FINAL REPORT

PREPARED BY HEMSON FOR THE TOWNSHIP OF BROCK

ASSET MANAGEMENT PLAN

June 12, 2025

HEMSON

1000 - 30 St. Patrick Street, Toronto ON M5T 3A3

416 593 5090 | hemson@hemson.com | www.hemson.com

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EXECUTIVE SUMMARY

The Asset Management Plan (2025 Plan) has been developed to be consistent with the requirements of *Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure* (*O Reg. 588/17*) and meet the 2025 proposed level of service requirements. This 2025 Plan includes current level of service measures for all core and non-core infrastructure assets and defines proposed levels of service over a ten-year period in compliance with the regulation. A summary of the key results of the 2025 AMP is noted below along with relevant reporting outputs provided in the summary dashboard. Note that all figures are in constant 2024 dollars.

- The Township's infrastructure has an estimated replacement value of $667.4 million. The largest share is roads and accounts for about $456.9 million (68%). The next highest share is bridges and culverts at $93.8 million (14%) and is followed by buildings at $84.2 million (13%). The other asset categories are made up of $32.5 million (5%) for land improvements, stormwater infrastructure, equipment, furnishings, vehicles, sidewalks, and pathways.

- Township assets are determined to be in Good condition overall. About $383.2 million (58%) of the assets are in Good to Very Good condition while $184.0 million (28%) of the assets are Fair condition. The remaining $100.2 million (15%) are in Poor to Very Poor condition.

- The proposed level of service is generally set to maintain the current level of service over the planning period (2024-2034) with some exceptions for certain assets.

    - Paved roads and unpaved roads are, on average, in Fair condition and are proposed to be maintained in this condition.

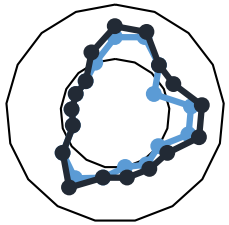
    - One bridge or culvert within the Township current has seasonal loading restrictions. The current weighted average BCI of bridges is 68, while the same metric for structural culverts is 64. This BCI proposed to be increased to an average of 75 for each by 2034. This is expected to be achieved if the full lifecycle cost recommendations of the 2023 Structures Inspection Report (OSIM) are undertaken.

    - The level of service for the condition of both buildings and vehicles has been delineated by function or department, and are proposed to remain at the current performance by 2034.

- The total 10-year lifecycle costs to meet proposed levels of service amount to $98.5 million (an average of $9.0 million per year). To meet proposed levels of service an average increase to contributions to capital reserves of $83,400 per year would be required which is equivalent to a 3.2% annual increase to the tax levy in 2025 ($2024). Going forward, this amount would need to be adjusted by inflation on an annual basis to ensure the Township's funding levels are sufficient to meet general market price increases.

Summary of 2025 Asset Management Plan

Maturity Assessment

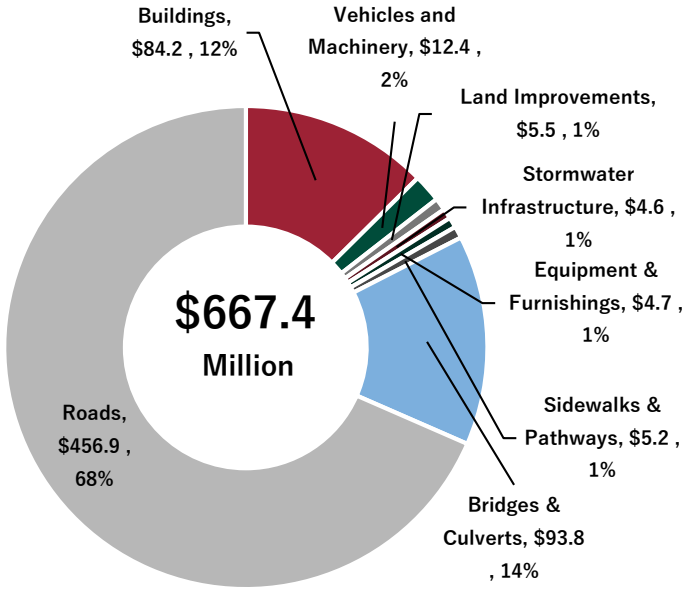


55/60

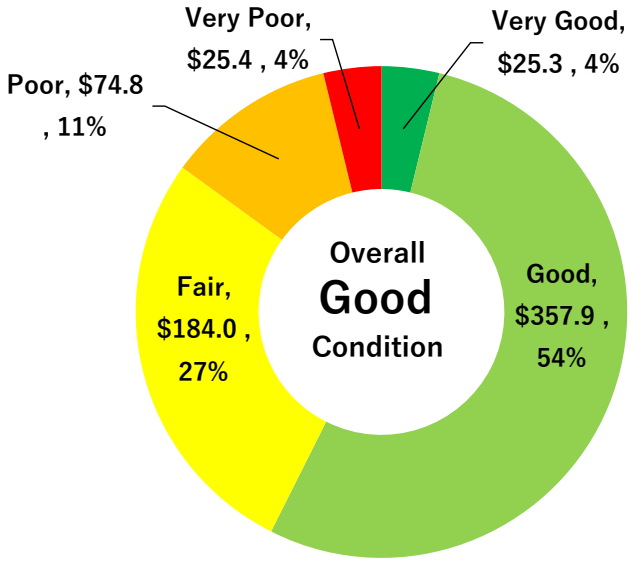
Total Need to Meet PLOS 2024-2034

$29.1 Million

Summary of Total Replacement Value ($M)



Summary of Asset Condition ($M)



1. INTRODUCTION

The Township of Brock 2025 Asset Management Plan (2025 AMP) provides the Township with a tool to assist in asset management financing decisions. The AMP covers all Township owned and operated assets and follows the format set out by the Ministry of Infrastructure through the *Building Together: Guide for Municipal Asset Management Plans*, the requirements of *Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure* (*O. Reg. 588/17*) and the Township's Strategic Asset Management Policy.

An Excel based asset management financial model has been developed as part of the 2025 AMP. The model contains the Township's detailed asset inventory and financing strategy used to develop this AMP. The model is provided to municipal staff and is intended to be updated on a regular basis to inform future capital investment decisions.

A. PURPOSE OF THE ASSET MANAGEMENT PLAN

The main purpose of the 2025 AMP is to advance the Township's asset management practices by developing a set of asset management strategies to the specific needs of each service area. At the same time, these strategies align with the objectives of the requirements of *Ontario Regulation 588/17 (O. Reg. 588/17)*. This plan is focused on achieving several key objectives:

- **Ensuring Long-Term Sustainability** – management of the Township's assets is a long-term commitment that must be sustainable to ensure effective service delivery for future generations.
- **Lowest Cost of Ownership** – long-term sustainability is only possible by ensuring costs are minimized through efficient management of assets by developing service area and asset specific objectives.
- **Minimizing Risk** – risk is minimized through the assessment, management and long-term planning of assets at more focused levels and through consultation with service area staff.
- **Enhancing Service Delivery** – the Township strives for continual improvement in its asset management strategies as outlined in the Strategic Asset Management Policy and therefore tailored approaches to assessing long-term needs unique to each asset category is captured through this AMP.

- **Supporting Informed Decision-Making** – development of a set of asset management tools that help the decision-making process make evidence-based decisions. The Excel based financial model can be used to continually keep asset information up to date.

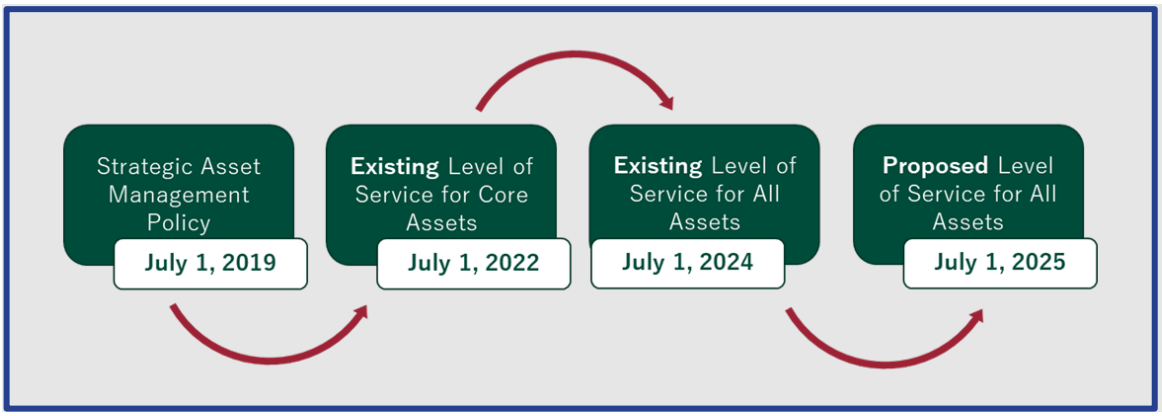
By following the key objectives above, the AMP establishes a "clear line of sight" from the service being provided to residents and businesses in the Township. Any investment requirements included in the AMP are clearly linked to a well-defined need. These needs over the 10-year period are set to meet the proposed level of service, which in the case of Faraday, is largely related to maintaining levels of service. Furthermore, the needs should be aligned with strategic objectives through capital and operating decisions made in the budget process.

B. REGULATORY CONTEXT

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. The regulation also contains more specific requirements on the type of analysis municipal asset management plans should contain, including policies, levels of service, lifecycle management and financing strategies. 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. A summary timeline of the requirements of the regulation are outlined in Figure 1.

Figure 1 – Ontario Regulation 588/17 Requirements



A high-level summary of the technical requirements to be addressed for July 1, 2025 include[1]:

- An AMP for all municipal infrastructure assets that builds upon the previous requirements for all asset categories (core and non-core).
- Identification of the proposed levels of service for each of the next 10-years (core and non-core).
- The lifecycle activities required to meet proposed levels of service.
- The risks associated with the lifecycle activities to meet proposed levels of service and their associated costs.

The 2025 AMP meets the requirements of the regulation as it includes the proposed levels of service requirement to meet the 2025 deadline for all assets considered in this AMP. The 2025 AMP builds on the work completed in the Township's 2019 Asset Management Plan which included all asset categories (core and non-core) and reported on the current level of service. Through this update, the Township has updated the current level of service utilizing more recent engineering reports, updated inventories and datasets compiled through consultation with Township staff.

[1] There are additional requirements of the regulation not explicitly stated here, however, this AMP meets all requirements needed. Only the most relevant reporting requirements are listed for simplicity. See https://www.ontario.ca/laws/regulation/r17588#BK7.

C. ASSET MANAGEMENT PLAN STRUCTURE

The 2025 AMP 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 1 provides a guide to the sections of the 2025 AMP.

Table 1 – AMP Report Structure

Section	Requirement
Main Body	
Section 2 - State of Local Infrastructure	Summarizes the state of the Township's infrastructure with reference to infrastructure quantity and quality. Additional details are provided in Appendix A.
Section 3 - Level of Service	A summary of the current and proposed levels of service summarized for each asset category. This section is consistent with the reporting requirements of O. Reg. 588/17.
Section 4 - Asset Management Strategy	Sets out several strategies and lifecycle costs that will assist the Township in maintaining assets so that proposed levels of service can be met. This section also includes a risk analysis of Township assets.
Section 5 - Financing Strategy	Establishes how asset management can be delivered in a financially sustainable way for all services. Outlines the lifecycle costs and funding strategy to meet proposed levels of service. Additional detailed calculations are provided in Appendix B.
Section 6 – Monitoring and Improvement Plan	Provides key recommendations on how to improve the asset management plan and related practices over the long-term.
Appendices	
Appendix A – State of Local Infrastructure Report Cards	Detailed reports on the state of local infrastructure by asset category including the asset portfolio, replacement values, age and condition.
Appendix B – Detailed Financing Strategy Tables	Additional detailed tables related to the lifecycle cost and financing strategy.

