The Township of Enniskillen

2024 Asset Management Plan

Prepared for:	The Township of Enniskillen 4465 Rokeby Line Petrolia, ON N0N 1R0
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Executive Summary

This 2024 Township of Enniskillen's Asset Management Plan was developed to satisfy the requirements of *Ontario Regulation 588/17: Asset Management Planning for Infrastructure.* This Asset Management Plan provides an overview of the Township's core assets and non-core assets. A total of eight asset categories were examined in this Asset Management Plan. Four core asset categories were defined per the regulation (Roads, Bridges & Culverts, Water, and Wastewater), while four non-core asset categories were defined by the Township (Municipal Buildings, Municipal Equipment, Public Works Fleet, and Public Works Equipment). Altogether, these asset categories have an estimated total replacement value of approximately $200 million derived from a combination of costs determined by municipal staff using the Township's available information and vendor quotes.

Over 90% of the Township's asset portfolio by replacement value comes from three asset categories:

- Water (37%);
- Roads (33%); and
- Bridges & Culverts (24%).

Asset condition for Paved Roads and Bridges & Culverts spanning 3 metres or greater in the Roads and Bridges & Culverts asset categories were professionally assessed and assigned appropriate condition ratings (Pavement Condition Index and Bridge Condition Index values). The asset condition of all other assets in the Township's portfolio were estimated based on age which may overstate or understate asset condition and needs.

An overview of the current and proposed levels of service by asset category and the lifecycle management strategies to sustain these levels of service are provided in this Asset Management Plan. Continued monitoring of levels of service outlined by Ontario Regulation 588/17, proposed levels of service, and current lifecycle management strategies should provide insights regarding the appropriateness as well as opportunities for further refinement of proposed levels of service and lifecycle management strategies in future years.

A 10-year outlook regarding the cost of lifecycle activities to maintain current levels of service is provided. This exercise indicated that, based on current committed funding levels for capital, the Township will experience funding deficits that will affect its ability to fully address and commit to rehabilitation/renewal and replacement/reconstruction lifecycle activities. Some considerations to help inform the development of a financial strategy to address funding deficits are identified in this version of the Asset Management Plan.

1.0 Purpose

The purpose of the 2024 Asset Management Plan is to provide:

- An overview of the Township of Enniskillen's assets;
- An estimate the funding levels required to sustain its assets at current levels of service; and
- An overview of the current levels of service and lifecycle activities needed in managing the inventory of assets.

This Asset Management Plan provides information and analysis on the needs for the Township's existing assets and serves as an updated reference point for the 2025 requirements of *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure*.

The purpose of the 2024 Asset Management Plan is not to seek Township Council decisions on changing funding strategies or levels of service; however, Council's endorsement and approval of the Asset Management Plan is required by Ontario Regulation 588/17 to demonstrate it recognizes the current state of the Township of Enniskillen's assets and their projected funding requirements.

2.0 Introduction & Background

2.1 The Township of Enniskillen

The Township of Enniskillen ("The Township") is a rural municipality located in central Lambton County with a population of 2,825 people per the 2021 census[1]. The oil and gas industry remains an important part of the local economy, but the Township's current main economic activities are in agriculture and livestock.

The Township surrounds the Town of Petrolia and the Village of Oil Springs while the Hamlets of Marthaville and Oil City are located within the Township.

Enniskillen is responsible for delivering the following services to its residents:

- Roads and bridges;
- Potable water distribution;
- Wastewater (or "sewage") collection and treatment for the Hamlet of Oil City; and
- Municipal drainage.

[1] Statistics Canada. 2023. (table). *Census Profile*. 2021 Census of Population. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released November 15, 2023.
https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E

2.1.1 A Note on the Township's Fire Services

The Township does not solely own or operate a fire department. The municipality has agreements with two volunteer fire departments to provide fire service to different areas of the Township. The Oil Springs Fire Department covers the southern portion of the municipality and is responsible for providing fire protection to areas within the boundary lines of Lots 1-31, Concession 1, 2 and 3 inclusive and Lots 1-26, Concession 4, 5, 6, and 7 inclusive. The Township pays 78% of the total cost of operating the Oil Springs Fire Department.

The Petrolia & North Enniskillen Fire Department covers the middle to northern portion of the municipality and are responsible for providing fire protection to areas within the boundary lines of Lots 1-31, Concession 8, 9, 10, 11, 12, and 13 inclusive. The Township pays 40% of the total cost of operating the Petrolia & North Enniskillen Fire Department.

2.2 Overview of Asset Management

Municipalities undertake the burden of managing and maintaining assets that are vital to the social, economic, and the environmental sustainability of the communities they serve. The goal of asset management is to minimize the lifecycle costs while effectively providing services to their communities, managing risks, and maximizing the value the communities receive from their respective municipality's asset portfolio.

The acquisition of an asset typically accounts for approximately 10-20% of its total cost of ownership. The remaining 80-90% is attributed to operations and maintenance of the asset.

Figure 1: Asset Lifecycle

The industry-standard approach and sequence to developing an asset management program defined

by the Institute of Asset Management is simplified and shown in Figure 2[2]. The emphasis and intended outcome of this approach is to align the Corporate (municipal) Strategic Plan and various asset management documents. The contents of an organization's Strategic Plan have a direct impact on asset management planning and reporting.

Figure 2: Asset Management Program Development Approach

Asset management is an ongoing, long-term process striving for continuous improvement with the intent to help municipalities make informed and strategic spending and investment decisions for assets.

2.2.1 Strategic Plan

A municipality's Strategic Plan establishes its high-level vision, mission, and overarching strategic objectives. Some municipalities may not have a single Strategic Plan document but may have the elements of a Strategic Plan exist in other documents.

The Corporation of the Township of Enniskillen Official Plan ("Official Plan") was drafted in 2015. This document contains elements of a Strategic Plan which inform the contents of the Township's Asset Management Policy, Asset Management Strategy, and Asset Management Plan. The Official Plan may evolve over time as the Township's key decision-makers and other stakeholders change.

2.2.2 Asset Management Policy

A municipality's Asset Management Policy is a set of guiding principles that outline its approach to asset management activities. It provides direction to municipal staff regarding their roles and responsibilities pertaining to the management of their municipality's assets and in alignment with the greater municipal Strategic Plan.

The Township adopted its Asset Management Policy in 2019[3] in accordance with Ontario Regulation 588/17.

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[2] https://fcm.ca/sites/default/files/documents/resources/guide/how-to-develop-asset-management-policy-strategy-mamp.pdf

[3] https://www.enniskillen.ca/wp-content/uploads/2021/06/Asset-Management-Policy-2019-Township-of-Enniskillen.pdf

The purpose of the Township's Asset Management Policy is to:

- Establish consistent standards and guidelines for the management of the Township's assets; and
- Apply sound technical, social, and economic principles that consider present and future needs of users, and the service expected from the assets.

2.2.3 Asset Management Strategy

An Asset Management Strategy outlines the translation of organizational objectives into asset management related objectives. An Asset Management Strategy should provide an overview of the activities required to meet these objectives. The intent is to provide more details than an Asset Management Policy on how a municipality plans to achieve asset management objectives through planned activities and decision-making criteria.

The Township's current Asset Management Policy has some of the components of an Asset Management Strategy. This may be expanded in future versions of the Asset Management Policy or as part of a separate document.

2.2.4 Asset Management Plan

The intent of an Asset Management Plan ("AMP") is to describe a municipality's asset portfolio, levels of service, and performance standards as well as the actions and resources required to provide a defined level of service. An AMP typically includes the following content:

- Current State of Assets;
- Asset Management Strategies;
- Levels of Service; and
- Financial Strategies.

The Township's definition of an Asset Management Plan in section 4 of its Asset Management Policy is aligned to providing similar content outlined above.

An AMP is intended to be a living document that should be updated regularly as additional asset and financial data becomes available. This enables a municipality to re-evaluate the state of its infrastructure and identify the effectiveness of its asset management and financial strategies.

2.3 Ontario Regulation 588/17

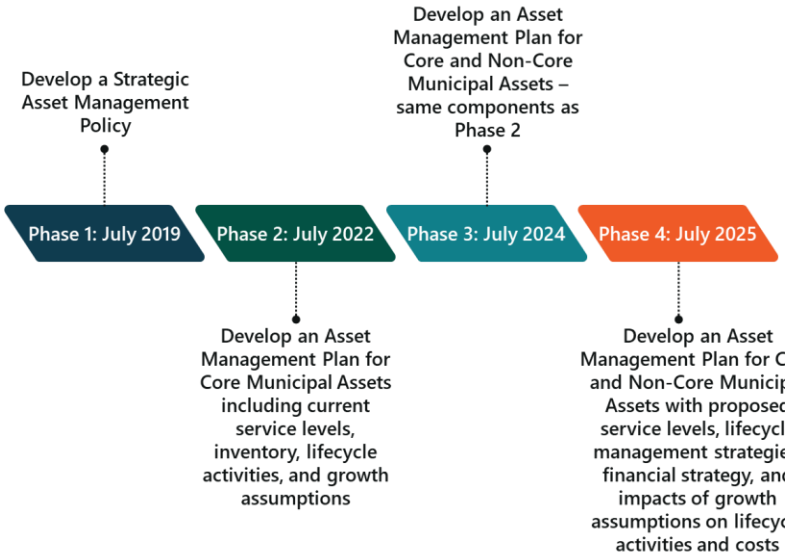
It is recognized that infrastructure assets across many municipalities nationwide are degrading faster than they are repaired or replaced which puts municipal service delivery at risk. The Ontario Government introduced *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure* ("O. Reg. 588/17") as a part of the *Infrastructure for Jobs and Prosperity Act, 2015* to address this challenge[4].

The goal of O. Reg. 588/17 is to improve how municipalities plan for their infrastructure by standardizing the practice of developing AMPs and to promote asset management best practices

[4] https://www.ontario.ca/page/municipal-asset-management-planning

across all Ontario municipalities. Figure 3 provides an overview of the O. Reg. 588/17 schedule.

Figure 3: O. Reg. 588/17 Schedule



Each milestone in the above O. Reg. 588/17 schedule builds on prior activities and deliverables to promote continuous improvement in developing and monitoring municipal AMPs.

3.0 Scope

This section provides context as to where the Township and the other Ontario municipalities are regarding the schedule outlined in O. Reg. 588/17 (Figure 3) and the reporting requirements.

3.1 O. Reg. 588/17 – Phase 3 and Asset Categories Included

This phase of O. Reg. 588/17 includes non-core assets with their current levels of service and the cost to maintain those levels of service to be added to the Township's previous AMP.

This version of the Township's AMP has been produced in accordance with O. Reg. 588/17 and captures the core assets described in the previous AMP (roads, bridges & culverts, water system, and wastewater system) and non-core assets which were also included in the previous AMP (e.g., municipal facilities, vehicle fleet, and other assets).

The Township indicates it does not own nor manage any stormwater management assets, therefore this asset category outlined in O. Reg. 588/17 is omitted. The onus of stormwater management assets ultimately falls on landowners in the municipality per *Drainage Act, R.S.O. 1990, c. D. 17*[5].

Each version of the Township's AMP represents a point-in-time perspective and is developed using the best available data, processes, and information at the time in conjunction with historical context from

[5] https://www.ontario.ca/laws/statute/90d17

previous AMP versions.

A compliance checklist is included in Appendix A – O. Reg. 588/17 Phase 3 Compliance Checklist.

3.2 Asset Inventory

The current asset inventory and related valuation information were compiled from various sources including:

- Insurance lists;
- Microsoft Excel spreadsheets managed by the Township's departments to record assets;
- Interviews; and
- Vendor quotes.

The information from these sources were centralized into a Microsoft Excel workbook to create the Township's asset inventory to be used for modeling and analysis in this AMP. The Excel workbook is intended to be a living asset inventory document and updated as the Township's asset inventory changes.

4.0 Limitations, Constraints, and Assumptions

The development and revision of each AMP requires substantial effort by municipal staff. The following points describe the limitations, constraints, and assumptions considered and exercised when developing the AMP.

1. **Data integrity and completeness** – The Township's data collection methods and sources of data and information are continuously improving but gaps still exist. The accuracy and completeness of the Township's AMP and its contents is contingent on the reliability and availability of data and information. It is understood that as the asset inventory changes over time, the data and information recorded should improve and be reflected in later versions of the AMP.
2. **Asset condition rating availability** – In situations where condition assessment data was absent or unknown, age of the asset was used as a proxy if possible. This approach can result in an over- or understatement of asset condition and spending/investment needs. This may require refinement over time or a re-evaluation of approach at the Township's discretion.
3. **Point-in-time perspective** – As mentioned in section 3.1, each version of the Township's AMP represents a point-in-time perspective. Each version of the AMP is developed based on the best available data, processes, and information at the time. Information and data used in this AMP are expected to be dated due to changes such as the Township's priorities, data collection methods, and information/data sources.
4. **Future predictions are based on historical information** – The AMP uses historical information to predict the future costs considering inflationary effects. Major economic, social, political, environmental changes and/or other external factors will impact the relevance of historical information in predicting the future and thus accuracy of the contents of this AMP.

The challenges previously noted are common among municipalities nationwide and require long-term

commitment and sustained effort by staff to improve these practices. As the Township's asset management program evolves and improves, the quality of future AMPs and other core documents that support the AMP should improve as well.

5.0 Definitions & Concepts

This section provides context regarding how O. Reg. 588/17 defines municipal assets, as well as some key concepts to consider in asset management. A robust asset management program aims to ensure all stakeholders understand what are considered assets and the considerations to be aware of when managing these assets.

5.1 Core Municipal Infrastructure Assets

Core municipal infrastructure assets as defined in section 1 of O. Reg. 588/17 are shown in Table 1.

Table 1: Core Municipal Infrastructure Assets per O. Reg. 588/17

Asset Categories	Definitions
Water	Asset that relates to the collection, production, treatment, storage, supply, or distribution of water.
Wastewater	Asset that relates to the collection, transmission, treatment, or disposal of wastewater, including any wastewater asset that from time to time manages stormwater.
Stormwater	Asset that relates to the collection, transmission, treatment, retention, infiltration, control, or disposal of stormwater.
Road	1. Arterial roads – Class 1 and Class 2 highways as determined under the Table to section 1 of Ontario Regulation 239/02. 2. Collector roads – Class 3 and Class 4 highways as determined under the Table to section 1 of Ontario Regulation 239/02. 3. Local roads – Class 5 and Class 6 highways as determined under the Table to section 1 of Ontario Regulation 239/02.
Bridge or Culvert	Not defined in O. Reg. 588/17 – refer to *Ontario Structure Inspection Manual* definitions: 1. Bridge – A structure which provides a roadway or walkway for the passage of vehicles, pedestrians or cyclists across an obstruction, gap or facility and is greater than or equal to 3 m in span. 2. Culvert (Structural) – A structure that forms an opening through soil and has a span of 3 metres or more[6].

[6] The *Ontario Structure Inspection Manual* provides a more technical definition, but this captures the general definition.

5.2 Non-Core Municipal Assets

O. Reg. 588/17 does not explicitly define what are considered non-core municipal assets, however it is assumed that it broadly captures assets that do not fall within the category definitions outlined in section 5.1 – Core Municipal Infrastructure Assets. These could be interpreted as other assets such as municipal facilities, municipal-owned vehicles, and heavy equipment.

Table 2 describes how this version of the Township's AMP broadly defines non-core asset categories.

Table 2: Non-Core Asset Categories

Asset Categories	Description/Definition
Municipal Facilities	Buildings and facilities for public use or used/managed by municipal staff to support daily municipal operations (e.g., public washrooms, administrative building, etc.).
Municipal Equipment	Equipment for public use or used/managed by municipal staff to carry out their duties (e.g., playground equipment, bleachers, computers, etc.).
Public Works Fleet	Vehicles and trailers used by Public Works staff.
Public Works Equipment	Heavy machinery and other specific-purpose equipment used by Public Works staff.

5.3 Lifecycle Management

It is inevitable that assets deteriorate over time, which affects their condition and performance. This is due to a combination of various factors such as an asset's characteristics, location, frequency of use, maintenance history, and environment. As an asset deteriorates, its ability to fulfill its intended function to help deliver a service can be negatively impacted.

A municipality should develop and establish a lifecycle management strategy to proactively manage asset deterioration to ensure that the municipality's assets are working as expected and adequately delivering services to the community. This can be achieved by considering a mix of lifecycle management activities over the course of an asset's lifespan. Table 3 provides a summary of different lifecycle activities that will form an overall lifecycle management strategy for an asset category.

Table 3: Lifecycle Management Activities[7]

Lifecycle Activity	Description	Cost Perception
Non-Infrastructure	Actions or policies that are not capital in nature but are implemented to lower costs and/or extend the Useful Life of an asset.	$
Maintenance	Any activities that: • Prevent defects/deterioration; and/or • Focus on correcting current defects or slowing down deterioration.	$
Rehabilitation/Renewal	Any activities that fix known defects/deficiencies that may be affecting an asset's performance.	$$$
Replacement/Reconstruction	End-of-life activities of an asset such as: • Replacing an asset with similar capabilities and features; • Replacing an asset with better capabilities and features (i.e., upgrade); or • Full rebuild/reconstruction of an asset.	$$$$$

It is important to note that an asset's performance can be sustained through a combination of maintenance and rehabilitation lifecycle activities, but replacement will ultimately be required in most cases. Understanding the impact of these activities on an asset's lifecycle and the costs associated can help municipal staff determine how to maximize an asset's Useful Life at the lowest total cost of ownership and when its replacement is expected.

5.4 Risk Management

In general, municipalities often take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are typically fixed first, regardless of their impact to service delivery. It should be noted that not all assets are created equal. Some are more important than others and their failure or inability to be repaired poses more risk to the community relative to other assets.

Risk can be viewed as a product of two variables and can be a qualitative or quantitative measure:

$$Risk = (Likelihood\ of\ failure) * (Consequence\ of\ failure)$$

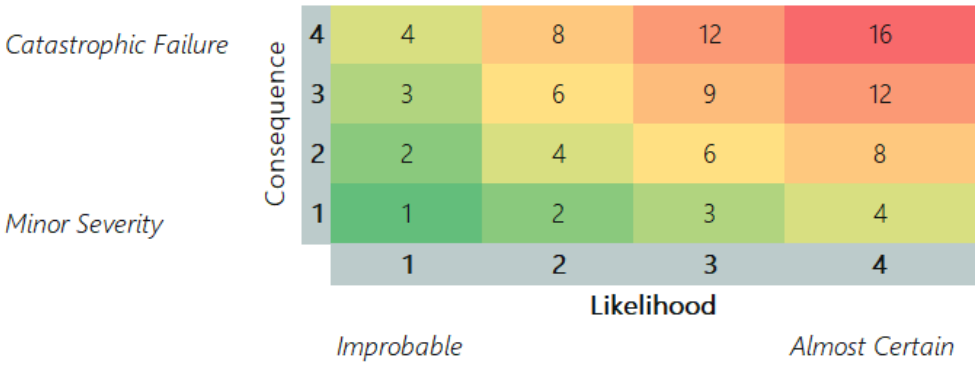
By identifying and understanding the various impacts of asset failure and the likelihood that it will fail, risk management can identify critical assets and determine where maintenance efforts, and spending,

[7] Table derived from sections 5.3-5.10 of *Asset Management Framework: A guide to asset management for municipalities in Ontario.* https://mfoa-amp.ca/AMF/AMF_05C.pdf

should be focused. A good tool to assess asset risk is a risk matrix. The output from the risk matrix is intended to provide an idea as to which assets have the highest risk of failure, which can help to determine the relative importance (or criticality) of issues to address.

An example of a high-level risk assessment matrix is provided in Figure 4 below.

Figure 4: Sample Risk Matrix



Common types of consequences to consider when assessing asset risk of failure are provided in Table 4.

Table 4: Common Consequences to Consider Associated with Asset Failure[8]

Type of Consequence	Description of Consequence
Economic	An economic impact of asset failure may manifest itself as a disruption(s) to local business activities. These may look like business closures, service disruptions, etc.
Environmental	Environmental impacts such as pollution or significant landscape changes such as erosion, damage to natural habitats for local fauna, etc. which may cause a failure event of an asset(s).
Financial	This refers to direct financial impacts due a failure event of an asset(s) (i.e., the replacement costs of asset(s))
Public Health and Safety	Impacts such as inhibited access to critical services (e.g., hospitals, clinics, grocery stores, etc.) or even injury/death. The recent example of the COVID-19 pandemic demonstrated the importance of maintaining essential facilities and equipment to enable them to pivot and manage emergency situations.
Socio-Political	Socio-political impacts refer impacts such as negative reception from the community, bad media coverage, and reputational damage to the municipality and its leadership.
Strategic	This refers to the effects of an asset failure(s) on the community's long-term goals such as economic development, business attraction, population growth, etc.

5.5 Levels of Service

Level of service ("LOS") is a measure of a service a municipality provides to the community as well as the nature and quality of those services. Qualitative descriptions and quantitative metrics measure both community and technical levels of service and will vary based on asset category.

The qualitative (Community LOS) and quantitative (Technical LOS) measures include a combination of those outlined in O. Reg. 588/17 for core assets and measures deemed appropriate by a given municipality for non-core assets.

This AMP focuses on current LOS provided to the community. Proposed LOS defined by the Township in the previous AMP are included in this version for continuity from the previous version and to provide context on current state performance against the proposed LOS. Municipalities in Ontario are expected to determine proposed LOS by asset category and provide explanations why the proposed LOS are appropriate by Phase 4 in July 2025.

[8] Table derived from section 6.3.7 of *An Anatomy of Asset Management – Version 3,* https://theiam.org/media/1486/iam_anatomy_ver3_web-3.pdf and section 3.2.5 of *Decision Making and Investment Planning: Managing Infrastructure Assets, https://fcm.ca/sites/default/files/documents/resources/guide/infraguide-managing-infrastructure-assets-mamp.pdf*

5.5.1 Community Levels of Service

Community LOS are simple, plain language descriptions or measures of the service that the community receives. For core asset categories, O. Reg. 588/17 provides qualitative descriptions that are required to be included in this AMP. Community LOS previously defined by the Township will also be included where applicable.

