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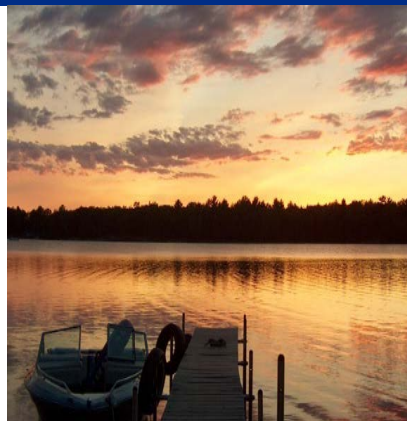
Township of Limerick

Township of Limerick Asset Management Plan

131-19679-00

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DRAFT REPORT



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January 9, 2014

Ms. Jennifer Trumble
Township of Limerick
89 Limerick Lake Road
Gilmour, Ontario K0L 1W0

**Subject: Township of Limerick Asset Management Plan
Draft Report**

Dear Ms. Trumble,

This report was produced by WSP (previously GENIVAR). WSP is pleased to submit to the Township of Limerick our draft report for the Township of Limerick Asset Management Plan. The report has been structured in accordance with the Township's requirements as outlined in the RFP and supporting documentation provided upon project initiation.

The report has been organized into the following subsections:

- **Executive Summary** – An overview highlighting key observations and recommendations.
- **Introduction** – A summary of the project objectives and background of the Township's infrastructure.
- **State of Local Infrastructure** – An inventory of the Township's assets and associated life expectancies, replacement costs, assigned conditions and recommended works.
- **Desired Levels of Service** – An overview of each infrastructure category's levels of service and the associated targets and timeframes.
- **Asset Management Strategy** – A summary of the planned action strategies and an overview of the risk assessment used to prioritize the recommended works.
- **Financing Strategy** – A summary of the yearly expenditure forecasts by infrastructure category and planned action strategy, followed by an evaluation of the adequacy of the Township's funding.

Yours truly,

Kevin Morawski, P.Eng.
Team Lead, Infrastructure Management and Planning

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- Appendix A Asset Inventory
- Appendix B Road Condition Ratings
- Appendix C Risk Assessment

1. Executive Summary

WSP (previously GENIVAR) was retained to undertake the development of a comprehensive asset management plan that the Township of Limerick (Township) can utilize to assist with decisions regarding the building, operating, maintaining, renewing, replacing, disposing and funding of their infrastructure assets.

The Township's infrastructure consists of approximately 48 km of gravel roads, 21 km of surface treated roads, three (3) bridges plus one (1) shared bridge, three (3) culverts and three (3) buildings.

Full life cycle investments for maintenance, rehabilitation, renewal and replacement needs were applied over a ten year planning period from 2014 to 2023. The recommended works for each asset were assigned so that the desired levels of service will be met for each of the Township's infrastructure categories: roads, bridges and buildings. The associated targets and timeframes for each level of service will provide the Township with a measure to actively track the performance of the infrastructure.

Recommended works were classified based on six (6) planned action strategies: non-infrastructure solutions, maintenance activities, renewal/rehabilitation activities, replacement activities, disposal activities and expansion activities, as outlined in the Ministry of Infrastructure Ontario's, "Guide for Municipal Asset Management Plans". An analysis of planned actions was undertaken to determine the most effective strategy for managing the Township's infrastructure. The most effective strategy determined was to perform annual maintenance and complete timely renewal works, which will prolong the life of the infrastructure and reduce long-term spending.

An assessment of risk was undertaken in order to determine the priority of the works associated with the infrastructure. The recommended works were distributed over the ten year planning period based on the priority determined through the risk assessment. The major capital projects for the Township projected over the ten year planning period include: the replacement of North Steenburg Lake Road Bridge in 2014, the upgrade of Highway 620 in 2015, minor rehabilitation of St. Ola Bridge in 2019, major rehabilitation of the Limerick Community Centre in 2016, minor rehabilitation of the Township/roads/Fire Building in 2022 and the reconstruction of North Steenburg Road over subsequent years (as planned by the Township).

Finally, yearly expenditure forecasts were summarized by infrastructure category and by planned action strategy. Limerick's annual capital budget was summarized over the past five (5) years for transportation services and recreation and cultural services using the values presented in the Township's Consolidated Financial Statements (Collins Barrow).

It is recommended that the Township of Limerick and neighbouring municipalities develop formal cost sharing agreements for boundary roads and the Deer River Bridge.

Based on the 2012 expenditures and the 5-year history of financial records, it will be difficult for the Township to fund the required capital upgrades of its transportation infrastructure. The upgrade of Highway 620 from a surface treated road to a paved

asphalt road accounts for a significant portion of the recommended transportation budget, amounting to 42% of the annual budget for base capital expenditures. In order to fund the recommended road works excluding the upgrade of Highway 620 an annual tax increase of approximately \$193 per household would be required. To fund the upgrade of Highway 620, an additional tax increase of \$398 per household would be required. It is clear from the funding scenarios that this level of capital investment cannot be funded by the Township's current tax base.

A funding shortfall is also expected for the recommended rehabilitation of the Limerick Community Centre. The rehabilitation of the Community Centre is necessary to resolve the heating, accessibility, office space and records storage issues. Additionally, the rehabilitation will extend the useful life of the building. In order to fund the future rehabilitation of the Community Centre, a combination of budget reallocations from other Township departments and possible tax increases should be considered. With the assistance of this asset management plan, the Township of Limerick can forecast upcoming capital projects and will be able to impose the recommended tax increase and/or apply for funding as needed.

Asset management is a cost effective measure to help optimize investments, create long term savings and better manage infrastructure risks. The implementation of this asset management plan will assist the Township of Limerick in making informed decisions to meet the desired levels of service, reduce overall risk and improve the infrastructure over the ten year timeframe of the plan.