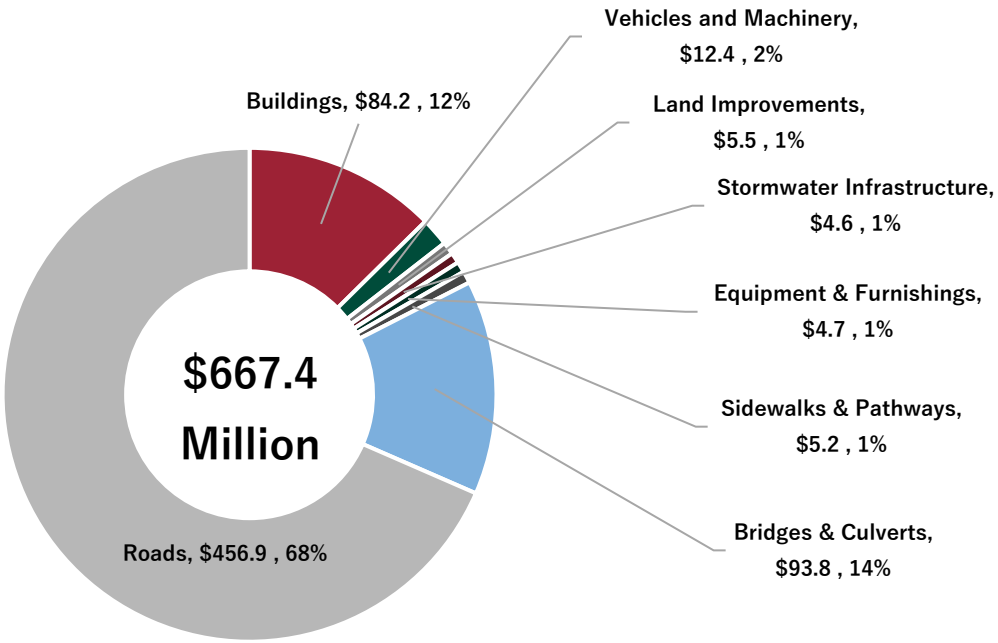
2. STATE OF LOCAL INFRASTRUCTURE

This section provides a summary of the Township's assets with reference to asset quantity and quality. Some assets have condition assessments based on engineering inspections, while the balance of asset conditions are based on the useful life of the asset relative to its age or a high-level condition assessment developed in consultation with Township staff. Detailed technical information on the asset inventory, remaining useful life and conditions for each asset category is provided in Appendix A.

A. REPLACEMENT COST OF INFRASTUCTURE

The replacement cost for all Township assets considered in the 2025 AMP is estimated at $667.4 million (represented in constant 2024 dollars). The largest share is related to roads and accounts for about $456.9 million (68%) of the total replacement value. The next highest share is attributed to bridges and culverts at $93.8 million (14%) and this is followed by the buildings at $84.2 million (13%). The other asset categories in the Township's asset portfolio are made up of $12.4 million for vehicles and machinery, $5.5 million for land improvements, $5.2 million for sidewalks and pathways, $4.7 million for equipment and furnishings, and $4.6 million for stormwater infrastructure.

Figure 2 - Summary of Assets by Total Replacement Value ($2024 millions)



Replacement values are used to estimate the cost of replacing an asset when it reaches the end of its engineered design life. For this reason, the replacement values represent an important input into the lifecycle cost analysis. The total replacement cost of assets of $667.4 million has been determined utilizing different methods that are appropriate for each asset category and dependent on data available at the time of developing this AMP.

Table 2 – Methodology Used for Replacement Values

Asset Category	Methodology
Roads	▪ Based on benchmark costs per kilometre in similar municipalities
Bridges and Culverts	▪ Based on benchmark costs per square metre of deck area
Buildings	▪ Based on replacement values identified in the Development Charges Background Study, and allocated to individual building components. For Buildings that were not included, a cost per unit of gross floor area, taken from Altus 2024 Cost Guide, was applied.
Vehicles and Machinery	▪ Adjust acquisition costs to 2024 dollars based on average NRBCPI (2% annual)
Land Improvements	▪ Adjust acquisition costs to 2024 dollars based on average NRBCPI (2% annual)
Stormwater Infrastructure	▪ Adjust acquisition costs to 2024 dollars based on average NRBCPI (2% annual)
Equipment and Furnishings	▪ Adjust acquisition costs to 2024 dollars based on average NRBCPI (2% annual)
Sidewalks and Pathways	▪ Based on benchmark costs per metre in similar municipalities

B. REMAINING USEFUL LIFE OF THE INFRASTRUCTURE

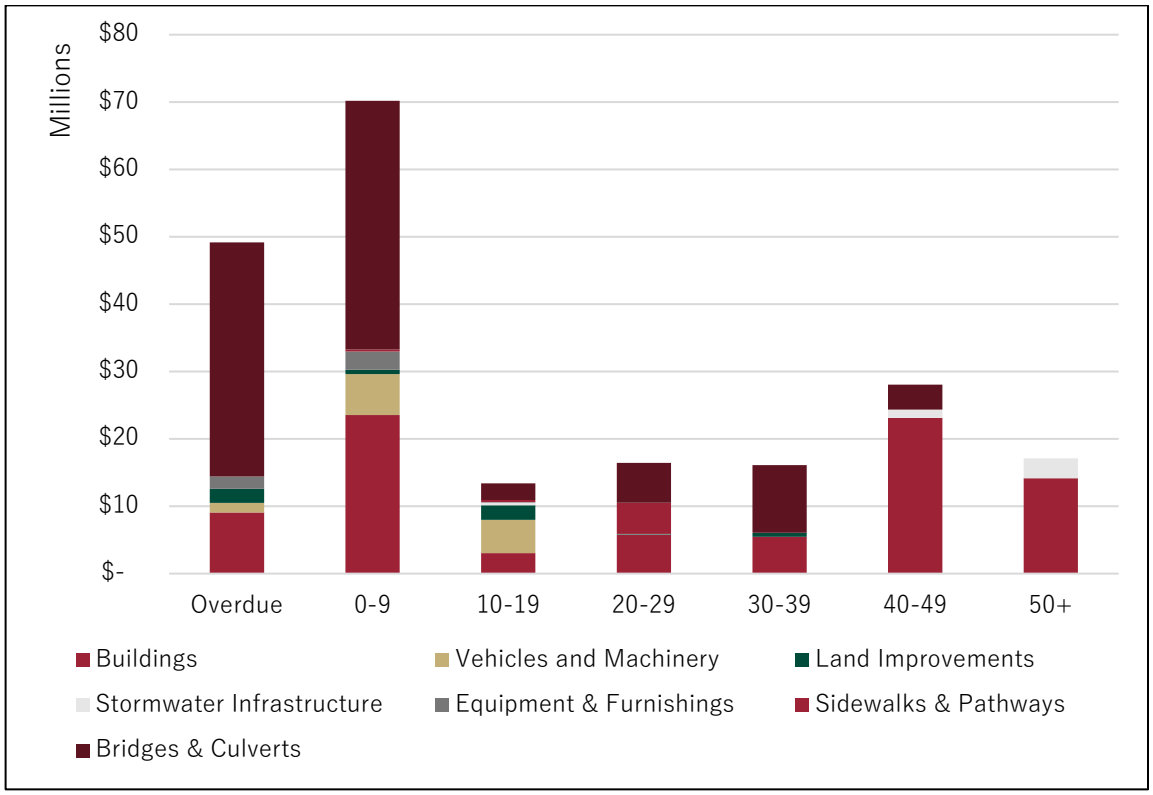
Figure 3 provides a summary of the assets by replacement value shown by their remaining useful life (years).[2] About $17.1 million (8%) of the infrastructure has greater than 50 years of remaining useful life. About $74.0 million (35%) has between 10 and 49 years of remaining useful life while about $70.1 million (33%) has 0 to 9 years of remaining useful life.

The remaining $49.2 million (23%) is considered overdue and past its design life. This is largely related to building components and bridges and culverts, which routinely outlive their expected useful life as a result of the maintenance and renewal activities undertaken by the

[2] The summary shows infrastructure totalling about $210.5 million of the total Township replacement value of $456.9 million as roads have been excluded from the summary. Roads are excluded as no acquisition date or useful life information is available as the Township maintains the roads based on its condition and not on age.

Township. Although this infrastructure is considered past its design life, the infrastructure continues to be maintained and is in good working order.

Figure 3 - Summary of Assets by Remaining Useful Life ($2024) – excluding Roads



Note: Roads are excluded as no acquisition date or useful life information is available as the Township maintains the roads based on its condition and not on age.

C. CONDITION OF THE INFRASTRUCTURE

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 3 summarizes the assumed parameters.

Table 3 - 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 AMP. The approaches for each of these methods is outlined.

1. Engineered Conditions

Condition rating systems based on engineered and professional standards. These measures can then be translated into a 5-tier rating system. The Township aims to continually update the asset inventory to reflect changes in conditions or when assets are replaced.

- Condition assessments for the roads are based on the engineered assessments developed through the 2023 Road Needs Study (2023 RNS). The RNS rates the roads utilizing a 100-point scale for surface condition. The condition of the roads has been translated to the 5-point scale based on the scale in Table 4. The scale has been adapted from the scale used in the RNS.

Table 4 – Road Surface Condition Parameters

Condition Rating	Surface Condition Range
Very Good	90 – 100
Good	70 – 90
Fair	60 – 70
Poor	50 - 60
Very Poor	Less than 50

- Condition assessments for the culverts are based on the engineered assessments developed through the 2023 OSIM report (Ontario Structure Inspection Manual). The OSIM report rates the culverts utilizing a 100-point Bridge Condition Index scale (BCI). The condition of the culverts has been translated to the 5-point scale based on the scale in Table 5 below.

Table 5 – Bridges and Culverts Condition Parameters *

Condition Rating	BCI Range
Very Good	80 - 100
Good	60 - 80
Fair	40 - 60
Poor	20 - 40
Very Poor	Less than 20

** BCI Categorization has been maintained from the previous AMP*

2. Staff Consultation

For some assets where engineering conditions were not available, estimates were developed in consultation with Township staff. This approach is important where there is low confidence that age and useful life represents the condition of a particular asset. This method has been used for a series of assets in this 2025 AMP:

- Vehicles and Machinery – some vehicles and machinery are older based on their design life; however, they continue to be well maintained and are in working condition. It has been assumed that fire vehicles and machinery are in Fair condition in the instances where their age would suggest they would be in Poor or Very Poor condition.

- Buildings – condition for building structures and components have been assessed by Township staff to ensure the reported condition is consistent with the real condition of these assets. The Township continues to maintain its buildings to ensure they are available for service. Generally, buildings are long-lived assets and can continue to be used well past their design life with proper ongoing maintenance.

- Sidewalks – condition was assessed by staff and provided in the asset listing provided for purposes of this study.

3. Age Based Approach

For some asset types where the Township was not able to provide a condition assessment based on existing knowledge or inspection, the condition is estimated based on age and the

remaining useful life of the asset. It is the intention that the Township move towards a condition assessment methodology using approach 1 and 2 wherever possible. The age-based condition methodology is more appropriate for lower valued assets that have a shorter useful life. Table 6 shows the methodology where the condition is assigned based on the remaining useful life of the assets.

Table 6 – Age Based Condition Parameters

Condition Rating	Percentage of Remaining Useful
Very Good	80% - 100%
Good	60% - 80%
Fair	40% - 60%
Poor	20% – 40%
Very Poor	Less than 20%

Summary of the Condition of Assets

Figure 4 summarizes the condition of Township assets which are determined to be in Good condition on average. Overall, about $305.8 million (60%) of the assets are in Good to Very Good condition while $141.7 million (28%) of the assets are Fair condition. The remaining $61.0 million (12%) are in Poor to Very Poor condition.