For non-core asset categories, the Township has determined the qualitative descriptions that will be used to determine the community level of service provided. Community LOS by asset category are detailed in section 10.0.

5.5.2 Technical Levels of Service

Technical LOS are a quantitative measure of key technical attributes of the service being provided to the community. For core asset categories, O. Reg. 588/17 provides technical metrics that are required to be included in this AMP. Technical LOS previously defined by the Township will also be included where applicable.

For non-core asset categories, the Township has determined the technical metrics that will be used to determine the technical level of service provided. Technical LOS by asset category are detailed in section 10.0.

5.6 Condition Assessment

The Township uses condition indexes to determine the condition of certain assets. These are determined from professional inspections for its Paved Roads and Bridges & Culverts – Span 3 metres or greater. Paved Roads are provided a Pavement Condition Index ("PCI") value and Bridges & Culverts – Span 3 metres or greater are provided a Bridge Condition Index ("BCI") upon assessment. Wherever a condition index is not measured or unavailable, an age-based proxy (or "Useful Life") was used to determine an asset's condition. Table 5 shows how these condition measures can be aligned to condition descriptions and criteria defined in the Canadian Infrastructure Report Card ("CIRC")[9]. This condition assessment rating system is commonly used by other Ontario municipalities and the Federation of Canadian Municipalities.

The alignment between the CIRC definitions and the condition metrics is provided for comparative purposes as this is not formally utilized by the Township. However, this does provide context on how these different measures can be interpreted.

[9] http://canadianinfrastructure.ca/downloads/canadian-infrastructure-report-card-2019.pdf

Table 5: CIRC Condition Rating Scale Aligned to Township of Enniskillen Condition Rating Information

CIRC Condition Rating Scale			Condition Metrics from Professional Inspections/Age Estimate		
Condition	Description of Condition	Description Explanation	Pavement Condition Index (PCI)	Bridge Condition Index (BCI)	% of Useful Life Remaining
Very Good	Fit for the future	Well-maintained, good condition, new, or recently rehabilitated	91-100	70-100	81-100%
Good	Adequate for now	Acceptable, generally approaching mid stage of expected service life	76-90		61-80%
Fair	Requires attention	Signs of deterioration, some elements exhibit deficiencies	66-75	60-69	41-60%
Poor	At risk of affecting service	Approaching end-of-service life, condition below standard, large portion of system exhibits significant deterioration	40-65	Less than 60	20-40%
Very Poor/Critical	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-39		Less than 20%

6.0 Current State of Asset Portfolio

The current replacement value ("CRV") of the Township's asset portfolio is an estimated $200 million. This figure indicates the cost to replace the Township's entire known inventory of core and non-core assets. This was determined using a combination of costs determined and provided by municipal staff using the Township's available information and vendor quotes provided to the Township.

The three largest asset categories the Township manages are:

- Water;
- Roads; and
- Bridges & Culverts.

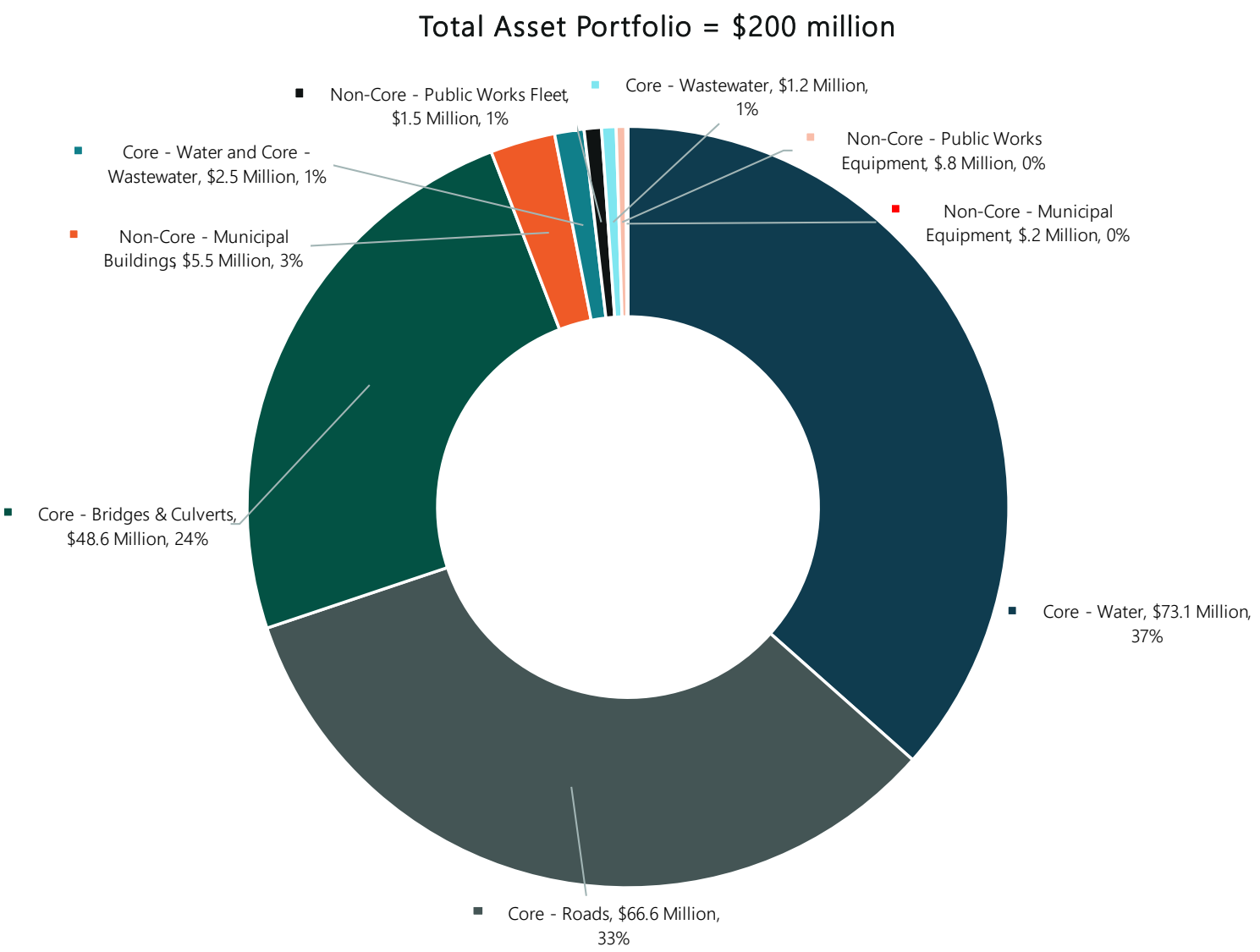
These three asset categories make up nearly 95% of the Township's known asset portfolio by CRV.

Table 6 provides how the assets in the portfolio were categorized and re-mapped to align with O. Reg. 588/17 definitions and Figure 5 shows the asset portfolio mapped to O. Reg. 588/17 definitions. Section 7.0 of this report provides current state context by asset category per O. Reg 588/17 definitions.

Table 6: Township of Enniskillen's Asset Portfolio

Asset Category for Analysis	Mapped O. Reg. 588/17 Asset Category	CRV ($)	% of Asset Portfolio
Water Mains	Core – Water	72,747,105	36%
Roads (Paved)	Core – Roads	63,795,178	32%
Bridges & Culverts – Span 3 metres or greater	Core – Bridges & Culverts	47,248,400	24%
Buildings (Community & Admin Facilities)	Non-Core – Municipal Facilities	5,507,035	3%
Roads (Unpaved)	Core – Roads	2,772,846	1%
Buildings (Water & Sewer Facilities)	Core – Water and Core – Wastewater	2,494,614	1%
Vehicles	Non-Core – Public Works Fleet	1,464,798	1%
Bridges & Culverts – Span less than 3 metres	Core – Bridges & Culverts	1,345,128	1%
Sewer Mains – Oil City	Core – Wastewater	1,228,465	1%
Equipment (Public Works)	Non-Core – Public Works Equipment	814,826	0%
Water – Pumps, Valves, and Other	Core – Water	348,000	0%
Equipment (Community & Admin)	Non-Core – Municipal Equipment	180,093	0%
Total		**199,946,487**	**100%**

Figure 5: Township of Enniskillen Asset Portfolio (Mapped to O. Reg. 588/17)



7.0 Asset Categories – Current State

This section provides the current state of the Township's core and non-core municipal assets per O. Reg. 588/17 (and sections 5.1 and 5.2 of this AMP).

7.1 Core – Roads

The Township's road network consists of 273 kilometres of roads – Paved and Unpaved – which accounts for approximately 33% of all assets captured in this AMP by replacement value. The Township's road inventory is listed by segment from intersection to intersection. Table 7 provides a high-level overview of the Township's road inventory.

Table 7: Roads High-Level Summary

Asset Category	Type	Quantity (km)	Quantity (Lane km)	CRV ($)
Roads (Unpaved)	Gravel/Clay/Stone	153	306	2,772,846
Roads (Paved)[10]	Surface Treated	62	124	63,795,178
	Paved	58	116	
Total		**273**	**546**	**66,568,024**

Gravel, clay, and stone roads (or "Unpaved Roads") have been included in the AMP inventory as they comprise a significant portion of the municipality's road network. However, the lifecycle management strategies for these assets consist of perpetual maintenance activities and do not require capital costs for rehabilitation or replacement activities. Unpaved Roads can theoretically have a limitless Useful Life due to the nature of these assets.

Road Condition Assessments generally occur every three (3) years for the Township's Paved Roads, but more frequent inspection will take place where road segments are observed to be in greater distress by Public Works staff. PCI for sections of the Township's Paved Roads is determined using field data and uses the methodology from the *Ministry of Transportation's SP-022 Flexible Pavement Rating – Guidelines for Municipalities*[11]. The field data is entered into a Flexible Pavement Condition Evaluation Form which computes the PCI for that given road section. A "Time of Improvement" recommendation is also generated based on the inputs from the field assessments. The Flexible Pavement Condition Evaluation Form is used throughout Lambton County. A sample form template is available in Appendix

[10] In previous versions of the AMP, Paved Roads were separated by two types – Surface Treated and Paved. This categorization differs from what is recorded in the Township's inventory spreadsheet. Paved Roads are separated by two types of materials – Asphalt (83 km; CRV $46.7 million) and D.S. High Float (38 km; CRV $17.1 million).

[11] https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?lang=en-US

C – Lambton County Flexible Pavement Condition Evaluation Form. Unpaved Roads were not provided PCI values as they are not inspected to the same degree as Paved Roads and lifecycle activities for this type of road surface differs significantly as previously stated.

Alignment of the Time of Improvement recommendation with PCI is provided in Table 8. An overview of the sections of Paved Roads is provided in Table 9.

Table 8: PCI Alignment to Condition Rating System in Section 4.6

Condition	Description of Condition	Description Explanation	PCI	Time of Improvement Recommendation from Evaluation Form
Very Good	Fit for the future	Well-maintained, good condition, new, or recently rehabilitated	91-100	"Adequate"
Good	Adequate for now	Acceptable, generally approaching mid stage of expected service life	76-90	"6 to 10 years"
Fair	Requires attention	Signs of deterioration, some elements exhibit deficiencies	66-75	"1 to 5 years"
Poor	At risk of affecting service	Approaching end-of-service life, condition below standard, large portion of system exhibits significant deterioration	40-65	"Reconstruct NOW" or "Rehabilitate NOW"
Very Poor/Critical	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-39	

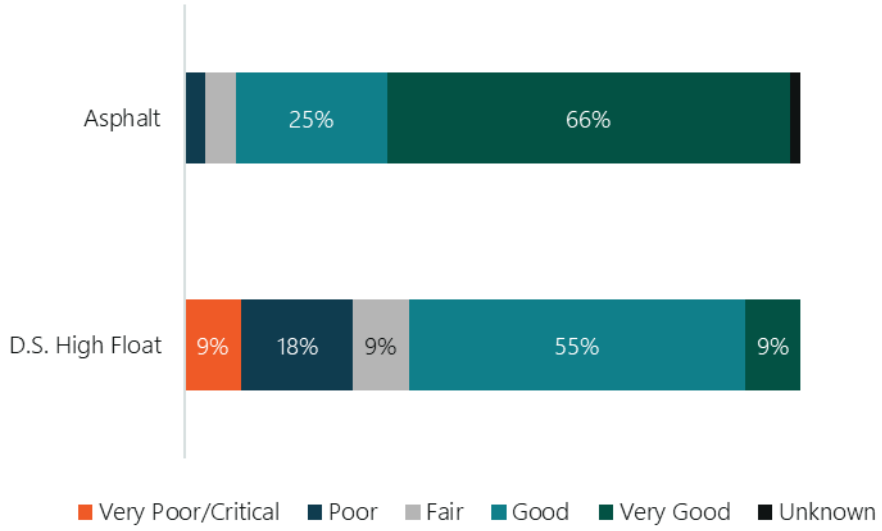
Table 9: Overview by Age Category - Paved Roads Sections

Age Category	Linear Length (km)	CRV by Age Category ($)	% of Total CRV	Average PCI by Age Category	Condition	# of Sections - Time of Improvement "Adequate"	# of Sections - Time of Improvement "6 to 10 years"	# of Sections - Time of Improvement "1 to 5 years"	# of Sections - Time of Improvement "Reconstruct NOW" or "Rehabilitate NOW"	# of Sections - Other[12]
Less Than 5 Years	30.9	18,558,494	29.1%	98.7	Very Good	15	0	0	0	0
5-10 Years	14.5	6,956,241	10.9%	94.8	Very Good	8	0	0	0	0
11-15 Years	40.9	18,458,414	28.9%	80.6	Good	12	7	2	3	0
16-20 Years	26.8	14,835,543	23.3%	77.2	Good	4	5	5	0	1
21-30 Years	8.2	4,752,645	7.4%	89.3	Good	13	2	1	1	2
31-50 Years	0.4	233,841	0.4%	94.5	Very Good	2	0	0	0	0
51-100 Years	0.0	0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**121.7**	**63,795,178**	**100%**	**86.9**	**Good**	**54**	**14**	**8**	**4**	**3**

[12] Number of Paved Roads sections with no comments (blanks) and explanation for a section of road not under the Township's management found across various documents/spreadsheets used in this AMP.

In the Township's roads inventory spreadsheet, two types of materials are noted to be used for the Township's Paved Roads – Asphalt and D.S. High Float. However, the inventory spreadsheet does not distinguish between Surface Treated and Paved as previously shown in Table 7. The Paved Roads inventory was recategorized from previous versions of the AMP to reflect material type. Figure 6 provides an overview of the condition of the materials used for the Township's Paved Roads.

Figure 6: Paved Roads Condition Breakout by Material Type



Overall, the Township's Paved Roads have a PCI of 86.9 or a "Good" rating. There is a total of 83 sections of Paved Roads in the Township's current inventory. Out of these 83 sections of Paved Roads in inventory, 54 (or 65%) are not anticipated to require any immediate lifecycle activities. Average age of the Township's Paved Roads is approximately 15 years. This is based on each section's last recorded rehabilitation activity.

While the 63 sections of Unpaved Roads were not provided a PCI value, this asset type was given an overall qualitative condition rating of "Good" based on the maintenance frequency previously mentioned. The average age of the Township's Unpaved Roads is estimated to be 49 years per current inputs. Condition ratings for Unpaved Roads may overestimate or underestimate the actual physical working condition of these assets because condition is estimated based on age.

7.2 Core – Bridges & Culverts

The Township is responsible for the maintenance, repair, and replacement of Bridges & Culverts – Span 3 metres or greater. The Township is also responsible for Bridges & Culverts – Span less than 3 metres but over $5,000 in replacement value. This asset category accounts for approximately 24% of all assets captured in this AMP by replacement value. Like the Unpaved Roads mentioned in section 7.1, the inventory for Bridges & Culverts – Span less than 3 metres has been included in this AMP but are not considered capital-related lifecycle activities (rehabilitation/renewal and replacement/reconstruction) per the Township.

Ontario Regulation 104/97: Standards for Bridges[13] ("O. Reg. 104/97") requires municipalities to have Bridges & Culverts – Span 3 metres or greater inspected every two years. The Township's most recent inspections for Bridges & Culverts – Span 3 metres or greater were in 2022 which comply with O. Reg. 104/97. The engineer responsible for inspection reviewed the structural integrity of the Bridges & Culverts – Span 3 metres or greater in accordance with the *Ontario Structure Inspection Manual* ("OSIM")[14] and provided BCI values for those inspected assets.

Table 10 provides a high-level inventory summary of the Township's Bridges & Culverts. Table 11 provides an overview of the Township's inventory of with a span of 3 metres or greater. Figure 7 provides an overview of the condition of the Bridges & Culverts – Span 3 metres or greater category by type.

Table 10: Bridges & Culverts High-Level Summary

Asset Category	Type	Count	CRV ($)
Bridges & Culverts – Span 3 metres or greater	Bridge - Concrete	8	47,248,400
	Bridge - Steel	11	
	Culvert - Boiler Plate	0	
	Culvert - Concrete	27	
	Culvert - Corrugated Steel Pipe	11	
	Culvert - PE Pipe	0	
Bridges & Culverts – Span less than 3 metres	Bridge - Concrete	0	1,345,128
	Bridge - Steel	0	
	Culvert - Boiler Plate	9	
	Culvert - Concrete	7	
	Culvert - Corrugated Steel Pipe	80	
	Culvert - PE Pipe	6	
Total		**159**	**48,593,528**

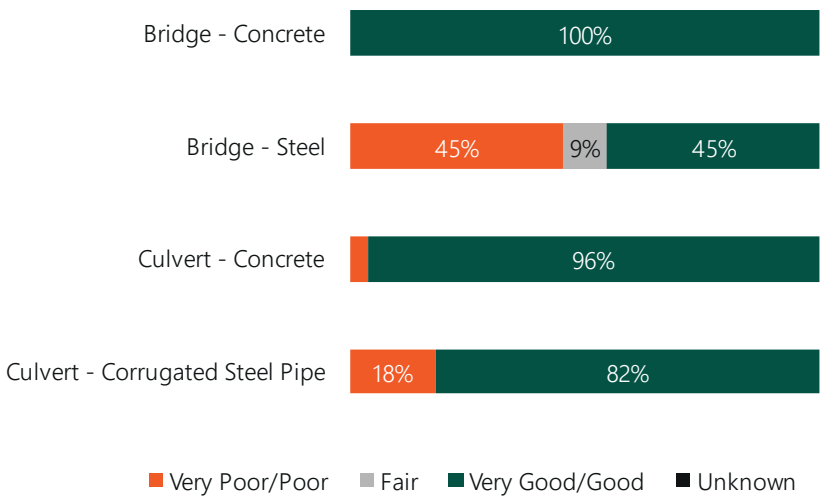
[13] https://www.ontario.ca/laws/regulation/970104

[14] https://www.library.mto.gov.on.ca/SydneyPLUS/Sydney/Portal/default.aspx?component=AAAAIY&record=2cc7e50c-3d41-4468-90f1-0788368ce945

Table 11: Overview by Type - Bridges and Culverts - Span 3 Metres or Greater

Type	Current Average Age	Count	% of Bridges & Culverts – Span 3 metres or Greater	Average BCI by Type	Condition	CRV ($)
Bridge - Concrete	46	8	14.0%	86.4	Very Good/Good	15,184,400
Bridge - Steel	67	11	19.3%	59.5	Poor	21,767,800
Culvert - Concrete	33	27	47.4%	90.9	Very Good/Good	8,154,200
Culvert - Corrugated Steel Pipe	38	11	19.3%	83.1	Very Good/Good	2,142,000
Total	**42**	**57**	**100.0%**	**82.7**	**Good**	**47,248,400**

Figure 7: Bridges & Culverts - Span 3 Metres or Greater Condition Breakout by Type



The Township's current inventory of Bridges & Culverts – Span 3 metres or greater have an average BCI of 82.7, between "Good" and "Very Good" condition and an average age of an estimated 42 years. The Township's steel bridges have an average BCI of 59.5 (or between "Poor" and "Very Poor/Critical" condition). These account for approximately 46% CRV of all assets in the Bridges & Culverts – Span 3 metres or greater segment.

Condition is estimated for Bridges & Culverts – Span less than 3 metres using age. At the time of this AMP, Bridges & Culverts – Span less than 3 metres are currently at 22% of Useful Life remaining (or "Poor" condition) on average and have an estimated average age of 54 years. These condition ratings

may not be entirely representative of the actual physical condition of these assets.

7.3 Core – Water

The Township operates a municipal Water Distribution System ("WDS") under license #028-101 issued by the Ontario Ministry of the Environment, Conservation and Parks. To maintain the license, a financial plan for the Township's WDS must be approved by Council resolution every six years per *Ontario Regulation 453/07: Financial Plans under Safe Drinking Water Act, 2002*. The Township's 2021-2026 Water Financial Plan satisfies this requirement in addition to the O. Reg. 588/17 requirement to have a financial plan related to water assets considered in the Township's asset management planning[15]. This asset category accounts for approximately 37% of all assets captured in this AMP by replacement value.

The WDS provides potable water to 1,389 service connections in the following municipalities in addition to the Township of Enniskillen:

- The Township of Brooke-Alvinston;
- The City of Sarnia;
- The Township of St. Clair; and
- The Town of Plympton-Wyoming.

The Township purchases water from the Town of Petrolia and sells water to the Village of Oil Springs and the Township of Dawn-Euphemia. The Village of Oil Springs and the Township of Dawn-Euphemia operate their own licensed Water Distribution Systems for their respective communities.

