



Township of South Algonquin

Asset Management Plan 2022

June 2023 – 22-3836

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Acronyms, Abbreviations, Definitions

An abbreviation and an acronym are both shortened versions of something else. Both can often be represented as a series of letters. Many people are unable to tell the difference between an abbreviation and an acronym.

°C	degrees Celsius
a.m.	ante meridiem
AADT	average annual daily traffic
ALOS	Asset Level of Service
AM	Asset Management
AMP	Asset Management Plan
AODA	Accessibility for Ontarians with Disabilities Act
BCI	Bridge Condition Index
Bldg	Building
C	climate change factor
CAO	Chief Administrative Officer
CDN	Canadian Dollars
CLOS	Community Level of Service
Corp	Corporation
CSA	Canadian Standards Association
CSP	Corrugated Steel Pipe
DMI	Distress Manifestation Index
e.g.	exempli gratia (for example)

ES	Executive Summary
etc.	etcetera (and so forth)
FCM	Federation of Canadian Municipalities
HCB	High Class Bituminous
i.e.	id est (that is)
ID	identification
IT	Information Technology
km	kilometre
KPI	key performance indicator
LCB	Low Class Bituminous
LED	light-emitting diode
LOS	Level of Service
Ltd.	Limited
m	metre
M	million
m ²	square metre
Maint	maintenance
Max	maximum
Min	minimum
MOE	Ministry of the Environment
MTO	Ontario Ministry of Transportation
N	North

N/A	Not Applicable
No.	number
O & M	Operations and Maintenance
O. Reg.	Ontario Regulation
OSIM	Ontario Structure Inspection Manual
PCI	Pavement Condition Index
p.m.	post meridiem
PW	Public Works
Qty	quantity
RCR	Ride Comfort Index
Reconst	reconstruction
Rehab	rehabilitation
St	street
sq.	square

Executive Summary

The Township of South Algonquin (Township or South Algonquin) is updating its 2013 Asset Management Plan (AMP) in alignment with O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure and the Township’s Strategic Asset Management Policy (FIN-003-00).

The AMP documents South Algonquin’s assets and strategies based on known information at the time of writing the report. This plan is a snapshot of a period as of December 2022. Assets will continue to deteriorate and investments will be required to improve the condition and extend the useful life of the infrastructure, to meet the “fit for purpose” measure of the assets in delivery of the services and meeting (or moving towards) the proposed LOS established by the Township.

Overview of the AMP

The Introduction (**Section 1.0**) presents an overview of key concepts of asset management such as the State of Local Infrastructure, Levels of Service, Risk Assessment, and concludes with a Roadmap with Next Steps.

This is followed by a section on Growth within the Township (**Section 1.7**).

The core assets included in the AMP are:

- Roads (**Section 2.0**); and
- Bridges and Culverts (**Section 3.0**)

The non-core assets included in the AMP are:

- Solid Waste (**Section 4.0**);
- Fleet and Equipment (**Section 5.0**);
- Buildings and Facilities (**Section 6.0**); and
- Parks and Land (**Section 7.0**)

The final chapter is the Financial Strategy (**Section 7.0**).

Policy Alignment

This asset management plan was developed in alignment with the Township's Strategic Asset Management Policy (FIN-003-00).

The purpose of the Townships policy is to provide leadership in and commitment to the development and implementation of the Municipality's asset management program. It is intended to guide the consistent use of asset management across the organization, to facilitate logical and evidence-based decision-making for the management of municipal infrastructure assets and to support the delivery of sustainable community services now and in the future.

By using sound asset management practices, the Municipality will work to ensure that all municipal infrastructure assets meet expected performance levels and continue to provide desired service levels in the most efficient and effective manner. Linking service outcomes to infrastructure investment decisions will assist the Municipality in focusing on service, rather than budget, driven asset management approaches.

Within the policy the Township states the importance of strategic alignment with other planning documents at the Township, namely the Township of South Algonquins Official Plan, and the Township of South Algonquin's Strategic Plan. These plans were designed to meet the legislative requirements and work together to achieve the Township's mission of providing innovation and excellence in service delivery. These plans will be reviewed regularly by staff and annual spending requirements in support of the plans' objectives will be incorporated into the budgeting process. All of the Township's plans rely to some extent on the physical assets owned by the Township and the commitment of staff to ensure their strategic use. This includes the long-term maintenance, repair, and replacement of existing assets along with the acquisition of new assets to meet the evolving needs in the Township.

Stakeholder Engagement: As established in the policy, the Township recognizes the importance of stakeholder engagement as an integral component of a comprehensive asset management approach. The Township commits to provide opportunities for residents and other stakeholders serviced by the Township to provide input into asset management planning.

This was achieved through workshops with staff and a public engagement on-line survey on LOS.

Regulatory Alignment

The 2023 AMP is an update to the 2013 AMP which was in alignment with the new regulation, **O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure**. The regulation requires the following four phases of compliance:

1. By July 2019: Municipalities to have a strategic asset management policy.
2. By July 2022: All core assets to be covered in the asset management plan with current LOS. Core assets include water, wastewater, stormwater, roads and bridges/culverts.
3. By July 2024: All assets owned by the municipality to be covered in the AMP. Non-core assets include buildings, fleet and equipment as well as green infrastructure assets.
4. By July 2025: Municipalities will have approved proposed LOS and the lifecycle management and financial strategy for ten-year period to achieve the proposed LOS.

The current edition of the AMP meets Phase 3 requirements with the exception of natural assets.

Inclusion of all assets owned by the Township provides an overview of what is needed to continue to deliver the services required of the community in the future. The asset management plan identifies the required investments to maintain service delivery for the next 10 years. The plan will be updated on an ongoing basis with the availability of new information and the regulation requires annual reporting to Council on the progress (and barriers) to implementing the AMP.

Roadmap with Next Steps

Next Steps – Regulatory Compliance

Future updates would include more robust financial strategy to meet phase 4 requirements. This will be supported by the implementation of new asset management software (TownSuite) currently underway.

The next update would also include green infrastructure assets (i.e. natural assets) owned by the Township and further assessment on infrastructure vulnerability to the impacts of climate change related to operations, levels of service and lifecycle management.

Next Steps – Recommendations in AMP 2022

Recommendations – Regulatory

In future updates of this report a recommendation to the Township would be to implement a Building Condition Assessment program for all their Building and Facilities assets. As well, the Parks and Lands asset category has several buildings (privy's and changing facilities) that have been updated or added to the inventory since the previous Asset Management Plan done in 2013. A full condition assessment (which would include the breakdown of each building and facility by overall components) of the entirety of the buildings owned by the Township would allow a more comprehensive cost breakdown for planning and maintenance activities and would ensure the whole of these asset categories has been captured. Given the complicated nature of assessing these buildings from a component stand point and the time commitment needed in this assessment, it is recommended the Township has a third party to facilitate this work.

The Township should also investigate the potential closure costs for each of their Solid Waste sites to ensure future planning for these costs can be considered.

Recommendations – Continuous Improvement

A full inventory of the assets owned by the Township should be undertaken as there are still some unknowns with respect to the final inventory counts and asset IDs. Having the Townsuite system online now the Township should find this task more manageable and straightforward.

State of Local Infrastructure

Each section on the State of Local Infrastructure sets out:

- i. a summary of the assets in the category;
- ii. the replacement cost of the assets in the category;
- iii. the average age of the assets in the category, determined by assessing the average age of the components of the assets;

- iv. the information available on the condition of the assets in the category; and
- v. a description of the Townships approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate.

The Township delivers services that require ownership of infrastructure in the following assets categories:

- Roads;
- Bridges and Culverts;
- Solid Waste;
- Fleet and Equipment;
- Buildings and Facilities; and
- Parks and Lands.

Each service area is presented in a separate chapter that follows this format:

- Summary;
- Average Age;
- Replacement Cost;
- Condition;
- LOS; and
- Performance.

Asset Inventory

South Algonquin maintains databases of their assets including detailed attributes of the assets. The inventory was compiled prior to initiation of this work and updated throughout the work as needed, and was provided by South Algonquin. The inventory data is currently being transferred to the fully integrated cloud based Townsuite municipal software system from the OGRA system. We are currently using outputs from the Townsuite system and excel files for inventory tracking purposes. The inventory includes assets that are owned by South Algonquin that provide services in the following asset categories:

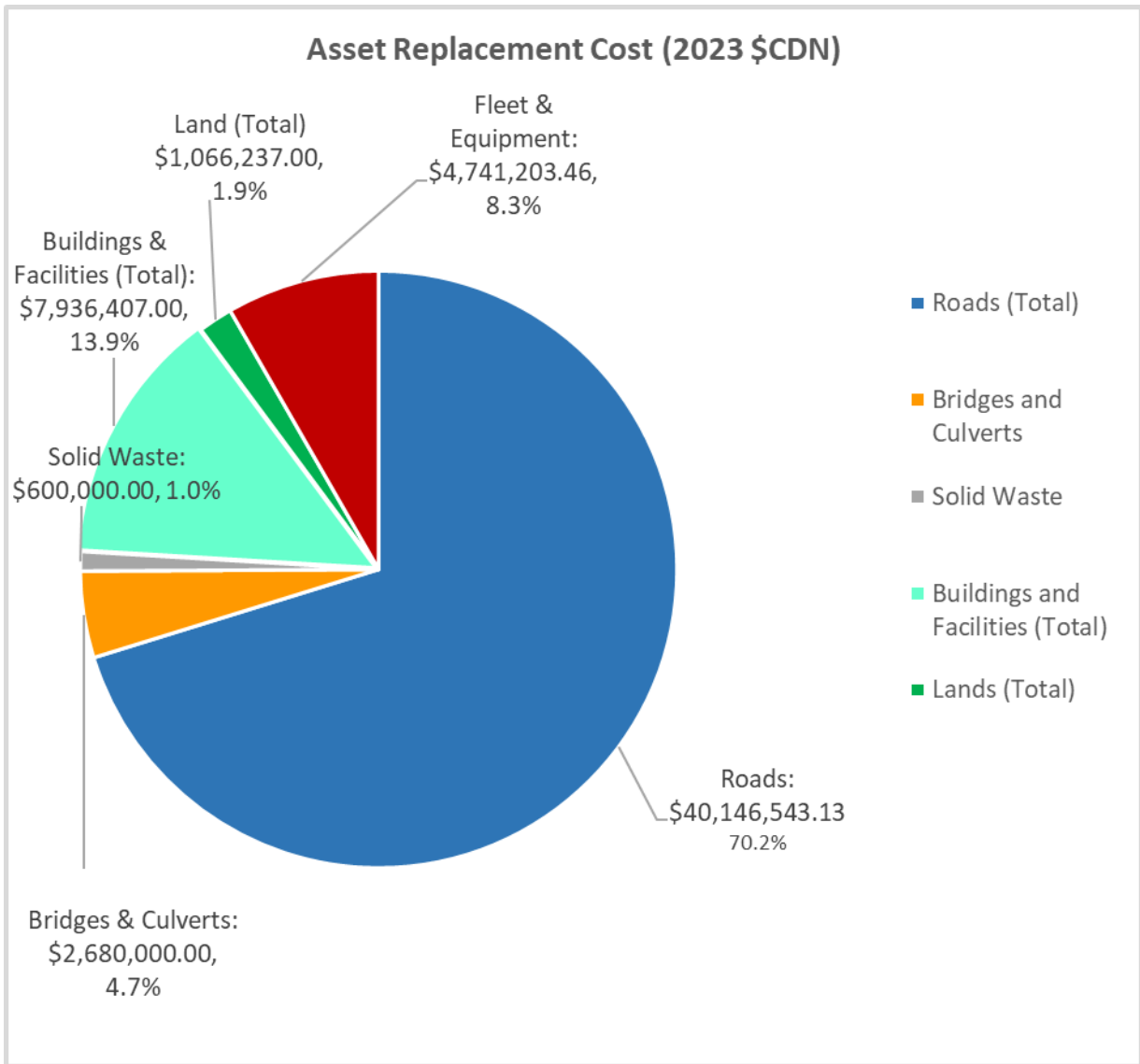
- Roads;
- Bridges and Culverts;

- Solid Waste;
- Fleet and Equipment;
- Buildings and Facilities; and
- Parks and Lands.

Asset Replacement Costs

The total replacement cost for the Township’s infrastructure assets is: \$56.87 million (in 2023 dollars). The distribution of this replacement cost is shown in **Figure ES-1** with roads, bridges and culverts making up 76% of the replacement costs.

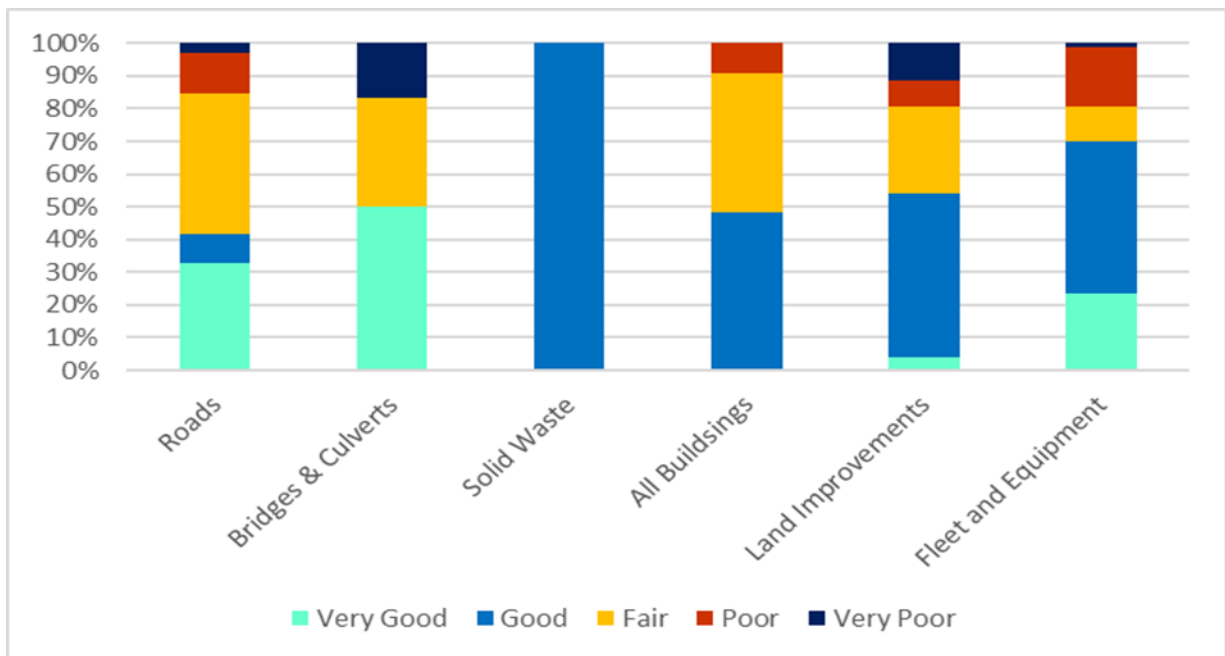
Figure ES-1: Asset Replacement Cost



Asset Condition Summary

A summary of the condition for each of the Township' infrastructure assets is shown in **Figure ES-2**. On average across all asset categories, 18% of the Township' infrastructure assets have a condition rating of Very Good, 42% have a condition rating of Good, 26% have a condition rating of Fair, 8% have a condition rating of Poor, and 5% have a condition rating of Very Poor.

Figure ES-2: Asset Condition 2022



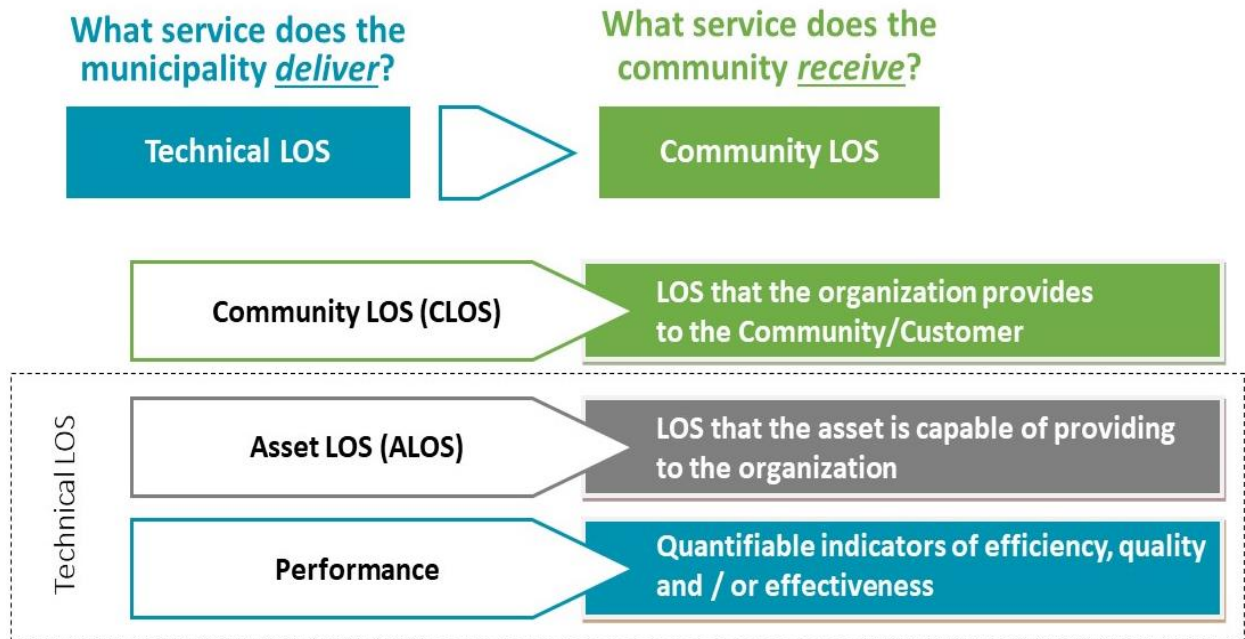
Levels of Service

The current and proposed levels of service are described in terms of technical metrics and qualitative descriptions for each asset type. These measures are prescribed for core assets (including roads, and bridges and culverts) within O. Reg. 588/17.

Levels of Service (LOS) are presented in **Figure ES-3** and defined as follows:

- **Community LOS:** LOS that the organization provides to the community, intended to be customer-focused, providing a qualitative description of scope and quality; and
- **Technical LOS:** LOS that the asset is capable of providing to the Township which is further measured by the performance of the asset, providing technical metrics that support the delivery of LOS.

Figure ES-3: Levels of Service (Community LOS, Technical LOS and Performance)



The current and proposed LOS are described in terms of technical metrics and qualitative descriptions for each asset type. These descriptions are prescribed for core assets (including roads, and bridges and culverts) within Ontario Regulation (O. Reg.) 588/17.

Through the AMP development, South Algonquin sought to establish current and proposed LOS, in accordance with O. Reg. 588/17 for core assets. For the non-core assets included within this AMP, South Algonquin sought to define and establish current and proposed LOS in line with the intent of O. Reg. 588/17.

As part of this process, South Algonquin undertook education and working sessions with internal stakeholders, and provided a survey for public feedback to understand LOS concepts, and gain understanding of public perception of the levels of service and the public's expectation for service delivery.

Acknowledgements

The consulting team would like to express our appreciation to the staff for their cooperation and input to this update. We acknowledge their commitment and flexibility to contribute to this project despite the challenges brought into daily operations as a result of the global pandemic.

Project Team

- Bryan Martin, CAO/Clerk Treasurer
- Jennifer Baragar, Deputy Treasurer
- Dave Gatley, Public Works Superintendent (to Oct 2022)
- Steven Ronholm, Public Works Superintendent (starting May 2023)

About this Report

Dillon Consulting Limited was retained by the Township of South Algonquin to conduct an update to their Asset Management Plan to meet the requirements of O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure and as amended by O. Reg. 193/21.

Consulting Team

- Darla Campbell, Project Manager
- Liza Guilbeau, Asset Management Coordinator and Technical Lead
- Kaelee Oxford, LOS, Risk and AM Strategy
- Sierra Eskritt, Risk and AM Strategy and Analysis
- Joseph Hoekstra, Financing Strategy
- James Mario, Financing Strategy

1.0 Introduction

The Township of South Algonquin (Township or South Algonquin) is updating its 2013 Asset Management Plan (AMP) in alignment with O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure and the Township’s Strategic Asset Management Policy (FIN-003-00).

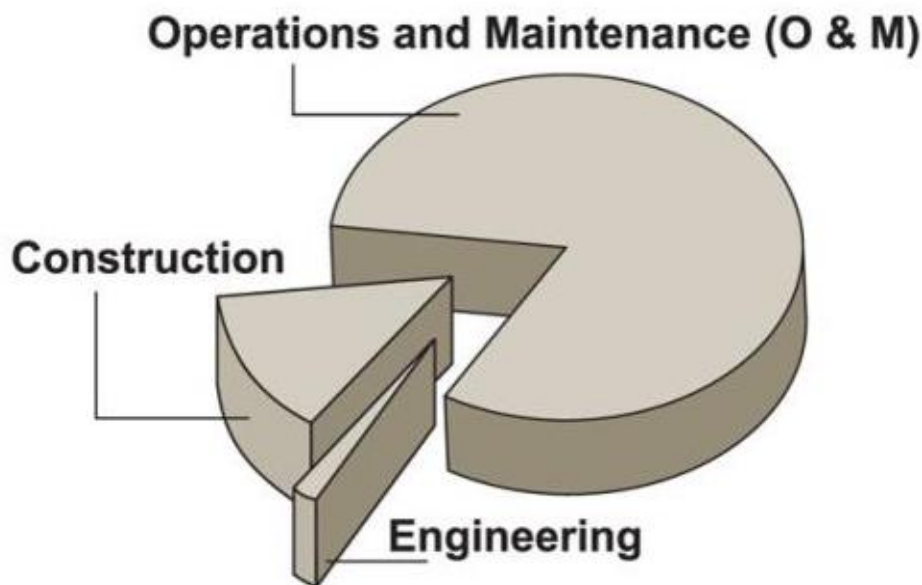
The AMP documents South Algonquin’s assets and strategies based on known information at the time of writing the report. This plan is a snapshot of a period as of December 2022. Assets will continue to deteriorate and investments will be required to improve the condition and extend the useful life of the infrastructure, to meet the “fit for purpose” measure of the assets in delivery of the services and meeting (or moving towards) the proposed LOS established by the Township.

1.1 Asset Management Overview

Asset management is a process of making the best possible decisions regarding the creation, maintenance, renewal, rehabilitation, disposal, expansion and procurement of infrastructure assets. The objective of asset management is to maximize the benefits of the assets, minimize risk and provide satisfactory LOS to the public in a sustainable manner. It considers risks related to the lifecycle of the assets and requires a multi-disciplinary team of planning, finance, engineering, technology, maintenance and operations.

Asset management considers the full lifecycle of the infrastructure, not just the initial cost for designing and constructing the asset (20%), but the operations and maintenance each and every year (80%). See **Figure 1-1**.

Figure 1-1: Lifecycle Approach (Infraguide 2005)



The essential questions for asset management, as described in the InfraGuide: Managing Infrastructure Assets (Oct 2005), are:

1. What do you have and where is it?
2. What is it worth?
3. What is its condition and expected remaining service life?
4. What is the Level of Service (LOS) expectation, and what needs to be done?
5. When do you need to do it?
6. How much will it cost and what is the acceptable level of risk(s)?
7. How do you ensure long-term affordability?

These seven essential questions align to four phases of asset management: asset inventory, condition, LOS and analysis and strategy development.

The provision of reliable infrastructure is crucial for ensuring that South Algonquin can continue to deliver sustainable services to its current residents and to accommodate growth in a manner which is environmentally, socially and economically sustainable.

To ensure that South Algonquin is able to provide infrastructure that meets the needs of residents now and in the future South Algonquin has developed and implemented an asset management plan. The intent of the asset management plan is to identify the

technical and financial needs of assets well in advance of a major asset renewal or replacement so that South Algonquin is able to plan for these major projects should the timing and the needs coincide.

1.2 Overview of the AMP

This introduction includes an overview of key asset management principles: State of Local Infrastructure, LOS, Risk Assessment and Lifecycle Strategies. The introduction concludes with a section on Growth and a Roadmap with Next Steps.

The core assets included in the AMP are presented in **Table 1-1**.

Table 1-1: Core and Non-Core Assets

Core Assets	Non-Core Assets
<ul style="list-style-type: none"> • Roads (Section 2.0) • Bridges and Culverts (Section 3.0) 	<ul style="list-style-type: none"> • Solid Waste (Section 4.0) • Fleet and Equipment (Section 5.0) • Buildings and Facilities (Section 6.0) • Parks and Land (Section 7.0)

Within each section for each asset category, the following topics are presented:

- State of Local Infrastructure;
- Condition;
- Current LOS;
- Current Performance;
- Risk Assessment;
- Lifecycle Activities; and
- Asset Management Strategy

The final chapter is the Financial Strategy (**Section 8.0**).

1.2.1 Policy Alignment

This asset management plan was developed in alignment with the Township's Strategic Asset Management Policy (FIN-003-00).

The purpose of the Townships policy is to provide leadership in and commitment to the development and implementation of the Municipality's asset management program. It is intended to guide the consistent use of asset management across the organization, to

facilitate logical and evidence-based decision-making for the management of municipal infrastructure assets and to support the delivery of sustainable community services now and in the future.

By using sound asset management practices, the Municipality will work to ensure that all municipal infrastructure assets meet expected performance levels and continue to provide desired service levels in the most efficient and effective manner. Linking service outcomes to infrastructure investment decisions will assist the Municipality in focusing on service, rather than budget, driven asset management approaches.

Within the policy the Township states the importance of strategic alignment with other planning documents at the Township, namely the Township of South Algonquins Official Plan, and the Township of South Algonquin's Strategic Plan. These plans were designed to meet the legislative requirements and work together to achieve the Township's mission of providing innovation and excellence in service delivery. These plans will be reviewed regularly by staff and annual spending requirements in support of the plans' objectives will be incorporated into the budgeting process. All of the Township's plans rely to some extent on the physical assets owned by the Township and the commitment of staff to ensure their strategic use. This includes the long-term maintenance, repair, and replacement of existing assets along with the acquisition of new assets to meet the evolving needs in the Township.

Stakeholder Engagement: As established in the policy, the Township recognizes the importance of stakeholder engagement as an integral component of a comprehensive asset management approach. The Township commit to provide opportunities for residents and other stakeholders serviced by the Township to provide input into asset management planning.

