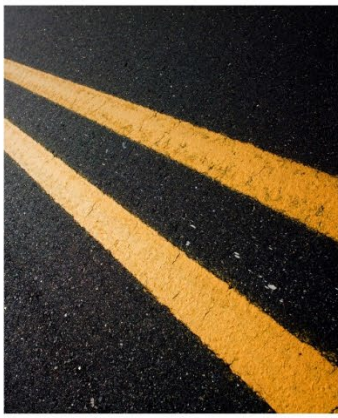
Loyalist Township
Asset Management Plan
December 2024



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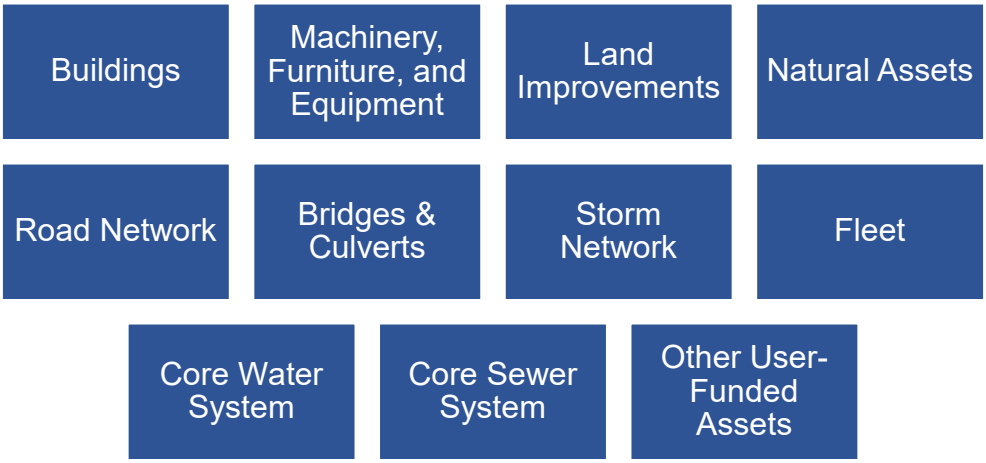
EXECUTIVE SUMMARY

The infrastructure owned by Loyalist Township (the "Township") supports a wide range of municipal services that enable residents, businesses, and other stakeholders to live, work, and play. Its overall performance plays a significant role in the Township's economic development, competitiveness, prosperity, reputation, and quality of life for residents.

Municipalities in Ontario are required to complete an Asset Management Plan that meets all requirements outlined within Ontario Regulation 588/17. A thorough Asset Management Plan will communicate the investment required to ensure the sustainable delivery of services associated with desired infrastructure levels of service.

Scope

This Asset Management Plan includes all assets owned and capitalized by the Township, with additional prescriptive information on Core Assets. Furthermore, the plan provides the respective financial obligations of all asset categories required to maintain the Township's current Levels of Service. Future iterations of the plan will include additional requirements concerning proposed Levels of Service and growth that are to be met by July 1, 2025.



State of the Local Infrastructure

The State of the Local Infrastructure assesses and quantifies the asset categories in terms of overall condition, replacement cost, and estimated service life remaining. As depicted in Figure 1 and Figure 2, the Township's current infrastructure has an estimated replacement cost of all assets is $774 million based on the end of life replacement cost and is in good to very good condition overall. This represents a $104 million increase since 2022, $50 million of which is related to new or developer donated assets.

Figure 1: Township Assets - Replacement Cost by Asset Category

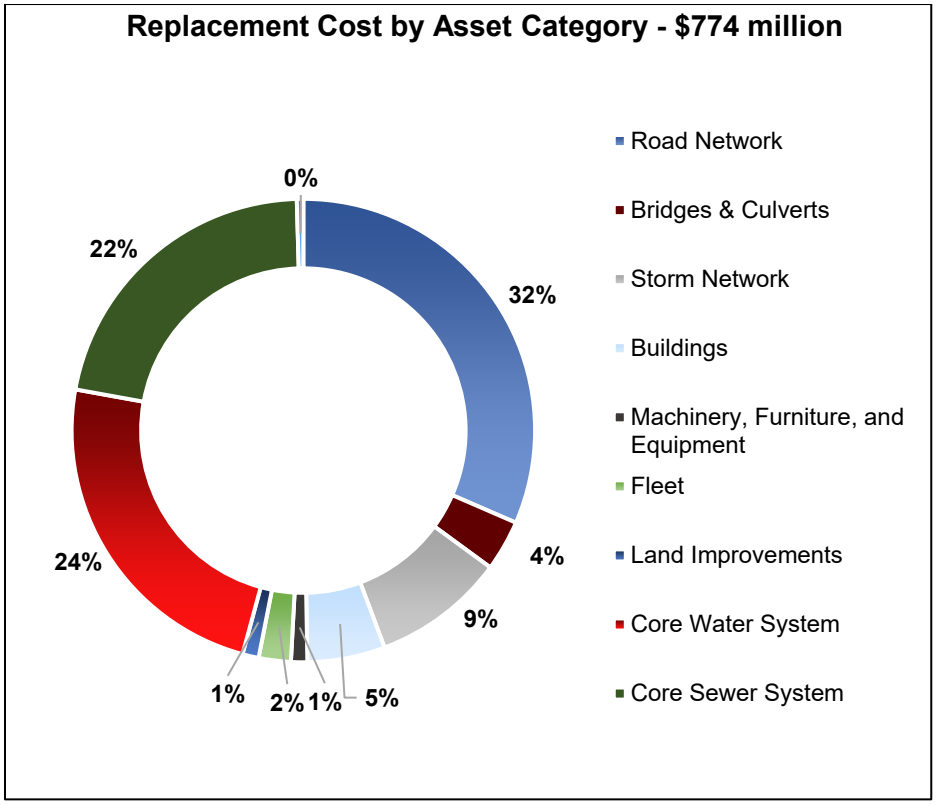


Figure 2: Township Assets - Condition by Replacement Cost

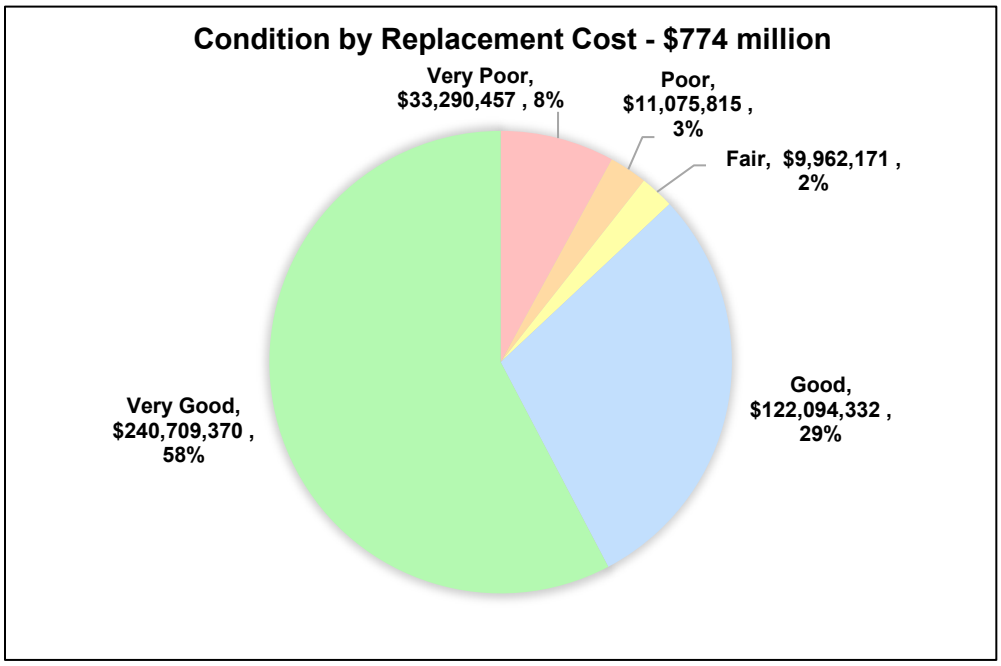
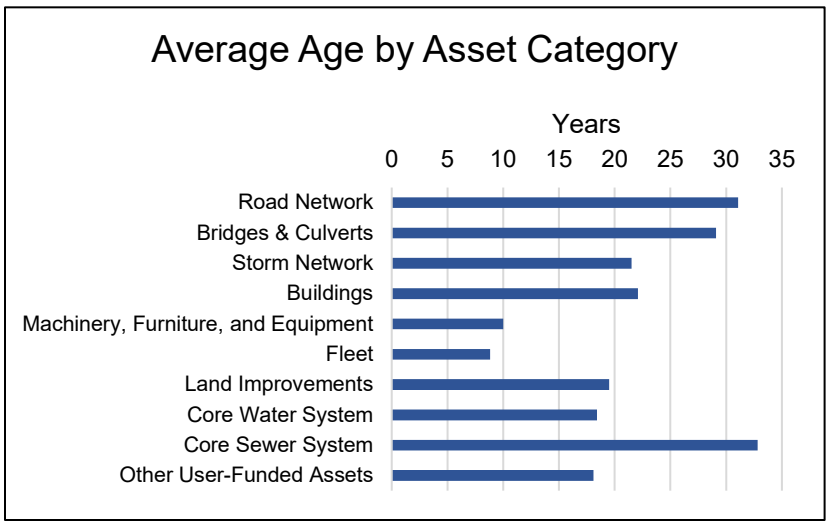


Figure 3: Township Assets – Average Age by Asset Category



Township staff are continuing to prioritize data management and more specifically, to refine its condition assessment approaches across all asset categories.

As the Township continues to grow, the average age by asset category ranges between 9 and 33 years as shown in Figure 3.

Financial Strategy Recommendations

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average Annual Requirement totals $16.5 million, which represents a $2 million increase from 2022. Based on a historical analysis of sustainable capital funding sources, the Township has committed approximately $8.6 million toward capital projects per year, an increase of $1.5 million. As a result, there is currently an annual funding gap of $8.0 million, an increase of $0.6 million from 2022.

A simplified financial strategy was developed as part of the 2022 AMP to address the annual asset management capital Funding Gap which is summarized in Table 1. This captures any reductions in existing debt repayments ove the next 20 years. The table has been updated to reflect the 2024 requirements with changes from 2022 noted in brackets.

Table 1: Summary of Recommended Revenue Changes

	Total Tax Levy Change/User Revenue Change	Average Annual Tax/User Revenue Change for 20 years
Tax-Funded Assets	25.3% (-0.6%)	1.2% (+0.1%)
Water - User-Funded Assets	8.4% (-5.9%)	0.1% (-0.1%)
Sewer - User-Funded Assets	36.3% (-22.5%)	0.6% (-0.4%)

The 2025 AMP will require the Township to provide proposed LOS and a funding plan for the next 10 years which may affect the infrastructure deficit. It is recommended that the annual increases remain at 2022 levels until the completion of the 2025 AMP and then any adjustments made.

In 2024, the Township started the work on completing a Long-Range Financial Plan (LRFP). It should be noted that the Asset Management Plan (AMP) will not match the LRFP. The AMP forecasts capital expenditures needed to maintain our existing assets with the timing based on age and condition-based ratings. The LRFP includes the AMP funding requirements and new assets due to growth and other needs which are not related specifically to assets, and in some cases, the LRFP will identify the replacement or rehabilitation of an existing asset with different timing from the AMP due to coordinating the work with other activities. Finally, due to the existing funding gap identified within the AMP, staff are continuously evaluating which capital projects are the highest priority and which capital projects can be delayed based on their risk profile.

The Water and Sewer (User-Funded) Assets are included in the calculations of needs for the Asset Management Plan, however the revenues that are raised from these systems are separate from the tax rate and are funded from specific Water and Sewer user fees. The analysis of these fees was just updated in the 2024 Water/ Sewer rate study, which includes a multi year financial plan. The financial plan considers funding of the system, operations and capital.

Continuous Improvement

This Asset Management Plan represents a snapshot in time and is based on the best available processes, data, and information. Strategic asset management planning is ongoing and requires continuous improvement and dedicated resources. Several recommendations have been developed to guide the refinement of the Township's Asset Management Plan as outlined in Appendix D. These include:

- Continuous validation of asset inventory data and information.
- Formalization of condition assessment strategies for all asset categories.
- Continued implementation and alignment of risk-based decision-making as part of regular budget deliberations.
- Continuous review, development, and implementation of optimal lifecycle management strategies.
- Refinement of Community and Technical Levels of Service.
- Identification of proposed Levels of Service.
- Refinement of the financial strategy to continually reduce/manage the annual capital funding gap.

The 2025 AMP will include proposed levels of service as required by O. Reg. 588/17, updated replacement costs and building condition assessments. Implementing condition-based assessments vs age-based condition ratings could result in changes to the annual requirements.

1. INTRODUCTION

Loyalist Township is one of four lower-tier municipalities in the County of Lennox & Addington in southeastern Ontario. Spanning 340 square kilometres, the Township includes the residential communities of Amherstview, Bath, Odessa, and Amherst Island, as well as a number of small hamlets and rural areas.

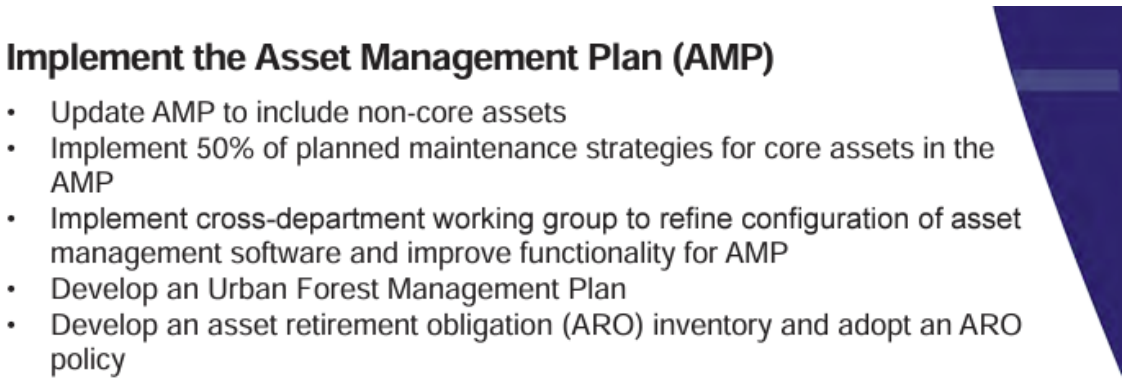
The Township is currently experiencing significant growth in residential, commercial, and industrial assessment classes. As this continues for the foreseeable future, planned investments will need to be made to address existing infrastructure in addition to preparing for future infrastructure to service this growth.

Figure 4: Map of Loyalist Township

Asset management ("AM") is a comprehensive process to ensure the delivery of services associated with infrastructure is provided in a financially sustainable manner.

The implementing of the Township's Asset Management Plan ("AMP") is a key objective in the Strategic Plan endorsed by Council in 2024. Figure 5 is the asset management initiatives from the 2024-2027 Strategic Plan.

Figure 5: Loyalist Township Strategic Plan 2024-2027: Asset Management Initiatives



The AM program is designed to connect strategic Council and community objectives with day-to-day infrastructure investment and operating decisions.

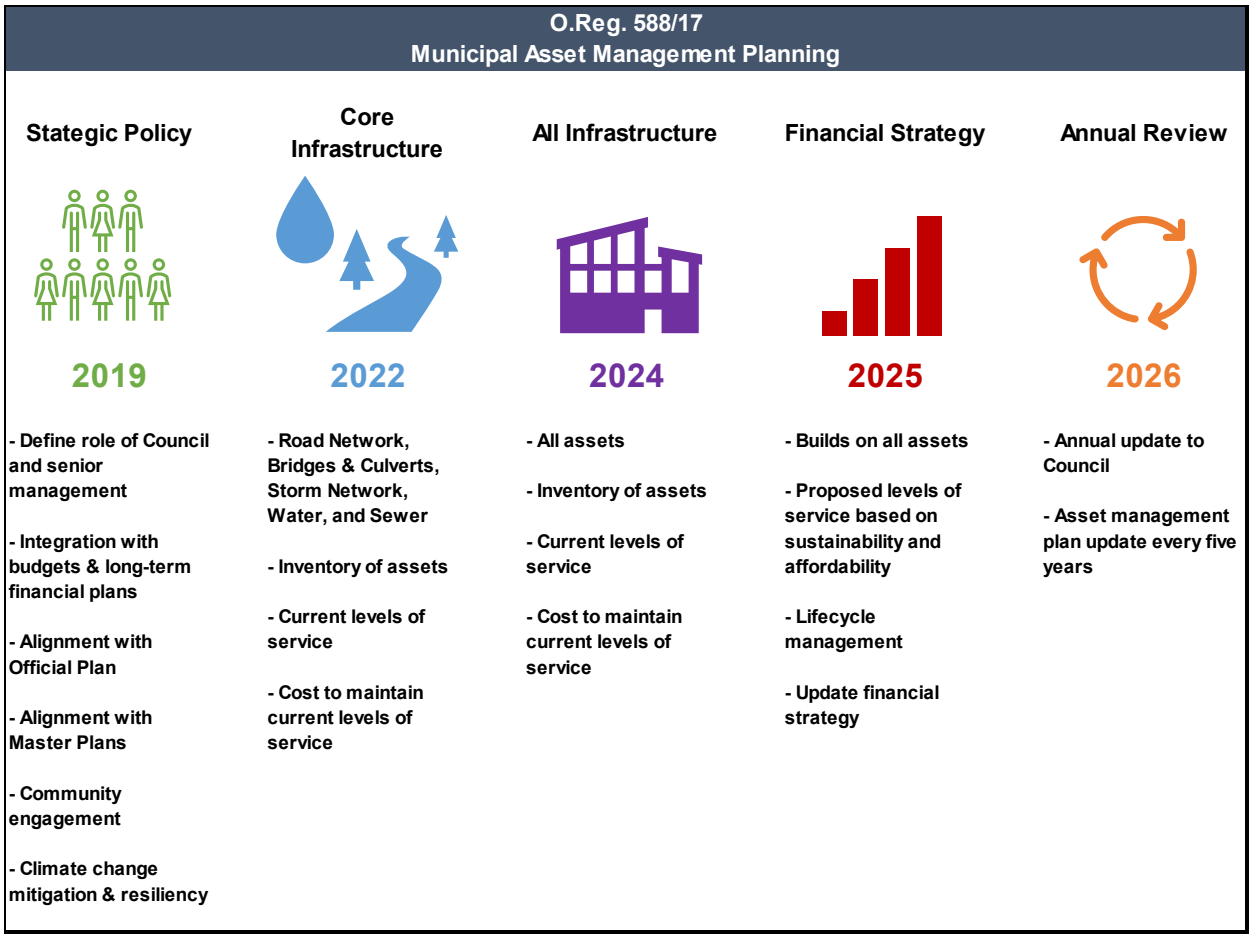
The key objectives of AM are to:

- Align with the Provincial regulatory landscape, meet the requirements of O. Reg. 588/17, and position the Township for grant funding programs.
- Understand the Township's current State of the Local Infrastructure ("SOLI").
- Measure and monitor Level of Service ("LOS") metrics to determine how well infrastructure meets expectations.
- Establish asset lifecycle management activities (i.e., the operation, maintenance, rehabilitation, and replacement of assets).
- Determine the optimal costs of and appropriate timing for the asset lifecycle activities required to ensure the infrastructure systems provide service levels that meet community expectations.
- Establish a financial strategy that will fund the expenditures required to complete the optimal lifecycle activities.

1.1. REGULATORY FRAMEWORK

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure ("O. Reg. 588/17"). This regulation mandates specific requirements to assist municipalities with managing assets. Furthermore, it emphasizes current and proposed LOS and the Lifecycle Costs incurred to deliver them. Figure 6 outlines the various milestones that all Ontario municipalities must meet to fulfill the requirements of the regulation.

Figure 6: O.Reg.588/17 Timelines



This AMP will replace the Township's 2022 AMP to ensure adherence to O.Reg.588/17. Table 2 lists the regulatory milestones that are currently due and whether the Township complies with this AMP.

Table 2: O.Reg.588/17 Compliance

O.Reg. 588/17	Requirement	Section(s) in this AMP	Status
S.5(2), 1(i - ii)	Community and Technical LOS based on data from at most the two calendar years before the year in which all information required under the section is included in the AMP. For Core Assets, the Community and Technical LOS as set out in the regulation. For Non-Core Assets, the LOS established by the municipality.	3 & 4	In compliance
S.5(2), 2	Current performance of each asset category per the performance measures established by the municipality based on data from at most two calendar years in which all information required under the section is included in the AMP.	3 & 4	In compliance. Township is working to improve key performance indicators ("KPIs") in future AMPs.
S.5(2), 3(i – v)	Summary of assets in each category. The replacement cost of the assets in the category. The average age of the assets in the category determined by assessing the average age of the components of the assets. The information available on the condition of the assets in the category. A description of the municipality's approach to assessing the condition of the assets in the category, based on the recognized and generally accepted good engineering practices where appropriate.	3 & 4	In compliance
S.5(2), 4(i – iv)	For each asset category, the lifecycle activities that would need to be undertaken to maintain the current LOS for 10 years and the costs of providing those activities.	3, 4, 5, Appendix C	In compliance
S.5.(2), 5(i – ii)	For municipalities with a population of less than 25,000, a description of assumptions regarding future changes in population or economic activity and how the assumptions relate to information on the municipality's lifecycle activities.	6	In compliance

1.2. ASSET MANAGEMENT POLICY

Under Section 3(1) of the O.Reg. 588/17, the Strategic Asset Management Policy was developed and endorsed by Council in June 2019 and subsequently updated in 2021 for changes in governance determined to be necessary through policy implementation. The objectives of the policy are to:

- Provide a framework for implementing AM to enable a consistent and strategic approach at all levels of the organization.
- Provide transparency and demonstrate to stakeholders the legitimacy of decision-making processes that combine strategic plans, budgets, service levels, and risks.
- Ensure the commitment to AM practices and their alignment with the Township's strategic objectives.

The Township is required to review and update this policy, if necessary, at least every five years.

AM is not a time-limited initiative, but rather a way of doing business that requires the alteration of processes and active and ongoing collaboration from the most important resource in an AM program – people. The development, implementation, and improvement of the Township's AM program requires stakeholder knowledge in specific areas of interest, as listed in Table 3.

Table 3: Stakeholders and Areas of Interest

Stakeholders	Areas of Interest
Council and Standing Committees	• Community sustainability • Public concerns • Corporate strategy and plan approvals • Sustainability of the Township's infrastructure and service levels • Capital and operating budget approval • User Rate approval • Appropriate fiscal decision making • Significant project approvals
Senior Management Team/AM Steering Committee	• Provide strategic direction • Sustainability of the Township's infrastructure and service levels • Capital and operating budget reviews, recommendations to Council • Rate reviews and recommendations to Council • Appropriate fiscal decision-making including preparation of the annual capital and operational budgets with AM needs assessed and recommendations for funding. • Support and assign priority to the AM program • Significant project review and recommendations • Responsible for oversight and guidance of the AM program • Need to be aware of program developments, milestones, etc. • Need to be aware of and approve program results
AM Team	• Program design and implementation • Facilitation and coordination of activities across the Township-wide AM network • Communication
Staff	• Asset stewardship • Data collection and reporting • Data analysis and modeling support • Processes and procedures including decision making • New approaches, tools, and technologies • Education and information
Agencies/Government	• Compliance with legal and regulatory requirements • Compliance with service agreements • Compliance with grant/funding program requirements
Customers/Community (Residential, Commercial, Industrial, Institutional, visitors)	• Municipal services available for their use • Municipality plans for future investment, growth, etc. • Rationales behind decisions • Where and how their tax dollars and user rates are being spent • Sustainability of the Township's infrastructure and service levels • Public health and safety • Willingness to pay for service • Equitable rate structure • Business support

1.3. SCOPE

This AMP includes all assets that the Township has capitalized per the Public Sector Accounting Standard ("PSAS") 3150 - Tangible Capital Assets. Furthermore, this AMP excludes certain assets that fall outside the scope of the Township's Tangible Capital Asset Policy. O. Reg 588/17 specifies Community and Technical LOS for Core Assets and in accordance with the regulation, the Township has developed its own LOS for Non-Core assets.

Table 4 lists the assets included in this AMP and how they are categorized.

Table 4: Asset Categories in this AMP

Asset Category	Subcategories	Core/Non-Core Infrastructure
3. Tax-Funded Assets		
3.1. Road network	Gravel Roads, High-Class Bitumen ("HCB") Roads, Low-Class Bitumen ("LCB") Roads, Road Guiderails	Core
	Sidewalks/Curbs, Signs, Streetlights, Shoreline Protection	Non-Core
3.2. Bridges & Culverts	Bridges and Culverts subject to the Ontario Structure Inspection Manual ("OSIM")	Core
3.3. Storm Network	Cross Culverts, Driveway Culverts, Catch Basins, Storm Manholes, Storm Mains, Storm Water Management Facilities, Storm Water Treatment Units	
3.4. Buildings	Corporate Services, Emergency Services, Recreation & Facilities Services, Transit Services, Transportation Services, Waste Management Services	Non-Core
3.5. Machinery, Furniture, and Equipment		
3.6 Fleet	Emergency Services, Transportation Services, Building Services, Recreation & Facilities Services	
3.7 Land Improvements	Siteworks – Parks, Play Structures Outdoor Recreation, Boat Ramps & Docks, Siteworks - Other	

Asset Category	Subcategories	Core/Non-Core Infrastructure
3.8 Natural Assets	Woodlands, Significant Woodlands, Wetlands, Significant Wetlands, Alvars	
4. User-Funded Assets		
4.1. Core Water System	Hydrants, Valves Water Meters, Water Mains Treatment Facilities, Distribution Facilities	Core
4.2. Core Sewer System	Sewer Manholes, Sewer Mains Treatment Facilities, Collection Facilities	
4.3. Other User-Funded Assets	Utilities Buildings, Utilities Machinery & Equipment, Utilities Fleet	Non-Core

2. METHODOLOGY

2.1. ASSET MANAGEMENT PLAN

This iteration of the Township's AMP is structured as follows:

- Introductory sections that outline the approach, purpose, and structure of the AMP.
- A series of separate sections for each asset category, which includes:
  - The State of the Local Infrastructure
  - The Level of Service Strategy
  - The Lifecycle Management Strategy
  - The Risk Management Strategy
- A section outlining the financial strategy between tax-funded and user-funded asset categories.
- A section addressing future growth in the municipality.
- Various appendices that compliment the data presented in this AMP.

Data Management

The effective management of assets relies on the processing of large volumes of asset data and related information, such as their condition, costs, and risk evaluation, as well as rehabilitation, replacement, and maintenance activities. This information supports decision-making that should relate to the Township's community objectives. AM at the Township, therefore, relies on the processes and systems that collect, manage, and report this information.

The Township's asset data is housed in Public Sector Digest's Citywide Asset Manager software ("Citywide"). The Township also uses a Geospatial Information System ("GIS") system by ESRI to house geographically located assets. There is currently an integration to link assets in Citywide to the GIS display only; one system cannot update the other. The Township has provisions set for these systems that provide controls for different users, roles, and groups. Any access to asset data is restricted to the permissions included within the users' role profiles.

Township staff understand that maintaining its data and continuously improving its accuracy is imperative to the success of its AM program. As stated in the Township's Strategic Asset Management Policy, the divisional management team or the "AM Network Team" with support from operations staff, are responsible for the management and updating of asset data.

Citywide's Asset Hierarchy as illustrated in **Appendix A The Hierarchy,** outlines the Township's Asset Classifications and was developed to provide corporate-wide consistency to reporting assets. Additionally, this hierarchy satisfies the financial reporting requirements of the Township, such as financial statement presentation under PSAS, the amortization of assets, and the submission of the provincially mandated Financial Information Return. Citywide also groups assets by asset profile using the Asset Sub-Type and Component of the Asset Hierarchy. Asset profiles set the lifecycle strategy and risk models for each asset category.

Annual Requirement

Annual Requirement is used throughout this AMP to estimate the present value of funds that should be allocated annually over the Estimated Useful Life ("EUL") of an asset to fully fund its replacement. The formula to calculate Annual Requirement is as follows:

Replacement Cost ÷ Estimated Useful Life = Annual Requirement

Assumptions and Limitations

Assumptions and limitations are documented throughout this AMP directly or via footnotes. **Appendix D** lists recommendations for AM practices that may be incorporated into future AMPs.

Future Demand

Anticipating the impact of future demands on the Township's assets and infrastructure networks is an integral part of infrastructure design. There are three main future demands the Township has identified that will impact new and existing assets:

- Growth
- Climate change
- Increased service level expectations

The rate of housing growth in the Township has been outpacing population growth since 2001, owing to declining average household size, which is a result of the demographic change underway in the Township. The growth rate differences between population and households are partially due to an aging population, a demographic feature of the Township that mirrors most of Ontario, particularly in communities outside major urban centers. The effect of declining household size is that a greater number of housing units and infrastructure are required to house a comparable population.

Aligning the AMP with the needs outlined in the Township's Development Charges study, Impost study, Official Plan, Climate Action Plan, Infrastructure Master Plan and other division specific master plans such as the Recreation Master Plan and Fire Master Plan, is imperative to ensure new and existing assets will sustainably provide service levels into the future.

A guiding principle of the Strategic Plan is environmental sustainability and specifically that "Loyalist Township will make decisions in a sustainable manner while maintaining a focus on protecting our natural environment". This will be achieved by reviewing maintenance plans to incorporate more environmentally sound practices; by including environmental responsibility in key decision-making; and by integrating carbon reduction into AM activities. The ResiLienT Loyalist Township Climate Action Plan is the Township's commitment to undertaking local action on climate change by setting goals for greenhouse gas ("GHG") emissions across various sectors while outlining steps needed to achieve them. The goals of the action plan are listed in Table 5.

Table 5: ResiLienT Climate Action Goals

Priority Sector	Goals
Sustainable Land Use	Meet the current and future needs of the Loyalist Community while incorporating practices that will protect the environment and support local agriculture.
Waste Reduction	Divert waste away from landfill and promote a circular economy
Transportation	Provide residents with enhanced transit services and promote the uptake of low-carbon fuels in vehicles, all while maintaining expected levels of service.
Buildings	Increase the energy efficiency of existing residential, commercial, and municipal buildings, and promote the construction of new buildings designed to exceed existing energy standards.
Water and Wastewater	Reduce residential water usage and the amount of energy required to treat, distribute, or collect water and wastewater.
Other	Undertake initiatives which may not have a direct and quantifiable impact on GHG emissions in Loyalist, but that will contribute to a culture of climate action while promoting community resiliency and financial sustainability.

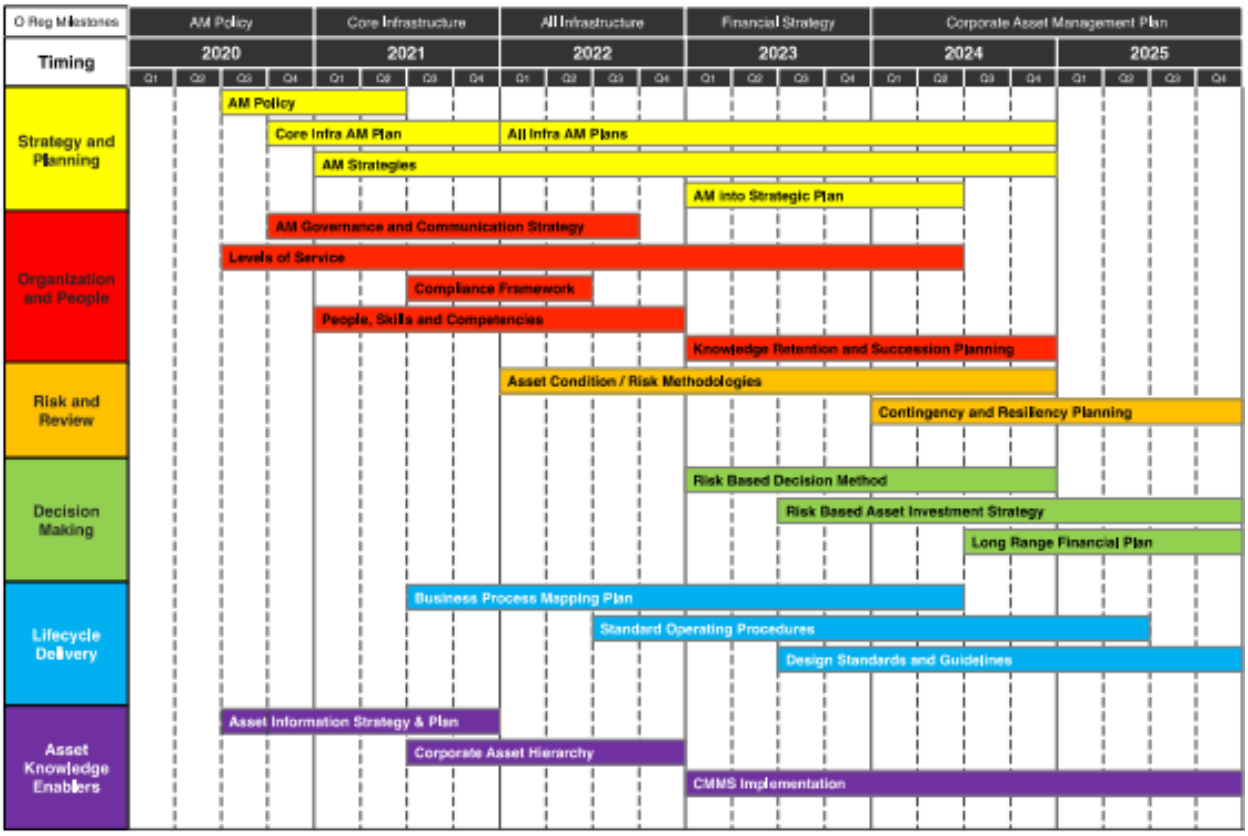
Building climate change resilience within the Township's assets and implementing adaptation solutions will sustain services and ensure that assets endure climate impacts. Furthermore, it will reduce the Township's carbon footprint with the potential of reducing associated Lifecycle Costs.

It is the requirement of O.Reg. 588/17 that the Township review its service levels and provide recommended targets for the next 10 years. Through that exercise, all LOS will be evaluated for sustainability and a plan to implement any changes will be developed. The Township addresses the growing needs of the community through public engagement throughout the year, most notably during budget development and deliberations as well as semi-annual Townhalls.

Plan Improvement and Monitoring

Developed in 2020 with the assistance of a third-party consultant, the roadmap planned for the corporate development of AM is illustrated in Figure 7.

Figure 7: Asset Management Roadmap



Each asset category may be at various stages of development; however, this program is for consistent development across all areas. Per Section 7 of the O.Reg. 588/17, the Township shall review and update its AMP every five years once the final milestone has been completed, and at least every five years thereafter.

As per Section 9 of the O.Reg.588/17, the Township's Council shall conduct an annual review of its AM progress on or before July 1 each year, starting the year after the final milestone has been completed. The review must address its progress on implementing the plan, any factors impeding its ability to implement the plan, and a strategy to address any above-noted impeding factors.

As noted, recommendations to improve the Township's AM practices have been listed in **Appendix D**.

2.2. STATE OF THE LOCAL INFRASTRUCTURE

The State of the Local Infrastructure (SOLI) as presented in each asset category provides the following:

- Summary of asset inventories that include descriptions and quantities and that support the various services provided by the Township.
- Estimated replacement cost of the assets. It is important to note that not all assets are scheduled to be replaced, but rather continually rehabilitated. As such, a replacement cost estimate serves as a foundational benchmark to highlight the significance of the infrastructure that supports various services.
- Description of the proportion of estimated service life remaining relative to an asset category's EUL.
- Average condition of the assets weighted by replacement cost.
- Description of the data sources used to inform this section, including any relevant condition assessment policies/practices.

Replacement Costs

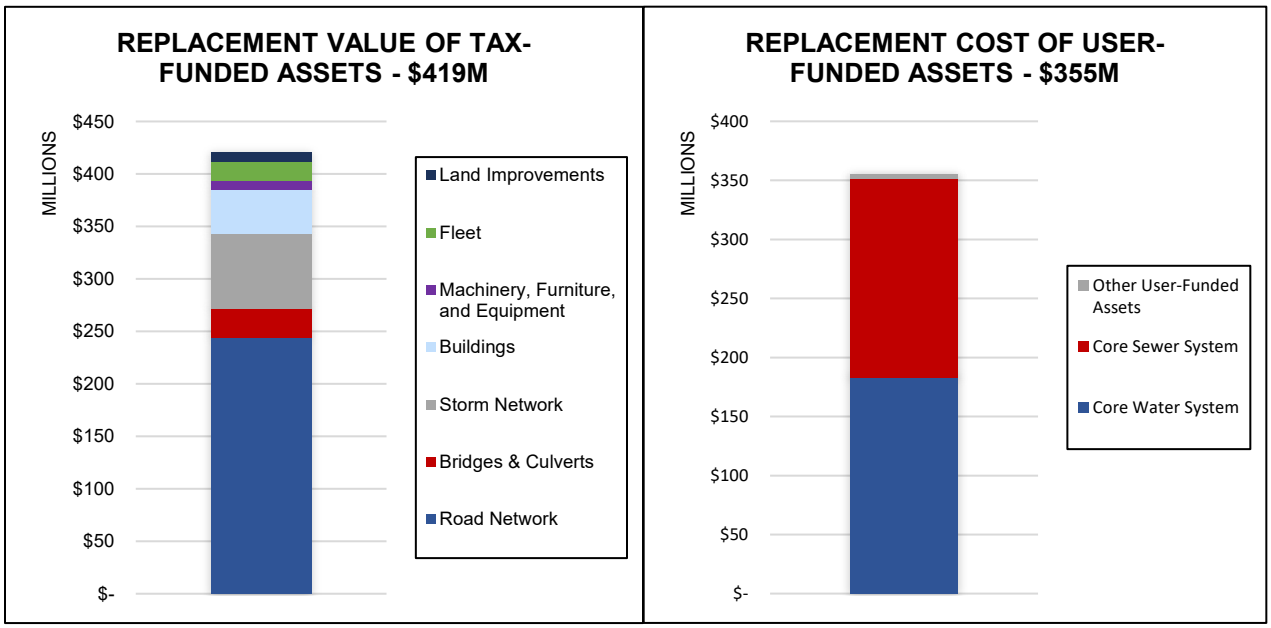
Replacement Costs for each asset or asset category were derived based on several sources, which include:

- Historic Township construction contracts and tenders to develop per-unit costs.
- User-defined costs based on industry sources.
- Consumer Price Index ("CPI")/inflationary estimates.

CPI is typically used in the absence of reliable data to determine the replacement cost of an asset. Citywide calculates the most recent CPI against the historical cost of each asset and its in-service date to estimate the replacement at its present value. As assets age and new technology become available, inflation becomes a less reliable method. As such, as 10-year capital plans are adjusted from year-to-year, costing is more accurately updated.

As of 2024, the estimated total Replacement Cost of the Township's assets is $774 million. This is illustrated between tax and user-funded assets in Figure 8.

Figure 8: Replacement Cost of Township Assets



Estimated Useful Life and Service Life Remaining

The Estimated Useful Life (EUL) of an asset is the period in which the Township expects the asset to be in service before requiring replacement or disposal. The EUL is initially estimated based on the Tangible Capital Asset Policy but can be adjusted via rehabilitations/improvements and/or condition assessments, resulting in a shortened or prolonged EUL. An asset's service life remaining is the projected in-service years remaining of an asset after any adjustment to its EUL. Two scenarios are presented below to illustrate service life remaining.

Item	In-service Year	Asset Age as of Year 2021	Initial Lifecycle EUL	Condition Assessment and/or Event	Service Life Remaining
HCB Roads	2000	21 Years	40 Years	None	19 Years
HCB Roads	2000	21 Years	40 Years	Micro-surfacing, holds condition 5 years	24 Years

Condition Assessment Approach

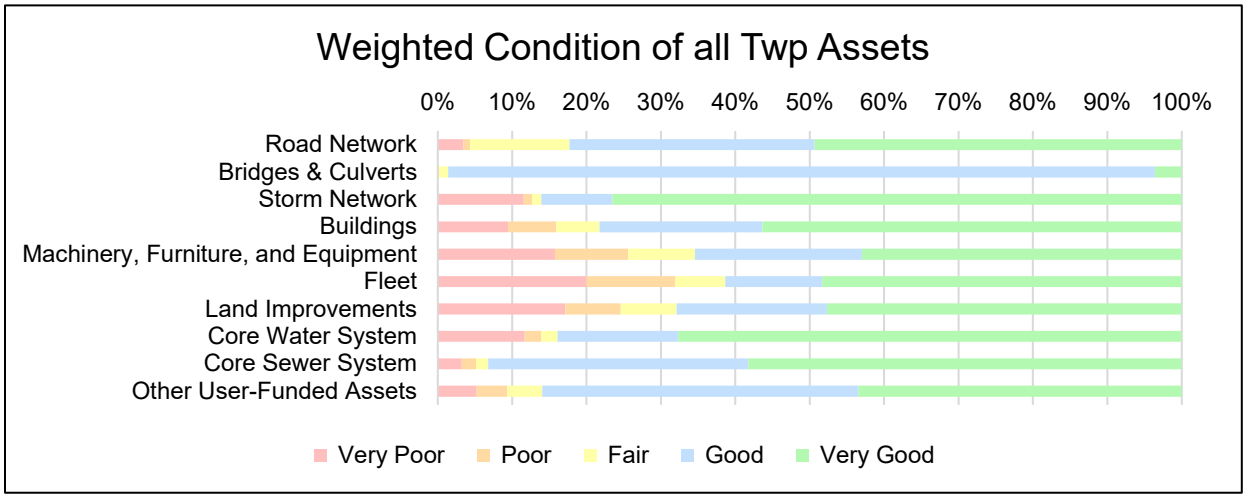
Condition ratings were assigned to every asset using a five-point rating scale as shown in Table 6. In addition to providing a sound basis for assessment, this will allow Township staff to benchmark the results against the values presented in this document.

Table 6: Condition Ratings

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well-maintained, new or recently rehabilitated	>80%
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	>=60% and <80%
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	>=40% and <60%
Poor	Increasing potential of affecting service	Approaching the end of service life, condition below standard, large portion of system exhibits significant deterioration	>=20% and <40%
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	<20%

A weighted condition summary of each asset category is illustrated in Figure 9. Collectively, 85% of assets owned by the Township relative to Replacement Cost are in good or very good condition. This estimate relies on either the asset's age or any condition assessments undertaken.

Figure 9: Township Assets - Condition Summary by Asset Category



2.3. Levels of Service Strategy

In balancing Council-endorsed LOS and financially sustainable lifecycle costs, municipalities face a choice: overpromise and underdeliver; under-promise and over-deliver; or promise only what can be delivered sustainably.

Developing realistic LOS using meaningful key performance indicators ("KPIs") can be instrumental in managing stakeholder expectations, identifying areas requiring higher investments, driving organizational performance, and securing the highest value for money from public assets.

Community & Technical Levels of Service

The purpose of Community and Technical LOS is to define what needs to be achieved and how it relates to the Township's assets and the people and processes which influence their performance. O.Reg. 588/17 mandates the inclusion of specific Community and Technical LOS for Core Assets in this AMP; however, the Township has defined Corporate LOS and expanded Community LOS, which are planned to be integrated into future iterations of the Township's AMP. These value-added LOS are further discussed below.

Additionally included within the applicable LOS in Sections 3 and 4 is a performance metric calculating the Capital Reinvestment Rate. This reinvestment rate is a factor of annual capital allocation relative to total Replacement Cost.

Strategic and Corporate Goals

This AMP was developed to ensure alignment with the 2024-2027 Strategic Plan, specifically the vision of the Township and the corporate mission. The Township's strategic vision is a thriving, innovative and sustainable community where all people are valued. Our mission is to promote a balanced quality of life for residents and businesses, through the effective delivery of services and good governance, while ensuring fiscal responsibility and environmental sustainability.

The Township developed the three pillars of customer service in the Corporate LOS and has expanded its Community LOS as outlined in Figure 10.

Figure 10: Corporate & Community LOS

Future Improvements

Future iterations of the AMP will work to incorporate the Corporate and Community LOS. Establishing the connection between Community LOS and the activities performed to determine the Technical LOS will ensure a clear relationship is identified between corporate objectives and asset-focused objectives. Similarly, understanding the interplay between asset LOS and KPIs will ensure that integrated and holistic AM decisions can be made to provide the optimal blend of capital and operating expenditures.

