TOWNSHIP OF JOLY

ASSET MANAGEMENT PLAN

DECEMBER 2025

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Executive Summary

Municipalities exist to provide effective, timely, and efficient services to their public. Foundational to the delivery of these services is the quality of the tangible capital assets managed by that municipality. Both management and Council play a pivotal role in this endeavour by developing and implementing prudent management practices, such that a municipality can provide municipal services in a fiscally responsible and sustainable manner.

The Township of Joly's (the 'Township') Asset Management Plan (the 'Plan') documents information relevant to the management of the Township's capital assets. The overarching purpose of an Asset Management Plan is to aid municipalities in making cost effective decisions with respect to operating, maintaining, renewing, replacing, and disposing of their assets. By implementing a long-term vision, the Township can ensure that decisions regarding resource allocations are not reactive, but rather made through a methodical, risk-based approach that takes into consideration both short- and long-term needs and objectives.

The development and implementation of improved asset management practices in municipalities has been an ongoing pursuit for more than two decades. In November of 2003, the National Guide to Sustainable Municipal Infrastructure published a *Best Practice for Municipal Infrastructure Asset Management* which helped serve as the framework by which an asset management plan can be developed.

Regulations were thereafter implemented by the Ontario Government as part of a holistic approach to infrastructure management. The first set of Asset Management Plans were developed in the mid-2010s, as a result of the *Building Together- Guide for Asset Management Plans.*

Subsequent to this, through the creation of O. Reg. 588/17 under the *Infrastructure for Jobs and Prosperity Act*, the Province established a series of dates by which the Plan is to be updated and integrated into municipal planning. The requirements of each Plan, as well as their corresponding deadlines for implementation, are outlined in the table below.

Completion Date	Requirements
July 1, 2019	• Adopt a Strategic Asset Management Policy

July 1, 2022	• Update the Plan for core infrastructure assets (roads, bridges, culverts, water and wastewater), including:
	  ○ Current levels of service;
	  ○ Inventory analysis; and
	  ○ Ten-year estimate of expenditures required to maintain the current levels of service

July 1, 2024	• Update the Plan for all infrastructure assets, incorporating the same information as above for the core assets • Meet Provincial reporting requirements regarding levels of service and capital financing sources

July 1, 2025	• Incorporate the following for all infrastructure assets:
	  ○ Proposed levels of service for a 10-year period;
	  ○ Updated inventory analysis;

	○ Lifecycle management strategy; ○ Financial strategy; and ○ Plan for addressing funding shortfalls
Ongoing	• Review, and update as necessary, the Strategic Asset Management Policy every five years commencing July 1, 2019 • Update the Asset Management Plan every five years • By May 31, report to the Province any time the Plan is updated • Council conducts an annual review of asset management progress, commencing the year after the July 1, 2025 requirements have been incorporated into the Plan. This review is to include: ○ Progress in implementing the Plan; ○ Factors impeding the Township's ability to implement the Plan; and ○ A strategy to address any factors identified

In July of 2019, Township of Joly Council adopted its Strategic Asset Management Policy, a copy of which has been enclosed as Appendix H. This policy details the framework for the Township's Asset Management Systems, the roles and responsibilities of staff and Council, and the alignment of the Plan with other Township policies and by-laws.

All of the Township's assets are included in this Plan. Using 2024 values, the Township's asset base has a historical cost of approximately $5.7M, with a replacement cost estimated to be $55.7M. The State of Local Infrastructure section of the Plan provides more detailed information on the existing asset base, broken down by asset category.

Best management practices related to each asset class are identified, including the "preservation management" approach to asset management that has been adopted in principle by the Township. Although this approach has been shown to result in the lowest overall cost of ownership in the long-term, it is not financially feasible to implement to any significant extent at this time.

The Township has identified current levels of service for each asset category, and their related costs. As well, the Township has identified and integrated a target level of service in its financial strategy over the ten-year planning period.

In order for the Plan to be effective, it must be integrated with financial planning and long-term budgeting. The financing section of the Plan presents a 10-year capital budget that has been limited in scope to the most critical projects, in line with available funding levels. For the 10 years covered by the Plan, the projected total cost to replace and maintain existing assets is $9.37M, and the total municipal expenditures related to financing past, current, and future assets is $10.7M.

To Township will be required to use debt financing in certain circumstances to supplement municipal funds derived from property taxation, but will strive to limit borrowing to a "moderate risk" level as defined by the Ministry of Municipal Affairs. The financial strategy also incorporates an annual tax levy increase in line with the inflation rate (i.e., 2%). An additional annual dedicated

capital levy increase of 1.6%, necessary to achieve the target level of service, has been included in this plan's 10-Year Capital Budget.

The financial strategy as outlined will permit the Township to finance all anticipated capital expenditures over the 10-year term of the Plan, with additional funds targeted into reserve to help finance future capital needs arising beyond the Plan period.

This Plan has been prepared by an external consultant, with input from the Municipal Administrator, Treasurer, and Roads Supervisor, and builds on previous versions of the Plan prepared by Eastern Infrastructure Solutions Inc. and the Greer Galloway Group. It brings the Township into full compliance with the July 1, 2025 requirements under *Ontario Regulation 588/17* and has been endorsed by Council in principle as an evolved approach to asset management within the Township.

Departures from the strategy and proposals outlined within the Plan are inevitable, as circumstances and priorities are constantly evolving. To that end, the Plan will be subject to continuous revision as the Township works within its limitations and identifies specific challenges and/or opportunities for improvement. A comprehensive review will be undertaken every five years, at a minimum, to comply with the current Provincial requirements.

1.0 Introduction

1.1 About Joly

Joly Township is a small, rural municipality located in mid-Northern Ontario, in the District of Parry Sound. The Township covers a territory of 194 km^2, and borders the Township of Strong, Town of Kearney, and Township of Machar, as well as parts of unorganized Ontario. The most recently published census data (2021) reports 155 private dwellings and a population of 293, a decrease of 3.6% over the 5-year census period. A large portion of the Township is crown land, limiting opportunities for future development. Over the 10-year planning period, the Township is not expected to grow significantly and, as a result, expansion of its capital asset base is not anticipated.

The Township jointly funds arena, landfill, and library services through a partnership with the Township of Strong and Village of Sundridge, and purchases fire services from the South River/Machar and Sundridge/Strong Fire Departments. It also engages in regional economic development through the Almaguin Community Economic Development consortium, and provides building services to residents through a regional Joint Building Committee.

1.2 Purpose of an Asset Management Plan

Through Ontario Regulation 588/17, the provincial government has mandated the preparation of an asset management plan. Primarily, the objective of an asset management plan is to leverage a municipality's existing infrastructure data to help develop a long-term balanced capital budget. Taking a holistic approach to long-term budgeting allows municipalities to plan for the long-term maintenance and replacement of their assets, so that desired service levels can be met at the lowest lifecycle cost.

This Plan will aid the Township in making appropriate financial decisions and investments as part of its annual budget deliberations. A carefully prepared, effectively utilized Plan should aid in moving from an ad-hoc, informal approach to the management of assets to a data-driven approach that formally recognizes the connection between levels of service, cost, and risk.

While it is anticipated that regular annual budgetary procedures will remain unchanged, it is the intention that this Plan will help serve as a guiding document in this development through the identification of long-term capital needs and financial capacity, as well as in the development of tax levy rates and other related revenue generators.

Well-maintained infrastructure is important to the growth and development of the Township as set out in the goals of the Township's Official Plan. The Official Plan aims to "encourage the adequate provision of physical services, roads and community facilities to satisfy the needs of the residents of the municipality."[1] It is the intent of the Official Plan to encourage development that is compatible with the character, role, and permitted uses of agricultural, rural, and the Township site areas, as well as to promote the continued functioning of natural systems. It is essential that the natural beauty and environmental resources, considered key factors in the growth of the tourism sector, are not damaged by future development.

[1] Township of Joly Official Plan (2025), p. 11-12.

Well maintained roads and bridges facilitate the movement of goods, the provision of services, and the transport of people to work, school, and for leisure. Given the proximity of extensive local logging and aggregate extraction industry, they are essential to the establishment and continuance of economic development through the transport of commodities to market.

The state of local infrastructure also reflects on the image of the Township to its residents and visitors. Poorly maintained infrastructure conjures a negative image and may detract from investment in the Township. It also represents a very visible means by which ratepayer expectations regarding value for money is established.

Consequently, the development of a sustainable Asset Management Plan will facilitate the achievement of the vision outlined in the Official Plan.

1.3 Evaluation and Improvement of the Plan

As part of the Plan, Levels of Service have been developed for each of the primary asset groups. The Levels of Service are considered the 'expectation' or 'target' for the management of various assets. The Levels of Service also provide a measuring stick against which the Township can assess the relative success of their management practices, financial investment levels, and the overall suitability of the Plan. These Levels of Service have been determined based on available data; future expansion is possible, however the Township must ensure that data collection processes are in place for any new metrics selected.

Annually, the Township is required to review and report on the progress made in implementing the Asset Management Plan, any challenges in achieving its objectives, and mitigating strategies therefor. A comprehensive review of the Plan shall be undertaken every five years, as a minimum, which is to include an update to the state and condition of infrastructure inventory through such activities as the bi-annual Ontario Structure Inspection Manual (OSIM) reporting and regular road evaluations. Financial forecasts will also be revised with the comprehensive updates to reflect current replacement costs for the Township's infrastructure.

The average road network condition rating shall be recalculated with each Plan update. The calculated average condition rating will be compared against the Levels of Service target values and an assessment made as to whether revisions to the Plan are required to meet the desired Levels of Service. Alternatively, adjustments to the Levels of Service may need to be considered where insufficient funding or alternate priorities exist. Metrics and targets established within the Plan are designed to be inherently flexible, due to the ever-evolving needs of the Township's residents and of the infrastructure itself.

An asset management plan that is not adhered to, or updated infrequently, will quickly become obsolete and be of little or no value to the Township. Staff are responsible for periodically reviewing the mechanisms by which the Plan is compiled and updated, as part of the goal to continuously improve the accuracy and efficacy of Plan data.

Based on a preliminary review of the processes used to prepare this and previous iterations of the Plan, a significant area for improvement would be to implement strategies or practices which facilitate ongoing data collection and the maintenance of such data within an asset management database. Appropriate asset management decisions cannot be made without the availability to timely, accurate, and relevant data. The following are specific sources or uses of data which could be improved in future versions of the Plan:

1. Condition data: actual field condition data is the most useful metric when assessing and forecasting replacement schedules. In the absence of this, age is often used as a proxy to project the timing of future requirements. In future versions of the Plan, an attempt should be made to collect field condition data for all assets where practical.
2. Asset components: in the asset ledgers, most assets are not broken down into components, and are instead listed as a single, grouped item. As the components of major assets often do not depreciate at the same rate, failing to identify useful lives and replacement costs for each component could result in significant unanticipated capital expenditures being incurred. Going forward, the Township should ensure that, where applicable, assets are segmented into major components upon entry into the TCA ledger.
3. Replacement values: estimated replacement values form the basis for financial forecasts by establishing future investment requirements. A variety of methods have been used to estimate replacement cost, the least reliable of which is inflating historical cost based on an inflation index table. Wherever possible, replacement costs have been estimated using recent purchase data of similar assets from other local municipalities.

Best practices for infrastructure management are continuously being refined. As staff become aware of improved mechanisms for asset preservation, these should be incorporated into planning and maintenance activities. The ability of the Township to leverage its knowledge of infrastructure will greatly enhance its ability to sustainably meet the needs of its residents.

2.0 State of Local Infrastructure

The following section provides a brief overview of the current state of the Township's infrastructure portfolio, using high-level asset and financial indicators. A more detailed review of each asset class is subsequently provided.

2.1 Replacement Cost by Asset Category

The following table provides a summary overview of the replacement costs for all tangible capital assets owned by the Township. As of December 31, 2024, the municipality's total value of assets owned was approximately $55.7 million.

Asset Category	Replacement Value
Roads	$45,335,225
Bridges and Culverts	$7,453,212
Buildings	$794,426
Vehicles	$1,815,233
Machinery and Equipment	$290,269
Other Assets (Land Improvements, Computer Hardware/ Software)	$34,566
TOTAL	**$55,722,932**

2.2 Overall Asset Condition

As mentioned previously, there are several methods that may be used to assess the condition of assets, with field condition data providing the most relevant information and age-based estimates providing a simple, but less useful, approximation. Although field data is generally superior, the lack of a standardized approach to assessing some assets, and/or the lack of funding available to undertake detailed condition evaluations, means that an age-based approach will be used in certain circumstances.

O. Reg. 588/17 requires that the Township use recognized and generally accepted engineering practices, where appropriate, to assess the condition of assets. For core assets, and more specifically roads and bridges, this process is quite simple; roads are classified using a pavement condition index[1] or structural adequacy index, depending on the surface type, and bridges are professionally assessed using a bridge condition index[2] in the bi-annual OSIM reporting. For other assets, where industry standards for condition assessments do not exist, techniques needed to be developed to determine an accurate approximation of quality. Changes to these assessment methods may be required as interpretation of the regulation continues to evolve.

The rating scale used to determine asset conditions is outlined in the following tables. Table 2 provides a summary of the range of values that define each tier in the condition rating scale. Table 3 indicates the source of condition data used for each asset class.

