

# Loyalist Township

## Asset Management Plan

September 2022





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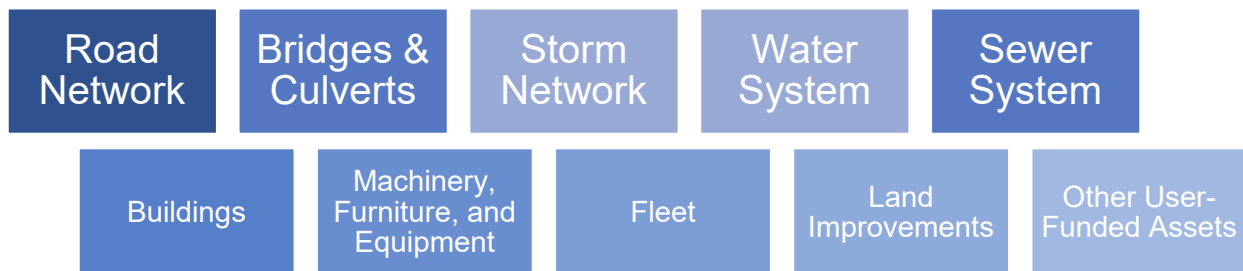
# EXECUTIVE SUMMARY

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 value, and estimated service life remaining. As depicted in Figure 1 and Figure 2, the Township’s current infrastructure has an estimated replacement value of \$670 million and is in good to very good condition overall.

Figure 1: Township Assets - Replacement Value by Asset Category

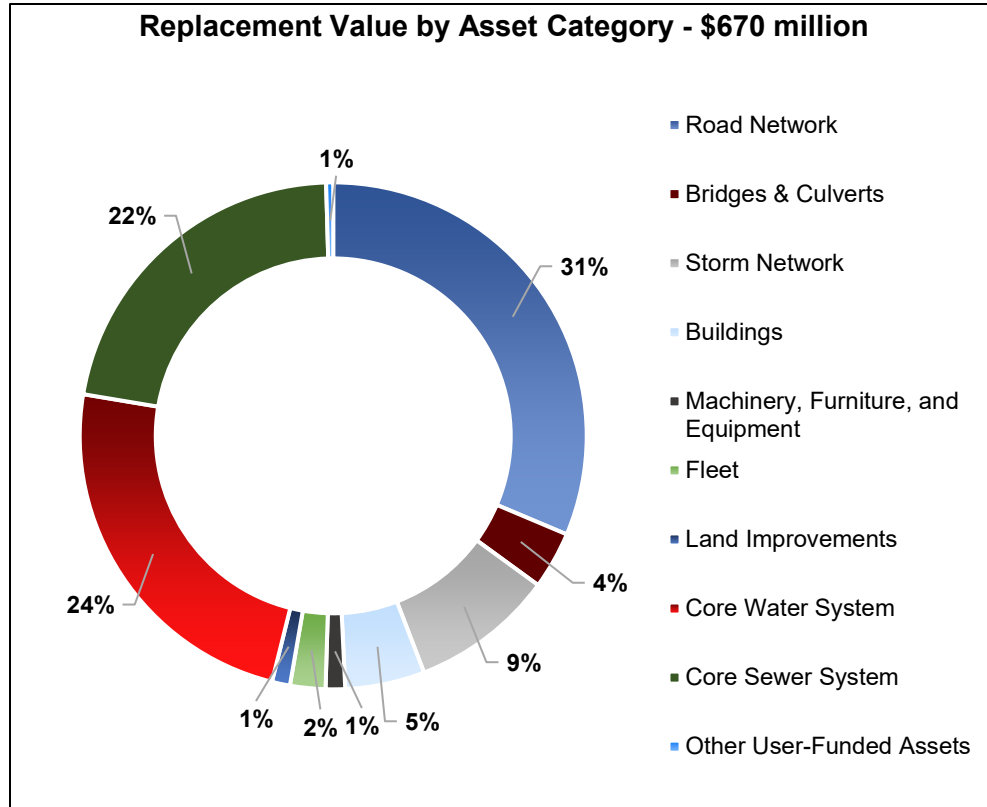


Figure 2: Township Assets - Condition by Replacement Value

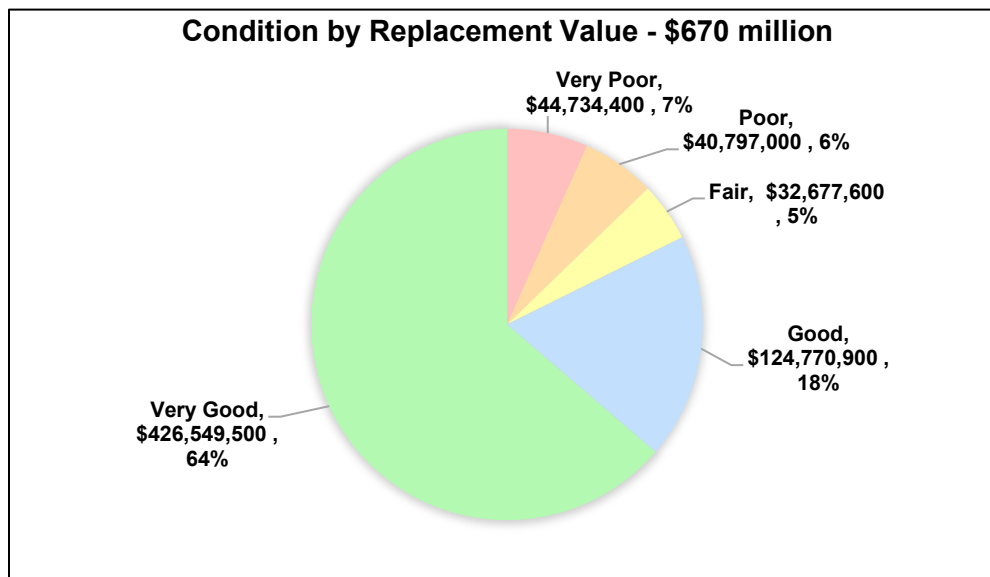
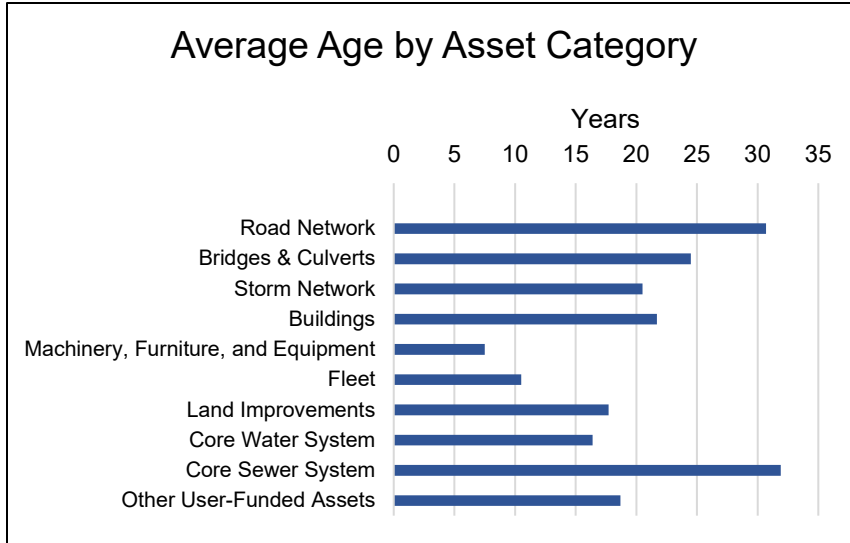


Figure 3: Township Assets – Average Age by Asset Category



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 8 and 32 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 \$14.5 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately \$7.1 million toward capital projects per year. As a result, there is currently an annual funding gap of \$7.4 million.

A simplified financial strategy was developed to address the annual capital Funding Gap which is summarized in Table 1. This captures any reductions in existing debt repayments in the next 20 years.

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	25.9%	1.1%
Water - User-Funded Assets	14.3%	0.2%
Sewer - User-Funded Assets	58.8%	1.0%

## 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:

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



# 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 completion and commitment to the Township’s Asset Management Plan (“AMP”) is a key objective in the Strategic Plan endorsed by Council in 2019. The AM program is designed to connect strategic Council and community objectives with day-to-day infrastructure investment and operating decisions.

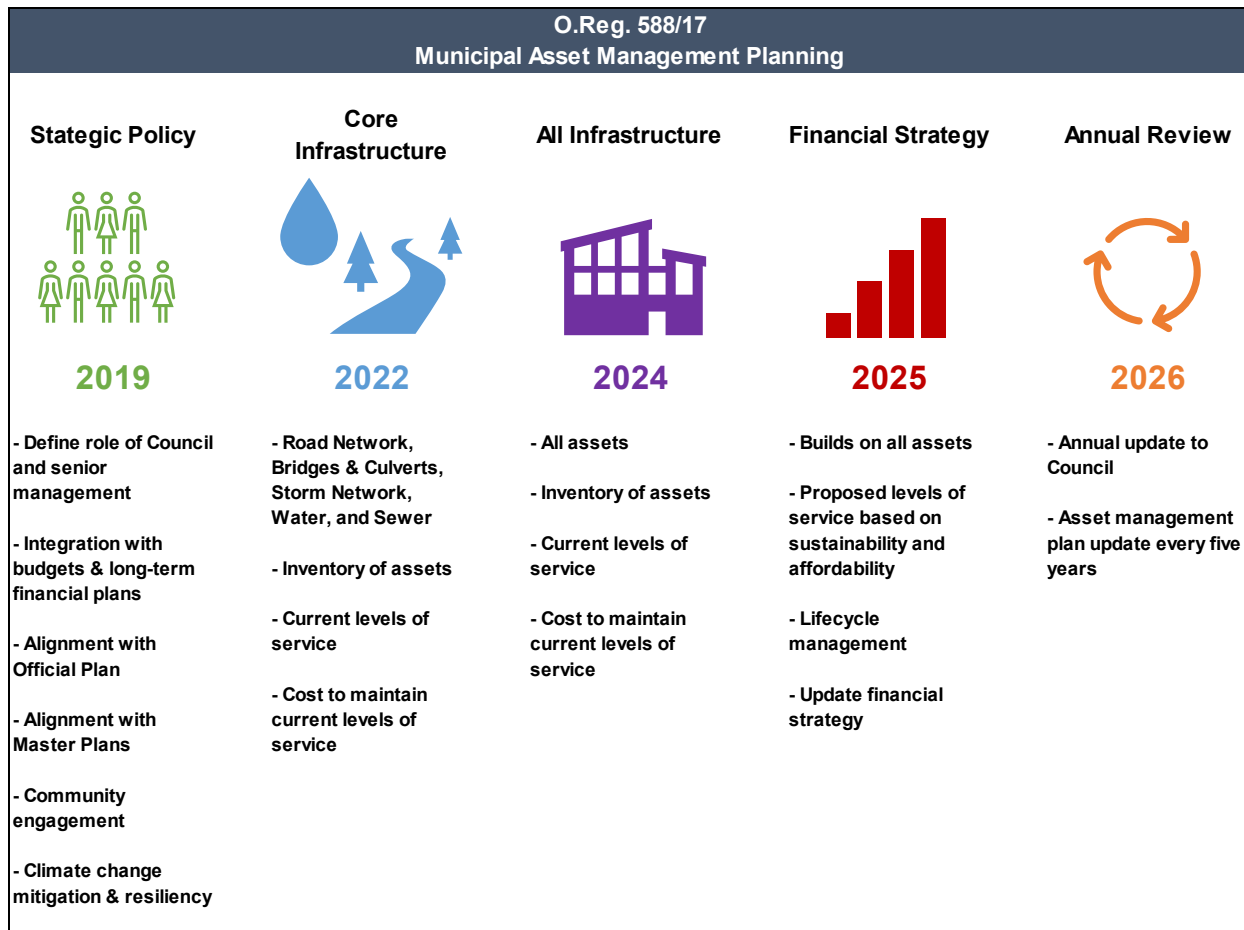
The key objectives of AM are:

- To align with the Provincial regulatory landscape, meet the requirements of O. Reg. 588/17, and position the Township for grant funding programs.
- To understand the Township's current State of the Local Infrastructure ("SOLI").
- To measure and monitor Level of Service ("LOS") metrics to determine how well infrastructure meets expectations.
- To establish asset lifecycle management activities (i.e., the operation, maintenance, rehabilitation, and replacement of assets).
- To 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.
- To establish a financial strategy that will fund 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”). The 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 5 outlines the various milestones that all Ontario municipalities must meet to fulfill the requirements of the .

Figure 5: O.Reg.588/17 Timelines



Although an update was completed in 2017, this AMP will replace the Township’s initial 2013 AMP to ensure adherence to the 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
<b>S.5(2), 1(i - ii)</b>	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 for core infrastructure. Township is developing LOS across all asset categories.
<b>S.5(2), 2</b>	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.
<b>S.5(2), 3(i - v)</b>	Summary of assets in each category. The replacement value 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
<b>S.5(2), 4(i - iv)</b>	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
<b>S.5.(2), 5(i - ii)</b>	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	<ul style="list-style-type: none"> <li>• Community sustainability</li> <li>• Public concerns</li> <li>• Corporate strategy and plan approvals</li> <li>• Sustainability of the Township’s infrastructure and service levels</li> <li>• Capital and operating budget approval</li> <li>• User Rate approval</li> <li>• Appropriate fiscal decision making</li> <li>• Significant project approvals</li> </ul>
Senior Management Team/AM Steering Committee	<ul style="list-style-type: none"> <li>• Provide strategic direction</li> <li>• Sustainability of the Township’s infrastructure and service levels</li> <li>• Capital and operating budget reviews, recommendations to Council</li> <li>• Rate reviews and recommendations to Council</li> <li>• Appropriate fiscal decision making</li> <li>• Support and assign priority to the AM program</li> <li>• Significant project review and recommendations</li> <li>• Responsible for oversight and guidance of the AM program</li> <li>• Need to be aware of program developments, milestones, etc.</li> <li>• Need to be aware of and approve program results</li> </ul>
AM Team	<ul style="list-style-type: none"> <li>• Program design and implementation</li> <li>• Facilitation and coordination of activities across the Township-wide AM network</li> <li>• Communication</li> </ul>
Staff	<ul style="list-style-type: none"> <li>• Asset stewardship</li> <li>• Data collection and reporting</li> <li>• Data analysis and modeling support</li> <li>• Processes and procedures including decision making</li> <li>• New approaches, tools, and technologies</li> <li>• Education and information</li> </ul>
Agencies/Government	<ul style="list-style-type: none"> <li>• Compliance with legal and regulatory requirements</li> <li>• Compliance with service agreements</li> <li>• Compliance with grant/funding program requirements</li> </ul>
Customers/Community (Residential, Commercial, Industrial, Institutional, visitors)	<ul style="list-style-type: none"> <li>• Municipal services available for their use</li> <li>• Municipality plans for future investment, growth, etc.</li> <li>• Rationales behind decisions</li> <li>• Where and how their tax dollars and user rates are being spent</li> <li>• Sustainability of the Township’s infrastructure and service levels</li> <li>• Public health and safety</li> <li>• Willingness to pay for service</li> <li>• Equitable rate structure</li> <li>• Business support</li> </ul>

## 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. Some examples of exclusions are natural assets and designated heritage infrastructure. O. Reg 588/17 requires a more detailed analysis and review of Community and Technical LOS for Core Assets in 2022. This information for all other Non-Core Assets is required to be included in the Township’s AMP by July 1, 2024.

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

Asset Category	Subcategories	Core/Non-Core Infrastructure
<b>4. User-Funded Assets</b>		
<b>4.1. Core Water System</b>	Hydrants, Valves Water Meters, Water Mains Treatment Facilities, Distribution Facilities	Core
<b>4.2. Core Sewer System</b>	Sewer Manholes, Sewer Mains Treatment Facilities, Collection Facilities	
<b>4.3. Other User-Funded Assets</b>	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:

- The 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 utilizes 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:

$$\text{Replacement Value} \div \text{Estimated Useful Life} = \text{Annual Requirement}$$

## 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 rates 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 and Infrastructure Master Plan is imperative to ensure new and existing assets will sustainably provide service levels into the future.



A primary objective of the Strategic Plan is to “be a municipal leader in climate action and environmental stewardship”. 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 in everything the Township does. 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.

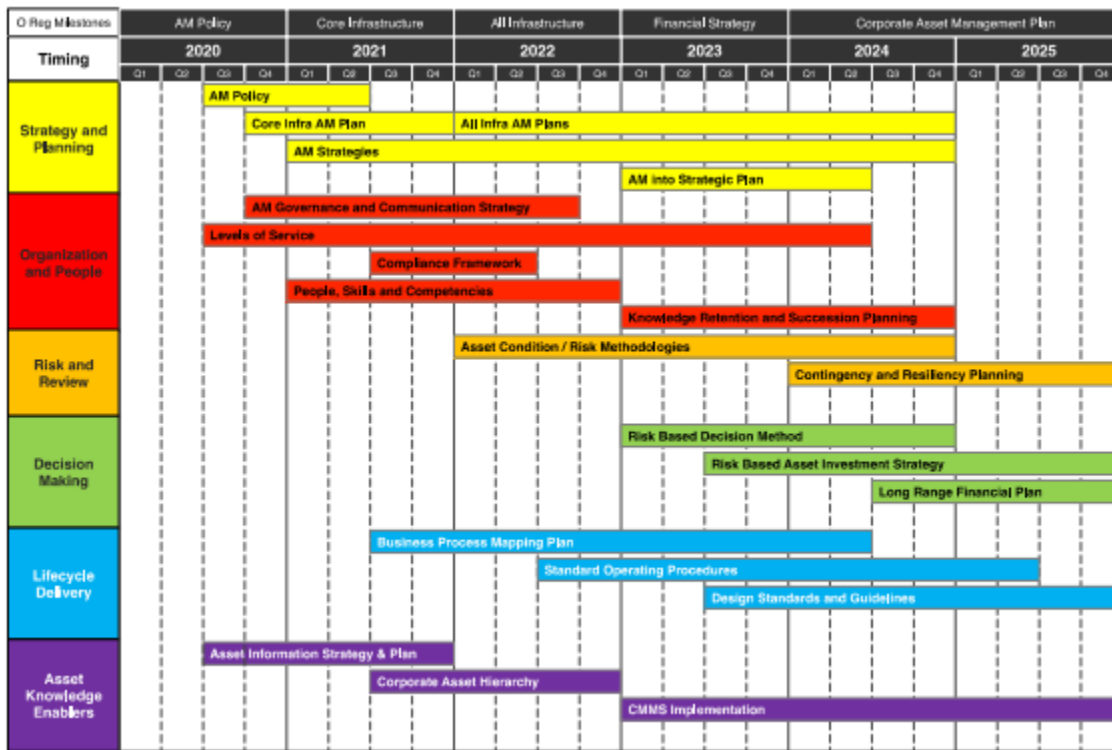
Building climate change resilience within the Township’s assets and implementing adaptation solutions will sustain services and ensure that assets endure climate impacts. Furthermore, it will reduce the Township’s carbon footprint with the potential of reducing associated Lifecycle Costs.

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.

## 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 6.

Figure 6: 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 SOLI as presented in each asset category provides the following information:

- A summary of asset inventories that include descriptions and quantities and that support the various services provided by the Township.
- An estimated replacement value 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 value estimate serves as a foundational benchmark to highlight the significance of the infrastructure that supports various services.
- A description of the proportion of estimated service life remaining relative to an asset category's EUL.
- The average condition of the assets weighted by replacement value.
- A description of the data sources used to inform this section, including any relevant condition assessment policies/practices.

### Replacement Values

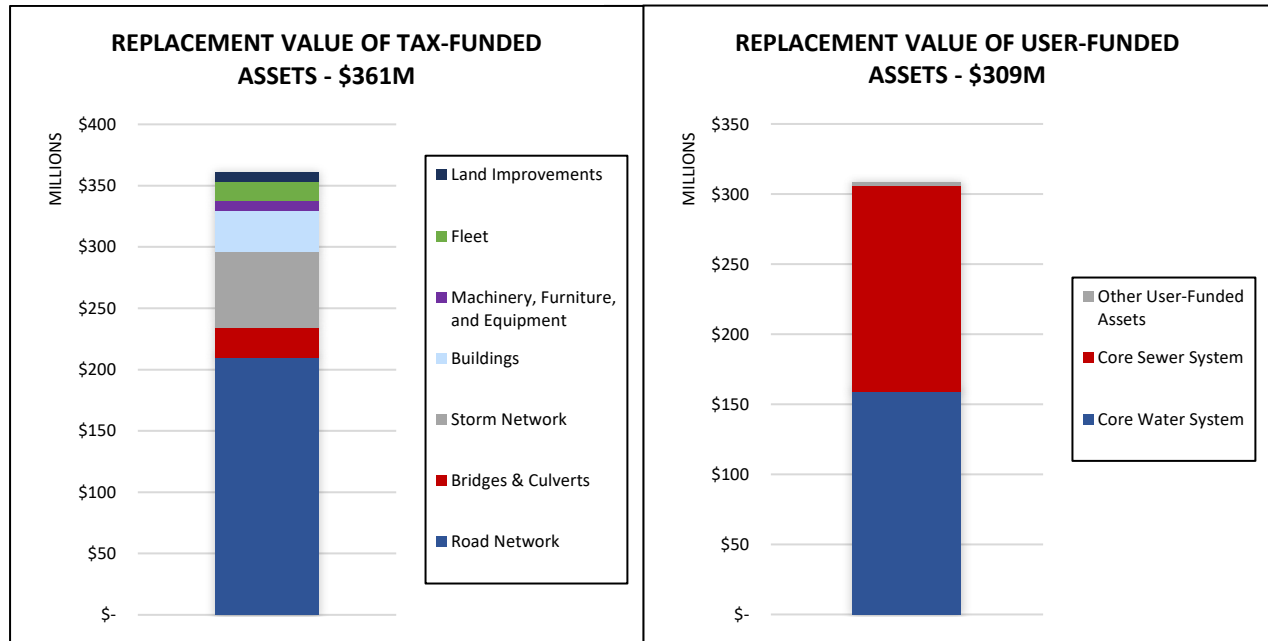
Replacement Values for each asset or asset category were derived based on several sources, which include:

- The Township's historic 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 value 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 the end of 2021, the estimated total Replacement Value of the Township’s assets is \$670 million. This is illustrated between tax and user-funded assets in Figure 7.

Figure 7: Replacement Value of Township Assets



## Estimated Useful Life and Service Life Remaining

The 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 Township’s 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

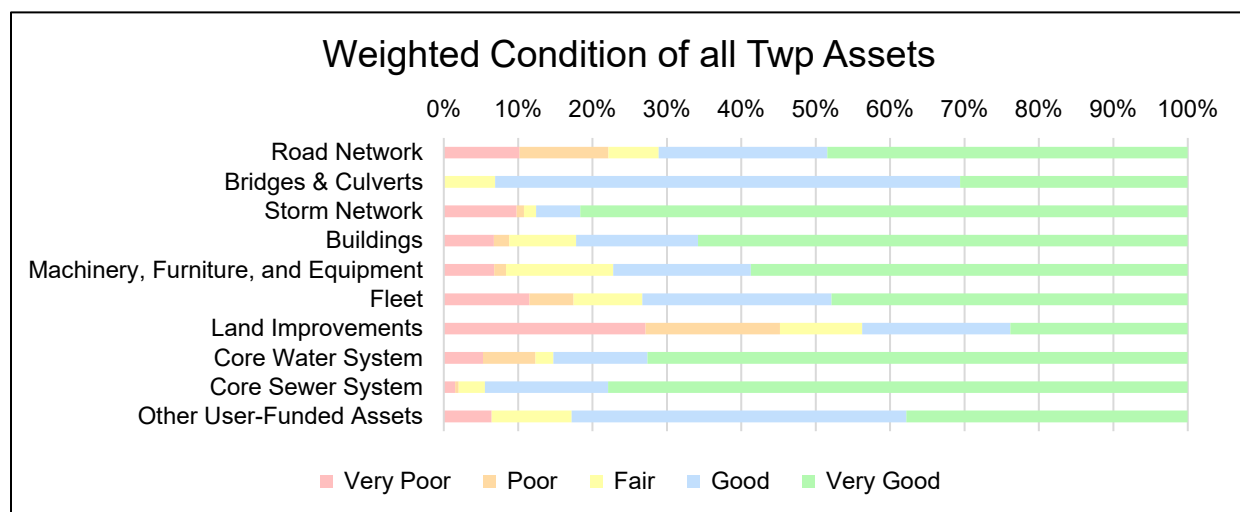
Condition ratings were assigned to every asset using a five-point rating scale as shown in Table 6. In addition to providing a sound basis for assessment, this will allow Township staff to benchmark the results against the values presented in this document.

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 8. Collectively, 82% of assets owned by the Township relative to Replacement Value are in good or very good condition. This estimate relies on either the asset's age or any condition assessments undertaken.

Figure 8: 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, 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 Value.

### Strategic and Corporate Goals

This AMP was developed to ensure alignment with the Strategic Plan, specifically with the vision of the Township and the corporate mission. The Township’s strategic vision is as follows:

- Increasing commercial and industrial activity by providing employment opportunities and amenities.
- Enhancing sense of community identity.
- Using innovative approaches to sustain and improve infrastructure.
- Ensuring a participatory, open, and transparent municipal government.

By leveraging the corporate mission, the Township developed the three pillars of customer service in the Corporate LOS and has expanded its Community LOS as outlined in Figure 9.



Figure 9: Corporate & Community LOS



## Future Improvements

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 utilized.

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.

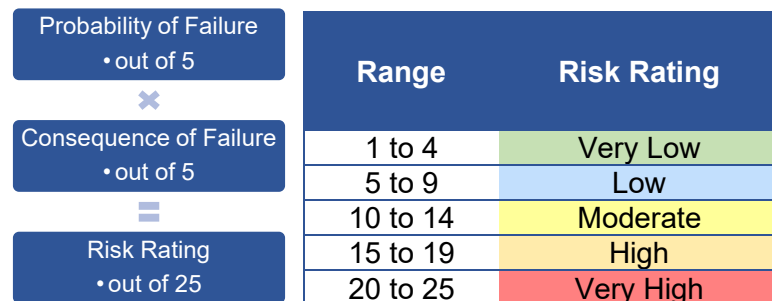
The types of lifecycle activities discussed in Sections 3 and 4 are listed in Table 7.

Table 7: Lifecycle Activities - Examples

Lifecycle Activity	Description	Examples for Roads
<b>Maintenance</b>	Regularly scheduled inspection of maintenance, or more significant repair activities associated with unexpected events.	Grading/ditching on gravel roads
<b>Preventative Maintenance</b>	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
<b>Rehabilitation</b>	Significant treatments designed to extend the life of the asset.	HCB road resurfacing, LCB road re-profile
<b>Replacement</b>	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:



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:

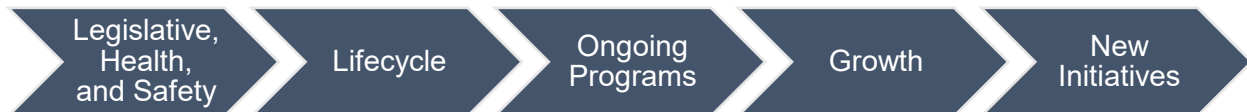
- Economic implications of asset failure (Replacement Value).
- Regulatory and health and safety implications of asset failure.
- Service level implications of asset failure.

Figure 10 illustrates the Township’s aggregated risk matrix of its assets as of the end of 2021. Any high-risk assets are reviewed by the department, whereby mitigation activities are developed, or the risk is tolerated. Out of the total Replacement Value of \$670 million, approximately \$38.1 million or 6% of assets are considered high or very high risk.

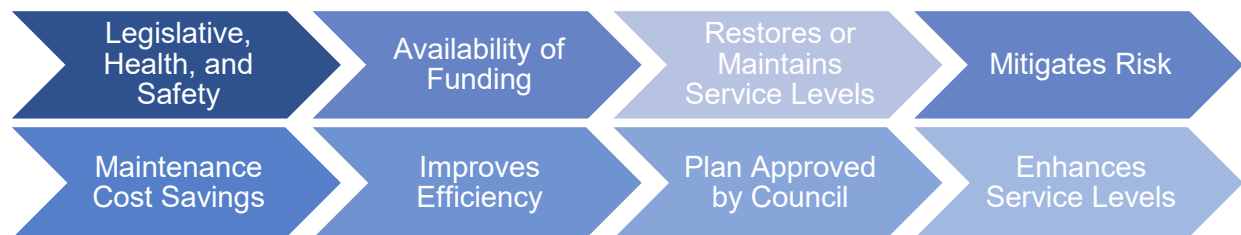
Figure 10: Township Risk Matrix



Historically, the Township has utilized 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 Value. 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 Value of the Road Network totaling \$210 million 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 is in good condition.

### Asset Inventory

Table 9: Road Network - Inventory Valuation Summary

Subcategory	Quantity		Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Gravel Roads</b>	113,480	m.	30,504,300	User-Defined Cost/Unit	44.7	Poor
<b>HCB Roads</b>	63,102	m.	126,204,600		33.9	Good
<b>LCB Roads</b>	81,568	m.	28,548,800		48.1	Good
<b>Road Guiderails</b>	4	assets	292,200	Consumer Price Index	5.8	Very Good
<b>Sidewalks/Curbs</b>	226	assets <sup>1</sup>	18,908,000	User-Defined Cost/Unit	22.5	Good
<b>Signs</b>	89	assets <sup>2</sup>	782,300	Consumer Price Index	9.9	Fair
<b>Streetlights</b>	1,027	ea.	4,689,500		30.6	Very Good
<b>Total Road Network</b>			<b>209,929,700</b>		<b>30.7</b>	<b>Good</b>

<sup>1</sup> Sidewalks/Curbs within Citywide are undergoing a review and thus are not an accurate representation of quantity.

<sup>2</sup> Signs within Citywide are currently pooled and thus are not an accurate representation of quantity.

## Asset Age

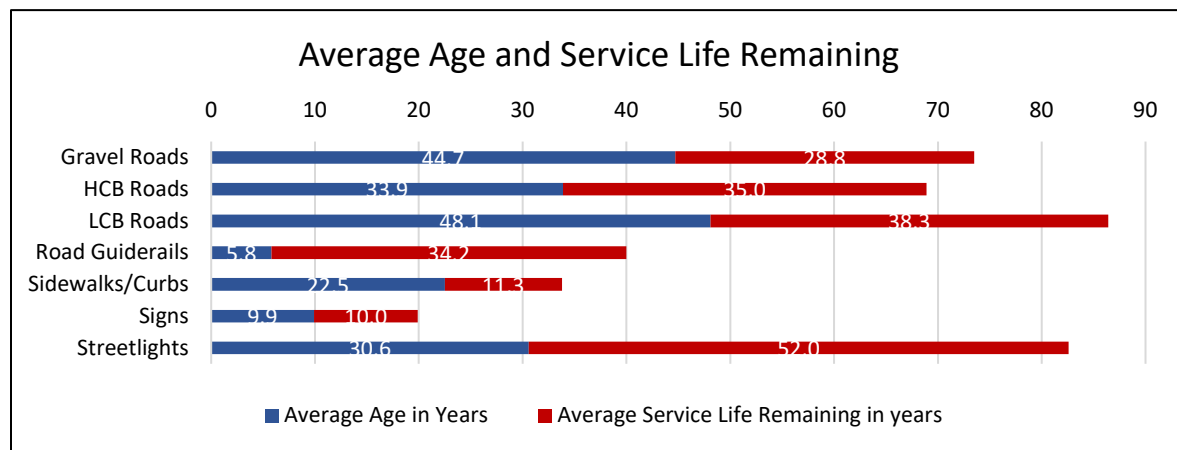
Figure 11 illustrates the average age relative to service life remaining for each subcategory of the Road Network. Service life remaining is primarily based on the assets' initial EUL, which are listed in Table 10, but may deviate if condition assessments and/or lifecycle activities have been undertaken 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.

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.

Table 10: Road Network - Estimated Useful Life

Subcategory	Estimated Useful Life (EUL)
Gravel Roads	50 Years
HCB Roads	40 Years <sup>3</sup>
LCB Roads	20 Years <sup>4</sup>
Road Guiderails	40 Years
Sidewalks/Curbs	30 Years
Signs	20 Years
Streetlights	30 to 60 Years

Figure 11: Road Network - Average Service Life and Service Life Remaining



<sup>3</sup> EUL for HCB roads is the lifecycle EUL if no lifecycle events occur.

<sup>4</sup> EUL for LCB roads is the lifecycle EUL if no lifecycle 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 the 2015 Roads Needs Study. Asset profiles are set up in Citywide to allocate a tailored deterioration curve to each subcategory of road. Therefore, a condition assessment from 2015 will project to 2021 using the applicable deterioration curve within the profile. A Roads Needs Study is periodically completed by an external consultant, which also recommends various lifecycle activities to optimize the useful life of roads. The next Roads Needs Study is expected to be completed in 2025 as the Township continues to improve its annual inspection program during the interim period. 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.

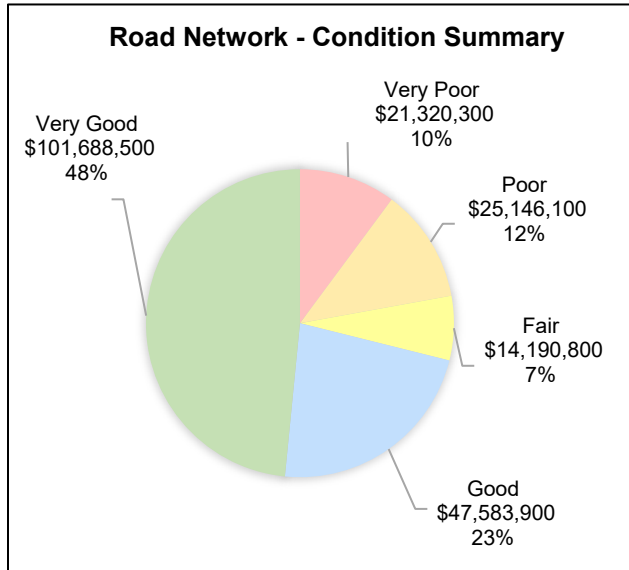
The Township does not have a formal approach to assessing the condition of the Road Network’s Non-Core Assets, and therefore heavily relies on an asset’s age and EUL to determine condition. Staff assessments that may shift the replacement of an asset are currently ad-hoc and are triggered by visual inspections and/or complaints. Sidewalks/Curbs have a staff-assessed projected condition from a 2019 rating. Table 11 outlines the Township’s weighted average condition of the road network to be 68 or good condition overall, with the lowest being gravel roads. A weighted average condition incorporates an asset’s Replacement Value to calculate an average condition for the subcategory.