This process will enable the organization to move towards a budgeting practice that quantifies the cost of achieving LOS, and/or communicates a reduction or improvement in LOS. This model is in its inception stage, and therefore, will be updated accordingly as part of future AMP updates.

2.4. LIFECYCLE STRATEGY

The goal of this strategy is to establish an integrated corporate-wide approach to managing assets from a capital and operating perspective. This is a process of updating the asset inventory to reflect what method of lifecycle management will be used.

Lifecycle assets are those that are monitored and kept in good repair via periodic lifecycle activities to ensure the provision of services. This strategy for an asset category can be applied at the asset profile level in Citywide.

Non-Lifecycle Assets are those assets that are monitored for condition but are run to failure under an asset end-of-life approach. Non-lifecycle management is a function of the level of risk the asset possesses to the Township. Both the asset risk as well as the risk to LOS must be considered when choosing this strategy. Assets that reach a condition of 20 or below will have a planning budget generated to assess the condition or plan for the asset replacement.

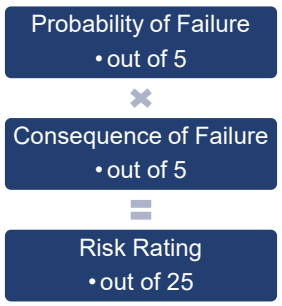
The types of lifecycle activities discussed in Sections 3 and 4 are listed in Table 7.

Table 7: Lifecycle Activities - Examples

Lifecycle Activity	Description	Examples for Roads
Maintenance	Regularly scheduled inspection of maintenance, or more significant repair activities associated with unexpected events.	Grading/ditching on gravel roads
Preventative Maintenance	Regularly scheduled maintenance or more significant repairs that may extend the useful life of the asset.	Soft spot repairs on gravel roads, rejuvenating agents on HCB roads
Rehabilitation	Significant treatments designed to extend the life of the asset.	HCB road resurfacing, LCB road re-profile
Replacement	Activities that are expected to occur once an asset has reached the end of its EUL and renewal/rehabilitation is no longer an option (if applicable).	Reconstruction of base and surface of HCB & LCB roads

2.5. RISK STRATEGY

Generally, infrastructure needs exceed municipal resource capacity. As such, municipalities must carefully select projects based on the state of infrastructure, economic development goals, and the needs of an evolving and growing community. These factors, along with social and environmental considerations, will form the basis of the Township's risk management framework incorporated in Citywide at the asset profile level. Risk is calculated as follows in the following graphic.



Range	Risk Rating
1 to 4	Very Low
5 to 9	Low
10 to 14	Moderate
15 to 19	High
20 to 25	Very High

The probability of failure is generally a function of an asset's physical condition (service life remaining), which is heavily influenced by the asset's age and the amount of investment that has been made in the maintenance and renewal of the asset throughout its life. Table 8 illustrates the probability of failure of risk model that was developed for all asset categories within this AMP.

Table 8: All Assets - Probability of Risk Model

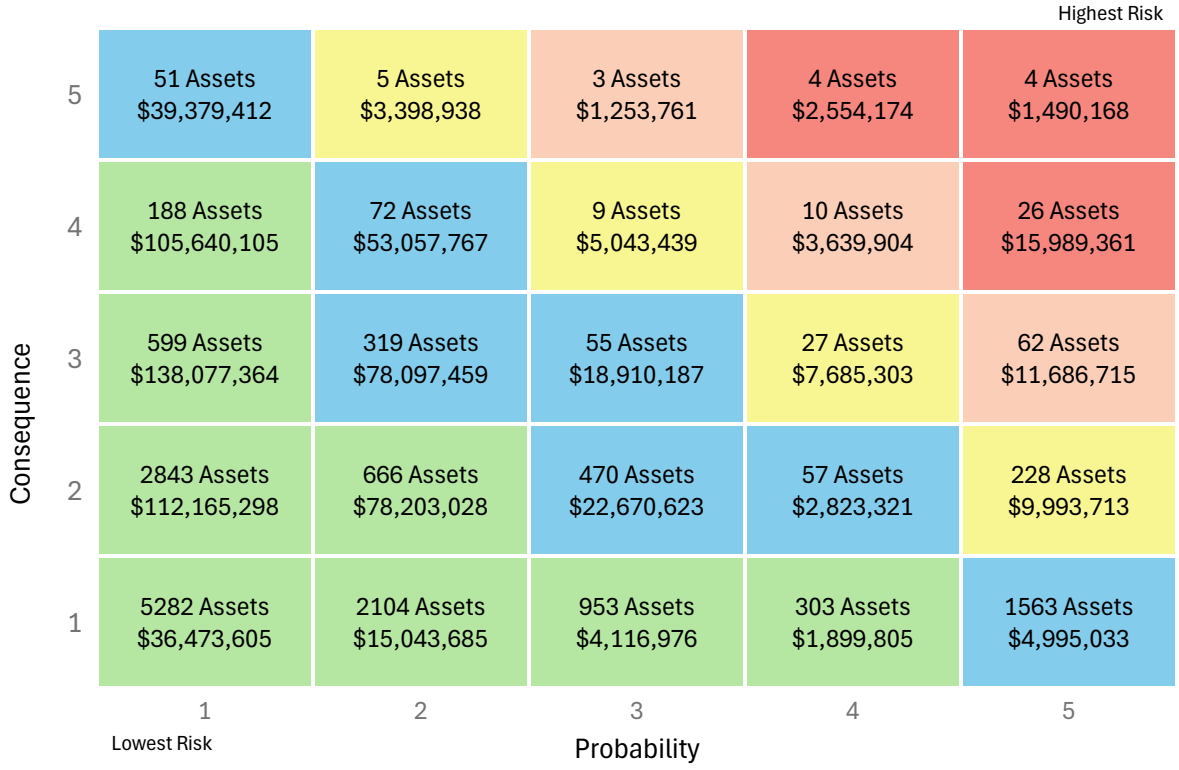
Range	Probability of Failure	Economic (100%) Condition (Service Life Remaining) (100%)	Condition
1	Rare	>80%	Very Good
2	Unlikely	>=60% and <80%	Good
3	Possible	>=40% and <60%	Fair
4	Likely	>=20% and <40%	Poor
5	Almost Certain	<20%	Very Poor

The consequence of failure risk models are disclosed throughout Sections 3 and 4 as they will differ by asset category. These will typically have multiple factors, such as:

- Economic implications of asset failure (Replacement Cost).
- Regulatory and health and safety implications of asset failure.
- Service level implications of asset failure.

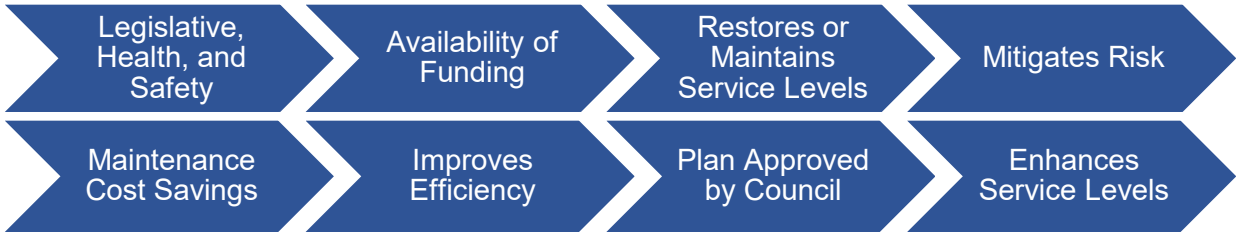
Figure 11 illustrates the Township's aggregated risk matrix of its assets as of 2024. Any high-risk assets are reviewed by the department, whereby mitigation activities are developed, or the risk is tolerated. Out of the total Replacement Cost of $774 million, approximately $36.6 million or 5% of assets are considered high or very high risk.

Figure 11: Township Risk Matrix



Historically, the Township has used a project prioritization process to evaluate proposed capital projects. The first set of criteria or the identified project driver is broken down as follows:

The second level criteria identified are as follows:



A project's score is calculated by multiplying the project driver by the sum of all the second level criteria that apply. This process puts all projects on a level playing field to assist decision-makers in allocating the limited resources in a more strategic, beneficial, and consistent way. It is the goal to integrate these practices with risk models as outlined above.

3. TAX-FUNDED ASSET CATEGORIES

3.1. ROAD NETWORK

The Township's Road Network is the most identifiable and widely used category of assets by residents and businesses in all rural and urban areas. The community's fundamental expectation is for this network to be efficient, dependable, and safe. Furthermore, it makes up the largest group of assets in terms of both quantity and Replacement Cost. This section summarizes the Road Network asset category that is managed by the Public Works Division within the Community & Customer Services Department.

State of the Local Infrastructure

An inventory valuation summary for the Township's Road Network is outlined in Table 9. Per O.Reg. 588/17, this asset category is comprised of Core Assets (roads and road guiderails) and Non-Core Assets (sidewalks/curbs, signs, and streetlights). Roads are further subcategorized between three materials, which are gravel, asphalt/high-class bituminous ("HCB"), and surface treated/low-class bituminous ("LCB").

The total Replacement Cost of the Road Network totaling $244 million (+$34 million from 2022) has been developed using historic construction costs per unit and a standardized consumer price index. The average age of the Road Network is approximately 31 years and the overall condition is good.

Public Works has implemented several preventative maintenance programs and undertaken updated road condition assessments which show an improved overall condition for the road network. The projected savings for using a lifecycle road maintenance program with timely preservation activities vs end-of-life system is identified in the capital forecast section.

Asset Inventory

Table 9: Road Network - Inventory Valuation Summary

Subcategory	Quantity		Replacement Costs ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Gravel Roads	110,703	Length (m)	33,622,831		47.9	Good
HCB Roads	67,228	Length (m)	151,262,946		35.2	Good
LCB Roads	84,600	Length (m)	33,839,889	User-Defined Cost/Unit	47.8	Very Good
Road Guiderails	585	Quantity, Length (m)	501,025	Consumer Price Index	7.4	Very Good
Sidewalks/Curbs	38,164	Length (m)	14,419,529	User-Defined Cost/Unit	22.7	Good
Signs	3,825	Quantity	734,650		12.8	Poor[1]
Streetlights	1,127	Quantity	5,637,546		30.8	Very Good
Shoreline Protection	1,431	Length (m)	4,064,212	Consumer Price Index	1.6	Very Good
Road Network Total			**244,082,628**		**31.1**	**Good**

Asset Age

Figure 12 illustrates the average age relative to service life remaining for each subcategory of the Road Network. Service life remaining is primarily based on the initial EUL of the assets, which are listed in Table 10, but may deviate if condition assessments and/or lifecycle activities have been undertaken as discussed later in this section. Most roads have at least one condition assessment documented in Citywide from the Roads Needs Study that was completed in 2015. Updated road condition assessments were completed in-house in 2022 & 2023.

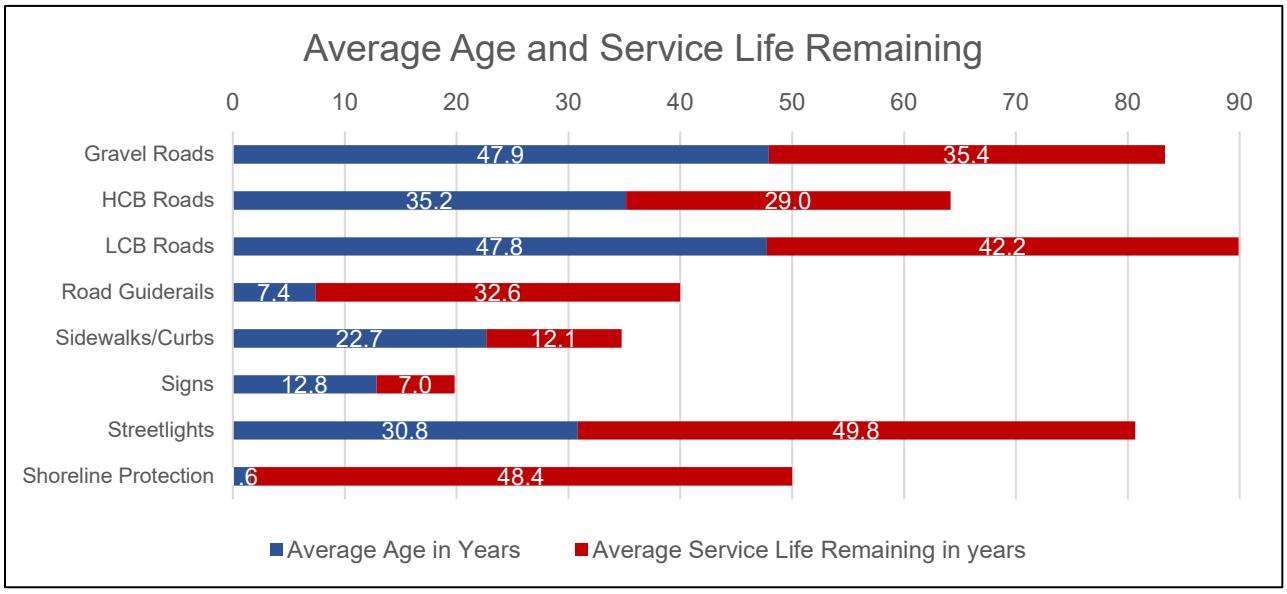
EULs are developed based on industry standards and fall under the Township's Tangible Capital Asset Policy. HCB and LCB roads are further broken down between base and surface and are depreciated at different rates. To manage the replacement of roads, lifecycle EULs have been used to schedule events as discussed later in this section.

[1] Sign assets are pooled and not an accurate representation of condition. Annual sign inspection inventory indicates that the overall condition of signs is Very Good. The Township will be working towards updating asset inventory to assessed conditions prior to 2025 AMP.

Table 10: Road Network - Estimated Useful Life

Subcategory	Estimated Useful Life (EUL)
Gravel Roads	50 Years
HCB Roads	40 Years[2]
LCB Roads	20 Years[3]
Road Guiderails	40 Years
Sidewalks/Curbs	30 Years
Signs	20 Years
Streetlights	30 to 60 Years
Shoreline Protection	50 Years

Figure 12: Road Network - Average Service Life and Service Life Remaining



[2] EUL for HCB roads is the lifecycle EUL if no lifecycle maintenance events occur.
[3] EUL for LCB roads is the lifecycle EUL if no lifecycle maintenance events occur.

Asset Condition and Assessment

The Township's current approach to assessing the condition of core Road Network assets relies on the projected conditions established from in-house condition assessments completed in 2022 & 2023. Asset profiles are set up in Citywide to allocate a tailored deterioration curve to each subcategory of road. Therefore, a condition assessment from 2022 will project to 2024 using the applicable deterioration curve within the profile. A Roads Needs Study, periodically completed by an external consultant, also recommends various lifecycle activities to optimize the useful life of roads. Condition ratings are measured using the Ministry of Transportation's Pavement Condition Index ("PCI") metric to produce an approximate structural adequacy score and physical condition. This will establish the time and need to address certain roads. Aside from this, observations from staff and the public also result in ad-hoc condition assessments to trigger events such as spot repairs.

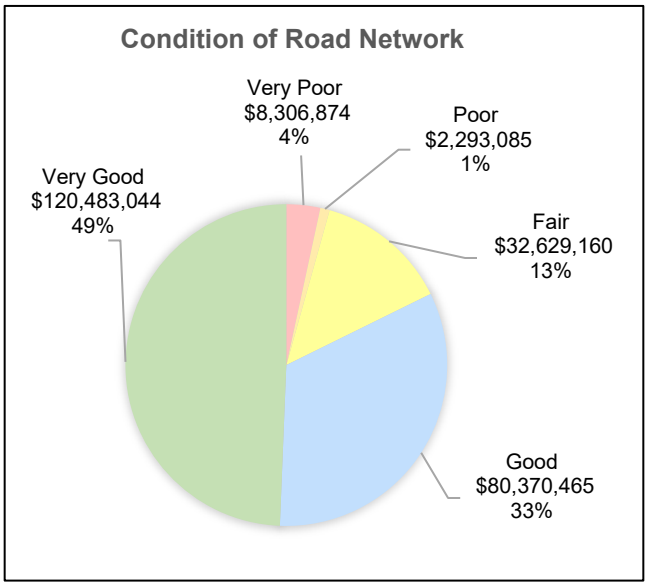
The Township does not have a formal approach to assessing the condition of the Road Network's Non-Core Assets, and therefore heavily relies on an asset's age and EUL to determine condition. Staff assessments that may shift the replacement of an asset are currently ad-hoc and are triggered by visual inspections and/or complaints. Sidewalks/Curbs have a staff-assessed projected condition from a 2019 rating. Table 11 outlines the Township's average condition of the road network to be 75 (+7) or good condition overall, with the lowest being road signs. A weighted average condition incorporates an asset's Replacement Cost to calculate an average condition for the subcategory.

Table 11: Road Network - Weighted Average Condition and Source

Subcategory	Average Assessed Condition	Condition Source
Gravel Roads	68%	Assessed
HCB Roads	76%	
LCB Roads	82%	
Road Guiderails	98%	
Sidewalks/Curbs	61%	
Signs	35%[4]	Age-based
Streetlights	91%	
Shoreline Protection	100%	
Road Network Total	75%	

[4] Sign assets are pooled and not an accurate representation of condition. Annual sign inspection inventory indicates that overall condition of signs is Very Good. Township will be working towards updating asset inventory to assessed conditions prior to 2025 AMP.

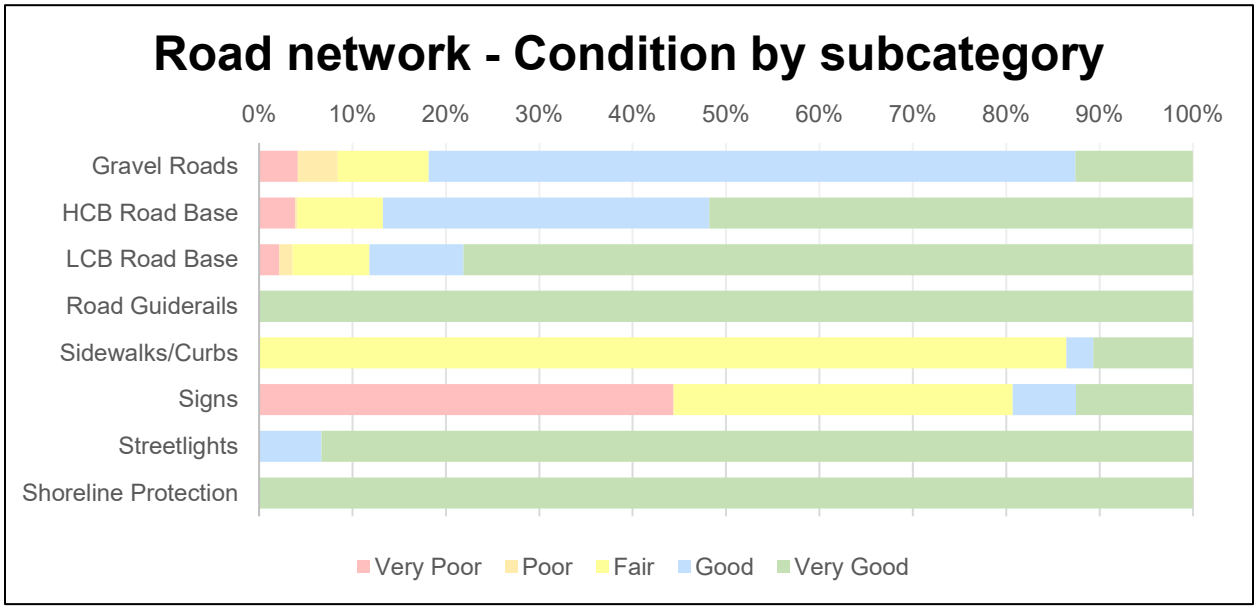
Figure 13: Road Network - Condition Summary



As shown in Figure 13, the Township's Road Network has approximately 82% of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. Overall road conditions have improved 11% since the 2022 AMP due to ongoing lifecycle activities and updated road condition assessments.

Figure 14 provides further detail on the condition of the assets by subcategory.

Figure 14: Road Network - Condition by Subcategory



Levels of Service

To adhere to the first AM milestone, O.Reg. 588/17 mandates the disclosure of certain Community and Technical LOS for Core Assets. Community LOS use qualitative descriptions to describe the scope or quality of service delivered by an asset category. Technical LOS use metrics to measure the scope or quality of service being delivered by an asset category. Table 12 outlines the required Community and Technical LOS as set out in O.Reg. 588/17 and one selected performance measure for this iteration of the AMP. Changes from 2022 are highlighted in brackets.

It is the Township's objective to finalize the development of advanced LOS within the Road Network in future iterations of the AMP. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 12: Road Network: Levels of Service

Community Levels of Service			Technical Levels of Service	
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See map in Appendix B.1	Lane-kilometers of Township Arterial Roads (MMS Road Classes 1 and 2) per land area (k/km2)	0.00 km/km2
			Lane-kilometers of Township Collector Roads (MMS Road Classes 3 and 4) per land area (k/km2)	0.50 km/km2
			Lane-kilometers of Township local roads (MMS Road Classes 5 and 6) per land area (k/km2)	1.00 km/km2 (+0.02)

Community Levels of Service			Technical Levels of Service	
Quality	Description or images that illustrate the different levels of road class pavement condition	The Township completed a Road Needs Study in 2015 in coordination with a third-party consultant. Every road section received a surface condition rating and a physical condition rating Surface Condition rating criteria segregates roads into four categories: 1-35 physical condition (poor to very poor to failed) - reconstruction of major rehabilitation is required immediately 36-55 physical condition (fair) - 1 to 5 year needs 56-70 physical condition (good) - 6 to 10 year needs 71-100 physical condition (excellent) - adequate, only maintenance & preservation scheduled. The Township has translated the above criteria to input condition assessments with Citywide's deterioration curve model. Condition ratings are as follows: 80-100 Very Good physical condition 60-79 Good physical condition 40-59 Fair physical condition 20-39 Poor physical condition 0-19 Very Poor physical condition	For paved roads in the municipality, the average pavement condition index value.	HCB Roads 76% (+2%) LCB Roads 82% (+12%)
			For unpaved roads in the municipality, the average surface condition (e.g., excellent, good, fair, or poor)	Good (Poor)
Performance			Capital re-investment rate	1.47% (-0.27%)

Lifecycle Management

Lifecycle strategies of the Road Network are segregated between the Core Assets and Non-Core Assets. To meet the requirements of O.Reg. 588/17, the focus has been to document and define the optimized lifecycle strategies within the core network, being gravel roads, HCB roads, and LCB roads.

Core Road network

The general approach to forecasting the cost of the lifecycle activities that are required to maintain the current LOS is to ensure that the proportion of assets in poor or very poor condition remains relatively stable. Staff have worked with the Township's upper-tier partner, the County of Lennox & Addington, to consider the optimal blend of each lifecycle activities to achieve the lowest Lifecycle Cost to manage the Township's roads.

Table 13 outlines the current lifecycle strategy that has been applied to the Township's gravel roads. This strategy is perpetual in nature and avoids replacement so long as lifecycle events are completed to retain the assets at a certain condition and risk range.

Table 13: Lifecycle Strategy - Gravel Roads

Gravel Roads		
Lifecycle Activity	**Type**	**Trigger/Timeline**
Grading	Operating - maintenance	Annually or as needed
Ditching		Every 20 years
Resurfacing	Operating - preventative maintenance[5]	40 mm every three years 75 mm as needed or 40 to 65 condition rating 150 mm as needed or 25 to 40 condition rating
Alleviate soft spots		As needed, as identified through road patrols
Reconstruction	Capital - replacement	As needed otherwise perpetual lifecycle via resurfacing activities

[5] Per the Township's current Tangible Capital Assets policy, the resurfacing of gravel roads is considered an operating cost.

Table 14 outlines the current lifecycle strategy that has been applied to the Township's HCB Roads. While this strategy requires attention before replacement, it extends the useful life from 40 years to approximately 94 years. Extending the useful life and replacement date of HCB roads is beneficial in aligning with the replacement and rehabilitation of underground works and other linear lifecycle strategies.

Table 14: Lifecycle Strategy - HCB Roads

HCB Roads		
Lifecycle Activity	**Type**	**Trigger/Timeline - chronologically triggered by condition**
Rejuvenator	Capital - preventative maintenance	4 years following initial construction or resurfacing - repeated up to 4 times
Micro Surfacing	Capital - rehabilitation	8 years following rejuvenator - repeated up to 4 times
Resurfacing		12 to 15 years following micro surfacing - repeated up to 3 times
Reconstruction	Capital - replacement	Projected at 94 years with lifecycle events

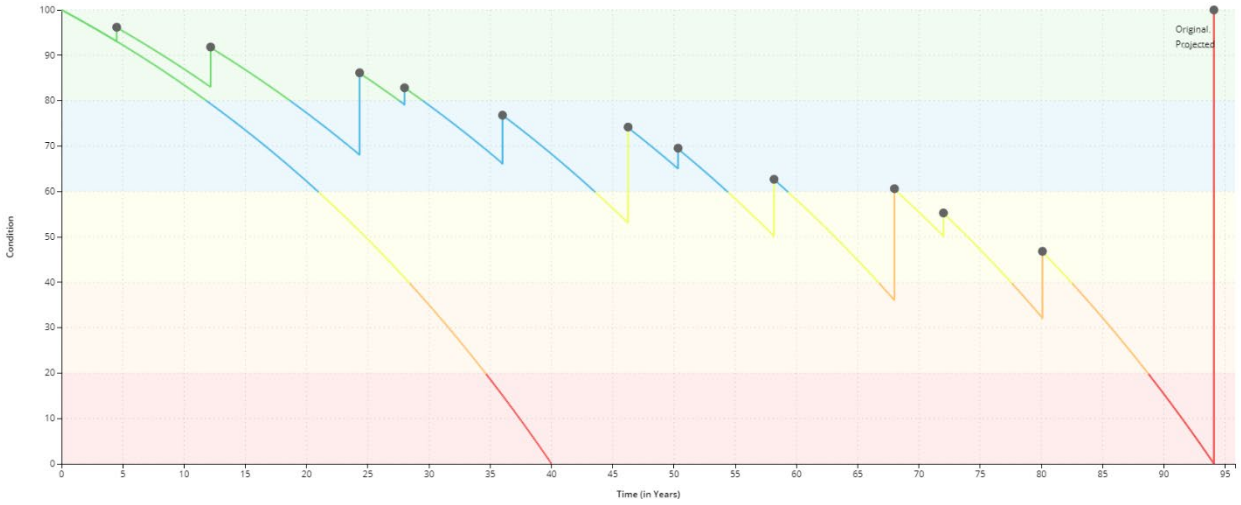
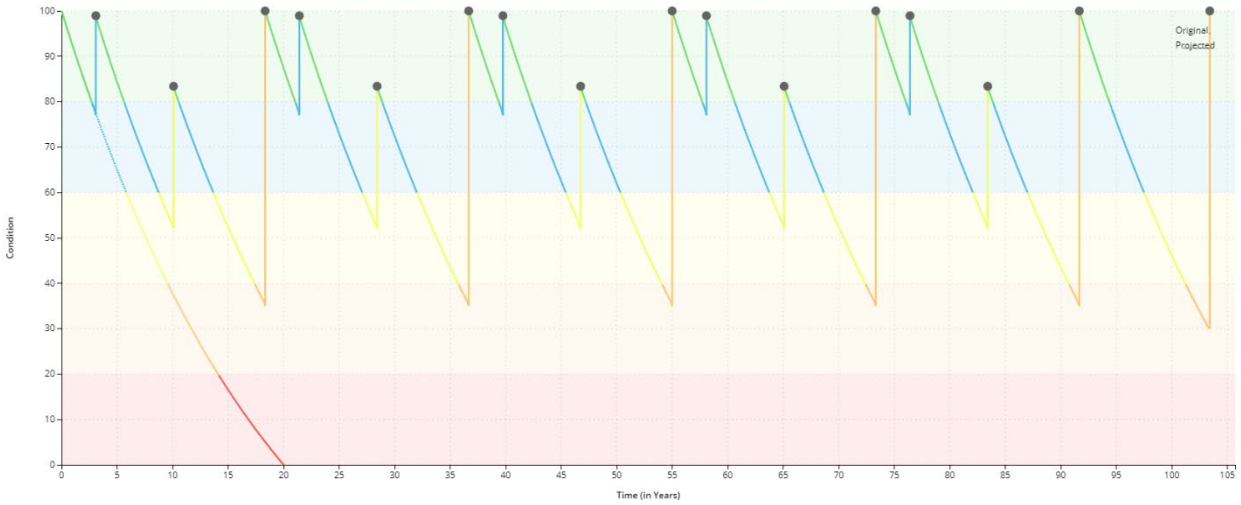


Table 15 outlines the current lifecycle strategy that has been applied to the Township's LCB Roads. This strategy is perpetual in nature and avoids replacement so long as lifecycle events are completed to retain the assets at a certain condition and risk range.

Table 15: Lifecycle Strategy - LCB Roads

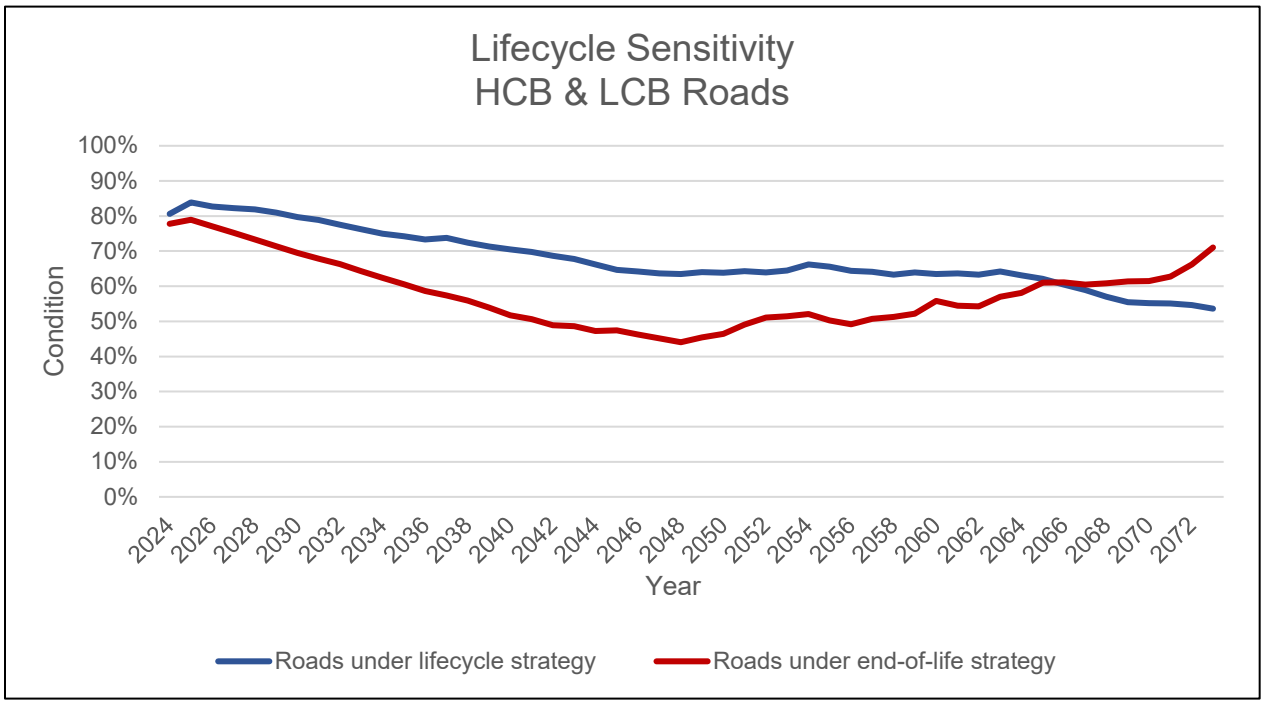
LCB Roads		
Lifecycle Activity	**Type**	**Trigger/Timeline - chronologically triggered by condition**
Single Preservation	Capital - preventative maintenance	3 years following initial construction or re-profile
Double Preservation		7 years following single preservation
Re-profile	Capital - rehabilitation	8 years following double preservation
Reconstruction	Capital - replacement	As needed otherwise perpetual lifecycle via preservation and re-profile activities



Lifecycle Sensitivity

Based on the above, Figure 15 illustrates the qualitative benefit of undertaking a lifecycle strategy to manage assets, whereby the average condition of HCB and LCB roads remains relatively stable under a lifecycle approach rather than an asset end-of-life approach. This mitigates overall risk at a lower cost.

Figure 15: Road Network - Lifecycle Sensitivity of HCB & LCB Roads



Non-core Road Network

The current lifecycle strategy of sidewalks, signs, and streetlights is to replace or rehabilitate them on an as-needed basis. Before the end of an asset's useful life, activities may be triggered prematurely via a visual inspection, reports/complaints, or accident reports. Like other infrastructure within the right-of-way, staff attempt to coordinate replacements with any underground and road works.

Asset Management Capital Forecasts

Figure 16 illustrates the road network's 10-year capital forecast, which includes lifecycle activities of roads as noted above.

As noted in Table 16, the Annual Requirement to fund the replacement and lifecycle activities of the Road Network totals $5.9 (+$0.7M) million. This incorporates annual savings in the present value of approximately $981,000 (+$194,000) if all the above-noted lifecycle strategies are undertaken at the appropriate condition rating. A more detailed 10-Year capital forecast is found in Appendix C.

Figure 16: Road Network - 10-Year Capital Forecast

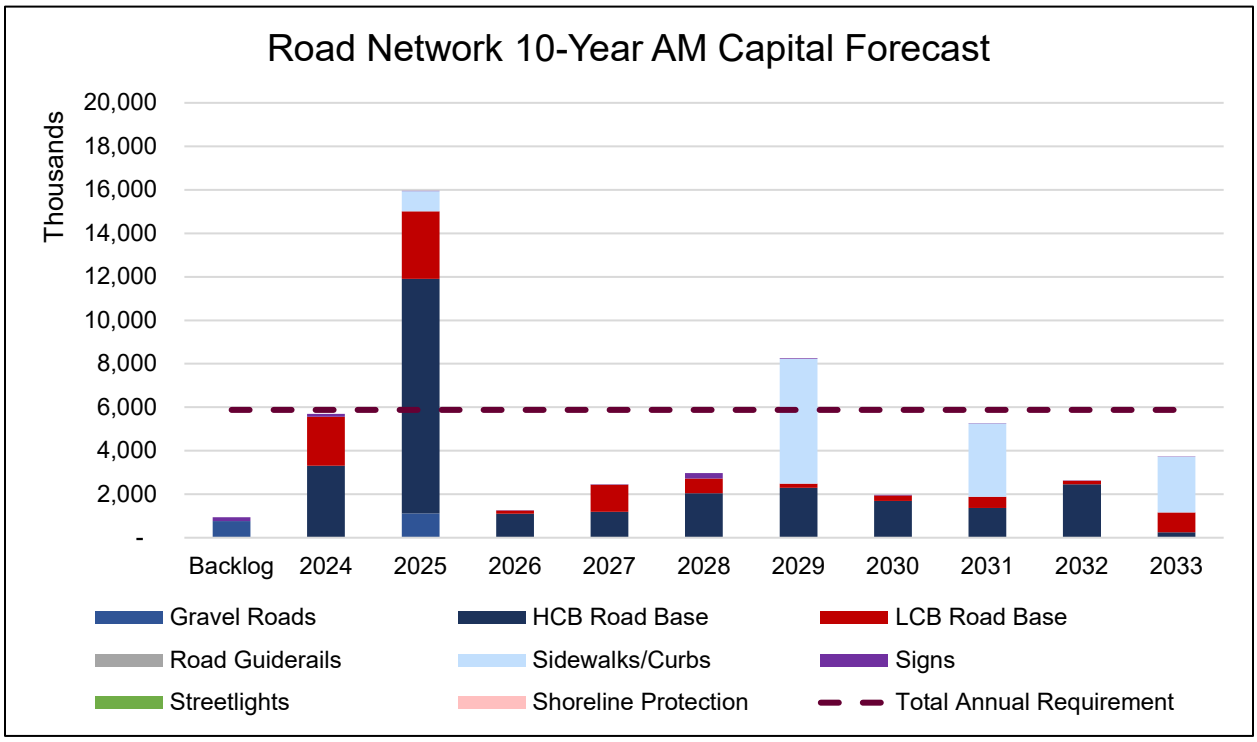


Table 16: Road Network - Annual Requirement

Subcategory	Annual Requirement - Lifecycle ($)	Annual Requirement - End of Life ($)	Savings (costs)
Core Assets	5,177,386	6,158,550	981,165
Non-Core Assets	701,757	701,757	-
Road Network Total	**5,879,143**	**6,860,308**	**981,165**

Risk Management

Risk models were developed at the asset profile level to prioritize rehabilitation and replacement of assets, with a higher focus on Core Assets. The basis for calculating risk is to determine the probability and consequence of failure of a specific asset. This is further explained in Section 2.5. The risk model to calculate the probability of failure is condition-based and is uniform across all asset categories. The consequence of failure risk model for the core Road Network is outlined in Table 17.

Table 17: Road Network - Consequence of Risk Model

Range	Economic (34%) Replacement Cost (100%)	Operational (33%) Fixed Risk (100%)	Health & Safety (33%) Road Class Attribute (100%)	Consequence of Failure
1	<$100,000	N/A	6 (Local)	Insignificant
2	>=$100,000 and <$250,000	N/A	5 (Local)	Minor
3	>=$250,000 and <$500,000	Gravel Roads	4 (Collector)	Moderate
4	>=$500,000 and <$1,000,000	LCB Roads Road Guiderails	3 (Collector)	Major
5	>$1,000,000	HCB Roads	1 & 2 (Arterial)	Severe

Figure 17 is the risk matrix generated from Citywide that incorporates the above-noted risk model and all asset subcategories in the Road Network. This matrix does not include any assets not planned for replacement. Under this model, there are four assets considered high or very high risk due to their condition or consequence of failure. These are also subsequently listed in Table 18. This represents a reduction of 23 road sections in very high and high risk categories as compared to 2022 AMP due to ongoing lifecycle activities and updated road condition assessments.

Figure 17: Road Network - Risk Matrix

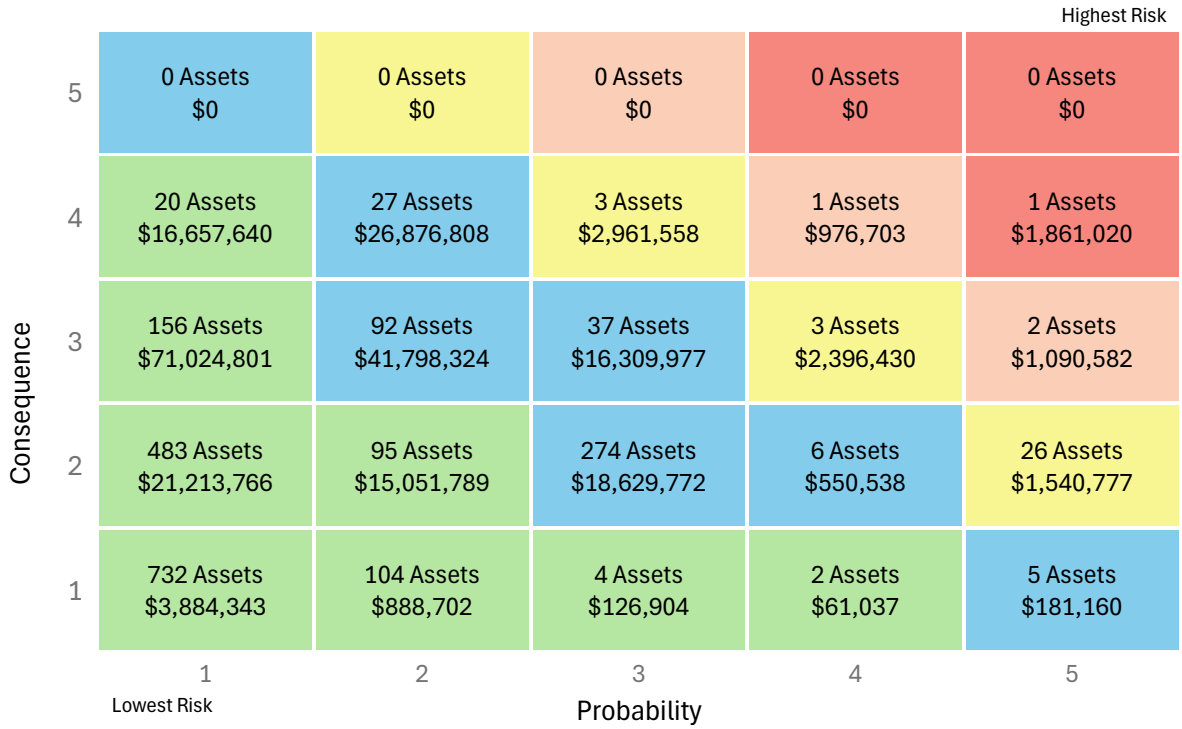


Table 18: Road Network – High-Risk Assets

Asset Name	Subcategory	GIS #	Risk Rating
Front Road[6]	HCB Roads	R1615	High
Stella Forty Foot Road[6]	HCB Roads	R1631	High
Stella Forty Foot Road[6]	HCB Roads	R1630	Very High
Stella Forty Foot Road[6]	HCB Roads	R1632	High

[6] Design included in the 2022 approved Capital Budget

3.2. BRIDGES & CULVERTS

As outlined in the O.Reg. 588/17, Bridges and Culverts form part of the Core Assets owned and managed by the Township. Within this asset category are structures that are subject to inspections under the Ontario Structure Inspection Manual ("OSIM"), as they meet the minimum span requirement of greater than or equal to three meters. The Public Works Division is responsible for the maintenance of all Bridges and Culverts owned by the Township to ensure these structures remain in adequate condition.

State of the Local Infrastructure

An inventory valuation summary for the Township's Bridges and Culverts is outlined in Table 19. This asset category is valued using a standardized CPI, and in some cases, a user-defined amount for a total value of approximately $27 million (+$2M from 2022). The average age of Bridges and Culverts is approximately 29 years and the overall condition is good.

Asset Inventory

Table 19: Bridges & Culverts - Inventory Valuation Summary

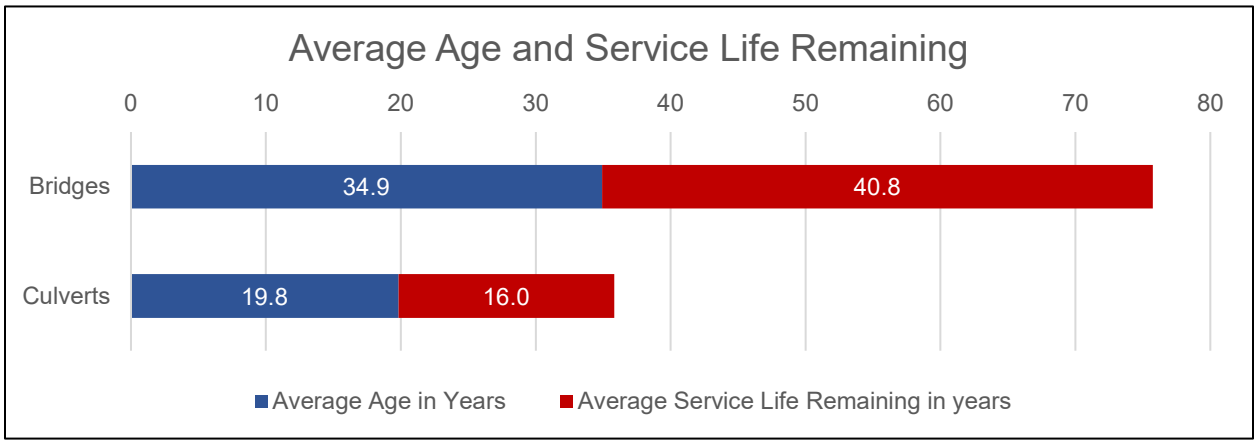
Subcategory	Description	Quantity		Replacement Costs ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Bridges	Bridges subject to OSIM inspection	15	ea.	20,672,319	User-Defined Cost/Consumer Price Index	34.9	Good
Culverts	Culverts subject to OSIM inspection	13	ea.	6,808,344		19.8	Good
Total Bridges & Culverts				**27,480,663**		**29.1**	**Good**

Asset Age

Figure 18 illustrates the average age relative to service life remaining for each subcategory of Bridges & Culverts. Service life remaining is based on the initial EUL of the assets, which range between 20 to 60 years. This may deviate if a condition assessment and/or lifecycle activities have been undertaken. As shown, Bridges and Culverts are through approximately 46% & 55% of their EULs on average, respectively.

