this 2022 Plan to 2051. Figure 7 demonstrates that:

- Average annual contributions over the 30-year period would have to be in the order of $1.7 million per year.
- This level of investment in municipal assets would need to increase from current funding levels. It should be noted that of the 2022 capital funding sources for this set of assets, rate supported revenues are the most secure form of recurring revenue for the Municipality as other funding sources could be subject to review by the Province and connote be relied up as a secure funding source each year for financial planning.

Figure 7
Provision Schedule (Risk Based, Rate Services)



D. SUMMARY OF REVENUES

The municipal revenue sources available to address the identified full life cycle cost requirements outlined above are limited. Generally, the type of capital project aligns to its funding source. In this regard, growth related projects receive most of their funding through development charges in communities that impose DCs; replacement projects are predominantly funded through tax-based contributions for tax supported assets and water and wastewater rates for rate based services. In Marmora and Lake, as DCs are not imposed, any new assets would be emplaced using tax or rate funded mechanisms. When assets require rehabilitation or are due for replacement, the source of funds are essentially limited to reserves or contributions from the operating budget regardless of how the initial first round capital asset was funded.

The tables below provide a summary of the revenues assumed in this analysis for both tax and rate supported assets separately.

Table 14 Financing Strategy Key Assumptions – Tax Supported Assets	
Category	**Assumptions**
Tax Levy Support (including reserve contributions)	▪ Existing 2022 tax supported capital funding of $795,600 is assumed to be the starting point and base case for increasing annual capital contributions. This includes the capital from operating funding plus the contributions to reserve (from operating) included in the budget for capital purposes.
Debt (funded from taxes)	▪ Existing debt for capital related assets (funded from the tax base) is already built in to the municipality budgeting framework, therefore, this available funding capacity is expected to be maintained over the period. ▪ The analysis includes about $194,500 in annual debt payments for capital assets is included in the AMP over the planning period.
Canada Community Building Fund (Gas Tax Reserve Fund)	▪ Gas tax funding for 2022 is approximately $125,400. Post 2022 gas tax funding is assumed based on AMO allocations to 2023 and remain constant afterwards.
Other Grants	▪ One-time government grants of approximately $248,000 are assumed for 2022-2026 only – the 2022 budget included provincial/federal funding of this amount and a similar level of activity is expected in the short-term.
Inflation	▪ Financing strategy is expressed in constant 2022 dollars.
Existing Reserves	▪ Existing tax supported reserve funds of $1.57 million have been accounted for and are applied against the lifecycle cost expenditures in 2022 for the purposes of forecast calculation. ▪ The reserves included for in the analysis only capture funds available for capital and generally exclude operating reserves
Expansion Activities	▪ The financial requirements identified in the strategies also include a provision for expansion activities. As the municipality does not levy DCs, the first round capital expenditures plus the asset management requirements associated with new assets is included. A modest $1.45 million provision for new first round capital is included – this number is expected to be refined in future AMPs.

Table 15 Financing Strategy Key Assumptions – Rate Supported Assets	
Category	**Assumptions**
Rate Revenue Support (including reserve contributions)	▪ Existing 2022 rate supported capital funding of $136,000 is assumed to be the starting point and base case for increasing annual capital contributions. This includes the capital from operating funding plus the contributions to reserve (from operating) included in the budget for capital purposes.
Debt (funded from utility rates)	▪ Existing debt for capital related assets (funded from the user rates) is already built in to the municipality budgeting framework, therefore, this available funding capacity is expected to be maintained over the period. ▪ The analysis includes about $167,900 is annual debt payments for capital assets included for in the AMP.
Inflation	▪ Financing strategy is expressed in constant 2022 dollars.
Existing Reserves	▪ Existing rate supported reserve funds of $28,000 have been accounted for and are applied against the lifecycle cost expenditures in 2022 for the purposes of forecast calculation.
Expansion Activities	▪ The financial requirements identified in the strategies also include a provision for expansion activities. As the municipality does not levy DCs, the first round capital expenditures plus the asset management requirements associated with new assets is included. A modest $725,000 provision for new first round capital is included – this number is expected to be refined in future AMPs.

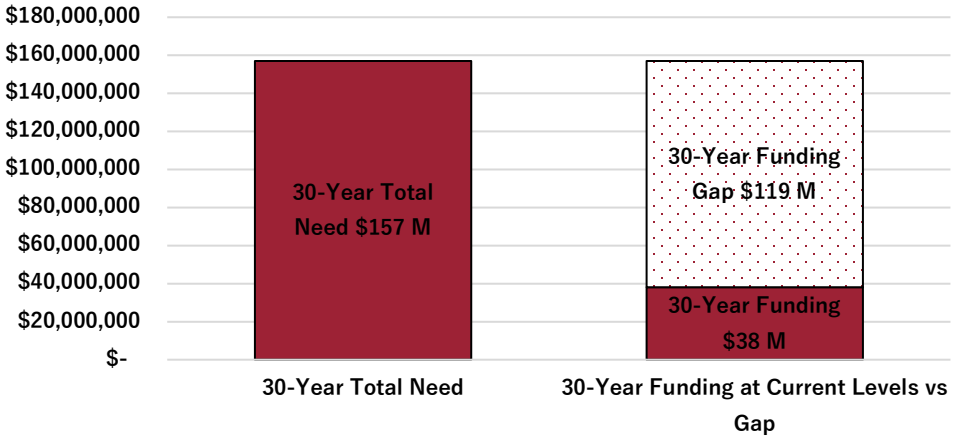
E. INFRASTRUCTURE DEFICIT AND FINANCING STRATEGIES

To implement sustainable asset management practices the Municipality needs to have an understanding of the current “infrastructure deficit” as well as the funding gaps that would arise should the required full life-cycle costs related to capital, identified in Part C: Capital Provision Schedule, be delayed.

The current infrastructure deficit shown in Figure 8 represents the difference between the required lifecycle costs and the current contributions to capital for tax supported assets in this 2022 Plan. The graph indicates that existing funding levels are insufficient to cover projected costs over the planning period, as a result, a notional gap of $119.0 million exists over the same period. It is unrealistic to expect the Municipality to address the total

infrastructure deficit in the short-term. Therefore, a long-term funding strategy that identifies options for addressing current and future asset expenditures is required.

Figure 8 - 30-Year Need vs Current Funding
Tax Supported Assets



If the Municipality were to implement a funding strategy to eliminate the tax supported infrastructure deficit by 2051, the Municipality would be required to increase capital contributions on an annual basis by an average of about $252,300 for 30 years (plus annual inflation). For 2023, the increase would be in addition to the $795,600 tax supported capital funding, $125,400 in Gas Tax funds and $248,000 in one-time grants, debt payments for capital ($194,500), operating and maintenance costs associated with capital funded through the operating budget ($360,700) and existing tax supported reserve funds on hand. The yearly revenue requirement is equivalent to 5.1% of the Municipality's 2022 tax levy revenues of about $4.9 million. A detailed table of this strategy can be found in Appendix D – Table 1.

Eliminating the infrastructure deficit by 2051 is an aggressive objective and is an initiative the Municipality may not want to explore at this time; a few reasons include:

- The required capital contributions (to eliminate the deficit) will necessitate an increase to property taxes beyond a reasonable measure;
- The Municipality may need to decrease or limit funding of other key Municipality services or initiatives in lieu for capital repair and replacement activity;
- Assets can remain in use past their engineered design life and are capable of performing to meet the Municipality's current level of service under these circumstances. Therefore, in such instances, the asset does not necessarily need to be replaced by virtue of exceeding their design life; and

- Prudent asset management strategies, which are currently employed by the Municipality can often extend the requirement of major repair or replacement of capital assets and may prolong the life of the asset.

Further to the above noted comments, three financing strategies were developed to illustrate a rational capital contribution level to meet the full lifecycle cost needs for tax supported assets as outlined in Figure 9. The financing strategies illustrate the "smoothed options" to the capital repair and replacement requirements identified in Part B. Key revenue assumptions for each of the three tax supported funding strategies is shown in Table 14 and each financing strategy is summarized in Table 16 below.

Table 16
Summary of Financing Strategies – Tax Supported Assets

Financing Strategy	Strategy Parameters
Strategy 1 **Close in-year Funding Gap by 2036**	▪ Increase annual capital contributions by approximately $187,800 per year. ▪ For 2022, the increase would be in addition to the 2022 budgeted funding identified. ▪ The yearly revenue requirement is equivalent to 3.8% of the Municipality's 2022 tax levy.
Strategy 2 **Close in-year Funding Gap by 2041**	▪ Increase annual capital contributions by approximately $138,400 per year. ▪ For 2022, the increase would be in addition to the 2022 budgeted funding identified. ▪ The yearly revenue requirement is equivalent to 2.8% of the Municipality's 2022 tax levy.
Strategy 3 **Close in-year Funding Gap by 2051**	▪ Increase annual capital contributions by approximately $85,000 per year. ▪ For 2022, the increase would be in addition to the 2022 budgeted funding identified. ▪ The yearly revenue requirement is equivalent to 1.7% of the Municipality's 2022 tax levy.

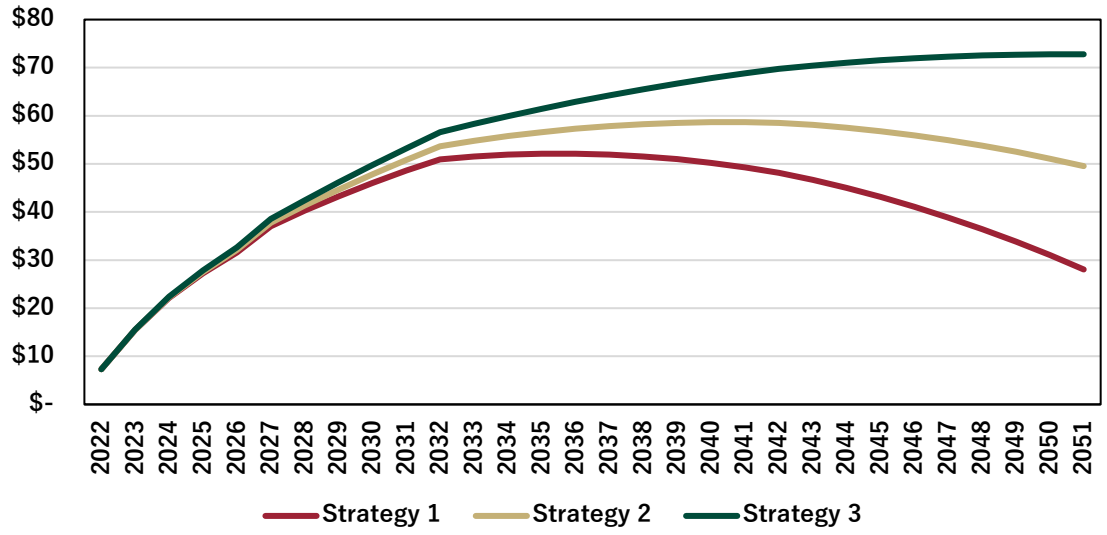
Note: Key assumptions noted in Table 14 are maintained for all three financing strategies.

Given the capital expenditure requirement to meet the asset lifecycle needs, the cumulative infrastructure deficit will increase in all scenarios before the Municipality begins to reduce this amount by increasing capital contributions by more than the annual provision

requirement. The infrastructure deficit will increase by the annual funding gap and decrease once the annual contributions are greater than the annual provision.

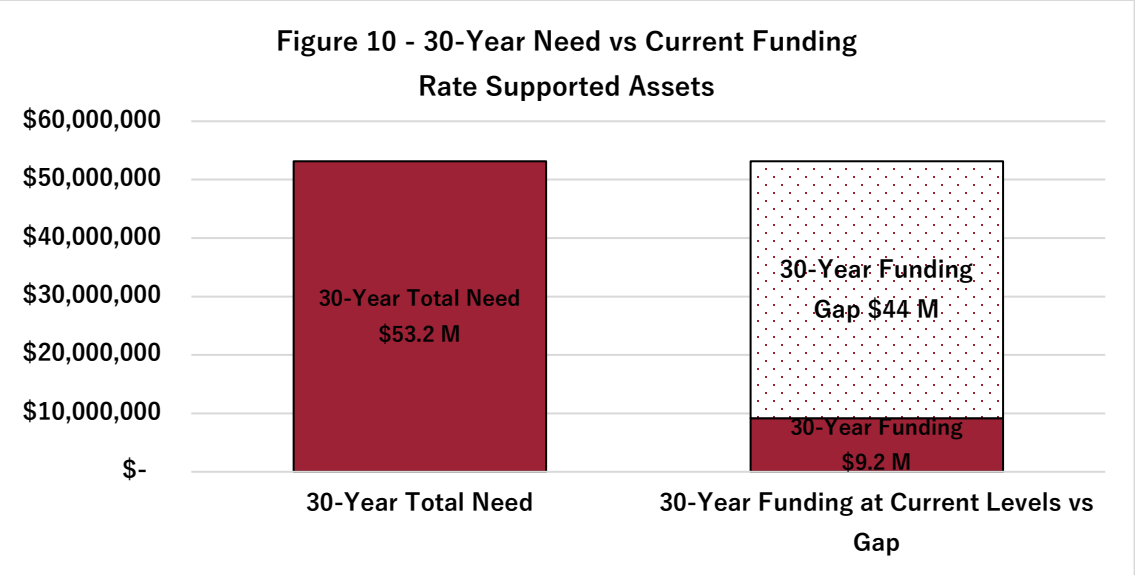
It is important to note that even though the in-year funding gap has been addressed within the planning horizon in all strategies, the infrastructure deficit poses risk to the Municipality as it is indicative of overdue assets that have fully depreciated and may be in Very Poor condition. These assets would need to be addressed in a longer time frame and are at risk for asset failure. The figure below provides a snapshot summary of the infrastructure deficit for all three strategies outlined in Table 16.

Figure 9 - Infrastructure Deficit Comparison ($ millions)
Tax Funded Services



Rate Supported Assets

The current infrastructure deficit shown in Figure 10 represents the difference between the required lifecycle costs and the current revenues to maintain capital assets for rate supported assets in this 2022 Plan. The graph indicates that existing funding levels are insufficient to cover projected costs over the planning period, as a result, a notional gap of $44 million exists over the same period. It is unrealistic to expect the Municipality to address the total infrastructure deficit in the short-term. Therefore, a long-term funding strategy that identifies options for addressing current and future asset expenditures is required.



If the Municipality were to implement a funding strategy to eliminate the user rate supported infrastructure deficit by 2051, the Municipality would be required to increase capital contributions on an annual basis by an average of about $98,800 (plus inflation) for 30 years. For 2022, the increase would be in addition to the current funding levels for user rate supported capital funding.

To provide consistency with the analysis on the tax supported assets, similar timeframes for additional funding strategies were developed. Strategy 1 in the case of the rate supported assets provides a more aggressive target of closing the in-year funding gap by 2051 where strategies 2 and 3 provide for more modest rate impacts. Assumptions used to develop each strategy is summarized in Table 15.

The financing strategies identified in Table 17 portray the “smoothed options” to the rate supported capital repair and replacement requirements identified in Part B. Assumptions for each of the three funding strategies is shown below; however, it is expected that the Municipality incorporate this information in future utility rate setting studies to balance the annual asset management requirements with affordable user rates.

Table 17 Summary of Financing Strategies – Utility Rate Supported Assets	
Financing Strategy	**Strategy Parameters**
Strategy 1 **Close in-year Funding Gap by 2036**	▪ Increase annual capital contributions by approximately $76,800 per year. ▪ For 2022, the increase would be in addition to the 2022 budgeted funding identified.
Strategy 2 **Close in-year Funding Gap by 2041**	▪ Increase annual capital contributions by approximately $55,700 per year. ▪ For 2022, the increase would be in addition to the 2022 budgeted funding identified.
Strategy 3 **Close in-year Funding Gap by 2051**	▪ Increase annual capital contributions by approximately $22,200 per year. ▪ For 2022, the increase would be in addition to the 2022 budgeted funding identified.

F. COSTS TO MAINTAIN LEVELS OF SERVICE AND RELATIONSHIP WITH FINANCING STRATEGIES

As outlined in Part A of this Financing Strategy section, total budgeted asset maintenance expenditures in 2022 were about $361,000 for tax supported assets. The largest share of expenditures has consistently been related to roads and related assets accounting for over 60% of the maintenance budget for 2022, at approximately $228,000.

In addition, the Municipality will spend about $1.4 million (including grants, gas tax and transfers to reserves) in 2022 for the full lifecycle costs of tax supported assets. The $1.4 million in capital spending is comprised of:

- $795,600 in tax levy capital funding (including reserve contributions);
- $125,400 in gas tax funding;
- $248,200 in one-time grants; and
- $194,500 in annual debt payments for capital (this expenditure level is expected to continue moving forward).

For water and sewer services, the Municipality will spend $303,000 for repair/replacement of assets and a further $35,300 for asset maintenance.

Both the capital maintenance requirements (from operating) and the capital spending provision identified are attributed to maintaining the service level associated with the $270.7 million of tax and rate supported assets.

Overall, this funding allocation is required to ensure the Municipality delivers the existing levels of service identified in Section 3 of the Asset Management Plan for both core and non-core infrastructure assets which represent the lifecycle activities outlined in Appendix C. Overall, it is recommended that the Municipality continues to monitor levels of service on an annual basis in the context of budget expenditures. In this manner, the Municipality can identify any significant changes in levels of service and identify if funding levels are appropriate to address any asset pressures.

Furthermore, the financing strategies represent sustainable options at maintaining the current levels of service from a long-term perspective. In summary, the following conclusions can be made:

- The option to "do nothing" and allow the infrastructure back-log to accumulate would mean that existing funding levels would not be sufficient to manage the infrastructure in place over the long-term. Therefore, the assets in service would deteriorate with a series of assets moving into poor and very poor condition which would effectively provide a reduction in the level of service over the short and long-term.

- Strategy 1 would ultimately result in a service level increase over the long-term as assets are replaced as required based on condition and useful life. Therefore, the deficit would largely be eliminated over the planning period. This strategy would represent a more optimal level of asset repair and replacement than existing trends and should be targeted with the determination of proposed levels of service moving forward.

- The adoption of either the 2nd or 3rd strategy would ensure, that over the long-term, the funding gap-stabilizes and the infrastructure deficit is controlled. Under this approach, the additional funding would allow for increased targeted investments in asset areas (such as: equipment, vehicles, land improvements, roads and related, etc.) currently in "fair" condition to ensure these assets don't transition into the poor category in the next 5 -10 years therefore maintaining the existing level of service.

    - Also of importance, the assets in Good/Very Good condition require continued investment to ensure service levels are maintained. As these

assets age, they may also transition in the Fair or lower category. Continued contributions to reserves will ensure funds are available whenever assets require works to be completed.

G. AVAILABLE FUNDING TOOLS

The following section discusses, at a high level, the range of tools available to the Municipality for funding capital expenditures.

Federal and Provincial Grants

Historically, the Municipality has had some success in securing grant funding from higher orders of government to assist in funding capital projects. The Municipality will continue to seek financial assistance from upper levels of government (where available) to fund non-growth related capital works.

The Municipality of Marmora and Lake has indicated that it expects to continue receiving Gas Tax funds (renamed now to the Canada Community Building Fund) – these funds have been incorporated into the financing strategies at current levels. The Municipality has indicated that other external grants, such as OCIF, may potentially be at risk in future years; therefore, no other future grant funding is assumed for the purposes of the financing strategy beyond 2026. If the Municipality continues to receive other funding sources over the long-term, it is expected that these funds would be directed to high-priority projects in an effort to reduce the overall infrastructure deficit.

