



# 2024 Asset Management Plan



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# 1 Executive Summary

The Township of Drummond/North Elmsley (the Township) was incorporated in 1998 with the merging of the Townships of Drummond and North Elmsley. The Township is in central Lanark County and has a population of approximately 8,183 according to the 2021 Census.

## 1.1 Purpose of the Report

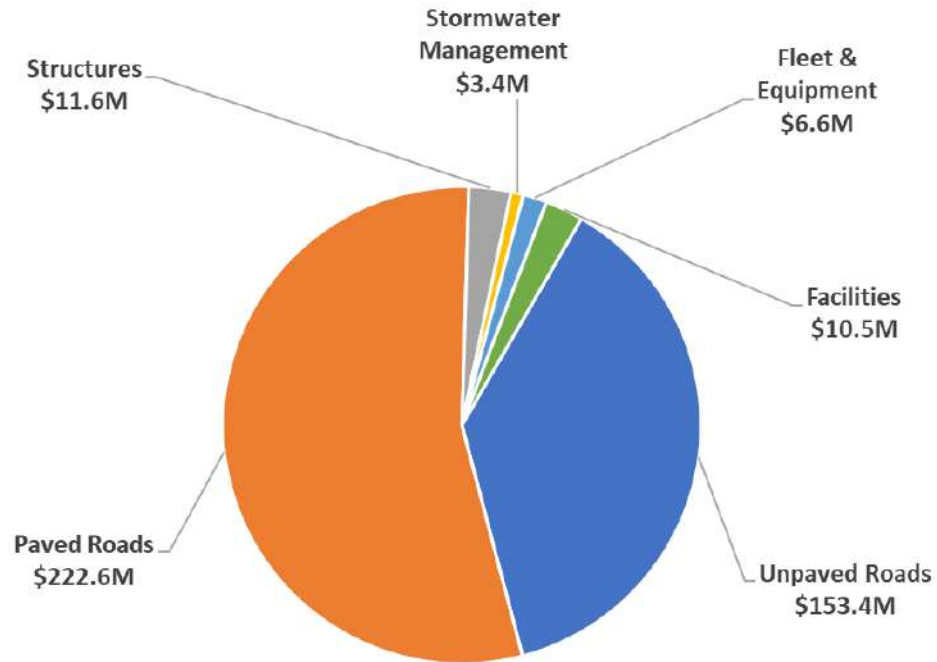
The goal of asset management is to maximize asset value while delivering good services, which requires finding the right balance between levels of service, risks, and costs. Therefore, a good asset management system is necessary for delivering the Township's strategic vision, goals, and service objectives at costs the taxpayer can afford.

The Township of Drummond/North Elmsley's 2024 Asset Management Plan (AMP) is a technical and financial report outlining the 10-year infrastructure investments required to maintain good, reliable community services at affordable rates. This report is also required to meet July 1, 2024, requirements of *O. Reg 588/17, Asset Management Planning for Municipal Infrastructure*.

## 1.2 Overview

The 2024 AMP focuses on paved and unpaved roads, bridges, major and minor culverts, storm sewers, fleet, and equipment which comprises 18 asset classes worth an estimated \$408.0 million (2024 values excluding land). Note that facilities are not included in this Asset Management Plan and will be addressed in the next version of the plan later in 2024.

Figure 1.2.1: Infrastructure Replacement Value Summary



### 1.3 State of the Infrastructure

Figure 1.3.1 illustrates the overall state of the Township’s infrastructure which is “Good” with 77% of the assets rating “Good” or “Very Good.” Figure 1.3.2 further breaks down the infrastructure state by condition and performance as measured by the Current Asset Levels of Service. Overall, 49% of the assets’ condition and 87% of the assets’ performance are in a “Good” or “Very Good” state.

Figure 1.3.1: The Township’s Overall Current State of the Assets

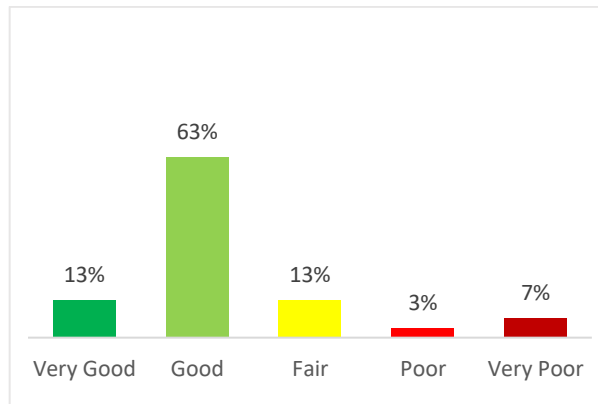
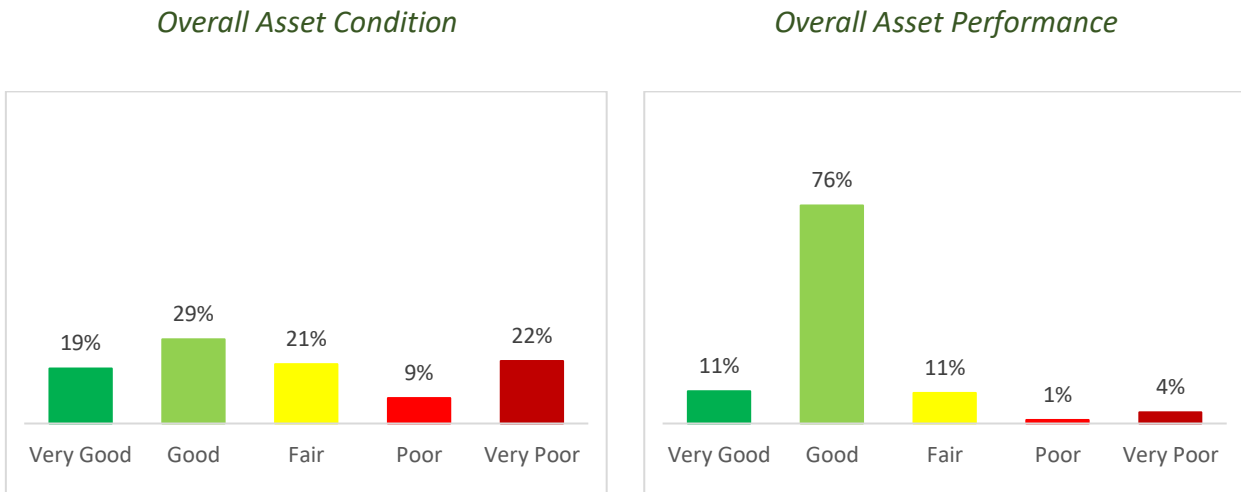


Figure 1.3.2: The Township’s Overall State of Asset Condition and Performance



The “Good” state of the Township’s infrastructure is the result of good asset management practices, fiscal prudence, and maximizing the use of taxpayers’ funds and government grants. The challenge going forward will be sustaining the “Good” state of the assets and services in the face of many pressures including:

- Keeping taxes and user fees affordable while addressing growing infrastructure needs
- Climate change
- Increased demands for services
- Static population growth and revenue sources
- The unpredictability of receiving infrastructure grants

#### 1.4 Infrastructure Investments and Analysis

Figure 1.4.1 outlines the annual operating, and capital expenditures required over ten years to meet the Township’s Current and Proposed Technical Levels of Service and compares those expenditure requirements against the Township’s historical 6-year average of capital expenditures and the operating investments in the 2024 budget. As illustrated by figure 1.4.1, there are gaps between the historical annual average expenditures and the projected expenditures required to maintain Current Technical Levels of Service and achieve Proposed Technical Levels of Service. Note that historical expenditures on building and property assets are not included in in this analysis.

Figure 1.4.1: Ten-year annual financing needs to meet Current and Proposed Levels of Service

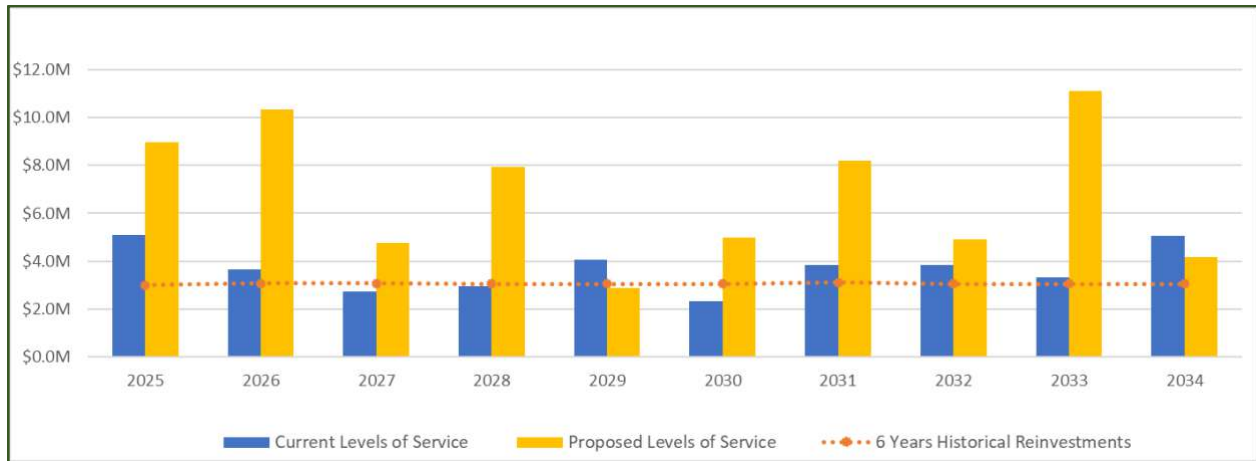


Table 1.4.3 sums up the 10-year operating and capital requirements to maintain Current Technical Levels of Service and achieve Proposed Technical Levels of Service. The total 10-year infrastructure funding gap is the difference between:

- The infrastructure needs to achieve the Current and Proposed Technical Levels of Service (excluding building and property assets)
- The Township’s historical 6-year average of annual capital investments plus the 2024 operating investments projected over the next 10 years (in 2024 values).

As Table 1.4.3 indicates, the Township’s historical levels of spending fall short of meeting both Current Technical Levels of Service and Proposed Technical Levels of Service by \$6.2 million and \$27.7 million respectively. Affordably achieving the Proposed Technical Levels of Service is not feasible in the 10-year timeframe; however, the Township is close to being able to financially sustain its Current Technical Levels of Service.

Table 1.4.3: 10-year Financing Needs to Meet Current and Proposed Technical Levels of Service

LOS Targets	10-year Operating Needs	10-year Capital Needs	Total 10-year Needs	Historical Investments <sup>1</sup>	Total 10-year Infrastructure Funding Gap <sup>2</sup>	Var. <sup>3</sup>	SI <sup>4</sup>
Current LOS	\$16.2M	\$20.5M	\$36.7M	\$30.6M	\$6.2M	16.8%	0.8
Proposed LOS	\$21.1	\$47.1M	\$68.2M	\$30.6M	\$27.7M	40.7%	0.6

\*Based on Township’s historical 6-year average of capital expenditures and the operating investments in the 2024 budget.

Notes:

1. Historical investments are based on the Township’s 6-year average of annual capital investments plus the 2024 operating investments projected over the next 10 years (in 2024 values).

2. The 10-year infrastructure funding gap is the difference between the required expenditures to meet Current and Proposed Technical Levels of Service and the Township's historical 6-year average projected over 10 years.
3. The infrastructure funding gap measured as a % variance.
4. The Sustainability Index (S.I.) measures the adequacy of the Township's historical 6-year average projected over 10 years to sustain the current and proposed levels of service. To be sustainable, a municipality should achieve a minimum index of 0.9.

### **Moving Forward**

The Sustainability Index (SI), which measures the adequacy of the Township's historical spending averaged over the next 10 years, is currently at 0.8. To financially sustain its infrastructure targets, a municipality should achieve a minimum Sustainability Index of 0.9.

The full 10-year funding gap to sustain Current Technical Levels of Service can be attributed to shortfalls in average capital investments. Operating investment levels are adequate. Therefore, if the Township increases its historical levels of capital investments to reduce its 10-year gap by at least \$5.6 million, then the Township could achieve the minimum sustainability target of 0.9 (excluding building and property needs). The Township should, however, continue working toward or utilizing some Proposed Technical Levels of Service where matters of safety, efficiency, and better service and asset management outcomes are evident.

The Township's financial goal is to achieve a balance between good services and good assets that are affordable at acceptable levels of risk; therefore, the Township's financing strategy will prioritize closing the infrastructure funding gap to maintain Current Technical Levels of Service. In the coming months the Township intends to complete a financial strategy (which would also include the implications of buildings and property) that considers a mix of options including affordable revenue increases, borrowing, partnership opportunities and seeking grants from the provincial and federal governments.

### **1.5 Conclusions**

1. The current state of the infrastructure is "Good."
2. The Township cannot affordably achieve its Proposed Asset Levels of Service within the 10-year timeframe of the Asset Management Plan.
3. To make the Current Technical Levels of Service financially sustainable, the Township will need to increase its historical capital expenditures over the next ten years, such that it reduces its infrastructure funding gap by at least \$5.6 million (not including building and property investments).
4. The currently 'Good' state of the Township's infrastructure provides it with time and flexibility to phase in tax increases to sustain its Current Technical Levels of Service.
5. The Township intends to complete a financial strategy that considers a mix of options including affordable revenue increases, borrowing and seeking funding grants from the provincial and federal governments.
6. The Township is progressing toward developing organizational asset management expertise.

## 1.6 Recommendations

1. That Council approves the 2024 Asset Management Plan to comply with *O. Reg 588/17, Asset Management Planning for Municipal Infrastructure*.
2. The Township prioritizes making Current Technical Levels of Service financially sustainable within the 10-year timeframe of the Asset Management Plan.
3. The Township completes a financial strategy that considers a mix of options including affordable revenue increases, borrowing, and seeking funding grants from the provincial and federal governments.
4. The 2024 Asset Management Plan be used as the basis to inform the 2025 budget and forecast.
5. That the Asset Management Plan be used as part of the annual budget planning process.
6. Processes be developed and implemented for the annual update of the budget and forecast and the Asset Management Plan.
7. The Data Management Plan be implemented.
8. The Township continues to build in-house asset management capacity and expertise.
9. The Township undertakes a climate change adaptation strategy.



## 2 Asset Management at the Township

### 2.1 What is Asset Management?

The ISO 55000 for Asset Management defines asset management as: “the coordinated activity of an organization to realize value from assets.”

In other words, asset management is the integration of policy, practices, and processes to balance lifecycle costs, affordability, and risks with desired levels of service to maximize asset value in the pursuit of achieving the municipality’s service objectives. Asset management requires the expertise of people in engineering, operations, finance, technology, and frontline services, all supported by the right systems and software. Comprehensive asset management also provides decision-makers with the information that they need to understand the impacts of their decisions on the ability to deliver services across all the municipality’s assets.

### 2.2 The State of the Township’s Asset Management Program

The Township recognizes that comprehensive asset management is the best way to affordably address the most pressing asset needs. The Township has developed a program of policies, practices, and processes that support comprehensive asset management planning and decision-making including:

- An approved Asset Management Policy formalizing the Township’s commitment to asset management.
- The collection of asset data and development of data management plans to maintain asset information such as asset attributes, acquisition costs, useful service life, current asset condition and performance ratings, repair and maintenance history, technical levels of service targets, capital and operating lifecycle costs, etc.
- The organization of the infrastructure into asset hierarchies that draw a line-of-sight between the assets and the public services that depend on those assets.
- An Asset Register organized by the asset hierarchies containing the most relevant and reliable asset information.
- Community Levels of Service aligned with Township service objectives and the Strategic Plan.
- Current and proposed Technical Levels of Service that define the assets’ operating and capital requirements, define targets to provide community services, and enable identification of asset maintenance, repair, and replacement needs.
- A risk management strategy to identify risks to public services due to asset deficiencies and to prioritize asset repairs and replacements.
- The implications of climate change on infrastructure, services, and asset management practices.
- Documentation of asset lifecycle strategies and costs for long-range planning of operating and capital investment plans.
- A 10-year Asset Management Plan that is compliant with Ontario’s Asset Management Regulation (O. Reg 588/17) and aligns with the Township’s Strategic Plan.

- Development of staff knowledge and expertise to continuously improve the organization’s asset management program.

### 2.3 The Asset Management Plan within the Township’s Planning Framework

Figure 2.3.1: Relationship of the Asset Management Plan to other Township Plans



As Figure 2.3.1 illustrates, the Strategic Plan sets the course for the Township’s planning and operations every four years including the Asset Management Plan (AMP). Table 2.3.1 summarizes the alignment between the Township’s five current strategic priorities and the outcomes of the 2024 AMP.

Table 2.3.1 - Analysis of the Alignment between the Strategic Plan and the Asset Management Plan (AMP)

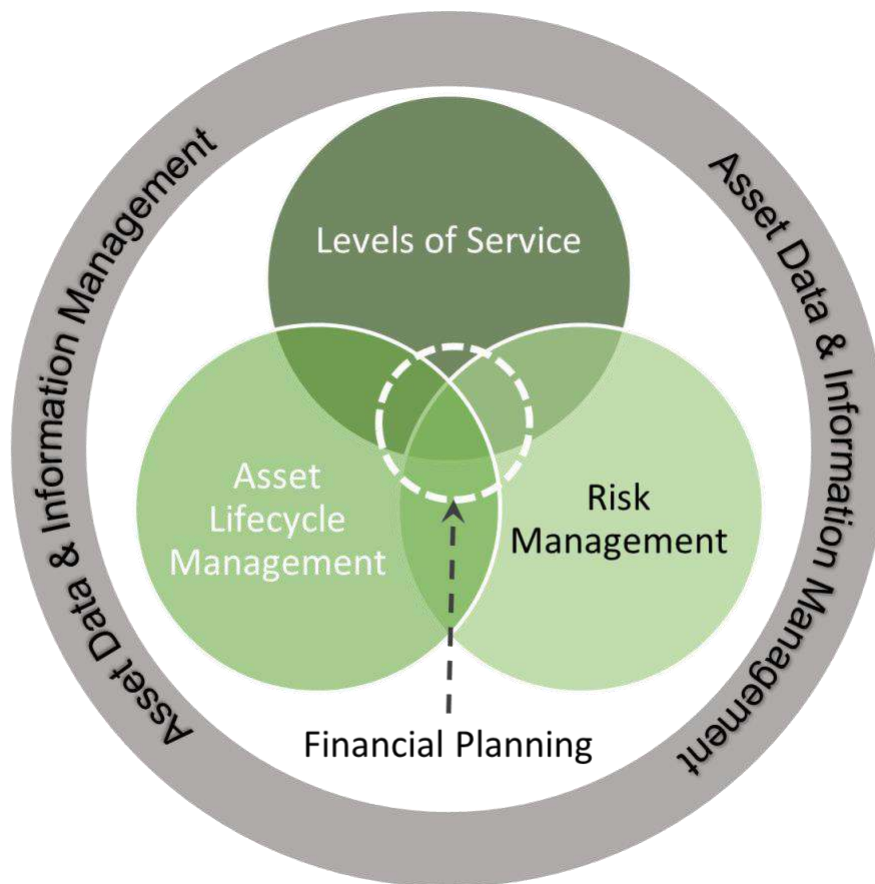
#	Strategic Goals	What it Means	How it is Addressed in the AMP
1	Financial Sustainability	Aligning financial planning with the Strategic Plan including ensuring that services and service levels meet Council’s objectives.	The AMP reflects the community services provided to the residents of the Township and sets out the asset Technical Levels of Service and costs necessary to provide these Community Levels of Service.
2	Well Maintained Assets	Ensuring that financial planning and multi-year budgeting can sustainably maintain assets to provide desirable community services.	The AMP provides a 10-year asset investment plan to fund the requirements to maintain Community Levels of Service and asset Technical Levels of Service.
3	Managed growth that protects and respects our rural heritage and natural environment	Growth is managed in a way that maintains the Township’s rural character, green spaces, and healthy lakes and rivers.	The Community Levels of Service and asset Technical Levels of Service in the AMP reflect the character of the community and provide a blueprint for the design of new, growth-related assets.
4	Efficient and responsive delivery of municipal services	Keeping pace with the expectations of our residents in an ever-changing environment of legislative and technical and advances.	The Community Levels of Service and asset Technical Levels of Service in the AMP reflect the expectations of the residents. As customer expectations change, so does the AMP.
5	Thriving local economy	Encourage an environment that fosters employment and entrepreneurship and creates wealth for the community.	Economic growth relies on sound infrastructure and good community services. The AMP identifies the asset requirements to provide that foundation.

### 3 Corporate Asset Management Strategy

The Township uses a Corporate Asset Management Strategy to guide the practices and processes for asset management planning. The Township’s Corporate Asset Management Strategy focuses on the integrated coordination of practices and processes in five key areas:

1. Levels of Service
2. Risk Management
3. Asset Lifecycle Management
4. Financial Planning
5. Technology, Data, and Information Management

*Figure 2.3.1: The Township’s Corporate Asset Management Strategy*



### 3.1 Levels of Service

The Township’s approach to levels of service is to create meaningful measures that describe the quality, quantity, and value of services received by the community and the asset requirements to deliver the services. The Township’s approach to establishing levels of service measures are designed to achieve the following outcomes:

- Desired service levels that are aligned with the Strategic Plan.
- There is a line-of-sight between the community services and the asset requirements to deliver the services (“line-of-sight” in the context of asset management is the ability to draw a direct correlation between asset conditions and the service and risk outcomes that those assets provide)
- Informs the current and future state of the infrastructure.
- Informs asset priorities.
- Set reasonable levels of control to manage risk.
- Informs selection of the most practical asset lifecycle strategies.
- Informs operating and capital investment requirements.
- The measures are limited to what is necessary for decision-making and planning.

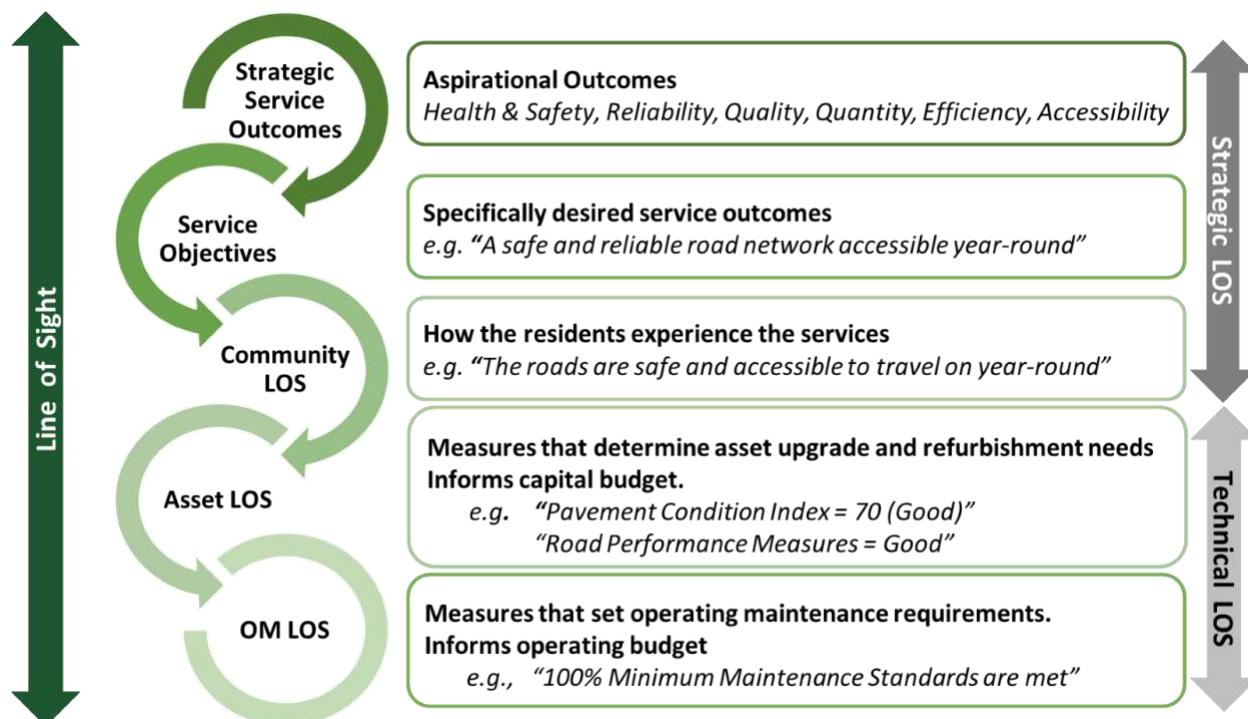
Figure 3.1.1: Key Outcomes of the Township’s Approach to Levels of Service



## Levels of Service Alignment

The Township has organized the levels of service into a hierarchal framework that distinguishes the levels of service types and functions and creates a line-of-sight between services to the community and the assets' technical requirements to deliver community services. Figure 3.1.2 illustrates the levels of service hierarchy using roads as an example.

Figure 3.1.2: The Township's Level of Service Hierarchy (Roads Example)



## Defining the Township's Levels of Service Types

### Community Levels of Service

Community Levels of Service (CLOS) are non-technical measures describing the residents' service experience. To a large extent the desired service experience is informed by Council and the Township's Strategic Plan. The Township's CLOS reflecting Strategic Plan goals can be found in Section 4 of the AMP.

### Technical Levels of Service

Technical Levels of Service (TLOS) measure the technical requirements of the assets to provide desired CLOS. The Township's TLOS are divided into two categories:

## 1. Asset Levels of Service

The Township’s Asset Levels of Service (ALOS) are measures of the assets’ condition and performance requirements to provide adequate CLOS and are used to identify capital project requirements to restore or replace assets. The Township’s ALOS measures, criteria and targets have been derived from industry best practices, regulations, design guidelines and/or Council directives.

As summarized on Table 3.1.1, the Township divides ALOS into two categories:

- a) **Condition ALOS** measure the physical “health” of the assets and their ability to function. This is a key measure that determines how much longer assets can continue to provide services, what actions are required to restore the assets and when.
- b) **Performance ALOS** measure the assets’ ability to provide sufficient service safety, quality, quantity, reliability, accessibility, and/or resiliency to external threats. The Township uses four performance ALOS measures:
  - Operational Functionality,
  - Capacity to Meet Demands,
  - Operational Resiliency
  - Environmental Resiliency.

Each of the four performance ALOS are supported by criteria unique to each asset type that are used to measure specific asset requirements.

*Table 3.1.1: The Township’s Asset Levels of Service Categories and Measurement Attributes*

Asset Levels of Service	Measurement Attributes Using Industry Measures, Ministry Design Guidelines, Regulations, & Other Precedents
Condition	Physical state of the asset measured by condition rating systems: <ul style="list-style-type: none"> <li>• PCI, BCI, FCI, PACP, “Very Good” to “Very Poor,” etc.</li> </ul>
Operational Functionality	<ul style="list-style-type: none"> <li>• Efficiency and effectiveness of service delivery.</li> <li>• Ability to meet minimum current design and/or safety requirements.</li> <li>• Level of operational problems experienced and whether they affect community services.</li> <li>• Compliance with current Regulations and/or Standards (including the level of “grandfathering”).</li> <li>• Whether all required elements are present.</li> <li>• Relevance and effectiveness of technology.</li> <li>• Efficiency of resource consumption.</li> </ul>
Capacity to Meet Demands	<ul style="list-style-type: none"> <li>• To what degree capacity satisfies current demands and minimum community service levels.</li> <li>• Level of operational problems experienced.</li> <li>• Are there noticeable negative impacts on community service levels or stakeholders.</li> </ul>
Operational Resiliency	<ul style="list-style-type: none"> <li>• To what degree minimum service requirements are maintained/protected with back-up systems, spare capacity, or alternative supply.</li> <li>• To what extent the assets are secure from acts of vandalism, trespassing, theft, assault, or terrorism.</li> </ul>

Environmental Resiliency	<ul style="list-style-type: none"> <li>• To what extent the assets are resilient to environmental stresses (e.g., impacts from wind, fire, flooding, excessive rainfall/snowfall, etc.)</li> <li>• To what extent are the assets resilient to the impacts of climate change.</li> </ul>
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The Township’s current and proposed Condition and Performance ALOS measures and ratings can be found in Section 4 of the AMP and the predominant service outcomes tied to the different ALOS types are outlined in Appendix II.

## 2. Operating Maintenance Levels of Service

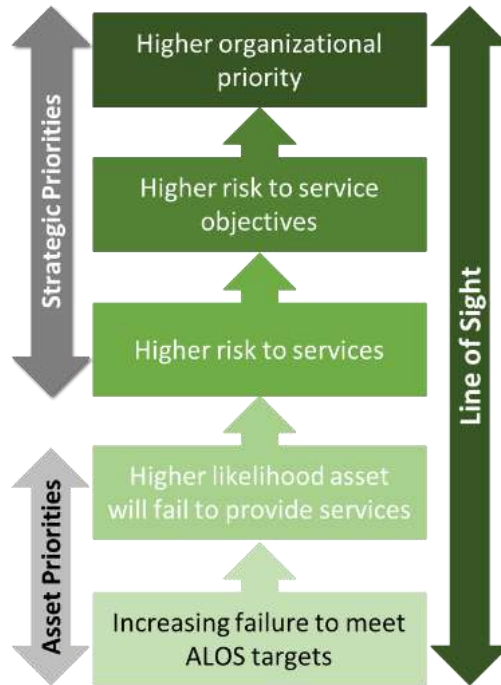
Operating Maintenance Levels of Service (OMLOS) provide the measures necessary to ensure assets can be fully utilized and service life is maximized. OMLOS set out the activities and requirements to inform the operating budget. The Township’s OMLOS measures, criteria, and targets have been derived from industry best practices and regulations. The Township’s current and proposed OMLOS measures and ratings can be found in Section 4 of the AMP.

### 3.2 Risk Management

The main objective of a municipality is to provide public services, and the purpose of assets are to facilitate service delivery. Therefore, understanding asset risk should not be limited to the assets themselves, but should include an understanding of how the risk will affect services and the municipality’s strategic service objectives. For this reason, the Township’s approach to risk management is to utilize enterprise risk management, a methodology that assesses asset risk relative to the impact it will have on the achievement of corporate service objectives. For example, roads that are rough and too narrow will cause a higher risk to achieving a service objective of “good transportation services.”

As Figure 3.2.1 illustrates, the higher the asset risks, the higher the risks to corporate service objectives; therefore, it is also a higher priority for these risks to be addressed through asset management actions.

Figure 3.2.1: The Corporate Risk Hierarchy



Risk can never be eliminated, only managed. Therefore, a balance must be achieved between ensuring adequate and sustainable services while accepting a reasonable level of risk. ALOS dictate likelihood of failure; therefore, the selection of reasonable ALOS targets will provide reasonable levels of risk management.

Enterprise risk management provides a means to consistently evaluate and prioritize different assets, asset classes, and ALOS across the organization and is the foundation of the Township's risk management strategy, which is summarized in Figure 3.2.2.

Figure 3.2.2: Key Aspects of the Township’s Risk Management Approach



### **The Risk Management Framework**

Risk is defined by ISO 31000 as the “*effect of uncertainty on objectives*” and is a function of *consequence of failure X likelihood of failure*.