EULs are developed based on industry standards and fall under the Township's Tangible Capital Asset Policy.

Figure 18: Bridges & Culverts - Average Age and Service Life Remaining

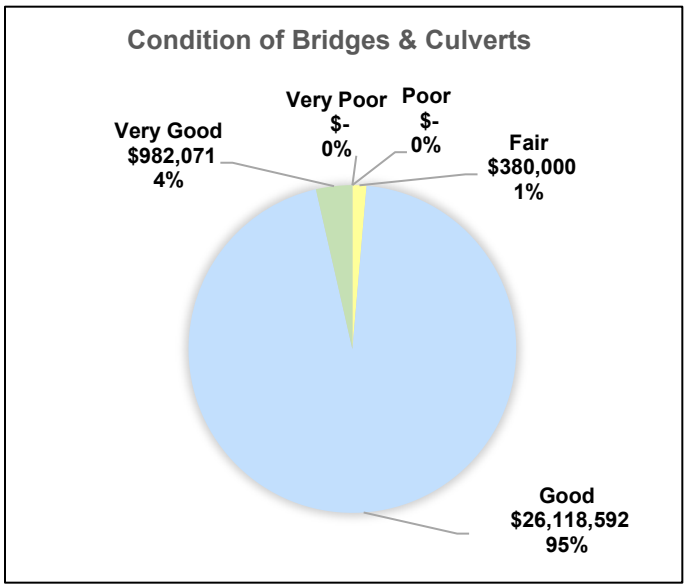


Asset Condition and Assessment

The Township's current approach to assessing the condition of Bridges & Culverts within this asset category is using the structural condition ratings generated from the provincially regulated OSIM inspection. This manual provides municipalities with a guide that outlines inspection procedures, material defects, condition states, maintenance needs, and performance deficiencies.

The last OSIM inspection was completed in 2024, therefore condition will project in accordance with the asset's respective deterioration curve and estimated useful life in Citywide. The next OSIM inspection is scheduled for 2026 as they are to be completed biennially.

Figure 19: Bridges & Culverts - Condition Summary

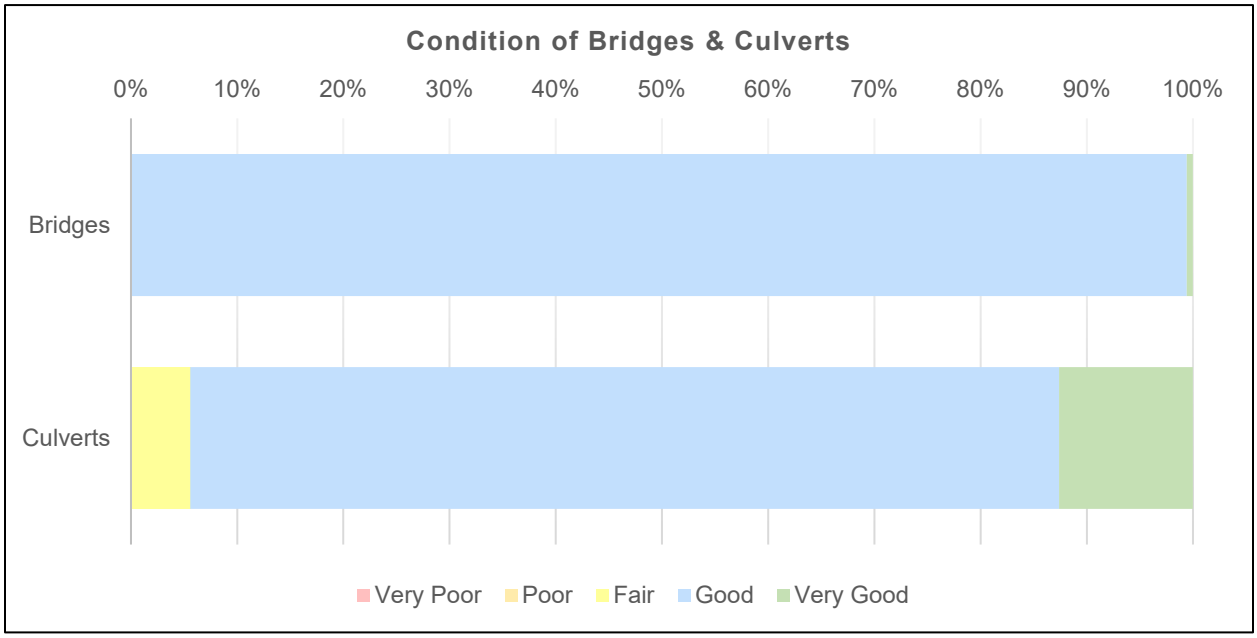


Projected conditions illustrated in Figure 19 are based on a weighted average relative to the Replacement Cost.

The Township's Bridges and Culverts asset category has approximately 99% of assets in good or very good condition due to the results of the last OSIM inspection and the spread between useful lives within the asset category. The remaining assets are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term.

Figure 20 provides further detail into the assets by subcategory.

Figure 20: Bridges & Culverts - Condition by Subcategory



Levels of Service

To adhere to the first AM milestone, O.Reg. 588/17 legislates the disclosure of certain Community and Technical LOS for Core Assets. Community LOS use qualitative descriptions to describe the scope or quality of service delivered by an asset category. Technical LOS use metrics to measure the scope or quality of service being delivered by an asset category. Table 20 outlines the required Community and Technical LOS as set out in O.Reg. 588/17 and one selected performance measure for this iteration of the AMP.

It is the Township's objective to finalize the development of advanced LOS for Bridges & Culverts in future iterations of the AMP. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 20: Bridges & Culverts - Levels of Service

Community Levels of Service			Technical Levels of Service	
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges provide reliable access to the road network for vehicles and/or pedestrians	Percentage of bridges in the Township with loading restrictions	6.7% (+3.7%)[7]
Quality	Description or images of the condition of bridges & OSIM culverts and how this would affect the use of the bridges & culverts	See map in Appendix B.2	The average condition index value for OSIM structures in the Township	72%
Performance			Capital re-investment rate	0.74%

[7] Calculation error in 2022, 1 of 15 bridges - Wing Road Bridge is a single lane structure with width restrictions.

Lifecycle Management

Table 21 outlines the current lifecycle strategy that has been applied to the Township's Bridges & Culverts.

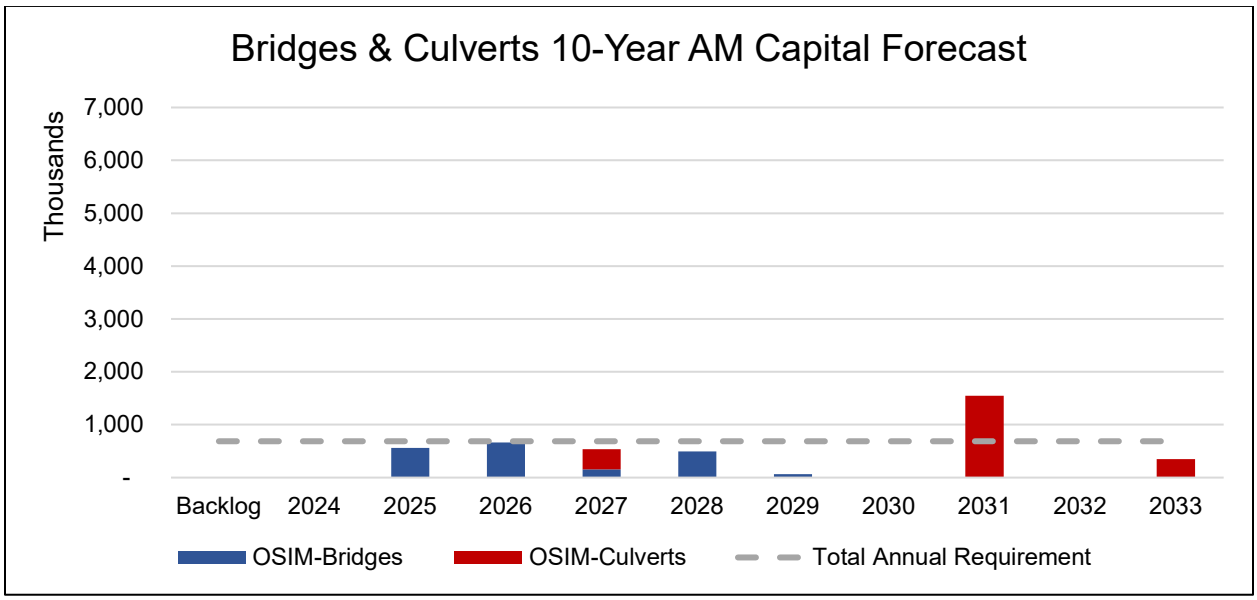
Table 21: Bridges & Culverts - Lifecycle Strategy

Lifecycle Activity	Type	Trigger/Timeline	Description
OSIM inspection	Operating – maintenance/regulatory inspection	Mandated every two years	Biennial inspections by qualified professionals using the OSIM manual provide a snapshot of the current condition of each bridge element. Maintenance, repair, and rehabilitation are planned following inspections.
Routine maintenance	Operating - preventative maintenance	Annual details are structure dependent	Routine maintenance includes excess vegetation removal, pressure washing of bearing seats and expansion joint seals, routing and sealing of cracks, and removal of ice buildup.
Concrete protectant application		Applied every three years	Concrete protective coatings are applied to the surface of the concrete to provide a waterproof sealant that protects the concrete from water absorption.
Replacement	Capital - replacement	Mandated by results of structural inspections	Replacement at end of its useful life.

Asset Management Capital Forecasts

The Annual Requirement to fund the replacement of Bridges and Culverts is currently $687,017 (+$73,017). Figure 21 illustrates the 10-year capital forecast for this asset category, however, minimal capital spending is anticipated in the short-term based on the results of the 2024 OSIM inspection with higher costs expected beyond the 10-year forecast period. The total annual requirement shown is based on the full lifecycle of the assets.

Figure 21: Bridges & Culverts - 10-Year Capital Forecast



Risk Management

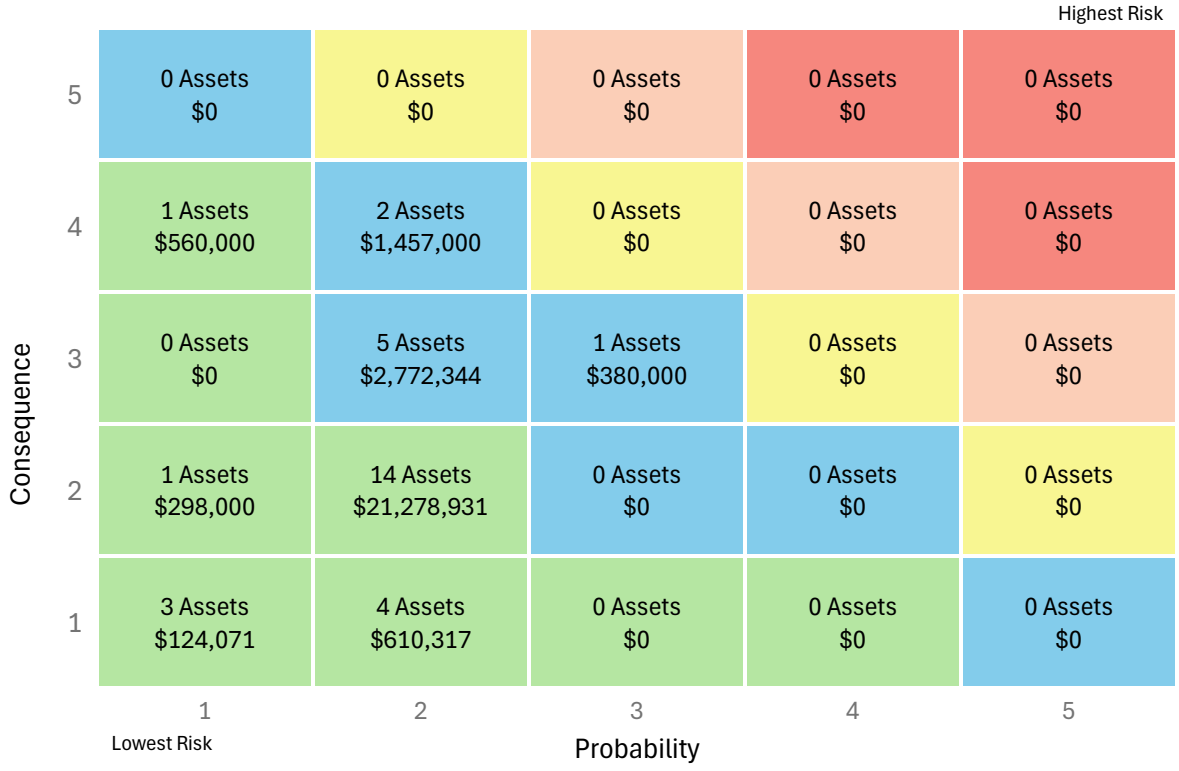
Risk models were developed at the asset profile level to prioritize the rehabilitation and replacement of assets, with a higher focus on Core Assets. The basis for calculating risk is to determine the probability and consequence of failure for each asset. This is further explained in Section 2.5. The risk model to calculate the probability of failure is condition-based and is uniform across all asset categories. The consequence of failure risk model for Bridges & Culverts is outlined in Table 22.

Table 22: Bridges & Culverts - Consequence of Failure Risk Model

Range	Economic (34%)	Health & Safety (66%)	Consequence of Failure
	Replacement Cost (100%)	Road Class (100%)	
1	<$100,000	6 (Local)	Insignificant
2	>=$100,000 and <$250,000	5 (Local)	Minor
3	>=$250,000 and <$500,000	4 (Collector)	Moderate
4	>=$500,000 and <$1,000,000	3 (Collector)	Major
5	>$1,000,000	1 & 2 (Arterial)	Severe

Figure 22 is the risk matrix generated from Citywide that incorporates the above-noted risk model. This matrix does not include any assets not planned for replacement or with a nominal Replacement Cost. Under this model, there are no assets considered high or very high risk due to their condition or consequence of failure.

Figure 22: Bridges & Culverts - Risk Matrix



3.3. STORM NETWORK

The Township's Storm Network manages and treats stormwater to protect residents, businesses, and its natural built environments. Stormwater, derived from rain and snowmelt, enters the storm system through catch basins, creeks, ditches, and other stormwater channels. The system drains stormwater away from buildings, roads, and other surfaces.

Due to the increased intensity and frequency of storm events from climate change, stormwater management is becoming increasingly crucial, hence the requirement to address the issue within the Township's Strategic Asset Management Policy. If the Storm Network is not well maintained, appropriately sized, or in a good state of repair to accommodate added flows, this can increase the risk of overland flooding.

State of the Local Infrastructure

Asset Inventory

The Public Works division operates and maintains the Township's Storm Network, which is subcategorized in Table 23 with an overall Replacement Cost of $72 million (+$11 million from 2022). These values were developed based on historic construction costs and consumer price index. This asset category the overall condition is very good at an average age of 22 years and forms part of the core infrastructure as outlined in O.Reg. 588/17.

Table 23: Storm Network - Inventory Valuation Summary

Subcategory	Quantity		Replacement Costs ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Cross Culverts	1,613	Quantity, Length (m)	7,643,578	Consumer Price Index	24.6	Fair
Driveway Culverts	3,812	Quantity, Length (m)	5,317,396		3.9	Very Good
Catchbasins	1,294	Quantity	5,235,524		22.0	Very Good
Storm Manholes	601	Quantity	5,722,722	User-Defined Cost/Unit	20.3	Very Good
Storm Mains	43,121	Length (m), Quantity	42,931,797		23.2	Very Good
Storm Water Management Facilities	8	Quantity	4,575,614	Consumer Price Index	11.0	Very Good
Storm Water Treatment Units	1	Quantity	181,643		7.3	Very Good
Storm Network Total			**71,608,274**		**21.5**	**Very Good**

Asset Age

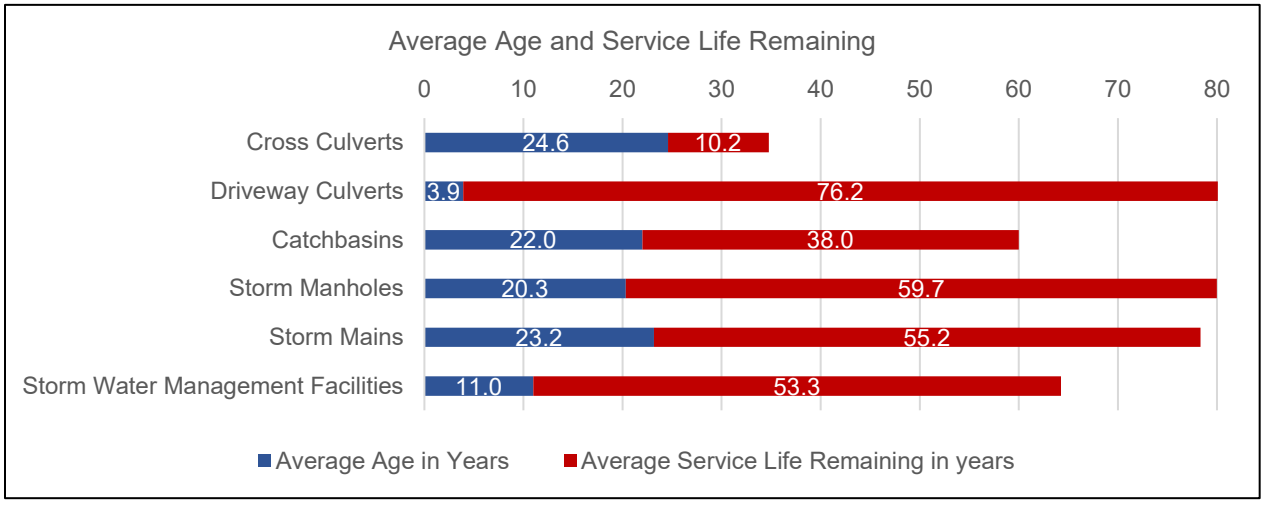
Figure 23 illustrates the average age relative to service life remaining for each subcategory of the Storm Network. Service life remaining is based on the initial EUL of the assets, which are listed in Table 24, but may deviate if a condition assessment and/or lifecycle activities have been undertaken.

EULs are developed based on industry standards and are in accordance with the Township's Tangible Capital Asset Policy. A range in EUL is important to ensure certain components of an asset (where applicable) are depreciated and forecasted for replacement appropriately.

Table 24: Storm Network - Estimated Useful Lives

Division	Estimated Useful Life (EUL)
Cross Culverts	30 to 60 Years
Driveway Culverts	80 Years
Catch Basins	60 Years
Storm Manholes	80 Years
Storm Mains	30 to 80 Years
Storm Water Management Facilities	60 to 80 Years
Storm Water Treatment Units	80 Years

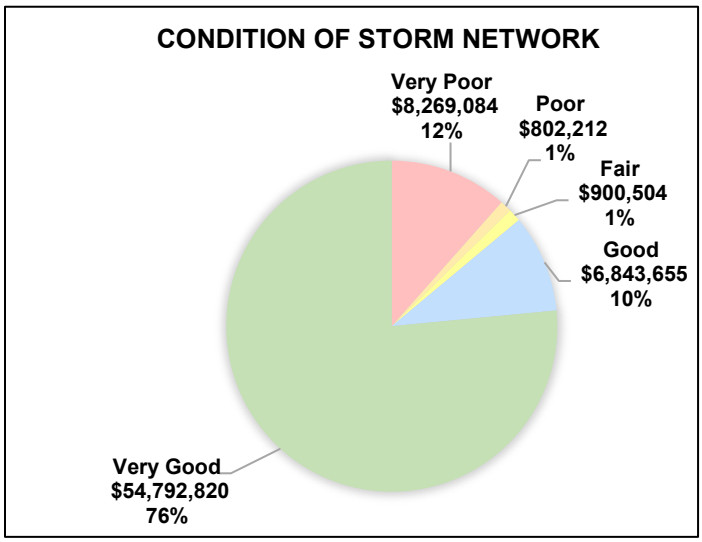
Figure 23: Storm Network - Average Age and Service Life Remaining



Asset Condition and Assessment

The Township does not have a formal approach to assessing the condition of assets within the Storm Network, and therefore heavily relies on an asset's age and EUL to determine condition. Staff assessments that may shift the replacement of an asset are currently ad-hoc and are triggered by visual inspections and/or complaints

Figure 24: Storm Network - Condition Summary

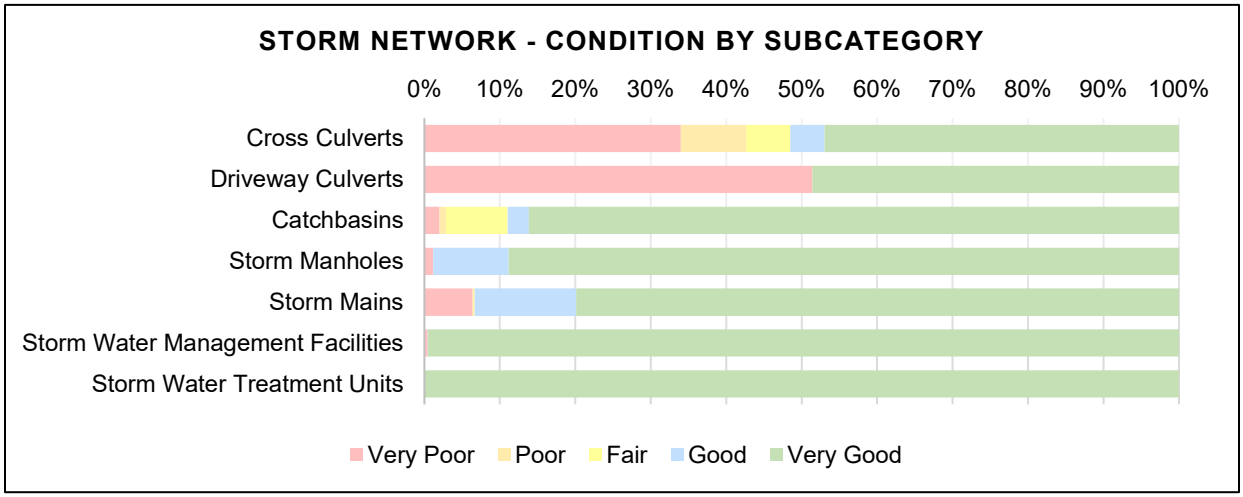


Projected conditions illustrated in Figure 24 are based on a weighted average relative to the Replacement Cost.

The Township's Storm Network has approximately 86% (-2%) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. Approximately 66% of the Replacement Costs associated with poor and very poor condition relates to culverts.

Figure 25 provides further detail on assets by subcategory, highlighting a generally poor condition of cross culverts compared to other subcategories. As noted, driveway culverts are primarily pooled and are not an accurate representation of the asset subcategory.

Figure 25: Storm Network - Condition by Subcategory



Levels of Service

O.Reg. 588/17 requires legislated Community LOS for Core Assets, using qualitative descriptions to define the scope or quality of service delivered by an asset category. O.Reg. 588/17 also requires Technical LOS for Core Assets which use metrics to measure the scope or quality of service being delivered by an asset category. Table 25 lists the Community and Technical LOS as set out in O.Reg. 588/17 and one selected performance measure for this iteration of the AMP.

It is the Township's objective to finalize the development of advanced LOS within the Storm Network in future iterations of the AMP. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 25: Storm Network - Levels of Service

Community Levels of Service			Technical Levels of Service	
Scope	Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	Rural properties outside of floodplains are protected from flooding. See maps in Appendix B.3.	Percentage of properties in municipality resilient to a 100-year storm	The percentage of properties resilient to a 100-year storm is not available at the time of this report. All stormwater systems that are within sub-divisions that were constructed after 1970 are protected from the 100-year storm. Some areas of old Odessa are 'drainage supported only' as opposed to formal minor storm sewer serviced.
Performance			Capital re-investment rate	0.44%

Lifecycle Management

Table 26 lists the current lifecycle strategy adopted by the Township to maintain the current LOS associated with Storm Network.

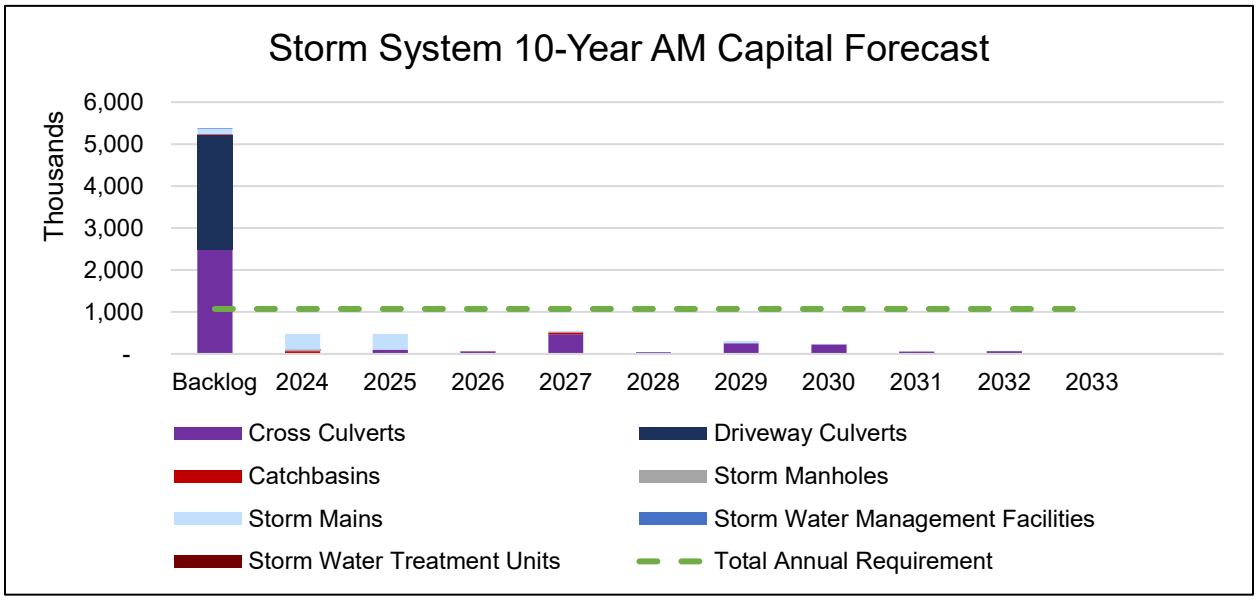
Table 26: Storm Network - Lifecycle Strategy

Lifecycle Activity	Type	Trigger/Timeline	Description
Sediment removal - catch basins & storm manholes	Operating - maintenance	Annually	Sediment removal reduces abrasion within the storm system and discharges at each outlet.
Storm main flushing and sediment removal in ditches		As required	Sediment removal within mains reduces abrasion and corrosion and maintains design flow.
Facility inspections		In accordance with Environmental Compliance Approvals	
Culvert inspections		Completed during road rehabilitation projects as identified by condition ratings. Ad hoc inspections are as required.	
Replacement	Capital - replacement	Mandated by results of inspections or confirmed condition rating	Replacement at end of its useful life.

Asset Management Capital Forecasts

Figure 26 illustrates the Storm Network's 10-year capital forecast. Almost all the backlog relates to pooled cross and driveway culverts that require attention in Citywide. The Annual Requirement to fund the replacement of the Storm Network totals $1,071,964 (+$193,964). A more detailed 10-year capital forecast is found in Appendix C.

Figure 26: Storm Network - 10-Year Capital Forecast



Risk Management

As explained in Section 2.5, risk models have been developed for each asset category to prioritize the rehabilitation and replacement of assets, with a higher focus on the Core Assets. The consequence of failure risk model for storm mains, storm manholes, and catch basins is outlined in Table 27. The risk models for Stormwater Management Facilities and Driveway culverts are primarily based on Replacement Cost.

Table 27: Storm Network - Consequence of Risk Model

Range	Economic (34%) Replacement Cost (100%)	Operational (33%) Fixed Risk/Asset Sub-Type (100%)	Health & Safety (33%) Road Class Attribute (100%)	Consequence of Failure
1	<$25,000	N/A	6 (Local)	Insignificant
2	>=$25,000 and <$75,000	Catch basins, Storm Manholes Storm Mains <450 mm	5 (Local)	Minor
3	>=$75,000 and <$125,000	Cross Culverts Storm Mains 450 - 750 mm	4 (Collector)	Moderate
4	>=$125,000 and <$200,000	Storm Mains 800 - 1,200 mm	3 (Collector)	Major
5	>$200,000	Storm Mains >1,200 mm	1 & 2 (Arterial)	Severe

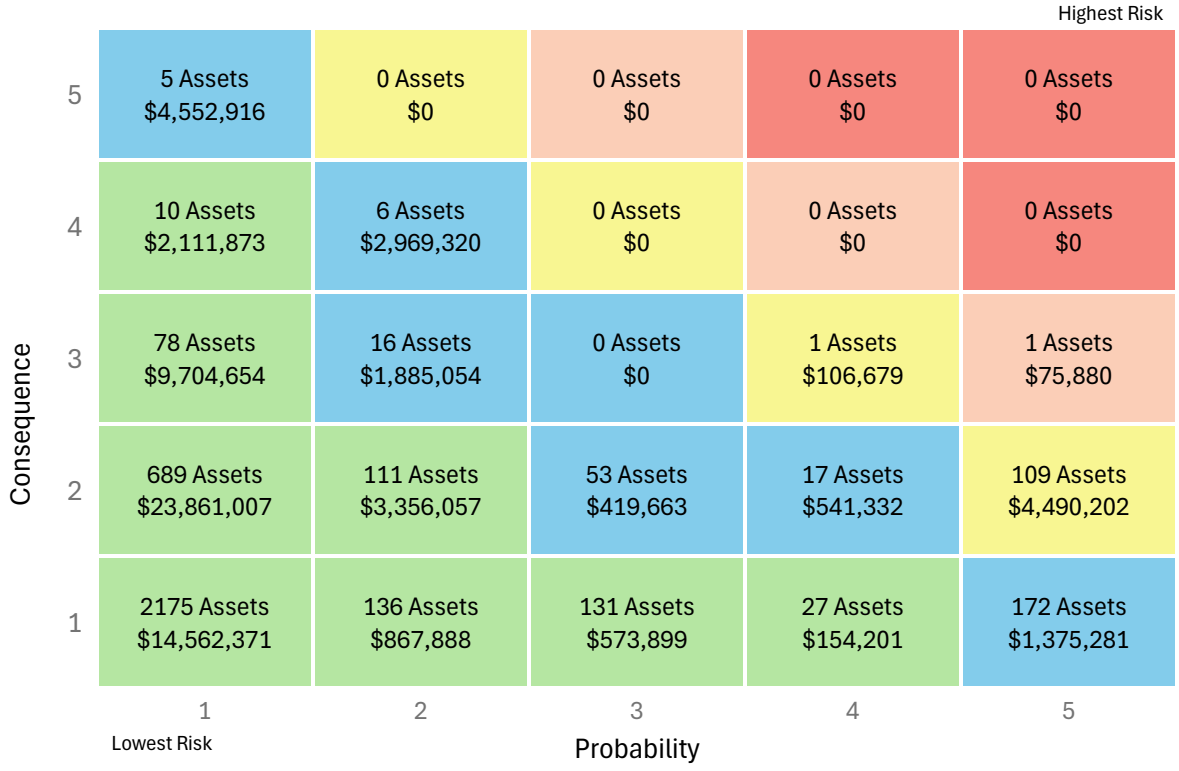
Figure 27 is the risk matrix generated from Citywide that incorporates the above-noted risk model. This matrix does not include any assets not planned for replacement. Under this model, there is one asset considered high or very high risk due to their condition or consequence of failure. This asset is also subsequently listed in Table 28: Storm Network - High-Risk Assets.

Table 28: Storm Network - High-Risk Assets

Name	AMP Subcategory	Risk Rating
Storm Sewer on Main Street - Bath	Storm Mains	High[8]

[8] This asset is scheduled for replacement as part of the Main Street – Bath (East) project.

Figure 27: Storm Network - Risk Matrix



3.4. BUILDINGS

The Township owns and maintains several Buildings that provide services to residents and businesses. This section compiles the Buildings that are considered non-core as per O.Reg. 588/17, which includes municipal offices, fire stations, recreation centres, and garages.

State of the Local Infrastructure

Table 29 lists and describes the Township's Buildings by division/department. With an overall Replacement Cost of $42 million (+$8M from 2022), the average age is 22 years with an overall condition of good. Per note 11 below, the replacement cost of Buildings currently cannot be considered a reliable estimate. The Township is undertaking Building Condition Assessments and will provide assessed conditions and replacement costs as part of the 2025 AMP.

Asset Inventory

Table 29: Buildings - Asset Valuation Summary

Subcategory	Description	Quantity		Replacement Costs ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Corporate Services	Municipal office, cemetery storage shed	2	ea	3,443,384	Consumer Price Index	26.8	Good
Emergency Services	Training facility, training towers (2), burn room, storage shed, fire stations (4)	9	ea	11,098,519		19.2	Very Good
Recreation & Facilities Services	Recreation centre, canteen, Leisure Centre & Hall, Parks & Facilities Office, storage/ maintenance sheds (5), shelters (4), outdoor rink, community hall, libraries (2), other (4)	22	ea	18,366,949		24.6	Fair
Transit Services	Bus Shelters	18	ea	175,968		16.2	Fair
Transportation Services	Public Works garages (2), sand and salt storage facilities (6)	8	ea	8,898,228		19.8	Very Good
Waste Management Services	Landfill facility	1	ea	21,140		6.6	Very Good
Buildings Total				**42,004,188** [9]		**22.1**	**Good**

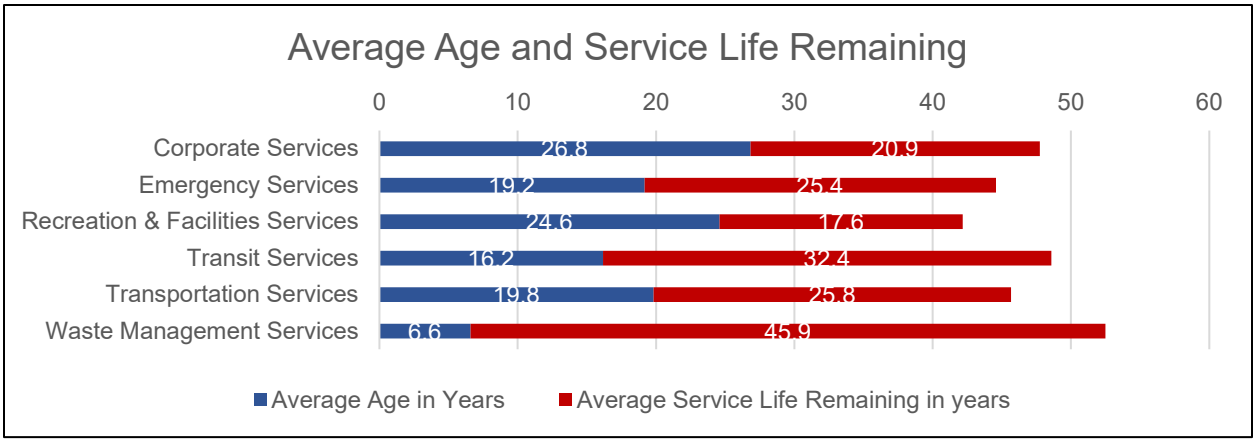
[9] Improvements to the Buildings asset data are ongoing as staff continues to prospectively update its components and capitalization processes. As such, the replacement value of Buildings currently cannot be considered a reliable estimate.

Asset Age

The EUL of Buildings range between five to 80 years depending on the component of the building, which includes fixtures, site services, HVAC, structural, mechanical, and electrical. These useful lives are in accordance with the Township's Tangible Capital Asset Policy.

Figure 28 illustrates the average age and service life remaining by division. The sum of these two factors may not necessarily total the asset's EUL, as an internal condition assessment may adjust the remaining useful life.

Figure 28: Buildings - Average Age and Service Life Remaining



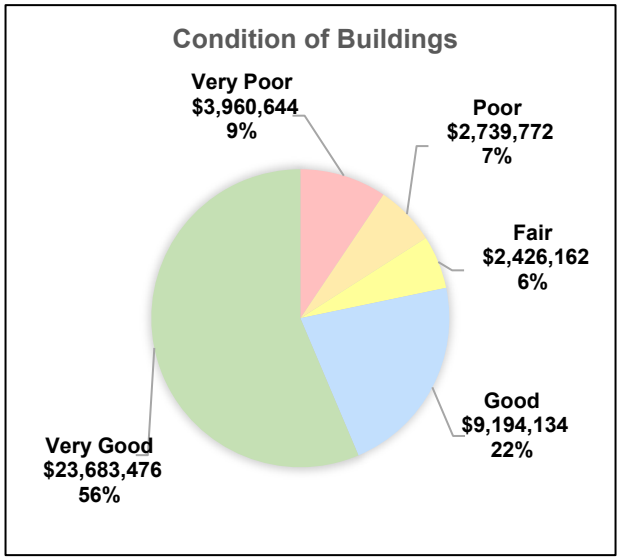
Asset Condition and Assessment

The Township's historic and current approach to assessing the condition of non-core Buildings relies on the asset's age and EUL. Internal inspections and failures have played a role in identifying and prioritizing the rehabilitation and replacement of non-core Buildings.

Currently, the Township does not have a formal condition assessment approach for non-core Buildings. It is important for the Township to develop and implement a formal and comprehensive condition assessment approach that proactively assesses this asset category. This will be done prior to the 2025 AMP.

Projected conditions illustrated in Figure 29 are based on a weighted average relative to the Replacement Cost.

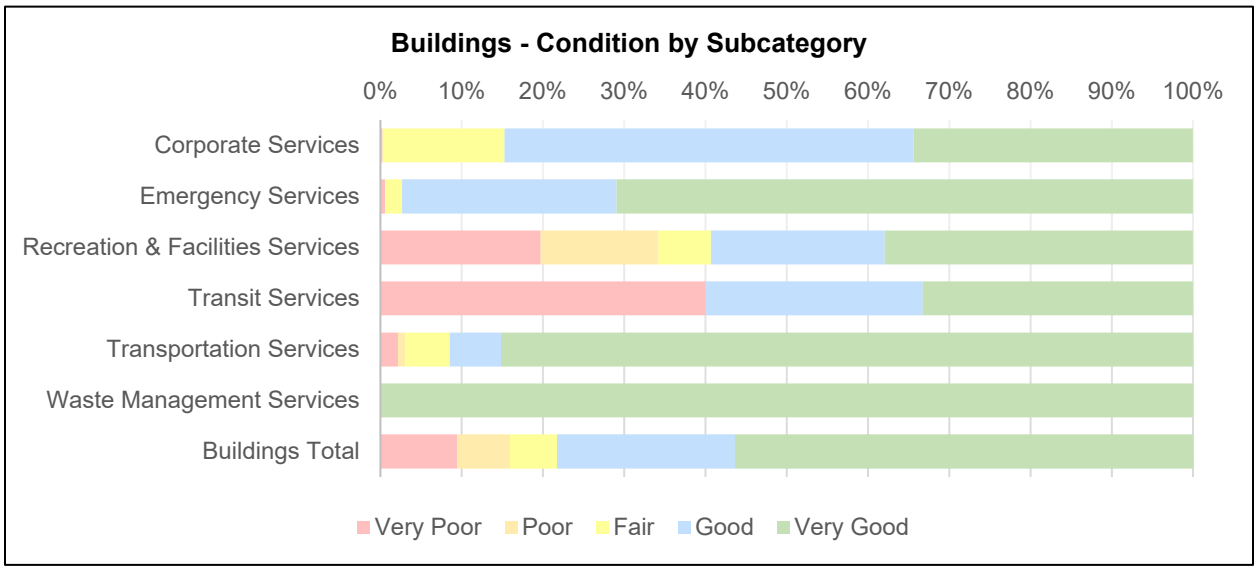
Figure 29: Buildings - Condition Summary



The Township's non-core Buildings have approximately 78% (-4%) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. Approximately 70% of the Replacement Values associated with poor and very poor condition relates to Recreation Services Buildings, and more specifically, the W.J. Henderson Recreation Centre which has a major infrastructure project in progress. Current replacement costs are not considered a reliable estimate at this time. It is expected when refined in future AMP updates, replacement costs will increase.

Figure 30 provides further detail on the assets by subcategory. Condition assessments have not been historically documented within Citywide. It is a priority for staff to ensure assessments are implemented periodically.

Figure 30: Buildings - Condition by Subcategory



Levels of Service

Buildings are considered a Non-Core Asset category and as such Technical and Community LOS are not defined in O.Reg. 588/17; municipalities are to develop their own.

Table 30 lists the Community and Technical LOS developed by the Township. It is the Township's objective to finalize the development of advanced LOS in future AMP updates. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 30: Buildings: Levels of Service

Community Levels of Service			Technical Levels of Service	
Scope	Description, which may include maps of municipally owned buildings.	See maps in Appendix B.4		
Safety			% of facilities where annual internal inspections have been completed	100%
Quality			% of facility assets that are in fair or better condition (Age or Condition Based)	84%
Usage			Number of bookings at Recreational Facilities	12238
Performance			Capital re-investment rate	0.63%

Lifecycle Management

Township Buildings are subject to inspections to adhere to health and safety requirements and structural deficiencies. Certain Buildings, such as within the subcategory of Emergency Services are required to provide certain LOS as laid out in their master plan. The maintenance of other buildings is dealt with on a case-by-case basis.

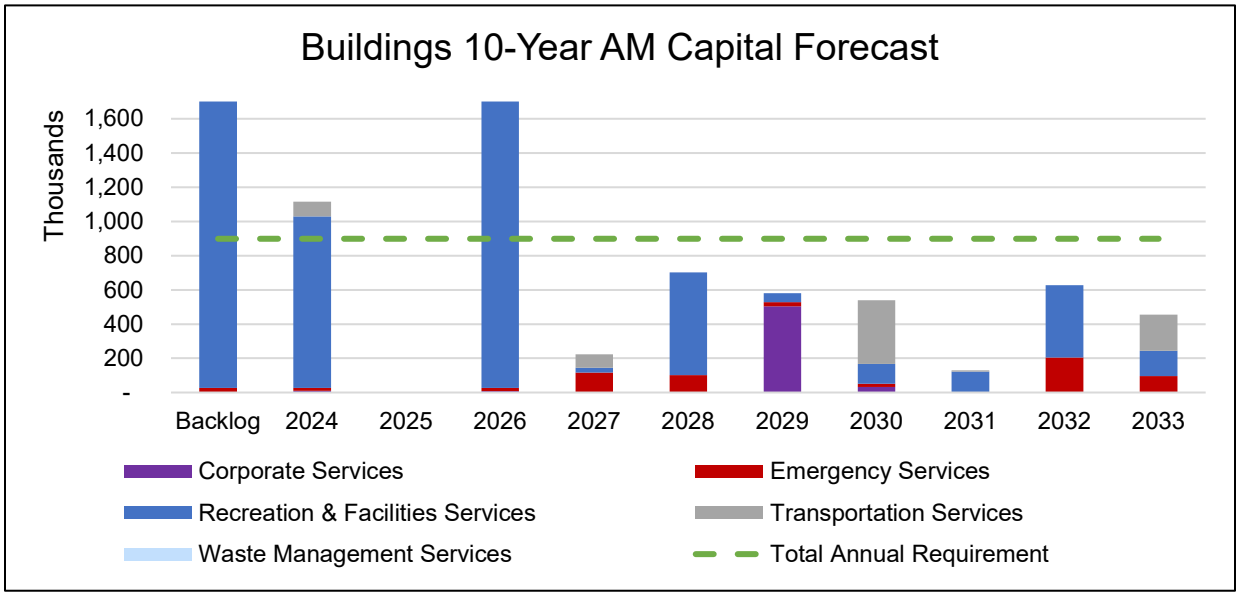
The replacement of Building components is scheduled for Council's consideration based on condition, age, and historical maintenance costs. Currently, the Township does not have a formal approach to managing the lifecycle of non-core Buildings.

Asset Management Capital Forecasts

Based on current data, the Annual Requirement to fund the capital replacement of Buildings is $898,677 (+$154,077). The 10-year capital forecast totaling $9.6 (+$2.1M) million is illustrated in Figure 31. A more detailed 10-year capital forecast is found in Appendix C.