Development Charges

Development charges may be imposed to pay for increased capital costs required because of increased needs for services arising from development. The municipality does not currently impose DCs, although, a provision for expansion related activities has been included for in the analysis in which these capital costs are funded though taxes/utility rates.

Furthermore, the analysis includes the annual asset management requirements associated with any new assets acquired in addition to the net annual requirement for the Municipality's existing assets as identified in the previous sections.

Property Taxes and Utility Rates

According to the 2022 budget, property taxes represent about $4.9 million in revenues, while utility rates account for an additional $1.0 million. The use of property taxes to fund municipal tax supported services is the most secure source of funding for the Municipality. The most common and secure avenue to generate additional funding to support increased capital asset management functions would be to increase property tax revenues.

The Municipality manages utility rate supported infrastructure separately though water and sewer fees for serviced properties. The Municipality regularly reviews the utility rates and financial plans to ensure the systems are self funding. Further to this, the recent rate study completed in 2019 illustrates regular adjustment to the utility rates to increase the annual contributions to reserve for the purposes of asset repair and replacement.

Non-Utility Related User Fees

To the extent that user fees are being collected to fund repair and replacement of capital infrastructure, user fees should be allocated to capital reserves. The Municipality should look to review and ensure user fees are being utilized to the full extent as allowed under Provincial legislation. This will help alleviate funding pressures from the tax base and allow for greater flexibility to fund capital asset repair and replacement activities. Most commonly, municipalities undertake detailed user fee reviews of their building, planning and engineering fees in order to recover the full cost of providing services – the full cost recovery user fee rates generally incorporate a component for building capital replacement.

The Municipality reviews its building permit fees on an annual basis to ensure these fees recover costs associated to providing building permit related services. The reviews also account for capital costs associated to building permit services and these costs are reflected through the fees.

Public Private Partnerships

Public Private Partnerships (P3s) are a common tool for delivering infrastructure services throughout communities across Canada to build roads, hospitals, light rail transit, water and wastewater treatment facilities and other infrastructure. P3s can offer more effective project and lifecycle cost control and risk management than traditional procurement methods. The Municipality could explore P3s as a tool to carry out capital related activities.

Local Improvement Charges

Municipalities, through local improvement charges, have the ability to recover the costs of capital improvements made on public or privately owned land from property owners who will

benefit from improvement. The Municipality could use the local improvement process to undertake a capital project and recover all or part of the cost of the project.

Developer Contributions

Municipalities obtain a wide-range of assets through developer contributions; these contributions can be "in kind" direct provision of assets or funded, partially or fully, through agreement. The contributions are typically facilitated through condition of a subdivision or site plan agreement under the *Planning Act*. An important consideration in determining the level and extent of developer contributions is the Municipality's "local service definitions" which, under the *Development Charges Act* and *Planning Act*, are used to establish which type, and shares, of capital expenses are considered eligible for direct development contribution or funding.

Assets funded, or provided, under developer contributions are typically "first round" assets but can, in certain circumstances, include replacement of existing assets and funding of non-DC recoverable shares. An example of replacement of an existing asset is when an existing road requires improvements or upgrades as a result of a specific development; the Municipality could endeavour to require the developer to undertake, or fund, the road improvements as a condition of the subdivision agreement. The Municipality benefits from the funding of the improved road, but is also an effective deferral of a capital renewal expense as the existing, and therefore depreciated asset, is also replaced or renewed.

H. FINANCING AND FINANCIAL MANAGEMENT PRACTICES

This section discusses, at a high level, the means by which capital revenue can be raised or secured.

Debt (as a financing tool)

Debt financing is a viable tool available to fund capital projects. Planned debt is a responsible way to spread the costs of a project over the life of an asset. This ensures the tax payers who benefit from the asset share the cost, therefore, the burden of capital is distributed equally between the current tax/rate payer and future tax/rate payers. It is important to note that debt funding is subject to interest costs.

The amount of debt a Municipality can carry is set by Provincial regulations to ensure municipalities continue to operate in a fiscally sound environment. The Ministry of Municipal Affairs mandates that a municipality's annual debt repayment must not exceed 25% of annual own-source revenues. The repayment limit has been calculated based on data

contained in the 2020 Annual Repayment Limit, as submitted to the Ministry. The Municipality currently has about $274,000 in annual net debt payments, this equates to about 4% of own-source revenues relative to the 25% Provincial limit.

The requirements of the *Municipal Act* and best practice, suggests that any potential debt should not be financed for a period longer than the average useful life of the asset. This will ensure the Municipality is not paying for an asset outside the design life and beyond the asset's expected use.

Reserves and Reserve Funds

Reserves are to be used to cope with high capital investment periods by saving during low capital investment periods. This practice will smooth annual expenditures and ensure the Municipality can complete the required annual capital works. In addition to contributions during low investment periods, many municipalities use annual surpluses, should one arise, to increase reserves. There is no prescribed amount of reserves for a Municipality to have at any given time, but they should be sufficient to cover emergency work (if required).

As of 2020, the Municipality had an estimated capital reserve balance of $1.57 million for tax supported assets, while utility rate supported reserve funds account for additional $28,000. The reserve balances incorporated into the analysis only consider the money the Municipality has on hand to carry out capital projects related to the services to which this asset management plan applies and excludes operating and rate stabilization reserves. The entire $505,000 in available tax supported capital reserves have been accounted and applied towards the 2022 lifecycle needs. The same approach was used for the rate supported assets.

I. FUTURE DEMAND

The 2022 Plan reflects the assets that the Municipality currently owns and operates. According to Statistics Canada datasets, over the last 15 years the Municipality's population has increased by about 355 people from about 3,910 to 4,270 people in 2021 (9% or 0.6% per annum). If the level of population growth experienced in the last 15 years is used as a basis for an assumed level of activity, the municipality's population could increase to 5,100 people by 2051. The population growth identified is only assumed for the purposes of asset management planning.

In order to facilitate growth, the Municipality may be required to emplace new infrastructure to service development. Irrespective of how the first round capital is funded, when assets

require rehabilitation or are due for replacement, the source of funds is limited to reserves or contributions from operating. Capital expenditures to carry out the rehabilitation and replacement of aging infrastructure are not growth-related and are therefore not eligible for funding through development charge revenues or other developer contributions.

Despite the additional asset management requirements associated with new infrastructure, growth will have the effect of increasing the overall assessment base and additional user fee and charges revenues to help offset the capital asset provisions required to replace the infrastructure proposed to be funded under the development charges by-law. The collection of these funds is intended to be allocated to the Municipality's reserves for the future replacement of these assets. The Municipality should continue to prioritize the repair and replacement of existing "Very Poor" and "Poor" conditioned infrastructure.

6. CONTINUOUS IMPROVEMENTS AND UPDATES

The major premise of comprehensive corporate asset management is that an organization will seldom have perfect processes and data to manage the asset portfolio. Instead, the underlying culture of continuous improvement and reliability is its key to success. The improvements and next steps will form part of the Municipality's evolving Asset Management program moving forward.

A. NET BOOK VALUE VS. REPLACEMENT VALUE

As specified in the Ministry Guide, the value of the Municipality's assets is presented in two different formats: 'Net Book Value' and 'Replacement Value'. These are described below.

Net Book Value (NBV) is consistent with the financial accounting practices defined by the Public Sector Accounting Board and is reported in the Municipality's financial statements. The Municipality of Marmora and Lake reported Net Book Value covers the full scope of the Municipality's Tangible Capital Assets (TCA), including land. It is noted that the same scope of assets are considered under this 2022 Plan.

The Net Book Value is the original acquisition cost less accumulated depreciation, depletion or amortization. It is reported annually in accordance with reporting standards established by the Public Sector Accounting Board (PSAB) of the Canadian Institute of Chartered Accountants. As shown on Table 18 below, the Municipality's 2020 Consolidated Financial Statement reported the NBV of the Municipality's TCA as of December 31, 2020 at $24.7 million. Under the financial accounting approach many assets may be fully depreciated yet remain in use, therefore, Net Book Value is not the appropriate methodology to be employed for infrastructure renewal planning.

Table 18
Summary of Tangible Capital Asset Values

Asset Category	2020 Closing NBV
Land	$1,214,200
Land Improvements	$0
Buildings	$5,988,053
Machinery and Equipment	$1,152,906
Vehicles	$1,222,994
Linear Assets	$15,073,819
Total	**$24,651,972**

Source: Municipality of Marmora and Lake 2020 Financial Information Return.

Replacement Values are used to estimate the cost of replacing an asset when it reaches the end of its engineered design life. The total replacement cost of all assets is estimated at $270.7 million.

Replacement Cost Valuation

The two basic methods to estimate replacement costs needed for infrastructure renewal planning are outlined:

- Local price indices: This is the most accurate method. The Municipality has collected some recent acquisition data demonstrating similar replacement activities. The Municipality's replacement costs are based on recent construction costs specific to the Municipality particularly for buildings, roads, water and sewer.
- Accounting estimates: When assets cannot be estimated against either index, the Municipality uses historic cost, estimated useful life and inflationary effects to determine replacement value.
- Benchmark costs: Some replacement costs are based on benchmark engineering costs per unit, in particular for roads, bridges, some buildings and linear water and sewer infrastructure. Detailed unit costs are provided in Appendix B.

B. ASSET MANAGEMENT INTERNAL NETWORK

It is recommended that the Municipality consider forming an Asset Management Committee to focus on the activities related to the management of Municipal assets and to coordinate asset management practices and policies. It is recognized that the Municipality's annual capital budget process considers capital planning at a corporate level based on available funding and municipal priorities. The intention of the asset management committee is to consider capital planning over a longer term period and co-ordinate any initiatives that need to be taken over the longer term.

C. PLAN MONITORING

The Municipality will need to carefully monitor and evaluate the asset management progress and effectiveness of the Plan on or before July 1 in each year starting in 2025. This ensures that the Plan is utilized to its full extent and any gaps are identified prior to the regulatory date. Although the extent to which the regulation applies would not be applicable to the

Municipality for several years, the Municipality could look to advance the review process and address the following criteria each year:

a) The Municipality's progress in implementing its asset management plan;

b) Any factors impeding the Municipality's ability to implement its asset management plan; and

c) A strategy to address the factors described above in clause b).

D. DATA QUALITY AND CONFIDENCE

The Municipality should regularly review the confidence of existing data as well as its effectiveness integrating asset management activities into regular business processes. The Confidence Level Rating approach identified in Table 19 below will be used to identify what specific asset categories/areas the Municipality can improve upon. The Confidence Level Rating is based on principles of the Ministry's Guide to Municipal Asset Management Plans, Federal Gas Tax Agreement Requirements, ISO 55000, and International Infrastructure Management Manual (IIMM). Current data used in the preparation of this asset management plan would be generally reliable and based on a **Level 4** recognizing that all asset categories are well documented. The data quality score is included in Appendix B complementing the State of the Local Infrastructure Reports.

Table 19
Data Quality Confidence Grading System

Confidence Grade		Description
5	**Highly Reliable**	▪ Data based on sound records, procedure, investigations and analysis, documented properly and recognized as the best method of assessment. ▪ *Dataset is complete and estimated to be accurate +/- 2%.*
4	**Reliable Data**	▪ Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. ▪ *Dataset is complete and estimated to be accurate +/- 10%.*

Table 19 Data Quality Confidence Grading System		
Confidence Grade		**Description**
3	**Uncertain**	▪ Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade 4 or 5 data is available. ▪ *Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated +/- 25%.*
2	**Very Uncertain**	▪ Data based on unconfirmed verbal reports and/or cursory inspection and analysis. ▪ *Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy +/- 40%.*
1	**Unknown**	▪ None or very little data held

E. TIMEFRAMES FOR REVIEW AND UPDATES

This Asset Management Plan should be reviewed and updated on a regular basis. Recognizing that a full plan and related policies should only be updated at key intervals, it is important that other asset management components, such as capital budgeting, risk assessments and updates to the asset register should be integrated into staff's regular routine. Table 20 below outlines the key timelines.

Table 20 Timeframes for Reviews and Updates	
Asset Management Framework	**Timeframe**
Asset Management Policy	5 Years
Asset Management Plan	3-5 Years
Capital Budget	Annually
Asset Register and Data	Semi-Annually or Annually
Risk assessment (capital prioritization)	Semi-Annually or Annually
Level of Service Framework	Semi-Annually or Annually
Reporting to Council	Annually

This asset management plan has been endorsed by the executive lead of the Municipality and will need to be approved, by resolution, by Municipality Council. The Municipality will need to be mindful of the reporting timelines noted above relative to any potential changes to the timelines referenced by *Ontario Regulation 588/17.*

F. PUBLIC REVIEW AND COMMENT

Although the Asset Management Plan is intended to aid Municipality staff and Council make informed decisions regarding future capital investment needs, the plan is intended to be available to the public. Therefore, it is recommended that the Municipality post this plan as well as the strategic asset management policy on the website and provide a copy to anyone upon request.

The Municipality of Marmora and Lake will require further public consultation and input to develop the target levels of service required for July 1, 2025.

7. Conclusions and Recommendations

The objective of this 2022 Plan is to provide the Municipality of Marmora and Lake with the information it needs to make decisions on how best to manage capital assets in a sustainable way to 2051. In this section, recommendations based on the analysis undertaken are made.

A. SUMMARY OF KEY FINDINGS

- The Municipality's asset base is valued at $270.7 million, in relation to the census population of about 4,267 persons (or approximately $63,400 per capita).
- Overall, the highest proportion (about 43% or $116.5 million) of the Municipality's assets are considered to be in "Good" to "Very Good" condition. At the same time, approximately 39% ($104.8 million) of infrastructure is considered to be in "Poor" to "Very Poor" condition. The remaining share of $46.3 million (18%) is in "Fair" condition. Note these shares exclude gravel roads.
- The Municipality of Marmora and Lake has made some effort in recent years to address the infrastructure gap and improve the condition of assets:
    - Upper level government grant money received has typically been allocated to capital asset repair and replacement activities;
    - The Municipality has capital replacement reserves, and has been contributing to reserves on an annual basis, which is in addition to in year funding from the capital tax levy;
    - Through its annual capital budgeting process, the Municipality addresses critical issues and assets in need of repair or replacement.
- The responsibility to maintain existing infrastructure is challenging, however, in addition to current capital funding, the Municipality should increase annual capital contributions to address current and future infrastructure requirements;
    - Property taxes are the most secure form of revenue and the Municipality should consider increasing tax base revenues, above current practices, to fund capital works;

- Ensure user fees are being utilized to the full extent as allowed under Provincial legislation. This will help alleviate funding pressures from the tax base and allow for greater flexibility to fund capital asset repair and replacement activities.
- Explore alternative arrangements to provide services – public private partnerships or shared services.

- Based on the year-end 2020 Annual Repayment Limit, the Municipality is considered to be in good fiscal standing with strong budgetary performance and limited external debt – even considered the new debt issued for equipment, the Municipality currently operates well below the annual repayment limit of $1.61 million in total net debt charges. This debt capacity could allow the Municipality to continue to use debt to carry out emergency asset replacements, improvements, or other strategic projects which typically provide a return on investment such as a reduction in operating costs.

- The Municipality should continue to seek funding from the Federal and Provincial government (when available) to undertake capital related works.

B. SUMMARY OF RECOMMENDATIONS

Based on the research and analysis undertaken for this 2022 Plan the following conclusions can be reached:

1. Continue to Improve Capital Development Planning Process

- The Municipality should develop a multi-year capital budget and forecasts for all services based on a 10-year forecast horizon. The capital budget can be based on the asset replacement schedule in the Municipality's Asset Management Model.

- Capital budgets and forecasts should identify and evaluate each capital project in terms of the following, including but not limited to:
  - gross and net project costs;
  - risk assessment;
  - timing and phasing;
  - funding sources;
  - potential financing and debt servicing costs;
  - long-term costs, including non-infrastructure solutions, maintenance activities, renewal/rehabilitation activities, replacement activities, disposal activities and expansion activities;
  - capacity to deliver; and
  - alternative service delivery and procurement options.

- A range of quantifiable service level targets that incorporate the quantity and quality of capital assets should be explored and established for all services over the next few years. Targets should be measured, reported on, and adjusted annually. This requirement will need to be in place by July 1st, 2025 as per O. Reg. 588/17.

- Repair and replacement capital works should be prioritized based on a risk assessment. For example, assets identified as “very poor” and “poor” and having a significant consequence of failure should be prioritized first.

- Infrastructure assets which have been provided a “fair” condition rating should be targeted for maintenance to ensure they continue to perform at current levels of service.

- The Municipality should, where possible, coordinate the construction of new infrastructure with infrastructure repairs and replacement to achieve cost efficiencies.

2. Ensure Asset Inventories are Updated Regularly

- Sound asset management decisions are only possible if information in the asset registry is accurate. The Municipality designated data champion should regularly update the registry to account for asset purchases, upgrades, and replacements, as well as asset condition ratings and information on useful life.

- The Municipality should continue to refine the condition assessments for all assets considered under this 2022 Plan; and

  - The Municipality should update this Asset Management Plan at a minimum every 5 years.

3. Optimize the Use of Existing Assets

- The Municipality should implement a range of engineering and non-engineering approaches to extend the useful life of current assets, taking the lifecycle actions presented in Appendix C.

- The Municipality should explore opportunities to dispose under utilized infrastructure/facilities which may not warrant repair/replacement. For example, underutilized facilities, or surplus land/parks, could be disposed and sold; and

- Coordinate assets into specific hubs to create operating and capital repair/maintenance efficiencies where possible.

APPENDIX A

DEFINITIONS

APPENDIX A – DEFINITIONS

This appendix contains definitions for commonly used terms throughout the Municipality's Asset Management Plan.

1. **Annual Provision -** Given the timing and cost to replace an asset in the future, the amount of savings required year-over-year to replace that asset on schedule. This is also referred to as the annual requirement.
2. **Condition Assessment -** A description of the state of an asset based on engineered or staff inspections on a 5-tier scale (very poor, poor, fair, good, and very good).
3. **Cumulative Infrastructure Deficit -** The difference between available funding and the cost of works required based on the replacement schedule added over an extended time period. This difference includes the backlog of infrastructure work which remains unfunded. In years where funding continues to be less than the need, the deficit grows. Conversely, years where funding exceeds the need, the deficit decreases.
4. **In-Year Funding Gap -** For any given year, this is the difference between capital requirement costs and available funding.
5. **O. Reg. 588/17 -** Ontario's Asset Management regulation that came into force on January 1st, 2018.
6. **Provision Schedule -** The required savings year-over-year needed to replace an asset based on the replacement schedule.
7. **Replacement Cost -** The cost of an asset to replace or reconstruct that asset at current prevailing market prices. The replacement cost will typically include all costs to procure, design, build and acquire the asset.
8. **Replacement Schedule -** The timing for replacement of an asset based on remaining useful life, condition or risk.
9. **Useful Life -** The expected service life of an asset expressed in years.
10. **Weighted Condition -** The average condition of an asset category weighted against the replacement costs of assets.
11. **Weighted Remaining Useful Life** - The average remaining useful life of an asset category weighted against the replacement cost of assets.