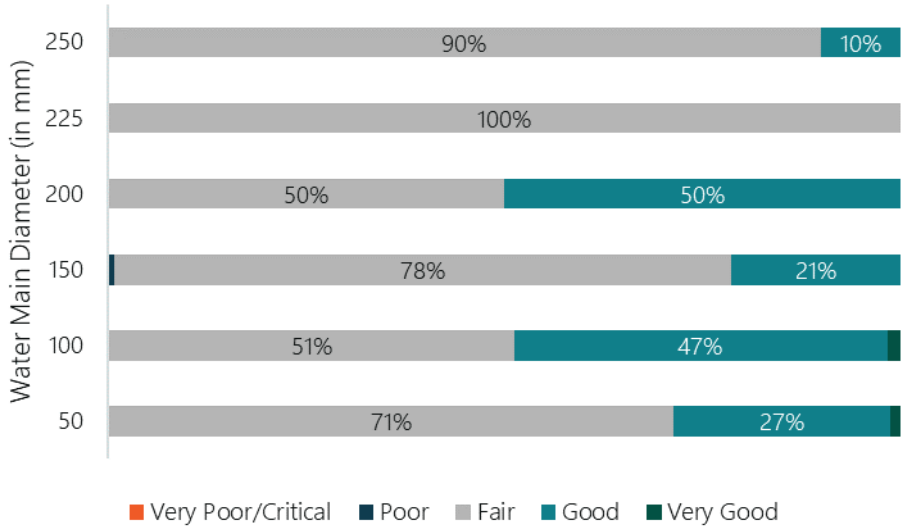
Condition is estimated for the Township's WDS assets using age. There are 346 sections of watermains in inventory. All watermains in the Township's water distribution system are plastic with an average age of 32 years. Table 12 provides an overview of the Township's watermains segmented by diameter. The Township's watermains have approximately 60% of their Useful Life remaining (or in "Fair" condition). Figure 8 provides an overview of the condition of the Township's watermains. As condition was estimated based on age, condition ratings may overestimate or underestimate the actual physical working condition of these assets.

[15] Section 3(1), 6(i-ii) of O. Reg. 588/17

Table 12: Overview by Type - Water Mains

Type – Diameter of Watermain	Total Length of Watermain by Diameter Type (in m)	Current Average Age	Average % of Useful Life Remaining	Condition	CRV ($)
250 mm	11,569	33	59%	Fair	3,586,390
225 mm	60	36	55%	Fair	17,700
200 mm	13,079	32	60%	Fair	3,662,120
150 mm	118,902	33	58%	Fair	26,752,950
100 mm	158,967	30	62%	Good	31,793,400
50 mm	44,739	32	60%	Fair	6,934,545
Total	**347,316**	**32**	**60%**	**Fair**	**72,747,105**

Figure 8: Water Main Condition Breakout by Main Diameter (in mm)



The Township WDS includes a water reservoir, pumping stations, generators, and other accessory assets to distribute potable water to all associated connections. Based on age, the water reservoir, pumping stations, and their accessory assets indicate that they are in "Poor" to "Very Poor/Critical" condition, however this may not be entirely representative of the actual physical working condition of these assets. Table 13 provides an overview of these assets.

Table 13: Overview – Water System Assets

Asset	Current Age	% of Useful Life Remaining	Condition	CRV ($)
Water Reservoir/Pump Station	31	38%	Poor	1,620,000
Water pumping station	31	38%	Poor	64,761
Fencing	30	-50%	Very Poor/Critical	41,000
144 ft. Guyed Tower	8	60%	Fair	29,306
Backup Generator	31	-55%	Very Poor/Critical	80,000
Valves/Piping	31	-55%	Very Poor/Critical	86,000
Pumps/Drives	7	65%	Good	37,000
PTO Generator	31	-55%	Very Poor/Critical	20,000
Generator 16.5 KW	31	-55%	Very Poor/Critical	25,000
Heating system	9	55%	Fair	100,000
Total				**2,103,067**

7.4 Core – Wastewater

The Township operates a Wastewater (or "Sewer") System for the Hamlet of Oil City. The system has 104 wastewater service connections, and the waste is treated in a single cell lagoon located west of the Hamlet of Oil City. The balance of the Township's residents uses private septic systems.

The Wastewater System consists of 19 sections of sewer mains that are collectively:

- 2,497 metres of 200 mm diameter plastic pipe; and
- 1,190 metres of 100 mm ductile steel force main that pumps wastewater into a single cell lagoon.

The system also consists of a trunk main where gravity flows sewage to a single wet well pumping station.

Condition is estimated for the Township's wastewater assets using age. The average age of the sewer mains is estimated to be 50 years old. Table 14 and Figure 9 provide an overview of the Township's sewer mains segmented by diameter. The Township's sewer mains have approximately 38% of their Useful Life remaining (or in "Poor" condition) on average. Table 15 provides an overview of the sewer system's pumping station and lagoon condition based on age. The condition ratings for these assets may not be entirely indicative of the actual physical working condition of these assets since condition was estimated based on age.

Table 14: Overview by Type - Sewer Mains

Type – Diameter of Sewer Main	Total Length of Sewer Main by Diameter Type (in m)	Current Average Age	Average % of Useful Life Remaining	Condition	CRV ($)
200 mm	2,497	50	38%	Poor	823,935
100 mm	1,190	50	38%	Poor	404,530
Total	**3,687**	**50**	**38%**	**Poor**	**1,228,465**

Figure 9: Sewer Main Condition Breakout by Main Diameter (in mm)

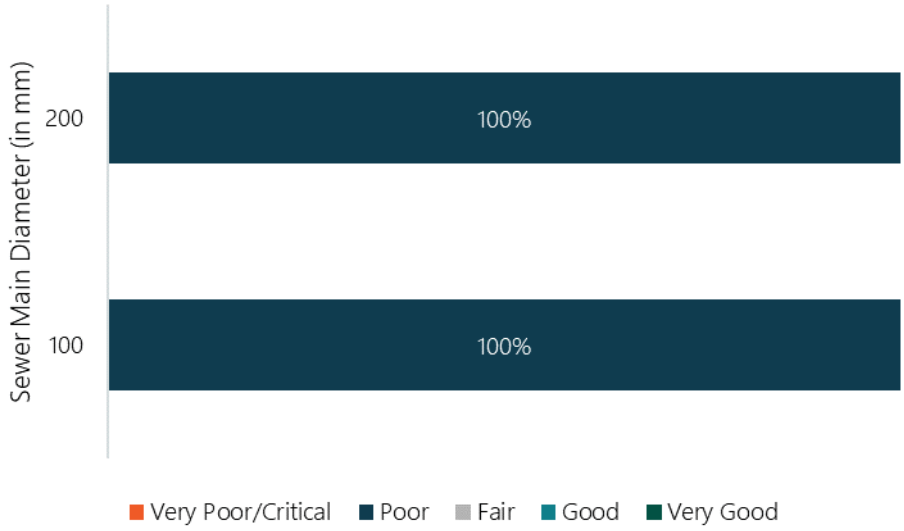


Table 15: Overview - Wastewater System Assets

Asset	Current Age	% of Useful Life Remaining	Condition	CRV ($)
Sewage pumping station	18	64%	Good	240,000
Waste Stabilization Pond (Lagoon)	50	38%	Poor	499,547
Total				**739,547**

7.5 Non-Core – Municipal Facilities

The Township's facilities are used to provide services to the public and enable Township staff to perform their duties. The Township is responsible for the upkeep and maintenance of all its facilities. The expectation is that these facilities will be updated as necessary and maintained to a desirable level to best serve the needs of its residents.

Condition for the Township's Municipal Facilities is estimated using age. Table 16 provides an overview of the Township's facilities. It must be noted that these condition ratings may not be entirely indicative of the actual physical working condition of these assets since condition was estimated based on age.

Table 16: Overview - Municipal Facilities

Asset	Current Age	% of Useful Life Remaining	Condition	CRV ($)
Gorman Park Pavilion	35	30%	Poor	175,000
Marthaville Park Pavilion	33	34%	Poor	210,000
Gorman Park Washroom	14	30%	Poor	215,000
Marthaville Park Washroom	1	95%	Very Good	232,000
Krall Park Pavilion	44	12%	Very Poor/Critical	120,000
Krall Park Washroom & Storage Building	44	-120%	Very Poor/Critical	68,000
Krall Park Concession Booth	44	12%	Very Poor/Critical	60,000
Salt Storage	9	82%	Very Good	725,000
Pump stations/ cemetery fencing	30	-50%	Very Poor/Critical	108,317
Township office	39	22%	Poor	1,913,070
Works depot	36	28%	Poor	1,661,930
120 ft. Guyed Tower	8	20%	Poor	18,718
Total				**5,507,035**

It is recommended that the Township collect and record age information and/or perform a Building Condition Assessment study for these assets and their components to gain more accurate condition

data, understand their useful lives, and assess whether the current lifecycle strategy for these assets is the optimal approach.

7.6 Non-Core – Municipal Equipment

This asset category captures assets used by the Township's residents and municipal administration. Most of the assets in this category are regarded as public-use equipment typically found in parks and playgrounds but the category also includes computers used by the Township's municipal staff. Condition ratings for these assets are based on age, however this may not be entirely indicative of the actual physical working condition of these assets. Age information for many assets in this category could not be provided. Table 17 provides an overview of the Township's municipal equipment.

Table 17: Overview by Type - Municipal Equipment

Type	Current Average Age	Count	Average % of Useful Life Remaining	Condition	CRV ($)
Bleachers	Not available	2	Not available	Not available	13,160
Computers	Not available	8	Not available	Not available	25,000
Baseball Diamond Lights	9	2	10%	Very Poor/Critical	105,288
Picnic Tables	Not available	20	Not available	Not available	5,062
Playground & Park Equipment	Not available	3	Not available	Not available	31,583
Total	**9**	**35**	**10%**	**Very Poor/Critical**	**180,093**

It is recommended the Township collect and record age information and/or perform a condition assessment study for these assets to understand their useful lives and assess whether the current lifecycle strategy for these assets is optimal.

7.7 Non-Core – Public Works Fleet

The Township's vehicles are used by the Public Works department to support maintenance activities for various assets (roads, water and wastewater systems, bridges and culverts, facilities, etc.) by providing a means to transport staff and necessary equipment to and from locations that need servicing. The Township's vehicle fleet consist of different types of trucks and trailers. Condition ratings for these assets are based on age, however this may not be entirely indicative of the actual physical working condition of these assets. Table 18 provides an overview of the Township's vehicle fleet.

Table 18: Overview by Type - Public Works Fleet

Type	Current Average Age	Count	% of Asset Category	Average % of Useful Life Remaining	Condition	CRV ($)
Parade Truck	68	1	8%	-353%	Very Poor/Critical	5,000
Heavy-Duty Truck	4	4	33%	58%	Fair	1,110,138
Pickup Truck	6	5	42%	11%	Very Poor/Critical	309,661
Trailer	23	2	17%	-28%	Very Poor/Critical	40,000
Total	**13**	**12**	**100.0%**	**-12%**	**Very Poor/Critical**	**1,464,798**

The Township should consider updating its fleet inventory and centralizing the inventory into a single repository (e.g., Excel spreadsheet or another database tool) to minimize inventory errors such as entry duplication.

7.8 Non-Core – Public Works Equipment

The Township's Public Works equipment consist of heavy machinery and other purpose-specific equipment that enable Public Works employees to perform maintenance activities on the Township's assets. These include landscaping, snow clearing, and excavation machinery and equipment, radio communications equipment, and miscellaneous tools and equipment. Condition ratings for these assets are based on age, however this may not be entirely indicative of the actual physical working condition of these assets. Age information for select assets could not be provided. Table 19 provides an overview of the Public Works equipment.

Table 19: Overview by Type - Public Works Equipment

Type	Current Average Age	Count	% of Asset Category	Average % of Useful Life Remaining	Condition	CRV ($)
Accessory - Heavy Equipment	13	3	30%	-45%	Very Poor/Critical	35,470
Backhoe	1	1	10%	95%	Very Good	175,105
Communication Equipment	Not available	1	7%	Not available	Not available	20,000
Grader	8	1	10%	60%	Fair	408,727
Lawn Mower/Lawn Tractor	7	2	20%	-75%	Very Poor/Critical	8,500
Miscellaneous - Tools and Equipment	Not available	1	10%	Not available	Not available	50,000
Tractor	2	1	10%	60%	Fair	231,924
Total	**7**	**10**	**100%**	**8%**	**Very Poor/Critical**	**814,826**

It is recommended the Township collect and record age information and/or perform a condition assessment study for these assets and their components to understand their useful lives and assess whether the current lifecycle strategy for these assets is optimal.

8.0 Impacts of Climate Change

There has been an increase of extreme weather events in recent years which are putting more stress on municipal assets and increasing pressure to maintain LOS. Climate change presents a risk management challenge that needs to be addressed within the context of municipal decision making. Examples of climate change that can be observed or trending across Canada are:

- Warmer and/or longer summers and winters;
- More intense storms;
- Longer and more frequent droughts;
- Increased snow and ice accumulation; and
- Increasing water levels.

The Township's *Community Risk Assessment* has noted some exposure to adverse conditions such as tornadoes and low ice coverage during winter that have a tangible impact to municipal service delivery[16]. In recognition, the Township's Asset Management Policy states:

> *"Climate change will be considered as part of the Township's risk management approach embedded in local asset management planning methods. This approach will balance the potential cost of vulnerabilities to climate change impact and other risks with the cost of reducing these vulnerabilities. The balance will be struck in the levels of service delivered through operations, maintenance schedules and capital investments. The Township recognizes the need for stakeholder input into the planning process and will foster informed dialogue using the best available information."*

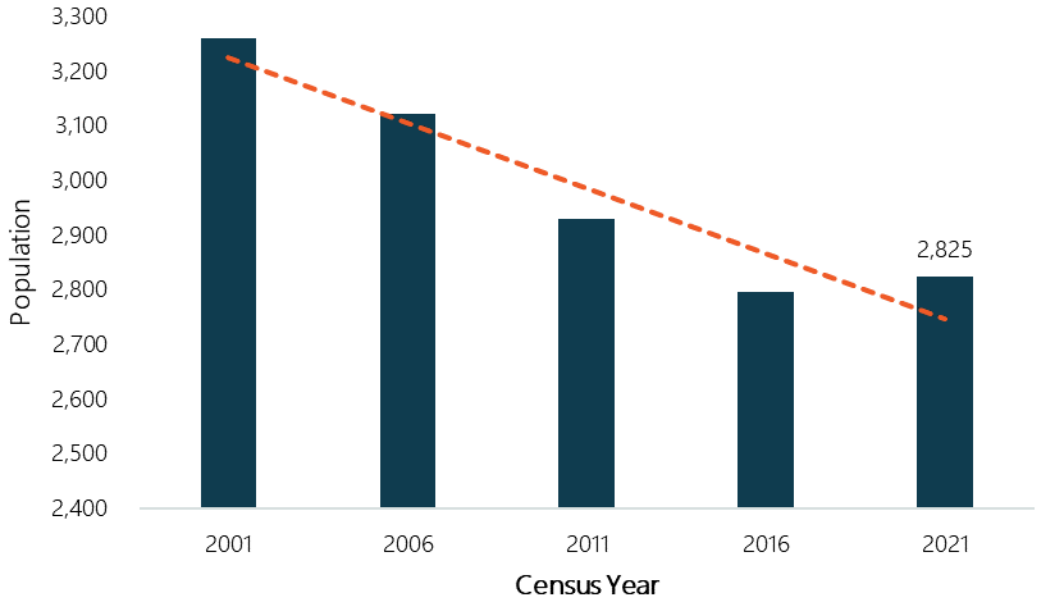
The Township has taken steps forward to identify areas of concern such as asset design, type of materials used in asset lifecycle activities, and resiliency to adverse and extreme conditions. Continued commitment to identify areas of concern should help reduce asset failure risks associated with the Township's assets and ensure LOS are adequately maintained.

[16] https://www.enniskillen.ca/wp-content/uploads/2024/04/Community-Risk-Assessment.pdf

9.0 Impacts of Population Growth

The most recent census data indicated the population of the Township was 2,825 in 2021, which represents an increase of 1.0% from 2016. By comparison the provincial average population growth is 5.8% and the national average is 5.2% over the same period[17]. However, examining the Township's population over five census years indicates the Township's population is generally declining at a rate of -2.8%. Figure 10 shows the Township's population trend according to census data.

Figure 10: Township of Enniskillen Population Trend

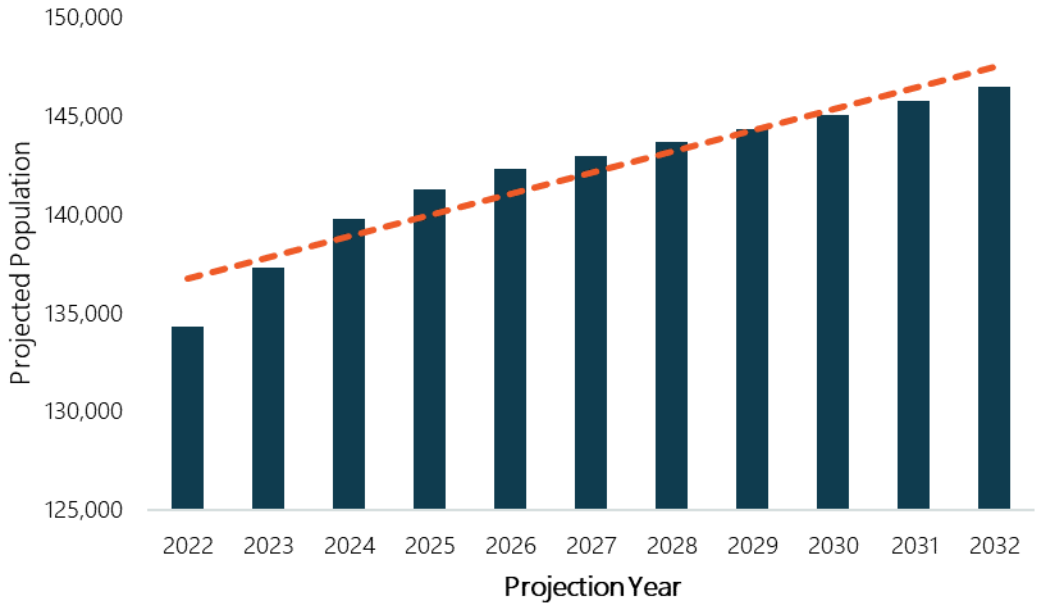


The Ontario Ministry of Finance's population projections for Lambton County[18] indicate slow growth for the region. Figure 11 shows that from 2022 to 2032, Lambton County is anticipated to grow at a rate of 0.8% annually.

[17] https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/page.cfm?lang=E&topic=1&dguid=2021A00053538016

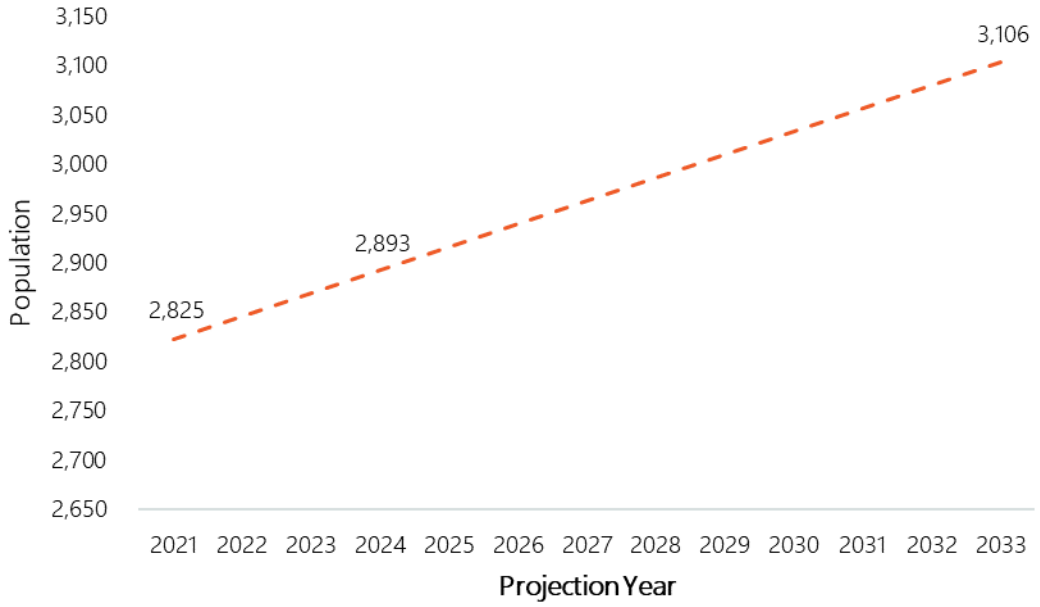
[18] https://data.ontario.ca/dataset/f52a6457-fb37-4267-acde-11a1e57c4dc8/resource/03abe0d5-0995-4ce2-ad9d-e904d50106a5/download/49_census_divisions_mof_population_projections_2022-2046.xlsx

Figure 11: Lambton County Population Projection (2022-32)



Assuming the Township grows at the same rate as Lambton County (0.8% annually), the estimated population for 2024 is 2,893 people. By 2033, the population is estimated to be 3,106 – an increase of 213 people over 10 years. The Township recognizes it is a slow growth municipality and currently does not foresee nor perceives that it will require any major expansion projects nor will have any major impacts to the lifecycle management strategies for its current assets described in section 10.0 over the next 10 years.

Figure 12: Township of Enniskillen - Population Projection (Assuming 0.8% Annual Growth)



10.0 Levels of Service & Lifecycle Management

O. Reg. 588/17 presents required LOS for core assets in a table format[19]. This section of the AMP aims to align the requirements indicated in O. Reg. 588/17 for core assets and is formatted similarly. LOS for non-core assets and proposed LOS are formatted similarly for consistency. Proposed LOS ("Desired" LOS in previous AMPs) were defined by the Township and are presented in a similar table format with current state performance.

Documenting current LOS, lifecycle management strategies, and risk (perceived and actual) are important pieces to consider in developing a holistic asset management program. Having these pieces documented helps support capital planning and encourage more proactive asset management practices.

Asset lifecycle management activities are important in ensuring the Township upholds service delivery commitments and standards established by the LOS defined for each asset category. The Township has outlined the required activities to form lifecycle management strategies for each of its asset categories. These lifecycle management strategies were also provided in the previous AMP.

At this time, the Township should:

1. Continue to measure each asset category's current LOS metrics defined in O. Reg. 588/17 and the proposed LOS (and their associated performance measures) it has defined; and
2. Consider regularly evaluating its current lifecycle management strategies by asset category to determine whether the current approaches are optimal.

Continued monitoring of LOS outlined by O. Reg. 588/17, proposed LOS, and current lifecycle management strategies should provide insights regarding the appropriateness as well as opportunities for further refinement of proposed LOS and lifecycle management strategies. Ontario municipalities are required to identify these opportunities in Phase 4 by 2025.