This asset management plan should be updated when regular inspections are completed and when conditions are re-assessed; every two (2) years for bridges, every three (3) years for roads and every five (5) years for buildings.

2. Introduction

The Ontario Ministry of Infrastructure's, "Building Together" (June 2011), states that any municipality seeking provincial infrastructure funding must demonstrate how its proposed project fits within a detailed asset management plan. This helps to ensure that limited resources are directed to the most critical needs. To support small municipalities in the development of their asset management plans, the Provincial government is providing funding through the Municipal Infrastructure Investment Initiative (MIII) to approximately 350 communities.

WSP (previously GENIVAR) was retained to undertake the development of a comprehensive asset management plan that the Township of Limerick (Township) can utilize to assist with decisions regarding the building, operating, maintaining, renewing, replacing, disposing and funding of their infrastructure assets.

This asset management plan was prepared in accordance with the Ontario Ministry of Infrastructure's, "Guide for Municipal Asset Management Plans" and has been structured based on the sections outlined for a detailed asset management plan.

2.1 Purpose

The purpose of this asset management plan is to provide a strategic document that will assist with decisions related to how the Township's infrastructure will be managed to ensure the desired levels of service are met. After the recommended works have been identified to ensure each asset will perform at the desired level of service, the recommended works will be distributed over a ten year planning period from 2014 to 2023. The recommended works for the infrastructure will be distributed based on priority levels determined through an assessment of risk. Following the application of full life cycle investments for maintenance, rehabilitation, renewal and replacement needs, the projected reinvestment needs will be compared to the current annual capital budget to determine the adequacy of the funding for the sustainability of the infrastructure.

The objective of this asset management plan is to maximize benefits, manage risk and provide satisfactory levels of service to the public in a sustainable manner. This asset management plan has been developed so that regular updates can be made to reflect the changing needs and funding levels of the Township's infrastructure.

2.2 Background

The Township of Limerick is located approximately 80km north of Belleville, Ontario and is situated within the County of Hastings. The Township is primarily served by Highway 62 and Highway 620.

The Township's infrastructure consists of approximately 48 km of gravel roads, 21 km of surface treated roads, three (3) bridges plus one (1) shared bridge, three (3) culverts and three (3) buildings. The scope of this project will encompass only the infrastructure within the boundaries of the Township of Limerick as identified in the following sections.

2.3 Limitations and Assumptions

This report has been prepared by WSP in accordance with generally accepted professional engineering principles and practices. The contents of this report represent WSP's professional opinion and best judgement under the natural limitations imposed by the scope of work and the information available.

This report is limited in scope to only those items that are specifically referenced herein. There may be other conditions that were not apparent due to the limitations imposed by the scope of work, and therefore WSP does not accept liability for any costs incurred by the client for subsequent discovery, manifestation, or rectification of such conditions.

This report is intended solely for the client. WSP accepts no responsibility for damages, if any, suffered by any third party as a result of use of, reliance on, or decisions made based on this report. This report has been written to be read in its entirety. Any part of this report must not be used as a separate entity.

3. State of Local Infrastructure

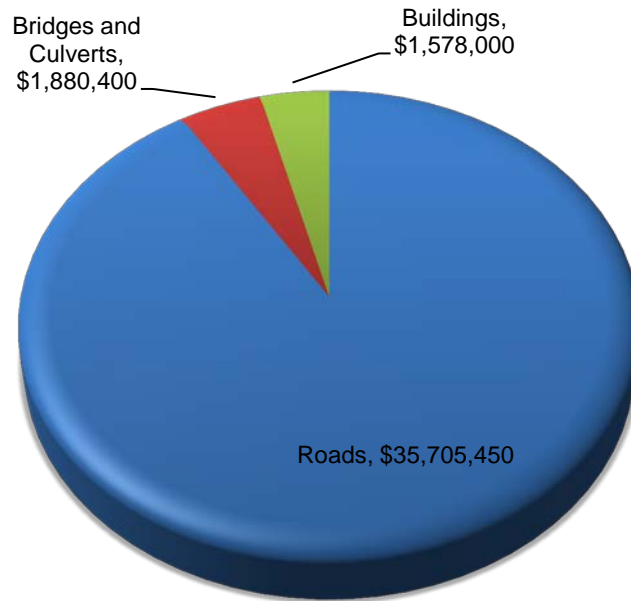
3.1 Inventory of Assets

Key asset inventory information including location, size, length, material and other attribute information is displayed in Tables 1 to 3 found in Appendix A.

3.1.1 Asset Value

The estimated life expectancy of each asset type and current year (2013) replacement value are both listed in Appendix A. The replacement costs were obtained from equipment suppliers as well as from accepted industry references. Allowances for all aspects of the replacement, such as installation (including for example, removal and disposal, ancillary installations, testing and commissioning, engineering and contingency allowances) were added to the equipment purchase cost to establish the full cost of replacement for each asset, in effect, resulting in a "contracted out" replacement cost. The total current year (2013) replacement costs for each infrastructure category are displayed below in Figure 3-1.

Figure 3-1 Total Replacement Values (2013) by Infrastructure Category



Net book value depicts an assets' value as the difference between the purchase price and the final accumulated amortization. The net book values of the Township's tangible capital assets according to the Consolidated Financial Statements (Collins Barrow), for the last five (5) years are displayed below in Table 3-1.

Table 3-1 Net Book Value of Capital Assets

Infrastructure Category	2012	2011	2010	2009	2008
Roads	\$869,493	\$766,504	\$286,992	\$331,529	\$376,064
Bridges	\$653,309	\$667,479	\$643,547	\$656,954	-
Buildings	\$198,023	\$208,716	\$219,409	\$162,758	\$170,209
Total	\$1,720,825	\$1,642,699	\$1,149,948	\$1,151,241	\$546,273

3.1.2 Asset Needs

The rehabilitation, renewal and replacement costs for the various infrastructure have been projected in Tables 1 to 3 in Appendix A based on life expectancy and age. An inflation rate of 3.0% per year was applied to the projected costs to provide the Township with realistic cost expectations for budgeting future works. Infrastructure needs associated with population growth and development of vacant lands has been included in this asset management plan as there is some expected growth within the Township over the ten year planning period (See Section 5.1.6).