APPENDIX B

TECHNICAL APPENDIX:

STATE OF LOCAL INFRASTRUCTURE

Appendix B – Technical Appendix: State of Local Infrastructure

The appendix provides a summary of the Municipality's assets with reference to quality and quantity. Some assets have condition assessments based on the conditions developed through the 2014 AMP and others are based on staff level assessments. The balance of assets considered are based on the useful life of the asset relative to its age. Useful life assumptions for the assets considered under the 2022 Plan were acquired from the Municipality's tangible capital asset inventory. Hemson has prepared State of the Local Infrastructure report cards for each asset category which outline: summary of inventory, remaining useful life, asset condition, and data reliability. It is intended that these report cards be updated annually by staff and provided to Council through the annual budget process.

1. Summary of Inventory

The summary of inventory provides and overview of the Municipality's assets including asset components, the quantity of those components, the replacement cost in 2022 dollars, method used to determine the replacement cost and the engineered useful life of the assets. The inventory summary is developed based on the Municipality's capital asset information. Furthermore, an asset management financial model based in Excel was developed as part of the 2022 AMP, this model contains all detailed asset information.

The assets included in this 2022 Plan are consistent with the asset categories included in Schedule 51 of the Municipality's Financial Information Return. Inclusion of all assets in this Plan therefore meet the asset management plan requirements in the Municipality's Gas Tax Funding Agreement.

2. Remaining Useful Life

The remaining useful life summary provides information on the age of assets based on the year assets were acquired or emplaced and their engineered useful life. Assets are categorized by remaining useful life based on their replacement cost in 2022 dollars. Assets categorized as overdue are considered to be beyond their engineered useful life, however, the asset may still be in good operating condition and therefore age does not represent the ideal method to determine condition. Typically, assets such as facilities are used well beyond their engineered useful lives with proper maintenance and repairs.

3. Asset Condition

A summary of the condition of assets is presented in a pie graph based on the replacement cost of assets in constant 2022 dollars. As discussed in Section 2, conditions have been determined based on a 5-tier rating system from very poor to very good. Condition assessments are based on several sources including, staff assessments, conditions based on the 2014 AMP and aged based approach. Through the 2022 AMP process staff undertook a detailed review of the asset conditions, and based on their knowledge, provided a more up to date condition based on the 5-tier rating scale. In addition, the Municipality has indicated that the condition assessments developed through the 2014 AMP continue to be appropriate as not many changes have occurred since that time. Details on the methodology the Municipality uses to assess the condition of assets is summarized in Table 1 below.

Table 1
Methodology Used for Condition Assessments

Service Category/Type	Methodology
Buildings	▪ Engineered Assessments (2020 Building Condition Report) ▪ Staff level condition assessments for some assets ▪ Age based approach for remaining buildings
Bridges	▪ Engineered condition (BCI ratings)
Culverts	▪ Staff level conditions
Catchbasins	▪ Staff level conditions
Sidewalk	▪ Age based approach
Roads	▪ Engineered condition (OCI)
Water	▪ Age based approach with some staff level conditions
Sewer	▪ Age based approach with some staff level conditions
Vehicles	▪ Staff level conditions
Machinery & Equipment	▪ Age based approach with some staff level conditions
Library	▪ Age based approach with some staff level conditions
Streetlights	▪ Staff level conditions

4. Replacement Cost

Replacement values are used to estimate the cost of replacing an asset when it reaches the end of its engineered design life. The total replacement cost of all assets is estimated at $270.7 million, and the replacement values are used as the basis for this plan. Specific methods used to determine replacement costs for asset categories are outlined below.

Roads

Based on a benchmark costing, replacement costs for the Municipality's paved roads are based on an average cost per kilometre of $1.2 million per kilometre. A value of $200,000 per kilometre was assumed for gravel roads.

Buildings

The majority of the Municipality's buildings replacement costs were determined by inflating historical costs to current dollars. The exception is the Fire Hall, which an insurance value was used as the base and adjusted upwards by 15% increase.

Water and Sewer Assets

Water and sewer linear assets replacement costs have been determined through the valuations developed through the 2014 AMP adjusted for inflation at a rate for 2%. Water and sewer buildings have updated replacement costs based on recent tenders provided by municipal staff.

Remaining Asset Categories

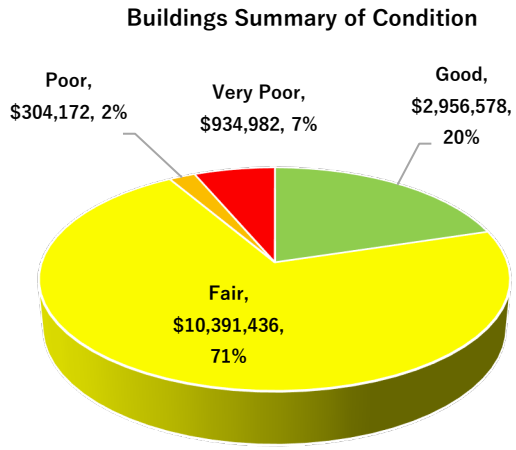
For all other remaining asset categories, Hemson has particularly relied upon the initial acquisition costs and adjusted these values to current dollars. That said, some specific adjustments were made to specific high valued vehicles and land improvements where more accurate replacement cost valuations were available from the development charges background study.

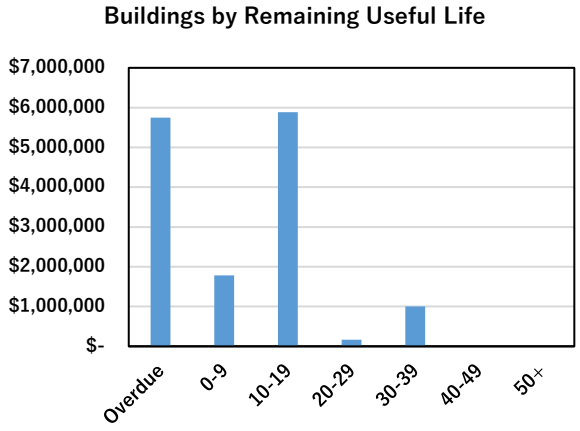
B.1 Buildings

Fair

Summary of Inventory				
Service Category	**Quantity**	**Replacement Cost 2022**	**Replacement Cost Method**	**Useful Life (Years)**
Transportation	11	$1,997,292	Inflation/Recent Costing	50
Environment	3	$140,000	Inflation	50
Fire	1	$1,240,251	Inflation	50
General Building	7	$5,948,716	Inflation	50
Parks	4	$5,233,790	Inflation	50
Cemetery	1	$27,119	Inflation	50
Total	**27**	**$14,587,168**		

The Municipality maintains a total of 27 buildings and supporting facilities for a total replacement cost of $14.6 million. The replacement costs for environment, fire, general buildings, parks and cemetery buildings were based relative to inflation and the valuation of transportation buildings were based on inflation or recent costing provided by the municipality. The engineered useful life of the building assets is 50 years.





The majority of the Municipality buildings (39% or $5.7 million) are considered overdue and need replacement in the short-term. Approximately 12% ($1.8 million) have a remaining useful life greater than 9 years or less. Approximately 40% ($5.9 million) have a remaining useful life between 10-19 years, about 1% ($165,015) have a remaining useful life of 20-29 years, and 7% ($1.0 million) have a remaining useful life of 30-39 years.

Overall, the Municipality maintains the majority ($10.4 million or 71%) of the buildings in Fair condition by virtue of their design life, while about 20% ($2.9 million) are in Good to Very Good condition. Finally, the Municipality's facilities considered to be in Poor to Very Poor condition amount to $1.2 million (8%).

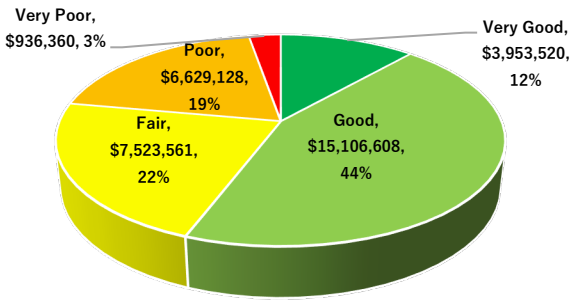
Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

B.2 Bridges and Large Culverts — Fair

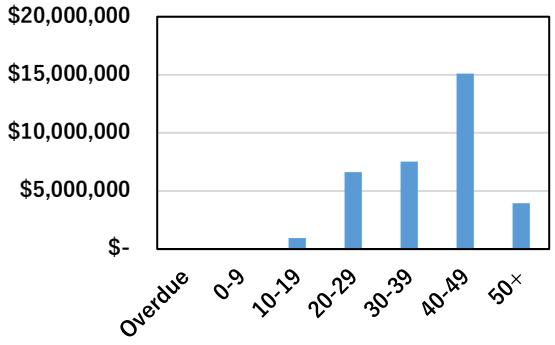
Summary of Inventory				
Components	**Quantity**	**Replacement Cost 2022**	**Replacement Cost Method**	**Useful Life (Years)**
Bridges	24	$32,189,976	Inflation	50
Large Culverts	5	$1,959,201	Inflation	50
Total	**29**	**$34,149,177**		

The Municipality owns 29 bridges and large culverts with a total replacement cost of $34.1 million. The replacement costs of the assets are inflated from previous costing analyses.

Bridges & Large Culverts Summary of Condition



Bridges and Large Culverts by Remaining Useful Life



The majority (44%) of the bridges and large culverts have a useful life of 49 years or less. Approximately 12% of the assets have a useful life of over 50 years, 22% have a useful life of 39 years or less, 19% have a remaining useful life of 29 years of less, and the remaining 3% have a useful life of 19 years or less.

Approximately $19.1 million (56%) of the Municipality's bridges and large culverts assets are considered to be in Good or Very Good condition. About $7.6 million (22%) are in Poor or Very Poor condition and the remaining $7.5 million (22%) are considered to be in Fair condition. Bridges and large culverts condition assessments are based on the BCI ratings developed through the OSIM Inspections for the 2018 Marmora and Lake Roads Needs Study.

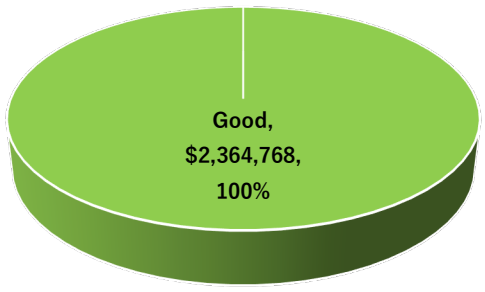
Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

B.3 Stormwater: Small Culverts & Catchbasins — Good

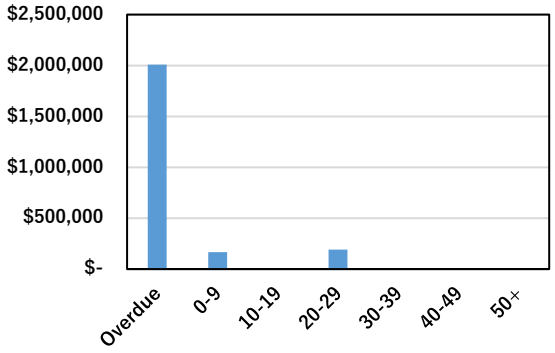
Summary of Inventory				
Components	**Quantity**	**Replacement Cost 2021**	**Replacement Cost Method**	**Useful Life (Years)**
Storm Assets (units)				
Small Culverts	359	$1,958,768	Inflation	15-25
Catch Basins	161	$406,000	Recent Costing	40
Total	**520**	**$2,364,768**		

The Municipality maintains about 23,000 meters of linear storm pipes with a replacement cost of $15.8 million. There is a total of 856 storm system components maintained by the Municipality, which includes manholes and catch basins with a replacement cost of $3.9 million. In total, the system is valued at approximately $19.8 million. The engineered useful life for storm system components is assumed to be 60 years.

Stormwater Summary of Condition



Stormwater by Remaining Useful Life



The majority of the Municipality's Stormwater system (small culverts and catch basins) (85% or $2.0 million) are overdue for replacement. The remaining 8% ($190,000) have a remaining useful life of 20-29 years, and 7% ($167,626) have a remaining useful life of under 9 years.

The entirety of the Municipality's storm system assets, $2,364,768 (100%), are considered to be in Good condition. Note that the conditions of the components of the stormwater system are based on most recent condition assessments provided by municipal staff, which notes the difference in the Remaining Useful Life graph.

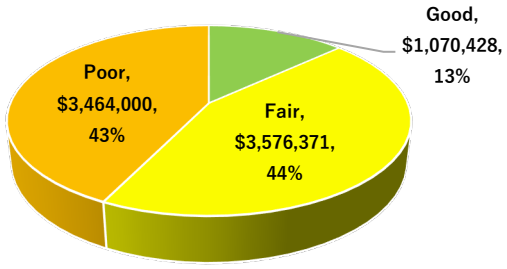
Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

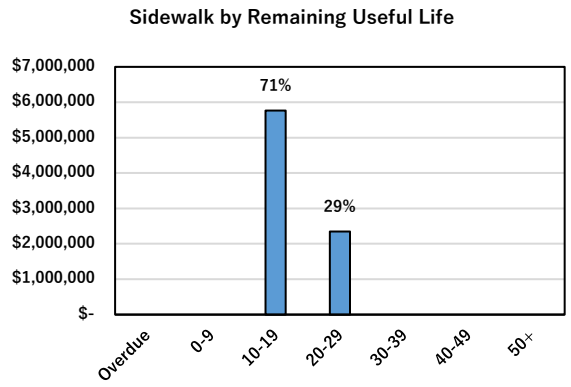
B.4 Sidewalks

Fair

Summary of Inventory				
Components	Quantity	Replacement Cost 2022	Replacement Cost Method	Useful Life (Years)
Sidewalks	57	$8,110,800	Recent Costing	40
Total		**$8,110,800**		

The Municipality owns approximately 13,518 metres of sidewalks with a total replacement cost of $8.1 million. The average replacement cost of sidewalks in Marmora and Lake is based on average costs on recent costing for repairs and replacement from municipal staff.





Over 70% of the sidewalk assets have a useful life of 19 years or less and may require replacement in a shorter term. About 29% of the assets have a useful life of 20-29 years.

Approximately $3.6 million (44%) of the Municipality's roads assets are considered to be in Fair condition. About $3.5 million (43%) are in Poor condition and the remaining $1.1 million (13%) are considered to be in Good condition. Sidewalk condition assessments are based on the condition ratings are age based, developed through the remaining useful life.

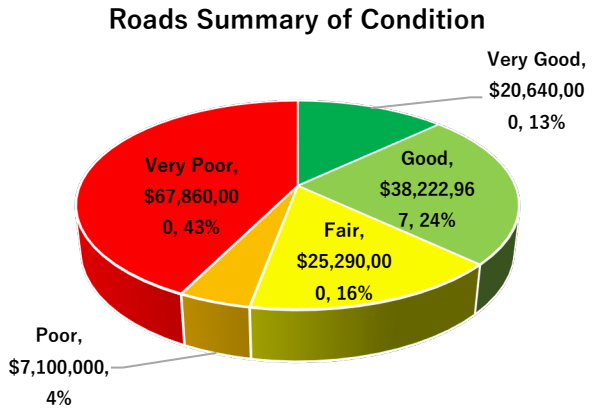
Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

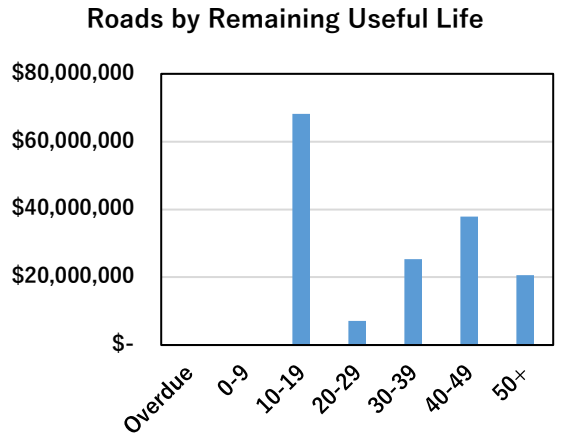
B.5 Roads

Fair

Summary of Inventory				
Components	Quantity	Replacement Cost 2022	Replacement Cost Method	Useful Life (Years)
Paved Roads (km)	115.9	$138,840,000	Recent Costing	50
Gravel Roads (km)	99.5	$19,900,000	Recent Costing	50
Total	**215.4**	**$158,740,000**		

The Municipality owns over 215 kilometres of roads with a total replacement cost of $158.7 million. Paved Roads have a replacement cost of $1,200,000 per km and Gravel Roads have a replacement cost of $200,000 per km. The average replacement cost of roads per kilometre in Marmora and Lake is based on average costs for similar municipalities.





Approximately 43% of the roads and related assets have a useful life of 19 years or less. About 13% of the assets have a useful life of over 50 years, 24% have a useful life of 49 years or less, 16% have a useful life of 39 years or less, and the remaining 4% have a useful life of 29 years or less.

Approximately $75.0 million (57%) of the Municipality's roads assets are considered to be in Poor or Very Poor condition. About $58.9 million (37%) are in Poor or Very Poor condition and the remaining $25.3 million (16%) are considered to be in Fair condition. Road condition assessments are based on OCI (Overall Condition Ratings) from the 2018 Municipal Roads Needs Study.

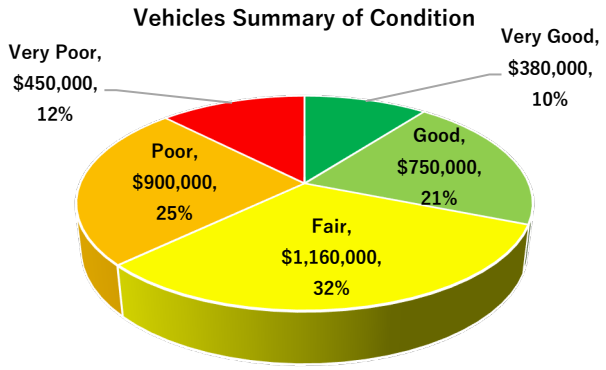
Data Confidence and Reliability: Level 4 (Reliable)
Dataset is complete and estimated to be accurate +/- 10%.

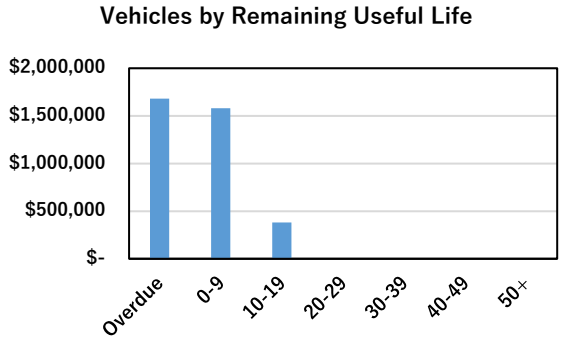
B.6 Vehicles

Fair

Summary of Inventory				
Service Area	Quantity	Replacement Cost 2022	Replacement Cost Method	Useful Life (Years)
Environment	3	$280,000	Recent Costing	15
Fire	6	$1,100,000	Recent Costing	15-20
Parks	2	$140,000	Recent Costing	15
Transportation	10	$2,120,000	Recent Costing	10
Total	**21**	**$3,640,000**		

The Municipality's vehicles assets contain a total of 21 vehicles with a total replacement value of $3.6 million and an assumed engineered useful life of 10-20 years. The inventory replacement costs are based on recent costing.