10.1 Core – Roads

10.1.1 Levels of Service

The Township maintains several types of road surfaces including asphalt, surface treatment, gravel, stone, and clay. LOS for this asset category is largely focused on Paved Roads.

The LOS concerning roads focuses on the physical condition rating of the road surface. As mentioned in section 7.1, Road Condition Assessments for the Township's Paved Roads occur every three years, but more frequent inspection takes place where road segments are observed to be in greater distress.

[19] See Tables 1 to 5 in O. Reg. 588/17

In addition to O. Reg. 588/17 requirements, the physical condition of the roads is a key indicator selected by the Township to determine the satisfaction with the road system. The Township strives to maintain all roads above the "Poor" condition rating (or PCI of 65 or less). Additionally, the Township utilizes the *Ontario Regulation 366/18: Minimum Maintenance Standards for Municipal Highways (amending O. Reg. 239/02)*[20] to inform maintenance activities for roads. This regulation establishes provincial maintenance standards regarding remediation of road hazards such as snow and ice accumulation, potholes, pavement cracks, and debris. Aspects of O. Reg. 366/18 are aligned to the Township's road lifecycle management strategy presented in section 10.1.2 (Table 22).

[20] https://www.ontario.ca/laws/regulation/r18366

Table 20: Roads LOS - O. Reg. 588/17 Requirements

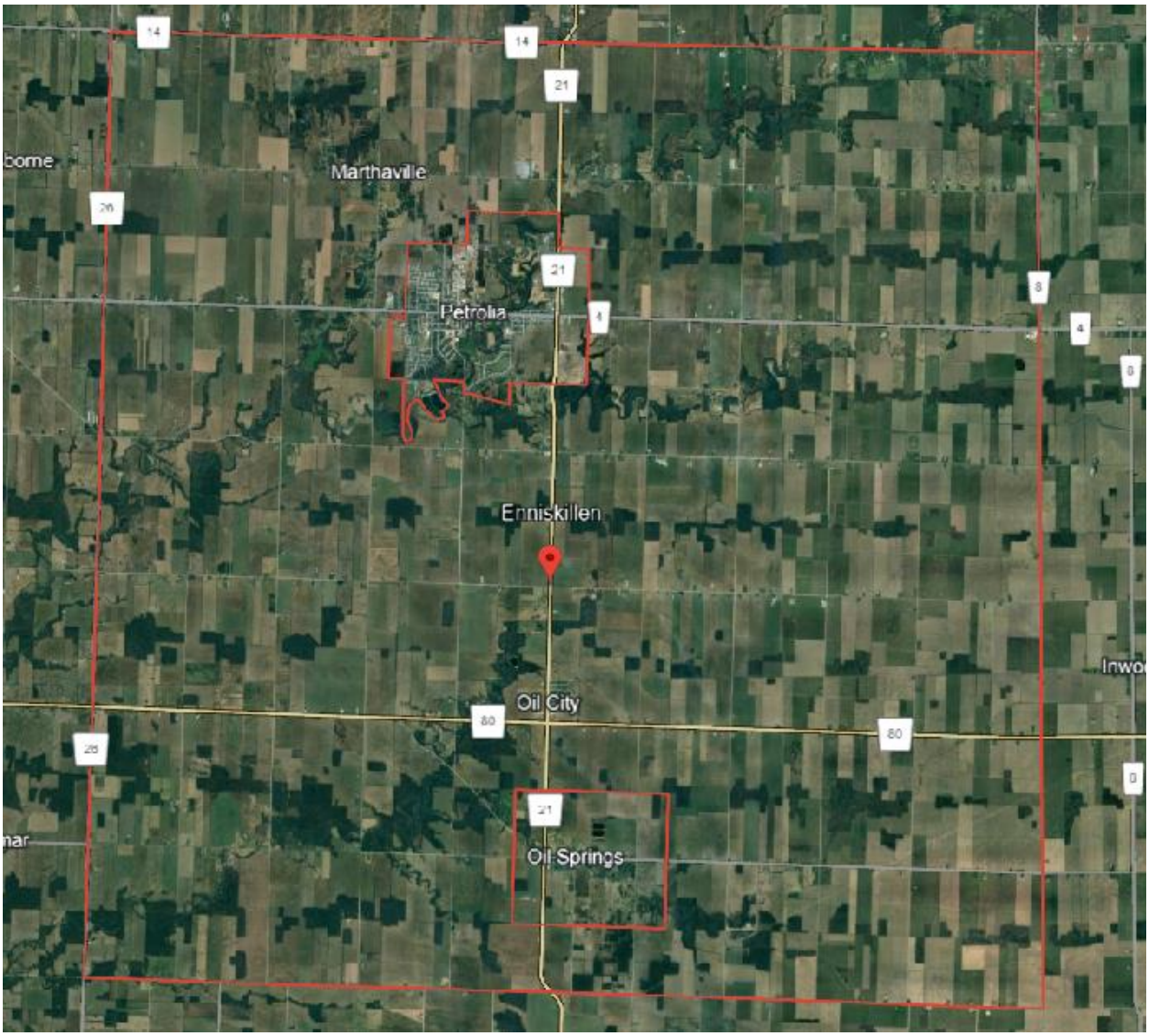
Service Attribute	Community Level of Service (Qualitative Descriptions)	Current Level of Service (Qualitative)	Technical Level of Service (Technical Metrics)	Current Level of Service (Technical)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity.	The Township road network consists of 273 kilometres of roads. The road system inventory listed by segment from intersection to intersection. Figure 13 and Figure 14 provide an overview of the Township road network.	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 (km/sq km)	(A) Lane-kilometres of local roads = 546 km (B) Square kilometres of land area in the municipality = 338 sq km (A)/(B) = 1.615
Quality	Description or images that illustrate the different levels of road class pavement condition.	Figure 15 provides photo examples of road class pavement conditions within Lambton County to provide an approximate perspective of road conditions in the Township. The Township attempts to maintain all roads above the "Poor" condition rating.	1. For paved roads in the municipality, the average pavement condition index value.	86.9 ("Good")
			2. For unpaved roads in the municipality, the average surface condition (e.g., excellent, good, fair or poor).	"Good"†

† **Note:** For Unpaved Roads, it is assumed based on rationale provided in section 7.1 that the current technical LOS receives an average surface condition rating of "Good." The Township manages Unpaved Road conditions through perpetual maintenance such as applying gravel and grading. The Township's Unpaved Roads do not require capital costs for rehabilitation activities or end-of-life replacement. If these are adequately maintained, they can theoretically have a limitless Useful Life.

Table 21: Roads – Proposed LOS

Service Attribute	Proposed Level of Service	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Quality	Maintain an average road condition of "Good"	Average paved road condition of "Good" (Average PCI ≥ 76)	"Good"	86.9 ("Good")
	Maintain 100% of roads above "Very Poor" condition	100% of paved roads in inventory must be above "Very Poor" condition (PCI > 39)	Percentage of inventory above "Very Poor" condition = 99%	Percentage of inventory above "Very Poor" condition = 98%

Figure 13: Township of Enniskillen Road Network[21]



[21] https://earth.google.com/web/search/Enniskillen,+Lambton+County,+Ontario/@42.85332523,-82.10104371,203.74745551a,38350.48213574d,35y,0h,0t,0r/data=Co8BGmUSXwolMHg4ODJmN2VhOTVkZTIwMjgzOjB4NzI4NzFiNzdkZGE5MjRiZRmWCK-4k2pFQCFyPcBJCYhUwCokRW5uaXNraWxsZW4slExhbWJ0b24gQ291bnR5LCBPbnRhcmlvGAIgASImCiQJHkgZDpN7RUARZo8c431fRUAZI17-e2tzVMAhGsblUoKbVMA6AwoBMA

Figure 14: Township of Enniskillen Road Network (Labeled)

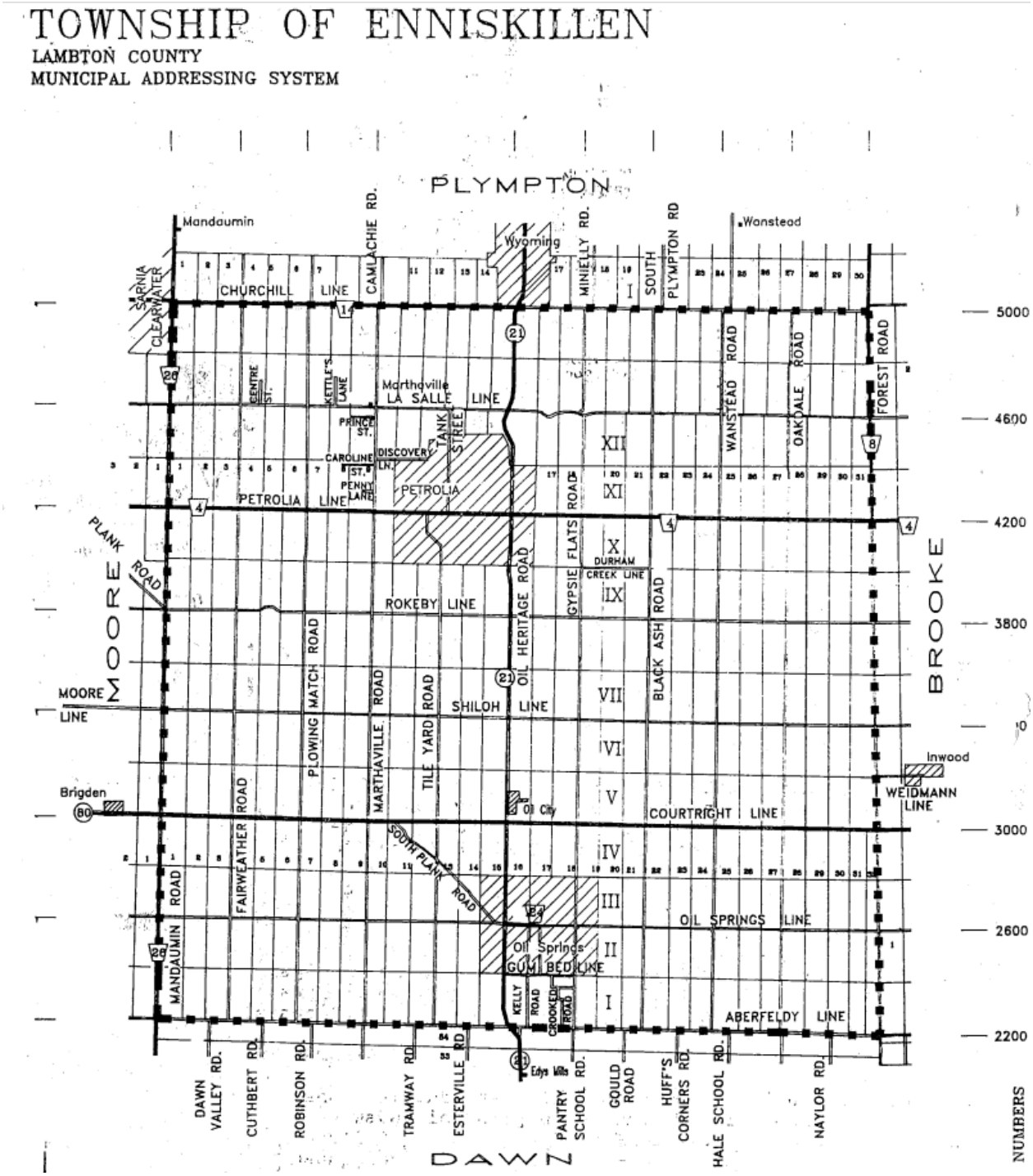
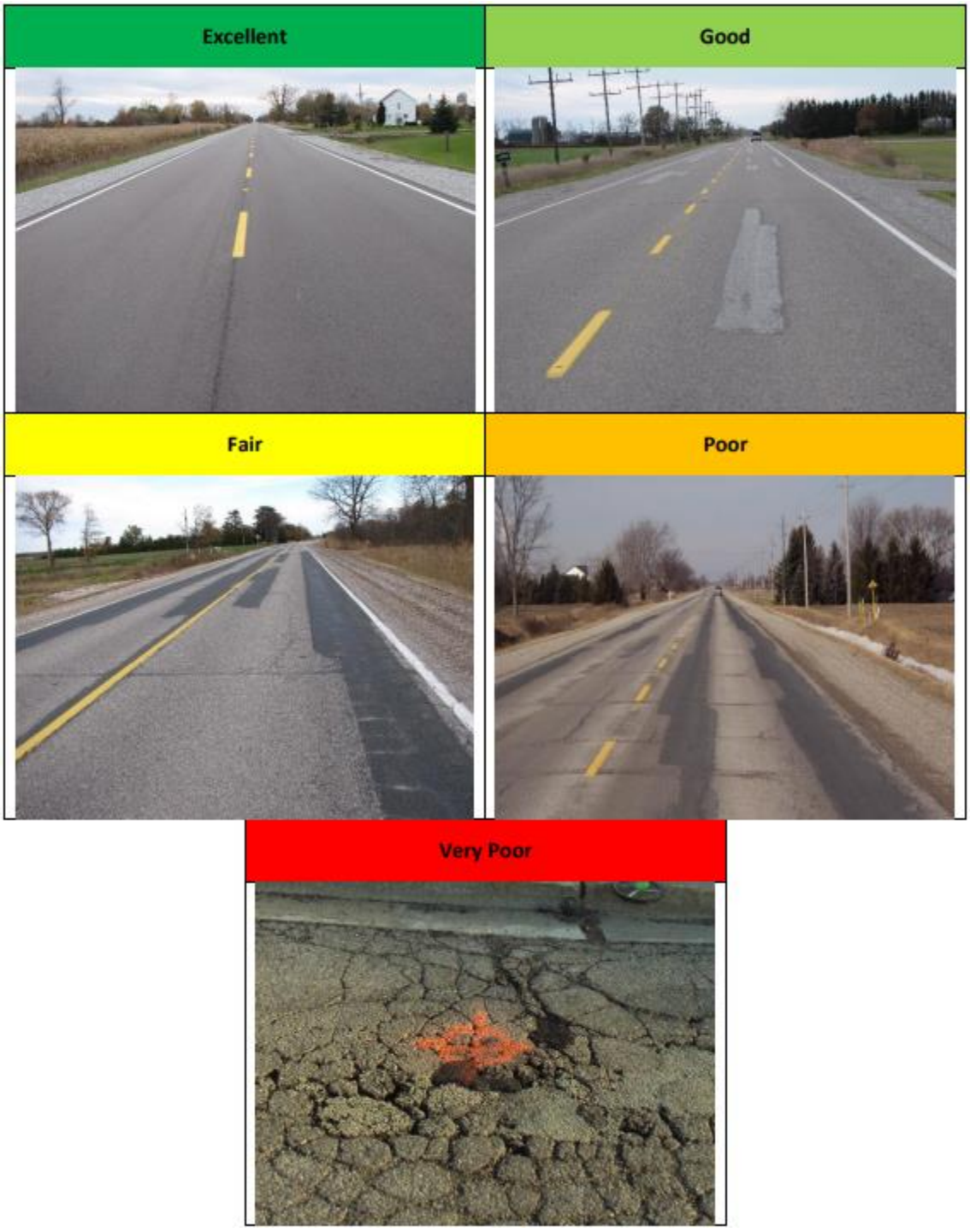


Figure 15: Lambton County – Local Examples of Road Network Condition[22]



[22] Lambton County, *Core Infrastructure Asset Management Plan* (2023) https://www.lambtononline.ca/en/county-government/resources/Documents/PlansReportsandStudies/Infrastructure--Development/County-of-Lambton-Core-Infrastructure-Asset-Management-Plan.pdf, page 33.

10.1.2 Lifecycle Management

The lifecycle strategy for roads in this AMP is largely focused on Paved Roads. As mentioned in previous sections, the Township's Unpaved Roads do not require capital costs for rehabilitation activities or end-of-life replacement.

Table 22: Roads Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	The road monitoring program undertaken by the Township promotes identification of deficiencies developing in the municipal roads. Half-load restrictions are put in place on selected roads deemed to be susceptible to damage to traffic loading during the spring freeze/thaw events. Municipal policy normally requires: 1) That directional boring of the road for the installation of small diameter drains and water services. Although more costly this reduces the long-term impact to the road surface and base; and 2) That watermains and municipal drains be installed off the travelled portion of the roads to reduce the potential of additional costs during future road construction.
Maintenance	Maintenance of the asphalt and surface treated roads consists of the placement of cold mix and spray patching surfaces to reduce the impact of the freeze thaw cycle on the surfaces. Road hazards such as potholes, snow and ice accumulation, pavement cracks, debris, and shoulder drop-offs are generally addressed in accordance with O. Reg. 366/18 and with respect to the identification of and timing to address a deficiency, and the recommended actions to address the deficiency. Unpaved Roads are perpetually maintained. Activities include reapplying gravel and grading as deemed required.
Rehabilitation/Renewal	Surface renewal – Historically new riding surfaces have been applied to the old asphalt and surface treated surfaces. This may include the use of an asphalt material at the time of the application of the asphalt to address surface cracking on the roads. A single layer of surface treatment may be used on surface treated roads. Where sufficient asphalt thickness exists on a road surface "in place" recycling of the asphalt layer will be incorporated.
Replacement/Reconstruction	Total reconstruction of a roadway occurs when the application of the maintenance strategies is no longer appropriate either due to the road condition or the costs.

At this time, the Township notes that it is unlikely that any portion of municipal road would be incorporated into Lambton County or provincial road systems. The Township has no current plans to dispose of any open public road through closure or sale.

Regarding expansion, there are no foreseeable development plans which will lead to the increase of the municipal road system. Expansion by downloading from Lambton County is also unlikely and there are no provincial roads within the Township. Roads subject to pedestrian and bicycle traffic may require the addition of wider lane widths.

10.2 Core – Bridges & Culverts

10.2.1 Levels of Service

The Ontario government requires that an inspection of Bridges & Culverts – Span 3 metres or greater occurs every two years per O. Reg. 104/97. The inspection and rating of these assets includes structural soundness, bridge condition, and safety. The Township indicates that bridges and culverts are permitted to fall into the "Poor" rating for a period of time until replacement. LOS for this asset category is focused on Bridges & Culverts – Span 3 metres or greater.

Table 23: Bridges & Culverts – Span 3 Metres or Greater LOS - O. Reg. 588/17 Requirements

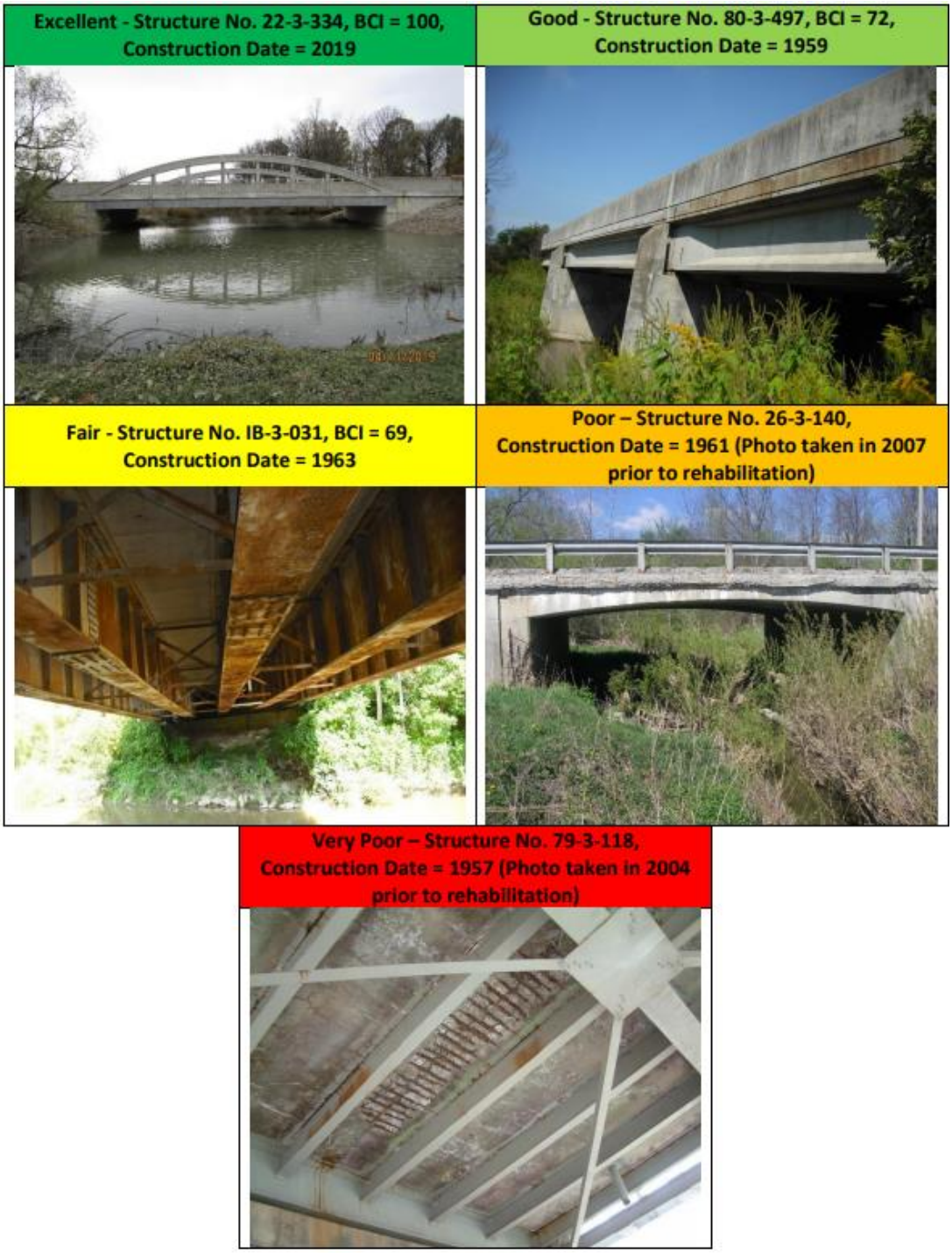
Service Attribute	Community Levels of Service (Qualitative Descriptions)	Current Level of Service (Qualitative)	Technical Levels of Service (Technical Metrics)	Current Level of Service (Technical)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	Traffic supported by the Township's bridges are mixed – from pedestrian traffic to heavy transport vehicles and farming machinery. Three bridges bear load restrictions, one of which only supports single-lane traffic.	Percentage of bridges in the municipality with loading or dimensional restrictions.	5.3%
Quality	1. Description or images of the condition of bridges and how this would affect use of the bridges.	Figure 16 provides photo examples of varying bridge conditions within Lambton County to provide an approximate perspective of bridge conditions in the Township.	1. For bridges in the municipality, the average bridge condition index value.	82.7 ("Good"/"Very Good")[23]
	2. Description or images of the condition of culverts and how this would affect use of the culverts.	Figure 17 provides photo examples of varying culvert conditions within Lambton County to provide an approximate perspective of culvert conditions in the Township.	2. For structural culverts in the municipality, the average bridge condition index value.	