Table 11: Road Network - Weighted Average Condition and Source

Subcategory	Weighted Average Condition out of 100	Condition Source
Gravel Roads	39.8	Assessed
HCB Roads	74	
LCB Roads	70.1	
Road Guiderails	97.9	
Sidewalks/Curbs	68.7	
Signs	53.1	Age-based
Streetlights	91	
<b>Total Road Network</b>	<b>68.3</b>	



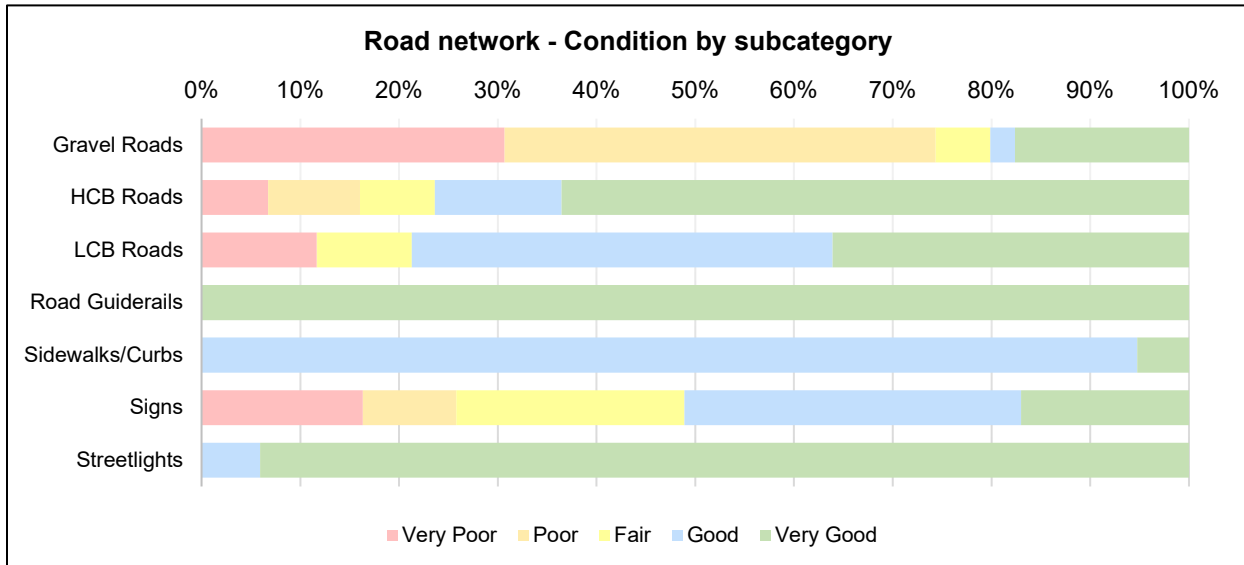
Figure 12: Road Network - Condition Summary



As shown in Figure 12, the Township’s Road Network has approximately 71% 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 49% or \$22.7 million of the Replacement Values associated with poor and very poor condition relates to gravel roads. This is approximately 85 kilometres that require short-term resurfacing.

Figure 13 provides further detail on the condition of the assets by subcategory.

Figure 13: 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.

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/km <sup>2</sup> )	0.00 km/km <sup>2</sup>
			Lane-kilometers of Township Collector Roads (MMS Road Classes 3 and 4) per land area (k/km <sup>2</sup> )	0.50 km/km <sup>2</sup>
			Lane-kilometers of Township local roads (MMS Road Classes 5 and 6) per land area (k/km <sup>2</sup> )	0.98 km/km <sup>2</sup>

Community Levels of Service			Technical Levels of Service	
Quality	Description or images that illustrate the different levels of road class pavement condition	<p>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</p> <p>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 &amp; preservation scheduled.</p> <p>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</p>	<p>For paved roads in the municipality, the average pavement condition index value.</p>	<p>HCB Roads 74% LCB Roads 70%</p>
		<p>For unpaved roads in the municipality, the average surface condition (e.g., excellent, good, fair, or poor)</p>	<p>Poor</p>	
Performance			Capital re-investment rate	1.74%

## 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 its 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 <sup>5</sup>	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

<sup>5</sup> 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

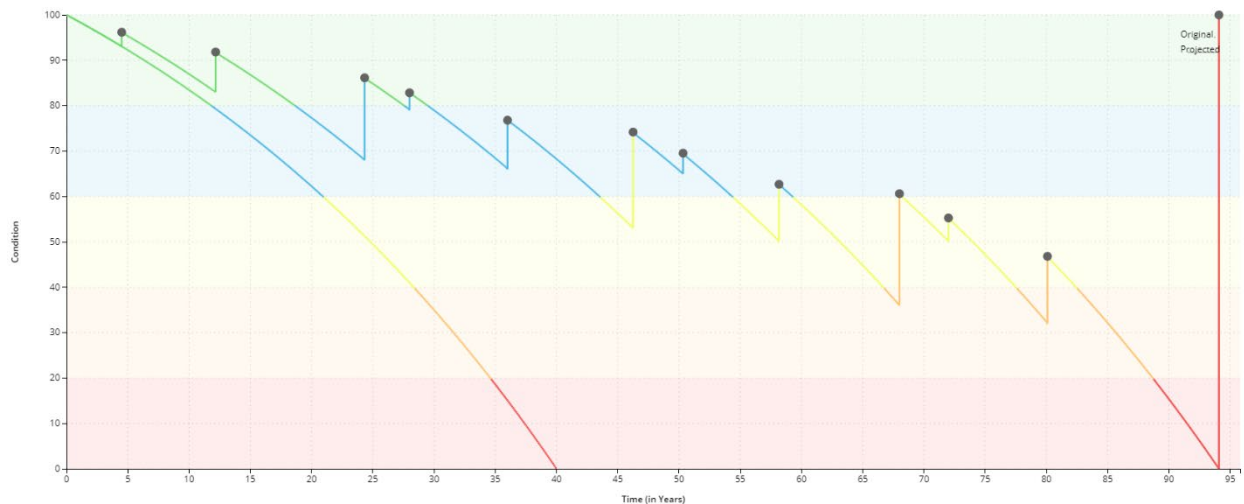
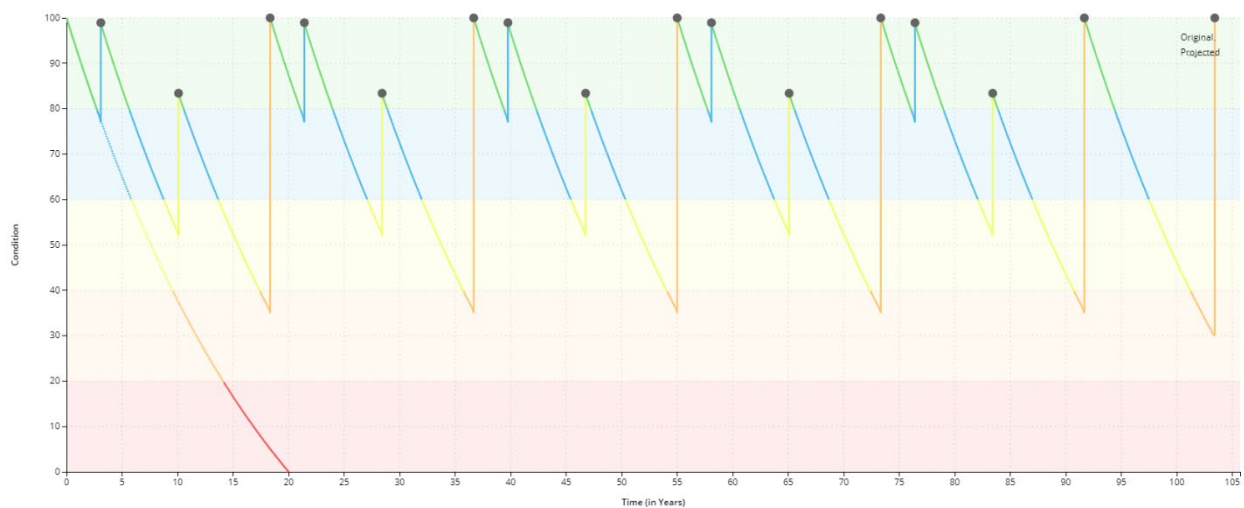


Table 15 outlines the current lifecycle strategy that has been applied to the Township’s LCB Roads. This strategy is perpetual in nature and avoids replacement so long as lifecycle events are completed to retain the assets at a certain condition and risk range.

Table 15: Lifecycle Strategy - LCB Roads

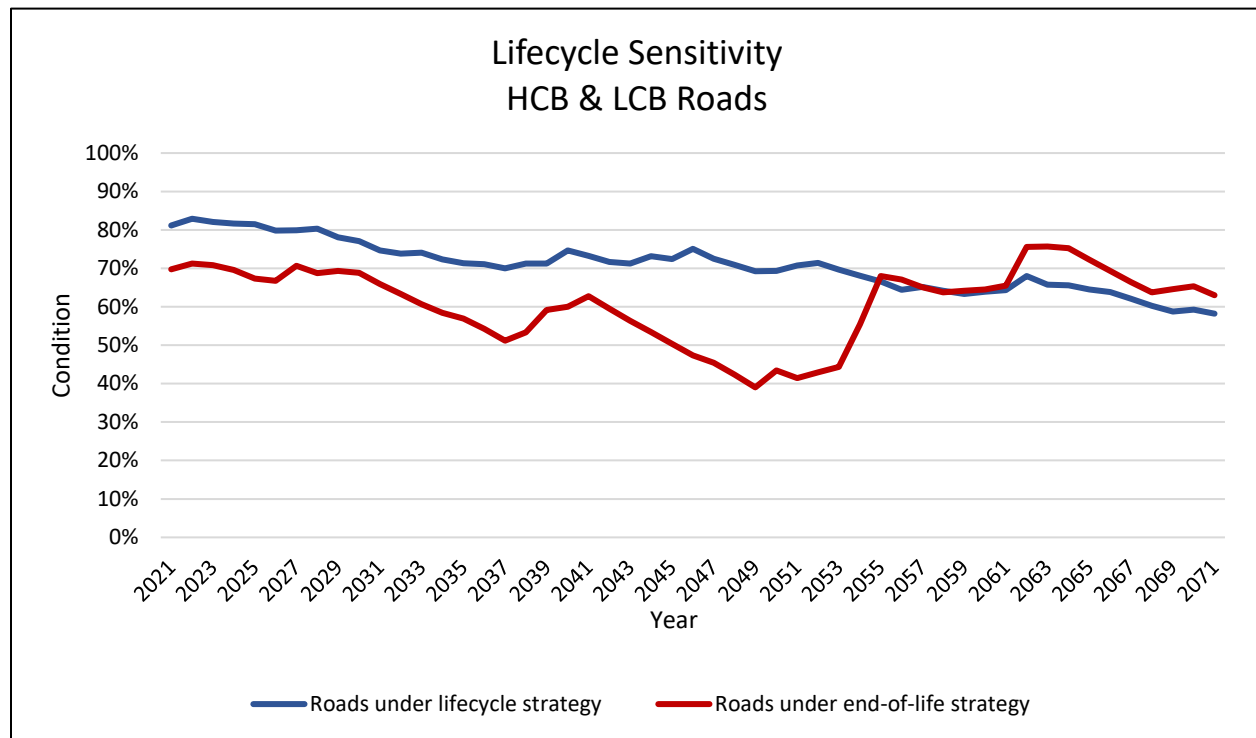
LCB Roads		
Lifecycle Activity	Type	Trigger/Timeline - chronologically triggered by condition
Single Preservation	Capital - preventative maintenance	3 years following initial construction or re-profile
Double Preservation		7 years following single preservation
Re-profile	Capital - rehabilitation	8 years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



### Lifecycle Sensitivity

Based on the above, Figure 14 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 14: 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.

### Capital Forecasts

Figure 15 illustrates the road network’s 10-year capital forecast, which includes lifecycle activities of roads as noted above. In 2029, the replacement of most sidewalks is scheduled based on projected condition, which requires an updated condition assessment to assess actual needs.

As noted in Table 16, the Annual Requirement to fund the replacement and lifecycle activities of the Road Network totals \$5.2 million. This incorporates annual savings in the present value of approximately \$787,000 if the above-noted lifecycle strategies are undertaken. A more detailed 10-Year capital forecast is found in Appendix C.

Figure 15: Road Network - 10-Year Capital Forecast

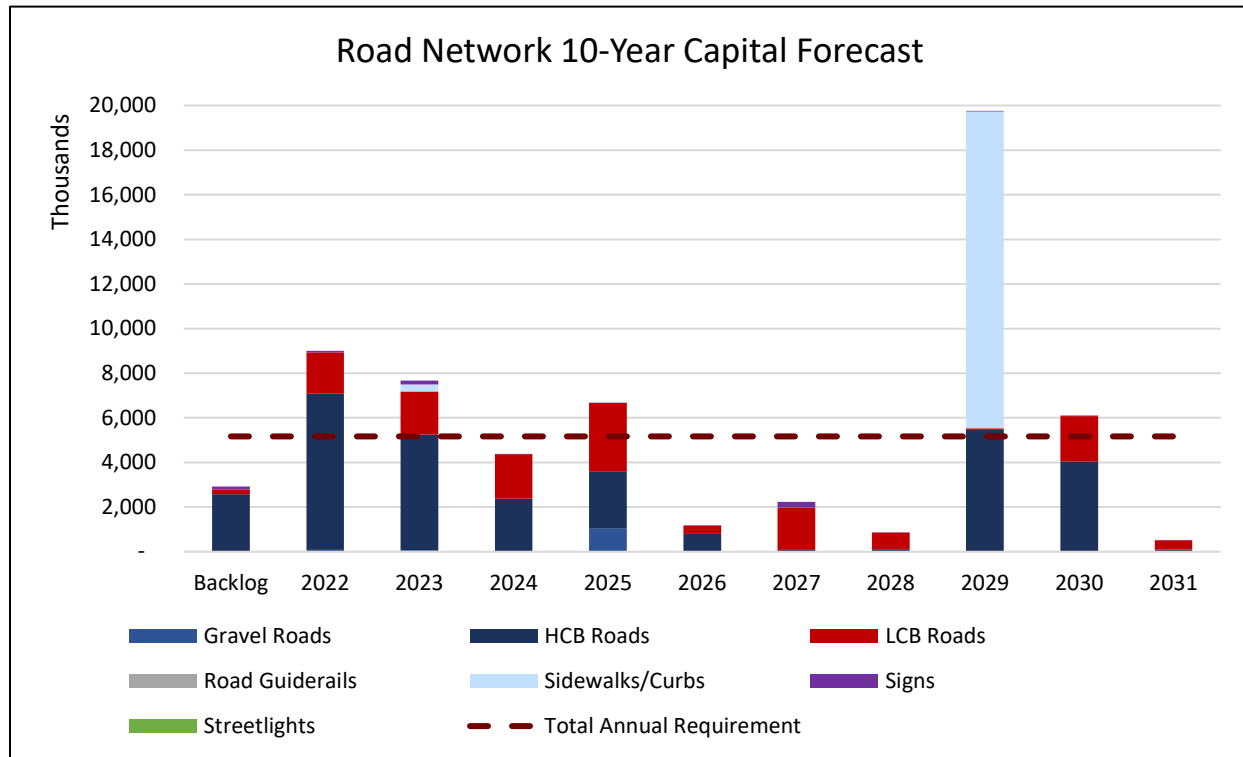


Table 16: Road Network - Annual Requirement

Subcategory	Annual Requirement - Lifecycle (\$)	Annual Requirement - End of Life (\$)	Savings (costs)
Core Assets	4,412,700	5,199,900	787,200
Non-Core Assets	755,800	755,800	-
<b>Total Road Network</b>	<b>5,168,500</b>	<b>5,955,700</b>	<b>787,200</b>

## 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 Value (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 16 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 27 assets considered high or very high risk due to their condition or consequence of failure. These are also subsequently listed in Table 18.

Figure 16: Road Network - Risk Matrix

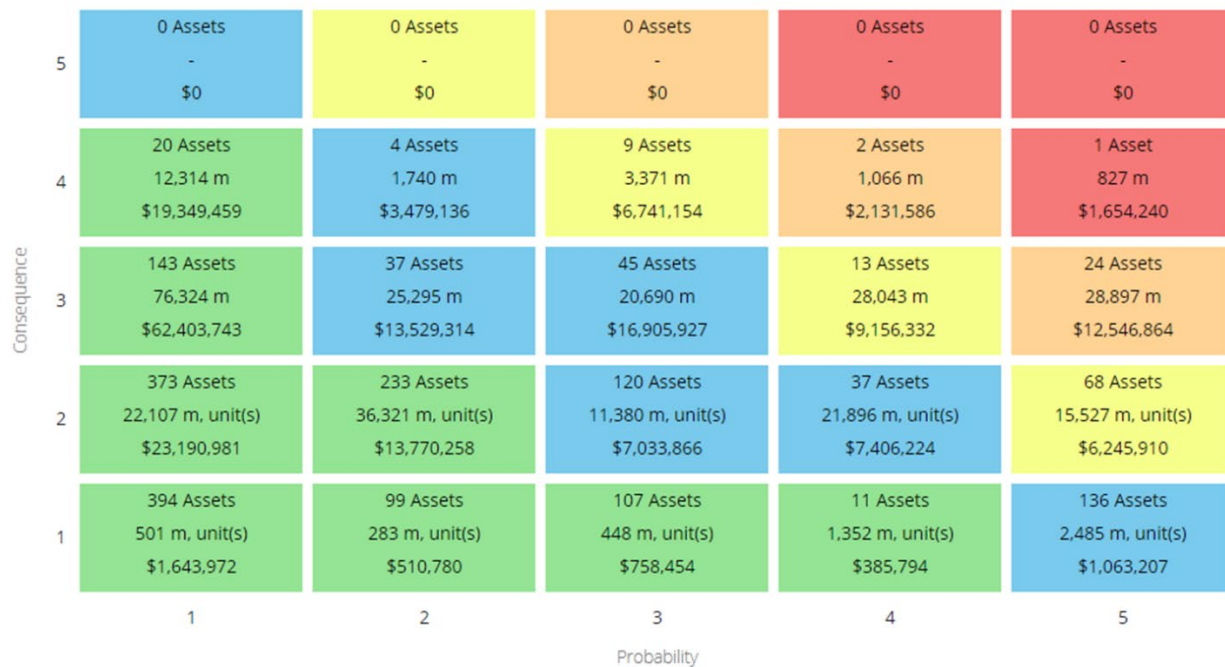


Table 18: Road Network – High-Risk Assets

Asset Name	Subcategory	GIS #	Risk Rating
Stella Forty Foot Road <sup>6</sup>	HCN Roads	R1630	Very High
South Shore Road <sup>7</sup>	Gravel Roads	R1611	High
Front Road <sup>6</sup>	HCN Roads	R1617	High
Scotland Road <sup>6</sup>	HCN Roads	R1401	High
Pruyn Crescent	HCN Roads	R1530	High
Front Road <sup>8</sup>	LCN Roads	R1614	High
Ham Road <sup>7</sup> above	Gravel Roads	R1492	High
Second Concession Road <sup>7</sup>	Gravel Roads	R1637	High
Lakeside Lane	HCN Roads	R1241	High
Old Wilton Road <sup>6</sup>	LCN Roads	R1406	High
Stella Forty Foot Road <sup>6</sup>	HCN Roads	R1631	High
Stella Forty Foot Road <sup>6</sup>	HCN Roads	R1632	High
Mud Lake Road	HCN Roads	R1339	High
Mud Lake Road	HCN Roads	R1340	High
Mud Lake Road	HCN Roads	R1341	High
South Street	HCN Roads	R1374	High
Oxford Crescent	HCN Roads	R1156	High
Front Road <sup>6</sup>	HCN Roads	R1615	High
McConnell Road <sup>7</sup>	Gravel Roads	R1432	High
Chipmunk Ridge Road <sup>7</sup>	Gravel Roads	R1407	High
Front Road <sup>7</sup>	Gravel Roads	R1622	High
Simmons Road <sup>7</sup>	Gravel Roads	R1424	High
South Shore Road <sup>7</sup>	Gravel Roads	R1610	High
Third Concession Road <sup>7</sup>	Gravel Roads	R1639	High
Third Concession Road <sup>7</sup>	Gravel Roads	R1640	High
Maple Road <sup>6</sup>	LCN Roads	R1413	High
Simmons Road <sup>6</sup>	LCN Roads	R1430	High

<sup>6</sup> Design included in the 2022 approved capital budget.

<sup>7</sup> Gravel road ratings are based on a prior Roads Needs Study in Citywide but have been improved through the Township’s maintenance activities in the last four years. The Public Works division will continue to identify sections of gravel roads which require comprehensive construction, drainage improvements, and grading changes with accompanying condition assessments.

<sup>8</sup> Construction 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 \$25 million. The average age of Bridges and Culverts is approximately 25 years and are in good condition.

#### Asset Inventory

Table 19: Bridges & Culverts - Inventory Valuation Summary

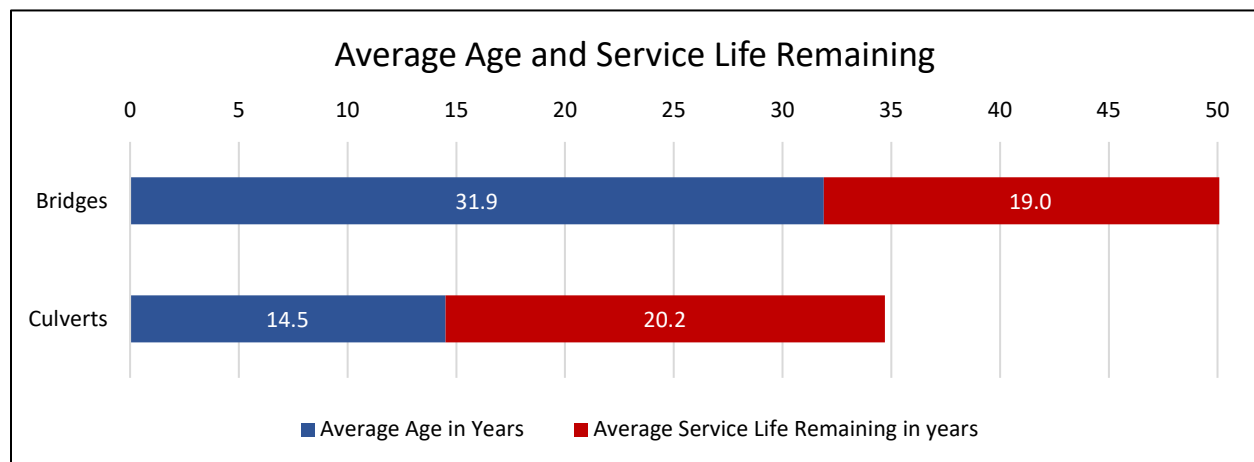
Subcategory	Description	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Bridges</b>	Bridges subject to OSIM inspection	15 ea.	19,246,100	User-Defined Cost/Consumer Price Index	31.9	Good
<b>Culverts</b>	Culverts subject to OSIM inspection	19 ea.	5,295,500		14.5	Very Good
<b>Total Bridges &amp; Culverts</b>		<b>34</b>	<b>24,541,600</b>		<b>24.5</b>	<b>Good</b>

## Asset Age

Figure 17 illustrates the average age relative to service life remaining for each subcategory of Bridges & Culverts. Service life remaining is based on the assets' initial EULs, 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 60% and 40% of their EULs on average, respectively.

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

Figure 17: Bridges & Culverts - Average Age and Service Life Remaining

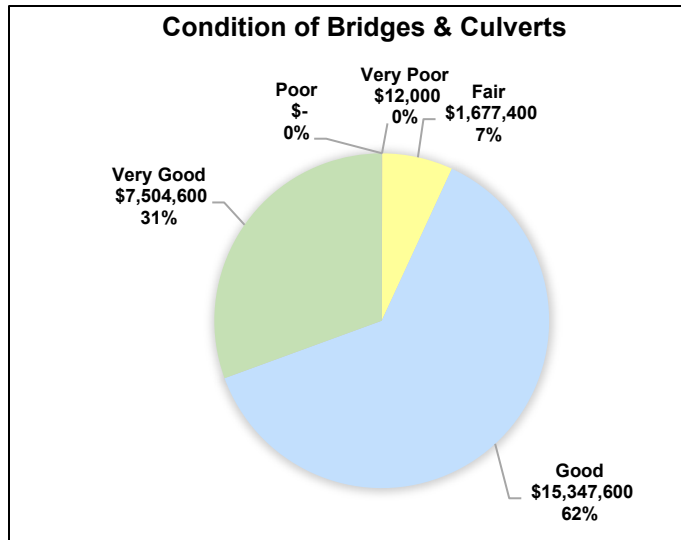


## Asset Condition and Assessment

The Township's current approach to assessing the condition of Bridges & Culverts within this asset category is utilizing 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 2020, 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 2022 as they are to be completed biennially.

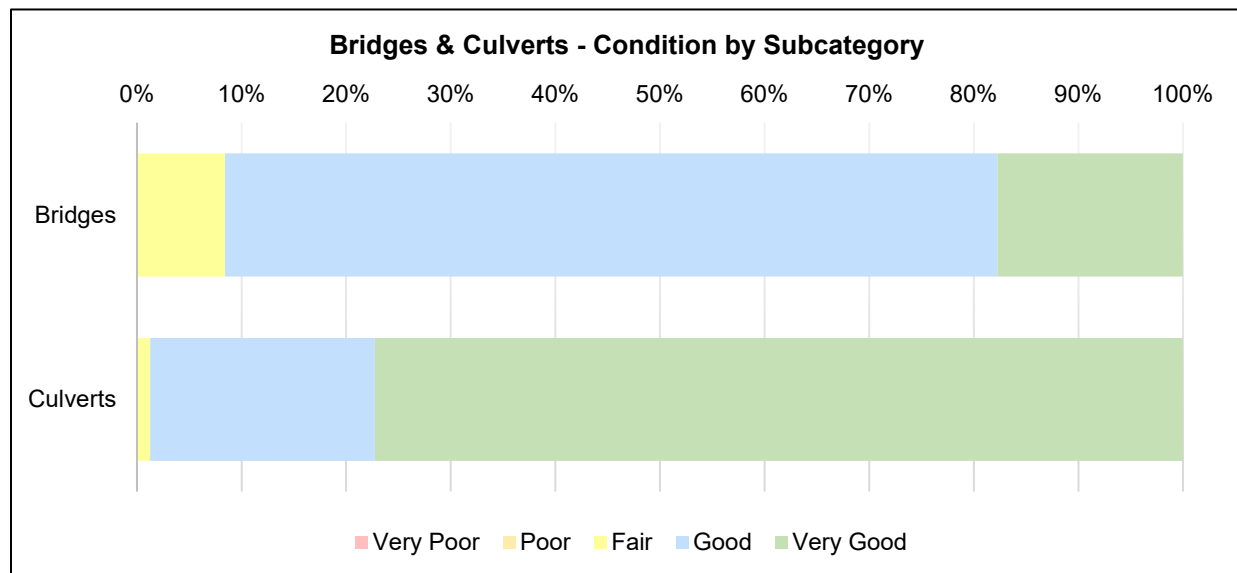
Figure 18: Bridges & Culverts - Condition Summary



Projected conditions illustrated in Figure 18 are based on a weighted average relative to the Replacement Value.

The Township's Bridges and Culverts asset category has approximately 93% 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 19 provides further detail into the assets by subcategory.

Figure 19: 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	3.0%
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	72.2
Performance			Capital re-investment rate	0.71%

## Lifecycle Management

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

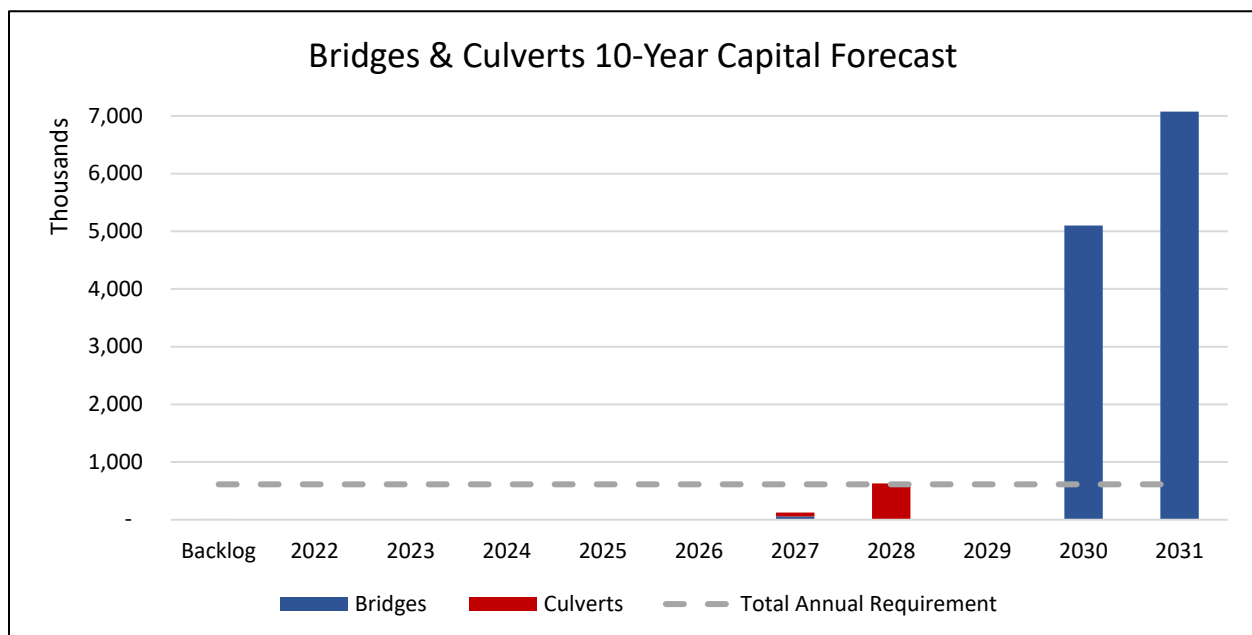
Table 21: Bridges & Culverts - Lifecycle Strategy

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.

## Capital Forecasts

The Annual Requirement to fund the replacement of Bridges and Culverts is currently \$614,000. Figure 20 illustrates the 10-year capital forecast for this asset category, however, capital spending is anticipated in the short-term based on the impending results of the 2022 OSIM inspection. As such, staff have tentatively included provisions in previous 10-year capital plans presented to Council for information. In the interim, a detailed 10-year capital forecast is found in Appendix C.

Figure 20: Bridges & Culverts - 10-Year Capital Forecast





## Risk Management

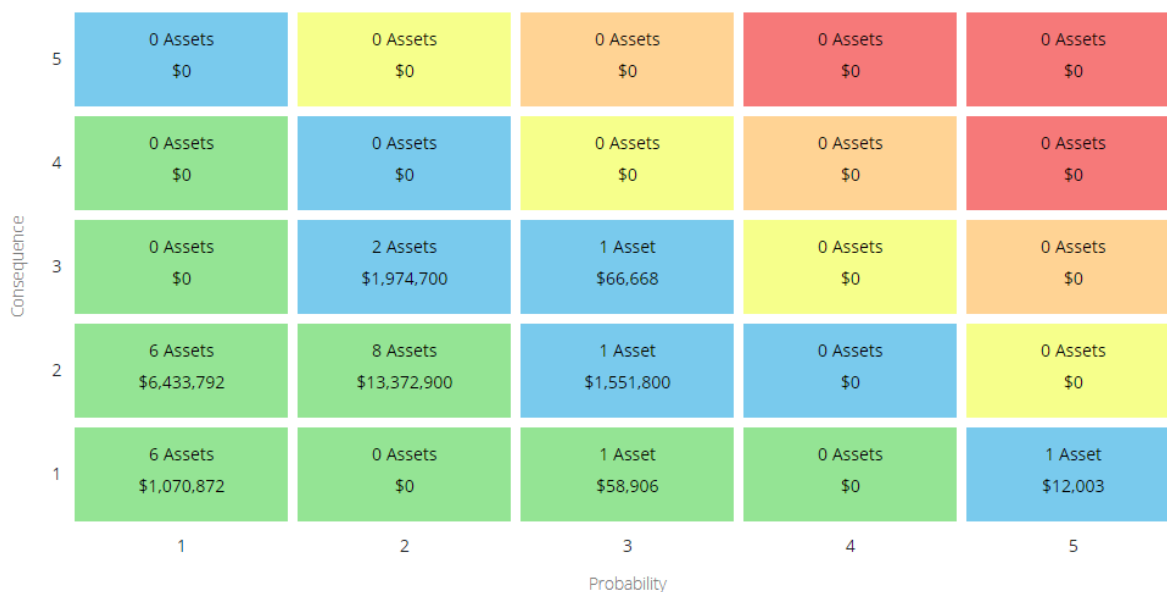
Risk models were developed at the asset profile level to prioritize the rehabilitation and replacement of assets, with a higher focus on Core Assets. The basis for calculating risk is to determine the probability and consequence of failure for each asset. This is further explained in Section 2.5. The 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 Value (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 21 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 Value. Under this model, there are no assets considered high or very high risk due to their condition or consequence of failure.

Figure 21: 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 Value of \$61 million. These values were developed based on historic construction costs and consumer price index. This asset category is generally in good condition at an average age of 21 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 Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Cross Culverts<sup>9</sup></b>	748 assets	8,009,700	Consumer Price Index	22.4	Fair
<b>Driveway Culverts<sup>10</sup></b>	145 assets	5,661,800		10.1	Very Good
<b>Catch Basins</b>	1,177 ea.	4,708,000	User-Defined Cost/Unit	21	Very Good
<b>Storm Manholes</b>	535 ea.	4,815,000		19.8	Very Good
<b>Storm Mains</b>	39,000 m.	34,106,900		22.1	Very Good
<b>Storm Water Management Facilities</b>	7 assets	3,941,100	Consumer Price Index	8.6	Very Good
<b>Total Storm System</b>		<b>61,242,500</b>		<b>20.5</b>	<b>Very Good</b>

<sup>9</sup> Cross Culverts within this category do not meet the size requirements for OSIM inspection. Inventory in Citywide is currently being reviewed and thus are not an accurate representation of quantity.

<sup>10</sup> Driveway Culverts within Citywide are currently pooled and thus is not an accurate representation of quantity.