Overall, the Municipality's vehicles have been categorized by remaining useful life. About $1.7 million (46%) are overdue and may require replacement in the short-term, while 43% ($1.6 million) of the Municipality's vehicles have less than 9 years of remaining useful life remaining. Only 10% ($380,000) of the Municipality's vehicles have a remaining useful life of 10-19 years.

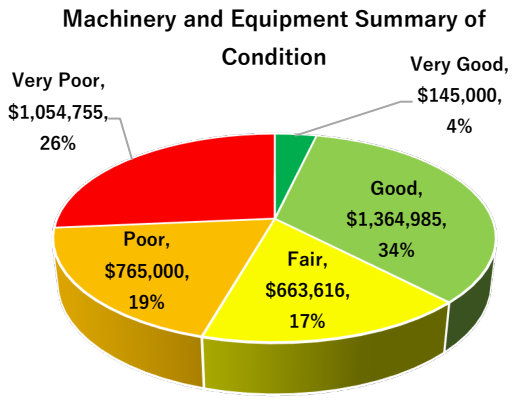
The condition analysis identified that the Municipality maintains $1.2 million (about 32%) of vehicles in Fair condition. Roughly $1.1 million (about 31%) of vehicles are in Very Good or Good condition. That said, roughly $900,000 (25%) are in Poor condition and $450,000 (12%) are in Very Poor condition and can be considered for replacement in the short-term. It is important to note that vehicles in Fair condition must be monitored closely as typically these vehicles will transition into the Poor/Very Poor categories over the short to medium term. Therefore, proper inspections and maintenance of these vehicles should continue over the short term.

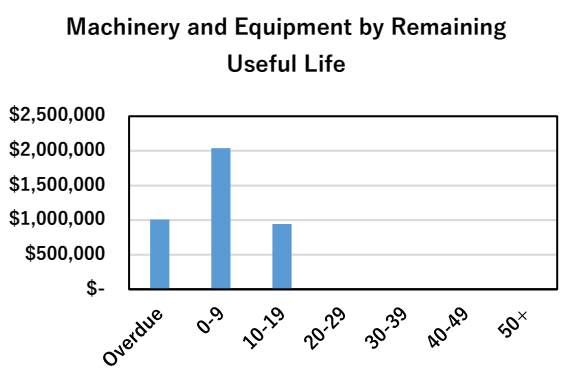
Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

B.7 Machinery and Equipment Fair

Summary of Inventory				
Service Area	Quantity	Replacement Cost 2022	Replacement Cost Method	Useful Life (Years)
Corporate Management	3	$62,775	Inflation	10-15
Environment	2	$350,000	Inflation	10-20
Parks	5	$181,000	Recent Costing	8-20
Protection - Fire	4	$83,213	Inflation/Recent Costing	5-20
Recreation Facilities	13	$767,355	Inflation	15-20
Roads	4	$89,856	Inflation	10-15
Sewer	1	$31,154	Inflation	15
Transport	14	$1,585,000	Recent Costing	10-15
Waste Site	1	$86,723	Inflation	25
Water Treatment	3	$756,280	Inflation	12-15
Total	**50**	**$3,993,356**		

The Municipality maintains pooled units of equipment for various services, which includes equipment for corporate management, environment, parks, protection services, recreation facilities, roads, sewer, transportation, waste, and water with a total replacement value of approximately $4.0 million. The equipment assets have an assumed useful life ranging between 5-25 years depending on the type of equipment. The asset replacement values have largely been derived by adjusting the original acquisition cost by inflation, but have also used recent costing for some service areas.





Overall, approximately $1.0 million (25%) of equipment assets are considered to be overdue by virtue of their design life. Although not overdue at this time, it should be noted that over 50% of the equipment ($2.0 million) will require replacement in under 9 years, and 24% ($945,596) will require replacement in under 19 years. As

the condition analysis for this category is based on the relative age of each asset, the conditions closely link to the remaining useful life graph. Some assets have used a more recent condition assessment from municipal staff. Overall, the Municipality maintains $1.5 million (38%) of equipment assets in Good to Very Good condition. Approximately 46% ($1.8 million) of equipment assets are considered to be in Poor or Very Poor condition, which would indicate signs of deterioration and these assets should be considered for repair or replacement. The remainder of the assets $663,616 (17%) are maintained in Fair condition.

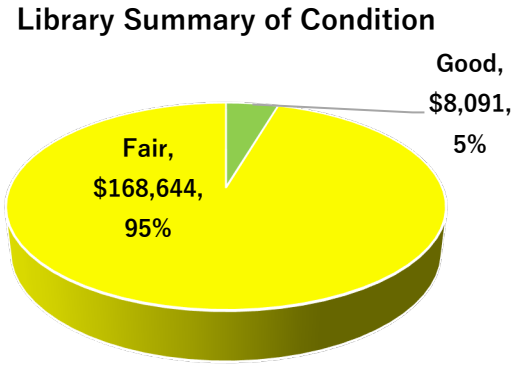
Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

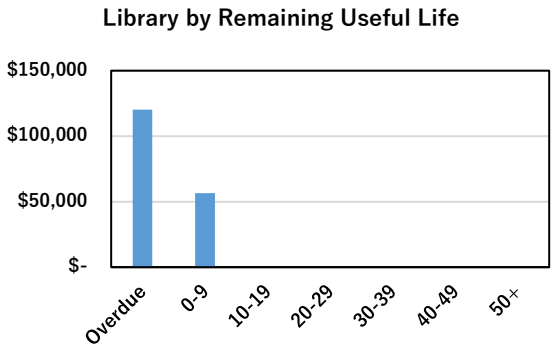
B.8 Library

Fair

Summary of Inventory				
Asset Description	Quantity	Replacement Cost 2022	Replacement Cost Method	Useful Life (Years)
Books	Pooled	$176,735	Inflation	10
Total		**$176,735**		

The Municipality maintains pooled units of books for library services, with a total replacement value of $176,735. The equipment assets have an assumed useful life of approximately 10 years. The asset replacement values have largely been derived by adjusting the original acquisition cost by inflation.





Overall, approximately $120,167 (68%) of library assets are considered to be overdue by virtue of their design life. Although not overdue at this time, it should be noted that 32% of the equipment ($56,568) will require replacement over the next ten years. The condition analysis for this category have been updated by municipal staff to more accurately reflect the current conditions. Overall, the Municipality maintains $168,644 (95%) of equipment assets in Fair condition, and 5% ($8,091) of equipment assets are considered to be in Good condition.

Data Confidence and Reliability: Level 4 (Reliable)
Dataset is complete and estimated to be accurate +/- 10%.

B.9 Streetlights

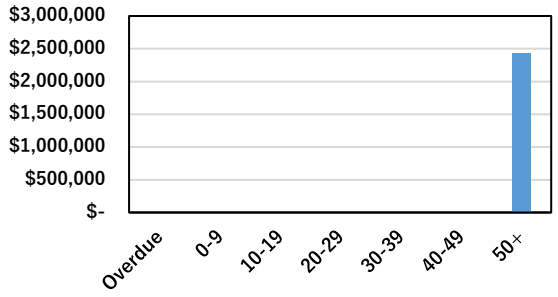
Good

Summary of Inventory				
Components	Quantity	Replacement Cost 2022	Replacement Cost Method	Useful Life (Years)
Streetlights	406	$6,000/Streetlight	Recent Costing	25
Total	**406**	**$2,436,000**		

The Municipality owns over 400 streetlights with a total replacement cost of $2.4 million. The average replacement cost of each streetlight is $6,000, based on current costing data.

Streetlights Summary of Condition

Streetlights by Remaining Useful Life



100% of the sidewalk assets have a useful life of 50 years or more.

All $2.4 million (100%) of the Municipality's sidewalk assets are considered to be in Good condition. Sidewalk condition assessments are based on the recent evaluation provided by municipal staff.

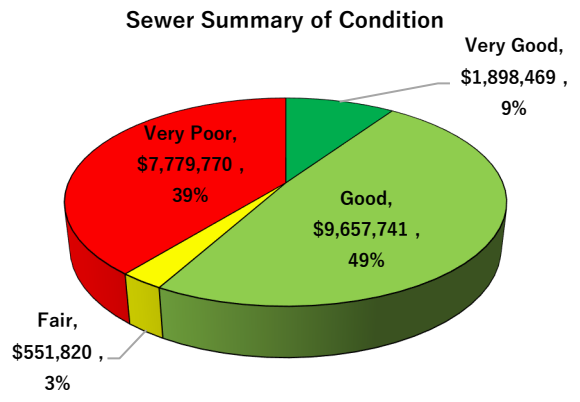
Data Confidence and Reliability: Level 4 (Reliable)
Dataset is complete and estimated to be accurate +/- 10%.

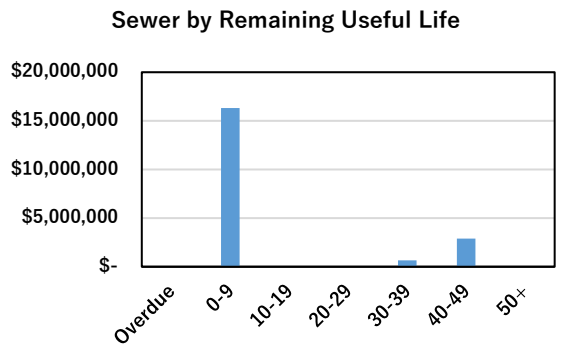
B.10 Sewer

Fair

Summary of Inventory				
Components	**Quantity**	**Replacement Cost 2022**	**Replacement Cost Method**	**Useful Life (Years)**
Sewer Linear by Pipe Size (mm)				
200	800	$3,248,844	Inflation	50
250	250	$2,559,367	Inflation	50
300	300	$1,237,896	Inflation	50
350	350	$404,226	Inflation	50
450	450	$893,282	Inflation	50
600	600	$887,250	Inflation	50
Sub-Total	**2,750**	**$10,185,980**		
Sewer Buildings (units)				
Building	1	$150,000	Inflation	50
Wastewater Treatment Plant	1	$8,000,000	Inflation	50
Wastewater Treatment Plant (Septic)	1	$1,000,000	Inflation	50
Wastewater Collection Pumping Station	1	$551,820	Inflation	50
Total		**$19,887,800**		

The Municipality maintains a sewer network with a replacement cost of $19.9 million. Replacement costs have been determined based on inflation. The assumed useful life has been derived on a component by component basis ranging from 50 years.





The majority of the Municipality's sewer components have a remaining useful life of under 10 years and accounts for $16.3 million (82%) with no sewer assets considered overdue. These assets should be monitored

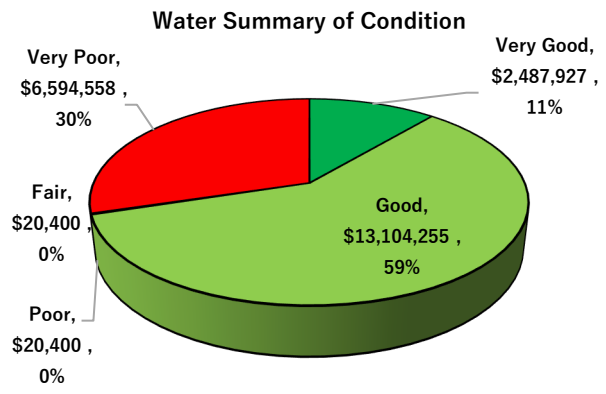
closely as they will become overdue in the short-term, $657,741 (3%) have a useful life of 39 years or less, and $1.9 million (15%) have a useful life of 49 years or less. The conditions of the sewer linear assets have been determined based on age, closely aligning the data with the remaining useful life. The conditions of the sewer building assets have been determined with up to date condition data from municipal staff. Approximately $11.5 million (58%) are considered to be in Good to Very Good condition, $551,820 (3%) are considered to be in Fair condition, while $7.8 million (39%) are considered to be in Poor to Very Poor condition.

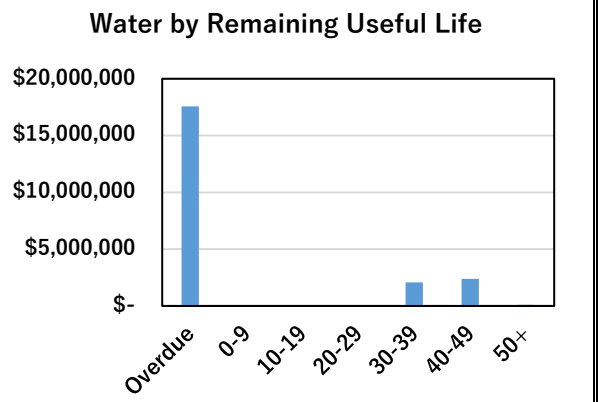
Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

B.11 Water — Fair

Summary of Inventory				
Components	**Quantity**	**Replacement Cost 2022**	**Replacement Cost Method**	**Useful Life (Years)**
Water Linear by Pipe Size (m)				
150	300	$6,003,175	Recent Costing	50
200	800	$1,384,359	Recent Costing	50
Sub-Total		**$7,387,534**		
Water Other Linear (units)				
Hydrants	98	$499,800	Inflation	40
Stainless Steel Pipe	1	$ 10,094	Inflation	50
Main Extension	1	$23,177	Inflation	50
Water Mains	Pooled	$89,522	Inflation	75
Standpipe	1	$301,795	Inflation	
Sub-Total		**$924,388**		
Water Buildings (units)	5	$13,570,000	Inflation	50
Total		**$22,227,540**		

The Municipality maintains a water system with a replacement cost of $22.2 million. Replacement costs have been determined based on inflation from historical values as well as benchmark costs per metre of pipe for the linear components. The assumed useful life has been derived on a component by component basis ranging from 40-75 years.





The majority of the Municipality's water system (79% or $17.5 million) assets are overdue. This amount is largely related to the water treatment plants, however the treatment plant continues to be maintained in proper operating condition in line with municipal and provincial standards and therefore the age is not a good indicator of its condition. The remainder of the system has a useful life of 30 or more years, which include linear assets and water buildings. Conditions of the water assets are based on age and remaining useful life for water linear assets, and data from municipal staff for water buildings. About $15.6 million (70%) of water assets are considered to be in Good or Very Good condition. Roughly $6.6 million (30%) are considered to be in Poor or Very Poor condition. Finally, <1% ($20,400) are in Fair Condition.

Data Confidence and Reliability:	Level 4 (Reliable) Dataset is complete and estimated to be accurate +/- 10%.

APPENDIX C

ASSET MANAGEMENT STRATEGY

APPENDIX C – ASSET MANAGEMENT STRATEGY

Machinery & Equipment

Machinery and equipment assets include small equipment and tools as well as large road equipment such as graders and trailers. Table 1 summarizes general actions that can be taken to ensure that assets are maintained in a state of good repair.

Table 1
Planned Actions: Machinery and Equipment

Areas	Planned Actions
Non-Infrastructure Solutions	▪ Regularly scheduling of repair work orders. ▪ Operating budgets should be informed by regular inspections as needed. ▪ Adjust service levels if necessary. ▪ Annually provide the necessary departments with related information when new and additional units are acquired. ▪ Training for staff to ensure safe and efficient operation of equipment.
Maintenance Activities	▪ Preventative maintenance program for all Municipality equipment. ▪ Regular inspection of all Municipality equipment. ▪ Annual inspection, service and certification performed on all applicable machinery vehicles in accordance with MTO requirements. ▪ Regular safety inspections of all vehicles before and after use to ensure safety standards are maintained.
Renewal/ Rehabilitation	▪ Regular component repairs based on inspections. ▪ Mid-life component replacements are usually common for larger equipment and can be scheduled accordingly (engine/transmission rebuilds).
Replacement	▪ Equipment replacement based on inspections. ▪ Equipment replacement forecast reviewed annually.
Disposal	▪ Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	▪ Identify needs through regular capital planning. ▪ Service improvements made where possible (new technologies, environmental impacts, etc.).

Vehicles

Vehicles are considered for all service areas including Fire, Roads and other general government vehicles. Actions related to maintaining the fleet are unique to each type of vehicle unit. Table 2 summarizes general actions that can be taken to ensure that fleet vehicles are maintained in a state of good repair.

Table 2
Planned Actions: Vehicles

Areas	Planned Actions
Non-Infrastructure Solutions	▪ Regularly scheduling of repair work orders. ▪ Operating budgets should be informed by regular inspections as needed. ▪ Adjust service levels if necessary. ▪ Annually provide the necessary departments with related information when new and additional units are acquired. ▪ Training for staff to ensure safe and efficient operation of vehicles.
Maintenance Activities	▪ Preventative maintenance program for all Municipality vehicles. ▪ Regular inspection of all Municipality vehicles. Emergency vehicles should be inspected in accordance with industry and regulatory guidelines. ▪ Annual inspection, service and certification performed on all applicable vehicles in accordance with MTO requirements. ▪ Regular safety inspections of all vehicles before and after use to ensure safety standards are maintained.
Renewal/ Rehabilitation	▪ Regular component repairs based on inspections. ▪ Mid-life component replacements are usually common for larger vehicles and can be scheduled accordingly (engine/transmission rebuilds).
Replacement	▪ Vehicle replacement based on inspections. ▪ Vehicle replacement forecast reviewed annually.
Disposal	▪ Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	▪ Identify needs through regular capital planning. ▪ Service improvements will be made where possible (new technologies, environmental impacts, etc.).

Buildings

There are a variety of buildings in the Municipality that are utilized for various purposes. Usually, customized maintenance plans are required for each facility depending on their purpose. Table 3 summarizes general actions that can be employed to ensure that Municipality facilities are maintained in a state of good repair.

Table 3
Planned Actions: Buildings

Areas	Planned Actions
Non-Infrastructure Solutions	▪ Operating budgets should be informed by condition assessments and regular inspections as needed. ▪ Business cases, special studies and consultation with stakeholders should be done when constructing a new facility or modifying an existing facility. ▪ Review of the design and layout of buildings and properties to minimize maintenance costs through design efficiencies over the lifecycle of buildings. ▪ Adjust service levels if necessary.
Maintenance Activities	▪ Buildings and facilities inspected regularly in accordance with occupational health and safety regulations ▪ HVAC and heating systems inspected regularly. ▪ Plumbing inspected regularly. ▪ Maintain electrical systems to Electrical Safety Authority standards. ▪ Fire alarms, fire extinguishers and emergency lights inspected regularly.
Renewal/ Rehabilitation	▪ Regular component repairs based on inspections.
Replacement	▪ Component replacement based on inspections.
Disposal	▪ Selling or demolishing facilities that are no longer in use or underutilized. ▪ Re-use or sell land not in use.
Expansion	▪ Identify needs through regular capital planning. ▪ Assumptions on required facility space through development agreements if necessary.

Land Improvements

Table 4 summarizes general actions that can be taken to ensure that these assets are maintained in a state of good repair.

Table 4 Planned Actions: Land Improvements	
Areas	**Planned Actions**
Non-Infrastructure Solutions	▪ Operating budgets should be informed by regular inspections as needed. ▪ Update policies and procedures regarding the accounting and reporting of the Municipality's tangible capital assets. ▪ Develop a Recreational Master Plan to identify needs and goals for local recreational facilities provided by the Municipality
Maintenance Activities	▪ Preventative maintenance program for all Municipality land improvements. ▪ Pool safety and maintenance to industry and legislative standards ▪ Inspection of assets on a regular basis to ensure safety
Renewal/ Rehabilitation	▪ Regular component repairs based on inspections.
Replacement	▪ Component replacement based on inspection.
Disposal	▪ Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	▪ Identify needs through regular capital planning. ▪ Continue to track future needs based on demands placed on infrastructure by the public

Roads

The roads and related category, includes all Municipality roads infrastructure. Regular maintenance and inspections are required to maintain safety and operational standards for roads. Table 5 summarizes general actions that can be taken to ensure that roads are maintained in a state of good repair.