The application of enterprise risk management for asset management requires the consistent use of consequence and likelihood of failure measures that are applied corporately to all asset classes.

### ***Consequences (Impact) of Failure***

The Township uses a triple bottom line (social, financial, environmental) approach to assess the consequences of an asset failing to meet its ALOS targets (Table 3.2.1). When assessing the potential consequences to health and safety, community services, finances, the environment, and municipal reputation, the Township considers whether the severity of impact due to asset failure is Very Low, Low, Moderate, High, or Very High. The criteria used to assess consequence severity was developed by staff based on their expertise and experiences managing the Township’s assets and finances. The Township’s full consequence table is included in Appendix III.

Table 3.2.1: Township’s Consequences of Failure Categories

Consequence Categories	What is Assessed
Health and Safety	Considers the impacts to the health and safety of the public and municipal staff including potential mental and physical injury, illness, and loss of life as a result of asset failure, impairment, malfunction, underperformance, insufficiency, or misuse.
Community Services	Considers the impacts to infrastructure integrity, community service functions, and municipal operations as a result of asset failure, impairment, malfunction, underperformance, or insufficiency.
Financial	Considers the impacts to municipal finances including: <ul style="list-style-type: none"> <li>• Unplanned capital and operating costs and associated revenue losses, to address and correct unexpected asset failures, impairments or malfunctions.</li> <li>• Avoidable operating costs and associated revenue losses from deficient or underperforming assets.</li> <li>• Compensation for revenue losses, litigation, liabilities or fines from asset failure, impairment, underperformance or insufficiency.</li> </ul>
Environment	Considers the impacts to the natural environment as a result of asset failure, impairment, malfunction, underperformance, or insufficiency.
Reputation	Consider the impacts to the image and reputation of the Township, Council, and staff as a result of asset failure, impairment, malfunction, underperformance, or insufficiency.

**Likelihood (Probability) of Failure**

The Township has set ALOS targets to manage its asset risks. The likelihood of asset failure is related to how closely the assets meet their ALOS targets: the closer the assets are to their ALOS targets, the less likely they will fail and therefore, the less risk to the municipality’s service objectives. As Figure 3.2.3 illustrates, the likelihood of failure and asset risk can change as the condition of assets change over time.

Figure 3.2.3: The Relationship between ALOS and Risk

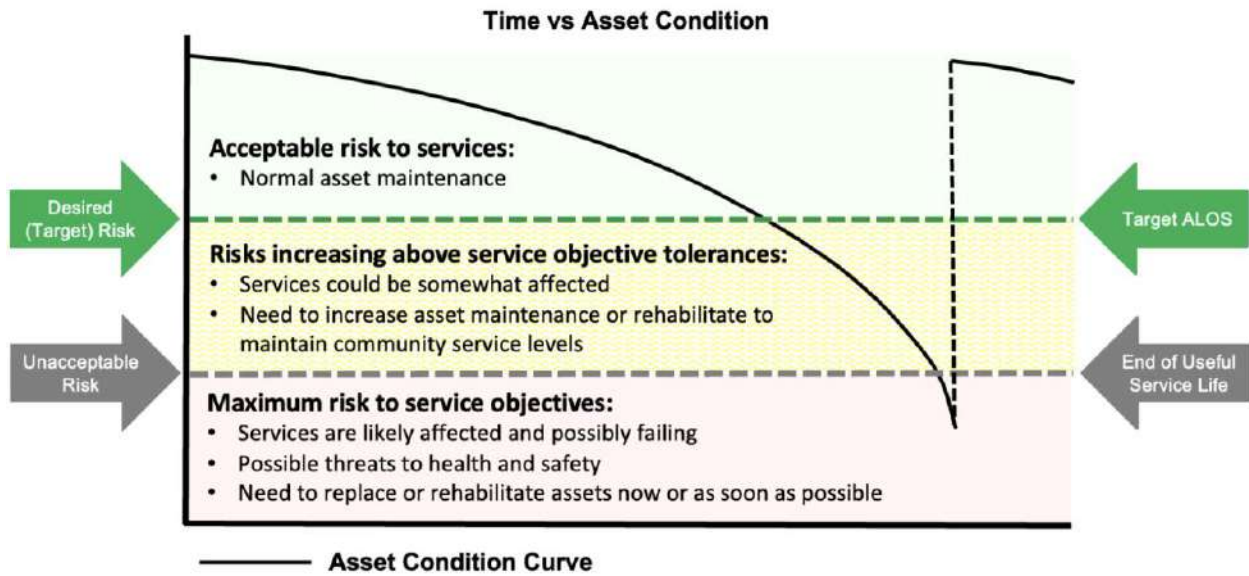


Table 3.2.2 below outlines the relationships between ALOS and likelihood of failure. Since asset conditions change over time due to wear and tear, condition-related likelihood of failure is estimated both in terms of a timeframe and a percent likelihood. Performance-related likelihood of failure is not necessarily time sensitive (e.g., size, capacity, volume, output) and therefore, is represented as a percent likelihood only.

Table 3.2.2 Relationships between Asset Levels of Service and Likelihood of Failure

Asset Level of Service and Corresponding Likelihood of Failure								
Condition Levels of Service				Performance Levels of Service				
ALOS Measures	Corresponding Likelihood of Failure Measures			ALOS Measures	Corresponding Likelihood of Failure Measures			
	Likelihood of Failure Ratings	Estimated Timeframe	% Likelihood of Failure		ALOS Rating	Likelihood of Failure Ratings	% Likelihood of Failure	
Varies by asset type and rating method	Very Good to Good	>20 yrs.	<10%	1. Operational Functionality	Very Good	Very Unlikely	<10%	
				2. Capacity to Meet Demands				
	Good to Fair	11-20 yrs.	10%-30%	3. Operational Resiliency		Good	Unlikely	10%-30%
	Fair to Poor	6-10 yrs.	30%-60%	4. Environmental Resiliency		Fair	Possible	30%-60%
	Poor to Very Poor	1-5 yrs.	60%-90%			Poor	Likely	60%-90%

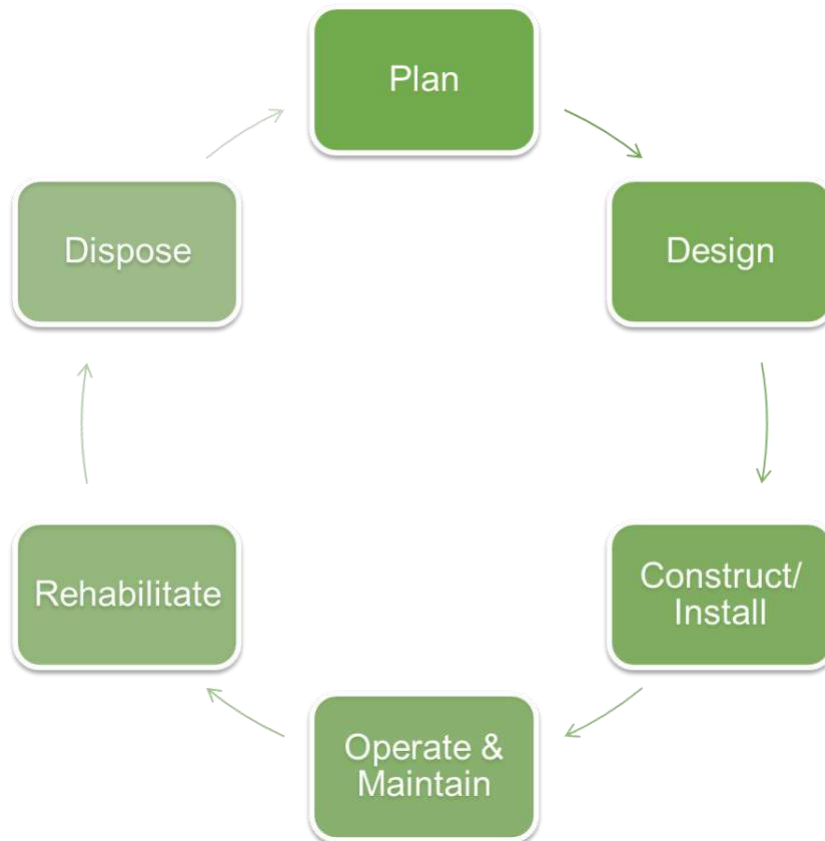
Asset Level of Service and Corresponding Likelihood of Failure							
Condition Levels of Service				Performance Levels of Service			
ALOS Measures		Corresponding Likelihood of Failure Measures		ALOS Measures		Corresponding Likelihood of Failure Measures	
Very Poor to Failed	Very Likely or Certain	<1 yr.	>90%		Very Poor	Very Likely or Certain	>90%

The Township’s risk assessment process, risk profiles, ALOS and Asset Class risk priorities can be found in Section 5 of the AMP.

### 3.3 Asset Lifecycle Management

Asset lifecycle strategies vary by asset type and can differ by municipality. Figure 3.3.1 illustrates the many stages of a typical asset lifecycle. At each stage the Township must consider the best strategies to maximize asset value to the community and how to continuously improve the strategies as available funding and regulations change, new technology and materials become available, and the effects of climate change become more apparent.

Figure 3.3.1: The Typical Asset Lifecycle



The Township also relies on asset lifecycle strategies to guide the most effective means to achieve asset TLOS and risk targets which in turn provides a forecast of asset investment requirements. Figure 3.3.2 summarizes the many of the aspects of asset lifecycle management at the Township and how it integrates with other aspects of the Township’s Corporate Asset Management Strategy.

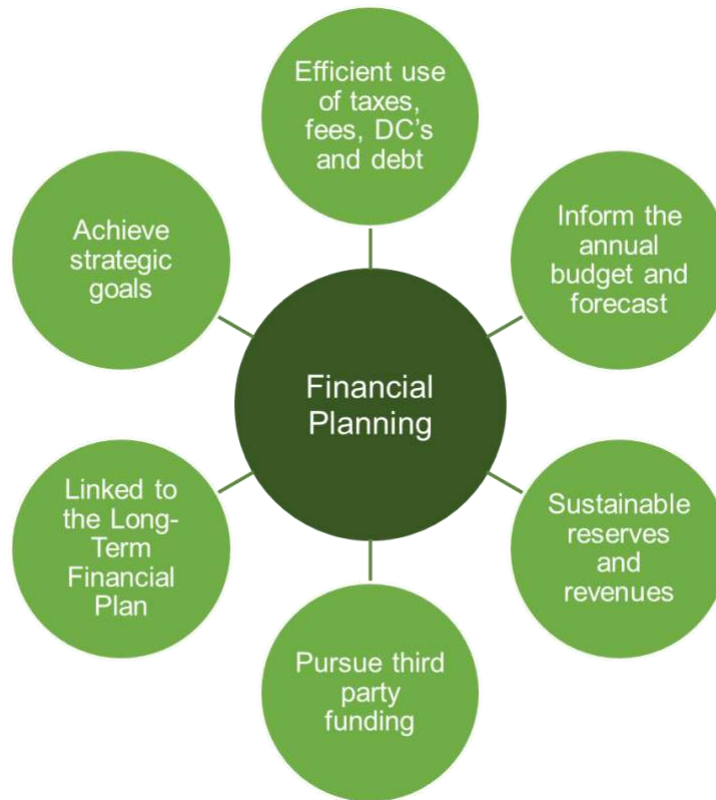
Figure 3.3.1: Key Aspects of the Township’s Approach to Asset Lifecycle Management



### 3.4 Financial Planning

The Township’s planning for infrastructure investments is directed toward balancing asset sustainability and desired levels of service at acceptable risk while maintaining affordability for the taxpayer. The 10-year financial plan is incorporated into the Long-Term Financial Plan and forms the basis of the Township’s annual non-growth infrastructure-related budget and forecast. Figure 3.4.1 summarizes many of the aspects of the Township’s financial planning for asset management. The recommended levels of infrastructure investments to maintain current TLOS and achieve proposed TLOS can be found in Section 8 of the AMP.

Figure 3.4.1: Key Aspects of the Township's Financial Planning for Asset Management



### 3.5 Technology, Data and Information Management

Adequate and accurate data and information is the foundation of asset management and instills confidence in decision-making and in the AMP. The key features of how asset data and information are managed at the Township are:

- CGIS Spatial Solutions is currently the Township's asset register and is the source for the most reliable asset information.
- A data management plan is maintained to guide the regular collection and maintenance of reliable asset data and information.
- Data collection and management is costly and therefore, the Township focuses on what is necessary to adequately inform asset management planning.
- Asset hierarchies are used to organize the Township's assets and data for 'line-of-sight' decision making between asset needs and service objectives.

Figure 3.5.1: The Township's Data and Information Management Requirements



### Data Quality and Confidence

The Township recognizes the importance of good asset data and therefore, maintains a data management plan to collect and manage the necessary information. Data is continually being collected by staff for road conditions, ditches, signs, barriers, minor culverts, storm sewers, and much more. In addition, information is being provided by the Roads Needs Study and the bi-annual Bridge and Major Culvert Inspection Report. Table 3.5.1 provides an outline for measuring and rating the quality and confidence of data. This table is sourced from the *International Infrastructure Management Manual*, which is an internationally recognized and referenced document for asset management.

Using Table 3.5.1 as a guide, the current Data Confidence Grade for the Township is **Medium to High**. The Township's current data management plan, if implemented, is expected to achieve a confidence rating of **High to Very High** within the next 5 years.

Table 3.5.1 Data Confidence Grading Scale (Source IPWEA, 2015, IIMM, Table 2.4.6, p 2/71)

Data Confidence Grading Scale		
Confidence Grade	Reliability	Accuracy
Very High	Data based on sound records, procedures, investigations, and analysis, documented properly, and agreed as the best method of assessment.	Dataset is complete and estimated to be accurate $\pm$ 2%
High	Data based on sound records, procedures, investigations, and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation.	Dataset is complete and estimated to be accurate $\pm$ 10%
Medium	Data based on sound records, procedures, investigations, and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available.	Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated $\pm$ 25%
Low	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis.	Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy $\pm$ 40%
Very Low	None or very little data held.	

## 4 Levels of Service

O. Reg 588/17: Asset Management for Municipal Infrastructure stipulates reporting on prerequisite Community Levels of Service (CLOS) and Technical Levels of Service (TLOS) measures in Tables 1 to 5 of the regulation. To meet the requirements of the regulation, the Township has provided the required reporting for each of the asset categories in Appendices AI i to AI iii. Further to the regulatory requirements, the Township has established specific CLOS and TLOS that reflect the services it will provide to the community and the asset requirements to provide those services. The Township’s CLOS are guided by its Strategic Plan, and the current and proposed TLOS measures and targets are guided by regulations, industry standards, and best practices as they relate to the Township’s specific asset needs.

### Community Levels of Service

Community Levels of Service describe the services received by the residents and businesses of Drummond/North Elmsley. As outlined on Table 4.1, the CLOS and Service Objectives are connected to the Strategic Goals in the Township’s Strategic Plan.

Table 4 .1: Line-of-Sight between Township Strategic Goals and Community Levels of Service

Strategic Goals	Service Objectives	Community Levels of Service
<ul style="list-style-type: none"> <li>• Well Maintained Assets.</li> <li>• Efficient and responsive delivery of municipal services.</li> </ul>	<ul style="list-style-type: none"> <li>• A safe and reliable road network accessible year-round.</li> <li>• Efficient management of infrastructure and services.</li> <li>• Readily accessible and responsive services.</li> </ul>	<ul style="list-style-type: none"> <li>• The roads are safe and accessible to travel year-round.</li> <li>• The roads are kept in good condition and are comfortable to drive on.</li> <li>• Issues with road maintenance are addressed in a timely fashion.</li> <li>• The roads reflect the character of the community.</li> <li>• The roads provide fair value for services.</li> <li>• There is accountable and transparent management of the roads system.</li> <li>• The landfill site is safety and efficiently managed.</li> <li>• The landfill site is accessible and operational year-round.</li> <li>• Planning and by-law issues are addressed in a timely fashion.</li> </ul>

### Technical Levels of Service

The Township has identified current and proposed (target) TLOS for Roads, Bridges, Major Culverts, Minor Culverts, Storm Sewers, Fleet, and Equipment. The TLOS set minimum targets for asset condition, performance, and maintenance requirements to achieve CLOS and maximize asset value. The TLOS are divided into three categories as described on Table 4.2.

Table 4.2: The Township’s Technical Levels of Service Categories

TLOS Type	Description	Budget Planning Outcomes
Condition ALOS	Measures the physical or structural integrity of the assets.	Informs capital investment needs and occasionally operating maintenance investment needs.
Performance ALOS	Measures to ensure assets provide safe, adequate, efficient, reliable and accessible services.	Mainly informs capital investment needs and occasionally operating maintenance investment needs.
Operating Maintenance LOS	Measures to ensure the assets are properly maintained to maximize service lifespan and value and to provide year-round safe, efficient and accessible services.	Informs operating investment needs.

### 4.1 Roads

The Township’s Roads inventory includes High Class Bitumen (HCB), Low Class Bitumen (LCB) and gravel collector roads that service higher volumes of commuter traffic and HCB, LCB and gravel local roads that service lower volumes of local traffic. Table 4.1.1 summarizes the different road classes in the Township’s inventory and Map AI-i-1 in Appendix I illustrates the Township’s road network.

Table 4.1.1: The Township’s Roads Inventory

Asset Category	Asset Class	Inventory	Replacement Value (2024 Dollars in Millions)
Paved Roads	HCB Semi-Urban Local Roads	0.5 km	\$0.9
	HCB Rural Collector Roads	58.2 km	\$90.8
	HCB Rural Local Roads	73.2 km	\$114.1
	LCB Rural Collector Roads	7.0 km	\$11.0
	LCB Rural Local Roads	3.8 km	\$5.9
	<b>Sub-Total</b>	<b>142.7 km</b>	<b>\$222.6</b>
Gravel Roads	Collector Gravel Roads	8.1 km	\$10.3
	Local Gravel Roads	113.4 km	\$143.1
	<b>Sub-Total</b>	<b>121.5 km</b>	<b>\$153.4</b>
<b>Roads</b>	<b>Total</b>	<b>264.2 km</b>	<b>\$376.0</b>

### Roads Condition Asset Levels of Service Measures and Targets

Condition ALOS measure the physical integrity of the roads. Maintaining roads in good condition is necessary to achieve several important service objectives:

- Safety
- Accessibility and reliability
- Good surface quality and rideability
- Minimization of maintenance and rehabilitation costs

To measure the condition of the roads and set Condition ALOS targets, the Township uses a pavement condition index (PCI). The PCI is a typical industry measure to determine the current conditions of paved and unpaved roads and help predict when road restoration or reconstruction is required. The use of a PCI for gravel surfaces reflects similar surface distresses seen in paved surfaces and ensures a consistent condition measure across a municipality's entire road network.

The PCI uses a scale between 0 and 100 to rate the road conditions and is based on a visual assessment of surface deficiencies such as cracking and rutting, and the roughness of ride. The higher the PCI number, the better the pavement or gravel surface condition. Table 4.1.2 shows the Township's Road condition rating system and Map AI-i-2 in Appendix I shows the condition ratings for each road. The road condition ratings relative to the PCI ranges for each rating are generally typical for the industry and consistent with Ministry of Transportation of Ontario (MTO) guidelines.

*Table 4.1.2: The Township's Roads Condition Rating System*

Asset Classes	Pavement Condition Index (PCI) Ratings System				
	Very Good	Good	Fair	Poor	Very Poor
HCB Pavement – Collector Roads	> 80	70 – 80	51 – 69	45 – 50	< 45
HCB Pavement – Local Roads	> 80	65 – 80	46 – 64	40 – 45	< 40
LCB Pavement – Collector Roads	> 80	70 – 80	51 – 69	45 – 50	< 45
LCB Pavement – Local Roads	> 80	64 – 80	46 – 64	40 – 45	< 40
Collector Gravel Roads	> 80	70 – 80	45 – 69	35 – 44	< 35
Local Gravel Roads	> 80	64 – 80	41 – 64	30 – 40	< 30

### Current Condition of the Roads Assets

The Township has two major road classifications: Collector Roads and Local Roads. Collector Roads generally operate at higher speeds and carry higher volumes of commuter and commercial traffic than Local Roads and therefore, need to be managed to a higher PCI target. The Township

has set a target PCI of 70 for Collector Roads, which corresponds to a “Good” condition. Currently, the network average for Collector Roads is a PCI of 83.5 (Very Good). The Local Roads carry less traffic at lower speeds and therefore can be managed to a lower PCI target. The Township has set a target PCI of 65 for Local Roads, which also corresponds to a “Good” condition. Currently, the network average for Local Roads is a PCI of 68.5 (Good).

Once a section of road falls below the PCI target set by the Township, the ability to provide safe, cost-effective transportation services begins to decline and restorative actions such as resurfacing, re-gravelling, or reconstruction should be planned and/or implemented within a 10-year timeframe. Table 4.1.3 outlines the current and proposed (target) Condition ALOS for each of the Township’s Road Asset Classes.

*Table 4.1.3: The Township’s Current and Target Condition Asset Levels of Service for Roads.*

Road Asset Classes	Condition Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
HCB Semi-Urban Local	Pavement Condition Index	PCI = 35 (Very Poor)	PCI = 65 (Good)
HCB Rural Collector	Pavement Condition Index	PCI = 84.4 (Very Good)	PCI = 70 (Good)
HCB Rural Local	Pavement Condition Index	PCI = 67.4 (Good)	PCI = 65 (Good)
LCB Rural Collector	Pavement Condition Index	PCI = 76.7 (Good)	PCI = 70 (Good)
LCB Rural Local	Pavement Condition Index	PCI = 93.6 (Very Good)	PCI = 65 (Good)
Gravel Rural Collector	Pavement Condition Index	PCI = 65 (Fair)	PCI = 70 (Good)
Gravel Rural Local	Pavement Condition Index	PCI = 65 (Good)	PCI = 65 (Good)

**Roads Performance Levels of Service Measures and Targets**

The Township’s Performance ALOS categories, measures, and criteria for Roads are summarized on Table 4.1.4. The Township’s road performance criteria are based on regulations, typical industry design guidelines, and best practices.

*Table 4.1.4: Criteria Measured by the Township’s Performance Asset Levels of Service for Roads*

Level of Service	Target	Criteria Measured
Operational	Good	<ul style="list-style-type: none"> <li>Sufficiency of road platform widths (through lanes and shoulder</li> </ul>

Level of Service	Target	Criteria Measured
Functionality		<p>areas) to accommodate current traffic volumes, posted speeds, and road classification.</p> <ul style="list-style-type: none"> <li>• Adequacy of road structure (pavement/surface material and base) capacity to accommodate traffic volumes and loading.</li> <li>• Appropriate geometric designs and sightlines for posted speeds (vertical and horizontal alignments)</li> <li>• Adequacy of roadside protection (e.g., guardrails).</li> <li>• Adequacy of condition and regulatory compliance of existing roadside safety devices.</li> <li>• Adequacy of ditch conditions, design and road drainage.</li> </ul>
Capacity to Meet Demands	Good	<ul style="list-style-type: none"> <li>• Sufficient number of lanes to meet peak traffic volumes.</li> </ul>
Environmental Resiliency	Good	<ul style="list-style-type: none"> <li>• Adequacy of ditch capacity to accommodate design storms.</li> <li>• Adequacy of erosion protection where required.</li> </ul>

Table 4.1.6 outlines the current and target (proposed) Performance ALOS for each of the Township’s Road Asset Classes.

*Table 4.1.6: The Township’s Current and Target Performance Asset Levels of Service for Roads*

Road Asset Classes	Performance Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
HCB Semi-urban Local	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good
HCB Rural Collector	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good
HCB 1 Rural Local	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good

Road Asset Classes	Performance Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
LCB Rural Collector	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good
LCB Rural Local	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good
Gravel Rural Collector	Operational Functionality	Fair	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good
Gravel Rural Local	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good

**Improvements to Roads Performance Levels of Service**

Improvements to correct road performance deficiencies are ideally addressed at the time of a road reconstruction or a major resurfacing unless an overriding safety concern is present. Table 4.1.5 outlines the road performance improvements required to meet the proposed Performance ALOS which are reflected in the proposed 10-year capital plan (Appendix A) of the 2021 Roads Needs Study.

Table 4.1.5: Proposed Performance Asset Levels of Service Improvements

Level of Service Improved	Action	Performance ALOS Criteria Being Addressed
Operational Functionality	Reconstruct and pave gravel roads: <ul style="list-style-type: none"> <li>• Rideau Lakes Road – Best Lane to Elmgrove Road</li> <li>• Burns Road – Armstrong Road to Drummond Conc. 1</li> <li>• Spence Road – Drummond Conc. 1 to Drummond Conc. 2</li> <li>• Porter Road – Carroll Road to Glenview Road</li> </ul>	<ul style="list-style-type: none"> <li>• Sufficiency of road platform widths (through lanes and shoulder areas) to accommodate current traffic volumes, posted speeds and road classification.</li> <li>• Adequacy of road structure (pavement/surface material and base) capacity to accommodate traffic volumes and loading.</li> </ul>
Operational Functionality	Regrading roads and intersections: <ul style="list-style-type: none"> <li>• Rideau Lakes Road – Regrade Hill from 15% to 10%.</li> <li>• Richardson Side Road and County Road 10 (Intersection improvements).</li> </ul>	<ul style="list-style-type: none"> <li>• Appropriate geometric designs and sightlines for posted speeds (vertical and horizontal alignments).</li> </ul>
Operational Functionality	Horizontal re-alignments: <ul style="list-style-type: none"> <li>• Widenmaier Road – 90-degree corner.</li> <li>• Burns Road – Burns Road to Buttermilk Hill Road.</li> </ul>	<ul style="list-style-type: none"> <li>• Appropriate geometric designs and sightlines for posted speeds (vertical and horizontal alignments).</li> </ul>

**Roads Operating Maintenance Levels of Service Measures and Targets**

The Township’s current and target (proposed) OMLOS for roads are summarized on Table 4.1.6. The Township’s OMLOS targets are based on Provincial regulations and best practices.

Table 4.1.6: The Township’s Current and Target Operating Maintenance Levels of Service for Roads

Roads Operating Maintenance Levels of Service		
Activity	Current LOS	Proposed LOS
Road Patrols	Fully meets Minimum Maintenance Standards (O. Reg 239/02)	Fully meets Minimum Maintenance Standards (O. Reg 239/02)

Roads Operating Maintenance Levels of Service		
Activity	Current LOS	Proposed LOS
Shoulder Brushing/Maintenance	Every 10 years	Every 7 years
Shoulder Drop-off Repairs	Fully meets Minimum Maintenance Standards (O. Reg 239/02)	Fully meets Minimum Maintenance Standards (O. Reg 239/02)
Ditch Cleaning and Regrading	5 km/year	25 km/year
Sweeping	Once a year	Once a year
Snow Removal	Fully Meet Minimum Maintenance Standards (O. Reg 239/02)	Fully Meet Minimum Maintenance Standards (O. Reg 239/02)
Pavement Spot Repairs (potholes & cracks)	Fully meets Minimum Maintenance Standards (O. Reg 239/02)	Fully meets Minimum Maintenance Standards (O. Reg 239/02)
Gravel Road Re-graveling	Maintain the gravel roads network average at PCI = 65 (Good)	Maintain the gravel roads network average at PCI = 65 (Good)
Gravel Patch	200 Tonnes per year	700 Tonnes per year
Crack Sealing	Every 10 years after road resurfacing or reconstruction where pavement is above PCI = 80.	Every 5 years after road resurfacing or reconstruction where pavement is above PCI = 80
Line Painting	100% of roads every year	100% of roads every year
Dust Control	100% of roads once every year	100% of roads once every year
Roads Needs Study	Every 10 years (review every 5 years)	Every 10 years (review every 5 years)
Streetlight Repairs/Maintenance	Fully meets Minimum Maintenance Standards (O. Reg 239/02)	Fully meets Minimum Maintenance Standards (O. Reg 239/02)
Guardrail Installations	Not applicable	Fully meets MTO Roadside Design Manual
Guardrail Repairs	Repair existing (as-is)	Fully meets MTO Roadside Design Manual
Sign replacements	Fully meets Minimum Maintenance Standards (O. Reg	Fully meets Minimum Maintenance Standards (O. Reg

Roads Operating Maintenance Levels of Service		
Activity	Current LOS	Proposed LOS
	239/02) and Ontario Traffic Manual	239/02) and Ontario Traffic Manual
Traffic Counts (AADT)	Every 10 years	Every 5 years
Reflectivity Testing	Fully meets Minimum Maintenance Standards (O. Reg 239/02)	Fully meets Minimum Maintenance Standards (O. Reg 239/02)

## 4.2 Bridges and Major Culverts

The Township’s inventory includes five bridges and nine major culverts. Major culverts are culverts with a width or diameter greater than 3.0 metres. Culverts less than 3.0 metres are included and assessed as part of the Stormwater Management inventory in Section 4.3. Table 4.2.1 summarizes the Township’s Bridges and Major Culvert inventory and Map AI-ii-1 in Appendix I illustrates the locations of the structures.

Table 4.2.1: The Township’s Bridge and Major Culvert Inventory

Asset Category	Inventory	Replacement Value (2024 Dollars in Millions)
Bridges	5	\$7.1
Major Culverts (>3m)	9	\$4.5
<b>Structures Total</b>	<b>14</b>	<b>\$11.6</b>

### Bridge and Major Culvert Condition Asset Levels of Service Measures and Targets

Condition ALOS measure the integrity of the bridges and major culverts. Maintaining bridges and major culverts in good condition is necessary to achieve several important service objectives:

- Safety
- Accessibility and reliability
- Good surface quality and rideability
- Minimization of maintenance costs

To measure the condition of the bridges and major culverts and set Condition ALOS targets, the Township uses a bridge condition index (BCI). The BCI is a typical industry measure to determine the current conditions of the structures and help predict when repairs and restorations are required.

The BCI uses a scale between 0 and 100 to rate the structures’ conditions and is based on a visual assessment of structural deficiencies such as cracking, spalling, corrosion, scouring, barrier/guardrail damage, and erosion. The higher the BCI number, the better the structure’s

condition. Table 4.2.2 shows the Township’s Bridges and Major Culverts condition rating system and Map AI-ii-2 in Appendix I shows the condition ratings for each structure. The structure condition ratings relative to the BCI ranges for each rating are generally typical for the industry and are consistent with MTO guidelines.

*Table 4.2.2: The Township’s Bridge and Major Culvert Condition Rating System*

Asset Classes	Bridge and Major Culvert Condition Index (BCI) Ratings System				
	Very Good	Good	Fair	Poor	Very Poor
Bridges and Major Culverts	> 80	70 - 80	60 - 69	40 - 59	< 40

**Current Condition of the Bridges and Major Culvert Assets**

The Township has set a target BCI of 70 for all bridges and major culverts which corresponds to a “Good” condition. Currently, the average BCI rating for Bridges is 81.2 (Very Good) and the average BCI rating for Major Culverts is 67.7 (Fair).

Once a bridge or major culvert falls below the target BCI of 70 set by the Township, the ability to provide safe, cost-effective services begins to decline and restorative actions such as repair or replacement of the structural elements or a full replacement of the structure should be planned and/or implemented within the 10-year timeframe depending on the condition of the structure. Table 4.2.3 outlines the current and target (proposed) Condition ALOS for the Township’s Bridges and Major Culverts Asset Classes.