## Asset Age

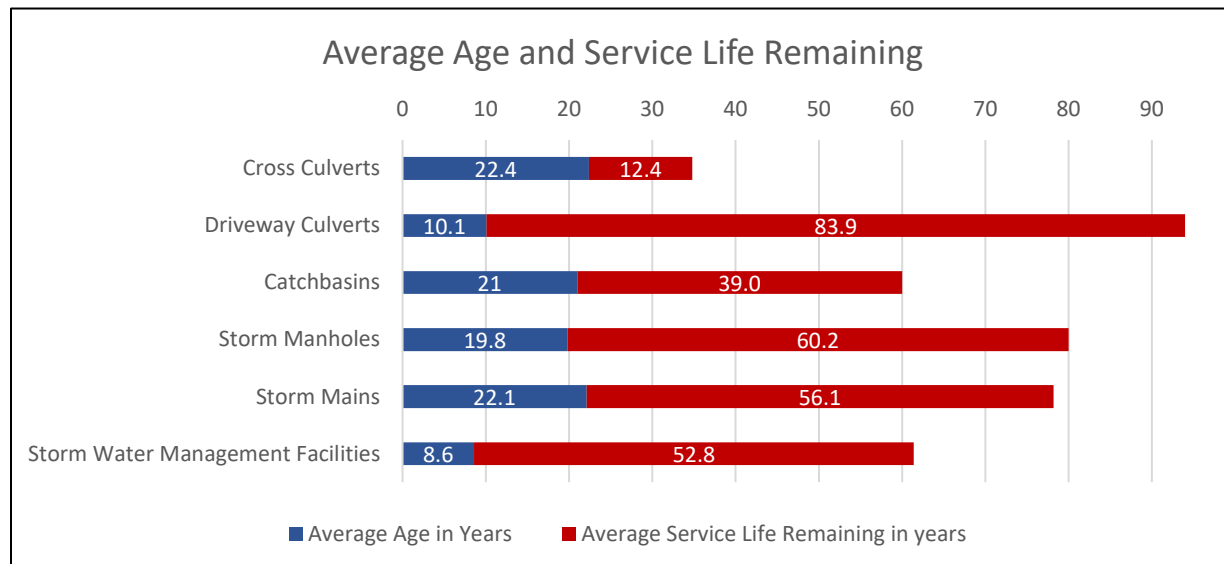
Figure 22 illustrates the average age relative to service life remaining for each subcategory of the Storm Network. Service life remaining is based on the assets' initial EULs, which are listed in Table 24, but may deviate if a condition assessment and/or lifecycle activities have been undertaken.

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

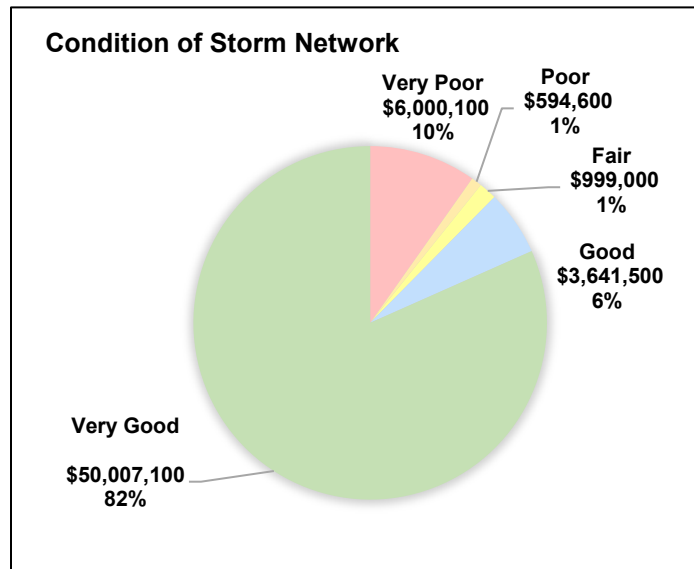
Figure 22: Storm Network - Average Age and Service Life Remaining



## 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 23: Storm Network - Condition Summary

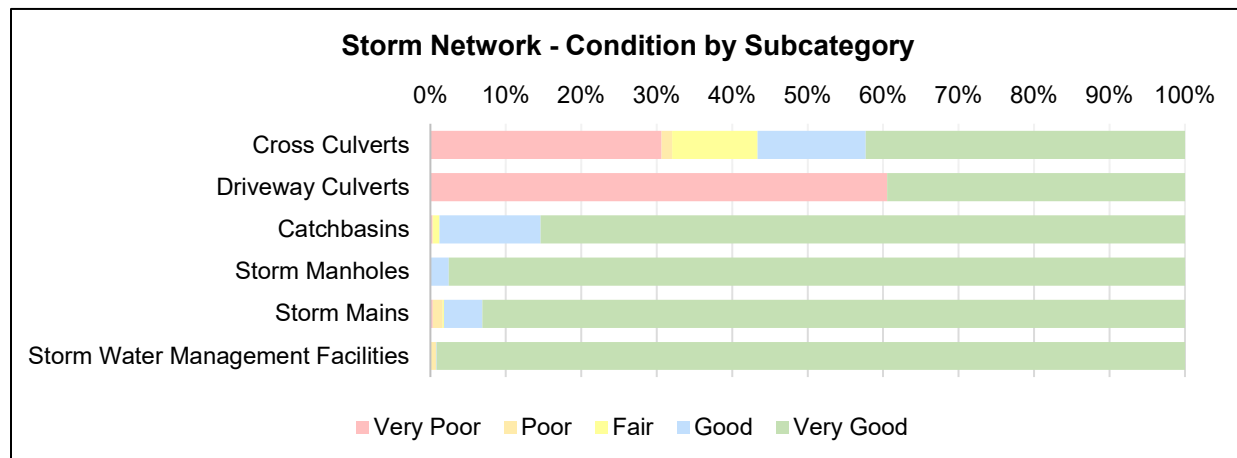


Projected conditions illustrated in Figure 23 are based on a weighted average relative to the Replacement Value.

The Township's Storm Network has approximately 88% 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 81% of the Replacement Values associated with poor and very poor condition relates to culverts.

Figure 24 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 24: 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 utilize 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	0.41%

## Lifecycle Management

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

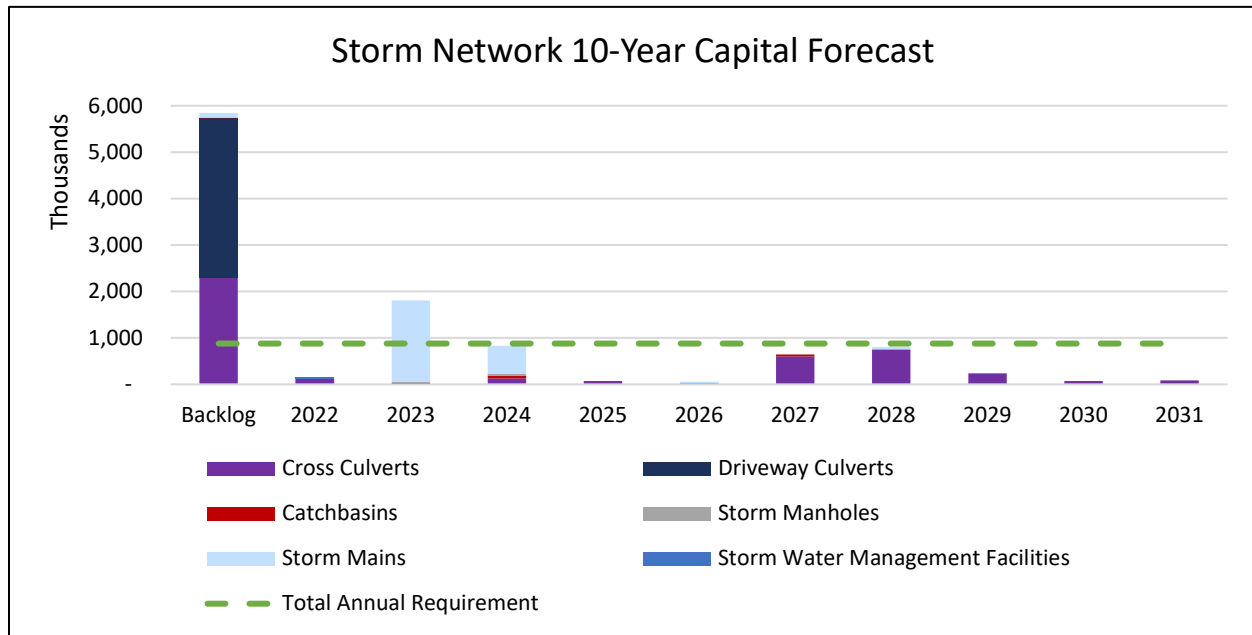
Table 26: Storm Network - Lifecycle Strategy

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.

## Capital Forecasts

Figure 25 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 \$878,000. A more detailed 10-year capital forecast is found in Appendix C.

Figure 25: Storm Network - 10-Year Capital Forecast



## Risk Management

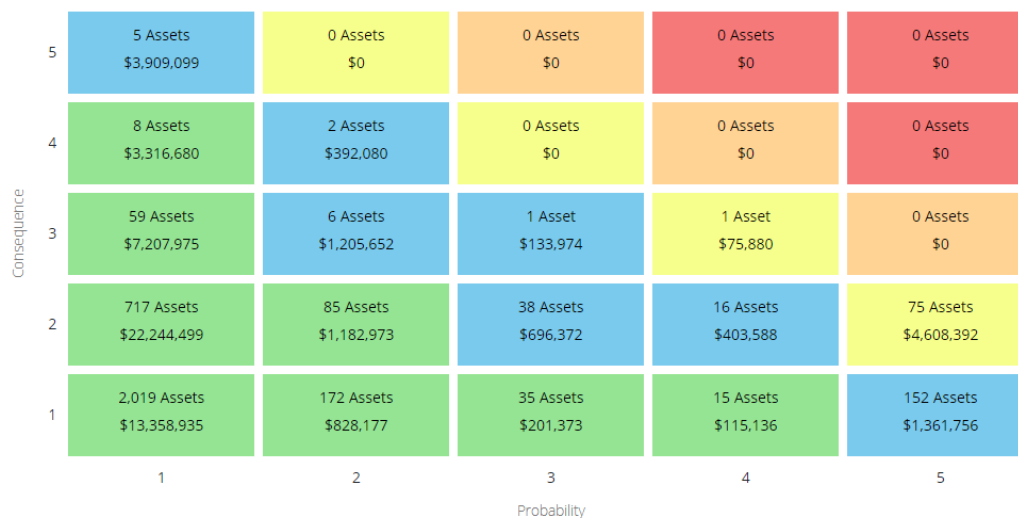
As explained in Section 2.5, risk models were developed for each asset category to prioritize the rehabilitation and replacement of assets, with a higher focus on the Core Assets. The consequence of failure risk model for storm mains, storm manholes, and catch basins is outlined in Table 27. The risk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

Table 27: Storm Network - Consequence of Risk Model

Range	Economic (34%) Replacement Value (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 26 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 are no assets considered high or very high risk due to their condition or consequence of failure.

Figure 26: 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, bus shelters, and garages.

### State of the Local Infrastructure

Table 28 lists and describes the Township's Buildings by division/department. With an overall Replacement Value of \$34 million, the average age is 21 years with a weighted condition of good. Per note 11 below, the replacement value of Buildings currently cannot be considered a reliable estimate.

#### Asset Inventory

Table 28: Buildings - Asset Valuation Summary

Subcategory	Description	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Corporate Services</b>	Municipal office, cemetery storage shed	2 ea.	3,106,000		26.3	Good
<b>Emergency Services</b>	Training facility, training towers (2), burn room, storage shed, fire stations (4)	9 ea.	10,861,700		16.6	Very Good
<b>Recreation Services</b>	Recreation Centre, canteen, Leisure Centre & Hall, storage/maintenance sheds (3), shelters (4), outdoor rink, community hall, libraries (2), other (4)	19 ea.	14,449,800	Consumer Price Index	24.5	Good
<b>Transportation Services</b>	Public Works garages (2), sand and salt storage facilities (6), bus shelters (18)	26 ea.	5,561,300		19.7	Very Good
<b>Waste Management Services</b>	Landfill facility	1 ea.	7,300		9.1	Very Good
<b>Total Buildings</b>		<b>57</b>	<b>33,986,100<sup>11</sup></b>		<b>21.7</b>	<b>Good</b>

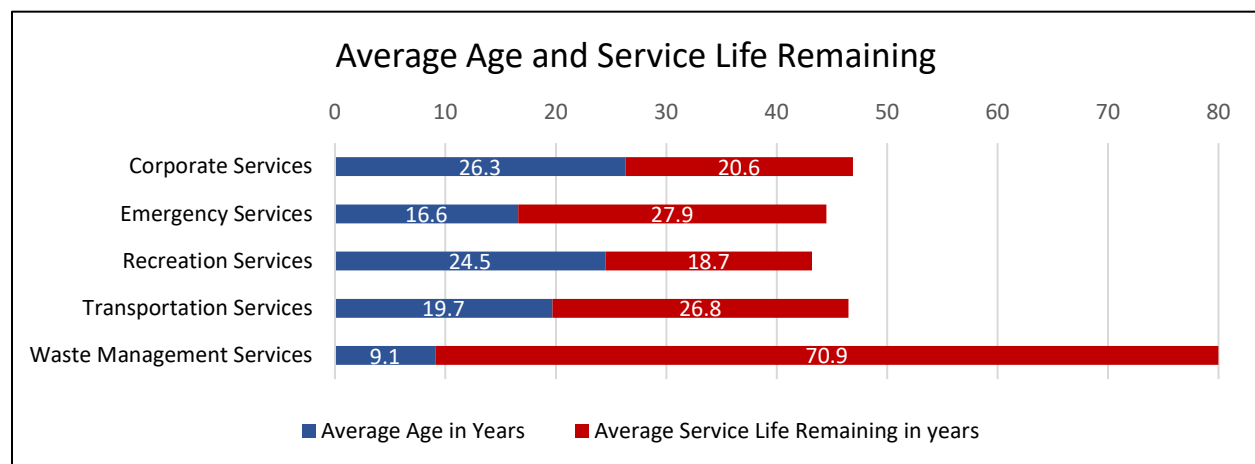
<sup>11</sup> Improvements to the Buildings asset data are ongoing as staff continues to prospectively update its components and capitalization processes. As such, the replacement value of Buildings currently cannot be considered a reliable estimate.

## Asset Age

The EUL of Buildings range between 5 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 27 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 27: 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.

Figure 28: Buildings - Condition Summary

Projected conditions illustrated in Figure 28 are based on a weighted average relative to the Replacement Value.

The Township's non-core Buildings have 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. 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. Current replacement values are not considered a reliable estimate at this time. It is expected when refined in future AMP updates, replacement costs will increase.

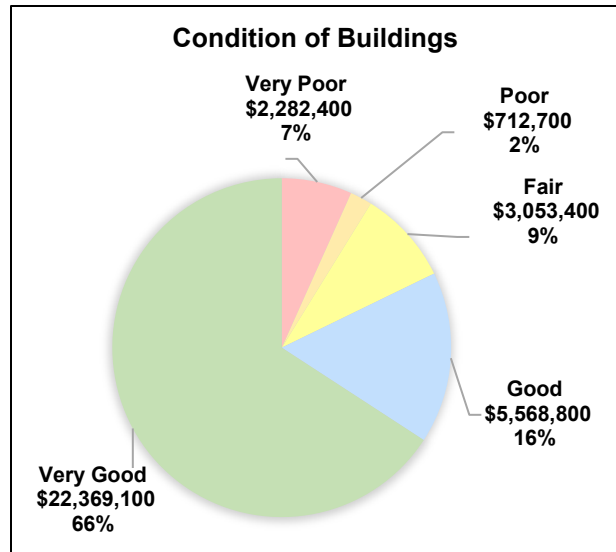
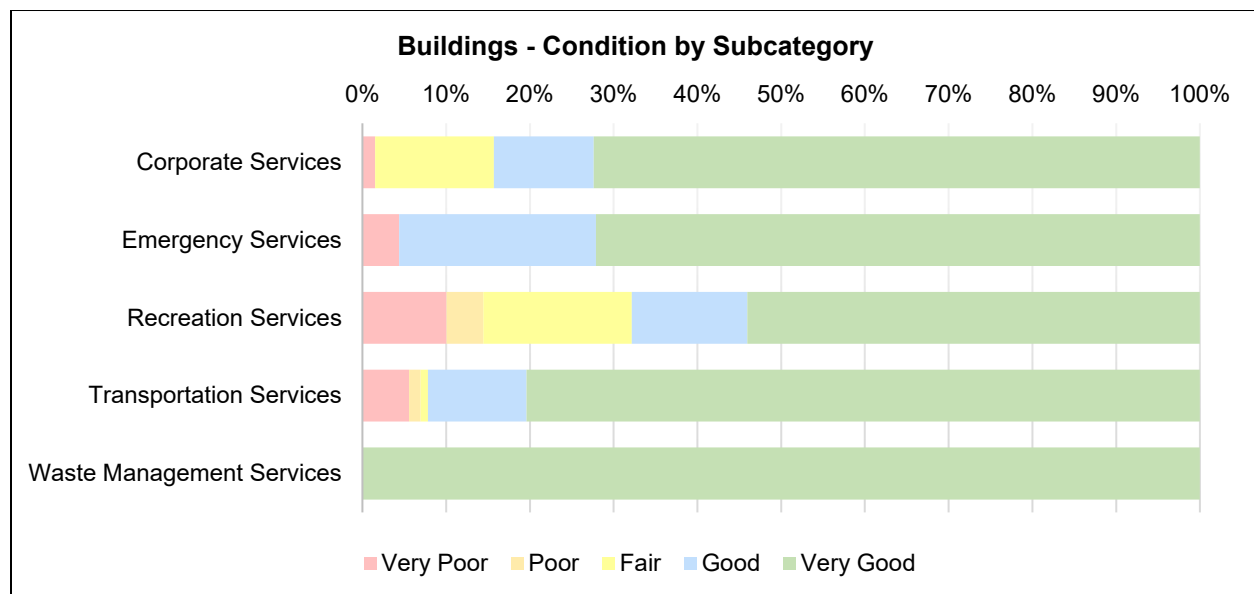


Figure 29 provides further detail on the assets by subcategory. As noted above, the Recreation Centre requires attention in the short-term, however, condition assessments have not been historically documented within Citywide. It is a priority for staff to ensure assessments are implemented periodically.

Figure 29: Buildings - Condition by Subcategory



## Levels of Service

Buildings are considered a Non-Core Asset category and as such, the Township has until July 2024 to report on Technical LOS and enhance on Community LOS in its AMP. A map of Buildings owned by the Township within all asset categories is in Appendix B.4 to satisfy the Township's current Community LOS.

## Lifecycle Management

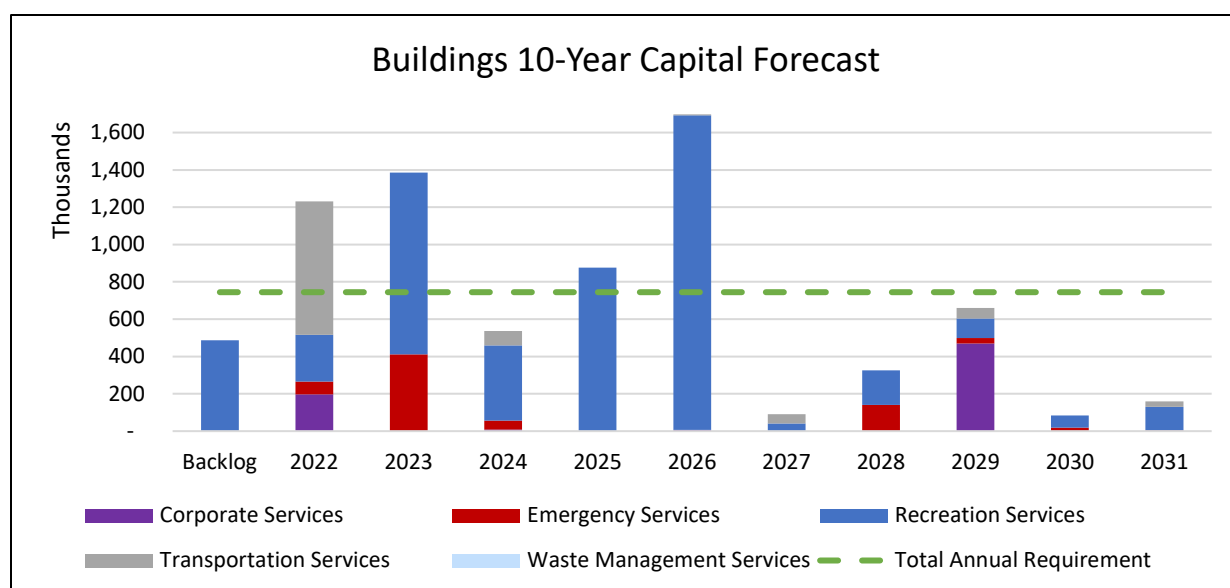
Township Buildings are subject to inspections to adhere to health and safety requirements and structural deficiencies. Certain Buildings, such as within the subcategory of Emergency Services are required to provide certain LOS as laid out in their master plan. The maintenance of other buildings is dealt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

## Capital Forecasts

Based on current data, the Annual Requirement to fund the capital replacement of Buildings is \$744,600. The ten-year capital forecast totaling \$7.5 million is illustrated in Figure 30. A more detailed 10-year capital forecast is found in Appendix C.

Figure 30: Buildings - 10-Year Capital Forecast



## Risk Management

As further explained in Section 2.5, the risk model to calculate the of failure is condition-based and is consistent across all asset categories. The consequence of failure risk model for Buildings is outlined in Table 29.

Table 29: Buildings - Consequence of Failure Risk Model

Range	Economic (34%) Replacement Value (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	Utility Services (non- core) <sup>12</sup>	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 31 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 Value. Under this model, there are eight assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 30.

Figure 31: Buildings - Risk Matrix



<sup>12</sup> Non-core buildings operated by the Utilities division are included in Section 4.3.

Table 30: Buildings - High-Risk Assets

Asset Name	Subcategory	Risk Rating
W.J. Henderson Lobby & Arena Electrical	Recreation Services	Very High
W.J. Henderson Arena plumbing	Recreation Services	Very High
Finkle's Shore Park Pavilion	Recreation Services	High
Millcreek Park Gazebo Structure	Recreation Services	High
Heritage Fairfield House Washrooms	Recreation Services	High
Odessa Fire Hall HVAC	Emergency Services	High
W.J. Henderson Pool Flat Roof	Recreation Services	High
County Rd 6 Garage Heaters	Transportation Services	High

### **W.J. Henderson Recreation Centre**

The W.J. Henderson Recreation Centre was acquired in 1976 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, 2021. 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 last 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 values as current values are not considered a reliable estimate in some cases, as illustrated by the pool failure.

## 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 31 lists and describes the Township's Machinery, Furniture, and Equipment by division/department. With an overall Replacement Value of \$8 million, the average weighted condition of this asset category is good at an average age of 8 years.

Table 31: Machinery & Equipment - Asset Valuation Summary

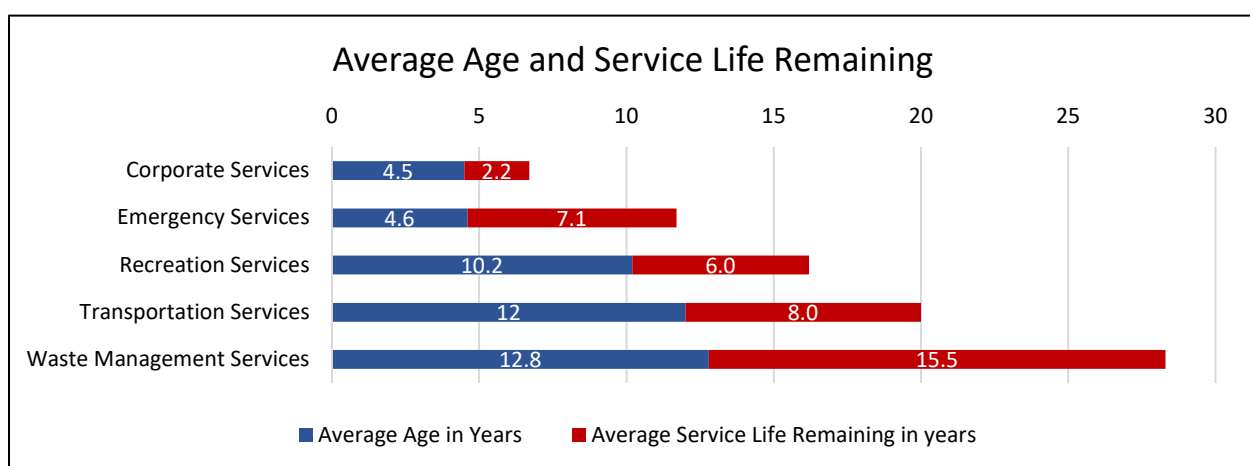
Subcategory	Description	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Corporate Services</b>	IT equipment, furniture & fixtures	81 assets	886,200		4.5	Very Good
<b>Emergency Services</b>	Pooled equipment such as bunker & rescue gear, hoses, extrication kits, breathing apparatuses, etc.	38 assets	1,555,100		4.6	Very Good
<b>Recreation Services</b>	Various machinery & equipment at the WJH Henderson Centre, mowers, fitness equipment, etc.	53 ea.	1,783,500	Consumer Price Index/User-Defined Cost	10.2	Good
<b>Transportation Services</b>	Loaders, street sweepers, tractors, excavator, survey equipment, radio repeaters, various public works garage equipment, etc.	43 ea.	3,274,900		12	Good
<b>Waste Management Services</b>	Scale, compactor, weigh scale, loader, etc.	6 ea.	979,300		12.8	Very Good
<b>Total Machinery &amp; Equipment</b>			<b>8,479,000</b>		<b>7.5</b>	<b>Good</b>

## Asset Age

The EUL of Machinery, Furniture, and Equipment ranges between 5 to 25 years and is in accordance with the Township’s Tangible Capital Asset Policy.

Figure 32 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 32: Machinery & Equipment - Average Age and Service Life Remaining



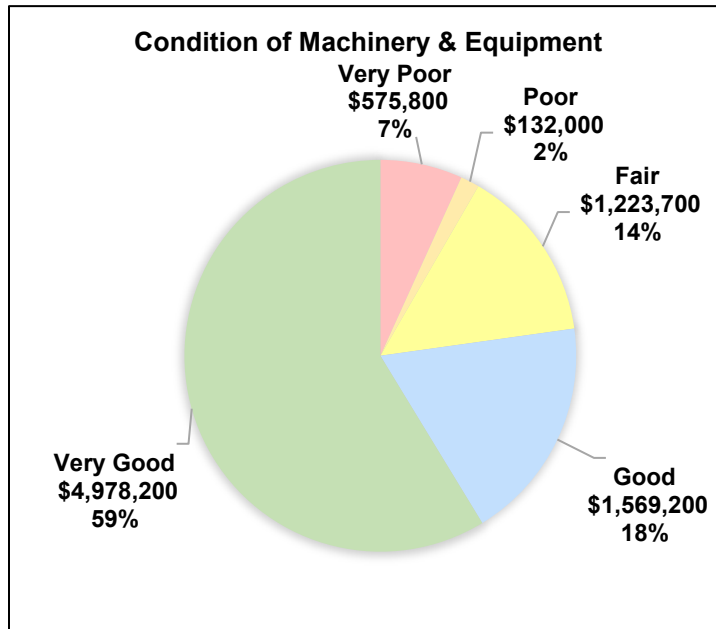
## Asset Condition and Assessment

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.



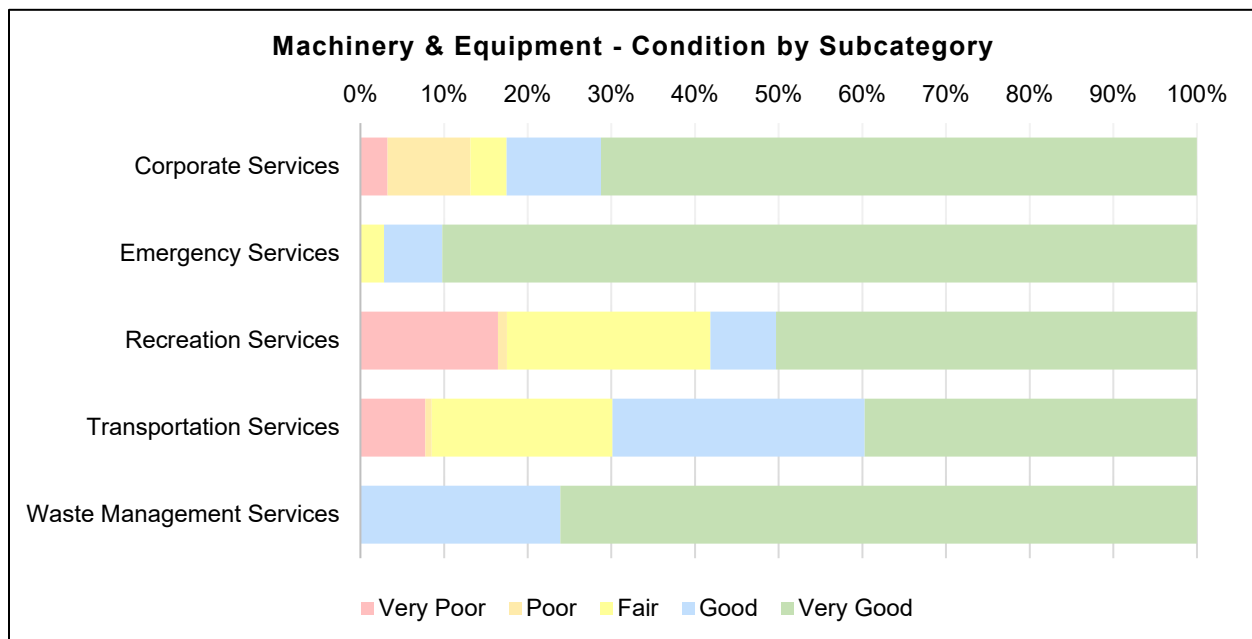
Figure 33: Machinery & Equipment - Condition Summary



Projected conditions illustrated in Figure 33 are based on a weighted average relative to the Replacement Value.

The Township's non-core Machinery, Furniture, and Equipment has approximately 77% 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 Values associated with poor and very poor condition relates to machinery and equipment that provide transportation and emergency services. Figure 34 provides further detail by subcategory.

Figure 34: Machinery & Equipment - Condition by Subcategory



## Levels of Service

Machinery, Furniture, and Equipment are considered a Non-Core Asset category and as such, the Township has until July 2024 to report on Community and Technical LOS in its AMP.

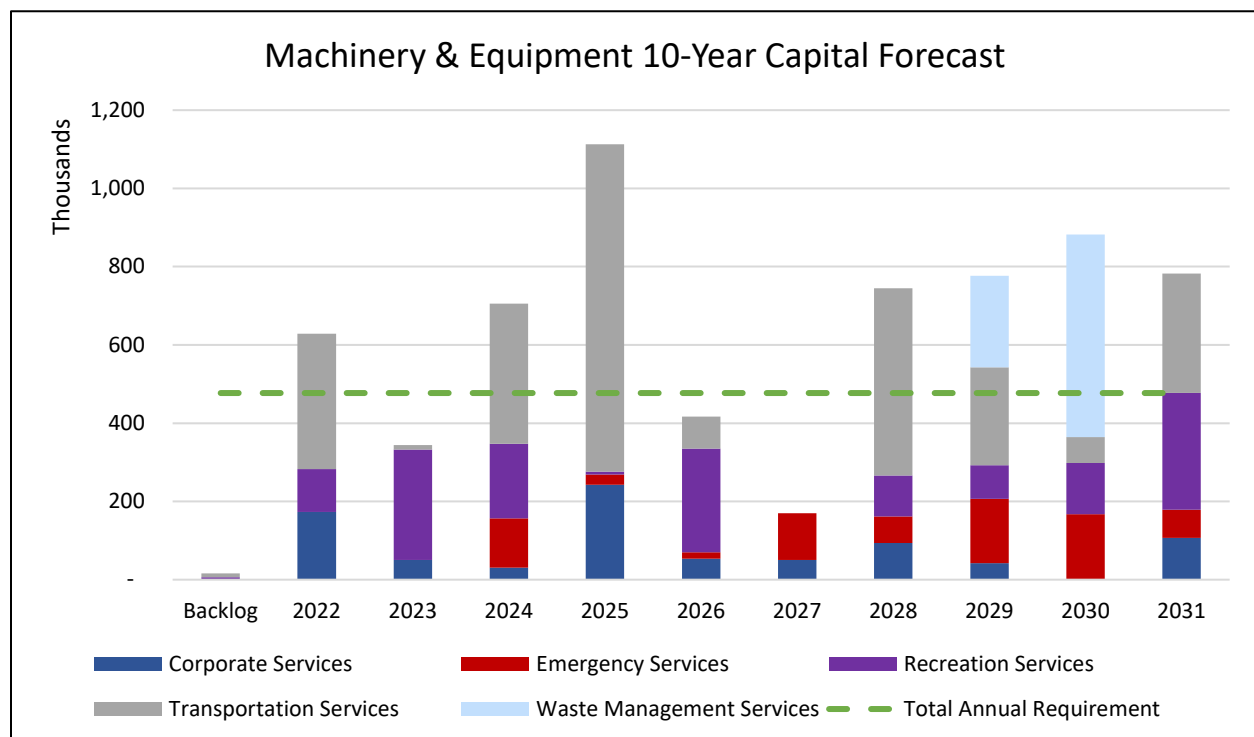
## Lifecycle Management

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.

### Capital Forecasts

Based on current data, the Annual Requirement to fund the capital replacement of Machinery, Furniture, and Equipment is \$477,000. The ten-year capital forecast totaling \$6.6 million is illustrated in Figure 35.

Figure 35: 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 32.

Table 32: Machinery & Equipment - Consequence of Risk Model

Range	Economic (50%) Replacement Value (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) <sup>13</sup>	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 36 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 Value. Under this model, there are two assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 33.

Figure 36: Machinery & Equipment - Risk Matrix



<sup>13</sup> User-funded machinery & equipment operated by the Utilities division is included in Section 4.3.

Table 33: Machinery & Equipment – High-Risk Assets

Asset Name	Subcategory	Risk Rating
1992 Caterpillar Loader, M/936F	Transportation Services	Very High
Arena Compressors	Recreation Services	Very High

## 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 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 34. The total Replacement Value of this asset category totals \$15 million based on historic costs per unit and a standardized consumer price index. The average age of this fleet is approximately 11 years and is in good condition.