Table 5
Planned Actions: Roads

Areas	Planned Actions
Non-Infrastructure Solutions	▪ Operating budgets should be informed by regular inspections as needed. ▪ Adjust service levels if necessary. ▪ Regularly scheduling of repair work orders. ▪ Annually provide the necessary departments with related information when new and additional equipment is acquired. ▪ Continue to conduct road inspections and maintain an up-to-date database (i.e. Inventory of roads in Marmora and Lake).
Maintenance Activities	▪ Regular maintenance including, road sweeping, snow removal, dust control, roadside vegetation management, and roadside ditch cleanout and clearing. ▪ Continued maintenance of roads in line with O. Reg. 239/02 Minimum Maintenance Standards for Municipal Highways. ▪ Continue to monitor road restrictions based on Municipality policy, in particular for load restrictions in effect during the spring months ▪ Maintain roads in the winter based on the Snow Clearing Policy minimum standards.
Renewal/ Rehabilitation	▪ Resurfacing of poor conditioned paved roads. ▪ Regular grading and application of gravel for gravel roads. ▪ Regular component repairs based on inspections.
Replacement	▪ Road reconstruction based on condition assessments.
Disposal	▪ Dispose or sell assets that are no longer in use or are in poor condition. ▪ Convert low traffic roads to less costly gravel if necessary.
Expansion	▪ Identify needs through regular capital planning. Ensure assumed roads are tracked through the asset management plan. ▪ Service improvements made where possible (new technologies, environmental impacts, etc.).

Stormwater (Small Culverts & Catchbasins)

Table 6 summarizes general actions that can be taken to ensure that these assets are maintained in a state of good repair.

Table 6
Planned Actions: Stormwater (Small Culverts & Catchbasins)

Areas	Planned Actions
Non-Infrastructure Solutions	▪ Operating budgets should be informed by regular inspections as needed. ▪ Adjust service levels if necessary. ▪ Regularly scheduling of repair work orders. ▪ Annually provide the necessary departments with related information when works are completed.
Maintenance Activities	▪ Preventative maintenance program for components of the stormwater system. ▪ Regular safety inspections.
Renewal/ Rehabilitation	▪ Regular component repairs based on inspections.
Replacement	▪ Components replaced based on needs.
Disposal	▪ Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	▪ Identify needs through regular capital planning. ▪ Service improvements made where possible (new technologies, environmental impacts, etc.).

Water

Table 7 summarizes general actions that can be taken to ensure that these assets are maintained in a state of good repair.

Table 7 Planned Actions: Water	
Areas	**Planned Actions**
Non-Infrastructure Solutions	▪ Operating budgets should be informed by regular inspections as needed. ▪ Adjust service levels if necessary. ▪ Regularly scheduling of repair work orders. ▪ Annually provide the necessary departments with related information when works are completed. ▪ Continue investing capital and operational funds to provide upgrades and rehabilitations to treatment and distribution systems. ▪ Establish and upgrade current practices and policies. ▪ Continue to provide Water Treatment Plan Annual Reports, as per Ministry of the Environment requirements. ▪ Liaise with the sewer and water operator to ensure continued maintenance of sanitary sewage and water systems.
Maintenance Activities	▪ Preventative maintenance program for components of the water system. ▪ Regular safety inspections. ▪ CCTV camera inspections performed as identified and needed.
Renewal/ Rehabilitation	▪ Regular component repairs based on inspections.
Replacement	▪ Components replaced based on needs.
Disposal	▪ Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	▪ Identify needs through regular capital planning. ▪ Service improvements made where possible (new technologies, environmental impacts, etc.).

Sewer

Table 8 summarizes general actions that can be taken to ensure that these assets are maintained in a state of good repair.

Table 8 Planned Actions: Sewer	
Areas	**Planned Actions**
Non-Infrastructure Solutions	▪ Operating budgets should be informed by regular inspections as needed. ▪ Adjust service levels if necessary. ▪ Regularly scheduling of repair work orders. ▪ Annually provide the necessary departments with related information when works are completed. ▪ Liaise with the sewer and water operator to ensure continued maintenance of sanitary sewage and water systems.
Maintenance Activities	▪ Preventative maintenance program for the sewer system. ▪ CCTV camera inspections performed as identified and needed.
Renewal/ Rehabilitation	▪ Regular component repairs based on inspections.
Replacement	▪ Components replaced based on needs.
Disposal	▪ Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	▪ Identify needs through regular capital planning. ▪ Service improvements made where possible (new technologies, environmental impacts, etc.).

Bridges & Culverts

Table 9 summarizes general actions that can be taken to ensure that these assets are maintained in a state of good repair.

Table 9
Planned Actions: Bridges & Culverts

Areas	Planned Actions
Non-Infrastructure Solutions	• Operating budgets should be informed by regular inspections as needed. • Adjust service levels if necessary. • Regularly scheduling of repair work orders. • Annually provide the necessary departments with related information when works are completed. • Update OSIM Inspections Report on a regular basis and input OSIM data into AMP model as needed. • Update policies and procedures regarding the accounting and reporting of the Municipality's tangible capital assets. • Prioritize bridge and culvert improvements based on inspection reports.
Maintenance Activities	• Regular inspections and repairs of all culverts. • Continue required OSIM inspections (every 2 years) • Continue to monitor road restrictions based on municipal policy, in particular for load restrictions in effect during the spring months • Continued maintenance of roads in line with *O. Reg. 239/02 Minimum Maintenance Standards for Municipal Highways* • Continue to conduct visual reviews of bridges and culverts that require work within the next two years to determine if there are any safety concerns.
Renewal/ Rehabilitation	• Regular component repairs based on inspections. • Continue to implement recommendations of 2018 OSIM Inspections Report.
Replacement	• Component replacement based on needs.
Disposal	• Dispose or sell assets that are no longer in use or are in poor condition.

Table 9 Planned Actions: Bridges & Culverts	
Areas	**Planned Actions**
Expansion	• Identify needs through regular capital planning. • Service improvements made where possible (new technologies, environmental impacts, etc.).

Sidewalks

Table 10 summarizes general actions that can be taken to ensure that these assets are maintained in a state of good repair.

Table 10 Planned Actions: Sidewalks	
Areas	**Planned Actions**
Non-Infrastructure Solutions	• Operating budgets should be informed by regular inspections as needed. • Adjust service levels if necessary. • Regularly scheduling of repair work orders. • Annually provide the necessary departments with related information when works are completed. • Update policies and procedures regarding the accounting and reporting of the Municipality's tangible capital assets.

Maintenance Activities	• Preventative maintenance program for all Municipality sidewalks.
	• Regular seasonal maintenance as needed to ensure safety of pedestrians, in particular based on Winter Maintenance By-law
	  • Snow removal occurs on primary and secondary sidewalks. Secondary sidewalk maintenance occurs after primary sidewalks have been maintained.
	  • Winter maintenance generally occurs from mid-November to end of March every year

Renewal/ Rehabilitation	• Sidewalk repairs should continue as needed
Replacement	• Components replaced based on needs.
Disposal	• Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	• Identify needs through regular capital planning. • Continue to track needs based on the growth-related capital program in the Development Charges Background Study. • Service improvements made where possible (new technologies, environmental impacts, etc.).

Streetlights

Table 11 summarizes general actions that can be taken to ensure that these assets are maintained in a state of good repair.

Table 11 Planned Actions: Streetlights	
Areas	**Planned Actions**
Non-Infrastructure Solutions	• Operating budgets should be informed by regular inspections as needed. • Update policies and procedures regarding the accounting and reporting of the Municipality's tangible capital assets.
Maintenance Activities	• Continue to monitor reports of streetlight issues and maintain accordingly
Renewal/ Rehabilitation	• Regular component repairs based on inspections.
Replacement	• Component replacement based on inspections.
Disposal	• Dispose or sell assets that are no longer in use or are in poor condition.
Expansion	• Identify needs through regular capital planning.

APPENDIX D

DETAILED FINANCING STRATEGY TABLES

Table 1a
Municipality of Marmora & Lake
2022 Asset Management Plan
Close Cumulative Infrastructure Deficit by 2051 (Tax Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues							3. Funding Gap Calculation		
Year	Non-Infrastructure Solutions	Capital Renewal/ Replacement and Disposal	Operations and Maintenance	Expansion Activities (Annual Provision for replacement)	Total Lifecycle Costs	Debt Payments - Tax Supported - Assumed over the period	Capital from Taxation (Including Transfers to Reserves)	O&M from Taxation	Yearly Increase in Tax Funding ($)	Canada Community Building Fund CCBF (formerly Gas Tax)	Other Grants	Existing Tax Suppported Reserves (for capital)	Total Lifecycle Funding	Annual Funding Gap	Cumulative Infrastructure Deficit
2022		$ 10,250,037	$ 360,700	$ -	$ 10,610,737.27	$ 194,500	$ 795,613	$ 360,700		$ 125,370	$ 248,212	$ *1,571,398*	$ 3,295,793	$ 7,314,945	$ 7,314,945
2023	$ 50,000	$ 9,593,586	$ 360,700	$ 51,067	$ 10,055,352	$ 194,500	$ 1,047,930	$ 360,700	$ 252,317	$ 130,821	$ 248,212		$ 1,982,163	$ 8,073,189	$ 15,388,134
2024	$ 50,000	$ 8,302,114	$ 360,700	$ 52,133	$ 8,764,947	$ 194,500	$ 1,300,247	$ 360,700	$ 252,317	$ 130,821	$ 248,212		$ 2,234,480	$ 6,530,467	$ 21,918,601
2025	$ 50,000	$ 6,940,667	$ 360,700	$ 53,200	$ 7,404,567	$ 194,500	$ 1,552,564	$ 360,700	$ 252,317	$ 130,821	$ 248,212		$ 2,486,797	$ 4,917,770	$ 26,836,371
2026	$ 50,000	$ 6,380,848	$ 360,700	$ 54,267	$ 6,845,814	$ 194,500	$ 1,804,881	$ 360,700	$ 252,317	$ 130,821	$ 248,212		$ 2,739,114	$ 4,106,701	$ 30,943,072
2027	$ 50,000	$ 7,375,417	$ 360,700	$ 55,333	$ 7,841,450	$ 194,500	$ 2,057,198	$ 360,700	$ 252,317	$ 130,821			$ 2,743,219	$ 5,098,231	$ 36,041,303
2028	$ 50,000	$ 5,422,255	$ 360,700	$ 56,400	$ 5,889,355	$ 194,500	$ 2,309,515	$ 360,700	$ 252,317	$ 130,821			$ 2,995,536	$ 2,893,819	$ 38,935,122
2029	$ 50,000	$ 5,288,640	$ 360,700	$ 57,466	$ 5,756,806	$ 194,500	$ 2,561,832	$ 360,700	$ 252,317	$ 130,821			$ 3,247,853	$ 2,508,954	$ 41,444,076
2030	$ 50,000	$ 5,283,390	$ 360,700	$ 58,533	$ 5,752,623	$ 194,500	$ 2,814,149	$ 360,700	$ 252,317	$ 130,821			$ 3,500,170	$ 2,252,453	$ 43,696,529
2031	$ 50,000	$ 5,277,032	$ 360,700	$ 59,600	$ 5,747,331	$ 194,500	$ 3,066,466	$ 360,700	$ 252,317	$ 130,821			$ 3,752,487	$ 1,994,845	$ 45,691,374
2032	$ 50,000	$ 5,257,760	$ 360,700	$ 60,666	$ 5,729,126	$ 194,500	$ 3,318,783	$ 360,700	$ 252,317	$ 130,821			$ 4,004,804	$ 1,724,322	$ 47,415,696
2033	$ 50,000	$ 3,646,153	$ 360,700	$ 61,733	$ 4,118,586	$ 194,500	$ 3,571,100	$ 360,700	$ 252,317	$ 130,821			$ 4,257,120	$ (138,534)	$ 47,277,162
2034	$ 50,000	$ 3,646,153	$ 360,700	$ 62,800	$ 4,119,653	$ 194,500	$ 3,823,417	$ 360,700	$ 252,317	$ 130,821			$ 4,509,437	$ (389,785)	$ 46,887,377
2035	$ 50,000	$ 3,645,333	$ 360,700	$ 63,866	$ 4,119,899	$ 194,500	$ 4,075,734	$ 360,700	$ 252,317	$ 130,821			$ 4,761,754	$ (641,856)	$ 46,245,522
2036	$ 50,000	$ 3,635,633	$ 360,700	$ 64,933	$ 4,111,266	$ 194,500	$ 4,328,051	$ 360,700	$ 252,317	$ 130,821			$ 5,014,071	$ (902,805)	$ 45,342,716
2037	$ 50,000	$ 3,635,633	$ 360,700	$ 65,999	$ 4,112,333	$ 194,500	$ 4,580,367	$ 360,700	$ 252,317	$ 130,821			$ 5,266,388	$ (1,154,056)	$ 44,188,660
2038	$ 50,000	$ 3,630,971	$ 360,700	$ 67,066	$ 4,108,737	$ 194,500	$ 4,832,684	$ 360,700	$ 252,317	$ 130,821			$ 5,518,705	$ (1,409,968)	$ 42,778,692
2039	$ 50,000	$ 3,630,618	$ 360,700	$ 68,133	$ 4,109,451	$ 194,500	$ 5,085,001	$ 360,700	$ 252,317	$ 130,821			$ 5,771,022	$ (1,661,571)	$ 41,117,121
2040	$ 50,000	$ 3,630,618	$ 360,700	$ 69,199	$ 4,110,517	$ 194,500	$ 5,337,318	$ 360,700	$ 252,317	$ 130,821			$ 6,023,339	$ (1,912,822)	$ 39,204,299
2041	$ 50,000	$ 3,630,618	$ 360,700	$ 70,266	$ 4,111,584	$ 194,500	$ 5,589,635	$ 360,700	$ 252,317	$ 130,821			$ 6,275,656	$ (2,164,072)	$ 37,040,227
2042	$ 50,000	$ 3,630,618	$ 360,700	$ 71,333	$ 4,112,651	$ 194,500	$ 5,841,952	$ 360,700	$ 252,317	$ 130,821			$ 6,527,973	$ (2,415,322)	$ 34,624,904
2043	$ 50,000	$ 3,454,981	$ 360,700	$ 72,399	$ 3,938,080	$ 194,500	$ 6,094,269	$ 360,700	$ 252,317	$ 130,821			$ 6,780,290	$ (2,842,210)	$ 31,782,694
2044	$ 50,000	$ 3,454,981	$ 360,700	$ 73,466	$ 3,939,147	$ 194,500	$ 6,346,586	$ 360,700	$ 252,317	$ 130,821			$ 7,032,607	$ (3,093,461)	$ 28,689,233
2045	$ 50,000	$ 3,454,981	$ 360,700	$ 74,532	$ 3,940,213	$ 194,500	$ 6,598,903	$ 360,700	$ 252,317	$ 130,821			$ 7,284,924	$ (3,344,711)	$ 25,344,522
2046	$ 50,000	$ 3,454,981	$ 360,700	$ 75,599	$ 3,941,280	$ 194,500	$ 6,851,220	$ 360,700	$ 252,317	$ 130,821			$ 7,537,241	$ (3,595,961)	$ 21,748,561
2047	$ 50,000	$ 3,454,981	$ 360,700	$ 76,666	$ 3,942,346	$ 194,500	$ 7,103,537	$ 360,700	$ 252,317	$ 130,821			$ 7,789,558	$ (3,847,212)	$ 17,901,350
2048	$ 50,000	$ 3,454,981	$ 360,700	$ 77,732	$ 3,943,413	$ 194,500	$ 7,355,854	$ 360,700	$ 252,317	$ 130,821			$ 8,041,875	$ (4,098,462)	$ 13,802,888
2049	$ 50,000	$ 3,454,981	$ 360,700	$ 78,799	$ 3,944,480	$ 194,500	$ 7,608,171	$ 360,700	$ 252,317	$ 130,821			$ 8,294,192	$ (4,349,712)	$ 9,453,176
2050	$ 50,000	$ 3,454,981	$ 360,700	$ 79,866	$ 3,945,546	$ 194,500	$ 7,860,488	$ 360,700	$ 252,317	$ 130,821			$ 8,546,509	$ (4,600,963)	$ 4,852,213
2051	$ 50,000	$ 3,454,981	$ 360,700	$ 80,932	$ 3,946,613	$ 194,500	$ 8,112,805	$ 360,700	$ 252,317	$ 130,821			$ 8,798,826	$ (4,852,213)	$ 0
30-Year Infrastructure Deficit					**$ 157,013,903**								**$ 157,013,903**	$ -	

Total Tax Funding	$ 133,626,270	
2022 Total Tax Levy	$ 4,918,711	*Based on 2022 budget*
Inc. as % of Tax Levy	5.13%	