*Table 4.2.3: Current and Target Condition Asset Levels of Service for Bridges and Major Culverts*

Structure Asset Classes	Condition Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
Bridges	Bridge Condition Index	BCI = 81.2 (Very Good)	BCI = 70 (Good)
Major Culverts	Bridge Condition Index	BCI = 67.7 (Fair)	BCI = 70 (Good)

**Bridge and Major Culvert Performance Levels of Service Measures and Targets**

The Township’s Performance ALOS categories, measures and criteria for Bridges and Major Culverts are summarized on Table 4.2.4. The Township’s bridge and major culvert performance criteria are based on regulations, typical industry design guidelines, and best practices.

Table 4.2.4: Criteria Measured by the Township’s Performance Asset Levels of Service for Structures

Performance ALOS Types	Target	Criteria Measured
Operational Functionality	Good	<ul style="list-style-type: none"> <li>Sufficiency of deck platform/through-lanes widths to accommodate current traffic volumes.</li> <li>Adequacy of roadside safety device protection and barriers.</li> <li>Adequacy of condition and regulatory compliance of roadside safety devices.</li> </ul>
Capacity to Meet Demands	Good	<ul style="list-style-type: none"> <li>Adequacy of structural capacity and number of lanes to meet peak traffic volumes and loading.</li> </ul>
Environmental Resiliency	Good	<ul style="list-style-type: none"> <li>Sufficiency of span and elevation to accommodate a 100-year or regional storm event with adequate freeboard above high-water levels.</li> <li>Flood protection of lanes during major storm events.</li> <li>Adequacy of scouring and armouring protection around foundations and footings.</li> </ul>

Improvements to correct bridge and major culvert performance deficiencies are ideally addressed at the time of a reconstruction or major refurbishment unless an overriding safety concern is present. Table 4.2.5 outlines the current and target (proposed) Performance ALOS for the Township’s Bridges and Major Culverts Asset Classes.

Table 4.2.5: The Township’s Performance Level of Service Rating System for Structures

Structure Asset Classes	Performance Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
Bridges	Operational Functionality	Good	Good
	Capacity to Meet Demands	Very Good	Good
	Environmental Resiliency	Good	Good
Major Culverts	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good

### Bridge and Major Culvert Operating Maintenance Levels of Service Measures and Targets

The Township’s current and target (proposed) OMLOS for bridges and major culverts are summarized on Table 4.2.6. The Township’s OMLOS targets are based on Provincial regulations and best practices.

Table 4.2.6: The Township’s Current and Target Operating Maintenance Levels of Service for Structures

Bridge and Major Culvert Operating Maintenance Levels of Service		
Activity	Current LOS	Proposed LOS
Bridge Deck Washing	Once a year	Once a year
Bridge Deck Spall Repairs	Fully Meet Minimum Maintenance Standards (O. Reg 239/02)	Fully Meet Minimum Maintenance Standards (O. Reg 239/02)
Bridge & Major Culvert Inspections	Biannual Inspections of 100% of Structures per the Public Transportation and Highway Improvement Act	Biannual Inspections of 100% of Structures per the Public Transportation and Highway Improvement Act

### 4.3 Stormwater Management

The Township’s Stormwater Management inventory is comprised of buried linear assets including storm sewers, catch basins, catch basin manholes, ditch inlets, and minor culverts less than 3.0 metres wide. Roadside ditches and swales are included and assessed as part of the roads inventory in Section 4.1. Table 4.3.1 summarizes the Stormwater Management Asset Classes in the Township’s inventory and Map AI-iii in Appendix I illustrates the Township’s storm sewer system.

Table 4.3.1: The Township’s Buried Stormwater Management Inventory

Asset Category	Inventory	Replacement Value (2024 Dollars in Millions)
Storm Sewers	804 m	\$0.5
Minor Culverts (<3.0m)	672 m	\$2.9
<b>Stormwater Management Total</b>	<b>1472 m</b>	<b>\$3.4</b>

### Storm Sewer Condition Asset Levels of Service Measures and Targets

Condition ALOS measure the integrity of the storm sewers. Maintaining storm sewers in good condition is necessary to achieve several important service objectives:

- Safety
- Road accessibility and reliability
- Maintaining road and property drainage and a sound road structure
- Minimization of road and storm sewer maintenance and rehabilitation costs

To measure the condition of the storm sewers and set Condition ALOS targets, the Township uses a rating system adopted from the Pipeline Assessment Certification Program (PACP), which is administered by the National Association of Sewer Service Companies (NASSCO). The PACP rating system is a typical industry measure to determine the current conditions of sewer pipes and help predict when rehabilitation or replacement is required.

The PACP rating system uses a scale between 1 and 5 to rate the sewer pipe conditions and is based on visual assessment via a closed-circuit television (CCTV) inspection of surface deficiencies such as cracking, pipe deformation, offset joint, protrusions, etc. The higher the number, the worse the pipe condition. Table 4.3.2 shows the Township’s storm sewer condition rating system and Map AI-iii in Appendix I shows the condition ratings for each storm sewer. The Township’s storm sewer condition ratings relative to the PACP ratings are consistent with NASSCO. Note that the Township classifies pipes rated PACP = 5 into two categories according to the PACP rating descriptions: pipes that are very poor but have not yet failed and pipes that have failed.

*Table 4.3.2: The Township’s Storm Sewers Condition Rating System*

Asset Class	The Township Storm Sewer Rating System using PACP				
	Very Good/ Good	Fair	Poor	Very Poor (Not Failed)	Very Poor (Failed)
Storm Sewers	PACP = 1 - 2 <ul style="list-style-type: none"> <li>• Pipe segment has minor defects.</li> <li>• Pipe unlikely to fail for at least 20 years.</li> </ul>	PACP = 3 <ul style="list-style-type: none"> <li>• Pipe segment has moderate defects</li> <li>• Deterioration may continue, at a 10-to-20-year timeframe.</li> </ul>	PACP = 4 <ul style="list-style-type: none"> <li>• Pipe segment has severe defects</li> <li>• Risk of failure within the next 5 to 10 years</li> </ul>	PACP = 5 <ul style="list-style-type: none"> <li>• Pipe segment has severe defects.</li> <li>• Risk of failure likely within the next 5 years</li> </ul>	PACP = 5 <ul style="list-style-type: none"> <li>• Pipe segment has failed.</li> <li>• Requires immediate attention.</li> </ul>

***Current Condition of the Storm Sewer Assets***

The Township has set a target PACP of 3 for all storm sewers which corresponds to a “Fair” condition. Currently, the average PACP rating for storm sewers is estimated at 3.3 (Fair).

Once a sewer pipe exceeds the target PACP of 3 set by the Township, the ability to provide safe, cost-effective services begins to decline and restorative actions such as relining or replacement should be implemented within the 10-year timeframe. Table 4.3.3 outlines the current and target (proposed) Condition ALOS for the Township’s Storm Sewer Asset Class.

Table 4.3.3: The Township’s Current and Target Condition Asset Levels of Service for Storm Sewers

Stormwater Asset Classes	Condition Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
Storm Sewers	NAASCO PACP Rating	PACP = 3 (Fair)	PACP = 3 (Fair)

**Storm Sewer Performance Levels of Service Measures and Targets**

The Township’s Performance ALOS categories, measures and criteria for storm sewers are summarized on Table 4.3.4. The Township’s storm sewer performance criteria are based typical industry design guidelines and best practices.

Table 4.3.4: Criteria Measured by the Township’s Performance Asset Levels of Service for Storm Sewers

Level of Service	Target	Criteria Measured
Operational Functionality	Good	<ul style="list-style-type: none"> <li>• Pipe flow velocities.</li> <li>• Minimum diameter sizing.</li> </ul>
Capacity to Meet Demands	Good	<ul style="list-style-type: none"> <li>• Adequate capacity to prevent flooding of Local Roads during a 5-year storm or on Collector Roads during a 10-year storm.</li> </ul>
Environmental Resiliency	Good	<ul style="list-style-type: none"> <li>• Adequacy of erosion protection where required.</li> </ul>

Improvements to correct storm sewer performance deficiencies are ideally addressed at the time the sewers are reconstructed. Table 4.3.5 outlines the current and target (proposed) Performance ALOS for the Township’s Storm Sewer Asset Class.

Table 4.3.5: The Township’s Performance Level of Service Rating System for Storm Sewers

Stormwater Asset Class	Performance Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
Storm Sewers	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good

Stormwater Asset Class	Performance Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
	Environmental Resiliency	Good	Good

**Storm Sewer Operating Maintenance Levels of Service Measures and Targets**

The Township’s current and target (proposed) OMLOS for storm sewers are summarized on Table 4.3.6. The Township’s OMLOS targets are based on best practices.

*Table 4.3.6: The Township’s Current and Target OM Levels of Service for Storm Sewers*

Storm Sewer Operating Maintenance Levels of Service		
Activity	Current LOS	Proposed LOS
CB/CBMH Cleaning	Every 10 years	Every 5 years
CCTV Inspections	Every 10 years	Every 10 years
Storm Sewer Flushing	Every 10 years	Every 5 years

**Minor Culvert Condition Asset Levels of Service Measures and Targets**

Condition ALOS measure the integrity of the minor culverts. Maintaining minor culverts in good condition is necessary to achieve several important service objectives:

- Safety
- Road accessibility and reliability
- Maintaining road and property drainage and a sound road structure
- Minimization of road and culvert maintenance and rehabilitation costs

To measure the condition of the minor culverts and set Condition ALOS targets, the Township uses a rating system based in part on the *American Association of State Highway Transportation Officials (AASHTO) Culvert and Storm Drainage System Inspection Guide*. The ratings measure the current conditions of culverts and help predict when rehabilitation or replacement is required.

The Township has adapted the AASHTO rating system to rate the condition of its minor culverts using a 5-point scale from “Very Good” to “Very Poor.” The culverts are rated based on a visual assessment of the deficiencies such as cracking, corrosion, pipe deformation, offset joints, protrusions, blockages, etc. Table 4.3.7 shows the Township’s minor culvert condition rating system.

Table 4.3.7: The Township’s Condition Rating System for Minor Culverts

Asset Class	Minor Culvert Condition Ratings				
	Very Good	Good	Fair	Poor	Very Poor
Minor Culverts	<ul style="list-style-type: none"> <li>• New/like new</li> <li>• Deterioration: None.</li> <li>• Structurally sound.</li> <li>• Functionally adequate.</li> </ul>	<ul style="list-style-type: none"> <li>• Deterioration: Little to none</li> <li>• Structurally sound.</li> <li>• Functionally adequate.</li> </ul>	<ul style="list-style-type: none"> <li>• Deterioration: Some</li> <li>• Structurally sound.</li> <li>• Functionally adequate.</li> </ul>	<ul style="list-style-type: none"> <li>• Deterioration: Significant and/or</li> <li>• Functionally inadequate.</li> <li>• Requires maintenance or repair.</li> </ul>	<ul style="list-style-type: none"> <li>• Deterioration: Severe and/or</li> <li>• Structurally unsound and/or</li> <li>• Functionally inadequate.</li> <li>• Possible imminent failure or threat to public safety.</li> </ul>

**Current Condition of the Minor Culvert Assets**

The Township has set a target of “Fair” for minor culverts. Currently, the average rating for minor culverts is “Good.”

Once a minor culvert drops to a “Poor” condition, the ability to provide safe, cost-effective services begins to decline and restorative actions such as relining or replacement should be implemented in the 10-year timeframe. Table 4.3.8 outlines the current and target (proposed) Condition ALOS for the Township’s Minor Culverts Asset Class.

Table 4.3.8: The Township’s Current and Target Condition Asset Levels of Service for Minor Culverts

Stormwater Asset Classes	Condition Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
Minor Culverts	AASHTO (Adapted)	Good	Fair

**Minor Culvert Performance Levels of Service Measures and Targets**

The Township’s Performance ALOS categories, measures and criteria for minor culverts are summarized on Table 4.3.9. The Township’s minor culvert performance criteria are based on regulations, typical industry design guidelines and best practices.

Table 4.3.9: Criteria Measured by the Township’s Performance Levels of Service for Minor Culverts

Level of Service	Target	Criteria Measured
Operational Functionality	Good	<ul style="list-style-type: none"> <li>• Sufficient length to accommodate the necessary road platform width and minimum ditch sloping requirements.</li> <li>• Adequate structural capacity to accommodate current traffic volumes and loading.</li> <li>• Adequacy of roadside safety device protection and regulatory compliance.</li> <li>• Meets minimum diameter recommendations per MTO Highway Drainage Design Standards for purposes of access for cleaning and repairs.</li> </ul>
Capacity to Meet Demands	Good	<ul style="list-style-type: none"> <li>• Sufficient capacity to accommodate a 10-year design storm flow for Collector Roads and a 5-year design storm flow for Local Roads.</li> </ul>
Environmental Resiliency	Good	<ul style="list-style-type: none"> <li>• Adequate scouring protection of culverts where required.</li> </ul>

Improvements to correct minor culvert performance deficiencies are addressed at the time the minor culverts are replaced. Table 4.3.10 outlines the current and target (proposed) Performance ALOS for the Township’s Minor Culvert Asset Class.

Table 4.3.10: The Township’s Performance Level of Service Rating System for Minor Culverts

Asset Class	Performance Asset Level of Service Measure	Asset Levels of Service	
		Current Asset Levels of Service	Proposed Asset Levels of Service
Minor Culverts	Operational Functionality	Good	Good
	Capacity to Meet Demands	Good	Good
	Environmental Resiliency	Good	Good

**Minor Culverts Operating Maintenance Levels of Service Measures and Targets**

The Township’s current and target (proposed) OMLOS for minor culverts are summarized on Table 4.3.11.

Table 4.3.11: The Current and Target Operating Maintenance Levels of Service for Minor Culverts

Minor Culvert Operating Maintenance Levels of Service		
Activity	Current LOS	Proposed LOS
Minor Culvert Replacements	Replace worst first (“Very Poor” culverts) according to available funding	Fair (Replace when culverts are “Poor”)
Minor Culvert Inspections	Every 5 years	Every 5 years
Culvert Cleaning	In reaction to identified drainage issues.	As needed when identified by staff through regular inspections or road patrols

#### 4.4 Fleet and Equipment

The Township’s fleet and equipment inventory includes small pick-up trucks, large tandem dump trucks, heavy equipment such as graders, loaders and backhoes and accessory equipment such as trailers and generators. Table 4.4.1 summarizes the different Fleet and Equipment Asset Classes in the Township’s inventory.

Table 4.4.1: The Township’s Fleet and Equipment Inventory

Service Division	Asset Class	Replacement Value (2024 Dollars in Millions)
Roads Operations	Small Trucks	\$0.4
	Large Trucks	\$2.5
	Heavy Equipment	\$2.3
	Accessory Equipment	\$0.3
Landfill Operations	Large Trucks	\$0.4
	Heavy Equipment	\$0.7
	Accessory Equipment	\$0.1
Building Department Operations	Small Trucks	\$0.1
<b>Total</b>		<b>\$6.6</b>

#### Fleet and Equipment Condition Asset Levels of Service Measures and Targets

Condition ALOS measure the integrity of the fleet and equipment. Maintaining the fleet and equipment in good condition is necessary to achieve several important service objectives:

- Safe operations and use of vehicles and equipment
- Safe operations and public use of roads, bridges, major culverts, stormwater, and landfill assets
- Maintaining the reliability of vehicles and equipment
- Maintaining the condition, accessibility and reliability of the roads, bridges, major culverts, stormwater, and landfill assets

- Minimization of vehicle maintenance costs

Since the Roads Operations and Building Department Operations Fleet and Equipment need to operate on public rights-of-way while the Landfill Operations Fleet and Equipment are restricted to operating on the landfill site, the Condition and Performance ALOS measures and targets differ.

**Roads and Building Department Operations Fleet and Equipment Condition Measures**

To measure and rate the condition of the Roads Operations and Building Department Operations Fleet and Equipment assets and set Condition ALOS targets, the Township uses a 5-point scale from “Very Good” to “Very Poor.” The condition rating system is based on the typical useful service life of the assets and is summarized on Table 4.4.2.

Table 4.4.2: Road and Building Department Operations Fleet and Equipment Condition Rating System

Asset Classes	Roads and Building Department Operations Fleet and Equipment Condition Ratings				
	Very Good	Good	Fair	Poor	Very Poor
All	<b>Assets with EUSL &gt;25 years:</b> • ERUSL >20 years <b>Assets with EUSL &lt;25 years:</b> • ERUSL >80%	<b>Assets with EUSL &gt;25 years:</b> • ERUSL = 11 to 20 years <b>Assets with EUSL &lt;25 years:</b> • ERUSL = 55% to 80%	<b>Assets with EUSL &gt;25 years:</b> • ERUSL = 6 to 10 years <b>Assets with EUSL &lt;25 years:</b> • ERUSL = 31% to 54%	<b>Assets with EUSL &gt;25 years:</b> • ERUSL = 1 to 5 years <b>Assets with EUSL &lt;25 years:</b> • ERUSL = 5% to 30%	<b>Assets with EUSL &gt;25 years:</b> • ERUSL <1 year <b>Assets with EUSL &lt;25 years:</b> ERUSL <5%

Note: EUSL = Estimated useful service life and ERUSL = Estimated remaining useful service life

**Landfill Operations Fleet and Equipment Condition Measures**

To measure and rate the condition of the Landfill Fleet and Equipment assets and set Condition ALOS targets, the Township uses a 3-point scale: “Exceeds,” “Adequate,” and “Poor/Very Poor.” The condition rating system is based on the typical useful service life of the assets and is summarized on Table 4.4.3.

Table 4.4.3: Landfill Operations Fleet and Equipment Condition Rating System

Asset Classes	Landfill Operations Fleet and Equipment Condition Ratings		
	Exceeds	Adequate	Poor/Very Poor
All	ERUSL > 10 years	ERUSL = 1 to 10 years	ERUSL < 1 year

Note: ERUSL = Estimated remaining useful service life

**Current Condition of the Fleet and Equipment Assets**

The Township has set a target of “Fair” for the Roads Operations and Building Department Operations Fleet and Equipment assets and a target of “Adequate” for the Landfill Fleet and

Equipment assets. Currently, the average for the Roads Operations assets is “Fair,” the rating for the Building Department Operations vehicle is “Fair” and the average for the Landfill Operations assets is “Adequate.” Table 4.4.4 outlines the current and target (proposed) Condition ALOS for each of the Township’s Fleet and Equipment Asset Classes.

*Table 4.4.4: The Township’s Current and Target Condition Asset Levels of Service for Fleet and Equipment*

Service Division	Asset Classes	Condition Asset Level of Service Measure	Asset Levels of Service	
			Current Asset Levels of Service	Proposed Asset Levels of Service
Roads Operations	Small Trucks	DNE General 5-Point Ratings	Poor	Fair
	Large Trucks	DNE General 5-Point Ratings	Good	Fair
	Heavy Equipment	DNE General 5-Point Ratings	Fair	Fair
	Accessory Equipment	DNE General 5-Point Ratings	Fair	Fair
Landfill Operations	Large Trucks	DNE Special 3-Point Ratings	Very Poor	Adequate
	Heavy Equipment	DNE Special 3-Point Ratings	Adequate	Adequate
	Accessory Equipment	DNE Special 3-Point Ratings	Adequate	Adequate
Building Department Operations	Small Trucks	General 5-Point Ratings	Fair	Fair

**Fleet and Equipment Performance Levels of Service Measures and Targets**

The Township’s Performance ALOS categories, measures, and criteria for Fleet and Equipment are summarized on Table 4.4.5. The Township’s fleet and equipment performance criteria are based on regulations and best practices.

*Table 4.4.5: Criteria Measured by the Performance Asset Levels of Service for Fleet and Equipment*

Level of Service	Target	Criteria Measured
Operational Functionality	Good	<ul style="list-style-type: none"> <li>• Vehicles/equipment are suitable for purpose.</li> <li>• Vehicles/equipment technology is modern and efficient.</li> <li>• Vehicles/equipment comply with current regulations.</li> </ul>
Capacity to Meet Demands	Good	<ul style="list-style-type: none"> <li>• Adequate quantity of vehicles/equipment to meet normal service demands.</li> </ul>

Level of Service	Target	Criteria Measured
		<ul style="list-style-type: none"> <li>Vehicles/equipment have adequate physical capacity to meet service requirements (size, power, load carrying capacity, throughput, etc.).</li> </ul>
Operational Resiliency	Good	<ul style="list-style-type: none"> <li>Adequate back-up/standby vehicles/equipment for peak or emergency conditions including unforeseen vehicle/equipment failures.</li> </ul>

Improvements to correct performance deficiencies are addressed with the purchase of new vehicles and equipment. Table 4.4.6 outlines the current and target (proposed) Performance ALOS for each of the Township’s Road Asset Classes.

*Table 4.4.6: The Current and Target Performance Asset Levels of Service for Fleet and Equipment*

Service Division	Asset Classes	Performance Asset Level of Service Measure	Asset Levels of Service	
			Current Asset Levels of Service	Proposed Asset Levels of Service
Road Operations	Small Trucks	Operational Functionality	Good	Good
		Capacity to Meet Demands	Good	Good
		Operational Resiliency	Fair	Fair
	Large Trucks	Operational Functionality	Good	Good
		Capacity to Meet Demands	Good	Good
		Operational Resiliency	Good	Fair
	Heavy Equipment	Operational Functionality	Good	Good
		Capacity to Meet Demands	Good	Good
		Operational Resiliency	Very Poor	Fair
	Accessory Equipment	Operational Functionality	Good	Good
		Capacity to Meet Demands	Good	Good

Service Division	Asset Classes	Performance Asset Level of Service Measure	Asset Levels of Service	
			Current Asset Levels of Service	Proposed Asset Levels of Service
		Operational Resiliency	Poor	Fair
Landfill Operations	Large Trucks	Operational Functionality	Good	Good
		Capacity to Meet Demands	Very Good	Good
		Operational Resiliency	Very Good	Fair
	Heavy Equipment	Operational Functionality	Good	Good
		Capacity to Meet Demands	Very Good	Good
		Operational Resiliency	Very Poor	Fair
	Accessory Equipment	Operational Functionality	Good	Good
		Capacity to Meet Demands	Good	Good
Building Department Operations	Small Trucks	Operational Functionality	Very Good	Good
		Capacity to Meet Demands	Very Good	Good

**Fleet and Equipment Operating Maintenance Levels of Service Measures and Targets**

The Township’s current and target (proposed) OMLOS for Fleet and Equipment are summarized on Table 4.4.7. The Township’s OMLOS targets are based on Provincial regulations and best practices.

Table 4.4.7: The Current and Target Operating Maintenance Levels of Service Fleet and Equipment

Fleet and Equipment Operating Maintenance Levels of Service		
Activity	Current LOS	Proposed LOS
Regular Maintenance and Repairs	As required to maintain vehicles in sound working condition and meet safety and maintenance requirements	As required to maintain vehicles in sound working condition and meet safety and maintenance requirements
Rust Protection (Snowplow Trucks only)	Annually	Annually
Annual Safety Certification (Large Trucks excluding Landfill)	Mandated per MTO Highway Traffic Act	Mandated per MTO Highway Traffic Act

## 5 Risk Management

Risk is the product of *consequence of failure multiplied by the likelihood of failure*. Risk can never be eliminated, only managed to levels that are acceptable to the organization. The management of risk requires the implementation of controls. In the context of asset management those controls can be setting TLOS targets and having standard operating procedures (SOPs) in the event of an asset failure and/or service disruption.

Measuring asset risk using an enterprise risk management (ERM) approach is an effective and transparent way to understand the current state of infrastructure and to prioritize, plan, and communicate asset management actions across the entire Township’s portfolio. For ERM to be effective, the application of consistent risk assessment measures and processes are required.

### 5.1 The Township’s Risk Assessment Process

The Township’s first step was to document the different levels of severity of consequences of asset failure to health and safety, community services, municipal finances, the natural environment, and municipal reputation on a Consequences of Failure Table (Appendix III-i).

The next step was to evaluate the severity of failure for each asset class using the Consequences of Failure Table. Severity is assessed by estimating the potential impacts to health and safety, community services, municipal finances, the natural environment, and municipal reputation in the event of an asset failure, performance insufficiency, or the absence of the asset.

The consequences of failure and the likelihood of failure (which is predetermined by the current Condition and Performance ALOS ratings) are multiplied together in the Township’s risk assessment tool and prioritization model to produce a risk rating that indicates the level of risk to the assets, ALOS, and Asset Classes. Table 5.1 outlines how the scoring from the risk model is translated into varying degrees of risk.

*Table 5.1: The Township’s Risk Ranges and Ratings*

Risk Ratings	
Level	Range
Low	< 21
Medium	21 - 59
High	60 - 99
Very High	> 99

## 5.2 Risk-Based Asset Prioritization

The main objective of the Township’s ERM strategy is to determine priorities objectively and transparently across Asset Classes, ALOS, and individual assets. The degree of variance from the risk target provides the relative measures against which all assets, ALOS and Asset Classes can be compared and prioritized.

Table 5.2 outlines the main risk modelling outputs to evaluate and communicate corporate asset management risks and priorities



*Table 5.2: Key Risk Modelling Outputs to Inform Asset Management Decision-making*

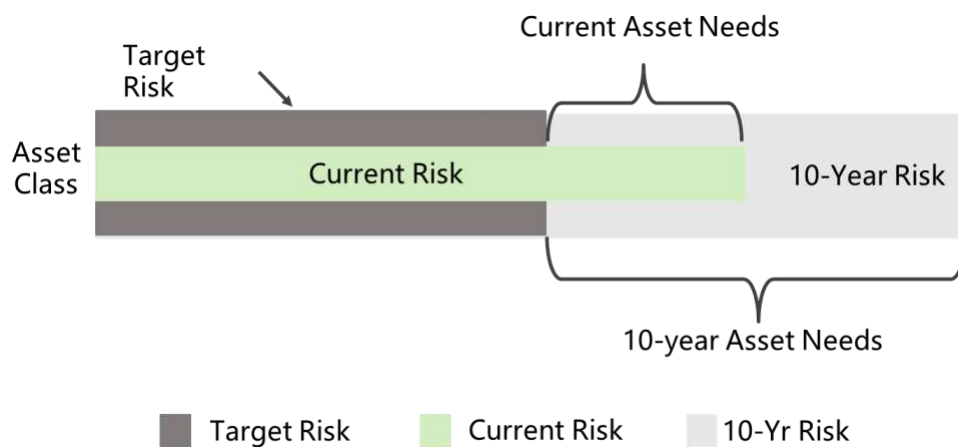
Reporting Output	What it Does	What Information it Provides	Appendix #
Asset Class Risk Profile	Illustrates the current and projected 10-year risk with and without capital investments based on the combined state of the assets’ condition and performance in each Asset Class. The risk profile is also used to estimate the 10-year risk after applying 10-year asset investments.	Provides an initial high-level organizational comparison of the Asset Classes in their current and future state with and without capital investments.	III-ii
Condition ALOS Risk Profile	Illustrates the current and estimated 10-year risk based on the current and estimated 10-year condition according to their typical lifecycles. The risk profile is also used to estimate the 10-year risk after applying 10-year asset investments.	Provides an organizational comparison of the Condition ALOS in their current and future state with and without capital investments.	III-iii
Performance ALOS Risk Profile	Illustrates the level of risk based on the current performance of the Township’s assets. Asset performance (e.g. sufficiency of lane widths) generally remains static over time unless the assets are replaced or rehabilitated.	Provides an organizational comparison of the Performance ALOS with and without capital investments.	III-iv
Current State Risk Priorities	Ranks the current Condition and Performance ALOS priorities according to the variance from risk targets.	Provides an organizational perspective of the deficient ALOS from highest to lowest and helps to narrow down to the specific assets driving the needs.	III-v

Reporting Output	What it Does	What Information it Provides	Appendix #
Ten-year Risk Priorities	Ranks the Condition and Performance ALOS priorities in 10 years according to the variance from risk targets. Asset conditions degrade at different rates and because asset performance does not change over time, ALOS priorities can change over 10 years.	Provides an organizational perspective of the deficient ALOS in 10 years from highest to lowest and helps to narrow down to the specific assets driving the 10-year needs.	III-vi

### Reading the Risk Profile

Figure 5.2.1 shows an example of the separate Asset Class bars used in the Asset Class, Condition ALOS and Performance ALOS Risk Profiles. Each bar on the risk profile showing Target Risk, Current Risk, and Ten-year Risk represents the state of risk for each of the Township’s asset classes. The Township’s Risk Profiles can be found in Appendices IV-ii, IV-iii and IV-iv.

Figure 5.2.1: Components of the Risk Profile



### Target Risk Bar

The Target Risk, represented by the dark grey bar, measures the asset class risk based on all the assets meeting their ALOS targets.

### Current Risk Bar

The Current Risk, represented by the centre green bar, measures the current risk of the asset class based on whether the assets within that asset class are meeting, exceeding, or failing their level of service targets. If the Current Risk bar is shorter than the Target Risk bar, then most of the assets in the asset class are meeting or exceeding their ALOS targets. If the Current Risk bar

and the Target Risk bar at are equal lengths, then generally most of the assets in the asset class are meeting their ALOS targets. When the Current Risk bar extends beyond the Target Risk bar, this indicates that a measurable number of assets in the asset class are deficient. The further the Current Risk bar extends out from the Target Risk bar, the greater the amount of asset deficiencies in that asset class.

**Ten-year Risk Bar**

The Ten-year Risk bar, represented by the light grey bar, is tied to the estimated lifespans of the assets and the Townships asset lifecycle strategies. The Ten-year Risk bar estimates the future state of risk based on the deterioration of the assets in the asset class over ten years without rehabilitative actions.

**5.3 The Township’s Overall Risk Outlook**

Figure 5.3.1 illustrates the overall current and projected risk for the Township’s infrastructure. As the Current Risk bar indicates, the Township’s overall risk is currently below the Target Risk which is reflective of the overall “Good” state of the Township’s infrastructure. This means that while many assets are “Poor” or “Very Poor” thus creating some risk above targets, most assets are currently meeting or exceeding their ALOS and risk targets. However, over the next ten years the overall risk is projected to extend beyond the Target Risk which reflects that many more assets will become “Poor” or “Very Poor” in the absence of reinvestments in and improvements to the infrastructure. As Figure 5.3.2 indicates, the risk is expected to more than double over ten years without the necessary reinvestments.