[23] Average PCI for all Bridges & Culverts – Span 3 metres or greater.

Table 24: Bridges & Culverts Spanning 3 Metres or Greater – Proposed LOS

Service Attribute	Proposed Level of Service	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Quality	Maintain an average bridge condition of "Good" with respect to O. Reg. 104/97 biennial inspections.	Average Bridges & Culverts – Span 3 metres or greater condition of "Good" (Average BCI ≥ 70)	"Good"	82.7 ("Good")
	Maintain 100% of bridges and major culverts above "Poor" condition in accordance with O. Reg. 104/97 biennial inspections.	100% of Bridges & Culverts – Span 3 metres or greater in inventory must be above "Poor" condition (BCI > 60)	88%	86%

Figure 16: Lambton County – Local Examples of Bridge Condition[24]



[24] Lambton County, *Core Infrastructure Asset Management Plan* (2023) https://www.lambtononline.ca/en/county-government/resources/Documents/PlansReportsandStudies/Infrastructure--Development/County-of-Lambton-Core-Infrastructure-Asset-Management-Plan.pdf, page 52.

Figure 17: Lambton County – Local Examples of Culvert Condition[25]

[25] County of Lambton, *Core Infrastructure Asset Management Plan* (2023) https://www.lambtononline.ca/en/county-government/resources/Documents/PlansReportsandStudies/Infrastructure--Development/County-of-Lambton-Core-Infrastructure-Asset-Management-Plan.pdf, page 53.

10.2.2 Lifecycle Management

Lifecycle strategy for Bridges & Culverts in this AMP is largely focused on those spanning 3 metres or greater. It is noted that the general lifecycle management approach for Bridges & Culverts – Span less than 3 metres (and over $5,000 in replacement value) is to replace the structure entirely and is considered as maintenance.

Table 25: Bridges & Culverts Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	Regular monitoring of the bridge conditions will continue to be undertaken by the Public Works department staff. The inspections of the larger spanned bridges and culverts (span over 3 metres) will take place as required by O. Reg. 104/97 every two years.
Maintenance	The biennial inspection per O. Reg. 104/97 identifies the primary maintenance projects for the structures. These inspections could recommend activities such as removal of vegetation, repairs to erosion control works, deck drains, painting, and minor concrete repairs. Bridges and culverts under 3 metres are addressed on a case-by-case basis due to the minimal impact of these assets.
Rehabilitation/Renewal	Minor rehabilitation includes the replacement of bridge bearings, water proofing, replacement of joint seals, resurfacing and barrier repairs. Major rehabilitation includes more extensive work such as deck replacement, replacement of barriers and recoating structural steel.
Replacement/Reconstruction	Replacement of a bridge or culvert takes place when it is determined that the asset is no longer viable either due to the maintenance costs or the asset's condition. The timing of the replacement of the asset will take into consideration the associated risk of the failure of the asset. The Township has replaced corrugated steel bridges with concrete bridges to extend the replacement time of the affected bridges as a contingency planning action.

The Township has no plans in place to reduce the number of bridges or culverts in the municipality. The Township has restricted access to one low volume road due to the condition of an associated bridge. A second site is currently under consideration. Not replacing these two bridges is an option that has come up in recent years although this decision has not yet been made.

In terms of expansion, there are no anticipated developments that would increase the number of bridges or culverts within the Township. Future bridge and culvert replacements will be subject to flow rate standards defined at the time which may require larger capacity structures.

10.3 Core – Water

10.3.1 Levels of Service

The Township recognizes that water is an integral part of each household. The Township strives to provide a safe and reliable WDS for the communities it serves. These communities expect that the water they receive meets water quality standards and that the supply is reliable. In addition to O. Reg. 588/17 LOS requirements, the indicators the Township selected for water address the number of boil water orders issued and the number of watermain breaks per year.

Table 26: Water LOS - O. Reg. 588/17 Requirements

Service Attribute	Community Levels of Service (Qualitative Descriptions)	Current Level of Service (Qualitative)	Technical Levels of Service (Technical Metrics)	Current Level of Service (Technical)
Scope	1. Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system.	Figure 18 shows the boundaries of the Township's WDS. Figure 19 provides a map of the Township's watermain locations.	Percentage of properties connected to the municipal water system.	93.98%
	2. Description, which may include maps, of the user groups or areas of the municipality that have fire flow.	The only area of the Township where fire flow is available is within the Hamlet of Oil City. The municipal WDS was designed in the 1990s to provide safe, clean drinking water to residents that were dealing with failing water wells and unacceptable water quality issues. The system was not designed with fire flow as a priority. The priority at the time was to provide safe, clean drinking water.	Percentage of properties where fire flow is available.	10.26%
Reliability	Description of boil water advisories and service interruptions.	The Township's WDS has had no boil water advisory nor any "do not drink" advisory events in the past 10 years.	1. The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.	0 days – 1,389 connections
			2. The number of connection-days per year due to watermain breaks compared to the total number of properties connected to the municipal water system.	0 days – 1,389 connections

Table 27: Water – Proposed LOS

Service Attribute	Proposed Level of Service	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Reliability	Number of boil water advisories	Number of boil water advisories = 0	0	0
	Number of boil water orders	Number of boil water orders = 0	0	0
	Number of watermain breaks per year (excluding services)	Number of watermain breaks per year = 0	2	0

Figure 18: Township of Enniskillen Drinking Water System Boundary Map

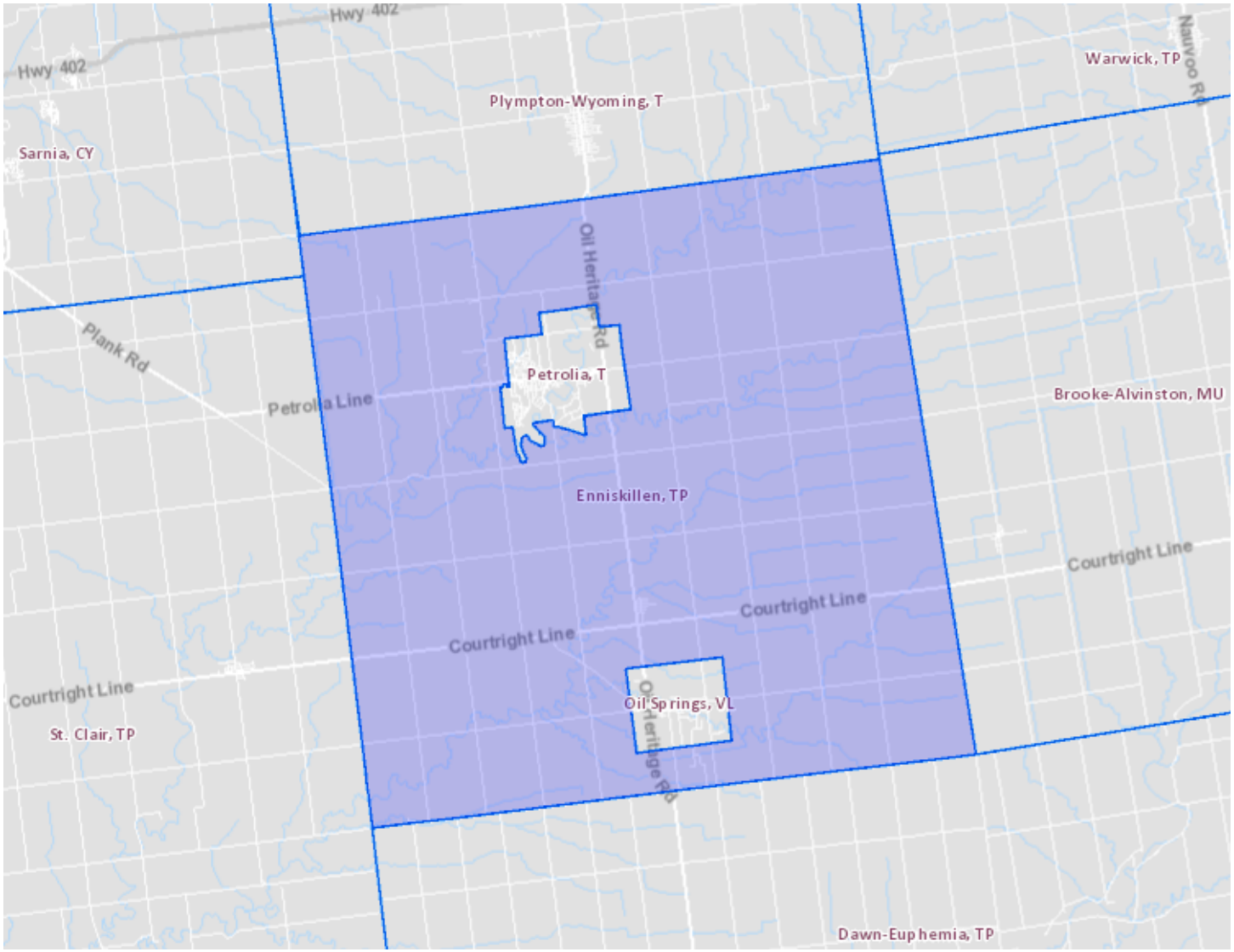
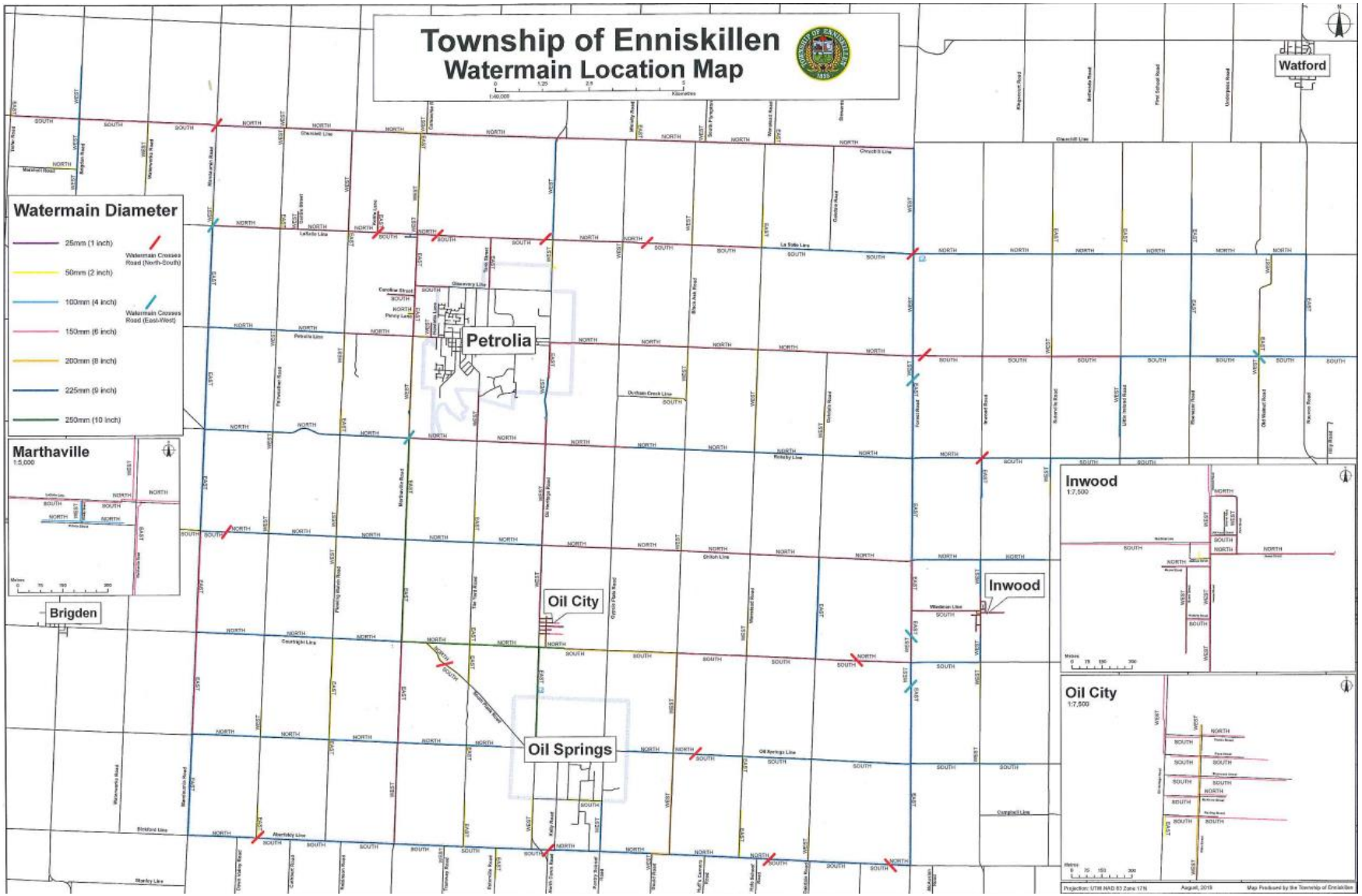


Figure 19: Township of Enniskillen Watermain Location Map



10.3.2 Lifecycle Management

Table 28: Water Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	The Township monitors water loss within WDS by daily reading of the flow at primary meters and analyzing water loss during the water billing cycle. It is anticipated that this monitoring will reduce operating costs by identifying breaks earlier and reduce unbilled water usage. Staff will continue to be provided training related to changes in technology for operating and maintaining the water distribution system with the goal of incorporating procedures that reduce water loss and extend the life of the infrastructure.
Maintenance	The regular maintenance of the WDS consists of visual monitoring for leaks, flushing, exercising valves, and painting fire hydrants. Repairs are made to meters and shut offs as well as watermain valves. Corrosion to metal parts of valves and water service shutoffs may require incorporating the use of replacement materials which reduce corrosion.
Rehabilitation/Renewal	The Township's WDS consists of plastic watermains with an average age of 32 years old. The Township will continue to monitor the location and the number of watermain breaks in the WDS. The Township will incorporate the current renewal and rehabilitation techniques to control the unbilled water usage in the distribution system. As trenchless technology is refined the lining of waterlines may become a viable option. The rehabilitation of the water reservoir would be undertaken after an engineer's review.
Replacement/Reconstruction	The expected life of the watermains indicates that replacement is not anticipated for just over 45 years. The replacement of any portion of the WDS will take place based on the amount of watermain breakage and the amount of water loss (unbilled usage). Efforts will be made to incorporate current replacement practices at that time.

Regarding disposal, the possibility exists where lines located in neighbouring municipalities could be assumed and operated by those municipalities. For example, the previous AMP indicated a watermain located on Old Walnut Road north of LaSalle Line was abandoned due to the instability in the road structure. The three water services in the area were assumed by the Township of Brooke-Alvinston as a result. No discussions are currently underway to dispose of other portions of the current WDS in the Township.

In terms of expansion, there is limited potential for expansion of the WDS. Access to the system has been provided to most properties within the Township. There is little potential for expansion of the WDS resulting from land development taking place within the Township.

10.4 Core – Wastewater

10.4.1 Levels of Service

Sanitary sewers are available only to the Hamlet of Oil City. Residents of Oil City expect that sewage is moved and treated with no main line backups and no untreated releases into the environment. In addition to O. Reg. 588/17 requirements, the Township's indicators for the Sewer System examine the number of backups in the sanitary sewer main and the sewer main breaks per year. This does not include backups on private property or breaks within the service laterals on private property.

Table 29: Wastewater Assets LOS - O. Reg. 588/17 Requirements (1 of 4)

Service Attribute	Community Levels of Service (Qualitative Descriptions)	Current Level of Service (Qualitative)	Technical Levels of Service (Technical Metrics)	Current Level of Service (Technical)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.	The only area serviced by a municipal Wastewater System in the Township is in the Hamlet of Oil City. There are 105 households in Oil City and 104 sewer service connections. 100% of properties in Oil City that have access to the sewer system are connected to the system. One household is outside of the service area.	Percentage of properties connected to the municipal wastewater system.	100%

Table 30: Wastewater Assets LOS - O. Reg. 588/17 Requirements (2 of 4)

Service Attribute	Community Levels of Service (Qualitative Descriptions)	Current Level of Service (Qualitative)	Technical Levels of Service (Technical Metrics)	Current Level of Service (Technical)
Reliability	1. Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes.	Not applicable – No combined sewers in the Wastewater System.	1. The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system.	0
	2. Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.	Not applicable – No combined sewers in the Wastewater System.	2. The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	0
	3. Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.	Prevention measures are in place to reduce the amount of stormwater entering the Wastewater System. In 2023, smoke testing in the system took place. Few concerns were found and those that were found were corrected immediately. The smoke test is a tool that could be used going forward if there was a concern with potential for stormwater getting into the sanitary system.	3. The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	0

Table 31: Wastewater Assets LOS - O. Reg. 588/17 Requirements (3 of 4)

Service Attribute	Community Levels of Service (Qualitative Descriptions)	Current Level of Service (Qualitative)	Technical Levels of Service (Technical Metrics)	Current Level of Service (Technical)
Reliability	4. Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration.	The current direction in managing stormwater is to utilize the natural absorption and infiltration qualities of the ground to induce ground water recharge and to filter out various impurities. The principles of natural stormwater management fit into the larger concept of watershed and sub-watershed planning. The Township will encourage the separation of stormwater inflow and infiltration from municipal sanitary wastewater flows. The Township will also initiate the disconnection of rooftop leaders from sanitary sewers and eliminate other factors that add stormwater to sewers[26].	Not defined in O. Reg. 588/17.	Not applicable.

[26] *The Corporation of the Township of Enniskillen Official Plan*, https://www.enniskillen.ca/wp-content/uploads/2019/09/Enniskillen-Official-Plan-2015-update-Sept-2019.pdf, section 10.4.

Table 32: Wastewater Assets LOS - O. Reg. 588/17 Requirements (4 of 4)

Service Attribute	Community Levels of Service (Qualitative Descriptions)	Current Level of Service (Qualitative)	Technical Levels of Service (Technical Metrics)	Current Level of Service (Technical)
Reliability	5. Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	The Oil City Wastewater Collection System consists of works for the collection and transmission of sewage, consisting of 2,497 m of trunk sewers, a sewage pumping station and 1,190 m of force main, with discharge into the Oil City Lagoon. Overflow discharge location at the Saarup drain and pathway to final receiver of Oil City Lagoon, Fox Creek. The Oil City Wastewater pump station has a 24-hour capacity. The Oil City lagoon has approval for annual discharge. Alum is added to the lagoon prior to discharge to meet set parameters as outlined in Procedure F-5-1[27]. An annual report of the discharge is prepared and sent to the Ministry of the Environment, Conservation and Parks.	Not defined in O. Reg. 588/17.	Not applicable.

[27] https://www.ontario.ca/page/f-5-1-determination-treatment-requirements-municipal-and-private-sewage-treatment-works

Table 33: Wastewater – Proposed LOS

Service Attribute	Proposed Level of Service	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Reliability	Number of sewer backups (excluding services)	Number of sewer backups = 0	0	0
	Number of sewer main breaks per year	Number of sewer main breaks per year = 0	0	0

10.4.2 Lifecycle Management

Table 34: Wastewater System Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	The Oil City Wastewater System was constructed in the travelled portion of the roads. There will be coordination of the maintenance of manholes and sewer lines when road rehabilitation takes place. The Township will monitor sewer main backups, failure of service connections, and the failure of the sewer mains. The sewer flow is metered at the pump station. If sewer flows increase, the Township will undertake inspections to ensure that sump pumps and other surface water flow has not been connected to the sewer system. The Township will incorporate video inspection when it is determined that there is potential for blockage of the mains or deterioration of the mains or to find illegal storm water connections.
Maintenance	A maintenance program is in place to undertake visual inspection of manholes. Flushing of the sewer mains is undertaken when it is determined that there is a potential for blockage of the mains.
Rehabilitation/Renewal	The Township will incorporate the current practices in place at the time of the rehabilitation or replacement of the sewer mains. As trenchless technology is refined, rehabilitation may incorporate relining of the mains. The relining or replacement of the sewer mains will be coordinated with road reconstruction in the Hamlet of Oil City. The rehabilitation of the sewage pump station would be undertaken after an engineer's review.
Replacement/Reconstruction	The Township will incorporate the current practices in place at the time of the rehabilitation or replacement of the sewer mains. The relining or replacement of the sewer mains will be coordinated with road reconstruction in the Hamlet of Oil City.

The Township has no intent to close or transfer the ownership of the Wastewater System to any neighbouring municipalities.

The Hamlet of Oil City is a low growth area with little potential for expansion of the sewer system. Any development will be subject to the design limitations of the single cell lagoon.

10.5 Non-Core – Municipal Facilities

10.5.1 Levels of Service

The Township proposed a LOS for Municipal Facilities in its previous AMP as the number of days its facilities are unavailable due to system failures.

In this version of the AMP, the Township aims to integrate energy efficiency as a proposed LOS. The goal is to tie in the requirements of the former *Ontario Green Energy Act Regulation 397/11* (now *Ontario Regulation 507/18 of the Electricity Act*) which requires municipalities to report their goals and objectives for conserving and otherwise reducing energy consumption and managing its demand for energy. The Township developed its *2024 Energy Conservation and Demand Management Plan*[28] in accordance with the regulation. No quantitative targets have been defined but have indicated that a general trend in reduced energy consumption is observed.