[1]Pavement Condition Index (PCI) rates the severity and density of 15 specific distresses in pavement
[2]Bridge Condition Index (BCI) is calculated based on the condition of elements of the bridge and represents a ratio of the bridge's current value to its replacement value,

Table 2- Condition Rating Criteria

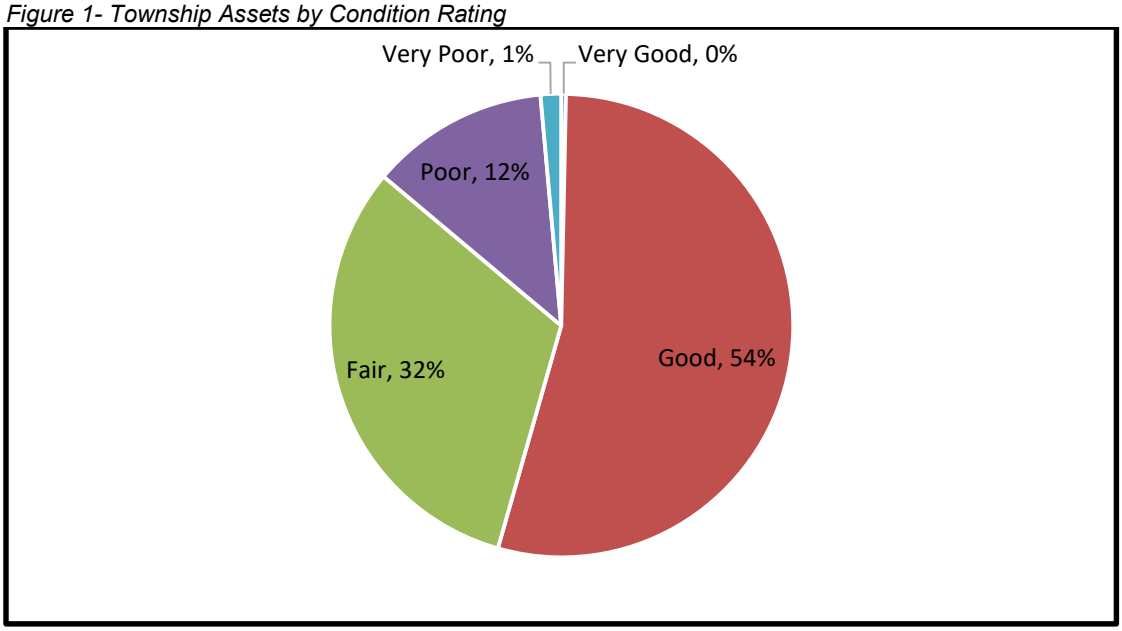
Condition Rating	Condition Description – General	Index/Age Based Measure	Action Required
Very Good	No noticeable defects/new or recently rehabilitated	Age - <10% of lifespan Index-based – 9 to 10 (90 to 100) Fleet - <50,000 km or 2,000 hours BCI- range of 80-100	No action required other than normal maintenance
Good	Only minor deterioration or defects	Age – 10% to 49% of lifespan Index-based – 6.5 to 8.9 (65-89) Fleet - <100,000 km or 5,000 hours BCI – range of 70-79	Normal and preventative maintenance required Nothing major anticipated within the next 5 years
Fair	Some deterioration evident but function not significantly affected	Age – 50% to 74% of lifespan Index-based – 4.5 to 6.4 (45-64) Fleet - <200,000 km or 10,000 hours BCI – range of 60-69	Minor rehabilitation expected within the next 5 years
Poor	Serious deterioration in at least some components, function is inadequate	Age – 75% to 100% of lifespan Index-based – 3.0 to 4.4 (30-44) Fleet - <400,000 km or 15,000 hours BCI – range of 40-59	Major/Minor rehabilitation or replacement
Very Poor	Failed asset, no longer functional	Age - > life expectancy Index-based – 0 to 2.9 (0-29) Fleet - > 400,000 km or 15,000 hours BCI- range of 0-39	Replacement

Table 3- Sources of Condition Data by Asset Class

Asset Class	Component	Source of Condition Data
Roads Network	Paved Roads	Pavement Condition Index
	Gravel Roads	Structural Adequacy Index
	Other Road Components	Age
Bridges and Culverts	Bridges	BCI through OSIM Reporting
	Culverts	BCI through OSIM Reporting
Buildings	All	General Condition Description
Equipment	All	Age
Vehicles	Fleet	Kilometers or Hours, Age
	Other	General Condition Description
Other Assets	All	Age

Assets have been evaluated based on the above criteria. The following chart illustrates the proportion of Township assets in each condition rating tier. Approximately 54% of all assets are in good to very good condition, whereas 13% of assets are in poor to very poor condition and require replacement in the near term.

Figure 1- Township Assets by Condition Rating



2.3 Replacement Financing Requirements

A municipality's annual funding requirement represents an approximation of the amount, based on current estimated replacement costs and life expectancies, that the Township should allocate each year so that assets can be replaced upon reaching the end of their useful lives. Note that, while actual annual requirements may fluctuate significantly from year to year, the annual funding requirement represents a long-term sustainability threshold that, when used in conjunction with a functional reserves and reserve funds system, will allow the Township to meet its annual capital obligations. As outlined in Table 4 below, using 2024 replacement costs, the Township should allocate approximately $1.04 million each year to meet capital replacement requirements for all assets that are currently owned.

Table 4- Annual Requirements by Asset Category

Asset Category	Funding Requirement
Roads	$740,703
Bridges and Culverts	$124,220
Buildings	$19,861
Equipment	$28,255
Vehicles	$126,317
Other Assets	$6,913
TOTAL	**$1,046,268**

Note, however, that the above figure is significantly skewed by the cost of road bases. The majority of the road bases in the Township were developed in the early- to mid- 1900s, and records regarding their construction costs are not available. As a result, engineering estimates

have been used to develop replacement costs. However, it is important to note that road bases will very rarely need to be fully replaced; although some repairs will need to be made, the costs associated with engineering design, excavation, and blasting, among others, will not recur outside of extreme circumstances involving a natural disaster or the like, and under which circumstances external funding support is generally available. It therefore makes sense to consider the annual funding requirement exclusive from road base replacement, to provide a more accurate estimation of long-term capital needs for planning purposes. The following table provides an illustration of the annual funding requirement, excluding the cost of road bases.

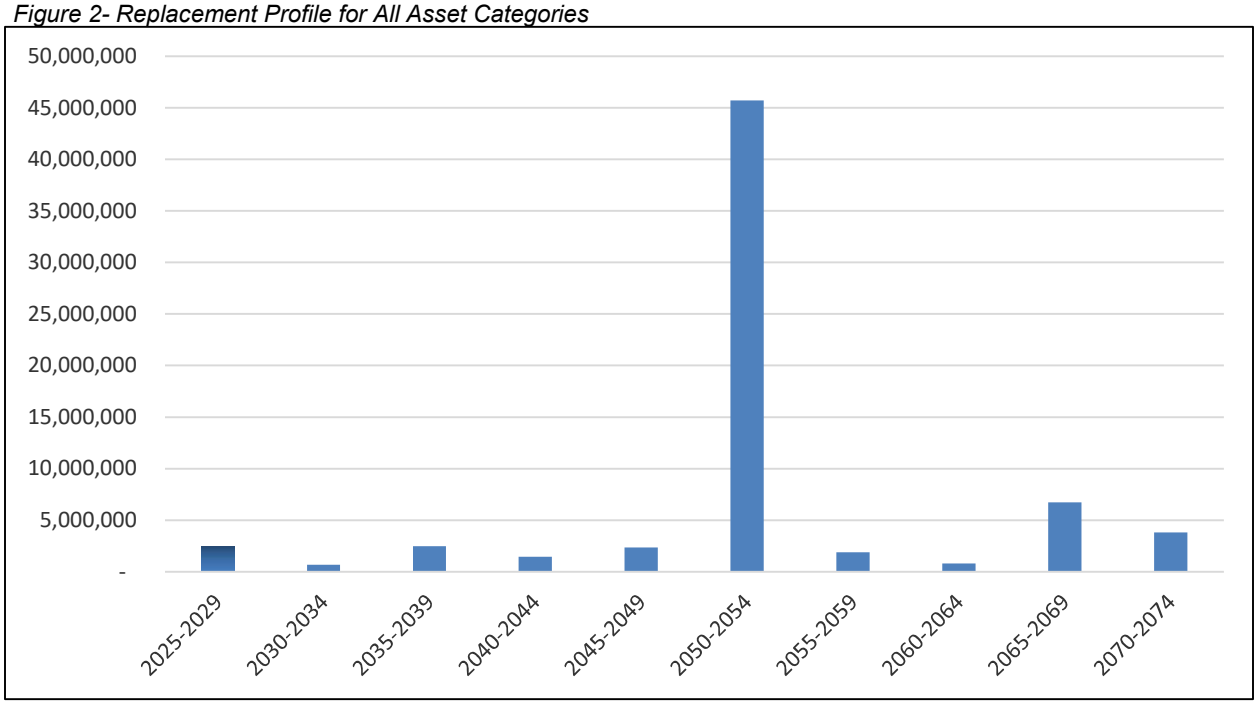
Table 5- Annual Requirements by Asset Category- Excluding Bases

Asset Category	Funding Requirement
Roads	$132,919
Bridges and Culverts	$124,220
Buildings	$19,861
Equipment	$28,255
Vehicles	$126,317
Other Assets	$6,913
TOTAL	**$462,758**

2.4 Asset Replacement Requirements

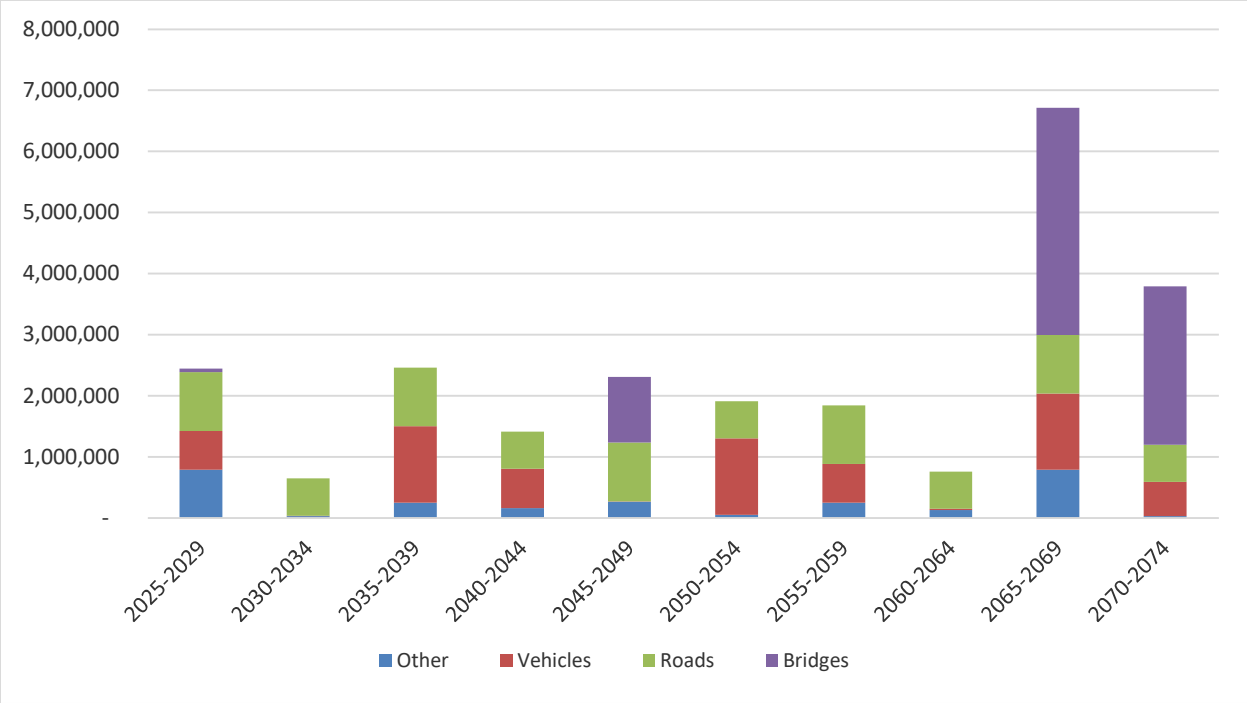
The following chart provides a long-term outlook of the Township's asset replacement needs based on maintenance of the existing asset portfolio and each asset's anticipated useful life. The backlog represents the total investment in infrastructure that has been deferred over previous years, and generally represents the value of assets that remain in operation beyond their useful lives. The significant spike that appears in the 2050-2054 group largely represents the road bases reaching the end of their amortization period.

Figure 2- Replacement Profile for All Asset Categories



If excluding road bases, the forecasted replacement needs are illustrated in the following table.

Figure 3- Replacement Profile for All Asset Categories- Excluding Road Bases



The following sections provide a more detailed overview of the assets in each class.

2.5 Roads

In 2025, the Township undertook a Road Needs Study to inventory and assess the condition of its road infrastructure. The Township's road network spans a total of 133.8 lane km, entirely within a rural setting, and can be broken into two categories by surface type: gravel and low class bituminous (LCB). Per the standards prescribed in O. Reg. 239/02 Minimum Maintenance Standards for Municipal Highways, 34% of the road network is considered Class 6 and therefore not subject to the standards imposed in the regulation. The reminder of the road network is in Class 5. Additional information about the roads is presented in Table 6 below.

Table 6 - Road System Summary

Road Type	AADT	Length (km)	Average Condition Rating	Historical Cost (Dec 2024)	Net Book Value (Dec 2024)	Estimated Replacement Cost	Average Asset Age / Useful Service Life (Years)
Gravel (Loose Top Gravel/Earth)	All	127.6	6.4	2,524,305	1,047,655	1,069,357	12.2
	0-49	59.7	6.0	1,194,229	542,756	605,082	13.46
	50-199	54.8	6.9	1,046,784	410,157	379,638	11.68
	200-399	13.1	6.4	283,292	94,742	84,636	8.00
Low Class Bituminous (LCB)	All	6.2	8.0	514,404	445,297	410,664	3.0
	0-49	-	-	-	-	-	-
	50-199	-	-	-	-	-	-
	200-399	6.2	8.0	514,404	445,297	410,664	3.0
Total		133.8	6.5	3,038,709	1,492,952	1,480,020	

As demonstrated in the table above, the average road condition per the 2025 Road Needs Study is 6.5/10. These ratings represent a weighted average of the condition of all Township roads (weighted by road length) as of July 1, 2025. The Township will undergo a Road Needs Study every five years, with the results used to update the relevant sections of this Plan.

2.6 Bridges and Culverts

The Township's bridge and culvert inventory consists of nine structures, of which six are part of a formal OSIM assessment program. This category encompasses structural culverts, which are defined as any culvert with a span exceeding three metres, non-structural culverts, and bridges. The condition ratings below are based on the 2024 OSIM inspections performed by AMTEC Engineering Inc, where available; age-based condition estimates are used in all other circumstances.

Table 9- Bridge Inventory Summary

Structure	Quantity	Average Condition Rating	Historical Cost	Net Book Value	Estimated Replacement Cost	Average Age/Useful Service Life
Bridges	5	70.4	1,236,801	1,003,567	6,551,020	19.86
Culverts	4	77.6	104,403	82,025	902,192	18.27
Total	**9**	**73.6**	**1,341,203**	**1,085,592**	**7,453,212**	**19.67**

A detailed condition assessment of each applicable structure is included in the 2024 *OSIM Bridge and Culvert Inspection Program*. The Township generally relies on the recommendations provided in the OSIM report to establish a rehabilitation work plan. In 2025, two bridge structures were replaced by structural culverts; the replacement costs estimated above account for the change in structure type.

The results of the biennial structure inspections will be used on an ongoing basis to update the bridge inventory. The next inspection is scheduled to be completed in 2026.

2.7 Buildings

The Township owns four building assets, which are comprised of the municipal offices, Township garage, and a washroom structure and shade structure at Lynch Lake Park. A summary of the Township's building inventory is provided in Table 10, below.

Table 10 - Buildings Inventory

Building	Condition	Year Built/ Last Improved	Age	Historical Cost	Net Book Value	Estimated Replacement Cost
Municipal Offices	FAIR	2023	2	47,252	34,573	150,368
Township Garage	VERY POOR	1980	45	131,456	14,638	563,926
Lynch Lake Washroom	GOOD	2005	20	11,845	6,070	17,765
Shade Structure	VERY GOOD	2024	1	62,366	61,587	62,366
Total				**$252,919**	**$116,868**	**$794,426**

At this time, the Township has not developed a formal condition assessment plan for its facilities. Staff are scheduled to review each facility's condition annually to identify the need for repairs/ upgrades. Results of the inspections shall be used to update the Plan as part of the regular Plan review process, and to inform budgetary requests.

2.8 Vehicles

The Township owns a fleet of vehicles generally dedicated to public works and protective inspection. A summary of the fleet is provided in Table 11 below.