*Figure 5.3.1: Overall Township Risk Profile*

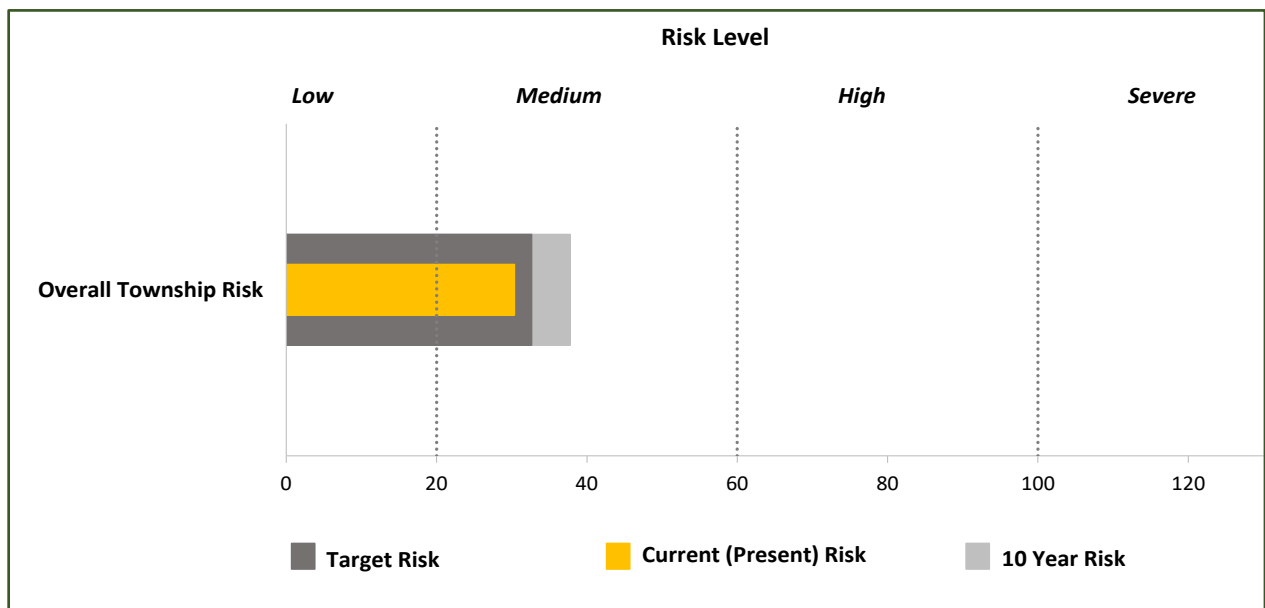
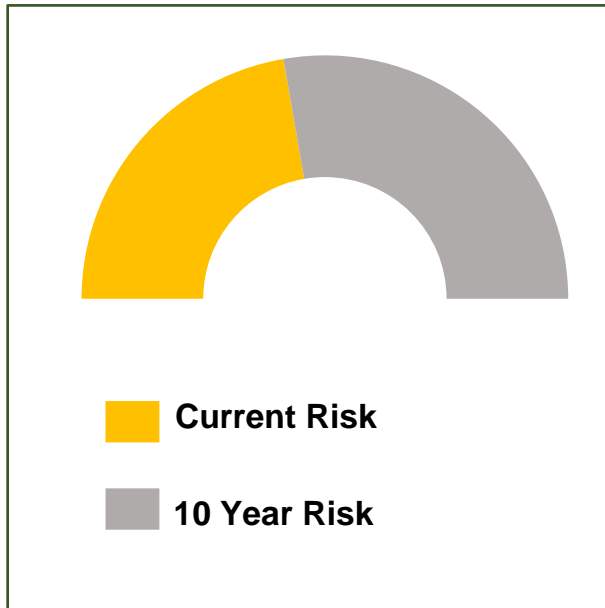
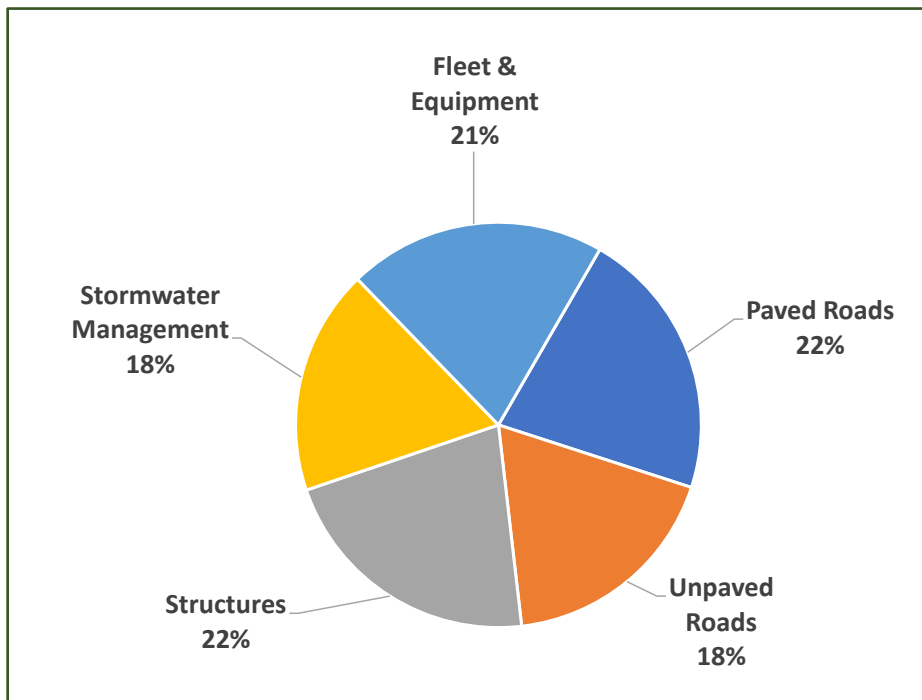


Figure 5.3.2: Overall Township Risk Outlook



Although Figure 5.3.1 indicates that the Township’s overall Current Risk is below its overall Target Risk, there are still existing asset deficiencies in meeting ALOS target within each of the asset classes that cause the risk to exceed risk targets. Figure 5.3.3 illustrates the distribution of Current Risk where it exceeds Target Risk in each of the asset classes. As the chart shows, the Current Risk above targets is evenly distributed across the different asset classes.

Figure 5.3.3: The Distribution of Current Risk over Risk Targets



## 5.4 Analysis of Asset Management Needs and Priorities

Making decisions on what assets to repair or replace given limited resources requires many technical, financial, and practical considerations. Utilizing the outputs from the risk modelling provides evidence on where to start to identify and prioritize asset management actions. Since further rigor is required to narrow down the proposed projects and activities to be included over the next 10 years in the annual budget and forecast, the asset management priorities have been allocated to two broad priority categories as outlined in Table 5.4. The priorities are not in any specific order and were determined using the Current State Risk Priorities (Appendix III-v) and the 10-year Risk Priorities (Appendix III-vi). The specific projects and activities behind the priorities listed on Table 5.4 will be further screened as part of planning the 2025 budget and 9-year forecast.

*Table 5.4: Risk Modelling Conclusion to Inform Planning of the Budget and Forecast*

10-year Planning Priority	Criteria	Asset Management Actions
First Priority	Deficient assets are currently at high or very high risk <sup>1</sup> or will be at high risk within 10 years <sup>2</sup> .	<ul style="list-style-type: none"> <li>• Replace 8<sup>th</sup> Concession Drummond Culvert (OSIM 2026).</li> <li>• Replace Maple Lane Road Culvert (OSIM 2027).</li> <li>• Rehabilitate Moores Road Culvert (OSIM 2030).</li> <li>• Reconstruct Innisville HCB Roads (Roads Needs 2028).</li> <li>• Reconstruct Burns Road to HCB.</li> <li>• Reconstruct the gravel section of Carroll Road to HCB.</li> <li>• Rehabilitate “Poor” or reconstruct “Very Poor” HCB Collector Roads.</li> <li>• Rehabilitate “Poor” or reconstruct “Very Poor” HCB Local Roads.</li> <li>• Maintain Local Gravel Roads in “Good” condition.</li> <li>• Replace “Very Poor” minor culverts.</li> <li>• Regrade the steep hill on Rideau Lakes Road and reconstruct to HCB (Roads Needs 2025).</li> <li>• Replace Innisville storm sewers.</li> <li>• Replace the oldest grader.</li> <li>• Realignment of 90-degree bend on Widenmaier Road (Road Needs 2028).</li> </ul>

10-year Planning Priority	Criteria	Asset Management Actions
		<ul style="list-style-type: none"> <li>• Update or add guardrails at various locations on Gravel Local Roads.</li> </ul>
Second Priority	Deficient assets are currently at medium risk <sup>1</sup> and will remain at medium risk in 10 years <sup>2</sup> .	<ul style="list-style-type: none"> <li>• Intersection improvements at Richardson Side Road and County Road 10 (Road Needs 2027).</li> <li>• Earth and tree removals on Oak Lane (Roads Needs 2025).</li> <li>• Reconstruct Carroll Road and McPhail’s Road to HCB (Currently LCB Collector Roads).</li> <li>• Replace minor culverts in “Poor” condition</li> <li>• Reconstruct high volume Gravel Local Roads to HCB</li> <li>• Widen Gravel Local Roads sections where platform widths are too narrow for typical traffic demands.</li> <li>• Update or add guardrails at various locations on HCB Local Roads.</li> <li>• Improve ditching on various sections of HCB Local Roads and Gravel Local Roads.</li> <li>• Replace Fleet and Equipment assets in “Poor” or “Very Poor” condition.</li> </ul>

Notes:

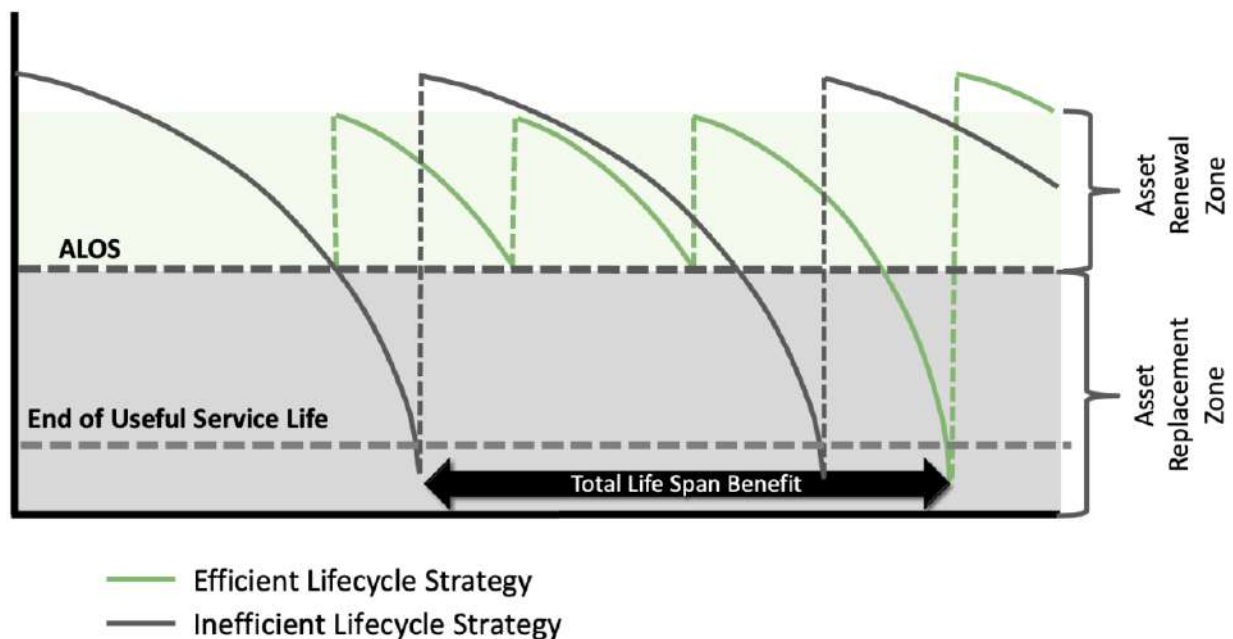
1. The Current State Risk Priorities (Appendix III-v)
2. The 10-year Risk Priorities (Appendix III-vi)

## 6 Asset Lifecycle Strategies

O. Reg 588/17: *Asset Management for Municipal Infrastructure* stipulates that municipalities document the full lifecycle of the assets and the operating and capital lifecycle activities that can be undertaken at lowest costs to achieve current and proposed technical levels of service.

Asset lifecycle strategies include operating and capital funded activities to maximize asset utilization and value. These activities can include inspections, maintenance, repairs, refurbishments, reconstructions and replacements. As the example in Figure 6.1 illustrates, if the lifecycle strategies are planned and executed proactively and efficiently, asset lifespans will be maximized while providing higher levels of service at lower cost of ownership.

Figure 6.1: Benefits of Efficient Lifecycle Strategies



The Township continually seeks to improve on its asset lifecycle strategies through additional funding, resources, and by employing new techniques and technology.

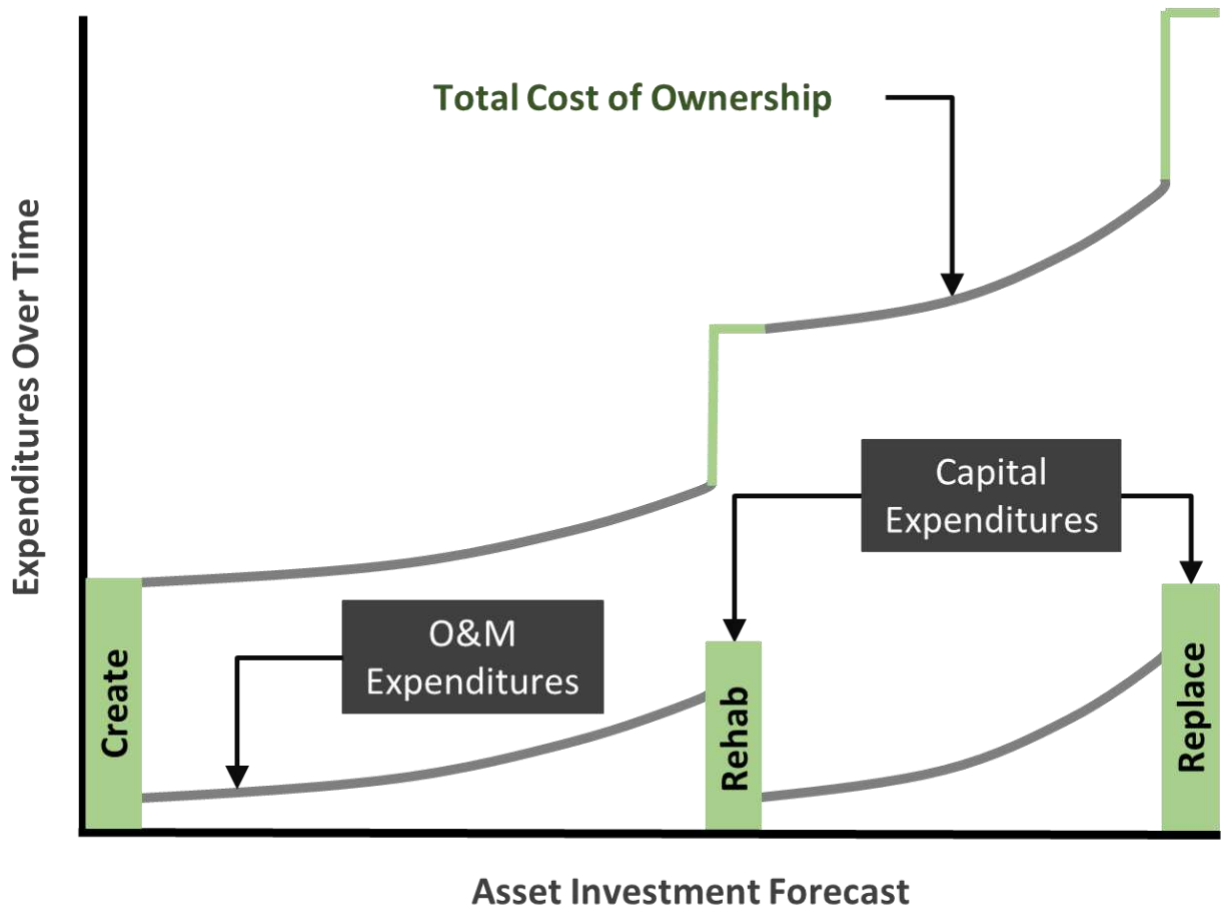
Climate change is another factor that impacts asset lifecycles and lifecycle activities and is discussed further in Section 7.0.

### Total Cost of Ownership

Effective lifecycle strategies are not only important to maximize asset value but help the municipality forecast its future asset investments and to calculate the total cost of asset ownership; these factors are key to calculating the infrastructure funding gap. Figure 6.2

illustrates the relationship between asset lifecycle investment strategies and whole lifecycle costs.

Figure 6. 2: Asset Lifecycle Strategies and Costs over Time



### 6.1 Roads

Table 6.1.1 outlines the roads lifecycle activities that maintain the Township’s current TLOS and what is required to achieve proposed (target) TLOS.

Table 6.1.1: The Township’s Current and Proposed Lifecycle Management Strategies for Roads

Lifecycle Activity	Description	Requirements to Meet Current and Proposed Technical Levels of Service	TLOS Status
Shoulder Maintenance	Re-gravelling and regrading shoulders to maintain road safety.	Every 10 years.	Current
		Every 7 years.	Proposed

Lifecycle Activity	Description	Requirements to Meet Current and Proposed Technical Levels of Service	TLOS Status
Ditch Cleaning and Regrading	Maintaining or increasing stormwater management capacity.	Approximately 5 km/year.	Current
		Approximately 25 km/year.	Proposed
Gravel Road Re-gravelling	Resurfacing of gravel roads to provide a good driving surface and extend service life.	Maintain the gravel roads network average at PCI = 65 (Good).	Current
		Maintain the gravel roads network average at PCI = 65 (Good).	Proposed
Gravel Patch	Repairs to holes, washouts and soft spots on gravel roads.	Approximately 200 tonnes/year.	Current
		Approximately 700 tonnes/year.	Proposed
Crack Sealing	Maintenance to extend asphalt pavement life.	Every 10 years after road resurfacing or reconstruction where pavement is above PCI = 80.	Current
		Every 5 years after road resurfacing or reconstruction where pavement is above PCI = 80.	Proposed
Partial Depth Reconstruction: Collector Roads	Rehabilitation of the road to provide a good driving surface and extend service life.	Generally rehabilitating below a PCI of 45.	Current
		Rehabilitate when PCI is between 45 to 50.	Proposed
		Convert surface treated (Low Class Bitumen) roads to asphalt.	No Change
Full Depth Reconstruction: Collector Roads	Full replacement of the road surface and base.	Generally reconstructing below a PCI of 40	Current
		Reconstruct when PCI is below 45.	Proposed
		Convert surface treated (Low Class Bitumen) roads to asphalt when reconstruction is warranted.	No Change
Partial Depth Reconstruction: Local Roads	Rehabilitation of the road to improve the road surface and base.	Generally rehabilitating below a PCI of 40	Current
		Rehabilitate when PCI is between 40 to 45.	Proposed
		Convert surface treated (Low Class Bitumen) roads to asphalt when partial depth reconstruction is warranted.	No Change

Lifecycle Activity	Description	Requirements to Meet Current and Proposed Technical Levels of Service	TLOS Status
Full Depth Reconstruction: Local Roads	Complete replacement of a very poor road with a new road structure.	Generally reconstructing below a PCI of 35	Current
		Reconstruct when PCI is below 40.	Proposed
		Convert surface treated (Low Class Bitumen) roads to asphalt when full depth reconstruction is warranted.	No Change
Surface Treatment: LCB Collector Roads	Rehabilitation of the road to provide a good driving surface and extend service life.	Rehabilitate with a single lift surface treatment when PCI is less than 70	No Change
		Rehabilitate with a double lift surface treatment when PCI is less than 65	No Change
Surface Treatment: LCB Local Roads	Rehabilitation of the road to provide a good driving surface and extend service life.	Rehabilitate with a single lift surface treatment when PCI is less than 65	No Change
		Rehabilitate with a double lift surface treatment when PCI is less than 60	No Change
Reconstruct and pave high-volume gravel roads	Reconstruct high-volume gravel roads to HCB pavement to improve service, safety and reduce re-graveling maintenance costs	Consider reconstruction to HCB when traffic volumes exceed approximately 125 vehicles per day.	Proposed
Increase the platform width of narrow gravel roads	Widen gravel roads where 2-way traffic flow is constrained.	Consider widening narrow gravel roads where traffic flows are being impeded and there are safety concerns.	Proposed
Roads Needs Study	A visual assessment of existing roadway conditions and deficiencies.	Reviewed every 5 years.	No Change

**6.2 Bridges and Major Culverts**

Table 6.2.1 outlines the bridges and major culvert lifecycle activities to maintain Township’s TLOS. There are no changes proposed to the current lifecycle strategies or TLOS

*Table 6.2.1: The Township’s Lifecycle Management Strategies for Bridges Major Culverts*

Lifecycle Activity	Description	Requirements to Maintain Current and Proposed Technical Levels of Service	TLOS Status
Bridge and Major Culvert Rehabilitations and Replacements	Reconstruction, rehabilitation or replacement of poor structures or structural elements.	Reconstruct, rehabilitate or replace structures or structural elements as recommended by OSIM inspections.	No Change
Bridge Deck Washing	Removal of salt and sediments to reduce corrosion potential.	Once a year	No Change
Spall Repairs	Minor repairs to peeling concrete surfaces.	As required to meet Minimum Maintenance Standards (O. Reg 239/02)	No Change
Structure Inspections	A visual assessment of existing structural conditions and deficiencies.	Biannual Inspections of 100% of Structures per the Public Transportation and Highway Improvement Act.	No Change

### 6.3 Stormwater Management

Tables 6.3.1 and 6.3.2 outline the storm sewer and minor culvert lifecycle activities that maintain the Township’s current TLOS and what is required to achieve proposed (target) TLOS.

*Table 6.3.1: The Township’s Current and Proposed Lifecycle Management Strategies for Storm Sewers*

Lifecycle Activity	Description	Requirements to Maintain Current and Proposed Technical Levels of Service	TLOS Status
Catch Basin and Catch Basin Manhole Cleaning	Cleaning of sediments and debris from catch basins to maintain system capacity.	Every 10 years.	Current
		Every 5 years.	Proposed
Storm Sewer Flushing	Cleaning of sediments and debris from pipes to maintain system capacity.	Every 10 years.	Current
		Every 5 years.	Proposed
Spot Repairs	Minor repairs to pipes and catch basins to maintain system integrity.	Not available.	Current
		As required.	Proposed

Lifecycle Activity	Description	Requirements to Maintain Current and Proposed Technical Levels of Service	TLOS Status
Storm Sewer Relining	Relining storm sewers pipes to maintain system capacity and structural integrity.	Not available.	Current
		When feasible and practical, reline pipes when PACP Rating = 4.	Proposed
Storm Sewer Replacement	Full replacement of storm sewers and catch basins to maintain system capacity and structural integrity.	Replace pipe when PACP Rating = 5.	No Change
CCTV Inspections	Visual inspections and assessments of pipe conditions using closed circuit television cameras.	Every 10 years.	No Change
		Every 10 years.	

*Table 6.3.2: The Township’s Current and Proposed Lifecycle Management Strategies for Minor Culverts*

Lifecycle Activity	Description	Requirements to Maintain Current and Proposed Technical Levels of Service	TLOS Status
Culvert Cleaning	Cleaning of sediments and debris from culverts to maintain road right-of-way drainage capacity.	Not available.	Current
		As required.	Proposed
Culvert Replacements	Replacement of minor culverts to maintain road right-of-way drainage capacity.	Replace worst first (‘Very Poor’ culverts) according to available funding.	Current
		Replace when culverts are ‘Poor’.	Proposed
Culvert Inspections	A visual assessment of existing culvert conditions and deficiencies.	Every 5 years	No Change

## 6.4 Fleet and Equipment

Tables 6.4.1 outlines the fleet and equipment lifecycle activities to maintain the Township’s TLOS. There are no changes proposed to the current lifecycle strategies or TLOS.

*Table 6.4.1: The Township’s Current Lifecycle Management Strategies for Fleet and Equipment*

Service Division	Lifecycle Activity	Description	Requirements to Maintain Current and Proposed Technical Levels of Service	TLOS Status
Roads Operations and Building Department Operations	Vehicle or Equipment Replacement	Replace asset prior to asset failure.	Replace vehicle or equipment when condition reaches ‘Poor’ (>1 year remaining useful service life).	No Change
Roads Operations	Rust Protection	Apply protection to snowplow trucks.	Annual applications.	No Change
Roads Operations	Annual Safety Certifications	Certification of Large Trucks per the MTO Highway Traffic Act.	Annual recertifications.	No Change
Landfill Operations	Vehicle or Equipment Replacement	Replace asset prior to asset failure.	Replace vehicle or equipment when condition reaches ‘Poor/Very Poor’ (<1 year remaining useful service life).	No Change
All	Regular Maintenance	Activities such as inspections, changing fluids and tires.	As required to maintain vehicles in sound working condition and meet safety and maintenance requirements.	No Change

## 7 Climate Change

Ontario's climate is changing, and the Township needs to prepare for the potential of hotter temperatures, increasingly strong and more frequent storms, and more freezing rain events. All these impacts pose potential risks to the Township's assets, and the ability to continue to provide residents with the levels of service that they expect. Adapting to climate change will require financing to modify assets to be more resilient and to increase the frequency of operations and maintenance to address the extra stresses being put on assets and services.

Some of the potential effects of climate change are summarized in this section of the report. The proposed TLOS targets in Section 4.0 and proposed changes to lifecycle activities in Section 6.0 are not intended specifically for climate change adaptation, although some of the proposed levels of service and lifecycle activity improvements will partially mitigate some effects of climate change. Implementation of additional measures to make assets and services more resilient to climate change will require additional operating and capital investments.

Since the effects of climate change are so broad, complex, and long ranging, it is recommended that a study be undertaken to develop a climate change adaptation strategy that identifies additional actions and costs to combat the effects of climate change on the community, the services, and the infrastructure. It is also recommended that the risks, actions, and costs identified in this study be incorporated into future versions of the Township's asset management plan.

## 7.1 Roads

Table 7.1.1 outlines how the risks stemming from climate change could affect the Township’s roads and the services they support.

The “Increased Lifecycle Actions” column summarizes the operating and capital related lifecycle activities that will likely increase over the long term to mitigate the effects of climate change. These increases would be in addition to the increases to lifecycle activities already proposed in Section 6.0 of the AMP.

*Table 7.1.1: Potential Impacts of Climate Change to Roads Assets and Services*

Climate Change Risks	Impacts to Assets	Impacts to Services	Increased Lifecycle Actions
Extreme and/or more frequent heat events	<ul style="list-style-type: none"> <li>Softening of asphalt and increased damage under loads.</li> <li>Pavement buckling.</li> <li>Accelerated pavement deterioration.</li> <li>More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>Decreased driving quality.</li> <li>More service interruptions due to temporary road closures for repairs.</li> <li>Higher servicing costs.</li> <li>Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>Rehabilitation of pavement surfaces               <ul style="list-style-type: none"> <li>Pavement spot repairs</li> <li>Crack sealing</li> </ul> </li> </ul>
Extreme and/or more frequent rain events	<ul style="list-style-type: none"> <li>Overland flooding of road surfaces</li> <li>Undermining and destabilization of road bases and reduced load bearing capacity.</li> <li>Road settlements.</li> <li>Potential of road washouts.</li> <li>Accelerated road deterioration.</li> <li>More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>More service interruptions due to temporary road closures. caused by flooding and/or for repairs.</li> <li>Decreased driving quality.</li> <li>Higher servicing costs.</li> <li>Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>Rehabilitation of pavement surfaces               <ul style="list-style-type: none"> <li>Pavement spot repairs</li> <li>Crack sealing</li> <li>Re-gravelling unpaved roads</li> <li>Gravel patching</li> </ul> </li> <li>Ditch cleaning and regrading</li> <li>Shoulder brushing and maintenance</li> <li>Repairs to, or additional erosion protection</li> <li>Tree removals</li> </ul>

Climate Change Risks	Impacts to Assets	Impacts to Services	Increased Lifecycle Actions
Increased freeze and thaw cycles	<ul style="list-style-type: none"> <li>• Increased road structure destabilization and decreasing load bearing capacity.</li> <li>• Road settlements.</li> <li>• Accelerated road deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>• Road closures to truck traffic.</li> <li>• Decreased driving quality.</li> <li>• More service interruptions due to temporary road closures for repairs.</li> <li>• Higher servicing costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation of pavement surfaces <ul style="list-style-type: none"> <li>○ Pavement spot repairs</li> <li>○ Crack sealing</li> <li>○ Re-gravelling unpaved roads</li> <li>○ Gravel patching</li> </ul> </li> </ul>
Increased frequency of freezing rain events	<ul style="list-style-type: none"> <li>• More frequent de-icing (pre-wetting) of road surfaces.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-wetting asphalt surfaces</li> </ul>
Increased erosion and debris from more frequent heavy rainfall and/or sudden thaw events	<ul style="list-style-type: none"> <li>• More blockages of ditches and culverts leading to increased potential of road flooding and localized washouts.</li> <li>• Erosion and destabilization of ditch embankments and potential road and shoulder washouts.</li> <li>• Road and/or shoulder settlements.</li> <li>• Accelerated road deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>• More service interruptions due to temporary road closures for repairs.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation of pavement surfaces <ul style="list-style-type: none"> <li>○ Pavement spot repairs</li> <li>○ Crack sealing</li> <li>○ Gravel patching</li> </ul> </li> <li>• Ditch cleaning and regrading</li> <li>• Shoulder brushing and maintenance</li> <li>• Repairs to, or additional erosion protection</li> </ul>
Increased volumes of water from heavy rainfall and/or sudden thaw events	<ul style="list-style-type: none"> <li>• Overland flooding of road surfaces</li> <li>• Undermining and destabilization of road bases</li> </ul>	<ul style="list-style-type: none"> <li>• More service interruptions due to temporary road closures for repairs.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation of pavement surfaces <ul style="list-style-type: none"> <li>○ Pavement spot repairs</li> <li>○ Crack sealing</li> </ul> </li> </ul>

Climate Change Risks	Impacts to Assets	Impacts to Services	Increased Lifecycle Actions
	<ul style="list-style-type: none"> <li>and reduced load bearing capacity.</li> <li>• Road settlements.</li> <li>• Potential of road washouts.</li> <li>• Accelerated road deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>		<ul style="list-style-type: none"> <li>○ Re-gravelling unpaved roads</li> <li>○ Gravel patching</li> <li>• Ditch cleaning and regrading</li> <li>• Shoulder brushing and maintenance</li> <li>• Repairs to, or additional erosion protection</li> <li>• Tree Removals</li> </ul>

## 7.2 Bridges and Major Culverts

Table 7.2.1 outlines how the risks stemming from climate change could affect the Township’s bridges and major culverts and the services they support.

The “Increased Lifecycle Actions” column summarizes the operating and capital related lifecycle activities that will likely increase over the long term to mitigate the effects of climate change. These increases would be in addition to the increases to lifecycle activities already proposed in Section 6.0 of the AMP.