Figure 4 - Summary of Asset Condition ($2024 - in millions)

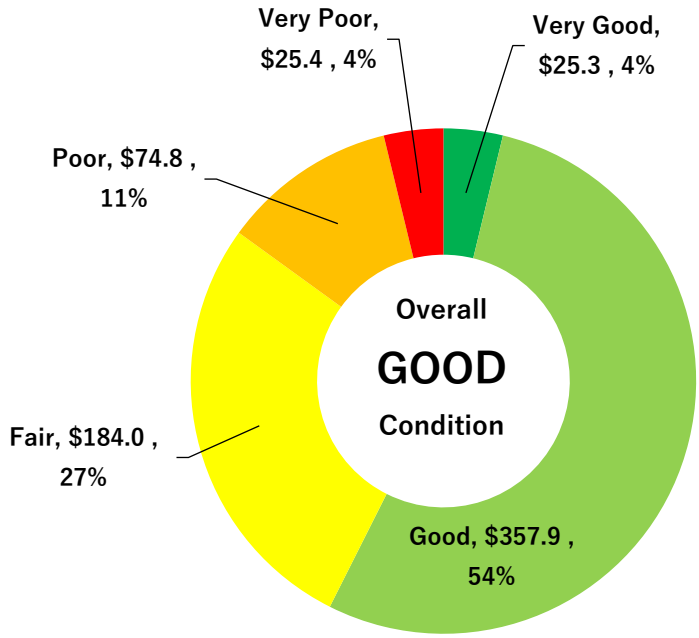


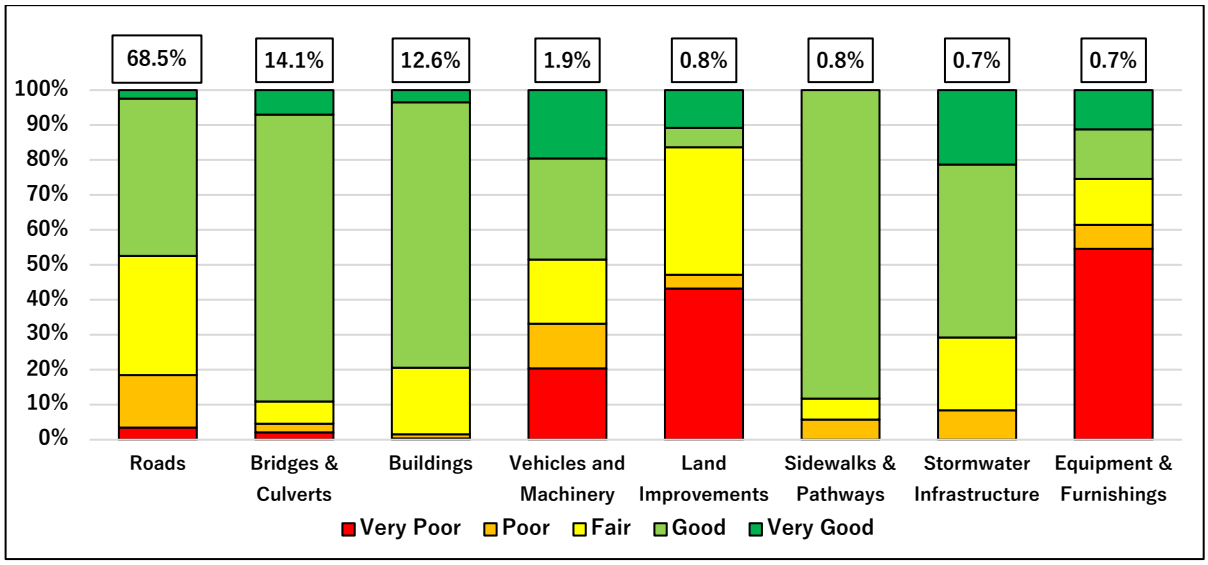
Figure 5 shows the condition of assets delineated by each asset category. Figure 5 shows the following:

- The Township's largest component in the asset portfolio of roads, making up 68% of the replacement value, is the main driver of the Township's overall asset condition. About $216.8 million (47%) of the roads are in Good to Very Good condition as these assets were assessed through the 2023 Road Needs Study. A smaller share of about $84.4 million (18%) of the roads are in Poor or Very Poor condition.

- About $83.6 million (89%) of the bridges and culverts are in Good to Very Good condition as these assets were assessed through the 2023 OSIM report. A small share of about $4.3 million (5%) of the culverts are in Poor or Very Poor condition.

- Buildings are generally in Good condition or better with about $66.9 million (79%) of the building components failing in this category and only $1.3 million (2%) of the buildings are in Poor or Very Poor condition.

Figure 5 - Summary of Asset Condition by Asset Category ($2024 – in millions)



Note: The percentages above the bars represent the shares of replacement value relative to the total replacement value of Township assets at $667.4 million.

3. LEVEL OF SERVICE

Levels of service (LOS) describe the outputs or objectives the Township intends to deliver to its residents, which includes measures from a customer, technical and community perspective. LOS provides a description of a particular activity or asset metric where performance may be measured to benchmark the current state and set targets to ensure resident's needs are met.

Levels of service measure how well the Township is meeting business needs and this information can be utilized as key drivers to inform future investment decisions. Having well-defined service levels will allow the Township to be transparent with its stakeholders to find the appropriate balance between affordability and service expectations.

A. THE TOWNSHIP'S LEVEL OF SERVICE GOALS

The LOS Framework helps support and achieve key asset management goals:

- Develop and continuously improve asset management related documentation to provide evidence-based level of service linkages between the customer and technical levels with integration directly into service-based activities as it relates to both the operational and capital expenditures. This objective is achieved through development of the AMP financial model, and the Township expects to continue to make improvements to its available asset data over the longer-term.

- Develop a clear relationship between the level of service and the costs associated to meeting level of service objectives by integrating the AMP LOS framework into the budget process. This integration is expected to be achieved over the longer-term however, the financing strategy makes recommendations on the financial needs to meet the proposed level of service which can be utilized to help inform the budget process.

- Meet the requirements of *O. Reg. 588/17* for 2025 to define the proposed level of service, identify costs to meet the proposed level of service and identify any risks of not meeting these targets.

B. CUSTOMER LEVELS OF SERVICE (CLOS)

Customer Levels of Service are specific parameters that describe the extent and quality of services that the Township provides to residents from the resident's perspective. CLOS is comprised of qualitative measures such as the description of assets or the related service

provided. CLOS can be evaluated through an understanding of the wants and needs of residents while understanding the assets the Township owns and operates. The CLOS are documented as high-level qualitative statements that capture these characteristics. For the purposes of meeting *O. Reg. 588/17* requirements, the Community Levels of Service (outlined in the regulation) are also included under the CLOS.

C. TECHNICAL LEVELS OF SERVICE (TLOS)

Technical Levels of Service are specific parameters that measure asset performance. TLOS is comprised of quantitative measures such as asset age/condition or service performance. Part of the TLOS is to consider both the individual asset capability and how the assets are scheduled to be utilized as part of a system of service delivery. These measures are developed through a review of the Township's asset data, engineering reports and in consultation with staff.

The technical levels of service have been defined to meet the following criteria:

- TLOS measures are relevant to the operation of Township services
- TLOS are feasible to track and the data to inform the technical measures are readily available or will be tracked for future iterations of the AMP
- TLOS are developed recognizing the public as the main driver of service, they are designed to track internal asset specific performance, but the resulting quality of service will continue to be based on public input

TLOS measures are crucial for tracking levels of service as they provide quantifiable measures to evaluate the effectiveness and efficiency of service delivery. By systematically monitoring these measures, the Township can assess whether service standards are being met, identify areas for improvement, and allocate resources effectively. An iterative consultation process with staff helped in developing an internal tracking tool to capture the necessary data for calculating the current and proposed levels of service and monitoring the trends moving forward.

D. OVERVIEW OF THE TOWNSHIP'S LEVEL OF SERVICE

The Township's 2019 Asset Management Plan was prepared for all Township infrastructure assets under the "current level of service" framework as required by O. Reg. 588/17. The Township defined its current levels of service in accordance with qualitative and technical metrics that have been established through the regulation and in consultation with staff. In

general, the measures were derived from data collected in 2019 and the process ensured that the current level of service accurately reflected the performance and condition of infrastructure assets given the available data of the day.

Current Level of Service

For the purposes of this 2024 Asset Management Plan, the customer and technical level of service reporting measures remain generally consistent with those established through the 2019 process, however, the “current” baseline data has been updated with information that has been made available since 2019. Furthermore, improvements have been made to streamline the measures to focus in areas that are relevant and useful for service level monitoring and meeting the regulatory reporting requirements.

Proposed Level of Service

O. Reg 588/17 requires municipalities to define its proposed levels of service by July 1st, 2025. These proposed levels of service (PLOS) are intended to provide the Township with a measurable future target state for the services it provides. The proposed level of service focuses on asset specific measures that capture the performance of infrastructure which forms part of the services provided by the Township. Best efforts have been made to maintain the focus of the proposed level of service to infrastructure assets that support the service rather than the overall services provided by any specific service area. However, it is noted that in general the proposed level of service outlined in this AMP are required to continue to provide the overall level of service objectives of the Township.

For every level of service that the Township measures, a corresponding set of PLOS measures have been developed. Consultation with Township staff was conducted to develop the proposed levels of service based on the needs of the community, existing data and assessing their appropriateness for the Township. Overall, the proposed levels of service outlined in this report have been carefully evaluated based on the following criteria:

- **Options & Associated Risk** - Staff assess various options for the proposed levels of service and analyze the risks associated with each option to the long-term sustainability of the Township. This assessment considers factors such as service quality, operational efficiency, and financial sustainability.

- **Differences from Current Levels of Service** – The analysis looks at a comparison of the proposed levels of service with the current levels to identify areas where adjustments or enhancements are necessary. While some proposed levels of service may mirror the current levels outlined in this AMP, adjustments or enhancements to the current procedures may still be necessary to ensure alignment with longer-term goals.

- **Achievability** - The feasibility of achieving the proposed levels of service considering factors such as available resources, technological capabilities, and operational constraints have been evaluated. Efforts have been made to ensure that the proposed targets are realistic and attainable within the Township's operational capacity. Notwithstanding the Township's intended ability to achieve the targets, it is expected that the proposed levels of service continue to be reviewed and monitored - further adjustments may be warranted moving forward.

- **Affordability** - The affordability of the proposed levels of service is conducted in conjunction with the budget process, ensuring alignment with the financial resources and fiscal capacity available. This process inherently involves approval by Council and the organization, with affordability considerations integrated into budgetary decisions.

Summary of the Level of Service

Table 7 summarizes the customer levels of service while Table 8 shows the technical levels of service. Table 8 shows:

- Road lane-km as a proportion of the total land area in the Township. The proposed level of service is to maintain the current level of service as the Township does not expect to undertake major works that would result in the reclassification of any roads to anther category.

- Paved roads in the Township are on average in Good condition with an average PCI of 71. Unpaved roads in the Township are, on average, in slightly worse condition than the paved roads in the Township, with a PCI of 68. This information is based on the Township's 2023 Road Needs Study (RNS) with some updates to conditions captured through consultation with staff. Given the overall "Good" condition of the road network, the extensive workplan laid out in this RNS, and the Township's funding constraints, the proposed level of service is to maintain the current PCI of roads, which is consistent with the Township's existing practices. The cost implications of achieving this target are included in the financing strategy section of this report.

- Township bridges are on average in Good condition (68 BCI) with one structure (or 2%) currently having loading or dimensional restrictions. Structural culverts are also in Good condition, despite a slightly lower BCI of 64. Going forward, the Township aims to maintain the current structure's loading restriction for specific season's of the year. Staff have identified a goal of increasing the BCI for both bridges and culverts to 75. Given the long useful life of bridges and culverts, staff have identified that this would be achieved

if the is maintained for culverts based on the recommendations of the OSIM reports completed every two years.

- For Township buildings, the current level of service is based on an average condition of Good. As repairs and maintenance are needed on buildings, the Township expects to be able to respond to these needs. Therefore, the proposed level of service is to maintain buildings in their current condition by department. To achieve this, an additional need beyond the current investment has been identified in the financing strategy section of this report.

- The level of service for the condition of vehicles has been delineated by function or department. While these condition-based metrics are set to be maintained at their current performance, there are some slight differences in the current performance between these classifications. An additional need beyond the current investment for vehicles is outlined in the financing strategy section of this report.

- The proposed levels of service for other asset categories, such as sidewalks, parks and recreation, and library are not forecast to require additional contributions beyond their current investment. It is assumed that these targets can be achieved with current investment from tax levy, and development charges revenue where they relate to growth-assets.