Table 11 - Vehicle Inventory

Vehicle Category	Quantity	Condition	% of Service Life Remaining	Historical Cost	Net Book Value	Estimated Replacement Cost
Public Works Vehicles	7	7.1	66%	834,738	551,273	1,807,000
Protective Inspection	1	3.7	87%	8,233	7,204	8,233
Total	**8**	**7.1**	**66%**	**$842,972**	**$558,477**	**$1,815,233**

An assessment of each vehicle's condition has been conducted through a visual inspection of the critical components and working capability. Unless visual inspections indicate otherwise, condition scores are assigned based on the vehicle's total mileage to date, averaged with its age-based condition rating. Vehicles shall be evaluated on an annual basis to assess their condition and residual lifespan. Results of the evaluation will be used to update the Plan as part of its ongoing review.

2.9 Machinery and Equipment

The administration and operation of the Township is dependent on an inventory of equipment required for daily administrative, public works, winter control, and other services. A summary of the Township's machinery and equipment inventory is provided in Table 12 below.

Table 12 – Machinery and Equipment Inventory

Category	Quantity	Condition	% of Service Life Remaining	Historical Cost	Net Book Value	Estimated Replacement Cost
General Government	3	1.6	0%	110,254	-	238,115
Public Works	3	7.9	74%	30,426	22,498	32,854
Winter Operations	1	7.7	75%	19,130	14,348	19,300
Total	**7**	**2.7**	**23%**	**$159,810**	**$36,846**	**$290,269**

At this time, the condition for each item of machinery and equipment has been established using an age-based formula and no formal evaluation has been undertaken. As best practices for assessing the condition of these assets continue to emerge, the condition rating will be updated and monitored as part of the regular Plan review.

2.10 Other Assets

The Township of Joly owns several miscellaneous assets which are used for the general administration of the municipality. Specifically, this category consists of the Township's accounting software and network server systems. It also comprises all capitalized land owned by the Township.

A summary of the Township's other assets is presented in Table 13 below.

Table 13 – Other Assets Summary

Asset Type	Quantity	Condition	% of Service Life Remaining	Historical Cost	Net Book Value	Estimated Replacement Cost
Land	5	-	-	$9,899	n/a-no replacement	Infinite life
Computer Hardware and Software	2	3.8	30%	$29,734	$8,791	$34,566
Total		**3.8**	**30%**	**$39,634**	**$8,791**	**$34,566**

Due to the relatively low value of these other assets to the Township, condition assessments have been estimated using each asset's age. These assets shall be evaluated on an annual basis for signs of impairment that would impact their residual lifespan. Results of the evaluation shall be used to update the Plan as part of the ongoing review.

3.0 Levels of Service

Municipalities exist for the purpose of providing services to their communities. For most internal and external reporting purposes, these services are normally discussed in terms of eight functional areas including, for example, General Government, Protection to Persons and Property, and Transportation. However, since this Plan is specifically related to the management of assets, levels of service in this Plan are being defined by asset category rather than functional area.

Levels of service are statements describing the degree to which a municipality's services will be provided. Levels of service can be defined based on any number of asset attributes, including safety, reliability, scope, quality, sustainability, etc. O. Reg. 588/17 requires the Township to identify levels of service on both a customer and technical basis.

A customer (i.e., strategic) level of service is a quantitative description of the provided service from the perspective of the community. These typically include descriptions of the function and condition of the available assets.

In contrast, a technical level of service is a quantifiable, internally-focused metric considering what actions (programs, procedures and activities) the municipality needs to undertake in order to provide services at the identified customer level. Simply put, the focus is on what the municipality can do as opposed to what the community is going to receive. In order to be measurable and useful, the technical levels of service are often linked to a performance metric that can be tracked and evaluated over time.

The levels of service provided by a municipality should be established according to five main factors: the community's expectations, the community's ability to pay, the strategic goals of the Municipality, legislative requirements (e.g., Minimum Maintenance Standards for Municipal Highways, O. Reg 239/02), and what the Municipality can be reasonably expected to provide with its available staff resources.

Ultimately, it is Council that defines the levels of service, and in so doing, they must balance three key factors: cost, risk, and performance. Typically, an increase in the level of service (performance) will present less risk but at a higher cost. It must also be noted that the attainment of levels of service is critically dependent on staffing levels. Due to the finite number of working hours for existing staff, and difficulty in recruiting and retaining qualified staff in any capacity, an increase in the level of service in one area is generally only possible by decreasing that in another area unless Council is to consider opportunities for external service contracting.

3.1 Customer and Technical Levels of Service

The following sections outline the Township's current levels of service (customer and technical), and related performance indicators for the technical levels of service. Specific performance indicators have been identified using SMART guidelines[2] that were deemed relevant to the Municipality. These may evolve in future iterations of the Plan.

These levels of service form the basis of the projected expenditures later in this Plan. The targets established for this Plan were based on the current service levels the Township has been able to achieve with the assistance of senior-level government funding. All levels of service marked with an asterisk have been mandated in O. Reg. 588/17.

[2] SMART guidelines state that key performance indicators should be **S**pecific (clear and unambiguous, outline exactly what is expected, who is responsible/involved and how it is to be measured), **M**easurable (a clear procedure for measuring progress), **A**chievable (a realistic target), **R**elevant (to people trying to achieve the target and/or service being delivered) and **T**imely (realistic time frame to achieve the target).

3.1.1 Roads

Objective: to provide a safe and reliable road network that takes people where they want to go at the lowest possible cost for current and future users.

Description	Customer Level of Service
Description, which may include maps, of the road network and its level of connectivity*	The Township's road network spans a total of 66.9 centreline km, which is comprised of 44.4 km of Class 5 roads and 22.5 km of Class 6 roads. Forest Lake Road is the only surface treated road in the Township, receiving the heaviest road traffic, and connects Joly to the neighbouring Township of Strong. Paisley Road is the longest road in the Township, connecting into the Town of Kearney.
Descriptions or images which illustrate the different levels of road conditions (PCI and gravel)*	Surface Treated Roads:  PCI=100  PCI=60  PCI=20

	Gravel Roads:  SAI=90  SAI=60  SAI=10

In general, the Township is not growing at a sufficient rate to warrant the expansion of its road network. Therefore, roads will generally be left as is (i.e. no new roads will be constructed, no currently gravelled roads will be paved, and no currently seasonal roads will be maintained year-round).

Activity	Technical Level of Service	Performance Indicator	Current Level of Service
General	Number of lane-kilometres of each of arterial roads (Class 1 and 2), collector roads (Class 3 and 4), and local roads (Class 5 and 6) as a proportion of square kilometres of land area in the municipality*	n/a	Arterial Roads: 0 Collector Roads: 0 Local Roads: 0.69 lane km/km^2
	For paved roads, the average pavement condition index value*	Average condition rating (PCI)	8.0 (Good)
	For unpaved roads, the average surface condition (e.g. excellent, good, fair, poor)*	Average surface condition	6.4 (Fair)

Complaints	Complaints prioritized using a pre-assessment where possible; response time based on level or urgency, location, complexity of task, and safety concerns	Number of serious complaints received	(data not tracked) Serious complaints responded to within one week of report
Road Access	Roads constructed to provide access to properties, allowing for residential construction and other development.	Percentage of original 100-acre parcels that cannot be accessed by a public or private road.	38.3% of original parcels cannot be accessed by road.
Surface Imperfections	All hardtop surfaces checked for potholes and patched.	Average condition rating Amount of cold mix applied to roads in the year	Roads checked every three weeks 2025: 0 T of cold mix used
Surface Treatment Resurfacing	% of roads/km of roads repaired or replaced each year	Kilometres of roads repaired or replaced each year	None (on average)
Gravel Resurfacing	% of roads/km of roads re-gravelled each year; once per year via tender	Kilometres of roads re-gravelled each year	3 km/year

3.1.2 Bridges and Culverts

Objective: to provide a safe and reliable bridge and culvert network that takes people where they want to go at the lowest possible cost for current and future users.

Description	Customer Level of Service
Description of the traffic that is supported by the municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)*	All bridges in the municipality predominantly support motor vehicles, and are located on roads with an AADT ranging from 50-399. Heavy transport traffic is predominantly a result of work performed by the municipal Public Works staff, with occasional traffic resulting from the local aggregate pits and logging operations. Emergency vehicles are an infrequent source of traffic on the Township's bridges.
Description or images of the condition of bridges and how this would affect the use of the bridges*	Kent's Mill Road Bridge (BCI 71.2): This bridge, with an unknown construction date, is overall in good condition. The bridge's timber deck is scheduled for replacement in 2025. There are no restrictions on the use of the bridge at the present time. Hill 14 Road Bridge (BCI 69.3): This bridge was constructed in 1986 and is in fair condition overall. There are some signs of damage to the guiderails, and settlement of the retaining walls. There are no restrictions on the use of this bridge at the present time. Strong/Joly Boundary Road Bridge - North and South (BCI 61.9): These bridges are near the end of their useful lives, and showing signs of structural distress. Both structures are currently load-posted at 6 tonnes per axle. Complete replacement is scheduled for 2025, and are planned to be replaced with culverts. Brennan's Road Bridge (BCI 87.6): Constructed in 2014, this is in good condition overall. There is a need for routine cleaning and minor repairs to the guiderails and barrier posts. Sand Hill Road Culvert (BCI 68.9): A structural culvert installed in 2014, this is overall in good condition. End treatments are recommended, as well as repairs due to minor guiderail impact damage.

Activity	Technical Level of Service	Performance Indicator	Current Level of Service
General	Bridges suitable for all traffic, meaning they do not have any loading or dimensional restrictions*	Percentage of the bridges in the municipality with loading or dimensional restrictions	Two (40%) of bridges with load restrictions
	For bridges, the average bridge condition index value*	n/a	70.36
	For structural culverts, the average bridge condition index value*	n/a	68.90
Inspections	Perform bi-annual OSIM inspections	Percentage of bridges inspected by an approved engineer	Inspections done bi-annually to 100% of bridges
Quality	Bridges maintained at fair condition or greater	Number of structures with a BCI <40	None below 40 BCI
Scope	Number of bridges in the Township Number of culverts in the Township	n/a	Bridges - 5 Culverts - 4

3.1.3 Buildings

Objective: to have facilities suitable for their intended use that provide for a safe user environment at the lowest possible cost for current and future taxpayers.

Description	Customer Level of Service
Description, which may include images, of the municipal buildings by function	The Township office is a roughly 768 square foot building that is used by the administration and by-law enforcement staff. It houses the Council chambers, one separate office, a kitchen area, and washroom. Adjoining the municipal office is the Township Garage. This facility is approximately 2,400 square feet, and is used to store public works equipment and related records. The Township owns a public washroom facility at Lynch Lake Park, which was constructed in 2005 and is overall in fair condition. Finally, in 2024 the Township constructed a new shade structure at Lynch Lake Park. It is openly available to the public for use outside of the winter months, and is in very good condition.
Description of the condition of the buildings, and their suitability for intended use	The Township office has recently undergone substantial interior renovations; in 2023, the flooring, drywall, ceiling tiles, and fixtures were replaced and are in good condition. There is generally sufficient space for the small municipal staff complement; however, the Council meeting area is cramped and there is insufficient room for large public gatherings. The Township garage is overall in fair condition, with upcoming roofing and electrical repairs required. It does not have sufficient space to house all of the Township's equipment, and winter sand is stored outdoors.

Activity	Technical Level of Service	Performance Indicator	Current Level of Service
General	Square feet of buildings by function	Square feet of buildings by function	Administration- 768 Public Works- 2,400 Recreation- 432
Condition	Overall condition index (good/fair/poor)	% of facilities whose condition is rated poor or worse.	Overall: 3.0 (Poor)
Accessibility	All public facilities are useable by individuals with accessibility needs.	Percentage of facilities that are accessible.	100%
Availability	Facilities are available for public use during posted hours.	Number of days facilities are unexpectedly closed.	2 days
Quality	Facilities are maintained at a condition of fair or greater.	Percentage of facilities with a condition rating of poor or below.	One facility (25%)

3.1.4 Vehicles

Objective: to have safe and reliable vehicles to facilitate the provision of municipal services at the lowest possible cost for current and future taxpayers.

Description	Customer Level of Service
Description of vehicles and their intended use	The Township owns one dump truck: a 2022 Freightliner 114SD. This is used during the summer for hauling materials to various job sites, and continuously during the winter as a snow plow. One pickup truck, a 2019 GMC Sierra 1500, is also in the Public Works fleet. This truck is used to transport personnel and small materials to job sites, as well as for road patrols, inspections, and large vehicle refueling. The GMC is nearing the end of its useful life, and is scheduled for replacement in 2028. The Township also owns a 1998 Daewoo Loader. This is predominantly used for loading materials into dump trucks for road maintenance and construction. It is also used on occasion for clearing snow, ditching, and clearing obstructions in emergency situations. In 2022, the Township purchased a new grader; a Toromont 140 13A. This runs continuously during the summer months to smooth and pack the gravel roads, and is also used infrequently during the winter for ice blading. A backhoe, purchased in 2002, is also in the fleet. This is a multipurpose frontline machine that performs various road maintenance tasks, including snowplowing, changing culverts, and ditching. It can also be used in emergency situations to clear obstructions from municipal roadways. It is scheduled to be replaced in 2027. Finally, the Township is a partial owner of a 2020 Chevy Silverado pickup. This vehicle is used by the By-law Enforcement Officer in carrying out their in-field responsibilities, and was purchased from the Joint Building Committee in 2024.

Activity	Technical Level of Service	Performance Indicator	Current Level of Service
General	Number of vehicles by functional area	n/a	Public works- 7 Protective Inspection- 1
	Overall fleet condition index	n/a	Overall: 7.1 (Good)
Downtime	Lost service capacity from out-of-operation vehicles (# of days/280 that the vehicle is available for use)	Average downtime as a percentage of total annual hours	2.36% downtime High: 5.4% (backhoe)
Quality	Fleet maintained at a condition of fair or greater	Percentage of fleet where the condition is rated poor or lower	37.5% (3/8) rated poor or lower
Maintenance	All regularly scheduled maintenance is performed in accordance with the vehicle manual, at a minimum. Vehicles are to be maintained in a clean condition and washed on a regular basis to remove dirt and/or road salt.	n/a	Regularly scheduled maintenance performed as per vehicle's schedule. Annual inspections for plow truck.

3.1.5 Machinery and Equipment

Objective: to have safe and reliable equipment to facilitate the provision of municipal services at the lowest possible cost for current and future taxpayers.

Customer Level of Service	Description
Description of the types of equipment and their intended use	In 2023, the Township leased a Toshiba photocopier to replace its aged unit that was previously purchased in 2015. This is used daily for printing, scanning, and faxing duties in the administrative office. The copier is serviced annually and is generally in good condition. The Township owns a propane-operated backup generator at the municipal office, which is used to provide power to certain outlets in the case of an extended power outage. It is serviced annually, was purchased in 2012, and is overall in poor condition. In 2011, the Township paid for a solar panel system to be installed, which generates monthly revenue based on actual electricity generated. Public Works equipment includes a GPS (2018) and two-way radio (2021) system. Both pieces of equipment are in fair or better condition. The GPS system is used to track data on the operations of the municipal fleet, while the radio serves as the primary means of communication between Public Works staff. Finally, the Township owns a culvert steamer which was purchased in 2022, which is used to unfreeze driveway and other small culverts in the springtime. The steamer is in good condition.