*Table 7.2.1: Potential Impacts of Climate Change to Bridge and Major Culvert Assets and Services*

Climate Change Risks	Impacts to Assets	Impacts to Services	Increased Lifecycle Actions
Extreme and/or more frequent heat events	<ul style="list-style-type: none"> <li>• Softening of asphalt and increased damage under loads.</li> <li>• Pavement buckling.</li> <li>• Accelerated pavement deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>• Decreased driving quality.</li> <li>• More service interruptions due to temporary bridge closures for repairs.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Repairs and rehabilitations of pavement surfaces</li> <li>• Repairs to underlying deck surfaces</li> </ul>

Extreme and/or more frequent rainfall events	<ul style="list-style-type: none"> <li>• Flooding of bridge surfaces</li> <li>• Saturation of soils and undermining and destabilization of bridge foundations, footings, approaches, abutments and wing walls.</li> <li>• Accelerated bridge deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>• More service interruptions due to temporary bridge closures for repairs.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Repairs and rehabilitations of bridge and major culvert elements</li> <li>• Repairs to, or additional erosion protection</li> </ul>
Increased freeze and thaw cycles	<ul style="list-style-type: none"> <li>• Accelerated concrete deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>• More service interruptions due to temporary bridge closures for repairs.</li> <li>• Higher servicing costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Repairs and rehabilitations of bridge and major culvert elements</li> <li>• Spot repairs of concrete spalling and pavement</li> </ul>
Increased frequency of freezing rain events	<ul style="list-style-type: none"> <li>• More frequent de-icing (pre-wetting) of bridge surfaces.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-wetting (de-icing) of bridge riding surfaces</li> </ul>
Increased erosion from more frequent heavy rainfall and/or sudden thaw events	<ul style="list-style-type: none"> <li>• Destabilization of embankments around bridges.</li> <li>• Increased rehabilitation and/or erosion protection.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Repairs to, or additional erosion protection</li> </ul>

### 7.3 Stormwater Management

Table 7.3.1 outlines how the risks stemming from climate change could affect the Township’s stormwater management assets and the services they support.

The “Increased Lifecycle Actions” column summarizes the operating and capital related lifecycle activities that will likely increase over the long term to mitigate the effects of climate change. These increases would be in addition to the increases to lifecycle activities already proposed in Section 6.0 of the AMP.

*Table 7.3.1: Potential Impacts of Climate Change to Stormwater Management Assets and Services*

Climate Change Risks	Impacts to Assets	Impacts to Services	Increased Lifecycle Activities
More frequent and/or extreme rainfall events	<ul style="list-style-type: none"> <li>• Overwhelming of system capacity causing overland flooding of roads and property.</li> <li>• Undermining and destabilization of road bases and reduced load bearing capacity.</li> <li>• Soil saturation, undermining and destabilization of road bases and reduced load bearing capacity.</li> <li>• Road settlements.</li> <li>• Road washouts.</li> <li>• Accelerated road deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>• More service interruptions due to temporary road closures caused by flooding and/or for repairs.</li> <li>• Property damage.</li> <li>• More service interruptions due to temporary road closures. caused by flooding and/or for repairs.</li> <li>• Decreased driving quality.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased sizing of storm sewers and minor culverts to increase flow capacity</li> <li>• Rehabilitation of pavement surfaces               <ul style="list-style-type: none"> <li>○ Pavement spot repairs</li> <li>○ Crack sealing</li> <li>○ Re-gravelling unpaved roads</li> <li>○ Gravel patching</li> </ul> </li> <li>• Ditch cleaning, regrading and enlarging</li> <li>• Shoulder brushing and maintenance</li> <li>• Tree removals</li> </ul>
Increased erosion and debris from more frequent heavy rainfall and/or sudden thaw events	<ul style="list-style-type: none"> <li>• More blockages of ditches and culverts leading to increased potential of road flooding and localized washouts.</li> <li>• Erosion and destabilization of ditch embankments and</li> </ul>	<ul style="list-style-type: none"> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation of pavement surfaces               <ul style="list-style-type: none"> <li>○ Pavement spot repairs</li> <li>○ Crack sealing</li> <li>○ Gravel patching</li> </ul> </li> <li>• Ditch cleaning and regrading</li> </ul>

	<p>potential road and shoulder washouts.</p> <ul style="list-style-type: none"> <li>• Road and/or shoulder settlements.</li> <li>• Accelerated road deterioration.</li> </ul>		<ul style="list-style-type: none"> <li>• Shoulder brushing and maintenance</li> <li>• Storm sewer flushing</li> <li>• Catch basin cleaning</li> </ul>
Increased volumes of water from heavy rainfall and/or sudden thaw events	<ul style="list-style-type: none"> <li>• Overwhelming of system capacity causing overland flooding of roads and property.</li> <li>• Undermining and destabilization of road bases and reduced load bearing capacity.</li> <li>• Soil saturation, undermining and destabilization of road bases and reduced load bearing capacity.</li> <li>• Road settlements.</li> <li>• Road washouts.</li> <li>• Accelerated road deterioration.</li> <li>• More frequent repairs or rehabilitations.</li> </ul>	<ul style="list-style-type: none"> <li>• More service interruptions due to temporary road closures for repairs.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> <li>• Property damage.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased sizing of storm sewers and minor culverts to increase flow capacity</li> <li>• Rehabilitation of pavement surfaces <ul style="list-style-type: none"> <li>○ Pavement spot repairs</li> <li>○ Crack sealing</li> <li>○ Re-gravelling unpaved roads</li> <li>○ Gravel patching</li> </ul> </li> <li>• Ditch cleaning, regrading and enlarging</li> <li>• Shoulder brushing and maintenance</li> <li>• Tree removals</li> </ul>

## 7.4 Fleet and Equipment

Table 7.4.1 outlines how the risks stemming from climate change could affect the Township’s fleet and equipment assets and the services they support.

The “Increased Lifecycle Actions” column summarizes the operating and capital related lifecycle activities that will likely increase over the long term to mitigate the effects of climate change. These increases would be in addition to the increases to lifecycle activities already proposed in Section 6.0 of the AMP.

*Table 7.4.1: Potential Impacts of Climate Change to Fleet and Equipment Assets and Services*

Climate Change Risks	Impacts to Assets	Impacts to Services	Increased Lifecycle Actions
More frequent and/or extreme heat events	<ul style="list-style-type: none"> <li>• More frequent use and higher wear of vehicles and equipment to make more frequent road, bridge and stormwater management repairs or rehabilitations</li> <li>• Reduced vehicle and equipment lifespans</li> <li>• Shortages of fleet and equipment inventory to handle higher frequency of calls, repairs and emergencies</li> </ul>	<ul style="list-style-type: none"> <li>• Decreased response times and longer service interruptions.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance and servicing of vehicles and equipment.</li> <li>• Replacements of vehicles and equipment</li> <li>• Addition of new vehicles and equipment</li> </ul>
More frequent and/or extreme rain events	<ul style="list-style-type: none"> <li>• More frequent use and higher wear of vehicles and equipment to make more frequent road, bridge and stormwater management repairs or rehabilitations</li> <li>• Reduced vehicle and equipment lifespans</li> <li>• Shortages of fleet and equipment inventory to handle higher frequency of calls, repairs and emergencies</li> </ul>	<ul style="list-style-type: none"> <li>• Decreased response times and longer service interruptions.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance and servicing of vehicles and equipment.</li> <li>• Replacements of vehicles and equipment</li> <li>• Addition of new vehicles and equipment</li> </ul>

Increased frequency of freezing rain events	<ul style="list-style-type: none"> <li>• Shortages of fleet and equipment inventory to handle higher frequency of calls, and emergencies</li> </ul>	<ul style="list-style-type: none"> <li>• Decreased response times and longer service interruptions.</li> <li>• Higher servicing costs.</li> <li>• Potential safety issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Addition of new vehicles and equipment</li> </ul>
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## 8 Financial Strategy

Good financial management is required for sustainable assets and services, and the achievement of strategic goals. *Reg 588/17: Asset Management for Municipal Infrastructure* requires municipalities to outline its financial strategy and include a 10-year operating and capital plan in the AMP. The overall objective of the Township’s financial strategy is to maintain sustainable services and assets at affordable rates to the residents and businesses of Drummond/North Elmsley. Figure 8.1 illustrates the key components of the Township’s Financial Strategy, which guides development of the AMP’s 10-year operating and capital plan.

*Figure 8.1: Components of Township’s Financing Strategy*



## 8.1 The Long-Term Financial Plan

Financial sustainability depends on setting tax rates that address today's infrastructure needs so that it will not burden the next generation of citizens. To achieve that outcome, the Long-Term Financial Plan (LTFP) is founded on three pillars:

### 1. Financial Sustainability

Providing and maintaining desired services and state of infrastructure levels without resorting to unplanned increases in rates or disruptive cuts to services.

### 2. Financial Vulnerability

Managing the Township's dependency on outside funding sources that it does not control.

### 3. Financial Flexibility

Maintaining the ability to adjust debt levels or taxes to meet financial obligations and the amount of dependency the Township has on outside funding sources that it does not control.

Creating a LTFP that connects the AMP's financial plan and the annual budget and forecast ensures that the Township can financially adapt to the changing infrastructure needs and maintain the sustainability of assets and services to acceptable levels.

## 8.2 Growth

Residential and commercial growth generates wealth within the community and provides additional tax revenues to the Township to fund its future infrastructure needs. Township growth is driven by new residents to the community and from the conversion of seasonal dwellings to year-round dwellings.

At the time of this report, the Township was in the process of updating its Development Charges Background Study and reviewing new growth projections. Therefore, the new projections were unavailable at the time of drafting this report. Until such time as the new growth projections are available, the 2024 AMP will continue to rely on the growth projections from the 2019 Background Study.

The 2019 Development Charges Background Study projected a growth rate for the Township between 2019 to 2028 of 0.75% annually. This average falls below the averages for the Province and Lanark County which grew between 2011 and 2016 at a rate of about 0.92% annually. The Township's growth projections for 2024 are not anticipated to change significantly from the 2019 projections.

Because of the low growth projections, the infrastructure needs identified in the asset management plan are not anticipated to be impacted or changed due to growth. There are, however, implications to the Township's revenues to sustain the financial plan outlined in this report. The low growth rate will result in a relatively flat revenue stream over the coming 10-year

period which means the increasing financial burden for increasing infrastructure needs will need to be supported by a relatively static population base.

### 8.3 The Financial Strategy – Overview

Table 8.3.1 sums up the 10-year operating and capital requirements to maintain Current TLOS and achieve Proposed TLOS. The total 10-year infrastructure funding gap is the difference between:

- The infrastructure needs to achieve the Current and Proposed TLOS (not including property assets)
- The Township’s historical 6-year average of annual capital investments plus the 2024 operating investments projected over the next 10 years (in 2024 values).

As Table 8.3.1 summarizes, the Township’s historical levels of spending fall short of meeting both Current TLOS and Proposed TLOS by \$6.2 million and \$27.7 million respectively. Affordably achieving the Proposed TLOS is not feasible in the 10-year timeframe; however, the Township is close to being able to financially sustain its Current TLOS.

The Sustainability Index (SI), which measures the adequacy of the Township’s historical spending averaged over the next 10 years, is currently at 0.8. To financially sustain its infrastructure targets, a municipality should achieve a minimum Sustainability Index of 0.9.

The full 10-year funding gap to sustain Current TLOS can be attributed to shortfalls in average capital investments. Operating investment levels are adequate. Therefore, if the Township increases its historical levels of capital investments to reduce its 10-year gap by at least \$5.6 million, then the Township could achieve the minimum sustainability target of 0.9 (excluding building and property needs). The Township should, however, continue working toward or utilizing some Proposed TLOS where matters of safety, efficiency and better service, and asset management outcomes are evident.

*Table 8.3.1: 10-year Financing Needs to Meet Current and Proposed Technical Levels of Service*

LOS Targets	10-year Operating Needs	10-year Capital Needs	Total 10-year Needs	Historical Investments <sup>1</sup>	Total 10-year Infrastructure Funding Gap <sup>2</sup>	Var. <sup>3</sup>	SI <sup>4</sup>
Current LOS	\$16.2M	\$20.5M	\$36.7M	\$30.6M	\$6.2M	16.8%	0.8
Proposed LOS	\$21.1	\$47.1M	\$68.2M	\$30.6M	\$27.7M	40.7%	0.6

Notes:

1. Historical investments are based on the Township’s 6-year average of annual capital investments plus the 2024 operating investments projected over the next 10 years (in 2024 values).

2. The 10-year infrastructure funding gap is the difference between the required expenditures to meet Current and Proposed Technical Levels of Service and the Township's historical 6-year average projected over 10 years.
3. The infrastructure funding gap measured as a % variance.
4. The Sustainability Index (S.I.) measures the adequacy of the Township's historical 6-year average projected over 10 years to sustain the current and proposed levels of service. To be sustainable, a municipality should achieve a minimum index of 0.9.

Since the outcome of Township's financial strategy is to achieve a balance between good services and good assets that are affordable at acceptable levels of risk, the Township's financing strategy will prioritize closing the infrastructure funding gap to maintain Current TLOS.

The Township's challenge to even meet Current TLOS is mainly driven by the capital investments required to maintain the roads and bridges in their currently "Good" state. How the Township's infrastructure arrived a generally "Good" state stems from staff's sound management practices, the optimized use of grants and loans, and Council's support in making the necessary investments.

The Township's good management practices will continue; however, moving forward the Township will prioritize maintaining Current TLOS and close the financing gap to these current service levels. The Township's strategy will be guided by four key principles:

1. Sustain current service levels to the community
2. Maintain affordability for the taxpayer
3. Maximize asset value for services
3. Prioritize safe assets and services

The actions to support the key principles include:

- Gradual, responsible, and affordable increases to taxes and user fees.
- Advocate to the provincial and federal governments for additional grants based on sound justifications.
- When necessary, use targeted and sensible borrowing to address specific asset needs.
- Employ sound asset and financial management practices
- Utilize the Township's risk management strategy and practices to continuously assess risks to assets and services to prioritize asset management actions
- Continuously adapt the Township's financial planning to the infrastructure needs and affordability to the taxpayer by continuously updating the annual budget and forecast and AMP.

### 8.3.1 Capital Investment Forecast

Although the Township’s financial strategy is centered on sustaining the Current TLOS, Table 8.3.1.1 and Figure 8.3.1.1 provide an overview of the capital requirements to sustain both Current and Proposed TLOS.

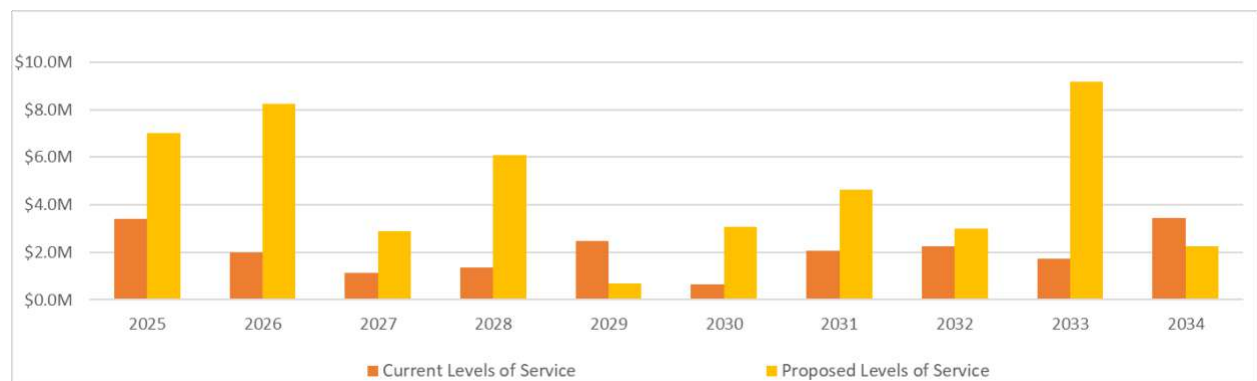
It is estimated that annual capital investments of \$2.1 million are required to sustain the Current TLOS which equates to an infrastructure reinvestment rate of 0.5%. Based on the Township’s 6-year historical capital investment levels, this would equate to an annual capital infrastructure funding gap of \$0.6 million.

The annual capital investments to achieve Proposed TLOS are estimated at \$4.7 million which equates to a reinvestment rate of 1.2%. Based on the Township’s 6-year historical capital investment levels, this would equate to an annual capital infrastructure funding gap of \$2.3 million.

*Table 8.3.1.1: Capital Requirements to Achieve Current and Proposed Technical Levels of Service*

Technical Levels of Service Targets	Required Annual Investments (\$,000)	Reinvestment Rate	Annual Capital Infrastructure Funding Gap (\$,000)
Current Levels of Service	\$2,050.2	0.5%	\$630.8
Proposed Levels of Service	\$4,707.7	1.2%	\$2,297.0

*Figure 8.3.1.1: Capital Requirements to Achieve Current and Proposed Technical Levels of Service*



### 8.3.2 Operating Maintenance Investment Forecast

Again, Table 8.3.2.1 and Figure 8.3.2.1 provides an overview of the operating requirements to sustain both Current and Proposed TLOS despite the Township’s financial strategy moving toward sustaining Current TLOS.

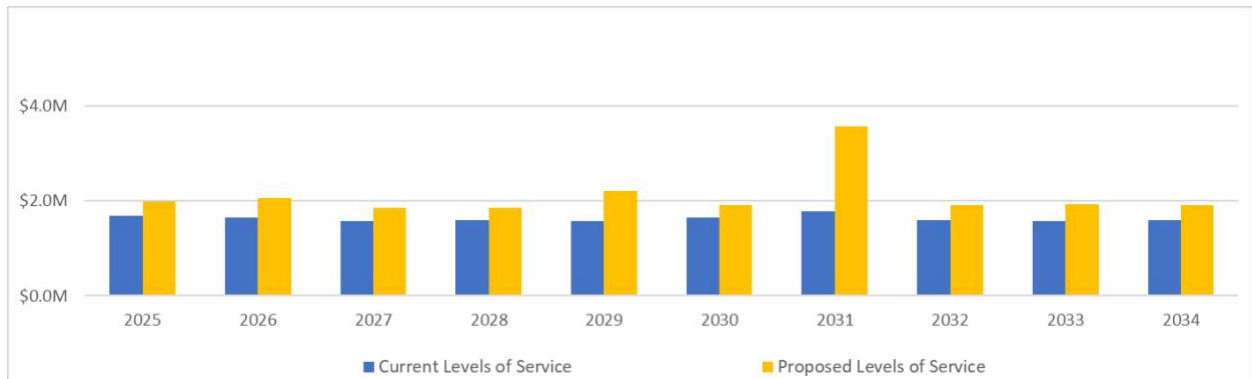
It is estimated that annual operating investments of \$1.6 million are required to sustain the Current TLOS which equates to an infrastructure reinvestment rate of 0.4%. Based on the Township’s 2024 operating investments levels, this would equate to an annual operating funding surplus of \$0.01 million.

The annual operating investments to achieve Proposed TLOS are estimated at \$2.1 million which equates to a reinvestment rate of 0.5%. Based on the Township’s 2024 operating investments levels, this would equate to an annual operating funding gap of \$0.5 million.

*Table 8.3.2.1: Operating Requirements to Achieve Current and Proposed Technical Levels of Service*

Technical Levels of Service Targets	Required Annual Investments (\$,000)	Reinvestment Rate	Annual Operating Infrastructure Funding Gap (\$,000)
Current Levels of Service	\$1,623.7	0.4%	(\$13.7)
Proposed Levels of Service	\$2,114.7	0.5%	\$477.4

*Figure 8.3.2.1: Operating Requirements to Achieve Current and Proposed Technical Levels of Service*



### 8.3.3 Revenue Forecast

The revenue forecast focuses solely on what is required to sustain the Township’s Current TLOS.

The Township annually collects approximately \$1.4 million in revenue for the capital renewal program. The annual capital investment requirements are \$2.1 million to sustain Current TLOS, thus creating an annual deficit of approximately \$0.6 million.

*Table 8.3.3.1: Forecasted Revenue for Capital Funding*

Annual Investment Requirements* (\$,000)	Annual Forecasted Revenue Funding Available (\$,000)	Surplus/(Deficit) (\$,000)
\$2,050.2	\$1,419.3	(\$630.8)

\*Based on typical asset lifecycles

### 8.3.4 Capital Reserves

Reserves play a critical role in long-term financial planning. Currently the Township has a \$0.6 million in the Capital Reserves. The Capital Reserves are primarily used for:

- Stabilizing tax rates
- Financing one-time or short-term investments
- Accumulating funding for future infrastructure investments
- Funding infrastructure funding shortfalls
- Managing the use of debt

*Table 8.3.4.1: Current Reserve Balances*

Asset Category	Balance on December 31, 2023 (\$,000)
Roads	\$375.3
Structures	\$53.3
Fleet and Equipment	\$195.8
<b>Total</b>	<b>\$624.3</b>

### 8.3.5 The Infrastructure Funding Gap

The infrastructure funding gap represents the financial shortfall between what the municipality can currently afford to fund versus what it should be funding to achieve desired infrastructure conditions and community services.

#### *The Annual Capital Funding Gap*

To meet capital replacement and rehabilitation needs to sustain assets and maintain Current TLOS, the Township will require average annual capital investments of approximately \$2.1 million. As Table 8.3.5.1 summarizes, the Township has historically invested \$1.4 million towards capital projects per year and has approximately \$0.6 million in capital reserves leaving an annual funding gap of \$0.6 million.

*Table 8.3.5.1: Annual Capital Funding Gap*

Annual Investment Requirements* (\$,000)	Annual Revenue Funding (\$,000)	Reserve Funding (\$,000)	Surplus/(Deficit) (\$,000)
\$2,050.2	\$1,419.3	\$624.3	(\$568.4)

\*Based on typical asset lifecycles

### **The Annual Operating Funding Gap**

Repairs and maintenance to extend and maximize the use and life of assets are funded from the operating budget. The Township’s maintenance needs to sustain assets and maintain Current TLOS is approximately \$1.6 million. As Table 8.3.5.2 summarizes, the Township has historically invested \$1.6 million towards maintaining the assets each year and has approximately \$0.3 million (\$300,000) in operating reserves to fund infrastructure related operating expenditures, leaving an annual surplus funding gap of approximately \$263,904.1.

*Table 8.3.5.2: Annual Operating Funding Gap*

Operations & Maintenance Investment Requirements (\$,000)	Annual Revenue Funding (\$,000)	Reserve Funding (\$,000)	Surplus/(Deficit (\$,000)
\$1,623.7	\$1,637.34	\$263.9	\$263.9

### **8.4 Next Steps in the Financial Strategy**

The Township’s objective is to reduce the infrastructure funding gap by at least \$5.6 million over 10 years to financially sustain its Current TLOS. The funding gap does not include the investments for buildings and property. The Township has a framework to move forward with a strategy that would cover all assets including facilities, and in the coming months the Township intends to complete the strategy that would consider a mix of options including affordable revenue increases, borrowing, and seeking grants from the provincial and federal governments.

# Appendices



# APPENDIX I – STATE OF THE INFRASTRUCTURE AND O. REG 588/17 REPORTING REQUIREMENTS

## i. Roads



Table AI.i.1: The Township of Drummond/North Elmsley’s Road Inventory

Asset Category	Asset Class	Inventory	Replacement Value (2024 Dollars in Millions)
Paved Roads	HCB Semi-Urban Local Roads	0.5 km	\$0.9
	HCB Rural Collector Roads	58.2 km	\$90.8
	HCB Rural Local Roads	73.2 km	\$114.1
	LCB Rural Collector Roads	7.0 km	\$11.0
	LCB Rural Local Roads	3.8 km	\$5.9
	<b>Sub-Total</b>	<b>142.7 km</b>	<b>\$222.6</b>
Unpaved Roads	Collector Gravel Roads	8.1 km	\$10.3
	Local Gravel Roads	113.4 km	\$143.1
	<b>Sub-Total</b>	<b>121.5 km</b>	<b>\$153.4</b>
<b>Roads</b>	<b>Total</b>	<b>264.3 km</b>	<b>\$376.0</b>

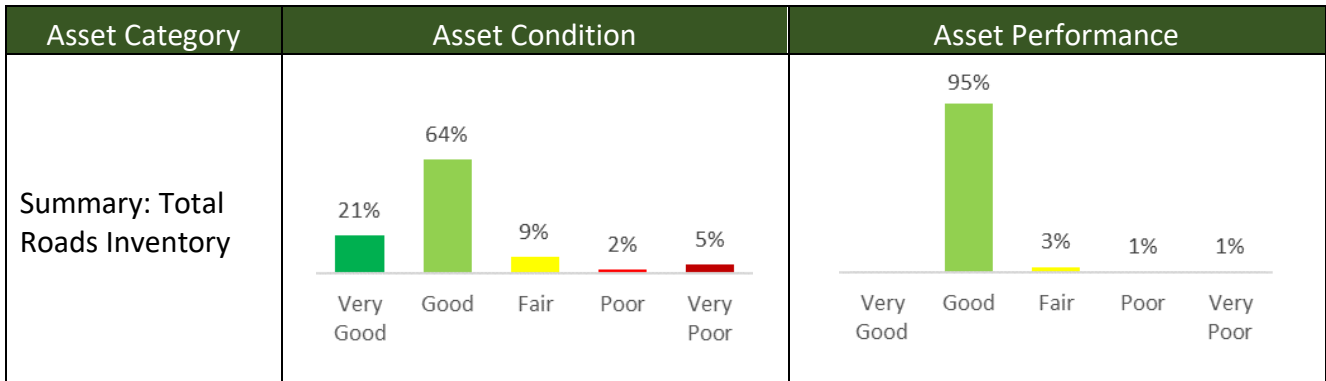
### State of the Roads Infrastructure (Current Levels of Service)

The Township updates its Roads Needs Study every five years to assess the current state of road condition and performance. The most recent Roads Needs Study was completed in 2022, the results of which are summarized on Table AI.i.2. Overall, the state of the Township’s roads is rated “Good.”

Table AI.i.2: Current Condition and Performance of the Roads Assets

Asset Category	Asset Condition	Asset Performance
HCB (Paved) Semi-Urban Local Roads	<p>Very Good    Good    Fair    Poor    Very Poor</p>	<p>Very Good    Good    Fair    Poor    Very Poor</p>
HCB (Paved) Rural Collector Roads	<p>Very Good    Good    Fair    Poor    Very Poor</p>	<p>Very Good    Good    Fair    Poor    Very Poor</p>
HCB (Paved) Rural Local Roads	<p>Very Good    Good    Fair    Poor    Very Poor</p>	<p>Very Good    Good    Fair    Poor    Very Poor</p>
LCB (Paved) Rural Collector Roads	<p>Very Good    Good    Fair    Poor    Very Poor</p>	<p>Very Good    Good    Fair    Poor    Very Poor</p>

Asset Category	Asset Condition	Asset Performance
LCB (Paved) Rural Local Roads	<p>100%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>	<p>100%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>
Collector Gravel Roads	<p>100%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>	<p>85%</p> <p>6%</p> <p>3%</p> <p>6%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>
Local Gravel Roads	<p>100%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>	<p>92%</p> <p>6%</p> <p>1%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>
Summary: Total Paved Roads Inventory	<p>39%</p> <p>38%</p> <p>11%</p> <p>3%</p> <p>9%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>	<p>98%</p> <p>2%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>
Summary: Total Unpaved Roads Inventory	<p>93%</p> <p>7%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>	<p>89%</p> <p>6%</p> <p>2%</p> <p>3%</p> <p>Very Good   Good   Fair   Poor   Very Poor</p>



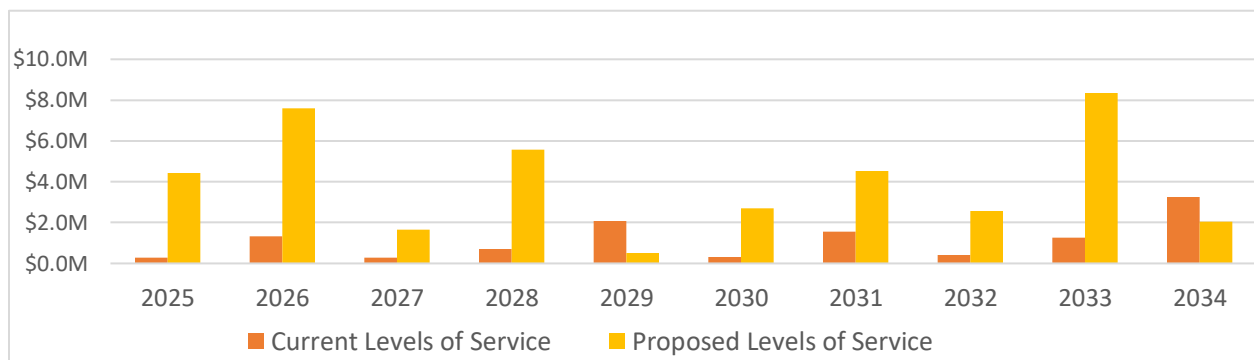
### Capital Investment Forecast

Capital investments are needed to resurface and reconstruct roads to maintain state-of-good repair. The Township has analyzed the annual costs to generally maintain the roads as they are (Current Technical Levels of Service) and the costs to improve the general state of the roads in line with industry norms and best practices (Proposed Technical Levels of Service). Table AI-i-3 and Figure AI.i.3 summarize the annual capital investment requirements to achieve both Technical Levels of Service targets.

Table AI.i.3: Capital Requirements to Achieve Current and Proposed Technical Levels of Service

Technical Levels of Service	Annual Investment (\$,000)	Reinvestment Rate	Annual Funding Gap (\$,000)
Current Technical Levels of Service	\$1,145.1	0.3%	\$2,850.0
Proposed Technical Levels of Service	\$3,995.1	1.1%	

Figure AI.i.3: Capital Requirements to Achieve Current and Proposed Technical Levels of Service



### Operating Investment Forecast

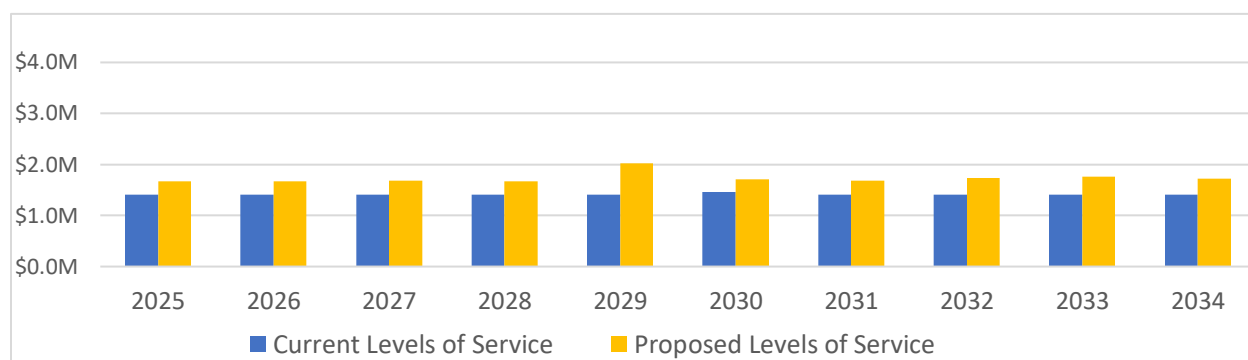
Operating investments are needed to repair and maintain the roads, including activities like clearing snow, sealing cracks, patching holes, and grading gravel roads and ditches. The Township has analyzed the annual costs to keep maintenance practices as they are and remain compliant

with regulations (Current Technical Levels of Service) and the costs to increase maintenance practices to improve public services and asset lifespans (Proposed Technical Levels of Service). Table AI.i.4 and Figure AI.i.4 summarize the annual operating investment requirements to achieve both Technical Levels of Service targets.