Table 7 – Customer Levels of Service

Asset Category	Customer LOS	Community Level of Service	
Roads	Maintain safe and reliable roads and to meet reporting requirements of (O. Reg. 588/17)	Description, which may include maps, of the road network in the municipality and its level of connectivity.	The Township maintains a complete listing of the road network in Appendix A of the 2023 Roads Needs Study developed by Chisholm, Fleming and Associates.
		Description or images that illustrate the different levels of road class pavement condition.	The Township maintains surface condition ratings of the road system condition by roads segments on a scale from 0-10. The asset inventory found in Appendix A of the 2023 Roads Needs Study developed by Chisholm, Fleming and Associates also includes the surface condition rating for each road segment.
Bridges and Culverts	Maintain safe and reliable culverts and to meet reporting requirements of (O. Reg. 588/17)	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	Bridges and culverts support all local traffic. Information about Load Restrictions can be found in the TLOS (Table 8).
		Description or images of the condition of culverts and how this would affect use of the culverts.	Details on engineered culvert conditions including images and technical specifications are included in the 2023 OSIM Structure Inspections Summary Report by Chisholm, Fleming and Associates.
Buildings	Maintain safe and functional buildings with sufficient capacity for residents and staff.	The Township owns and operates 28 buildings which includes various fire halls, arenas, community centres, garages, town halls, public works facilities, public washrooms, an animal shelter, and a library.	

Asset Category	Customer LOS	Community Level of Service	
Vehicles and Machinery	Maintain safe and functional motor vehicles and machinery available to respond to service needs when required.	The Township owns and maintains 140 different vehicles and pieces of machinery. The majority of the replacement value for these assets sits under Public Works.	
Equipment and Furnishings	Maintain safe and functional machine equipment that is reliable and available for use when needed.	The Township maintains and operates many pieces of machinery and equipment that are critical to the operations of their arenas, parks, roads, library, fire, administration, and other functions,	
Sidewalks and Pathways	Maintain a safe and functional sidewalk and active transportation network that is available for use by residents.	Description, which may include maps, of the sidewalk network in the municipality and its level of connectivity.	The Township maintains a complete listing of the sidewalk and pathway network, which can be found on pages 12 to 14 of the 2023 Sidewalk Inventory and Plan.

Table 8 – Technical Levels of Service

Asset Category	Technical Level of Service	Source	Current LOS	Proposed LOS
Roads	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)	2023 RNS	Arterial: 0% Collector: 87% Local: 86%	Maintain CLOS
	For paved roads in the municipality, the average pavement condition index value (O. Reg. 588/17)	2023 RNS	71 out of 100	Maintain CLOS
	For unpaved roads in the municipality, the average surface condition (O. Reg. 588/17)	2023 RNS	68 out of 100	Maintain CLOS
	Ratio of Paved vs. Unpaved Roads	2023 RNS	1.47	Maintain CLOS
Bridges and Culverts	Percentage of bridges in the municipality with loading or dimensional restrictions (O. Reg. 588/17)	2023 OSIM	2% (1 of 45)	Maintain CLOS
	For bridges in the municipality, the average bridge condition index value (O. Reg. 588/17)	2023 OSIM	68 out of 100	75 out of 100
	For structural culverts in the municipality, the average bridge condition index value (O. Reg. 588/17)	2023 OSIM	64 out of 100	75 out of 100
Stormwater Infrastructure	Percentage of properties in municipality resilient to a 100-year storm (O. Reg. 588/17)	AMP Model	Estimated at 90% (Urban Area)	95% (Urban Area)
	Percentage of the municipal stormwater management system resilient to a 5-year storm (O. Reg. 588/17)	AMP Model	100% (Urban Area)	100% (Urban Area)
Sidewalks	Total Meters of Sidewalk Constructed per Annum	2023 Sidewalk Inventory and Plan	425 M	500 M
Buildings	Asset Replacements that result in improved environmental efficiencies (where feasible)	Township Staff	100%	Maintain CLOS

Asset Category	Technical Level of Service		Source	Current LOS	Proposed LOS
	Energy efficient Lighting Retrofits (LED Conversions)		Township Staff	14%	100%
	Average Facility Condition Index by Department:	Library	AMP Model	Good	Good
		Recreation		Good	Good
		Public Works		Good	Good
		Health Services		Good	Good
		Animal Services		Very Good	Very Good
		Fire		Good	Good
Fire	Average Response Time		Township Staff	7 Minutes, 17 Seconds	Maintain CLOS
	Percentage of Regulated Inspection Completed		Township Staff	100%	Maintain CLOS
Vehicles	Average weighted condition assessment	Public Works	AMP Model	Fair	Fair
		Canine/By-Law		Fair	Fair
		Building Services		Fair	Fair
		Recreation and Culture		Fair	Fair
		Parks		Fair	Fair
		Fire		Good	Good
Library	Number of Book Lockers		Township Staff	0	2
	Average Wait Time for Requested Material		Township Staff	1 Week	1 Week
	Number of Hotspots Available for Use		Township Staff	9	Maintain CLOS
Parks and Recreation	Grass Cutting Frequency in Parks		Township Staff	Weekly	Weekly
	% of Play Structures that are AODA Compliant		Township Staff	15%	50%

4. ASSET MANAGEMENT STRATEGY

This section sets out an action plan that will assist the Township in maintaining assets to meet proposed level of service objectives. The asset management strategy includes current practices and potential future practices related to non-infrastructure solutions, maintenance activities, renewal/rehabilitation, disposal, and expansion activities. It outlines the lifecycle costs needed to meet proposed levels of service over the next 10-years for each lifecycle activity and the methodology used to develop the costs. The final component of this section includes a risk analysis, which outlines a summary of assets that can be prioritized for repair/replacement if needed.

A. OVERVIEW OF FULL LIFECYCLE COST MODEL

As part of the Asset Management Plan, the Township, along with Hemson, have identified the total full life cycle costs that corresponds to the requirements of the regulation. This would entail a cost estimation throughout the asset's 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, if any.

A "lifecycle management approach" in asset management planning not only includes estimating future lifecycle costs based on a set of lifecycle activities. These lifecycle activities can be segmented into six (6) categories: non-infrastructure solutions, operations/maintenance, renewal/rehabilitation, replacement, disposal, and expansion activities. Table 9 provides a description of each lifecycle category. The Township undertakes all the activities described in Table 9, however, the Township's budget generally accounts for these expenditures in different categories.

Table 9 - Overview of the Full Life Cycle Activities

Category	Description
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, etc.). Associated to work needed to manage assets but not necessarily direct work on those assets.

Category	Description
Maintenance Activities	Servicing assets on a regular basis 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.
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.
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.
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.
Expansion Activities	Planned activities required to extend or expand municipal services to accommodate the demands of growth.

As the Township's infrastructure assets are long-lived, the starting point for the lifecycle costs analysis covers a 40-year planning period. However, consistent with *O. Reg. 588/17,* the planning period focuses on the first 10-years to meet proposed levels of service. In this period, various methodologies have been utilized to determine the long-term lifecycle costs to maintain, repair and replace assets under an "ideal" investment scenario. This means that the full recommendations of works from the engineered reports (2023 OSIM and 2023 Roads Needs Study) were implemented into the cost model, and all other assets are planned for replacement at the end of their useful life. No adjustments were made in consideration for existing municipal asset practices or relationship to the target level of service set. These costs are referred to as the "benchmark" lifecycle costs.

Table 11 outlines the methodologies and costs from 2024-2035 to meet this ideal scenario. Over the planning period, the total costs needed to undertake the lifecycle activities is estimated at $212.9 million (an average of about $19.4 million per year).

Of the total lifecycle costs, most costs can be attributed to saving for the renewal, rehabilitation or replacement of infrastructure, making up about 87% of the total lifecycle costs. The average annual need specifically for renewal, rehabilitation or replacement of infrastructure is about $16.8 million per year (see Table 10). The difference between the total need, and the need specifically for renewal, rehabilitation or replacement is an average of $2.6 million per year, which represents the average annual operating, maintenance, and non-infrastructure solution costs.

Table 10 – Average Annual Renewal/Rehabilitation/Replacement Need by Asset Category

Asset Category *	Benchmark Average Annual Requirement	PLOS Average Annual Requirement
Roads	$11.4 million	$3.6 million
Bridges	$0.7 million	$0.7 million
Vehicles	$1.0 million	$1.2 million
Buildings	$2.4 million	$1.2 million
Other Assets	$1.2 million	$0.4 million
Total *	**$16.8 million**	**$6.4 million**

** Note: Figures may not sum due to rounding.*

To determine the total lifecycle costs to meet proposed levels of service over the 2024-2034 period, consultations with Township staff were undertaken to determine the best approach. Table 11 outlines the lifecycle costs needed to meet the proposed level of service. Over the 2024-2034 period, a total lifecycle need of about $98.5 million is identified (an average of about $9.0 million per year). The average annual need specifically for renewal, rehabilitation or replacement of infrastructure is about $6.4 million per year (see Table 10).

Table 11 - Overview of the Full Life Cycle Activities and AMP Approach

Category	Lifecycle Cost Approach to Meet PLOS	2024-2034 Cumulative Benchmark Lifecycle Costs	2024-2034 Cumulative Lifecycle Costs to Meet PLOS
Non-Infrastructure Solutions	• Provision of $50,000 per year to undertake activities to manage assets.	$550,000	$550,000
Operations and Maintenance Activities	• Based on a review of recent budgets by service area. Includes costs that can be reasonably attributed to asset specific maintenance – estimated at $2.5 million per annum (based on 2024 budget) • In most instances, does not include general operating costs associated to staffing, with the exception of staff that carry out specific lifecycle activities	$27.5 million	$27.5 million
Replacement and Rehabilitation Activities	• Benchmark lifecycle costs were determined using risk-based replacement schedule for the following asset categories: Buildings, Vehicles and Machinery, Land Improvements, Stormwater Infrastructure, Equipment and Furnishings, and Sidewalks and Pathways. • Adjustments made to determine the lifecycle needs to meet PLOS are listed below: o For buildings, a 100% useful life extension has been applied to recognize the extension of asset life due to proactive rehabilitation activities undertaken by the Township, rather than full replacement. o The useful life of certain front-line Fire Vehicles has been extended from 15 to 20 years, slightly reducing the annual provision for replacement. o Beyond the existing capital investment in stormwater infrastructure, an additional 50% of the calculated lifecycle need has been identified. o Existing investment in land improvements, equipment and furnishings, sidewalks,	$51.7 million	$30.8 million

Category	Lifecycle Cost Approach to Meet PLOS	2024-2034 Cumulative Benchmark Lifecycle Costs	2024-2034 Cumulative Lifecycle Costs to Meet PLOS

Renewal Activities (Roads, Bridges, and Culverts)	• Benchmark renewal expenditures for bridges were calculated based on an annualized contribution calculated based on the costs identified in the 2023 Structure Inspection Summary Report (OSIM) for the 2023-2032 period. Through discussion with staff, the need for the full recommended OSIM program was identified to achieve the PLOS.
	  o The total 10-year need of $8.2 million resulted in an annual need of approximately $820,000 per year, which was applied across the full 2024-2034 planning period.
	• Benchmark renewal expenditures for roads were calculated based on those costs identified in the 2023 Road Needs Study (RNS), which includes annual preservation programs. The improvement costs and timelines laid out in this study are listed below:
	  o $36.4 million has been identified as an immediate need, $10.9 million has been identified over the 2024-2028 period, and $74.3 million has been identified over the 2029-2033 period. An additional $3.4 million has been assumed to be required for roads that were deemed "Adequate" at the time of the 2023 RNS.
	• Adjustments made to determine the lifecycle needs to meet PLOS are listed below:
	  o Only the Roads identified as an immediate need were planned to be undertaken over the 2024-2034 period. Staff expect the condition of roads to exceed the PLOS target set, if all activities in the RNS are undertaken.
		$133.2 million	$39.6 million

Disposal Activities	• No disposal activities have been explicitly identified, but costs for disposal have been assumed to be included in renewal/rehabilitation/replacement activities	$ -	$ -
Expansion Activities	• The approximate operations and maintenance costs of expansion assets have been accounted for in the lifecycle costs for future years.	$33,000	$33,000
Cumulative Total		**$212.9 million**	**$98.5 million**
Average per Year (Total)		**$19.4 million**	**$9.0 million**
Average per Year (for Renewal, Rehabilitation, and Replacement Activities)		**$16.8 million**	**$6.4 million**

Note: All costs expressed in constant 2024 dollars.