The life expectancies for each asset take into consideration that routine annual maintenance is carried out by the Township of Limerick. Regular maintenance can add significant life to assets and is highly recommended. Annual maintenance expenditure for roads and bridges has been incorporated into the final investment requirements.

3.1.3 Asset Condition

3.1.3.1 Roads

Asset condition was previously established for the Township's roads based on the Roads Needs Study (G.D. Jewell Engineering Inc. (2007)), which was prepared using the Ministry of Transportation's "Methods and Inventory Manual for Small Lower Tier Municipalities, 1987".

The condition of the roads was updated based on the observations of the drive test, in which each of the Township's roads was driven at the posted speed limit. The drive test was completed on October 24th, 2013.

The Roads Needs Study utilizes a numerical rating of 1 to 10 to define the condition of the roads based on the following five (5) characteristics: surface condition, surface width, shoulder width, structural adequacy and drainage. Lower numbers are assigned to roads that show the most distress, and higher numbers are assigned to roads that show little or no distress. A description of the condition rating scale as it applies to the overall road system is provided in Table 3-2. Detailed condition rating descriptions for gravel roads and surface treated roads as outlined in the "Methods and Inventory Manual for Small Lower Tier Municipalities" are included in Appendix B.

Table 3-2 Roads System Condition Ratings

Condition Rating	Definition
<5	<ul style="list-style-type: none"> Poor structural condition Substantial improvement needed throughout total road system
5-7	<ul style="list-style-type: none"> Average structural condition Some continued improvement may be needed
8-10	<ul style="list-style-type: none"> Good structural condition Some local improvements may be needed

Based on the results of the drive test, the weighted average condition of the Township's roads system is 5.7. The weighted average condition of the Township's gravel roads and surface treated roads is 5.2 and 6.9, respectively.

3.1.3.2 Bridges

According to Ontario Regulation 104/97, every public bridge in Ontario must undergo an inspection every two (2) years. Bridge condition was established based on the most recent Ontario Structure Inspection Manual (OSIM) reports (May 2012). Bridges were assigned a condition rating of "Excellent", "Good", "Fair" or "Poor". The OSIM provides condition state tables for each material type and for specialized elements where required. As a general rule of thumb, the following table is used for most condition state tables.

Table 3-3 OSIM General Condition Ratings

Description	Definition
Poor	<ul style="list-style-type: none"> This refers to an element (or part of an element) where severe and very severe defects are visible. In concrete, any type of spalling or delamination would be considered “poor” since these defects usually indicate more serious underlying problems in the material (e.g. corroding reinforcing steel). These types of defects would normally trigger rehabilitation or replacement if the extent and location affect the overall performance of that element.
Fair	<ul style="list-style-type: none"> This refers to an element (or part of an element) where medium defects are visible. These types of defects may trigger a “preventative maintenance” type of remedial action (e.g. sealing, coating, etc) where it is economical to do so.
Good	<ul style="list-style-type: none"> This refers to an element (or part of an element) where the first sign of “light” (minor) defects are visible. This usually occurs after the structure has been in service for a number of years. These types of defects would not normally trigger any remedial action since the overall performance of the element is not affected.
Excellent	<ul style="list-style-type: none"> This refers to an element (or part of an element) that is in “new” (as constructed) condition No visible deterioration type defects are present and remedial action is not required. Minor construction defects do not count as visible deterioration type defects.

Based on the OSIM bridge reports, the current average condition of the Township’s bridges is “Good to Fair”.

3.1.3.3 Buildings

The existing condition of the buildings was established through consultation with Township staff. Buildings were assigned a condition rating of 1 to 5 based on the rating scale as shown below in Table 3-4.

Table 3-4 Buildings Condition Ratings

Rating	Description	Definition
1	Excellent	<ul style="list-style-type: none"> No work required, no dollar amount
2	Good	<ul style="list-style-type: none"> No work required, no dollar amount, perform normal maintenance
3	Fair	<ul style="list-style-type: none"> Minor maintenance, small dollar amount
4	Poor	<ul style="list-style-type: none"> Required major rehabilitation, large dollar amount
5	Very Poor	<ul style="list-style-type: none"> Requires asset replacement, replacement cost

Based on consultation with Township staff, the current average condition of the buildings included in this asset management plan is 3.0.

4. Desired Levels of Service

The recommended works for each asset were assigned so that the desired levels of service for the Township's infrastructure will be met. The levels of service have been defined below in Table 4-1 for each of the infrastructure categories: roads, bridges and buildings.

Table 4-1 Township of Limerick's Levels of Service

Infrastructure Category	Level of Service	Performance Measure	Unit	Existing Value	Target Value	Target Timeframe (year)
Roads	To provide a smooth, comfortable riding surface at posted speed limit	Frequency of Class 4 road maintenance (dust control & grading/crack sealing, pothole repair & edge repair)	No/yr	TBD	2	2014
		Frequency of Class 5 road maintenance (dust control & grading/crack sealing, pothole repair & edge repair)	No/yr	TBD	2	2014
		Frequency of Class 6 road maintenance (dust control & grading/crack sealing, pothole repair & edge repair)	No/yr	TBD	1	2014
		Frequency of condition inspections	yrs	6	3	2016
		Average condition rating of Township's gravel roads	1-10	5.2	6.0	2023
		Average condition rating of Township's surface treated roads	1-10	7.3	7.0	2023
Bridges	To provide comfortable riding surface and safe means of passage	Frequency of bridge maintenance (bridge cleaning, surface repair)	No/yr	TBD	1	2014
		Frequency of condition inspections	yrs	4	2	2014
		Average condition rating of Township bridges	-	Good - Fair	Good - Fair	2023
Buildings	To provide energy efficient buildings, satisfactory work environments for Township staff and reliable space for the community	Time to complete minor building repairs	days	TBD	10	2014
		Time to complete contracted building repairs	days	TBD	30	2014
		Frequency of condition inspections	yrs	N/A	5	2018
		Average condition rating of Township buildings	1 - 5	3.0	2.5	2023

4.1 Targets and Timeframes

Each level of service has been defined through a performance measure. In order to actively track the Township's performance in meeting the desired levels of service, an assigned value for each level of service will provide a means to measure the performance. The target values, existing values and target timeframes are listed in Table 4-1.