#### Asset Inventory

Table 34: Fleet - Asset Valuation Summary

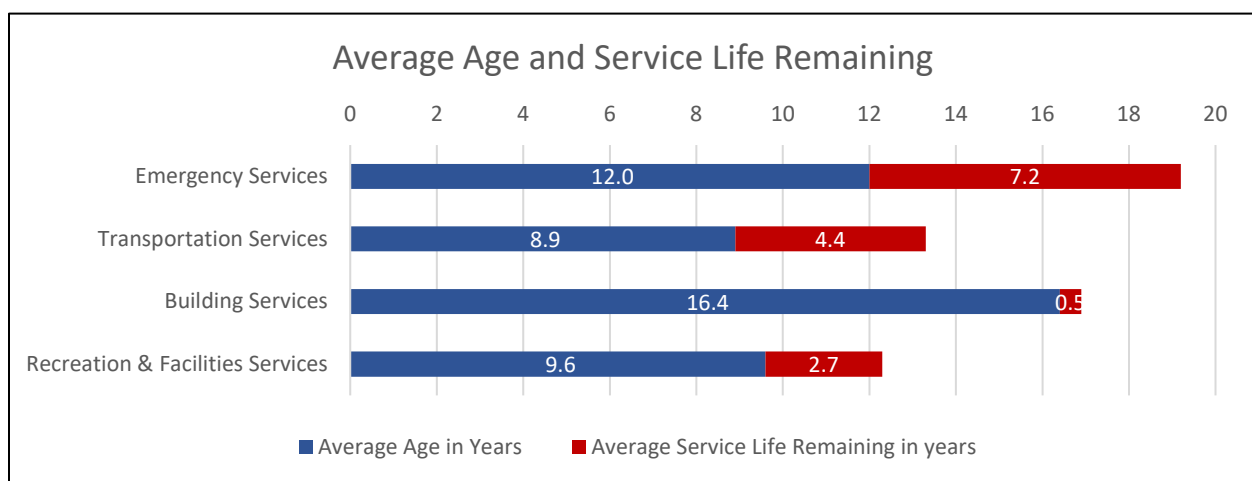
Subcategory	Description	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Emergency Services</b>	Heavy & light rescue units, pick-up trucks, cars, pumpers, tankers, aerial trucks, utility vehicles	29 ea.	9,291,000	User-Defined Cost/Consumer Price Index	12	Good
<b>Transportation Services</b>	Plows, pick-up trucks, vans, dump trucks	35 ea.	5,122,200		8.9	Good
<b>Building Services</b>	Pick-up trucks	3 ea.	180,000	User-Defined Unit Cost	16.4	Poor
<b>Recreation &amp; Facilities Services</b>	Pick-up trucks, dump trucks, vans	10 ea.	480,000		9.6	Good
<b>Total Fleet</b>		<b>77</b>	<b>15,073,200</b>		<b>10.5</b>	<b>Good</b>

## 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 37 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.

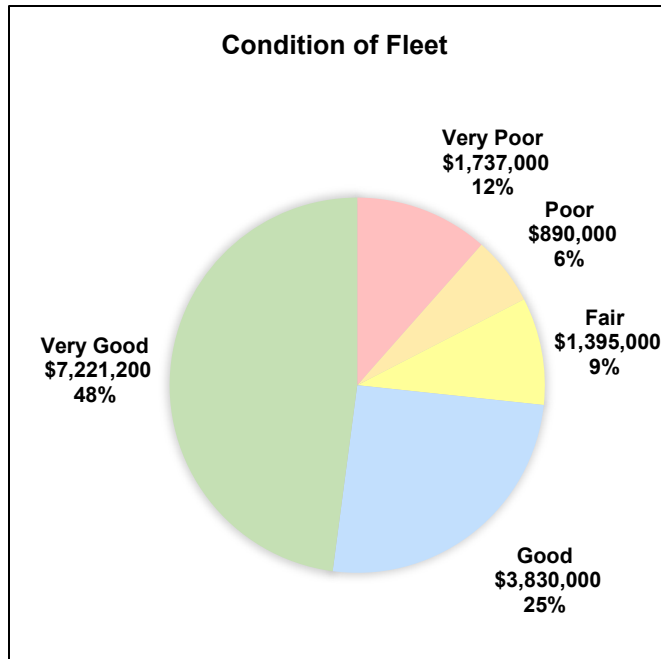
Figure 37: Fleet - Average Age and Service Life Remaining



## 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.

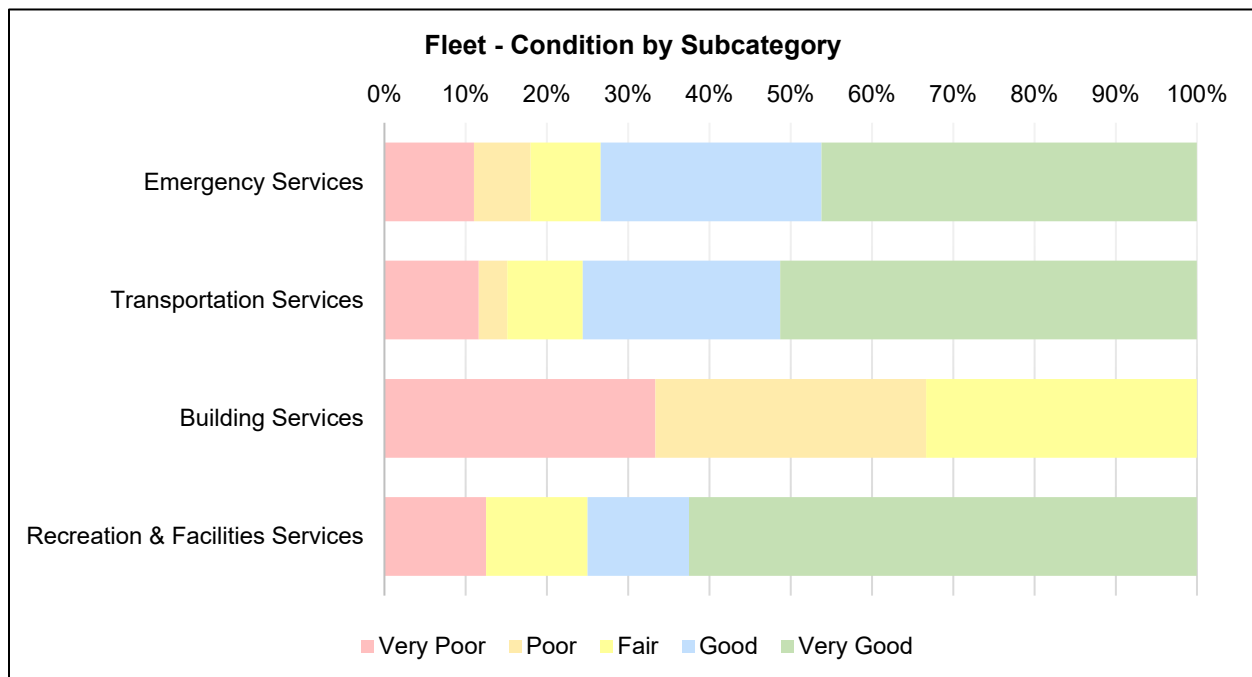
Figure 38: Fleet - Condition Summary



Projected conditions illustrated in Figure 38. are based on a weighted average relative to the Replacement Value.

The Township's Fleet has approximately 73% 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 64% of the Replacement Values associated with poor and very poor condition relates to Emergency Services due to its high Replacement Value relative to the other fleet. Figure 39 provides further detail by subcategory, illustrating that Building Services has the largest portion of fleet in very poor to poor condition.

Figure 39: Fleet - Condition by Subcategory



## Levels of Service

Fleet is considered a Non-Core Asset category and as such, the Township has until July 2024 to report on Community and Technical LOS in its AMP.

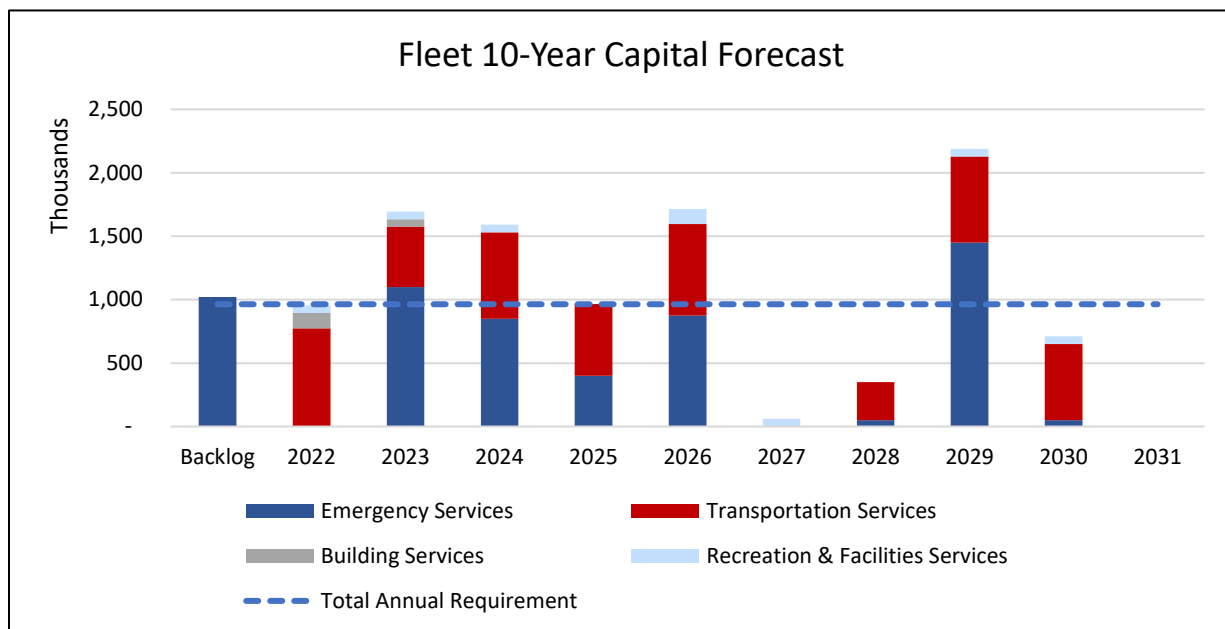
## Lifecycle Management

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.

### Capital Forecasts

Based on current data, the Annual Requirement that should be allocated to fund the capital replacement of tax-funded Fleet is \$963,900. The 10-year capital forecast totaling \$10.8 million is illustrated in Figure 40. 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 40: Fleet - Ten-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 35.

Table 35: Fleet - Consequence of Failure Risk Model

Score	Economic (34%) Replacement Value (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 <sup>14</sup>	Moderate
4	>=\$125,000 and <\$200,000	Plows	Public Works	Major
5	>\$200,000	Emergency Fleet - All	Emergency Services	Severe

Figure 41 illustrates the risk matrix for Fleet that is generated in Citywide that incorporates the above-noted risk models. This matrix excludes 12 surplus vehicles that are awaiting sale or repurposed and therefore not planned for future replacement. There are eight assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 36.

<sup>14</sup> User-funded fleet operated by the Utilities division is included in Section 4.3.

Figure 41: Fleet - Risk Matrix

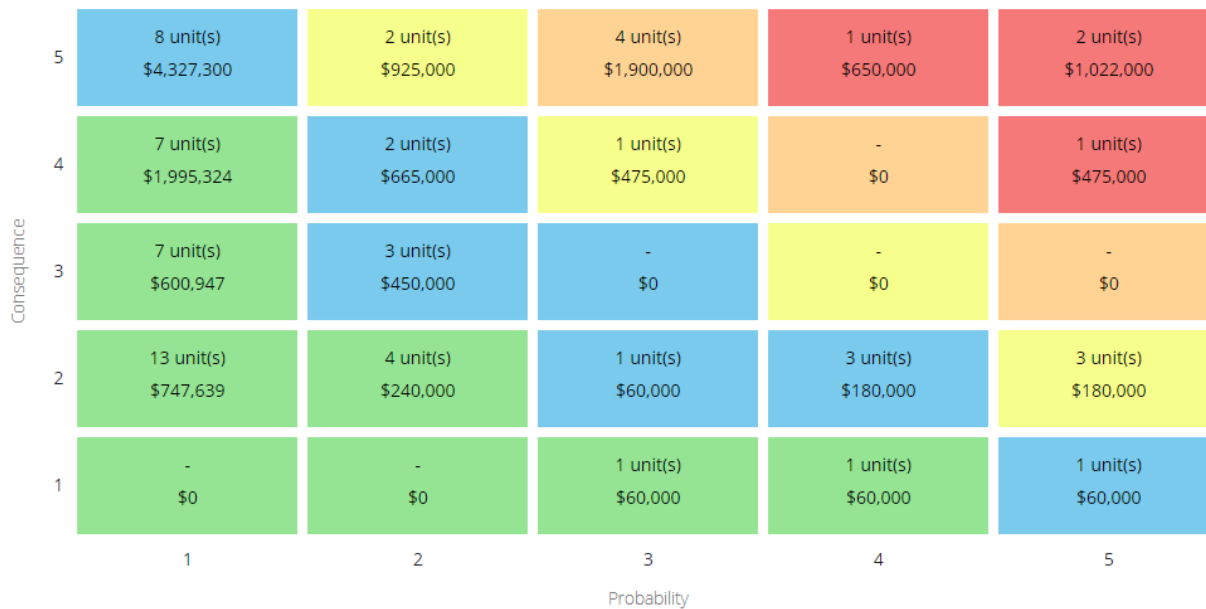


Table 36: Fleet – High-Risk Assets

Asset Name	Description	Division	Risk Rating
Tanker T941	E8399	Emergency Services	Very High
Pumper P931 <sup>15</sup>	E8793	Emergency Services	Very High
2011 International 7600 Snowplow <sup>16</sup>	T3611	Public Works	Very High
Pumper P912	E4393	Emergency Services	Very High
Tanker T921	E4496	Emergency Services	High
Rescue R911	E8697	Emergency Services	High
Pumper P932	E8400	Emergency Services	High
Tanker T911	E8808	Emergency Services	High

<sup>15</sup> Pumper P931/E8793 was sold in 2022.

<sup>16</sup> T3611 International snowplow is scheduled for replacement in the 2022 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 37 lists and describes the Township’s Land Improvements by component. With an overall Replacement Value of \$8 million, the average weighted condition of this asset category is fair at an average age of 18 years.

Table 37: Land Improvements - Asset Valuation Summary

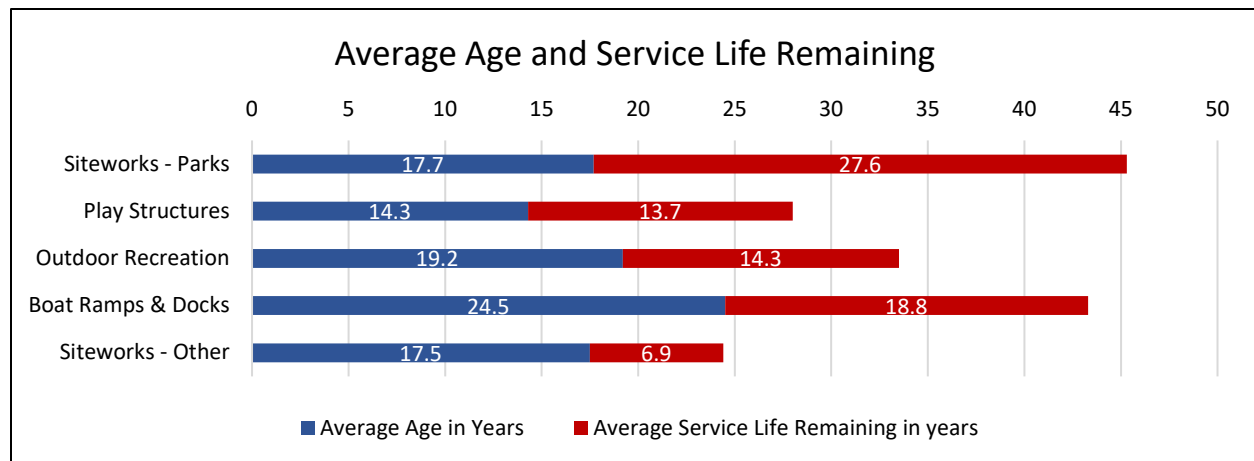
Subcategory	Description	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Siteworks - Parks</b>	Landscaping, paving, irrigation, walkways, lights, signs, benches in Township-owned parks	297 assets	2,130,800		17.7	Good
<b>Play Structures</b>	Play Structures	31 assets	722,600	Consumer Price Index	14.3	Fair
<b>Outdoor Recreation</b>	Sports fields, courts, and rinks	14 assets	2,620,200		19.2	Fair
<b>Boat Ramps &amp; Docks</b>	Boat Ramps & Docks	2 ea.	48,600		24.5	Poor
<b>Siteworks - Other</b>	Landscaping & paving on other municipal properties	55 assets	2,189,600		17.5	Poor
<b>Total Land Improvements</b>			<b>7,711,800</b>		<b>17.7</b>	<b>Fair</b>

## 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 42 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 42: Land Improvements - Average Life and Service Life Remaining

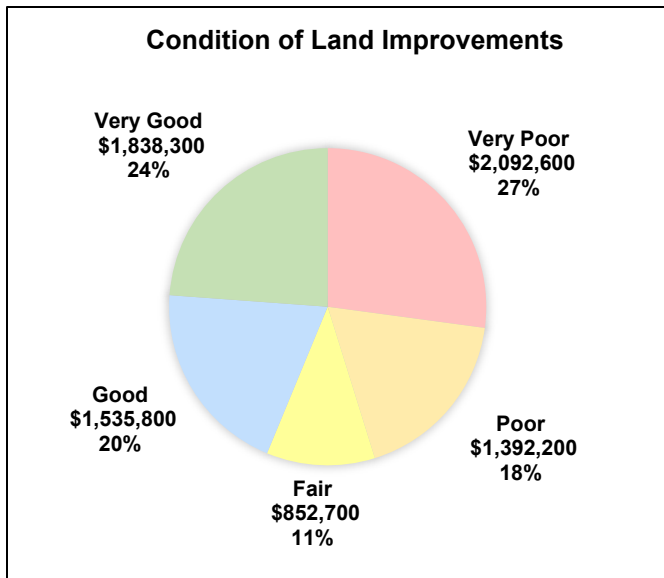


## Asset Condition and Assessment

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.

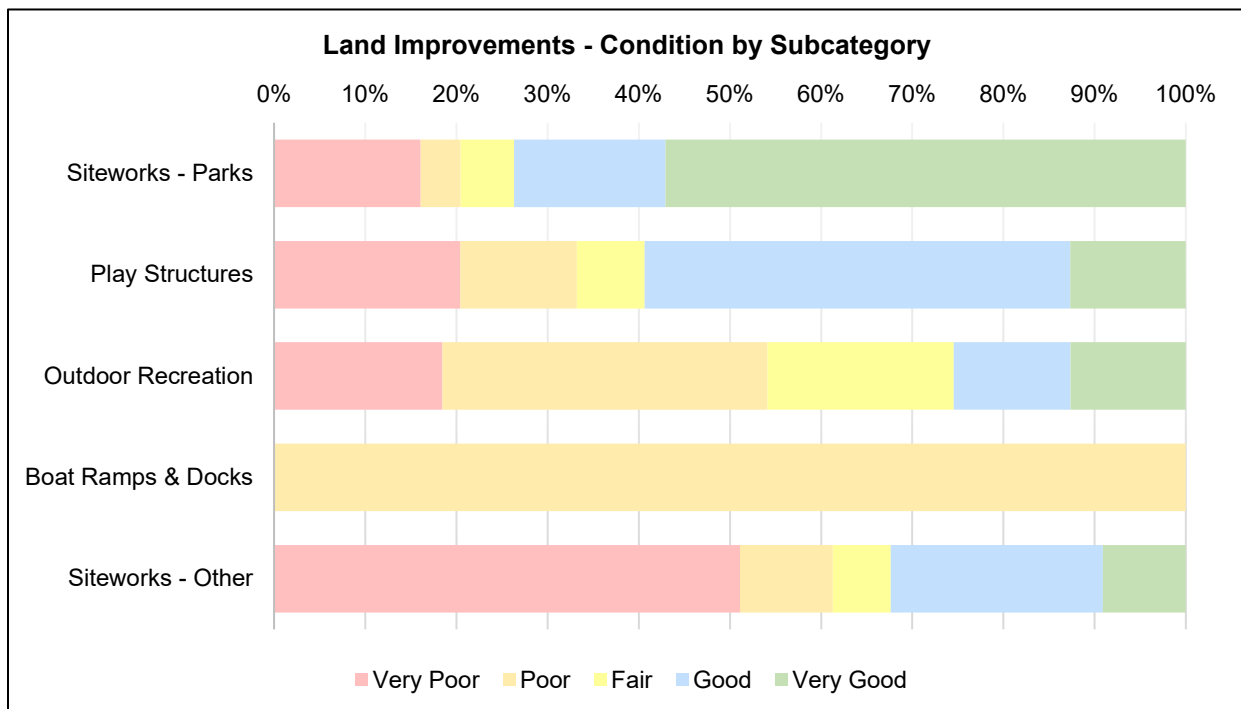
Figure 43: Land Improvements - Condition Summary



Projected conditions illustrated in Figure 43 are based on a weighted average relative to the Replacement Value.

The Township's non-core Land Improvements have approximately 44% 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 Values associated with poor and very poor condition relates to outdoor recreation and other siteworks. Figure 44 provides further detail by subcategory.

Figure 44: Land Improvements - Condition by Subcategory



## Levels of Service

Land Improvements are considered a Non-Core Asset category and as such, the Township has until July 2024 to develop Community and Technical LOS.

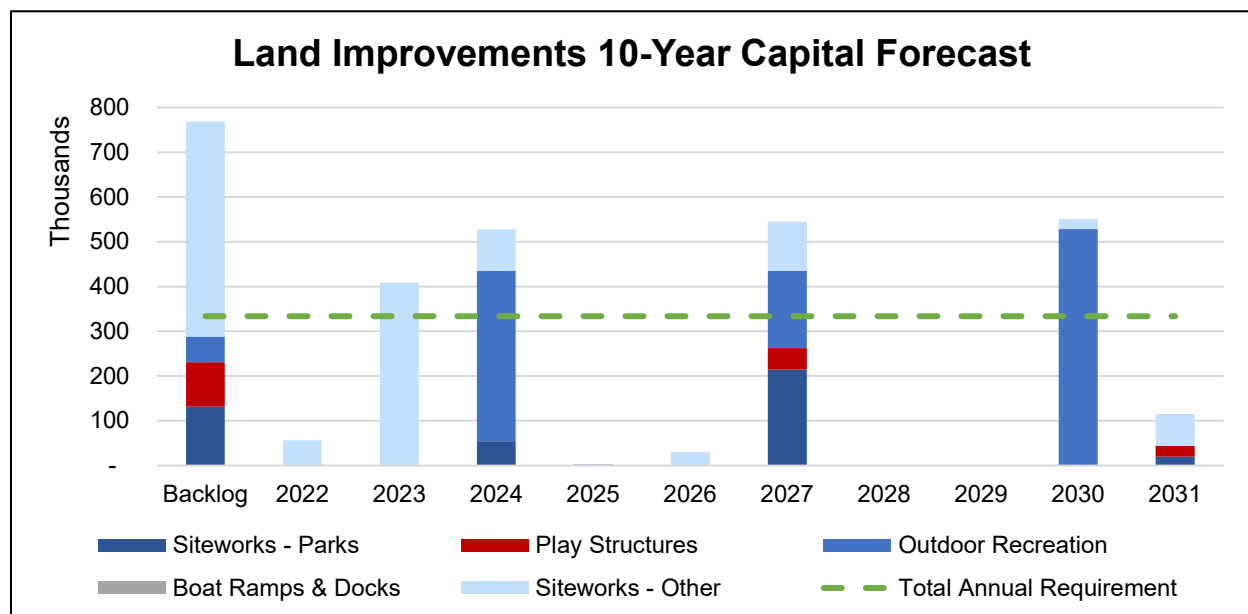
## Lifecycle Management

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.

### Capital Forecasts

Based on current data, the Annual Requirement that should be allocated to fund the capital replacement of Land Improvements is \$333,700. The ten-year capital forecast totaling \$3 million is illustrated in Figure 45.

Figure 45: 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 38.

Table 38: Land Improvements - Consequence of Risk Model

Range	Economic (50%) Replacement Value (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 46 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 Value. Under this model, there are five assets considered high or very high risk due to their condition or consequence of failure, which are also listed in Table 39.

Figure 46: Land Improvements - Risk Matrix

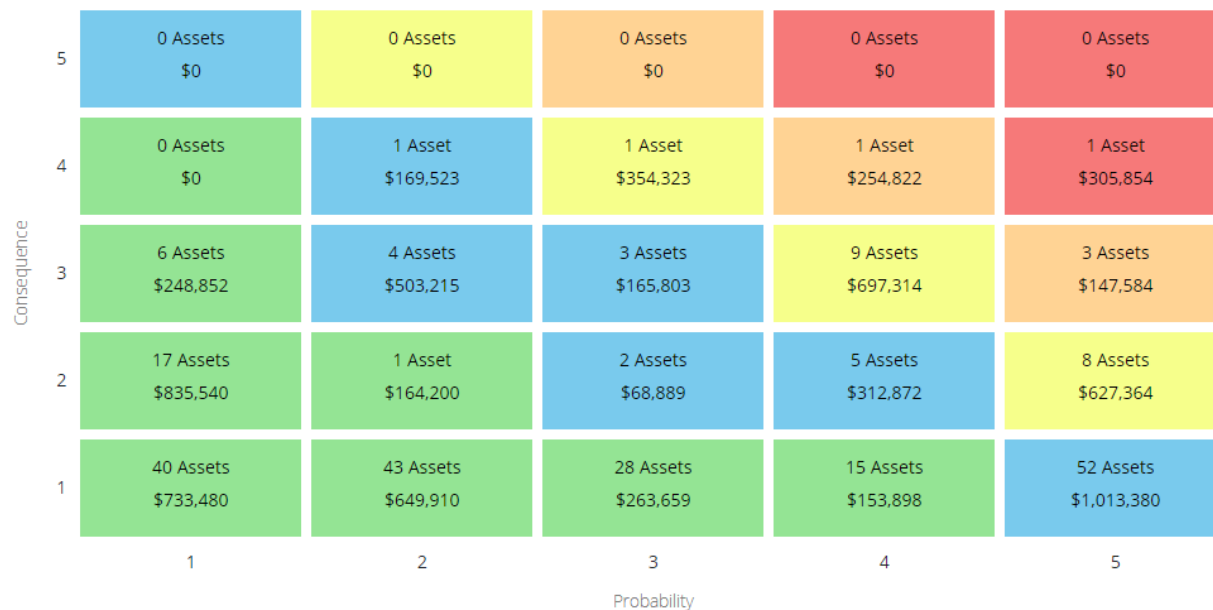


Table 39: Land Improvements – High-Risk Assets

Asset Name	Risk Rating
Willie Pratt Sports Field Regulation Soccer Pitch	Very High
Bath Park Playground Equipment	High
Willie Pratt Sports Field Baseball Playing Field	High
Dinosaur Park Play structure	High
Fairfield House & Park Play structures	High



## 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 80 kilometers of linear water infrastructure valued at approximately \$159 million. 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 40. 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 Values are valued based on user-defined unit costs using historical development reports. The average age of the Core Water System is 16 years and is in very good condition overall.

Table 40: Core Water System - Asset Valuation Summary

Subcategory	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Hydrants</b>	474 ea.	4,787,400	User-Defined Unit Cost	20.4	Very Good
<b>Valves</b>	651 ea.	2,601,100		19	Very Good
<b>Water Meters</b>	4,939 ea.	3,457,300		14.2	Good
<b>Water Mains</b>	80,869 m.	109,990,000		27.6	Very Good
<b>Treatment Facilities</b>	2 ea.	23,195,800	Consumer Price Index	18.1	Very Good
<b>Distribution Facilities</b>	5 ea.	14,929,600		37.3	Good
<b>Total Core Water System</b>		<b>158,961,200</b>		<b>16.4</b>	<b>Very Good</b>

## Asset Age

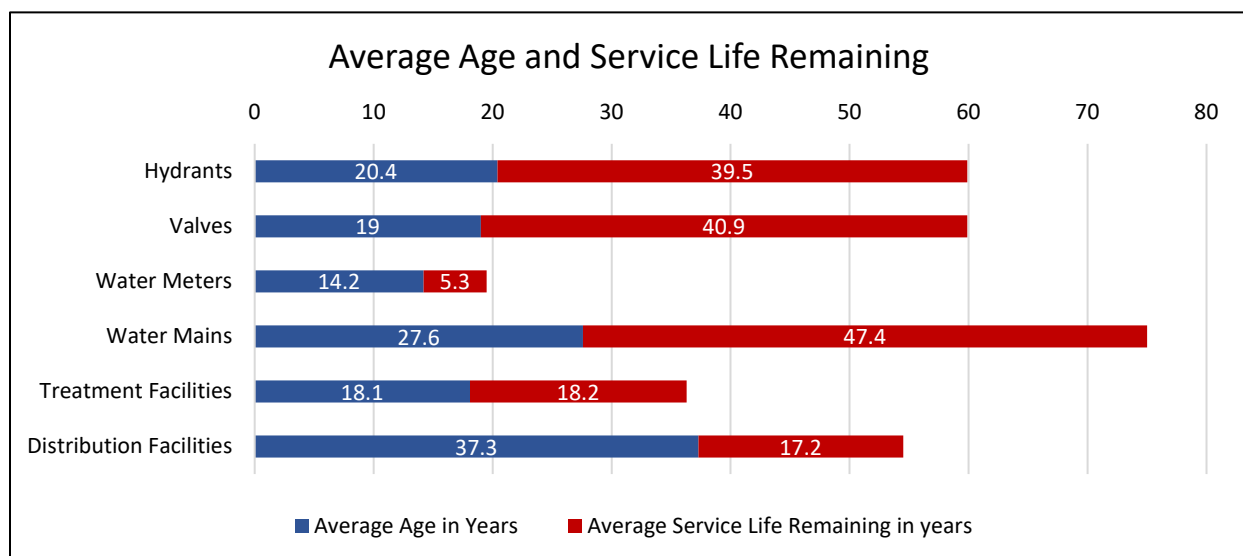
Figure 47 illustrates the average age relative to service life remaining for each subcategory of the Core Water System. Service life remaining is based on the assets' initial EULs, which are listed in Table 41, but may deviate if a condition assessment has been undertaken. On average, water mains are 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 41: Core Water System - Estimated Useful Lives

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

Figure 47: Core Water System - Average Age and Service Life Remaining

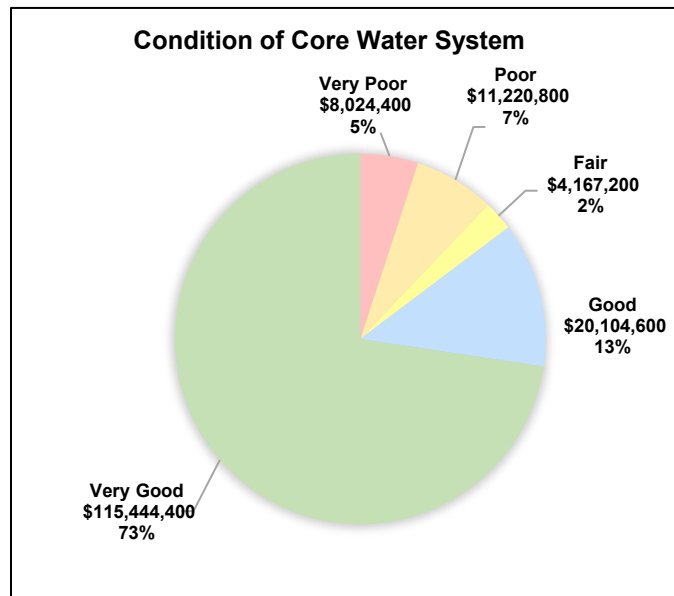


## Asset Condition and Assessment

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 48: Core Water System - Condition Summary

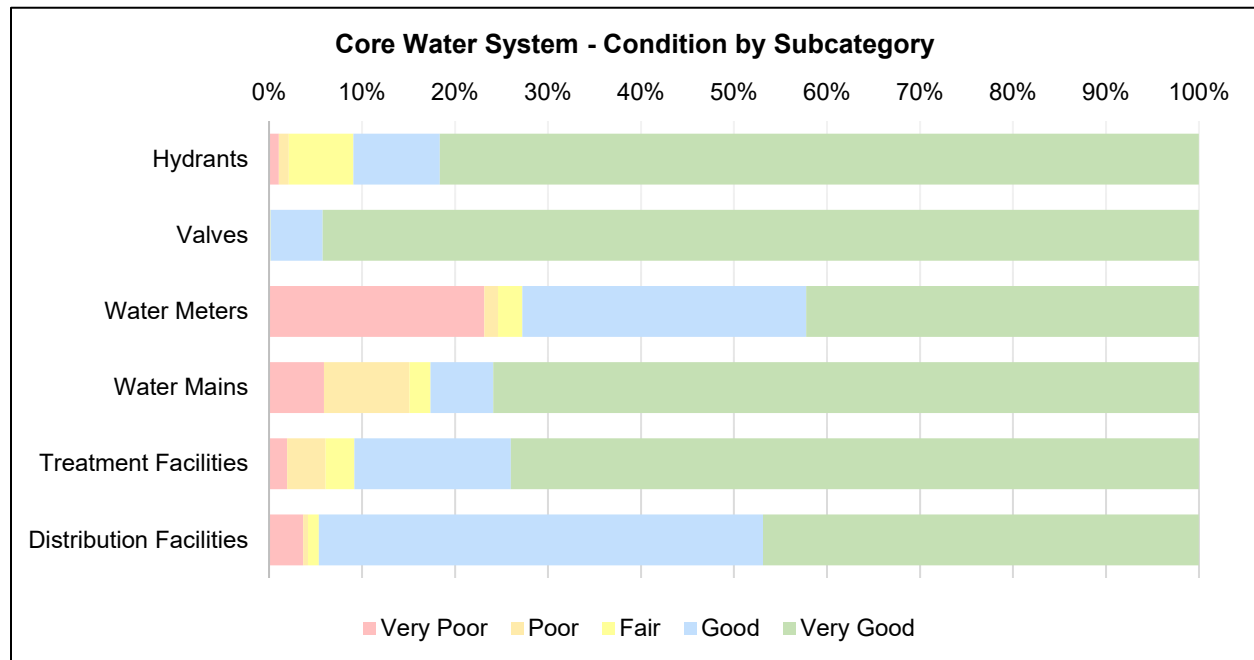


Projected conditions illustrated in Figure 48 are based on a weighted average relative to the Replacement Value.

The Township’s Core Water System has approximately 86% 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 85% of the Replacement Values associated with poor and very poor conditions relate to water mains, due to their overall value relative to other infrastructure.

Figure 49 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 Value per unit.