Table 2a
Municipality of Marmora & Lake
2022 Asset Management Plan
Financing Strategy 1: Close In-Year Funding Gap by 2036 (Tax Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues							3. Funding Gap Calculation		
Year	Non-Infrastructure Solutions	Capital Renewal and Replacement	Operations and Maintenance	Expansion Activities (Annual Provision for replacement)	Total Lifecycle Costs	Debt Payments - Tax Supported - Assumed over the period	Capital from Taxation (Including Transfers to Reserves)	O&M from Taxation	Yearly Increase in Tax Funding ($)	Canada Community Building Fund CCBF (formerly Gas Tax)	Other Grants (OCIF)	*Less: Existing Reserves*	Total Lifecycle Funding	Annual Funding Gap	Cumulative Infrastructure Deficit
2022	$ -	$ 10,250,037	$ 360,700		$ 10,610,737	$ 194,500	$ 795,613	$ 360,700		$ 125,370	$ 248,212	*$ 1,571,398*	$ 3,295,793	$ 7,314,945	$ 7,314,945
2023	$ 50,000	$ 9,593,586	$ 360,700	$ 51,067	$ 10,055,352	$ 194,500	$ 983,444	$ 360,700	$ 187,831	$ 130,821	$ 248,212		$ 1,917,677	$ 8,137,675	$ 15,452,620
2024	$ 50,000	$ 8,302,114	$ 360,700	$ 52,133	$ 8,764,947	$ 194,500	$ 1,171,275	$ 360,700	$ 187,831	$ 130,821	$ 248,212		$ 2,105,508	$ 6,659,439	$ 22,112,060
2025	$ 50,000	$ 6,940,667	$ 360,700	$ 53,200	$ 7,404,567	$ 194,500	$ 1,359,106	$ 360,700	$ 187,831	$ 130,821	$ 248,212		$ 2,293,338	$ 5,111,228	$ 27,223,288
2026	$ 50,000	$ 6,380,848	$ 360,700	$ 54,267	$ 6,845,814	$ 194,500	$ 1,546,936	$ 360,700	$ 187,831	$ 130,821	$ 248,212		$ 2,481,169	$ 4,364,645	$ 31,587,933
2027	$ 50,000	$ 7,375,417	$ 360,700	$ 55,333	$ 7,841,450	$ 194,500	$ 1,734,767	$ 360,700	$ 187,831	$ 130,821	$ -		$ 2,420,788	$ 5,420,662	$ 37,008,595
2028	$ 50,000	$ 5,422,255	$ 360,700	$ 56,400	$ 5,889,355	$ 194,500	$ 1,922,598	$ 360,700	$ 187,831	$ 130,821	$ -		$ 2,608,619	$ 3,280,736	$ 40,289,330
2029	$ 50,000	$ 5,288,640	$ 360,700	$ 57,466	$ 5,756,806	$ 194,500	$ 2,110,429	$ 360,700	$ 187,831	$ 130,821	$ -		$ 2,796,450	$ 2,960,356	$ 43,249,687
2030	$ 50,000	$ 5,283,390	$ 360,700	$ 58,533	$ 5,752,623	$ 194,500	$ 2,298,260	$ 360,700	$ 187,831	$ 130,821	$ -		$ 2,984,281	$ 2,768,342	$ 46,018,029
2031	$ 50,000	$ 5,277,032	$ 360,700	$ 59,600	$ 5,747,331	$ 194,500	$ 2,486,091	$ 360,700	$ 187,831	$ 130,821	$ -		$ 3,172,112	$ 2,575,220	$ 48,593,249
2032	$ 50,000	$ 5,257,760	$ 360,700	$ 60,666	$ 5,729,126	$ 194,500	$ 2,673,922	$ 360,700	$ 187,831	$ 130,821	$ -		$ 3,359,942	$ 2,369,183	$ 50,962,432
2033	$ 50,000	$ 3,646,153	$ 360,700	$ 61,733	$ 4,118,586	$ 194,500	$ 2,861,752	$ 360,700	$ 187,831	$ 130,821	$ -		$ 3,547,773	$ 570,813	$ 51,533,245
2034	$ 50,000	$ 3,646,153	$ 360,700	$ 62,800	$ 4,119,653	$ 194,500	$ 3,049,583	$ 360,700	$ 187,831	$ 130,821	$ -		$ 3,735,604	$ 384,049	$ 51,917,293
2035	$ 50,000	$ 3,645,333	$ 360,700	$ 63,866	$ 4,119,899	$ 194,500	$ 3,237,414	$ 360,700	$ 187,831	$ 130,821	$ -		$ 3,923,435	$ 196,464	$ 52,113,757
2036	$ 50,000	$ 3,635,633	$ 360,700	$ 64,933	$ 4,111,266	$ 194,500	$ 3,425,245	$ 360,700	$ 187,831	$ 130,821	$ -		$ 4,111,266	$ 0	$ 52,113,757
2037	$ 50,000	$ 3,635,633	$ 360,700	$ 65,999	$ 4,112,333	$ 194,500	$ 3,613,076	$ 360,700	$ 187,831	$ 130,821	$ -		$ 4,299,097	$ (186,764)	$ 51,926,993
2038	$ 50,000	$ 3,630,971	$ 360,700	$ 67,066	$ 4,108,737	$ 194,500	$ 3,800,907	$ 360,700	$ 187,831	$ 130,821	$ -		$ 4,486,928	$ (378,191)	$ 51,548,802
2039	$ 50,000	$ 3,630,618	$ 360,700	$ 68,133	$ 4,109,451	$ 194,500	$ 3,988,738	$ 360,700	$ 187,831	$ 130,821	$ -		$ 4,674,759	$ (565,308)	$ 50,983,494
2040	$ 50,000	$ 3,630,618	$ 360,700	$ 69,199	$ 4,110,517	$ 194,500	$ 4,176,569	$ 360,700	$ 187,831	$ 130,821	$ -		$ 4,862,589	$ (752,072)	$ 50,231,422
2041	$ 50,000	$ 3,630,618	$ 360,700	$ 70,266	$ 4,111,584	$ 194,500	$ 4,364,399	$ 360,700	$ 187,831	$ 130,821	$ -		$ 5,050,420	$ (938,836)	$ 49,292,586
2042	$ 50,000	$ 3,630,618	$ 360,700	$ 71,333	$ 4,112,651	$ 194,500	$ 4,552,230	$ 360,700	$ 187,831	$ 130,821	$ -		$ 5,238,251	$ (1,125,600)	$ 48,166,986
2043	$ 50,000	$ 3,454,981	$ 360,700	$ 72,399	$ 3,938,080	$ 194,500	$ 4,740,061	$ 360,700	$ 187,831	$ 130,821	$ -		$ 5,426,082	$ (1,488,002)	$ 46,678,984
2044	$ 50,000	$ 3,454,981	$ 360,700	$ 73,466	$ 3,939,147	$ 194,500	$ 4,927,892	$ 360,700	$ 187,831	$ 130,821	$ -		$ 5,613,913	$ (1,674,766)	$ 45,004,217
2045	$ 50,000	$ 3,454,981	$ 360,700	$ 74,532	$ 3,940,213	$ 194,500	$ 5,115,723	$ 360,700	$ 187,831	$ 130,821	$ -		$ 5,801,744	$ (1,861,531)	$ 43,142,687
2046	$ 50,000	$ 3,454,981	$ 360,700	$ 75,599	$ 3,941,280	$ 194,500	$ 5,303,554	$ 360,700	$ 187,831	$ 130,821	$ -		$ 5,989,575	$ (2,048,295)	$ 41,094,392
2047	$ 50,000	$ 3,454,981	$ 360,700	$ 76,666	$ 3,942,346	$ 194,500	$ 5,491,385	$ 360,700	$ 187,831	$ 130,821	$ -		$ 6,177,405	$ (2,235,059)	$ 38,859,333
2048	$ 50,000	$ 3,454,981	$ 360,700	$ 77,732	$ 3,943,413	$ 194,500	$ 5,679,215	$ 360,700	$ 187,831	$ 130,821	$ -		$ 6,365,236	$ (2,421,823)	$ 36,437,510
2049	$ 50,000	$ 3,454,981	$ 360,700	$ 78,799	$ 3,944,480	$ 194,500	$ 5,867,046	$ 360,700	$ 187,831	$ 130,821	$ -		$ 6,553,067	$ (2,608,587)	$ 33,828,922
2050	$ 50,000	$ 3,454,981	$ 360,700	$ 79,866	$ 3,945,546	$ 194,500	$ 6,054,877	$ 360,700	$ 187,831	$ 130,821	$ -		$ 6,740,898	$ (2,795,352)	$ 31,033,571
2051	$ 50,000	$ 3,454,981	$ 360,700	$ 80,932	$ 3,946,613	$ 194,500	$ 6,242,708	$ 360,700	$ 187,831	$ 130,821	$ -		$ 6,928,729	$ (2,982,116)	$ 28,051,455
30-Year Infrastructure Deficit					**$ 157,013,903**								**$ 128,962,448**		

Total Tax Funding	$ 105,574,815
2022 Total Tax Levy	$ 4,918,711
Inc. as % of Tax Levy	3.82%

Table 3a
Municipality of Marmora & Lake
2022 Asset Management Plan
Financing Strategy 2: Close In-Year Funding Gap by 2041 (Tax Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues							3. Funding Gap Calculation		
Year	**Non-Infrastructure Solutions**	**Capital Renewal and Replacement**	**Operations and Maintenance**	**Expansion Activities (Annual Provision for replacement)**	**Total Lifecycle Costs**	**Debt Payments - Tax Supported - Assumed over the period**	**Capital from Taxation (Including Transfers to Reserves)**	**O&M from Taxation**	**Yearly Increase in Tax Funding ($)**	**Canada Community Building Fund CCBF (formerly Gas Tax)**	**Other Grants (OCIF)**	***Less: Existing Reserves***	**Total Lifecycle Funding**	**Annual Funding Gap**	**Cumulative Infrastructure Deficit**
2022	$ -	$ 10,250,037	$ 360,700		$ 10,610,737	$ 194,500	$ 795,613	$ 360,700		$ 125,370	$ 248,212	*$ 1,571,398*	$ 3,295,793	$ 7,314,945	$ 7,314,945
2023	$ 50,000	$ 9,593,586	$ 360,700	$ 51,067	$ 10,055,352	$ 194,500	$ 934,031	$ 360,700	$ 138,418	$ 130,821	$ 248,212		$ 1,868,264	$ 8,187,088	$ 15,502,033
2024	$ 50,000	$ 8,302,114	$ 360,700	$ 52,133	$ 8,764,947	$ 194,500	$ 1,072,450	$ 360,700	$ 138,418	$ 130,821	$ 248,212		$ 2,006,683	$ 6,758,264	$ 22,260,297
2025	$ 50,000	$ 6,940,667	$ 360,700	$ 53,200	$ 7,404,567	$ 194,500	$ 1,210,868	$ 360,700	$ 138,418	$ 130,821	$ 248,212		$ 2,145,101	$ 5,259,465	$ 27,519,762
2026	$ 50,000	$ 6,380,848	$ 360,700	$ 54,267	$ 6,845,814	$ 194,500	$ 1,349,287	$ 360,700	$ 138,418	$ 130,821	$ 248,212		$ 2,283,520	$ 4,562,295	$ 32,082,057
2027	$ 50,000	$ 7,375,417	$ 360,700	$ 55,333	$ 7,841,450	$ 194,500	$ 1,487,705	$ 360,700	$ 138,418	$ 130,821	$ -		$ 2,173,726	$ 5,667,724	$ 37,749,781
2028	$ 50,000	$ 5,422,255	$ 360,700	$ 56,400	$ 5,889,355	$ 194,500	$ 1,626,124	$ 360,700	$ 138,418	$ 130,821	$ -		$ 2,312,144	$ 3,577,210	$ 41,326,991
2029	$ 50,000	$ 5,288,640	$ 360,700	$ 57,466	$ 5,756,806	$ 194,500	$ 1,764,542	$ 360,700	$ 138,418	$ 130,821	$ -		$ 2,450,563	$ 3,306,244	$ 44,633,235
2030	$ 50,000	$ 5,283,390	$ 360,700	$ 58,533	$ 5,752,623	$ 194,500	$ 1,902,960	$ 360,700	$ 138,418	$ 130,821	$ -		$ 2,588,981	$ 3,163,642	$ 47,796,876
2031	$ 50,000	$ 5,277,032	$ 360,700	$ 59,600	$ 5,747,331	$ 194,500	$ 2,041,379	$ 360,700	$ 138,418	$ 130,821	$ -		$ 2,727,400	$ 3,019,932	$ 50,816,808
2032	$ 50,000	$ 5,257,760	$ 360,700	$ 60,666	$ 5,729,126	$ 194,500	$ 2,179,797	$ 360,700	$ 138,418	$ 130,821	$ -		$ 2,865,818	$ 2,863,308	$ 53,680,116
2033	$ 50,000	$ 3,646,153	$ 360,700	$ 61,733	$ 4,118,586	$ 194,500	$ 2,318,216	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,004,237	$ 1,114,350	$ 54,794,465
2034	$ 50,000	$ 3,646,153	$ 360,700	$ 62,800	$ 4,119,653	$ 194,500	$ 2,456,634	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,142,655	$ 976,998	$ 55,771,463
2035	$ 50,000	$ 3,645,333	$ 360,700	$ 63,866	$ 4,119,899	$ 194,500	$ 2,595,053	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,281,073	$ 838,825	$ 56,610,288
2036	$ 50,000	$ 3,635,633	$ 360,700	$ 64,933	$ 4,111,266	$ 194,500	$ 2,733,471	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,419,492	$ 691,774	$ 57,302,062
2037	$ 50,000	$ 3,635,633	$ 360,700	$ 65,999	$ 4,112,333	$ 194,500	$ 2,871,889	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,557,910	$ 554,422	$ 57,856,485
2038	$ 50,000	$ 3,630,971	$ 360,700	$ 67,066	$ 4,108,737	$ 194,500	$ 3,010,308	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,696,329	$ 412,408	$ 58,268,893
2039	$ 50,000	$ 3,630,618	$ 360,700	$ 68,133	$ 4,109,451	$ 194,500	$ 3,148,726	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,834,747	$ 274,704	$ 58,543,596
2040	$ 50,000	$ 3,630,618	$ 360,700	$ 69,199	$ 4,110,517	$ 194,500	$ 3,287,145	$ 360,700	$ 138,418	$ 130,821	$ -		$ 3,973,166	$ 137,352	$ 58,680,948
2041	$ 50,000	$ 3,630,618	$ 360,700	$ 70,266	$ 4,111,584	$ 194,500	$ 3,425,563	$ 360,700	$ 138,418	$ 130,821	$ -		$ 4,111,584	$ -	$ 58,680,948
2042	$ 50,000	$ 3,630,618	$ 360,700	$ 71,333	$ 4,112,651	$ 194,500	$ 3,563,982	$ 360,700	$ 138,418	$ 130,821	$ -		$ 4,250,002	$ (137,352)	$ 58,543,596
2043	$ 50,000	$ 3,454,981	$ 360,700	$ 72,399	$ 3,938,080	$ 194,500	$ 3,702,400	$ 360,700	$ 138,418	$ 130,821	$ -		$ 4,388,421	$ (450,341)	$ 58,093,255
2044	$ 50,000	$ 3,454,981	$ 360,700	$ 73,466	$ 3,939,147	$ 194,500	$ 3,840,818	$ 360,700	$ 138,418	$ 130,821	$ -		$ 4,526,839	$ (587,693)	$ 57,505,563
2045	$ 50,000	$ 3,454,981	$ 360,700	$ 74,532	$ 3,940,213	$ 194,500	$ 3,979,237	$ 360,700	$ 138,418	$ 130,821	$ -		$ 4,665,258	$ (725,045)	$ 56,780,518
2046	$ 50,000	$ 3,454,981	$ 360,700	$ 75,599	$ 3,941,280	$ 194,500	$ 4,117,655	$ 360,700	$ 138,418	$ 130,821	$ -		$ 4,803,676	$ (862,396)	$ 55,918,122
2047	$ 50,000	$ 3,454,981	$ 360,700	$ 76,666	$ 3,942,346	$ 194,500	$ 4,256,074	$ 360,700	$ 138,418	$ 130,821	$ -		$ 4,942,095	$ (999,748)	$ 54,918,373
2048	$ 50,000	$ 3,454,981	$ 360,700	$ 77,732	$ 3,943,413	$ 194,500	$ 4,394,492	$ 360,700	$ 138,418	$ 130,821	$ -		$ 5,080,513	$ (1,137,100)	$ 53,781,273
2049	$ 50,000	$ 3,454,981	$ 360,700	$ 78,799	$ 3,944,480	$ 194,500	$ 4,532,911	$ 360,700	$ 138,418	$ 130,821	$ -		$ 5,218,932	$ (1,274,452)	$ 52,506,822
2050	$ 50,000	$ 3,454,981	$ 360,700	$ 79,866	$ 3,945,546	$ 194,500	$ 4,671,329	$ 360,700	$ 138,418	$ 130,821	$ -		$ 5,357,350	$ (1,411,804)	$ 51,095,018
2051	$ 50,000	$ 3,454,981	$ 360,700	$ 80,932	$ 3,946,613	$ 194,500	$ 4,809,747	$ 360,700	$ 138,418	$ 130,821	$ -		$ 5,495,768	$ (1,549,155)	$ 49,545,863
30-Year Infrastructure Deficit					**$ 157,013,903**								**$ 107,468,040**		

Total Tax Funding	$ 84,080,407
2022 Total Tax Levy	$ 4,918,711
Inc. as % of Tax Levy	2.81%

Table 4a
Municipality of Marmora & Lake
2022 Asset Management Plan
Financing Strategy 3: Close In-Year Funding Gap by 2051 (Tax Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues								3. Funding Gap Calculation	
2022	**Non-Infrastructure Solutions**	**Capital Renewal and Replacement**	**Operations and Maintenance**	**Expansion Activities (Annual Provision for replacement)**	**Total Lifecycle Costs**	**Debt Payments - Tax Supported - Assumed over the period**	**Capital from Taxation (Including Transfers to Reserves)**	**O&M from Taxation**	**Yearly Increase in Tax Funding ($)**	**Canada Community Building Fund CCBF (formerly Gas Tax)**	**Other Grants (OCIF)**	***Less: Existing Reserves***	**Total Lifecycle Funding**	**Annual Funding Gap**	**Cumulative Infrastructure Deficit**
2022	$ -	$ 10,250,037	$ 360,700		$ 10,610,737	$ 194,500	$ 795,613	$ 360,700		$ 125,370	$ 248,212	*$ 1,571,398*	$ 3,295,793	$ 7,314,945	$ 7,314,945
2023	$ 50,000	$ 9,593,586	$ 360,700	$ 51,067	$ 10,055,352	$ 194,500	$ 880,612	$ 360,700	$ 84,999	$ 130,821	$ 248,212		$ 1,814,845	$ 8,240,507	$ 15,555,452
2024	$ 50,000	$ 8,302,114	$ 360,700	$ 52,133	$ 8,764,947	$ 194,500	$ 965,612	$ 360,700	$ 84,999	$ 130,821	$ 248,212		$ 1,899,844	$ 6,865,103	$ 22,420,554
2025	$ 50,000	$ 6,940,667	$ 360,700	$ 53,200	$ 7,404,567	$ 194,500	$ 1,050,611	$ 360,700	$ 84,999	$ 130,821	$ 248,212		$ 1,984,844	$ 5,419,723	$ 27,840,277
2026	$ 50,000	$ 6,380,848	$ 360,700	$ 54,267	$ 6,845,814	$ 194,500	$ 1,135,610	$ 360,700	$ 84,999	$ 130,821	$ 248,212		$ 2,069,843	$ 4,775,971	$ 32,616,249
2027	$ 50,000	$ 7,375,417	$ 360,700	$ 55,333	$ 7,841,450	$ 194,500	$ 1,220,609	$ 360,700	$ 84,999	$ 130,821	$ -		$ 1,906,630	$ 5,934,820	$ 38,551,068
2028	$ 50,000	$ 5,422,255	$ 360,700	$ 56,400	$ 5,889,355	$ 194,500	$ 1,305,609	$ 360,700	$ 84,999	$ 130,821	$ -		$ 1,991,630	$ 3,897,725	$ 42,448,793
2029	$ 50,000	$ 5,288,640	$ 360,700	$ 57,466	$ 5,756,806	$ 194,500	$ 1,390,608	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,076,629	$ 3,680,178	$ 46,128,971
2030	$ 50,000	$ 5,283,390	$ 360,700	$ 58,533	$ 5,752,623	$ 194,500	$ 1,475,607	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,161,628	$ 3,590,995	$ 49,719,966
2031	$ 50,000	$ 5,277,032	$ 360,700	$ 59,600	$ 5,747,331	$ 194,500	$ 1,560,607	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,246,627	$ 3,500,704	$ 53,220,670
2032	$ 50,000	$ 5,257,760	$ 360,700	$ 60,666	$ 5,729,126	$ 194,500	$ 1,645,606	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,331,627	$ 3,397,499	$ 56,618,169
2033	$ 50,000	$ 3,646,153	$ 360,700	$ 61,733	$ 4,118,586	$ 194,500	$ 1,730,605	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,416,626	$ 1,701,960	$ 58,320,129
2034	$ 50,000	$ 3,646,153	$ 360,700	$ 62,800	$ 4,119,653	$ 194,500	$ 1,815,604	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,501,625	$ 1,618,028	$ 59,938,157
2035	$ 50,000	$ 3,645,333	$ 360,700	$ 63,866	$ 4,119,899	$ 194,500	$ 1,900,604	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,586,624	$ 1,533,274	$ 61,471,431
2036	$ 50,000	$ 3,635,633	$ 360,700	$ 64,933	$ 4,111,266	$ 194,500	$ 1,985,603	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,671,624	$ 1,439,642	$ 62,911,073
2037	$ 50,000	$ 3,635,633	$ 360,700	$ 65,999	$ 4,112,333	$ 194,500	$ 2,070,602	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,756,623	$ 1,355,710	$ 64,266,783
2038	$ 50,000	$ 3,630,971	$ 360,700	$ 67,066	$ 4,108,737	$ 194,500	$ 2,155,601	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,841,622	$ 1,267,115	$ 65,533,898
2039	$ 50,000	$ 3,630,618	$ 360,700	$ 68,133	$ 4,109,451	$ 194,500	$ 2,240,601	$ 360,700	$ 84,999	$ 130,821	$ -		$ 2,926,622	$ 1,182,829	$ 66,716,727
2040	$ 50,000	$ 3,630,618	$ 360,700	$ 69,199	$ 4,110,517	$ 194,500	$ 2,325,600	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,011,621	$ 1,098,897	$ 67,815,623
2041	$ 50,000	$ 3,630,618	$ 360,700	$ 70,266	$ 4,111,584	$ 194,500	$ 2,410,599	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,096,620	$ 1,014,964	$ 68,830,587
2042	$ 50,000	$ 3,630,618	$ 360,700	$ 71,333	$ 4,112,651	$ 194,500	$ 2,495,599	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,181,619	$ 931,031	$ 69,761,618
2043	$ 50,000	$ 3,454,981	$ 360,700	$ 72,399	$ 3,938,080	$ 194,500	$ 2,580,598	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,266,619	$ 671,461	$ 70,433,080
2044	$ 50,000	$ 3,454,981	$ 360,700	$ 73,466	$ 3,939,147	$ 194,500	$ 2,665,597	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,351,618	$ 587,529	$ 71,020,608
2045	$ 50,000	$ 3,454,981	$ 360,700	$ 74,532	$ 3,940,213	$ 194,500	$ 2,750,596	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,436,617	$ 503,596	$ 71,524,204
2046	$ 50,000	$ 3,454,981	$ 360,700	$ 75,599	$ 3,941,280	$ 194,500	$ 2,835,596	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,521,617	$ 419,663	$ 71,943,867
2047	$ 50,000	$ 3,454,981	$ 360,700	$ 76,666	$ 3,942,346	$ 194,500	$ 2,920,595	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,606,616	$ 335,731	$ 72,279,598
2048	$ 50,000	$ 3,454,981	$ 360,700	$ 77,732	$ 3,943,413	$ 194,500	$ 3,005,594	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,691,615	$ 251,798	$ 72,531,396
2049	$ 50,000	$ 3,454,981	$ 360,700	$ 78,799	$ 3,944,480	$ 194,500	$ 3,090,594	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,776,614	$ 167,865	$ 72,699,261
2050	$ 50,000	$ 3,454,981	$ 360,700	$ 79,866	$ 3,945,546	$ 194,500	$ 3,175,593	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,861,614	$ 83,933	$ 72,783,194
2051	$ 50,000	$ 3,454,981	$ 360,700	$ 80,932	$ 3,946,613	$ 194,500	$ 3,260,592	$ 360,700	$ 84,999	$ 130,821	$ -		$ 3,946,613	$ (0)	$ 72,783,194
30-Year Infrastructure Deficit					**$ 157,013,903**								**$ 84,230,709**		