Table 35: Municipal Facilities - Proposed LOS

Service Attribute	Community Level of Service (Qualitative)	Technical Level of Service (Technical Metrics)	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Reliability		Number of Days Facility Unavailable due to System Failures	Number of Days Facility Unavailable due to System Failures = 0	0	0
Efficiency	Reduce consumption of natural gas in municipal operations (facilities)		Not applicable – not yet determined	Not applicable – not yet determined	Not applicable – not yet determined
	Reduce consumption of electricity in municipal operations (facilities)		Not applicable – not yet determined	Not applicable – not yet determined	Not applicable – not yet determined

[28] https://www.enniskillen.ca/wp-content/uploads/2024/02/2024-Energy-Conservation-and-Demand-Management-Plan-Township-of-Enniskillen.pdf

10.5.2 Lifecycle Management

Table 36: Municipal Facilities Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	The Township has adopted a policy of regular inspections of all structures to identify issues associated with the structure. The Township policy is to replace asphalt shingled roofs with steel for a longer life expectancy.
Maintenance	The Township undertakes monthly inspections of all structures to ensure that they are operational. Annual inspections are undertaken of all heating and cooling systems.
Rehabilitation/Renewal	The Township will accommodate accessibility standards as required when any alterations are considered for municipal facilities.
Replacement/Reconstruction	Replacement/reconstruction of municipal facilities will occur as deemed required from inspection results.

There are no plans for expansion of existing structures or the addition of new structures by the Township.

10.6 Non-Core – Municipal Equipment

10.6.1 Levels of Service

These assets encompass equipment intended for community-use in public areas such as parks and playgrounds as well as computers and other technology used by municipal staff to perform daily operations.

The proposed LOS for this asset category is the number of days equipment is unavailable due to failures.

Table 37: Municipal Equipment – Proposed LOS

Service Attribute	Level of Service	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Reliability	Number of days equipment unavailable due to failures	Number of days equipment unavailable due to failures = 0	0	0

10.6.2 Lifecycle Management

Table 38: Municipal Equipment Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	Municipal equipment replacement is undertaken generally by age, repair costs, and equipment reliability for these assets. Assets within this asset category are typically managed on an as-needed basis and are not perceived to require sophisticated lifecycle management strategies. However, manufacturer recommendations may be followed to remain current with repair needs and minimize equipment downtime.
Maintenance	
Rehabilitation/Renewal	
Replacement (and Disposal)	All equipment replacement (and disposal) is subject to the purchasing policy of the Township as directed by the Municipal Council. There are no plans to reduce the number of equipment operated by the Township.

10.7 Non-Core – Public Works Fleet

10.7.1 Levels of Service

The Township proposed LOS for "Machinery" in its previous AMP as the number of days its equipment were unavailable due to equipment failure per year. Contents of "machinery" have been re-categorized into Public Works Fleet and Public Works Equipment in this version of the AMP. As a result, the proposed LOS for this asset category is the number of days its vehicles are unavailable due to failures.

The Township's fleet is used by Public Works staff to transport personnel to sites within the Township that require servicing and to also provide a means of delivering various services. Fleet replacement is undertaken generally by age, repair costs, and equipment reliability.

Table 39: Public Works Fleet – Proposed LOS

Service Attribute	Level of Service	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Reliability	Number of days vehicles unavailable due to failures	Number of days vehicles unavailable due to failures = 14	53	0

10.7.2 Lifecycle Management

Table 40: Public Works Fleet Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	The Township has a policy which mandates the replacement of the Road Superintendent's pickup after four (4) years of use to ensure the reliability of the vehicle. All other vehicles are replaced based on associated costs to maintain the units, the number of kilometres, and the vehicle age.
Maintenance	Most vehicle servicing is done in house by staff to meet the manufacturers recommended requirements.
Rehabilitation/Renewal	The replacement policy for vehicles does not contemplate rehabilitation of equipment. The Township does not own or have access to sufficient equipment to continue normal activities if rehabilitation of vehicles was required.
Replacement (and Disposal)	All vehicle replacement (and disposal) is subject to the purchasing policy of the Township as directed by the Municipal Council. There are no plans to reduce the number of vehicles operated by the Township.

There are no plans to increase the type and number of vehicles used by the Township's employees in the future.

10.8 Non-Core – Public Works Equipment

10.8.1 Levels of Service

Public Works staff uses equipment to perform vital activities such as snow clearing, landscaping, and general road maintenance. This asset category also includes supplies and tools used by Public Works staff to perform general maintenance on municipal facilities, equipment, and vehicles. Equipment replacement is undertaken generally by age, repair costs, and equipment reliability for these assets.

With respect to asset recategorization mentioned in section 10.7.1, the proposed LOS for this asset category is the number of days equipment were unavailable due to failures.

Table 41: Proposed Public Works Equipment LOS

Service Attribute	Level of Service	Target Established by Township	Level of Service from Previous AMP	Current Level of Service
Reliability	Number of days equipment unavailable due to failures	Number of days equipment unavailable due to failures = 14	0	0

10.8.2 Lifecycle Management

Table 42: Public Works Equipment Lifecycle Strategy

Lifecycle Activity	Description
Non-Infrastructure	The Township equipment replacement policy incorporates participation in a dealer trade in program for tractors and backhoes. As a result, the Township receives a new tractor annually and a new backhoe every two years. All other equipment is replaced based on associated costs to maintain the units, the number of kilometres, and the equipment age.
Maintenance	Most Public Works equipment servicing is done in house by staff to meet the manufacturers recommended requirements.
Rehabilitation/Renewal	The replacement policy for Public Works equipment does not contemplate rehabilitation. The Township does not own or have access to sufficient equipment to continue normal activities if rehabilitation were required.
Replacement (and Disposal)	All Public Works equipment replacement (and disposal) is subject to the purchasing policy of the Township as directed by the Municipal Council. There are no plans to reduce the number of equipment operated by the Township.

There are no plans to materially increase the type and number of equipment used by the Township's employees in the future.

11.0 Considerations for Risk Management

In section 5.4, the concept of asset risk management was introduced. It is recommended that Township staff and other key stakeholders discuss and identify its critical assets to determine the appropriate risk management strategies. These also include activities such as:

- Developing risk models for each of its asset categories;
- Refining current asset lifecycle strategies;
- Refining condition assessment methodologies and strategies; and
- Improving how asset data is collected and recorded.

Exercising the above recommendations will enable the Township to:

- Review and adjust risk models for its asset categories, such as the risk matrix example in section 5.4, to reflect evolving conditions and understanding of the probability and consequences of asset failure within the Township; and
- Implement more risk-based decision-making as part of asset management planning and budgeting.

12.0 Financial Review

With respect to and continuity with the Township's previous AMPs, the AMP must be incorporated into the financial planning of the Township. This is to provide information to Council regarding the cost implications of sustaining its physical assets for adequate delivery of services to the community. This section of the AMP provides a review and analysis of the Township's current and projected financial position to determine whether its operating and capital requirements will be met over a 10-year period.

12.1 Overview

Municipal assets are supported from a combination of funding sources. The main funding sources are from revenues collected through taxes and user rates.

Table 43 provides a breakdown of the Township's asset categories supported by taxes and user rates.

Table 43: Asset Categories Organized by Main Supporting Revenue Source

Asset Categories Supported by Taxes	Asset Categories Supported by User Rates
Core – Roads	Core – Water
Core – Bridges & Culverts	Core – Wastewater
Non-Core – Municipal Facilities	
Non-Core – Municipal Equipment	
Non-Core – Public Works Fleet	
Non-Core – Public Works Equipment	

Revenues from taxes and user rates generally cover operations and maintenance expenses ("O&M Expenses"). For rehabilitation/renewal and replacement/reconstruction lifecycle activities (collectively "Capital Projects" or "Capital Spend"), municipalities often utilize other funding sources to cover most of the costs. These other funding sources include:

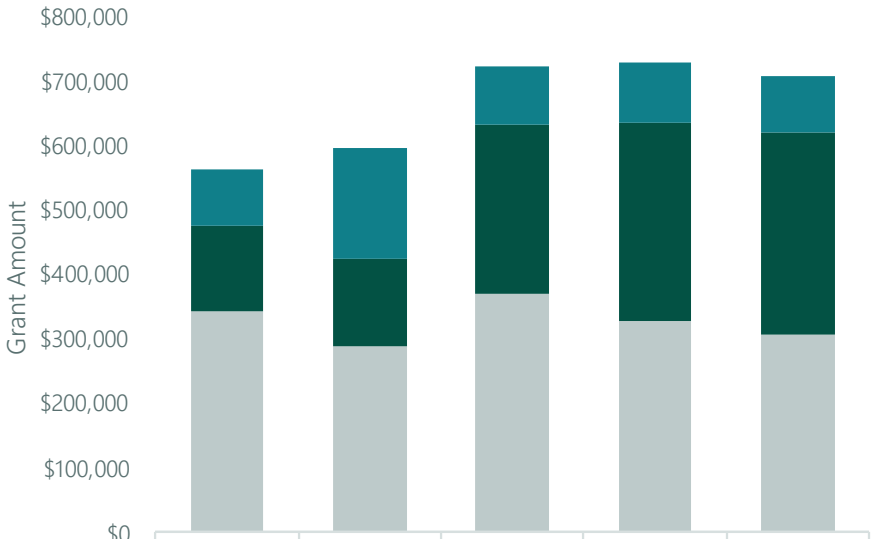
- Government grants from provincial and federal agencies;
- Reserves; and
- Debt.

The Township receives funding from the following government grants which are specifically allocated to its tax supported assets per Council direction:

- The Canada Community-Building Fund ("CCBF" – formerly the Federal Gas Tax Fund);
- The Ontario Community Infrastructure Fund ("OCIF"); and
- The Ontario Municipal Partnership Fund ("OMPF").

Figure 20 shows the Township's grant funding history from 2020-2024.

Figure 20: Grant Funding History (includes 2024 Budgeted Allocations)



	2020	2021	2022	2023	2024
CCBF	$85,187	$174,532	$89,344	$93,596	$88,900
OCIF	$135,223	$135,331	$264,686	$308,591	$315,300
OMPF	$343,038	$288,542	$370,820	$328,701	$306,500

Reserves enable municipalities to set aside funds:

- For future Capital Projects;
- For O&M Expenses to maintain LOS; and
- As contingency in the event of unexpected expenses during emergencies.

The Township currently maintains two reserves that support its asset portfolio:

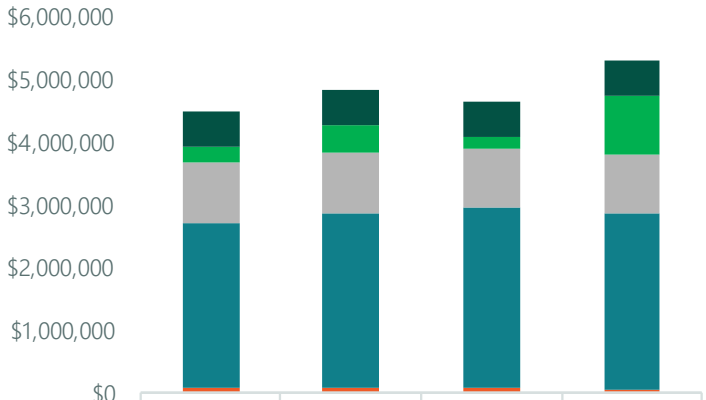
- **Working Capital:** A general-purpose reserve for the Township's assets.
- **Water Capital:** A reserve that specifically supports the Township's Water assets. $0.20 per cubic metre of water built into the water rate charged to users replenishes this reserve.

In addition, the Township has Accumulated Surplus amounts for its pool of tax supported assets and the Core – Water and Core – Wastewater asset categories. The Accumulated Surplus accounts are where the Township's surplus funds at year end accumulates and are available for future needs such as clearing deficits and Capital Projects. The Accumulated Surplus accounts function similarly to reserves but are not earmarked for any specific needs.

Figure 21 shows the Township's historical year-end balances for its reserves and Accumulated Surplus.

Historically, the Working Capital and Water Capital reserves and the Accumulated Surplus – Water balances at year end have remained consistent. The Accumulated Surplus – Wastewater is gradually being depleted to clear annual deficits. The Accumulated Surplus – Tax is used to fund annual Capital Spend for tax supported assets as opposed to using the Working Capital reserve to transfer funds in and out.

Figure 21: Reserves and Accumulated Surplus History[29]



	2020	2021	2022	2023
Working Capital	$558,792	$558,792	$558,792	$558,792
Accumulated Surplus - Tax	$275,940	$422,822	$211,586	$940,489
Water Capital	$962,444	$962,444	$929,931	$933,635
Accumulated Surplus - Water	$2,625,668	$2,813,187	$2,896,652	$2,818,240
Accumulated Surplus - Wastewater	$90,345	$80,196	$74,625	$62,214

Like many businesses, municipalities may opt to use debt for a portion of the funding needed for capital projects and pay back the borrowed funds over an extended term. *Ontario Regulation 403/02: Debt and Financial Obligation Limits for Municipalities* indicates a municipality's total annual debt payments for capital projects cannot exceed 25% of its own-source annual revenues and the borrowing limit is recalculated for each proposed borrowing[30, 31].

No debt has been used to fund any of the Township's capital projects in recent years, nor does the Township have any outstanding debt associated with its assets at this time.

12.2 Revenues, Expenses, and Income

This section provides analyses on two items:

1. The Township's capacity to collect sufficient revenue to cover O&M Expenses to maintain current LOS; and
2. Determine if there is funding available to put towards future capital projects after O&M Expenses.

The Township's Operating Budgets for Core – Water, Core – Wastewater, and the municipality (tax

[29] The jump in the 2023 Accumulated Surplus – Tax year-end balance was driven by deferred/cancelled capital projects.

[30] https://www.ontario.ca/laws/regulation/020403

[31] https://www.ontario.ca/document/tools-municipal-budgeting-and-long-term-financial-planning/understanding-municipal-debt

supported assets) includes annual amounts committed to Capital Spend for the year. For analysis purposes, O&M Expenses to sustain current LOS were compared against specific revenue components attributed to the Township's assets. The purpose was to see how much funding from sustainable revenue sources is available for Capital Projects after O&M Expenses have been covered.

For assets in the Core – Water and Core – Wastewater asset categories:

- **Revenue:** Refers to rates & administration fees charged to users of the WDS and Wastewater System.

For assets in the pool of tax supported assets:

- **Revenue:** Refers to taxes and the government grants indicated in section 12.1 (CCBF, OCIF, and OMPF).

In the subsequent analysis, the difference between Revenue and O&M Expenses is referred to as **Net Income.**

Core – Water and Core – Wastewater asset categories were examined separately and tax supported assets were pooled for analysis as shown in section 12.1 (Table 43). The assumptions used in the analyses are shown in Table 44.

Table 44: Assumptions Applied to Analyses

Item	Values	Assumption Notes
Revenue – Taxes	$2,814,100	The Township estimates it will receive $2.8 million in tax revenue in 2024 and is used as the baseline for projected tax revenue.
Revenue – Water	$1,532,930	The Township estimates it will receive $1.5 million in revenue from its WDS in 2024 and is used as the baseline for projected Water revenue.
Revenue – Wastewater	$40,560	The Township estimates it will receive $40,560 in revenue from its Wastewater service in 2024 and is used as the baseline for projected Wastewater revenue.
Revenue – Grant (CCBF)	$88,900	The annual receipt of CCBF funds is not anticipated to change significantly over time and is applied only to tax supported assets. The amount of $88,900 is held constant in analysis.
Revenue – Grant (OCIF)	$315,300	The annual receipt of OCIF funds is not anticipated to change significantly over time and is applied only to tax supported assets. The amount of $315,300 is held constant in analysis.
Revenue – Grant (OMPF)	$306,500	The annual receipt of OMPF funds is assumed to be applied to capital projects, is not anticipated to change significantly over time, and is applied only to tax supported assets. The amount of $306,500 is held constant in analysis.
O&M Expenses – Tax Supported Assets	$2,230,860	The Township estimates it will spend $2.2 million in 2024 for operations and maintenance for tax supported assets and is used as the baseline for projected operations and maintenance to maintain current LOS.
O&M Expenses – Water	$1,497,150	The Township estimates it will spend $1.5 million in 2024 for operations and maintenance on its Core – Water assets and is used as the baseline for projected operations and maintenance to maintain current LOS.
O&M Expenses – Wastewater	$43,300	The Township estimates it will spend $43,300 in 2024 for operations and maintenance on its Core – Wastewater assets and is used as the baseline for projected operations and maintenance to maintain current LOS.
Inflation Rate	4%	4% inflation is applied to projections for revenue, O&M, and capital spend due to increased economic uncertainty post-COVID-19 pandemic and aligns with the CPI year-over-year change in Ontario from 2022-2023[32].
Population Growth	0.8%	The population growth derived in section 9.0 is applied to revenue projections to capture a perceived annual growth in the number of ratepayers.
Accumulated Surplus – Tax	$250,000	The Township indicates its 2023 year-end balance for Accumulated Surplus – Tax of $940,489 is an anomaly due to deferred work. Accumulated Surplus – Tax year-end balances are generally around $250,000. The amount of $250,000 is held constant from 2024 onwards.
Funding from Debt	$0	The Township has not historically used nor currently has any debt for capital projects.
Transfer from Reserves	$0	The Township has not historically used any funds held in its reserves for capital projects.

[32] https://data.ontario.ca/dataset/29a55543-3e27-4d7a-8ce5-7b669305b2d8/resource/cfeca07a-7752-4e54-b109-fe20467413a2/download/cpi.xlsx

Figure 22 indicates the Township's WDS will collect sufficient Revenue to cover O&M Expenses to maintain LOS. Net Income is projected to grow annually and the gap between Revenue and O&M widens year over year throughout the 10-year projection. The Net Income at each year end indicates some funds will be available for future Capital Spend.

Figure 22: Core – Water: Revenue, O&M, and Net Income

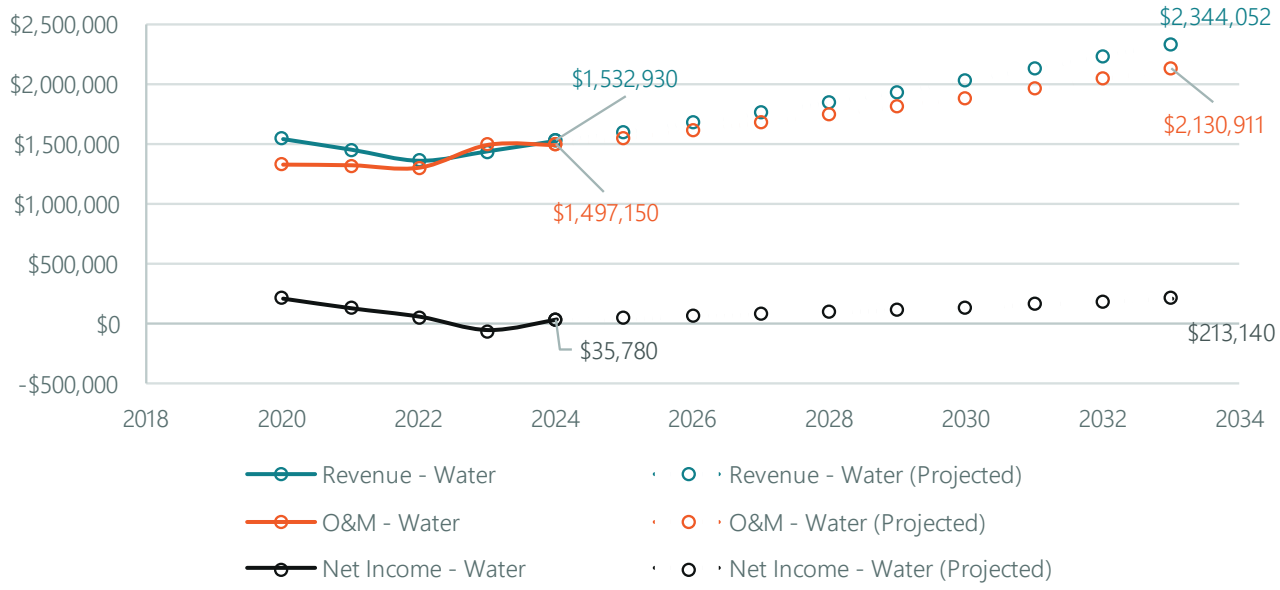


Figure 23 indicates that the Township's Wastewater System operates at a deficit. The operating deficit is cleared annually using the Accumulated Surplus – Wastewater account. The gap in Revenue and O&M is projected to converge over time and will eventually reach a breakeven point around 2032-2033 to close the operating deficit. However, this indicates that no material funding will be available for future Capital Spend during the 10-year projection period.