Figure 49: 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 42 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 42: 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	<p>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 17 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 64 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.</p> <p>See maps in Appendix B.5.</p>	Percentage of properties connected to the municipal water system	73.0%
	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	99.6%
Reliability	Description of boil water advisories and service interruptions	<p>In 2021, Loyalist Township experienced one boil water advisory due to a water main break in Odessa. The boil water advisory was in place for three days and impacted 30 properties. Two water main breaks occurred in 2021 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.</p>	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	0.018
			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	1.3%

## 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 utilize 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*

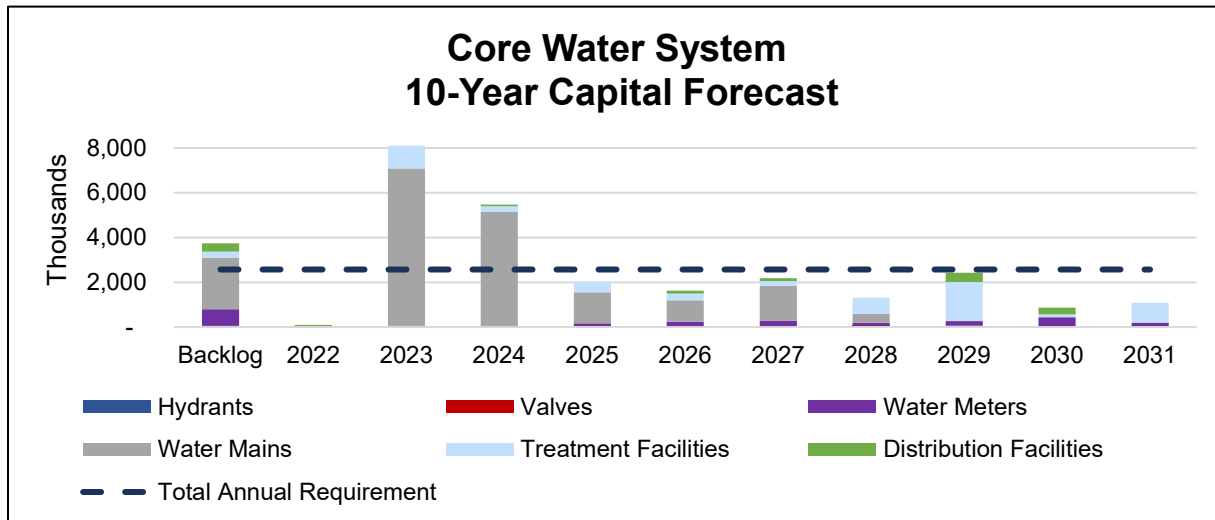
Core facilities within Citywide can be further broken down into process equipment and building components.

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.

### *Capital Forecasts*

Figure 50 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 \$2.6 million.

Figure 50: 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 43.

Table 43: 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 Value (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 51 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 31 assets considered high or very high risk due to their condition or consequence of failure. These are also subsequently listed in Table 44.

Figure 51: Core Water System - Risk Matrix

		1 Asset \$717,423	2 Assets \$968,645	1 Asset \$209,902	0 Assets \$0	0 Assets \$0
5						
4		102 Assets \$55,939,057	12 Assets \$11,389,615	3 Assets \$814,320	7 Assets \$5,701,844	7 Assets \$3,582,180
3		255 Assets \$33,478,862	7 Assets \$1,244,620	11 Assets \$2,003,257	20 Assets \$4,148,915	16 Assets \$2,238,712
2		1,081 Assets \$23,059,525	107 Assets \$4,450,092	38 Assets \$800,267	16 Assets \$1,135,103	19 Assets \$870,161
1		2,108 Assets \$2,239,366	1,518 Assets \$1,762,528	132 Assets \$216,710	74 Assets \$129,253	1,162 Assets \$1,850,679
		1	2	3	4	5
		Probability				

Table 44: Core Water System – High-Risk Assets

Asset Name	Location	GIS #	Risk Rating
Water Pipe on Main	Main, Bath from Easement to Mott	WM546	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 Manitou	Manitou from Briscoe to Kildare	WM38	Very 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
Water Pipe on Mott	Mott from Main to Westbury	WM547	Very High
Water Pipe on Kildare	Kildare from Kidd to Cambridge	WM26	High
Water Pipe on Amherst	Amherst from - to Manitou	WM117	High
Water Pipe on Amherst	Amherst from Manitou to Pittsfield	WM119	High
Water Pipe on Amherst	Amherst from Pittsfield	WM121	High
Water Pipe on Asbury	Asbury from Havergal to Westran	WM41	High
Water Pipe on Chesterfield	Chesterfield from Sherwood to Pittsfield	WM60	High
Water Pipe on Park	Park	WM76	High
Water Pipe on Manitou	Manitou from Cambridge to Princeton	WM36	High
Water Pipe on Sherwood	Sherwood from - to Manitou	WM141	High
Water Pipe on Manitou	Manitou from Sherwood	WM91, WM1008	High
Water Pipe on Upper Park	Upper Park from Park Cr to Amherst Dr	WM124	High
Water Pipe on Westfield	Westfield from Highway 33 to Manitou	WM143	High
Water Pipe on Manitou	Manitou from Princeton to Briscoe	WM37	High
Water Pipe on Sherwood	Sherwood from Tareyton to Briscoe	WM73	High
Water Pipe on Main	Main, Bath	WM512	High
Water Pipe on Main	Main, Bath	WM519	High
Water Pipe on Easement	Easement from WTP to Main	WM545	High
Water Pipe on Amherst	Amherst from Amherst to Amherst	WM123	High
Water Pipe on Purdy	Purdy from Tower to Sir John	WM549	High
Water Pipe on Pruyn	Pruyn from Sir John to Sir John	WM554	High
Chlorine Contact Equipment	Bath WTP - 329 Main St		High
Water Pipe on Highway 33	Highway 33	WM214	High
Water Pipe on Asbury	Asbury from Manitou to Havergal	WM40	High
Water Pipe on Easement	Easement from Littlefield	WM50	High

## 4.2. CORE SEWER SYSTEM

The Township’s Core Sewer System is a combination of approximately 71 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 \$147 million 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 45. 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 Values are valued based on user-defined unit costs using historical development reports. The average age of the Core Sewer System is 32 years and is in very good condition overall.

Table 45: Core Sewer System - Asset Valuation Summary

Subcategory	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
<b>Sewer Manholes</b>	815 ea.	7,009,000	User-Defined Unit Cost	32.8	Very Good
<b>Sewer Mains</b>	71,325 m.	66,150,900	User-Defined Unit Cost/Consumer Price Index	32.7	Very Good
<b>Treatment Facilities</b>	2 ea.	62,602,800	Consumer Price Index	23.2	Very Good
<b>Collection Facilities</b>	8 ea.	11,004,400		25.9	Good
<b>Total Core Sewer System</b>		<b>146,767,100</b>		31.9	Very Good

## Asset Age

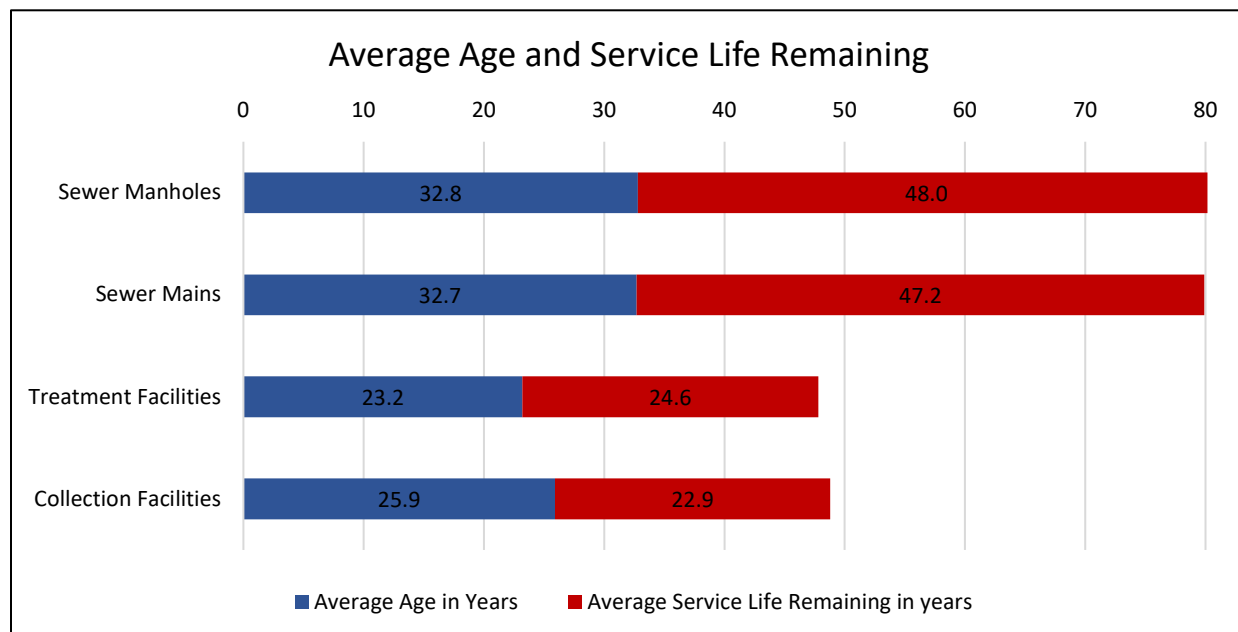
Figure 52 illustrates the average age relative to service life remaining for each subcategory of the Core Sewer System. Service life remaining is based on the assets' initial EULs, which are listed in Table 46, but may deviate if a condition assessment has been undertaken. On average, linear sewer assets 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 46: Core Sewer System - Estimated Useful Life

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

Figure 52: Core Sewer System - Average Age and Service Life Remaining

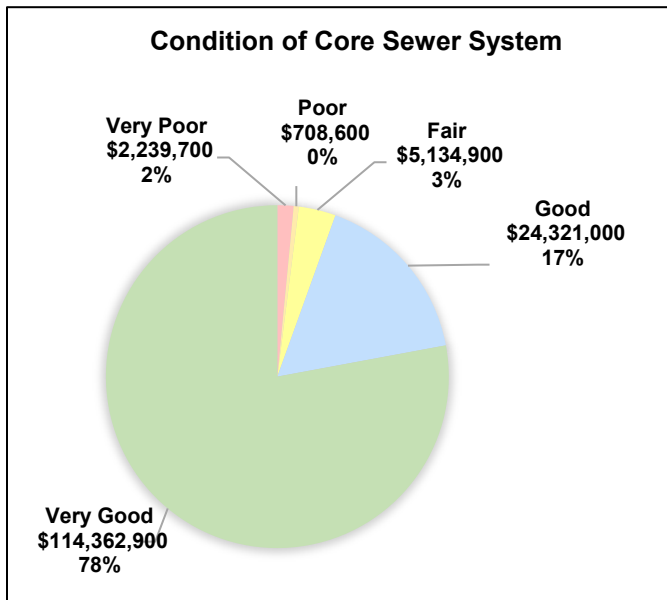


## Asset Condition and Assessment

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 53: Core Sewer System - Condition Summary

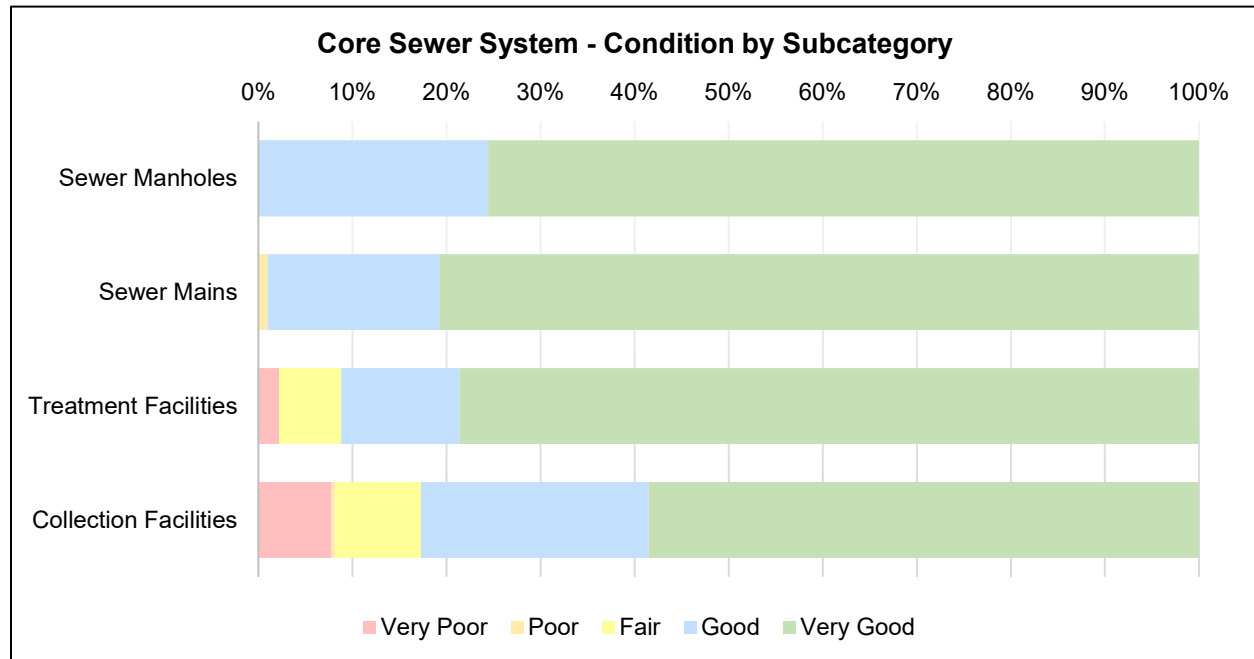


Projected conditions illustrated in Figure 53 are based on a weighted average relative to the Replacement Value.

The Township’s Core Sewer System has approximately 95% 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 47% of the Replacement Values associated with poor and very poor conditions relate to the treatment plants, due to their overall value relative to other infrastructure.

Figure 54 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 Value as compared to other subcategories within the system.

Figure 54: 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 47 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 47: 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	<p>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 16 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 42.5 km of separated sewers, four sewage pumping stations, and 11.2 km of force mains. These works eventually discharge into the Amherstview Water Pollution Control Plant.</p> <p>See maps in Appendix B.6.</p>	Percentage of properties connected to the municipal wastewater system	71.0%
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	0.0006
	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. Three sewer main backups were reported in 2021. Staff attended and resolved the issue in a timely manner.	Number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0010
	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 2021 five 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	0.44%



## 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 utilize 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*

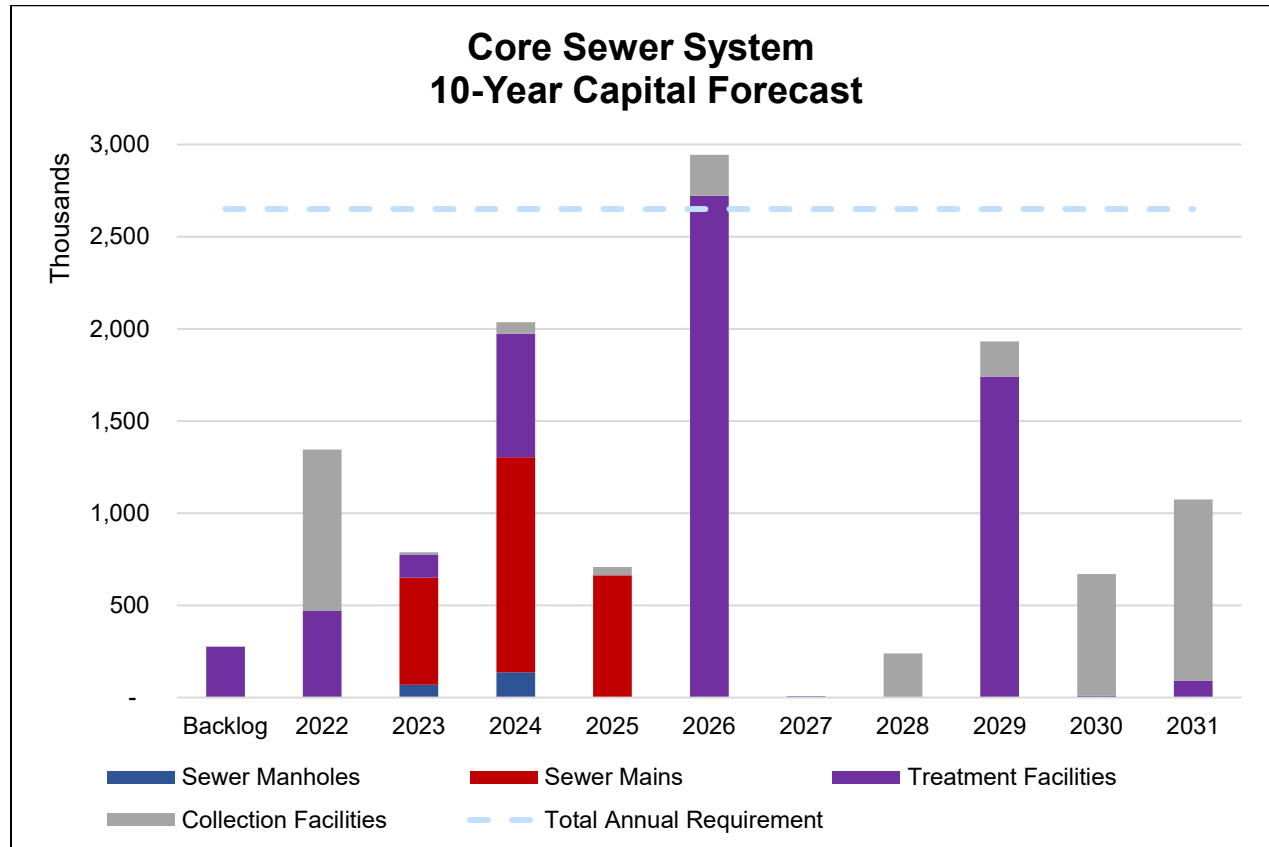
Core facilities within Citywide can be further broken down into process equipment and building components.

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.

### *Capital Forecasts*

Figure 55 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 a justification for any capital project deferrals. The Annual Requirement to fund the Core Sewer System is currently \$2.7 million.

Figure 55: 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 48.

Table 48: Core Sewer System - Consequence of Risk Model

Score	Economic (34% Manholes, Mains) (100% Facilities) Replacement Value (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 56 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 five assets considered high or very high risk due to their condition or consequence of failure. These are also subsequently listed in Table 49.

Figure 56: Core Sewer System - Risk Matrix

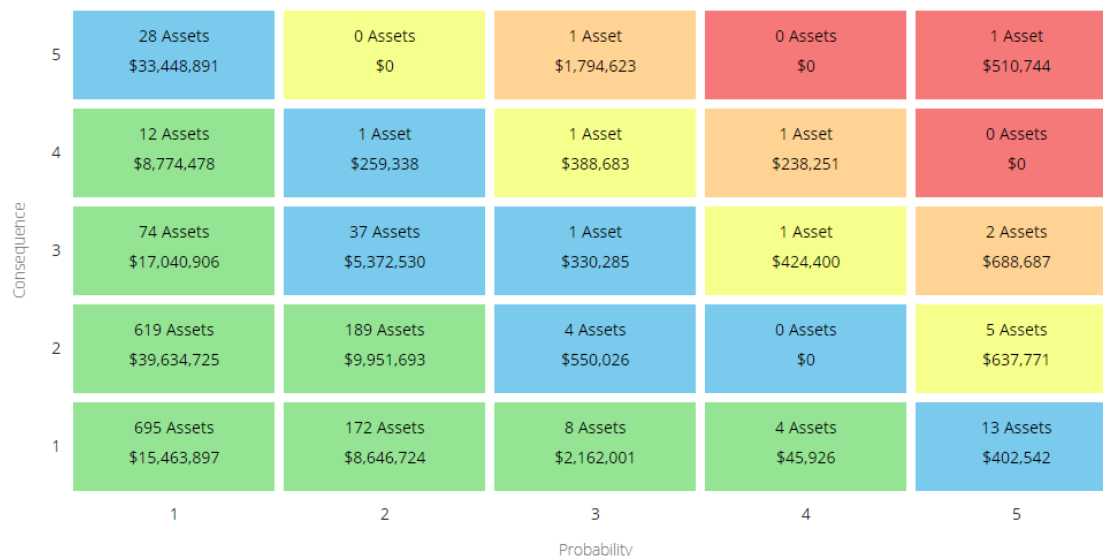


Table 49: Core Sewer System – High-Risk Assets

Asset Name	Location	Risk Rating
Bath WPCP Old Generator and transfer switch		Very High
Sanitary Main on Bath PS#1 FM Outlet	Bath PS#1 FM from MH 5398 to MH 5368	High
Aeration <sup>17</sup>	Amherstview WPCP - 4326 Taylor Kidd Blvd	High
Lakeview PS Electrical <sup>18</sup>	Bath WPCP - 50 Sir John Johnson Dr	High
	Lakeview PS - 4565 Bath Rd	High

<sup>17</sup> Replacement of the aeration system is included in the 2022 approved capital budget.

<sup>18</sup> Replacement of the generator at the Lakeview Pumping Station is included in the 2022 approved capital budget.

## 4.3. OTHER USER-FUNDED ASSETS

Other User-Funded assets are 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 50. This asset category includes user-rate funded light-duty fleet, the Millhaven garage, and its equipment contents. With a Replacement Value of \$3 million, the average age of other user-funded assets is 19 years, and is in good condition overall.

Table 50: Other User-Funded Assets - Asset Valuation Summary

Subcategory	Quantity	Replacement Value (\$)	Replacement Value Method	Average Age in Years	Weighted Average Condition
Utilities Building	1 ea.	2,007,100	Consumer Price Index	38.8	Good
Utilities Machinery & Equipment	9 assets	333,800		13.3	Fair
Utilities Fleet	13 ea.	660,000	User-Defined Unit Cost	10.1	Good
<b>Total Other User-Funded Assets</b>		<b>3,000,900</b>		<b>18.7</b>	<b>Good</b>

## Asset Age

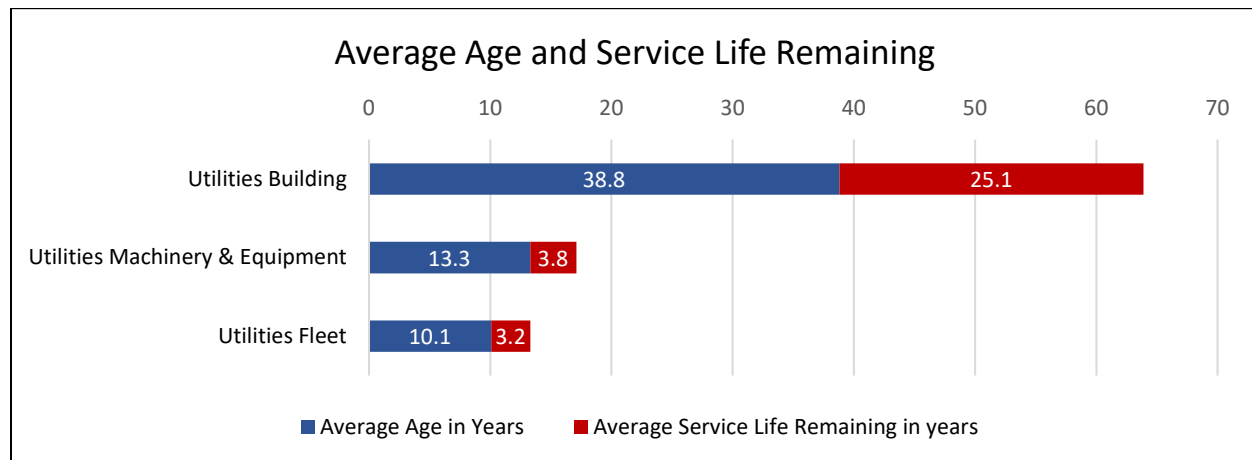
Figure 57 illustrates the average age relative to service life remaining for each subcategory of the Other User-Funded Assets. Service life remaining is based on the assets' initial EULs, which are listed in Table 51, but may deviate if a condition assessment and/or lifecycle activities have been undertaken.

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 51: 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 57: Other User-Funded Assets - Average Age and Service Life Remaining

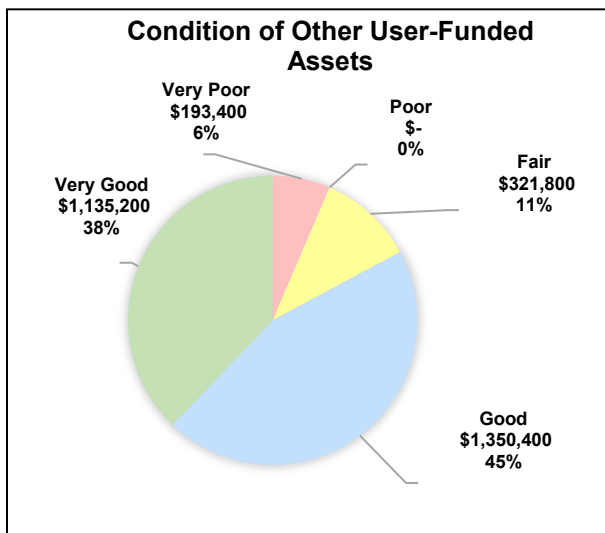


## Asset Condition and Assessment

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.

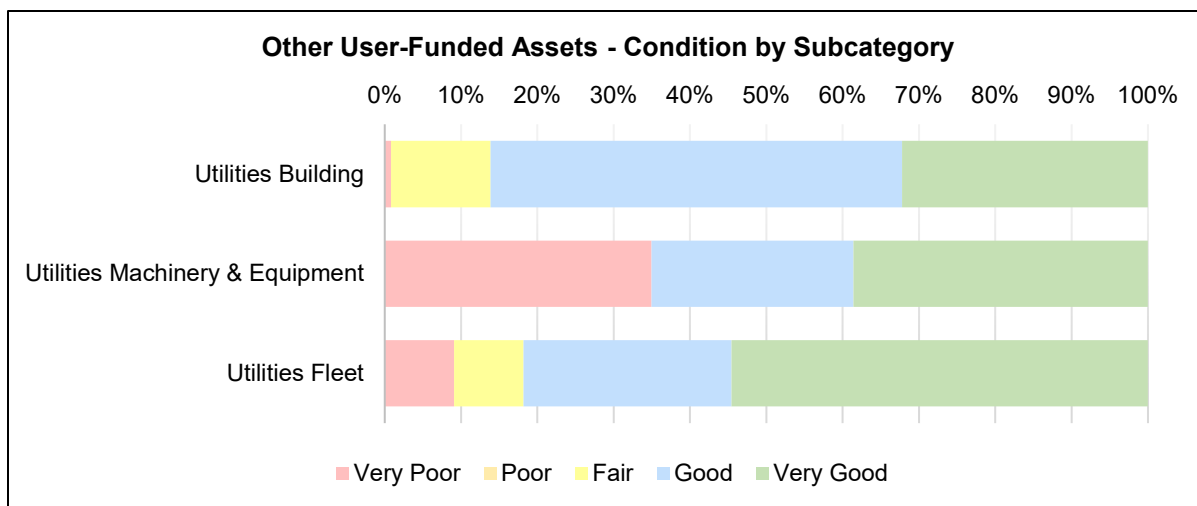
Figure 58: Other User-Funded Assets - Condition Summary



Projected conditions illustrated in Figure 58 are based on a weighted average relative to the Replacement Value.

The Township's Other User-Funded Assets have approximately 83% 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 59 provides further detail by subcategory.

Figure 59: 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, the Township has until July 2024 to develop Community and Technical LOS.

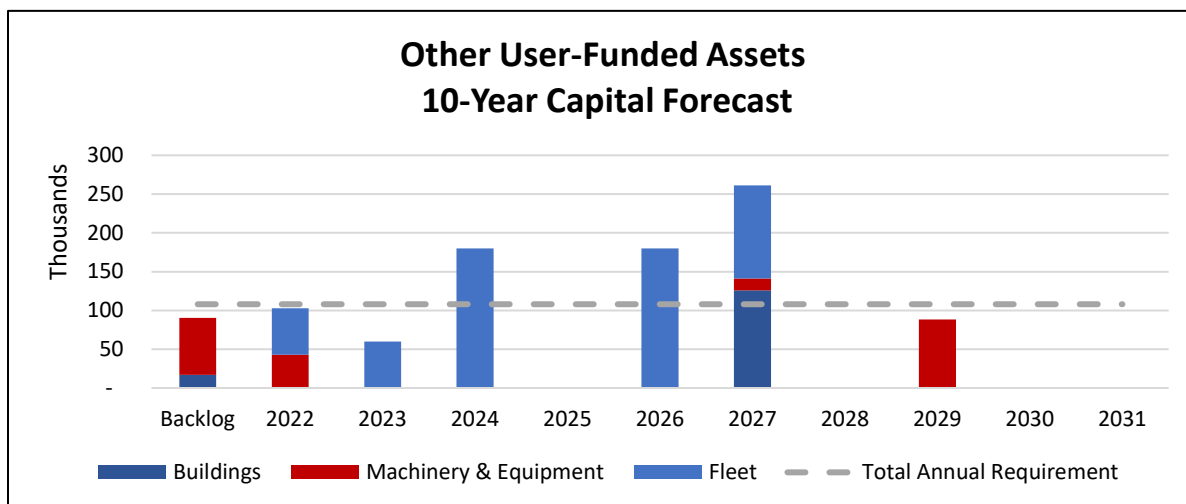
## Lifecycle Management

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

### Capital Forecasts

Based on current data, the Annual Requirement that should be allocated to fund the capital replacement of Other User-Funded Assets is \$108,000. The ten-year capital forecast totaling \$963,000 is illustrated in Figure 60.

Figure 60: Other User-Funded Assets - 10-Year Capital Forecast



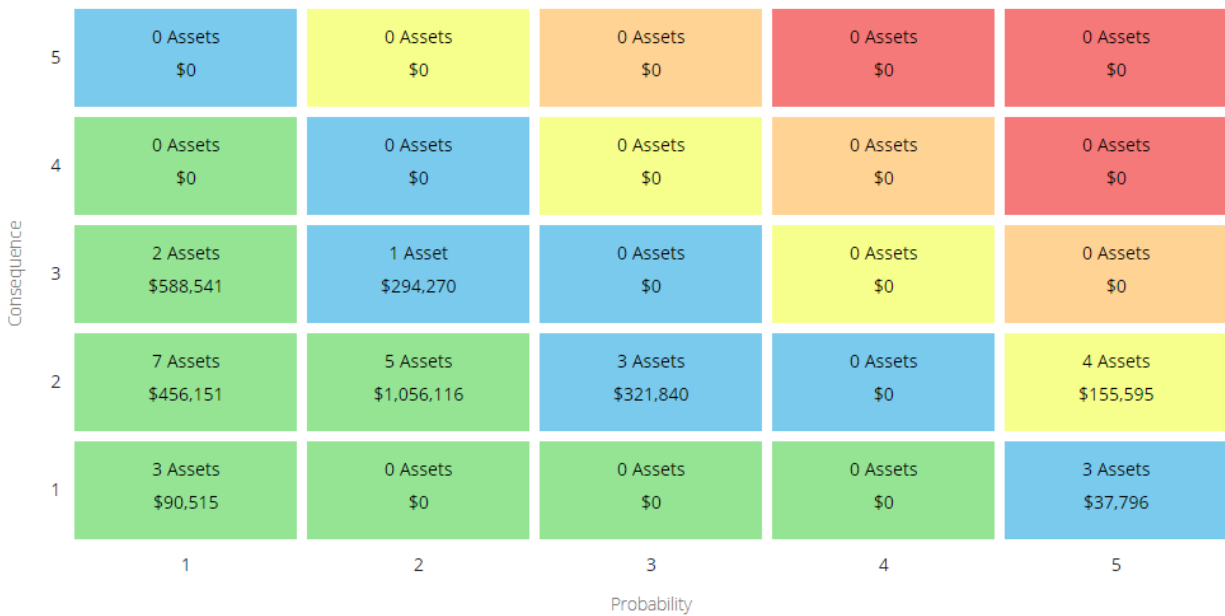
## Risk Management

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



Figure 61 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 61: 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”)
  - Ontario Municipal Partnership Fund (“OMPF”)

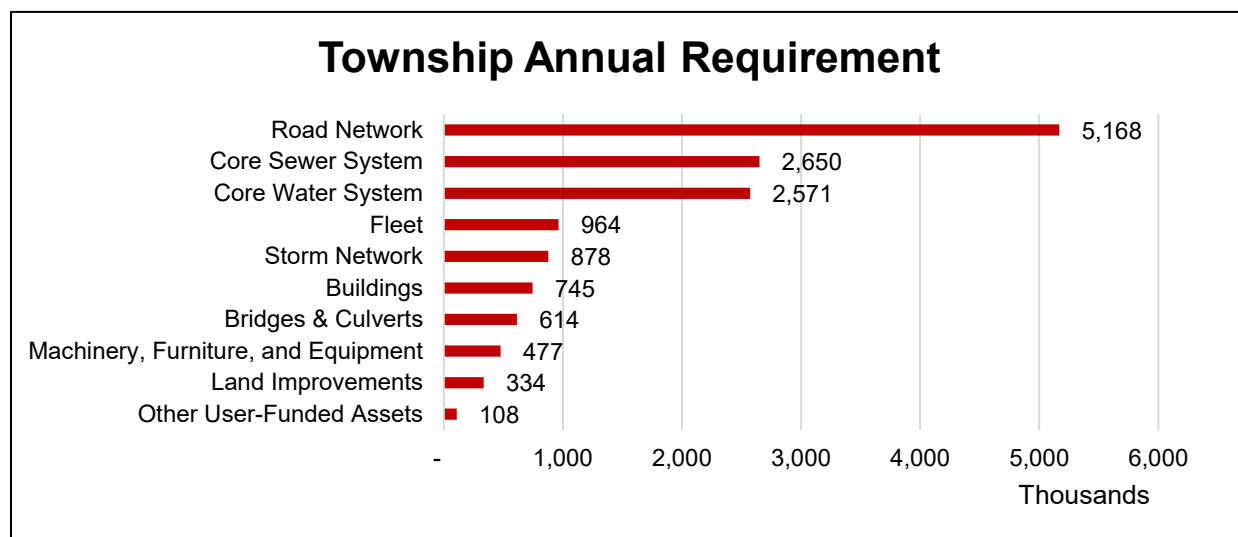
Per Provincial requirements, periodic grants that are not firm in nature are not included. If the financial plan demonstrates a funding shortfall, it is a requirement that a specific plan is included that illustrates how the impact of the shortfall will be managed. In evaluating the funding shortfall, 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 Value and EUL. In total, the Township should allocate approximately \$14.5 million annually to address capital requirements for the assets included in this AMP. This consists of \$9.2 million for tax-funded assets and \$5.3 million for user-funded assets. The breakdown by asset category is outlined in Figure 62.