This was achieved through workshops with staff and a public engagement on-line survey on LOS.

1.2.2 Regulatory Alignment

The 2023 AMP is an update to the 2013 AMP which was in alignment with the new regulation, **O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure**. The regulation requires the following four phases of compliance:

5. By July 2019: Municipalities to have a strategic asset management policy.
6. By July 2022: All core assets to be covered in the asset management plan with current LOS. Core assets include water, wastewater, stormwater, roads and bridges/culverts.
7. By July 2024: All assets owned by the municipality to be covered in the AMP. Non-core assets include buildings, fleet and equipment as well as green infrastructure assets.
8. By July 2025: Municipalities will have approved proposed LOS and the lifecycle management and financial strategy for ten-year period to achieve the proposed LOS.

The current edition of the AMP meets Phase 3 requirements with the exception of natural assets.

Inclusion of all assets owned by the Township provides an overview of what is needed to continue to deliver the services required of the community in the future. The asset management plan identifies the required investments to maintain service delivery for the next 10 years. The plan will be updated on an ongoing basis with the availability of new information and the regulation requires annual reporting to Council on the progress (and barriers) to implementing the AMP.

1.3 State of Local Infrastructure

Each section on the State of Local Infrastructure sets out:

- vi. a summary of the assets in the category;
- vii. the replacement cost of the assets in the category;
- viii. the average age of the assets in the category, determined by assessing the average age of the components of the assets;
- ix. the information available on the condition of the assets in the category; and
- x. a description of the Townships approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate.

The Township delivers services that require ownership of infrastructure in the following assets categories:

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- Bridges and Culverts;
- Solid Waste;
- Fleet and Equipment;
- Buildings and Facilities; and
- Parks and Lands.

Each service area is presented in a separate chapter that follows this format:

- Summary;
- Average Age;
- Replacement Cost;
- Condition;
- LOS; and
- Performance.

1.3.1

Asset Inventory

South Algonquin maintains databases of their assets including detailed attributes of the assets. The inventory was compiled prior to initiation of this work and updated throughout the work as needed, and was provided by South Algonquin. The inventory data is currently being transferred to the fully integrated cloud based Townsuite municipal software system from the OGRA system. We are currently using outputs from the Townsuite system and excel files for inventory tracking purposes. The inventory includes assets that are owned by South Algonquin that provide services in the following asset categories:

- Roads;
- Bridges and Culverts;
- Solid Waste;
- Fleet and Equipment;
- Buildings and Facilities; and
- Parks and Lands.

1.3.2

Asset Replacement Costs

The total replacement cost for the Township' infrastructure assets is: \$56.87 million (in 2023 dollars). The distribution of this replacement cost is shown in **Figure 1-2** and **Figure 1-3** with roads, bridges and culverts making up 75% of the replacement costs.

Figure 1-2: Asset Replacement Cost

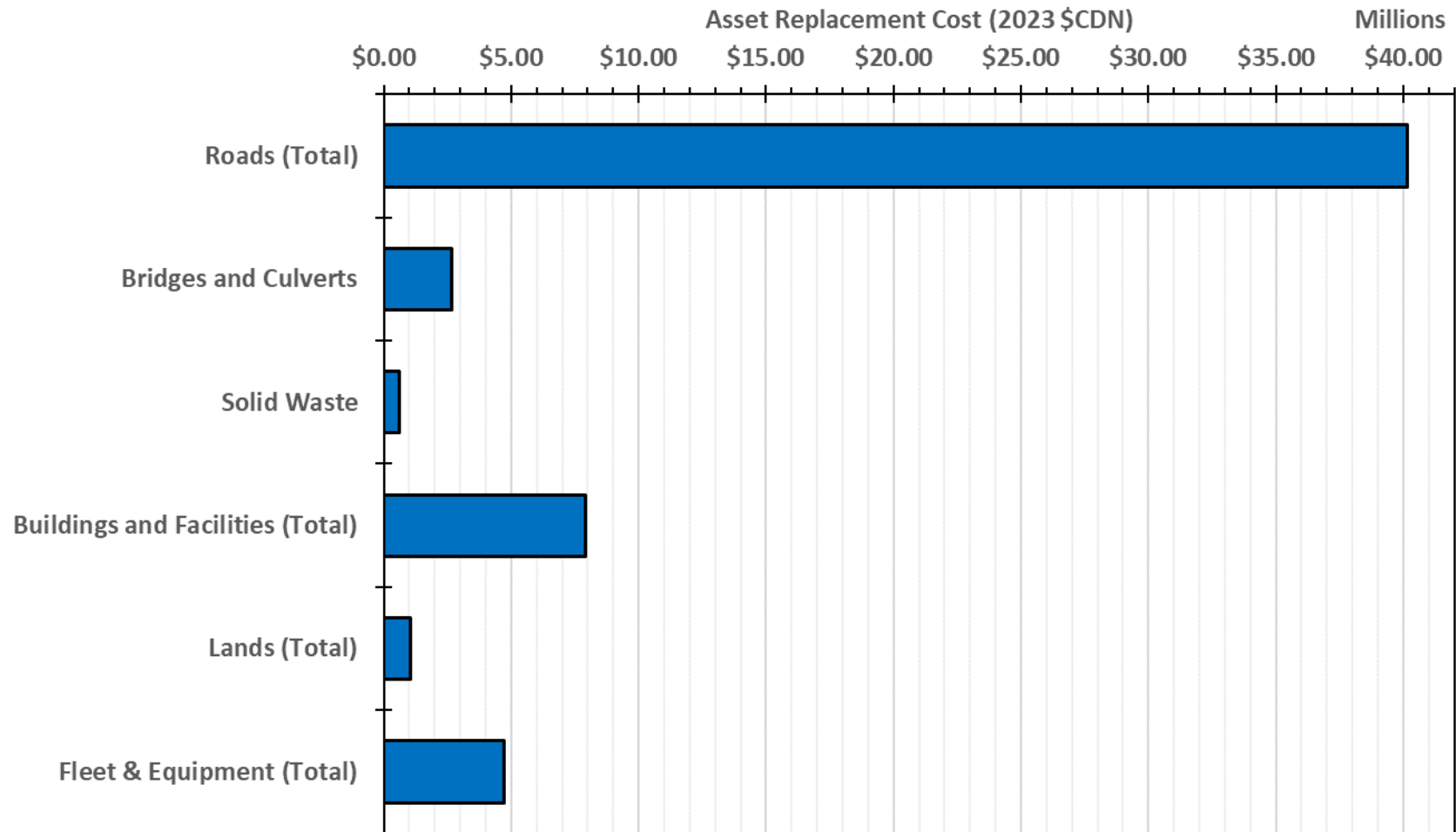
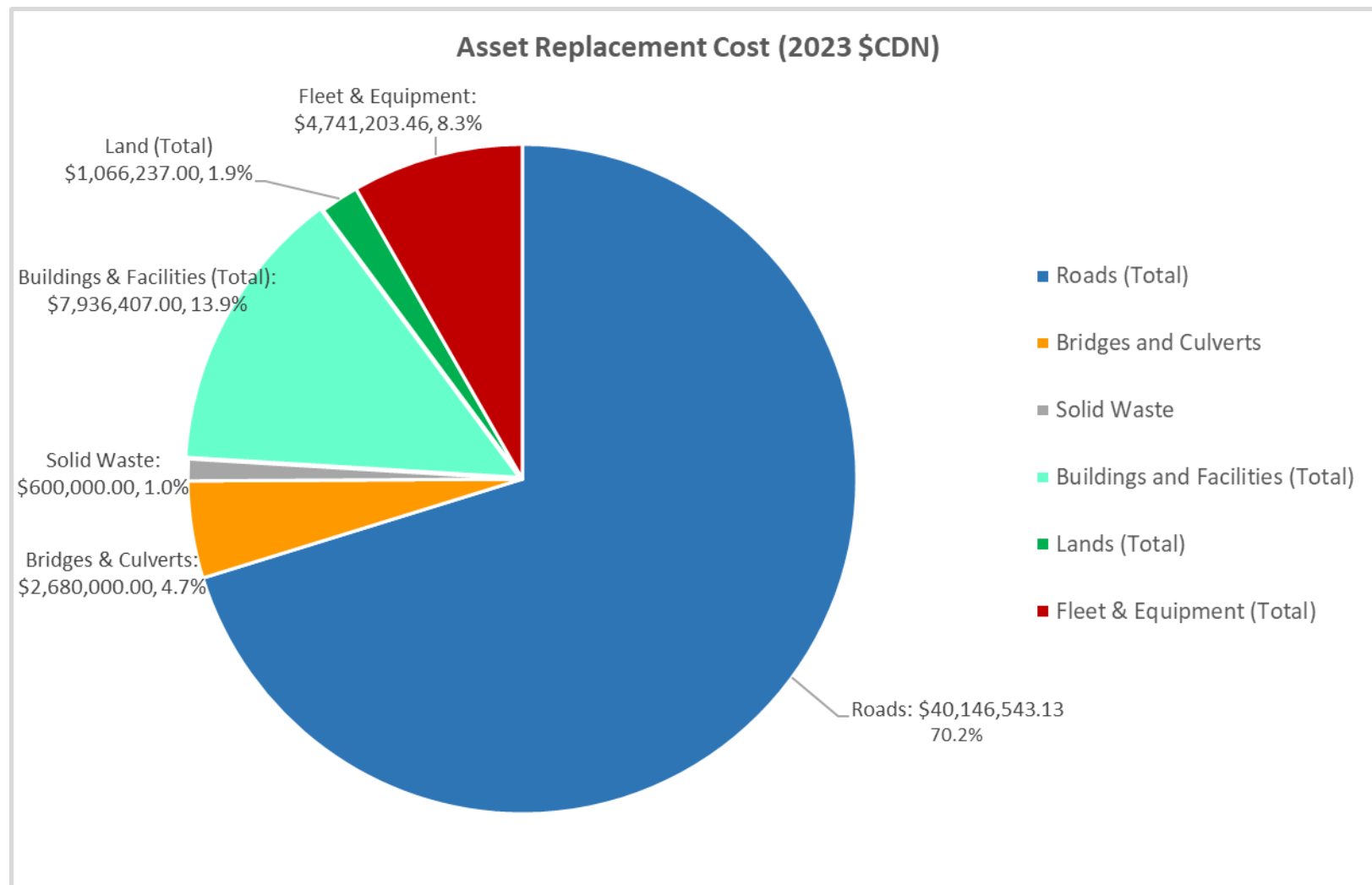


Figure 1-3: Asset Replacement Cost

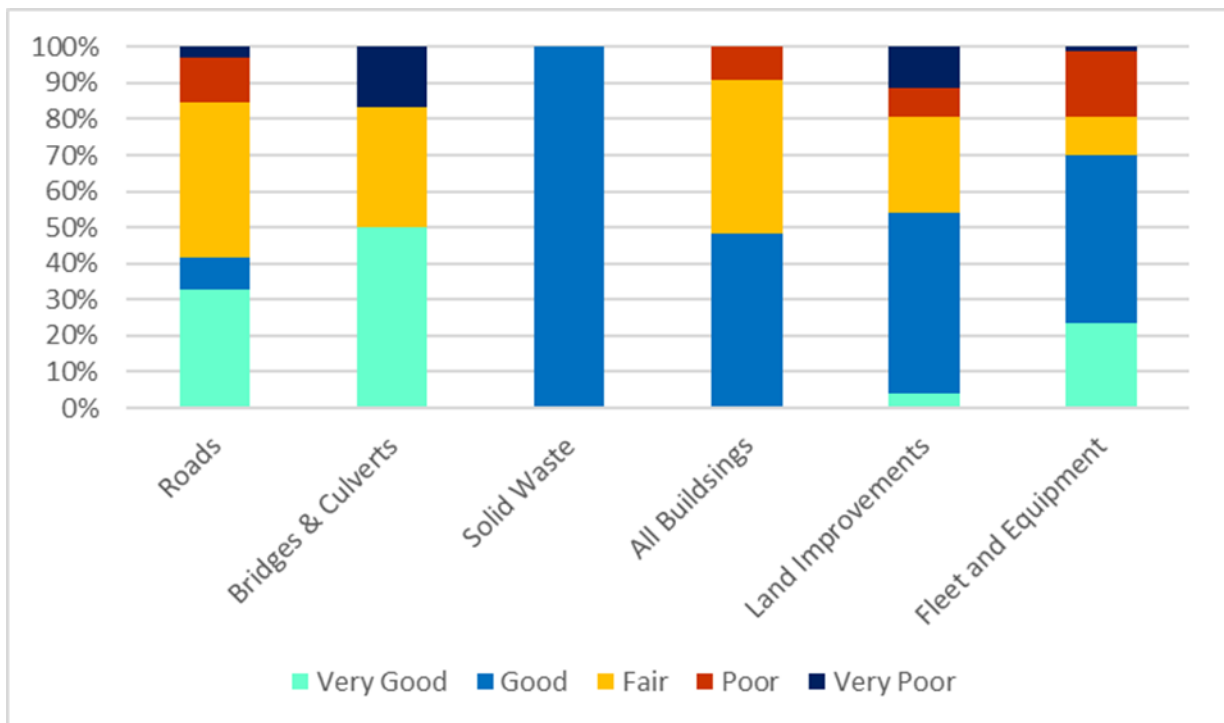


1.3.3

Asset Condition Summary

A summary of the condition for each of the Township’ infrastructure assets is shown in **Figure 1-4**. On average across all asset categories, 18% of the Township’ infrastructure assets have a condition rating of Very Good, 42% have a condition rating of Good, 26% have a condition rating of Fair, 8% have a condition rating of Poor, and 5% have a condition rating of Very Poor.

Figure 1-4: Asset Condition 2022



1.3.4

Asset Hierarchy

The asset hierarchy defines the tiers of asset componentry. Each type of asset, both complex and linear, can have its assets defined and inventoried at a high level, or with increased component detail. The Township currently tracks their assets to a component level. An example of the componentry within the roads is shown in **Table 1-2**. The components of the assets have been defined with their category, assets, components and subcomponents.

Table 1-2: Asset Hierarchy Example

Asset Category	Asset Component	Subcomponent
Roads	Road Base Road Surface	Shoulders Ditches

For this AMP, the analysis will focus on assets at the ‘asset component’ level, with the expectation that the condition and replacement of the components and subcomponents will be consistent with the linear assets. This is predicated on the assumption that all other elements included in the system are required componentry that will be replaced in conjunction with the linear components, and are expected to have similar lifespans and conditions as the linear components.

Buildings and facilities are considered complex assets. Complex assets are classified as assets which have various components which will be considered within the AMP. The components that will be included in the AMP are described in the buildings and facilities chapter of this report.

1.3.5 Asset Inventory

The asset inventory includes assets that are owned by the Township. The Township maintains a registry of assets that includes asset information, location, condition (where available) and age. The inventory was updated as part of this project and the next step for the Township is to apply this information into the new asset management software (Townsuite).

1.4 Levels of Service

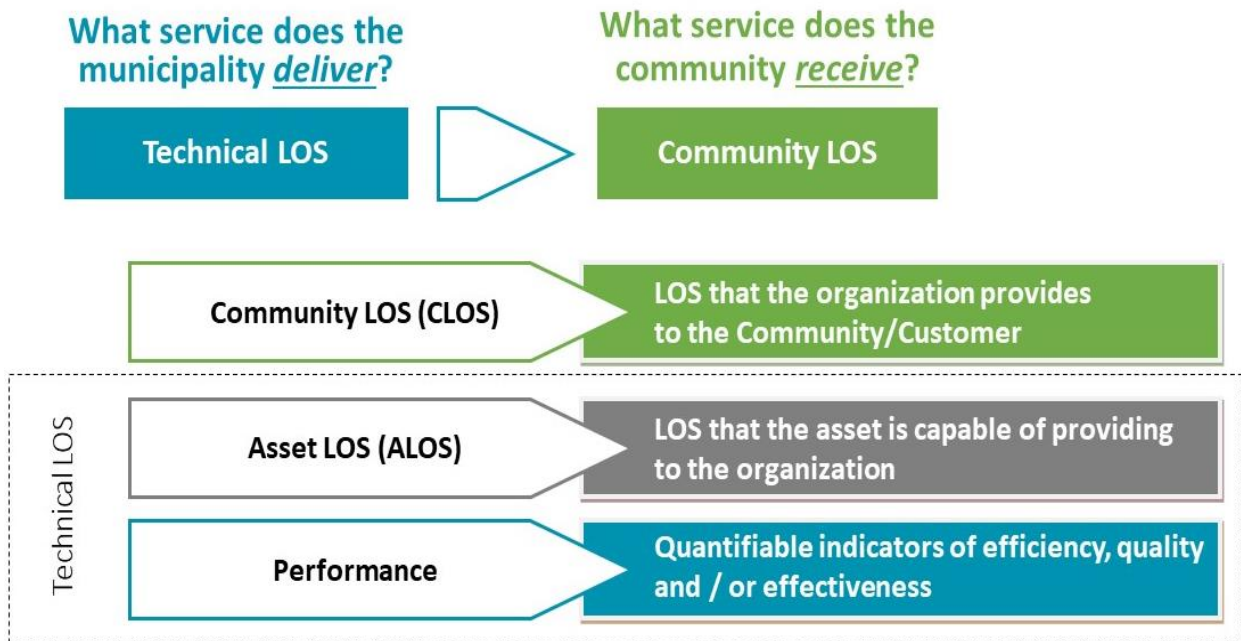
The current and proposed levels of service are described in terms of technical metrics and qualitative descriptions for each asset type. These measures are prescribed for core assets (including roads, and bridges and culverts) within O. Reg. 588/17.

Levels of Service (LOS) are presented in **Figure 1-5** and defined as follows:

- **Community LOS:** LOS that the organization provides to the community, intended to be customer-focused, providing a qualitative description of scope and quality; and

- **Technical LOS:** LOS that the asset is capable of providing to the Township which is further measured by the performance of the asset, providing technical metrics that support the delivery of LOS.

Figure 1-5: Levels of Service (Community LOS, Technical LOS and Performance)



The current and proposed LOS are described in terms of technical metrics and qualitative descriptions for each asset type. These descriptions are prescribed for core assets (including roads, and bridges and culverts) within Ontario Regulation (O. Reg.) 588/17.

Through the AMP development, South Algonquin sought to establish current and proposed LOS, in accordance with O. Reg. 588/17 for core assets. For the non-core assets included within this AMP, South Algonquin sought to define and establish current and proposed LOS in line with the intent of O. Reg. 588/17.

As part of this process, South Algonquin undertook education and working sessions with internal stakeholders, and provided a survey for public feedback to understand LOS concepts, and gain understanding of public perception of the levels of service and the public’s expectation for service delivery.

1.4.1

LOS Workshop

A workshop was held with staff from South Algonquin, representing several departments across the organization, Engineering, Facilities, and Administration. The workshop was held on April 29, 2022 through online delivery.

During the LOS of workshop, the concepts of Levels of Service were discussed, including definition of levels of service, impacts of changes to levels of service, and barriers to delivering the service.

The workshop included discussion regarding current Levels of Service at South Algonquin, conducting individual group discussions to identify important parameters for defining service delivery, and local issues and efficiencies for delivery.

1.4.2

LOS Community Survey

The Township undertook a community survey to receive feedback and information regarding Levels of Service in the community.

The purpose of the community survey was to engage with members of the public about levels of service related to asset management in the Township, related to service delivery associated with the infrastructure and asset categories included within this plan. The survey solicited feedback on:

- Overall satisfaction with municipal services;
- Suggestions for service improvements;
- Expectations for levels of municipal services;
- Willingness to pay to maintain or increase services; and,
- Service priorities for funding allocation.

The survey was advertised with a notice in a mail out and was available on the Township' website from July 11, 2022, to July 25, 2022. The community could request a printed copy of the survey or directly participate with the online survey. The survey was completed by 61 respondents with 70% of them being full time residents within the Township. A summary of the survey results was presented in the report, **Asset Management Levels of Service Survey Summary (September 2022)**.

The following are the overall themes and findings that emerged from the survey results:

- **Theme #1:** The community is generally satisfied with the programs and services provided by the Township.
- **Theme #2:** The community feels that the majority of the services listed in the survey at this time do not need improvement.
- **Theme #3:** The majority of respondents would like to receive services from the Township at a “family diner” LOS, with medium cost.
- **Theme #4:** Overall, majority of residents are willing to pay an increase or slight increase in fees to maintain the current levels of services.
- **Theme #5:** The respondents indicated a preference to maintain current service (likely pay more)
- **Theme #6:** The services that should be prioritized for funding are Township roads, winter control on roads, and solid waste facilities.

1.4.3 Proposed Levels of Service (LOS)

The proposed Levels of Service (LOS) is an established target for the Township’s LOS, set to guide the Township in their current and future asset management. Proposed Levels of Service are a requirement for compliance with O. Reg. 588/17. The Proposed LOS established within this report relates to the target to be achieved in ten-years, the year 2032.

To establish the proposed Levels of Service, the Township established the current LOS, and sought input from the Township’ staff, public (through levels of service survey), and Council to understand the preferred levels of service targets.

Through the process, three scenarios were generally considered for proposed levels of service, each a considering a different level of investment to the infrastructure, and the corresponding impact it will have on the LOS being provided. The scenarios considered included the following:

- No change in funding – LOS would decrease over time;
- Increase in funding – LOS would be maintained over time; and
- Greater increase in funding – LOS would increase over time (increase would vary depending on funding increase).

Direction received from Township' staff indicated that the current Levels of Service were generally found to be sufficient, however there are some parameters that will have improved LOS targets. Accordingly, the proposed Levels of Service targets for 2032 have been identified, maintaining the established LOS values from 2022 or slightly improving (rounding up). Proposed Levels of Service are summarized in **Table 1-3**. And described for each asset category in the sections that follow.

Table 1-3: Proposed Levels of Service for 2032

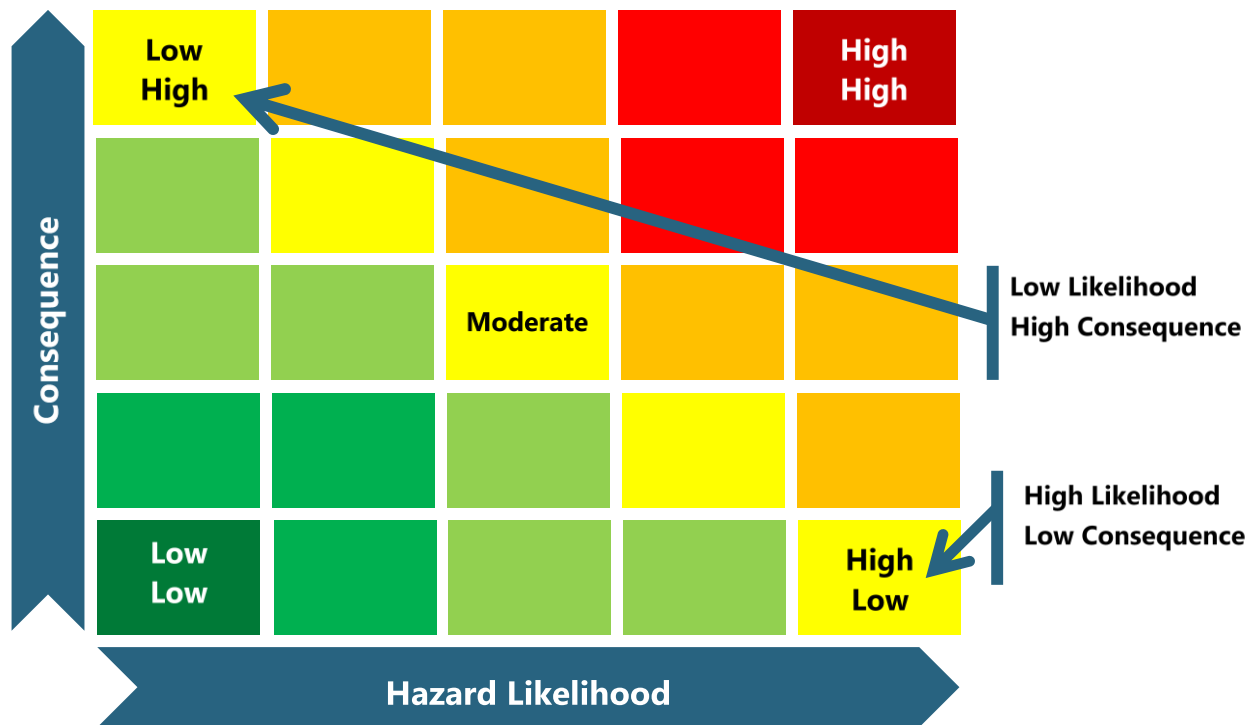
Asset Service	LOS Parameter	LOS Measure	2022 LOS Delivered	Proposed LOS for 2032
Roads – Paved	Quality	Average pavement condition index (PCI)	88 (Good)	Maintain 80 (good) or better.
Roads – Unpaved	Quality	Average condition	Fair	Good
Bridges and Culverts	Quality	Average bridge condition index (BCI) value	68.5 (fair)	68.5 (fair) or better
Solid Waste	Reliability in hours of operation	Provide recycling and garbage facilities within the Township, with minimal maintenance closures.	Maintain open hours of operation (See Table 4-1) except two days of closure due to COVID pandemic.	Maintain open hours of facility.
Fleet and Equipment	Reliability	Maintained in good or better condition	24% of Fleet and Equipment condition 'very good', 46% of condition 'good', 11% condition 'fair'.	Maintain these overall condition ratings.
Buildings and Facilities	Customer Satisfaction	Energy efficiency and consumption of greenhouse gases.	65% Energy Efficiency.	Maintain Energy Efficiency.
Parks and Lands	Reliability	Equipment and faculties at parks maintained in good or better condition.	All equipment maintained in 'fair or better' condition.	All equipment maintained in 'fair or better' condition.

1.5 Risk Assessment

In determining the lifecycle activities for each asset category and identifying the priority activities, the risks associated with the options are to be considered. The risk rating for each asset generates a risk profile for the entire asset category.

The assets with the highest risk rating identify the priorities for the Township. As part of assessing risk, consider the factors that increase the likelihood of a hazard occurring (or non-delivery of service) and the consequence. **Figure 1-6** presents a risk “heat map” plotting likelihood and consequence.