As noted above, Buildings are currently using an age-based condition rating which is not very accurate compared to using a Building Condition Assessment system. The Township plans to have BCAs completed for all buildings prior to the 2025 AMP which should provide a more accurate 10-year capital forecast.

Figure 31: Buildings - 10-Year Capital Forecast



Risk Management

As further explained in Section 2.5, the risk model to calculate the probability of failure is condition-based and is consistent across all asset categories. The consequence of failure risk model for Buildings is outlined in Table 31.

Table 31: Buildings - Consequence of Failure Risk Model

Range	Economic (34%) Replacement Cost (100%)	Social (33%) Fixed Risk by Service Area (100%)	Health & Safety (33%) Fixed Risk by Asset Sub-Type (100%)	Consequence of Failure
1	<$75,000	Corporate Services	Building Fixtures	Insignificant
2	=>$75,000 and <$125,000	Utilities Services (non-core)[10]	Building Site Services	Minor
3	=>$125,000 and <$250,000	Transportation Services	Building HVAC	Moderate
4	=>250,000 and <$500,000	Recreation Services	Building Electrical Building Mechanical	Major
5	> $500,000	Emergency Services	Building Structural	Severe

Figure 32 is the risk matrix generated from Citywide that incorporates the above-noted risk model. This matrix does not include any assets not planned for replacement or with a nominal Replacement Cost. Under this model, there are nine assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 32.

[10] Non-core buildings operated by the Utilities division are included in Section 4.3.

Figure 32: Buildings - Risk Matrix

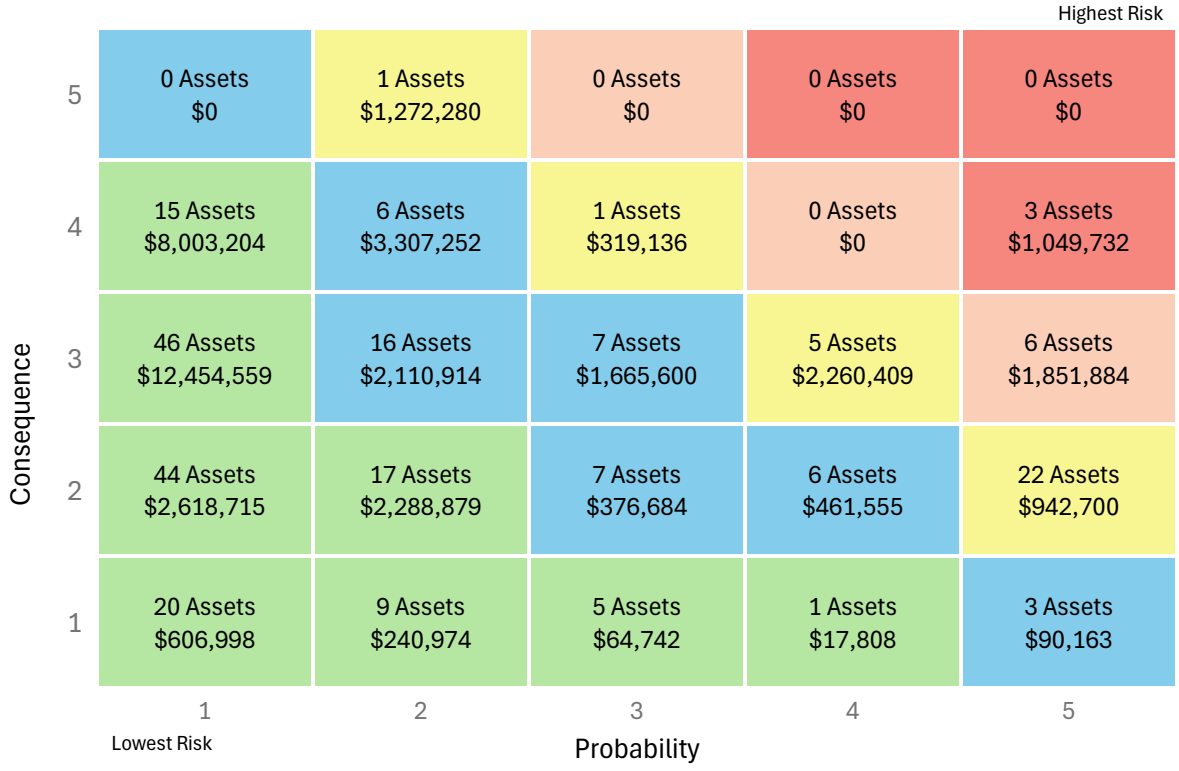


Table 32: Buildings - High-Risk Assets

Asset Name	Subcategory	Risk Rating
W.J. Henderson Lobby & Arena Electrical	Recreation & Facilities Services	Very High
W.J. Henderson Amherstview Library Electrical	Recreation & Facilities Services	Very High
W.J. Henderson Pool Flat Roof	Recreation & Facilities Services	High
W.J. Henderson Arena Rink Boards and Glass	Recreation & Facilities Services	High
W.J. Henderson Arena plumbing	Recreation & Facilities Services	Very High
Finkle's Shore Park Pavilion	Recreation & Facilities Services	High
Millcreek Park Gazebo Structure	Recreation & Facilities Services	High
Heritage Fairfield House Weather Proofing	Recreation & Facilities Services	High[11]
Layer Cake Hall - Building Structure	Recreation & Facilities Services	High[12]

[11] This asset is currently included for design in the approved 2025 capital budget.
[12] This asset is currently under repair.

W.J. Henderson Recreation Centre

The W.J. Henderson Recreation Centre was acquired in 1974 and is the Township's primary recreation facility that houses a pool, indoor skating rink, and library. The facility has undergone extensive repairs, maintenance, and rehabilitation within the last decade. It is important to reiterate that, in accordance with the first milestone of O.Reg. 588/17, staff have prioritized necessary adjustments to its Citywide asset data for Core Assets, which excludes all asset categories relating to the W.J. Henderson Recreation Centre.

The SOLI illustrated in this AMP is as of December 31, 2023. At that time, the expectation was that the pool would reopen in 2022 coming out of COVID restrictions. During the expected reopening of the pool, it was discovered the pool basin had failed, reaching its end of useful life. This was with numerous repairs, maintenance, and rehabilitation undertaken on the pool over the past several years. As a result, the pool was closed indefinitely in 2022, as the Township works toward a possible replacement.

As noted above, staff prioritized necessary adjustments to Citywide asset data for Core Assets, in accordance with the first milestone of O. Reg 588/17. The example of the pool, and its subsequent failure, highlights the need for asset data improvements and updates as the Township's asset management activities move towards future milestones for non core assets. It is important that the Township develop condition assessments other than aged based. It also highlights the need for updates to replacement costs as current values are not considered a reliable estimate in some cases, as illustrated by the pool failure.

In 2024 Loyalist Township commenced a $49.5M renovation project which includes a renovation to the majority of assets included in the arena area and an addition to the facility which will include the new eight lane swimming pool and a leisure pool. The existing pool basin will be converted into new aquatics change rooms and the existing change rooms will be turned into general community gathering space. The project included net-zero ready mechanical systems design that will electrify the facility with the exception of the library gas boiler. The project will also include accessibility upgrades such as the installation of an elevator, universal washrooms, universal changerooms, barrier free washrooms, and an in-arena accessible viewing platform. This project will be transformational for the community and includes numerous asset management lifecycle improvements throughout the facility.

3.5. MACHINERY, FURNITURE, AND EQUIPMENT

The Township owns and utilizes a variety of Machinery, Furniture, and Equipment to assist in providing services to residents and businesses. This section compiles the Machinery, Furniture, and Equipment that is considered non-core as per O.Reg. 588/17, which includes items relating to information technology, firefighting, parks, the recreation centre, road maintenance, and waste management.

State of the Local Infrastructure

Asset Inventory

Table 33 lists and describes the Township's Machinery, Furniture, and Equipment by division/department. With an overall Replacement Cost of $8.8 million (+0.8M from 2022), the overall condition of this asset category is good at an average age of 10 years.

Table 33: Machinery & Equipment - Asset Valuation Summary

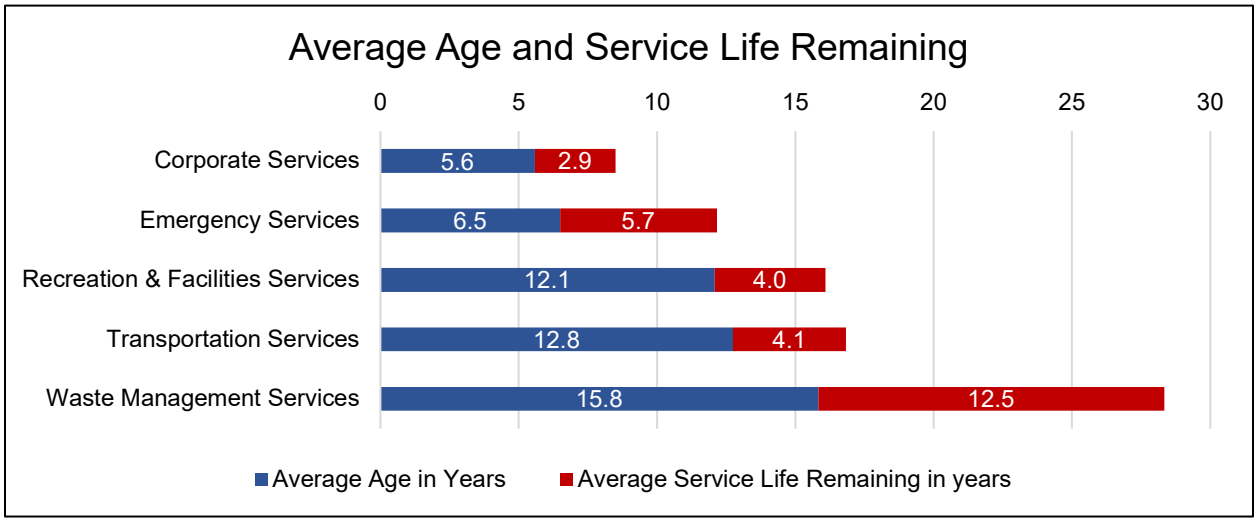
Subcategory	Description	Quantity		Replacement Cost ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Corporate Services	IT equipment, furniture & fixtures	167	Quantity	848,166	Consumer Price Index/User-Defined Cost	5.6	Fair
Emergency Services	Pooled equipment such as bunker& rescue gear, hoses, extrication kits, breathing apparatuses, etc.	45	Quantity	1,425,240		6.5	Good
Recreation & Facilities Services	Various machinery & equipment at the WJH Henderson Centre, mowers, fitness equipment, etc.	46	Quantity	1,933,675		12.1	Fair
Transportation Services	Loaders, street sweepers, tractors, excavator, survey equipment, radio repeaters, various public works garage equipment, etc.	56	Quantity	3,611,858		12.8	Fair
Waste Management Services	Compactor, weigh scale, loader, etc.	6	Quantity	975,351		15.8	Very Good
Machinery, Furniture, and Equipment Total				**8,794,290**		**10.0**	**Good**

Asset Age

The EUL of Machinery, Furniture, and Equipment ranges between five to 25 years and is in accordance with the Township's Tangible Capital Asset Policy.

Figure 33 illustrates the average age and service life remaining by department. The sum of these two factors may not necessarily total the asset's EUL, as an internal condition assessment may adjust the remaining useful life.

Figure 33: Machinery & Equipment - Average Age and Service Life Remaining

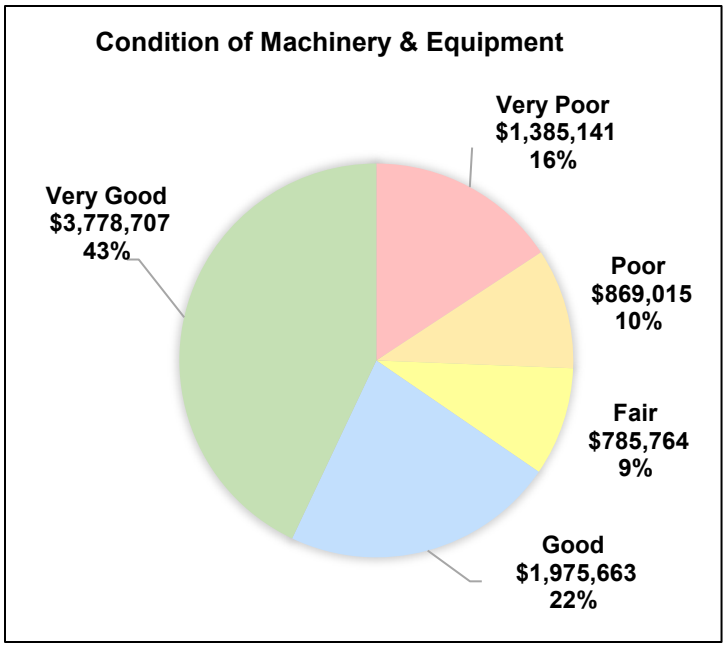


Asset Condition and Assessment

The Township's historic and current approach to assessing the condition of non-core Machinery, Furniture, and Equipment relies on the asset's age and estimated useful life. Internal inspections and failures have played a role in identifying and prioritizing the rehabilitation and replacement of this asset category.

Currently, the Township does not have a formal condition assessment approach for non-core Machinery, Furniture, and Equipment. It is important for the Township to develop and implement a formal and comprehensive condition assessment approach that proactively assesses this asset category.

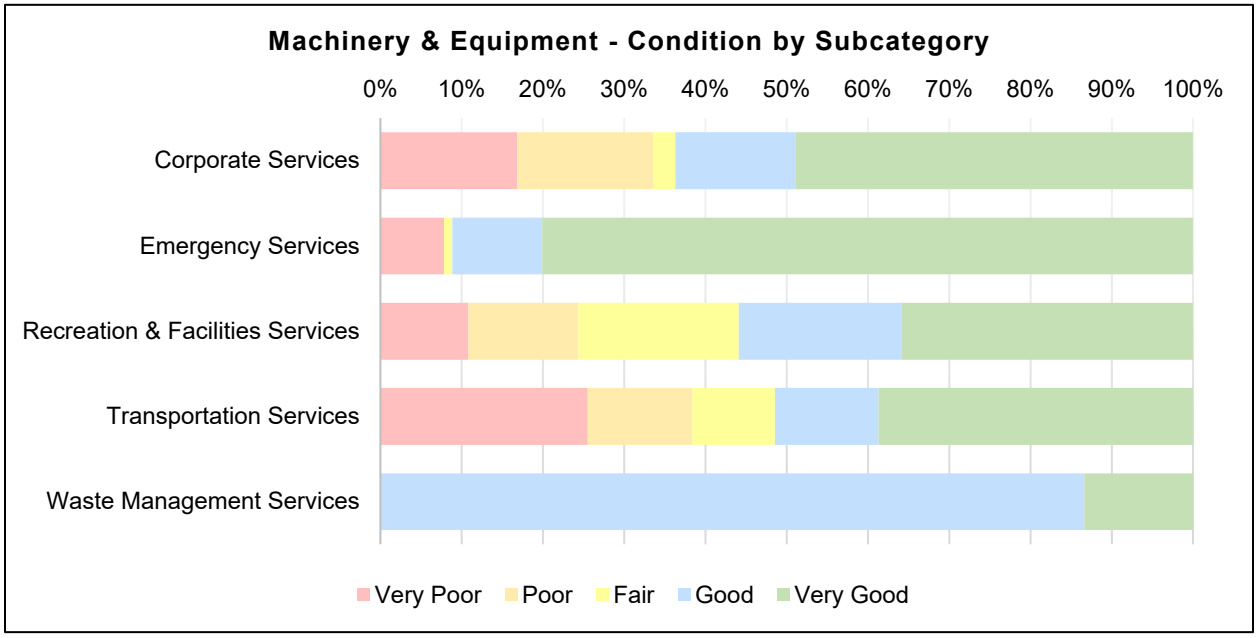
Figure 34: Machinery & Equipment - Condition Summary



Projected conditions illustrated in Figure 34 are based on a weighted average relative to the Replacement Cost.

The Township's non-core Machinery, Furniture, and Equipment has approximately 65% (-12%) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. The Replacement Costs associated with poor and very poor condition relates to machinery and equipment that provide transportation and emergency services. Figure 35 provides further detail by subcategory.

Figure 35: Machinery & Equipment - Condition by Subcategory



Levels of Service

Machinery, Furniture, and Equipment are considered a Non-Core Asset category and as such Technical and Community LOS are not defined in O.Reg. 588/17; municipalities are to develop their own.

Table 34 lists the Community and Technical LOS developed by the Township. It is the Township's objective to finalize the development of advanced LOS in future AMP updates. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 34: Machinery, Furniture, and Equipment: Levels of Service

Community Levels of Service			Technical Levels of Service	
Quality			% of equipment in fair or better condition	74%
			% of essential equipment where regulatory inspections have been completed	100%
Environmental Stewardship	Vehicles and Equipment have minimal impact on the environment	The Township's Climate Action Plan includes the following goals: CAP goal #17[13]		
Performance			% of facilities where annual internal inspections of IT networking equipment have been completed	100%
			Capital re-investment rate	1.59%

[13] CAP goal #17 - Electrify the municipal fleet- replace fossil fuel powered vehicles with electric alternatives as part of lifecycle activities.

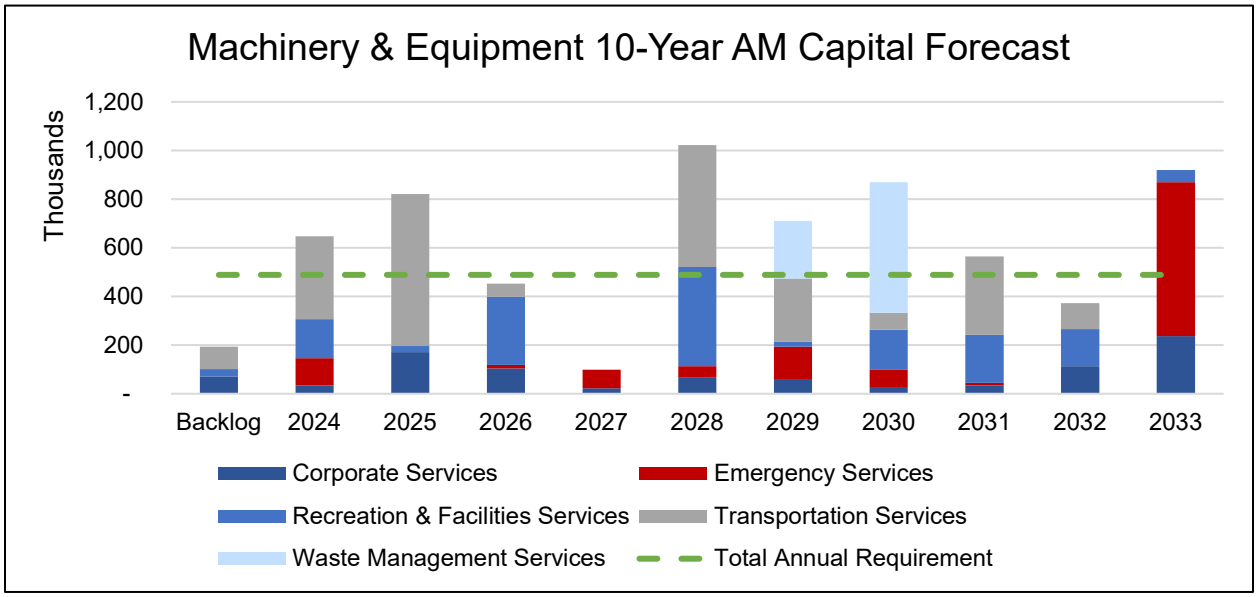
Lifecycle Management

The replacement of Machinery, Furniture, and Equipment is scheduled for Council's consideration based on condition, age, and historical maintenance costs. Currently, the Township does not have a formal approach to managing the lifecycle of Machinery, Furniture, and Equipment.

Asset Management Capital Forecasts

Based on current data, the Annual Requirement to fund the capital replacement of Machinery, Furniture, and Equipment is $488,731 (+$11,731). The 10-year capital forecast totaling $6.7 (+$0.1M) million is illustrated in Figure 36.

Figure 36: Machinery & Equipment - 10-Year Capital Forecast



Risk Management

As explained in Section 2.5, risk models were developed for each asset category to prioritize the rehabilitation and replacement of assets. The consequence of failure risk model for machinery, furniture, and equipment is outlined in Table 35.

Table 35: Machinery & Equipment - Consequence of Risk Model

Range	Economic (50%) Replacement Cost (100%)	Social (50%) Fixed Risk by Service Area (100%)	Consequence of Failure
1	<$25,000	Corporate Services	Insignificant
2	>=$25,000 and <$75,000	Utility Services (non-core)[14]	Minor
3	>=$75,000 and <$125,000	Transportation Services	Moderate
4	>=$125,000 and <$200,000	Recreation Services	Major
5	>$200,000	Emergency Services	Severe

Figure 37 is the risk matrix generated from Citywide that incorporates the above-noted risk model. This matrix does not include any assets not planned for replacement or with a nominal Replacement Cost. Under this model, there are 12 assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 36.

[14] User-funded machinery & equipment operated by the Utilities division is included in Section 4.3.

Figure 37: Machinery & Equipment - Risk Matrix

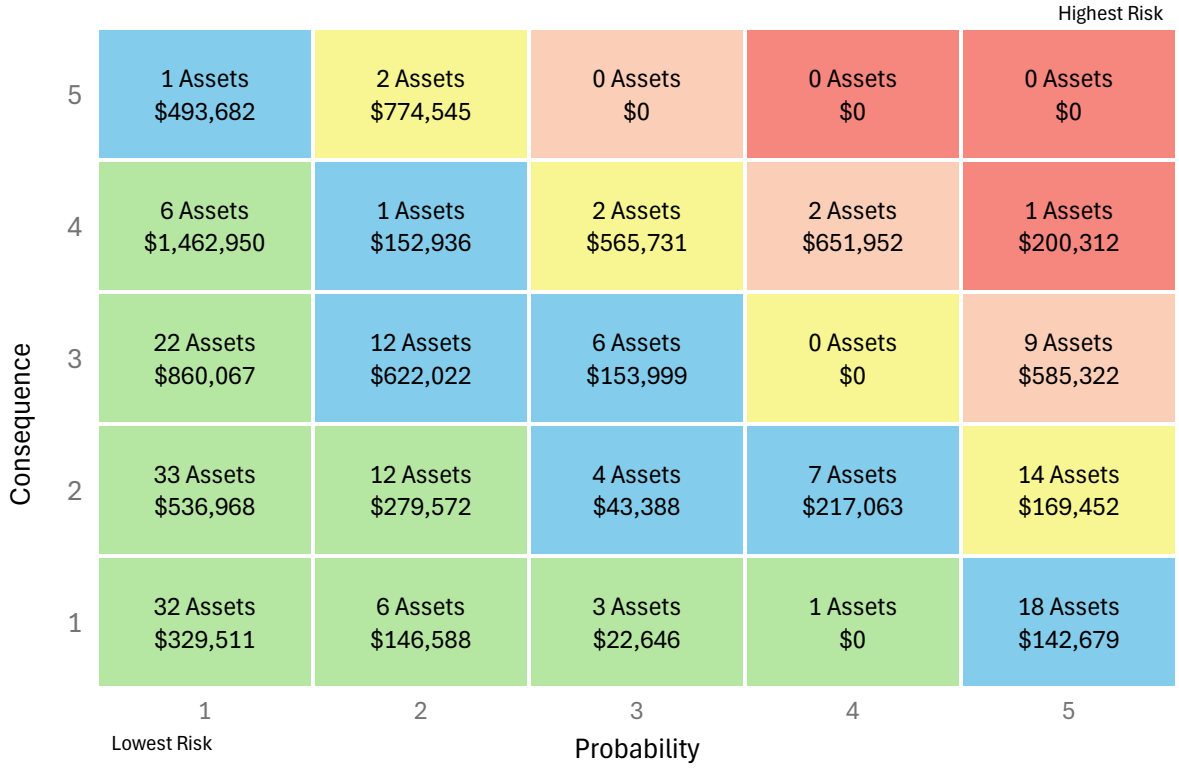


Table 36: Machinery & Equipment – High-Risk Assets

Asset Name	Subcategory	Risk Rating
Arena Ice System	Recreation & Facilities Services	High[15]
Leisure Centre Fitness Equipment	Recreation & Facilities Services	High
Compressor for breathing air	Emergency Services	High
Heavy Hydraulic Extraction Equipment kit # 2	Emergency Services	High
Heavy Hydraulic Extraction Equipment kit # 2	Emergency Services	High
Heavy Hydraulic Extraction Equipment kit # 2	Emergency Services	High
1992 Caterpillar Loader, M/936F	Transportation Services	Very High
2004 Champion/Volvo grader	Transportation Services	High
2005 John Deere tractor	Transportation Services	High
2009 John Deere tractor	Transportation Services	High
2004 John Deere riding mower 1435	Recreation & Facilities Services	High
2005 John Deere tractor	Recreation & Facilities Services	High

[15] This asset is included in the 2024 WJH project.

3.6. FLEET

Tax-funded Fleet is considered non-core infrastructure in accordance with O.Reg. 588/17 and is primarily operated by Emergency Services, Public Works (Transportation Services), Building, and Recreation & Facilities Divisions. All but Emergency Services' fleet is managed by the Public Works Division. This asset category includes the light to heavy-duty fleet and fire rescue vehicles to provide services including but not limited to:

- Firefighting, training, and prevention
- Road maintenance
- Building inspections
- Parks and facilities maintenance

State of the Local Infrastructure

An inventory valuation summary for the Township's tax-funded Fleet is outlined in Table 37. The total Replacement Cost of this asset category totals $17 million (+$2 million from 2022) based on historic costs per unit and a standardized consumer price index. The average age of this fleet is approximately nine years and has an overall condition of good.

Asset Inventory

Table 37: Fleet - Asset Valuation Summary

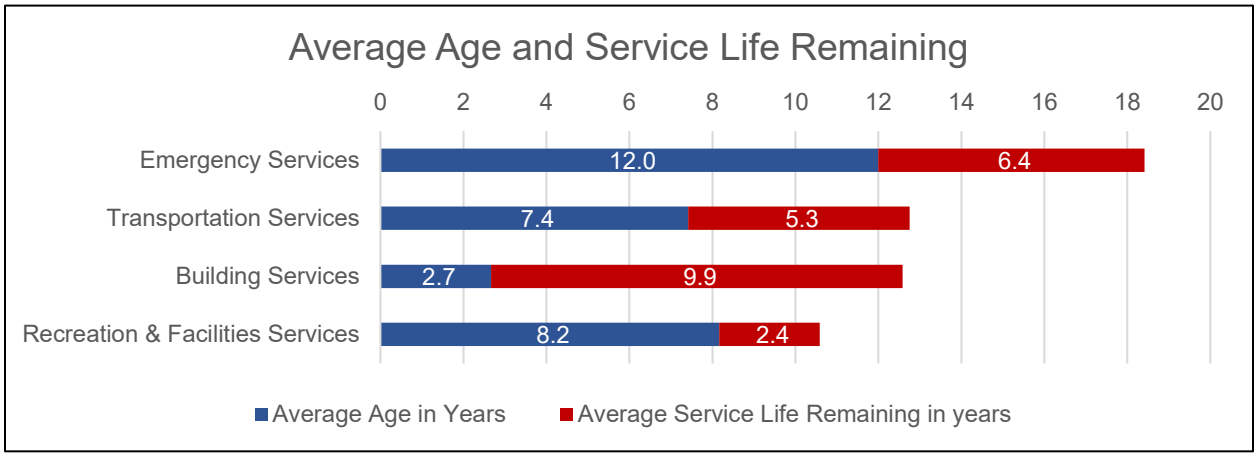
Subcategory	Description	Quantity		Replacement Cost ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Emergency Services	Heavy & light rescue units, pick-up trucks, cars, pumpers, tankers, aerial trucks, utility vehicles	24	ea.	9,081,812	User-Defined Cost/Consumer Price Index	12.0	Good
Transportation Services	Plows, pick-up trucks, vans, dump trucks	38	ea.	7,779,711		7.4	Fair
Building Services	Pick-up trucks	2	ea.	75,990	User-Defined Unit Cost	2.7	Very Good
Recreation & Facilities Services	Pick-up trucks, dump trucks, vans	9	ea.	403,347		8.2	Good
Total Fleet				**17,340,860**		**8.8**	**Good**

Asset Age

The EUL of the Fleet ranges between 10 to 20 years and is in accordance with the Township's Tangible Capital Asset Policy.

Figure 38 illustrates the average age and service life remaining by division. The sum of these two factors may not necessarily total the asset's EUL, as an internal condition assessment may adjust the remaining useful life.

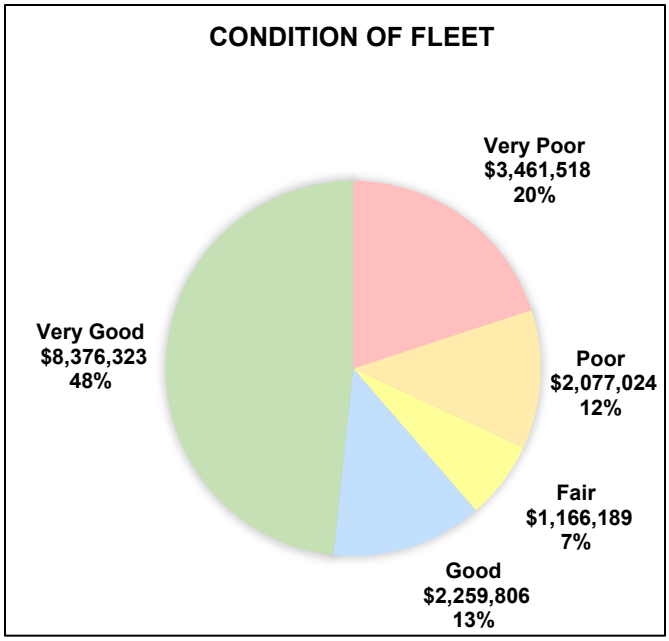
Figure 38: Fleet - Average Age and Service Life Remaining



Asset Condition and Assessment

The Township's historic and current approach to assessing the condition of tax-funded Fleet initially relies on the asset's age and EUL. The useful life of the Fleet to provide Emergency Services is based on the results of regulated inspections. For all other fleet, internal inspections, and review of historic maintenance scheduled for each vehicle play a role in identifying and prioritizing the replacement of these assets.

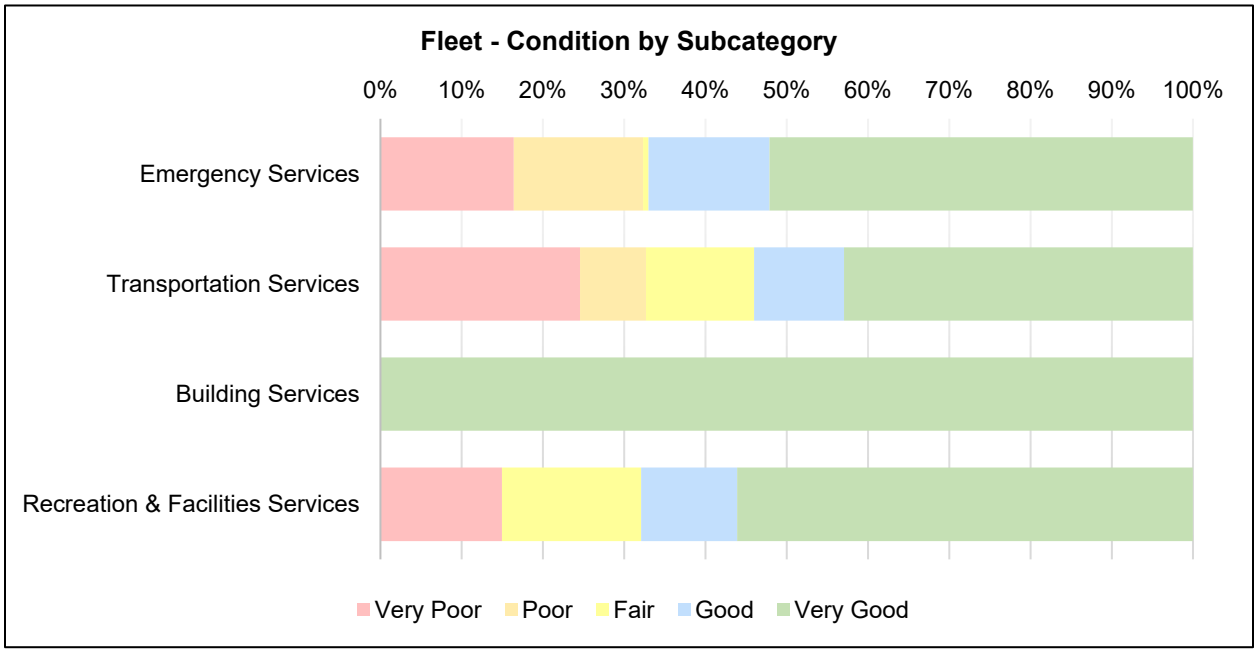
Figure 39: Fleet - Condition Summary



Projected conditions illustrated in Figure 39. are based on a weighted average relative to the Replacement Cost.

The Township's Fleet has approximately 61% (-12%) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. Approximately 53% (+11%) of the Replacement Costs associated with poor and very poor condition relates to Emergency Services due to its high Replacement Cost relative to the other fleet. Figure 40 provides further detail by subcategory, illustrating that Building Services has the largest portion of fleet in very poor to poor condition.

Figure 40: Fleet - Condition by Subcategory



Levels of Service

Fleet is considered a Non-Core Asset category and as such, Technical and Community LOS are not defined in O.Reg. 588/17; municipalities are to develop their own.

Table 38 lists the Community and Technical LOS developed by the Township. It is the Township's objective to finalize the development of advanced LOS for inclusion in future AMP updates. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 38: Fleet: Levels of Service

Community Levels of Service			Technical Levels of Service	
Quality			% of equipment in fair or better condition	74%
			% of vehicles where regulatory inspections have been completed	100%
Environmental Stewardship	Vehicles and Equipment have minimal impact on the environment	The Township's Climate Action Plan includes the following goals: CAP goal #16[16] CAP goal #17[17] CAP goal #18[18]	% of vehicles that are zero-emission vehicles	0%
Performance			Capital re-investment rate	3.17%

[16] CAP goal #16 - Optimize use of municipal vehicles by promoting eco driving techniques and inter-departmental vehicle sharing, installing auxiliary power units in vehicles to reduce idling.
[17] CAP goal #17 - Electrify the municipal fleet- replace fossil fuel powered vehicles with electric alternatives as part of lifecycle activities.
[18] CAP goal #18 - Replace heavy duty vehicles with zero emissions alternatives as the technology becomes available.

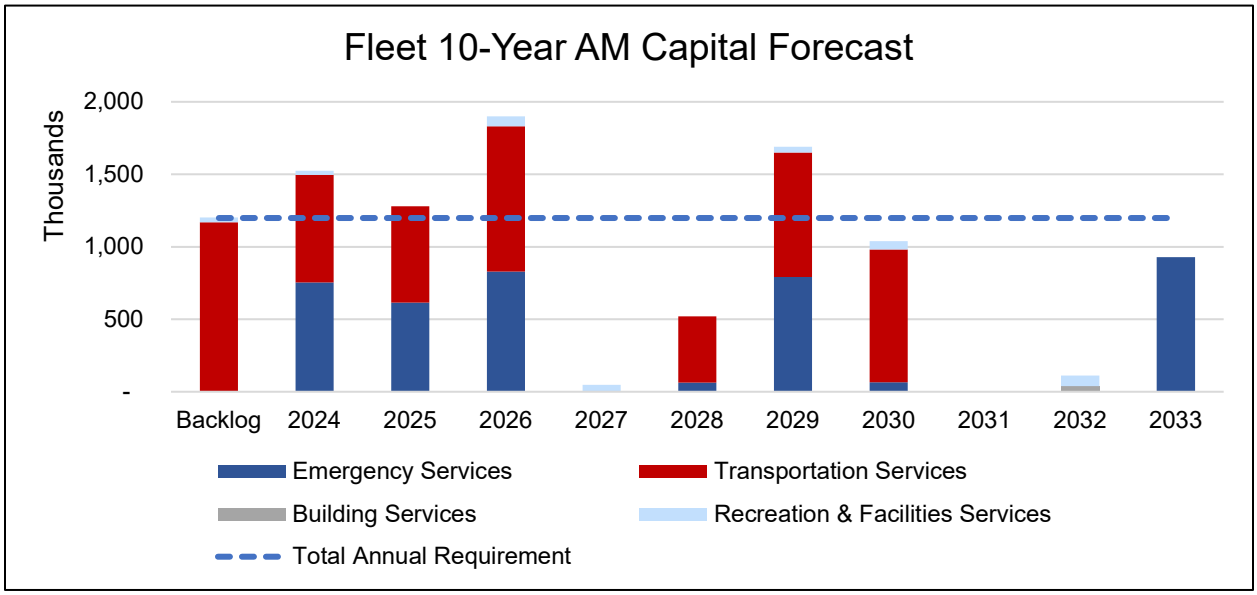
Lifecycle Management

Township Fleet undergoes visual and detailed inspections on an ad-hoc basis. Although certain divisions, such as Emergency Services, are required to replace firefighting Fleet at specific useful lives, Fleet replacements are generally scheduled for Council's consideration based on condition, age, and historical maintenance costs.

Asset Management Capital Forecasts

Based on current data, the Annual Requirement that should be allocated to fund the capital replacement of tax-funded Fleet is $1,198,513 (+$234,613). The 10-year capital forecast totaling $10.2 million (-$0.6M) is illustrated in Figure 41. This temporary drop is primarily related to the failure of a Fire Department vehicle and the decision to remove it from service in 2023. A replacement vehicle has been ordered and will be included in the 2025 AMP. The Township has a Fleet & Equipment Replacement reserve fund available for use in accordance with its Reserve & Reserve Fund Policy. This reserve fund has an internal target of $1.5 to $2 million.

Figure 41: Fleet - 10-Year Capital Forecast



Risk Management

As further explained in Section 2.5, the risk model to calculate the probability of failure is condition-based and is consistent across all asset categories. The consequence of failure risk model for tax-funded Fleet is outlined in Table 39.

Table 39: Fleet - Consequence of Failure Risk Model

Score	Economic (34%) Replacement Cost (100%)	Operational (33%) Fixed Risk by Asset Profile (100%)	Social (33%) Fixed Risk by Asset-Type (100%)	Consequence of Failure
1	<$25,000	N/A	Building Services	Insignificant
2	>=$25,000 and <$75,000	General Fleet	Recreation & Facilities	Minor
3	>=$75,000 and <$125,000	N/A	Utilities[19]	Moderate
4	>=$125,000 and <$200,000	Plows	Public Works	Major
5	>$200,000	Emergency Fleet - All	Emergency Services	Severe

Figure 42 illustrates the risk matrix for Fleet that is generated in Citywide that incorporates the above-noted risk models. There are twelve assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 40.

[19] User-funded fleet operated by the Utilities division is included in Section 4.3.

Figure 42: Fleet - Risk Matrix

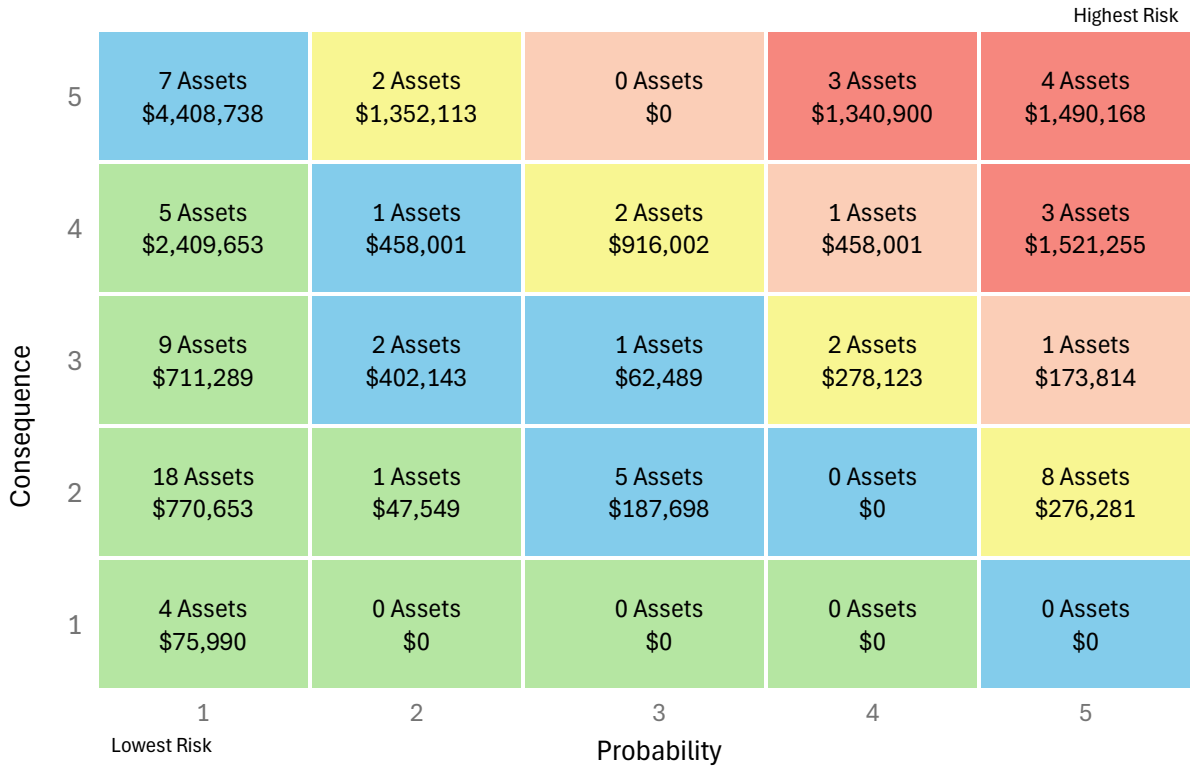


Table 40: Fleet – High-Risk Assets

Asset Name	Description	Division	Risk Rating
T921 – 1996 GMC - Tanker	E4496	Emergency Services	Very High
S921 - 2001 Ford - Squad	E4501	Emergency Services	Very High
T941 – 1999 GMC - Tanker	E8399		Very High
P932 - 2000 Spartan - Pumper[20]	E8400	Emergency Services	Very High
T931 – 2003 GMC - Tanker	E8503		Very High
R911 - 1998 Freightliner - Heavy Rescue	E8697	Emergency Services	Very High
T911 – 2008 International - Tanker	E8808		Very High
2015 International Tandem Truck	T0215	Transportation Services	High
2010 International - single axle	T0410	Transportation Services	Very High
2008 International tandem plow[21]	T3208	Transportation Services	Very High
2011 International 7600 Snow Plow[22]	T3611	Transportation Services	Very High
2008 Trackless sidewalk plow[23]	T6608	Transportation Services	High

[20] P932 Pumper – Replacement unit ordered with delivery scheduled in 2024.
[21] T3208 Snow Plow - Replacement ordered with delivery scheduled for 2025.
[22] T3611 Snow Plow - Replacement ordered with delivery scheduled in 2024.
[23] T6608 Sidewalk plow is scheduled for replacement in the 2024 approved capital budget.

3.7. LAND IMPROVEMENTS

The Township owns and maintains land across the community in which improvements have been undertaken. These improvements include but are not limited to landscaping, walkways, play structures, sports fields, boat ramps, and other siteworks. This asset category is considered non-core in accordance with O.Reg. 588/17.

State of the Local Infrastructure

Asset Inventory

Table 41 lists and describes the Township's Land Improvements by component. With an overall Replacement Cost of $9 million (+$1 million from 2022), the overall condition of this asset category is good at an average age of 19.5 years. The method of calculating the condition rating of this asset category has been changed from the straight-line deterioration used incorrectly in the 2022 AMP, to the use of a deterioration curve which is consistent with all other asset classes. This has resulted in an improved condition rating of Good from Fair for this category.