Activity	Technical Level of Service	Performance Indicator	Current Level of Service
General	Number of equipment assets by functional area	n/a	General Govt- 3 Public Works- 3 Winter Ops- 1
	Certain pieces of equipment rented where the frequency of use does not warrant a purchase	Total spent on equipment rentals/contracted services in the year	2025: $5,017 Sweeping, excavating services contracted out
	Overall equipment condition index	n/a	Overall: 2.7 (Poor)
Quality	Equipment maintained at a condition of fair or better	Percentage of equipment where the condition is rated poor or lower	42.9% (3/7) rated poor or lower
Maintenance	All regularly scheduled maintenance is performed. Other repairs made as required.	Service days lost due to equipment breakdowns	17 days

3.1.6 Computer Hardware and Software

Objective: to have a functional, secure and reliable computer network and software environment, enabling data collection, management, and retention at the lowest possible cost for current and future taxpayers.

Customer Level of Service	Description
Description of the computer hardware/software owned by the Township	The Township historically utilized Munisoft as its accounting software program. In 2025, a change was made to TMM for taxes and Quickbooks for the remainder of the software systems. However, functionality with Quickbooks is limited, and the Township will be seeking an alternative solution during the planning period. In addition, the Township owns a network system comprising of a server, firewall, switch, and multiple desktop computers. This network provides the basis on which administrative services are delivered.

Activity	Technical Level of Service	Performance Indicator	Current Level of Service
General	Number of computer hardware/software assets by functional area.	n/a	General Gov- 2
	Overall condition index	n/a	3.8 (Poor)
Quality	Assets maintained at a condition of fair or greater.	Percentage of computer hardware/ software assets in poor condition or lower	100% (2/2)
Reliability	Data maintained and backed up reliably, eliminating opportunities for loss or fraud.	Number of data loss incidents in a fiscal year	1 (2025)

3.2 Issues and External Trends Affecting Levels of Service

There are a variety of internal and external factors which may impact the Township's ability to meet its target levels of service as well as the evolution of its service targets. The following is a summary of the more significant external trends and factors which could impact the provision of sustainable services to the public.

Fiscal Capacity: Significant financial investment is required to maintain municipal infrastructure and provide desired levels of service. Municipalities typically have limited means for raising adequate and sustainable funding to meet both operational and capital requirements, and as a result are heavily reliant on senior-level government funding. The Province has indicated an intention to download additional costs to municipal governments, which will further stretch limited funding and make it more difficult to finance capital expenditures at target levels.

Accessibility Standards: Existing and future requirements with respect to accessibility standards may necessitate upgrades to buildings and facilities which are not currently anticipated under the Plan.

Limited Population Growth: Population growth and other demographic changes serve as a significant demand driver for current and future assets. Limited growth in the development and population of the Township is anticipated, which makes it difficult to raise the tax dollars necessary to fund infrastructure spending at an optimal level.

Crown Land: An extremely large portion of the Township remains as crown land. While opportunities have emerged in recent years for municipalities to participate in crown land disposition processes, financial constraints prohibit this and the existence of such crown land serves as a major barrier to future development.

Weather Events and Climate Change: Broad environmental and weather patterns have a direct impact on the reliability of critical infrastructure assets. Although the future impact of climate change is uncertain, it is widely believed that climate change will lead to more extreme weather events. As such, the impact of weather events on municipal infrastructure will need to be considered in defining the levels of service.

The impact of weather events on infrastructure varies with location and topography. Examples of specific impacts on Township assets include the washout of gravel roads due to intense rainstorms, damage to roads and bridges from meltwater flooding, and a decrease in machinery lifespans resulting from increased usage. The Township has, in two consecutive years, experienced significant damage to municipal roadways caused by natural disasters, necessitating activation of the MDRA.

Community Expectations: There is a recent trend towards heightened standards for health, safety, and environmental protection. Although the general public often has an opinion on how public services should be delivered, there is a disconnect between the level of service expected from the community and what it is willing to pay for. Increased resources for monitoring and managing these expectations are required to ensure the right balance of service level, cost, and risk is maintained.

Organizational Change and Capacity: Formal asset management is a labour-intensive process, and requires a significant depth and breadth of knowledge across the organization. The amount of staff time required for this task is expected to increase over time, as new reporting requirements under O. Reg. 588/17 take effect.

It is unlikely that the Township will reach a level of operational sophistication whereby implementation of more advanced asset management software would be beneficial. At this time, any such programs would be cost-prohibitive, and Township staff do not have sufficient time to maintain such databases. While the Township can continue to contract asset management practices outside of the organization, its staff require some level of knowledge of the regulation and ability to integrate practices into their day-to-day work. This will further stretch the workload of staff which are already tasked beyond capacity.

3.3 Target Level of Service

As one of the 2025 requirements under the legislation, the Township is required to establish a target level of service for all asset classes.

It is acknowledged that the Township of Joly has an extremely small residential tax base, meaning that a small increase in the tax levy causes a disproportionately large impact on an individual ratepayer. For that reason, through discussion with staff, it was determined that the Township would attempt to achieve full funding only for certain asset classes, specifically:

- Roads
- Machinery and Equipment
- Buildings
- Computer Hardware and Software

Consequently, any asset replacements scheduled in the Bridges & Culverts and Vehicles asset classes will require debt financing or grant funding through a higher level of government.

In order to achieve this target, the Township requires annual capital budget funding of $212,221. Current, predictable capital budget funding totals $133,783. Therefore, the Township will be required to increase their tax levy by 8.4%, or approximately 1.6% per year over five years.

Once the target level of service has been achieved, the Township should thereafter increase its capital levy by no less than CPI annually, to ensure that adequate funding remains in place.

Further, any additional debt servicing costs incurred over and above current levels will require an equivalent tax levy increase to fund.

4.0 Asset Management Strategy

An asset management strategy establishes a set of planned actions that will enable the Township's assets to provide the desired levels of service in a sustainable manner, while managing risk, at the lowest possible cost to municipal taxpayers. Consequently, establishing a strategy involves considering the different actions over the lifecycle of each asset that would allow it to provide the needed level of service, and the potential risks and costs associated with each option, as a means to extract the maximum possible value. These actions can be carried out on a planned schedule, or upon the realization of specified conditions.

Acquiring assets and simply letting them deteriorate until they are no longer useable is a strategy commonly followed by small municipalities. Conventional wisdom suggests, however, that within most asset classes there are key times during the lifecycle that smaller maintenance or rehabilitation investments can increase the asset's lifespan, thereby delaying the need for replacement and lowering the overall cost of ownership. It is generally accepted that doing reactive replacement of assets in the worst condition, the approach often followed by municipalities in the past, has the highest lifecycle cost of all available options.

Many industry studies have been conducted around this theme, particularly in relation to roads and bridges. One such analysis is presented in **Appendix E**. In this lifecycle analysis, it is demonstrated that a pavement management approach of strategic preventative maintenance and rehabilitation is approximately 23% cheaper than one of performing no preventative maintenance and simply replacing the asset at the end of its useful life. The appendix also provides an example of a strategic bridge maintenance program, which is approximately 50% cheaper than a strategy of no maintenance.

In another published study, using industry standard activities and costs, the costs for various road activities per year of added life was calculated. These are presented in **Table 15**. This study supports the analysis presented in **Appendix E**, and shows that if applied at the right time in an asset's life, maintenance and rehabilitation activities have a lower cost per year of life added than reconstruction does.

Table 15 – Cost Per Year of Added Life

Treatment	Cost per m^2	Additional Years of Life	Condition Range	Cost per Year of Added Life
Paved Road – Reconstruction	$140	35	25-0	$4
Paved Road – Resurface	$50	18	50-26	$2.77
Paved Road – Crack Sealing	$2.50	4	75	$0.63
Surface Treatment – Reconstruction	$130	25-30	25-0	$4.40
Surface Treatment – Resurface	$50	15-18	50-26	$3.33
Surface Treatment – Crack Sealing	$2.00	4	75	$0.50

In yet another analysis, it was determined that timely maintenance and rehabilitation activities could extend the useful life of road assets as follows:

- Paved Roads – increase lifespan from 25 years to 58 years;

- Surface Treated Roads – increase lifespan from 20 years to 33 years;
- Gravel Roads – increase lifespan from 10 years to 16 years.

The above examples are three of many studies that illustrate the potential benefits of abandoning the historical strategy of “fix it once it’s broken” in favour of a strategy of “fix it before it breaks” (hereinafter referred to as the “preservation management approach”). Ideally, over time, as additional asset and financial data becomes available, the Township will be able to conduct such analyses on its own assets. However, at present the Township does not have the internal resources to do this and has instead accepted the general applicability of these best practices to its own assets.

The full application of the preservation management approach outlined below is not feasible in the short term. Under this approach, staff time must be diverted away from their traditional duties towards monitoring the condition of the assets and preventative maintenance activities. Additionally, with an aged infrastructure and many assets in a condition beyond the point where preservation management techniques may be of benefit, the amount of funds required to address the most significantly deteriorated assets would leave little to no resources for maintaining assets currently in good condition.

Consequently, it is the Township’s intention to gradually move towards this approach by applying the best management practices outlined below to new/recently rehabilitated assets when financially feasible. This will require the cooperation of Council and staff; Council must allocate sufficient resources to implement best management practices, and staff must recommend and employ best management practices.

In addition to moving towards the preservation management approach, the Township will immediately incorporate the following generic strategies in their capital planning:

- non-essential capital projects will not be undertaken at the expense of preservation management activities;
- in lieu of delaying projects or purchasing specialized equipment, use of external contracted services will be considered;
- additional assets will not be constructed/acquired without considering the ability to maintain those assets long-term;
- the Township will endeavor to work with neighbouring municipalities on joint purchasing, wherever possible, to achieve cost savings;
- for new assets, the financial viability of renting versus ownership will be considered;
- as a means to control demand for increased levels of service, local improvement charges will be considered when increases in service level will benefit a specific group of taxpayers;
- the Township will be prepared to capitalize on senior government funding opportunities as they arise.

4.1 Condition Assessment Programs

The preservation management approach focuses on consistently taking optimized intervening actions throughout the entire lifecycle of an asset, rather than waiting for the asset to disintegrate before intervening. Since the effective application of a preservation management approach involves actually knowing/being able to predict the condition of each asset, a necessary

component of the strategy is to establish condition assessment protocols. As part of the Township's strategy, the following condition assessment approaches are planned:

Roads - A road needs study, prepared by a professional engineer, will be completed every five years. The consulting engineer will be asked to prepare a prioritized 10-year replacement program, utilizing risk-based analysis and within the scope of available funding. In addition, the consulting engineer will be requested to provide recommendations for appropriate road treatments based on industry best practices. Municipal staff should review the per-unit cost estimates with the consulting engineer, to ensure reasonable local-area rates are incorporated. Prior to inclusion in subsequent annual budgets, proposed roads are to be reviewed in the field to ensure the suggestions of the road needs study reflects the actual condition of the road assets.

Bridges and Culverts – Ontario municipalities are mandated to inspect all bridges and culverts over 3 metres in span according to the Ontario Structure Inspection Manual (OSIM). An OSIM inspection on all qualifying bridges and culverts will be conducted every two years by a qualified engineer, as required by the Ministry of Transportation. The consulting engineer will be requested to provide a ten-year work schedule, incorporating cost-effective preventative maintenance and rehabilitation work as appropriate, in addition to recommending if supplementary studies on particular bridges are required. Recommendations in the OSIM reports will form the basis of planned capital expenditures.

Buildings – Staff will attempt to develop a building assessment checklist for use in performing annual inspections of municipal buildings. A rating system is to be established that evaluates the condition of the components of the building and of the building overall. From there, it can be determined which planned actions should be taken as part of the asset management strategy.

The Township is not contemplating formal building assessments performed by a trained industry professional (typically architects or engineers) at the present time. In such assessments, various components of the building (site components, structural components, electrical components, mechanical components, vertical movement) are inspected, and a facility condition index (FCI) is calculated. The FCI is an industry standard numerical summary of a building's condition, which measures the value of required improvements as a percentage of the total building value. In the future, the Township may consider having a formal inspection completed before any major refurbishment or rehabilitation is performed on a building.

Vehicles and Machinery– Vehicles and machinery undergo routine inspections as required by legislation and operational needs, the frequency and nature of which depend on the use of the asset. Vehicles and machinery are serviced both in-house and externally depending on the level of technical ability required. A more proactive preventative maintenance program is not currently being considered.

Other Assets - the other asset inventory is comprised of computer hardware and software assets, which require specific, independent evaluation against physical damage, technological obsolescence, and loss of functionality. While primarily used internally, these assets pose a significant risk due to the threat of data loss and/or ransomware. As a result, these assets must be updated on a scheduled basis, and replaced at fixed intervals.

4.2 Risk Assessment

When establishing levels of service, when designing strategies to meet those levels of service, and when distributing available funding over competing projects, the risks associated with various courses of action must be considered. Risk can be viewed as a function of the following:

(a) the probability of an event occurring; and

(b) the consequence of an event occurring (the effect of changing the level of service, having an asset fail, or of not completing a project).

The Township has decided to employ a qualitative method of assessing the risk of various asset management options in accordance with ISO Risk Management standards.

In its simplest form, the probability of failure can be determined by considering how frequently an event has occurred in the past or is projected to occur in the future. It is worth noting that, in this context, "failure" refers not to a complete loss of utility, but to any inability for the asset to perform its normal function. The following table can be used to assign a "probability" score to each asset:

Table 16: Probability Ratings

Grade	Value	Probability Rating	Frequency Descriptor
A	Virtually Certain	>80%	Will or has occurred multiple times in a single year, over a multi-year period
B	Probable	50-80%	Will or has occurred once per year on average
C	Possible	20-50%	Occurs around once every five years, on average
D	Unlikely	5-20%	May occur within the next 20 years
E	Rare	<5%	Unlikely to occur within the next 20 years

Further, the consequence of failure can be considered as a function of five impact areas: health and safety, community, legal, financial, and environmental. Each of these areas have been incorporated into the following table:

Table 17: Consequence of Failure Matrix

	Value	Health and Safety	Community Impact	Legal Liability	Financial Impact	Environmental Impact
A	Catastrophic	Threat of death, both of staff and the public	Immediate and prolonged impact to the community. Reaction is substantial and requires a significant outlay of resources to rectify.	Township faces a serious and credible threat of multiple lawsuits arising, which may exceed the available insurance coverage. Additional threat of class-action suits.	Budgetary impact above $150,000 (total annual capital budget). All other projects postponed; debt financing required.	Significant impact to natural environment which requires a large outlay of resources to rectify; multiple years to restore; MNR notified

B	Major	Prolonged hospitalization and permanent injuries; not life-threatening	Community concern is raised quickly and to a high level. Some resources are required to resolve issues.	Township faces a serious and credible threat of multiple lawsuits arising, which may exceed the available insurance coverage. Future insurability questionable.	Budgetary impact from $100-150,000; debt financing required; some projects postponed	Impact to natural environment requiring at most one year to rectify
C	Moderate	Hospitalization for a single day at most. Injuries present, but not life-altering	Community raises concerns, however these can be dealt with internally without escalating to a higher level.	Township faces a threat of one or more lawsuits, however the total damages are expected to be within insurance limits. Some concern to future insurability.	Budget impact from $50-100,000; debt not required, some capital projects postponed	Some impact to the natural environment requiring up to six months to rectify
D	Minor	Minor injuries occur; visit to hospital not required	Issues are noted by the public, but are not brought forward for action	Township faces a threat of one or more lawsuits, however the total damages are expected to be within insurance limits. No threat to future insurability.	Budget impact from $10-50,000; may be managed with existing surplus, no debt required	Minor damages to the environment which require at most one month to restore
E	Insignificant	No injuries	Little or no recognition of the issue by the public	Little or no potential for lawsuits or damage to insurability.	Budget impact less than $10,000	No negative impact to natural ecosystems

Once both probability and consequence factors are assigned, these two matrices culminate in the assignment of a risk level to the asset that can be used to help prioritize projects under limited financial capacity.