Figure 1-6: Risk Heat Map



A priority rating has been developed based on the calculated risk rating and displayed in **Figure 1-6** as part of a 5 by 5 matrix. High risk ratings are shown in the red zone (risk rating 17 to 25), Moderate risk ratings are shown in the orange zone (risk ratings of 10 to 16) and Low risk ratings are in the green and yellow zone (risk ratings of 1 to 9).

The approach and methodology to risk assessment is presented in following sections. A risk profile for each asset category is presented in the corresponding sections for each asset category.

1.5.1 Risk Methodology and Approach

Risk assessment will be conducted for each of the asset categories within the AMP. The risk ratings for the assets follow the below risk methodology.

Risk is the likelihood and magnitude of a negative scenario (hazard) occurring that limits the ability of the asset to deliver the service. Risk is the consideration of asset failure and the consequence of the failure.

Risk = Likelihood x Consequence

Consequence considers the severity of the impact, vulnerability of the asset and exposure to the negative scenario.

Applying the methodology of a score of 1 to 5 for the hazard and the consequence, the maximum risk rating is 25 (high).

1.5.2 Calculation of Likelihood

The factors that contribute to the likelihood of failure include:

- A – Condition of the asset;
- B – Performance (reliability); and
- C – Vulnerability to climate change.

See **Table 1-4** for description of these factors.

Table 1-4: Likelihood Factors

Factors	Low (1)	Moderate (3)	High (5)
A – Condition	Very Good (1)	Good (2); Fair (3)	Poor (4); Very Poor (5)
B – Performance	Always Reliable	Usually Reliable	Not Reliable
C – Climate Change	No or limited impact, quick recovery or mitigation in place	Limited impact with slower recovery; mitigation plan not in place	Moderate or high impact; no or limited mitigation plan

By separating condition and performance as two separate factors, there is an opportunity to consider assets in poor condition that may still be performing well, as well as good condition assets that are not performing well. The climate change factor brings into consideration assets that are vulnerable to climate change scenarios such as intense rainfall, increased temperatures, extreme weather and drought. The climate change rating includes any mitigation activities in the scoring which reduces the risk and lowers the score.

Therefore, the likelihood of failure is $(A + B + C)/3$ (i.e., the average of the factors, assuming they are equally weighted).

1.5.3 Calculation of Consequence

In calculating consequence, the question to consider is: What increases the impact of non-delivery (or failure of the asset)?

There are two factors that contribute to the consequence which are:

- D – Impact or severity; and
- E – Importance of the asset in delivering service.

Both impact and importance contribute to the consequence and will be multiplied by likelihood. The two ratings will be added together for the consequence maximum score of 5 (D+E). See **Table 1-5** for description of consequence factors.

Table 1-5: Consequence Factors

Factors	Low	Moderate	High
D – Impact	Low or no impact (0)	Moderate impact (1)	High impact (2)
E – Importance of the asset in delivering service	Low importance (1)	Moderate importance (2)	High importance (3)

The impact ratings were established by considering these five possible areas of consequence (as discussed in the Risk Workshop) and determining an overall rating of high, moderate or low by taking an average for the impact of:

- Safety/Injury;
- Financial Loss;
- Reputation with Stakeholders
- Environmental Damage; and,
- Loss of Service.

The importance ratings for assets are established in consultation with South Algonquin staff. The ratings established include assumptions and specific importance values for assets.

1.5.3.1**Calculation of Risk**

The risk calculation for each of the assets is determined as follows:

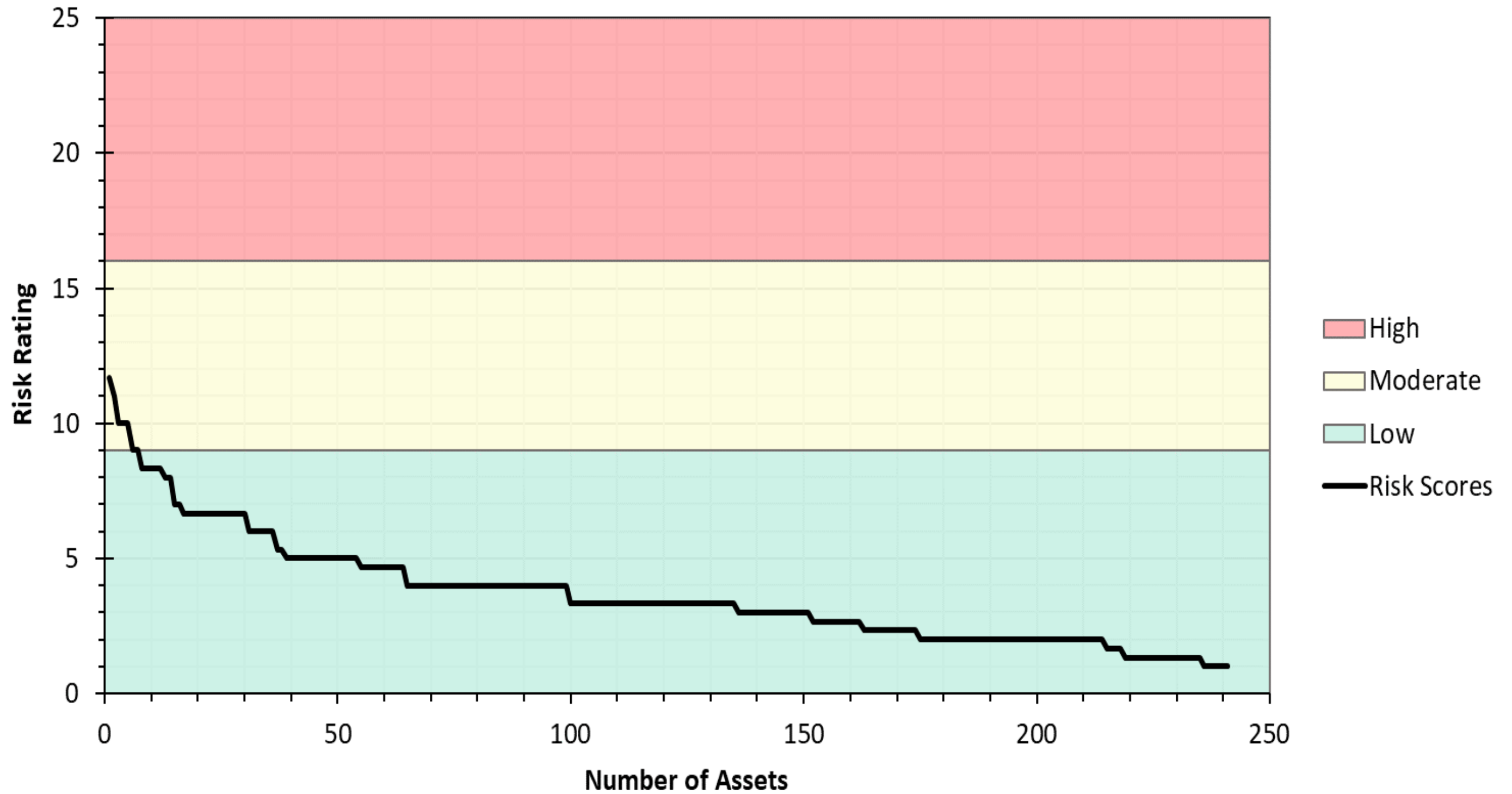
Risk = Hazard x Consequence

Risk = (A + B + C)/3 x (D + E)

Where

- A = Condition
- B = Performance
- C = Climate Change
- D = Impact
- E = Importance of the asset

Figure 1-7: Risk Profile for All Assets



Of more than 236 assets tracked within the Township’s asset management data, 0% have a high-risk rating and 2.8% have a moderate risk rating. The remaining assets have been identified as a low-risk rating.

1.5.3.2 Climate Change

In the Risk Workshop, staff considered the following climate change scenarios and identified low, moderate or high vulnerability for assets in each asset category:

- Mean Annual Temperature;
- Number of Hot Days (> 25 °C);
- Heavy Snow Events;
- Heavy Rain Events;
- Extreme Weather Events; and
- Occurrence and Magnitude of Flooding.

This information was used to inform the assignment of climate change factor (C) in the risk rating calculation for each asset component.

1.5.3.3 Limitation and Assumptions – Risk Assessment

Several key limitations and assumptions were made as part of the risk assessment process, which are summarized below:

- Field condition assessment data was used as available to determine state of infrastructure and risk. In the absence of field condition assessment data, asset age and estimated useful life was used to approximate physical condition.
- Performance of individual assets was assumed as “Always Reliable” unless otherwise indicated by Township staff, reviewed reports or provided asset data.

1.6 Asset Management Strategy

The asset management strategy for South Algonquin assets will employ the lifecycle activities to maximize the useful life and economy of each asset. Lifecycle activities are defined in O. Reg. 588/17 as “activities undertaken with respect to a municipal infrastructure asset over its service life”, and refers to potential activities that can be implemented by the Township during the useful life of an asset. The activities are

separated by category, including constructing, maintaining, renewing, operating and decommissioning for each asset category.

The lifecycle activities are typical, and include recommendations for timing of implementation and other best practices for implementation. The activities are used in the asset management strategy.

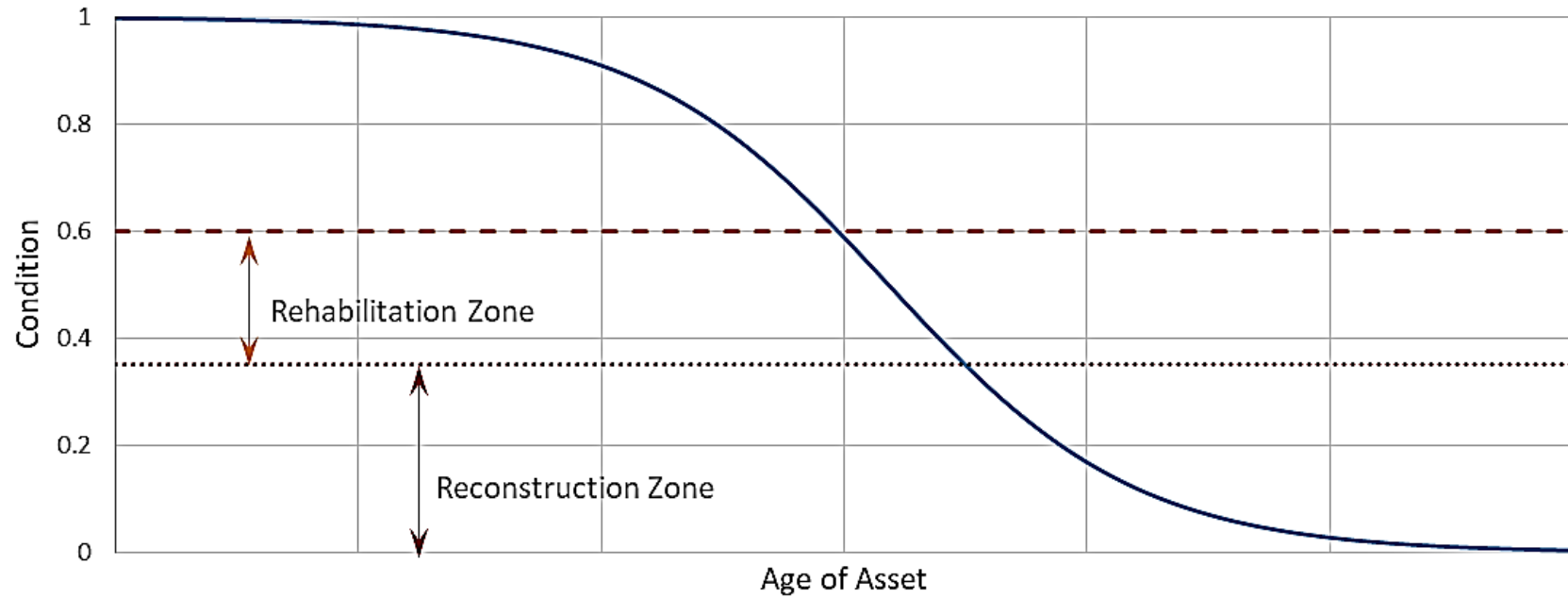
The primary indicator used in the development of a lifecycle strategy is the condition of each asset, however the strategy should also consider other factors, such as:

- Importance of the asset;
- Asset risk score;
- Condition of adjacent sections;
- Replacement requirements for adjacent infrastructure (linear);
- Expansion requirements; and
- Maintenance frequency and type.

As development continues to occur at South Algonquin and the assets continue to deteriorate, these factors will continue to change, and each have an impact on the lifecycle of an asset. Consideration of these factors should be given when devising capital project outlooks and budgeting, and updating of the asset management plan.

The assets will deteriorate on a non-linear basis, and the various lifecycle activities can be implemented at varying stages within an asset's deterioration. **Figure 1-8** provides a visualization of the theoretical deterioration curve for an asset, and the opportunity windows to conduct lifecycle activities within the expected useful life of an asset.

Figure 1-8: Theoretical Deterioration of Assets and Lifecycle Activity Opportunities



Implementation of maintenance activities throughout the lifecycle and rehabilitation works within an appropriate timeframe can assist in optimising the lifespan of an asset.

In reference to the above figure, it is expected that maintenance and operating activities will occur through the full lifecycle of the asset. Renewal works are most appropriately employed within the rehabilitation zone, and reconstruction and decommissioning will most likely occur within the reconstruction zone.

On an ongoing basis, each of the factors listed above should be reviewed and established to assist in asset management planning and decision making.

The strategy section for each asset category considers the lifecycle activities and best practices to develop a high-level strategy that can be used as a guide by the Township in asset management planning and decision making. The strategy will use current South Algonquin practices and suggest best practices to try to optimize the lifecycle of each of South Algonquin's assets, and therefore asset spending.

Analysis of the assets and development of projections are included as part of the strategy section. Analysis considers current replacement cost information, the attributes of the assets, and budgetary information from the Township to analyze the strategy and affordability. The methodologies used for linear and vertical asset analyses are described in the following sections.

1.7 Growth

Population and household data for the growth projections outlined here were obtained from the Official Plan as well as Statistics Canada Census data. Information is based on 2021 data from Statistic Canada and 2012 data from the Official Plan.

The Township of South Algonquin comprises 873.43 square kilometers. It also includes the communities of Aylen Lake, Cross Lake, Gunters, Madawaska, McKenzie Lake, Murchison, Opeongo, Wallace and Whitney. The population and employment forecasts for the municipality are set out in its Official Plan (August 2012) as follows:

- The population reported in the 2021 Census data from Statistics Canada is 1,055.
- Township and local communities should plan to accommodate a population of 1,272 people for the year 2032, if an average population growth of 2.7% is used.

Key considerations for growth projections for Township and its local communities include the following:

- Proximity to natural amenities also has an influence on housing demand in the Township, with seasonal housing growth an important planning consideration for many local municipalities.
- All local municipalities have been experiencing net out-commuting, largely due to job opportunities in the separated and outlining cities surrounding the Township. Out-commuting from the Township of South Algonquin residents is anticipated to continue over the Plan horizon.
- The extent of commuter-sheds relative to employment opportunities is an important consideration in the forecasts and represents a key determinant of the distribution of future population and housing growth within the Township.
- Servicing capacity may place limits on growth for many local areas.

Each consideration and its impacts on the lifecycle of the assets is presented in **Table 1-6**.

Table 1-6: Growth Impacts to Lifecycle Activities

Asset Category	Growth Impact Assumptions	How Assumptions Relate to Lifecycle of the Assets
Roads	Increased traffic in connector roads to adjacent communities	Potential increase in road maintenance costs, capital expenditures (new roads), expansion requirements.
Bridges & Culverts	Increased usage of bridge crossings by vehicles in the area	Potential traffic volume delays and mitigation required. Load considerations and regularly scheduled maintenance checks.
Solid Waste	Increase in demand and usage with increase in population growth	Increased capital costs for purchase of additional lands to meet service needs. Potential increase in maintenance costs.
Fleet and Equipment	Increase in service demands – requiring increased operation or capacity at greater distances	Increased capital costs for purchase of additional assets to meet service needs Increased operational costs in fleet maintenance and operational consumables.

Asset Category	Growth Impact Assumptions	How Assumptions Relate to Lifecycle of the Assets
Buildings and Facilities	Increased facility usage Changing service demands from aging population	Increase in capital expenditure for facility development in response to development. Increase in operating costs for facility services and maintenance.
Parks and Lands	Increase in service demands – requiring increased operation or capacity at greater distances	Increased capital costs for purchase of additional asset equipment to meet service needs. Increased operational costs in equipment maintenance and operational consumables.

There are several areas of growth that impact the services and programs of the Township. They are:

- Increasing demand for Fire Service due to increasing population, conversions from seasonal to permanent residences; and
- Greater demand for long-term care beds due to aging population.

1.8 Roadmap with Next Steps

1.8.1 Next Steps – Regulatory Compliance

Future updates would include more robust financial strategy to meet phase 4 requirements. This will be supported by the implementation of new asset management software (TownSuite) currently underway.

The next update would also include green infrastructure assets (i.e. natural assets) owned by the Township and further assessment on infrastructure vulnerability to the impacts of climate change related to operations, levels of service and lifecycle management.

1.8.2 Next Steps – Recommendations in AMP 2022

1.8.2.1 Recommendations – Regulatory

In future updates of this report a recommendation to the Township would be to implement a Building Condition Assessment program for all their Building and Facilities assets. As well, the Parks and Lands asset category has several buildings (privy's and changing facilities) that have been updated or added to the inventory since the previous Asset Management Plan done in 2013. A full condition assessment (which would include the breakdown of each building and facility by overall components) of the entirety of the buildings owned by the Township would allow a more comprehensive cost breakdown for planning and maintenance activities and would ensure the whole of these asset categories has been captured. Given the complicated nature of assessing these buildings from a component stand point and the time commitment needed in this assessment, it is recommended the Township has a third party to facilitate this work.

The Township should also investigate the potential closure costs for each of their Solid Waste sites to ensure future planning for these costs can be considered.

1.8.2.2 Recommendations – Continuous Improvement

A full inventory of the assets owned by the Township should be undertaken as there are still some unknowns with respect to the final inventory counts and asset IDs. Having the Townsuite system online now the Township should find this task more manageable and straightforward.

2.0 Roads



2.1 State of Local Infrastructure

The Township is responsible for maintaining a road network with a total roadway length of 122.09 of centreline kilometres (km) of hard and loose topped roads. This includes:

- 6.68 km of earth roads;
- 77.77 km of gravel roads;
- 21.94 km of Low Class Bituminous (Surface Treatment) roads; and,
- 15.70 km of High Class Bituminous (Asphalt) roads.

The information reported in this Asset Management Plan (AMP) and the subsequent analysis are based on the 2022 Pavement Condition Index (PCI) and condition data provided by a third-party consulting firm from the 2022 Road Inventory and Condition Assessment (2022 Roads Report) done at the request of the Township.

The roads are located across the Township and include roads owned by the separated towns (i.e. Whitney and Madawaska). In some places, local municipal infrastructure (i.e., catch basins) are located within the Township roads rights-of-way. As well some roads, bridges and culverts are located on boundaries with adjacent municipalities and Algonquin Park.

The road network with the Township would be considered a rural single tier road system. Where Rural is defined as areas with sparse development or where

development is less than 50% of the frontage, including developed areas extending less than 300 metres (m) on one side or 200 m on both sides and curb and gutter.

The majority of road assets have two lanes.

2.1.1 Average Age

The average age of the road assets is 64 years, although this does not consider maintenance and rehabilitation activities.

2.1.2 Replacement Costs

Replacement cost for the road assets were determined based on the 2016 Parametric Costing Guide from the Ministry of Transportation (MTO), material information and with reference to the 2022 Roads Report done for the Township by a third party. The replacement costs include costs necessary for full road reconstruction of a segment. It is assumed that all roads will be reconstructed as per their current surface type, i.e. like for like replacement.

The replacement cost of the assets in the road category is estimated at \$40,150,000.

2.2 Condition

The condition information for the road network reported in this AMP is based on the 2022 Roads Report, which provided Pavement Condition Index data for paved roads and overall general condition for gravel and earthen roads, by a third-party consulting firm.

The approach to assessing condition of roads is to hire a third-party consulting firm to conduct a road needs study about every five years and for staff to identify changes in observed condition and report these findings to the road's supervisor.

PCI is a rating system that measures the condition of the roadway. It uses two components: a ride comfort rating (RCR) and a distress manifestation index (DMI). The DMI is a visual inspection that rates the road based on physical condition of, and/or damage to the road (pavement and shoulders).

The condition of the roads is organized into five categories from "Very Good" to "Very Poor" using the alignment of PCI scores as shown in the following **Table 2-1**.

Table 2-1: Condition Rating Categories for Roads

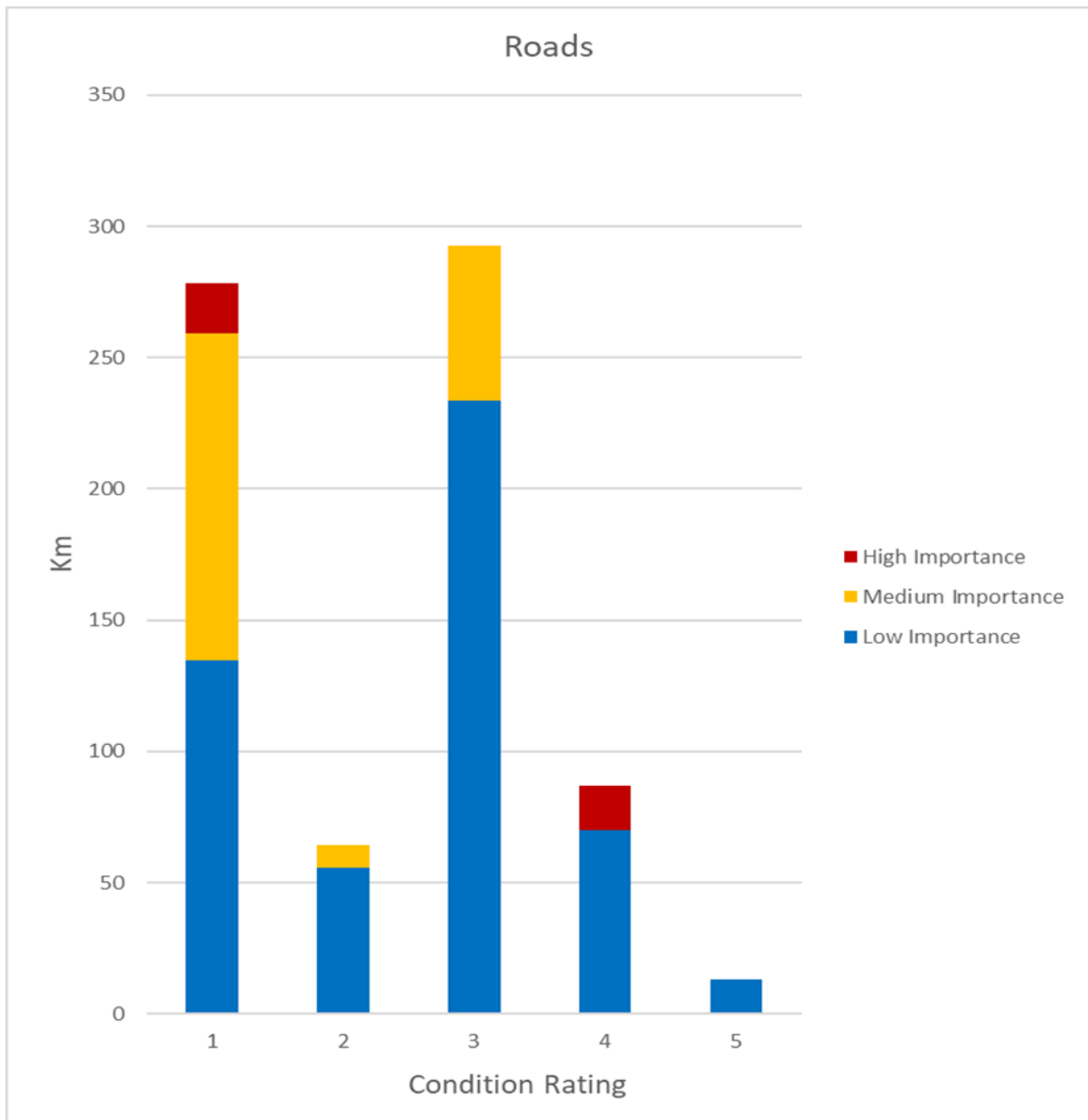
Condition	PCI	Condition Category
Very Good	90 to 100	1
Good	80 to 90	2
Fair	60 to 80	3
Poor	40 to 60	4
Very Poor	0 to 40	5

The average PCI condition rating for the paved road network is 75.5 PCI, an overall High Fair rating (Condition Category 3). The average condition rating for the gravel and earthen roads is 65 (Condition Rating 3).

The majority of the road network is in a “Very Good” to “Fair” condition with less than 16.5% by distance in Poor condition and only 4.5% in very poor condition.

Figure 2-1 summarizes the condition of the road network ranging from “Very Good” to “Very Poor” based on km of road in each condition category. Further, **Figure 2-1** presents the condition of the roads by importance (high, medium or low) shown by colour. Importance is a factor in setting priorities for future lifecycle activities.

Figure 2-1: Condition of Roads (Length [km] and Importance)



Note on Importance:

For Roads, importance was determined based on traffic volume as provided by the 2022 Roads Report completed by a third-party consultant. Where traffic data is not available road surface type was utilized. As such the following values will be used:

- High importance for roads with an AADT greater than or equal to 450 or roads with an asphalt surface treatment;

- Moderate importance for roads with an AADT greater than or equal to 100 but less than 450; and
- Low importance for roads with an AADT less than 100 or roads with granular or earth surface treatments.