Table 41: Land Improvements - Asset Valuation Summary

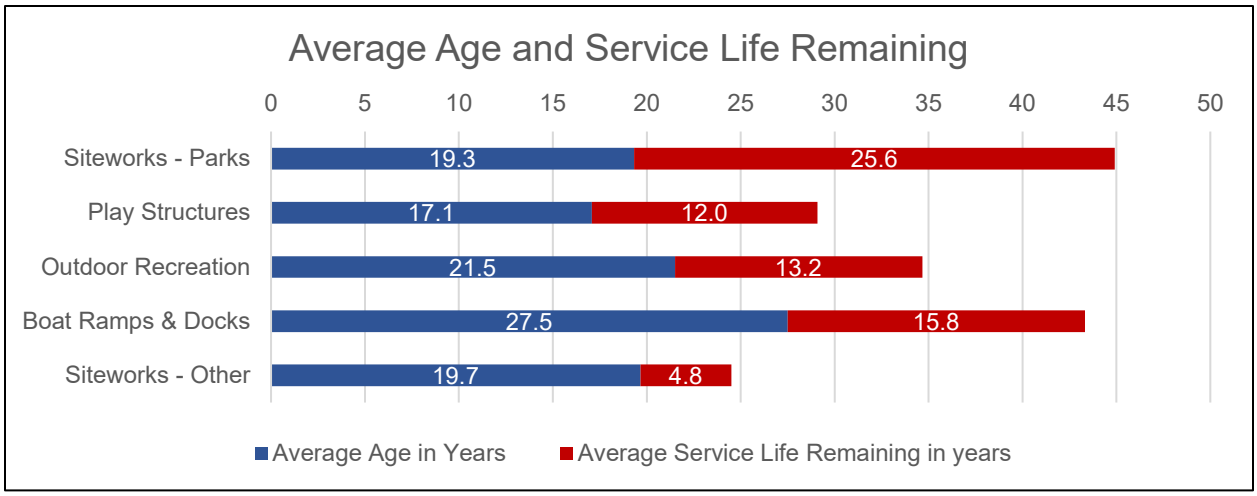
Subcategory	Description	Quantity		Replacement Cost ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Siteworks - Parks	Landscaping, paving, irrigation, walkways, lights, signs, benches in Township-owned parks	1451	Quantity, Length (m)	2,784,519	Consumer Price Index	19.3	Good
Play Structures	Play Structures	31	Quantity	1,428,771		17.1	Good
Outdoor Recreation	Sports fields, courts, and rinks	14	Quantity	2,443,963		21.5	Good
Boat Ramps & Docks	Boat Ramps & Docks	2	Quantity	32,859		27.5	Good
Siteworks - Other	Landscaping & paving in other municipal properties	1055	Quantity, Length (feet)	2,074,943		19.7	Fair
Total Land Improvements				**8,765,055**		**19.5**	**Good**

Asset Age

The EUL of Land Improvements range between 15 to 80 years and is in accordance with the Township's Tangible Capital Asset Policy. The useful life of an asset will depend on the type of improvement undertaken to lands.

Figure 43 illustrates the average age and service life remaining by department. The sum of these two factors may not necessarily total the asset's EUL, as an internal condition assessment may adjust the remaining useful life.

Figure 43: Land Improvements - Average Life and Service Life Remaining

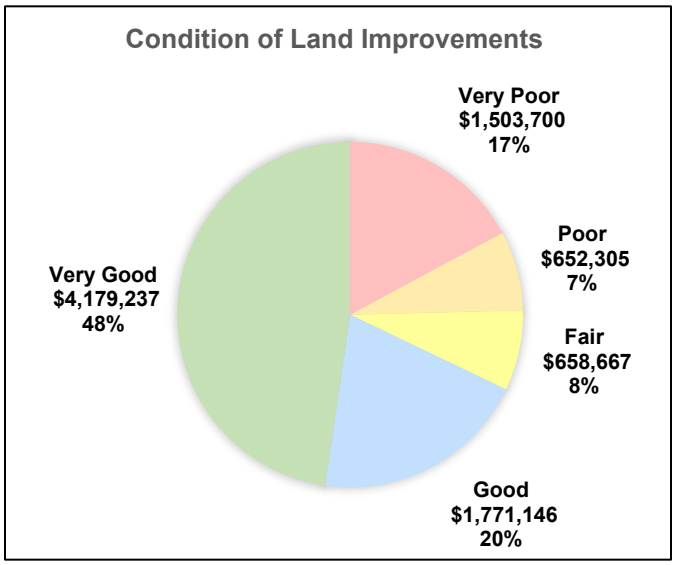


Asset Condition and Assessment

The Township's historic and current approach to assessing the condition of Land Improvements relies on the asset's age and EUL. Internal inspections and failures have played a role in identifying and prioritizing the rehabilitation and replacement of this asset category.

Currently, the Township does not have a formal condition assessment approach for Land Improvements. It is important for the Township to develop and implement a formal and comprehensive condition assessment approach that proactively assesses this asset category.

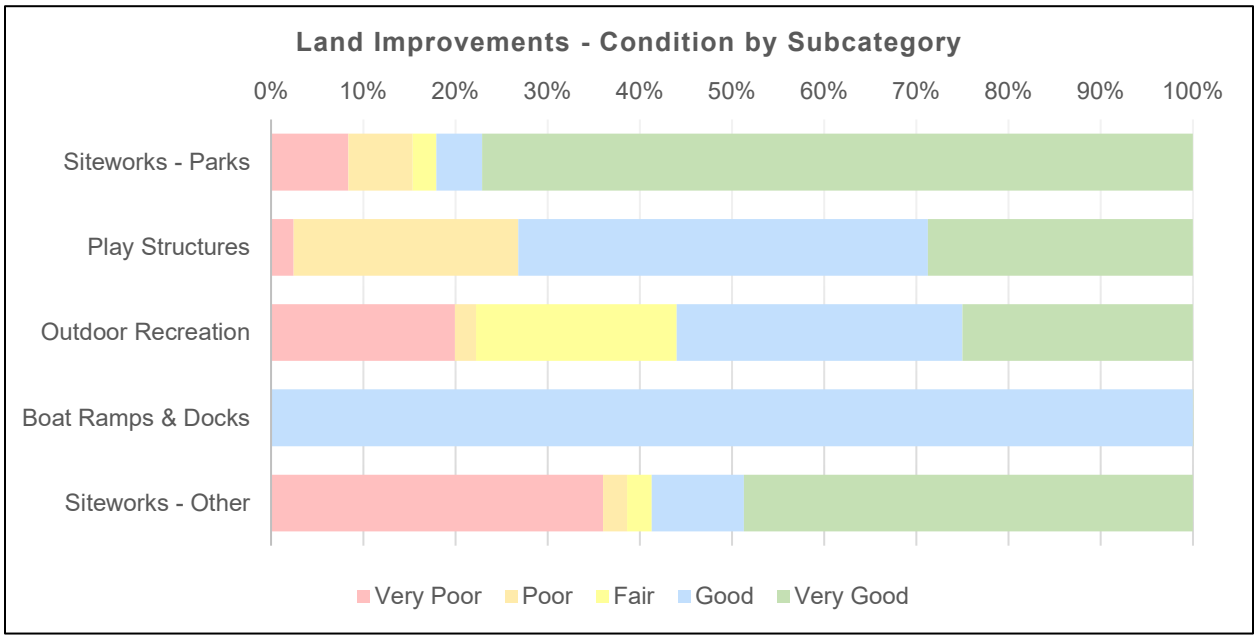
Figure 44: Land Improvements - Condition Summary



Projected conditions illustrated in Figure 44 are based on a weighted average relative to the Replacement Cost.

The Township's non-core Land Improvements have approximately 68% (+24%[24]) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. The Replacement Costs associated with poor and very poor condition relates to outdoor recreation and other siteworks. Figure 45 provides further detail by subcategory.

Figure 45: Land Improvements - Condition by Subcategory



[24] This AMP is utilizing a deterioration curve vs the straight-line deterioration used in the 2022 AMP. The use of a deterioration curve is consistent with all other asset classes.

Levels of Service

Land Improvements are considered a Non-Core Asset category and as such Technical and Community LOS are not defined in O.Reg. 588/17; municipalities are to develop their own.

Table 42 lists the Community and Technical LOS developed by the Township. It is the Township's objective to finalize the development of advanced LOS in future AMP updates. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 42: Land Improvements: Levels of Service

Community Levels of Service			Technical Levels of Service	
Safety			% of play structures where regulatory inspections have been completed	100%
			% of play structures in compliance with CSA Standards	65%
			% of sport fields where inspections have been completed	50%
			% of walkway & trail assets inspected annually	100%
Quality			% of play structures in fair or better condition	73%
			% of sport fields in fair or better condition	N/A[25]
Quantity			Asphalt Walkways	6.4 km
			Gravel Walkway	4.1 km
			Earth/Grass Walkways	0.6 km
Usage			Number of Sport fields bookings	839
Performance			Capital re-investment rate	1.28%

[25] LOS to be included in 2025 AMP

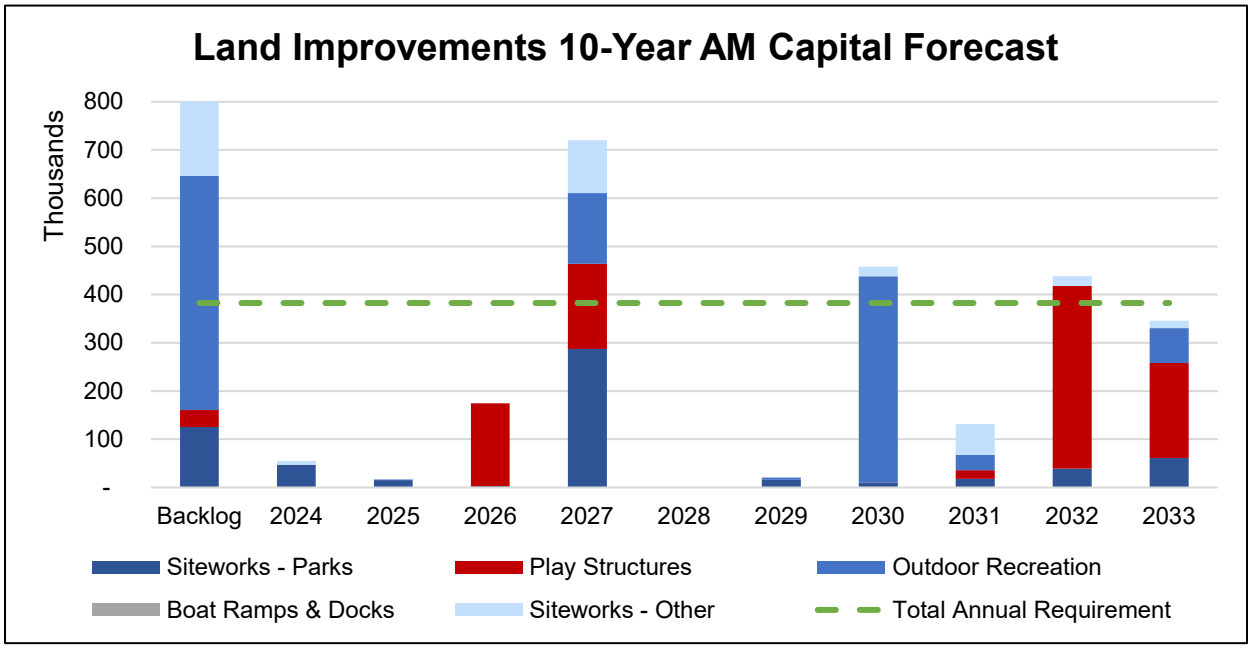
Lifecycle Management

The replacement of Land Improvements is scheduled for Council's consideration based on condition, age, and historical maintenance costs. Currently, the Township does not have a formal approach to managing the lifecycle of Land Improvements.

Asset Management Capital Forecasts

Based on current data, the Annual Requirement that should be allocated to fund the capital replacement of Land Improvements is $382,700 (+$49,000). The 10-year capital forecast totaling $3.7 (+$0.7M) million is illustrated in Figure 46.

Figure 46: Land Improvements - 10-Year Capital Forecast



Risk Management

As explained in Section 2.5, risk models were developed for each asset category to prioritize the rehabilitation and replacement of assets. The consequence of failure risk model for Land Improvements is outlined in Table 43.

Table 43: Land Improvements - Consequence of Risk Model

Range	Economic (50%) Replacement Cost (100%)	Health & Safety (50%) Fixed Risk by Component (100%)	Consequence of Failure
1	<$75,000	Siteworks - Other	Insignificant
2	>=$75,000 and <$125,000	Siteworks - Parks	Minor
3	>=$125,000 and <$250,000	Boat Ramps & Docks	Moderate
4	>=$250,000 and <$500,000	Outdoor Recreation	Major
5	>$500,000	Play Structures	Severe

Figure 47 is the risk matrix generated from Citywide that incorporates the above-noted risk model. This matrix does not include any assets not planned for replacement or with a nominal Replacement Cost. Under this model, there are four assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 44.

Figure 47: Land Improvements - Risk Matrix

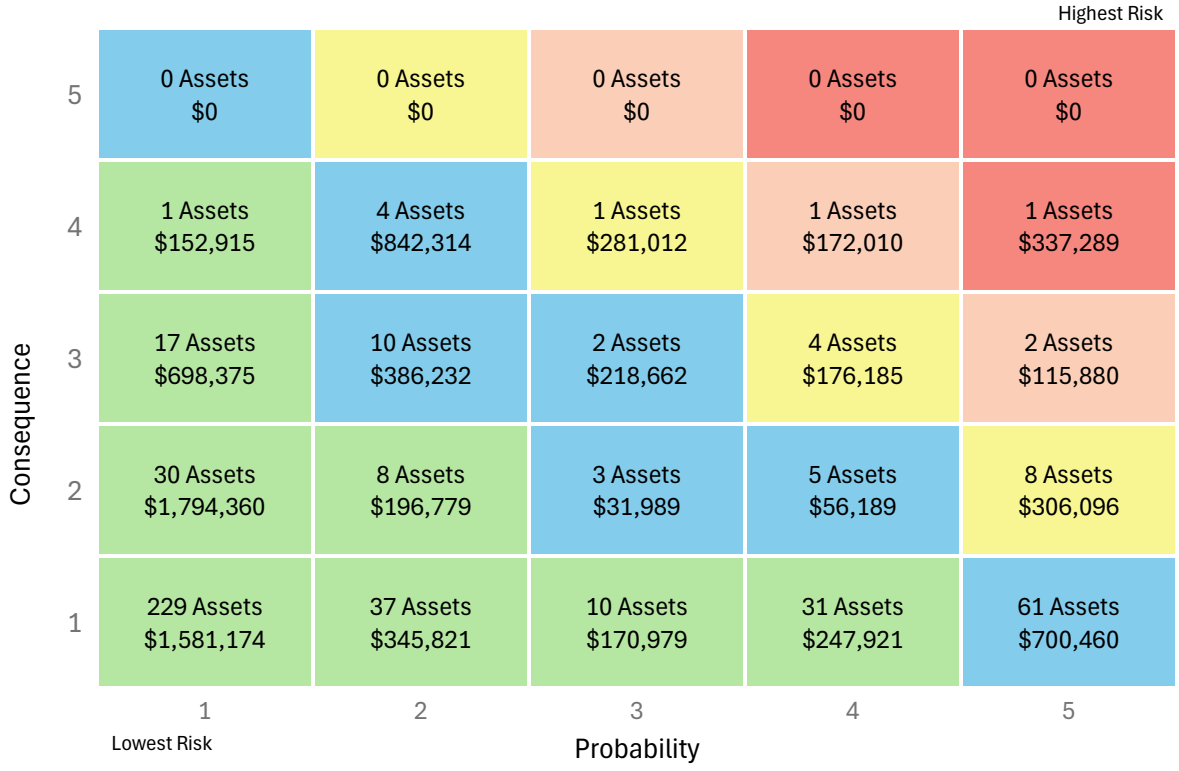


Table 44: Land Improvements – High-Risk Assets

Asset Name	Risk Rating
J. Earl Burt Memorial Park Playground Equipment	High
Willie Pratt Sports Field Small Soccer Pitch	High
Willie Pratt Sports Field Regulation Soccer Pitch	Very High
Fairfield House & Park Playstructure	High

3.8. NATURAL ASSETS

The Township owns land across the community in which a variety of natural assets are located. Natural assets include wetlands, forests and alvars. Other natural assets such as parklands and stormwater management facilities are included in other sections. This asset category is considered non-core in accordance with O.Reg. 588/17.

The Township is currently working on a Natural Asset strategy to assess the condition of its assets and the value they provide to the community.

State of the Local Infrastructure

Asset Inventory

Natural assets do not depreciate in the same way as other assets, and their services can be provided in perpetuity if they are well managed and protected. Future iterations of the AMP should include all natural assets along with relevant watershed, sub-watershed and catchment area boundaries for the natural assets within the boundaries of Loyalist Township.

Table 45 lists and describes the Township's Natural Assets by component.

Table 45: Natural Assets – Asset Valuation Summary

Subcategory	Description	Quantity		Replacement Cost ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Wetlands	-	76.3	ha	-	-	-	-
Significant Wetlands	-	438.2	ha	-	-	-	-
Wooded Areas	-	79.2	ha	-	-	-	-
Significant Woodlands	-	438.2	ha	-	-	-	-
Alvars	-	16.45	ha	-	-	-	-
Total Natural Assets				**-**	**-**	**-**	**-**

Levels of Service

Natural Assets are considered a Non-Core Asset category and as such Technical and Community LOS are not defined in O.Reg. 588/17; municipalities are to develop their own.

Table 46 lists the Community and Technical LOS developed by the Township. It is the Township's objective to finalize the development of advanced LOS in future AMP updates. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 46: Natural Assets: Levels of Service

Community Levels of Service			Technical Levels of Service	
Environmental Stewardship	Promoting access to nature, rewilding of some Township owned lands and the incorporating the use of Low Impact Development (LID) into developments.	The Township's Climate Action Plan includes the following goals: CAP goal #1[26] CAP goal #2[27] CAP goal #3[28] CAP goal #5[29] CAP goal #8[30]		
	Pollinator Protection	CAP goal #4[31]		
Quantity			Number of hectares of Township owned Alvars	33.5 ha
			Number of hectares of Township owned Wetlands	645.0 ha
			Number of hectares of Township owned Forests & Woodlands	517.4 ha

[26] CAP goal # 1 to plant 20,000 trees over the next 10 years, the Township has planted 7700 trees on Township lands and 10s of thousands of trees have been planted on private lands.
[27] CAP Goal #2 - rewild Township owned lands. Undertake pilot projects to naturalize municipal parks, and to investigate potential use of alternate seed mixes in municipal ROW.
[28] CAP goal #3 - incorporate LID into stormwater management practices - LID concepts into stormwater activities where appropriate.
[29] CAP goal # 5 - promote access to nature. Expand the natural trail network, acquire and repurpose land to create publicly accessible natural spaces, where appropriate.
[30] CAP goal #8 - create resilient, low carbon communities - encourage development through complete communities using mixed land use and diversity of residential types, promote sustainable land use development practices and resilient infrastructure.
[31] CAP goal #4 = Develop a Pollinator Protection Strategy. Two pollinator gardens/canoes installed in Centennial Park, Bath (June 2022) as part of the Butterflyway Project. There is also a insect/pollinator hotel behind the school in Bath. Additional pollinator gardens have been established throughout the Township in collaboration with the Bath Gardening Club (per CAP 2023 report card) - not sure if these are Township owned lands or not.

4. USER-FUNDED ASSET CATEGORIES

4.1. Core Water System

The Township supplies safe, clean, high-quality water to the serviced residents and businesses within the serviced areas of Amherstview, Odessa, Bath, Harewood, and Brooklands. This involves managing reliable water systems capable of providing sufficient quality, flow, and pressure to meet drinking, recreational, irrigation, sanitary, fire protection, and business needs. Drinking water is treated by two separate plants, which is then distributed throughout the serviced areas via five distribution facilities and over 85 (+5 km from 2022) kilometers of linear water infrastructure valued at approximately $183 million (+$24M). The Township's water system is primarily funded by user rates set by Council and therefore is excluded from expenditures funded by the tax levy.

State of the Local Infrastructure

Asset Inventory

Core Assets included within this section are listed in Table 47. Most of the Water System is linear in nature, such as hydrants, valves, water meters, and water mains. Treatment and distribution facilities are considered non-linear but contribute to the overall production and distribution of clean drinking water. Approximately two-thirds of the Core Water System's Replacement Costs are valued based on user-defined unit costs using historical development reports. The average age of the Core Water System is 18 years and has an overall condition of good.

Table 47: Core Water System - Asset Valuation Summary

Subcategory	Quantity		Replacement Cost ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Hydrants	503	Quantity	6,972,943	User-Defined Unit Cost	21.8	Very Good
Water Valves	698	Quantity	3,188,039		20.7	Very Good
Water Meters	5,170	Quantity	3,772,236		16.4	Fair
Water Mains	85,627	Length (m)	129,094,033		29.1	Good
Water Treatment Facilities	2	ea	23,892,884	Consumer Price Index	21.1	Good
Water Distribution Facilities	5	ea	16,014,105		39.3	Fair
Core Water System Total			**182,934,240**		**18.4**	**Good**

Asset Age

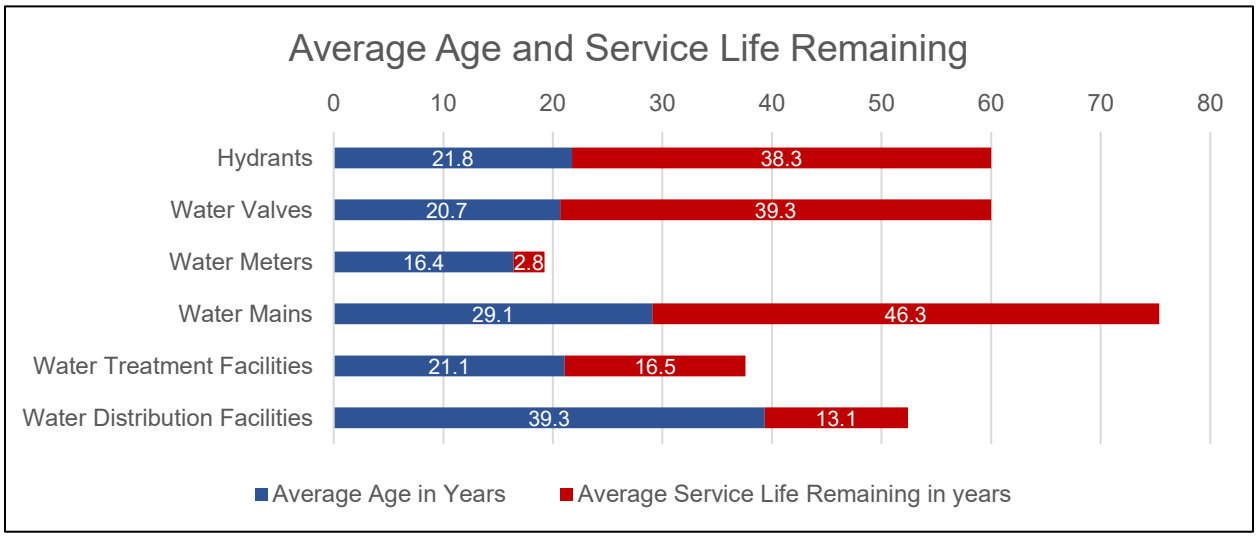
Figure 48 illustrates the average age relative to service life remaining for each subcategory of the Core Water System. Service life remaining is based on the initial EUL of the assets, which are listed in Table 48, but may deviate if a condition assessment has been undertaken. On average, water mains are through approximately one-third of their useful lives, which means over 60% of water mains are less than 40 years of age. Water meters have a shorter useful life and therefore, are through approximately three-quarters of their useful life.

EULs are developed based on industry standards and are in accordance with the Township's Tangible Capital Asset Policy. A range in EUL is important to ensure certain components of an asset (where applicable) are depreciated and forecasted for replacement appropriately.

Table 48: Core Water System - Estimated Useful Lives

Subcategory	Estimated Useful Life (EUL)
Hydrants	60 Years
Valves	
Water Meters	15 to 25 Years
Water Mains	50 to 80 Years
Treatment Facilities	5 to 80 Years
Distribution Facilities	

Figure 48: Core Water System - Average Age and Service Life Remaining

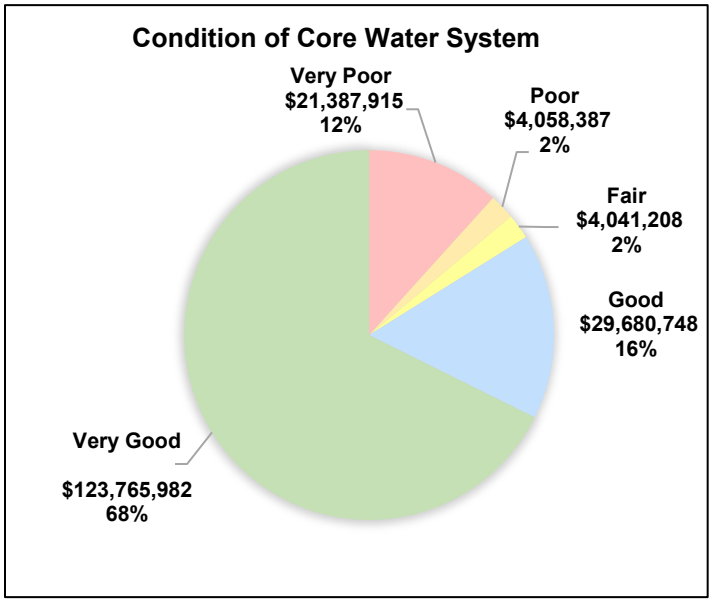


Asset Condition and Assessment

The Township's historic and current approach to assessing the condition of Core Water System assets heavily relies on the asset's age and EUL. Internal responses to the Technical LOS, such as historic main breaks, as disclosed in the next section, and externally legislated reporting requirements to retain a drinking water license have played a role in identifying and prioritizing the rehabilitation and replacement of linear assets. Although it is the Township's goal to proactively update and replace water meters, the current approach is to replace them as needed, which has been funded annually and consistently to some extent.

Currently, the Township does not have a formal condition assessment approach for Core Water System assets. It is important for the Township to develop and implement a formal and comprehensive condition assessment approach that proactively assesses core water infrastructure.

Figure 49: Core Water System - Condition Summary

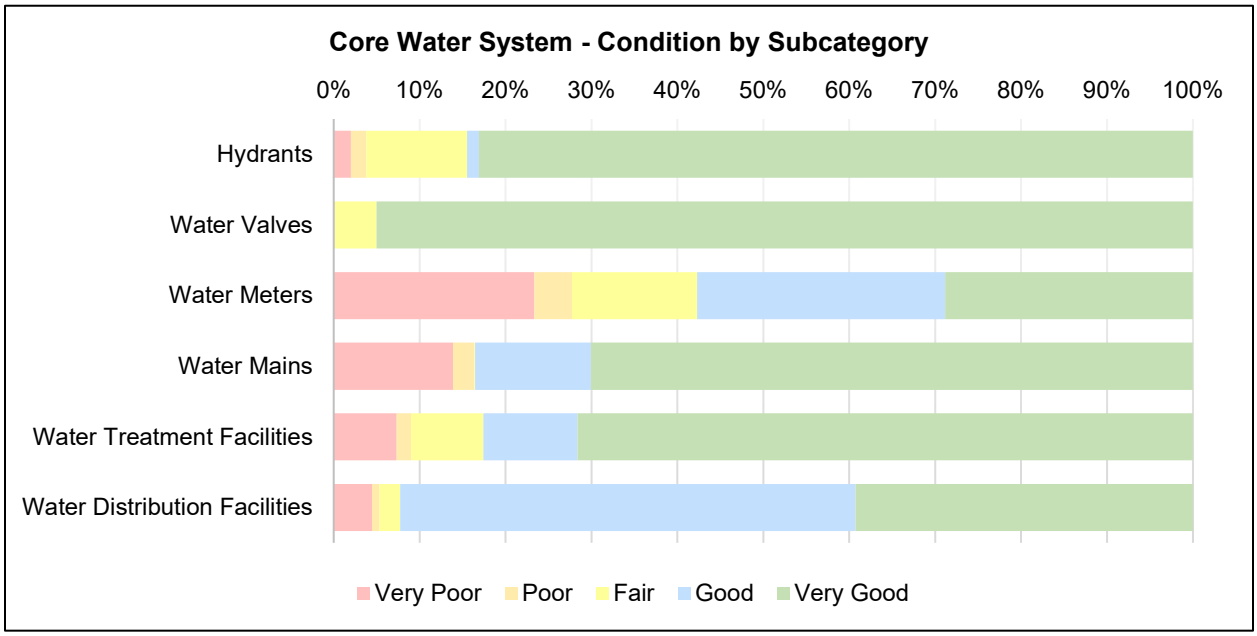


Projected conditions illustrated in Figure 49 are based on a weighted average relative to the Replacement Cost.

The Township's Core Water System has approximately 84% (-2%) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. While assets are generally in very good condition, approximately 83% of the Replacement Costs associated with poor and very poor conditions relate to water mains, due to their overall value relative to other infrastructure.

Figure 50 provides further detail into the Core Assets by subcategory. Water meters bear the highest proportion of assets in very poor condition at a relatively low Replacement Cost per unit.

Figure 50: Core Water System - Condition by Subcategory



Levels of Service

To adhere to the first asset management milestone, O.Reg. 588/17 legislates the disclosure of certain Community and Technical LOS for Core Assets. Community LOS use qualitative descriptions to describe the scope or quality of service delivered by an asset category. Technical LOS use metrics to measure the scope or quality of service being delivered by an asset category. Table 49 outlines the required Community and Technical LOS as set out in O.Reg. 588/17.

It is the Township's objective to finalize the development of advanced LOS within the Core Water System in future iterations of the AMP. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 49: Core Water System - Levels of Service

Community Levels of Service			Technical Levels of Service	
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	The Township operates two separate drinking water systems. The Bath Drinking water system consists of one drinking water plant, one elevated storage tank, and approximately 19 km of distribution water mains and services the village of Bath and Correctional Services Canada. The Fairfield drinking water system consists of one drinking water plant in Amherstview, one booster station, one on-ground storage reservoir, two elevated storage tanks, and approximately 67 km of water mains and services Amherstview, Odessa, Harewood, Brooklands, the Taylor Kidd Industrial Park, and the Loyalist East Business Park and Taylor Kidd Industrial Park. See maps in Appendix B.5.	Percentage of properties connected to the municipal water system	71.0% (-2%)
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow.		Percentage of properties where fire flow is available	99.65%
Reliability	Description of boil water advisories and service interruptions	Three water main breaks occurred in 2023 and were repaired within the same day, therefore, extended service disruptions were avoided. Water service interruptions may also occur due to maintenance activities or reconstruction projects. Staff attended to these interruptions in a timely manner, when possible.	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	0.000 (-0.018)
			Number of connection days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0.000
Performance			Capital Reinvestment Rate	0.9% (-0.4%)

Lifecycle Management

Linear Infrastructure

The AMP for the Core Water System's linear infrastructure has been developed using projected age-based conditions and risk. Water mains within Citywide are primarily defined by material and diameter, which allows the Township to use risk metrics to prioritize main relining and replacements. Furthermore, the Township performs periodic operational preventative maintenance activities on other linear assets such as valve exercising, hydrant flushing, and inspections. Like other linear infrastructure, staff attempt to coordinate water rehabilitation and replacements with road reconstruction projects to optimize Lifecycle Costs, unless there is a structural failure.

Core Facilities

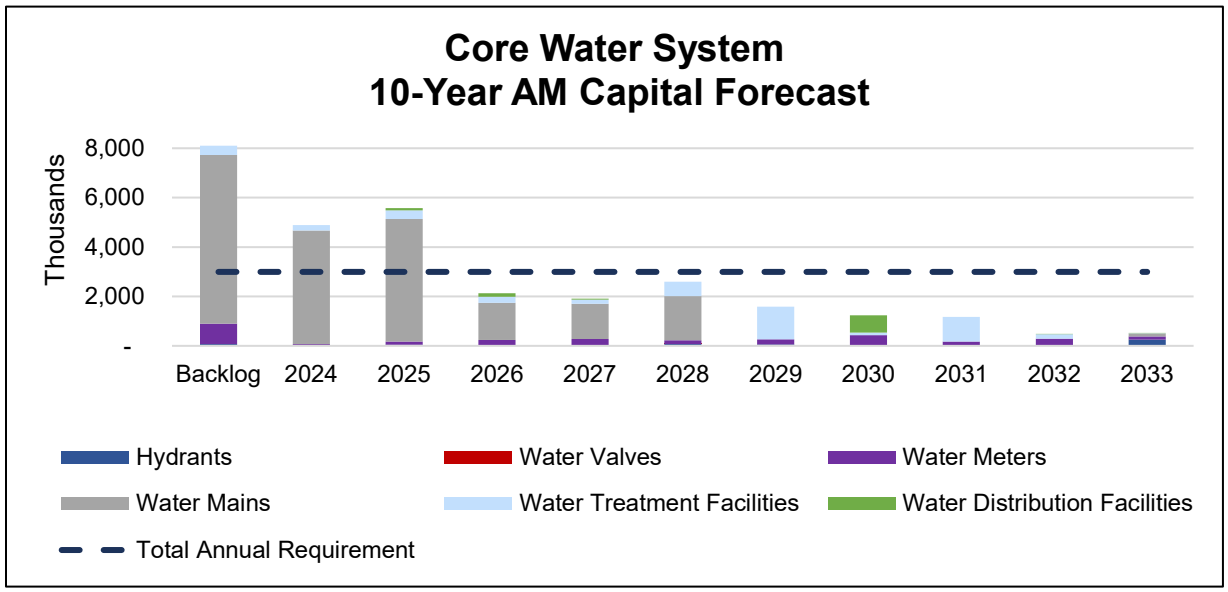
Core facilities within Citywide can be further broken down into process equipment and building components.

Process equipment lifecycle events are performed by the maintenance/operations staff. At a minimum, all facilities receive weekly visual inspections. Critical process equipment has alarms and the Supervisory Control and Data Acquisition ("SCADA") system monitoring the operation. Major process equipment receives annual detailed inspections.

Asset Management Capital Forecasts

Figure 51 illustrates the Core Water System's 10-year capital replacement forecast. The backlog represents scheduled asset replacements that are over their projected service life remaining. While they are not considered high-risk, it is important for the Township to document within Citywide a justification for any capital project deferrals. The Annual Requirement to fund the Core Water System is currently $3.0 (+$0.4M) million.

Figure 51: Core Water System - 10-Year Capital Forecast



Risk Management

As explained in Section 2.5, risk models were developed for each asset category to prioritize the rehabilitation and replacement of assets, with a higher focus on the Core Assets. The consequence of failure risk model for the Core Water System is outlined in Table 50.

Table 50: Core Water System - Consequence of Failure Risk Model

Score	Economic (34% All)	Operational (33% Valves, Meters, Mains)	Health & Safety (33% Valves, Meters, Mains) (66% Hydrants, Facilities)	Consequence of Failure
	Replacement Cost (100%)	Asset Classifications & Fixed Risk (100%)	QMS Risk Number (100%)	
1	<$25,000	Valve Diameter - 25 mm Water Meters - All Water Main Diameter - 25 to 50 mm	6	Insignificant
2	>=$25,000 and <$75,000	Valve Diameter - 100 to 150 mm Water Main Diameter - 100 to 150 mm	8	Minor
3	>=$75,000 and <$125,000	Valve Diameter - 200 to 250 mm Water Main Diameter - 200 to 250 mm	12	Moderate
4	>= $125,000 and <$200,000	Valve Diameter - 300 mm Water Main Diameter - 300 mm	16	Major
5	>$200,000	Valve Diameter - 400 mm Water Main Diameter - 400 mm	25	Severe

Figure 52 is the risk matrix generated from Citywide that incorporates the above-noted risk models. This matrix does not include any assets considered surplus and not planned for replacement. Under this model, there are 60 assets considered high or very high risk due to their condition or consequence of failure. These are also subsequently listed in Table 51.

Figure 52: Core Water System - Risk Matrix

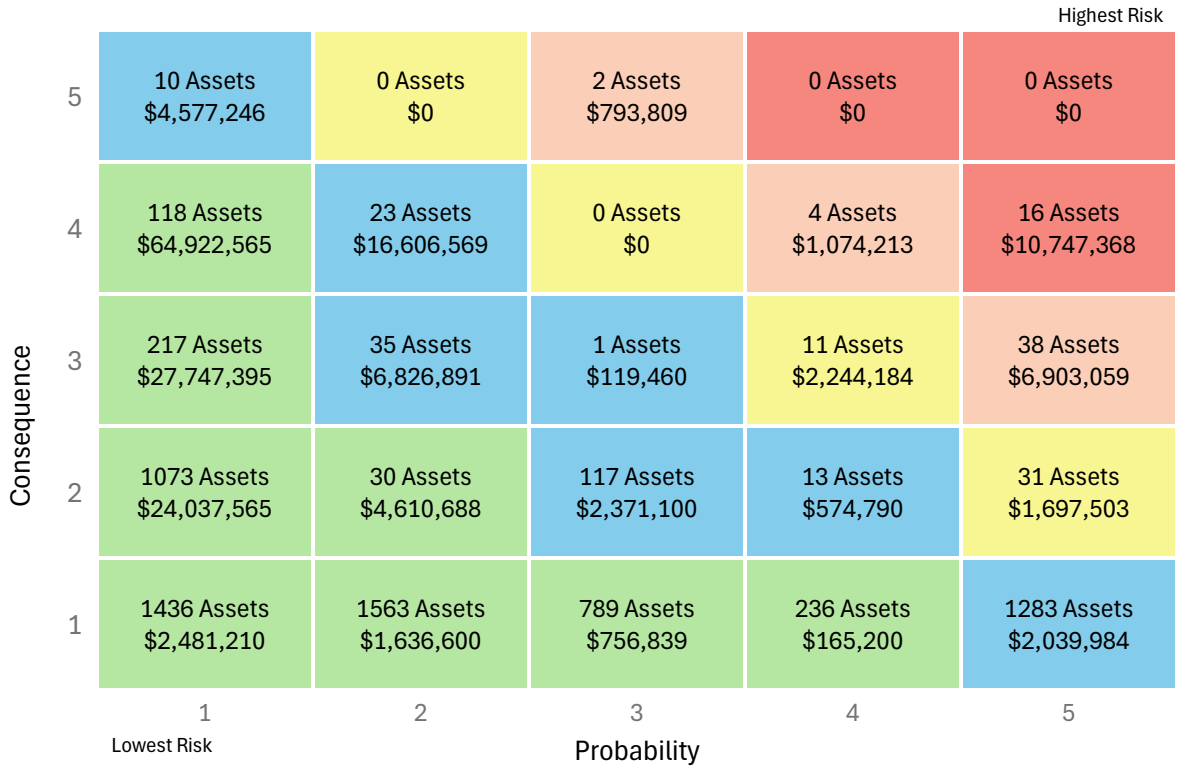


Table 51: Core Water System – High-Risk Assets

Asset Name	Location	GIS #	Risk Rating
Water Pipe on Asbury	Asbury from Havergal to Westran	WM41	High
Water Pipe on Havergal	Havergal from Asbury to Rothwell	WM42	High
Water Pipe on Rothwell	Rothwell from Havergal to Westran	WM43	High
Water Pipe on Westran	Westran from Rothwell to Asbury	WM44	High
Water Pipe on Huff	Huff from Havergal to Westran	WM52	High
Water Pipe on Westfield	Westfield from Highway 33 to Manitou	WM143	High
Water Pipe on Highway 33	Bath Rd Hwy 33 – Behind Civic Addresses 4785,4777,4773,4771 Bath Rd	WM214	High
Water Pipe on Asbury	Asbury from Manitou to Havergal	WM40	High
Water Pipe on Havergal	Havergal from Rothwell to Cornell	WM45	High
Water Pipe on Westran	Westran from Rothwell to Cornell	WM46	High
Water Pipe on Cornell	Cornell from Havergal to Westran	WM47	High
Water Pipe on Westran	Westran from Cornell to Huff	WM48	High
Water Pipe on Westran	Westran from Huff to Littlefield	WM49	High
Water Pipe on Easement	Easement from Littlefield to WJ Henderson Recreation Ctr.	WM50	High
Water Pipe on Havergal	Havergal from Cornell to Huff	WM51	High
Water Pipe on Littlefield	Littlefield from Westran to Havergal	WM53	High
Water Pipe on Havergal	Havergal from Huff to Littlefield	WM54	High
Water Pipe on Littlefield	Littlefield from Havergal to Manitou	WM55	High
Water Pipe on Kidd	Kidd from Kildare to Kidd	WM136	High
Water Pipe on Bayview Drive	Bayview Dr from Brooklands Park Ave N to 14 Bayview Dr	WM204	High
Water Pipe on Main	Main from Mott to Heritage	WM525	High
Water Pipe on Main	Main from Heritage to East end	WM535	High
Water Pipe on Easement	Easement from Purdy to Bath STP	WM550	High
Water Pipe on Sir John	Sir John from Pruyn to Pruyn	WM553	High
Water Pipe on Academy	Academy from Fairfield St to 30m past Bulch Ave Intersection on ending on Mott St	WM603	High
Water Pipe on Manitou	Manitou from Cambridge to Princeton	WM36	Very High
Water Pipe on Manitou	Manitou from Princeton to Briscoe	WM37	High
Water Pipe on Manitou	Manitou from Briscoe to Kildare	WM38	Very High
Water Pipe on Sherwood	Sherwood from Tareyton to Briscoe	WM73	High
Water Pipe on Sherwood	Sherwood from Manitou to Briscoe	WM90	Very High
Water Pipe on Manitou	Manitou from Cambridge to Frink	WM87	Very High

Asset Name	Location	GIS #	Risk Rating
Water Pipe on Sherwood	Sherwood from - to Manitou	WM141	High
Water Pipe on Main	Main from Church St to Davy St	WM512	High
Water Pipe on Main	Main from Lodge St to Davy St	WM519	High
Water Pipe on Manitou	Manitou from Sherwood to Future Westfield Dr N Side for 91, and Future Westfield Dr N Side to Westfield Dr S Side for 1008	WM91, WM1008	High
Water Pipe on Addington St	Addington St from Addington Crt to Hydrant 367 located 40 W of Amy Lynn Dr	WM116	Very High
Water Pipe on Purdy	Purdy from Tower to Sir John	WM549	Very High
Water Pipe on Sir John	Sir John from Purdy to Pruyn	WM552	High
Water Pipe on Pruyn	Pruyn from Sir John to Sir John	WM554	Very High
Water Pipe on Easement	Easement from WTP to Main	WM545	High
Water Pipe on Main	Main from Easement to Mott	WM546	Very High
Water Pipe on Mott	Mott from Main to Westbury	WM547	Very High
Water Pipe on Tower Rd.	Tower Rd. from Mott to Purdy	WM548	Very High
Water Pipe on Tower Rd.	Tower Rd. from Purdy to EWT	WM556	Very High
Water Pipe on Amherst	Amherst from Amherst to Amherst	WM123	High
Water Pipe on Upper Park	Upper Park from Park Cr to Amherst Dr	WM124	Very High
Water Pipe on Kildare	Kildare from Green to Kidd	WM25	High
Water Pipe on Kildare	Kildare from Kidd to Cambridge	WM26	Very High
Water Pipe on Amherst	Amherst from 343 Amherst Dr to Manitou Cr W	WM117	Very High
Water Pipe on Amherst	Amherst from Manitou to Pittsfield	WM119	Very High
Water Pipe on Amherst	Amherst from Pittsfield to	WM121	Very High
Water Pipe on Upper Park	Upper Park from Amherst to Water Tower	WM122	High
Water Pipe on Kidd	Kidd from Green to Kidd	WM137	High
Bath WTP Building Fixtures	Bath WTP - 329 Main St		High
Chlorine Scada / Electrical	Fairfield WTP - 4464 Bath Road		High
Chlorine Contact Equipment	Fairfield WTP - 4464 Bath Road		High
Package Plant Equipment	Bath WTP - 329 Main St		High
Chlorine Contact Equipment	Bath WTP - 329 Main St		High

All water pipes are in progress either through dedicated capital projects or new watermain relining program. The list is based on age-based conditions and watermain relining program will complete physical condition assessments to better prioritize based on actual conditions.

Series A PVC Water Pipe

The above list of high risk assets includes a long list of water pipes. Most of these water pipes are included in the 10-year capital project list either through planned reconstructions or the new watermain relining program. One item that is important to note when considering this list is the specific circumstances of the water pipe material for mains located in Odessa.