Total Tax Funding	$ 60,843,076
2022 Total Tax Levy	$ 4,918,711
Inc. as % of Tax Levy	1.73%

Table 1a
Municipality of Marmora & Lake
2022 Asset Management Plan
Close Cumulative Infrastructure Deficit by 2051 (Rate Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues						3. Funding Gap Calculation	
Year	Non-Infrastructure Solutions	Capital Renewal/ Replacement and Disposal	Operations and Maintenance	Expansion Activities (Annual Provision for replacement)	Total Lifecycle Costs	Debt Payments - Rate Supported - Assumed over the period	Capital from User Fees (Including Transfers to Reserves)	O&M from Rates	Yearly Increase in Rate Funding ($)	*Less: Existing Reserves*	Total Lifecycle Funding	Annual Funding Gap	Cumulative Infrastructure Deficit
2022		$ 3,457,548	$ 35,240		$ 3,492,788	$ 167,880	$ 136,000	$ 35,240		*$ 27,959*	$ 367,079	$ 3,125,708	$ 3,125,708
2023	$ 10,000	$ 3,457,548	$ 35,240	$ 25,503	$ 3,528,291	$ 167,880	$ 234,762	$ 35,240	$ 98,762		$ 437,882	$ 3,090,409	$ 6,216,118
2024	$ 10,000	$ 3,457,548	$ 35,240	$ 26,007	$ 3,528,794	$ 167,880	$ 333,523	$ 35,240	$ 98,762		$ 536,643	$ 2,992,151	$ 9,208,269
2025	$ 10,000	$ 3,457,548	$ 35,240	$ 26,510	$ 3,529,297	$ 167,880	$ 432,285	$ 35,240	$ 98,762		$ 635,405	$ 2,893,893	$ 12,102,161
2026	$ 10,000	$ 3,457,548	$ 35,240	$ 27,013	$ 3,529,801	$ 167,880	$ 531,046	$ 35,240	$ 98,762		$ 734,166	$ 2,795,634	$ 14,897,796
2027	$ 10,000	$ 3,389,718	$ 35,240	$ 27,516	$ 3,462,474	$ 167,880	$ 629,808	$ 35,240	$ 98,762		$ 832,928	$ 2,629,546	$ 17,527,342
2028	$ 10,000	$ 1,338,331	$ 35,240	$ 28,020	$ 1,411,590	$ 167,880	$ 728,569	$ 35,240	$ 98,762		$ 931,689	$ 479,901	$ 18,007,243
2029	$ 10,000	$ 1,338,331	$ 35,240	$ 28,523	$ 1,412,094	$ 167,880	$ 827,331	$ 35,240	$ 98,762		$ 1,030,451	$ 381,643	$ 18,388,886
2030	$ 10,000	$ 1,338,331	$ 35,240	$ 29,026	$ 1,412,597	$ 167,880	$ 926,092	$ 35,240	$ 98,762		$ 1,129,212	$ 283,385	$ 18,672,270
2031	$ 10,000	$ 1,338,331	$ 35,240	$ 29,529	$ 1,413,100	$ 167,880	$ 1,024,854	$ 35,240	$ 98,762		$ 1,227,974	$ 185,126	$ 18,857,396
2032	$ 10,000	$ 1,338,331	$ 35,240	$ 30,033	$ 1,413,603	$ 167,880	$ 1,123,615	$ 35,240	$ 98,762		$ 1,326,735	$ 86,868	$ 18,944,264
2033	$ 10,000	$ 1,336,986	$ 35,240	$ 30,536	$ 1,412,762	$ 167,880	$ 1,222,377	$ 35,240	$ 98,762		$ 1,425,497	$ (12,735)	$ 18,931,530
2034	$ 10,000	$ 1,336,986	$ 35,240	$ 31,039	$ 1,413,265	$ 167,880	$ 1,321,138	$ 35,240	$ 98,762		$ 1,524,258	$ (110,993)	$ 18,820,536
2035	$ 10,000	$ 1,336,986	$ 35,240	$ 31,542	$ 1,413,769	$ 167,880	$ 1,419,900	$ 35,240	$ 98,762		$ 1,623,020	$ (209,251)	$ 18,611,285
2036	$ 10,000	$ 1,336,986	$ 35,240	$ 32,046	$ 1,414,272	$ 167,880	$ 1,518,662	$ 35,240	$ 98,762		$ 1,721,782	$ (307,510)	$ 18,303,775
2037	$ 10,000	$ 1,336,136	$ 35,240	$ 32,549	$ 1,413,925	$ 167,880	$ 1,617,423	$ 35,240	$ 98,762		$ 1,820,543	$ (406,618)	$ 17,897,157
2038	$ 10,000	$ 1,336,136	$ 35,240	$ 33,052	$ 1,414,428	$ 167,880	$ 1,716,185	$ 35,240	$ 98,762		$ 1,919,305	$ (504,876)	$ 17,392,281
2039	$ 10,000	$ 1,336,136	$ 35,240	$ 33,555	$ 1,414,932	$ 167,880	$ 1,814,946	$ 35,240	$ 98,762		$ 2,018,066	$ (603,135)	$ 16,789,146
2040	$ 10,000	$ 1,336,136	$ 35,240	$ 34,059	$ 1,415,435	$ 167,880	$ 1,913,708	$ 35,240	$ 98,762		$ 2,116,828	$ (701,393)	$ 16,087,753
2041	$ 10,000	$ 1,318,129	$ 35,240	$ 34,562	$ 1,397,931	$ 167,880	$ 2,012,469	$ 35,240	$ 98,762		$ 2,215,589	$ (817,658)	$ 15,270,096
2042	$ 10,000	$ 1,318,129	$ 35,240	$ 35,065	$ 1,398,435	$ 167,880	$ 2,111,231	$ 35,240	$ 98,762		$ 2,314,351	$ (915,916)	$ 14,354,179
2043	$ 10,000	$ 1,316,861	$ 35,240	$ 35,568	$ 1,397,669	$ 167,880	$ 2,209,992	$ 35,240	$ 98,762		$ 2,413,112	$ (1,015,443)	$ 13,338,736
2044	$ 10,000	$ 1,316,861	$ 35,240	$ 36,072	$ 1,398,172	$ 167,880	$ 2,308,754	$ 35,240	$ 98,762		$ 2,511,874	$ (1,113,702)	$ 12,225,034
2045	$ 10,000	$ 1,316,861	$ 35,240	$ 36,575	$ 1,398,675	$ 167,880	$ 2,407,515	$ 35,240	$ 98,762		$ 2,610,635	$ (1,211,960)	$ 11,013,074
2046	$ 10,000	$ 1,316,861	$ 35,240	$ 37,078	$ 1,399,179	$ 167,880	$ 2,506,277	$ 35,240	$ 98,762		$ 2,709,397	$ (1,310,218)	$ 9,702,856
2047	$ 10,000	$ 1,316,631	$ 35,240	$ 37,581	$ 1,399,452	$ 167,880	$ 2,605,038	$ 35,240	$ 98,762		$ 2,808,158	$ (1,408,706)	$ 8,294,150
2048	$ 10,000	$ 897,445	$ 35,240	$ 38,085	$ 980,770	$ 167,880	$ 2,703,800	$ 35,240	$ 98,762		$ 2,906,920	$ (1,926,150)	$ 6,368,000
2049	$ 10,000	$ 897,445	$ 35,240	$ 38,588	$ 981,273	$ 167,880	$ 2,802,562	$ 35,240	$ 98,762		$ 3,005,682	$ (2,024,408)	$ 4,343,592
2050	$ 10,000	$ 897,445	$ 35,240	$ 39,091	$ 981,776	$ 167,880	$ 2,901,323	$ 35,240	$ 98,762		$ 3,104,443	$ (2,122,667)	$ 2,220,925
2051	$ 10,000	$ 897,445	$ 35,240	$ 39,594	$ 982,280	$ 167,880	$ 3,000,085	$ 35,240	$ 98,762		$ 3,203,205	$ (2,220,925)	$ 0
30-Year Infrastructure Deficit					**$ 53,162,828**						**$ 53,162,828**		

Total Tax Funding	$ 47,041,269	
2022 Total Tax Levy	$ 1,042,605	*Based on 2022 budget*
Inc. as % of Tax Levy	9.47%	

Table 2a
Municipality of Marmora & Lake
2022 Asset Management Plan
Financing Strategy 1: Close In-Year Funding Gap by 2036 (Rate Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues						3. Funding Gap Calculation	
Year	Non-Infrastructure Solutions	Capital Renewal and Replacement	Operations and Maintenance	Expansion Activities (Annual Provision for replacement)	Total Lifecycle Costs	Debt Payments - Rate Supported - Assumed over the period	Capital from User Fees (Including Transfers to Reserves)	O&M from Rates	Yearly Increase in Rate Funding ($)	*Less: Existing Reserves*	Total Lifecycle Funding	Annual Funding Gap	Cumulative Infrastructure Deficit
2022	$ -	$ 3,457,548	$ 35,240	$ -	$ 3,492,788	$ 167,880	$ 136,000	$ 35,240		*$ 27,959*	$ 367,079	$ 3,125,708	$ 3,125,708
2023	$ 10,000	$ 3,457,548	$ 35,240	$ 25,503	$ 3,528,291	$ 167,880	$ 212,797	$ 35,240	$ 76,797		$ 415,917	$ 3,112,374	$ 6,238,083
2024	$ 10,000	$ 3,457,548	$ 35,240	$ 26,007	$ 3,528,794	$ 167,880	$ 289,593	$ 35,240	$ 76,797		$ 492,713	$ 3,036,081	$ 9,274,164
2025	$ 10,000	$ 3,457,548	$ 35,240	$ 26,510	$ 3,529,297	$ 167,880	$ 366,390	$ 35,240	$ 76,797		$ 569,510	$ 2,959,788	$ 12,233,951
2026	$ 10,000	$ 3,457,548	$ 35,240	$ 27,013	$ 3,529,801	$ 167,880	$ 443,186	$ 35,240	$ 76,797		$ 646,306	$ 2,883,494	$ 15,117,445
2027	$ 10,000	$ 3,389,718	$ 35,240	$ 27,516	$ 3,462,474	$ 167,880	$ 519,983	$ 35,240	$ 76,797		$ 723,103	$ 2,739,371	$ 17,856,817
2028	$ 10,000	$ 1,338,331	$ 35,240	$ 28,020	$ 1,411,590	$ 167,880	$ 596,779	$ 35,240	$ 76,797		$ 799,899	$ 611,691	$ 18,468,508
2029	$ 10,000	$ 1,338,331	$ 35,240	$ 28,523	$ 1,412,094	$ 167,880	$ 673,576	$ 35,240	$ 76,797		$ 876,696	$ 535,398	$ 19,003,905
2030	$ 10,000	$ 1,338,331	$ 35,240	$ 29,026	$ 1,412,597	$ 167,880	$ 750,372	$ 35,240	$ 76,797		$ 953,492	$ 459,104	$ 19,463,010
2031	$ 10,000	$ 1,338,331	$ 35,240	$ 29,529	$ 1,413,100	$ 167,880	$ 827,169	$ 35,240	$ 76,797		$ 1,030,289	$ 382,811	$ 19,845,821
2032	$ 10,000	$ 1,338,331	$ 35,240	$ 30,033	$ 1,413,603	$ 167,880	$ 903,966	$ 35,240	$ 76,797		$ 1,107,086	$ 306,518	$ 20,152,338
2033	$ 10,000	$ 1,336,986	$ 35,240	$ 30,536	$ 1,412,762	$ 167,880	$ 980,762	$ 35,240	$ 76,797		$ 1,183,882	$ 228,880	$ 20,381,218
2034	$ 10,000	$ 1,336,986	$ 35,240	$ 31,039	$ 1,413,265	$ 167,880	$ 1,057,559	$ 35,240	$ 76,797		$ 1,260,679	$ 152,587	$ 20,533,805
2035	$ 10,000	$ 1,336,986	$ 35,240	$ 31,542	$ 1,413,769	$ 167,880	$ 1,134,355	$ 35,240	$ 76,797		$ 1,337,475	$ 76,293	$ 20,610,098
2036	$ 10,000	$ 1,336,986	$ 35,240	$ 32,046	$ 1,414,272	$ 167,880	$ 1,211,152	$ 35,240	$ 76,797		$ 1,414,272	$ -	$ 20,610,098
2037	$ 10,000	$ 1,336,136	$ 35,240	$ 32,549	$ 1,413,925	$ 167,880	$ 1,287,948	$ 35,240	$ 76,797		$ 1,491,068	$ (77,143)	$ 20,532,955
2038	$ 10,000	$ 1,336,136	$ 35,240	$ 33,052	$ 1,414,428	$ 167,880	$ 1,364,745	$ 35,240	$ 76,797		$ 1,567,865	$ (153,437)	$ 20,379,518
2039	$ 10,000	$ 1,336,136	$ 35,240	$ 33,555	$ 1,414,932	$ 167,880	$ 1,441,541	$ 35,240	$ 76,797		$ 1,644,661	$ (229,730)	$ 20,149,788
2040	$ 10,000	$ 1,336,136	$ 35,240	$ 34,059	$ 1,415,435	$ 167,880	$ 1,518,338	$ 35,240	$ 76,797		$ 1,721,458	$ (306,023)	$ 19,843,765
2041	$ 10,000	$ 1,318,129	$ 35,240	$ 34,562	$ 1,397,931	$ 167,880	$ 1,595,135	$ 35,240	$ 76,797		$ 1,798,255	$ (400,323)	$ 19,443,442
2042	$ 10,000	$ 1,318,129	$ 35,240	$ 35,065	$ 1,398,435	$ 167,880	$ 1,671,931	$ 35,240	$ 76,797		$ 1,875,051	$ (476,617)	$ 18,966,825
2043	$ 10,000	$ 1,316,861	$ 35,240	$ 35,568	$ 1,397,669	$ 167,880	$ 1,748,728	$ 35,240	$ 76,797		$ 1,951,848	$ (554,179)	$ 18,412,647
2044	$ 10,000	$ 1,316,861	$ 35,240	$ 36,072	$ 1,398,172	$ 167,880	$ 1,825,524	$ 35,240	$ 76,797		$ 2,028,644	$ (630,472)	$ 17,782,174
2045	$ 10,000	$ 1,316,861	$ 35,240	$ 36,575	$ 1,398,675	$ 167,880	$ 1,902,321	$ 35,240	$ 76,797		$ 2,105,441	$ (706,765)	$ 17,075,409
2046	$ 10,000	$ 1,316,861	$ 35,240	$ 37,078	$ 1,399,179	$ 167,880	$ 1,979,117	$ 35,240	$ 76,797		$ 2,182,237	$ (783,059)	$ 16,292,350
2047	$ 10,000	$ 1,316,631	$ 35,240	$ 37,581	$ 1,399,452	$ 167,880	$ 2,055,914	$ 35,240	$ 76,797		$ 2,259,034	$ (859,582)	$ 15,432,769
2048	$ 10,000	$ 897,445	$ 35,240	$ 38,085	$ 980,770	$ 167,880	$ 2,132,710	$ 35,240	$ 76,797		$ 2,335,830	$ (1,355,061)	$ 14,077,708
2049	$ 10,000	$ 897,445	$ 35,240	$ 38,588	$ 981,273	$ 167,880	$ 2,209,507	$ 35,240	$ 76,797		$ 2,412,627	$ (1,431,354)	$ 12,646,354
2050	$ 10,000	$ 897,445	$ 35,240	$ 39,091	$ 981,776	$ 167,880	$ 2,286,304	$ 35,240	$ 76,797		$ 2,489,424	$ (1,507,647)	$ 11,138,707
2051	$ 10,000	$ 897,445	$ 35,240	$ 39,594	$ 982,280	$ 167,880	$ 2,363,100	$ 35,240	$ 76,797		$ 2,566,220	$ (1,583,940)	$ 9,554,767
30-Year Infrastructure Deficit					**$ 53,162,828**						**$ 43,608,062**		