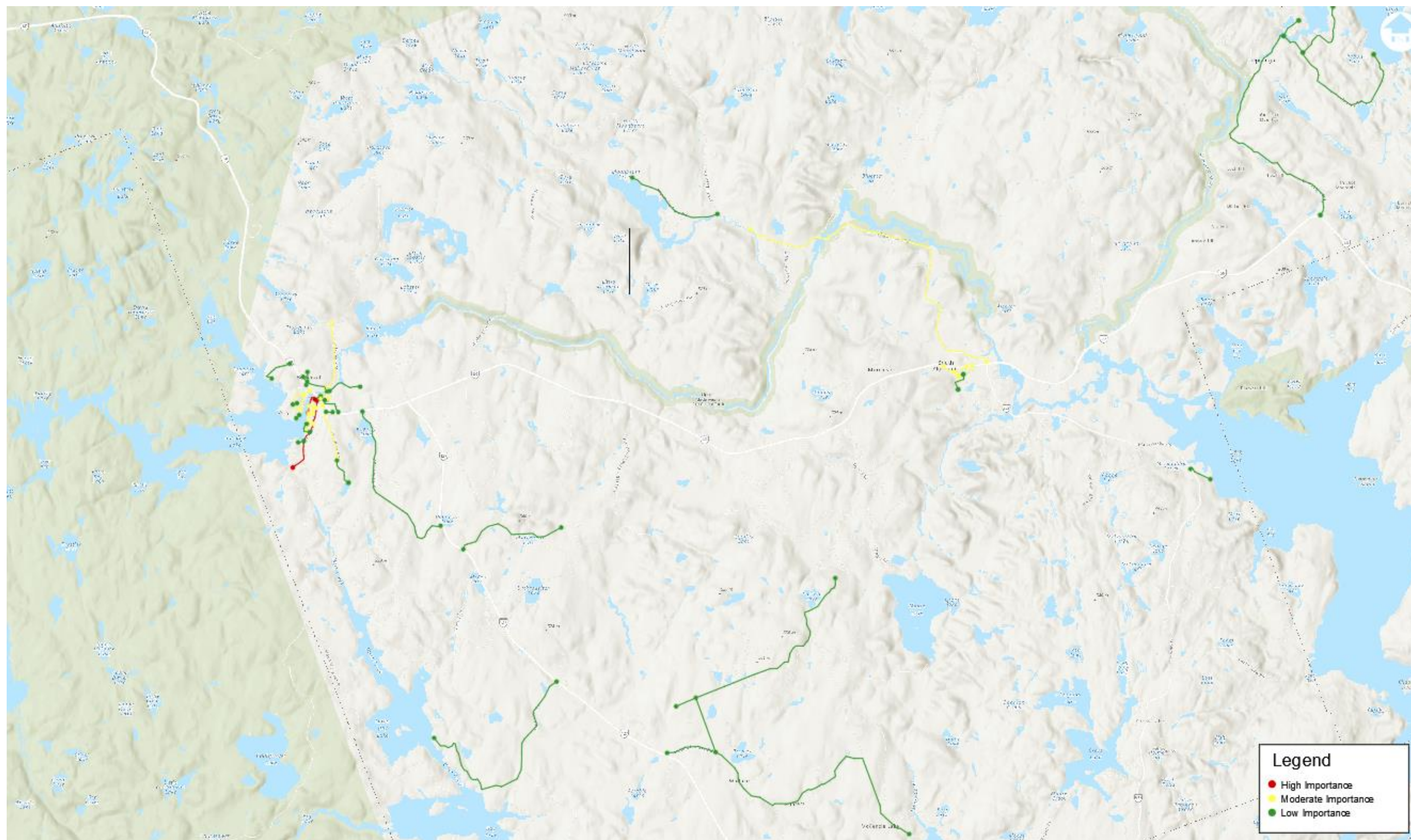
Bridges will be assigned the same importance rating as the road it serves.

2.3 Current LOS

2.3.1 Community LOS – Roads

The roads in the Township are intended to serve through traffic and to collect traffic from the local roads system. Township roads also connect urban centres to each other or the King’s Highway System. Township roads provide service to resort and recreational areas. See a map of the Township road network in **Figure 2-2**.

Figure 2-2: Map of Township Roads with Showing Importance



2.3.2 Technical LOS – Roads

The number of lane-km of roads as a proportion of square kilometres (km²) of land area of the Township is 0.14 km/km².

Quality: The technical metric for the condition of roads is the Pavement Condition Index (PCI) for paved roads and the average surface condition for unpaved roads.

1. **Paved:** The average pavement condition index is 88 (Good) for paved roads.
2. **Unpaved:** For unpaved roads, the average surface condition is Fair. There are currently 16.16 km of gravel road that the 2022 Roads Report has identified as needing to be reconstructed now, which is approximately 20% of the total 77.77 km of gravel roads.

2.3.3 Performance – Roads

The current performance of the road network is determined by the following performance measures established by the Township. It is based on actual performance in the most recent year.

- Half loads in spring. See list of roads in load restriction By-Law 15-481.
- Traffic counts. See Appendix for traffic counts locations from 2022.

2.4 Risk Assessment

The risk assessment for roads assets was conducted using the following assumptions and criteria:

Condition: Determined based on estimated condition (using provided condition data from the Roads Needs Study). **Table 2-2** below provides details regarding the provided ratings from the Township's Roads Needs Study and the corresponding rating used within the risk calculation.

Table 2-2: Road Condition Ratings

Condition Rating (PCI)	Corresponding Risk Condition Rating
0 to 19	5 – Very Poor
20 to 39	4 – Poor
40 to 59	3 – Fair
60 to 79	2 – Good
80 to 100	1 – Very Good

Performance: Assumed to be always reliable (value of 1).

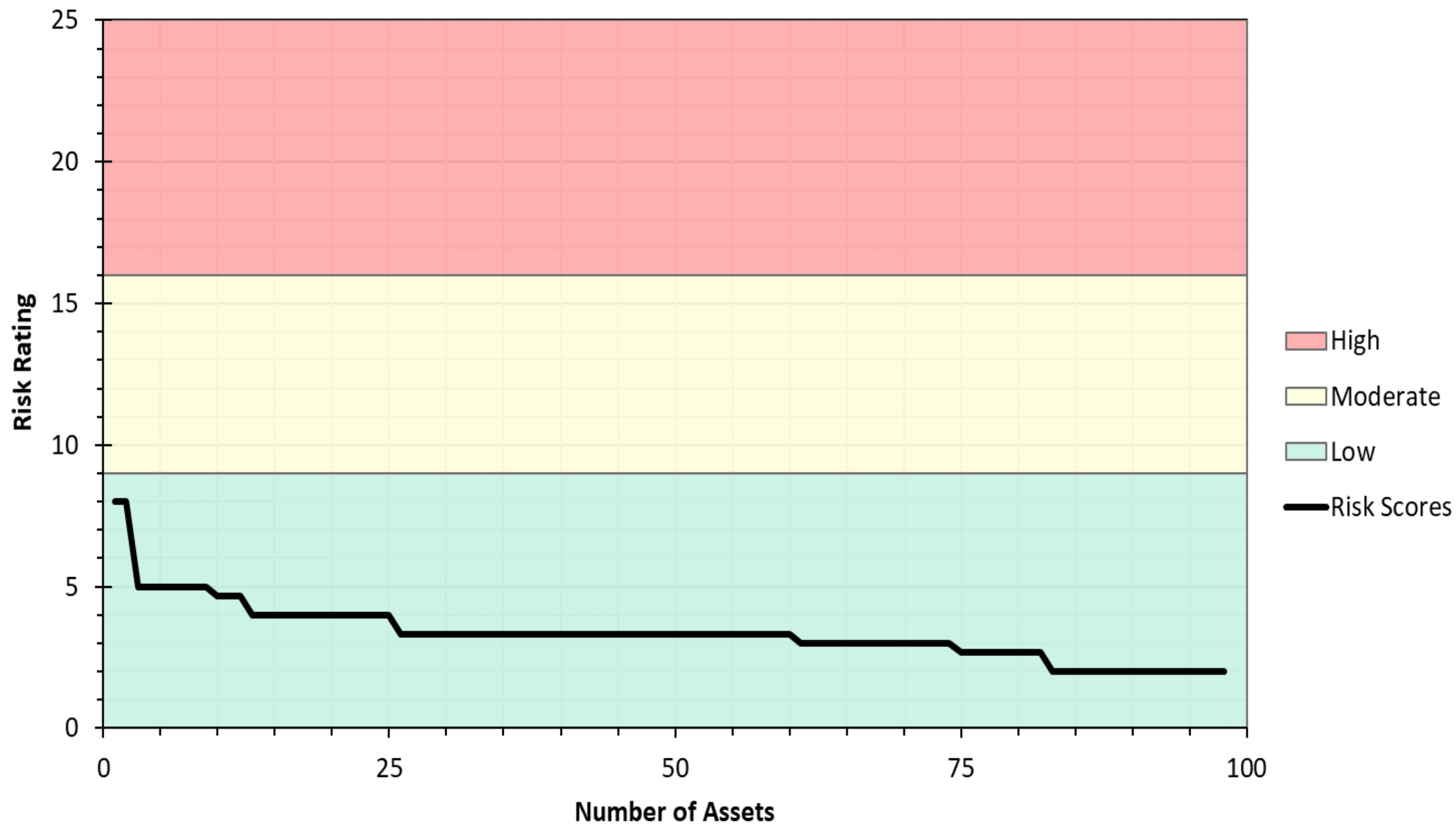
Climate Change: Assumed a value of 1 (Low, No or limited impact, quick recovery or mitigation in place).

Impact: Moderate impact (value of 1) assumed for all assets.

Importance: Importance was determined based on traffic volume as provided by the road needs study by G.D. Jewell Engineering Inc. Where traffic volume data is not available road surface type was utilized to determine importance. As such the following values will be used:

- High importance (value of 3) for roads with an AADT greater than or equal to 450 or roads with an asphalt surface treatment;
- Moderate importance (value of 2) for roads with an AADT greater than or equal to 100 but less than 450; and
- Low importance (value of 1) for roads with an AADT less than 100 or roads with granular or earth surface treatments.

Figure 2-3: Risk Profile for Roads Assets



As depicted in **Figure 2-3** all Road Assets (98) were determined to be in the low risk zone.

2.5 Lifecycle Activities

The following section describes the lifecycle activities that can be implemented within the asset management strategy for road assets. The primary lifecycle activities include construction, maintenance, operation, renewal/rehabilitation, and decommissioning/disposal.

The lifecycle activities presented below are consistent with best practices for road asset management and maintenance.

2.5.1 Construction

The initial lifecycle activity of a road asset is its construction. The road asset should be constructed to adhere to applicable requirements, codes, and design guidelines. Construction of new road assets is recommended to be in line with recommendations as part of growth, master plan, or other Township strategies. The design of the road asset should consider the LOS expected to be provided by that particular road asset, such as the anticipated speed or volume of traffic. Varying factors in construction include road classification, surface type, and location.

Construction can also be the replacement of deteriorated assets. Generally, at the end of the useful life of an asset, it can be replaced to ensure the continuation of the desired LOS which the Township provides. At the time of replacement, design should be undertaken to ensure design requirements are met, and adequate capacity is provided for current and future projections.

2.5.2 Maintenance

Maintenance activities are undertaken on the assets throughout their useful life to maintain their operating condition and performance. There are a variety of maintenance activities available to undertake on-road assets depending on the surface type of the roadway, including:

- Ditch and shoulder improvements;
- Grading;
- Calcium treatment;
- Crack sealing;
- Patching/pothole repair; and
- Washout repair.

Maintenance activities can include the full road surface or can be used to address localized repairs on the road surface.

The selection of the maintenance activity is dependent on a variety of factors, including road surface type (material, urban/rural classification), condition (surface and road base), road works history, and importance, among others.

2.5.3 **Operating**

Operating activities for the road assets include those activities that do not directly deal with the physical state of the road but work to extend the assets' useful life. The operating activities can include non-infrastructure solutions (such as policies, limiting truck traffic, and planning reports), and monitoring/inspection of the assets. Inspection of the road assets is completed by Township staff on a regular basis, and on a broader portion of the network conducted by a third party, in the form of a Roads Needs Study. The Roads Needs Study includes a combination of effort types to suit the needs of the Township. Adjustments are made to reflect road improvements and capital construction, deterioration of pavement or ride conditions, and to coordinate with underground infrastructure work, if applicable. In recent years the Township has procured the services of an independent specialist to provide a Roads Needs Study.

2.5.4 **Renewal/Rehabilitation**

Renewal or rehabilitation of road assets can be undertaken when maintenance works are no longer sufficient to address road surface deficiencies. These replace significant parts of the road and sub-base but provide large improvements to condition and lifespan. These works can include:

- Resurfacing for paved roads;
- Replacement of material lost for gravel and earthen roads.

The selection of the activity for implementation will require consideration of the same factors listed for maintenance works.

2.5.5 Decommissioning

Decommissioning activities of the road assets include the removal of the road from service. A road may be removed by disposal of the asset components, or establishment of a barricade to prevent continued usage of the asset. Disposal activities should be conducted such that health and safety protocols are being followed, and spent materials are disposed of at an appropriate or approved facility.

2.6 Asset Management Strategy

The asset management strategy for the road assets seeks to use the lifecycle activities in a manner that will achieve cost-effective and sustainable management of the road assets.

The road assets will deteriorate on a non-linear basis, and the lifecycle activities can be implemented at varying stages within an asset's deterioration.

The condition and usage of the road assets are key drivers in the determination of lifecycle activities to use. The Township has engaged a third party for the assessment of the roads, completed in 2022. This condition assessment of the roads is completed on a scheduled basis wherein the entirety of the network is reviewed every three years to five years. A variety of methods can be implemented for undertaking condition assessment of roads, including visual inspection, and street scan technology. A condition rating program can also be implemented that considers the importance or risk of a road segment and prioritizes frequency and timing of condition assessments to higher usage or higher importance roads. This condition assessment program continuation is recommended for the Township.

Maintenance works should be undertaken throughout the lifecycle of an asset. Selection of the appropriate maintenance activity will depend on the type of deterioration being experienced on the asset, and the condition of the asset. Some activities, such as crack sealing, are best utilized on a road segment that is generally in good condition. As the road segment continues to deteriorate, maintenance activities may become a less preferred option as they may become insufficient to address deficiencies. Maintenance

activities can be undertaken on a road segment multiple times prior to the asset requiring rehabilitation activities, depending on the nature and extent of the maintenance works.

Renewal and rehabilitation activities should be undertaken on an asset when it has deteriorated past the point where maintenance activities would be adequate to address condition issues. Selection of the appropriate rehabilitation activity will depend on the road surface material, stage in the lifecycle, and severity and type of deterioration.

At the point where a road asset has deteriorated such that maintenance and rehabilitation options will be inadequate to address condition issues, the road can be a candidate for reconstruction. Reconstruction works will result in a road segment being at a very good condition rating. In general, the current strategy for the road assets at the Township is to allow the road surface asset to degrade near the end of its expected lifecycle, and reconstruct the road surface when required. The road base has a much longer expected useful life than the road surface and is dealt with as required during road works.

Reconstruction and rehabilitation work offer the Township an opportunity to integrate other improvements into the road works. This may include active transportation facilities, upgrades of drainage, street lighting, and changes to the road cross-section to accommodate growing demands.

As the Township reconstructs the roads, the cross-section will vary depending on the location and classification of the road. The width of pavement (number of lanes, presence of on-street pavement), and type of active transportation (sidewalk, multi-use path) will be assessed on a case-by-case basis as roads are identified for reconstruction.



3.0 Bridges and Culverts



3.1 State of Local Infrastructure

The Township has four bridges, the Airy Pedestrian Bridge, Algonquin Street Bridge, Moore’s Creek Bridge, Poverty Creek Bridge, and one structural culvert (3 m in span and larger), the McCauley Lake Road Culvert, totaling five structures. The Township also provides winter plowing services for the Victoria Lake Culvert, which is in poor condition. It is used for EMS transit and the Township provides the snow removal services for its constituents as residents live on either side of the structure. Although this structure does not fall within the Townships inventory they assisted Ontario Parks with its replacement in 2022.

3.1.1 Average Age

The average age of bridges is 60 years, whereas the age of the Townships culvert is estimated to be between 30 and 40 years old.

The age distribution of the bridge and culvert structures is shown in **Table 3-1**.

Table 3-1: Age of Bridges and Culverts

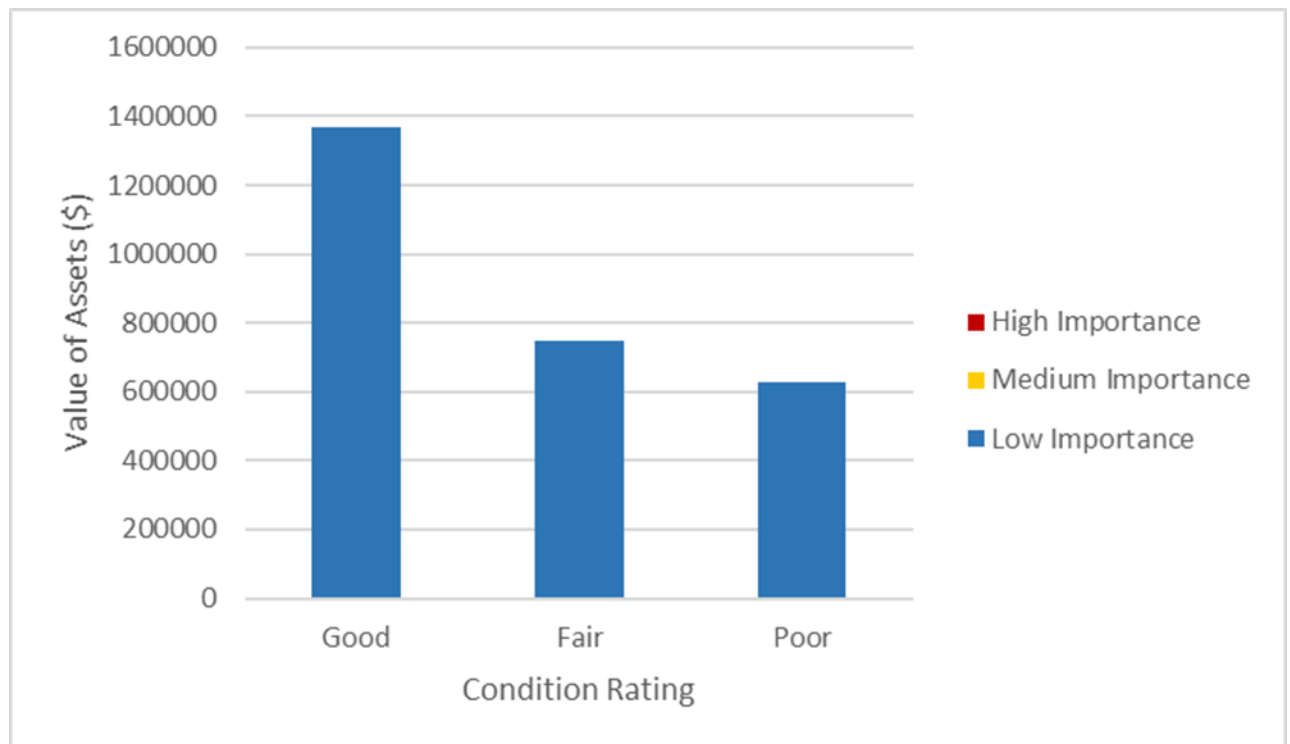
Bridges/Culverts	Age
Algonquin Street Bridge	72
Moore’s Creek Bridge	62
Poverty Creek Bridge	77
Airy Pedestrian Bridge	27
McCauley Lake Road Bridge (Culvert)	30 to 40

3.1.2 Replacement Cost

The replacement cost of the bridges/culverts is \$2,680,000.

Figure 3-1 presents the replacement cost of bridges/culverts in each of the condition categories, with the importance of the bridges/culverts all being low, based on the reported AADT values. Note that the majority of the bridges and culverts are in Good condition. Only one structure is in Fair and one structure is in Poor condition.

Figure 3-1: Condition of Bridges and Culverts (Value and Importance)



Condition

The information reported in this AMP and the subsequent analysis are based on the current inventory information maintained by the Township, and the current OSIM reports. OSIM assessments were most recently conducted for the Bridges and Culverts in 2021 by a third-party consulting firm.

The OSIM assessment conducted for the Township consisted of an inspection by a professional engineer pursuant to the Ontario Structural Inspection Manual of up to 55 structural elements which provides an indication of the general overall condition of the bridge or structural culvert (3 plus m span). This overall general condition of Good, Fair, or Poor, which has been assigned to each structure can be further translated into a Bridge Condition Index (BCI) number to allow us to group structures together and help assist in showing the Township where their funds would be best used.

Table 3-2 shows the condition of bridges and culverts and how this would affect use of the bridges. The Bridge Condition Index (BCI) is grouped into three condition categories of Good, Fair and Poor. Photos illustrating an example of the condition in each category are presented in **Figure 3-2** to **Figure 3-4**.

Table 3-2: Condition of Bridges and How it Affects the Use

BCI Range	Condition Rating	Affect Usage
70 to 100	Good (1)	Not Applicable
60 to 70	Fair (3)	Not Applicable
Less than 60	Poor (5)	Possible Load Restrictions

Figure 3-2: Example of Poor Condition Bridge or Culvert – McCauley Lake Road Bridge



Figure 3-3: Example of Fair Condition Bridge or Culvert – Poverty Creek Bridge



Figure 3-4: Example of Good Condition Bridge or Culvert – Algonquin Street Bridge



The bridges and culverts are generally in a good condition (BCI 70 to 100); with one in fair condition (BCI 60 to 70) and one in poor condition (BCI 0 to 60). The Township updates its bridges and culvert conditions every two years. It engages an independent engineering consultant to undertake the inspection work and update the OSIM reports with current condition and a preliminary cost estimate for any works (improvements or replacements) recommended for the structure.

In addition to the condition, other factors such as importance, impacts of climate change and consequence of failure is considered in determining the risk rating for each bridge and culvert. The risk rating and the recommendations in the OSIM report are considered in planning maintenance, repairs and replacement. For example, if a bridge/culvert has a rating of good (BCI of 70) or greater, then minimal maintenance is required within the next five years. In comparison, for bridges and culverts rated fair (BCI of 50 or below) or poor, they require either immediate maintenance/repairs within one year.

3.3 Current LOS

3.3.1 Community LOS – Bridges and Culverts

The Townships bridges and culverts carry motor vehicles, emergency vehicles, heavy transport vehicles (unless otherwise signed), cyclists, and pedestrians. See map Figure 3-5 of the location of the bridges and culverts in the Township.

Figure 3-5: Location of Bridges and Culverts



3.3.2 **Technical LOS – Bridges and Culverts**

The number of bridges/culverts in the Township with load or dimensional restrictions are:

- One asset in the bridge and culvert category has load restrictions; and
- Three of bridges and culvert have minimum vertical clearance restrictions.

3.3.3 **Performance – Bridges and Culverts**

The current performance of bridges and culverts is determined by the above performance measures established by the Township. It is based on actual performance in the most recent year.

See **Table 3-3** for the 2022 performance measures related to:

- Bridges with load restrictions; and
- Bridges with minimum vertical clearance restrictions.

Table 3-3: Performance 2022 – Bridges and Culverts

Description of Measure	ID	Bridge/Culvert Name
Load Restrictions	EQP 233	Poverty Creek Bridge
Minimum Vertical Clearance Restrictions	EQP 232	Moore’s Creek Bridge
	EQP 233	Poverty Creek Bridge
		McCauley Lake Road Culvert

3.4 **Risk Assessment**

The risk assessment for bridge and culvert assets was conducted using the following assumptions and criteria:

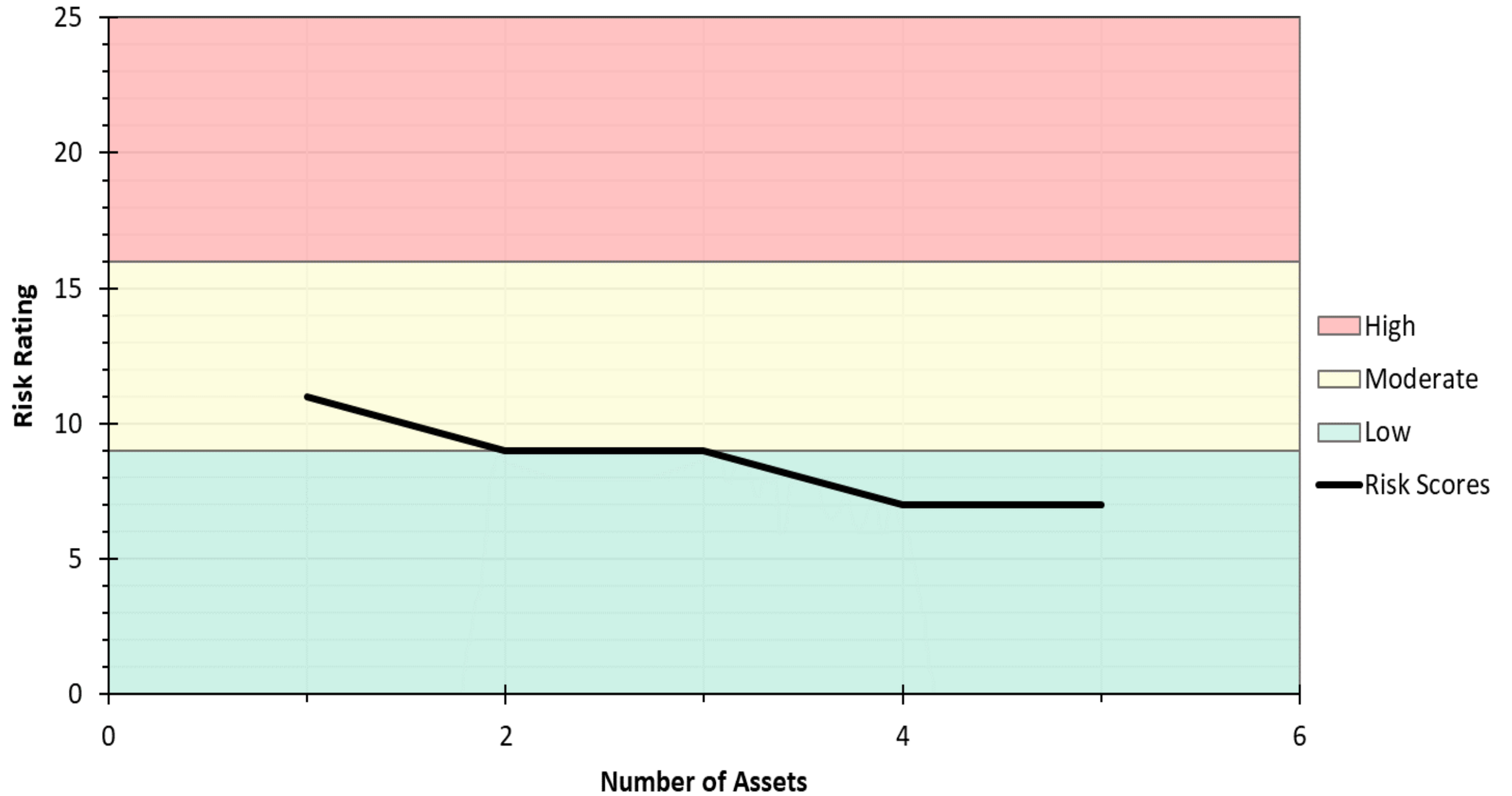
Condition: Determined based on BCI ratings supplied by the Township from their OSIM Reports, according to the following:

- BCI from 0 up to 60: condition 5 (poor to very poor);
- BCI from 60 up to 70: condition 3 (fair); and
- BCI from 70 to 100: condition 1 (very good to good).