Table 18- Matrix

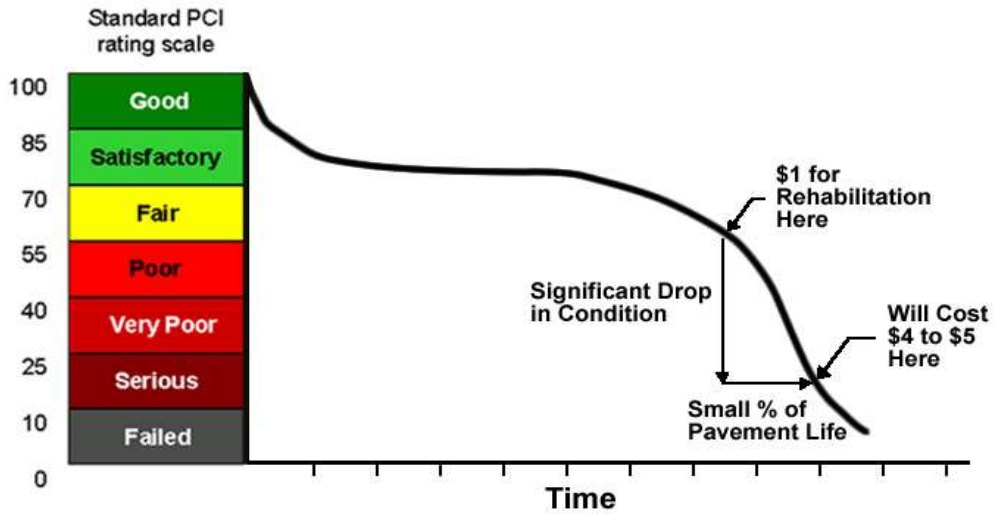
Likelihood	Consequence				
	E Insignificant	D Minor	C Moderate	B Major	A Catastrophic
A- Certain	Medium	Medium	High	High	Extreme
B- Probable	Medium	Medium	Medium	High	Extreme
C- Possible	Low	Medium	Medium	High	High
D- Unlikely	Low	Low	Medium	Medium	High
E- Rare	Low	Low	Medium	Medium	Medium

4.3 Asset Management Strategy Roads – Best Practices Framework

4.3.1 Roads Best Management Practices

As discussed in the introduction to this section, extensive industry research has proven that the key to managing a road network is the timing of maintenance and rehabilitation activities. This idea evolves from the fact that deterioration of a road over its lifespan is generally non-linear. A road generally provides a constant, acceptable condition for the first part of its service life and then, as defects occur, begins to deteriorate very rapidly. If the proper work is not completed during this deterioration phase, surface defects and road drainage can be affected to the point that base failure results and reconstruction of the road is the only available option. **Figure 4.3.1** illustrates the underlying principle in support of a preservation management approach to pavement infrastructure. The principle also has application to each of the classes of roads maintained by the Township. Significant cost savings will result from proactive intervention rather than simply waiting as long as possible before performing maintenance.

Figure 4.3.1 - Typical Service Life of an Asphalt Pavement



Over a road's lifecycle, depending on the condition of the road and the nature of the defect, there are number of different maintenance, rehabilitation and replacement activities that are recommended to minimize the cost of keeping the road in acceptable condition. These can generally be categorized as: preventative maintenance; rehabilitation; replacement/ reconstruction. The thresholds for when work activities should be applied coincide approximately with the condition of the assets as shown below:

- Very Good Condition (condition rating 76-100) – preventative maintenance phase: apply relatively low-cost preventative maintenance activities such as crack sealing on paved and surface treated roads
- Fair (condition rating 50-75) – rehabilitation phase: resurface options such as mill & pave, asphalt overly, single and double surface treatments
- Poor (condition rating less than 50 for roads that exhibit defects attributable to the failure of the base soil layers beneath the surface) – reconstruction phase

Preservation management treatments for each type of road are discussed further below.

4.3.2 Preservation Management Approach for Roads

The Township intends to rely on recommendations in its Road Needs Studies to implement the preservation management strategy for the management of its roads. Each of the preservation management activities for gravel, paved, and surface treated roads identified below are guidelines only. Road deterioration rates and the nature of the deterioration will dictate when actions should be taken and what kind of treatment is most appropriate. The treatments outlined below should be considered in any future updates of the Road Needs Study and recommendations on the specific treatments required should be documented and prioritized by the consulting engineer.

A. Gravel Roads

Gravel roads require frequent maintenance, as wheel motion forces material to the outside as well as in between travelled lanes, leading to rutting, reduced water run-off, and eventually severe road deterioration. If interrupted early enough, this deterioration process can be prevented; simple regrading and compaction is sufficient, with material being pushed back into the proper profile. In addition to this, lifecycle activities including gravel spot and section replacement, dust abatement, ditch clearing, and roadside brushing can help extend the lifespan of a road. Through these perpetual maintenance activities, full reconstruction of gravel roads can be avoided.

A preservation management approach for this type of road, presented as a guideline only, is outlined in the following tables.

Table 19 – Preservation Management Approach - Gravel Surface

Action	Frequency
Regrade surfaces to maintain smooth/safe driving surface and proper crossfall	As needed. Generally 2-3 times per year for higher volume roads; 1-2 for lower volume roads
Add calcium to tighten surface, retain aggregate and reduce dust	Each spring on all roads of higher volume and as needed during summer months. OGRA recommends 4t per kilometer
Ditch and brush rights-of-way to improve roadbed drainage and safety	Complete road network every 10 years

Table 20 - Capital Activities – Gravel Roads

Action	Frequency
Add layer (75mm) of granular material to road surface	Every 3 years for class 4 and 5 roads; every 5 years for class 6 roads
Base and sub-base improvements	As needed or as dictated by traffic volumes
Reconstruct/convert to hard top	As dictated by traffic volumes

B. Surface Treated Roads

A guideline preservation management strategy for surface treated roads is presented in the following table.

Table 21 – Preservation Management Approach – Surface Treated Roads

Activity	Age (Years)	Condition Rating	Service Life Extension (years)
Slurry seal	3	8	4
Slurry seal	6	7	3
Double surface treatment	10	6	5
Pulverize and DST	14	<4	8

In addition to the above-noted preservation approach, the following best management practices should be employed to preserve the surface, extend the service life, and reduce lifecycle costs of surface treated roads:

1. Surface treatment should be applied to the entire road platform, from “grass to grass”, including any shoulders. This will eliminate grading on surface treated roads, which has a tendency to damage the edge of the surface treatment and cause premature failure of the surface.

2. New technologies should be utilized where they can be demonstrated to reduce lifecycle costs, such as fibre-reinforced surface treatment. This technology can be used to mitigate reflective cracking when a single or double surface treatment is applied over an aging surface. It can eliminate the need for pulverizing the underlying surface in certain situations and can reduce overall costs.

3. Drainage and culvert needs should be assessed prior to any significant renewal or rehabilitation strategy and any improvements should be completed concurrently. This will eliminate the need to cut/excavate a relatively new surface to replace a culvert.

4. Ditching and clearing (brushing) of the rights-of-way should take place to improve roadbed drainage and safety.

C. Asphalt Roads

Asphalt surfaces are the smoothest, most durable, and most expensive road surface that could be used by the Township. Asphalt provides a constant, acceptable condition for the initial portion of its service life but then begins to deteriorate rapidly as it ages. Surface defects such as cracking and raveling are the first signs of deterioration. If left untreated, the pavement will rapidly deteriorate to the point where reconstruction is the only option. A preservation management strategy can mitigate this by applying renewal treatments earlier in the pavement's life before the conditions deteriorate too far to be effective. **Table 22** below summarizes preservation management activities to be considered for asphalt roads:

Table 22- Rural Asphalt Roads

Activity	Age (Years)	Condition Rating	Service Life Extension (years)
Crack seal	2-6	9	2
Slurry seal/ Microsurface*	4-8	8	4-6
Overlay	12-15	6-7	10
Pulverize and Pave	20-25	<5	20
Reconstruct	30	<4	30

*Slurry seal can be used on lower volume paved roads (less than 1000 vehicles per day). For roads with volumes in excess of 1000 vehicles per day, microsurfacing should be used.

In addition to the above noted preservation approach, the following best management practices should be considered to extend the service life and reduce the lifecycle cost of asphalt roads:

1. Review the condition of other infrastructure, particularly underground infrastructure, prior to implementing any major renewal or rehabilitation of the pavement. Any repairs or capital upgrades to other infrastructure should be coordinated (refer to Section 4.7 for discussion on Integrated Capital Planning). This should reduce utility cuts in newer asphalt.
2. Repair potholes in the surface in a timely fashion to prevent saturation and weakening of road base.
3. Undertake regular shouldering program of rural paved roads to promote proper drainage. Poorly maintained shoulders allow surface water to pond and saturate the road base, which weakens the base and leads to cracking at the edge of pavements.
4. Undertake a ditching program to ensure there is adequate drainage for road base on rural roads. This will reduce the likelihood of structural distresses caused by softening of the road base due to poor drainage.
5. Specify the appropriate type of performance graded asphalt cement for the location.
6. Undertake a clearing program to reduce shading of the roadbed and remove roots/vegetation from the road base.

A high-level approach to establishing an appropriate road budget based on implementing best management practices for gravel, surface treated and paved roads is presented in **Appendix D**.

4.4 Asset Management Strategy Bridges and Culverts – Best Practices Framework

4.4.1 Bridges and Culverts Best Management Practices

As with roads, the structural integrity of bridges and culverts do not fall constantly over time. A new bridge or culvert generally provides a constant, acceptable level of service and condition for the first part of its service life and then begins to deteriorate more rapidly as time progresses. Studies have shown that it is more cost effective to apply more frequent, less costly maintenance and rehabilitation treatments to structures rather than waiting for serious signs of structural failure to become noticeable.

4.4.2 Preservation Management Approach for Bridges and Culverts

The Township intends to rely on recommendations provided in biennial OSIM inspections to implement a preservation management strategy for managing its bridge assets (including culverts larger than 3 m). Each of the preservation management activities identified below should be considered as part of the biennial structure inspections. Deterioration rates and the type of deterioration will dictate when action should be taken and what kind of treatment is most appropriate. Recommendations on the specific treatments required should be documented and prioritized in the OSIM Inspection. A 10-year plan for bridge expenditures should be developed as part of the engagement.

A. Bridge Management Strategy

Bridges are complex structures that generally transmit live loads directly though their structure to a foundation, and are made up of several elements including the foundation, the substructure (abutments or ballast walls), and the superstructure (deck). Bridges are designed with a 75-year service life, but to achieve this life span, intervention at periodic times is required. Through rehabilitation, it is also possible to extend this lifespan to approximately 100 years, delaying the need for costly replacement. **Table 23** summarizes a preservation management strategy that is applicable to bridges:

Table 23 - Bridge Preservation Management Strategy

Activity	Age (Years)	Condition Rating	Service Life Extension (years)
Minor Repairs	10-20	80-90	2-5
Minor Rehabilitation	30	65-70	20
Major Rehabilitation	50-60	50-60	40
Replacement	75	<40	75

Over the life of a bridge, two minor rehabilitations and one major rehabilitation can be anticipated. Minor rehabilitations typically involve repairs to the bridge deck, railing system, deck joints, and other concrete components. A major rehabilitation would include a full deck replacement.

B. Structural Culvert Management Strategy

Culverts transmit loads through fill to a foundation. Structural culverts are typically designed with a 75-year service life, similar to a bridge. However, in order to achieve this life span, careful

selection of culvert material considering the site chemistry and culvert exposure is required. Periodic intervention is also required. **Table 24** summarizes a preservation management strategy that could be applied to culverts:

Table 24 - Culvert Preservation Management Strategy

Activity	Age (Years)	Condition Rating	Service Life Extension (years)
Culvert material/ coating Selection	at Design		
Minor Repairs (patching, re-coating - partial or full, cleanout etc.)	10-20	80-90	2-5
Minor Rehabilitation (e.g. waterproofing, coating)	25	65-70	20
Major Rehabilitation (overlay, invert paving, relining etc.)	35 – 50	50-60	40
Replacement	75	<40	75

In addition to the above-noted preservation approach, the following best management practices should be employed by the Township to extend the service life and reduce lifecycle costs of bridges and culverts:

1. Undertake minor bridge repairs as recommended in the OSIM Inspection reports. Minor repairs are critical as they address problems while they are still small and cost-effective to repair. Repairs may include handrail repair, pothole patching, concrete patches, repair to joint armouring, tightening steel bridge hardware, regrading of approaches or embankments, erosion prevention, crack sealing, etc.

2. Sweep and clean bridge decks and deck drains each spring. This will allow for inspection of the bridge surface and will promote positive drainage on the deck. In turn, this will eliminate standing water that has the potential to penetrate the wearing surface and cause premature deterioration of the deck.

3. Replace expansion joints as soon as they are damaged or worn. Expansion joints are flexible joints between the bridge deck and the approach slabs on a large bridge. Once damaged, they allow water to penetrate down to the abutments and bearing seats, which causes premature deterioration of these components. Expansion joints are relatively inexpensive, and their timely replacement can delay very costly rehabilitation work on the sub-structure.

4. Complete deck condition assessments (DCA) on any larger structures as outlined in the OSIM reports. DCA's involve exploratory work to properly assess the extent of deterioration of the deck. They will help define the extent of rehabilitation required on a bridge deck.

5. Undertake localized or complete painting of steel girders, truss members, or other steel members as recommended by OSIM inspections.

6. Clean out culverts as needed to prevent standing water or sediment collection in the culvert.

7. Stabilize embankments and inlets/outlets to prevent erosion and “piping” around the culvert. Ensure appropriate headwall/cutoff walls or clay seals are in place.

8. At the time of replacement, consider alternatives such as using pre-fabricated steel structures to replace small bridges on rural, low volume roads.

4.4 Asset Management Strategy Buildings – Best Practices Framework

Due to the high cost of new building construction, the Township’s general strategy for buildings is to undertake maintenance and upgrades on its existing buildings to ensure that, at a minimum, the expected useful service life of each building is realized, with the goal of using each building beyond its expected service life. Prior to performing major upgrades or rehabilitation on any building, the continued need for the building, its overall condition, and suitability for its intended purpose will be evaluated to ensure that continued rehabilitation is the most appropriate strategy.

4.4.1 Building Best Management Practices

Deterioration of buildings over time varies from one building to another due to the type of construction, the environment, the usage of the building and the level of maintenance over its lifespan. Consequently, no overriding lifecycle management strategy has been recommended in the literature we have seen. Instead, the recommended approach is to program regular inspections to identify potential failures and deterioration, and ensure that problems are addressed before they become critical or cause additional damage.