There are external issues that may affect the levels of service and the Township's ability to meet the targets and timeframes. There are approximately 24.5km of roads that are on municipal boundaries where the responsibility for all road works can be shared. The levels of service for these roads depend on the ability of the neighbouring municipalities to fund the recommended road works. Boundary roads have been identified in Appendix A.

5. Asset Management Strategy

Asset sustainability is dependent on activities such as maintenance, repairs, upgrades and replacements when necessary. The application of these activities relies heavily on the level of funding available and the effective allocation of that funding. To ensure recommended works were appropriately prioritized, an assessment of the risks for Limerick's infrastructure was undertaken to determine the urgency of the works associated with each asset.

5.1 Planned Action Strategies

The following section outlines the asset management strategies proposed for the management of the Township's infrastructure assets. Management strategies have been broken down into six categories including Non-Infrastructure Solutions, Maintenance Activities, Renewal/Rehabilitation Activities, Replacement Activities, Disposal Activities and Expansion Activities. A description of each strategy is outlined below.

5.1.1 Non-Infrastructure Solutions

Non-infrastructure solutions produce lower costs for long-term asset sustainability. Cost and time savings are optimized by implementing an organizational approach for all infrastructure works. Important non-infrastructure solutions include implementation of an asset management plan and regular inspections of the various infrastructure. Results of inspections should be used to regularly update the asset management plan. According to Ontario Regulation 104/97, every public bridge in Ontario must undergo an inspection every two (2) years. Roads are to be inspected every three (3) years and buildings are to be inspected every five (5) years.

5.1.2 Maintenance Activities

Maintenance is essential to managing infrastructure, as the expected level of service often relies on maintenance activities. Regular maintenance can also add significant life to assets. It is important that the Township of Limerick schedule regular inspections of its assets to identify maintenance requirements. Annual maintenance expenditure for

roads and bridges has been formulated and incorporated into the final investment requirements. See Section 6.1 for the recommended annual maintenance expenditures.

5.1.3 Renewal / Rehabilitation Activities

Rehabilitation is necessary when an asset does not perform to its desired level of service. Significant repairs designed to extend the life of the asset are determined through regular inspections. Rehabilitation over replacement is advantageous when there are only a few components that need repair. Recommended renewal/rehabilitation activities are found in Appendix A and include the ditching of roads where necessary, dragging and rolling of the gravel roads, resurfacing paved roads, bridge repairs where necessary, an upgrade of Highway 620, a minor rehabilitation of the Township/Roads/Fire Building and a major rehabilitation of the Limerick Community Centre.

5.1.4 Replacement Activities

Occasionally, the extent of damage or deterioration to an asset is too great and rehabilitation is deemed unfeasible. At this point, replacement is necessary. As an asset approaches the end of its service life, more frequent inspection may be necessary to determine if replacement of the asset is critical in the short-term, or if deferral of the asset replacement is possible. The only recommended replacement activities within the ten year planning period is the remaining reconstruction of North Steenburg Lake Road and the replacement of the Steenburg Lake Road North Bridge.

5.1.5 Disposal Activities

Following the replacement of an asset or the decommissioning of a facility, the disposal of the previous asset(s) must be considered and incorporated into the total cost of replacement. In the cases that this asset management plan recommends replacement activities, the associated cost includes disposal.

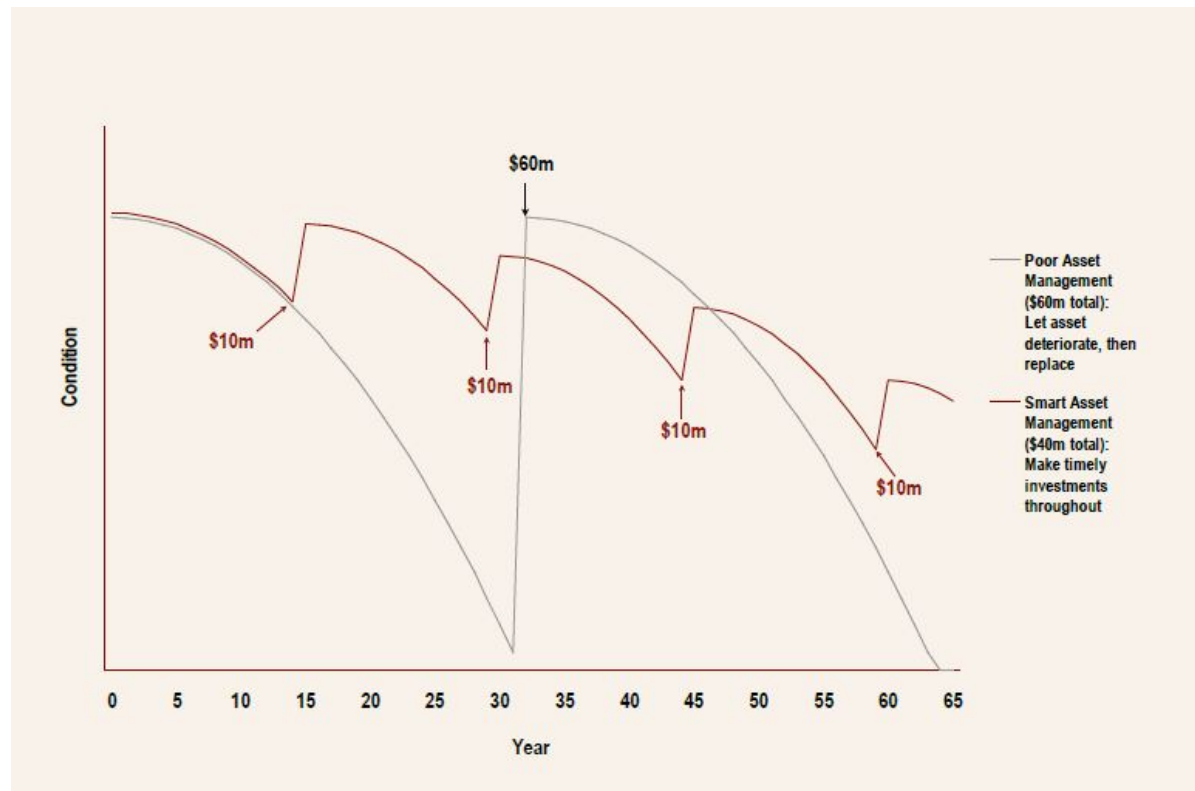
5.1.6 Expansion Activities (If Necessary)