Performance: Assumed to be always reliable (value of 1).

- Climate Change:** Assumed a value of 5 (Moderate or high impact; no or limited mitigation plan).
- Impact:** Assumed to all be high impact (value of 2).
- Importance:** Importance for bridges are consistent with the importance values attributed to the road segments on which the bridges are located.

Figure 3-6: Risk Profile for Bridges and Culverts



As depicted in **Figure 3-6** the five Bridges and Culvert Assets were determined to be in the low risk zone and one is in the moderate risk rating zone.

3.5 Lifecycle Activities – Bridges and Large Culverts

The following section describes the lifecycle activities that can be implemented within the asset management strategy for bridge and structural (large) culvert assets. Note that, as previously discussed, roadway bridge assets refer to the entirety of the asset which is made up of the bridge deck surface and bridge structure. The primary lifecycle activities include construction, inspections, maintenance and rehabilitation replacement, and decommissioning/disposal.

3.5.1 Construction

The start of an asset's lifecycle is its construction. The bridge or structural culvert should be constructed to adhere with the requirements of the O. Reg. 160/02: Standards for Bridges, CSA S6 Canadian Highway Bridge Design Code, and any and all other applicable regional codes and requirements for the bridge and its use. Each bridge or structural culvert should be designed and constructed to provide the services for which it is intended.

3.5.2 Inspections

Under **O. Reg. 160/02: Standards for Bridges**, the Township is required to complete one inspection of all bridges and structural culverts every two years to identify the condition and produce a report outlining the recommended work over a ten-year period. The inspection uses the Ontario Structural Inspection Manual (OSIM) 2018 and is referred to as the OSIM or Bridge Inspection Report. The Township should continue the current biennial OSIM Bridge Inspections along the current schedule, with the next inspections scheduled for 2023. The inspections should include all bridges and culverts with a single or combined span greater than 3 m.

3.5.3 Maintenance

Bridge and culvert assets are long-lived assets with estimated useful lives from 50 to beyond 75 years. Throughout the lifecycle of these assets the majority of expected needs will be maintenance and repair work.

Routine maintenance works are typically used to prolong the lifespan of assets and include both preventative and reactive activities designed to maintain the asset's condition and function. Preventative activities are implemented to provide a predictive response to deterioration or possible performance issues by managing the contributing factors prior to an event occurring. Reactive maintenance is conducted in response to a condition or performance issue and is designed to correct the issue before it causes asset deterioration and possible deficiencies. The scale of maintenance activities varies widely and is dependent on a variety of factors including age, asset utilization, environment, and design. Maintenance should be completed based on recommendations in biennial OSIM reports and industry best practices.

A general summary of bridge and structural culvert maintenance activities include, but are not limited to:

- Cleaning, washing or flushing;
- Railing system maintenance;
- Painting of steel bridge components;
- Bearing maintenance;
- Pest control;
- Deck drainage maintenance; and
- Erosion control.

Repair works are driven by the identification and treatment of deficiencies to prevent the continued deterioration of the deficiency which may cause a reduction in asset condition, performance and LOS delivered. Timing of repairs varies widely as they may be prescheduled based on estimated deterioration, in response to biennial condition reporting, or on an emergency basis. Repairs to bridges vary widely and can be in relation to structural and deck surface components.

3.5.4 Replacement

Replacement of a structure is based on current age, estimated lifespan, and recommendations from condition assessments. Replacement can be used when an asset is nearing or has reached the end of its life, repairs are not technically feasible, estimated future repair costs are greater than replacement cost, or increases to capacity or LOS are required. Replacement activities are typically large in scale and involve the

issuance of a capital project. Timing of replacement activities must consider the impact on adjacent infrastructure, the impact on nearby asset LOS and the replacement or maintenance requirements of connected infrastructure.

3.5.5 Disposal

Disposal activities from bridges and culverts can include the removal from service of a bridge or culvert, through:

- Closure of the bridge or culvert from access;
- Change in LOS of the bridge or culvert to limit access (e.g., vehicular bridge traffic having a reduction or addition of a load posting); and
- Deconstruction of the bridge or culvert.

Disposal activities should be implemented when a bridge or culvert structure has reached the end of its useful life or has degraded to such a state that it can no longer provide the LOS for which it is intended. Removal of a bridge from service without replacement, or decrease in the LOS should be undertaken only when it is decided to no longer be required to provide the LOS to residents.

Disposal activities should be conducted such that health and safety protocols are being followed, and spent materials are disposed of at appropriate or approved facilities.

3.6 Asset Management Strategy – Bridges and Large Culverts

The asset management strategy for bridges and structural culverts is based on maintaining the structures in sufficient condition and performance to allow for continued access to crossings and adequate service delivery. The strategy considers the requirements set out by applicable regulations, and builds on those to include the lifecycle activities summarized above.

Under O. Reg. 160/02: Standards for Bridges, the Township is required to complete one inspection of all bridges and structural culverts every two years to identify conditions and produce a report outlining the recommended work for a 1 to 10-year period. The inspection uses the Ontario Structural Inspection Manual (OSIM) 2018 and is referred to as the OSIM report. The most recent condition assessment and study was completed in 2021, with the next scheduled assessment planned for 2023.

The Township’s current strategy for maintaining the bridges includes the procurement of OSIM reports at the required frequency, and completion of the maintenance, rehabilitation and reconstruction works according to the recommendations from the OSIM reports.

Inspections and OSIM reports will identify works to be completed at each of the bridge and culvert structures – each of the inspection types should recommend maintenance works, rehabilitation works, and reconstruction where necessary, as well as prioritization of the works and an estimation of the overall condition of the structure. It is therefore assumed that by following the results of the inspections / OSIMs, the Township will be following a strategy that prioritizes maintenance works as required to maximize the lifecycle of the bridge and large culvert assets.

4.0 Solid Waste

4.1 State of Local Infrastructure

The Township operates two solid waste landfill sites, one known as the Airy (Whitney) Landfill located in the former Airy Township on lands which were purchased from the Crown in 2004, at 426 Nipissing Road, and one known as the Madawaska (Lyell) Landfill located on Crown lands under a Land Use Permit in the former Township of Lyell, at 6319 Highway 523.

4.1.1 Madawaska (Lyell) Landfill Site

The Madawaska (Lyell) landfill site has a total capacity of approximately 79,950 cubic metres (m³), with an estimated remaining capacity of 38,690 m³. The site is approved for the following waste types:

- Household Waste;
- Contaminated Fill;
- Shredded C&D Waste; and
- Inert Fill.

The Madawaska (Lyell) landfill also maintains a waste diversion program, where they accept certain items for collection and then redirect these items back to manufacture for disposal. Under the diversion program the landfill accepts the following items free of charge:

- Electronics;
- Tires;
- Batteries; and
- Steel and Aluminum.

There are two buildings located on the landfill site to complete landfilling operations, including:

- Reuse Building; and
- Site Office Trailer.

In addition to the site, the Township owns other equipment that are used in operations, including:

- Loader Waste Disposal Truck (purchased in 1991);
- Compactor (purchased in 1999); and
- Various Garbage and Electronic Bins (TBD).

Operations and filling at the landfill have proceeded in accordance with the Certificate and the Design and Operations report done by Jp2g in 2017. According to the 2021 reporting, there is 38,690 m³ of capacity remaining in the entirety of the landfill. Based on a comparison of the 2020 and 2021 surveys an estimated 1,310 m³ of landfilling occurred over this time, therefore it can be averaged out that there is an expected further 29 years of capacity remaining.

4.1.2 Airy (Whitney) Landfill Site

The Airy (Whitney) landfill site has a total capacity of approximately 106,615 m³ in size, with an estimated remaining capacity of 35,000 m³. The site is approved for the following waste types:

- Household Waste;
- Contaminated Fill;
- Shredded C&D Waste; and
- Inert Fill.

The Airy (Whitney) landfill also maintains a waste diversion program, where they accept certain items for collection and then redirect these items back to manufacture for disposal. Under the diversion program the landfill accepts the following items free of charge:

- Electronics;
- Tires;
- Batteries; and
- Steel and Aluminum.

There are two buildings located on the landfill site to complete landfilling operations, including:

- Reuse Building; and
- Site Office Trailer.

In addition to the site, the Township owns other equipment that are used in operations, including:

- Loader Garbage Truck (purchased in 2014); and
- Various Garbage and Electronic Bins.

Operations and filling at the landfill have proceeded in accordance with the operational requirements of the site laid out in the “Airy (Whitney) Landfill Design and Operations Report” done by Jp2g in 2004. According to the 2021 reporting, there is 35,000 m³ of capacity remaining in the entirety of the landfill. Based on a comparison of the November 5, 2020, and December 1, 2021, surveys an estimated 835 m³ of landfilling occurred over this time, therefore it can be averaged out that there is an expected further 41 years of capacity remaining.

4.1.3 Average Age

The Madawaska (Lyell) landfill site has been in operation since 1972, and has a currently been in operation for 50 years with an expected further 29 years of capacity remaining.

The Whitney (Airy) landfill site has been in operation since 1977, and has a currently been in operation for 45 years with an expected further 41 years of capacity remaining.

4.1.4 Replacement Costs

The replacement cost for the Lyell Landfill Waste asset is \$300,000.

The replacement cost for the Airy Landfill Waste asset is \$300,000.

The above replacement costs are based on previous AMP data and current inflation rates. This overall replacement cost is based generally on the land pricing, the vehicles and buildings associated with each site’s costs fall under the asset category for those items respectively, this cost does not consider the closure cost for either site.

Condition

The information reported in this AMP and the subsequent analysis are based on the current inventory maintained by the Township and current waste reports, including:

- Waste Management Bylaw 16-517;
- 2021 Annual Monitoring Report Airy (Whitney) Waste Disposal Site ECA No. A530603 (Jp2g Consultants Inc. May 2022); and
- Madawaska Landfill Site Township of South Algonquin ECA No. A7091303 2021 Annual Monitoring Report (Jp2g Consultants Inc. March 2022).

The condition of the waste facility can be assessed as the physical condition of the landfill, or through an environmental lens according to the monitoring that occurs regularly at the site.

The Airy (Whitney) Landfill facility has ongoing sampling and monitoring programs which review the quality of groundwater and surface water. At the time of the 2022 reporting, the 2021 sampling program was completed and only select exceedances were noted in surface water quality samples; however, this is not attributed to poor condition at the landfill but instead to naturally occurring parameters. Furthermore, the report recommends continued monitoring for RUC at monitoring well 92-3 on the perimeter of the landfill property and for the Township to potentially consider initiating a long-term solution that could include obtaining an easement from the Crown for additional properties in this direction. Methane gas monitoring did report that methane was not detected in any of the monitoring wells or on-site buildings during either the spring or the fall monitoring events.

In accordance with the monitoring requirements for the Environmental Compliance Approval (ECA) Certificate of Approval (C of A), monitoring results and operating conditions are reported, most recently in 2021 (Airy Landfill Site, Township of South Algonquin, ECA No. A530603 – 2021 Annual Monitoring Report, Jp2g Consultants Inc.).

The Madawaska (Lyell) Landfill facility has ongoing sampling and monitoring programs which review the quality of groundwater and surface water. At the time of the 2022 reporting, the 2021 sampling program was completed and only manganese, Total Dissolved Solids (TDS), and nitrate exceedances were noted to be over the Reasonable Use Assessments in the ground water sampling; however, there are no groundwater users between the landfilling area and Pete's Lake, where this leachate plume may be

migrating, and as a result the Reasonable Use Policy is being met. There are currently no concerns with respect to the surface water sampling program. Methane gas monitoring was not reported on any of the monitoring wells or on-site buildings during either the spring or the fall monitoring events. Overall, the groundwater monitoring report from 2021 concluded that the site may continue operating in compliance with the current ECA No. A7091303 approval (Jp2g Consultants Inc., 2021).

In accordance with the monitoring requirements for the Environmental Compliance Approval (ECA) Certificate of Approval (C of A), monitoring results and operating conditions are reported, most recently in 2021 (Madawaska Landfill Site, Township of South Algonquin, ECA No. A7091303 - 2021 Annual Monitoring Report, Jp2g Consultants Inc.).

4.3 Current LOS

Levels of service for waste assets are not defined in the regulation, O. Reg. 588/17. As such, levels of service have been established in consultation with the Township. **Table 4-1** and **Table 4-2** outline the Township’s current community and technical levels of service for waste management assets.

4.3.1 Community LOS – Solid Waste

Table 4-1: Community Levels of Service – West

LOS Parameter	Community Levels of Service Qualitative Description	Community LOS
Scope	Description, which may include maps facility location	Airy (Whitney) Landfill site located at 462 Nipissing Road, Lot 10, Concession 7 and 8 in the geographical Township of Airy. Lyell (Madawaska) Landfill site located at 6319 Hwy. 523, Lot 7, Concession 11 in the geographical Township of Lyell. Locations shown in Figure 4-1 .

LOS Parameter	Community Levels of Service Qualitative Description	Community LOS
Availability	Description of hours of operation and available services	<p><u>Landfill Site Hours:</u></p> <p>Summer: Wednesday from 2:30 PM to 6:30 PM Saturday from 8:00 AM to 12:00 PM Sunday from 10:00 AM to 2:00 PM, May through October.</p> <p>Winter: Wednesday from 1:00 PM to 4:00 PM Saturday from 8:00 AM to 12:00 PM</p> <p>Services include household waste, recycling, e-waste, inert waste, tires and batteries.</p>

Figure 4-1: Landfill Location Map

SOUTH ALGONQUIN



Legend

Primary Land Use Area

- Conservation Reserve
- Enhanced Management Area
- Forest Reserve
- General Use Area
- Protected Area - Far North
- Provincial Park
- Provincial Wildlife Area
- Recommended Conservation Reserve
- Recommended Provincial Park
- Wilderness Area

- Overlay Area
- Amendments in Progress

Thematic Data

- Private Land
- National Park
- Indian Reserve
- Other Federal Land
- MNR EcoDistrict
- MNR District
- MNR Region
- Forest Management Unit
- Geographic Township
- Niagara Escapment Plan Boundary
- Provincial Park Admin Zone
- Tertiary Watershed
- Caribou Range Boundary
- Renewable Energy on Crown Land Policy
- Far North Boundary

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry (OMNRF) shall not be liable in any way for the use or any information on this map, or, or reliance upon, this map

4.3.2 Technical LOS – Solid Waste

Table 4-2: Technical Levels of Service – Waste

LOS Parameter	Technical Levels of Service Technical Metric Description	Technical LOS
Scope	Percent of properties serviced by waste collection.	All properties have waste collection services.
Scope	Annual volume of waste through collection services and material drop-off.	10,858 m ³ material received by the landfill in 2021.
Quality	Meets CoA operating requirement.	Monitoring Requirements have been fulfilled at the time of submission.

4.3.3 Performance – Solid Waste

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for waste assets, and their current measures are shown in **Table 4-3**.

Table 4-3: Current Performance Measures for Waste

Asset Performances Measure	Current Measure
Waste Fleet maintenance expenses or annual operating cost to provide service (\$/household)	<p>Based on available information, the waste fleet operating and maintenance expenses in 2021 were as follows:</p> <ul style="list-style-type: none"> • Solid Waste Works fleet: \$295,963. <p>Based on 1,096 households, this equates to approximately \$165/household for annual operating and maintenance cost for waste fleet assets.</p>

Asset Performances Measure	Current Measure
Hours of Operation Maintained	Not currently tracked, but it is recommended that the Township should track this performance measure in the future. Was the landfill open during all hours of operation or were there times due to staffing shortages or COVID-19 that the hours needed to be reduced?

4.4 Risk Assessment

The Risk assessment for solid waste facilities assets was conducted using the following assumptions and criteria:

Condition: Assumed to be in good condition (value of 2).

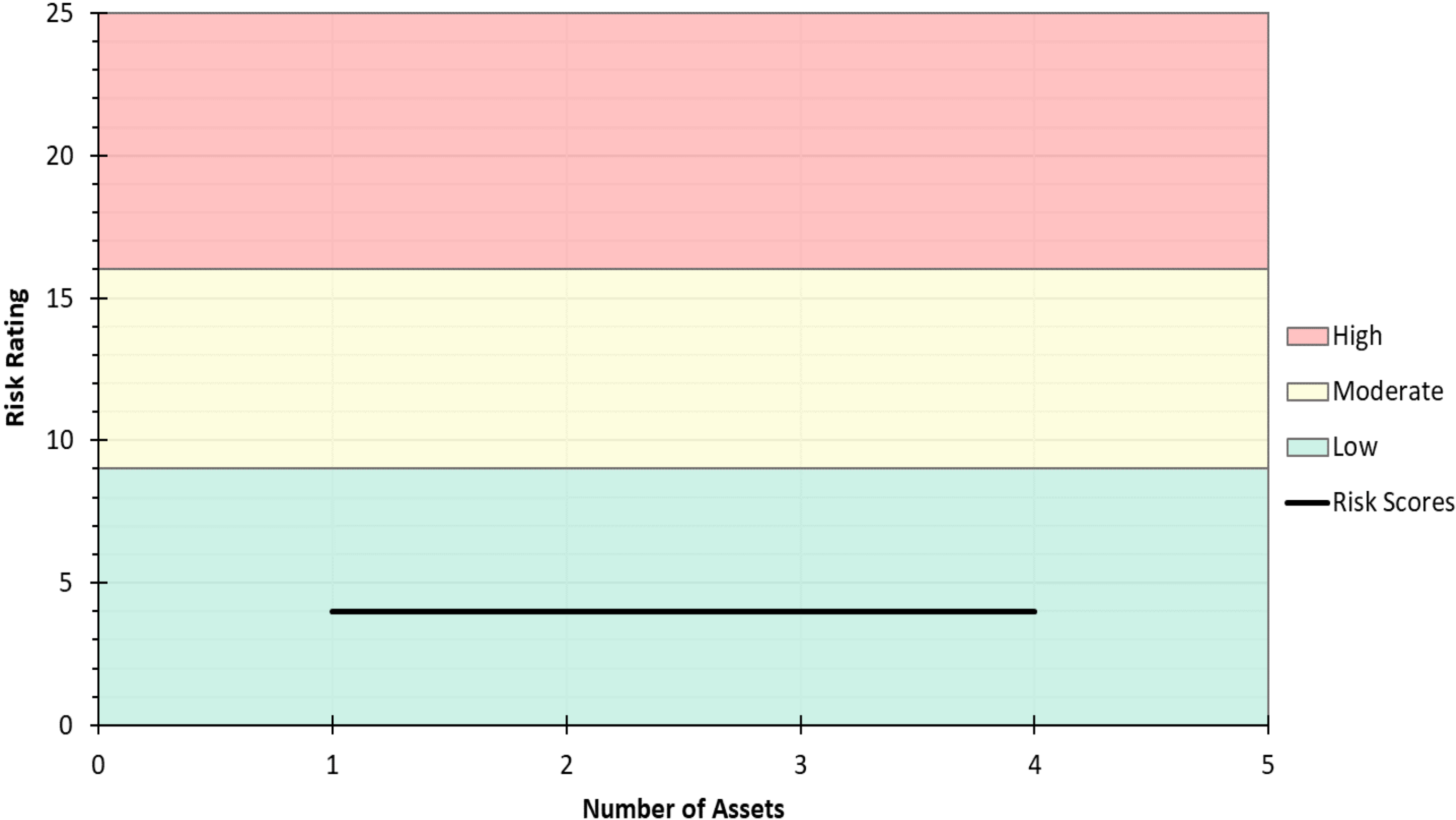
Performance: Assumed to be always reliable (value of 1).

Climate Change: Assumed a value of 3 (Limited impact with slower recovery; mitigation plan not in place).

Impact: Assumed to all be moderate impact (value of 1).

Importance: Importance for solid waste facilities is assumed to be low (value of 1).

Figure 4-2: Risk Profile for Solid Waste Assets



As depicted in **Figure 3-6** four Solid Waste Assets were determined to be in the low risk zone.

4.5 Lifecycle Activities – Solid Waste

The following section describes the lifecycle activities that can be implemented within the asset management strategy for solid waste assets. Note that, as previously discussed, the solid waste assets refer to the entirety of the asset which is made up of varying component systems depending on the use of the lands and buildings that make up each site. The primary lifecycle activities include construction, maintenance, renewal, and decommissioning/disposal.

4.5.1 Construction

The start of a solid waste asset lifecycle is its construction. The site should be selected such that it impacts the population of the Township minimally while being constructed to adhere to the requirements of the Environmental Protection Act (EPA), Ontario Water Resources Act (OWRA), and any and all other relevant legislation. Construction of a new asset should be done such that the current needs of the Township are being addressed, and that the solid waste asset can provide service delivery as intended.

4.5.2 Maintenance

Throughout the full lifecycle of a solid waste asset, the majority of the expected lifecycle activities to be undertaken will be maintenance and servicing works. Maintenance activities can be used to improve the LOS of an asset (or component), to maintain it, or to service existing issues. Activities that fall under the maintenance category can be varied by response type and scale of maintenance requirements. Activities can be required through routine maintenance works, in response to complaints, or on an emergency basis. In general, the expected types of maintenance activities within the lifecycle of a solid waste asset include:

- **Preventative Maintenance:**
 - This type of maintenance activity is undertaken to prevent failure or poor performance of a solid waste asset component. Preventative maintenance works can be undertaken on an ad-hoc basis based on knowledge of the condition, or be undertaken according to a maintenance schedule.

- **Reactive Maintenance:**
 - This type of maintenance activity is undertaken in response to an issue or fault in the asset or component systems. The scale of reactive maintenance works will be variable depending on the system and type of failure or decrease in the LOS.
- **Major Maintenance (Replacement):**
 - This type of maintenance activity is undertaken in response to a component which is no longer able to provide an adequate LOS. Major maintenance (replacement) will be undertaken for one or more components of a solid waste asset. Major maintenance works can be preventative (in anticipation of the end of the service life of a component), or in response to a system failure.

4.5.3 **Renewal**

As one phase of a solid waste asset reaches capacity there may be the opportunity to renew the lifecycle of the asset by expanding into a new phase. Renewal will require that all regulatory approval processes are completed and all applicable standards are still met. The cost of going through this process may be substantial and will be required to be started in advance of the requirement of the new landfilling area due to the timelines of achieving the approval. In anticipation of this timing and cost need, it is important to gain a thorough understanding of operations and future requirements of the landfilling site through its current reporting or additional studies.

4.5.4 **Decommissioning/Disposal**

At the end of the useful life of the solid waste asset (capacity has been reached), there are additional costs and liabilities associated with the closure of the site. Once operations are no longer possible, the landfilling activities will cease, however, there will be remaining costs for managing the solid waste asset, as there will be costs associated with closure activities, and ongoing maintenance costs to maintain the condition and safety of the site.

4.6 **Asset Management Strategy – Solid Waste**

The strategy for the solid waste site would seek to maximize the operational lifespan of the solid waste asset and continue to provide adequate waste services to the Township.

The strategy for solid waste assets should consider the following:

- The strategy should rely on detailed assessment and documentation for the solid waste facility, completed by waste professionals. Understanding of site operations, waste volumes, site capacity, etc., will influence how the site is managed.
- Services provided as part of landfill and solid waste service delivery. The Township provides solid waste collection services, as well as on-site waste disposal services for residents of the Township and adjacent municipalities. These services include refusing disposal beyond household waste. The management strategy for the waste site should consider the operation of each stream of service delivery, and understand the utilization, efficiency and adequacy of each service. The quantity and specifications of assets required (landfill site and ancillary) may change according to the services delivered.

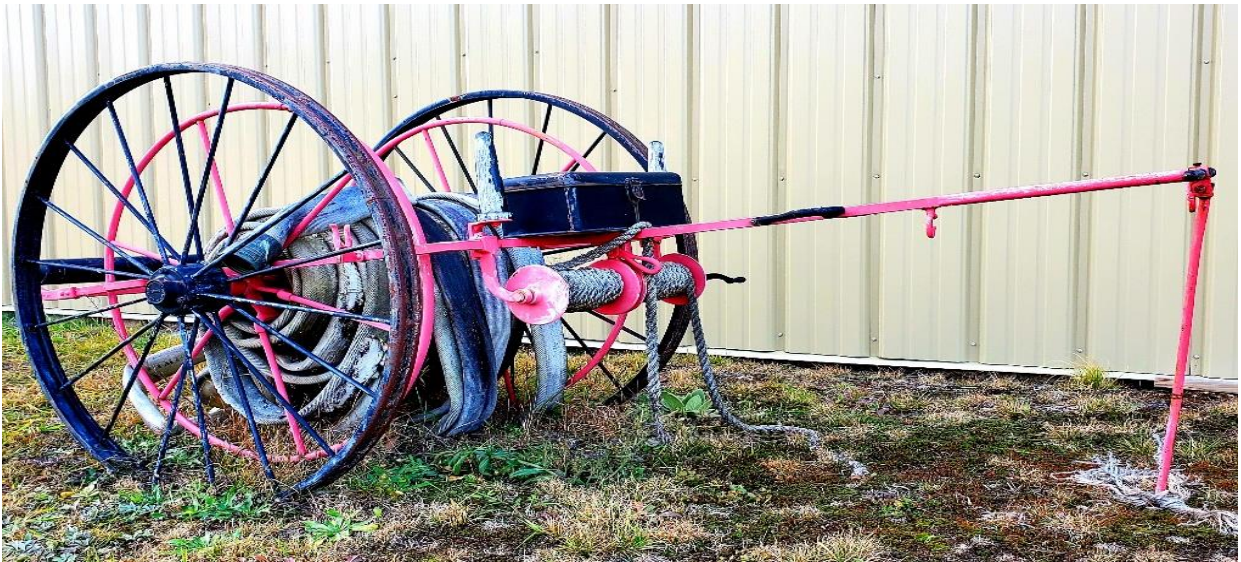
Lifecycle activities undertaken at the solid waste site should be according to the guidance in current landfill guidance, regulations and reporting. Through the lifecycle of the solid waste asset, the Township will have to consider the opening of new phases for landfilling activity, and the impacts of closure and maintenance for the facility.