Table AI.i.4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service

Technical Levels of Service	Annual Investment (\$,000)	Reinvestment Rate	Annual Funding Gap (\$,000)
Current Technical Levels of Service	\$1,418.9	0.5%	\$316.1
Proposed Technical Levels of Service	\$1,735.0	0.5%	

Figure AI.i.4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service



### O. Reg. 588/17 Reporting: Levels of Service

Table AI.i.5 below shows the Community and Technical LOS that are required by the O. Reg. 588/17 to report.

Table AI.i.5: O. Reg. 588/17 Requirements

Community Levels of Service		Technical Levels of Service	
<b>Service Attribute: Scope</b>			
1. Description, which may include maps, of the road network in the municipality and its level of connectivity.	Please refer to Page 83 for the map of the existing road network	1. Number of lane-kilometres of each of the arterial roads, collector roads and local roads as a proportion of the square kilometres	1.436 km <sup>2</sup>

		of the land area of the municipality.	
<b>Service Attribute: Quality</b>			
1. Description or images that illustrate the different levels of road class pavement condition	For Pavement Rating Scale please refer to the section on 'Condition Measure' above, Pages 78-80.	1. For paved roads in the municipality, the average pavement condition index value.	70.3
		2. For the unpaved roads in the municipality, the average surface condition (e.g., excellent, good, fair, or poor).	Good

Figure A1.i.1: Drummond/North Elmsley Road Network

# Drummond/North Elmsley Road Network

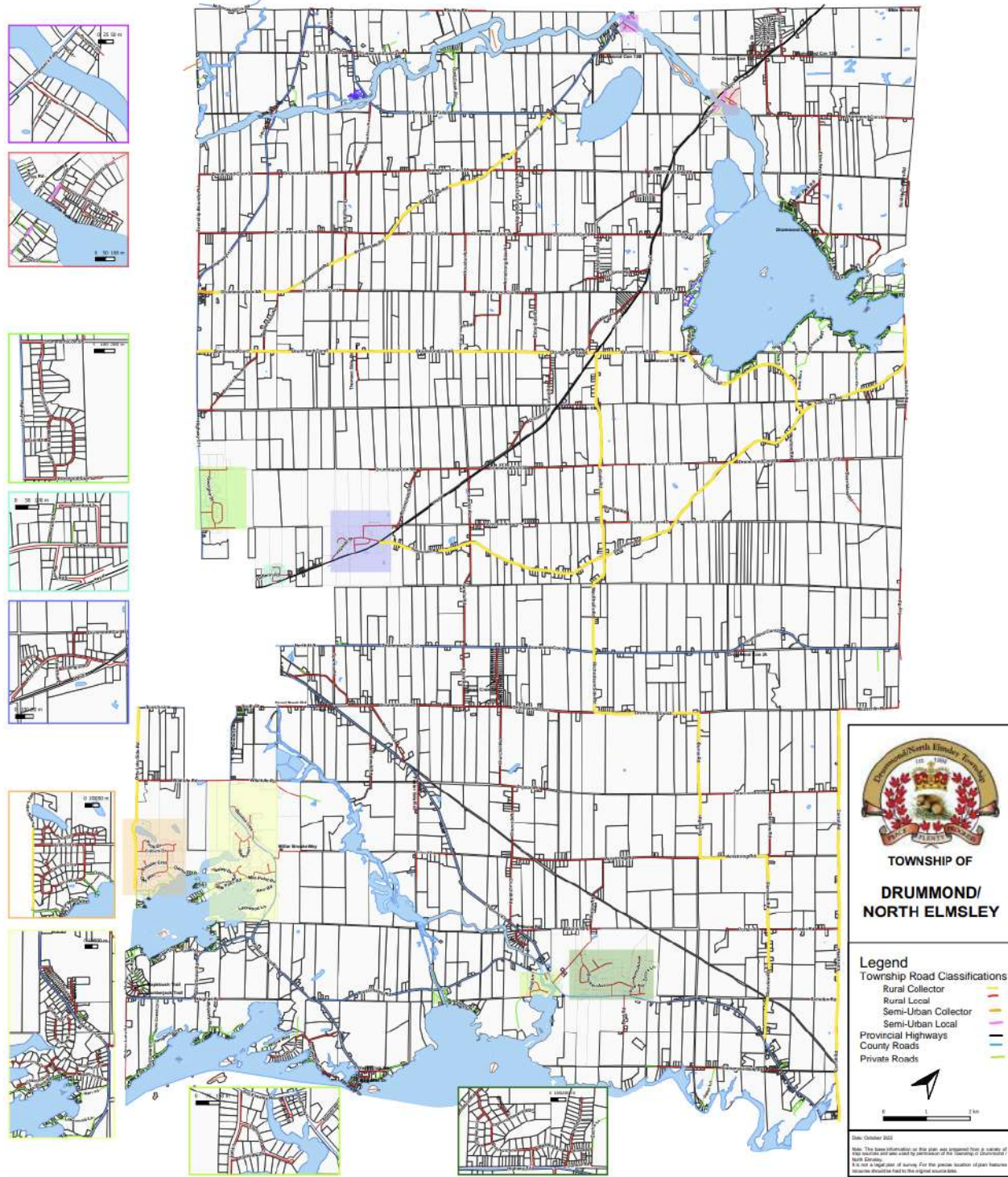
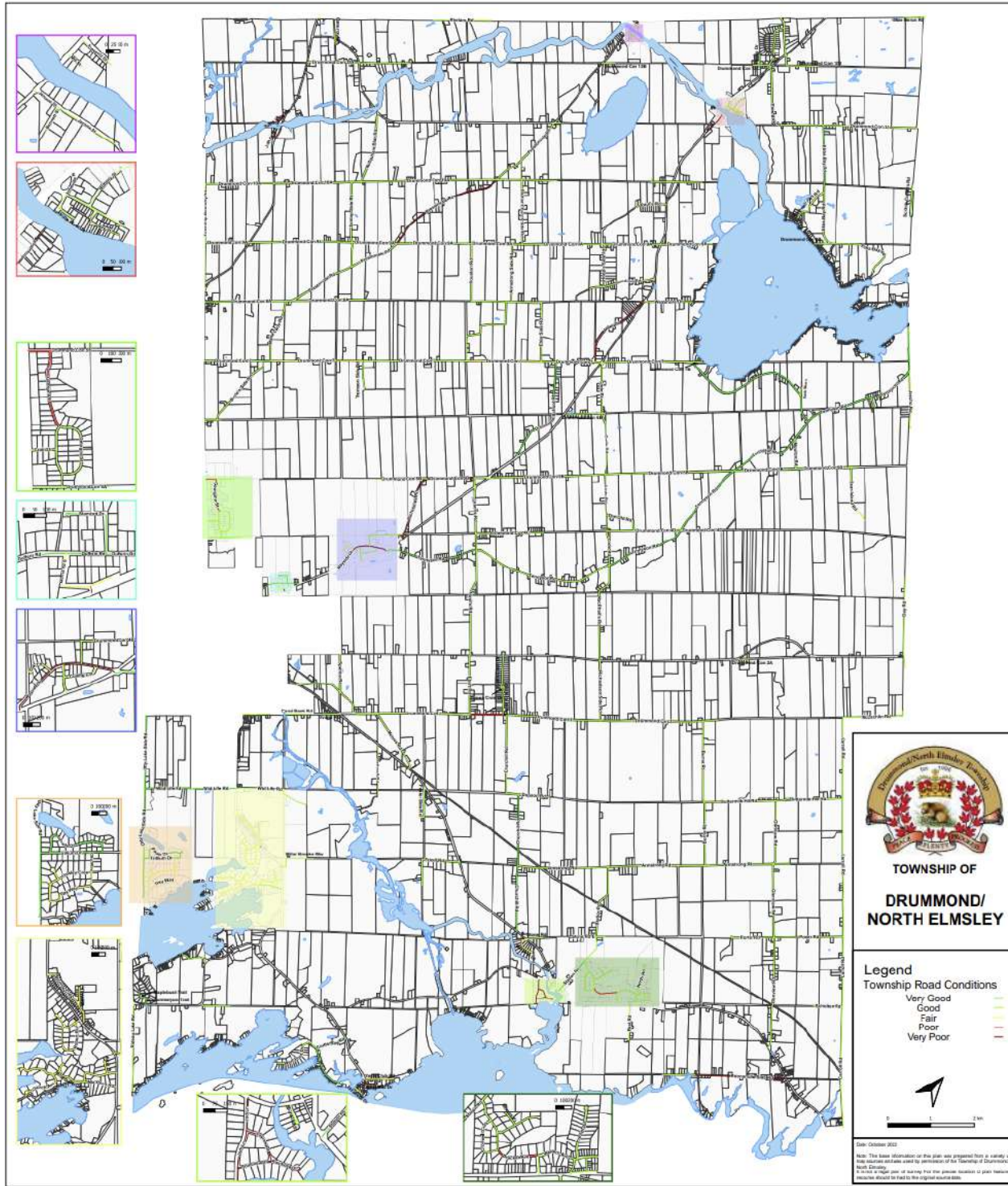


Figure A1.i.2: Drummond/North Elmsley Road Conditions

## Drummond/North Elmsley Road Conditions



ii. **Bridges and Major Culverts**



*Table AI.ii.1: The Township of Drummond/North Elmsley’s Bridge and Major Culvert Inventory*

Asset Category	Inventory	Replacement Value (2024 Dollars in \$,000)
Bridges	5	\$7,053.2
Major Culverts (>3 metres wide)	9	\$4,511.9
<b>Structures Total</b>	<b>14</b>	<b>\$11,565.0</b>

**State of the Bridges and Major Culverts Infrastructure (Current Levels of Service)**

Assessing the condition of bridges and major culverts is based on visual assessments of the structural elements for deficiencies such as cracking, spalling, corrosion, scouring, barrier/guardrail damage, and erosion per the Ministry’s Ontario Structure Inspection Manual (OSIM).

The Township has set a target BCI of 70 for all bridges and major culverts which corresponds to a “Good” condition. Currently, the average BCI rating for Bridges is 81.2 (Very Good) and the average BCI rating for Major Culverts is 67.7 (Fair).

Table AI.ii.2: Current Condition and Performance of the Bridges and Major Culverts

Asset Category	Asset Condition	Asset Performance
Bridges	<p>40% 60%</p> <p>Very Good Good Fair Poor Very Poor</p>	<p>65% 29% 6%</p> <p>Very Good Good Fair Poor Very Poor</p>
Major Culverts	<p>22% 44% 11% 11% 11%</p> <p>Very Good Good Fair Poor Very Poor</p>	<p>21% 68% 11%</p> <p>Very Good Good Fair Poor Very Poor</p>
Summary: Structures	<p>29% 50% 7% 7% 7%</p> <p>Very Good Good Fair Poor Very Poor</p>	<p>43% 49% 8%</p> <p>Very Good Good Fair Poor Very Poor</p>

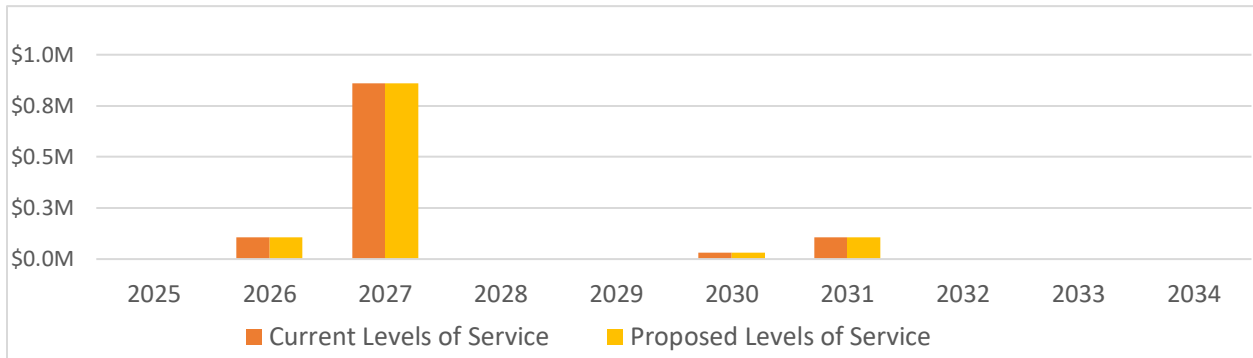
### Capital Investment Forecast

Capital investments are needed to refurbish and replace bridges and major culverts to maintain state-of-good repair. Because the safety of these structures is critical, the Township fully invests what is required to maintain state-of-good repair. As Table AI-ii-3 and Figure AI-ii-3 illustrate there is no difference between Current and Proposed Technical Levels of Service.

Table AI.ii.3: Capital Requirements to Achieve Current and Proposed Technical Levels of Service

Technical Levels of Service Targets	Annual Investment (\$,000's)	Reinvestment Rate	Annual Funding Gap (\$,000's)
Current Technical Levels of Service	\$110.3	1.0%	\$0.0
Proposed Technical Levels of Service	\$110.3	1.0%	

Figure AI.ii.3: Capital Requirements to Achieve Current and Proposed Technical Levels of Service



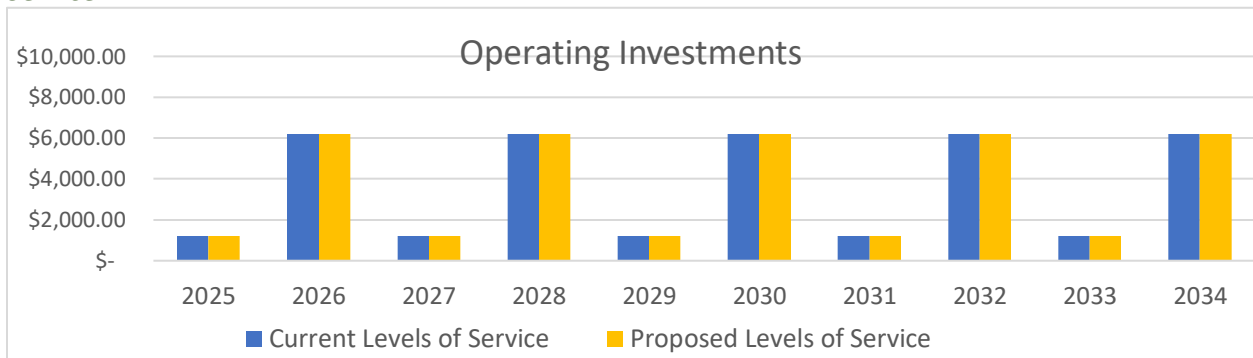
### Operating Investment Forecast

Operating investments are needed to repair and maintain the bridges and major culverts, including activities like clearing snow, washing deck surfaces, repairing cracks, spalling concrete, and guardrails. Again, because the safety of these structures is critical, the Township fully invests what is required to maintain state-of-good repair. As Table AI-ii-4 and Figure AI-ii-4 illustrate there is no difference between Current and Proposed Technical Levels of Service.

Table AI-ii-4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service

Technical Levels of Service Targets	Annual Investment (\$,000's)	Reinvestment Rate	Annual Funding Gap (\$,000's)
Current Levels of Service	\$3.7	0.03%	\$0.0
Proposed levels of Service	\$3.7	0.03%	

Figure AI.ii.4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service



## O. Reg. 588/17 Reporting: Levels of Service

Table AI-ii-5: below shows the Community and Technical LOS that are required by the O. Reg. 588/17 to report.

Table AI.ii.5: O. Reg. 588/17 Requirements

Community Levels of Service		Technical Levels of Service	
<b>Service Attribute: Scope</b>			
1. Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	The Township's bridges support: <ul style="list-style-type: none"> <li>• heavy transport vehicles</li> <li>• motor vehicles</li> <li>• emergency vehicles</li> <li>• pedestrians</li> <li>• cyclists, and</li> <li>• farm equipment</li> </ul>	1. Percentage of bridges in the municipality with loading or dimensional restrictions.	Loading = 0%  Dimensional = 0%
<b>Service Attribute: Quality</b>			
1. Description or images of the condition of bridges and how this would affect use of the bridges.	The Township rates the condition of bridges using the OSIM inspections Bridge Condition Index.	1. For bridges in the municipality, the average bridge condition index value. in the municipality, the average pavement condition index value.	81.2
2. Descriptions or images of the condition of culverts and how this would affect use of the culverts.	The Township rates the condition of major culverts using the OSIM inspections Bridge Condition Index.	2. For structural culverts in the municipality, the average bridge condition index value.	67.7

Figure A1.ii.1: Bridges and Major Culverts

## Bridges and Major Culverts

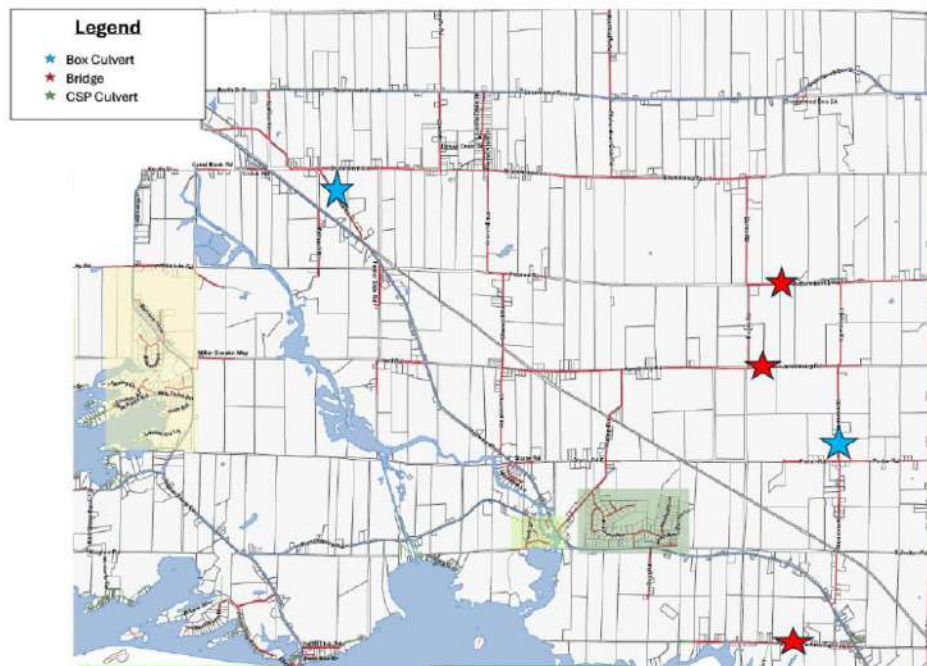
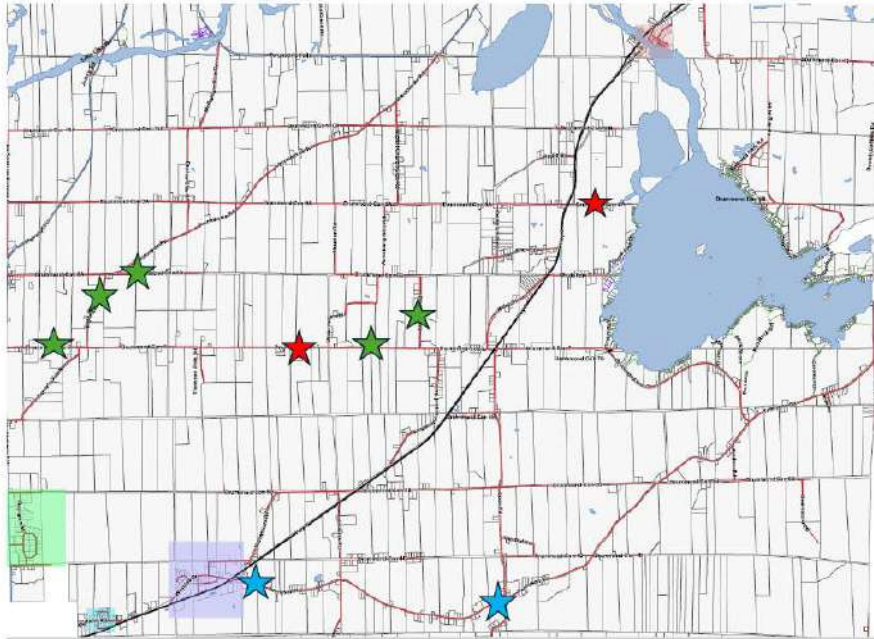


Figure A1.ii.2: Bridges and Major Culverts

## Bridges and Major Culverts

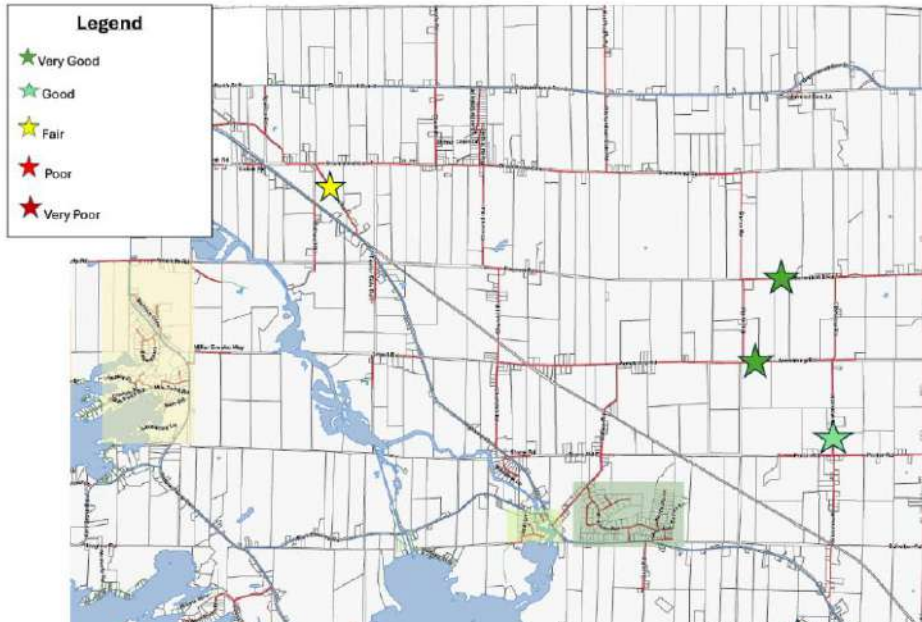
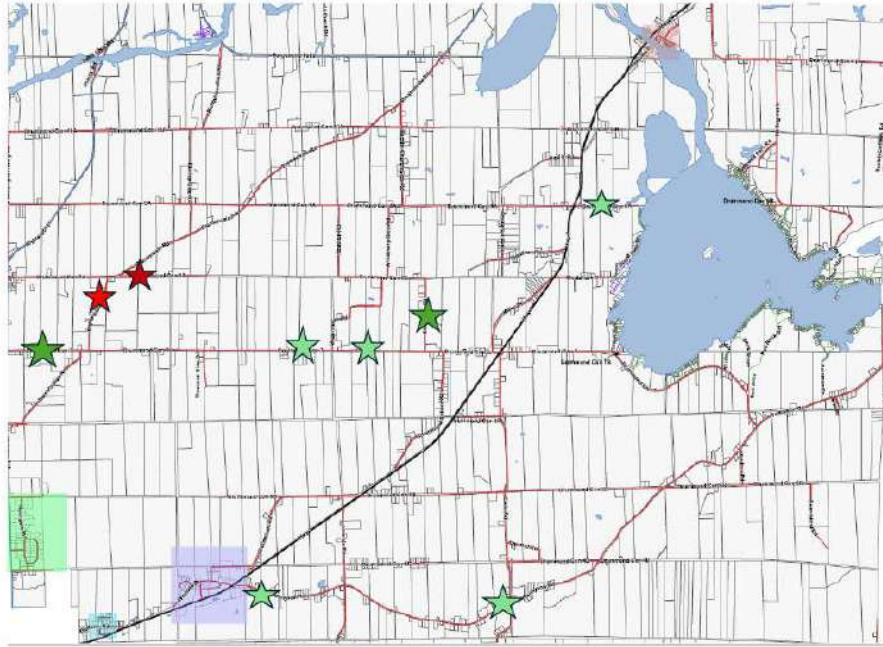
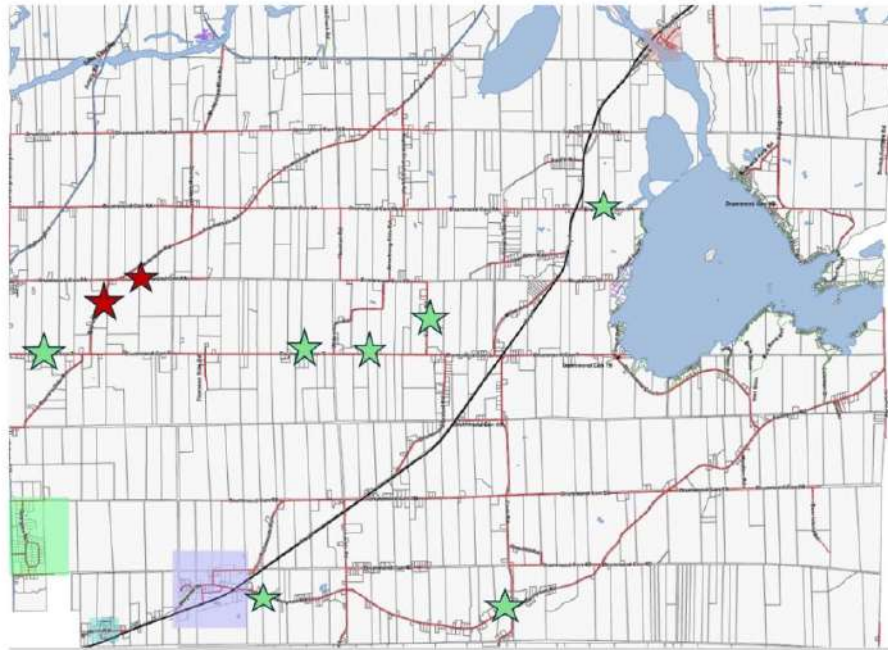


Figure A1.ii.3: Bridges and Major Culverts

## Bridges and Major Culverts



iii. Stormwater Management



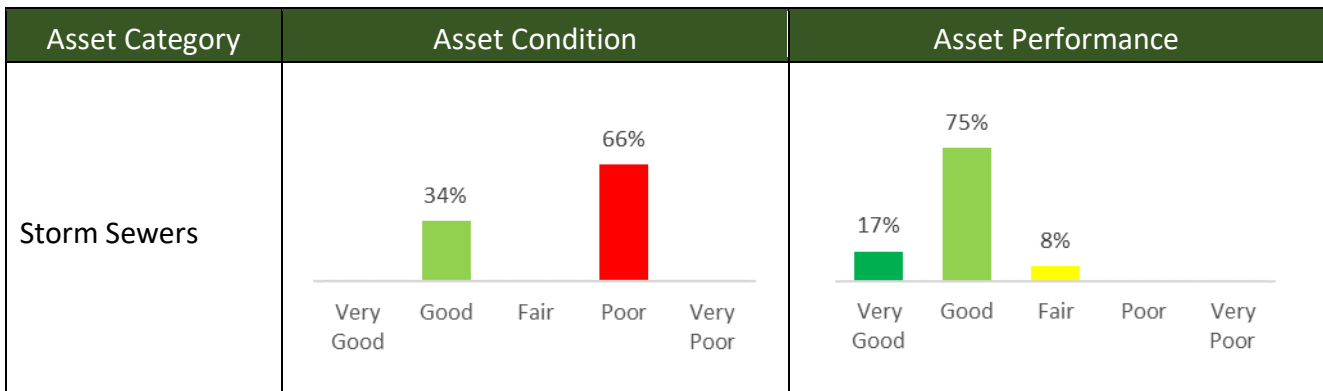
Table AI.iii.1: The Township of Drummond/North Elmsley’s Stormwater Management Inventory

Asset Category	Inventory	Replacement Value (2024 Dollars in \$,000)
Storm Sewers	843 m	\$514.2
Minor Culverts (<3 metres wide)	680 m	\$2,921.0
<b>Stormwater Management Total</b>	<b>1523 m</b>	<b>\$3,435.2</b>

**State of the Roads Infrastructure (Current Levels of Service)**

The Township conducts regular visual inspections of the storm sewers, catch basins, and minor culverts, the results of which are summarized on Table AI.iii.2. Overall, the state of the Storm Sewers is rated “Fair,” and the Minor Culverts are rated “Good.”

Table AI.iii.2: Current Condition and Performance of the Stormwater Management Assets





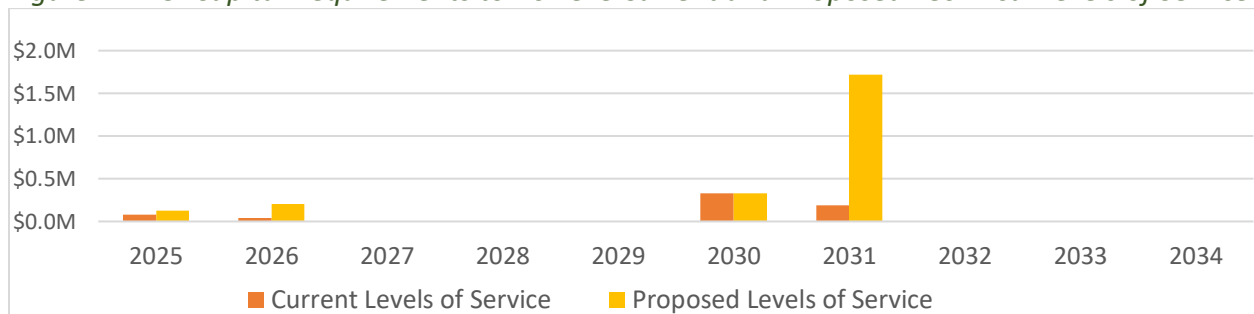
### Capital Investment Forecast

Capital investments are needed to replace sewer pipes and catch basins to maintain state-of-good repair. Minor culvert replacements are financed from the operating budget. As Table AI.iii.3 and Figure AI.iii.4 summarize, there is no difference in Current and Proposed Technical Levels of Service or investment requirements over the next 10-years.