On an ongoing basis, the Township should employ the following best management practices in maintaining its buildings:

1. Program inspections on a regular basis, including inspections by trained professionals on a periodic basis.

2. Maintain exterior sealants and flashing to avoid water penetration.

3. Ensure grading is such that surface water (drainage) is directed away from the building or into soak away pits.

4. Repair damaged exterior elements (e.g. steel sheathing, roofing, cladding) as soon as the damage occurs to prevent further deterioration.

5. Annually inspect and remove debris from roof drains, gutters, and downspouts.

6. Consider implementing improved building systems, such as HVAC, and maintaining as per manufacturer recommendations or as otherwise deemed necessary.

7. Consider retrofitting buildings to enhance energy conservation.

8. Pump out septic tanks on a regular basis.

9. Maintain heating and HVAC systems through annual cleaning of furnaces and replacement of filters. Provide for humidity and moisture controls to prevent mold.

4.5 Asset Management Strategy Vehicles, Machinery and Equipment – Best Practices Framework

It is generally believed that the optimal approach to managing vehicles, machinery, and equipment is through routine inspections, servicing, and preventative maintenance programs. Maintenance manuals that are supplied at the time of purchase usually outline the appropriate schedules and routines for regular maintenance and servicing.

Through a condition assessment program, staff can make note of equipment or part deterioration so they can schedule to replace or repair worn parts before they fail, thus avoiding the consequences of asset failure.

The general strategy is to replace the asset when the cost/benefit of replacing the asset exceeds the cost/benefit of continued maintenance and rehabilitation. This requires a prediction of the future condition of a given asset. Research into the historical costs of major equipment over time will be incorporated into future versions of this Plan.

4.5.1 Vehicles, Machinery and Equipment Best Management Practices

The Township should employ the following best management practices to maintaining their vehicles, machinery and equipment:

1. Vehicles, machinery and equipment are to be serviced on a regular basis, as per manufacturer recommendations or as otherwise deemed necessary by the manager.

2. Vehicles, machinery, and equipment failures shall be repaired at the earliest opportunity to prevent undue wear and tear.

3. Vehicles, machinery, and equipment shall be used with care.

4. Vehicles, machinery, and equipment will be stored indoors whenever possible.

5. Winter sanding/salting vehicles will be washed after use to remove salt/sand residue.

6. Operators shall be properly trained on the use and care of the vehicles and machinery.

7. Vehicles shall be locked and parked in a safe location, when not parked at their home facility, to prevent the potential for vandalism and theft.

8. Vehicles, machinery, and equipment shall be replaced at or near the end of their services lives.

4.6 Asset Management Strategy- Other Assets

The general strategy for other assets, such as computer hardware and software assets, land improvements, street/traffic lights, and sidewalks is to maintain them as needs are identified in order to ensure they are available for use up to or beyond their expected service lives, and to re-evaluate the need for the asset prior to its replacement. Assets are scheduled for replacement when their functionality or condition renders them inadequate to support the intended level of service.

4.7 Integrated Capital Planning

The best management practices outlined above treat each asset group as a stand-alone system (e.g. the road network, the bridge network, etc.) and suggest that optimal capital investment decisions are triggered primarily by the asset's current condition. However, it is also important to understand and implement an integrated capital planning approach to realize maximum value for money invested. As an example, it is not generally cost-effective to replace a road surface in Year 1, only to go back and replace services beneath the road - and have to replace the surface again - 5 years later. The scheduling and prioritizing of projects should incorporate an integrated approach across related assets.

The following integrated capital planning practices shall be adopted by the Township in developing work priorities:

A. Road rehabilitation work adjacent to structures planned for replacement shall be considered for tender with the structure replacement work, or after structure work is complete.

B. Road and bridge priorities shall give due consideration to short and long-term development plans (e.g. turning lane requirements, utility cuts, etc.).

C. Any identified road base deficiencies will be rectified when road resurfacing occurs (e.g. increasing road width, creating an emergency bypass).

4.8 Procurement Methods

The Township has in place and shall adhere to its current Purchasing By-Law in retaining services to manage, maintain, and improve its infrastructure assets under this Plan.

Alternative procurement methods shall be explored as the opportunities for such arise, including:

Joint Tendering - e.g. equipment, gravel/salt bulk purchase to realize potential economies of scale

Retainer Services - e.g. engineering, consultant retainers to minimize procurement costs

Shared Services - pooled services with other municipalities.

5.0 Financing Strategy

5.1 Overview

With the growing push towards enhanced sophistication in asset management practices in municipalities, it is clear that, while the Province continues to assist municipalities with their infrastructure challenges, it is also clear that every municipality is expected to move towards the sustainable management of its own capital assets; to ensure that, as assets need to be repaired, replaced and augmented, each municipality will be able to finance its own requirements.

The Township of Joly, as with many rural and small urban municipalities, is faced with sustaining a substantial inventory of capital assets with a limited tax base. As a baseline metric of sustainability, a Township may consider its annual capital funding available relative to annual amortization of its assets. In 2024, the Township recorded accumulated amortization of $210,266, a figure which excludes $26,931 in amortization relating to roads which are already fully amortized but remain in use. Using the Provincial target "asset sustainability ratio" (defined as annual capital additions/annual amortization expense) of 90%, this would suggest a minimum target level of capital expenditures of the Township of $213,477. This level of annual capital asset funding vastly exceeds the Township's current level of permanent/predictable capital funding, which totals $133,783.

An even more dismal outlook emerges if you recognize that assets will need to be replaced at their current cost, not at their historical cost. A rough approximation of the annual sustainable investment, based on estimated current replacement values, was indicated earlier in the Plan to be $1,046,268, or $462,758 upon elimination of road bases. As part of the development of the initial asset management plan, annual contributions to reserves based on this measure were considered as a proposed long-term municipal target. However, this level of investment so far exceeds any reasonable potential funding level for the Township, from increased taxation, debt financing, and all other known funding sources/strategies, that this target was quickly abandoned.

Instead, as a more practical and feasible long-term objective, the Township has focused on funding its needs, as dictated by its existing asset base and Levels of Service, in the period covered by this Plan. An outline of how these revenues and expenditures were estimated is presented in the sections that follow.

It should be noted that this section of the Plan is not intended to replace the Township's standard budgeting practices, and with minor exceptions only, does not prescribe specific work to be undertaken to maintain the Township's current Levels of Service. Rather, the focus of the revenue and expenditure estimates is to provide a snapshot of the scope of work that is feasible over the planning period at current funding levels, and if the prescribed approach to tax rate increases and debt or other sources of financing are followed.

Historically, capital projects are considered annually when Council engages the annual budgeting process. At that time, current cost estimates and Council/staff/ratepayer priorities are matched with available funding. A key deciding factor on the approved capital projects for the year is inevitably the impact that the capital expenditures, in conjunction with the less discretionary operating expenditures, will have on the tax levy.

Although the urgency of particular projects changes over time, as may the outlook of Council, there are advantages to taking a longer view of capital requirements than the current 1-year view (i.e., preparing a longer-term capital budget):

- Increases opportunities for obtaining federal and provincial funding. For virtually all funding available today, it is necessary to demonstrate how the proposed project is a priority in the Township's Asset Management Plan. Additionally, there is often a very short window between the announcement of funding and having "shovel ready" projects for submission.
- Allows the community to avoid sudden changes in its debt service requirements and spikes in its tax rates. By being aware of future needs and projects, the public and Council alike are less likely to view the annual budget as an end in itself, rather than part of a continuous process of expenditure/revenue generation. This might help justify to both the public and Council such things as increasing the annual levy above what is absolutely required in an effort to reserve money for known upcoming capital requirements, or to be more selective about when debt financing is to be used.
- Facilitates the avoidance of costly mistakes such as performing major repairs to assets that are likely to be replaced in the near future.
- Focuses attention on community objectives and fiscal capacity. As a result, staff, Council and the public are more likely to consider how proposed asset expenditures will contribute to the desired service levels and the trade-offs that must be made to be affordable.

This section of the Plan provides a ten-year roadmap that outlines the most critical capital needs of the Township, the timing for these works, as well as the anticipated costs and anticipated funding. Projects included relate to renewing, rehabilitating, or replacing existing assets, rather than to expanding the existing base.

It should be noted that this section of the Plan is not intended to replace the Township's standard budgeting practices, and does not necessarily reflect the precise timing of revenues and expenditures currently being contemplated by Council.

5.2 Expenditures

A summary of the anticipated expenditures and related sources of funding is presented in **Appendix A**. The expenditures summarized in this appendix are supported by a detailed asset replacement schedule for each class of assets. The detailed schedule is included in this Plan in **Appendix B**.

For the purposes of forecasting future expenditures, an **annual inflation factor of 2% has been used** for operating expenditures. Given the extreme increase in the inflationary environment experienced in recent years, an inflationary factor of 5% has been used for capital expenditures.

Highlights of the expenditures follow:

A. Roads

Prioritization and recommendations for planned capital improvements were documented in the Road Needs Study (2024). The identification of needs focused on the road characteristics that are most likely to require significant maintenance costs (should the deficiencies remain) or that are likely to impact the overall operations and

service of the road (surface condition; surface type; surface width; structural adequacy; drainage). Through consultation with staff, a prioritized list of road resurfacing projects has been further refined and adjusted to match available funding levels.

While the 10-year capital plan allows the Township to resurface each of its gravel roads over the course of the ten years, it should also be noted that a lower gravel lift factor is being utilized in the projection. That is, a smaller amount of gravel than what would be deemed optimal under the preservation management program is being applied to each road.

In addition, resurfacing costs have also been included for seasonal roads which, historically, have not been maintained. As higher-priority projects emerge during the Plan period, it is probable that funds for these roads will be reallocated to other areas of need.

The identified needs have been broken down into a project list for 2026-2035, presented in **Appendix B**. Total Road expenditures (inflated to current $) over the 10-year period are $1,872,488, ranging from a low of $137,067 in 2026 to a high of $367,315 in 2032.

Note that the preservation management approach also calls for annual calcium applications, ditching, brushing, and grading. These costs have been included in the Maintenance Activities section of the expenditure summary, as they are considered in the annual operating budget.

B. Bridges and Culverts

The 2024 OSIM inspection report identified $548,000 of required repairs on the Township bridges over the next five years. The Township is expending a significant amount of capital funding in the 2025 budget to replace the Strong/Joly Boundary Road Bridge- North and South, as well as redeck the Kent's Mill Road Bridge. This will eliminate $403,000 of the required repairs as outlined in the OSIM report.

The ten-year Plan includes completing the balance of the repair work identified in the OSIM inspection in Years 1 to 5 of the Plan. A placeholder expenditure for $50,000 was also included in 2034 for additional needs that may be identified in a future OSIM report.

Total expenditures over the 10-year period are estimated at $195,000.

The 10-year plan should be revisited after each biennial structure inspection and updated every two years.

C. Buildings

Required capital expenditures for buildings have been based on buildings reaching the end of their useful service lives (calculated from the date of the last major refurbishment and as determined by the Township's current amortization policy). With the exception of the Public Works garage- which is not likely to be replaced during the Plan period - all of the Township's buildings few relatively new or have had recent

upgrades. For example, in the past two years the main Township building has undergone substantial interior renovations, and the shade structure at Lynch Lake Beach is newly constructed.

Repairs to the roof and electrical systems at the Public Works garage have been allocated in the 2026 budget, with contingency amounts included in future years of the Plan as well.

The Municipal Office will also require substantial accessibility upgrades during the Plan period. At minimum, a wheelchair ramp, accessible door, and ADA door opener are required. While this has been included in Year 8 of the Plan, this is simply to match the first opportunity when sufficient funding is available; this remains a priority project. The Township will also be required to seek external funding, through the Enabling Accessibility fund or similar, to ensure the required work can be completed.

Total expenditures over the 10-year period are $361,111.

D. Vehicles

$736,209 of expenditures for the replacement of existing vehicles have been included in the 10-year plan. Vehicle replacements have been staggered based on the repayment dates for current outstanding debt, as with the exception of the By-law enforcement vehicle all such purchases are to be financed through debt.

E. Machinery and Equipment

$67,954 of expenditures for the replacement of existing equipment that will have reached the end of its useful service life (as determined by the Township's current amortization policy) have been included in the 10-year plan. The expenditure is recorded in the year the machinery/equipment is fully amortized.

The Township is also seeking to purchase a water tank for summer road maintenance. This is scheduled for 2028, at a projected cost of $46,305.

F. Other Assets

Expenditures related to the replacement of computer hardware and software over the ten-year period are $60,839. This allows for the purchase of a replacement accounting software system, as well as two forecasted replacements of the server hardware technology in 2028 and 2035.

One expenditure related to Land Improvements is also in this category, with the purchase of a new floating dock for the Lynch Lake Park scheduled for 2026. This is anticipated to cost $12,600, and to be partially funded through the Parkland reserve.

In total, the forecasted investment in capital asset refurbishment and replacement is $3,359,331 in the 10-year period, ranging from a low of $189,667 (2026) to a high of $533,891 (2029). Additionally, a total of $791,580 in non-infrastructure solutions and $5,217,080 in maintenance costs are forecasted for the 10-year period. Total expenditures, including O&M costs, capital asset renewal/rehabilitation, debt repayments, and net transfers to reserves are forecasted to be $10,766,304.

5.3 Revenue (Sources of Funding)

Revenue and other funding sources (i.e., transfers from reserves and debt financing) available for financing the above-noted expenditures is also presented in **Appendix A**. Each identified source is discussed below:

A. Taxation

In the 2025 budget, an estimated **$158,451 of the general taxation levy is estimated to have been available for financing past, current and future capital asset expenditures**. These are represented respectively by: *debt repayments* re: the tandem plow and grader (past capital asset requirements); *capital expenditures* (current capital asset requirements); and *net transfers to reserves* (future capital asset requirements).

Working from the 2025 base, taxation available for financing net capital asset expenditures has been increased by 2% annually. This is a reasonable approximation of what would generally happen in the combined annual operating and capital budget (i.e., small increases in the tax levy annually to compensate for rising prices due to inflation).

B. **Additional Capital Tax Levy**

In the Target Level of Service section of this Plan, the Township has identified the goal of being fully self-funded within certain asset classes in a five-year timespan. To achieve this objective, a dedicated capital levy increase of 1.6% has been established commencing in 2026. After the five-year phase in has concluded, this is scheduled to increase by 2% annually thereafter. In total, by the end of the 10-year Plan period, an additional $641,694 will be raised to finance current and future capital purchases.

C. Senior Government Grants

Future federal CCBF funding has been estimated to grow with inflation over the Plan period. Grant revenue also includes $125,000 related to the Provincial OCIF formula-based annual funding, and tied to road resurfacing projects.

One speculative senior-level grant has been incorporated into the Plan; an allocation of $116,552 in 2033, related to the accessibility upgrades at the Township office.

D. Transfers to and from Reserves

The anticipated capital-related 2025 year-end reserve balance carried forward to Year 1 of the Plan is expected to be $1,151,951. This is earmarked between general capital funding, working capital reserves, airport funding, and other, smaller items.

While the Township's overall reserve balance places it in the "low risk" category in the MMAH's annual financial indicator calculations, less than one year's amortization of the historical cost of the Township's assets has been reserved for capital purposes.

Over the 10-year period, the net transfers to and from reserve are highly variable. This is predominantly due to fluctuations in debt servicing costs in the period, ranging from a high of $159,283 (2030) to a low of $0 (2035). In years where debt servicing costs

are low, balancing reserve transfers have been established and split between general capital and working funds reserves.