The Township's solid waste facilities are not yet at the stage where closure is being considered, however, the Township must continue to be aware of the risks and costs associated with this lifecycle stage.

Lifecycle activities undertaken on the ancillary solid waste assets should be undertaken as required to maximize the useful life and sustainability of the asset. Generally, if acquired new, the assets will begin their expected useful life in very good condition and performance. Throughout the lifecycle of the assets, routine maintenance should be conducted. As required, specific maintenance should be conducted. As an asset ages and approaches the end of its useful life, it is expected that the risk and maintenance costs associated with the asset will increase. There will be a point in the lifecycle where the risk and maintenance costs are such that the replacement of the asset will be the preferred solution. This point will vary depending on the type of asset and the services delivered by each.

Strategy for the fleet and equipment assets related to landfill operations are included within the Fleet and Equipment sections.

5.0 Fleet and Equipment



5.1 State of Local Infrastructure

The Township owns and operates numerous vehicles and equipment used in delivering its services and programs. The largest user of fleet is Public Works (Roads and Transportation Services) followed by Fire Services; and Environmental, Recreational and Cultural.

The vehicles and equipment included in the Townships fleet delivers services in:

- **Public Works:** Snow removal, road repairs as well as Waste Management services;
- **Fire Services:** Vehicles and Equipment required for the Whitney and Madawaska fire stations; and
- **Recreation and Cultural Services:** Vehicles and Equipment used for administration services to support administration, parks and land assets.

The following **Table 5-1** outlines the fleet and equipment assets currently owned and maintained by the Township.

Table 5-1: Summary of Fleet and Equipment

Number of Assets	Public Works	Fire Services	Recreation and Culture
Number of Vehicles	16	13	0
Number of Equipment	22	25	24

5.1.1 Average Age

The average age of Public Works fleet is three years, while the Fire Services fleet has an average age of 22 years.

The average age of equipment is 14 years.

Ages are based on the year of acquisition, and are current as of 2022.

5.1.2 Replacement Costs

The replacement cost of the entire fleet is \$2,795,000 from each service area as follows:

- Public Works fleet replacement cost is \$1,640,000; and
- The Fire Services fleet replacement cost is \$1,155,000.

The replacement cost for all of the equipment is \$1,946,200.

The replacement costs shown above were a summation of the initial values as provided by the Township and inflated to current dollar values using the annual inflation rate from the Bank of Canada. As well, for some select (higher valued) equipment and fleet items the Township procured current Tender costs directly from manufactures and retailers.

5.1.3 Expected Useful Life

The expected useful life of fleet and equipment assets ranges from 5 to 25 years and varies by vehicle type. The useful life information was compiled by the Township staff and presented in their **Policy FN-001-02 Accounting for Tangible Capital Assets Policy**, dated October 2022. For some of the Public works fleet asset classes, typical useful life values were summarized in **Table 5-2**.

Table 5-2: Expected Useful Life of Fleet – Public Works

Class Description	Typical Useful Life
Light Trucks	10
Trailers	15
Roadside Equipment	10
Miscellaneous Equipment	10

Across all fleet assets, the average expected useful life is 11.25 years.

5.2 Condition

The information reported in this AMP and the subsequent analysis are based on the current inventory information maintained by the Township.

Condition of the fleet assets was established using the age and useful life of assets, or by odometer readings, both based on information tracked by the Township. The age and expected useful life were used to make an estimation of condition based on percentage of useful life elapsed, while odometer readings were separated into ranges associated with varying condition ratings. Condition ratings were determined on a scale of 1 to 5, where 1 describes an asset in Very Good condition and 5 in Very Poor condition. The condition ratings and corresponding useful life remaining and odometer ranges are shown in **Table 5-3**.

Table 5-3: Fleet Condition Assessment Remaining Useful Life Rating System

Condition Rating	Condition Rating Description	Expected Remaining Useful Life (%)	Odometer Reading Range (km)
1	Very Good	80 to 100	0 to 25,000
2	Good	60 to 80	25,000 to 75,000
3	Fair	40 to 60	75,000 to 125,000
4	Poor	20 to 40	125,000 to 200,000
5	Very Poor	0 to 20	200,000 and over

Condition was estimated using both methods for each asset (where data was available to do so), and the more conservative result was carried through assessment.

A summary of the condition ratings averaged by fleet and equipment asset type are shown in the **Appendix** and **Table 5-4** to illustrate the data as well.

The assets are generally in Good condition, with only one asset being rated as Very Poor. A summary of the overall distribution is shown in **Table 5-4**.

Table 5-4: Summary of Overall Fleet and Equipment Assets Condition

Condition Rating	Very Good	Good	Fair	Poor	Very Poor
No. of Assets	6	40	5	7	1
Percentage of Assets	8.5%	56%	7%	10%	1.5%

Figure 5-1: Asset Value and Condition Summary – Fleet

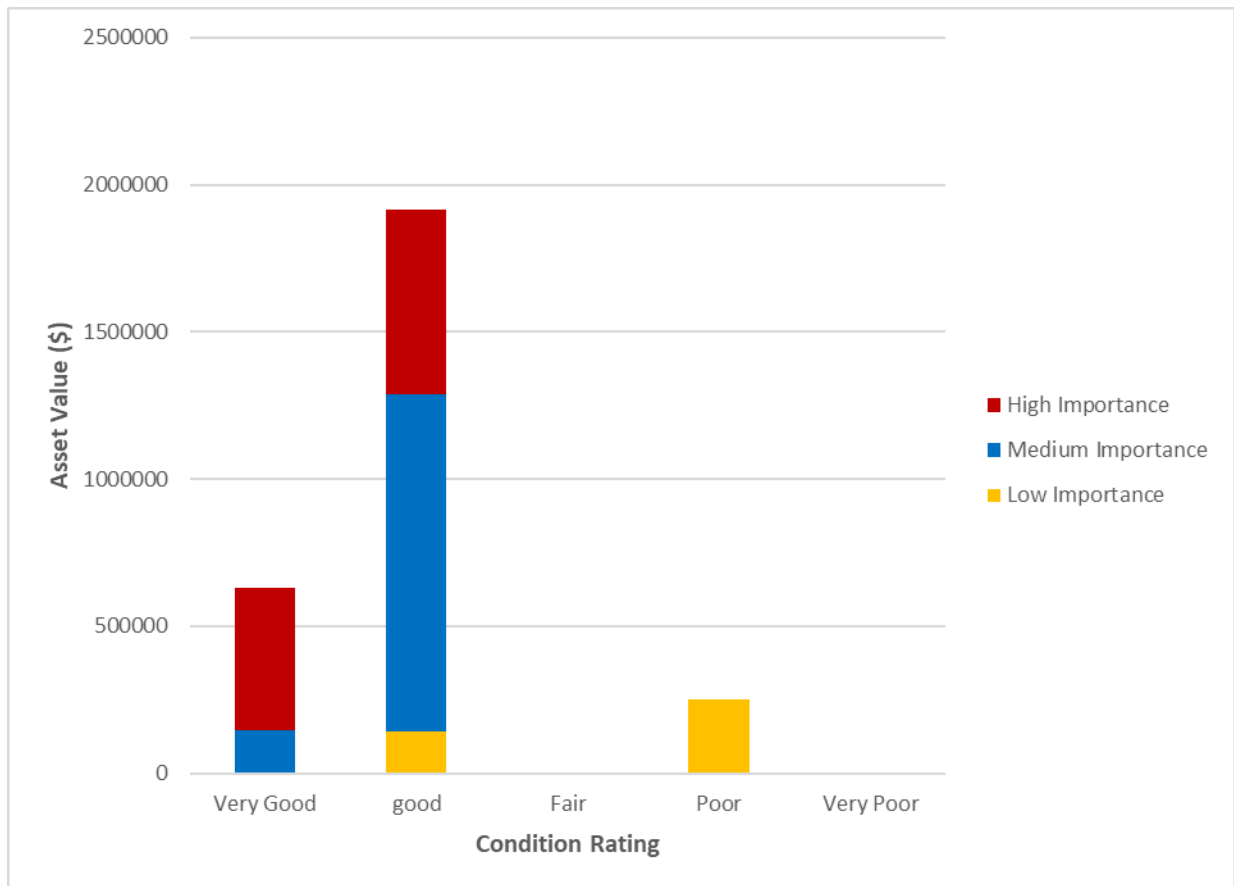
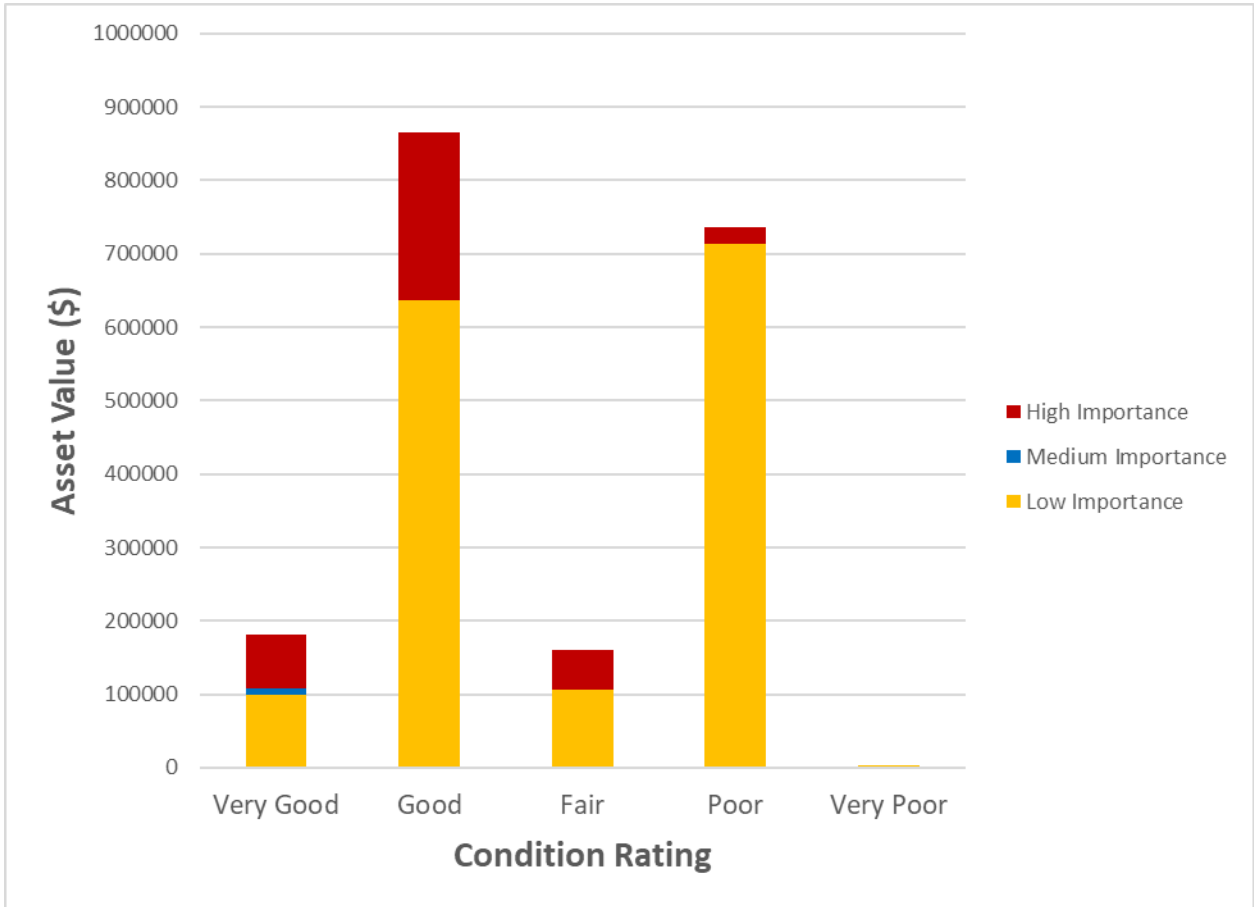


Figure 5-2: Asset Value and Condition Summary – Equipment



Asset number EQP251, a 1,500 gal. tank is not included in **Figure 5-1** as it was given a proxy condition value of Fair, the asset value of this item is \$1,650.00.

5.3 Current LOS

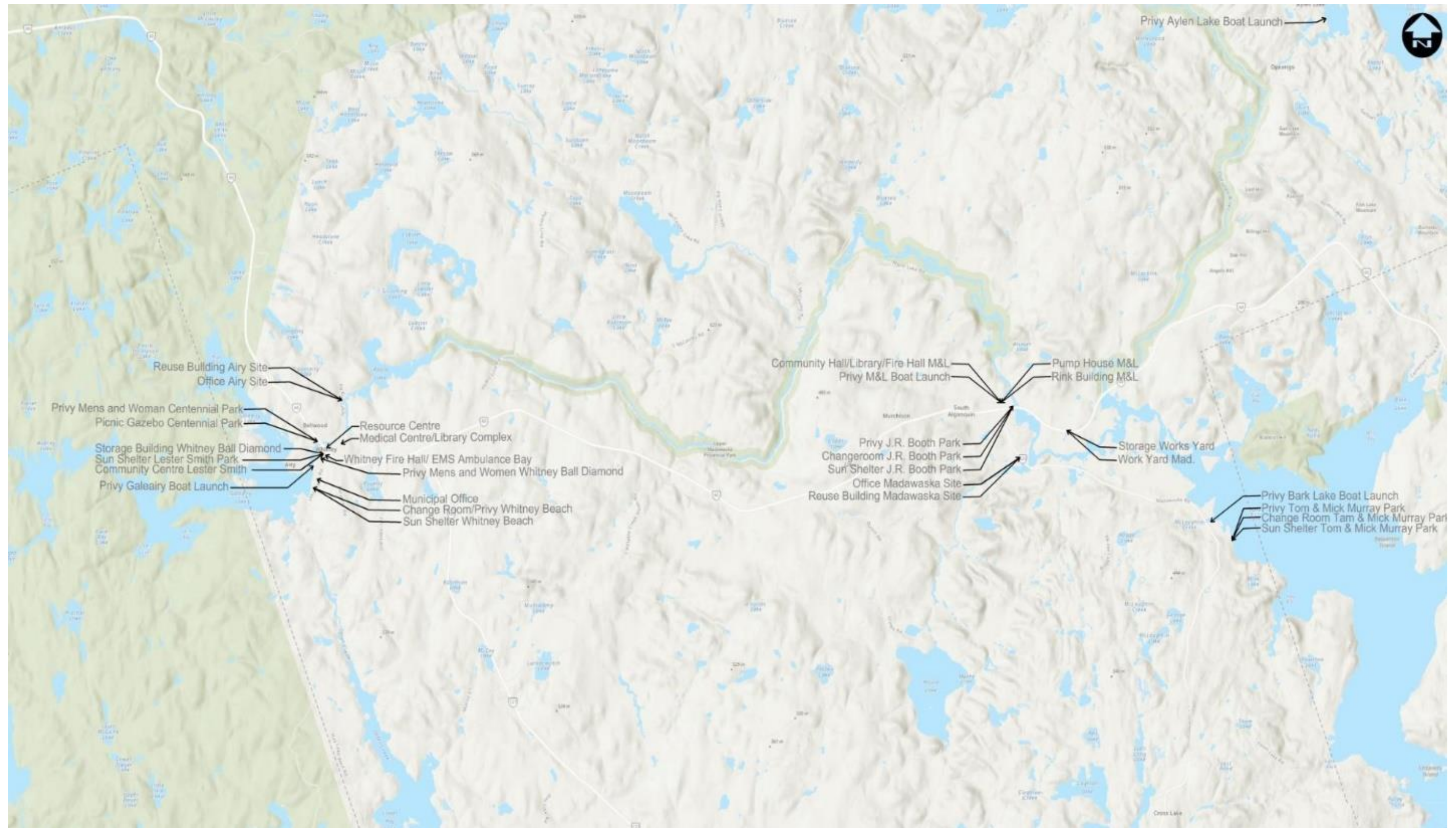
5.3.1 Community LOS – Fleet and Equipment

The vehicles and equipment included in the Township’s fleet and equipment asset category delivers services in:

- **Public Works:** Snow removal and road repairs as well as landfill and parks management; and
- **Fire Services:** Fire Emergency Response Vehicles and equipment.

The effectiveness and response time of the fleet is related to where the vehicles are stored. See **Figure 5-3** for a map of Townships facilities including the location of the fire and paramedic station and the Public Works garages.

Figure 5-3: Township Owned Buildings – Location of Garages and EMS Stations



5.3.2 Technical LOSs – Fleet and Equipment

The two distinct services provided by fleet (Fire Services and Public Works) are required to meet different standards for their fleet, so they measure the scope and quality in different ways.

5.3.3 Performance – Fleet and Equipment

The current performance of fleet is determined by the following performance measures established by the Township. It is based on actual performance in the most recent two years.

See **Table 5-5** for the performance measures selected by the Township:

- Public Works: Fleet maintenance expense in 2021 and vehicle recovery.

Table 5-5: Performance 2022 – Fleet and Equipment

Description of Measure	Services Delivered	Performance 2021
Fuel Consumption	Public Works	62,609 litres
Distance Travelled	Public Works	200,793 kilometers
Distance Travelled	Fire Services	52,224 kilometres
Fuel Consumption	Fire Services	16,285 litres

5.4 Risk Assessment – Equipment

The risk assessment for equipment assets was conducted using the following assumptions and criteria:

Condition: Determined based on estimated condition, using percentage of expected useful life remaining in line with the ratings set for vehicle assets.

Performance: Assumed to be always reliable (value of 1).

Climate Change: Assumed a value of 1 (No or limited impact, quick recovery or mitigation in place).

Impact: High impact (value of 2) for Fire Response and Emergency Equipment;
 Moderate impact (value of 1) for Sander Plow and associated Equipment; and
 Low Impact (value of 0) for all other equipment.

Importance: High importance (value of 3) for Fire Response and Emergency Equipment;
 Moderate importance (value of 2) for Sander Plow and associated Equipment; and
 Low importance (value of 1) for all other equipment.

5.5 Lifecycle Activities – Equipment

In the lifecycle of an equipment asset, there are multiple activities that can be taken, depending on the asset attributes. The expected lifecycle activities to be used on the equipment assets including acquisition, maintenance, operation and decommissioning/disposal.

5.5.1 Acquisition

Acquisition of a new equipment asset should consider the intended usage of the asset. The acquisition should be undertaken based on an understanding of the requirements of the asset for providing service delivery and should follow the Township procurement procedures. Acquisition of an asset could be as a new purchase or purchase of a used asset. Acquisition of a new asset can provide the Township with an asset in Very Good condition, however, the condition of a used asset could vary.

5.5.2 Maintenance

Maintenance activities will vary across the equipment assets due to the variability in the type and usage of assets. The maintenance activities should be undertaken according to manufacturer specifications and as required to address condition and performance issues that arise through regular usage. Maintenance activities should include regular inspections for condition, and recording of maintenance activities undertaken.

5.5.3 Decommissioning/Disposal

Disposal activities can include the removal from service through disposal, sale of asset or transfer of an asset to a different department. Disposal activities should be conducted such that health and safety protocols are being followed, and out-of-service assets are disposed of at appropriate or approved facilities.

5.6 Asset Management Strategy – Equipment

The asset management strategy for the equipment assets seeks to use the lifecycle activities in a manner that will achieve cost-effective and sustainable management of the assets. Within the Township’s equipment assets, there are a variety of asset types, which are involved in multiple aspects of service delivery, such as Public Works (which includes waste management equipment), Fire Services (which include fire response equipment), and Recreational and Cultural Services (which include the support of administration and parks and lands assets).

Generally, if acquired new, the assets will begin their expected useful life in Very Good condition and performance. Throughout the lifecycle of the assets, routine maintenance should be conducted. As required, specific maintenance should be conducted. As an asset ages and approaches the end of its useful life, it is expected that the risk and maintenance costs associated with the asset will increase. There will be a point in the lifecycle where the risk and maintenance costs are such that the replacement of the asset will be the preferred solution. This point will vary depending on the type of asset and the services delivered by each.

The Township should review the usage of equipment assets to confirm if services are being provided adequately. The assets should also be routinely assessed and monitored for condition and performance, to inform any maintenance or replacement works required. The needs and monitoring of asset condition will fall within multiple departments at the Township, due to the varied range of services the assets provide.

5.7 Risk Assessment – Fleet

The risk assessment for the fleet assets was conducted using the following assumptions and criteria:

Condition: Determined based on estimated condition, using percentage of expected useful life remaining. **Table 5-6** below provides details regarding the provided ratings from the Township and the corresponding rating used within the risk calculation.

Table 5-6: Vehicle Condition Rating

% of Useful Life Remaining	Condition Score Used
0 to 19%	5 (Very Poor)
20 to 39%	4 (Poor)
40 to 59%	3 (Fair)
60 to 79%	2 (Good)
80 to 100%	1 (Very Good)

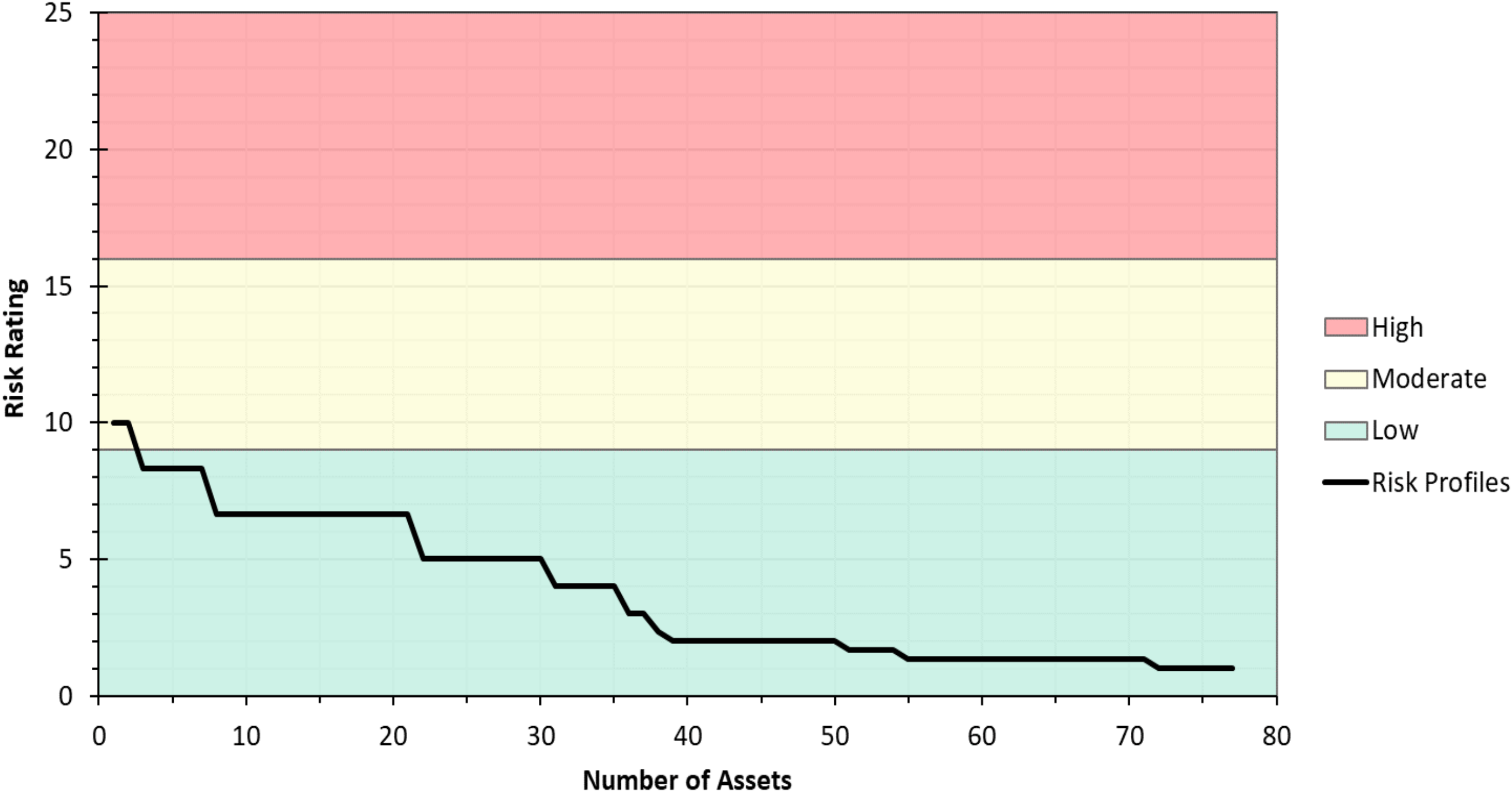
Performance: Assumed to be always reliable (value of 1).

Climate Change: Assumed a value of 1 (No or limited impact, quick recovery or mitigation in place).

Impact: High impact (value of 2) for Fire Response Units,
Moderate impact (value of 1) for Sander Plow Units, and
Low Impact (value of 0) for all other assets.

Importance: High importance (value of 3) for Fire Response Units,
Moderate importance (value of 2) for Sander Plow Units, and
Low importance (value of 1) for all other assets.

Figure 5-4: Risk Profile for Fleet and Equipment Assets



As depicted **Figure 5-4** in two Fleet and Equipment Assets were determined to be in the moderate risk zone, the remaining 75 are considered low risk.

5.8 Lifecycle Activities – Fleet

In the lifecycle of a fleet asset, there are multiple activities that can be undertaken, depending on the asset attributes. The expected lifecycle activities to be used on the fleet assets including acquisition, maintenance, operation and decommissioning/disposal.

5.8.1 Acquisition

Acquisition of a vehicle asset should consider the intended usage of the asset. The acquisition should be undertaken based on an understanding of the requirements of the asset for providing service delivery and should follow Township procurement procedures. Acquisition of an asset could be as a new purchase or purchase of a used asset. Acquisition of a new asset can provide the Township with an asset in Very Good condition, however, the condition of a used asset could vary.

Acquisition activities can also include the direct replacement of existing fleet assets. When a fleet asset reaches the end of its useful life, and the asset is found to be adequate for providing the service delivery required, the acquisition activity may be asset replacement.