Expansion activities are required to extend services to previously un-serviced areas or to expand services to accommodate growth demands. There is a proposed development on Limerick Lake Road which will include 110 new lots within the next five to ten years. Additional roads are not required to be constructed by the Township for the proposed development. The resulting increase in traffic on Limerick Lake Road is not expected to change the classification of the road. Therefore, there are no expansion activities necessary to facilitate the construction of the proposed development. However, the dragging and rolling of Limerick Lake Road before the proposed development proceeds has been included in this asset management plan.

5.2 Analysis of Planned Actions

An analysis of planned actions was undertaken to determine the most effective strategy for managing the Township's infrastructure. The analysis compares two strategies for managing infrastructure; one with timely renewal investments, and one without timely investments. These two strategies are depicted in Figure 5-1 below.

Figure 5-1 Small but Timely Renewal Investments Save Money (Figure 1, Ministry of Infrastructure, “Guide for Municipal Asset Management Plans”)



The most effective strategy for managing the Township’s infrastructure is to perform annual maintenance and complete timely renewal works. Implementing an annual maintenance program and completing timely renewal works will keep the infrastructure performing at the desired levels of service, and at the same time prolong the life of the infrastructure and reduce overall spending.

5.3 Procurement

Procurement is the act of obtaining goods, services or works from an external source. The Ministry of Infrastructure’s “Guide for Municipal Asset Management Plans” recommends Municipalities have procurement by-laws in place to serve as a basis for considering various delivery mechanisms.

There are approximately 24.5km of roads that are on municipal boundaries. There are currently no formal agreements with neighbouring municipalities for how the costs of these roads are shared. Additionally, there is currently no formal agreement for the Deer River Bridge, a shared responsibility bridge with Wollaston Township.

5.4 Overview of Risks

Understanding risks is important to the safety and functionality of the Township’s infrastructure. An assessment of risk was undertaken in order to determine the priority of the works associated with the infrastructure. The recommended works were distributed over the ten year planning period based on the priority determined through the risk assessment. The risk assessment results for the Township’s infrastructure and

associated priority rankings for the recommended works are included in Table 6 in Appendix C.

Below is a summary of the risk assessment approach, outlining how the assessment was carried out for the Township of Limerick’s infrastructure.

Every risk is expressed in terms of the following components:

1. A hazardous event or incident
2. A probability of the event occurring
3. A consequence of the event occurring

Risk is expressed as: $Risk = Likelihood \times Severity$

The likelihood (or probability) is assigned to the risk event as a whole. The severity (or consequence) is also assigned to the specific consequence regardless of its probability. For the purposes of this asset management plan, the only hazardous event considered was the failure of each asset. Please note that this assessment of risk is not a formal risk assessment of the Township’s infrastructure and therefore does not include all potential risks associated with each asset. Table 5-1 and Table 5-2 below were used to assign likelihood and severity scores to the hazardous events.

Table 5-1 Risk Likelihood Rating Scale

Likelihood	Description	Rating
Rare	<ul style="list-style-type: none"> • The associated infrastructure is new (within warranty period) and therefore not expected to fail in the near future; or • Road Condition Rating of 8-10, bridge rating of Good to Excellent, building rating of Good to Excellent. 	1
Unlikely	<ul style="list-style-type: none"> • The infrastructure is not new, but is still within the first quarter of its anticipated service life; or • Road Condition Rating of 6-7, bridge rating of Good to Fair, building rating of Good to Fair. 	2
Possible	<ul style="list-style-type: none"> • The associated infrastructure is part way through its anticipated service life; or • The asset has already been refurbished or rebuilt; or • Road Condition Rating of 4-5, bridge rating of Fair to Poor, building rating of Fair to Poor. 	3
Likely	<ul style="list-style-type: none"> • The associated infrastructure is approaching the end of its life cycle and therefore it is expected to fail in the near future; or • Road Condition Rating of 3, bridge rating of Poor, building rating of Poor. 	4
Very Likely	<ul style="list-style-type: none"> • The associated infrastructure has exceeded its life cycle and failure is considered imminent. • Road Condition Rating of 1-2, building rating of Very Poor. 	5