Total Tax Funding	$ 37,486,502
2022 Total Tax Levy	$ 1,042,605
Inc. as % of Tax Levy	7.37%

Table 3a
Municipality of Marmora & Lake
2022 Asset Management Plan
Financing Strategy 2: Close In-Year Funding Gap by 2041 (Rate Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues						3. Funding Gap Calculation	
Year	Non-Infrastructure Solutions	Capital Renewal and Replacement	Operations and Maintenance	Expansion Activities (Annual Provision for replacement)	Total Lifecycle Costs	Debt Payments - Rate Supported - Assumed over the period	Capital from User Fees (Including Transfers to Reserves)	O&M from Rates	Yearly Increase in Rate Funding ($)	*Less: Existing Reserves*	Total Lifecycle Funding	Annual Funding Gap	Cumulative Infrastructure Deficit
2022	$ -	$ 3,457,548	$ 35,240	0	$ 3,492,788	$ 167,880	$ 136,000	$ 35,240		*$ 27,959*	$ 367,079	$ 3,125,708	$ 3,125,708
2023	$ 10,000	$ 3,457,548	$ 35,240	$ 25,503	$ 3,528,291	$ 167,880	$ 191,727	$ 35,240	$ 55,727		$ 394,847	$ 3,133,444	$ 6,259,152
2024	$ 10,000	$ 3,457,548	$ 35,240	$ 26,007	$ 3,528,794	$ 167,880	$ 247,454	$ 35,240	$ 55,727		$ 450,574	$ 3,078,220	$ 9,337,372
2025	$ 10,000	$ 3,457,548	$ 35,240	$ 26,510	$ 3,529,297	$ 167,880	$ 303,181	$ 35,240	$ 55,727		$ 506,301	$ 3,022,997	$ 12,360,369
2026	$ 10,000	$ 3,457,548	$ 35,240	$ 27,013	$ 3,529,801	$ 167,880	$ 358,908	$ 35,240	$ 55,727		$ 562,028	$ 2,967,773	$ 15,328,142
2027	$ 10,000	$ 3,389,718	$ 35,240	$ 27,516	$ 3,462,474	$ 167,880	$ 414,635	$ 35,240	$ 55,727		$ 617,755	$ 2,844,719	$ 18,172,861
2028	$ 10,000	$ 1,338,331	$ 35,240	$ 28,020	$ 1,411,590	$ 167,880	$ 470,361	$ 35,240	$ 55,727		$ 673,481	$ 738,109	$ 18,910,970
2029	$ 10,000	$ 1,338,331	$ 35,240	$ 28,523	$ 1,412,094	$ 167,880	$ 526,088	$ 35,240	$ 55,727		$ 729,208	$ 682,885	$ 19,593,855
2030	$ 10,000	$ 1,338,331	$ 35,240	$ 29,026	$ 1,412,597	$ 167,880	$ 581,815	$ 35,240	$ 55,727		$ 784,935	$ 627,662	$ 20,221,517
2031	$ 10,000	$ 1,338,331	$ 35,240	$ 29,529	$ 1,413,100	$ 167,880	$ 637,542	$ 35,240	$ 55,727		$ 840,662	$ 572,438	$ 20,793,955
2032	$ 10,000	$ 1,338,331	$ 35,240	$ 30,033	$ 1,413,603	$ 167,880	$ 693,269	$ 35,240	$ 55,727		$ 896,389	$ 517,214	$ 21,311,169
2033	$ 10,000	$ 1,336,986	$ 35,240	$ 30,536	$ 1,412,762	$ 167,880	$ 748,996	$ 35,240	$ 55,727		$ 952,116	$ 460,646	$ 21,771,815
2034	$ 10,000	$ 1,336,986	$ 35,240	$ 31,039	$ 1,413,265	$ 167,880	$ 804,723	$ 35,240	$ 55,727		$ 1,007,843	$ 405,422	$ 22,177,237
2035	$ 10,000	$ 1,336,986	$ 35,240	$ 31,542	$ 1,413,769	$ 167,880	$ 860,450	$ 35,240	$ 55,727		$ 1,063,570	$ 350,199	$ 22,527,436
2036	$ 10,000	$ 1,336,986	$ 35,240	$ 32,046	$ 1,414,272	$ 167,880	$ 916,177	$ 35,240	$ 55,727		$ 1,119,297	$ 294,975	$ 22,822,411
2037	$ 10,000	$ 1,336,136	$ 35,240	$ 32,549	$ 1,413,925	$ 167,880	$ 971,904	$ 35,240	$ 55,727		$ 1,175,024	$ 238,901	$ 23,061,312
2038	$ 10,000	$ 1,336,136	$ 35,240	$ 33,052	$ 1,414,428	$ 167,880	$ 1,027,631	$ 35,240	$ 55,727		$ 1,230,751	$ 183,678	$ 23,244,990
2039	$ 10,000	$ 1,336,136	$ 35,240	$ 33,555	$ 1,414,932	$ 167,880	$ 1,083,358	$ 35,240	$ 55,727		$ 1,286,478	$ 128,454	$ 23,373,444
2040	$ 10,000	$ 1,336,136	$ 35,240	$ 34,059	$ 1,415,435	$ 167,880	$ 1,139,084	$ 35,240	$ 55,727		$ 1,342,204	$ 73,230	$ 23,446,674
2041	$ 10,000	$ 1,318,129	$ 35,240	$ 34,562	$ 1,397,931	$ 167,880	$ 1,194,811	$ 35,240	$ 55,727		$ 1,397,931	$ -	$ 23,446,674
2042	$ 10,000	$ 1,318,129	$ 35,240	$ 35,065	$ 1,398,435	$ 167,880	$ 1,250,538	$ 35,240	$ 55,727		$ 1,453,658	$ (55,224)	$ 23,391,451
2043	$ 10,000	$ 1,316,861	$ 35,240	$ 35,568	$ 1,397,669	$ 167,880	$ 1,306,265	$ 35,240	$ 55,727		$ 1,509,385	$ (111,716)	$ 23,279,735
2044	$ 10,000	$ 1,316,861	$ 35,240	$ 36,072	$ 1,398,172	$ 167,880	$ 1,361,992	$ 35,240	$ 55,727		$ 1,565,112	$ (166,940)	$ 23,112,795
2045	$ 10,000	$ 1,316,861	$ 35,240	$ 36,575	$ 1,398,675	$ 167,880	$ 1,417,719	$ 35,240	$ 55,727		$ 1,620,839	$ (222,164)	$ 22,890,631
2046	$ 10,000	$ 1,316,861	$ 35,240	$ 37,078	$ 1,399,179	$ 167,880	$ 1,473,446	$ 35,240	$ 55,727		$ 1,676,566	$ (277,387)	$ 22,613,244
2047	$ 10,000	$ 1,316,631	$ 35,240	$ 37,581	$ 1,399,452	$ 167,880	$ 1,529,173	$ 35,240	$ 55,727		$ 1,732,293	$ (332,840)	$ 22,280,404
2048	$ 10,000	$ 897,445	$ 35,240	$ 38,085	$ 980,770	$ 167,880	$ 1,584,900	$ 35,240	$ 55,727		$ 1,788,020	$ (807,250)	$ 21,473,154
2049	$ 10,000	$ 897,445	$ 35,240	$ 38,588	$ 981,273	$ 167,880	$ 1,640,627	$ 35,240	$ 55,727		$ 1,843,747	$ (862,473)	$ 20,610,680
2050	$ 10,000	$ 897,445	$ 35,240	$ 39,091	$ 981,776	$ 167,880	$ 1,696,354	$ 35,240	$ 55,727		$ 1,899,474	$ (917,697)	$ 19,692,983
2051	$ 10,000	$ 897,445	$ 35,240	$ 39,594	$ 982,280	$ 167,880	$ 1,752,080	$ 35,240	$ 55,727		$ 1,955,200	$ (972,921)	$ 18,720,062
30-Year Infrastructure Deficit					**$ 53,162,828**						**$ 34,442,766**		

Total Tax Funding	$ 28,321,207
2022 Total Tax Levy	$ 1,042,605
Inc. as % of Tax Levy	5.34%

Table 4a
Municipality of Marmora & Lake
2022 Asset Management Plan
Financing Strategy 3: Close In-Year Funding Gap by 2051 (Rate Funded Services)

Legend	1. Life Cycle Cost Model					2. Revenues						3. Funding Gap Calculation	
2022	**Non-Infrastructure Solutions**	**Capital Renewal and Replacement**	**Operations and Maintenance**	**Expansion Activities (Annual Provision for replacement)**	**Total Lifecycle Costs**	**Debt Payments - Rate Supported - Assumed over the period**	**Capital from User Fees (Including Transfers to Reserves)**	**O&M from Rates**	**Yearly Increase in Rate Funding ($)**	***Less: Existing Reserves***	**Total Lifecycle Funding**	**Annual Funding Gap**	**Cumulative Infrastructure Deficit**
2022	$ -	$ 3,457,548	$ 35,240	0	$ 3,492,788	$ 167,880	$ 136,000	$ 35,240		*$ 27,959*	$ 367,079	$ 3,125,708	$ 3,125,708
2023	$ 10,000	$ 3,457,548	$ 35,240	$ 25,503	$ 3,528,291	$ 167,880	$ 158,178	$ 35,240	$ 22,178		$ 361,298	$ 3,166,993	$ 6,292,701
2024	$ 10,000	$ 3,457,548	$ 35,240	$ 26,007	$ 3,528,794	$ 167,880	$ 180,356	$ 35,240	$ 22,178		$ 383,476	$ 3,145,318	$ 9,438,019
2025	$ 10,000	$ 3,457,548	$ 35,240	$ 26,510	$ 3,529,297	$ 167,880	$ 202,534	$ 35,240	$ 22,178		$ 405,654	$ 3,123,644	$ 12,561,663
2026	$ 10,000	$ 3,457,548	$ 35,240	$ 27,013	$ 3,529,801	$ 167,880	$ 224,712	$ 35,240	$ 22,178		$ 427,832	$ 3,101,969	$ 15,663,632
2027	$ 10,000	$ 3,389,718	$ 35,240	$ 27,516	$ 3,462,474	$ 167,880	$ 246,890	$ 35,240	$ 22,178		$ 450,010	$ 3,012,464	$ 18,676,096
2028	$ 10,000	$ 1,338,331	$ 35,240	$ 28,020	$ 1,411,590	$ 167,880	$ 269,068	$ 35,240	$ 22,178		$ 472,188	$ 939,403	$ 19,615,499
2029	$ 10,000	$ 1,338,331	$ 35,240	$ 28,523	$ 1,412,094	$ 167,880	$ 291,245	$ 35,240	$ 22,178		$ 494,365	$ 917,728	$ 20,533,227
2030	$ 10,000	$ 1,338,331	$ 35,240	$ 29,026	$ 1,412,597	$ 167,880	$ 313,423	$ 35,240	$ 22,178		$ 516,543	$ 896,053	$ 21,429,280
2031	$ 10,000	$ 1,338,331	$ 35,240	$ 29,529	$ 1,413,100	$ 167,880	$ 335,601	$ 35,240	$ 22,178		$ 538,721	$ 874,379	$ 22,303,659
2032	$ 10,000	$ 1,338,331	$ 35,240	$ 30,033	$ 1,413,603	$ 167,880	$ 357,779	$ 35,240	$ 22,178		$ 560,899	$ 852,704	$ 23,156,363
2033	$ 10,000	$ 1,336,986	$ 35,240	$ 30,536	$ 1,412,762	$ 167,880	$ 379,957	$ 35,240	$ 22,178		$ 583,077	$ 829,685	$ 23,986,048
2034	$ 10,000	$ 1,336,986	$ 35,240	$ 31,039	$ 1,413,265	$ 167,880	$ 402,135	$ 35,240	$ 22,178		$ 605,255	$ 808,010	$ 24,794,059
2035	$ 10,000	$ 1,336,986	$ 35,240	$ 31,542	$ 1,413,769	$ 167,880	$ 424,313	$ 35,240	$ 22,178		$ 627,433	$ 786,336	$ 25,580,394
2036	$ 10,000	$ 1,336,986	$ 35,240	$ 32,046	$ 1,414,272	$ 167,880	$ 446,491	$ 35,240	$ 22,178		$ 649,611	$ 764,661	$ 26,345,055
2037	$ 10,000	$ 1,336,136	$ 35,240	$ 32,549	$ 1,413,925	$ 167,880	$ 468,669	$ 35,240	$ 22,178		$ 671,789	$ 742,136	$ 27,087,191
2038	$ 10,000	$ 1,336,136	$ 35,240	$ 33,052	$ 1,414,428	$ 167,880	$ 490,847	$ 35,240	$ 22,178		$ 693,967	$ 720,462	$ 27,807,653
2039	$ 10,000	$ 1,336,136	$ 35,240	$ 33,555	$ 1,414,932	$ 167,880	$ 513,025	$ 35,240	$ 22,178		$ 716,145	$ 698,787	$ 28,506,440
2040	$ 10,000	$ 1,336,136	$ 35,240	$ 34,059	$ 1,415,435	$ 167,880	$ 535,203	$ 35,240	$ 22,178		$ 738,323	$ 677,112	$ 29,183,552
2041	$ 10,000	$ 1,318,129	$ 35,240	$ 34,562	$ 1,397,931	$ 167,880	$ 557,380	$ 35,240	$ 22,178		$ 760,500	$ 637,431	$ 29,820,983
2042	$ 10,000	$ 1,318,129	$ 35,240	$ 35,065	$ 1,398,435	$ 167,880	$ 579,558	$ 35,240	$ 22,178		$ 782,678	$ 615,756	$ 30,436,739
2043	$ 10,000	$ 1,316,861	$ 35,240	$ 35,568	$ 1,397,669	$ 167,880	$ 601,736	$ 35,240	$ 22,178		$ 804,856	$ 592,813	$ 31,029,552
2044	$ 10,000	$ 1,316,861	$ 35,240	$ 36,072	$ 1,398,172	$ 167,880	$ 623,914	$ 35,240	$ 22,178		$ 827,034	$ 571,138	$ 31,600,690
2045	$ 10,000	$ 1,316,861	$ 35,240	$ 36,575	$ 1,398,675	$ 167,880	$ 646,092	$ 35,240	$ 22,178		$ 849,212	$ 549,463	$ 32,150,153
2046	$ 10,000	$ 1,316,861	$ 35,240	$ 37,078	$ 1,399,179	$ 167,880	$ 668,270	$ 35,240	$ 22,178		$ 871,390	$ 527,789	$ 32,677,942
2047	$ 10,000	$ 1,316,631	$ 35,240	$ 37,581	$ 1,399,452	$ 167,880	$ 690,448	$ 35,240	$ 22,178		$ 893,568	$ 505,884	$ 33,183,826
2048	$ 10,000	$ 897,445	$ 35,240	$ 38,085	$ 980,770	$ 167,880	$ 712,626	$ 35,240	$ 22,178		$ 915,746	$ 65,024	$ 33,248,850
2049	$ 10,000	$ 897,445	$ 35,240	$ 38,588	$ 981,273	$ 167,880	$ 734,804	$ 35,240	$ 22,178		$ 937,924	$ 43,349	$ 33,292,199
2050	$ 10,000	$ 897,445	$ 35,240	$ 39,091	$ 981,776	$ 167,880	$ 756,982	$ 35,240	$ 22,178		$ 960,102	$ 21,675	$ 33,313,874
2051	$ 10,000	$ 897,445	$ 35,240	$ 39,594	$ 982,280	$ 167,880	$ 779,160	$ 35,240	$ 22,178		$ 982,280	$ -	$ 33,313,874
30-Year Infrastructure Deficit					**$ 53,162,828**						**$ 19,848,954**		

Total Tax Funding	$ 13,727,395
2022 Total Tax Levy	$ 1,042,605
Inc. as % of Tax Levy	2.13%

High Priority Capital Works

The following is a list of high priority capital works for the Municipality. In consultation with Municipal staff, and the results of the Asset Management Plan, the following table outlines a list of key projects which have been identified as a high priority and require immediate attention. Although not specifically identified in the list below, the linear water, sewer and storm water infrastructure in poor and very poor condition which is associated with corresponding roads work should be considered a high priority as undertaking the works simultaneously will create the most efficient use of resources.

Priority #	Project Description	Estimated Cost
1.	Watermain Rehab: Norwood Road and Roscoe Street	$800,000
2.	Watermain Rehab: North Maloney to Ultra Mar	$957,000
3.	Catchbasins (Stormwater) Replacement of Poor Assets	Average cost per catchbasin = $2,500
4.	Young's Bridge	$450,000.00
5.	Pit Bridge	$375,000.00
6.	Deer River Bridge	$780,000.00
7.	Gut Bridge	$300,000.00
8.	Boyd Bridge	$450,000.00
9.	Hannah's Bridge	$500,000.00
10.	Shanick Bridge	$3,000,000.00
11.	North Twin Sister Culvert	$365,000.00
12.	Cole Culvert	$300,000.00
13.	Joe Barrons Culvert	$300,000.00

14.	Various Building Repair Works identified as Very Poor in the AMP	$650,000.00
15.	SCADA Machinery	$700,000.00
16.	Bronson Road	$450,000.00
17.	Centre Line Road	$1.3 million
18.	Centre Line Road	$1.3 million
19.	Centre Line Road	$850,000.00
20.	Crofts Road	$500,000.00
21.	High Shore Road	$950,000.00
22.	Malone Road	$550,000.00
23.	Old Marmora Road	$3.0 million
24.	Shanick Road	$900,000.00
25.	Shanick Road	$550,000.00
26.	Station Road	$650,000.00
27.	Tiffen Road	$525,000.00
28.	Twin Sister Lakes Road	$500,000.00
29.	Vansickle Road	$1.1 million
30.	Old Hastings Road	$550,000.00
31.	Jennison Road	$1.4 million
32.	Skene Road	$850,000.00

The level of capital repair and replacement works required would necessitate the Municipality to seek funding from a variety of sources, in addition to utility rate and tax rate

based revenues, to fund all of part these works. As part of the Asset Management Plan and through a separate utility rate setting exercise, the Municipality has committed to consider increasing annual capital contributions consistent with Strategies 2 or 3 of the Asset Management Plan during the 2023 budget process and beyond (see Staff Report: 2022-05-17). Furthermore, regular utility rate increases were adopted by Council through to 2023 under by-law 2019-55. Further rate adjustments will be considered prior to the expiry of by-law 2019-55. However, in the short-medium term, the Municipality should look to secure grant funding to offset the capital costs of completing the noted projects.

The Municipality has always used internal control measures to prioritize capital related repair and replacement activities to align with available funds/resources to meet current levels of service. The Municipality will continue to utilize such measures to ensure capital works are carried out in a fiscally responsible manner. It is in this regard the Municipality has identified the need to complete some of the identified projects within 1 year, while the remaining high priority projects will be considered for completion in subsequent years beyond 2023. The Municipality's ability to undertake these projects is largely dependent on securing upper-level government grant funding, and therefore, the Municipality should exercise all available grant funding opportunities while continuing to move towards full cost recovery utility rates while also increasing tax supported capital contributions over the long-term consistent with the financial strategies presented in this Asset Management Plan.

The financing strategies outlined in the Section 5 of the Asset Management Plan, and through the adoption of the staff report dated May 17th, indicates the Municipality's commitment to increase capital contributions over time to progressively move towards a self sustaining asset system. It should be noted; annual capital budgeting exercises may reprioritize the capital works identified.