Figure 62: 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.

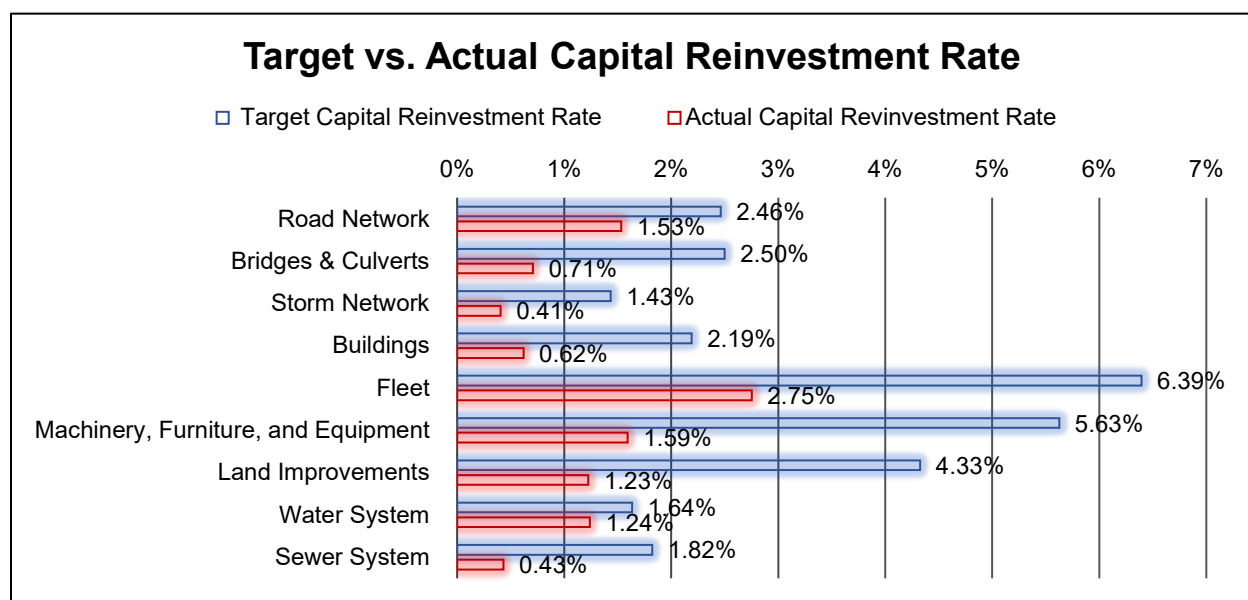
Subcategory	Annual Requirement - Lifecycle (\$)	Annual Requirement - End of Life (\$)	Savings (costs)
Core Assets	4,412,700	5,199,900	787,200
Non-Core Assets	755,800	755,800	-
<b>Total Road Network</b>	<b>5,168,500</b>	<b>5,955,700</b>	<b>787,200</b>

By using a proactive lifecycle strategy for the Road Network, the Township has the potential of realizing \$787,200 in cost avoidance. This reduces the Annual Requirement of the Core Assets by 15%. 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 is committing approximately \$7.1 million towards capital projects annually. This consists of \$4.5 million towards tax-funded assets and \$2.6 million towards user-funded assets. Given the Annual Requirement of \$14.5 million, there is currently a Funding Gap of \$7.4 million, this translates to an overall actual Capital Reinvestment Rate of 1.07% as compared to the targeted Capital Reinvestment Rate of 2.17%. Figure 63 breaks this down by asset category.

Figure 63: Target vs. Actual Capital Reinvestment Rate



## 5.2. TAX-FUNDED ASSETS

### Debt Issuances

Table 52 and Table 53 demonstrate how the Township has historically utilized debt for investing in tax-funded assets. There is currently \$5 million of debt outstanding for the tax-funded assets covered by this AMP, with corresponding principal and interest payments of \$632,900. These are well within provincially prescribed limits.

Table 52: Historical Tax-Funded Debt Issuances

Asset Category	Current Outstanding Debt (\$)	Issuance of Debt in the Last Five Years (\$)				
		2017	2018	2019	2020	2021
Road Network	1,146,600	941,500	-	-	-	-
Bridges & Culverts	-	-	-	-	-	-
Storm Network	1,500,500	471,600	-	-	-	-
Buildings	1,375,900	-	-	-	-	-
Fleet	536,800	156,800	-	-	-	-
Machinery, Furniture, and Equipment	-	-	-	-	-	-
Land Improvements	398,900	-	-	-	-	-
<b>Total Tax Funded</b>	<b>4,958,700</b>	<b>1,569,900</b>	-	-	-	-

Table 53: Future Tax-Funded Interest Payments

Asset Category	Principal & Interest Payments in the Next Twenty Years (\$)								
	2022	2023	2024	2025	2026	2027	2032	2037	2042
<b>Total Tax Funded</b>	<b>632,900</b>	<b>628,400</b>	<b>597,800</b>	<b>589,100</b>	<b>508,500</b>	<b>507,800</b>	<b>337,400</b>	<b>136,700</b>	<b>51,100</b>

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

*Table 54: Tax-Funded Asset Replacement Reserve Funds*

Reserve/Reserve Fund	Balance (December 31, 2021) (\$)	Asset Category
General Capital Reserve Fund	3,066,500	All
Fleet & Equipment Replacement Reserve Fund	1,418,900	Fleet, Machinery, Furniture, and Equipment
Amherst Island Assets Reserve Fund	90,900	All (restricted by geography)
Ice Resurfacers Reserve Fund	11,800	Machinery, Furniture, and Equipment
Road Use Agreement Reserve Fund	261,400	Road Network
Fire Training Centre Reserve	48,400	Buildings
<b>Total</b>	<b>4,897,900</b>	

## Current Funding

Table 55 shows, by asset category, the Township's average Annual Requirements and current funding positions.

Table 55: Tax-Funded Assets - Current Funding

Asset Category	Avg. Annual Requirement (\$)	Annual Funding Available (\$)				Total Available	Annual Deficit (\$)
		Taxes	CCBF (formerly Gas Tax)	OCIF	OMPF		
Road Network	5,168,400	1,464,700	538,200	752,200	466,100	3,221,200	1,947,200
Bridges & Culverts	613,600	173,900	-	-	-	173,900	439,700
Storm Network	878,200	248,900	-	-	-	284,900	629,300
Buildings	744,600	211,000	-	-	-	211,000	533,600
Fleet	963,900	415,000	-	-	-	415,000	548,900
Machinery, Furniture, and Equipment	477,000	135,200	-	-	-	135,200	341,800
Land Improvements	333,700	94,600	-	-	-	94,600	239,100
<b>Total</b>	<b>9,179,400</b>	<b>2,743,000</b>	<b>538,200</b>	<b>752,200</b>	<b>466,100</b>	<b>4,499,800</b>	<b>4,679,600</b>

The average Annual Requirement for the above asset categories is \$9.2 million. Annual revenue currently allocated to these assets for capital purposes is \$4.5 million. This results in an annual funding gap of \$4.7 million. This means that the above infrastructure categories are currently funded at 49% of their long-term requirements.



## Funding Requirement

In 2021, The Township had annual tax revenues of \$18,032,600. Table 56 illustrates, without consideration of any other revenue sources or cost containment strategies, the tax levy change necessary over time to achieve full funding.

Table 56: Tax-Funded Assets - Tax Change Required

Asset Category	Tax Levy Change Required for Full Funding
Road Network	10.8%
Bridges & Culverts	2.4%
Storm Network	3.5%
Buildings	3.0%
Fleet	3.0%
Machinery, Furniture, and Equipment	1.9%
Land Improvements	1.3%
<b>Total</b>	<b>25.9%</b>

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 \$125,100 over the next 5 years, \$295,500 over the next 10 years, \$496,200 over the next 15 years, and \$581,800 over the next 20 years.

It is recommended that the above changes are incorporated and allocated toward the Funding Gap of \$4.7 million as previously outlined. Table 57 outlines this concept.

Table 57: 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	4,679,600	4,679,600	4,679,600	4,679,600	4,679,600	4,679,600	4,679,600	4,679,600
Change in Debt Costs	N/A	N/A	N/A	N/A	(125,100)	(295,500)	(496,200)	(581,800)
<b>Resulting Infrastructure Deficit:</b>	4,679,600	4,679,600	4,679,600	4,679,600	4,554,500	4,384,100	4,183,400	4,097,800
Tax Increase Required	25.9%	25.9%	25.9%	25.9%	25.3%	24.3%	23.2%	22.7%
<b>Annually</b>	<b>5.2%</b>	<b>2.6%</b>	<b>1.7%</b>	<b>1.3%</b>	<b>5.1%</b>	<b>2.4%</b>	<b>1.5%</b>	<b>1.1%</b>

## Recommendations

It is recommended 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, OCIF, and OMPF 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.

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 58 outlines the current investment backlog of \$11.1 million by asset category.

Table 58: Tax-Funded Assets - Investment Backlog

Asset Category	Investment Backlog (\$)
Road Network	2,918,400
Bridges & Culverts	12,000
Storm Network	5,847,200
Buildings	486,700
Fleet	1,022,000
Machinery, Furniture, and Equipment	15,900
Land Improvements	768,900
<b>Total</b>	<b>11,071,100</b>

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 59 and Table 60 demonstrate how the Township has historically utilized debt for investing in user-funded assets. There is currently \$5.2 million of debt outstanding for the user-funded assets covered by this AMP, with corresponding principal and interest payments of \$910,600. These are well within provincially prescribed limits.

Table 59: User-Funded Assets - Historical Debt Issuances

Asset Category	Current Outstanding Debt	Use of Debt in the Last Five Years				
		2017	2018	2019	2020	2021
Core Water System	2,037,500	-	-	-	-	-
Core Sewer System	3,159,800	1,186,500	-	-	-	-
Other User-Funded Assets	-	-	-	-	-	-
<b>Total User-Funded</b>	<b>5,197,300</b>	<b>1,186,500</b>	-	-	-	-

Table 60: User-Funded Assets - Future Debt Repayments

Asset Category	Principal & Interest Payments in the Next Twenty Years								
	2022	2023	2024	2025	2026	2027	2032	2037	2042
Total User-Funded - Water	382,200	244,600	242,000	235,600	152,200	149,400	146,700	143,900	141,100
Total User-Funded - Sewer	528,400	523,300	348,300	316,200	315,900	315,500	265,500	240,400	124,000
<b>Total</b>	<b>910,600</b>	<b>767,900</b>	<b>590,300</b>	<b>551,800</b>	<b>468,100</b>	<b>464,900</b>	<b>412,200</b>	<b>384,300</b>	<b>265,100</b>

## 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 61 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 61: User-Funded Assets - Reserve Funds

Reserve Fund	Balance (December 31, 2021) (\$)	Asset Category
Water Capital Reserve Fund	738,600	All water infrastructure
Water Impost Fees - Club Fee Reserve Fund	3,293,400	
Sewer Capital Reserve Fund	1,107,200	All sewer infrastructure
Sewer Impost Fees - Club Fee Reserve Fund	4,180,000	
Fleet & Equipment Replacement Reserve Fund	112,200	Utilities Fleet, Machinery, Furniture and Equipment
<b>Total</b>	<b>9,431,400</b>	

## Current Funding

Table 62 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 62: User-Funded Assets - Current Funding

Asset Category	Avg. Annual Requirement (\$)	Annual Funding Available (\$)			Annual Deficit (\$)
		User Rates	Other	Total Available	
Water System	2,625,400	1,992,100	-	1,992,100	633,300
Sewer System	2,703,700	640,400	-	640,400	2,063,300
<b>Total</b>	<b>5,329,100</b>	<b>2,632,500</b>	<b>-</b>	<b>2,632,500</b>	<b>2,696,600</b>

The average Annual Requirement for the above asset categories is \$5.3 million. Annual revenue currently allocated to these assets for capital purposes is \$2.6 million. This results in an annual funding gap of \$2.7 million. This means that the above infrastructure categories are currently funded at 51% of their long-term requirements.

## Funding Requirement

In 2021, the Township had annual user revenues of \$7,941,300. Table 63 illustrates, without consideration of any other revenue sources or cost containment strategies, the user revenue changes necessary over time to achieve full funding.

Table 63: User-Funded Assets - Revenue Change Required

Asset Category	Rate Change Required for Full Funding
Water System	14.3%
Sewer System	58.8%
<b>Total</b>	<b>34.0%</b>

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 \$232,800 over the next 5 years, \$235,500 over the next 10 years, \$238,300 over the next 15 years, and \$241,100 over the next 20 years.
- The Township's debt payments for sewer user-funded assets will be decreasing by \$212,900 over the next 5 years, \$262,900 over the next 10 years, \$288,000 over the next 15 years, and \$404,400 over the next 20 years.

It is recommended that the above changes are incorporated and allocated toward the Funding Gap of \$2.7 million as previously outlined. Table 64 and Table 65 outline this concept.

Table 64: 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	633,300	633,300	633,300	633,300	633,300	633,300	633,300	633,300
Change in Debt Costs	N/A	N/A	N/A	N/A	(232,800)	(235,500)	(238,300)	(241,100)
<b>Resulting Infrastructure Deficit:</b>	633,300	633,300	633,300	633,300	400,500	397,800	395,000	392,200
User Revenue Increase Required	14.3%	14.3%	14.3%	14.3%	5.0%	5.0%	5.0%	4.9%
<b>Annually</b>	<b>2.9%</b>	<b>1.4%</b>	<b>1.0%</b>	<b>0.7%</b>	<b>1.0%</b>	<b>0.5%</b>	<b>0.3%</b>	<b>0.2%</b>

Table 65: 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	2,063,300	2,063,300	2,063,300	2,063,300	2,063,300	2,063,300	2,063,300	2,063,300
Change in Debt Costs	N/A	N/A	N/A	N/A	(212,900)	(262,900)	(288,000)	(404,400)
<b>Resulting Infrastructure Deficit:</b>	2,063,300	2,063,300	2,063,300	2,063,300	1,850,400	1,800,400	1,775,300	1,658,900
User Revenue Increase Required	58.8%	58.8%	58.8%	58.8%	23.3%	22.7%	22.4%	20.9%
<b>Annually</b>	<b>11.8%</b>	<b>5.9%</b>	<b>3.9%</b>	<b>2.9%</b>	<b>4.7%</b>	<b>2.3%</b>	<b>1.5%</b>	<b>1.0%</b>



## Recommendations

It is recommended 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.

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 66 outlines the current investment backlog of \$4.1 million by asset category.

Table 66: User-Funded Assets - Investment Backlog

Asset Category	Investment Backlog
Core Water System	3,745,200
Core Sewer System	276,500
Other User-Funded Assets	90,600
<b>Total</b>	<b>4,112,300</b>

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 its infrastructure to ensure LOS are continually met. There are various studies such as the Development Charges Study and the Impost Study that 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 67. Approximately 96% of the growth projected by 2046 is derived from development occurring in the urban areas of Amherstview, Bath, and Odessa.

It is important to note that actual results may deviate from these studies, as they are to act as a tool to guide municipal practices and documents such as the Township’s Official Plan, which was approved by Council in 2021.

Table 67: Growth Study Projections

Year	Population	Growth from 2021	Employment	Growth from 2021
2021	18,390		4,980	
2031	20,430	2,040	5,530	550
2041	21,960	3,570	5,960	980
2046	22,600	4,210	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 informed the preparation of the lifecycle management and financial strategy.

While the Township incorporates planned growth-related infrastructure in its 10-year capital budget, planning for forecasted population growth may require the expansion of existing infrastructure and services that may deviate from these plans. 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. These costs should 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
7450 Bridge Guiderails	OSIM Culvert
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
7476 Sanitary Sewer Pipes (200mm - 250mm)	04 - Ductile Iron (DI)
7477 Sanitary Sewer Pipes (300mm - 375mm)	05 - PVC
7478 Sanitary Sewer Pipes (400mm - 450mm)	06 - Asbestos Cement (AC)
7479 Sanitary Sewer Pipes (525mm - 750mm)	07 - Concrete
7482 Water Pipes (25mm - 50mm)	01 - Cast Iron (CI)
7483 Water Pipes (100mm - 150mm)	02 - Copper
7484 Water Pipes (200mm - 250mm)	03 - HDPE
7485 Water Pipes (300mm)	04 - Ductile Iron (DI)
7486 Water Pipes (400mm)	05 - PVC
7487 Water Pipes (N/A mm)	06 - Asbestos Cement (AC) 09 - Unknown
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
7491 Storm Sewer Pipes (450mm- 750mm)	07 - Concrete
7492 Storm Sewer Pipes (800mm- 1200mm)	08 - Corregated Steel (CSP)
7493 Storm Sewer Pipes (>1200mm)	09 - Unknown
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  
N0H 2N0  
613-386-7351

Production Date: January 6, 2022

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database  
Land Information Ontario

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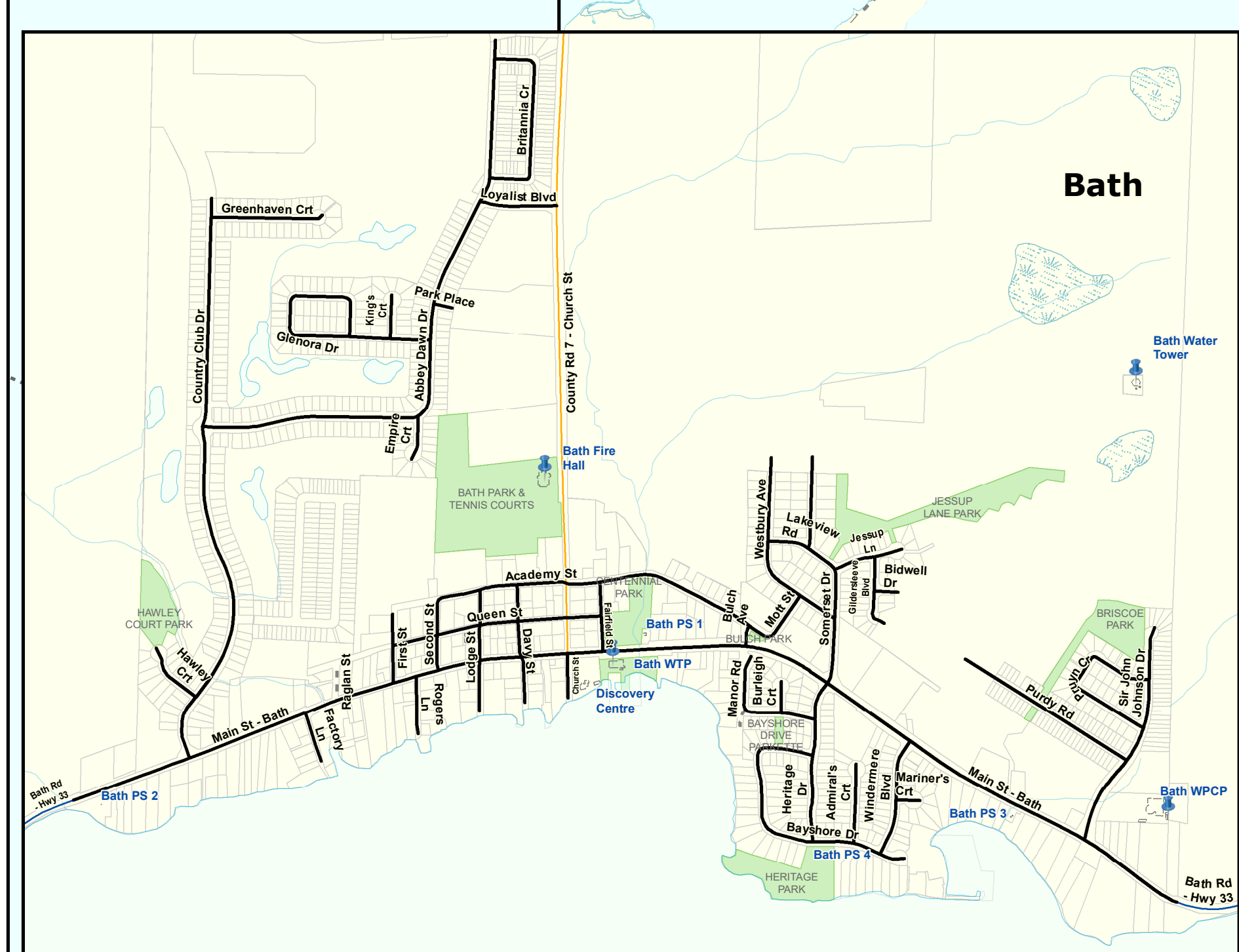
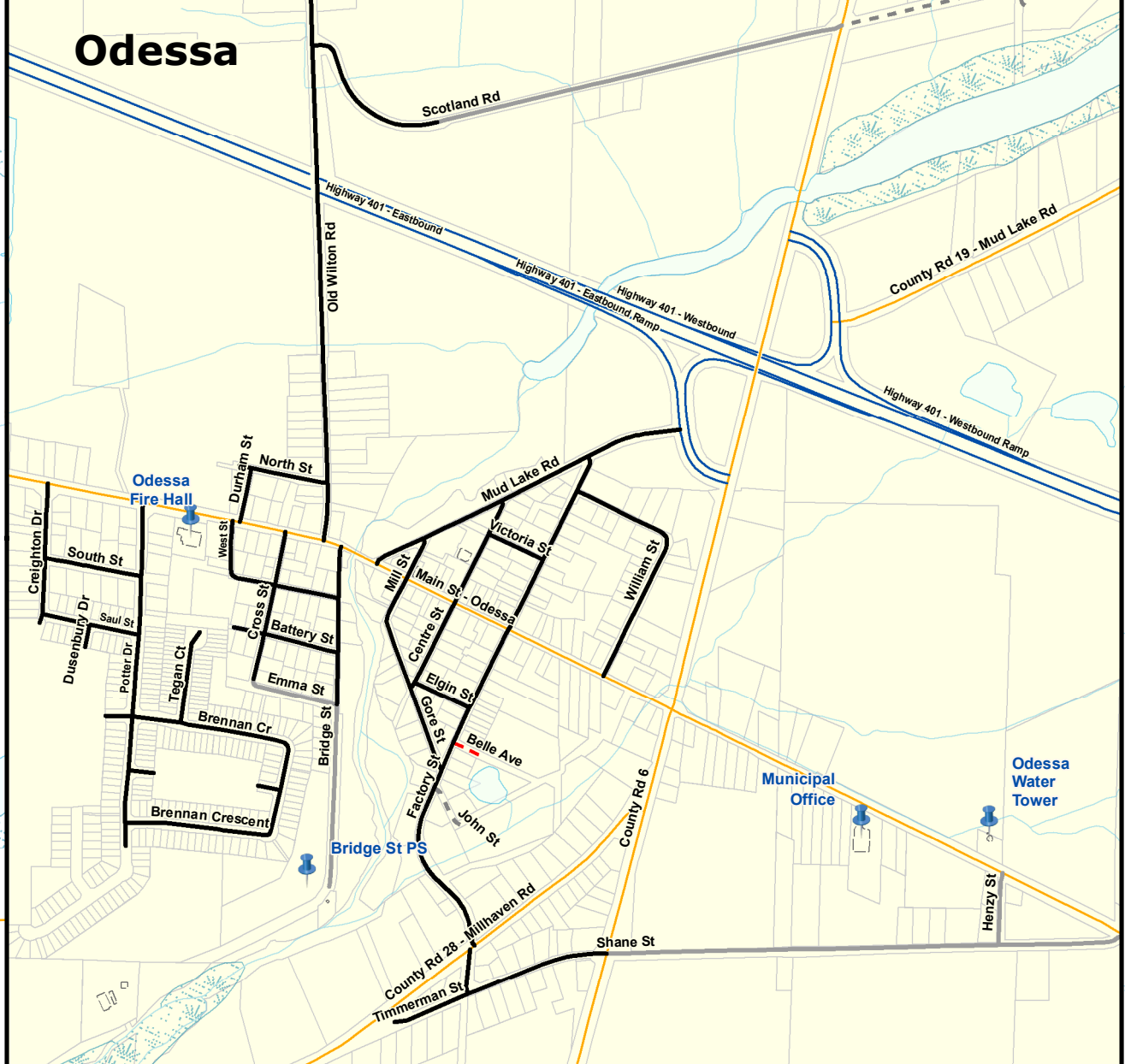
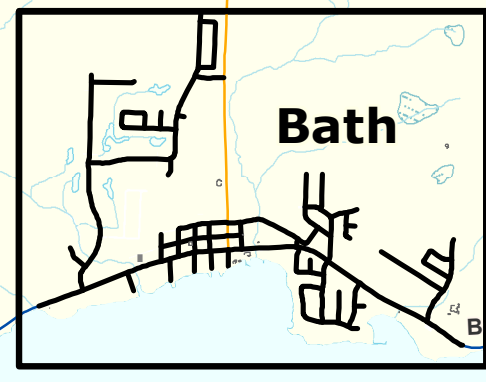
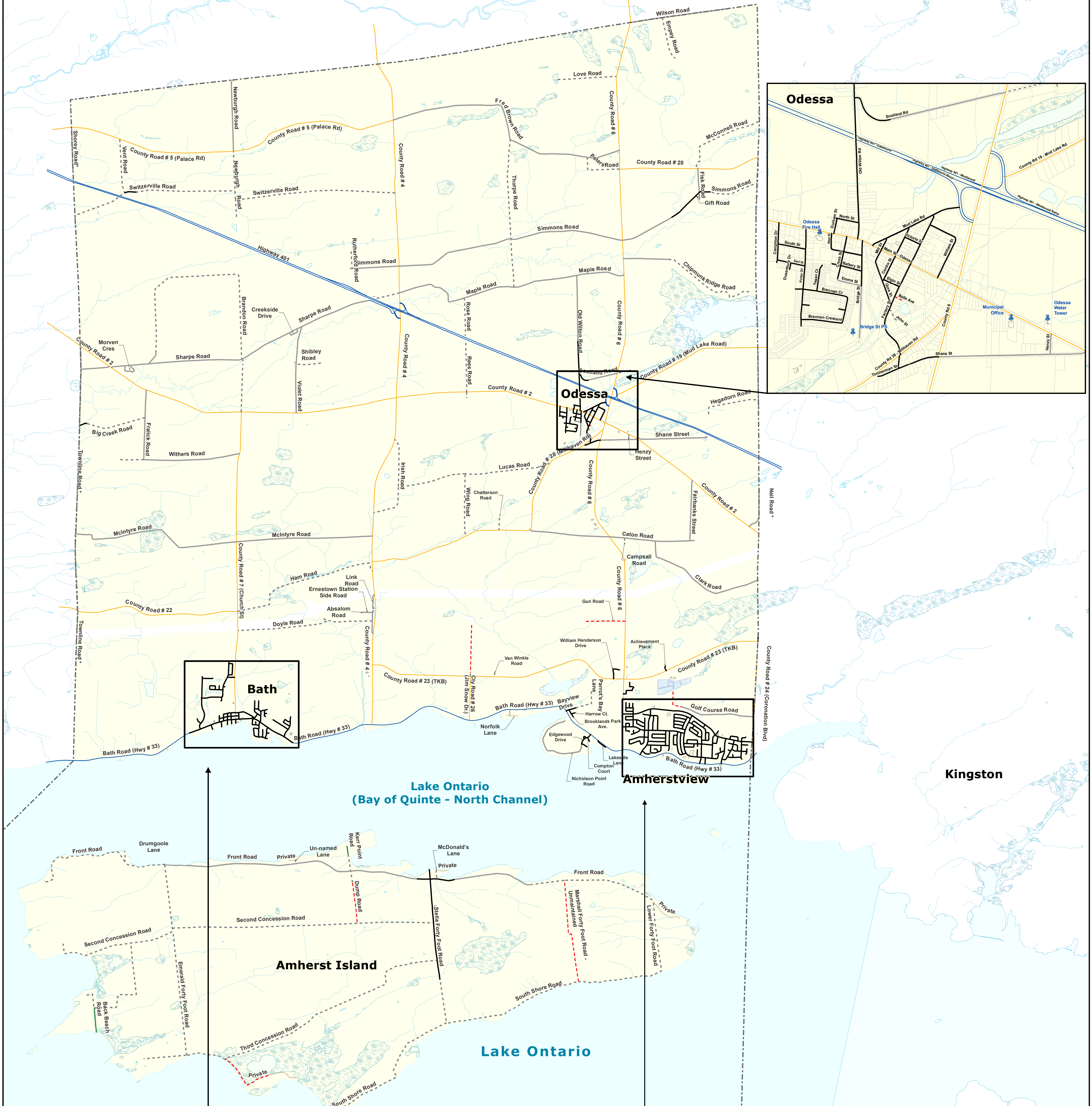
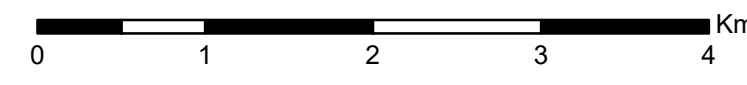
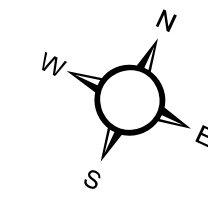
## Legend

### Township Owned Roads - Surface

- High Class Bit.-asphalt
- Low Class Bit.-surface treated
- Earth
- - - Gravel, Stone, Other Loosetop

### Township Access Road - Not Maintained

- County Road
- MTO Road
- Private Road
- Facility Footprint
- Sewage Lagoons
- - - Loyalist Township Boundary





## B.2. Bridges & Culverts Map

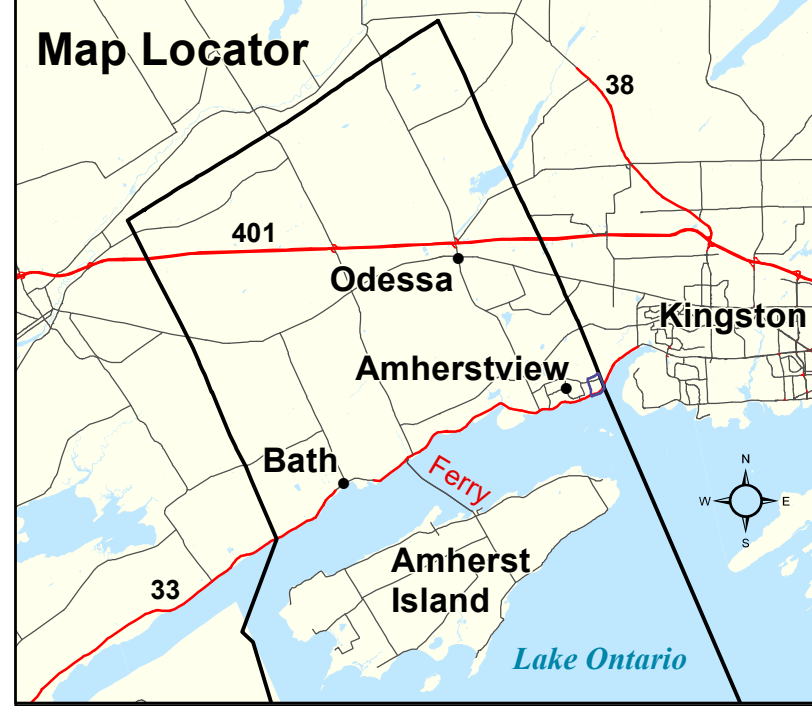




### B.3. Storm System Maps

# STORM SYSTEM ZONES

# 1 - Amherstview



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

- ..... Other Culvert
- ..... Culvert
- ..... Driveway Culvert
- Storm Laterals
- x Stm Structures
- Stormwater Treatment Unit
- Catchbasin
- Ditch Inlet CB
- Twin Inlet CB
- Manhole
- Ditch Inlet MH
- Sewer Inlet
- Sewer Outlet
- Cleanout
- Yard Basin
- Storm Pipe Sizes (mm)
- 150
- 200
- 250
- 300
- 375
- 450
- 600
- 675
- 750
- 900
- 1050
- 1200
- Non-Township Owned Storm Sewer
- Township Owned Storm Ponds

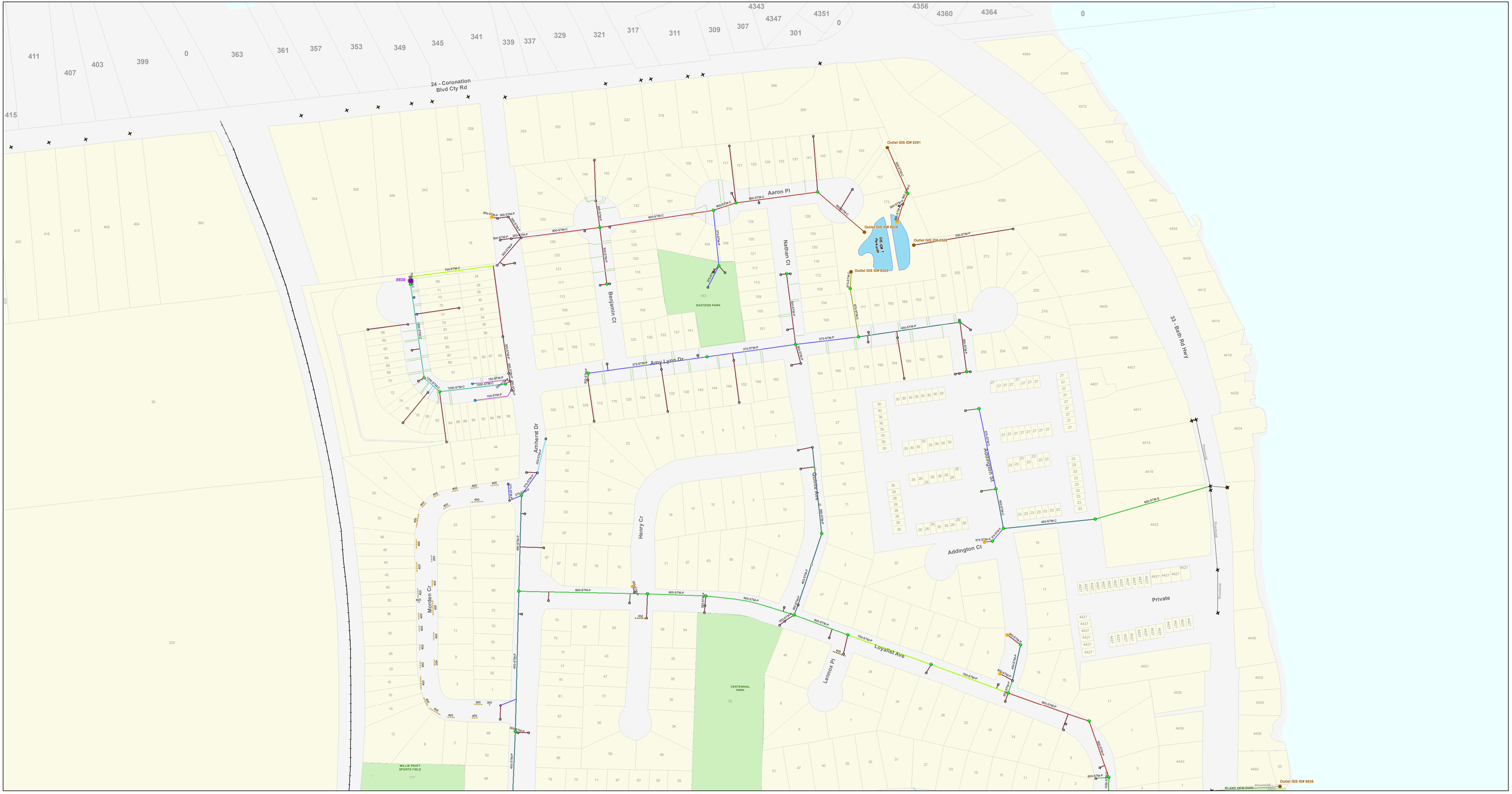
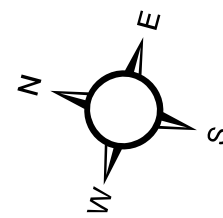
## Page 1 of 12