Table 5-2 Risk Severity Rating Scale

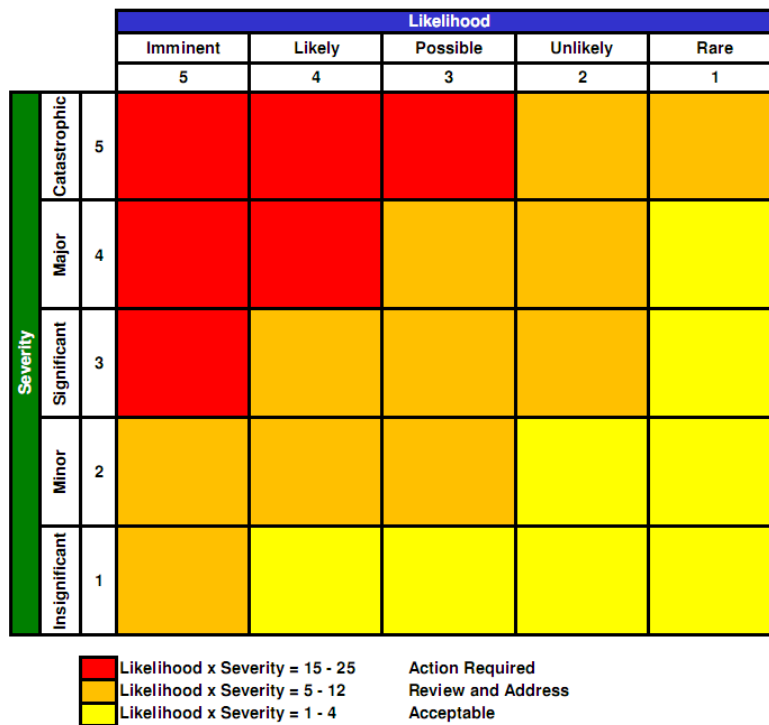
Severity	Description	Rating
Insignificant	<ul style="list-style-type: none"> No disruption to normal operation. 	1
Minor	<ul style="list-style-type: none"> Some manageable operation disruption. i.e Failure of a lower priority road. 	2
Moderate	<ul style="list-style-type: none"> Significant modification to normal operation but manageable. i.e. Failure of a medium priority road. 	3
Major	<ul style="list-style-type: none"> Reduced production with inability to meet demand imminent. i.e. Failure of a higher priority road. 	4
Catastrophic	<ul style="list-style-type: none"> Inability to meet demand; or Potential injury/death. i.e. Failure of a bridge or building. 	5

The risk “score” is determined as the product of the likelihood and severity ratings assigned to the event. This value was then used to assign priorities to the recommended works. Three risk levels were defined, based on the risk score of the particular event. These are shown in Table 5-3 and illustrated in Figure 5-2.

Table 5-3 Risk Levels

Risk = Likelihood X Severity	Level	Associated Response
1 – 4	Low	Acceptable
5 – 12	Medium	Review and Address
15 – 25	High	Action Required

Figure 5-2 Risk Classification Chart



The current average risk score associated with the failure of the Township's infrastructure is 5.1, which falls under the medium priority level. The only high level risks identified are associated with the North Steenburg Lake Road Bridge and the Limerick Community Centre, which have been recommended for replacement and rehabilitation, respectively. Additionally, a significant medium level risk was identified for Highway 620 which has been recommended for upgrade to an asphalt road. The recommended works were prioritized in order to minimize the average risk level over the ten year planning period.

It is recommended that a more detailed risk assessment be undertaken on the Township's infrastructure through future asset management planning activities, in order to refine the results of the high level risk analysis performed under this study.

6. Financing Strategy

6.1 Asset Life Cycle Investment Requirements

The following sections outline the assumptions made in determining the total costs to undertake the projected lifecycle treatments for each of the Township's assets including roads, bridges and buildings.

6.1.1 Roads

The Township of Limerick is responsible for the operation and maintenance of approximately 48 km of gravel roads and 21 km of surface treated roads.

Please note that it has been assumed that roads will undergo continued maintenance and rehabilitation, but not require complete road base replacement unless the roads are being upgraded to a paved surface. When Highway 620 is due for rehabilitation, it is recommended to upgrade the road to a paved asphalt surface. This will provide corridor consistency between Limerick Township and Wollaston Township. Highway 620 becomes a paved road at the Wollaston Township boundary, creating significant contrast with the Limerick portion of Highway 620. Increased traffic volumes from Wollaston Township are negatively impacting the surface treated section of the road in Limerick Township, requiring the road to undergo rehabilitation at only half of its anticipated life expectancy. It is also anticipated that Highway 620 will be need to be raised from a Class 4 road to a Class 3 road within the next ten years due to combined growth between Limerick Township and Wollaston Township.. The recommended upgrade of Highway 620 includes road elevation repairs, re-establishment of the crown, traffic signage replacement, safety barrier installation and asphalt paving of the road surface and shoulders. The upgrade to a paved asphalt surface will reflect the changing needs associated with Highway 620.

North Steenburg Lake Road was last surface treated in 2008, but has experienced some surface treatment deterioration as identified during the drive test. The Township began reconstructing North Steenburg Lake Road in 2012 and will continue with incremental reconstruction of the road over the next few years. This planned reconstruction has been incorporated into the projected recommended works displayed in Appendix A.

Ditching has been recommended for roads identified during the drive test as lacking an adequate ditch. A well maintained ditch significantly contributes to prolonging the life of the road base and thereby protecting the Township's investment in its roadways.

Recommended lifecycle treatments for gravel roads and surface treated roads have been included below in Table 6-1 and Table 6-2, respectively.

Table 6-1 Recommended Lifecycle Treatments for Gravel Roads

Recommended Treatment	Timing	Estimated Cost
Dragging and rolling	Every 10 years	\$10,000/km
Ditching	As required	\$19,000
Applying calcium chloride for dust control (0.6 kg/m ²)	*Every 5 Years	\$1.21/kg
Grass cutting, ditch cleaning and culvert cleaning	Annually	\$228/km
Routine grading including reshaping and leveling of the road surface	Annually	\$160/km

*Total cost of calcium chloride application has been estimated at \$150,000 for all 48 km of gravel roads, and therefore an annual budget of \$30,000 is being recommended for this item based on all roads receiving calcium chloride treatment in a 5 year timeframe.