Figure 23: Core – Wastewater: Revenue, O&M, and Net Income

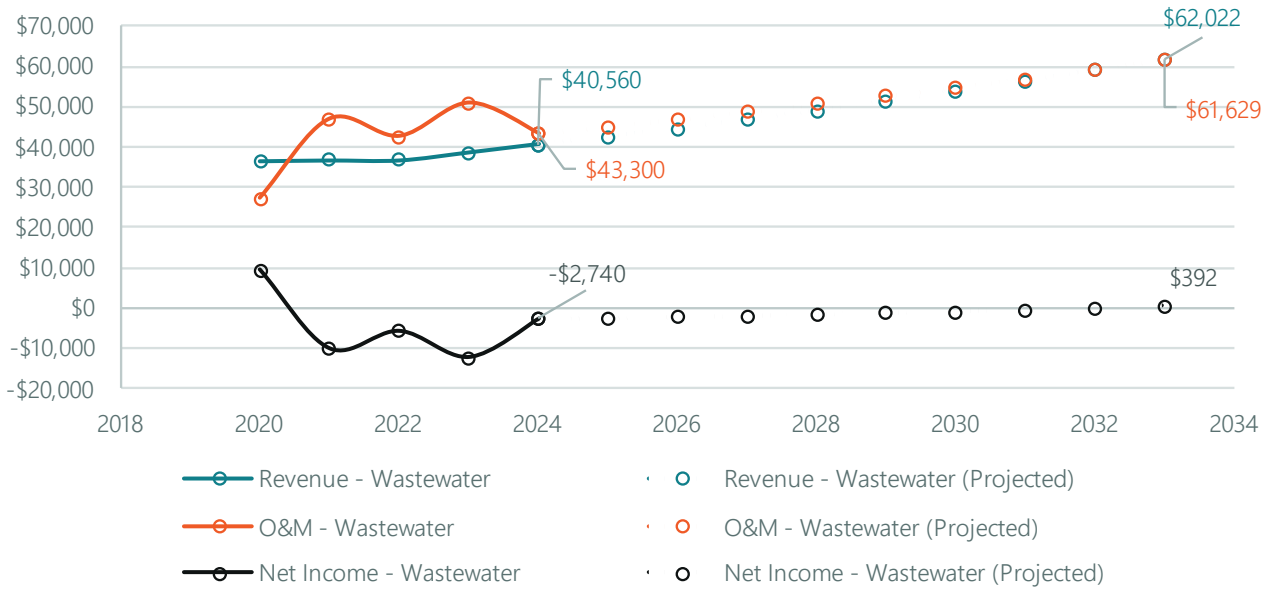
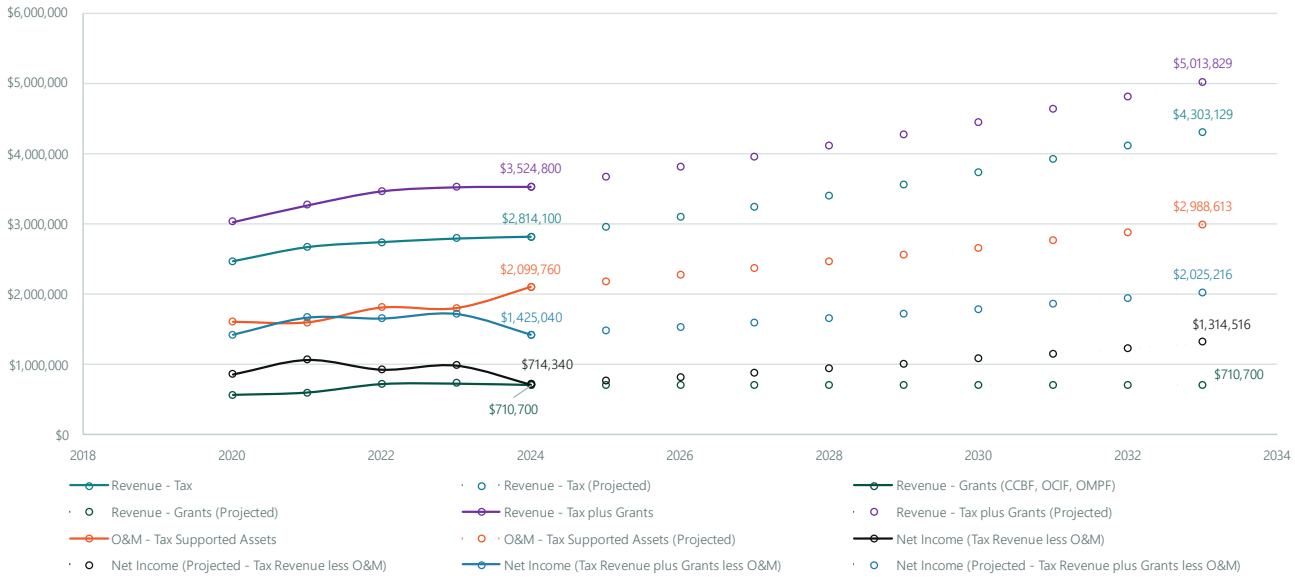


Figure 24 shows that the Township will have sufficient Revenue to cover O&M Expenses for its tax supported assets. Tax revenue itself is able cover O&M Expenses to maintain LOS. The inclusion of government grants as revenue increases Net Income by a constant amount of $710,700 throughout the projection period.

Figure 24: Tax Supported Assets: Revenue, O&M, and Net Income



12.3 Capital Plans and Available Funding

This section provides analysis on the funding available for Capital Spend compared against:

- What the Township currently spends in its current capacity; and
- What the Township needs to spend on capital ("Required Capital Spend") in 10 years according to Asset Information documents reviewed (see Appendix B – Documents Reviewed).

Figure 25 shows the Township Required Capital Spend will be approximately $77,000 in the next 10 years for renewal/rehabilitation and replacement/reconstruction for assets in the Core – Water category.

For 2024, $15,000 is committed to the renewal/rehabilitation of a parking lot at the Water Reservoir/Pump Station. The replacement/reconstruction of a generator is anticipated as Required Capital Spend in 2025 for $52,000.

Net Income is anticipated to sufficiently cover Required Capital Spend throughout the projection period apart from a slight funding shortfall in 2025 of approximately $2,000.

Projections show funds will be available in the Water Capital reserve and Accumulated Surplus – Water account for the Capital Spend expected in the next 10 years and for Capital Projects beyond the 10-year projection.

Figure 25: Water Capital Reserve and Accumulated Surplus - Water versus Capital Spend

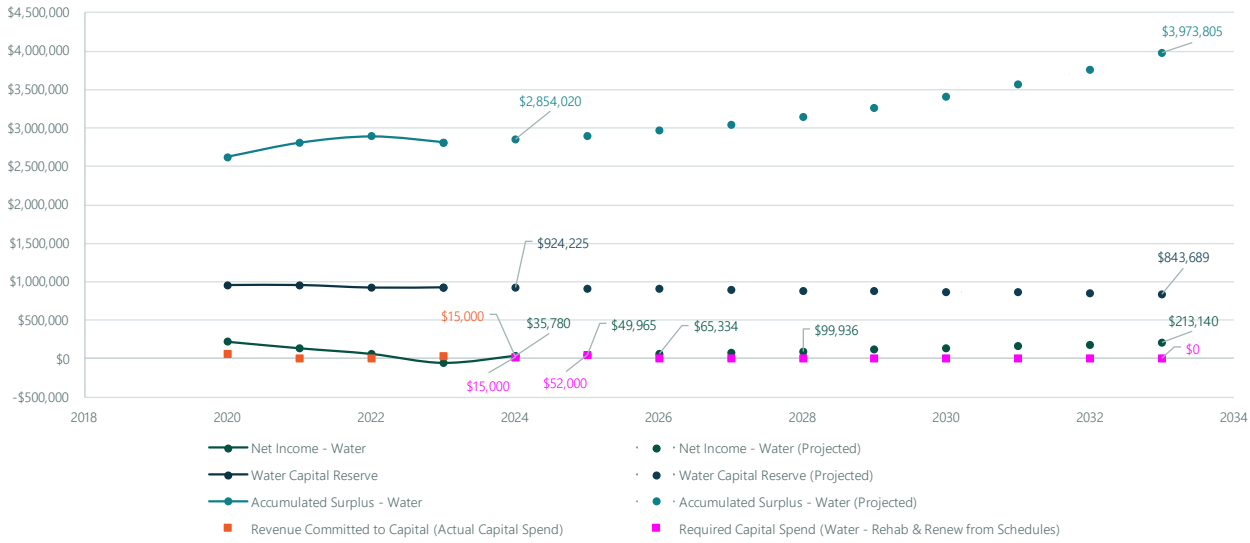


Figure 26 indicates the Township's Core – Wastewater assets will not require any Capital Spend in the next 10 years. The Township will have nearly $49,000 in Accumulated Surplus – Wastewater to use towards future Capital Projects at the end of 2033 but is not anticipated to be sufficient beyond the 10-year projection period.

The Township notes the Wastewater System's Waste Stabilization Pond (Lagoon) will require a Capital Spend of over $1 million beyond the 10-year projection period to continue servicing the Hamlet of Oil City. The Capital Project requires the rehabilitation/renewal of the Lagoon to continue Wastewater

collection from Oil City.

Figure 26: Accumulated Surplus - Wastewater versus Capital Spend

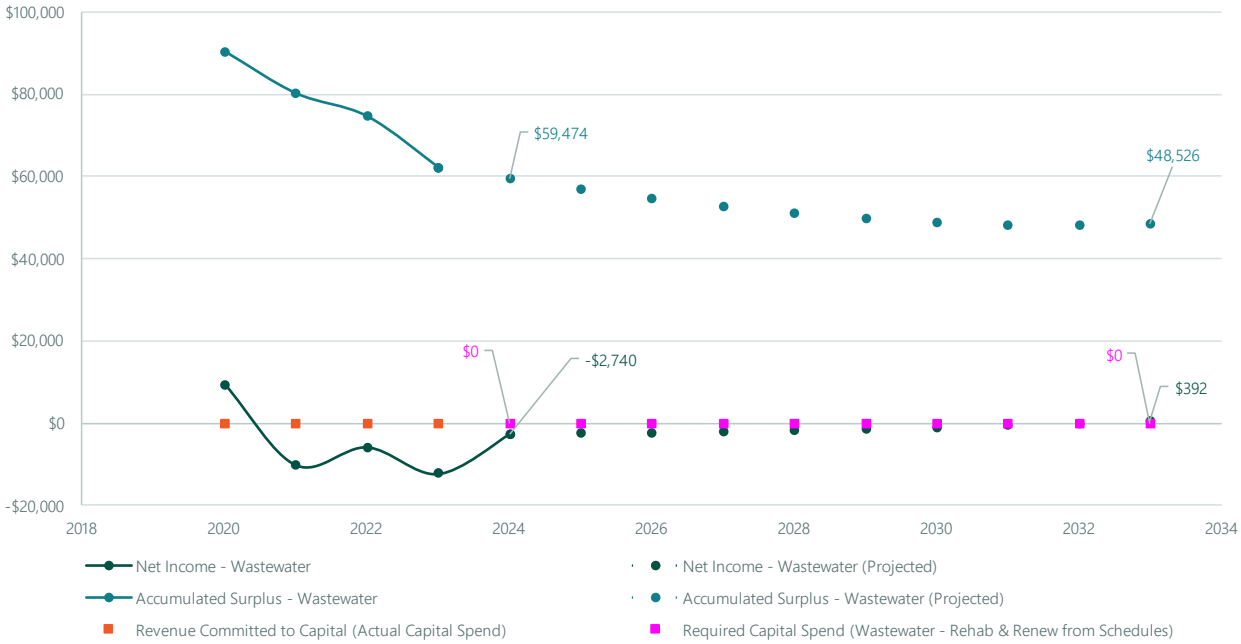


Figure 27 shows that the Township will need to spend a total of approximately $16.2 million in the next 10 years for renewal/rehabilitation and replacement/reconstruction of its tax supported assets (the sum of all Required Capital Spend).

For 2024, the Township is committing approximately $2 million for:

- Renewal/rehabilitation of sections of Paved Roads ($1 million);
- Renewal/rehabilitation of Bridges & Culverts – Span 3 metres or greater ($270,000);
- Replacement/reconstruction of washrooms at Krall Park and Marthaville Park ($400,000);
- Replacement of a Pickup Truck ($70,000) and Tractor ($7,500); and
- *Drainage Act Assessments*[33] ($300,000).

In comparison, the Required Capital Spend of nearly $3.5 million for 2024 calls for:

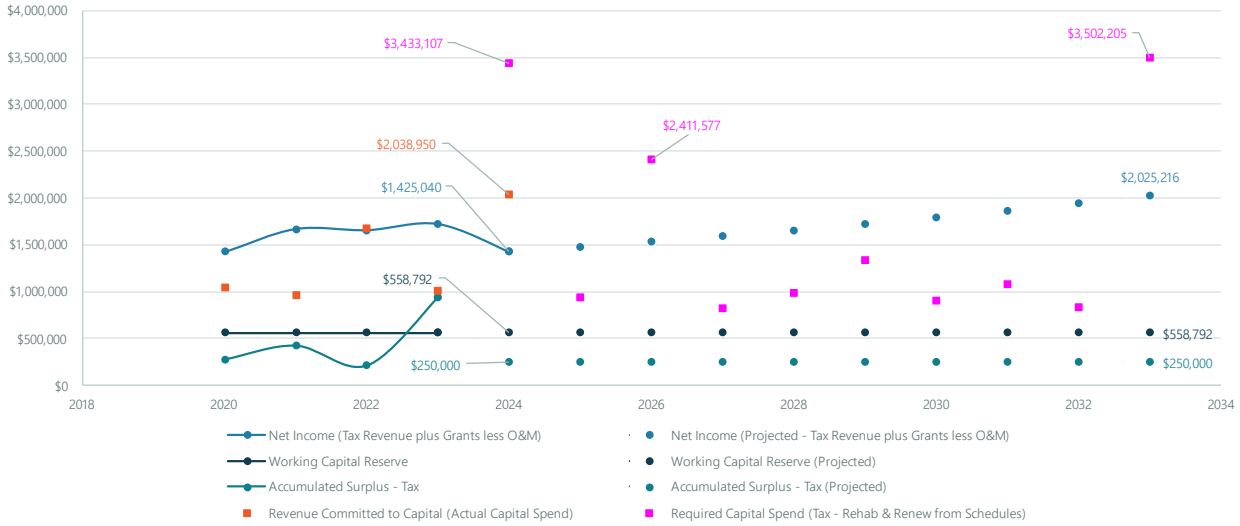
- Replacement/reconstruction of the Public Works depot ($1.7 million);
- Renewal/rehabilitation for sections of Paved Roads ($1.4 million); and
- Replacement/reconstruction for Bridges & Culverts – Span 3 metres or greater ($390,000).

The Township will cover its 2024 committed Capital Spend of $2 million with the proceeds from Net Income (inclusive of grants) and approximately $750,000 from Accumulated Surplus – Tax which will result in a 2024 Accumulated Surplus – Tax year-end balance of $250,000. Recall that in Table 44,

[33] https://www.dsao.net/images/Documents/OMAFRA/FactSheets/understandingDrainageAssessments.pdf

Accumulated Surplus – Tax is anticipated to have year-end balances at the $250,000 level in the 10-year projection.

Figure 27: Accumulated Surplus - Tax versus Capital Spend



Based on the current inputs and assumptions, the Township is currently not able to fully commit to the Required Capital Spend for its tax supported assets. 2024 indicates a funding deficit of $1.4 million to fully address the Required Capital Spend. 2026 Required Capital Spend is projected to have a funding deficit of $880,000 and 2033 Required Capital Spend is projected to have a funding deficit of nearly $1.5 million.

13.0 Appendices

13.1 Appendix A – O. Reg. 588/17 Phase 3 Compliance Checklist

O. Reg. 588/17 Requirement for Phase 3	O. Reg. 588/17 Section Reference	AMP Section Reference	Status
Current levels of service in each asset category	5(2), 1(i-ii)	10.1.1 – 10.8.1	Complete
Current performance measures in each asset category	5(2), 2	10.1.1 – 10.8.1	Complete
Summary of assets in each asset category	5(2), 3(i)	7.1 – 7.8	Complete
Replacement cost of assets in each asset category	5(2), 3(ii)	7.1 – 7.8	Complete
Age of assets in each asset category	5(2), 3(iii)	7.1 – 7.8	Complete
Provision of available information on the condition of assets in each asset category	5(2), 3(iv)	7.1 – 7.8	Complete
Description of the municipality's approach to assessing the condition of assets in each asset category	5(2), 3(v)	7.1 – 7.8	Complete
Lifecycle activities and the costs needed to maintain current levels of service for 10 years	5(2), 4(i-iv)	10.1.2 – 10.8.2 (Lifecycle activities), 12.2 – 12.3, Appendix D – Estimated Lifecycle Costs by Asset Category (Lifecycle costs)	Complete
Growth assumptions	5(2), 5(i-ii) or 5(2), 6(i-vi)	9.0	Complete – Only 5(2), 5(i-ii) applies to the Township

13.2 Appendix B – Documents Reviewed

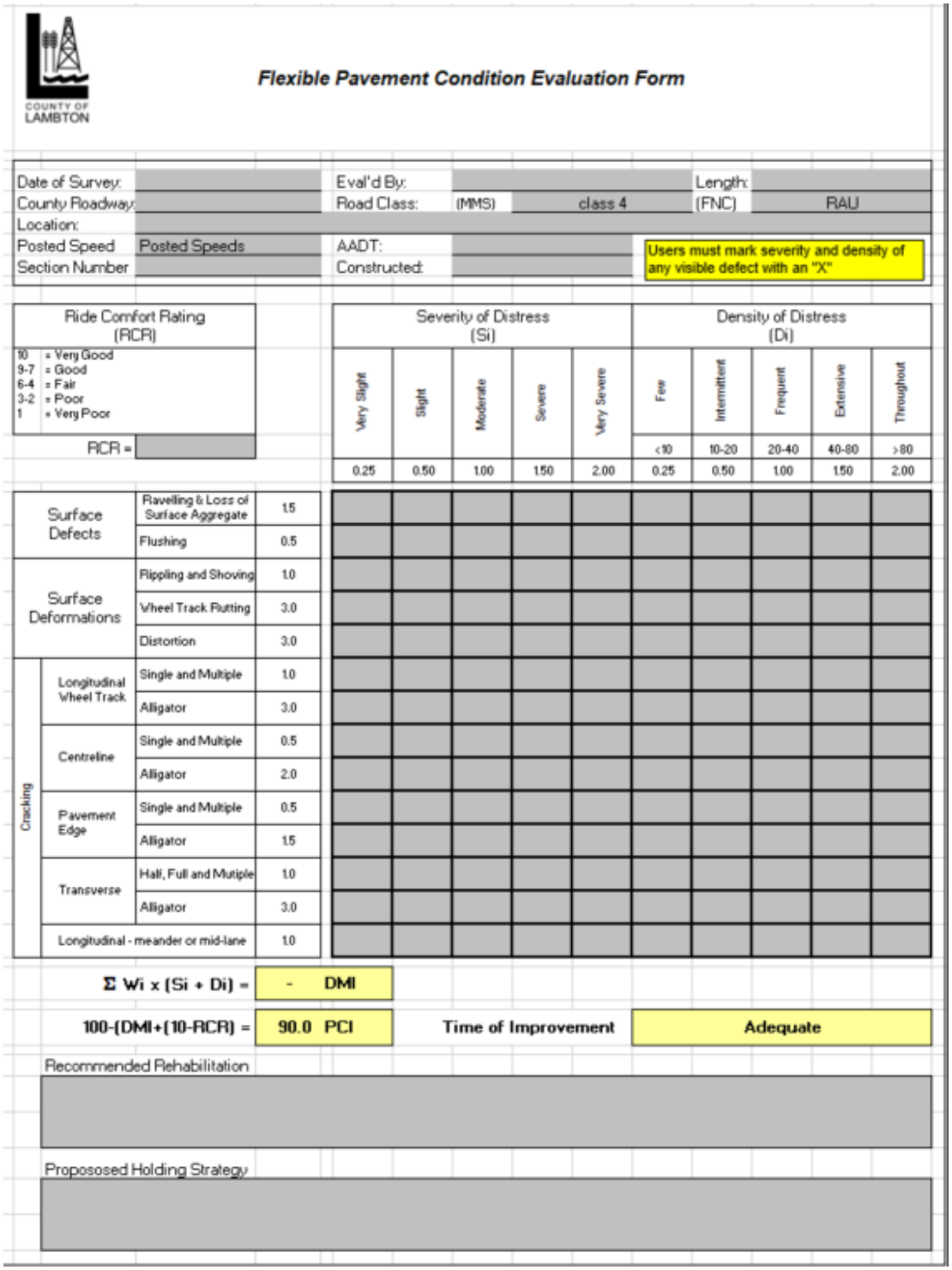
The following table is an inventory list of documents reviewed and used in the development of this version of the AMP.