Historic water pipe in Odessa was constructed using Series A PVC, an early version of the Polyvinyl Chloride material. While this pipe does have a reasonably long-life span, it poses a unique risk for field conditions. When there is roadwork occurring in proximity to this pipe it has the tendency to catastrophically fail, causing a fast leak which can risk draining the water tower and would pose significant problems to the system. Township staff have identified this unique risk and mitigate it by reconstructing the watermain any time roadwork is occurring in close proximity to the pipe.

While these pipes are otherwise typically stable and do not require work, this is challenging to accurately depict in the above data. In practice however, it has resulted in certain capital reconstruction projects such as the water pipes on Havergal, Asbury, Rothwell, Westran, Huff, Cornell, Littlefield being delayed in favour of aligning with the County of Lennox and Addington planned reconstruction of Main St – Odessa.

Staff are continuously evaluating the risks associated with these delays by monitoring watermain break rates as a proxy for overall condition. Staff also intend, through the new watermain relining program, to complete field sample of the watermains to get a more accurate picture of real conditions to contrast that with the above listed Estimated Useful Life of the water pipe, to aid in the overall evaluation of the risks in the system.

4.2. CORE SEWER SYSTEM

The Township's Core Sewer System is a combination of approximately 76 (+5 km from 2022) kilometers of linear sewers and eight pumping stations that convey wastewater flows from the serviced areas to two treatment plants where it is treated and discharged into the environment. This infrastructure is valued at approximately $168 million (+$21M) and is primarily funded by user rates set by Council. As a result, expenditures relating to the sewer system are excluded from the Township's tax levy.

State of the Local Infrastructure

Asset Inventory

Core Assets included within this section are listed in Table 52. Approximately half of the sewer system is linear in nature, which includes manholes and mains. Treatment and collection facilities are considered non-linear but contribute to the overall collection and treatment of wastewater. Approximately half of the Core Sewer System's Replacement Costs are valued based on user-defined unit costs using historical development reports. The average age of the Core Sewer System is 33 years and has an overall condition of very good.

Table 52: Core Sewer System - Asset Valuation Summary

Subcategory	Quantity		Replacement Cost ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Sewer Manholes	876	ea.	8,885,268	User-Defined Unit Cost	33.5	Very Good
Sewer Mains	75,594	m.	96,128,600	User-Defined Unit Cost/Consumer Price Index	33.5	Very Good
Treatment Facilities	2	ea.	53,527,388	Consumer Price Index	25.8	Good
Collection Facilities	8	ea.	9,571,399		28.6	Good
Total Core Sewer System			**168,112,655**		**32.8**	Very Good

Asset Age

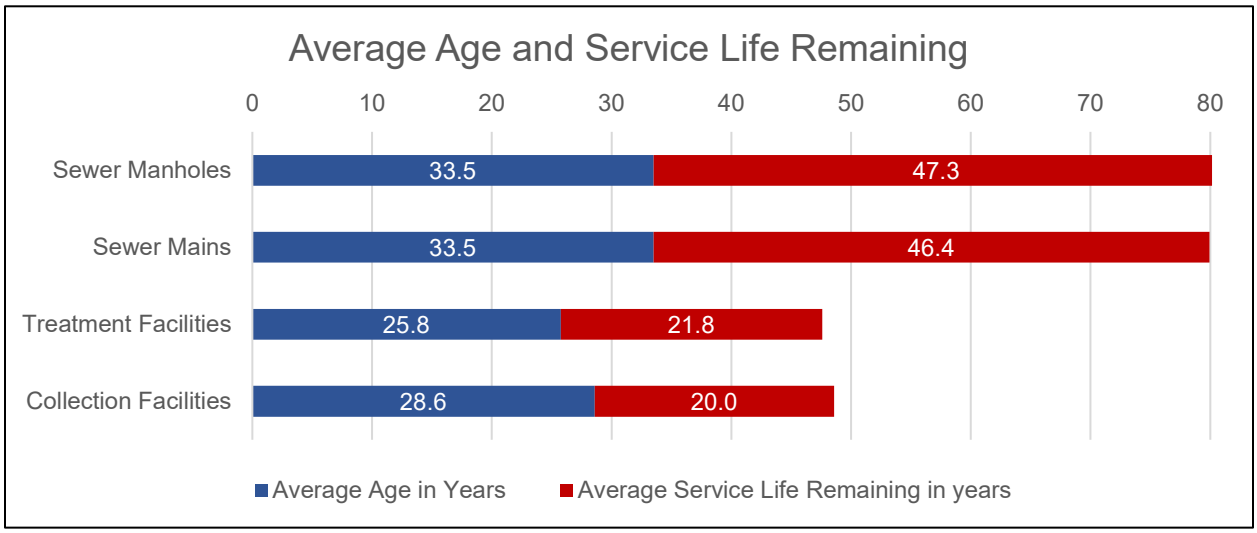
Figure 53 illustrates the average age relative to service life remaining for each subcategory of the Core Sewer System. Service life remaining is based on the initial EUL of the assets, which are listed in Table 53, but may deviate if a condition assessment has been undertaken. On average, linear sewer assets are approximately 40% through their useful lives, which means over 50% of assets are less than 40 years of age.

EULs are developed based on industry standards and are in accordance with the Township's Tangible Capital Asset Policy. A range in EUL is important to ensure certain components of an asset (where applicable) are depreciated and forecasted for replacement appropriately.

Table 53: Core Sewer System - Estimated Useful Life

Subcategory	Estimated Useful Life (EUL)
Sewer Manholes	80 Years
Sewer Mains	
Treatment Facilities	5 to 80 Years
Collection Facilities	

Figure 53: Core Sewer System - Average Age and Service Life Remaining

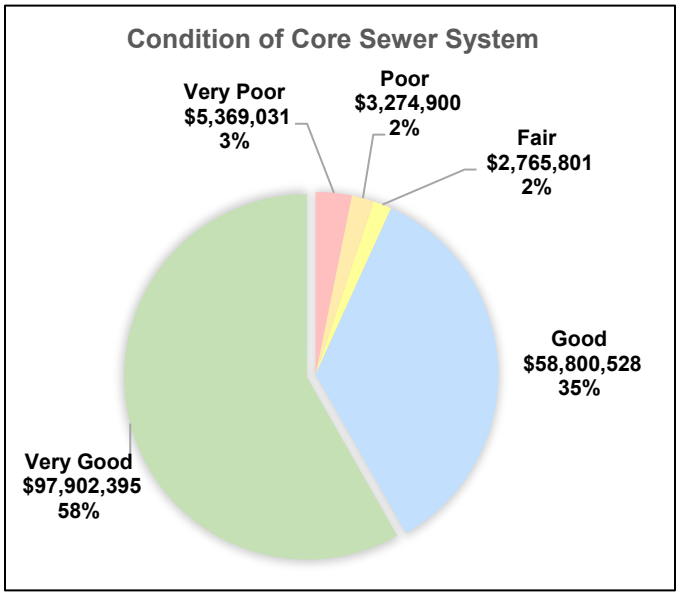


Asset Condition and Assessment

The Township's historic and current approach to assessing the condition of Core Sewer System assets heavily relies on the asset's age and EUL. Internal responses to the Technical LOS, as disclosed in the next section, and externally legislated reporting requirements have played a role in identifying and prioritizing the rehabilitation and replacement of linear assets.

Currently, the Township does not have a formal condition assessment approach for Core Sewer System assets. It is important for the Township to develop and implement a formal and comprehensive condition assessment approach that proactively assesses core sewer infrastructure.

Figure 54: Core Sewer System - Condition Summary

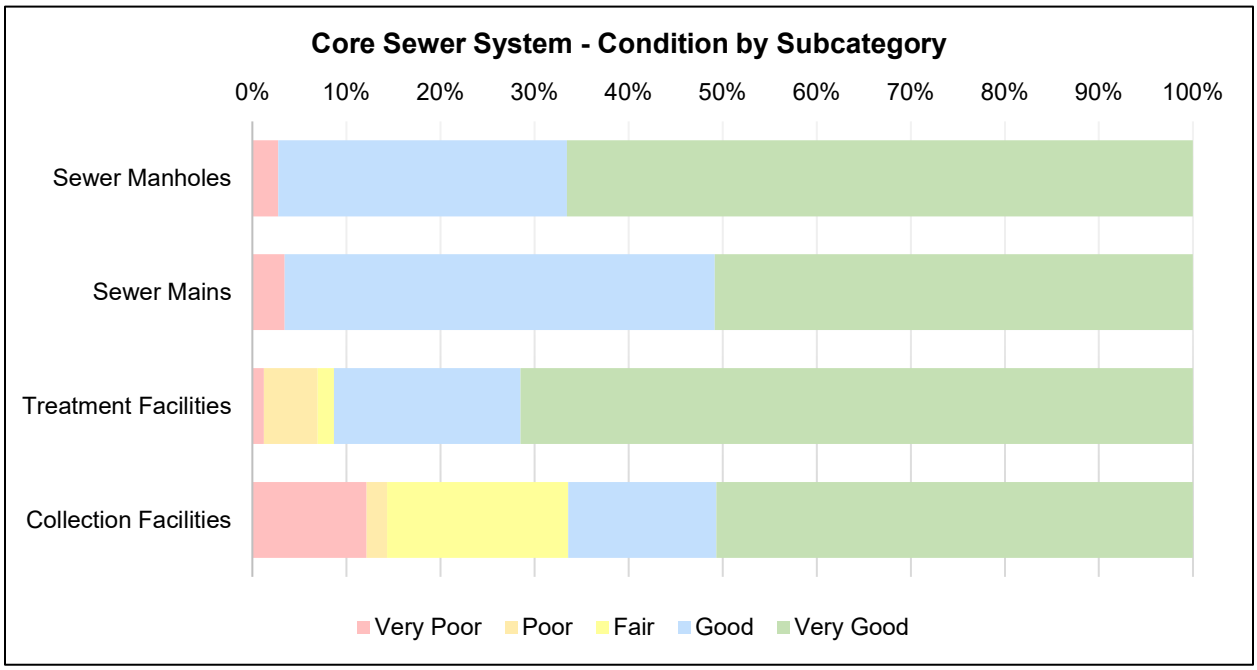


Projected conditions illustrated in Figure 54 are based on a weighted average relative to the Replacement Cost.

The Township's Core Sewer System has approximately 93% (-2%) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. While assets are generally in very good condition, approximately 43% of the Replacement Costs associated with poor and very poor conditions relate to the treatment plants, due to their overall value relative to other infrastructure.

Figure 55 provides further detail into the Core Sewer System assets by subcategory. Collection facilities bear the highest proportion of assets in very poor condition at a relatively lower Replacement Cost as compared to other subcategories within the system.

Figure 55: Core Sewer System - Condition by Subcategory



Levels of Service

To adhere to the first asset management milestone, O.Reg. 588/17 legislates the disclosure of certain Community and Technical LOS for Core Assets. Community LOS use qualitative descriptions to describe the scope or quality of service delivered by an asset category. Technical LOS use metrics to measure the scope or quality of service being delivered by an asset category. Table 54 outlines the required Community and Technical LOS as set out in O.Reg. 588/17.

It is the Township's objective to finalize the development of advanced LOS within the Core Sewer System in future iterations of the AMP. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 54: Core Sewer System - Levels of Service

Community Levels of Service			Technical Levels of Service	
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	The Township's sanitary sewer system consists of two sewage treatment plants and their associated collection system: The Bath Sewage collection system consists of works for the collection and transmission of sewage, consisting of approximately 17.6 km of separated sewers, four pumping stations, and 1.7 km of force main. These eventually discharge into the Bath Sewage Treatment plant. The Loyalist East Sewage Collection system consists of works for the collection and transmission of sewage, consisting of approximately 44.6 km of separated sewers, four sewage pumping stations, and 11.7 km of force mains. These works eventually discharge into the Amherstview Water Pollution Control Plant. See maps in Appendix B.6.	Percentage of properties connected to the municipal wastewater system	69.0% (-2.0%)
Reliability	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occurs in habitable areas or beaches	The Township does not own any combined sewers.	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	0.0

Community Levels of Service			Technical Levels of Service	
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Township does not own any combined sewers.	Number of connection days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0.0000 (-0.0006)
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	The Township has separated sewers. Stormwater can enter sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g., weeping tiles). Sewer mains are inspected regularly and repaired if leakages are observed. There were no sewer main backups reported in 2023.	Number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0004 (-0.0006)
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The Township follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.		
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment plant and may include suspended solids, total phosphorous, biological oxygen demand, total ammonia nitrogen, and E. coli. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants. In 2023 two exceedances of the limit for E. coli occurred at the AWPCP due to low flows and wildlife activity in the wetland. All final effluent limits were met for BSTP.		
Performance			Capital Reinvestment Rate	1.00% (+0.56%)

Lifecycle Management

Linear Infrastructure

The AMP for the Core Sewer System's linear infrastructure has been developed using projected age-based conditions and risk. Sewer mains within Citywide are primarily defined by material and diameter, which allows the Township to use risk metrics to prioritize main relining and replacements. The Township has a CCTV inspection program that is currently based on observations from the annual flushing program, inspections, and reports of backups and blockages. Furthermore, the Township performs periodic operational activities on other linear assets such as manhole inspections. Like other linear infrastructure, staff attempt to coordinate storm rehabilitation and replacements with road reconstruction projects to optimize Lifecycle Costs, unless there is a structural failure.

Core Facilities

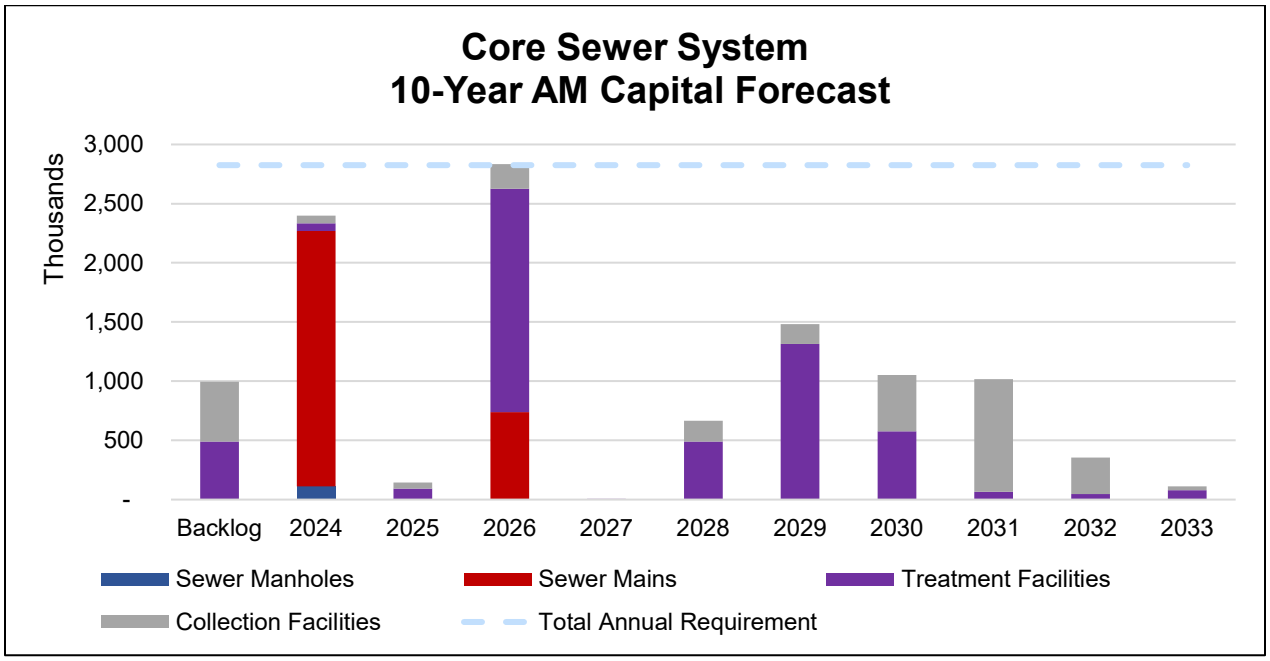
Core facilities within Citywide can be further broken down into process equipment and building components.

Process equipment lifecycle events are performed by the maintenance/operations staff and the computerized maintenance management system is under development. At a minimum, all facilities receive weekly visual inspections. Critical process equipment has alarms and the Supervisory Control and Data Acquisition ("SCADA") system monitoring the operation. Major process equipment receives annual detailed inspections.

Asset Management Capital Forecasts

Figure 56 illustrates the Core Sewer System's 10-year capital replacement forecast. The backlog represents scheduled asset replacements that are over their projected service life remaining. While the assets are not considered high-risk, it is important for the Township to document within Citywide justification for any capital project deferrals. The Annual Requirement to fund the Core Sewer System is currently $2.8 (+0.1M) million.

Figure 56: Core Sewer System - 10-Year Capital Forecast



Risk Management

As explained in Section 2.5, risk models were developed for each asset category to prioritize the rehabilitation and replacement of assets, with a higher focus on the Core Assets. The consequence of failure risk model for the Core Sewer System is outlined in Table 55.

Table 55: Core Sewer System - Consequence of Risk Model

Score	Economic (34% Manholes, Mains) (100% Facilities) Replacement Cost (100%)	Operational (33% Manholes, 66% Mains)		Strategic (33% Manholes) Fixed Risk (100%)	Consequence of Failure
		Attribute - Road Class (100% Manholes) (50% Mains)	Asset Sub-Type - Main Diameter (50% Mains)		
1	<$25,000	6 (Local)	50 to 150 mm	N/A	Insignificant
2	>=25,000 and <$75,000	5 (Local)	200 to 250 mm	Manholes - All	Minor
3	>=$75,000 and <$125,000	4 (Collector)	300 to 375 mm	N/A	Moderate
4	>=$125,000 and <$200,000	3 (Collector)	400 to 450 mm	N/A	Major
5	>$200,000	1 & 2 (Arterial)	525 to 750 mm	N/A	Severe

Figure 57 is the risk matrix generated from Citywide that incorporates the above-noted risk models. This matrix does not include any assets considered surplus and not planned for replacement. Under this model, there are seven assets considered high or very high risk due to their condition or consequence of failure. These are also subsequently listed in Table 56.

Figure 57: Core Sewer System - Risk Matrix

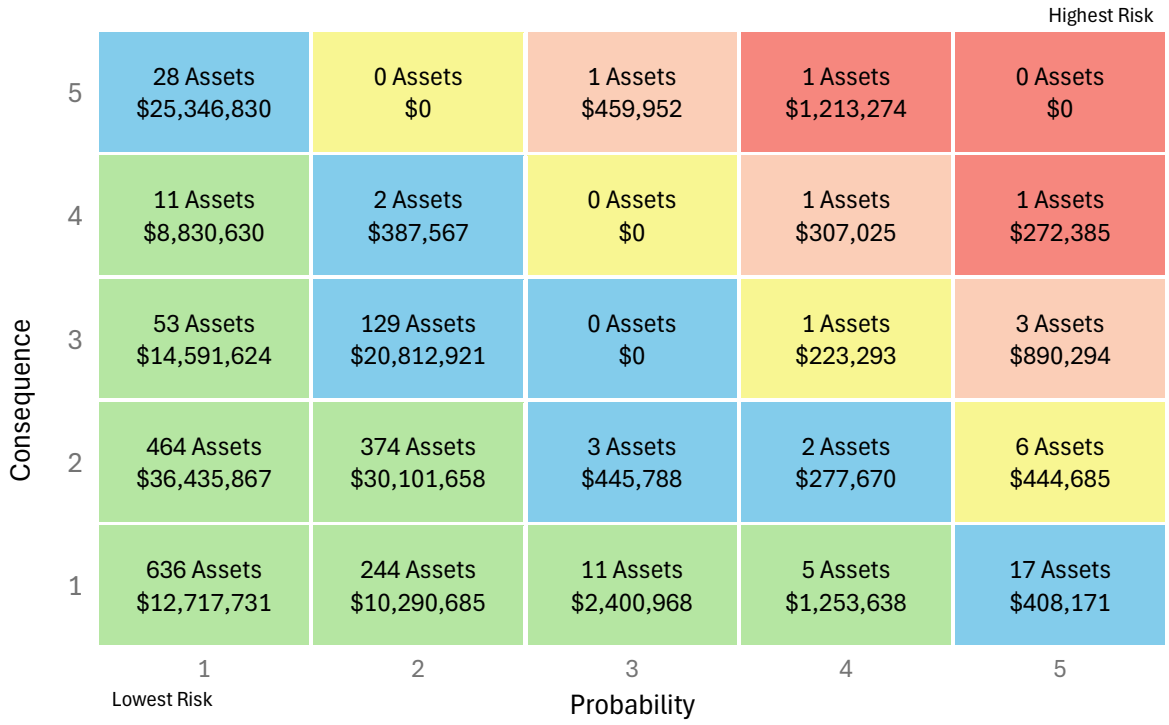


Table 56: Core Sewer System – High-Risk Assets

Asset Name	Location	GIS #	Risk Rating
Sanitary Main on Bath PS#2 FM[32]	Bath PS#2 FM from MH 0 to MH 5442	SAM5020	High
Sanitary Main on Bath PS#1 FM[33]	Bath PS#1 FM from MH 5398 to MH 5368	SAM5101	Very High
Amherstview WPCP Main Building Electrical	Amherstview WPCP - 4326 Taylor Kidd Blvd		High
Lakeview PS Electrical[34]	Lakeview PS - 4565 Bath Rd		High
Bath WPCP Old Generator and transfer switch[35]			High
Outlet[36]	Amherstview WPCP - 4326 Taylor Kidd Blvd		Very High

[32] Replacement of sanitary main scheduled in the 10-year capital budget.
[33] Design is underway for Bath Main St. project with construction forecasted for 2028.
[34] Replacement of the generator at the Lakeview Pumping Station is scheduled for 2024, remainder of electrical system scheduled for 2025 design and construction forecasted for 2027.
[35] Replacement of the generator at the Bath WPCP is scheduled for 2025 design with project completion forecasted for 2027.
[36] Asset replacement scheduled in 10-year capital budget.

4.3. Other User-Funded Assets

Other User-Funded assets include Buildings, Machinery & Equipment, and Fleet owned and maintained by the Utilities Division. This asset category is funded equally to provide both water and sewer services within the Township.

State of the Local Infrastructure

Asset Inventory

Assets included within this section are listed in Table 57. This asset category includes user-rate funded light-duty fleet, the Millhaven garage, and its equipment contents. With a Replacement Cost of $3.5 million (+$0.5M from 2022), the average age of other user-funded assets is 18 years, and has an overall condition of fair.

Table 57: Other User-Funded Assets - Asset Valuation Summary

Subcategory	Quantity		Replacement Cost ($)	Replacement Cost Method	Average Age in Years	Weighted Average Condition
Utilities Building	2	Quantity	2,571,458	Consumer Price Index	38.3	Good
Utilities Machinery & Equipment	14	Quantity	345,024		12.4	Fair
Utilities Fleet	12	Quantity	585,118	User-Defined Unit Cost	8.2	Fair
Total Other User-Funded Assets			**3,501,600**		18.1	**Fair**

Asset Age

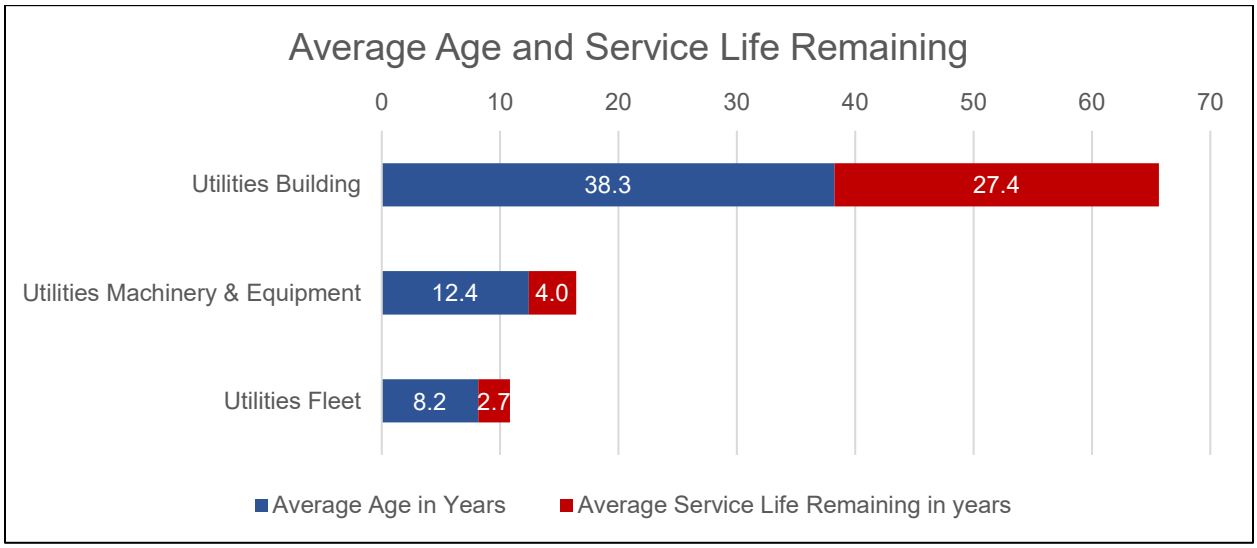
Figure 58 illustrates the average age relative to service life remaining for each subcategory of the Other User-Funded Assets. Service life remaining is based on the initial EUL of the assets, which are listed in Table 58, but may deviate if a condition assessment and/or lifecycle activities have been undertaken.

EULs are developed based on industry standards and are in accordance with the Township's Tangible Capital Asset Policy. A range in EUL is important to ensure certain components of an asset (where applicable) are depreciated and forecasted for replacement appropriately.

Table 58: Other User-Funded Assets - Estimated Useful Life

Subcategory	Estimated Useful Life (EUL)
Utilities Building	5 to 80 Years
Utilities Machinery & Equipment	5 to 25 Years
Utilities Fleet	5 to 20 Years

Figure 58: Other User-Funded Assets - Average Age and Service Life Remaining

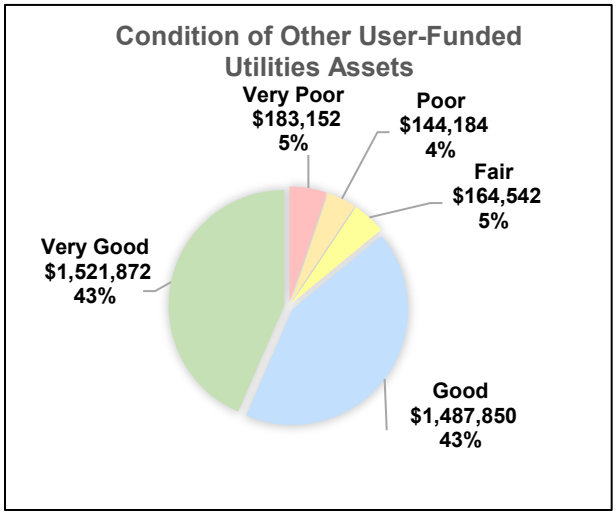


Asset Condition and Assessment

The Township's historic and current approach to assessing the condition of Other User-Funded Assets heavily relies on the asset's age and EUL.

Currently, the Township does not have a formal condition assessment approach for Other User-Funded Assets. It is important for the Township to develop and implement a formal and comprehensive condition assessment approach that proactively assesses these assets.

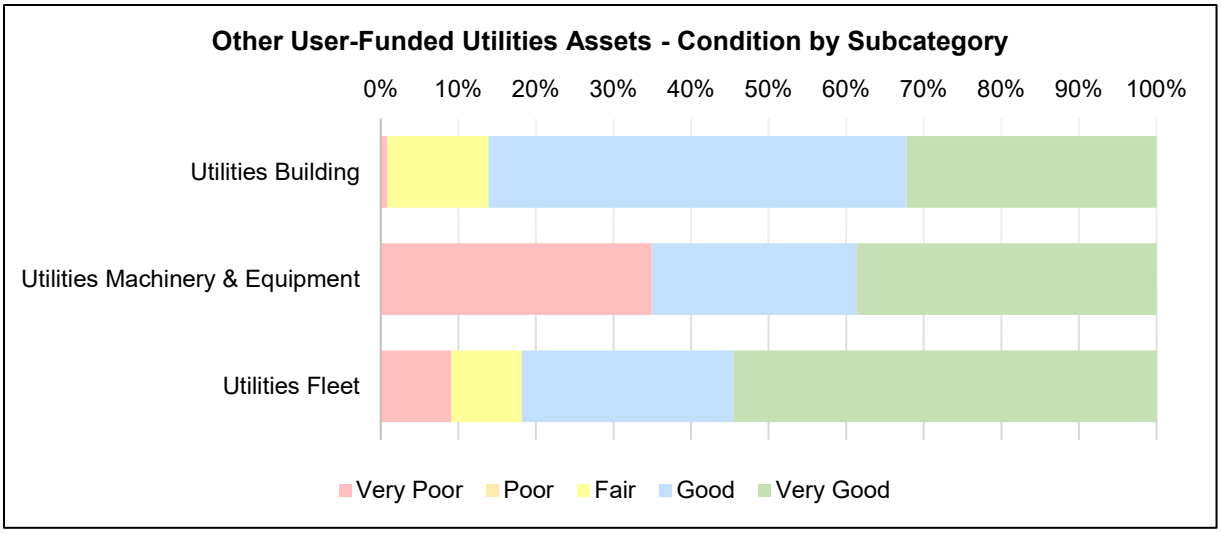
Figure 59: Other User-Funded Assets - Condition Summary



Projected conditions illustrated in Figure 59 are based on a weighted average relative to the Replacement Cost.

The Township's Other User-Funded Assets have approximately 86% (+3%) of assets in good or very good condition. The remaining are approaching the end of their expected useful lives, indicating a need for investment in the short to medium term. Figure 60 provides further detail by subcategory.

Figure 60: Other User-Funded Assets - Condition by Subcategory



Levels of Service

Other User-Funded Assets are owned by the Utilities Division and are considered a Non-Core Asset category and as such, Technical and Community LOS are not defined in O.Reg. 588/17; municipalities are to develop their own.

Levels of Service for Other User-Funded Assets mirror corresponding asset categories under tax-funded assets.

Table 59, Table 60, and Table 61 list the Community and Technical LOS developed by the Township. It is the Township's objective to finalize the development of advanced LOS in future AMP updates. These will incorporate the six added-value Community LOS endorsed by Council, as outlined in Section 2.3.

Table 59: Other User-Funded Assets [Buildings]: Levels of Service

Community Levels of Service			Technical Levels of Service	
Scope	Description, which may include maps, of municipally owned buildings.	See maps in Appendix B.4. Buildings Map		
Safety			% of facilities where annual internal inspections have been completed	100%
Quality			% of facility assets that are in fair or better condition (Age or Condition Based)	94%

Table 60: Other User-Funded Assets [Fleet]: Levels of Service

Community Levels of Service			Technical Levels of Service	
Quality			% of fleet in fair or better condition	83%
			% of vehicles where regulatory inspections have been completed	100%
Environmental Stewardship	Vehicles and Equipment have minimal impact on the environment	The Township's Climate Action Plan includes the following goals: CAP goal #16[37] CAP goal #17[38] CAP goal #18[39]	% of vehicles that are zero-emission vehicles	0%

Table 61: Other User-Funded Assets [Machinery & Equipment]: Levels of Service

Community Levels of Service			Technical Levels of Service	
Quality			% of equipment in fair or better condition	81%
			% of essential equipment where regulatory inspections have been completed	100%
Environmental Stewardship	Vehicles and Equipment have minimal impact on the environment	The Township's Climate Action Plan includes the following goals: CAP goal #17[40]		
Performance			% of facilities where annual internal inspections of IT networking equipment have been completed	100%

[37] CAP goal #16 - Optimize use of municipal vehicles by promoting eco driving techniques and inter-departmental vehicle sharing, installing auxiliary power units in vehicles to reduce idling.
[38] CAP goal #17 - Electrify the municipal fleet- replace fossil fuel powered vehicles with electric alternatives as part of lifecycle activities.
[39] CAP goal #18 - Replace heavy duty vehicles with zero emissions alternatives as the technology becomes available.

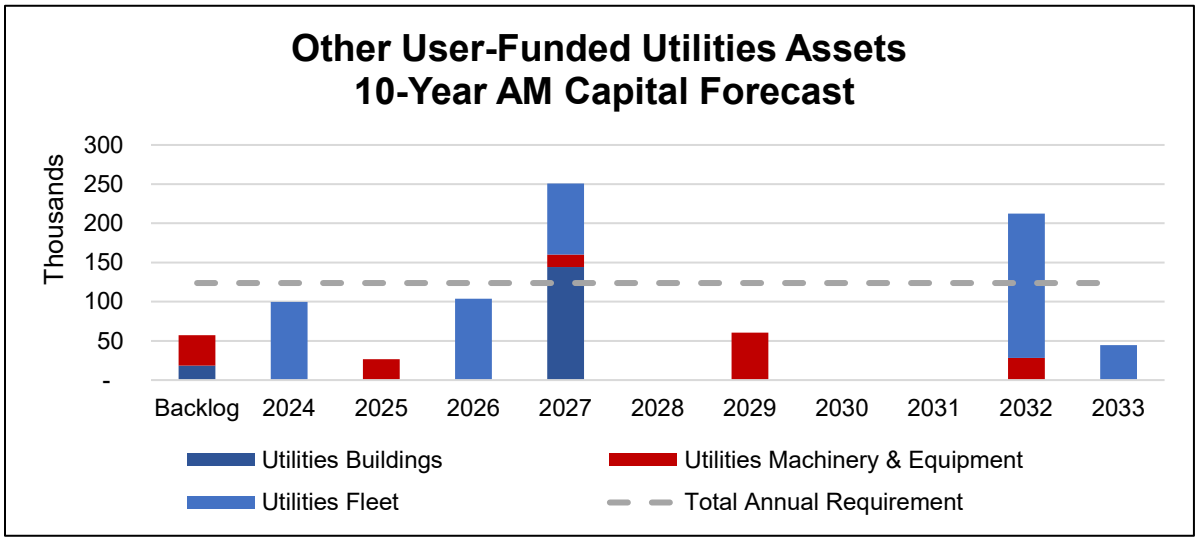
Lifecycle Management

Lifecycle management strategies mirror corresponding asset categories under tax-funded assets.

Asset Management Capital Forecasts

Based on current data, the Annual Requirement that should be allocated to fund the capital replacement of Other User-Funded Assets is $123,834 (+$15,834). The 10-year capital forecast totaling $855,425 (-$107,575) is illustrated in Figure 61.

Figure 61: Other User-Funded Assets - 10-Year Capital Forecast



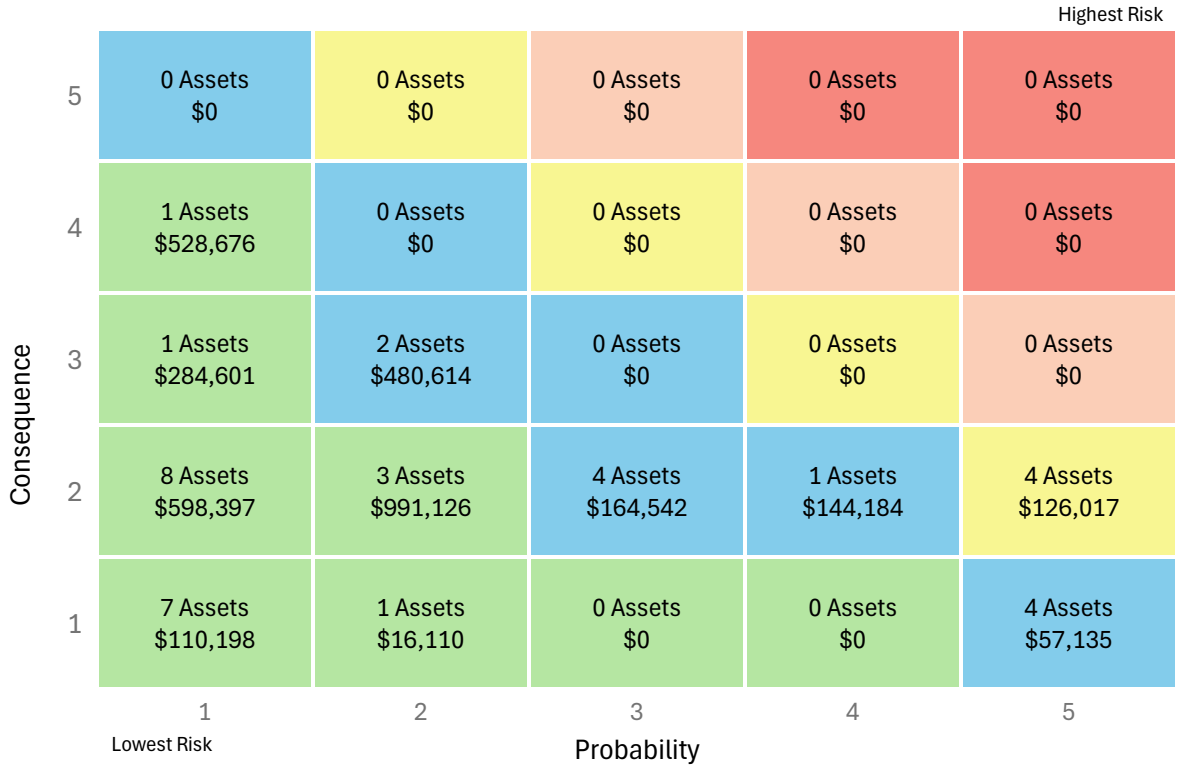
[40] CAP goal #17 - Electrify the municipal fleet- replace fossil fuel powered vehicles with electric alternatives as part of lifecycle activities.

Risk Management

Risk models mirror corresponding asset categories under tax-funded assets.

Figure 62 illustrates the risk matrix for fleet that is generated in Citywide that incorporates the risk models outlined in correlating tax-funded asset categories. Under this model, there are no assets considered high or very high risk due to their condition or consequence of failure.

Figure 62: Other User-Funded Assets - Risk Matrix



5. FINANCIAL STRATEGY

5.1. OVERVIEW

For an AMP to be effective and relevant, it is important that it be integrated into financial planning and long-term budgeting strategies. The development of a comprehensive financial plan is necessary for the Township to identify the financial resources needed for a successful, sustainable AM program. The Financial Strategy section develops such a financial plan by providing several options for consideration and concludes with staff recommendations. The plan presented took into consideration the following elements:

- Financial requirements
  - Existing assets
  - Existing service levels
  - Requirements of changes in LOS (will be included in future AMPs)
  - Requirements of growth
- Traditional sources of municipal funding
  - Tax levy
  - Debt
  - Reserves
  - User Rates
- Non-traditional sources of municipal funds
  - Reallocated budgets
  - Partnerships
  - Procurement methods
- Senior Government funds:
  - Canada Community Building Fund ("CCBF") (formerly Federal Gas Tax)
  - Ontario Community Infrastructure Fund ("OCIF")

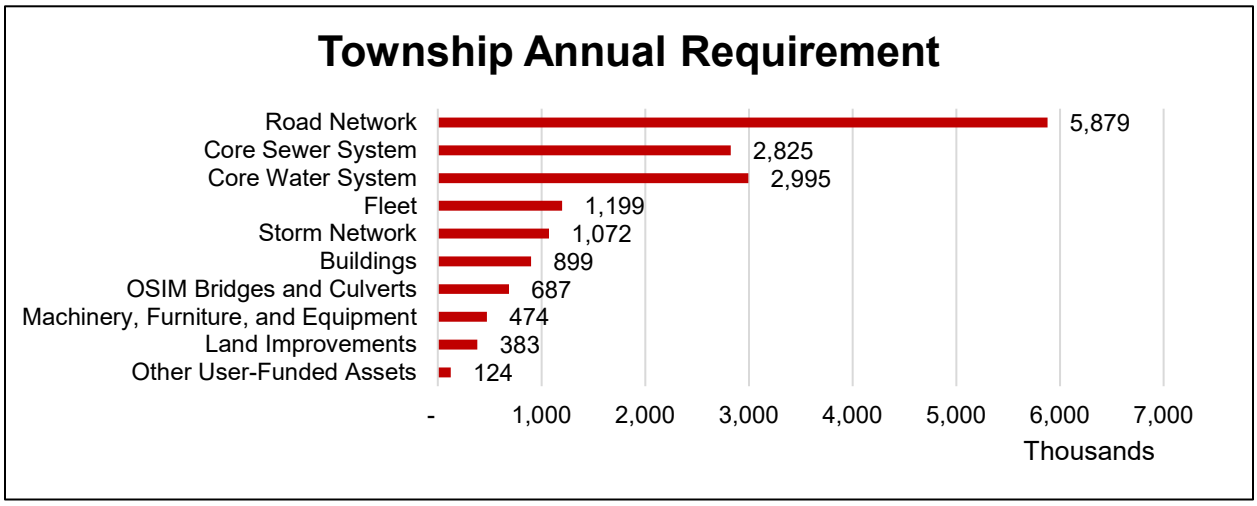
Per Provincial requirements, periodic grants that are not firm in nature are not included. If the financial plan demonstrates a funding shortfall, it is a requirement that a specific plan is included that illustrates how the impact of the shortfall will be managed. In evaluating the funding shortfall, the province may consider the Township's approach to the following:

- Has the reduction of existing LOS been considered to reduce financial requirements?
- What asset management and financial strategies have been considered? For example:
  - Has the use of debt been considered?
  - Do user fees reflect the cost of applicable services? If not, increased user fees should be considered.

Annual Requirements

The Annual Requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. This is a factor of total Replacement Cost and EUL. In total, the Township should allocate approximately $16.5 million (+$2.0M from 2022) annually to address capital requirements for the assets included in this AMP. This consists of $10.6 million (+$1.4M) for tax-funded assets and $5.9 million (+$0.6M) for user-funded assets. The breakdown by asset category is outlined in Figure 63.

Figure 63: Township Annual Requirement



For most asset categories, the Annual Requirement has been calculated based on a "replacement only" scenario, in which Capital Costs are only incurred at the construction and replacement of each asset.

For the Road Network, lifecycle management strategies have been developed to identify Capital Costs that are realized through strategic rehabilitation and renewal of the Township's roads. The reiterated table below provides a comparison of potential cost savings available if lifecycle management strategies are implemented across the Road Network, which compares the two scenarios:

1. Lifecycle strategy Scenario – based on the assumptions that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.
2. End-of-Life Scenario – based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.

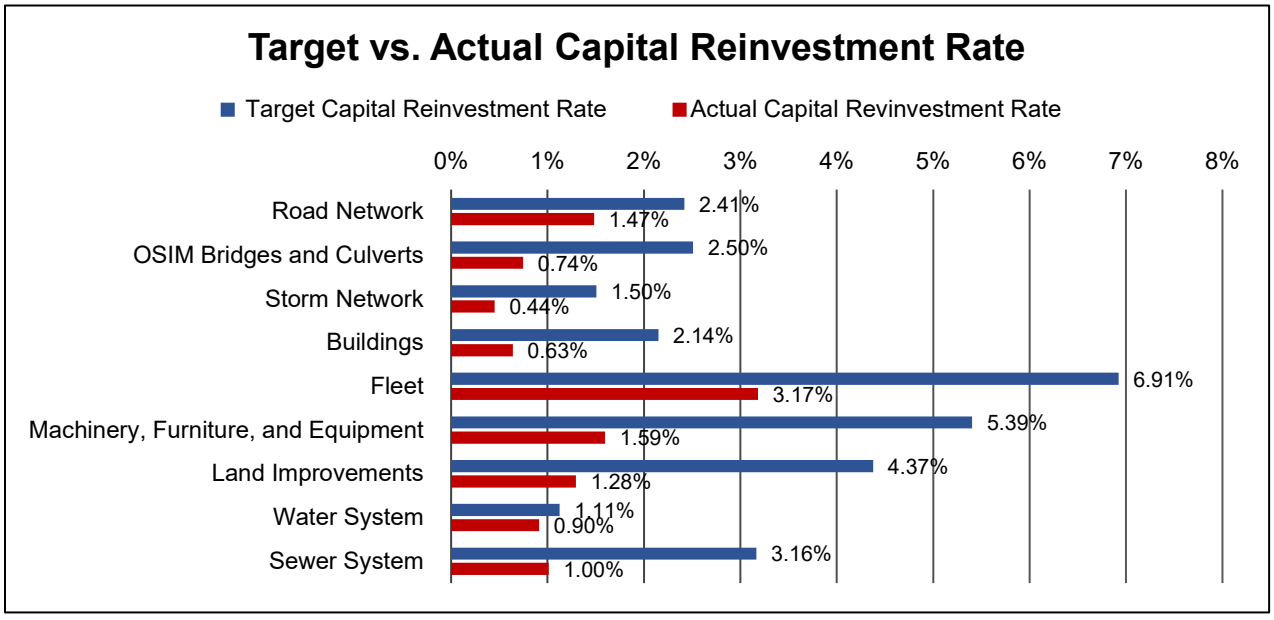
Subcategory	Annual Requirement - Lifecycle ($)	Annual Requirement - End of Life ($)	Savings (costs)
Core Assets	5,177,386	6,158,550	981,165
Non-Core Assets	701,757	701,757	-
Road Network Total	**5,879,143**	**6,860,308**	**981,165**

By using a proactive lifecycle strategy for the Road Network, the Township has the potential of realizing $981,165 (+$193,965) in cost avoidance. This reduces the Annual Requirement of the Core Assets by 14%. As this is the lowest cost option available to the Township, this is the value used in the development of the financial strategy. This approach will be reviewed to see how it may be applied to other asset categories.