Table 6-2 Recommended Lifecycle Treatments for Surface Treated Roads

Recommended Treatment	Timing	Estimated Cost
Reconstruction (with double surface treatment)	As required	\$94,500/km
Resurfacing	Every 20 years	\$20,000/km
Ditching	As required	\$19,000
Repair potholes	As required	\$5/m ²
Rout and seal cracks	As required	\$2/m
Manual chip seal of pavement edges	As required	\$75/m ²
Grass cutting, ditch cleaning and culvert cleaning	Annually	\$250/km
*Upgrade to asphalt road	As required	\$200,000/km

*Pulverize, 50-150mm G.A., 50mm lift of HL4 asphalt, shouldering, 10% spot drainage improvements, 10% contingency.

6.1.2 Bridges

The Township of Limerick is responsible for the operation and maintenance of three (3) bridges and one (1) shared responsibility bridge. Additionally, there are three (3) culverts ranging in size from 500mm to 1,200mm in diameter.

The Township has indicated the North Steenburg Lake Road Bridge will be replaced in the next year as per the OSIM bridge report. The St. Ola Bridge will require minor repairs as specified in the OSIM bridge report. The other bridges and culverts are considered to be in good condition and will not require major treatments within the ten year planning period.

Recommended lifecycle treatments for the bridges have been included in Table 6-3 below.

Table 6-3 Recommended Lifecycle Treatments for Bridges

Recommended Treatment	Timing	Estimated Cost
Replacement	End of Service Life 10 – 50 years	*\$500,000
Culvert replacement	End of Service Life Every 30 years	Cost varies by diameter (500mm – 1200mm) \$1,100/m - \$1,570/m
Minor Rehabilitation	As required	**\$95,000
Major Rehabilitation	As required	N/A
Bridge Maintenance/Cleaning (including washing of bearings, bearing seats, truss members, sweeping of bridge decks, curbs and gutters, removal of debris from expansion joints, debris pick-up or minor removal of aggregate, cleaning of catch-basins, man-holes and deck drains)	Annually	Negligible

*Cost provided by Township to replace North Steenburg Lake Road Bridge.

** Cost to rehabilitate St. Ola Bridge based on OSIM report (May, 2012).

6.1.3 Buildings

The Township of Limerick is responsible for the operation and maintenance of the following three (3) buildings: Township/Roads/Fire Building, Waste Disposal/Transfer Building and the Limerick Community Centre. For the purposes of this asset management plan, other smaller outbuildings including comfort stations and municipal docks have not been included.

The Waste Disposal/Transfer Building is fairly new and is in good condition. However, the Township/Roads/Fire Building is considerably older and will require a minor rehabilitation in the next ten years. The recommended minor rehabilitation includes the replacement of the windows, overhead doors and fire doors. Currently, a portion of the roads garage at the Township/Roads/Fire Building is occupied by Township offices and storage for Township records. This current arrangement exposes Township records to a

potential mould environment and does not provide adequate office space. Additionally, the office space does not have accessibility measures in place such as an accessible washroom and automated doors.

The Limerick Community Centre has experienced very high heating costs in recent years. Additionally, there are no accessibility measures in place at the Community Centre and consequently the building does not meet the applicable standards under the Accessibility for Ontarians with Disabilities Act (AODA), 2005. Since contracted work is currently required to provide adequate insulation and implement proper accessibility measures, it is recommended that the Township also renovate existing space or build additional office space and records storage at the Community Centre. The recommended rehabilitation of the Community Center includes gutting of the interior building, insulation of the building, new interior finishes, implementation of accessibility measures and renovation of existing space or construction of an addition to house the Township offices and records storage. If the building is properly maintained, this rehabilitation will extend the remaining life of the building to approximately 40 years.

The cost of the recommended rehabilitation assumes that the building is currently free of substances such as asbestos, lead, mould and rot. Prior to commencing the rehabilitation of the Community Center, it is recommended that the Township undertake a designated substances survey. Depending on the existence and extent of any potentially hazardous substances, replacement over rehabilitation of the Community Center should be considered.

Recommended lifecycle treatments for the buildings have been included in Table 6-4 below.

Table 6-4 Recommended Lifecycle Treatments for Buildings

Recommended Treatment	Timing	Estimated Cost
Replacement	Every 40-50 years	\$150 – \$220/sq. ft.
*Replace windows	As required	\$10,000
*Replace overhead doors	As required	\$8,000/door
*Replace fire doors	As required	\$2,000/door
**Major rehabilitation	As required	\$300,000

*Minor rehabilitation associated with the Township/Roads/Fire Building

**Major rehabilitation associated with the Limerick Community Centre

6.2 Expenditure Forecasts

6.2.1 Ten Year Capital Investment Needs

Based on approaches to asset lifecycle investments, including installation, maintenance and replacement at the end of service life, a ten year asset needs profile has been created for the asset categories. A summary of the ten year asset needs is included in Table 6-5 below.

Table 6-5 Township of Limerick's 10-Year Needs by Infrastructure Category

Infrastructure Category	Projected Annual Needs in Thousands of Dollars									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Roads		\$1,350		\$145	\$331	\$303	\$126	\$134	\$119	\$87
Bridges and Culverts	\$500					\$95				
Buildings			\$300						\$64	
Total	\$500	\$1,350	\$300	\$145	\$331	\$398	\$126	\$134	\$183	\$87

The major capital projects for the Township projected over the ten year planning period include: the replacement of North Steenburg Lake Road Bridge in 2014, the upgrade of Highway 620 in 2015, minor rehabilitation of St. Ola Bridge in 2019, major rehabilitation of the Limerick Community Centre in 2016, minor rehabilitation of the Township/roads/Fire Building in 2022 and the reconstruction of North Steenburg Lake Road over subsequent years (as planned by the Township).