5.8.2 Maintenance

Maintenance activities will vary across the fleet assets due to the variability in the type and usage of assets. The maintenance activities should be undertaken according to manufacturer specifications and as required to address condition and performance issues that arise through regular usage. Maintenance activities should include regular inspections of the fleet for condition, and recording of maintenance activities undertaken.

5.8.3 Decommissioning/Disposal

Disposal activities can include the removal from service through disposal, sale of asset or transfer of an asset to a different department. Disposal activities should be

conducted such that health and safety protocols are being followed, and out-of-service assets are disposed of at appropriate or approved facilities.

5.9

Asset Management Strategy – Fleet

The asset management strategy for the fleet assets would seek to maximize the useful lifespan of the assets, such that they can continue to be used in service delivery across the various departments within the Township. Within the Township's fleet assets, there are a variety of vehicle types, which are involved in multiple aspects of service delivery, such as Emergency Services (which include both Fire Response and Support vehicles), Public Works Fleet (which include, Grader, Sanders, Trailers, Mowers), and General Work Vehicles.

The Township's current strategy for the other types of vehicles within its fleet is driven by the age and performance of the assets. Fleet assets are generally purchased new, and replaced following the expected useful life, or when it no longer performs satisfactorily. At the end of its lifecycle, the usage is evaluated and if required it is replaced with a new version of the vehicle and disposed of.

The rating system for the performance and condition of the vehicle assets is not formalized and should be documented such that routine inspection and assessment of the fleet assets can be conducted to understand their current state. This can include a visual assessment of the vehicles, tracking of maintenance logs, or logging of odometer readings.

Generally, if acquired new, the assets will begin their expected useful life in very good condition and performance. Throughout the lifecycle of the assets, routine maintenance should be conducted. As required, specific maintenance should be conducted. As an asset ages and approaches the end of its useful life, it is expected that the risk and maintenance costs associated with the asset will increase. There will be a point in the lifecycle where the risk and maintenance costs are such that the replacement of the asset will be the preferred solution. This point will vary depending on the type of asset and can be impacted by factors such as build quality, and utilization. At the end of the lifecycle, the Township should review the requirement for service delivery for the asset to determine if it requires replacement. It is assumed that the assets will be replaced like for like.

The Township should review the usage of fleet assets to confirm if services are being provided adequately. The assets should also be routinely assessed and monitored for condition and performance, to inform any maintenance or replacement works required. The needs and monitoring of asset condition will fall within multiple departments of the Township, due to the varied range of services the assets provide.

6.0 Buildings and Facilities



6.1 State of Local Infrastructure

The Township has buildings and facilities in the following categories:

- Buildings (including Administration, Fire and Paramedic Services, and two Community Centres);
- Public Works Facilities (including Landfill Site Trailers and Reuse Buildings); and
- Parks and Recreation Facilities (includes Change rooms, Privy's, and Recreation storage buildings).

6.1.1 Average Age

The average age of all buildings and facilities in the Townships inventory is 22.9 years.

The average age of the Administration and Fire Services buildings is 16.4 years (below the average).

The average age of Public Works and facilities is 28.75 years (above the average).

The average age of Parks facilities is 23.3 years (marginally above the average).

6.1.2 Replacement Cost

The replacement cost for all buildings owned by the Township is \$7,936,400 which is assigned to each of the following service areas:

- The replacement cost for the Administration and Fire Services buildings is \$7,289,000.
- The replacement cost for Public Works facilities owned by the Township is \$75,200.
- The replacement cost for Parks facilities owned by the Township is \$572,200.

The replacement cost for the buildings and facilities is based on the insurance asset registry and recent tenders provided by the Township.

6.2 Condition

The condition information reported in this AMP is based on the Township's staff reviews reported with in the last two calendar years. It is recommended that a Building Condition Assessment (BCA) be done by a third-party consulting firm within the next two to four years to fully assess the current conditions of all the Townships buildings and allow the Township to have access to fully up to date records for the next Asset Management plan update.

The Township utilizes a rating system how below in **Table 6-1** to determine the condition of buildings.

Table 6-1: Township Building Condition Rating System

Rating	Criteria
Very Good (1)	Well maintained, meets all applicable building codes, accessible, new or recently renovated, don't require significant improvements.
Good (2)	Well maintained but requires improvements and/or renovations, often not fully accessible, meets minimum building codes.
Fair (3)	Maintained but needs significant improvements and/or renovations, often not accessible or meeting today's building code levels.
Poor (4)	Needs significant renovations or replacement.
Very Poor (5)	Needs replacement.

The condition, use and age of the Townships buildings and facilities are presented in the **Appendix**.

For this asset management plan, the Township's staff reviewed the facilities, assessed condition, and estimated remaining useful life. The Township may need to provide information from a report by the insurance company as to the replacement cost and undergo a building condition assessment in the near future to confirm or update the condition of some of the buildings.

6.2.1 Buildings – Administration, Emergency Services and Community Centres

The category of Buildings includes Administration, Fire and Emergency Services. These buildings include:

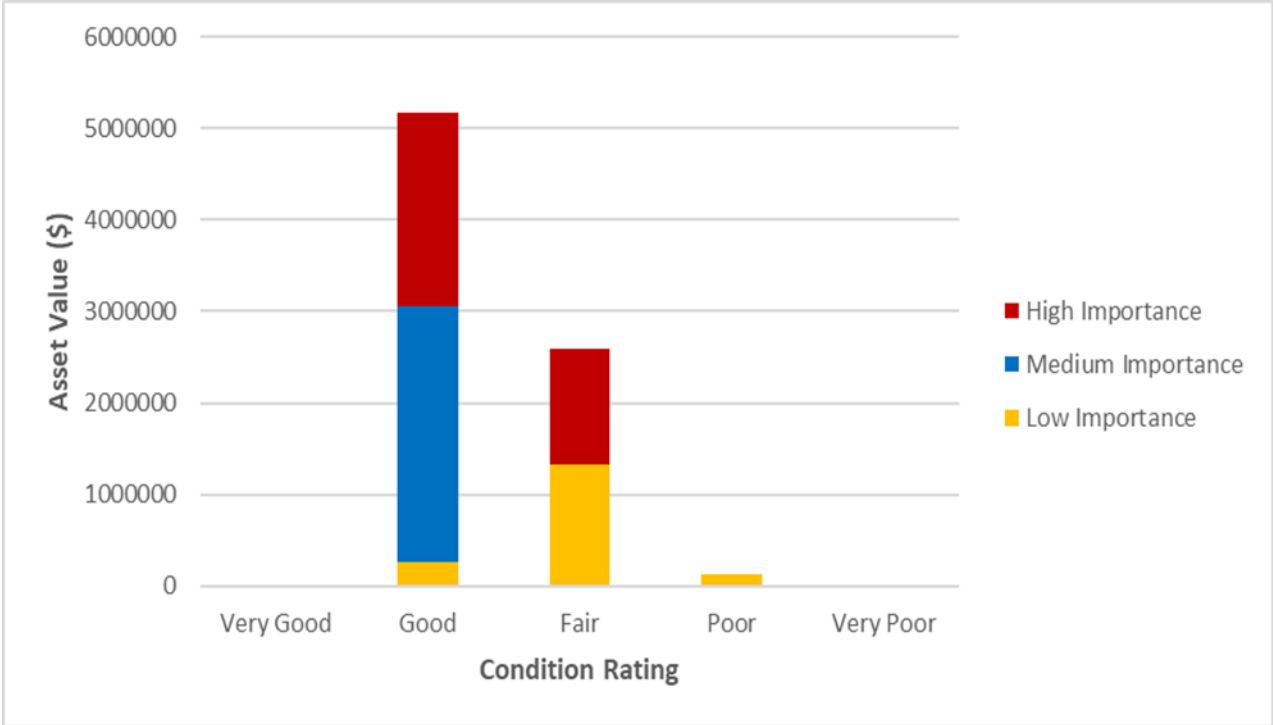
- The main administration building which is located at 7 Third Avenue in Whitney. This building houses the majority of the management, administrative and support staff for the Township. This building also houses the Senior Centre which runs programming and activities for Township constituents over the age of 50. The building was constructed in 1999.
- Another administration building is located at 9 Post Street in Whitney. This building houses the Township Resource Centre and offices. The building is approximately 18 years old, built in 2004.

- The Township also has two Library branches, one located at 33 Medical Centre Road in Whitney, which also houses the Medical Centre, as well as one in Madawaska, which also contains a Community Hall. The Whitney site was built in 2004, while the Madawaska site was built in 2009.
- The Township owns the Whitney Fire Hall/EMS Complex located at 31 Hay Creek Road in Whitney and built in 2012. The building contains two ambulance bays and three firetruck bays, well as offices and changerooms for the paramedics and fire fighters.
- The Township has three other Ambulance Bays and Fire Building assets throughout the Township. Two ambulance bays located in Whitney as well as a Multipurposed Building for fire services located at 26C Major Lake Road in Madawaska.





Figure 6-1: Condition and Replacement Costs of All Buildings



6.2.2 Public Works Facilities

Public Works has nine locations with offices, storage buildings and various outbuildings at each.

- The Madawaska Work Yard is located at 24808 Highway 60 and is the main location for maintenance and storage, the site includes a site office and two storage buildings.
- The Airy Landfill located at 462 Nipissing Road has two buildings on site one for Reuse Material and a site office.
- The Lyell (Madawaska) Landfill located at 6319 Highway 523 and has two buildings on site one for Reuse Material and a site office.

See **Appendix** for condition and replacement costs of Public Works facilities.

6.2.3 Parks Facilities

South Algonquin owns and operates several recreational sporting facilities throughout the Township for Baseball and Outdoor Skating. These facilities include men's and women's privy's and storage buildings.

The Township also owns and operates various parks for day use. The parks have picnic areas with sun shades and gazebo areas, as well as, male and female privies/change rooms and a boat launch for temporary use for boaters.

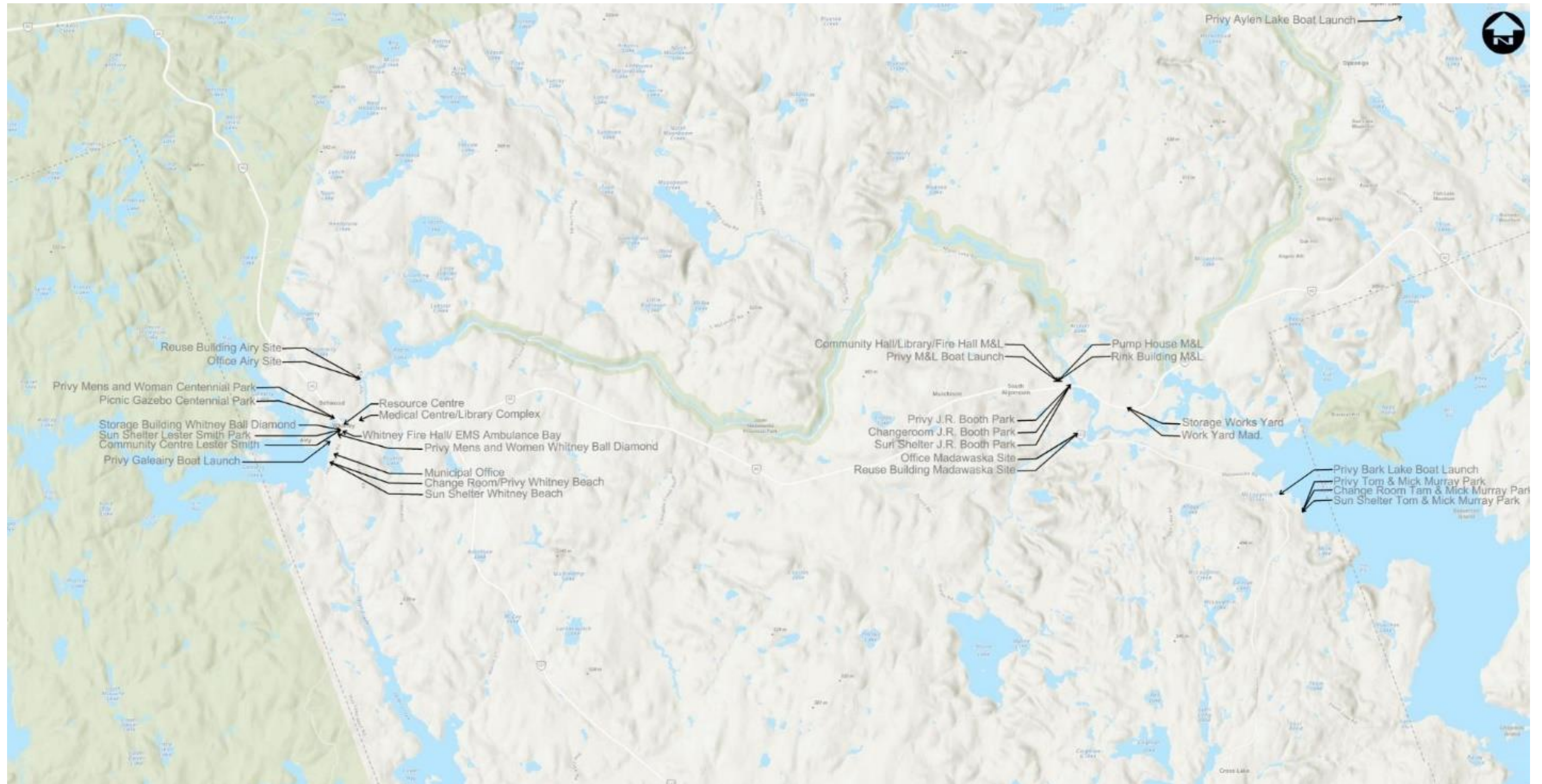
See **Appendix** for condition and replacement costs for Parks and Recreation facilities.

6.3 Current LOS

6.3.1 Community LOS – Buildings and Facilities

Buildings and facilities include administrative offices, Public Works garages and storage Buildings, a fire and paramedic station, and Parks facilities. See **Figure 6-2** for a map of the Township owned buildings.

Figure 6-2: Location of Buildings and Facilities



6.3.2 Technical LOS – Buildings and Facilities

See **Figure 6-2** for map of the location of Buildings and Facilities owned by the Township. The technical metrics related to availability, presented in **Table 6-2**, are described as follows:

- Size of building (square footage);
- Average hours of operation; and
- Number of staffs.

Table 6-2: Availability – Buildings and Facilities

Facilities and Buildings	Total Floor Area (ft ²)	Avg hours per week	Number of Staff
Municipal Offices - Whitney	3,892	35	5
Whitney Public Library	1,462	16	1
Madawaska Public Library	1,441	16	1
Fire Station, Whitney	3,640	10	16
Fire Station, Madawaska	3,497	10	15
Work Yard/Road Garage, Madawaska	4,100	40	7
Lyell (Madawaska) Landfill	32	40	1
Airy (Whitney) Landfill	32	40	1

6.3.3 Performance – Buildings and Facilities

The current performance of Buildings and Facilities is determined by the following performance measures established by the municipality. It is based on actual performance in the most recent two years.

- Energy efficiency for all buildings (energy usage as reported in Energy Consumption and Greenhouse Gas Emissions Reporting for 2020);
 - Propane (Litres) usage: 37,842.1
 - Oil (Litres) usage: 5,115.6
 - Hydro (Kwh) usage: 146,200.7

Risk Assessment

The risk assessment for building assets was conducted using the following assumptions and criteria:

Condition: Determined based on condition rating provided by the Township.

Performance: Assumed to be always reliable (value of 1).

Climate Change: Assumed a value of 3 (Limited impact with slower recovery; mitigation plan not in place).

Impact: Low impact (value of 0) for Environmental Services and Recreational Services building assets;

Moderate impact (value of 1) for General Government Services building assets; and

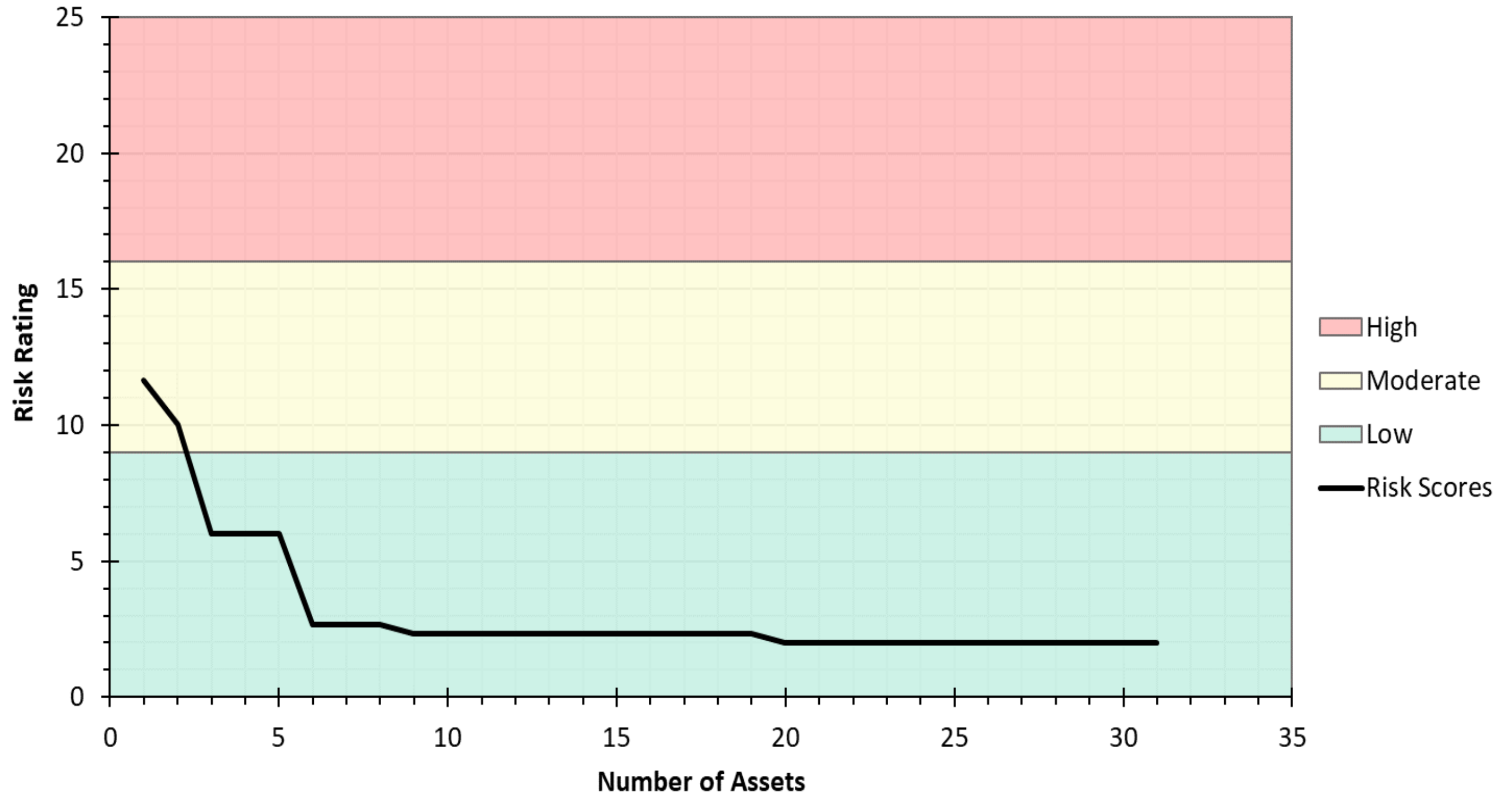
High impact (value of 2) for Emergency and Protective Services building assets.

Importance: Low importance (value of 1) for Environmental Services and Recreational Services building assets;

Moderate importance (value of 2) for General Government Services building assets; and

High importance (value of 3) for Emergency and Protective Services building assets.

Figure 6-3: Risk Profile for Buildings and Facilities Assets



As depicted in **Figure 6-3** two Buildings and Facilities Assets were determined to be in the moderate risk zone and the remaining 31 are considered low risk.

6.5 Lifecycle Activities – Buildings

The following section describes the lifecycle activities that can be implemented within the asset management strategy for building assets. Note that, as previously discussed, building assets refer to the entirety of the asset which is made up of varying component systems depending on the use of the building. The primary lifecycle activities include construction, maintenance, renewal, and decommissioning/disposal.

6.5.1 Construction

The start of a building asset's lifecycle is its construction. The building should be constructed to adhere to the requirements of the Ontario Building code, and any and all other applicable regional codes and requirements for the building and its use. Each building should be designed and constructed to provide the services for which it is intended.

6.5.2 Maintenance

Throughout the full lifecycle of a building, the majority of the expected lifecycle activities to be undertaken will be maintenance works. Maintenance activities can be used to improve the LOS of an asset (or component) or to maintain it. Activities that fall under the maintenance category can be varied by response type and scale of maintenance requirements. Activities can be required through routine maintenance works, response to poor conditions or performance, or on an emergency basis. In general, the expected types of maintenance activities within the lifecycle of a building include:

- **Preventative Maintenance:**
 - This type of maintenance activity is undertaken to prevent failure or poor performance of a building asset component. Preventative maintenance works can be undertaken on an ad-hoc basis based on knowledge of the condition, or be undertaken according to a maintenance schedule. Manufacturer directives and condition assessments should assist in determining the frequency of preventative maintenance activities.

- **Reactive Maintenance:**
 - This type of maintenance activity is undertaken in response to an issue or fault in the building or component systems, on an ad-hoc basis. The scale of reactive maintenance works will be variable depending on the system and type of failure or decrease in the LOS.
- **Major Maintenance (Replacement):**
 - This type of maintenance activity is undertaken in response to a component which is no longer able to provide an adequate LOS. Major maintenance (replacement) will be undertaken for one or more components of a building asset. Major maintenance works can be preventative (in anticipation of the end of the service life of a component), or in response to a system failure.

6.5.3 Renewal

Renewal works can be used to update a building asset for modernization, to achieve compliance with updated codes and requirements, to expand on an existing building, or to renovate to suit changes to services provided. Renovation works can include:

- Addition of new components to an existing building asset:
 - New components can be added to an existing building with the existing building largely unchanged.
- Updating of existing components:
 - Updating existing components can prolong the expected lifespan of a building asset.

6.5.4 Decommissioning/Disposal

Disposal activities can include the removal from service of a building, or a portion of a building and its components. Disposal activities should be conducted such that health and safety and environmental protocols are being followed, and spent materials are disposed of at appropriate or approved facilities.

Disposal activities can also include the removal of the building from the Township buildings portfolio through the sale of property if it is no longer required for service delivery.

6.6 Asset Management Strategy – Buildings

The asset management strategy for buildings assets will maximize the lifecycle of the asset where appropriate, in consideration of the specific needs of the Township and existing infrastructure.

The Township's asset management strategy for buildings relies on building condition assessments to establish the current state of the assets (including information such as age, condition and performance), and to establish recommended works and associated timeframes. Recent building condition assessments were completed in 2022 for a portion of the Township's buildings and facilities by Township staff and have consisted of non-intrusive visual inspection of the buildings and componentry. It is recommended that the Township engage a third-party consultant to provide detailed building condition assessments, alternatively, the Township could pursue training for existing staff to conduct these detailed building condition assessments in the future. The usage of such assessments for complex building assets can provide the Township with reliable and repeatable condition information and projections that can be used for capital planning and asset management.

The Township should continue to procure detailed building condition assessments at a sufficient frequency to have an ongoing understanding of the condition and required works at the buildings and facilities assets, suggested to be every 5 to 10 years. These reports can be used to inform a maintenance schedule and capital works schedule, and to understand the forecasting of asset improvements. If it is not possible to complete an assessment of all buildings on a routine basis, priority buildings for the condition assessment program are suggested to be identified by the presented risk assessment, condition, and performance measures. Buildings with high-risk or poor condition/performance components should be prioritized in the condition assessment program. Where building assessments have not been conducted (on less complex building assets and structures), the Township could consider adding these to the scope of the building condition assessments, or continue to undertake simplified assessments on a regular basis through visual inspection by the Township staff.

The Township strategy should maintain (or improve where appropriate) the condition and performance adequately to provide the intended services. **An industry standard of 2% of the current portfolio replacement value is recommended as a minimum annual**

investment into capital projects for major maintenance (replacement) and renewal activities, however specific works recommendations within building condition reports will provide a more tailored understanding of the Township’s recommended annual investment.

Implementation of the lifecycle activities for the buildings and facilities assets will vary across the assets, according to the components, conditions, and services provided.

Routine maintenance schedules are assumed to be in place currently and are recommended to continue assuming that they are currently providing a sufficient level of maintenance. Maintenance works can include preventative maintenance, reactive maintenance (in the event that there is an issue), or major maintenance which can include the replacement of a component.

7.0 Parks and Land



7.1 State of Local Infrastructure

The Parks and Land asset category includes a variety of assets such as boat launches, playgrounds, picnic areas, beaches, as well as Parking Lots (from Municipal buildings) and several unopened road allowances. Many of the assets included in this category are tied to parks related services, hence the parks distinction is added.

The Township has 24 Parks and Land assets, many of which contain additional components. A summary of the asset types, quantity, average condition, age and average expected useful life is included in the **Appendix**.

The Parks and Land assets are used by departments across the Township, with the majority attributed to Recreation and Cultural Services.

7.1.1 Average Age

Average age of the Parks and Land assets is 7.8 years.

7.1.2 Replacement Costs

The individual replacement costs for the Parks and Land varies, depending on the type of equipment or asset. For an estimate of future replacement costs of the Parks and Land assets, we have used data provided by the Township for their insurance assessment.

The replacement cost for all the Parks and Lands asset is \$1,066,000.

7.1.3 Expected Useful Life

The expected useful life of the assets was provided by the Township, and is also based on tracking and useful life estimations. The useful life was summarized across all asset types.