Table AI.iii.3: Capital Requirements to Achieve Current and Proposed Technical Levels of Service

Asset Category	Technical Levels of Service Targets	Annual Investment (\$,000's)	Reinvestment Rate	Annual Funding Gap (\$,000's)
Storm Sewers	Current Technical Levels of Service	\$32.7	6.4%	\$0.0
	Proposed Technical Levels of Service	\$32.7	6.4%	

Figure AI.iii.3: Capital Requirements to Achieve Current and Proposed Technical Levels of Service



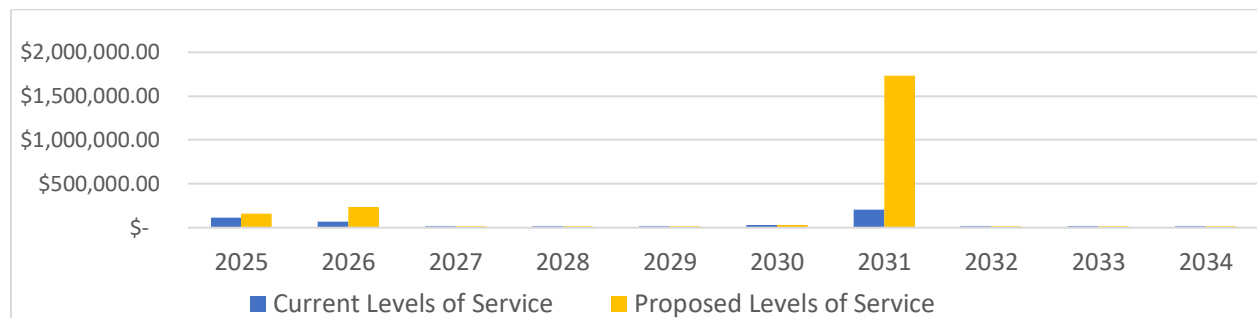
### Operating Investment Forecast

Operating investments are needed to clean and replace minor culverts and to clean and inspect storm sewers and catch basins. The Township has analyzed the annual costs to keep maintenance practices as they are (Current Technical Levels of Service) and the costs to increase maintenance practices to improve state-of-good repair for minor culverts and storm water management service reliability (Proposed Technical Levels of Service). Table AI.iii.4 and Figure AI.iii.4 summarizes the annual operating investment requirements to achieve both Technical Levels of Service targets.

*Table AI.iii.4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service*

Asset Category	Technical Levels of Service Targets	Annual Investment (\$,000's)	Reinvestment Rate	Annual Funding Gap (\$,000's)
Storm Sewers	Current Technical Levels of Service	\$2.4	0.5%	\$1.4
	Proposed Technical Levels of Service	\$3.8	0.7%	
Minor Culverts	Current Technical Levels of Service	\$49.2	1.7%	\$173.6
	Proposed Technical Levels of Service	\$222.8	7.6%	

*Figure AI.iii.4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service*



### **O. Reg. 588/17 Reporting: Levels of Service**

Table AI.iii.5 below shows the Community and Technical LOS that are required by the O.Reg. 588/17 to report.

Table AI.iii.5: O. Reg. 588/17 Requirements

Community Levels of Service		Technical Levels of Service	
<b>Service Attribute: Scope</b>			
1. Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	Please refer to Map AI.iii.1 for floodplain mapping	1. Percentage of properties in municipality resilient to a 100-year storm.	89.4%
		2. Percentage of properties in municipality resilient to a 5-year storm.in the municipality, the average pavement condition index value.	100%

Figure A1.iii.1: Floodplain mapping

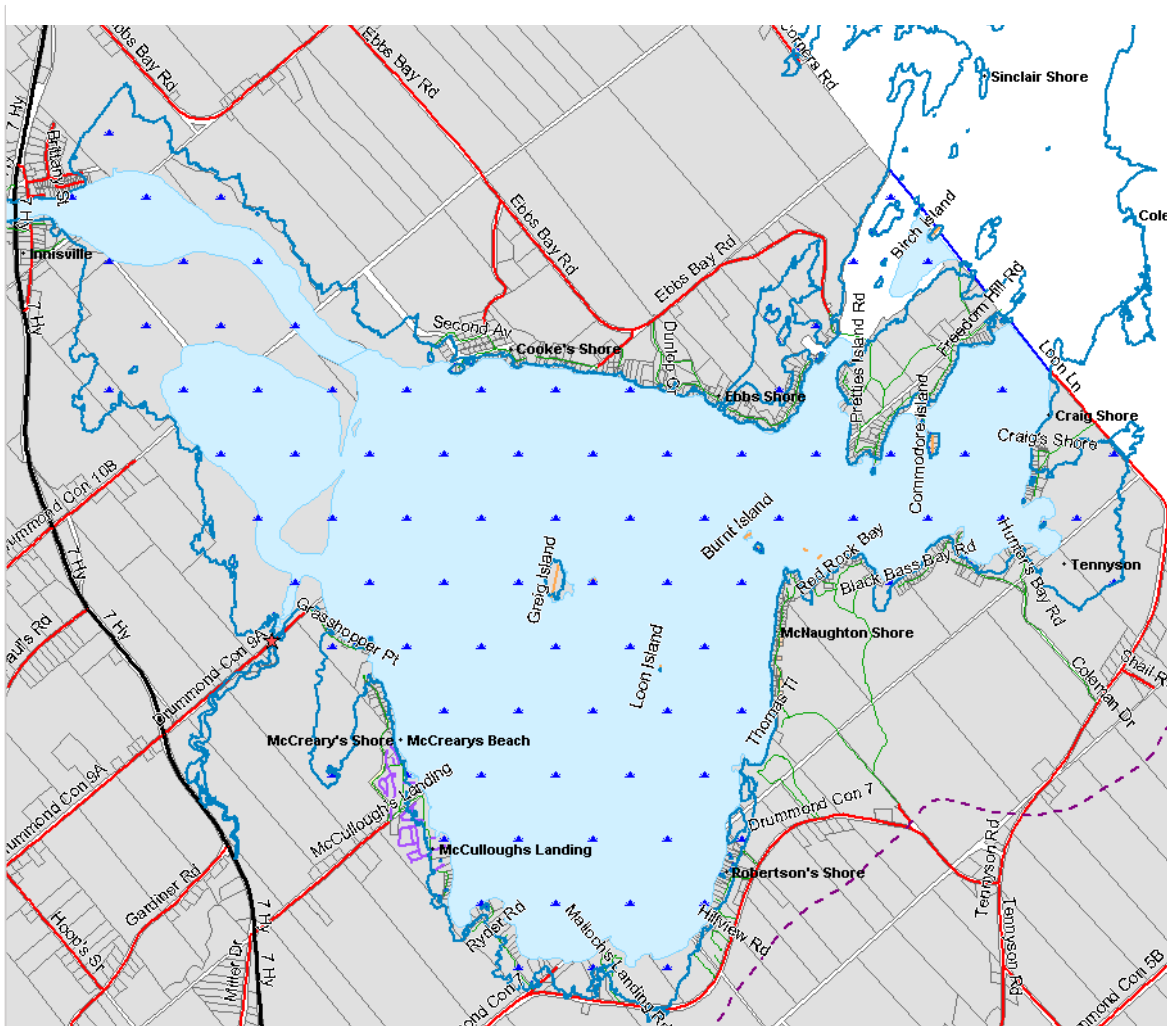


Figure A1.iii.2: Innisville North Storm Sewers

### Innisville North Storm Sewers

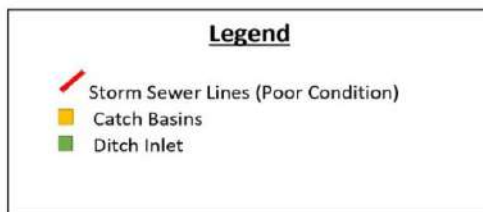
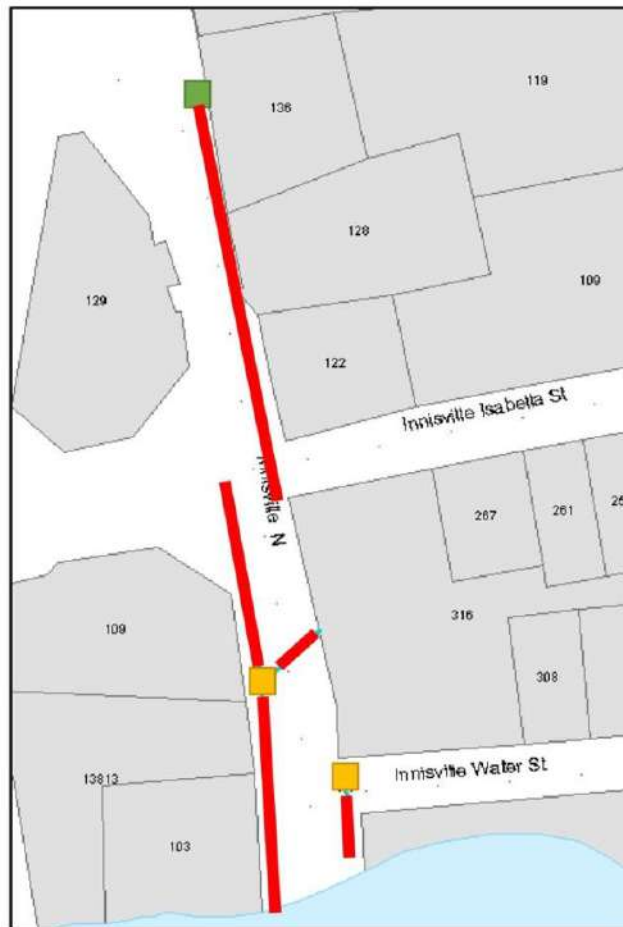


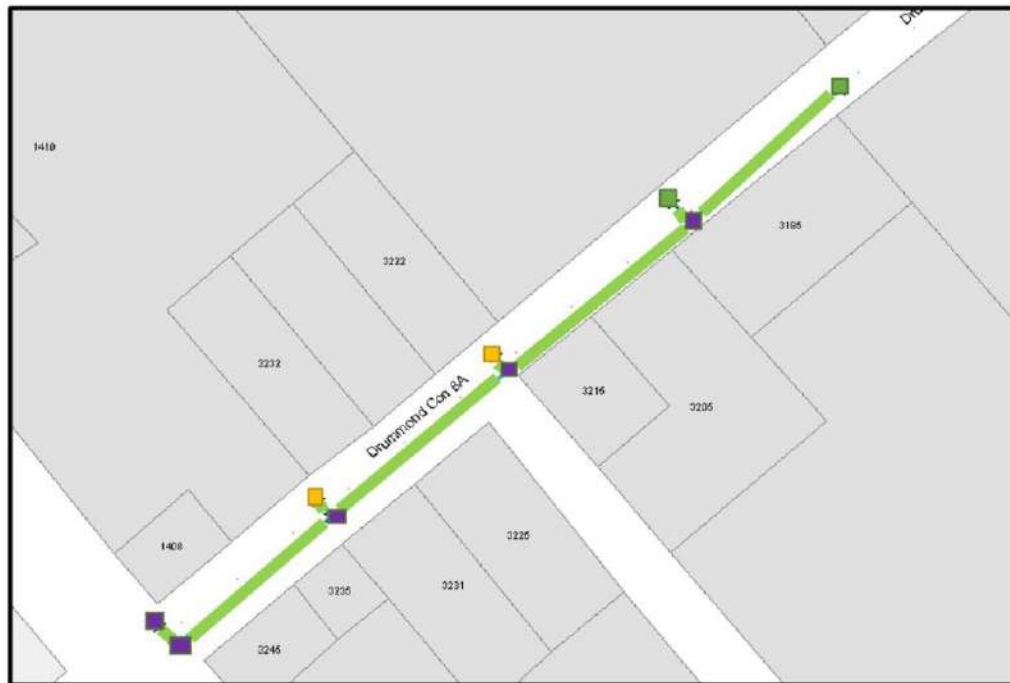
Figure A1.iii.3: Innisville North Storm Sewers

### Innisville South Storm Sewers



Figure Al.iii.4: Innisville North Storm Sewers

### Balderson Storm Sewers



**iv. Fleet and Equipment**



*Table AI.iv.1: The Township of Drummond/North Elmsley’s Fleet and Equipment Inventory*

Asset Category	Inventory	Replacement Value (2024 Dollars in \$,000)
Road Operations Accessory Equipment	11	\$263.1
Road Operations Heavy Equipment	6	\$2,254.4
Road Operations Small Trucks	5	\$355.0
Road Operations Large Trucks	7	\$2,460.0
Landfill Accessory Equipment	2	\$101.3
Landfill Heavy Equipment	2	\$665.0
Landfill Large Truck	1	\$385.0
Building Department Small Truck	1	\$75.0
<b>Total</b>	<b>35</b>	<b>\$6,558.7</b>

**State of the Fleet and Equipment Infrastructure (Current Levels of Service)**

The Township’s Fleet and Equipment are essential to maintaining service operations. The condition of vehicles and equipment are monitored daily with “circle checks” and regularly inspected and serviced. Replacement of vehicles or equipment depends on the age of the asset, its amount of use, and servicing history. Overall, the state of the Township’s fleet and equipment assets is rated “Fair.”

Table AI.iv.2: Current Condition and Performance of the Fleet and Equipment Assets

Asset Category	Asset Condition	Asset Performance
Road Operations Accessory Equipment	<p>18% 18% 27% 9% 27%</p> <p>Very Good Good Fair Poor Very Poor</p>	<p>59% 25% 17%</p> <p>Very Good Good Fair Poor Very Poor</p>
Road Operations Heavy Equipment	<p>33% 33% 33%</p> <p>Very Good Good Fair Poor Very Poor</p>	<p>56% 11% 33%</p> <p>Very Good Good Fair Poor Very Poor</p>
Road Operations Small Trucks	<p>20% 60% 20%</p> <p>Very Good Good Fair Poor Very Poor</p>	<p>63% 37%</p> <p>Very Good Good Fair Poor Very Poor</p>
Road Operations Large Trucks	<p>43% 29% 14% 14%</p> <p>Very Good Good Fair Poor Very Poor</p>	<p>11% 87% 2%</p> <p>Very Good Good Fair Poor Very Poor</p>

<p>Landfill Accessory Equipment</p>	<p>50% Very Good, 50% Very Poor</p>	<p>67% Good, 33% Fair</p>
<p>Landfill Heavy Equipment</p>	<p>50% Fair, 50% Very Poor</p>	<p>33% Very Good, 33% Good, 33% Very Poor</p>
<p>Landfill Large Truck</p>	<p>100% Very Poor</p>	<p>67% Very Good, 33% Good</p>
<p>Building Department Small Truck</p>	<p>100% Fair</p>	<p>63% Good, 37% Fair</p>
<p>Summary: Total Fleet and Equipment</p>	<p>17% Very Good, 17% Good, 26% Fair, 14% Poor, 26% Very Poor</p>	<p>16% Very Good, 57% Good, 15% Fair, 2% Poor, 10% Very Poor</p>

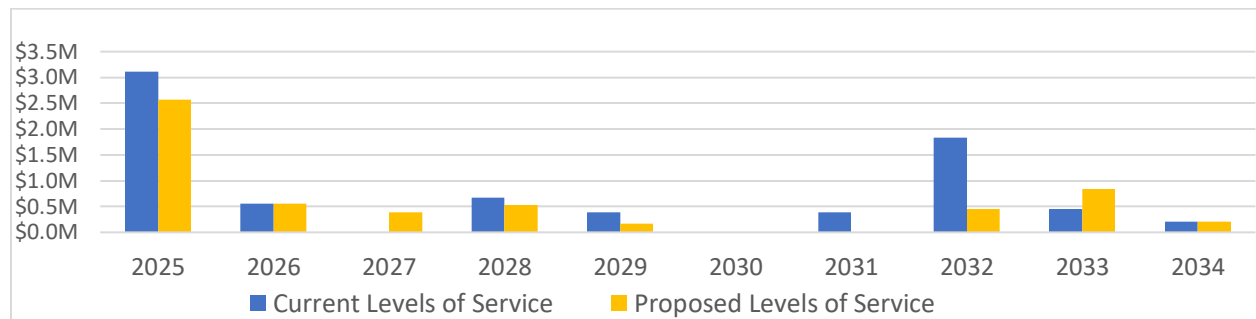
### Capital Investment Forecast

Capital investments are needed to replace old and failing vehicles for safe operations. The Township is exceeding its current levels of service primarily driven by the recent purchases of large trucks. With the Proposed Technical Levels of Service, the Township’s anticipated Fleet and Equipment investments have been marginally reduced over the next 10 years as summarized in Table AI.iv.3 and Figure AI.iv.3.

Table AI.iv.3: Capital Requirements to Achieve Current and Proposed technical Levels of Service

Technical Levels of Service Targets	Annual Investment (\$,000’s)	Reinvestment Rate	Annual Funding Gap (\$,000’s)
Current Technical Levels of Service	\$762.1	6.6%	(\$192.5)
Proposed Technical Levels of Service	\$569.6	4.9%	

Figure AI.iv.3: Capital Requirements to Achieve Current and Proposed technical Levels of Service



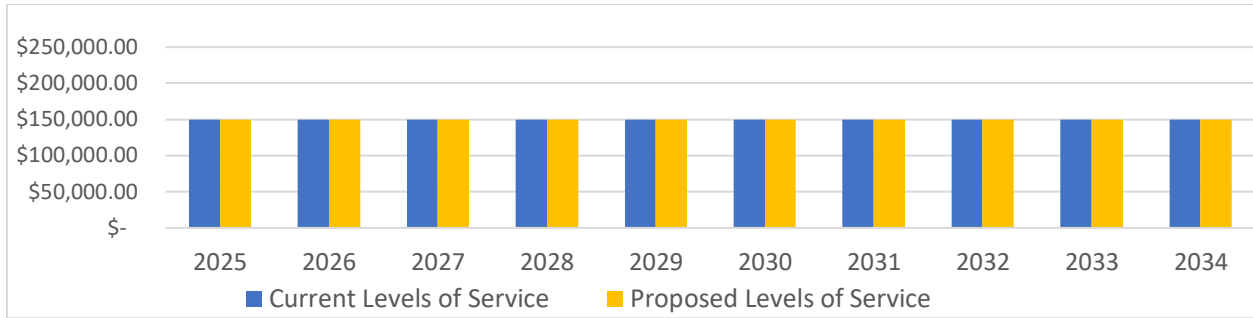
### Operating Investment Forecast

Operating investments are needed to service the vehicles and equipment and make repairs. These activities are essential to keep the vehicles operational so that prompt and reliable services can be provided. Due to the importance of having reliable vehicles and equipment there is no difference between Current and Proposed Technical Levels of Service and the financing to do so as summarized in Table AI.iv.4 and Figure AI.iv.4.

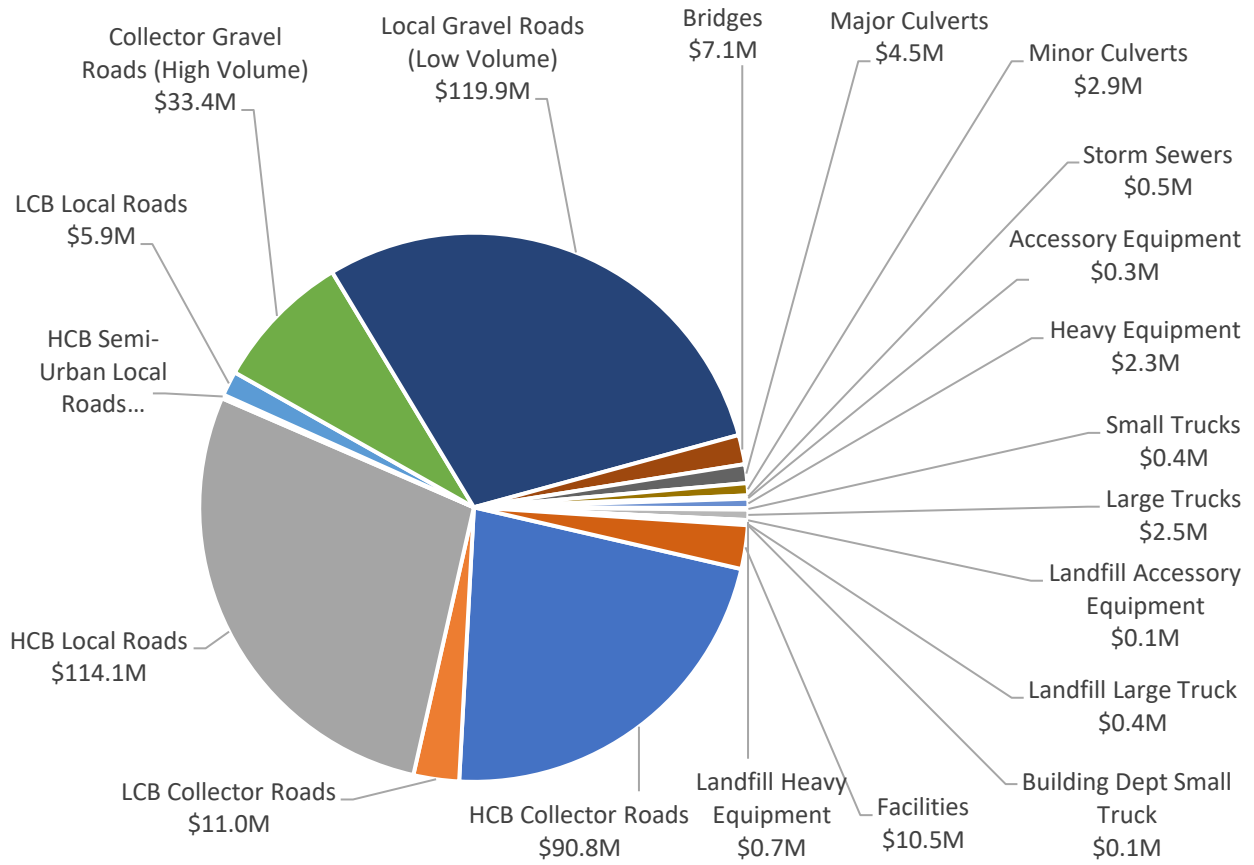
Table AI.iv.4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service

Technical Levels of Service Targets	Annual Investment (\$,000’s)	Reinvestment Rate	Annual Funding Gap (\$,000’s)
Current Technical Levels of Service	\$149.5	1.3%	\$0.0
Proposed Technical Levels of Service	\$149.5	1.3%	

Figure AI.iv.4: Operating Requirements to Achieve Current and Proposed Technical Levels of Service



## APPENDIX II – INFRASTRUCTURE REPLACEMENT VALUES



**APPENDIX III – ASSET LEVELS OF SERVICE OUTCOMES**

Asset Levels of Service	Predominant Community Service Outcomes					
	Health & Safety	Reliability	Quality	Quantity	Efficiency	Accessibility
Condition	X	X	X	X	X	X
Operational Functionality	X	X	X		X	X
Capacity to Meet Demands	X	X	X	X	X	X
Operational Resiliency	X	X				X
Environmental Resiliency	X	X				X

## APPENDIX IV – THE TOWNSHIP’S RISK MANAGEMENT DOCUMENTS

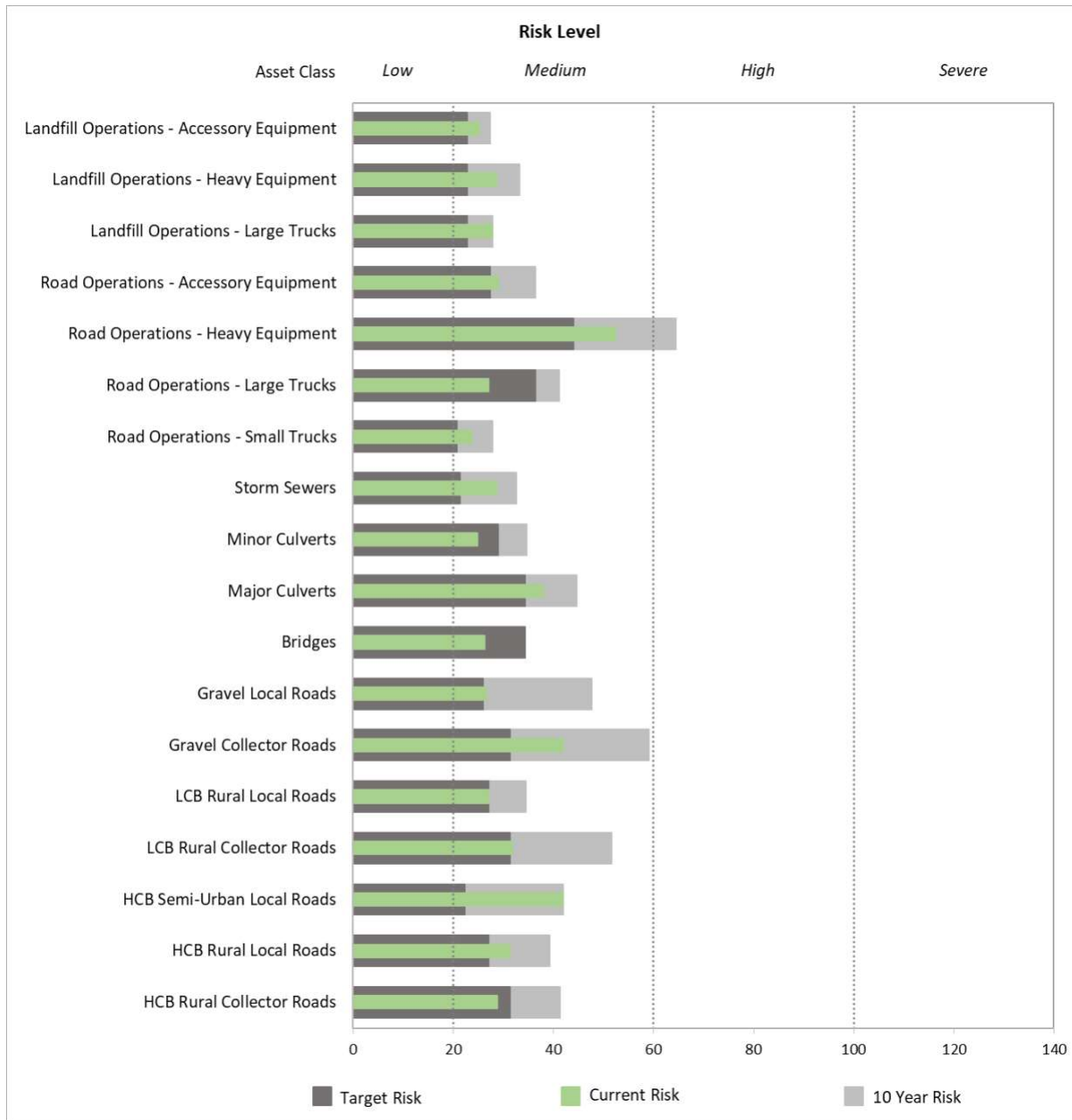
### i. Consequences of Failure Table

1	Consequence Categories	Consequence Severity Ratings				
2		Very Low	Low	Medium	High	Very High
3	Health & Safety	1	2	3	4	5
4	Consider the impacts to the health and safety of the public and municipal staff including potential mental and physical injury, illness and loss of life as a result of asset failure, impairment, malfunction, underperformance,	Negligible or no injury or illness among service workers or members of the public.  No medical attention required.	Minor injury <b>OR</b> Multiple Minor Injuries or illness lasting up to 2 weeks, <b>among service workers only.</b>  No impact on members of the public Recovery at home.	A Serious Injury <b>AND</b> (can include) A short term hospital stay, and/or with no permanent disabilities, <b>among service workers and less than 25 members of the public</b>	A Serious Injury <b>AND</b> (can include) A long term hospital stay, and/or with permanent disabilities, <b>among large numbers of service workers and 25-100 members of the public</b>	A Death <b>AND/OR</b> Multiple serious injuries requiring long term hospital recoveries with long term or permanent disabilities, <b>among large numbers of service workers and more than 100 members of the public</b>
5	Community Services	1	2	3	4	5
6	Consider the impacts to infrastructure integrity, community service functions, and municipal operations as a result of asset failure, impairment, malfunction, underperformance or insufficiency.	Very Low interruption/impairment of services. Integrity of services/ infrastructure is unaffected  Limited to a few people or residences in the community.  Nonessential services are affected for <b>less than one day.</b>  Operations of critical assets are unaffected. Little or no dissatisfaction with community services.	- Minor interruption/impairment of services. - Minor affect to integrity of services/infrastructure  - Affects an <u>isolated area</u> , and/or having <b>less than 50 people/ 25 residences.</b>  - Nonessential services and/or essential services are affected for up to one day <b>OR 8 Hours.</b>  - Operations of critical assets may be affected for <b>up to one day</b>  - Some short-term dissatisfaction with services in the community possibly resulting in a few complaints from the public to staff or a local Councillor.	- Moderate interruption/impairment of services. - Moderate affect to integrity of services/infrastructure - Affects a <u>sizable area</u> , and/or having <b>less than 100 people/ 50 residences.</b>  - Nonessential services are affected for up to a <b>2-7 days</b> and/or essential services for up to <b>12 hrs.</b>  - Operations of critical assets may be affected for <b>24 hours.</b>  - Some persistent dissatisfaction with services in the community leading to several or many complaints from the public to staff and Council.	- Significant interruption/ impairment of services. - Significant affect to integrity of services/infrastructure - Affects a <u>large area</u> and/or having <b>between 100-500 people/ 50 to 250 residences.</b>  - Nonessential services are affected for <b>8 to 28 days or 4 weeks</b> and/or essential services for <b>up to 24 hrs.</b>  - Operations of critical assets may be affected for <b>more than one day or up to 48 hrs.</b>  - Lasting and broad dissatisfaction with services in the community leading to high numbers of complaints from the public to staff and Council.  - Possible compliance breach resulting in issuance of corrective orders by external agencies.	- Extensive interruption/impairment of services. - Extensive affect to integrity of services/infrastructure - Affects a <u>very large area</u> and/or having <b>greater than 500 people/ 250 residences</b>  - Nonessential services are affected for <b>greater than 4 weeks</b> and/or essential services for <b>greater than 1 day or 24 hrs</b> - - Operations of critical assets may be affected for <b>greater than 2 days or 48 hrs.</b>  - Long-term community-wide dissatisfaction with services leading to calls for changes in Council and staff.  - Possible compliance breach resulting in issuance of corrective orders, sanctioning actions or removal of operating licence by external agencies.