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 affect the level of service. 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 Township 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 2. The formula to determine asset risk is as follows:

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

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

Likelihood of Failure: is directly linked to the condition of an asset. For example, an asset in Very Poor condition would have a high probability of asset failure in the short-term. This type of asset would be assumed to have deteriorated significantly or may be near the end of its useful life. Conversely, it would be considered rare for an asset to fail in the short-term if it is in Good or Very Good condition. Table 12 outlines the definition of likelihood of failure used for the Township's assets.

Table 12 - 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 Township if an asset were to fail to provide the desired level of service. The consequence of failure has been determined separately for each asset category, as the impact to the Township differs greatly by asset type. For example, if a fire emergency vehicle was not available for service, the potential impact could be more severe compared to a vehicle used for administrative purposes. For the purposes of this analysis, assets were assigned a consequence of failure based on a review of the assets and the service area they are attributed to. Table 13 below outlines the definition of consequence of failure used for the Township's assets. The consequence of failure, rated on a 1-5 scale, was weighted relative to each category in Table 13 depending on how impactful the consequence may be to the Township.

Table 13 - 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.

Risk Rating: categorizes assets based on the level of risk to the Township. 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. Table 14 below provides a summary of the risk matrix.

Table 14 - Risk Matrix

Evaluation Rating		Consequence of failure					Color Code
		1	2	3	4	5	
Likelihood 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 15 presents the findings of the risk analysis and illustrates the Township's asset risk rating. Most of the Township's assets continue to have relatively low risk, an indication of good maintenance practices overall.

The risk of each asset and asset category has been determined with reference to the parameters outlined in Table 14. It is important to note, that the Township will need to continue regular maintenance activities and capital works to ensure that the proposed level of service can be met, or otherwise additional risk can be expected. Please note roads and culverts have been excluded from the risk analysis in Table 15 as the infrastructure needs and timing of repair and replacement has been informed based on detailed engineered assessments outlined through the 2023 Road Needs Study and 2023 OSIM reports, respectively.

Table 15 - Summary Risk Assessment

Asset Type	Replacement Cost 2024	Risk (Weighted Average)
Buildings	$84.2 M	Low
Vehicles and Machinery	$12.4 M	Low
Land Improvements	$5.5 M	Low
Equipment and Furnishings	$4.7 M	Moderate
Stormwater Infrastructure	$4.6 M	Low
Total	**$508.5 M**	**Low**

Note: Roads, Bridges, and Culverts are excluded from the risk analysis as risk factors and prioritization have been addressed through the 2023 Road Needs Study 2023 OSIM Reports.

Further to Table 15, the 2024 AMP includes an estimate of the timing for replacement of all assets. Using the risk assessment, 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 16 below provides a summary of the risk thresholds used to calculate timing of replacement needs. Section 5 discusses the results of the lifecycle cost analysis and financing strategy.

Table 16 - Risk Threshold for Asset Life Extension

Percentage of Useful Life Added					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

C. MANAGING RISK

It is important to recognize the risk associated with the Township's ability to deliver the plan while recognizing that any deviation may affect the overall ability to deliver service. Table 17 below provides a summary of the identified risks, potential impacts and mitigating actions associated with the asset management program. Table 17 is intended to provide the Township with a framework that can be continually updated to track potential asset related risks and document mitigation actions so that they can be implemented into the Township's asset management practices.

Table 17 -Risk Associated to the Plan

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
Inadequate Funding	▪ Delivery of service ▪ Increased risk of failure ▪ Shorten asset life ▪ Defer funding to future generations	▪ Reductions of service by reviewing the current level 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 levels of service ▪ Implement process to implement AMP ▪ Investigate alternative lifecycle management options

D. FUTURE DEMAND

The 2024 Plan reflects the assets that the Township currently owns and operates. According to Statistics Canada census, over 5 years (2016-2021) the Township's population has increased by 925 people from about 11,642 to 12,567 people in 2021, a 7.9% increase (or about 1.5% per year). This would represent a steady rate of growth since 2016.

Moving forward. by 2034, the Township's population is expected to increase to about 15,300 people with occupied households increasing to 5,835 over the same period. The increase over the ten-year period from 2025-2034 is approximately 2,140 persons and 820 households. Lastly, Place of Work employment is projected to grow by about 525 employees over the period reaching 3,750 by 2034[3].

[3] Employment figures referenced are from the DC Study which utilize place of work employment values. Place of work employment considers where people work irrespective of their place of residence. The work at home employment is excluded from these figures.

The projections outlined are consistent with those outlined in the Township's most recent Development Charges Background Study (July 10, 2024) which are rooted in the targets prepared for the Region of Durham's 2022 Area Municipal Growth Allocations and Land Needs by 2051.

E. 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 Township adopted its first Strategic Asset Management Policy in 2019 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 Township 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 18 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 level of service for various service areas. The specific climate change impacts on levels of service could vary considerably and will need to be monitored over a longer time period.

Through further understanding of the anticipated extent of climate change events, climate change adaptation projects at the Township 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 18 - Framework for Climate Change Integration with Risk

Hazards/Risks	Likelihood	Consequence	
		Asset Category	**Possible Service Impacts**
Freezing Rain / Ice Storm	Rare to almost certain	▪ Roads ▪ Bridges and Culverts ▪ Buildings ▪ Stormwater	▪ Reduced road and culvert conditions, potential for closures ▪ Potential impact to access to facilities or closures
Extreme Temperatures – Cold Wave	Rare to almost certain	▪ Roads ▪ Bridges and Culverts ▪ Buildings ▪ Stormwater ▪ Land Improvements	▪ 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	▪ Roads ▪ Bridges and Culverts ▪ Buildings	▪ Flooding of bridges and roadways leading to closures ▪ Disruptions to service due to flooding of roads, leading to decreased levels of service ▪ Potential impact to access to facilities or closures

Hazards/Risks	Likelihood	Consequence	
		Asset Category	Possible Service Impacts
Flood – Urban	Rare to almost certain	▪ Roads ▪ Bridges and Culverts ▪ Buildings ▪ Land Improvements	▪ Flooding of culverts and roadways leading to closures ▪ Disruptions to service due to flooding of roads, leading to decreased levels of service ▪ Potential impact to access to facilities or closures ▪ Flooding of parks leading to closures and reduced levels of service
Extreme Temperatures – Heat Wave	Rare to almost certain	▪ Buildings ▪ Land Improvements	▪ 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	▪ Buildings ▪ Land Improvements	▪ 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 Township has continually undertaken both operating and capital expenditures necessary for to maintain tax funded services, however, the investments made fall short of the required need to meet the proposed levels of services. The Township will need to monitor funding levels over the next few years in relationship to the levels of service. This section of the Plan is intended to help the Township build on the existing asset management practices already in place. The financing strategies presented provide the Township with feasible options to increase capital funding in a sustainable manner to meet proposed levels of service. It is noted that all values are presented in constant 2024 dollars.

A. ANALYSIS OF AVAILABLE REVENUES

The municipal revenue sources available to address the identified full lifecycle cost requirements outlined in Section 4 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.

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 table below provides a summary of the revenues assumed in this analysis for tax supported assets.

Table 19 - Financing Strategy Key Assumptions for Tax Supported Assets

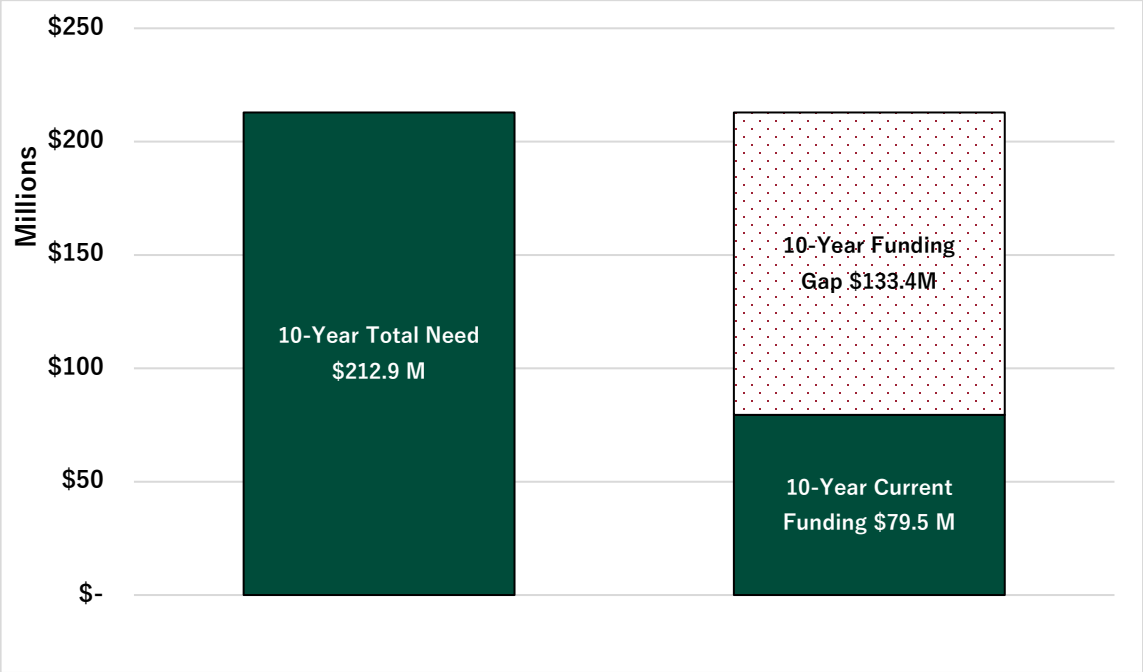
Category	Assumptions	Cumulative 10-Year Revenue at Current Levels
Operations and Maintenance from Taxation	▪ The Township prioritizes operating costs associated to providing services and it has been assumed that revenue from taxation will fully fund operating needs as they arise. ▪ Tax funding for ongoing operations and maintenance costs of expansion assets.	$27.5 million
Capital from Taxation	▪ Existing 2024 tax supported capital funding of about $2.6 million is assumed to be the starting point and base case for increasing annual	$47.8 million

(including reserve contributions)	capital contributions. This includes the capital contributions to reserves net of transfers from reserves or capital related grant funding.	
Canada Community Building Fund (CCBF)	▪ Gas tax funding for 2024 of approximately $395,000. Confirmed CCBF funding has been included. The confirmed amount for 2028 has been assumed to continue through to 2034.	$4.6 million
Other Grants	▪ Upper-level government grants of approximately $10.1 are assumed for the next 5-years only. This includes OCIF and a $1.9 million confirmed grant for the Sunderland Arena.	$10.1 million
Existing Reserves	▪ Existing asset management related reserve funds of $8.5 million have been accounted for and are applied against the lifecycle cost expenditures over a 10-year period for the purposes of the analysis. ▪ The reserves included for in the analysis only captures funds available for capital repair and replacement. ▪ Excludes obligatory DC reserve funds	$7.9 million
Total		**$98.5 million**

B. BENCHMARK INFRASTRUCTURE FUNDING GAP

To implement sustainable asset management practices the Township needs to understand the current "benchmark infrastructure funding gap" that would arise should the required full lifecycle costs related to capital be delayed. The funding gap shown in Figure 6 represents the difference between the benchmark lifecycle costs and the funding available for tax supported assets over the 10-year period from 2025 to 2034. The benchmark funding gap represents a measure of the "ideal" spending that would need to be undertaken if all assets were repaired or replaced as outlined in the engineered reports or on their design life schedule as shown in Section 4 versus the case if funding levels were maintained at current levels (see Table 19). Figure 6 indicates that existing funding levels are insufficient to cover projected costs over the 2024-2034 planning period, as a result, a notional gap of $133.4 million exists over the same period.

Figure 6 – 10-Year Need vs Funding (Benchmark Funding Gap for Tax Supported Assets)



If the Township were to implement a funding strategy to eliminate the benchmark funding gap, the Township would be required to increase capital contributions on an annual basis by an average of about $2.4 million from 2025-2034 (plus annual inflation). For 2025, the increase would be in addition to the funding sources already identified in Table 19. The yearly revenue requirement is equivalent to about 23% of the Township's 2024 tax levy revenues of about $10.6 million. A detailed table of this strategy can be found in Appendix A.