7.2 Condition

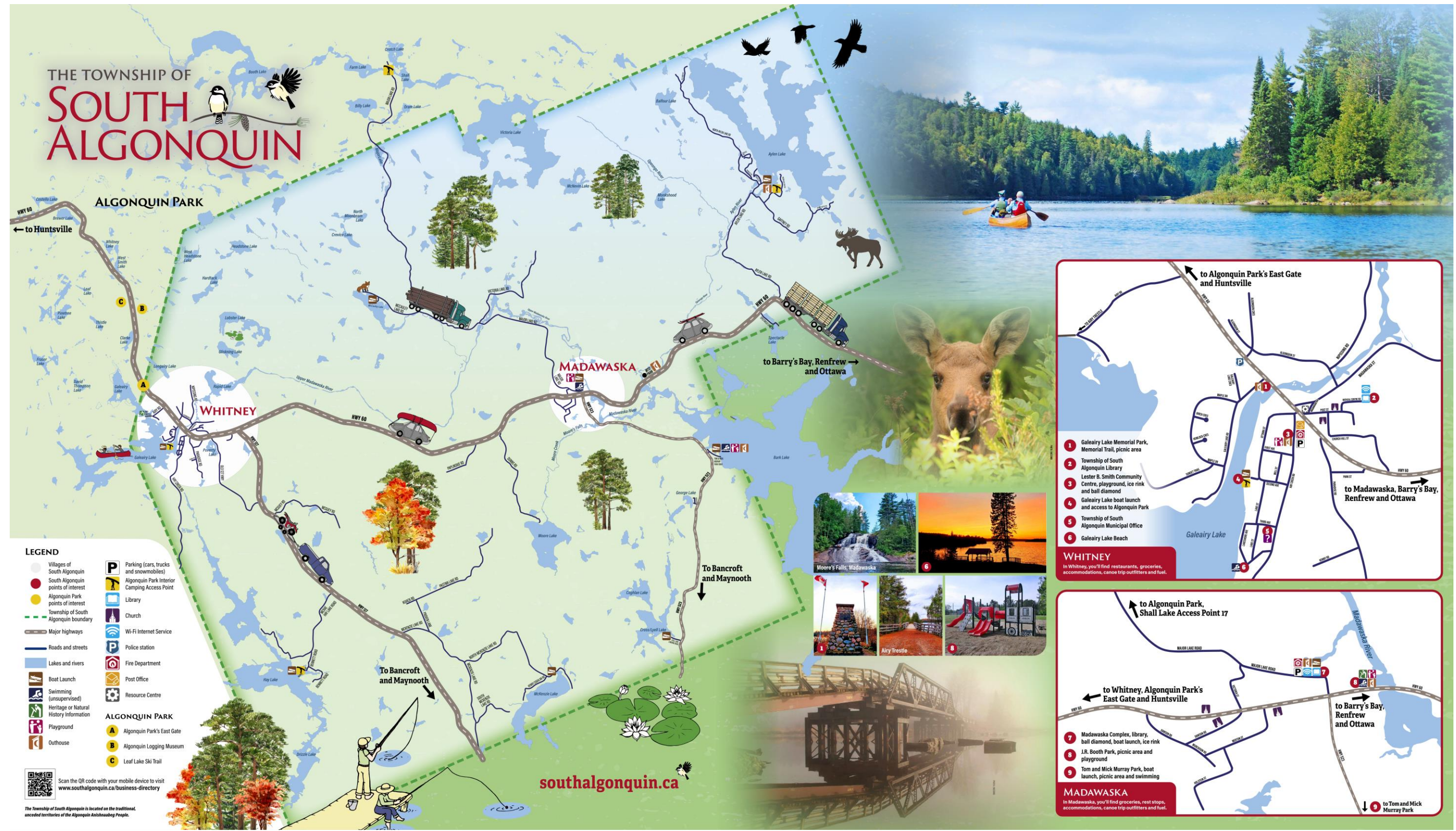
Where available current field condition data was used for this AMP reporting and the subsequent analysis. This field data is based on the current inventory information maintained by the Township.

Where no field condition data was available, the condition of the park and land assets was determined based on the age and useful life used of each asset.

The condition was determined on a scale of 1 to 5, for which a 1 describes an asset in Very Good condition and 5 in Very Poor condition.

The **Appendix** summarizes the distribution of all Parks and Lands assets condition by estimated replacement costs.

Figure 7-1: Location Map – Parks and Lands



7.3

Current LOS

Levels of service for Parks and Lands assets are not defined in the regulation, O. Reg. 588/17. As such, levels of services have been devised based on the content of the regulation, in consultation with the Township. **Table 7-1** and **Table 7-2** outline the Townships current community and technical levels of service for Parks and Lands.

The Levels of Service were determined from a park's perspective, as many of the Parks and Lands assets are part of parks service delivery. LOS descriptions were not determined for the other Parks and Lands assets.

7.3.1

Community LOS – Parks and Lands**Table 7-1: Community Levels of Service – Parks and Lands**

LOS Parameter	Qualitative Description	Township of South Algonquin Community LOS
Scope	Description which may include maps of parks locations	The locations of parks facilities throughout the Township are shown in Figure 7-1 .
Quality	Description of hours of operation and available services	Lights for soccer and baseball – off at 11:00 PM ¹
Quantity	How many parks per square km	24 Parks or Recreational Areas available for a total land area of South Algonquin Township that is 873.43 km ² , gives 36.39 parks or recreational areas per sq. km

¹ Due to seasonal staffing and requirements.

7.3.2 Technical LOS – Parks and Lands

Table 7-2: Technical LOS – Parks and Lands

LOS Parameter	Qualitative Description	Township of South Algonquin Community LOS
Scope	Number of Parks Facilities per Population	There are 49 parks facilities located throughout the Township. Based on a total population of 1,096 people, this equates to one park facility per 23 people.
Quality	Legal/Regulatory/ Local Standards	Legal/regulatory/local standards include: Grass cutting guidelines. Playground equipment annual inspection by a certified safety inspector. Beach grooming (department standards – done before the beach season begins, and at various times throughout the beach season).

7.3.3 Performance – Parks and Lands

Asset performance measures were determined in consultation with the Township, which provided relevant metrics against which the Township can gauge the performance of their assets. The performance measures for Parks and Lands, and their current values are shown in **Table 7-3**.

The current performance measures were determined from a park's perspective, as many of the yard improvements assets are part of parks service delivery. Performance measures were not determined for the other yard improvement assets.

Table 7-3: Current Performance Measures for Parks and Lands

Asset Performances Measure	Current Measure
Usage Rates of Facilities (by number of patrons, hours of operation, etc.)	Not currently available due to staff capacity to provide information.
Customer Feedback (number of complaints and compliments)	Not currently tracked, but it is recommended that that Township track this in the future.

7.4

Risk Assessment

The risk assessment for parks and recreation (land improvements) assets was conducted using the following assumptions and criteria:

Condition: Determined based on condition rating provided by the Township.

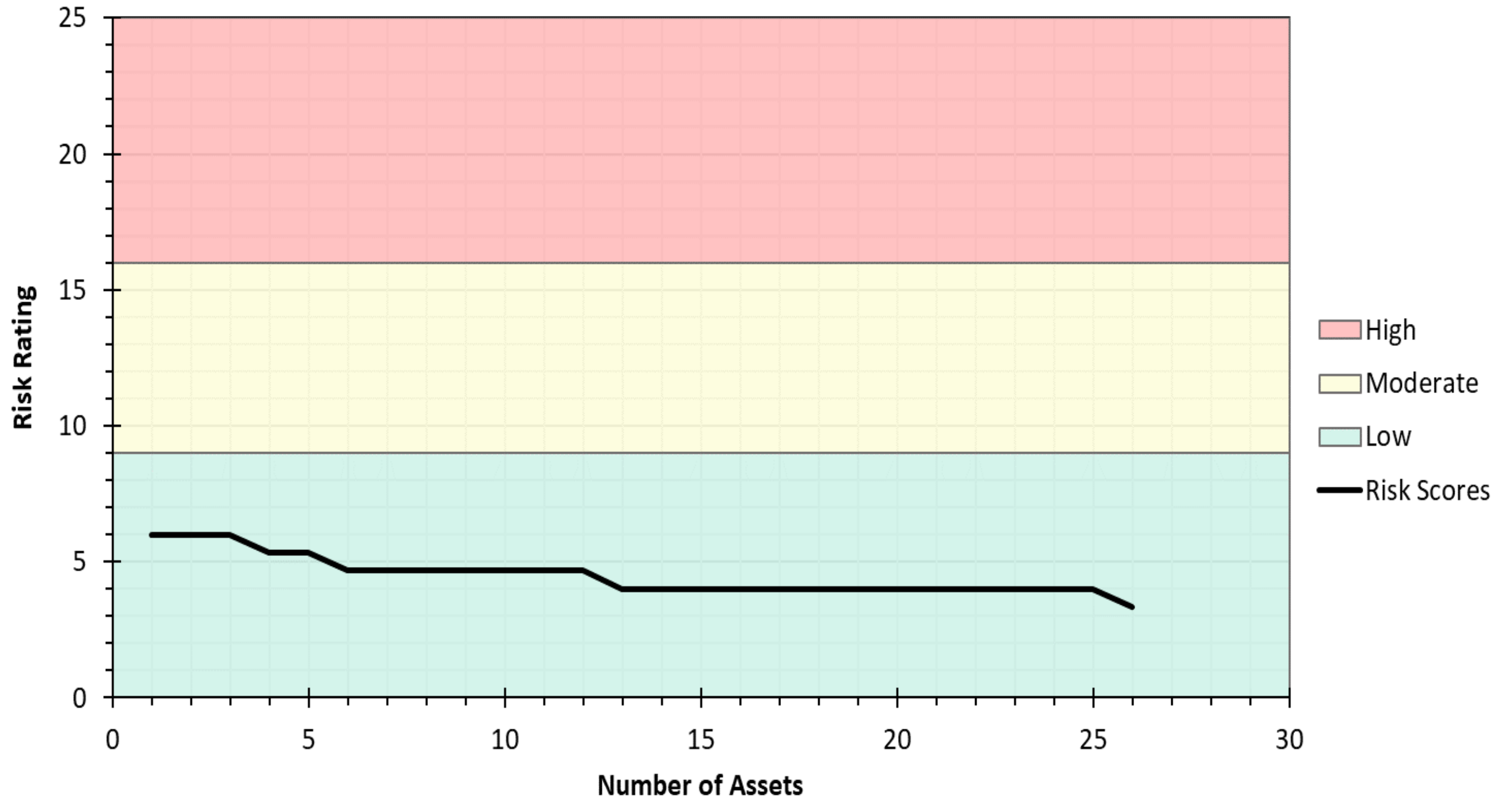
Performance: Assumed to be always reliable (value of 1).

Climate Change: Assumed to be moderate (value of 3; limited impact with slower recovery; mitigation plan not in place).

Impact: Assumed to be moderate impact (value of 1).

Importance: Assumed to all be low importance (value of 1).

Figure 7-2: Risk Profile for Park and lands Assets



As depicted in **Figure 7-2**, 26 Parks and Lands Assets were determined to be in the low risk zone.

7.5 Lifecycle Activities – Parks and Recreation (Land Improvements)

In the lifecycle of a Land Improvement asset, there are multiple activities that can be taken, depending on the asset attributes. The expected lifecycle activities to be used on the Land Improvement assets include acquisition, maintenance, operation and decommissioning.

7.5.1 Acquisition

Acquisition of a new land improvement asset should consider the intended usage of the asset. The acquisition should be undertaken based on an understanding of the requirements of the asset for providing service delivery and should follow Township procurement procedures. Acquisition of an asset could be as a new purchase or purchase of a used asset. Acquisition of a new asset can provide the Township with an asset in Very Good condition, however, the condition of a used asset could vary.

7.5.2 Maintenance

Maintenance activities will vary across the park's assets due to the variability in the type and usage of assets. The maintenance activities should be undertaken according to manufacturer specifications and as required to address condition and performance issues that arise through regular usage. Maintenance activities should include regular inspections for condition, and recording of maintenance activities undertaken.

7.5.3 Disposal

Disposal activities can include the removal from service through disposal, sale of assets or transfer of an asset to different departments. Disposal activities should be conducted such that health and safety protocols are being followed, and out-of-service assets are disposed of at appropriate or approved facilities.

Asset Management Strategy – Parks and Recreation (Land Improvements)

The asset management strategy for the land improvement assets seeks to use the lifecycle activities in a manner that will achieve cost-effective and sustainable management of the assets.

Generally, if acquired new, the assets will begin their expected useful life in Very Good condition and performance. Throughout the lifecycle of the assets, routine maintenance should be conducted. As required, specific maintenance should be conducted. As an asset ages and approaches the end of its useful life, it is expected that the risk and maintenance costs associated with the asset will increase. There will be a point in the lifecycle where the risk and maintenance costs are such that the replacement of the asset will be the preferred solution. This point will vary depending on the type of asset and the services delivered by each.

The Township should review the usage of parks and land improvement assets to confirm if services are being provided adequately. The assets should also be routinely assessed and monitored for condition and performance, to inform any maintenance or replacement works required. The needs and monitoring of asset condition will fall within multiple departments at the Township, due to the varied range of services the assets provide.

8.0 Financial Strategy

This chapter identifies the funding required to sustainably finance the lifecycle management strategy presented in the previous sections.

O. Reg. 588/17 requires that by July 2025 municipalities have an approved proposed LOS and a ten-year lifecycle management and financial strategy to achieve the proposed LOS. Various financing options, including reserve funds, debt, and grants can be considered during the process of developing the financial strategy.

This financial strategy should be examined and re-evaluated during the annual budgeting processes to ensure the sustainability of the Township of South Algonquin's financial position as it relates to its assets.

8.1 Funding Sources

The Township's current financial strategy is to fund capital expenditures from the following sources: government funding and grants, tax revenues, and capital reserves. The Township intends to continue following this financial strategy for the foreseeable future.

Table 8-1 summarizes the Township's budgeted revenue for 2023, which supports both operating and capital expenditures. This revenue identified is not intended to reflect the Township's maximum available funding; rather, it is intended to represent the standard amount of funding that the Township would have in a typical year if they maintain the status quo. Project- and timing-specific grants, subsidies, and other income are expected to supplement this base revenue where needed.

Table 8-1: Budgeted Revenue for 2023

Revenue Source	Amount
Ontario Community Infrastructure Fund (OCIF)	\$138,000
Northern Ontario Resource Development Support (NORDS)	\$95,000
Ontario Municipal Partnership Fund (OMPF)	\$1,013,000
Gas Tax	\$73,000
Other	\$277,000
Non-Taxation Revenue	\$1,596,000
Taxation Revenue	\$2,625,000
Total Revenue	\$4,221,000

These revenues have been projected for the next ten years based on the following assumptions:

- The Gas Tax and OMPF have been assumed to continue at the current levels for the next ten years.
- The province increased OCIF allocations substantially in 2022 as part of a five-year initiative. OCIF funding has been assumed to remain at the elevated amount of \$138,000 for the ten-year forecast period, understanding that there is a risk that it returns to the pre-2022 amount of \$52,000 in 2027 and beyond.
- NORDS funding was assumed to continue at the 2023 levels for the next ten years. However, the province only committed to providing NORDS funding to the Township until 2026, so there is a risk that this funding may need to be supplemented with other revenues in the future.
- Taxation revenue has been projected to increase at two percent per year, in line with the level of inflation assumed for operating expenditures.

8.2 Expenditures

Table 8-2 summarizes the annual capital expenditures recommended to achieve the capital asset lifecycle management strategy identified in the earlier sections of this report. From the Level of Service Survey completed by the Township in July it was noted that the constituents were comfortable with maintaining the current level of service provided by the Township for all asset categories with the exception of Roads. Therefore, this recommendation for the capital expenditures has indicated that the

Township maintain the existing level of service by reinvesting the amount needed for each asset category to replace these assets at the end of their useful life.

An inflation rate of 4% per year has been assumed for capital expenditures, which aligns with recent historical averages (pre-2021) of Statistics Canada's Building Construction Price Index for the Ottawa-Gatineau census metropolitan area. The pre-2021 average is used as inflation is expected to return from recent highs to more typical levels in the coming years.

Table 8-2: Recommended Annual Capital Expenditures

Asset Category	Annual Amount (2023 \$)
Roads	\$788,000
Bridges and Culverts	\$76,000
Solid Waste	\$26,000
Buildings and Facilities	\$152,000
Lands	\$61,000
Fleet and Equipment	\$351,000
Total	\$1,454,000

The Township's budgeted operating expenditures for 2023 are \$4,045,000. An inflation rate of 2.0%, the Bank of Canada's target, has been assumed for these expenditures. While inflation in recent years has been much higher than target, the Bank of Canada's April 2023 Monetary Policy Report projected a return to target some time in 2024.

8.3 Financial Analysis

8.3.1 Forecasted Capital Investment

The Township's forecasted expenditures can be compared to the forecasted revenues over the 10-year period to assess if there are any anticipated funding gaps, and assess if the proposed financial strategy allows the Township to appropriately invest in its capital assets. For the purposes of this analysis, it was assumed that revenues are first used to cover operating expenses, with the remainder going towards capital.

The Township's revenues are not projected to be adequate to finance the recommended capital expenditures over the next 10 years, as shown on **Figure 8-1**. Operating expenses alone may exceed revenues in the later years, as inflation drives

these expenses up while non-taxation revenues (provincial grants and subsidies, in particular) remain fixed.

The 2023 budgeted revenue and operating expenses result in a \$1.3 M annual capital funding shortfall relative to the recommended capital investment, with the annual shortfall steadily increasing to \$2.2 M in 2032 as a result of inflation. This results in a cumulative shortfall of \$17.0 M over ten years. The current total reserve balance of approximately \$2.7 M would only be adequate to cover the annual shortfalls for two years.

Table 8-3 summarizes all of the financial projections.

Figure 8-1: Revenue, Operating Expenditures and Recommended Capital Expenditures

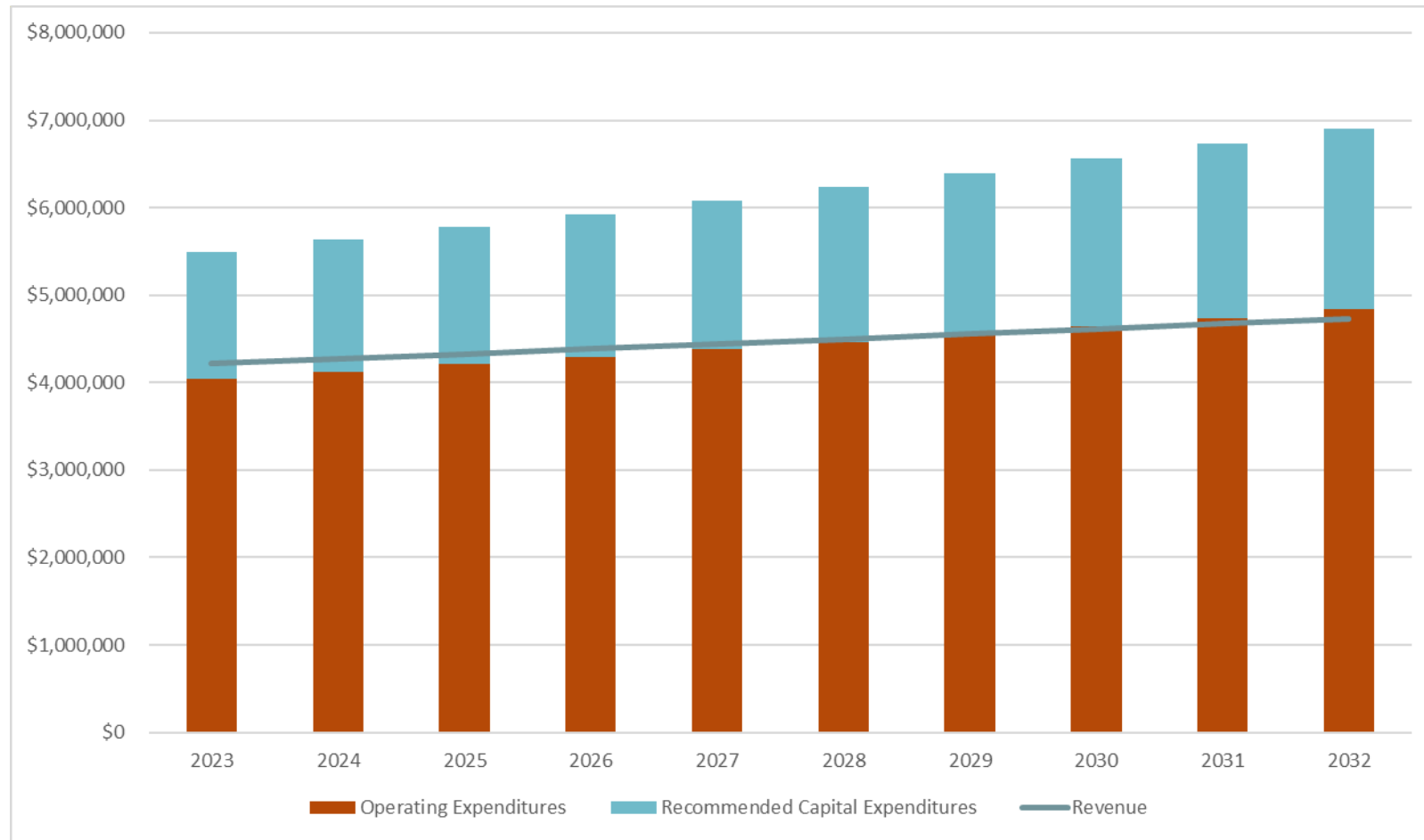


Table 8-3: Summary of Financial Projections (in 000's)

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Non-Taxation Revenue	\$1,596	\$1,596	\$1,596	\$1,596	\$1,596	\$1,596	\$1,596	\$1,596	\$1,596	\$1,596
Taxation Revenue	\$2,625	\$2,678	\$2,732	\$2,787	\$2,843	\$2,900	\$2,958	\$3,017	\$3,077	\$3,139
Total Revenue	\$4,221	\$4,274	\$4,328	\$4,383	\$4,439	\$4,496	\$4,554	\$4,613	\$4,673	\$4,735
Operating Expenditures	\$4,045	\$4,126	\$4,209	\$4,293	\$4,379	\$4,467	\$4,556	\$4,647	\$4,740	\$4,835
Recommended Capital Expenditures	\$1,454	\$1,512	\$1,572	\$1,635	\$1,700	\$1,768	\$1,839	\$1,913	\$1,990	\$2,070
Total Expenditures	\$5,499	\$5,638	\$5,781	\$5,928	\$6,079	\$6,235	\$6,395	\$6,560	\$6,730	\$6,905
Annual Capital Funding Shortfall	-\$1,278	-\$1,364	-\$1,453	-\$1,545	-\$1,640	-\$1,739	-\$1,841	-\$1,947	-\$2,057	-\$2,170
Cumulative Capital Funding Shortfall	-\$1,278	-\$2,642	-\$4,095	-\$5,640	-\$7,280	-\$9,019	-\$10,860	-\$12,807	-\$14,864	-\$17,034

A number of strategies could be implemented by the Township to mitigate the proposed capital funding shortfalls:

- **Debentures:** Debt financing could be used to fund a portion of the capital expenditures recommended in this report. However, due to provincially-mandated annual debt repayment limits of 25% of revenues, debt alone would not be adequate to cover the annual shortfalls in later years.
- **Grants and Subsidies:** Government grants and subsidies should be applied for where possible as a supplemental source of capital funding.
- **Tax Levy Increases:** Increasing the overall tax levy by more than the projected 2.0% per year would reduce, but not eliminate, the capital funding shortfall. Alternatively, a dedicated capital levy could be introduced.
- **Control Operating Expenditures:** Every increase in operating expenditures reduces the Township's ability to invest in capital assets.
- **Decreased LOS:** Targeting a lower LOS than what was specified in this report would allow the Township to reduce capital expenditures.

The Township should continue to contribute to capital reserves, at a minimum as mandated in the Capital Reinvestment Policy, to build up healthy balances that can sustainably fund capital investments, recognizing that capital expenditures will fluctuate from year-to-year.

8.3.2 Reinvestment Rates

Another useful perspective for evaluating the adequacy of an asset management financial strategy is reinvestment rates. The reinvestment rate is the annual capital investment as a percentage of the asset replacement value. While the projections presented earlier in this section have the benefit of highlighting years where there will be peaks in capital expenditure needs, reinvestment rates provide a simple annual target.

The 2016 Canadian Infrastructure Report Card found that rates of reinvestment are lower than targets recommended by asset management practitioners. The rate can vary based on factors such as the age of the infrastructure, the level of service and risk tolerance. The values provided are intended to be informative in nature. **Table 8-4** demonstrates the gap between current and target reinvestment levels, Canada-wide, for the asset categories that the Township owns. Insufficient reinvestment will result in

a gradual decline of physical condition levels that will impact municipal service delivery over time.

Table 8-4: Target Reinvestment Rates vs 2016 Canadian Average Reinvestment Rate

Infrastructure Category	Lower Target Investment Rate	Upper Target Investment Rate	Canadian Average Reinvestment Rate (2016)
Roads and Sidewalks	2.0%	3.0%	1.1%
Bridges	1.0%	1.7%	0.8%
Buildings	1.7%	2.5%	1.7%
Sports and Recreation Facilities	1.7%	2.5%	1.3%

The total replacement cost for the Township's capital assets that were listed in this plan is estimated to be \$57 M (in 2023 \$). **Table 8-5** summarizes the equivalent reinvestment rate considering the recommended capital expenditures, and considering the average budgeted capital expenditures from 2022 and 2023 for comparison. Reinvestment rates will naturally fluctuate from year to year, so it is best to look at averages. While lower than the recommended level of investment, the Township's budgeted amounts are generally in line with the Canadian average.

Table 8-5: Reinvestment Rates (2023\$)

Scenario	Average Annual Capital Expenditures	Reinvestment Rate
Recommended Capital Expenditures	\$1,454,000	2.6%
Average of 2022 and 2023 Capital Budget	\$607,630	1.1%

Reference Reports

South Algonquin Township Documents

Strategic Asset Management Policy (FIN-003-00)

Accounting for Tangible Capital Assets Policy (FN-001-02) Revised October 2022

Official Plan - Township of South Algonquin, August 2012

2022 Road Inventory and Condition Assessment Report – Jewell Engineering, July 2022

2021 OSIM Inspection Reports – Jewell Engineering, December 2021

Asset Management Plan – Greenview Environmental Management Ltd., December 2013

Madawaska Landfill Site (ECA No. A7091303) 2021 Annual Report – Jp2g Consultants Inc. March 2022

Madawaska Landfill Site (ECA No. A7091303) 2021 Annual Monitoring Report – Jp2g Consultants Inc. March 2022

Airy (Whitney) Waste Disposal Site (ECA No. A530603) 2021 Annual Report – Jp2g Consultants Inc. May 2022

Airy (Whitney) Waste Disposal Site (ECA No. A530603) 2021 Annual Monitoring Report – Jp2g Consultants Inc. May 2022