It should be noted that, although transfers to reserve appear high towards 2034 and beyond, it is possible that the Township will require replacements to its tandem plow and grader during that timeframe. Any such purchases would require debt servicing costs be incurred, in turn reducing or eliminating outright any net transfers to reserve. Alternatively, the Township could use these years to begin the implementation of the preservation management approach to a greater extent.

In addition, capital costs relating to any Township shared service, including the potential to formally enter as a partner in the Sundridge/Strong Fire Department, have not been incorporated into the Plan and, if realized, would also reduce or eliminate this in the same manner.

Transfers from reserves are recorded to finance the required repairs to the Hill 14 Bridge in 2030, as well as for the resurfacing of Forest Lake Road in 2032.

Following this approach, the overall capital reserve balance will increase to $1,629,829 by the end of the Plan period.

E. Long-term Debt Financing

Like many other local municipalities, the Township is accustomed to debt financing and in recent years has had debt servicing charges into what would be considered "high risk" from the perspective of the Ministry of Municipal Affairs' annual Financial Performance Indicators. Consequently, before new debt financing is considered in the annual budgeting process, Township staff are required to analyse the impact the proposed debt will have on its' debt servicing level to ensure that the future charges do not significantly exceed the target of 10% of operating revenue.

For the purposes of the Plan, new debt funding is forecasted to be required for the replacement of the backhoe ($318,600 in 2027), pickup truck ($75,000 in 2028), and loader ($331,800 in 2029). All debt is forecasted assuming a 5-year, 3.2% loan. In conjunction with repayments of its existing debt, this level of borrowing is expected to keep the Township within the low or medium risk category. This is illustrated in **Appendix G.**

Further discussion of long-term debt financing is presented in **Appendix F**.

F. Other Financing

Forecasted proceeds from the sale of the existing loader and backhoe have been recorded in the Plan. No Parkland revenues have been recorded.

In total, the forecasted sources of funding are expected to be $10,766,305.

5.4 Funding Shortfall/Excess Relative to Financial Requirements

The resulting annual funding excesses for each year of the Plan are also presented in **Appendix A**. The Plan balances each year of the Plan, with a forecasted increase to overall surplus of $920,435.

Note that the project schedule shown in **Appendix B** was developed by prioritizing and grouping projects based on factors such as condition, frequency of use, risk of failure, and location, and matching expenditures to total funding available in a given year. Therefore, not all asset replacements becoming due during the planning period have been incorporated into the Plan. In reality, if all assets were replaced on schedule, total capital expenditures during the 10-year period would be $3,621,651, representing a funding shortfall of $262,320.

6.0 Risks to the Asset Management Plan

As the Township moves towards implementing this Asset Management Plan, it should be acknowledged that there exists several inherent risks which may prevent the anticipated outcomes from being realized. The following is a summary of the risks that are known to exist today.

- **Non-commitment by Municipal Council or Staff to the Plan**. Asset management best practices, when properly utilized, represent a substantial deviation from current standards and norms. To achieve the objectives as outlined requires full buy-in and a collaborative effort between staff and Council.
- **Staffing Levels and Turnover.** Taking a proactive approach to asset management requires more staff time, effort and knowledge. It is unrealistic to believe that this additional work can be accomplished without increasing staff levels and potentially restructuring job responsibilities. Additionally, while the current employee base is not near retirement, there exists the constant possibility of turnover which would, by virtue of the exodus of local knowledge and experience this brings, impede the Township's ability to continue providing levels of service of the same quality.
- **Inadequate funding**. It has already been noted that the implementation of the preservation management approach is not likely to be feasible to any meaningful degree in the short term. An understanding of the benefits of proactive asset management is of little value if it cannot be put into practice.
- **Capital requirements of local district boards**. Approximately 18% of the Township's operating budget is allocated to funding local boards, over which the Township has no control. Levies are anticipated to rise significantly in the coming years, which could jeopardize the Township's ability to allocate sufficient funding to its own capital asset needs.
- **Emergencies, premature asset failures and other unforeseen events** which could direct funds away from scheduled activities, towards areas of urgent need.
- **Change in legislative requirements,** which may influence Levels of Service.

As is the case in many small rural municipalities, particularly in Northern Ontario, the simple reality is that there is a limited availability of funds, and a related limited ability to grow funding, in order to manage the Township's infrastructure. While this Plan sets out to manage the competing infrastructure priorities at the lowest combined lifecycle costs, the Plan will be subject to revision and refinement as new approaches/technologies are developed, new funding strategies are found, and the expectations of the Township (Council, staff, and ratepayers) evolve.

Appendix A
Yearly Revenue and Expenditure Summary

The yearly revenue and expenditure summary is prepared in a separate Excel spreadsheet. It is an integral component of the Plan

Appendix B
List of Projects – 2026 to 2035

The list of projects is prepared in a separate Excel spreadsheet. It is an integral component of the Plan

Appendix C
Township of Joly Operating Budget

The operating budget is prepared in a separate Excel spreadsheet. It is an integral component of the Plan

Appendix D

Guideline Road Expenditure Budget - Unconstrained Financing

Guideline Road Expenditures Budget-Unconstrained Financing

1. Preservation Management Approach – Road Resurfacing

In a financially unconstrained situation, an annual resurfacing strategy is recommended as follows based on typical degradation rates for roads:

I. Surface Treated Roads:
- 3.1 km (6.2 lane-km) in the existing inventory of surface treated roads (LCB)
- Degradation rate 0.625 km/year (rating drops from "10" to "5" over an 8-year period)
- Annual Resurfacing target of 0.775 km/year
- Annual Budget of $60,683 (0.775 km/yr. x $78,300/km **ST1***) for resurfacing

  ***ST1 – Double Surface Treatment**

II. Gravel Roads:

Gravel roads require regular maintenance. Maintenance includes regular grading and reapplication of new gravel. Application of 100mm of new gravel is recommended every 10 years for all gravel roads.

- 63.3 km in the existing inventory of earth/gravel roads (22.5 km < 50 cars/day)
- 100mm gravel every 10 years
- Annual Resurfacing of ~6.3 km/year
- Granular A ($48,500/ km)
- Annual Budget $305,550 (6.3 km/yr.* x $48,500/km **G***)** for gravelling
- Annual Budget Excluding Low Volume Roads $184,300 (3.8 km/yr. * $48,500/km **G***)** for gravelling

  ***G – Gravel**

* Based on a 10-year gravel resurfacing cycle.

** Cost based on supply and application of gravel by external forces. Some roads being resurfaced using crushed granite.

The total “ideal” resurfacing program, (surface treatment and gravel) for the entire municipal road network, per the calculations above, is estimated at $366,233 per year (2024 $). Consideration could be given to removing all roads with less than a specified volume of traffic (e.g. 50 vehicles/day), as it is generally accepted that these roads may be maintained strictly through maintenance activities. If this approach was taken, the total resurfacing program cost would be reduced to $245,000/year.

2. Preservation Management Approach - Maintenance Expenditures for Roads
Regular maintenance in the form of grading, roadside ditch cleanout and clearing needs to be undertaken in order to extend the useful service life of the existing roads. A commitment of resources is necessary to ensure a viable annual ditching and clearing program. These activities are considered two of the least expensive and most beneficial preventative maintenance activities to facilitate realizing the full surface service life.

A ditching and brushing maintenance budget is calculated and recommended as follows:

- Ditch/Brush the entire road network on a 10-year cycle.
- 133.8 lane km of road – 13.4 lane km of ditching/brushing annually.
- Ditching Production Rate – 0.5km / day (2 side of the road).
- Brushing Production Rate – 1 km /day (2 sides of the road).
- Approximately 20 person-days (or ~4 weeks) of Brushing/Ditching.

In the 2024 Road Needs Study, benchmark costs of $96/m for ditching and $175/m for brushing. More realistically, however, a contracted benchmark of $130/hour can be used. On that basis, if that work were to be contracted out, the estimated annual brushing/ditching requirement would be approximately $21,600.

It is extraordinarily unlikely that the values as outlined in the Road Needs Study are reflective of real-world conditions. In a more realistic scenario, the Township may choose to use its own forces and equipment and potentially realize cost savings in undertaking this work. Assuming the Township dedicated one public works person to this task, at an estimated rate of $60/hour (including payroll benefits burden) the resulting out-of-pocket cost would be $2,400/week or $9,600. The cost of the equipment and dump truck drivers has been omitted to permit direct comparison to the above Contractor costing. The Municipality has adequate equipment to perform this work, and therefore capital asset costing has not been factored into this equation.

Total Annual Brushing/Ditching Allowance:
External Forces $ 21,600
Internal Forces $ 9,600

Road grading activities are performed by Township forces and with existing Township equipment, and consequently, a separate road grading maintenance budget has not been prepared.

Appendix E
Life Cycle Cost Analysis

Life Cycle Cost Analysis

Pavement Management

The following life cycle costs analysis compares three different municipalities--Township 1, Township 2 and Township 3--each with three distinct approaches to pavement management. For this analysis we will assume each of the three municipalities have 7000 m^2 of pavement i.e. 1km of asphalt paved road that is 7m wide. In each scenario, the road is assumed to have been constructed in 2013 and will operate under normal traffic loading.

The Life Cycle Cost Analysis (LCCA) assumes no user costs. The LCCA uses a discount rate of 2.5% / year.

The LCCA shows the three different municipalities and tracks their pavement management decisions and related condition over the specified time period. Township 1 represents decisions made based on strategic preventive maintenance and rehabilitation (M&R), Township 2 represents decisions based on no preventive M&R and Township 3 represents decisions based on resurfacing only.

The figure below illustrates a time- pavement condition plot for each Township.

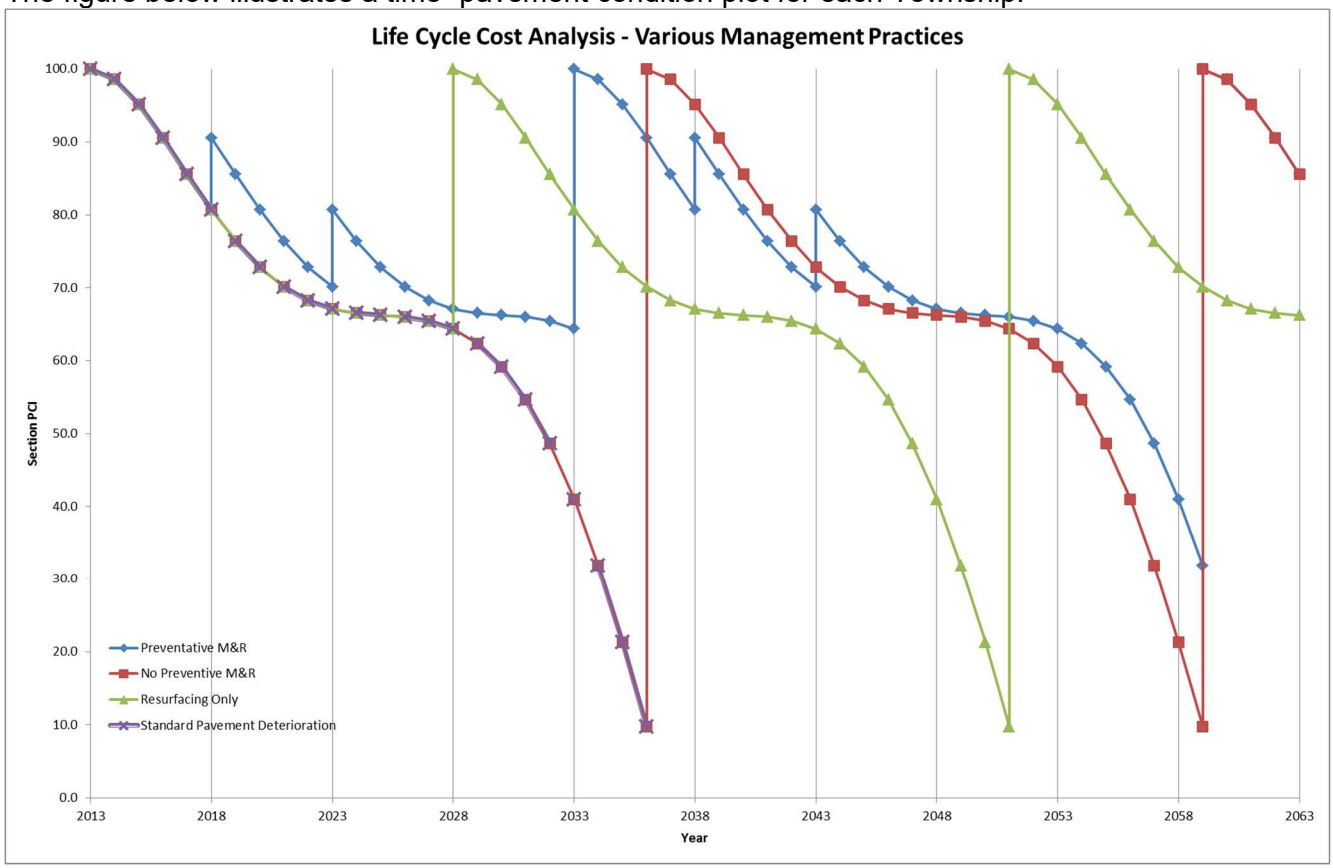


Figure 8.2. Time-Condition Plot for 3 Municipalities

The costs associated with the corresponding maintenance and rehabilitation decisions are outlined in the following tables:

Preventive M&R									
Year	**Age**	**Treatment**	**Δ PCI**	**PCI_q**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**	**Present Worth**
		-- Annual Ditching/Clearing --							
2018	**5**	**Localized Preventive - Rout and Seal**	81-90	Satisfactory-Good	1000	m	$1.50	$1,500.00	**$1,325.78**
2023	**10**	**Global Preventive - Slurry Seal**	70-81	Satisfactory-Good	7000	m^2	$6.50	$45,500.00	**$35,544.53**
2033	**20**	**Surface Course**	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m^2	$12.00	$84,000.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$204,487.50	**$124,792.78**
2038	**25**	**Localized Preventive - Rout and Seal**	81-88	Satisfactory-Good	4500	m	$1.50	$6,750.00	**$3,640.89**
2043	**30**	**Global Preventive - Slurry Seal**	68-78	Satisfactory-Good	7000	m^2	$6.50	$45,500.00	**$21,691.79**
2048	**35**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	5%	m^2	$30.00	$10,500.00	**$4,424.40**
2053	**40**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	10%	m^2	$30.00	$21,000.00	**$7,821.04**
2058	**45**	**Full Reconstruction**	32-100	Serious-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$107,290.28**
2063	**5**	**Localized Preventive - Rout and Seal**	81-90	Satisfactory-Good	1000	m	$1.50	$1,500.00	**$436.41**
		Final PCI in 2063:	**90**	**Good**				**Net:**	**$306,967.90**
								Residual Value:	**$85,346.08**
								Total Cost:	**$221,621.82**

The policy of Township 1 is to strategically intervene with preventative maintenance measures over the course of the pavement's service life. Two significant maintenance measures are performed on the pavement at various times and ultimately extend the service life of the pavement, prorating the total cost of the pavement over a longer period of time. Eventually, a full reconstruction is required and this cycle repeats. The total life cycle costs are substantially less when compared to Township 2 and 3, at a total of $221,622 over 50 years.