Production Date: January 6, 2022

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database  
Land Information Ontario

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# LOYALIST TOWNSHIP CULVERTS & BRIDGES



GIS Services - IT Division  
P.O. Box 70, 263 Main Street  
Odessa, Ontario  
N0H 2N0  
613-386-7351

Production Date: January 6, 2022

Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database  
Land Information Ontario

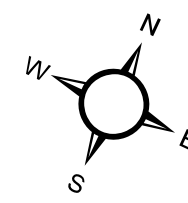
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## ActiveTownship\_Culverts\_Point

### TYPE

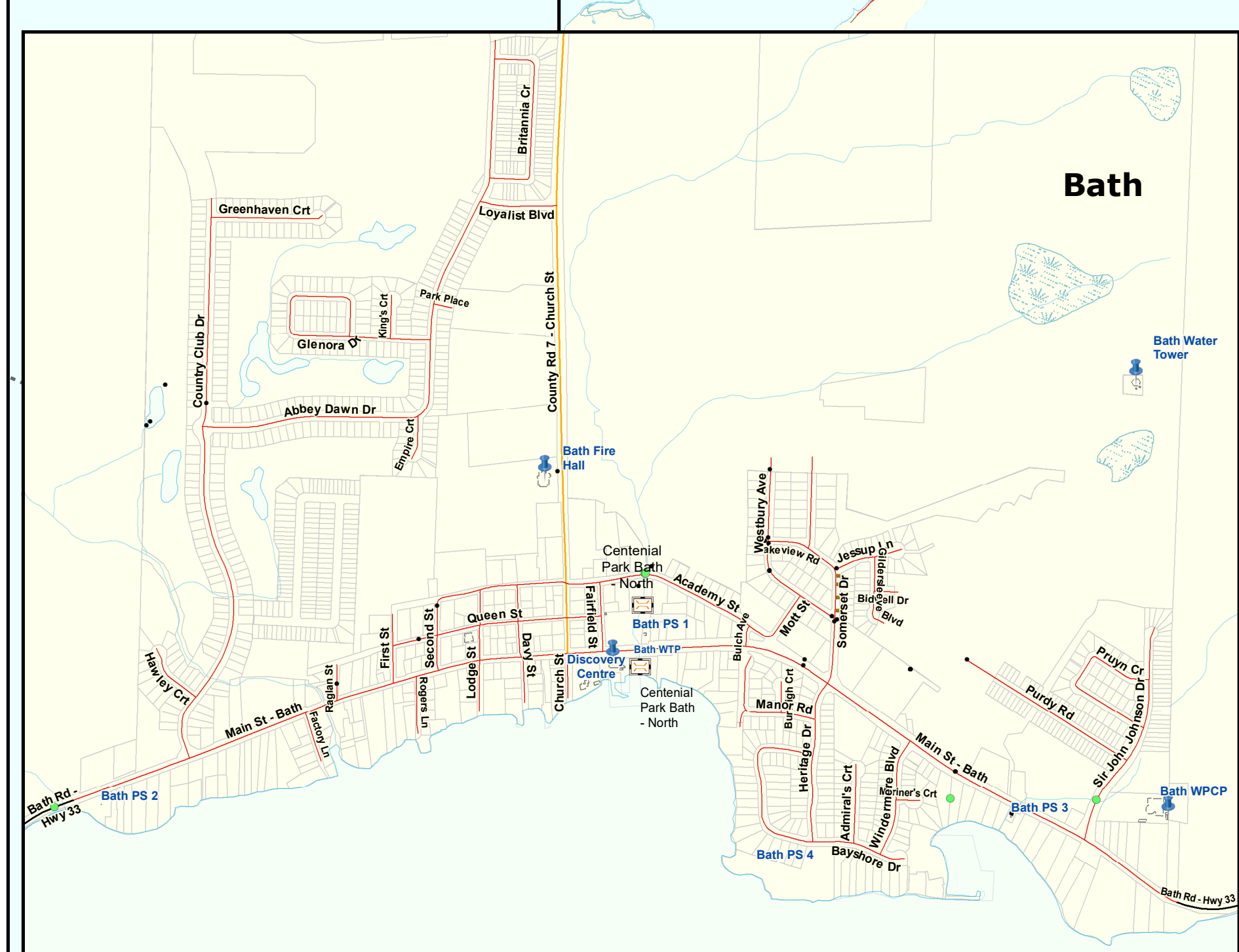
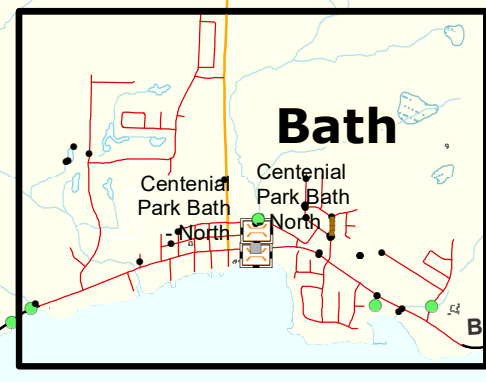
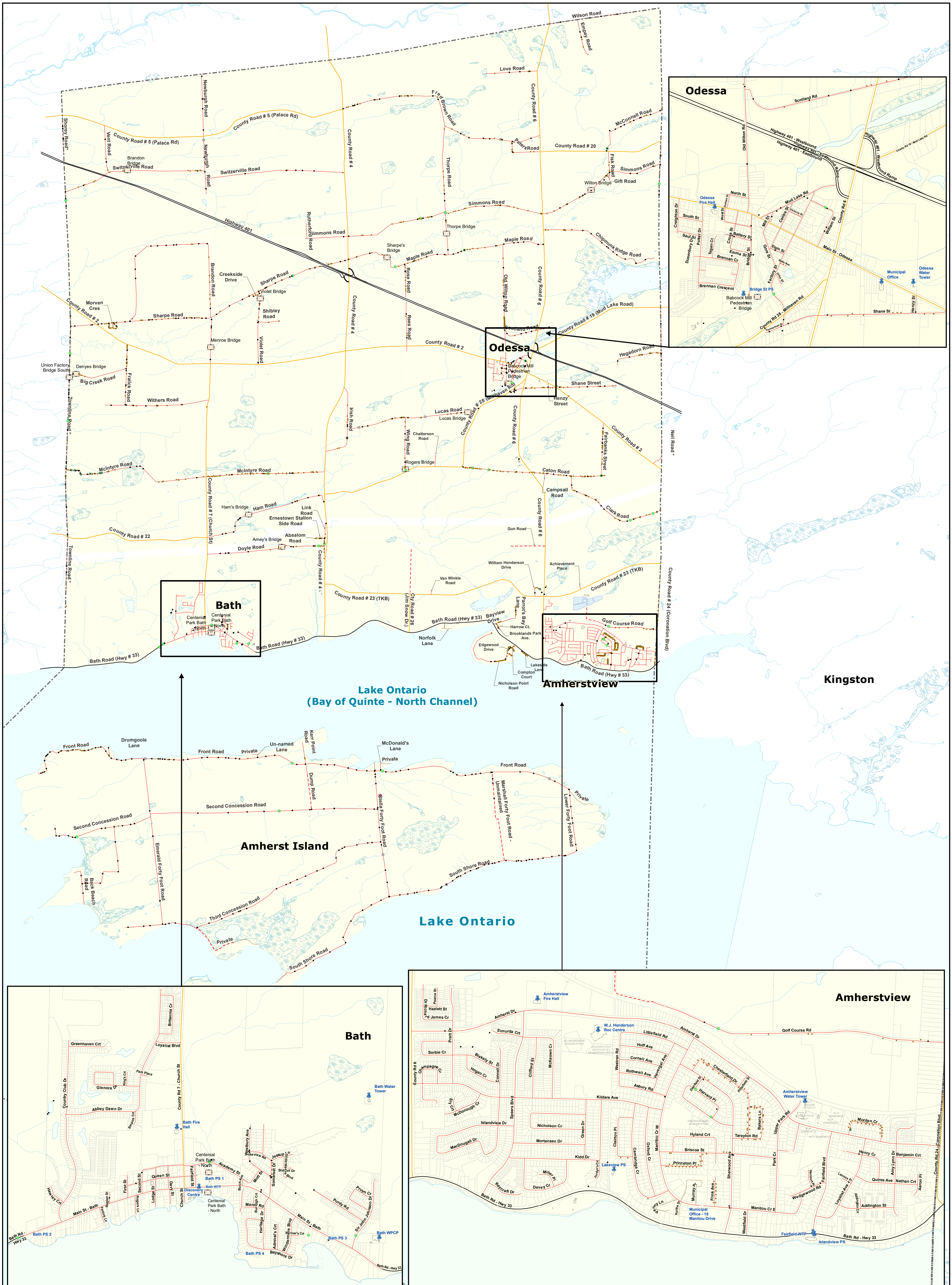
- Cross Culvert
- Driveway Culvert
- Arch Culvert
- Box Culvert
- Pond Culvert
- ROW Culvert
- Township Bridges

- Township - Maintained
- - - Township Access Road - Not Maintained
- County Road
- MTO Road
- Private Road
- Facility Footprint
- Sewage Lagoons
- - - Loyalist Township Boundary



0 1 2 3 4 Km

Please Note: The Driveway Culvert data displayed on this map is not representative of a complete inventory and only known feature locations are shown.





## B.4. Buildings Map

# Township Facilities & Buildings



Information Technology Division  
 P.O. Box 70, 263 Main Street  
 Odessa, Ontario  
 N0H 2N0  
 613-386-7351

Production Date: January 12, 2022

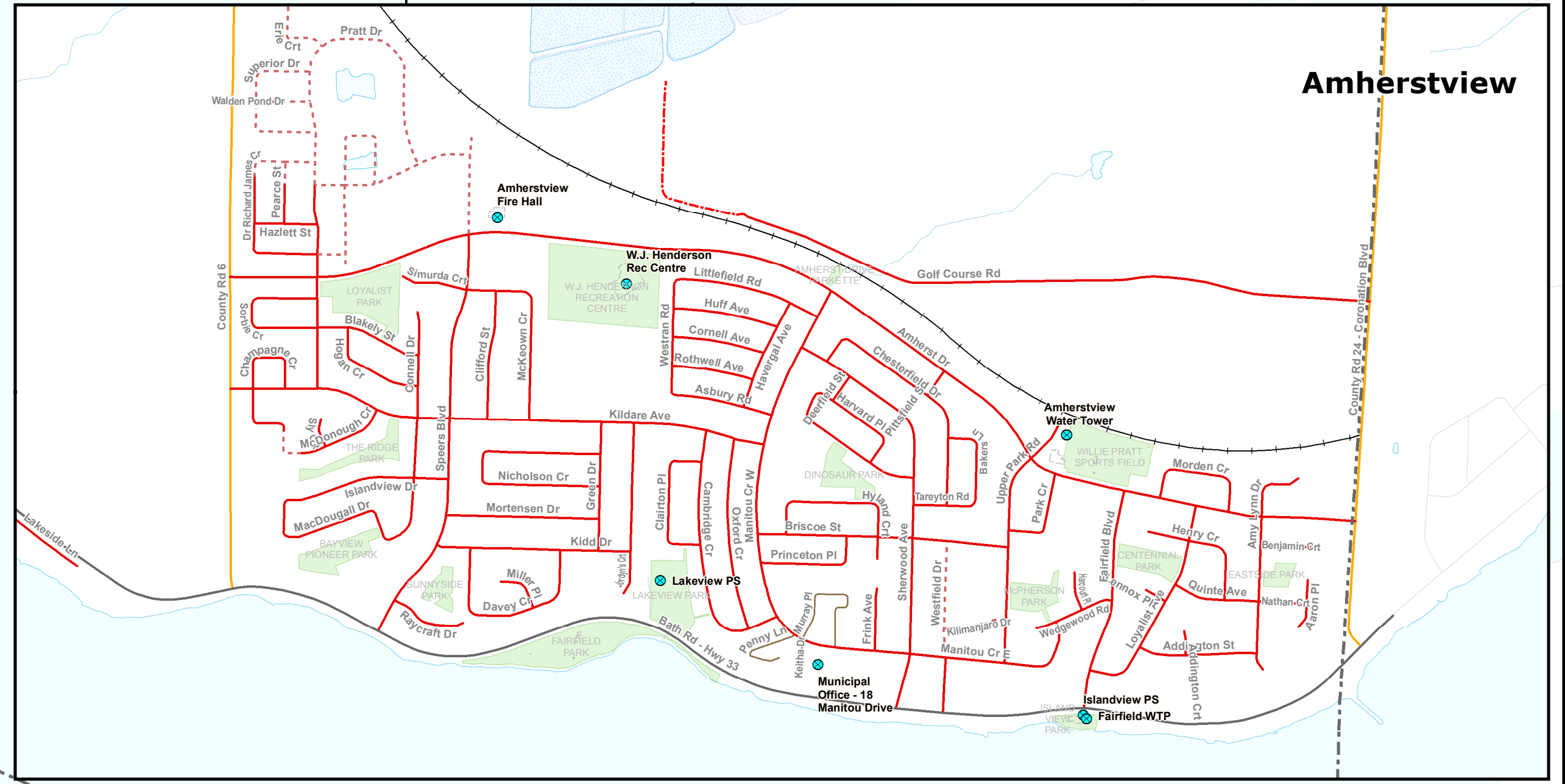
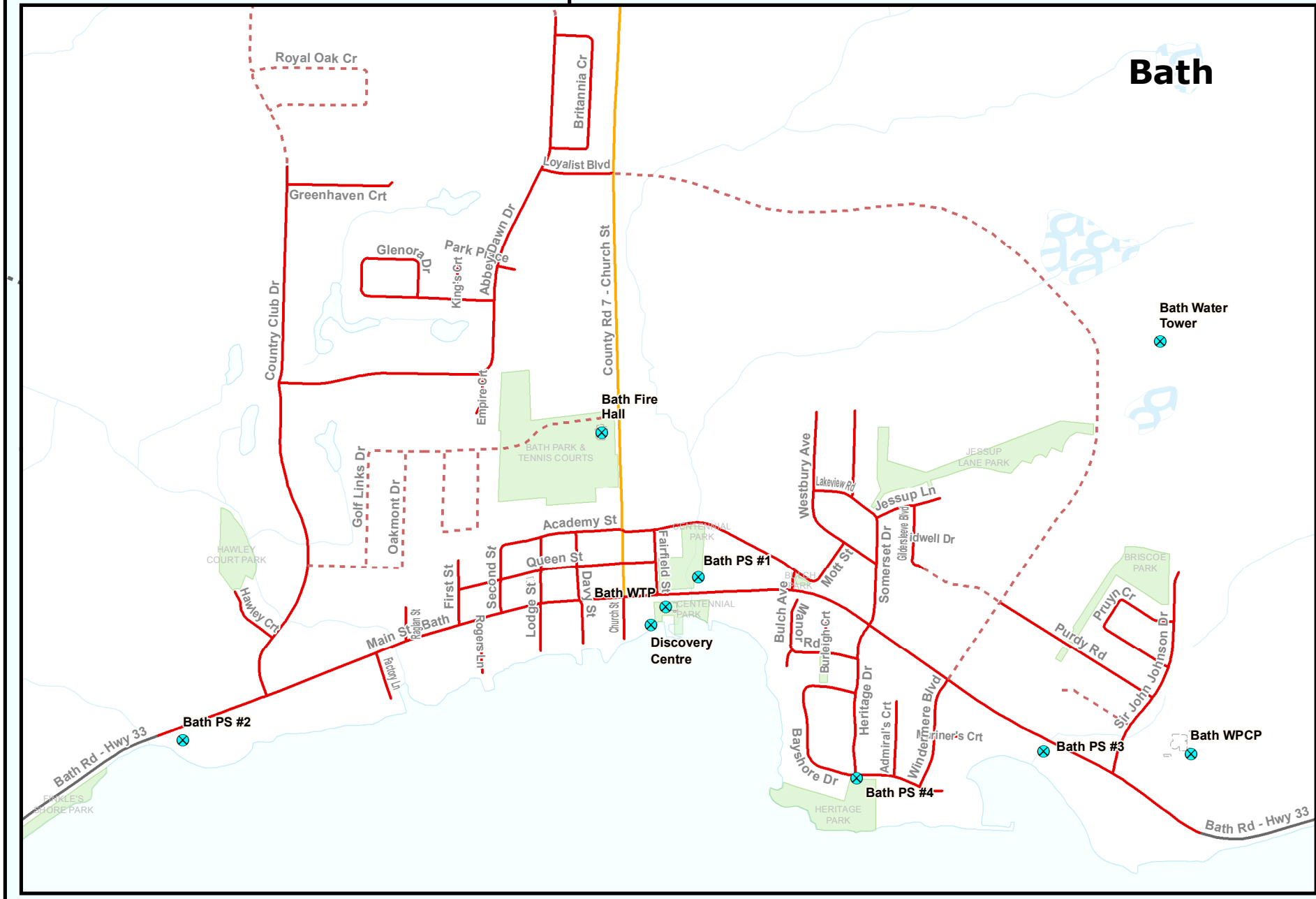
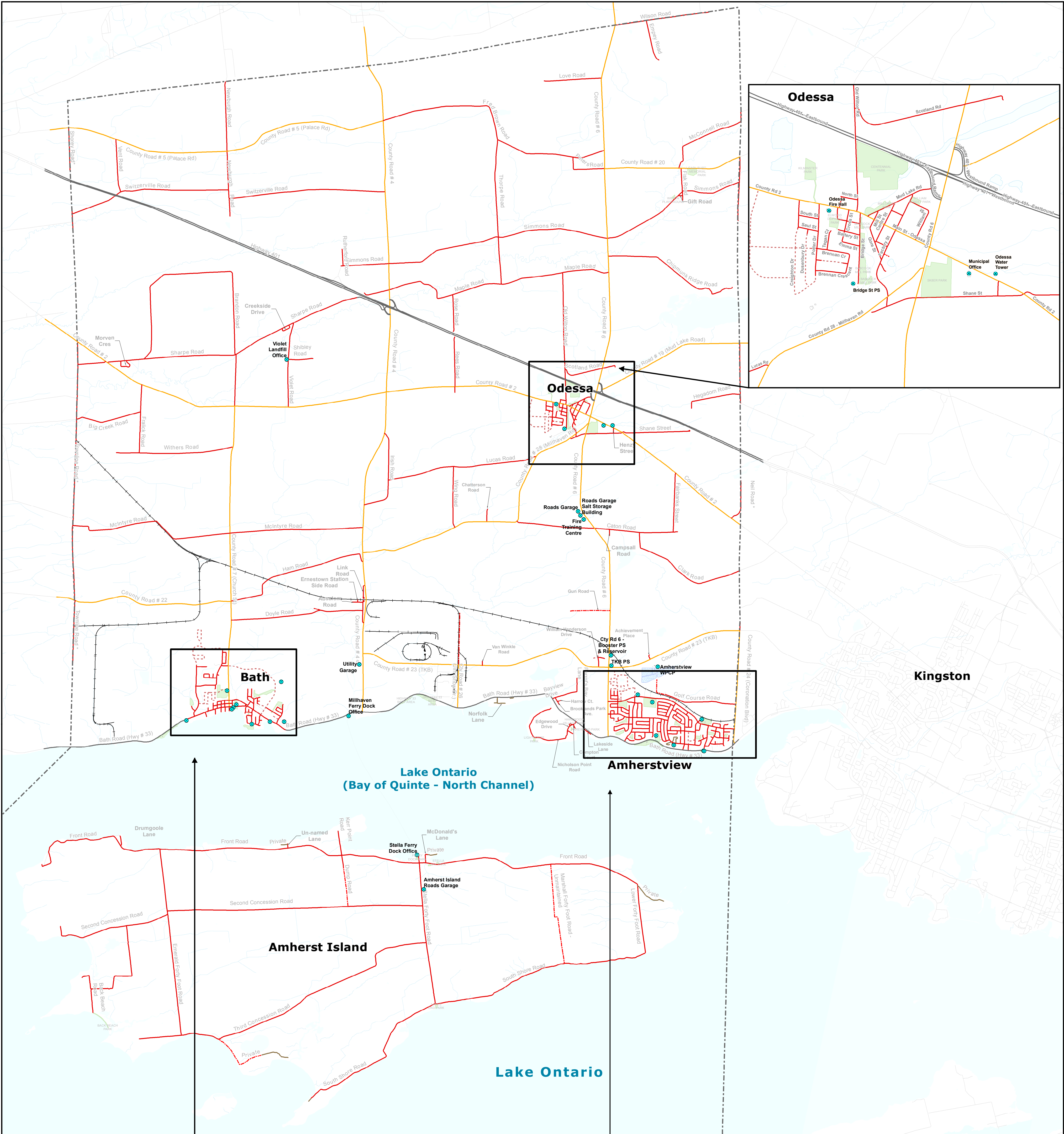
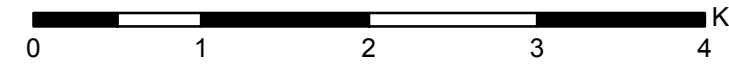
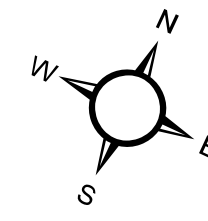
Datum/Projection: Nad 83, UTM 18

Data Sources: Loyalist Township Database  
 Land Information Ontario

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## Legend

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

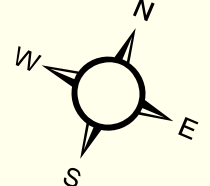
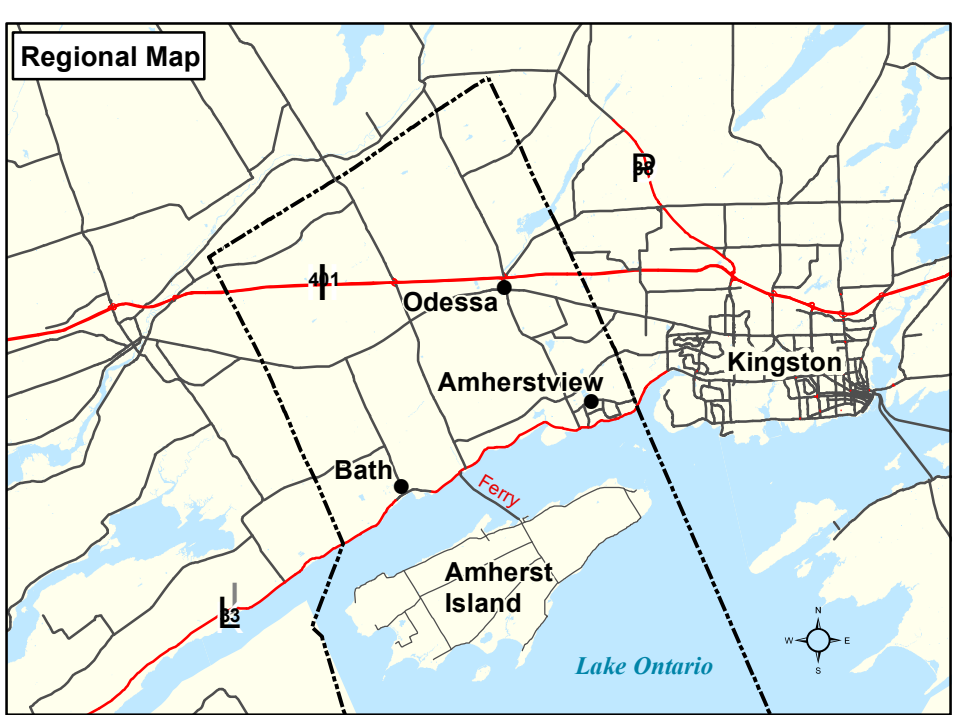
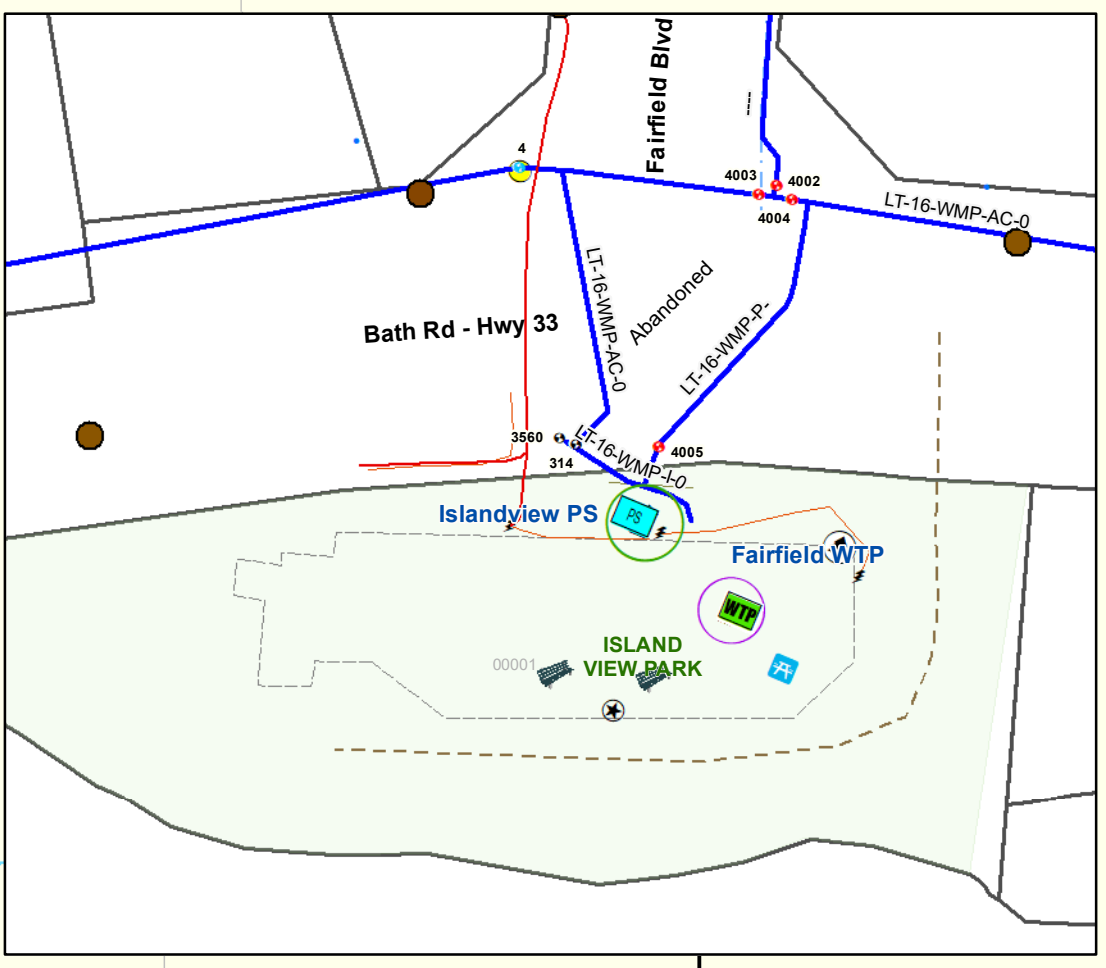
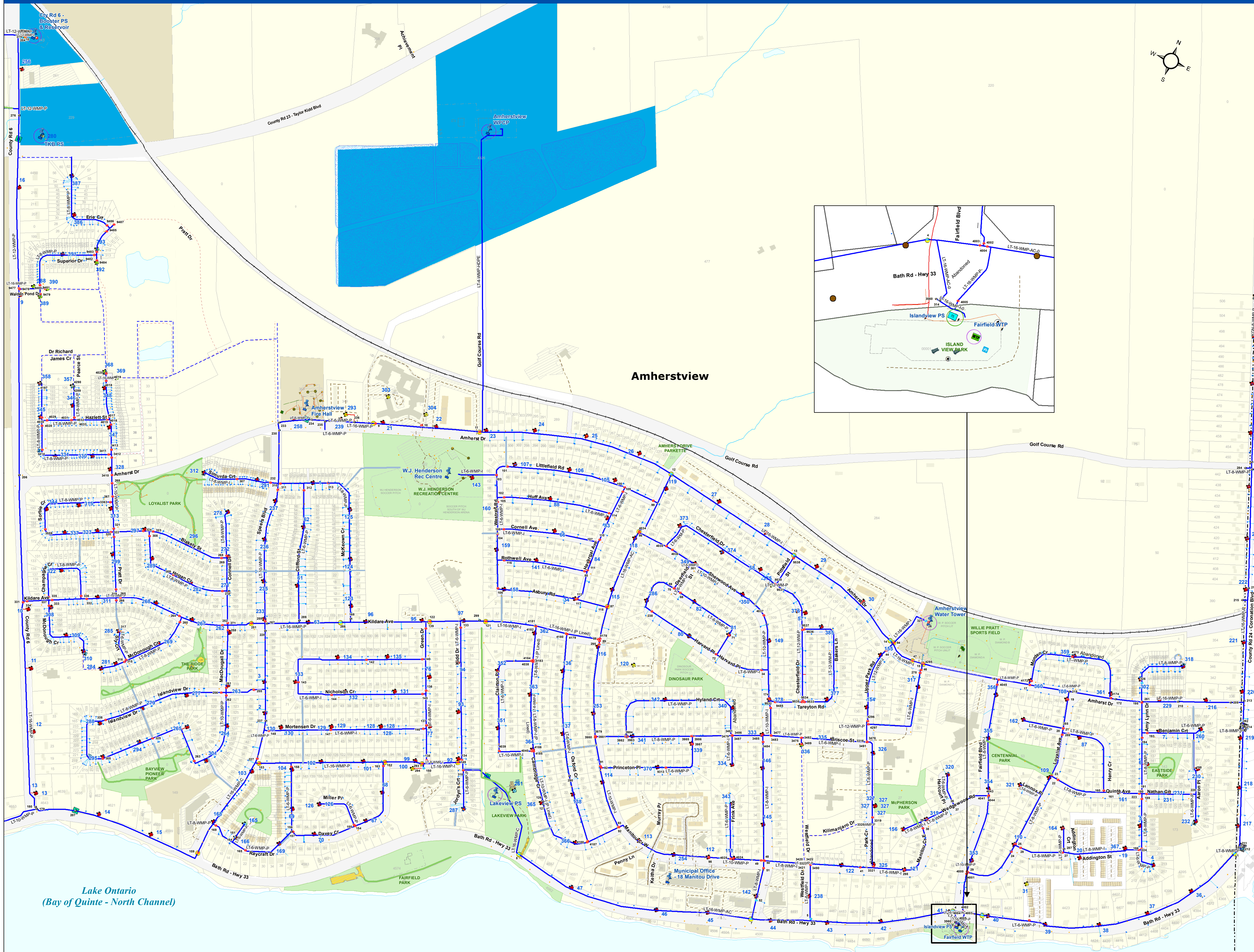






## B.5. Water System Maps

# AMHERSTVIEW WATER SYSTEM



- ### Legend
- Valve - Clockwise Open
  - Valve - Counter Clockwise Open
  - Valve - Unknown Direction
  - Curbstop
  - 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
  - Streetlights
  - Loyalist.DBO.FacilityFootprints
  - Sportsfield
  - ParkingLot
  - Fire Hall
  - Water Pollution Control Plant
  - Water Tower
  - Pumping Station
  - Water Treatment Plant
  - City Rd 6 - Booster PS & Reservoir
  - W.J. Henderson Recreation Centre
  - Fire Hydrant
  - Fire Hydrant - Temporary
  - Private Fire Hydrant
  - Yard Hydrant
  - Water Service
  - Hydrant Lead
  - Blowoff Lead
  - Sampling Station Lead
  - Sampling Stations
  - Diversion Chamber
  - Drain Chamber
  - Meter Chamber
  - Valve Chamber
  - Active Watermain 1
  - Proposed Watermain
  - Disposed Watermain
  - Walkway - Parks
  - Walkway - Public Works
  - Future Road
  - Private Road
  - Private Lane - Emergency Access
  - Loyalist Township Boundary
  - Properties
  - Parks
  - Township Property
  - Utility Department Property
  - Sewage Lagoons
  - PLC (Programmable Logic Controller)
  - PLC and Communication

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

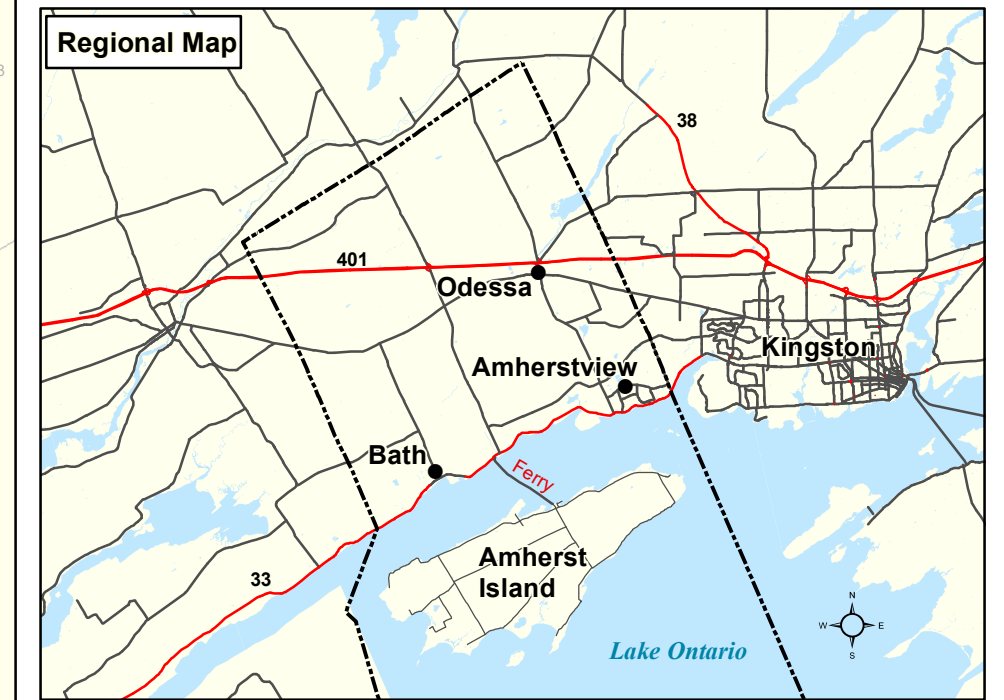


Production Date: January 6, 2022  
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Land Information Ontario

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Lake Ontario  
(Bay of Quinte - North Channel)

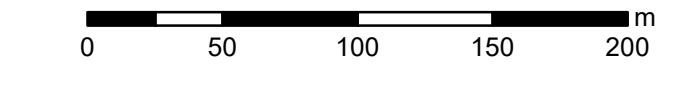
# ODESSA WATER SYSTEM



## 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

<sup>1</sup> Watermain labels adhere to standards published by the Canadian Standards Association (CSA).