It is unrealistic to expect the Township to address the total benchmark funding gap in the short-term. Eliminating the gap by 2034 is an aggressive objective - a few reasons include:

- The required capital contributions (to eliminate the gap) will necessitate an increase to property taxes beyond a reasonable measure;
- The Township would need to decrease or limit funding of other key services or initiatives in lieu for capital repair and replacement activity;
- Importantly, closing the benchmark funding gap would ultimately result in a service level increase beyond those targeted in this report over the long-term;
- Assets can remain in use past their engineered design life and can perform to meet the Township's 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 Township can often extend the requirement of major repair or replacement of capital assets and may prolong the life of the asset.

Therefore, a long-term lifecycle cost and funding strategy that reflects the proposed level of service shown in Section 4 would need to be developed.

C. PROPOSED LEVEL OF SERVICE INFRASTRUCTURE FUNDING GAP

The 2025 AMP combines the analysis on proposed levels of service developed in Section 3 with the corresponding lifecycle costs in Section 4 to develop a 10-year adjusted funding gap analysis that considers a more manageable set of costs to meet proposed levels of service (PLOS funding gap). The funding gap shown in Figure 7 represents the difference between the lifecycle costs needed to meet proposed levels of service and the funding available for tax supported assets over the planning period from 2024 to 2034.

The PLOS funding gap represents a measure of the spending that would need to be undertaken to meet proposed levels of service as shown in Section 4 versus the case if funding levels were maintained at current levels (see Table 18). Figure 7 still indicates that existing funding levels are insufficient to cover projected costs over the planning period, as a result, a funding gap of $19.5 million exists over the same period. Notably, the funding gap under the proposed level of service target is significantly reduced from the benchmark gap of $133.4 million over the planning period.

In order to fund this $19.5 million infrastructure gap over the 2024-2034 planning period, a tax levy increase of 3.3% would be required in 2025, raising approximately an additional $350,000 over the existing 2024 tax levy revenue of $10.6 million. This strategy would require the Township to increase capital spending by an additional $350,000 per annum over the planning period to meet the proposed level of services set out.

Figure 7 – 10-Year Need vs Funding (Proposed Level of Service Funding Gap for Tax Supported Assets)

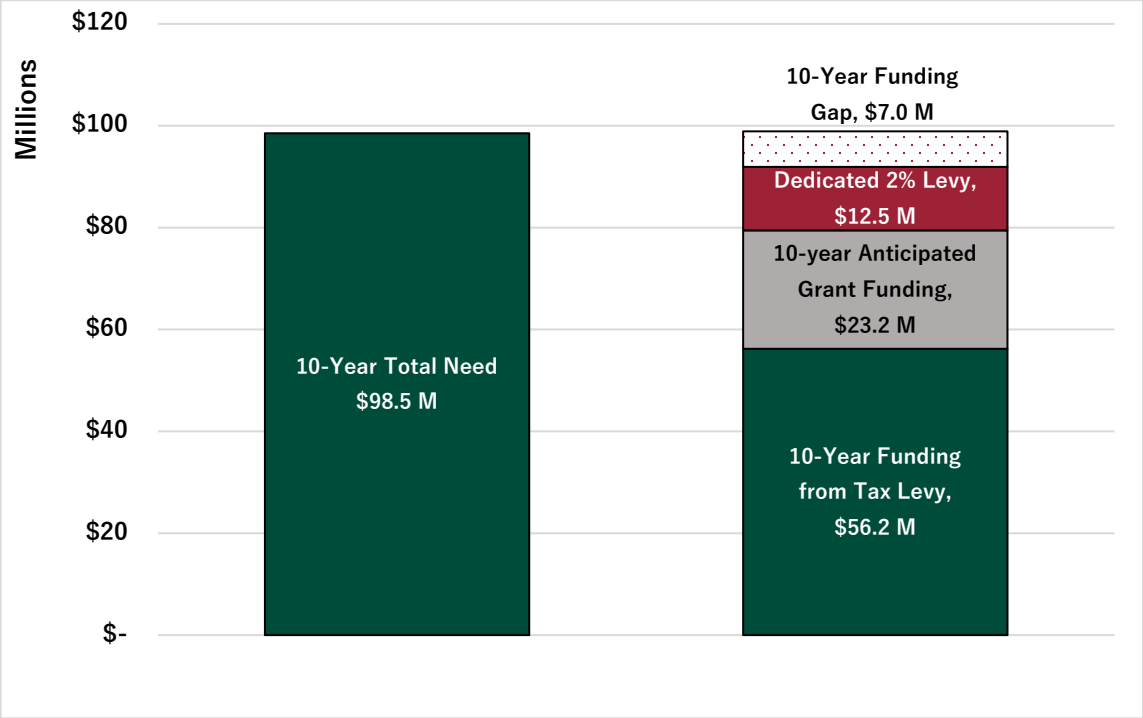
D. THE RELATIONSHIP TO THE PROPOSED LEVEL OF SERVICE

The information illustrated emphasizes the need for the Township to continue the utilization of these funding programs to meet service levels over the long-term. However, as the Township's asset management program further advances, it can be expected that the costs analysis be improved to better reflect asset risks, levels of service and a better understanding of the condition of the infrastructure.

Prior to the publication of this Asset Management Plan, Brock Council adopted the recommendations of a staff report to implement an additional 2% dedicated infrastructure levy. Figure 8 below shows the revised infrastructure gap for the 2024-2034 planning period, given this new initiative assuming it is maintained over the planning period.[4]

[4] The amount of money dedicated to asset management would still be subject to council approval each year through the budget.

Figure 8 – Revised 10-Year Need vs Funding (After implementation of Dedicated 2% Levy)



Overall, the infrastructure gap depicted in Figure 7 is required to ensure the Township delivers the proposed levels of service identified in Section 3 of the AMP, which represents the lifecycle activities outlined in Section 4. Given the adoption of this strategy, which does not align with the funding needed to meet the proposed level of services, other qualitative improvements and other financial solutions need to be explored. Table 20 outlines several approaches to closing the revised funding gap.

Table 20 – Approaches to Closing the Funding Gap

Category	Description
Improved Data Quality	As the Township matures its asset management practices, improving data quality across service areas will help to achieve a proper assessment of the condition of assets. Improved lifecycle cost data will facilitate evidence-based decision making and support in achieving lowest lifecycle costing through prioritization of repair and replacement activities.
Levels of Service Measures	As part of the 2024 AMP, levels of services measures by asset category have been established. Tracking LOS measures may identify areas where funding needs could be recalibrated based on performance.

Assessing Risk Tolerance	Further detailed risk analysis including defining risk tolerance level for individual asset classes will help to further refine prioritization of the investment needs and levels of service. Although not always desirable, it may be possible to accept a higher degree of asset risk to help lower ongoing asset costs.
Seek Funding Support from Upper Levels of Government	The Township continues to demonstrate a significant commitment to asset management and developing a set of renewal practices to ensure that services are delivered in the most cost-efficient manner. Despite the efforts, upper level of government support is required to supplement the Township's practices to balance affordability. For long-term financial planning and accurately assessing the infrastructure gap, it is equally important that upper-level government funding is stable and predictable.
Continued Project Co-ordination with the Region on Infrastructure Projects	In exploring opportunities with the Region, overall cost efficiencies may be achieved during linear asset rehabilitation and replacement (e.g. storm sewers, roads, bridges, culverts) by better aligning capital ventures (if applicable).

6. MONITORING AND IMPROVEMENT PLAN

The major premise of a comprehensive asset management plan is that a municipality 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 monitoring and improvement plan forms part of the Township's evolving asset management planning moving forward. It has been developed using an asset management maturity scale to assess areas for improvement.

A. ASSET MANAGEMENT MATURITY ASSESSMENT

The purpose of an asset management maturity assessment is to identify a municipality's current maturity and to establish a target maturity that can be reasonably achieved in the near future. Using the International Infrastructure Management Manual (IIMM) tool, information on asset maturity was assessed under three categories:

1. Understanding and Defining the Requirements
2. Development of Asset Management Lifecycle Strategies
3. Asset Management Enablers

The three maturity categories are broken down into 16 elements that are assessed in the individual Asset Maturity Radar Graph in Figure 8. The elements in each maturity category are outlined in Table 21.

Table 21 – Asset Management Maturity Assessment Elements

Category	AM Element
Understanding and Defining the Requirements	Analysing the Strategic Initiatives (AM Policy and Objectives)
	Levels of Service Framework
	Demand Forecasting and Management
	Asset Condition and Performance
	The Strategic Asset Management Plan
Developing Asset Management Lifecycle Strategies	Managing Risk and Resilience
	Operational Planning
	Capital Works Planning
	Asset Financial Planning and Management
	AM Plans (for the Asset Portfolio Assets)

Category	AM Element
Asset Management Enablers	AM People and Leaders
	Asset Data and Information
	Asset Information Management Systems (AIMS)
	AM Process Management
	Outsourcing and Procurement
	Continual Improvement

Each element is assessed independently and assigned a score based on criteria outlined in Table 22 which scores each criteria between 0 and 100 for each element. In general, a municipality in the "Aware" category recognizes that there are regulatory or service requirements that need to be met to maintain levels of service. However, no formal plans are in place to meet these objectives and asset management planning may be done on an ad hoc basis. A municipality in the "Advanced" category has integrated the asset management plan into its budget process and budget planning is well informed by the asset management plan. In general, most municipalities would fall in the "Core" or better category, for this reason the target score would be to achieve an "Intermediate" score over the longer-term.

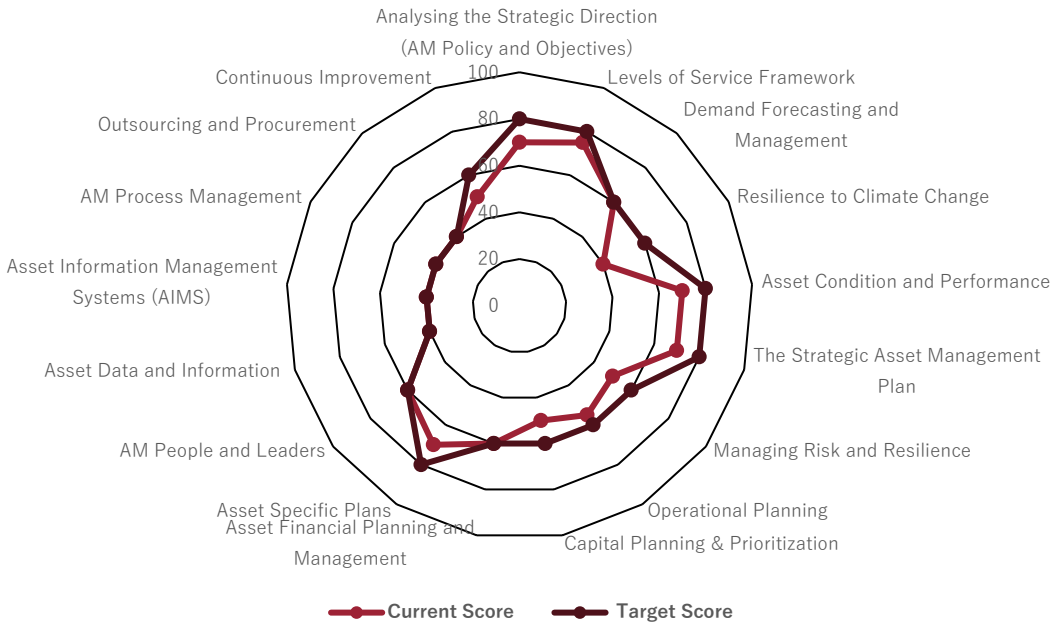
Table 22 – Maturity Assessment Scoring Scale

Maturity Level	Score
Aware	0-20
Basic	21-40
Core	41-60
Intermediate	61-80
Advanced	81-100

Figure 8 outlines the results of the Asset Maturity Rating. The Current Score accounts for all advancements in individual maturity as part of this 2024 AMP. Overall, the following were achieved:

- Understanding of levels of service focused on the condition of assets which is appropriate for the size and services provided by the Township;
- Enhancement in understanding the Township's asset management practices and general alignment with other key planning documents like the 2022 Roads Needs Study and OSIM reports; and
- General understanding of the Township's assets and the data available through consolidation of various data sources into the AMP financial model.