Document Title	Document Information/Contents	Document Format	Source
2014 Asset Management Plan	Asset Management Plan	PDF	Township of Enniskillen
2016 Asset Management Plan	Asset Management Plan	PDF	Township of Enniskillen
2024 Budget	Municipal Budget	PDF	Township of Enniskillen
2024-2028 Allocations (CCBF)	Government Grants Allocation	PDF	Township of Enniskillen
2022 Consolidated Financial Statements	Municipal Financial Statements	PDF	Township of Enniskillen
2024 Energy Conservation and Demand Management Plan Township of Enniskillen	Energy Plan	PDF	Township of Enniskillen
2024 Ontario Municipal Partnership Fund	Government Grants Allocation	Web Page	Government of Ontario
A-1-2016-Bridge-Event-Strategy	Asset Information	PDF	Township of Enniskillen
A-3-1-2016-Road-Surface-Strategy	Asset Information	PDF	Township of Enniskillen
A-4-2016-Equipment-Replacement-Summary	Asset Information	PDF	Township of Enniskillen
A-5-2016-Structure-Replacement-Summary-2	Asset Information	PDF	Township of Enniskillen
A-7-2016-Water-Distribution-System-by-Event	Asset Information	PDF	Township of Enniskillen
Asset Management Policy 2019 Township of Enniskillen	Asset Management Policy	PDF	Township of Enniskillen
Bridges CRV 2022 Bridges sorted by BCI	Asset Information	Excel	Township of Enniskillen
Canadian Infrastructure Report Card 2019	Background Information	PDF	Canadian Infrastructure

Document Title	Document Information/Contents	Document Format	Source
County of Lambton Core Infrastructure Asset Management Plan (2023)	Background Information	PDF	Lambton County
Community Risk Assessment	Background Information	PDF	Township of Enniskillen
Culverts Valuation July 2023 update	Asset Information	Excel	Township of Enniskillen
Drainage Act, R.S.O. 1990, c. D.17	Regulatory	Web Page/Word	Government of Ontario
Equipment to use for winter control totals other tabs removed	Asset Information	Excel	Township of Enniskillen
Flexible Pavement Condition Form (Sample with MTO)2023	Asset Information	Excel	Township of Enniskillen
Infrastructure for Jobs and Prosperity Act, 2015	Regulatory	Web Page/Word	Government of Ontario
Marsh Insurance 2023- without names	Asset Information	Excel	Township of Enniskillen
Municipal Act, 2001, S.O. 2001, c. 25	Regulatory	Web Page/Word	Government of Ontario
ocif_formula_grants_2024	Government Grants Allocation	Excel	Township of Enniskillen
Ontario Ministry of Transportation – SP-022 Flexible Pavement Condition Rating: Guidelines for Municipalities	Regulatory	PDF	Government of Ontario
Ontario Regulation 104/97: Standards for Bridges	Regulatory	Web Page/Word	Government of Ontario
Ontario Regulation 193/21: Asset Management Planning for Municipal Infrastructure (amending O. Reg. 588/17)	Regulatory	Web Page/Word	Government of Ontario
Ontario Regulation 239/02: Minimum Maintenance Standards for Municipal Highways	Regulatory	Web Page/Word	Government of Ontario
Ontario Regulation 366/18: Minimum Maintenance Standards for Municipal Highways (amending O. Reg. 239/02)	Regulatory	Web Page/Word	Government of Ontario
Ontario Regulation 403/02: Debt and Financial	Regulatory	Web	Government of

Document Title	Document Information/Contents	Document Format	Source
Obligation Limits		Page/Word	Ontario
Ontario Regulation 453/07: Financial Plans under Safe Drinking Water Act, 2002	Regulatory	Web Page/Word	Government of Ontario
Ontario Regulation 507/18: Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans	Regulatory	Web Page/Word	Government of Ontario
Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure	Regulatory	Web Page/Word	Government of Ontario
Ontario Ministry of Transportation – Ontario Structure Inspection Manual	Regulatory	PDF	Government of Ontario
Replacement cost structures 2023	Asset Information	PDF	Township of Enniskillen
Reservoir CRV data reservoir 2023 (July 05 2023)	Asset Information	Excel	Township of Enniskillen
Roads CRV based on 2021 September 2 updates	Asset Information	Excel	Township of Enniskillen
Sewer Oil City Sewer CRV data 2023 (July 05 2023)	Asset Information	Excel	Township of Enniskillen
The Corporation of the Township of Enniskillen Official Plan	Municipal Official Plan	PDF	Township of Enniskillen
Vehicle Listing	Asset Information	Excel	Township of Enniskillen
Water financial information	Asset Information	PDF	Township of Enniskillen
Water Financial Plan updated 2020	Municipal Water Financial Plan	PDF	Township of Enniskillen
Watermains – Sorted by year to get age percentage CRV data Watermains (July 05 2023)	Asset Information	Excel	Township of Enniskillen

13.3 Appendix C – Lambton County Flexible Pavement Condition Evaluation Form Sample



COUNTY OF LAMBTON

Flexible Pavement Condition Evaluation Form

Date of Survey:		Eval'd By:		Length:	
County Roadway:		Road Class:	(MMS) class 4	(FNC)	RAU
Location:					
Posted Speed	Posted Speeds	AADT:		Users must mark severity and density of any visible defect with an "X"	
Section Number		Constructed:			

Ride Comfort Rating (RCR)	
10	= Very Good
9-7	= Good
6-4	= Fair
3-2	= Poor
1	= Very Poor
RCR =	

			Severity of Distress (Si)					Density of Distress (Di)				
			Very Slight	Slight	Moderate	Severe	Very Severe	Few	Intermittent	Frequent	Extensive	Throughout
								<10	10-20	20-40	40-80	>80
			0.25	0.50	1.00	1.50	2.00	0.25	0.50	1.00	1.50	2.00
Surface Defects		Ravelling & Loss of Surface Aggregate	1.5									
		Flushing	0.5									
Surface Deformations		Rippling and Shoving	1.0									
		Wheel Track Rutting	3.0									
		Distortion	3.0									
Cracking	Longitudinal Wheel Track	Single and Multiple	1.0									
		Alligator	3.0									
	Centreline	Single and Multiple	0.5									
		Alligator	2.0									
	Pavement Edge	Single and Multiple	0.5									
		Alligator	1.5									
	Transverse	Half, Full and Mutiple	1.0									
		Alligator	3.0									
	Longitudinal - meander or mid-lane		1.0									

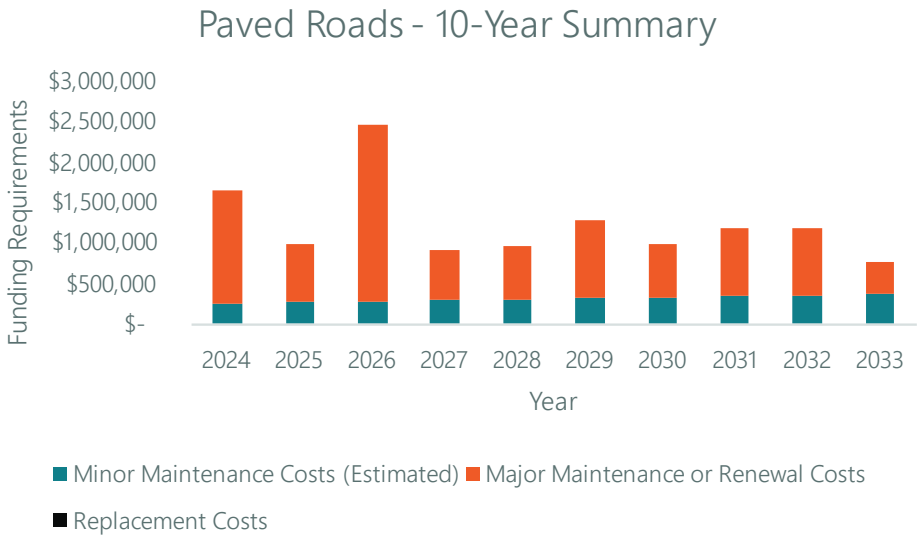
Σ Wi x (Si + Di) =	- DMI		
100-(DMI+(10-RCR) =	90.0 PCI	Time of Improvement	Adequate

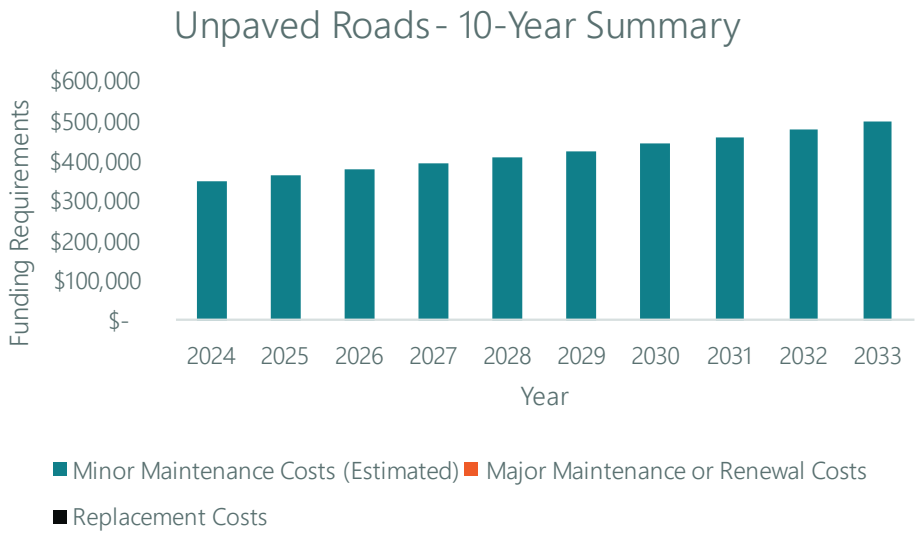
Recommended Rehabilitation

Proposed Holding Strategy

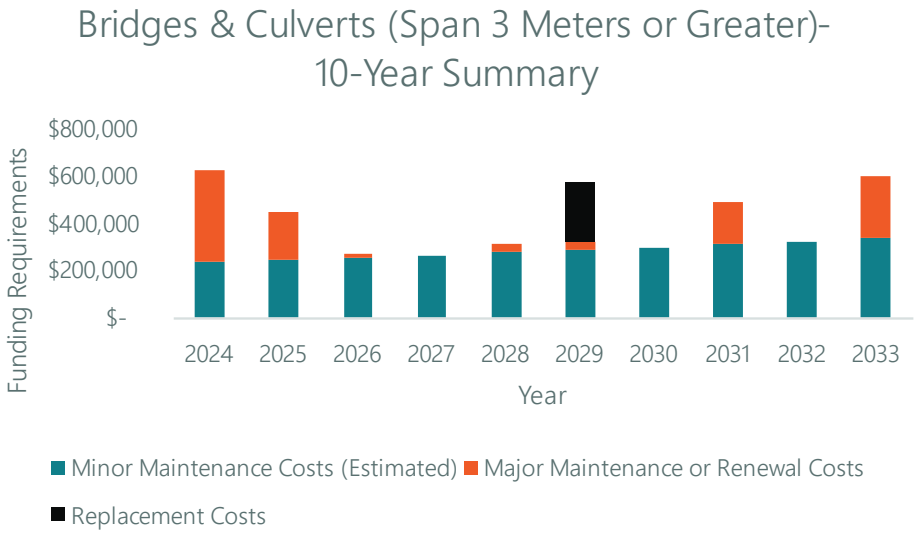
13.4 Appendix D – Estimated Lifecycle Costs by Asset Category (Model Outputs)

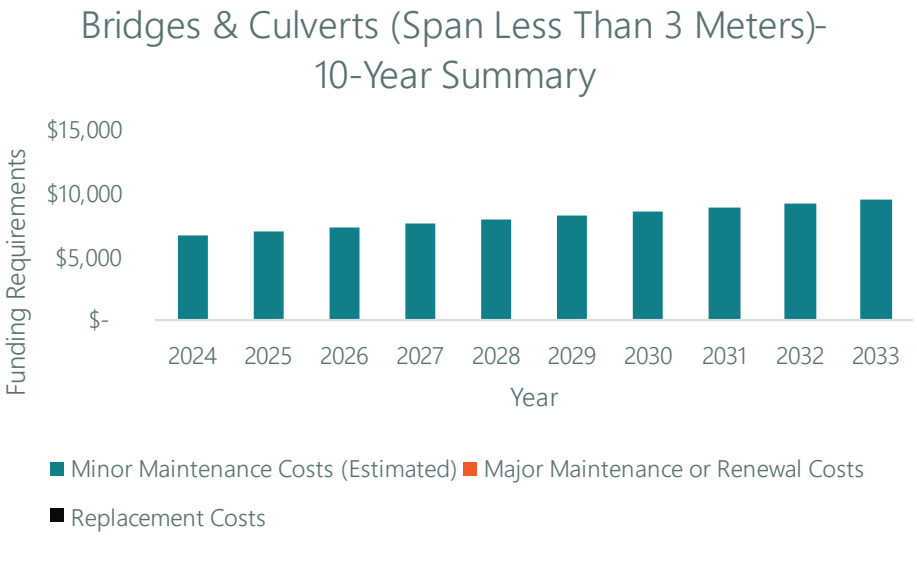
13.4.1 Core – Roads



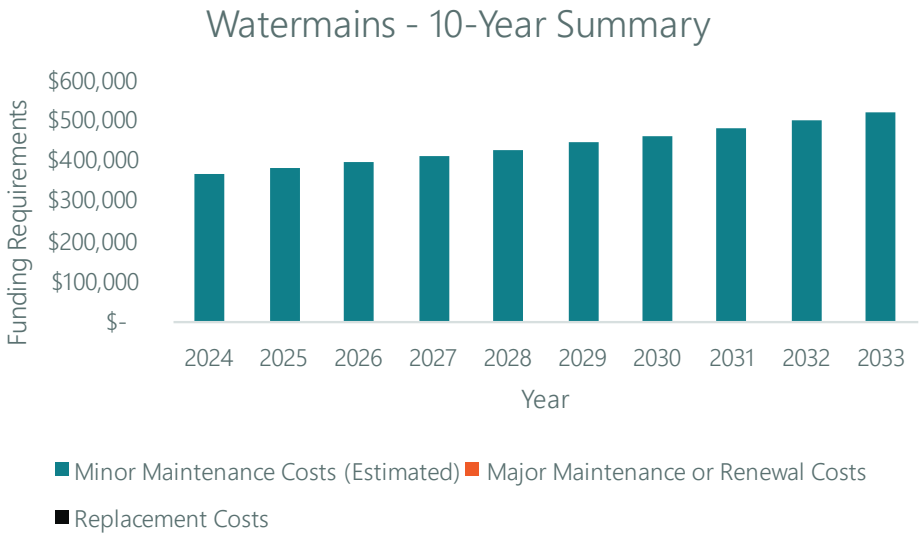


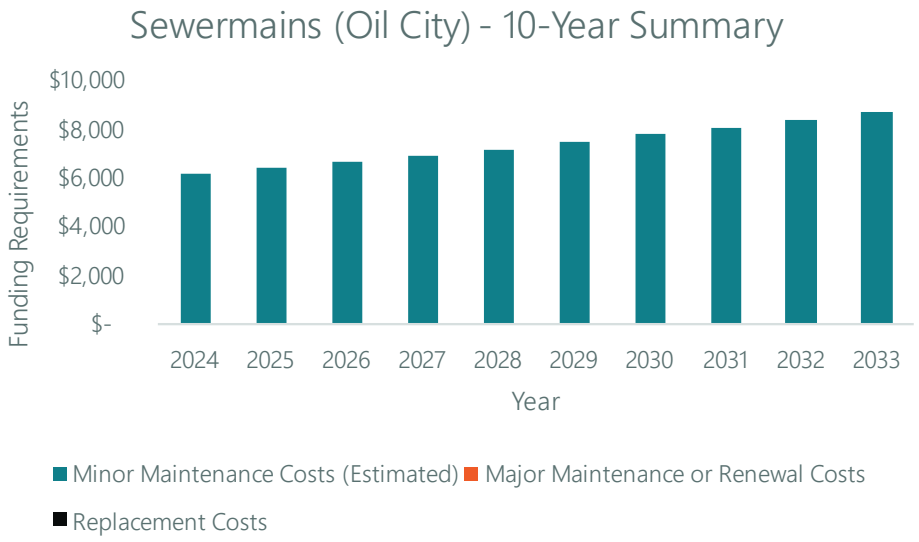
13.4.2 Core – Bridges and Culverts

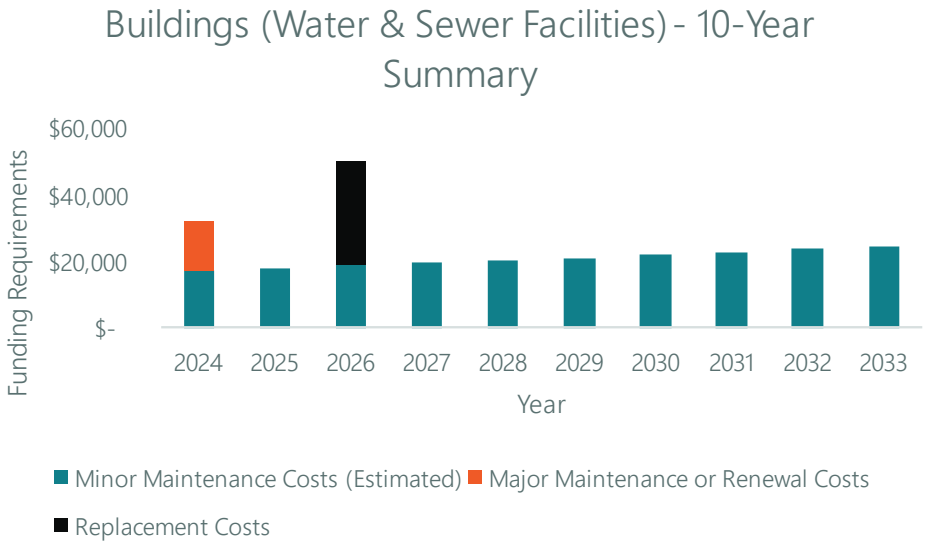


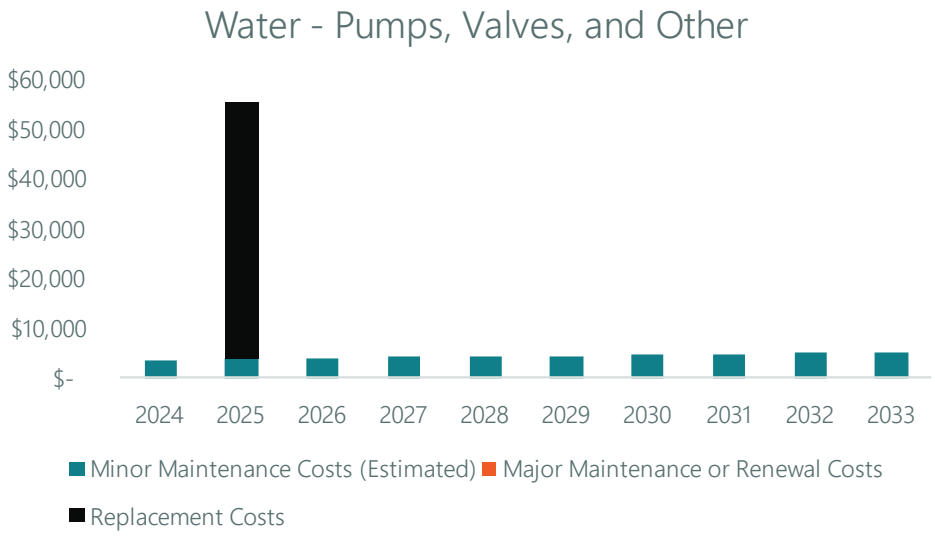


13.4.3 Core – Water and Core – Wastewater

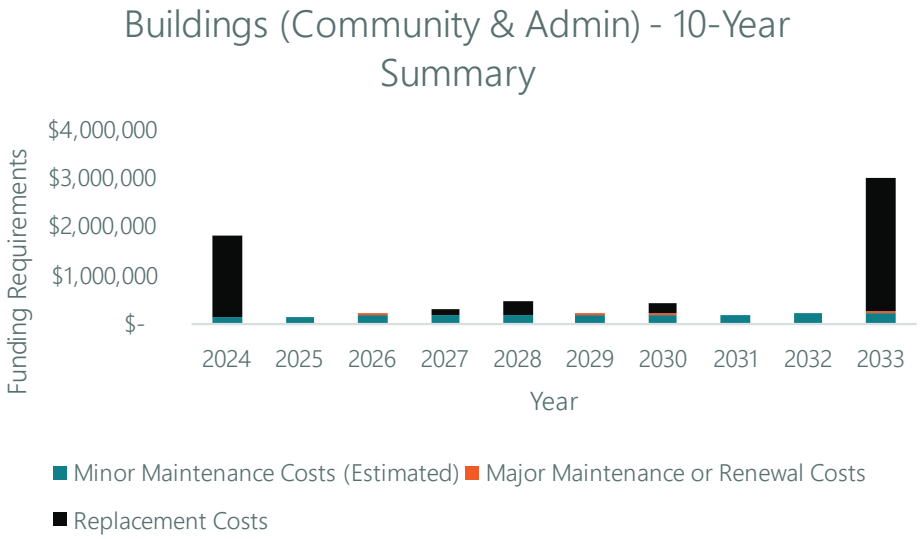




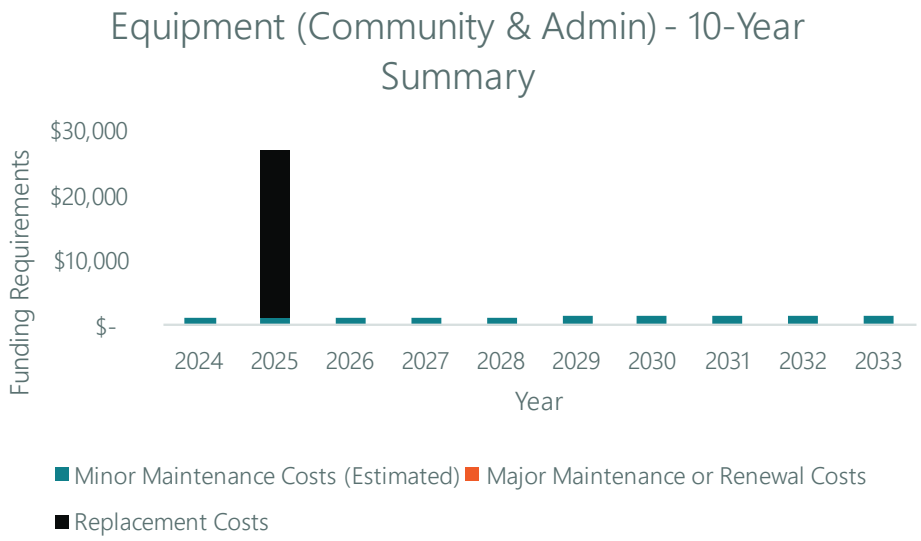

Buildings (Water & Sewer Facilities) - 10-Year Summary
$60,000
$40,000
$20,000
$-
Funding Requirements
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
Year
Minor Maintenance Costs (Estimated)
Major Maintenance or Renewal Costs
Replacement Costs


Water - Pumps, Valves, and Other
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$-
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
Minor Maintenance Costs (Estimated)
Major Maintenance or Renewal Costs
Replacement Costs

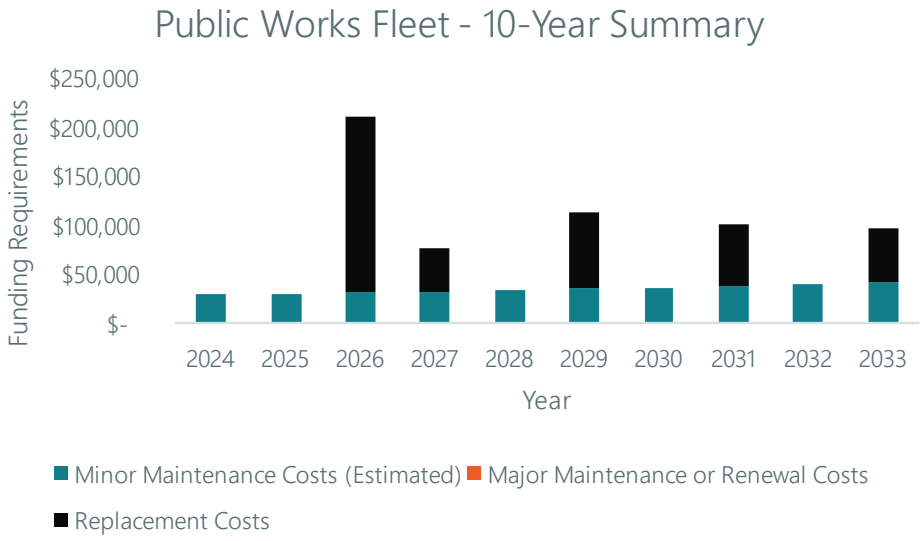
13.4.4 Non-Core – Municipal Facilities



13.4.5 Non-Core – Municipal Equipment



13.4.6 Non-Core – Public Works Fleet



13.4.7 Non-Core – Public Works Equipment