Annual Funding

Based on historical sustainable capital funding sources, the Township has committed approximately $8.6 million (+$1.5M) towards capital projects annually. This consists of $5.2 million (+$0.7M) towards tax-funded assets and $3.4 million (+$0.8M) towards user-funded assets. Given the Annual Requirement of $16.5 million (+$2.0M), there is currently a Funding Gap of $8.0 million (+$0.6M), this translates to an overall actual Capital Reinvestment Rate of 1.09% (+0.02%) as compared to the targeted Capital Reinvestment Rate of 2.10% (-0.07%). Figure 64 breaks this down by asset category.

Figure 64: Target vs. Actual Capital Reinvestment Rate



5.2. TAX-FUNDED ASSETS

Debt Issuances

Table 62 and Table 63 demonstrate how the Township has historically utilized debt for investing in tax-funded assets. There is currently $3.4 million (-$1.6M from 2022) of debt outstanding for the tax-funded assets covered by this AMP, with corresponding principal and interest payments of $449,800 (-$183,100). These are well within provincially prescribed limits.

Table 62: Historical Tax-Funded Debt Issuances

Asset Category	Current Outstanding Debt	Use of Debt in the Last Five Years				
		2019	2020	2021	2022	2023
Road Network	933,200	-	-	-	-	-
OSIM Bridges and Culverts	-	-	-	-	-	-
Storm Network	559,500	-	-	-	-	-
Buildings	1,085,500	-	-	-	-	-
Fleet	464,600	-	-	-	-	-
Machinery, Furniture, and Equipment	-	-	-	-	-	-
Land Improvements	365,700	-	-	-	-	-
Natural Assets	-	-	-	-	-	-
Total Tax Funded	**3,408,500**	**-**	**-**	**-**	**-**	**-**

Table 63: Future Tax-Funded Interest Payments

Asset Category	Principal & Interest Payments in the Next Twenty Years ($)								
	2024	2025	2026	2027	2028	2029	2034	2039	2044
Total Tax Funded	**449,800**	**446,500**	**374,000**	**373,600**	**278,900**	**246,700**	**206,500**	**87,600**	**-**

Reserve Funds

Reserve Funds are a crucial tool in long-term financial planning. The benefits of reserve funds being available for infrastructure planning include:

- Ability to stabilize tax rates when addressing variable and at times unforeseen factors
- Financing one-time or short-term investments
- Accumulating the funding for significant future infrastructure investments
- Managing the use of debt
- Normalizing infrastructure funding requirement

Table 64 outlines the reserve funds available for tax-funded assets and the asset categories they are applicable.

Table 64: Tax-Funded Asset Replacement Reserve Funds

Reserve/Reserve Fund	Balance (December 31, 2023) ($)	Asset Category
General Capital Reserve Fund	2,939,804	All
Fleet & Equipment Replacement Reserve Fund	1,426,917	Fleet, Machinery, Furniture, and Equipment
Amherst Island Assets Reserve Fund	97,857	All (restricted by geography)
Ice Resurfacer Reserve Fund	19,676	Machinery, Furniture, and Equipment
Road Use Agreement Reserve Fund	334,422	Road Network
Fire Training Centre Reserve	55,863	Buildings
Total	**4,874,539**	

Current Funding

Table 65 shows, by asset category, the Township's average Annual Requirements and current funding positions.

Table 65: Tax-Funded Assets - Current Funding

Asset Category	Avg. Annual Requirement ($)	Annual Funding Available ($)				Annual Deficit ($)
		Taxes	CCBF (formerly Gas Tax)	OCIF	Total Available	
Road Network	5,879,143	1,729,300	564,130	1,299,608	3,593,038	2,286,105
OSIM Bridges and Culverts	687,017	202,100	-	-	202,100	484,917
Storm Network	1,071,964	315,300	-	-	315,300	756,664
Buildings	898,677	264,300	-	-	264,300	634,377
Fleet	1,198,513	550,000	-	-	550,000	648,513
Machinery, Furniture, and Equipment	474,362	139,500	-	-	139,500	334,862
Land Improvements	382,664	112,600	-	-	112,600	270,064
Natural Assets	-	-	-	-	-	-
Total:	**10,592,340**	**3,313,100**	**564,130**	**1,299,608**	**5,176,838**	**5,415,502**

The average Annual Requirement for the above asset categories is $10.6 million (+$1.4M). Annual revenue currently allocated to these assets for capital purposes is $5.2 million (+$0.7M). This results in an annual funding gap of $5.4 million (+$0.7M). This means that the above infrastructure categories are currently funded at 49% of their long-term requirements.

Funding Requirement

In 2023, The Township had annual tax revenues of $21,437,783 (-$3.4M). Table 66 illustrates, without consideration of any other revenue sources or cost containment strategies, the tax levy change necessary over time to achieve full funding.

Table 66: Tax-Funded Assets - Tax Change Required

Asset Category	Tax Levy Change Required for Full Funding
Road Network	10.7%
OSIM Bridges and Culverts	2.3%
Storm Network	3.5%
Buildings	3.0%
Fleet	3.0%
Machinery, Furniture, and Equipment	1.6%
Land Improvements	1.3%
Total	**25.3%**

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

- The Township's debt payments for tax-funded assets will be decreasing by $203,100 over the next five years, $243,300 over the next 10 years, $362,200 over the next 15 years, and $449,800 over the next 20 years.

It is recommended that the above changes are incorporated and allocated toward the Funding Gap of $5.4 million as previously outlined, subject to the Township's overall financial position and other debt commitments. Table 67 outlines this concept.

Table 67: Tax Levy Increase Scenarios

	Without Capturing Changes				Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	5,415,502	5,415,502	5,415,502	5,415,502	5,415,502	5,415,502	5,415,502	5,415,502
Change in Debt Costs	N/A	N/A	N/A	N/A	(203,100)	(243,300)	(362,200)	(449,800)
Resulting Infrastructure Deficit:	5,415,502	5,415,502	5,415,502	5,415,502	5,212,402	5,172,202	5,053,302	4,965,702
Tax Increase Required	25.3%	25.3%	25.3%	25.3%	24.3%	24.1%	23.6%	23.2%
Annually:	**5.1%**	**2.5%**	**1.7%**	**1.3%**	**4.9%**	**2.4%**	**1.6%**	**1.2%**

Recommendations

In 2022, Council adopted the 2022 AMP with the following recommendations:

> That the Township implement the 20-year option that captures the changes in debt payments. This involves full funding being achieved over 20 years by:
>
> - Increasing tax revenues by 1.1% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
> - Allocating the CCBF, OMPF and OCIF revenue as outlined previously.
> - Increasing existing and future infrastructure budgets by the applicable CPI on an annual basis in addition to the deficit phase-in.
>
> It is understood that raising tax revenues by the amounts recommended above for infrastructure purposes will be difficult to do. However, considering a longer phase-in window may have greater consequences in terms of infrastructure failure.

Based on the 2024 AMP the infrastructure deficit has increased by $736,000 from 2022. To continue to meet the 20-year target, the annual increase in tax revenues for capital asset management would need to be increased from 1.1% to 1.2%. The 2025 AMP will require the Township to provide proposed LOS and a funding plan for the next 10 years which may affect the infrastructure deficit. It is recommended that the annual increase remain at 1.1% until the completion of the 2025 AMP and then any adjustments made.

Although the recommendation achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit within the resulting annual funding available. Table 68 outlines the current investment backlog of $11.2 million (+$0.1M) by asset category.

Table 68: Tax-Funded Assets - Investment Backlog

Asset Category	Investment Backlog ($)
Road Network	936,900
OSIM Bridges & Culverts	-
Storm Network	5,381,900
Buildings	2,102,100
Fleet	1,202,100
Machinery, Furniture, and Equipment	193,500
Land Improvements	1,386,000
Total	**11,202,500**

Prioritizing future projects will require the current data to be updated with condition-based data. Although the recommendations do not include further use of debt, the results of the condition-based analysis may require otherwise.

O.Reg. 588/17 will require that the Township integrates the proposed LOS for all asset categories in its AMP updates in future years. It is recommended that future planning reflect adjustments to LOS and their potential impacts on reserve fund balances.

5.3. USER-FUNDED ASSETS

Debt Issuances

Table 69 and Table 70 demonstrate how the Township has historically utilized debt for investing in user-funded assets. There is currently $4.4 million (-$0.8M) of debt outstanding for the user-funded assets covered by this AMP, with corresponding principal and interest payments of $738,300 (-$172,300). These are well within provincially prescribed limits.

Table 69: User-Funded Assets - Historical Debt Issuances

Asset Category	Current Outstanding Debt	Use of Debt in the Last Five Years				
		2019	2020	2021	2022	2023
Core Water System	1,547,700	-	-	-	-	-
Core Sewer System	2,852,600	-	-	-	-	-
Other User-Funded Assets	-	-	-	-	-	-
Total User-Funded	**4,400,300**	**-**	**-**	**-**	**-**	**-**

Table 70: User-Funded Assets - Future Debt Repayments

Asset Category	Principal & Interest Payments in the Next Twenty Years								
	2024	2025	2026	2027	2028	2029	2034	2039	2044
Total User-Funded - Water	242,000	239,000	152,200	149,400	146,700	143,900	71,600	57,700	-
Total User-Funded - Sewer	496,300	458,800	450,300	449,700	312,100	246,900	88,100	38,300	-
Total	**738,300**	**697,800**	**602,500**	**599,100**	**458,800**	**390,800**	**159,700**	**96,000**	**-**

Reserve Funds

Reserve Funds are a crucial tool in long-term financial planning. The benefits of reserve funds being available for infrastructure planning include:

- Ability to stabilize user rates when addressing variable and at times unforeseen factors.
- Financing one-time or short-term investments.
- Accumulating the funding for significant future infrastructure investments.
- Managing the use of debt.
- Normalizing infrastructure funding requirements.

Table 71 outlines the reserve funds available for user-funded assets and the asset categories they are applicable. The Township completes a water and sewer user rate study every five years that incorporates the fluctuations in Annual Requirements and the use of reserve funds within the user-funded asset categories.

Table 71: User-Funded Assets - Reserve Funds

Reserve Fund	Balance (December 31, 2023) ($)	Asset Category
Water Capital Reserve Fund	966,563	All water infrastructure
Water Impost Fees - Club Fee Reserve Fund	4,815,354	
Sewer Capital Reserve Fund	1,342,601	All sewer infrastructure
Sewer Impost Fees - Club Fee Reserve Fund	5,751,368	
Fleet & Equipment Replacement Reserve Fund	-	Utilities Fleet, Machinery, Furniture and Equipment
Total	**12,875,886**	

Current Funding

Table 72 shows, by asset category, the Township's average Annual Requirements, current funding positions, and funding increases required to achieve full funding on assets funded by user revenue.

Table 72: User-Funded Assets - Current Funding

Asset Category	Avg. Annual Requirement ($)	Annual Funding Available ($)			Annual Deficit ($)
		User Rates	Other	Total Available	
Water System	3,056,561	2,474,800	-	2,474,800	581,761
Sewer System	2,887,102	915,700	-	915,700	1,971,402
Total	**5,943,663**	**3,390,500**	**-**	**3,390,500**	**2,553,163**

The average Annual Requirement for the above asset categories is $5.9 million (+$0.6M). Annual revenue currently allocated to these assets for capital purposes is $3.4 million (+$0.7M). This results in an annual funding gap of $2.6 million (-$0.1M). This means that the above infrastructure categories are currently funded at 57% (+6%) of their long-term requirements.

Funding Requirement

In 2024, the Township had annual user revenues of $12,363,700. Table 73 illustrates, without consideration of any other revenue sources or cost containment strategies, the user revenue changes necessary over time to achieve full funding.

Table 73: User-Funded Assets - Revenue Change Required

Asset Category	Rate Change Required for Full Funding
Water System	8.4%
Sewer System	36.3%
Total	**20.7%**

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

- The Township's debt payments for water user-funded assets will be decreasing by $98,100 over the next five years, $170,400 over the next 10 years, $184,300 over the next 15 years, and $242,000 over the next 20 years.
- The Township's debt payments for sewer user-funded assets will be decreasing by $249,400 over the next five years, $408,200 over the next 10 years, $458,000 over the next 15 years, and $496,300 over the next 20 years.

It is recommended that the above changes are incorporated and allocated toward the Funding Gap of $2.6 million as previously outlined, subject to the Township's overall financial position and other debt commitments. Table 74 and Table 75 outline this concept.

Table 74: Water User Rate Increase Scenarios

Water								
	Without Capturing Changes				Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	581,761	581,761	581,761	581,761	581,761	581,761	581,761	581,761
Change in Debt Costs	N/A	N/A	N/A	N/A	(98,100)	(170,400)	(184,300)	(242,000)
Resulting Infrastructure Deficit:	581,761	581,761	581,761	581,761	483,661	411,361	397,461	339,761
Rate Increase Required	8.4%	8.4%	8.4%	8.4%	3.9%	3.3%	3.2%	2.7%
Annually:	**1.7%**	**0.8%**	**0.6%**	**0.4%**	**0.8%**	**0.3%**	**0.2%**	**0.1%**

Table 75: Sewer User Rate Increase Scenarios

Sewer								
	Without Capturing Changes				Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	1,971,402	1,971,402	1,971,402	1,971,402	1,971,402	1,971,402	1,971,402	1,971,402
Change in Debt Costs	N/A	N/A	N/A	N/A	(249,400)	(408,200)	(458,000)	(496,300)
Resulting Infrastructure Deficit:	1,971,402	1,971,402	1,971,402	1,971,402	1,722,002	1,563,202	1,513,402	1,475,102
Rate Increase Required	36.3%	36.3%	36.3%	36.3%	13.9%	12.6%	12.2%	11.9%
Annually:	**7.3%**	**3.6%**	**2.4%**	**1.8%**	**2.8%**	**1.3%**	**0.8%**	**0.6%**

Recommendations

In 2022, Council adopted the 2022 AMP with the following recommendations:

> That the Township implement the 20-year option that captures the changes in debt payments. This involves full funding being achieved over 20 years by:
>
> - Increasing water user revenues by 0.2% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP
> - Increasing sewer user revenues by 1% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP
> - Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
>
> It is understood that raising user revenues by the amounts recommended above for infrastructure purposes will be difficult to do. However, considering a longer phase-in window may have greater consequences in terms of infrastructure failure.

Based on the 2024 AMP the annual deficit has decreased by $143,437 from 2022. To continue to meet the 20-year target, the annual increase in water user revenues could decrease from 0.2% to 0.1% and the annual increase in sewer user revenues could decrease from 1% to 0.6%. The 2025 AMP will require the Township to provide proposed LOS and a funding plan for the next 10 years. It is recommended that the annual increase remain at 0.2% and 1% until the completion of the 2025 AMP and then any adjustments made.

Although the recommendation achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit within the resulting annual funding available. Table 76 outlines the current investment backlog of $10.6 million by asset category.

Table 76: User-Funded Assets - Investment Backlog

Asset Category	Investment Backlog
Core Water System	9,535,561
Core Sewer System	996,884
Other User-Funded Assets	57,135
Total	**10,589,580**

Prioritizing future projects will require the current data to be updated with condition-based data. Although the recommendations do not include further use of debt, the results of the condition-based analysis may require otherwise.

O.Reg. 588/17 will require that the Township integrates the proposed LOS for all asset categories in its AMP updates in future years. It is recommended that future planning reflect adjustments to LOS and their potential impacts on reserve fund balances.

6. IMPACTS OF GROWTH

6.1. GROWTH PROJECTIONS

Growth in the Township will play a significant role in AM and the need to expand infrastructure to ensure LOS are continually met. Various studies such as the Infrastructure Master Plan, the Development Charges Study and the Connection Fee Study identify growth-related capital infrastructure that will likely be required to service growth. These studies incorporate growth projections from the Township's Population, Housing, and Employment Projections study that was completed in 2019. According to this study, the Township is anticipating growth via population and employment outlined in Table 77. Approximately 96% of the growth projected by 2046 is derived from development occurring in the urban areas of Amherstview, Bath, and Odessa.

Growth projections act as a tool to guide municipal practices and documents such as the Infrastructure Master Plan completed in 2024, and the Township's updated Official Plan approved by Council in 2021. It is important to note that actual results may deviate from these studies, as it the current case. For example, the growth projection study predicted 6,960 occupied households by 2021 while the 2021 census results note 7,145 dwelling units. Additionally, growth in 2022 and 2023 outpaced the predicted 122 units per year by an average of 75% and the projected household estimate for 2026 was achieved three years early. While housing starts have slowed in 2024, the total number of occupied households remains slightly ahead of the 2019 study projections.

Table 77: Growth Study Projections

Year	Population	Growth from 2021	Occupied Households	Growth from 2021	Employment	Growth from 2021
2021	18,390		6,960		4,980	
2026	19,450	1060	7,570	610	5,260	280
2031	20,430	2,040	8,210	1,250	5,530	550
2036	21,260	2,870	8,740	1,780	5,760	780
2041	21,960	3,570	9,200	2,240	5,960	980
2046	22,600	4,210	9,730	2,770	6,140	1,160

6.2. IMPLICATIONS TO ASSET MANAGEMENT

By July 1, 2025, the Township's AMP must indicate how the assumptions regarding future changes in population and economic activity inform the preparation of the lifecycle management and financial strategy.

The AMP is focused on the costs related to LOS for existing assets, however the Infrastructure Master Plan includes expanded infrastructure and services necessitated by forecasted population growth. The Township incorporates planned growth-related infrastructure in its 10-year capital budget and long-range financial plan. As growth-related assets are constructed or acquired, they shall be integrated into the Township's AMP. While the addition of residential units will add to the existing assessment base and offset some costs associated with growth, the Township will need to review the lifecycle costs of growth-related infrastructure additions. These costs will be considered in long-term funding strategies that are designed to, at a minimum, maintain the current LOS.

APPENDIX A – CITYWIDE ASSET HIERARCHY

APPENDIX A - CITYWIDE ASSET HIERARCHY

Class	General Infrastructure	Core Infrastructure	
Category	Building Fleet Furniture & Equipment Information Technology	Land Land Improvements Machinery and Equipment Road Network	Sanitary System Storm Sewer System Water System
Segments	Facilities Fleet	Equipment	Right of Way (ROW)

Department	**Asset type**		
Corporate Services (CS)	120 Odessa Admin Office 123 Corporate IT Support 128 Odessa Garage (FM) 135 88 Main St. Bath	510 Glenwood Cemetery 511 Lutheran Union Cemetery 512 Pentland Cemetery 513 Switzerville Cemetery	515 Fourth Line Cemetery 519 Bell Cemetery 700 Vacant Land
Emergency Services (ES)	210 Emergency Services 212 Fire Training Classroom Facility 217 Odessa Fire Station	218 Amherstview Fire Station 219 Bath Fire Station 220 Amherst Island Fire Station	224 Fire Training Ground Facility 700 Vacant Land
Community & Customer Services (CCS)	332 Township Safety Devices 333 Transportation Services 337 Amherst Island Garage 338 Transportation Vehicles & Equipment 339 Bath Public Works Garage 340 Roads Hardtop 341 Bridges & Culverts 343 Roads Loosetop 345 Roads Equipment 347 County Road 6 Garage 348 County Rd 6 Sand and Salt Storage Facility 349 Millhaven Salt Dome and Shed 350 Storm Sewer System Urban 351 Rural Storm Sewer System 361 Streetlights 366 Sidewalks/ Curbs 382 Transit 465 Violet Landfill 480 Loyalist Waste 485 Amherst Island Landfill 700 Vacant Land 701 Bath Centennial Park South 702 Bath Centennial Park North 703 Bath Park	704 Bayview Pioneer Park 705 Amherst Island Big Marsh Wetland 706 Bridge Street Park Odessa 707 Briscoe Park 708 Bulch Park 709 Odessa Centennial Park 710 Recreation Services 711 Amherst Island Centennial Park 712 Amherstview Centennial Park 713 Dinosaur Park 714 Elwood Dopking Park 715 W.J. Henderson Rec Centre 716 Island View Park 717 Eastside Park 718 Jessup Lane Park 719 Finkle's Shore Park 721 Harewood Park 722 Hawley Court Park 723 Heritage Park 724 J. Earl Burt Memorial Park 725 Recreation Vehicles & Equipment 726 Lakeview Park 727 Lighthouse Park	728 Loyalist Park 729 Bath Bayshore Drive Parkette 731 McPherson Park 732 Millcreek Park 733 Odessa William St Park 734 Ridge Park 736 Sk8er Park 737 Kilminster Park 738 Sunnyside Park 739 Willie Pratt Sports Field 742 Leisure and Activity Centre 750 Parks 753 Sports fields 754 Sand Beach 760 Babcock Mill & Park 761 Fairfield House & Park 771 Amherstview Community Hall 774 Neilson Store & Stella Bay Park 776 Wilton Hall 777 Wilton Park 778 Wilton Cenotaph 782 Odessa Library 783 Amherst Island Library & Ferry Office
Economic Growth & Community Development Services (EGCDS)	401 Loyalist East Sewage Treatment Plant 402 Loyalist East Sewer Collection System 403 Lakeview Sewage Pumping Station 404 Islandview Sewage Pumping Station 405 Bridge Street Pumping Station 406 Taylor Kidd Sewage Pumping Station 411 Bath Sewage Treatment Plant 412 Bath Sewer Collection System	413 Bath Sewage Pumping Station #1 414 Bath Sewage Pumping Station #2 415 Bath Sewage Pumping Station #3 416 Bath Sewage Pumping Station #4 431 Fairfield Water Treatment Plant 432 Fairfield Water Distribution 433 Fairfield Distr Booster Station 434 Odessa Water Tower 435 Amherstview Water Tower	436 Fairfield Distr Reservoir 441 Bath Water Treatment Plant 442 Bath Water Distribution 443 Bath Water Tower 451 Utilities Vehicles & Equipment 452 Millhaven Garage 700 Vacant Land 810 Planning and Development Services

Asset Subtype	**Component**
7101 Land	
7402 Siteworks	Boat Ramps & Docks Outdoor Recreation Play Structures Siteworks - Other Siteworks - Parks OSIM Bridge
7403 Building Electrical	
7404 Building Fixtures	
7405 Building HVAC	
7406 Building Mechanical	
7407 Building Structural	
7408 Electrical Equip/Control & Instrumentation	
7409 Mechanical Equipment	
7410 Tankage	
7411 Machinery & Equipment	
7412 Furniture, Fixtures & Office Equipment	
7413 Sites Services	Outdoor Recreation Siteworks - Other Siteworks - Parks
7421 Manholes	
7422 Catchbasins	
7423 Stormwater Treatment Unit	
7424 Stormwater Management Facilities	
7446 Streetlights Pole	
7448 Bridges	Sizes in mm OSIM Bridge OSIM Culvert
7450 Bridge Guiderails	
7452 Steel Cross Road Culverts	Sizes in mm
7453 Driveway Culverts	
7454 Plastic/Precast Cross Road Culverts	Sizes in mm
7455 Road Base	
7456 Road Guiderails	
7457 Road Surface - Paved	
7458 Road Surface - Surface Treatment	
7460 Sidewalks/curbs	
7463 Communication & Security	
7464 Fleet	
7465 Software (Excluding Licenses)	
7466 Personal Computers	
7467 Servers and Networks	
7468 Printers & Photocopiers	
7469 Mobile Devices	
7470 Streetlights - Arm and Lumiere	
7471 Signs	
7475 Sanitary Sewer Pipes (50mm - 150mm)	03 - HDPE 04 - Ductile Iron (DI) 05 - PVC 06 - Asbestos Cement (AC) 07 - Concrete
7476 Sanitary Sewer Pipes (200mm - 250mm)	
7477 Sanitary Sewer Pipes (300mm - 375mm)	
7478 Sanitary Sewer Pipes (400mm - 450mm)	
7479 Sanitary Sewer Pipes (525mm - 750mm)	
7482 Water Pipes (25mm - 50mm)	01 - Cast Iron (CI) 02 - Copper 03 - HDPE 04 - Ductile Iron (DI) 05 - PVC 06 - Asbestos Cement (AC) 09 - Unknown
7483 Water Pipes (100mm - 150mm)	
7484 Water Pipes (200mm - 250mm)	
7485 Water Pipes (300mm)	
7486 Water Pipes (400mm)	
7487 Water Pipes (N/A mm)	
7488 Water Meters	01 - 5/8" 02 - 3/4" 03 - Oversized 04 - Unknown 05 - 5/8" x 3/4"
7489 Hydrant	
7490 Storm Sewer Pipes (<450mm)	03 - HDPE 05 - PVC 07 - Concrete 08 - Corregrated Steel (CSP) 09 - Unknown
7491 Storm Sewer Pipes (450mm- 750mm)	
7492 Storm Sewer Pipes (800mm- 1200mm)	
7493 Storm Sewer Pipes (>1200mm)	
7494 Valves	Sizes in mm

APPENDIX B – INFRASTRUCTURE MAPS

B.1. Roads Map

LOYALIST TOWNSHIP ROADS & COMMUNITIES

GIS Services - IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

Production Date: April 5, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

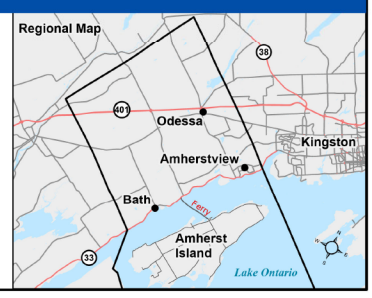
- Fire Hall (and Amherst Island Roads Garage)
- Water Pollution Control Plant/Sewage Treatment Plant
- Water Tower
- Municipal Office
- Violet Landfill Office
- W.J. Henderson Recreation Centre

Legend

- Township Road - Maintained
- Township Road - Not Maintained
- Future Road (potential)
- County Road
- MTO Road
- Private Road
- Parcel Fabric
- Sewage Lagoons
- Parcel Fabric
- Geographic Lot

0 1 2 3 4 Km

Regional Map



Lake Ontario
(Bay of Quinte - North Channel)

Kingston

Lake Ontario

Amherst Island

Odessa

Bath

Amherstview

0 100 200 300 400 m

0 200 400 600 800 1,000 m

B.2. Bridges & Culverts Map

OSIM Bridges and Higher Risk Structures

GIS Services - IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

Production Date: December 4th,2024

Datum/Projection: NAD 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

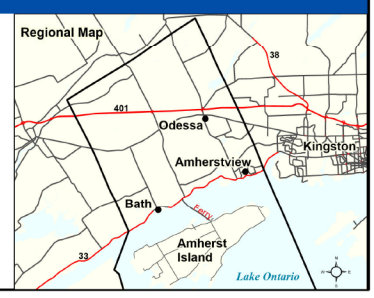
Road Network
- Township - Maintained
- Township - Not Maintained
- County Road
- MTO Road

Bridges
- Bridge
- OSIM Culverts
- StaffGeo.DBO.Stm_Culverts selection 1

N W E S

0 1 2 3 4 Km

Regional Map



Wilson Road
Emmey Road
Love Road
Fred Brown Road
County Road # 6
McConnell Road
Newburgh Road
Shorey Road
Vent Road
County Road # 5 (Palace Rd)
OSIM203
Switzerville Road
OSIM102
OSIM212
County Road # 4
Peters Road
County Road # 20
Thorpe Road
Fisk Road
OSIM114
Simmons Road
Gift Road
Florida Road
OSIM204
Rutherford Road
Highway 401
Simmons Road
OSIM111
Maple Road
Chipmunk Ridge Road
OSIM110
Brandon Road
Creekside Drive
Sharpe Road
Rose Road
Old Wilton Road
Morven Cres
County Road # 2
OSIM113
Shibley
Violet Road
Rees Road
Scotland Road
County Road # 19 (Mud Lake Road)
Howes Road *
OSIM106
Odessa
Hegadorn Road
OSIM103
OSIM206
OSIM205
Big Creek Road
OSIM112
Fralick Road
Withers Road
Townline Road *
OSIM101
GIS # 7944
Shane Street
Henry Street
OSIM105
Lucas Road
County Road # 28 (Millhaven Rd)
Irish Road
Wiring Road
Chatterson Road
Fairbanks Street
Neil Road *
McIntyre Road
OSIM104
OSIM201
OSIM109
OSIM202
Caton Road
Campsall Road
Clark Road
Ham Road
Link Road
Ernestown Station Side Road
Abeadom Road
County Road # 22
Doyle Road
OSIM100
Gun Road
William Henderson Drive
Achievement Place
Kingston
Van Winkle Road
County Road # 23 (TKB)
Bath
OSIM107
OSIM200
OSIM209
GIS # 7863
OSIM210
OSIM108
Bath Road (Hwy # 33)
Bayview Drive
Parrot's Bay Lane
Harrow Ct.
Brooklands Park Ave.
Amherstview
Golf Course Road
Norfolk Lane
Edgewood Drive
Lakeside Lane
Compton Court
Nicholsen Point Road
County Road # 24 (Coronation Blvd)
Lake Ontario
(Bay of Quinte - North Channel)
Front Road
Drumgoole Lane
OSIM208
Private
Un-named Lane
Kerr Point
McDonald's Lane
GIS # 8940
GIS # 8854
Dump Road
Stella Forty Foot Road
Marshall Forty Foot Road - Unmaintained
Lower Forty Foot Road
Second Concession Road
Amherst Island
OSIM207
OSIM211
Back Beach Road
Emerald Forty Foot Road
Third Concession Road
South Shore Road
GIS # 8753
Lake Ontario

B.3. Storm System Maps

STORM SEWER & MANHOLE MAPS

AMHERSTVIEW

Prepared by:
Corporate Services
IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

- Non-Township Structure - Do Not Maintain
- Private Structure
- Stormwater Treatment Unit
- Catchbasin
- Catchbasin MH
- Ditch Inlet CB
- Twin Inlet CB
- Manhole
- Ditch Inlet MH
- Culvert
- Sewer Inlet
- Sewer Outlet
- Cleanout
- Yard Basin
- Walkways - Parks + Recreation
- Walkways - Transportation
- Site Storm Structures
- Site Storm Sewers
- Arch Culvert
- Culvert
- Driveway Culvert
- Other Culvert

Storm Pipe Sizes (mm)

100, 150, 200, 250, 300, 375, 400, 450, 500, 525, 600, 675, 700, 750, 825, 900, 975, 1050, 1200, 1350, 1500, 1650

N W E S

0 60 120 180 240 300 m

Production Date: April 09, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

STORM SEWER & MANHOLE MAPS

ODESSA

Prepared by:
Corporate Services
IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

- Non-Township Structure - Do Not Maintain
- Private Structure
- Catchbasin
- Catchbasin MH
- Ditch Inlet CB
- Twin Inlet CB
- Manhole
- Ditch Inlet MH
- Sewer Inlet
- Sewer Outlet
- Yard Basin

Storm Pipe Sizes (mm)

- 150
- 200
- 250
- 300
- 375
- 450
- 500
- 525
- 600
- 675
- 750
- 900
- 1050
- 1200

- Walkways - Parks + Recreation
- Walkways - Transportation
- Site Storm Structures
- Site Storm Sewers

Culverts

- Arch Culvert
- Culvert
- Driveway Culvert
- Other Culvert

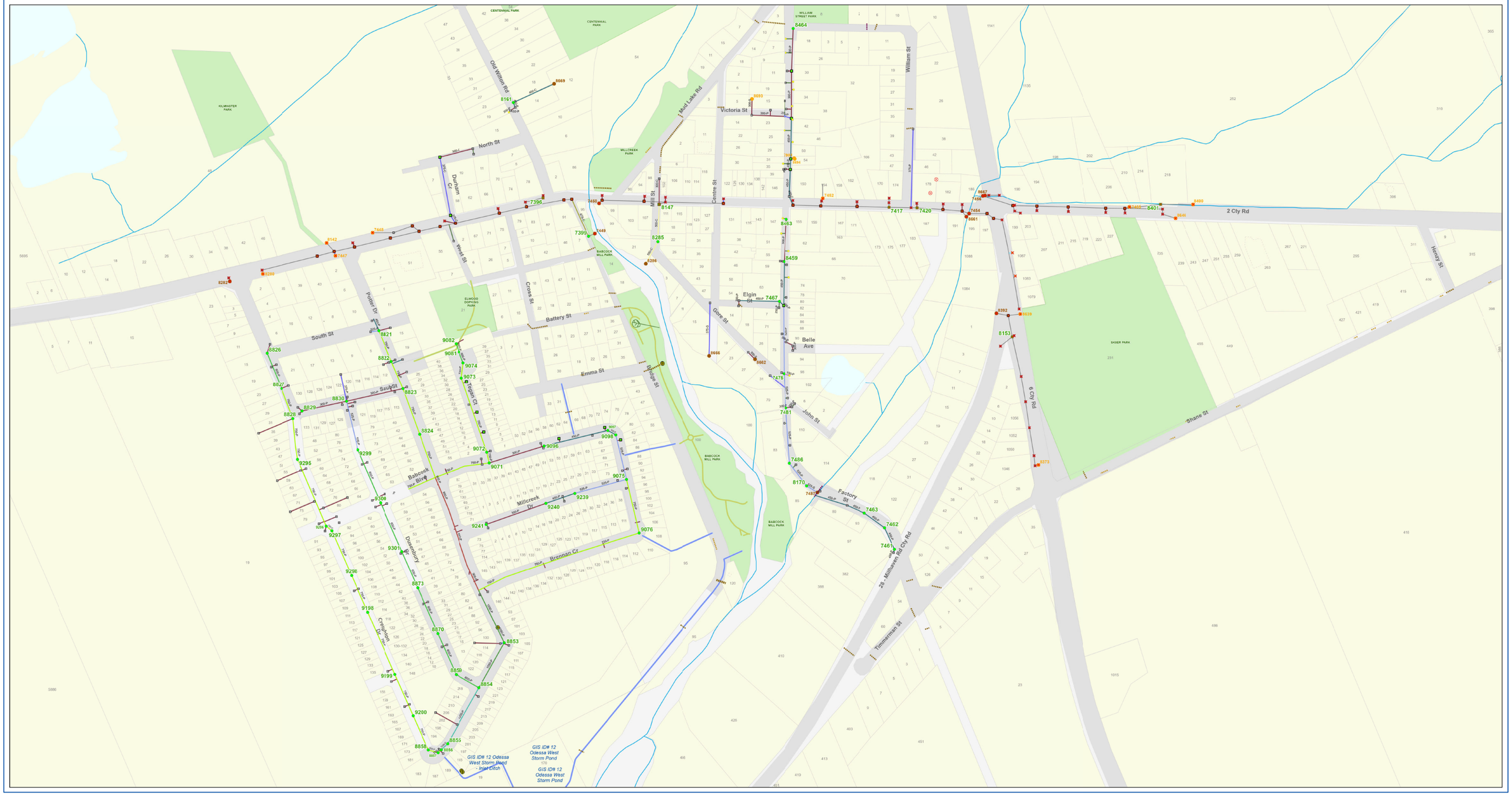
N W E S

0 40 80 120 160 200 m

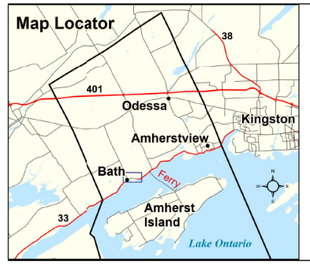
Production Date: April 10, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario



STORM SEWER & MANHOLE MAPS



Prepared by:
Corporate Services
IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

- Non-Township Structure - Do Not Maintain
- Private Structure
- Stormwater Treatment Unit
- Catchbasin
- Catchbasin MH
- Ditch Inlet CB
- Twin Inlet CB
- Manhole
- Ditch Inlet MH
- Sewer Inlet
- Sewer Outlet
- Yard Basin

Storm Pipe Sizes (mm)

- 200
- 225
- 250
- 275
- 300
- 375
- 400
- 450
- 525
- 600
- 675
- 750
- 900
- 1050
- 1200

- Walkways - Parks + Recreation
- Walkways - Transportation
- Site Storm Sewers

Culverts

- Arch Culvert
- Culvert
- Driveway Culvert
- Other Culvert

N W E S

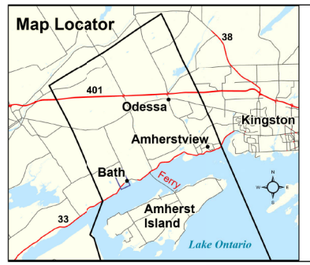
0 40 80 120 160 200 m

Production Date: April 10, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

STORM SEWER & MANHOLE MAPS



Prepared by:
Corporate Services
IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

- Non-Township Structure - Do Not Maintain
- Private Structure
- Stormwater Treatment Unit
- Catchbasin
- Catchbasin MH
- Ditch Inlet CB
- Twin Inlet CB
- Manhole
- Ditch Inlet MH
- Sewer Inlet
- Sewer Outlet
- Yard Basin

Storm Pipe Sizes (mm)

- 150
- 200
- 250
- 300
- 375
- 450
- 500
- 525
- 600
- 675
- 750
- 900
- 975
- 1050
- 1350

- Walkways - Parks + Recreation
- Walkways - Transportation
- Storm Ponds

Culverts

- Arch Culvert
- Culvert
- Driveway Culvert
- Other Culvert

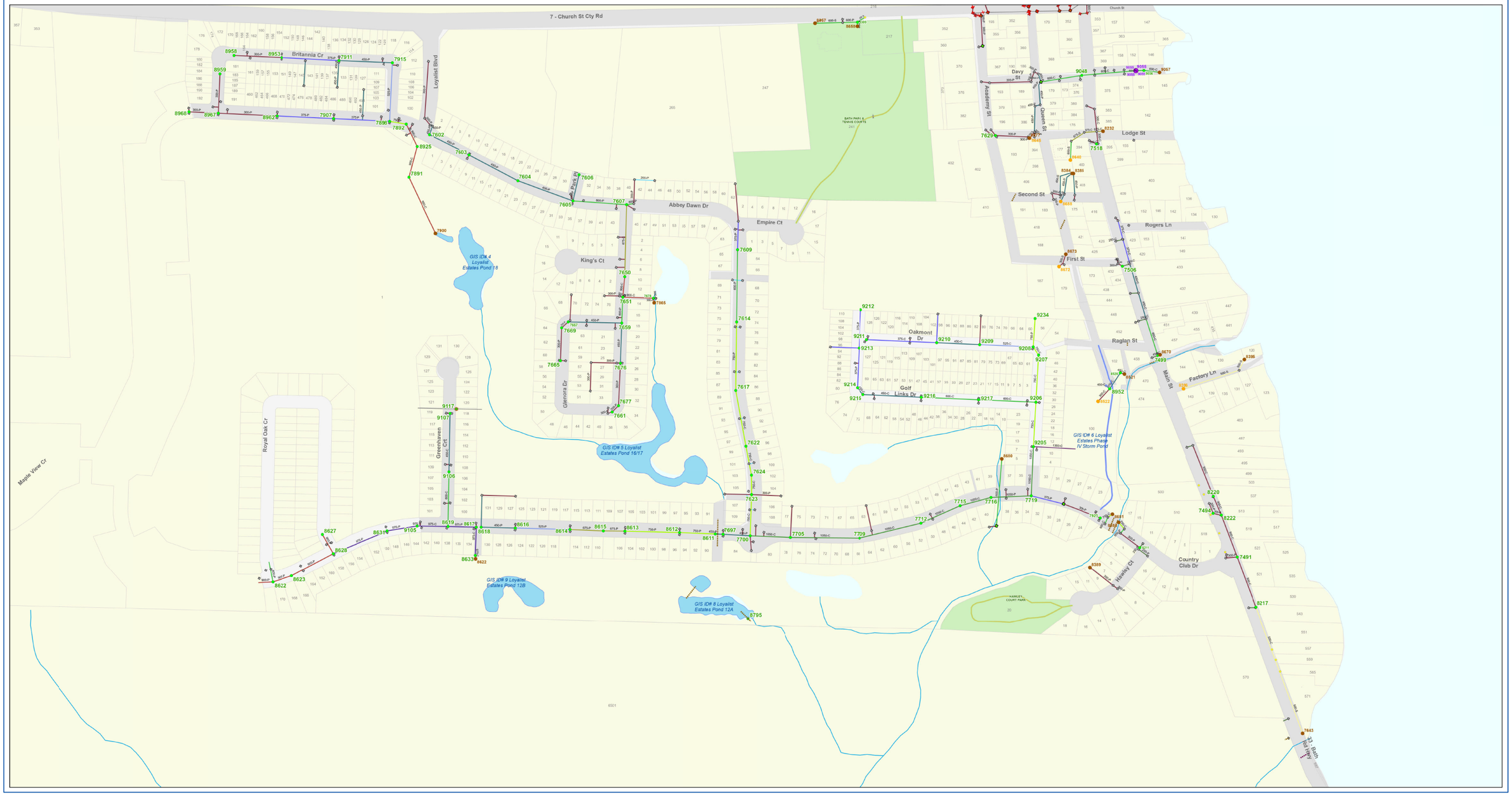
N E S W

0 40 80 120 160 200 m

Production Date: April 10, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario



B.4. Buildings Map

Township Facilities & Buildings

Corporate Services, Strategy & Innovation
GIS Services, IT Dvision
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

Production Date: December 4, 2024

Datum/Projection: Nad 83, UTM 18

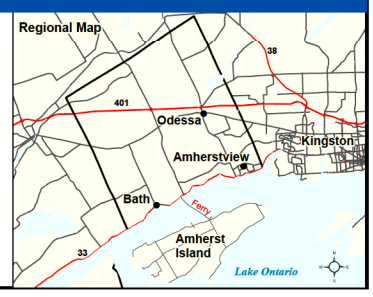
Data Sources: Loyalist Township Database
Land Information Ontario

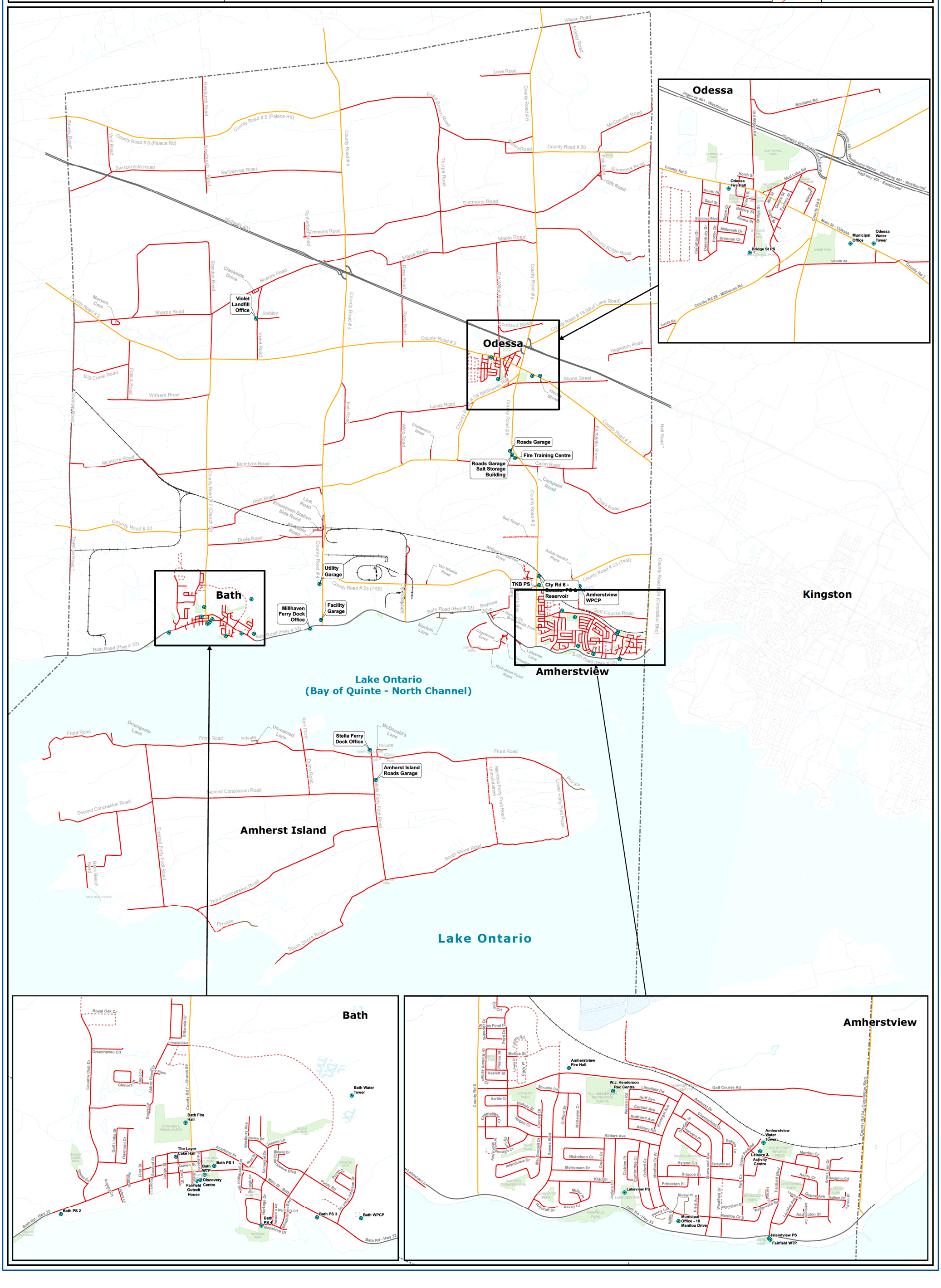
Legend

- Township Building
- Township Road - Maintained
- Township Road - Not Maintained
- Future Road
- County Road
- MTO Road
- Private Road
- Township Building selection

0 1 2 3 4 Km

Regional Map



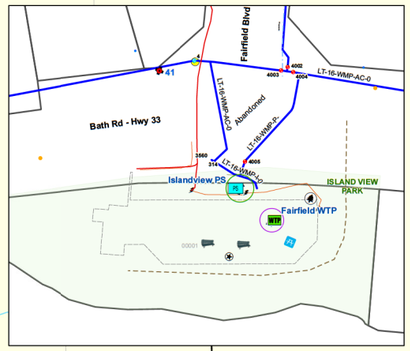


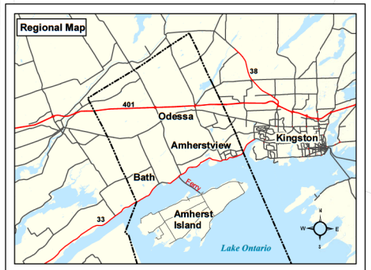
B.5. Water System Maps

AMHERSTVIEW WATER SYSTEM

Amherstview

Lake Ontario
(Bay of Quinte - North Channel)





Legend

- Streetlights
- Valve, Clockwise Open
- Valve, Counter Clockwise Open
- Valve, Unknown
- Curbstop
- Fire Hydrant
- Fire Hydrant -Temporary
- Private Fire Hydrant
- Yard Hydrant
- Active Watermain
- Proposed Watermain
- Disposed Watermain
- Water Service
- Hydrant Lead
- Blowoff Lead
- Sampling Station Lead
- Sampling Stations
- Diversion Chamber
- Drain Chamber
- Meter Chamber
- Valve Chamber
- Walkway - Parks
- Walkway - Public Works
- Fire Hall
- Water Pollution Control Plant
- Water Tower
- Pumping Station
- Water Treatment Plant
- Cty Rd 6 - Booster PS & Reservoir
- W.J. Henderson Recreation Centre
- Facility Locations (Point)
- Site Electrical Structures
- Site Lighting
- Site Sanitary Structure
- Site Storm Structures
- Site Water Valves
- Site Electric Lines
- Site Sanitary Laterals
- Site Storm Sewers
- Site Water Services
- Twp Fences
- PLC (Programmable Logic Controller)
- PLC and Communication
- Loyalist.DBO.FacilityFootprints
- Sportsfield
- ParkingLot
- Sewage Lagoons
- Loyalist Township Boundary
- Railway
- Future Road
- Private Road
- Private Lane - Emergency Access

[1] Watermain labels adhere to standards published by the Canadian Standards Association (CSA).