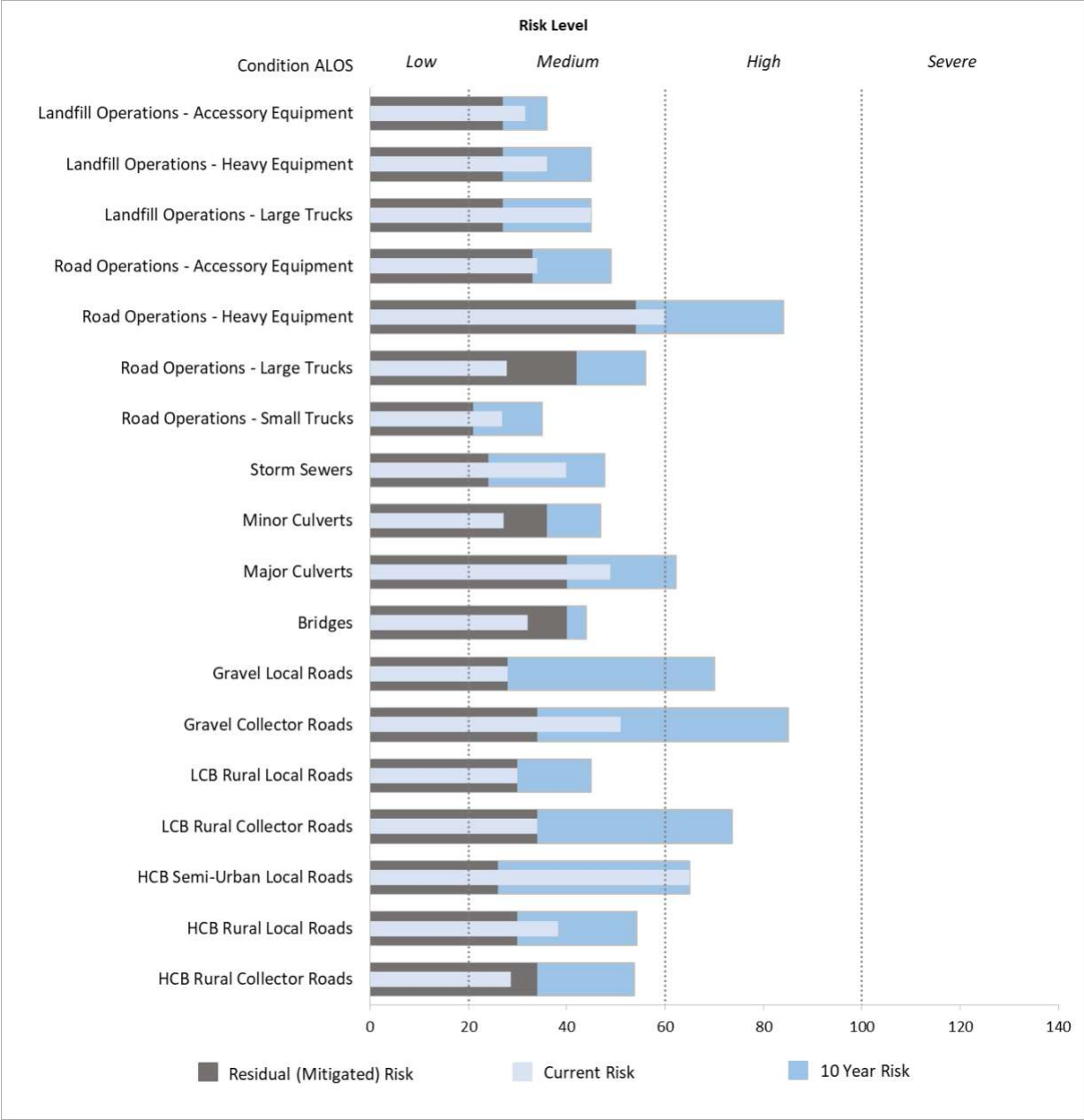
7	Financial	1	2	3	4	5
8	<p>Consider the impacts to municipal finances including:</p> <ul style="list-style-type: none"> <li>- Unplanned capital and operating costs and associated revenue losses, to address and correct unexpected asset failures, impairments or malfunctions.</li> <li>- Avoidable operating costs and associated revenue losses as a result of deficient or underperforming assets.</li> <li>- Avoidable capital costs resulting from the excessive deferment of rehabilitative works.</li> <li>- Compensation for revenue losses, litigation, liabilities or fines as a result of asset failure, impairment, underperformance or</li> </ul>	<p><b>0.33% as a proportion</b> of the Capital and Operating budget which are considered MINIMAL in relationship to:</p> <ul style="list-style-type: none"> <li>- <b>Avoidable</b> Capital to restore the asset in order to maintain functioning services</li> <li>- <b>Avoidable</b> annual Operating to maintain the asset in a reasonable state to continue providing services</li> <li>- Compensation for permanent revenue loss, fines, liabilities, litigation</li> <li>-</li> <li>- <b>\$10,000 (Capital)</b></li> <li>- <b>\$20,000 (Operating)</b></li> </ul>	<p><b>0.83% as a proportion</b> of the Capital and .83% Operating budget which are considered LOW in relationship to:</p> <ul style="list-style-type: none"> <li>- <b>Avoidable</b> Capital to restore the asset in order to maintain functioning services</li> <li>- <b>Avoidable</b> annual Operating to maintain the asset in a reasonable state to continue providing services</li> <li>- Compensation for permanent revenue loss, fines, liabilities, litigation</li> <li>-</li> <li>- <b>\$25,000 (Capital)</b></li> <li>- <b>\$50,000 (Operating)</b></li> </ul>	<p><b>1.67% as a proportion</b> of the Capital and 1.67% Operating budget which are considered MODERATE in relationship to:</p> <ul style="list-style-type: none"> <li>- <b>Non avoidable or unplanned</b> Capital to restore the asset in order to maintain functioning services</li> <li>- <b>Non avoidable or unplanned</b> annual Operating to maintain the asset in a reasonable state to continue providing services</li> <li>- Compensation for permanent revenue loss, fines, liabilities, litigation</li> <li>-</li> <li>- <b>\$50,000 (Capital)</b></li> <li>- <b>\$100,000 (Operating)</b></li> </ul>	<p><b>3.33% as a proportion</b> of the Capital and 3.33% Operating budget which are considered HIGH in relationship to:</p> <ul style="list-style-type: none"> <li>- <b>Unplanned</b> Capital to restore the asset in order to maintain functioning services</li> <li>- <b>Unplanned</b> annual Operating to maintain the asset in a reasonable state to continue providing services</li> <li>- Compensation for permanent revenue loss, fines, liabilities, litigation</li> <li>-</li> <li>- <b>\$100,000 (Capital)</b></li> <li>- <b>\$200,000 (Operating)</b></li> </ul> <p>Within the Township's Capacity but requires a major reallocation of funding and potentially drawing down non-essential service</p>	<p><b>8.33% as a proportion</b> of the Capital and 4.17% of the Operating budget which are considered VERY HIGH in relationship to:</p> <ul style="list-style-type: none"> <li>- <b>Unplanned</b> Capital to restore the asset in order to maintain functioning services</li> <li>- <b>Unplanned</b> annual Operating to maintain the asset in a reasonable state to continue providing services</li> <li>- Compensation for permanent revenue loss, fines, liabilities, litigation</li> <li>-</li> <li>- <b>\$250,000 (Capital)</b></li> <li>- <b>\$250,000 (Operating)</b></li> </ul> <p>Beyond Township's current means and requires significant additional financing including potentially drawing down on other essential services</p>
9	<p><b>Environment</b></p> <p>Consider the impacts to the natural environment as a result of asset failure, impairment, malfunction, underperformance or insufficiency.</p>	<p>1</p> <ul style="list-style-type: none"> <li>- Negligible or no damage to the environment.</li> <li>- Very short-term impacts lasting <b>less than a day</b></li> <li>- No environmental impact.</li> </ul>	<p>2</p> <ul style="list-style-type: none"> <li>- Minor damage affecting a <u>localized area</u>.</li> <li>- Short-term impacts to the environment lasting <b>1-2 days with manageable cleanup costs</b></li> </ul>	<p>3</p> <ul style="list-style-type: none"> <li>- Moderate/reversible damage affecting a <u>limited area</u>.</li> <li>- Medium-term impacts <b>3-5 days with reversible damage, full cleanup difficult</b></li> </ul>	<p>4</p> <ul style="list-style-type: none"> <li>- Significant/ reversible damage affecting a <u>large area, full cleanup very difficult</u></li> <li>Long-term impacts lasting <b>1-4 weeks</b></li> <li>- Warnings issued and possible fines from environmental agencies.</li> </ul>	<p>5</p> <ul style="list-style-type: none"> <li>- Severe and irreversible damage/contamination of <u>environmentally sensitive areas, full clean up not possible</u></li> <li>- Very long-term lasting <b>more than one year</b>.</li> <li>- Warnings, fines and monitoring actions from environmental agencies.</li> </ul>
10						

11	Reputation	1	2	3	4	5
12	<p>Consider the impacts to the image and reputation of the municipality, Council and staff from a community or broader public perspective as a result of asset failure, impairment, malfunction, underperformance or insufficiency.</p> <p>Also consider how asset failure, impairment, malfunction, underperformance or insufficiency creates deviation from the Township's strategic objectives per the Strategic Plan, Official Plan or Council directives.</p>	<ul style="list-style-type: none"> <li>- Negligible or very little media/social media attention.</li> <li>- Negligible or no community concern.</li> <li>- No deviation from strategic priorities.</li> <li>- No changes in public trust and confidence of staff and Council.</li> </ul>	<ul style="list-style-type: none"> <li>- Minor local media/social media attention lasting up to a <b>2 days</b>.</li> <li>- Minor levels of concern by <b>few/some residents</b> in the community possibly resulting in some complaints to staff and/or a local Councillor.</li> </ul>	<ul style="list-style-type: none"> <li>- Moderate media/social media attention lasting <b>up to a week</b></li> <li>- Moderate levels of concern by <b>many residents</b> in the community resulting in <b>many complaints</b> and discussions and/or meetings with members of staff and Council.</li> </ul> <p>Some <b>noticeable deviation</b> from strategic objectives possibly affecting public perceptions and confidence in the Township's achievement of strategic goals</p> <p>Some <b>short term negative opinion</b> and loss of public confidence in staff and Council.</p>	<ul style="list-style-type: none"> <li>- Significant media/social media attention lasting up to <b>4 weeks</b>.</li> <li>- Significant levels of concern by a <b>large number of residents</b> in the community resulting in <b>several complaints</b>, discussions and meetings with members of staff and Council and possibly a formal public meeting or delegation to Council.</li> <li>- <b>Significant deviation</b> from strategic objectives noticeably affecting public perceptions and confidence in the Township's achievement of strategic goals</li> <li>- Possible calls in the media and/or community for changes in staff or Council.</li> <li>- Lasting loss of public confidence</li> </ul>	<ul style="list-style-type: none"> <li>- Extensive media/social media attention lasting <b>more than 4 weeks/ 1 month</b> and possibly local or regional media attention.</li> <li>- Extensive levels of concern by a <b>very large number of residents</b> in the community and some external to the community resulting in a <b>high number of complaints</b>, discussions and meetings with members of staff and Council and possibly several formal public meetings and/or several delegations to Council.</li> <li>- <b>Major deviation</b> from strategic objectives significantly affecting public perceptions and confidence in the Township's achievement of strategic goals</li> <li>- Calls in the media and/or community for changes in staff or Council or possibly an Independent public inquiry.</li> <li>- Long-term or permanent loss of public confidence</li> </ul>

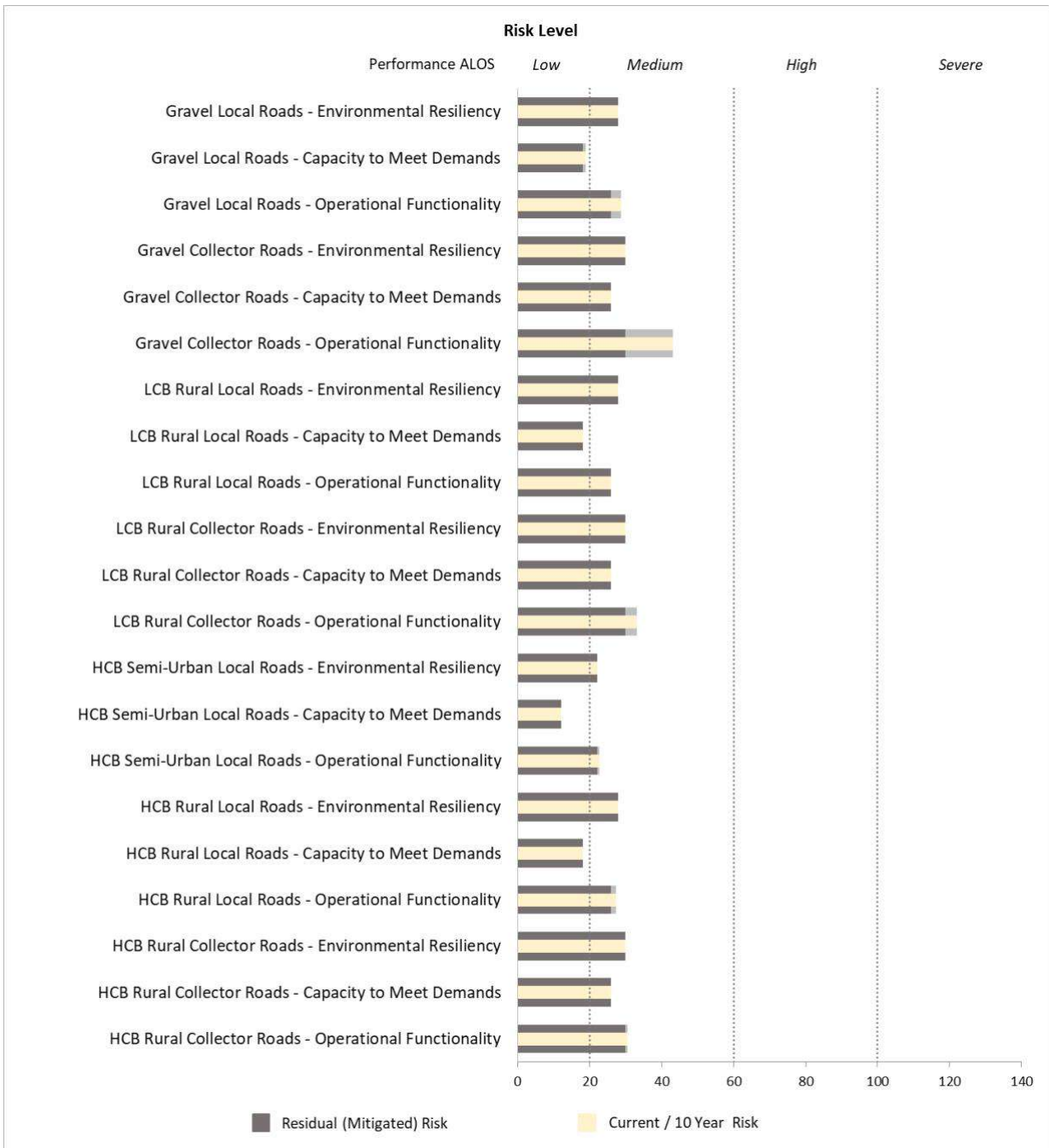
## ii.Asset Class Risk Profile

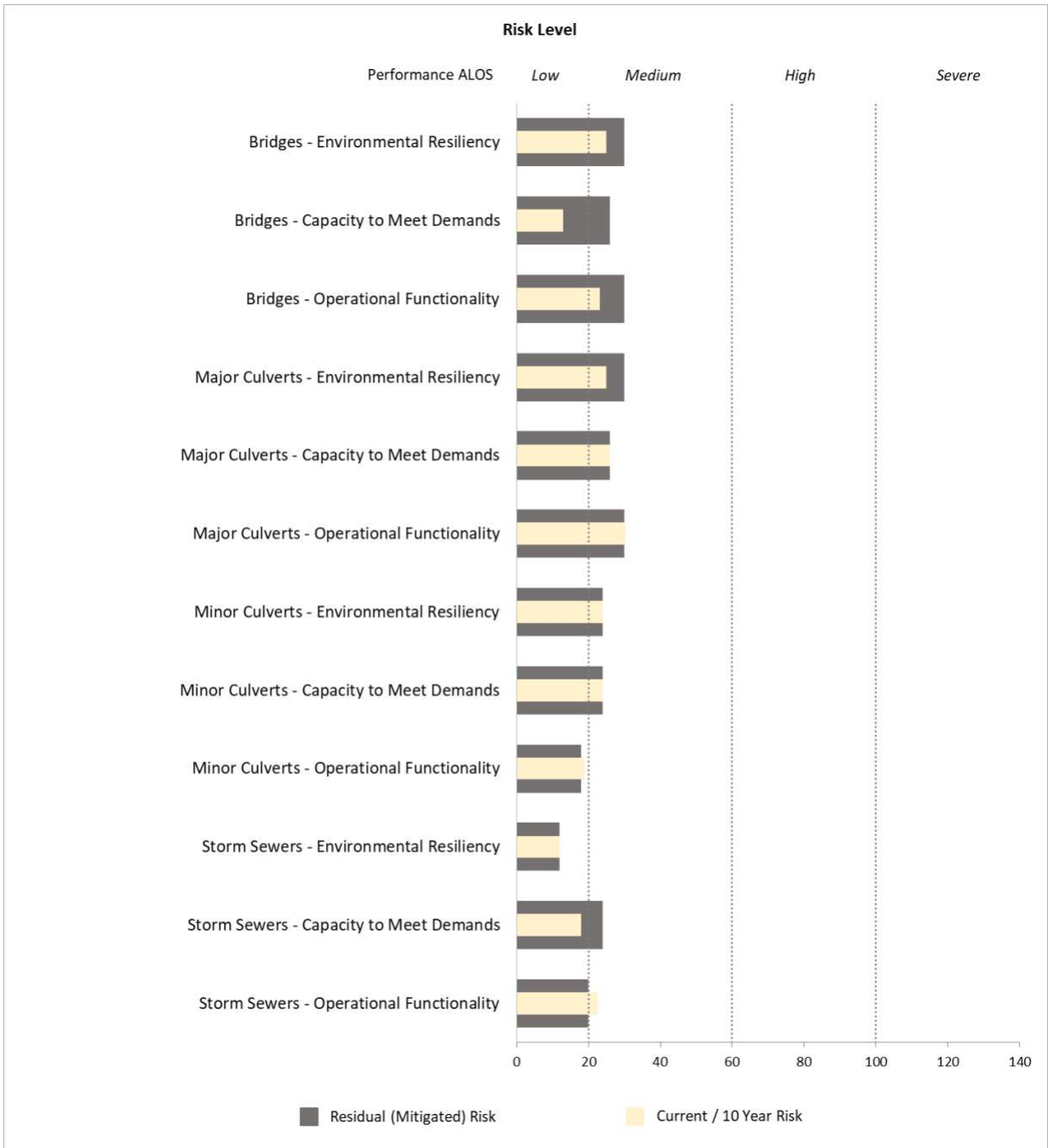


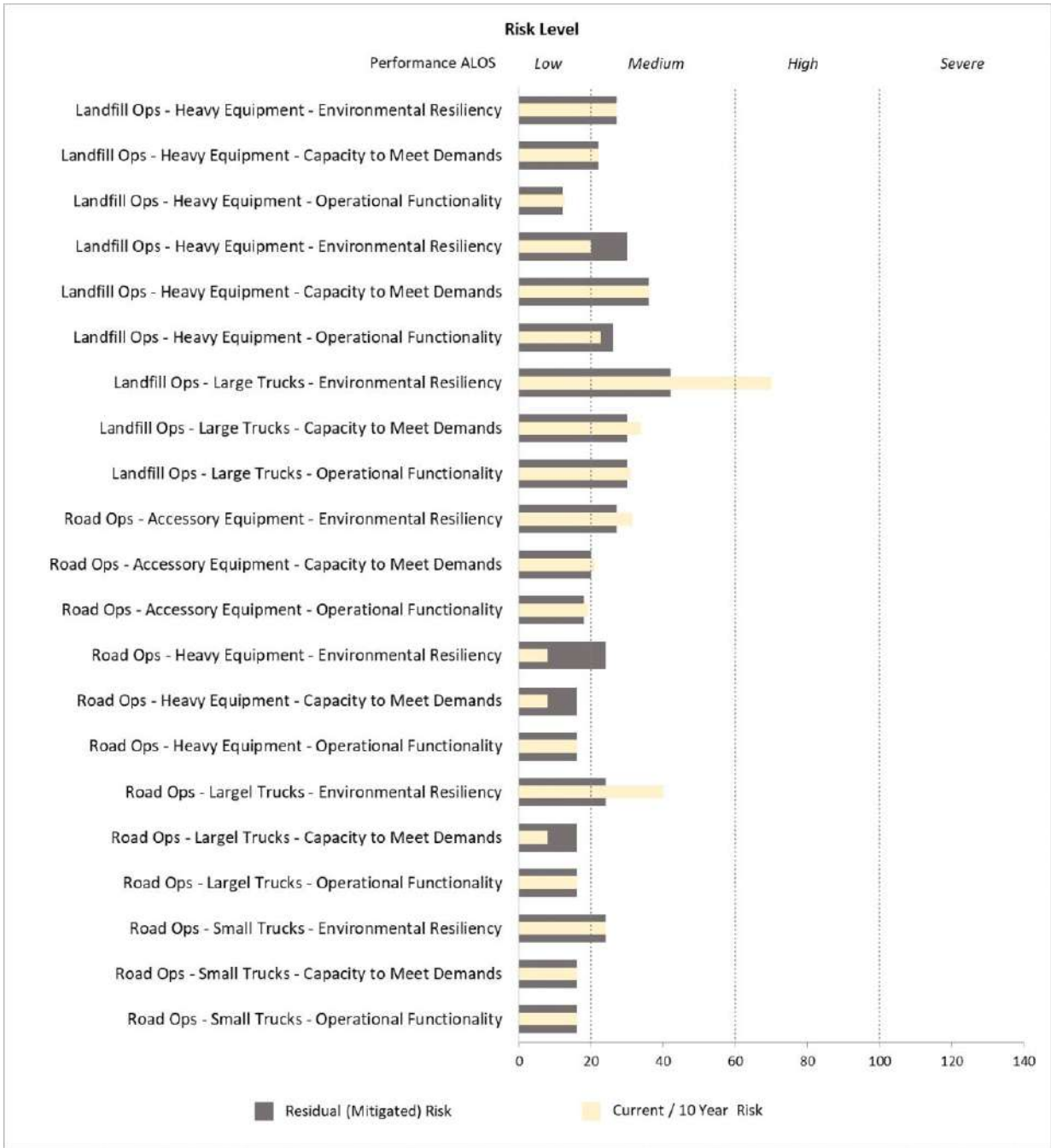
## iii.Condition Asset Level of Service Risk Profile



**iv. Performance Asset Level of Service Risk Profile**







**v.Current Risk Priorities**

Asset Class	ALOS Type	ALOS Description	ALOS Target	Current ALOS	Current State Risk	Current State Risk Priority Ranking (Higher Number = Higher Priority)
Major Culverts	C	Structure Condition	BCI = 70	BCI <40	100	1
HCB Rural Local Roads	C	Pavement Condition	PCI = 65	PCI <40	75	2
Gravel Collector Roads	P	Operational Functionality	Good	Very Poor	75	2
Major Culverts	C	Structure Condition	BCI = 70	BCI = 40 - 59	80	4
HCB Semi-Urban Local Roads	C	Pavement Condition	PCI = 65	PCI <40	65	5
Gravel Local Roads	P	Operational Functionality	Good	Very Poor	65	5
Road Operations - Heavy Equipment	C	Equipment Condition	Condition = Fair	Very Poor	90	7
HCB Rural Local Roads	C	Pavement Condition	PCI = 65	PCI = 40 - 45	60	8
Gravel Collector Roads	P	Operational Functionality	Good	Poor	60	8
Road Operations - Heavy Equipment	P	Operational Resiliency	Fair	Very Poor	70	10
HCB Rural Local Roads	P	Operational Functionality	Good	Poor	52	11
Minor Culverts	C	Structure Condition	Fair	Very Poor	60	12
Storm Sewers	C	Pipe Condition	PACP = 3 (Fair)	PACP = 5 (Fail in 1-5 yrs)	48	12
HCB Semi-Urban Local Roads	P	Operational Functionality	Good	Poor	44	14
Road Operations - Accessory Equipment	C	Equipment Condition	Condition = Fair	Very Poor	55	14
Major Culverts	C	Structure Condition	BCI = 70	BCI = 60 - 69	60	16
Landfill Operations - Large Trucks	C	Fleet Condition	Adequate	Very Poor	45	17
Landfill Operations - Heavy Equipment	C	Equipment Condition	Adequate	Very Poor	45	17
Landfill Operations - Accessory Equipment	C	Equipment Condition	Adequate	Very Poor	45	17
HCB Rural Collector Roads	C	Pavement Condition	PCI=70	PCI = 51 - 69	51	20
Gravel Collector Roads	C	Surface Condition	PCI = 70	PCI = 45 - 69	51	20
Landfill Operations - Heavy Equipment	P	Operational Resiliency	Fair	Very Poor	40	22
HCB Rural Collector Roads	P	Operational Functionality	Good	Fair	45	23
HCB Rural Local Roads	C	Pavement Condition	PCI = 65	PCI = 46 - 64	45	23
LCB Rural Collector Roads	P	Operational Functionality	Good	Fair	45	23
Gravel Collector Roads	P	Operational Functionality	Good	Fair	45	23
Bridges	P	Operational Functionality	Good	Fair	45	23
Major Culverts	P	Operational Functionality	Good	Fair	45	23
Road Operations - Heavy Equipment	P	Operational Functionality	Good	Fair	45	23
Road Operations - Heavy Equipment	P	Capacity to Meet Demands	Good	Fair	45	23
Road Operations - Small Trucks	C	Truck Condition	Condition = Fair	Very Poor	35	31
Asset Class	ALOS Type	ALOS Description	ALOS Target	Current ALOS	Current State Risk	Current State Risk Priority Ranking (Higher Number = Higher Priority)

Road Operations - Large Trucks	C	Truck Condition	Condition = Fair	Poor	56	31
HCB Rural Local Roads	P	Operational Functionality	Good	Fair	39	33
Gravel Local Roads	P	Operational Functionality	Good	Fair	39	33
Road Operations - Large Trucks	P	Operational Functionality	Good	Fair	39	33
Minor Culverts	C	Structure Condition	Fair	Poor	48	36
Road Operations - Accessory Equipment	C	Equipment Condition	Condition = Fair	Poor	44	37
Storm Sewers	P	Operational Functionality	Good	Fair	30	38
Road Operations - Accessory Equipment	P	Capacity to Meet Demands	Good	Fair	30	38
Gravel Local Roads	P	Capacity to Meet Demands	Good	Fair	27	40
Minor Culverts	P	Operational Functionality	Good	Fair	27	40
Road Operations - Accessory Equipment	P	Operational Functionality	Good	Fair	27	40
Road Operations - Accessory Equipment	P	Operational Resiliency	Fair	Poor	36	40
Road Operations - Small Trucks	C	Truck Condition	Condition = Fair	Poor	28	45
Road Operations - Small Trucks	C	Truck Condition	Condition = Fair	Poor	28	45
Road Operations - Small Trucks	P	Operational Functionality	Good	Fair	18	47
Road Operations - Small Trucks	P	Operational Functionality	Good	Fair	18	47

## vi.Ten-year Asset Level of Service Priorities

Asset Class	ALOS Type	ALOS Description	ALOS Target	10 Year ALOS	10-Year Risk	10-Year Risk Priority Ranking (Higher Number = Higher Priority)
Major Culverts	C	Structure Condition	BCI = 70	BCI <40	100	1
Road Operations - Heavy Equipment	C	Equipment Condition	Condition = Fair	Very Poor	90	2
HCB Rural Collector Roads	C	Pavement Condition	PCI=70	PCI <45	85	3
LCB Rural Collector Roads	C	Pavement Condition	PCI = 70	PCI <45	85	3
Gravel Collector Roads	C	Surface Condition	PCI = 70	PCI <35	85	3
Bridges	C	Structure Condition	BCI = 70	BCI = 40 - 59	80	6
HCB Rural Local Roads	C	Pavement Condition	PCI = 65	PCI <40	75	7
Gravel Collector Roads	P	Operational Functionality	Good	Very Poor	75	7
Road Operations - Heavy Equipment	C	Equipment Condition	Condition = Fair	Poor	72	9
Gravel Local Roads	C	Surface Condition	PCI = 65	PCI <30	70	10
Road Operations - Large Trucks	C	Truck Condition	Condition = Fair	Very Poor	70	10
Road Operations - Heavy Equipment	P	Operational Resiliency	Fair	Very Poor	70	10
HCB Rural Collector Roads	C	Pavement Condition	PCI=70	PCI = 45 - 50	68	13
LCB Rural Collector Roads	C	Pavement Condition	PCI = 70	PCI = 45 - 50	68	13
HCB Semi-Urban Local Roads	C	Pavement Condition	PCI = 65	PCI <40	65	15
Gravel Local Roads	P	Operational Functionality	Good	Very Poor	65	15
HCB Rural Local Roads	C	Pavement Condition	PCI = 65	PCI = 40 - 45	60	17
Gravel Collector Roads	P	Operational Functionality	Good	Poor	60	17
Bridges	C	Structure Condition	BCI = 70	BCI = 60 - 69	60	17
Major Culverts	C	Structure Condition	BCI = 70	BCI = 60 - 69	60	17
Minor Culverts	C	Structure Condition	Fair	Very Poor	60	17
Storm Sewers	C	Pipe Condition	PACP = 3 (Fair)	PACP = 5 (<1yr or failed)	60	17
Road Operations - Large Trucks	C	Truck Condition	Condition = Fair	Poor	56	23
Road Operations - Accessory Equipment	C	Equipment Condition	Condition = Fair	Very Poor	55	24
HCB Rural Local Roads	P	Operational Functionality	Good	Poor	52	25
Asset Class	ALOS Type	ALOS Description	ALOS Target	10 Year ALOS	10-Year Risk	10-Year Risk Priority Ranking

						(Higher Number = Higher Priority)
HCB Rural Collector Roads	C	Pavement Condition	PCI=70	PCI = 51 - 69	51	26
Minor Culverts	C	Structure Condition	Fair	Poor	48	27
HCB Rural Collector Roads	P	Operational Functionality	Good	Fair	45	28
HCB Rural Local Roads	C	Pavement Condition	PCI = 65	PCI = 46 - 64	45	28
LCB Rural Collector Roads	P	Operational Functionality	Good	Fair	45	28
LCB Rural Local Roads	C	Pavement Condition	PCI = 65	PCI = 46 - 64	45	28
Gravel Collector Roads	P	Operational Functionality	Good	Fair	45	28
Bridges	P	Operational Functionality	Good	Fair	45	28
Major Culverts	P	Operational Functionality	Good	Fair	45	28
Road Operations - Heavy Equipment	P	Operational Functionality	Good	Fair	45	28
Road Operations - Heavy Equipment	P	Capacity to Meet Demands	Good	Fair	45	28
Landfill Operations - Large Trucks	C	Fleet Condition	Adequate	Very Poor	45	28
Landfill Operations - Heavy Equipment	C	Equipment Condition	Adequate	Very Poor	45	28
Landfill Operations - Accessory Equipment	C	Equipment Condition	Adequate	Very Poor	45	28
HCB Semi-Urban Local Roads	P	Operational Functionality	Good	Poor	44	40
Road Operations - Accessory Equipment	C	Equipment Condition	Condition = Fair	Poor	44	40
Landfill Operations - Heavy Equipment	P	Operational Resiliency	Fair	Very Poor	40	42
HCB Rural Local Roads	P	Operational Functionality	Good	Fair	39	43
Gravel Local Roads	P	Operational Functionality	Good	Fair	39	43
Road Operations - Large Trucks	P	Operational Functionality	Good	Fair	39	43
Road Operations - Accessory Equipment	P	Operational Resiliency	Fair	Poor	36	46
Road Operations - Small Trucks	C	Truck Condition	Condition = Fair	Very Poor	35	47
Storm Sewers	P	Operational Functionality	Good	Fair	30	48
<b>Asset Class</b>	<b>ALOS Type</b>	<b>ALOS Description</b>	<b>ALOS Target</b>	<b>10 Year ALOS</b>	<b>10-Year Risk</b>	<b>10-Year Risk Priority Ranking (Higher Number = Higher Priority)</b>

Road Operations - Accessory Equipment	P	Capacity to Meet Demands	Good	Fair	30	48
Gravel Local Roads	P	Capacity to Meet Demands	Good	Fair	27	50
Minor Culverts	P	Operational Functionality	Good	Fair	27	50
Road Operations - Accessory Equipment	P	Operational Functionality	Good	Fair	27	50
Road Operations - Small Trucks	P	Operational Functionality	Good	Fair	18	53