No Preventive M&R									
Year	**Age**	**Treatment**	**Δ PCI**	**PCI_q**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**	**Present Worth**
2023	**10**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	5%	m^2	$30.00	$10,500.00	**$8,202.58**
2028	**15**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	10%	m^2	$30.00	$21,000.00	**$14,499.78**
2030	**17**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	20%	m^2	$30.00	$42,000.00	**$27,602.19**
2036	**23**	**Full Reconstruction**	10-100	Poor-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$184,707.88**
2043	**7**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	5%	m^2	$30.00	$10,500.00	**$5,005.80**
2048	**12**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	10%	m^2	$30.00	$21,000.00	**$8,848.79**
2053	**17**	**Safety/Stopgap Maintenance - AC Patching/Leveling**	N/A	N/A	20%	m^2	$30.00	$42,000.00	**$15,642.09**
2059	**23**	**Full Reconstruction**	10-100	Poor-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$104,673.45**
		Final PCI in 2063:	**86**	**Good**				**Net:**	**$369,182.56**
								Residiual Value:	**$81,552.92**
								Total Cost:	**$287,629.64**

The policy of Township 2 is to simply construct the pavement and wait until serious deficiencies begin to appear before acting. This approach unfortunately remains common still today. Over the last period of the pavement's life, maintenance is required to ensure safety and operation until the pavement becomes completely destroyed. Once the pavement has failed, a complete reconstruction is carried out restoring the pavement to new condition. This cycle repeats again until a second reconstruction is required. The total costs are substantial and total $287,630 over 50 years.

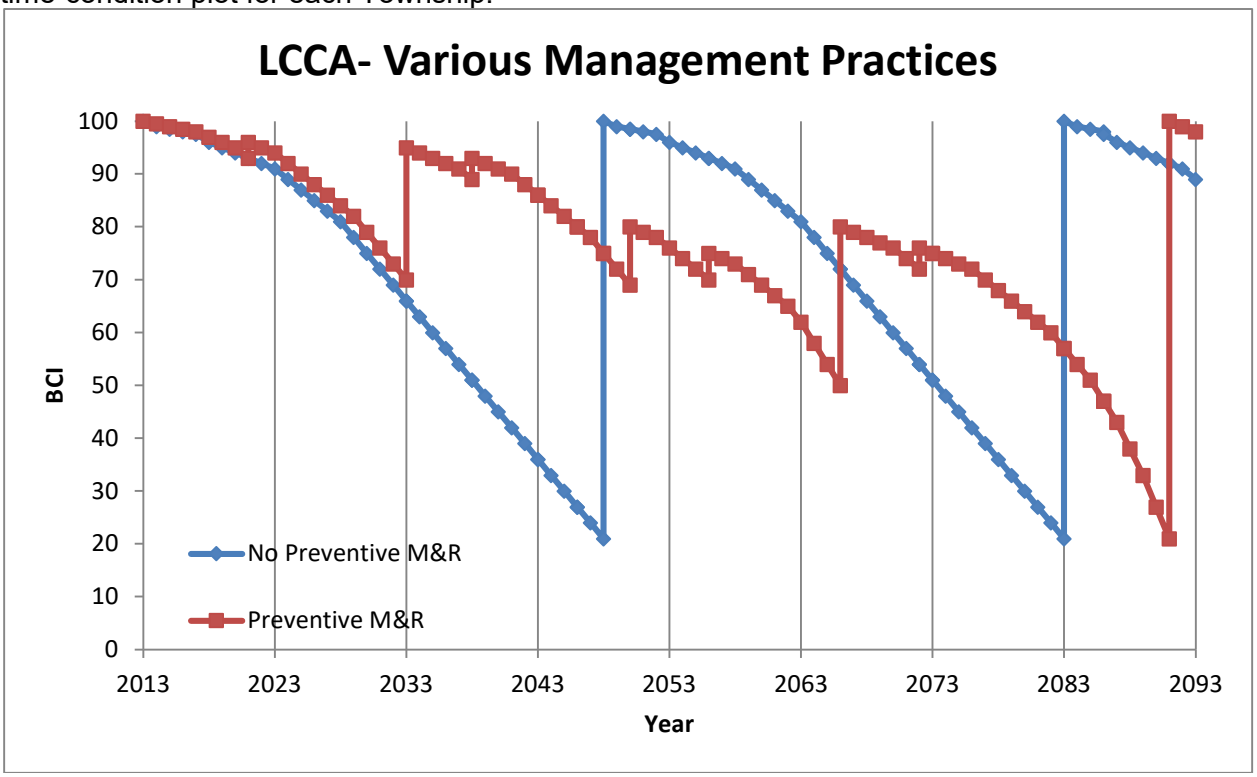
Resurfacing Only									
Year	**Age**	**Treatment**	**Δ PCI**	**PCI_q**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**	**Present Worth**
2028	**15**	**Surface Course**	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m^2	$12.00	$84,000.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$204,487.50	**$141,191.58**
2051	**23**	**Full Reconstruction**	10-100	Serious-Good					
		Remove Asphalt Full Depth			7000	m^2	$15.00	$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	$35.00	$14,700.00	
		40mm Base Course			686	t	$125.00	$85,750.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$325,937.50	**$127,534.43**
2067	**15**	**Surface Course**	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m^2	$12.00	$84,000.00	
		50mm Surface Course			892.5	t	$135.00	$120,487.50	
								$204,487.50	**$53,898.67**
		Final PCI in 2063:	**66**	**Good**				**Net:**	**$322,624.67**
								Residiual Value:	**$62,587.12**
								Total Cost:	**$260,037.55**

The policy of Township 3 is periodic resurfacing. The pavement is constructed and time passes until early signs of serious distress are observed. This occurs after the time when preventive maintenance is neither appropriate nor possible, but before the pavement becomes completely destroyed. Resurfacing is performed and restores the pavement to almost new condition. The pavement then deteriorates for the remainder of its life, requiring significant maintenance in the last years before it becomes completely destroyed. A full reconstruction is then carried out and the cycle continues. The total costs are in between that of Township 1 and 2 at $260,038 over 50 years.

It may be easy to see upfront cost savings by understanding that as long as any costs associated with maintaining the pavement are deferred as long as possible, money will be saved. The reality is that extending a pavements service life prorates the total cost of the pavement over a longer period of time and ultimately becomes more economical in the long run. If preventive maintenance measures are strategically planned and carried out then the service life of the pavement can be maximized and substantial reconstruction costs can be deferred for longer periods of time. In a time when economy and efficiency are becoming more and more important, this type of proactive management is essential in the management of infrastructure.

Life Cycle Cost Analysis
Structures

The following life cycle costs analysis compares two different management practices for municipalities managing their structure inventory. For the analysis we will assume each of the municipalities have an identical bridge as a part of their inventory. The bridges both have the same initial construction cost, and are identical in terms of structure type and construction.
For the analysis, each Township has in their inventory a two-lane, single span bridge with concrete barrier walls and deck supported by prestressed concrete girders on concrete abutments. The bridge has expansion joints at either end and a paved deck. The road maintenance policy of each Township is to use salt as a winter roadway de-icer. The Life Cycle Cost Analysis (LCCA) assumes no user costs.
The LCCA shows the municipalities and tracks their structure management decisions over a 90-year time period. Township 1 represents decisions made based on strategic preventive M&R and Township 2 represents decisions based on no preventive M&R. Refer to the figure below for a time-condition plot for each Township.



Time-Condition Plot for 2 Municipalities

The costs associated with the corresponding maintenance and rehabilitation decisions are outlined in the following tables:

Preventive M&R

Year	Treatment	Δ BCI	Quantity	Unit	Unit Cost	Total Cost	Present Worth

2021	**Rout and Seal Cracks**	93-96	250	m	$2.50	$625.00	**$512.97**
2033	**First Rehabilitation**	70-95					
	Patch, Waterproof and Pave Deck		480	m2	$600.00	$288,000.00	
	Misc Concrete Patching		50	m2	$2,000.00	$100,000.00	
						$388,000.00	**$236,785.13**
2038	**Rout and Seal Cracks**	89-93	250	m	$2.50	$625.00	**$337.12**
2050	**Barrier Wall Replacement**	69-80	39	m3	$2,500.00	$97,500.00	**$39,104.04**
2056	**Rout and Seal Cracks**	70-75	200	m	$2.50	$500.00	**$172.92**
2066	**Second Rehabilitation**	50-80					
	Patch, Waterproof and Pave Deck		480	m2	$600.00	$288,000.00	
	Misc. Concrete Patching		100	m2	$2,000.00	$200,000.00	
	Bearing Replacement		10	ea.	$5,000.00	$50,000.00	
	New Barrier Walls		39	m3	$1,450.00	$56,550.00	
						$594,550.00	**$160,628.84**
2072	**Rout and Seal Cracks**	72-76	350	m	$2.50	$875.00	**$203.84**
2091	**Structure Replacement**	21-100					
	Piles		1500	m	$350.00	$525,000.00	
	Abutments and Wingwalls		300	m3	$1,100.00	$330,000.00	
	Girders		450	m	$1,000.00	$450,000.00	
	New Concrete Deck		300	m3	$1,250.00	$375,000.00	
	New Barrier Walls		39	m3	$1,450.00	$56,550.00	
	Approach Slabs		56	m3	$575.00	$32,200.00	
						$1,768,750.00	**$257,753.73**
	Final BCI in 2093:	**98**				**Net:**	**$695,498.58**
						Residual Value:	**$240,427.03**
						Total Cost:	**$455,071.54**

No Preventive M&R

Year	Treatment	∆ BCI	Quantity	Unit	Unit Cost	Total Cost	Present Worth
2048	**Structure Replacement**	21-100					
	Piles		1500	m	$350.00	$525,000.00	
	Abutments and Wingwalls		300	m3	$1,100.00	$330,000.00	
	Girders		450	m	$1,000.00	$450,000.00	
	New Concrete Deck		300	m3	$1,250.00	$375,000.00	
	New Barrier Walls		39	m3	$1,450.00	$56,550.00	
	Approach Slabs		56	m3	$575.00	$32,200.00	
						$1,768,750.00	**$745,300.07**
2083	**Structure Replacement**	21-100					
	Piles		1500	m	$350.00	$525,000.00	
	Abutments and Wingwalls		300	m3	$1,100.00	$330,000.00	
	Girders		450	m	$1,000.00	$450,000.00	
	New Concrete Deck		300	m3	$1,250.00	$375,000.00	
	New Barrier Walls		39	m3	$1,450.00	$56,550.00	
	Approach Slabs		56	m3	$575.00	$32,200.00	
						$1,768,750.00	**$314,047.89**
	Final BCI in 2093:	**64**				**Net:**	**$1,059,347.96**
						Residual Value:	**$157,013.57**
						Total Cost:	**$902,334.39**

*Costs are for materials only and do not include construction costs

The policy of Township 1 is to strategically intervene with maintenance measures over the course of the structure's service life. Maintenance measures are performed on the structures at various

times and ultimately extend the service life of the structure, prorating the total cost of the structure over a longer period of time. Eventually, a full reconstruction is required and this cycle repeats. The total costs are fractional compared to those of Township 1. This difference in decision making introduces significant savings throughout the cycle.

The policy of Township 2 is to simply build the structure and wait until serious deficiencies become evident. At the last possible minute, a complete reconstruction is carried out restoring the structure to perfect condition. This cycle repeats again until a second reconstruction is required. The total costs are substantial. Unfortunately this approach still remains common today as municipalities are faced with an aged structure network and limited funds for maintenance.

It may be easy to see upfront cost savings by understanding that as long as any costs associated with maintaining the structure are deferred as long as possible, money will be saved. The reality is that extending a bridge or culvert's service life prorates the total cost of the structure over a longer period of time and ultimately becomes more economical in the long run. If preventive maintenance measures are strategically planned and carried out then the service life can be maximized and substantial reconstruction costs can be deferred for longer periods of time. In a time when economy and efficiency are becoming more and more important, this type of proactive management is essential in the management of our resources.

The difficulty faced by most municipalities is related to "breaking the cycle." With an aged infrastructure and many structures with condition beyond the point of preservation management techniques, substantial funds are required to address those most significantly deteriorated structures leaving little funds for keeping the good bridges good.

Appendix F
Low Risk Long-term Debt Level

Low Risk Long-term Debt Level
It has been expressly acknowledged by the Province that the use of debt in a sustainable capital financing strategy may be necessary. Specifically, the *Building Together Guide* notes that, "(*t)here may be a need for some municipalities to revisit their "zero debt" policies. Debt financing, such as debentures, loans, and construction financing agreements, helps to spread the cost of expensive capital projects over time so that both current and future users of services share the burden*."

When viewed in conjunction with another of the Province's guiding principles—"*those who benefit directly from municipal infrastructure should pay for the service"*—it seems clear that, rather than having to borrow money itself to pay for grants to individual municipalities, the Province is expecting individual municipalities, the beneficiaries of the related municipal infrastructure, to take on long-term debt themselves. The Township is therefore prepared to use long-term debt to finance capital projects to a "reasonable level".

The Ministry of Municipal Affairs (MMA) prepares a "Financial Indicator Review" (Review) annually for each municipality, based on the Financial Information Return (FIR) submitted. The Review classifies the Township as "Low", "Moderate", or "High" Risk for each of the reported measures. There are three debt-related measures on the Review:

1. Debt servicing cost as a % of total operating revenue: low risk = < 5%
2. Net financial assets or net debt as a % of total operating revenue: low risk > -20%
3. Net financial assets as a % of own purpose taxation plus user fees : low risk > -50%

Of the three, debt servicing costs as a % of total operating revenue yields the most restrictive calculation on the available debt capacity. Using this measure, a low risk level of borrowing is in the neighbourhood of $415,000 based on a 10-year repayment term and 5% interest rate, whereas a moderate risk exists with total borrowing of $830,000 under the same assumptions. The actual theoretical maximum allowable, again assuming a 10-year repayment schedule at 5% interest, is approximately $2,075,000; however, it is ill-advised to implement a capital financing plan that anywhere near approaches this level of debt.

Historically, the Township has undertaken a strategy of using debt for major capital purchases, including current outstanding debt for a tandem plow and grader, and making repayments over five years. This approach, however, means that the Township has fallen into the 'High Risk' debt servicing category as outlined in the Report.

In this Plan's Capital Budget Forecast, as well as the appended Tally of Cumulative Debt Repayments (Appendix G), the following approach to debt has been taken:

a) New debt will continue to be linked to specific asset categories; notably, vehicles, buildings, and bridges.
b) The historical approach of making repayments over five years remains in effect.
c) New assets requiring debt will only be purchased when existing debt has been paid down, in full. This ensures that a consistent, predictable debt servicing cost can be factored into future budget projections, and that total debt levels do not exceed that of the present day.

Under these guiding principles, Appendix G notes specific debt-financed asset purchases over the 10-year Plan period. It should be noted that, outside of a small spike in 2030 when the Loader

replacement commences, the Township is able to achieve its goal of remaining within the moderate risk category.

It is also noted that the actual decision to incur debt for specific items will occur as a result of the annual budgeting procedures, and different needs may exist at the time of debenture that vary from the projections contained herein.

Appendix G
Tally of Cumulative Debt Repayments

The tally of cumulative debt repayments is prepared on a separate Excel spreadsheet

Appendix H
Strategic Asset Management Policy

The Strategic Asset Management Policy is attached as a separate document