0 100 200 300 400 m

Production Date: July 17, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Datcabase Land Information Ontario

GIS Services - IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

HIGHWAY 33 - WATER SYSTEM

Legend

- Streetlights
- Walkway - Parks
- Walkway - Public Works
- Fire Hall
- Pumping Station
- Cty Rd 6 - Booster PS & Reservoir
- Facility Locations (Point)
- Site Lighting
- Site Sanitary Structure
- Site Storm Structures
- Site Water Valves
- Site Electric Lines
- Site Sanitary Laterals
- Site Storm Sewers
- Site Water Services
- Twp Fences
- PLC and Communication
- Loyalist.DBO.FacilityFootprints
- Sportsfield
- Sewage Lagoons
- Curbstop
- Valve - Clockwise Open
- Valve - Unknown Direction
- Fire Hydrant
- Fire Hydrant -Temporary
- Private Fire Hydrant
- Yard Hydrant
- Active Watermain [1]
- Proposed Watermain
- Disposed Watermain
- Water Service
- Hydrant Lead
- Sampling Station Lead
- Sampling Stations
- Diversion Chamber
- Drain Chamber
- Valve Chamber
- Railway
- Future Road
- Private Road
- Private Lane - Emergency Access
- Parks
- Township Property
- Utility Department Property
- Properties

[1] Watermain labels adhere to standards published by the Canadian Standards Association (CSA).

0 100 200 300 400 500 m

Loyalist Township

Production Date: April 04, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

GIS Services - IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

Lake Ontario
(Bay of Quinte - North Channel)

Nicholson Point

N W E S

COUNTY ROAD 6 & LOYALIST EAST BUSINESS PARK WATER SYSTEM

Corporate Services
IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

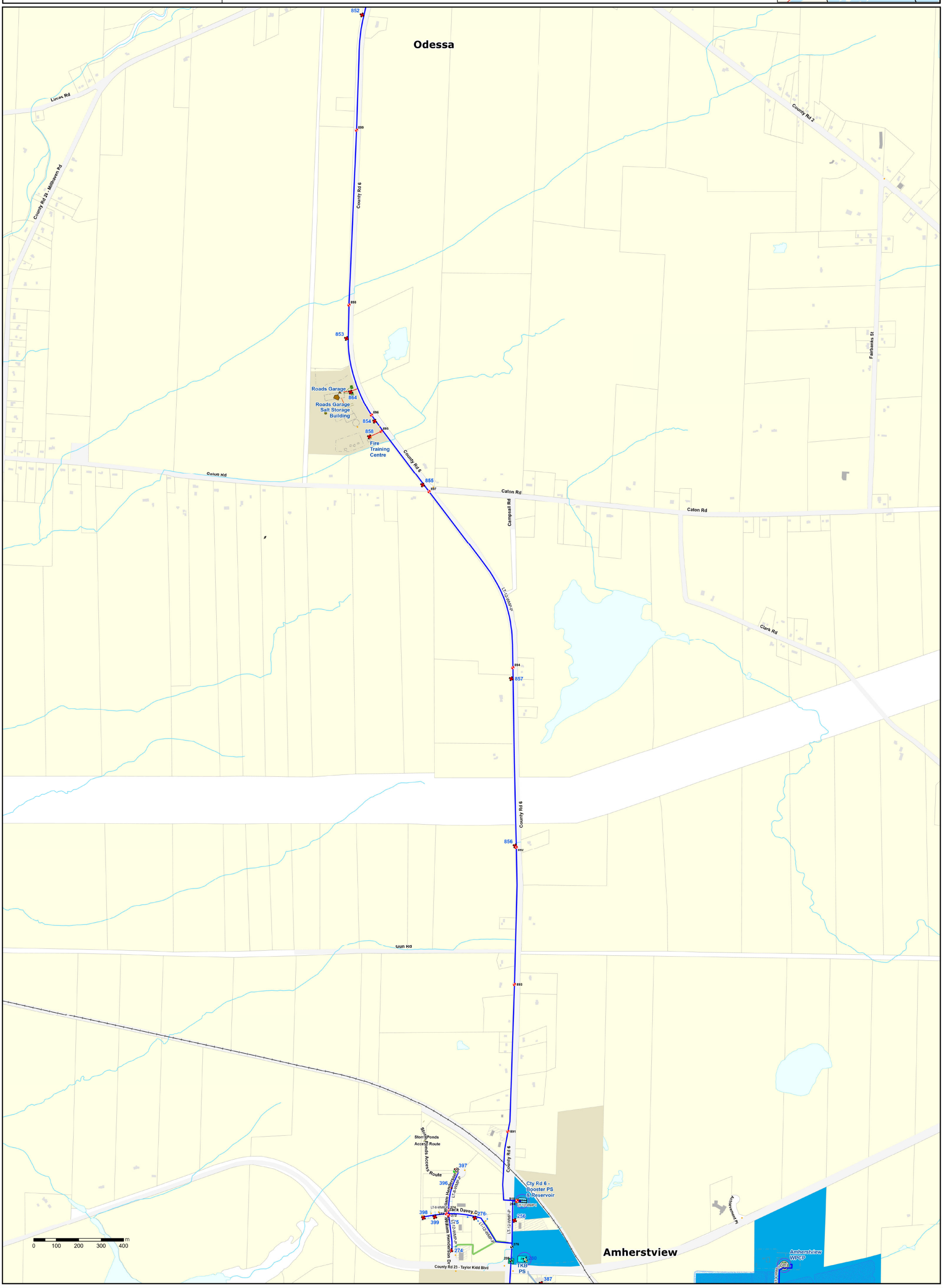
Production Date: April 26, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

Legend

- Streetlights
- Valve, Clockwise Open
- Valve, Unknown
- Curbstop
- Fire Hydrant
- Yard Hydrant
- Active Watermain
- Water Service
- Hydrant Lead
- Diversion Chamber
- Drain Chamber
- Walkway - Parks
- Walkway - Public Works
- Site Electrical Structures
- Site Lighting
- Site Storm Structures
- Site Water Valves
- Site Electric Lines
- Site Sanitary Laterals
- Site Storm Sewers
- Site Water Services
- Twp Fences
- PLC and Communication
- ParkingLot
- Sewage Lagoons
- Railway
- Utility Department Property
- Township Property
- Road (Right of Way)
- StaffGeo.DBO.Parcel



ODESSA WATER SYSTEM

Legend

- Streetlights
- Walkway - Parks
- Fire Hall
- Water Tower
- Pumping Station
- Municipal Office
- Facility Locations (Point)
- Site Electrical Structures
- Site Lighting
- Site Sanitary Structure
- Site Electric Lines
- Site Sanitary Laterals
- Site Sanitary Sewer
- Site Storm Sewers
- Site Water Services
- Twp Fences
- PLC and Communication
- Loyalist.DBO.FacilityFootprints
- Sportsfield
- Curbstop
- Valve - Clockwise Open
- Valve - Counter Clockwise Open
- Valve - Unknown Direction
- Fire Hydrant
- Yard Hydrant
- Active Watermain [1]
- Proposed Watermain
- Disposed Watermain
- Water Service
- Hydrant Lead
- Sampling Stations
- Future Road
- Parks
- Township Property
- Utility Department Property
- Properties

[1] Watermain labels adhere to standards published by the Canadian Standards Association (CSA).

0 50 100 150 200 m

Loyalist TOWNSHIP

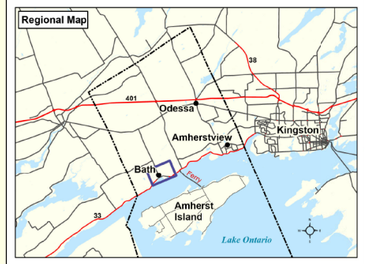
Production Date: April 4, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

GIS Services - IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

BATH WATER SYSTEM



Legend

- Streetlights
- Walkway - Parks
- Walkway - Public Works
- Fire Hall
- Water Pollution Control Plant
- Water Tower
- Pumping Station
- Water Treatment Plant
- Facility Locations (Point)
- Site Lighting
- Site Water Structures
- Site Storm Sewers
- Site Water Services
- Twp Fences
- PLC (Programmable Logic Controller)
- PLC and Communication
- Fire Hydrant
- Private Fire Hydrant
- Yard Hydrant
- Curbstop
- Valve - Counter Clockwise Open
- Valve - Unknown Direction
- Active Watermain [1]
- Proposed Watermain
- Disposed Watermain
- Water Service
- Hydrant Lead
- Sampling Stations
- Future Road
- Parks
- Township Property
- Utility Department Property
- Properties
- Road (Right of Way)

[1] Watermain labels adhere to standards published by the Canadian Standards Association (CSA).

0 50 100 200 300 400 m

Loyalist Township

Production Date: April 04, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

GIS Services - IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

B.6. Sewer System Maps

AMHERSTVIEW SANITARY COLLECTION SYSTEM

Sanitary Sewers - All Sanitary Sewers are Separated

Diversion 600 mm	Forcemain 450 mm	Sewer 150 mm	Sewer 350 mm	Sewer 525 mm	
Forcemain 150 mm	Forcemain 550 mm	Sewer 200 mm	Sewer 375 mm	Sewer 600 mm	
Forcemain 200 mm	Forcemain 600 mm	Sewer 250 mm	Sewer 400 mm	Sewer 675 mm	
Forcemain 300 mm	Overflow 400 mm	Sewer 300 mm	Sewer 450 mm	Sewer 750 mm	

Production Date: April 3, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

GIS Services, IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

SANITARY SEWERS - COUNTY ROAD 6 & LOYALIST EAST BUSINESS PARK

Corporate Services
IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

Production Date: April 05, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

Legend

- Walkway - Parks
- Walkway - Public Works
- Water Tower
- Cty Rd 6 - Booster PS & Reservoir
- Municipal Office
- Township Garage
- Sanitary Manhole

System Control

- PLC and Communication

Sanitary Auxilliary Equipment

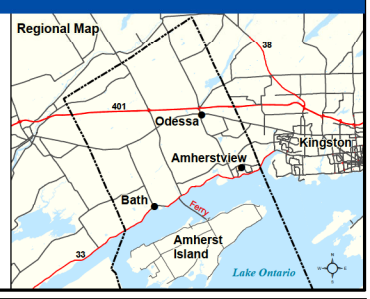
- ByPass
- Diversion Chamber
- Meter
- Pumping Station
- Valve Chamber
- Water Pollution Control Plant

Sanitary Sewers

- Diversion 600 mm
- Forcemain 150 mm
- Forcemain 300 mm
- Forcemain 450 mm
- Forcemain 550 mm
- Forcemain 600 mm
- Sewer 150 mm
- Sewer 200 mm
- Sewer 250 mm
- Sewer 375 mm
- Sewer 450 mm
- FacilityFootprints

Sportsfield - Maintenance Level

- Sportsfield
- Parking Lot
- Sewage Lagoons
- Railway
- Future Road
- Parks



ODESSA SANITARY COLLECTION SYSTEM

Legend

- Fire Hall
- Water Tower
- Municipal Office
- Manhole

Sanitary Auxilliary Equipment

TYPE

- ByPass
- Meter
- Pumping Station
- Walkway - Parks
- Walkway - Public Works

System Control Type

- PLC and Communication
- FacilityFootprints
- Sportsfield
- Parking Lot
- Future Road
- Parks

Sanitary Sewers - All Sewers are Separated

- Forcemain 300 mm
- Forcemain 450 mm
- Sewer 150 mm
- Sewer 200 mm
- Sewer 250 mm
- Sewer 375 mm
- Sewer 450 mm
- Proposed Sewer

0 50 100 150 200 m

Loyalist Township

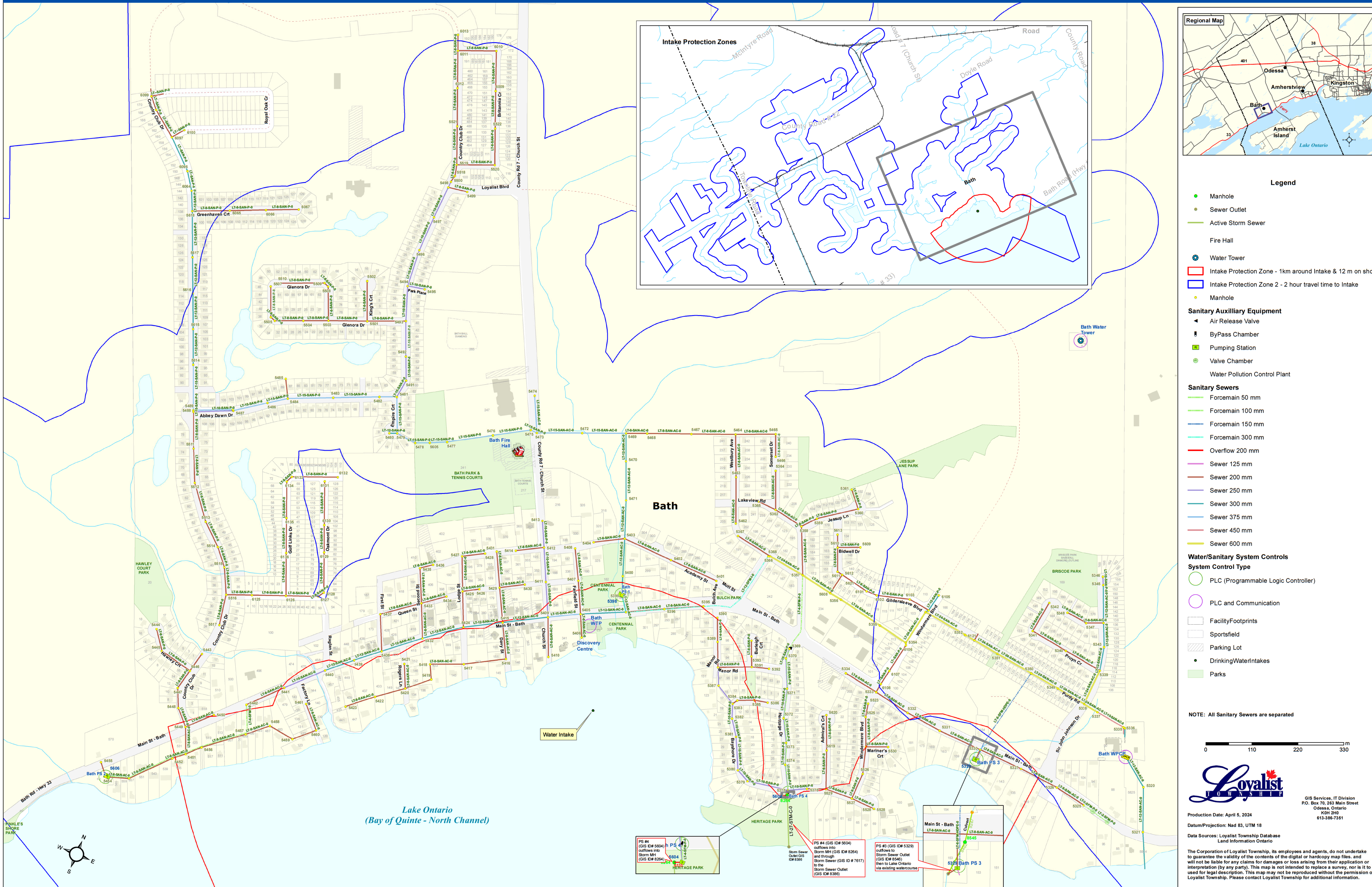
GIS Services, IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351

Production Date: April 3, 2024

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database
Land Information Ontario

BATH SANITARY COLLECTION SYSTEM


Intake Protection Zones
Bath
Lake Ontario
(Bay of Quinte - North Channel)
Water Intake
Bath Fire Hall
BATH PARK & TENNIS COURTS
CENTENNIAL PARK
HERITAGE PARK
HAWLEY COURT PARK
JESSUP LANE PARK
BRISCOE PARK
Bath Water Tower
Bath WTP
Discovery Centre
Bath WPCP
Bath PS 3
Bath PS 4
Main St - Bath
County Rd 7 - Church St
Loyalist Blvd
Bath Rd - Hwy 33
Regional Map
Odessa
Amherstview
Kingston
Bath
Amherst Island
Lake Ontario
Legend
Manhole
Sewer Outlet
Active Storm Sewer
Fire Hall
Water Tower
Intake Protection Zone - 1km around Intake & 12 m on shore
Intake Protection Zone 2 - 2 hour travel time to Intake
Manhole
Sanitary Auxilliary Equipment
Air Release Valve
ByPass Chamber
Pumping Station
Valve Chamber
Water Pollution Control Plant
Sanitary Sewers
Forcemain 50 mm
Forcemain 100 mm
Forcemain 150 mm
Forcemain 300 mm
Overflow 200 mm
Sewer 125 mm
Sewer 200 mm
Sewer 250 mm
Sewer 300 mm
Sewer 375 mm
Sewer 450 mm
Sewer 600 mm
Water/Sanitary System Controls
System Control Type
PLC (Programmable Logic Controller)
PLC and Communication
FacilityFootprints
Sportsfield
Parking Lot
DrinkingWaterIntakes
Parks
NOTE: All Sanitary Sewers are separated
0 110 220 330 m
GIS Services, IT Division
P.O. Box 70, 263 Main Street
Odessa, Ontario
K0H 2H0
613-386-7351
Production Date: April 5, 2024
Datum/Projection: Nad 83, UTM 18
Data Sources: Loyalist Township Database
Land Information Ontario

APPENDIX C – ANNUAL REQUIREMENTS AND 10-YEAR CAPITAL PLANS

Appendix C - 10-Year Capital Plans

Tax-funded - Road Network												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Gravel Roads	766,521	-	1,120,923	-	-	-	-	-	-	-	-	1,887,444
HCB Road Base	-	3,314,240	10,782,651	1,102,746	1,194,673	2,052,286	2,288,807	1,690,306	1,375,224	2,460,676	243,881	26,505,492
LCB Road Base	-	2,242,506	3,107,678	141,126	1,250,361	668,711	194,962	253,662	507,070	163,596	916,275	9,445,946
Road Guiderails	-	-	-	-	-	-	-	-	-	-	-	-
Sidewalks/Curbs	-	-	922,761	-	375	-	5,749,555	-	3,369,935	-	2,565,845	12,608,471
Signs	170,379	144,234	11,163	820	5,160	248,075	17,300	24,007	15,947	5,504	1,343	643,932
Streetlights	-	-	-	-	-	-	-	-	-	-	-	-
Shoreline Protection	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Requirement	**936,900**	**5,700,980**	**15,945,176**	**1,244,692**	**2,450,569**	**2,969,073**	**8,250,625**	**1,967,975**	**5,268,176**	**2,629,776**	**3,727,343**	**51,091,285**

Tax-funded - Bridges & Culverts												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
OSIM-Bridges	-	-	560,000	667,000	157,000	496,000	66,000	-	-	-	-	1,946,000
OSIM-Culverts	-	-	-	-	380,000	-	-	-	1,547,000	-	349,000	2,276,000
Total Annual Requirement	**-**	**-**	**560,000**	**667,000**	**537,000**	**496,000**	**66,000**	**-**	**1,547,000**	**-**	**349,000**	**4,222,000**

Tax-funded - Storm Network												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Cross Culverts	2,491,820	-	99,945	58,500	471,652	41,846	253,038	226,142	58,183	62,543	4,467	3,768,136
Driveway Culverts	2,734,484	-	-	-	-	-	-	-	-	-	-	2,734,484
Catchbasins	12,138	63,000	-	4,046	40,460	-	-	-	-	-	-	119,644
Storm Manholes	-	39,500	-	-	-	-	-	-	-	-	-	39,500
Storm Mains	123,400	376,620	379,150	-	39,495	-	57,260	-	-	-	-	975,925
Storm Water Management Facilities	20,045	-	-	-	-	-	-	-	-	2,653	-	22,698
Total Annual Requirement	**5,381,887**	**479,120**	**479,095**	**62,546**	**551,607**	**41,846**	**310,298**	**226,142**	**58,183**	**65,196**	**4,467**	**7,660,387**

Tax-funded - Buildings												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Corporate Services	-	9,819	-	7,443	-	-	503,457	32,190	-	-	-	552,909
Emergency Services	26,324	16,885	-	19,606	116,287	101,855	24,634	18,819	3,129	203,712	96,450	627,701
Recreation & Facilities Services	1,898,873	1,002,026	-	3,075,386	28,382	600,408	52,698	116,928	119,957	423,767	146,966	7,465,391
Transit Services	70,458	-	-	-	-	-	-	-	-	22,546	10,190	103,194
Transportation Services	106,472	87,217	-	6,558	78,665	-	-	371,539	6,431	-	212,663	869,545
Total Annual Requirement	**2,102,127**	**1,115,947**	**-**	**3,108,993**	**223,334**	**702,263**	**580,789**	**539,476**	**129,517**	**650,025**	**466,269**	**9,618,740**

Tax-funded - Machinery, Furniture, and Equipment												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Corporate Services	71,240	34,815	171,504	104,262	22,285	65,375	60,954	27,138	34,219	112,809	236,998	941,599
Emergency Services	-	111,721	-	14,716	75,953	48,027	132,914	72,900	10,708	-	633,213	1,100,152
Recreation & Facilities Services	30,023	159,598	24,851	280,305	-	408,062	21,016	163,536	197,249	153,435	49,282	1,487,357
Transportation Services	92,282	341,749	624,916	52,865	-	500,190	258,259	69,335	322,062	106,299	-	2,367,957
Waste Management Services	-	-	-	-	-	-	237,194	537,351	-	-	-	774,545
Total Annual Requirement	**193,545**	**647,883**	**821,271**	**452,148**	**98,238**	**1,021,654**	**710,337**	**870,260**	**564,238**	**372,543**	**919,493**	**6,671,610**

Appendix C - 10-Year Capital Plans

Tax-funded - Fleet												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Emergency Services	-	754,191	615,415	828,809	-	62,489	790,672	65,522	-	-	928,019	4,045,117
Transportation Services	1,169,370	741,644	664,900	1,002,465	-	458,001	860,144	916,002	-	-	-	5,812,526
Building Services	-	-	-	-	-	-	-	-	-	39,885	-	39,885
Recreation & Facilities Services	32,728	27,608	-	69,135	47,549	-	40,359	56,541	-	72,692	-	346,612
Total Annual Requirement	**1,202,098**	**1,523,443**	**1,280,315**	**1,900,409**	**47,549**	**520,490**	**1,691,175**	**1,038,065**	**-**	**112,577**	**928,019**	**10,244,140**

Tax-funded - Land Improvements												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Siteworks - Parks	125,358	47,073	15,001	2,500	287,731	-	15,750	10,941	18,142	39,148	60,893	622,537
Play Structures	35,000	-	-	172,010	176,185	-	-	-	17,466	378,833	197,364	976,858
Outdoor Recreation	485,892	-	1,410	-	146,593	-	5,000	427,252	31,988	-	72,298	1,170,433
Boat Ramps & Docks	-	-	-	-	-	-	-	-	-	-	-	-
Siteworks - Other	739,767	7,724	-	-	109,408	-	-	19,647	63,585	20,328	15,114	975,573
Total Annual Requirement	**1,386,017**	**54,797**	**16,411**	**174,510**	**719,917**	**-**	**20,750**	**457,840**	**131,181**	**438,309**	**345,669**	**3,745,401**

Tax-funded - Natural Assets												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Wetlands	-	-	-	-	-	-	-	-	-	-	-	-
Significant Wetlands	-	-	-	-	-	-	-	-	-	-	-	-
Wooded Areas	-	-	-	-	-	-	-	-	-	-	-	-
Significant Forests												
Alvars	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Requirement	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

All Tax-funded Assets												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Road network	936,900	5,700,980	15,945,176	1,244,692	2,450,569	2,969,073	8,250,625	1,967,975	5,268,176	2,629,776	3,727,343	51,091,285
Bridges & Culverts	-	-	560,000	667,000	537,000	496,000	66,000	-	1,547,000	-	349,000	4,222,000
Storm Network	5,381,887	479,120	479,095	62,546	551,607	41,846	310,298	226,142	58,183	65,196	4,467	7,660,387
Buildings	2,102,127	1,115,947	-	3,108,993	223,334	702,263	580,789	539,476	129,517	650,025	466,269	9,618,740
Fleet	1,202,098	1,523,443	1,280,315	1,900,409	47,549	520,490	1,691,175	1,038,065	-	112,577	928,019	10,244,140
Machinery, Furniture, and Equipment	193,545	647,883	821,271	452,148	98,238	1,021,654	710,337	870,260	564,238	372,543	919,493	6,671,610
Land Improvements	1,386,017	54,797	16,411	174,510	719,917	-	20,750	457,840	131,181	438,309	345,669	3,745,401
Total Tax-funded assets	**11,202,574**	**9,522,170**	**19,102,268**	**7,610,298**	**4,628,214**	**5,751,326**	**11,629,974**	**5,099,758**	**7,698,295**	**4,268,426**	**6,740,260**	**93,253,563**

Appendix C - 10-Year Capital Plans

User-funded - Water System												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Hydrants	69,314	27,725	41,588	-	-	69,314	55,451	13,863	13,863	13,863	249,529	554,508
Water Valves	-	-	-	-	-	4,475	-	-	-	-	-	4,475
Water Meters	833,000	39,200	131,600	240,800	274,400	147,000	212,100	417,900	165,900	270,900	129,500	2,862,300
Water Mains	6,828,899	4,605,296	4,963,499	1,502,843	1,433,494	1,792,268	-	-	-	-	119,460	21,245,759
Water Treatment Facilities	1,180,601	221,032	352,622	248,750	165,933	584,318	1,321,958	105,801	993,241	188,316	8,887	5,371,459
Water Distribution Facilities	623,747	-	90,149	140,285	39,039	-	-	695,117	-	7,514	7,127	1,602,978
Total Annual Requirement	**9,535,561**	**4,893,253**	**5,579,458**	**2,132,678**	**1,912,866**	**2,597,375**	**1,589,509**	**1,232,681**	**1,173,004**	**480,593**	**514,503**	**31,641,479**

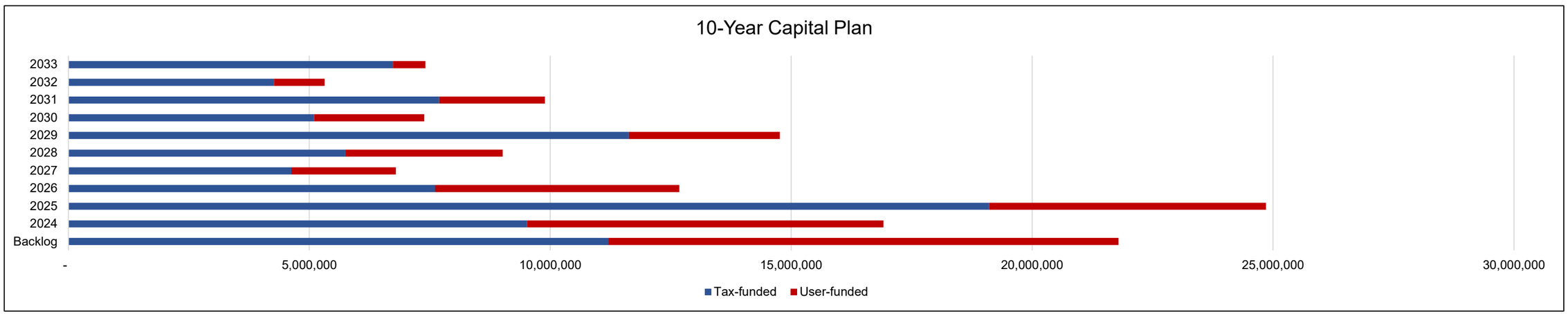
User-funded - Sewer System												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Sanitary Collection Facilities	505,961	63,657	51,636	207,956	-	175,392	167,995	477,223	951,519	309,204	33,583	2,944,126
Sanitary Mains	-	2,157,400	-	739,225	-	-	-	-	-	-	-	2,896,625
Sanitary Manholes	-	112,000	-	-	-	-	-	-	-	-	-	112,000
Sanitary Treatment Facilities	490,923	65,246	93,241	1,885,555	5,032	490,151	1,313,788	576,252	66,664	46,802	78,495	5,112,149
Total Annual Requirement	**996,884**	**2,398,303**	**144,877**	**2,832,736**	**5,032**	**665,543**	**1,481,783**	**1,053,475**	**1,018,183**	**356,006**	**112,078**	**11,064,900**

Other User-funded Assets												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Utilities Buildings	18,542	-	-	-	144,184	-	-	-	-	-	-	162,726
Utilities Machinery & Equipment	38,593	-	26,475	-	16,110	-	60,700	-	-	28,441	-	170,319
Utilities Fleet	-	99,542	-	103,842	90,529	-	-	-	-	183,804	44,663	522,380
Total Annual Requirement	**57,135**	**99,542**	**26,475**	**103,842**	**250,823**	**-**	**60,700**	**-**	**-**	**212,245**	**44,663**	**855,425**

All User-funded Assets												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Water System	9,535,561	4,893,253	5,579,458	2,132,678	1,912,866	2,597,375	1,589,509	1,232,681	1,173,004	480,593	514,503	31,641,479
Sewer System	996,884	2,398,303	144,877	2,832,736	5,032	665,543	1,481,783	1,053,475	1,018,183	356,006	112,078	11,064,900
Other user-funded assets	57,135	99,542	26,475	103,842	250,823	-	60,700	-	-	212,245	44,663	855,425
Total User-funded Assets	**10,589,580**	**7,391,098**	**5,750,810**	**5,069,256**	**2,168,721**	**3,262,918**	**3,131,992**	**2,286,156**	**2,191,187**	**1,048,844**	**671,244**	**43,561,804**

Appendix C - 10-Year Capital Plans

All Asset Categories												
Subcategory	**Backlog**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Tax-funded	11,202,574	9,522,170	19,102,268	7,610,298	4,628,214	5,751,326	11,629,974	5,099,758	7,698,295	4,268,426	6,740,260	93,253,563
User-funded	10,589,580	7,391,098	5,750,810	5,069,256	2,168,721	3,262,918	3,131,992	2,286,156	2,191,187	1,048,844	671,244	43,561,804
Total Asset Categories	**21,792,154**	**16,913,268**	**24,853,078**	**12,679,554**	**6,796,935**	**9,014,243**	**14,761,965**	**7,385,914**	**9,889,482**	**5,317,270**	**7,411,504**	**136,815,367**



APPENDIX D – RECOMMENDED ASSET MANAGEMENT PRACTICES

State of the Local Infrastructure	
1.	Consider the development of a formal data governance strategy to support the consistent and accurate collection and presentation of data. This would include the processes to align asset inventory in Citywide with the Township's GIS.
2.	Develop a formal process that ensures the periodic update of Asset Classifications, and more specifically, Asset Attributes upon completion of operational tasks (e.g., traffic counts if applicable to models).
3.	Periodically review and update Lifecycle Costs, including Replacement Cost where applicable.
4.	Develop a workplan that will initiate the improvement of various pooled asset data in Citywide including but not limited to signs, sidewalks/curbs, cross culverts, driveway culverts, and land improvements. Ensure any improvements compliment the Township's AMP, LOS, and operational practices.
5.	Develop a formal process that ensures the periodic condition assessments of assets upon completion of relevant work tasks. Consider the use of Public Sector Digest's Maintenance Manager module that is currently being utilized by the Township to document work orders and service requests. In the case of asset subcategories subject to external condition assessments, continue to ensure the periodic update of asset conditions in Citywide for proper projection (e.g., Roads Needs Study, OSIM, structural building assessments, etc.).
6.	Develop a formal strategy to develop condition assessment approaches for the Township's Non-Core Assets.
Levels of Service	
1.	Continue to measure current LOS in accordance with O.Reg. 588/17.
2.	Work towards enhancing the documentation of LOS by incorporating the Corporate LOS and six value-added Community LOS developed by the Township's senior management. Develop processes to ensure corresponding Technical LOS are established. Align any LOS with ISO 55000 series of standards.
3.	Work towards identifying proposed LOS as per O.Reg. 588/17 and identify strategies required to close the gap between the Township's current and proposed LOS.
4.	Strengthen the alignment with the Township's Strategic Plan and various master plans. Ensure the update of future AMPs reflect any alterations to these plans. This may include the recognition of improved lifecycle strategies that may impact the Township's overall AM practices and processes.
5.	Engage the community by facilitating discussions about the Township's infrastructure and community the benefits of AM. A communication strategy should be development and information about the SOLI should be made available. Additionally, engage the public via surveys to develop proposed LOS.

Lifecycle Management	
1.	Periodically review the Township's Tangible Capital Asset Policy and identify variances between financial EUL in which the asset is amortized and lifecycle EUL.
2.	Periodically evaluate the efficacy of current lifecycle strategies to determine impact on Lifecycle Costs, performance, and risk.
3.	Formalize lifecycle strategies for those asset categories lacking. More specifically, Non-Core Assets. Continually evaluate the efficacy of these strategies to ensure optimization of Lifecycle Costs, performance, and risk.
Risk Management	
1.	Continue to implement risk-based decision making as part of the capital budgeting process and tie in with risk models developed within Citywide. This practice would include the continual review of high-risk assets.
2.	Review risk models as new information becomes available that merits the alteration of risk associated with an asset group. New information should yield data that is or can be readily available in Citywide.
Financial Strategy	
1.	Review finance strategies and processes. Focus on improving financial reporting capabilities and the integration AM activities with the Township's budget development process. In conjunction with the enhancement of LOS, improve financial metrics that analyze the cost/benefit of providing units of service relative to its capital and operating spending.

APPENDIX E – SUMMARY OF TABLES AND FIGURES

APPENDIX F – GLOSSARY OF TERMS

Annual Requirement is the annual amount of funds required to fully fund an asset at the time of replacement relative to its total EUL. In the context of this AMP, the Annual Requirement is in present value.

Arterial Road Class means Class 1 and Class 2 highways as determined under the Table to section 1 of Ontario Regulation 239/02 (Minimum Maintenance Standards for Municipal Highways) made under the Municipal Act, 2001.

Asset Attribute or "Attribute" is a database of key attributes tailored for an asset, which may include but is not limited to GIS ID, QMS risk number, and road class.

Asset Classification is the assignment of certain characteristics to assets to effectively group them within the Asset Hierarchy (Appendix A).

Asset Hierarchy is the structure in which assets are presented and reported within Citywide and as outlined in Appendix A.

Asset Management Plan or "AMP" is a strategic document that states how a group of assets are to be managed over a period. The plan describes the characteristics and condition of infrastructure assets, the levels of service expected from them, planned actions to ensure the assets are providing the expected level of service, and financing strategies to implement the planned actions.

Asset Type is an Asset Classification that mirrors the established departments under the Township's financial general ledger structure.

Asset Sub-Type is an Asset Classification that that exhibits similar characteristics and perform a similar service.

Capital Cost is a significant expenditure that generates a benefit beyond one year. This includes the acquisition, replacement, and betterment of capital assets.

Capital Reinvestment Rate is the ratio of funds allocated for capital investment relative to Replacement Cost.

Citywide Asset Manager or "Citywide" is a software developed by Public Sector Digest that the Township uses to house its asset inventory and manage its assets.

Collector Road Class means Class 3 and Class 4 highways as determined under the Table to section 1 of Ontario Regulation 239/02 (Minimum Maintenance Standards for Municipal Highways) made under the Municipal Act, 2001.

Community Levels of Service or "Community LOS" reflects the categories or themes that are most valued by the community.

Component is an Asset Classification that componentizes assets within a constant Asset Sub-Type (e.g., diameter size of a water valve).

Core Asset is any infrastructure asset that is defined as following:

- 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 storm water.
- Storm water management asset that relates to the collection, transmission, treatment, retention, infiltration, control, or disposal of storm water.
- Road.
- Bridge or culvert.

Corporate Levels of Service or "Corporate LOS" are the core strategic outcomes as aligned with Township's corporate vision and Strategic Plan.

Development Charges Study is a study required under the Development Charges Act, 1997, for a municipality to have the ability to charge a fee from developers to fund tax-funded capital infrastructure relating to growth.

Estimated Useful Life or "EUL" is the period in which an asset is estimated to be in service. EULs by asset category are determined under the Township's Tangible Capital Asset Policy.

Funding Gap is an instance where an asset investment requirement does not have dedicated monetary resources to fund it.

Geospatial Information System/Geographic Information System (GIS) is a framework for gathering, managing, and analyzing data. Capable of integrating multiple data sets to produce spatial location and layers of information into visualizations using maps and 3D scenes.

Impost Study is a study issued by the Township that supports the imposition of charges permitted under the Municipal Act, 2001, to fund water and sewer capital infrastructure relating to growth.

Infrastructure for Jobs and Prosperity Act (2015) is an Act that establishes mechanisms to encourage principled, evidence based and strategic long-term infrastructure planning that supports job creation and training opportunities, economic growth, and protection of the environment, and incorporate design excellence into infrastructure planning.

Infrastructure Master Plan is a strategic document that sets growth-related goals, objectives, and priorities for municipal infrastructure.

Levels of Service or "LOS" are the parameters or combination of parameters that reflect social, political, economic, and environmental outcomes that the organization delivers. LOS statements describe the outputs or objectives that are intended to be delivered to customers.

Lifecycle Cost Refers to the total costs required for an asset or service over all stages of its life, e.g., acquisition/creation, operation and maintenance, renewal, and disposal.

Local Road Class means Class 5 and Class 6 highways as determined under the Table to section 1 of Ontario Regulation 239/02 (Minimum Maintenance Standards for Municipal Highways) made under the Municipal Act, 2001.

Non-Core Assets is any infrastructure asset that does not fall under one of the Core Asset categories, but is still owned and operated by the Township, such as fleet, equipment, and land improvements.

Official Plan is a plan adopted by the Township that outlines land use policies and ensures future planning and development meets the specific needs of the community.

Ontario Regulation 588/17 – Asset Management Planning for Municipal Infrastructure or "O.Reg.588/17" is an Ontario Regulation made under the *Infrastructure for Jobs and Prosperity Act (2015)* of and filed in December 2017, which prescribes the policies and requirements relating to the preparation of this asset management plan by applicable municipalities.

Public Sector Accounting Standards or "PSAS" represents the accounting framework established by the Public Sector Accounting Standards Board.

Quality Management Standard or "QMS" is a standard and score to assist owners and operating authorities in the effective management and operation of their municipal residential drinking water systems. Staff have developed and implemented a QMS specific to the Township. Certification was originally obtained on February 2009. Recertification was successfully achieved in 2013, 2016, 2019 and 2022.

Replacement Cost in the context of this AMP is the total present value of funds required to replace an asset.

Reserve & Reserve Fund Policy is the policy adopted by the Township that outlines the contribution, use, and reporting requirements of its reserves and reserve funds.

Service Area is a grouping of Asset Classifications that provide similar services.

State of the Local Infrastructure or "SOLI" is the summary on the state of the assets that include information regarding Replacement Cost, average age, and average condition.

Strategic Asset Management Policy is a policy that municipalities must pass that required under O.Reg.588/17 that outlines the various objectives of effectively managing its assets.

Strategic Plan is a planning document endorsed by Council that establishes a common vision for the municipality that will define success. The plan is intended to provide Council and staff with a framework for decision making.

Tangible Capital Asset Policy is the policy adopted by the Township that provides guidance regarding the capitalization and amortization of assets and sets their Estimated Useful Lives.

Technical Levels of Service or "Technical LOS" are detailed metrics that can be used to evaluate and report whether the Community LOS are being achieved.

APPENDIX G – ACRONYMS

Acronym	Meaning
AM	Asset Management
AMP	Asset Management Plan
CCBF	Canada Community Building Fund
CPI	Consumer Price Index
EUL	Estimated Useful Life
GHG	Green House Gas
GIS	Geospatial/Geographic Information System
HCB	High Class Bitumen
KPI	Key Performance Indicator
LCB	Low Class Bitumen
LOS	Levels of Service
O.Reg.	Ontario Regulation
OCIF	Ontario Community Infrastructure Fund
OSIM	Ontario Structure Inspection Manual
PCI	Pavement Condition Index
SCADA	Supervisory Control and Data Acquisition
SOLI	State of the Local Infrastructure