Figure 8 – Asset Maturity Rating



B. IMPROVEMENT PLAN

Continuous improvement is a fundamental aspect of municipal asset management. This process involves systematically identifying areas for enhancement, implementing changes, monitoring outcomes, and adjusting strategies based on feedback and new insights. The goal of the municipal asset management planning regulation (O. Reg. 588/17) is to promote municipalities to take incremental steps to maximize benefits, manage risk and provide satisfactory levels of service to the public in a cost-effective manner.

Improvement initiatives have been identified that will enhance the effectiveness of the Township's asset management program. The following table provides recommended improvement initiatives with associated priorities and timelines. While some areas for improvement can be addressed more immediately, others could be undertaken over the long-term.

Table 23 – Improvement Plan Initiatives

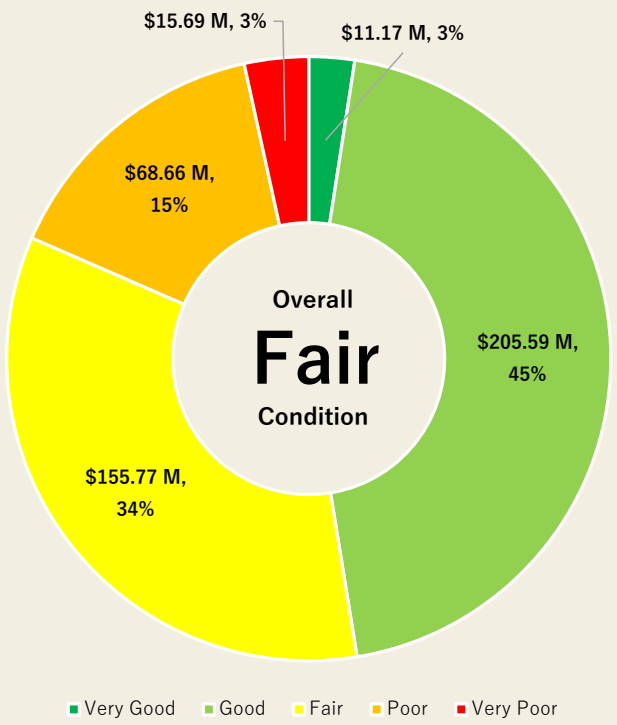
Area of Improvement	Action	Outcome	Timeline	Priority	Comments
Levels of Service	Align AMP with budget process	Determine capital contributions	Medium	Medium	Ensuring that the AMP remains up today will help guide tax funded capital contributions needs to meet long-term asset management needs
Climate Change Integration	Further development of mitigation and adaptation strategies into asset management	Further understanding of climate change risks on Township's delivery of services and support informed prioritization of strategies.	Long	Medium	The Strategic Asset Management Policy requires a commitment to integrate climate change considerations through capital planning.
Asset Data	Continually update the asset inventory	More informed ecision making for apital budget urposes	Medium	Medium	The AMP needs to be updated every 5-years as per regulation after 2025, this is an opportunity to ensure asset data including conditions remains up to date.

Area of Improvement	Action	Outcome	Timeline	Priority	Comments
Financing Strategy	Continue to monitor infrastructure gap	Continue to monitor funding needs to meet proposed level of service	Medium	Medium	While infrastructure gap has been monitored as part of this plan, it will need to be updated along with regular reviews of the AMP in the future.
	Seek funding support from upper levels of government	Continue bridging of funding gap for improved financial sustainability.	Long	High	The Township expects to continue to rely on grant funding for capital projects.