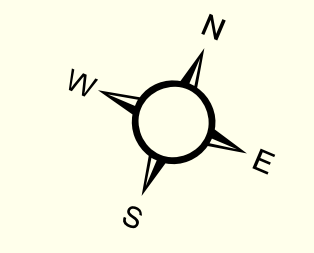
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P.O. Box 70, 263 Main Street  
Odessa, Ontario  
K0H 2H0  
613-386-7351

Production Date: January 6, 2022

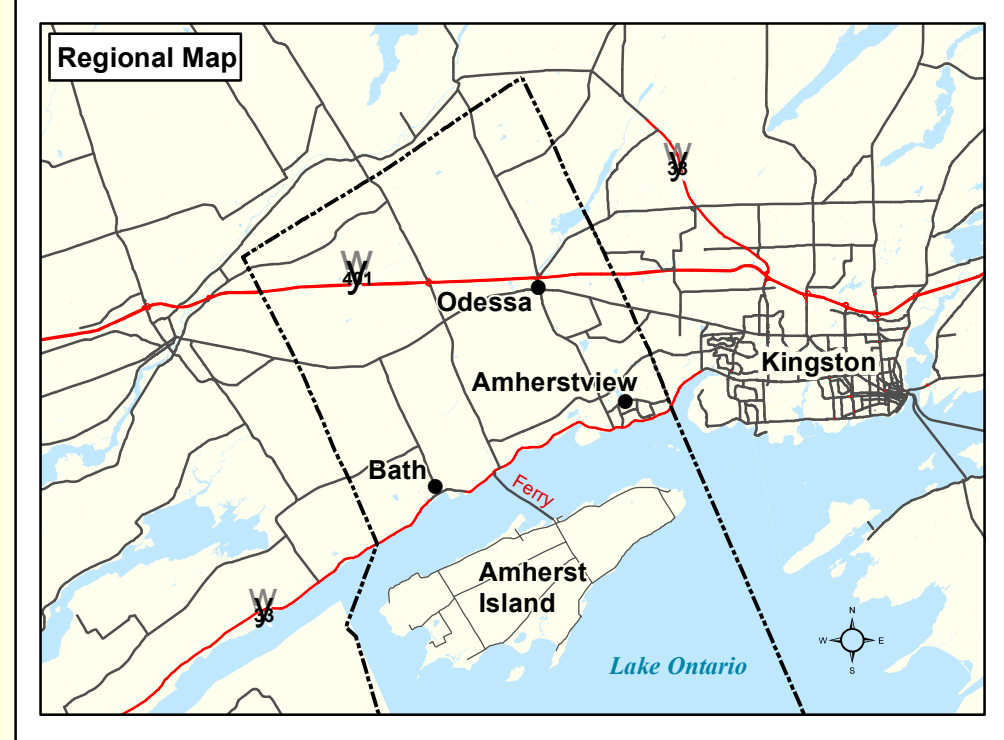
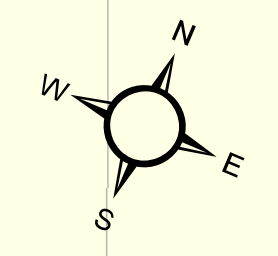
Datum/Projection: Nad 83, UTM 18

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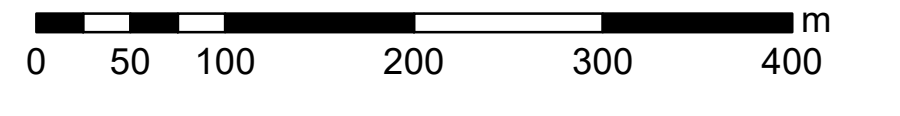
# BATH WATER SYSTEM



## 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)

<sup>1</sup> Watermain labels adhere to standards published by the Canadian Standards Association (CSA).



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 Land Information Ontario

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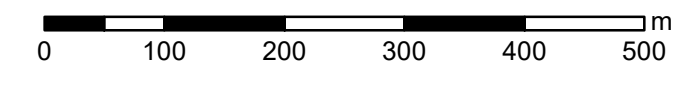
# HIGHWAY 33 - WATER SYSTEM



## 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
- 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

<sup>1</sup> Watermain labels adhere to standards published by the Canadian Standards Association (CSA).



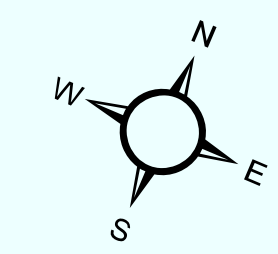
GIS Services - IT Division  
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Lake Ontario  
 (Bay of Quinte - North Channel)



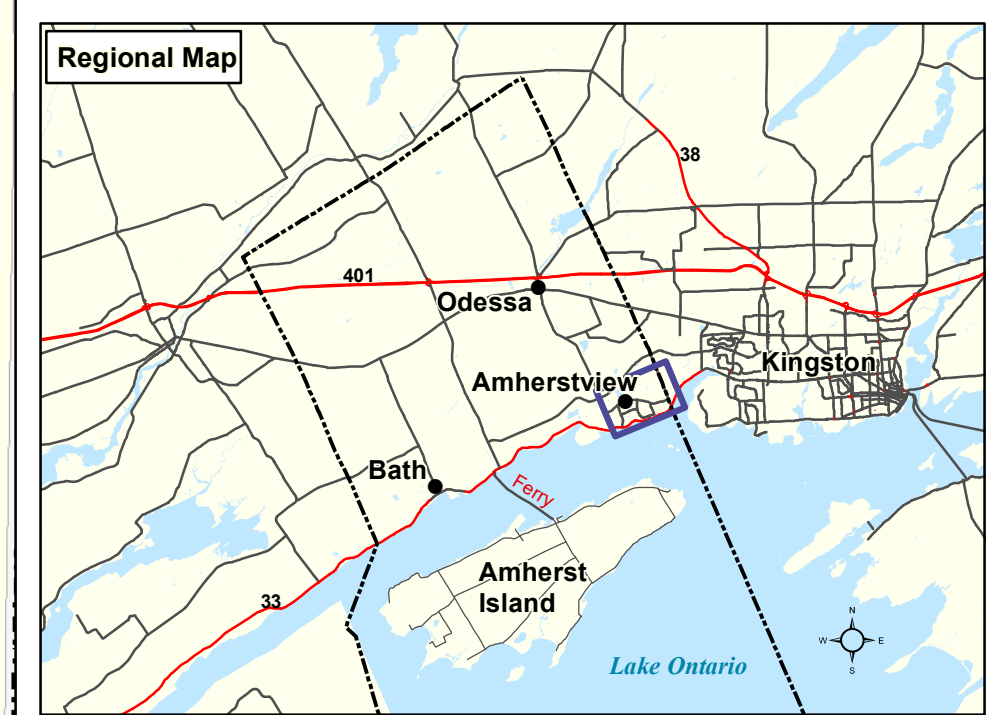
Nicholson Point

10  
 11  
 12  
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## B.6. Sewer System Maps

# AMHERSTVIEW SANITARY COLLECTION SYSTEM



### Legend

- Manhole
- Walkway - Parks
- Walkway - Public Works
- Fire Hall
- Water Tower
- Cty Rd 6 - Booster PS & Reservoir
- W.J. Henderson Recreation Centre
- PLC (Programmable Logic Controller)
- PLC and Communication
- Facility/Footprints
- Sportsfield
- Seaw Lagoons
- Storm Ponds
- Loyalist Township Boundary
- Future Road
- Private Road
- Private Lane - Emergency Access
- Intake Protection Zone - 1km around Intake & 12 m on shore
- Intake Protection Zone 2 - 2 hour travel time to Intake
- Parks
- Properties
- Air Release Valve
- ByPass
- Diversion Chamber
- Pumping Station
- Valve Chamber
- Water Pollution Control Plant

0 100 200 300 400 m

### 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

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Corporate Services  
 IT Division  
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# ODESSA SANITARY COLLECTION SYSTEM



## Legend

- Fire Hall
- Water Tower
- Municipal Office
- Manhole

## Sanitary Auxilliary Equipment

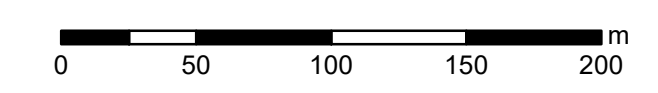
- TYPE**
- ByPass
  - Meter
  - Pumping Station
  - Walkway - Parks

## 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

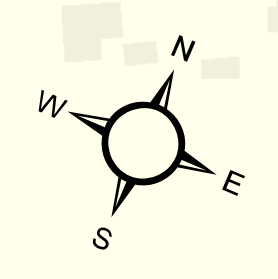


Infrastructure Services Department  
 Engineering Division  
 P.O. Box 70, 283 Main Street  
 Odessa, Ontario  
 K0H 2H0  
 613-366-7351

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# 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

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- Walkway - Parks
- 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

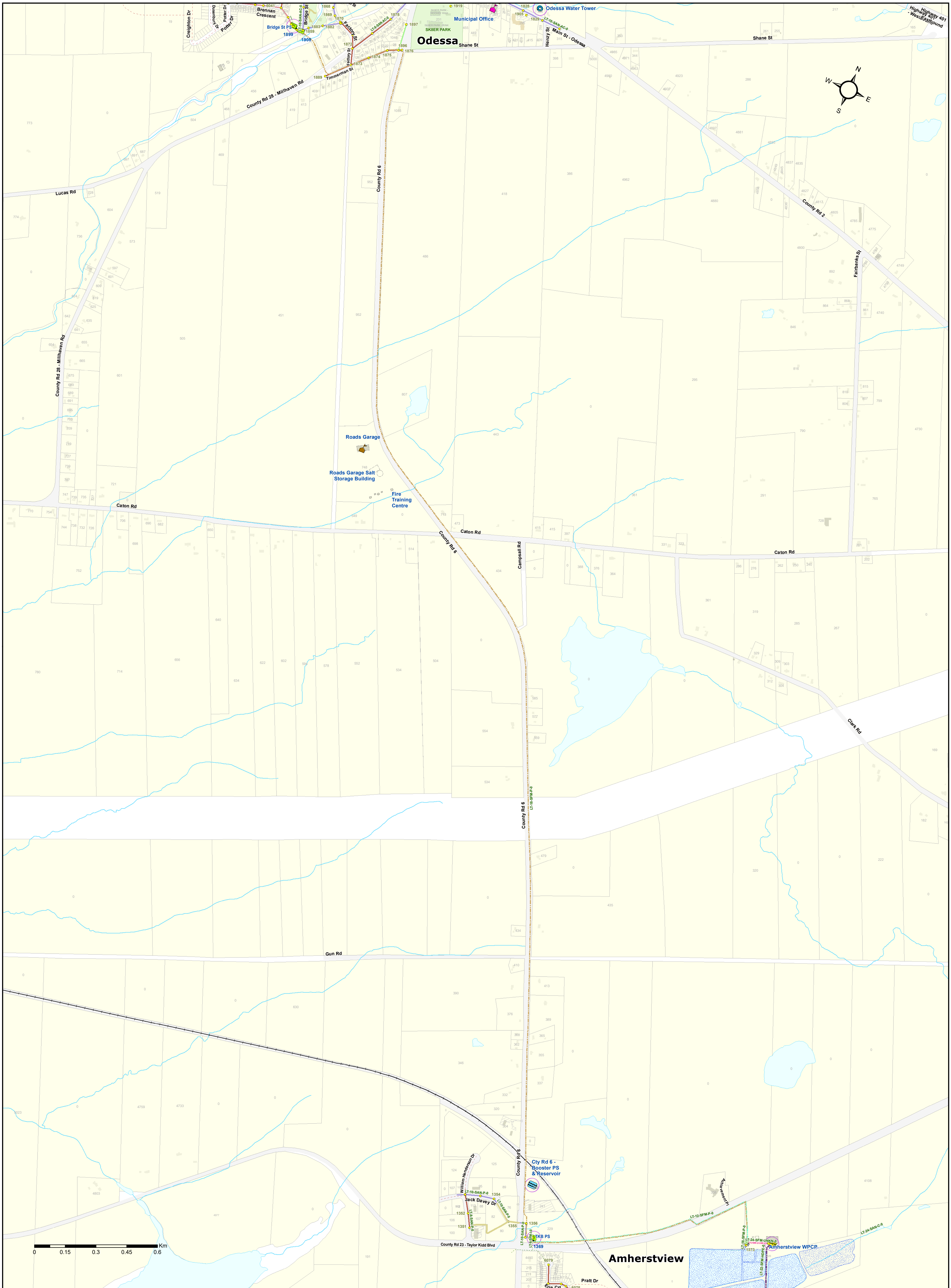
### Legend

- ### Sanitary Sewers
- Diversion 600 mm
  - Forcemain 150 mm
  - Forcemain 300 mm
  - Forcemain 450 mm
  - Forcemain 550 mm

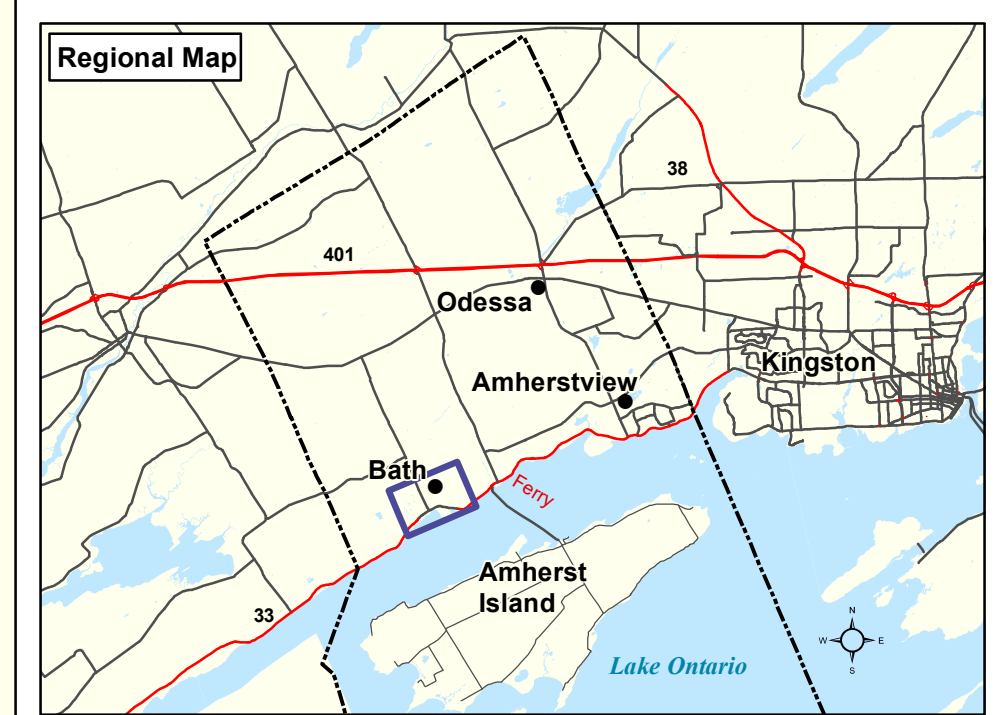
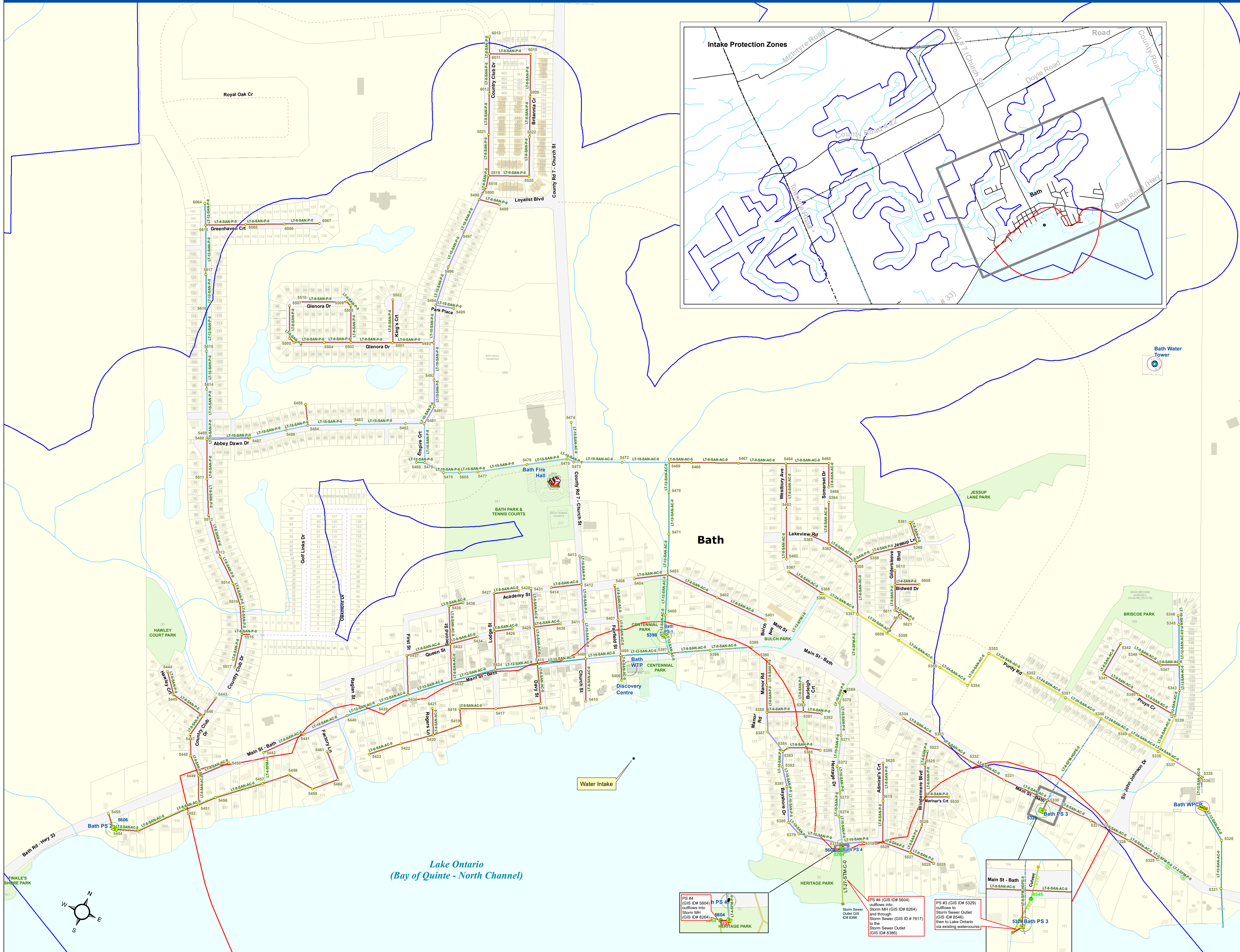
- Forcemain 600 mm
- Sewer 150 mm
- Sewer 200 mm
- Sewer 250 mm
- Sewer 375 mm
- Sewer 450 mm
- Proposed Sewer
- FacilityFootprints

### Sportsfield - Maintenance Level

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



# BATH SANITARY COLLECTION SYSTEM



- ### 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 Auxiliary 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

**Loyalist Township**  
Corporate Services  
IT Division  
P.O. Box 70, 283 Main Street  
Odessa, Ontario  
K0H 2H0  
613-366-7351

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## **APPENDIX C – ANNUAL REQUIREMENTS AND 10-YEAR CAPITAL PLANS**

# Appendix C - 10-Year Capital Plans

Tax-funded - Road Network												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Gravel Roads	-	90,000	64,900	-	1,053,900	-	-	-	-	-	-	1,208,800
HCB Roads	2,583,100	6,991,000	5,180,100	2,374,600	2,526,000	803,400	82,900	109,200	5,465,700	4,037,000	91,500	30,244,600
LCB Roads	207,400	1,844,700	1,943,900	1,999,100	3,082,700	364,400	1,899,100	746,700	69,200	2,048,000	423,100	14,628,300
Road Guiderails	-	-	-	-	-	-	-	-	-	-	-	-
Sidewalks/Curbs	-	-	308,200	-	-	-	400	-	14,200,200	-	-	14,508,800
Signs	127,800	74,000	168,100	12,600	900	1,000	252,400	16,700	23,400	15,100	5,100	697,100
Streetlights	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Road Network</b>	<b>2,918,400</b>	<b>8,999,700</b>	<b>7,665,200</b>	<b>4,386,300</b>	<b>6,663,500</b>	<b>1,168,800</b>	<b>2,234,800</b>	<b>872,600</b>	<b>19,758,500</b>	<b>6,100,100</b>	<b>519,700</b>	<b>61,287,600</b>

Tax-funded - Bridges & Culverts												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Bridges	12,000	-	-	-	-	-	58,900	-	-	5,102,600	7,076,400	12,249,900
Culverts	-	-	-	-	-	-	66,700	629,300	-	-	-	696,000
<b>Total Bridges &amp; Culverts</b>	<b>12,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>125,600</b>	<b>629,300</b>	<b>-</b>	<b>5,102,600</b>	<b>7,076,400</b>	<b>12,945,900</b>

Tax-funded - Storm Network												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Cross Culverts	2,300,900	123,300	-	125,600	73,800	21,900	603,400	752,100	234,800	68,900	81,400	4,386,100
Driveway Culverts	3,428,100	-	-	-	-	-	-	-	-	-	-	3,428,100
Catchbasins	12,000	-	32,000	60,000	-	4,000	40,000	-	-	-	-	148,000
Storm Manholes	-	-	18,000	45,000	-	-	-	-	-	-	-	63,000
Storm Mains	106,200	-	1,757,400	599,600	-	33,100	-	49,100	-	-	-	2,545,400
Storm Water Management Facilities	-	28,300	-	-	-	-	-	-	-	-	-	28,300
<b>Total Storm System</b>	<b>5,847,200</b>	<b>151,600</b>	<b>1,807,400</b>	<b>830,200</b>	<b>73,800</b>	<b>59,000</b>	<b>643,400</b>	<b>801,200</b>	<b>234,800</b>	<b>68,900</b>	<b>81,400</b>	<b>10,598,900</b>

Tax-funded - Buildings												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Corporate Services	-	197,600	-	9,300	-	7,100	-	-	470,600	-	-	684,600
Emergency Services	-	67,700	411,700	47,400	-	-	-	141,100	28,400	18,100	3,000	717,400
Recreation Services	486,700	250,400	974,500	402,800	876,800	1,684,700	41,500	185,100	105,300	65,700	127,500	5,201,000
Transportation Services	-	716,200	-	77,000	-	6,200	48,800	-	56,100	-	29,600	933,900
Waste Management Services	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Buildings</b>	<b>486,700</b>	<b>1,231,900</b>	<b>1,386,200</b>	<b>536,500</b>	<b>876,800</b>	<b>1,698,000</b>	<b>90,300</b>	<b>326,200</b>	<b>660,400</b>	<b>83,800</b>	<b>160,100</b>	<b>7,536,900</b>

Tax-funded - Machinery, Furniture, and Equipment												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Corporate Services	-	173,400	50,700	30,600	242,700	53,300	50,500	93,400	41,900	-	107,100	843,600
Emergency Services	-	-	-	125,900	26,300	16,300	119,200	68,000	164,500	167,700	71,400	759,300
Recreation Services	5,900	109,100	282,200	190,600	7,500	265,300	-	105,200	85,700	130,300	299,100	1,480,900
Transportation Services	10,000	346,400	11,300	358,800	836,200	82,200	-	478,000	250,700	66,500	304,500	2,744,600
Waste Management Services	-	-	-	-	-	-	-	-	234,000	517,500	-	751,500
<b>Total Machinery &amp; Equipment</b>	<b>15,900</b>	<b>628,900</b>	<b>344,200</b>	<b>705,900</b>	<b>1,112,700</b>	<b>417,100</b>	<b>169,700</b>	<b>744,600</b>	<b>776,800</b>	<b>882,000</b>	<b>782,100</b>	<b>6,579,900</b>

# Appendix C - 10-Year Capital Plans

Tax-funded - Fleet												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Emergency Services	1,022,000	-	1,100,000	850,000	400,000	875,000	-	50,000	1,450,000	50,000	-	5,797,000
Transportation Services	-	775,000	475,000	680,000	565,000	720,000	-	300,000	679,600	600,000	-	4,794,600
Building Services	-	120,000	60,000	-	-	-	-	-	-	-	-	180,000
Recreation & Facilities Services	-	60,000	60,000	60,000	-	120,000	60,000	-	60,000	60,000	-	480,000
Total Annual Requirement	963,900	963,900	963,900	963,900	963,900	963,900	963,900	963,900	963,900	963,900	963,900	-
<b>Total Fleet</b>	<b>1,022,000</b>	<b>955,000</b>	<b>1,695,000</b>	<b>1,590,000</b>	<b>965,000</b>	<b>1,715,000</b>	<b>60,000</b>	<b>350,000</b>	<b>2,189,600</b>	<b>710,000</b>	<b>-</b>	<b>11,251,600</b>

Tax-funded - Land Improvements												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Siteworks - Parks	131,500	-	-	54,200	2,300	-	214,400	-	-	-	20,100	422,500
Play Structures	99,700	-	-	-	-	-	47,800	-	-	-	24,400	171,900
Outdoor Recreation	56,900	-	-	380,800	-	-	172,700	-	-	528,500	-	1,138,900
Boat Ramps & Docks	-	-	-	-	-	-	-	-	-	-	-	-
Siteworks - Other	480,800	56,900	409,000	92,600	-	29,800	110,300	-	-	22,100	70,500	1,272,000
<b>Total Land Improvements</b>	<b>768,900</b>	<b>56,900</b>	<b>409,000</b>	<b>527,600</b>	<b>2,300</b>	<b>29,800</b>	<b>545,200</b>	<b>-</b>	<b>-</b>	<b>550,600</b>	<b>115,000</b>	<b>3,005,300</b>

All Tax-funded Assets												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Road network	2,918,400	8,999,700	7,665,200	4,386,300	6,663,500	1,168,800	2,234,800	872,600	19,758,500	6,100,100	519,700	61,287,600
Bridges & Culverts	12,000	-	-	-	-	-	125,600	629,300	-	5,102,600	7,076,400	12,945,900
Storm Network	5,847,200	151,600	1,807,400	830,200	73,800	59,000	643,400	801,200	234,800	68,900	81,400	10,598,900
Buildings	486,700	1,231,900	1,386,200	536,500	876,800	1,698,000	90,300	326,200	660,400	83,800	160,100	7,536,900
Fleet	1,022,000	955,000	1,695,000	1,590,000	965,000	1,715,000	60,000	350,000	2,189,600	710,000	-	11,251,600
Machinery, Furniture, and Equipment	15,900	628,900	344,200	705,900	1,112,700	417,100	169,700	744,600	776,800	882,000	782,100	6,579,900
Land Improvements	768,900	56,900	409,000	527,600	2,300	29,800	545,200	-	-	550,600	115,000	3,005,300
<b>Total Tax-funded assets</b>	<b>11,071,100</b>	<b>12,024,000</b>	<b>13,307,000</b>	<b>8,576,500</b>	<b>9,694,100</b>	<b>5,087,700</b>	<b>3,869,000</b>	<b>3,723,900</b>	<b>23,620,100</b>	<b>13,498,000</b>	<b>8,734,700</b>	<b>113,206,100</b>

# Appendix C - 10-Year Capital Plans

User-funded - Water System												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Hydrants	50,500	-	-	20,200	30,300	-	-	50,500	60,600	10,100	20,200	242,400
Valves	-	-	-	-	-	-	-	4,300	-	-	-	4,300
Water Meters	751,100	24,500	50,400	39,900	132,300	241,500	275,100	147,700	212,100	421,400	170,100	2,466,100
Water Mains	2,296,900	-	7,038,400	5,094,100	1,397,200	951,900	1,568,000	398,600	-	-	-	18,745,100
Treatment Facilities	276,000	-	1,017,800	242,100	468,000	305,100	209,900	707,600	1,737,600	131,800	886,100	5,982,000
Distribution Facilities	370,700	76,000	-	78,900	-	122,700	135,500	-	414,800	301,100	-	1,499,700
<b>Total Annual Requirement</b>	<b>3,745,200</b>	<b>100,500</b>	<b>8,106,600</b>	<b>5,475,200</b>	<b>2,027,800</b>	<b>1,621,200</b>	<b>2,188,500</b>	<b>1,308,700</b>	<b>2,425,100</b>	<b>864,400</b>	<b>1,076,400</b>	<b>28,939,600</b>

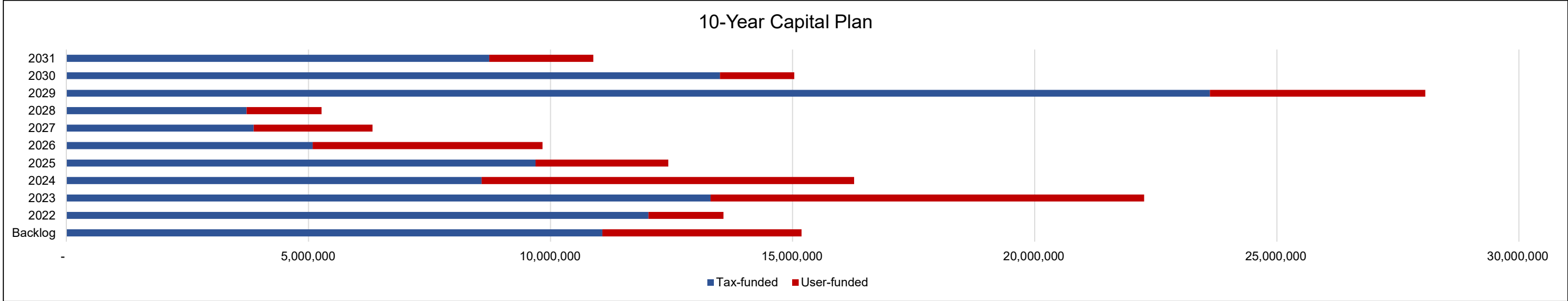
User-funded - Sewer System												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Sewer Manholes	-	-	68,800	137,600	-	-	-	-	-	-	-	206,400
Sewer Mains	-	-	582,400	1,166,400	662,700	-	-	-	-	-	-	2,411,500
Treatment Facilities	276,500	471,500	125,200	670,000	-	2,721,700	6,300	-	1,741,200	9,900	91,500	6,113,800
Collection Facilities	-	872,900	12,400	62,000	45,900	222,800	-	240,000	191,300	660,400	983,500	3,291,200
<b>Total Annual Requirement</b>	<b>276,500</b>	<b>1,344,400</b>	<b>788,800</b>	<b>2,036,000</b>	<b>708,600</b>	<b>2,944,500</b>	<b>6,300</b>	<b>240,000</b>	<b>1,932,500</b>	<b>670,300</b>	<b>1,075,000</b>	<b>12,022,900</b>

Other User-funded Assets												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Buildings	16,800	-	-	-	-	-	126,100	-	-	-	-	142,900
Machinery & Equipment	73,800	42,800	-	-	-	-	15,100	-	88,400	-	-	220,100
Fleet	-	60,000	60,000	180,000	-	180,000	120,000	-	-	-	-	600,000
<b>Total Annual Requirement</b>	<b>90,600</b>	<b>102,800</b>	<b>60,000</b>	<b>180,000</b>	<b>-</b>	<b>180,000</b>	<b>261,200</b>	<b>-</b>	<b>88,400</b>	<b>-</b>	<b>-</b>	<b>963,000</b>

All User-funded Assets												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Water System	3,745,200	100,500	8,106,600	5,475,200	2,027,800	1,621,200	2,188,500	1,308,700	2,425,100	864,400	1,076,400	28,939,600
Sewer System	276,500	1,344,400	788,800	2,036,000	708,600	2,944,500	6,300	240,000	1,932,500	670,300	1,075,000	12,022,900
Other user-funded assets	90,600	102,800	60,000	180,000	-	180,000	261,200	-	88,400	-	-	963,000
<b>Total User-funded Assets</b>	<b>4,112,300</b>	<b>1,547,700</b>	<b>8,955,400</b>	<b>7,691,200</b>	<b>2,736,400</b>	<b>4,745,700</b>	<b>2,456,000</b>	<b>1,548,700</b>	<b>4,446,000</b>	<b>1,534,700</b>	<b>2,151,400</b>	<b>41,925,500</b>

# Appendix C - 10-Year Capital Plans

All Asset Categories												
Subcategory	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Tax-funded	11,071,100	12,024,000	13,307,000	8,576,500	9,694,100	5,087,700	3,869,000	3,723,900	23,620,100	13,498,000	8,734,700	113,206,100
User-funded	4,112,300	1,547,700	8,955,400	7,691,200	2,736,400	4,745,700	2,456,000	1,548,700	4,446,000	1,534,700	2,151,400	41,925,500
<b>Total Asset Categories</b>	<b>15,183,400</b>	<b>13,571,700</b>	<b>22,262,400</b>	<b>16,267,700</b>	<b>12,430,500</b>	<b>9,833,400</b>	<b>6,325,000</b>	<b>5,272,600</b>	<b>28,066,100</b>	<b>15,032,700</b>	<b>10,886,100</b>	<b>155,131,600</b>



## 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 Value 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.	<p>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.</p> <p>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.).</p>
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.

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## 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 Value.

**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 a:

- 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, and 2019.

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