APPENDIX A

STATE OF LOCAL INFRASTRUCTURE

Roads



Current Replacement Value

$456.9 Million

Asset Inventory

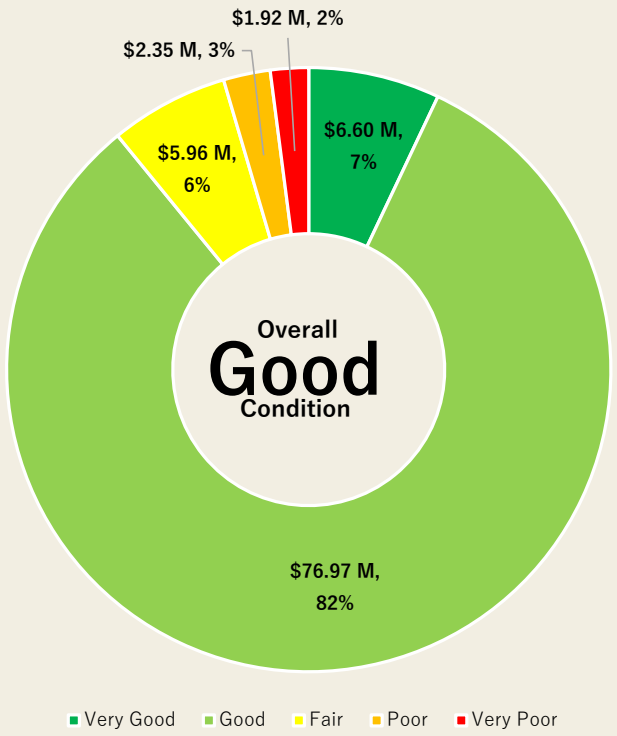
367.3 KM

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

Bridges and Culverts



Current Replacement Value

$93.8 Million

Asset Inventory

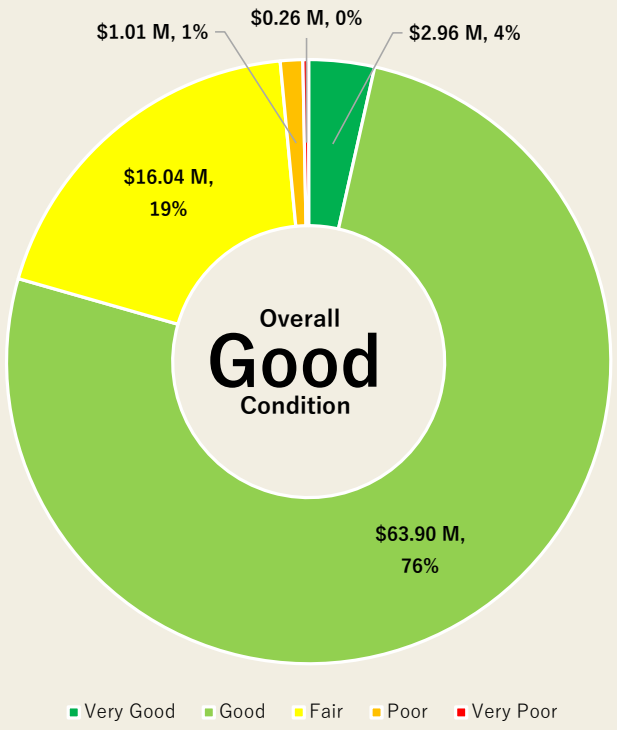
52 Units

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

Buildings



Current Replacement Value

$84.2 Million

Asset Inventory

28 Facilities

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

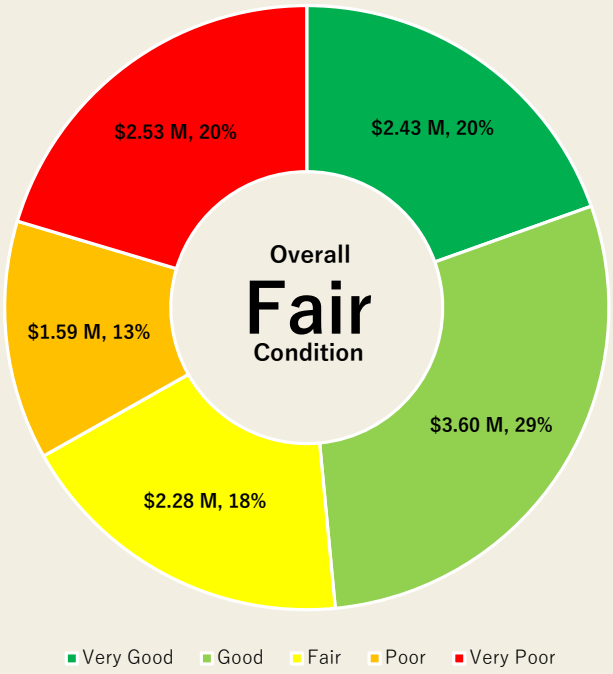
Average Remaining Useful Life

28 Years

Estimated Useful Life

10-100 Years

Vehicles and Machinery



Current Replacement Value

$12.4 Million

Asset Inventory

140 Units

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

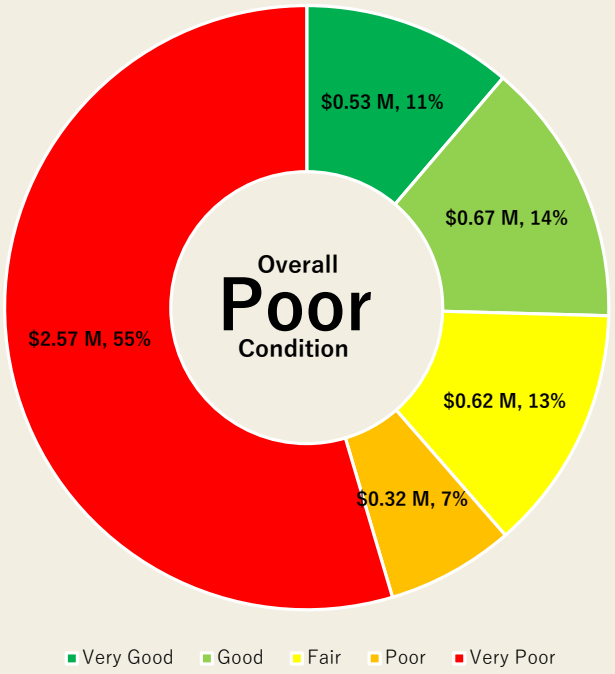
Average Remaining Useful Life

8 Years

Estimated Useful Life

10-20 Years

Equipment and Furnishings



Current Replacement Value

$4.7

Million

Asset Inventory

174

Units

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

Average Remaining Useful Life

0

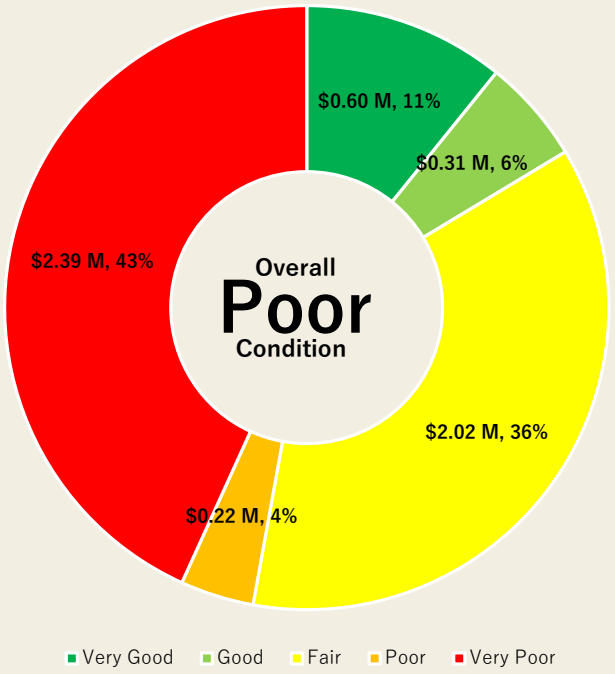
Years

Estimated Useful Life

20

Years

Land Improvements



Current Replacement Value

$5.5 Million

Asset Inventory

Pooled

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

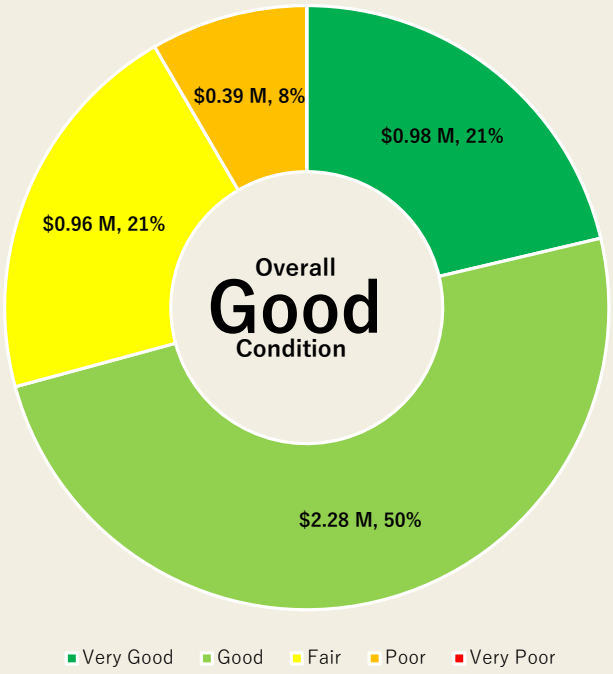
Average Remaining Useful Life

4 Years

Estimated Useful Life

10-40 Years

Stormwater Infrastructure



Current Replacement Value

$4.6 Million

Asset Inventory

Pooled

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

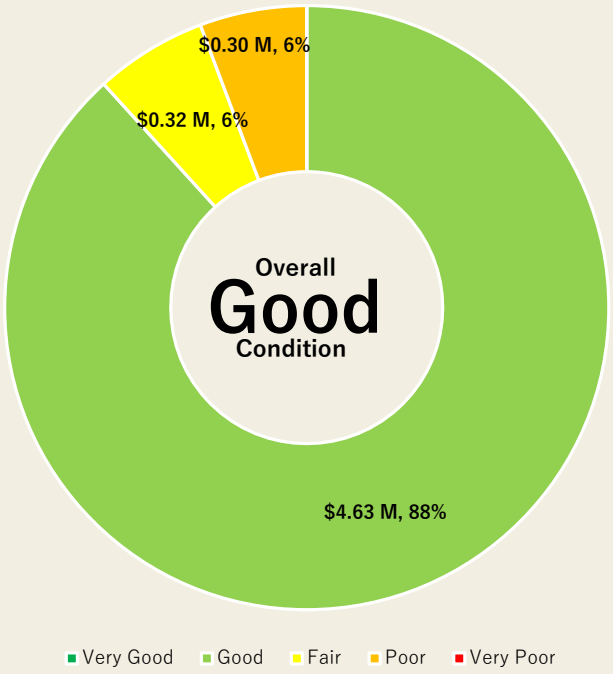
Average Remaining Useful Life

51 Years

Estimated Useful Life

15-25 Years

Sidewalks



Current Replacement Value

$5.2

Million

Asset Inventory

25,732

Metres

Data Confidence & Reliability

Level 4 (Reliable)

Dataset is complete and estimated to be accurate +/- 10%

Average Remaining Useful Life

20

Years

Estimated Useful Life

30

Years

APPENDIX B

DETAILED FINANCING STRATEGY TABLES

Table 1
Township of Brock
2024 Asset Management Plan
Base Scenario: Close Cumulative Infrastructure Deficit by 2034 (10-Years)

Year		1. Lifecycle Costs					2. Forecast of Revenues								3. Funding Gap Calculation		
	Non-Infrastructure Solutions	Operations & Maintenance	Replacement	Renewal (Roads and Bridges)	Operations and Maintenance of Expansion Assets	Total Lifecycle Costs	O&M from Taxation	Capital from Taxation (Including Transfers to Reserves)	Yearly Increase in Tax Funding ($)	Yearly Increase in Tax Funding (%)	Canada Community Building Fund CCBF (formerly Gas Tax)	Other Grants (OCIF)	Sunderland Area Grant (non-growth Share)	Existing Reserves	Total Funding	Annual Funding Gap	Cumulative Infrastructure Deficit
2024	$ 50,000	$ 2,495,524	$ 4,697,051	$ 6,561,804	$ 570	$ 13,804,949	$ 2,496,094	$ 2,615,280			$ 395,108	$ 795,000	$ 1,925,000	$ 8,472,369	$ 16,698,852	$ (2,893,902)	$ (2,893,902)
2025	$ 50,000	$ 2,495,524	$ 4,697,051	$ 6,561,804	$ 989	$ 13,805,368	$ 2,496,513	$ 5,040,237	$ 2,424,957	92.7%	$ 411,571	$ 740,158		$ -	$ 8,688,479	$ 5,116,889	$ 2,222,987
2026	$ 50,000	$ 2,495,524	$ 4,697,051	$ 6,561,804	$ 1,345	$ 13,805,725	$ 2,496,869	$ 7,465,195	$ 2,424,957	48.1%	$ 411,571	$ 740,158		$ -	$ 11,113,793	$ 2,691,932	$ 4,914,919
2027	$ 50,000	$ 2,495,524	$ 4,697,051	$ 6,561,804	$ 2,154	$ 13,806,533	$ 2,497,678	$ 9,890,152	$ 2,424,957	32.5%	$ 428,034	$ 740,158		$ -	$ 13,556,022	$ 250,511	$ 5,165,430
2028	$ 50,000	$ 2,495,524	$ 4,697,051	$ 6,561,804	$ 2,715	$ 13,807,094	$ 2,498,239	$ 12,315,110	$ 2,424,957	24.5%	$ 428,034	$ 740,158		$ -	$ 15,981,540	$ (2,174,446)	$ 2,990,984
2029	$ 50,000	$ 2,495,524	$ 4,697,051	$ 19,249,874	$ 3,442	$ 26,495,891	$ 2,498,966	$ 14,740,067	$ 2,424,957	19.7%	$ 428,034	$ 740,158		$ -	$ 18,407,225	$ 8,088,666	$ 11,079,650
2030	$ 50,000	$ 2,495,524	$ 4,697,051	$ 19,249,874	$ 4,089	$ 26,496,537	$ 2,499,613	$ 17,165,024	$ 2,424,957	16.5%	$ 428,034	$ 740,158		$ -	$ 20,832,829	$ 5,663,708	$ 16,743,358
2031	$ 50,000	$ 2,495,524	$ 4,697,051	$ 19,249,874	$ 4,253	$ 26,496,702	$ 2,499,777	$ 19,589,982	$ 2,424,957	14.1%	$ 428,034	$ 740,158		$ -	$ 23,257,951	$ 3,238,751	$ 19,982,109
2032	$ 50,000	$ 2,495,524	$ 4,697,051	$ 19,249,874	$ 4,420	$ 26,496,868	$ 2,499,944	$ 22,014,939	$ 2,424,957	12.4%	$ 428,034	$ 740,158		$ -	$ 25,683,075	$ 813,794	$ 20,795,903
2033	$ 50,000	$ 2,495,524	$ 4,697,051	$ 19,249,874	$ 4,603	$ 26,497,052	$ 2,500,127	$ 24,439,896	$ 2,424,957	11.0%	$ 428,034	$ 740,158		$ -	$ 28,108,215	$ (1,611,164)	$ 19,184,739
2034	$ 50,000	$ 2,495,524	$ 4,697,051	$ 4,101,256	$ 4,604	$ 11,348,434	$ 2,500,128	$ 26,864,854	$ 2,424,957	9.9%	$ 428,034	$ 740,158		$ -	$ 30,533,173	$ (19,184,739)	$ -
Total	**$ 550,000**	**$ 27,450,764**	**$ 51,667,559**	**$ 133,159,645**	**$ 33,184**	**$ 212,861,153**	**$ 27,483,948**	**$ 162,140,736**	**$ 24,249,574**		**$ 4,642,519**	**$ 8,196,580**	**$ 1,925,000**	**$ 8,472,369**	**$ 212,861,153**		

Table 2
Township of Brock
2024 Asset Management Plan
PLOS Scenario: Close Cumulative Infrastructure Deficit by 2034 with Lifecycle Activities Tailored to PLOS

Year		1. Lifecycle Costs									2. Forecast of Revenues								3. Funding Gap Calculation		
	Non-Infrastructure Solutions	Operations & Maintenance	Operations and Maintenance of Expansion Assets	Existing Capital Investment	Additional Cost to Meet PLOS Renewal (Roads and Bridges)	Additional Cost to Meet PLOS Renewal (Vehicles)	Additional Cost to Meet PLOS Renewal (Facilities)	Additional Cost to Meet PLOS Renewal (Stormwater Infrastructure)	Total Lifecycle Costs	O&M from Taxation	Capital from Taxation (Including Transfers to Reserves)	Yearly Increase in Tax Funding ($)	Yearly Increase in Tax Funding (%)	Canada Community Building Fund CCBF (formerly Gas Tax)	Other Grants (OCIF)	Sunderland Area Grant (non-growth Share)	Existing Reserves	Total Funding	Annual Funding Gap	Cumulative Infrastructure Deficit
2024	$ 50,000	$ 2,495,524	$ 570	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,953,264	$ 2,496,094	$ 2,615,280			$ 395,108	$ 795,000	$ 1,925,000	$ 8,472,369	$ 16,698,852	$ (7,745,587)	$ (7,745,587)
2025	$ 50,000	$ 2,495,524	$ 989	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,953,683	$ 2,496,513	$ 2,961,177	$ 345,897	13.2%	$ 411,571	$ 740,158		$ -	$ 6,609,419	$ 2,344,265	$ (5,401,323)
2026	$ 50,000	$ 2,495,524	$ 1,345	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,954,039	$ 2,496,869	$ 3,307,074	$ 345,897	11.7%	$ 411,571	$ 740,158		$ -	$ 6,955,672	$ 1,998,368	$ (3,402,955)
2027	$ 50,000	$ 2,495,524	$ 2,154	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,954,848	$ 2,497,678	$ 3,652,970	$ 345,897	10.5%	$ 428,034	$ 740,158		$ -	$ 7,318,840	$ 1,636,008	$ (1,766,947)
2028	$ 50,000	$ 2,495,524	$ 2,715	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,955,409	$ 2,498,239	$ 3,998,867	$ 345,897	9.5%	$ 428,034	$ 740,158		$ -	$ 7,665,298	$ 1,290,111	$ (476,836)
2029	$ 50,000	$ 2,495,524	$ 3,442	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,956,136	$ 2,498,966	$ 4,344,764	$ 345,897	8.6%	$ 428,034	$ 740,158		$ -	$ 8,011,922	$ 944,215	$ 467,379
2030	$ 50,000	$ 2,495,524	$ 4,089	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,956,783	$ 2,499,613	$ 4,690,661	$ 345,897	8.0%	$ 428,034	$ 740,158		$ -	$ 8,358,465	$ 598,318	$ 1,065,697
2031	$ 50,000	$ 2,495,524	$ 4,253	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,956,948	$ 2,499,777	$ 5,036,557	$ 345,897	7.4%	$ 428,034	$ 740,158		$ -	$ 8,704,527	$ 252,421	$ 1,318,118
2032	$ 50,000	$ 2,495,524	$ 4,420	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,957,114	$ 2,499,944	$ 5,382,454	$ 345,897	6.9%	$ 428,034	$ 740,158		$ -	$ 9,050,590	$ (93,476)	$ 1,224,642
2033	$ 50,000	$ 2,495,524	$ 4,603	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,957,297	$ 2,500,127	$ 5,728,351	$ 345,897	6.4%	$ 428,034	$ 740,158		$ -	$ 9,396,670	$ (439,373)	$ 785,269
2034	$ 50,000	$ 2,495,524	$ 4,604	$ 2,615,280	$ 2,859,827	$ 416,269	$ 464,205	$ 51,589	$ 8,957,298	$ 2,500,128	$ 6,074,248	$ 345,897	6.0%	$ 428,034	$ 740,158		$ -	$ 9,742,567	$ (785,269)	$ (0)
Total	**$ 550,000**	**$ 27,450,764**	**$ 33,184**	**$ 28,768,080**	**$ 31,458,102**	**$ 4,578,957**	**$ 5,106,258**	**$ 567,474**	**$ 98,512,819**	**$ 27,483,948**	**$ 47,792,403**	**$ 3,458,968**		**$ 4,642,519**	**$ 8,196,580**	**$ 1,925,000**	**$ 8,472,369**	**$ 98,512,819**		