A summary of the recommended works categorized by the six (6) previously defined planned action strategies over the next ten year period is included in Table 6-6 below. However, as described in Section 5.1, there are no forecasted disposal activities and applicable expansion activities within the next ten years. This forecast will assist in the planning of expenses associated with replacement, maintenance, renewal and rehabilitation of the Township's infrastructure.

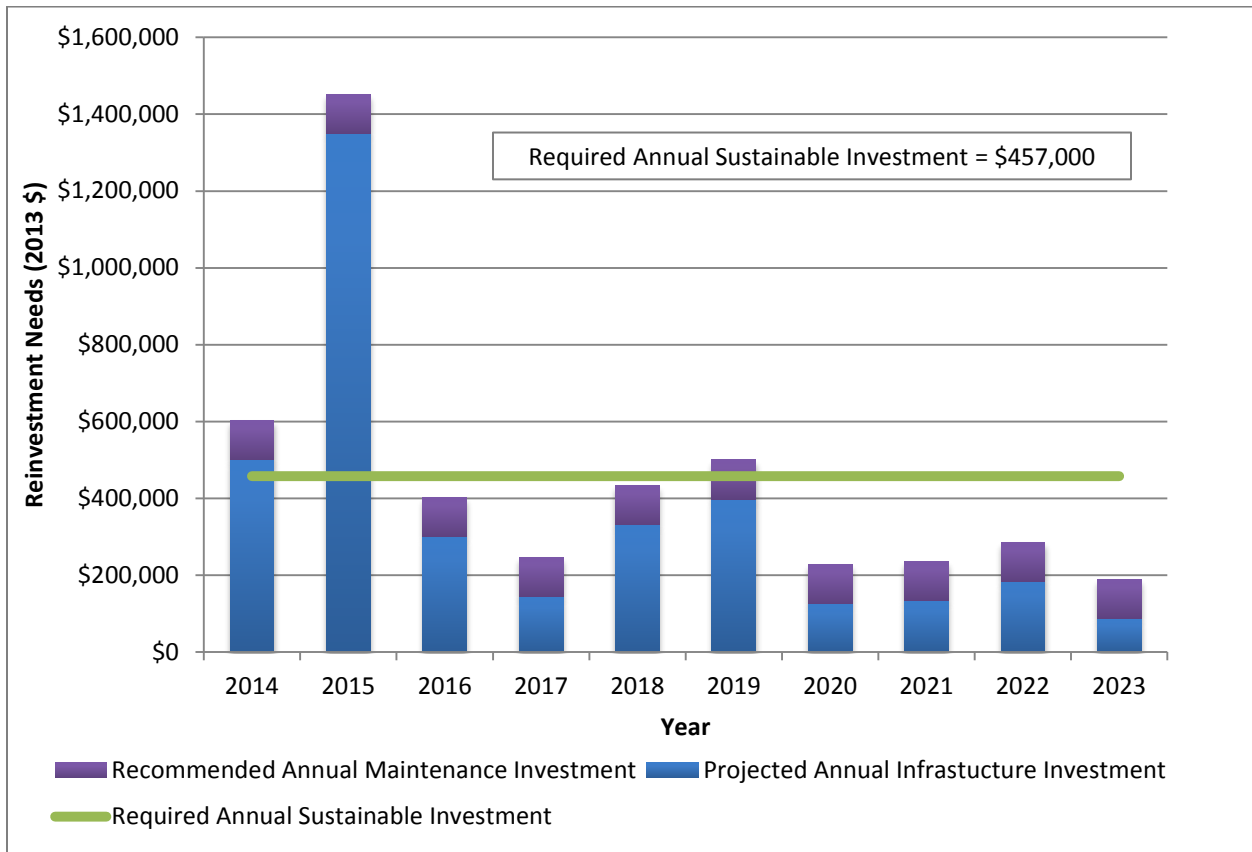
Table 6-6 Township of Limerick's 10-Year Needs by Planned Action Strategy

Planned Action Strategy	Projected Annual Needs in Thousands of Dollars									
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Maintenance Activities	\$102	\$102	\$102	\$102	\$102	\$102	\$102	\$102	\$102	\$102
Renewal/Rehab Activities		\$1,350	\$300	\$145		\$190	\$126	\$134	\$183	\$87
Replacement Activities	\$500				\$331	\$208				
Total	\$602	\$1,452	\$402	\$247	\$433	\$500	\$228	\$236	\$285	\$189

In order to develop sustainable infrastructure systems, it is important that annual budgets be allocated to allow for the planned maintenance, rehabilitation and replacement of the Township's assets. The recommended annual maintenance investment for the roads and bridges is approximately \$102,000. Based on the initial projected needs of the Township's infrastructure over the ten year planning period, the current annual investment required for infrastructure sustainability is approximately

\$457,000. The projected annual expenditures over the ten year planning period are summarized below in Figure 6-1.

Figure 6-1 Township of Limerick’s 10-Year Capital Investment Requirements



6.2.2 Township of Limerick Capital Budget

The Township’s Consolidated Financial Statements (Collins Barrow) provide the annual breakdown of revenues and expenses for transportation services and recreation and cultural services. According to the Consolidated Financial Statements, Transportation Services is described as, “The activities of the transportation function include construction and maintenance of the Township’s roads and bridges and winter control”. Recreation and Cultural Services is described as, “The recreation and cultural services function provides indoor and outdoor recreational facilities and programs and library services”.

Transportation Services

The breakdown of the yearly revenues and expenses for Transportation Services as found in the Township’s Consolidated Financial Statements is presented below in Table 6-7 and Table 6-8, respectively.

Table 6-7 Township of Limerick's Annual Revenues for Transportation Services

Transportation Services Sources of Revenue	2012	2011	2010	2009	2008
Property Taxation	\$461,795	\$347,577	\$316,959	\$256,815	\$282,883
User Charges	\$3,722	\$2,954	\$1,896	\$383	\$7,151
Government Transfers - Operating	-	-	-	\$44,473	-
Government Transfers - Capital	-	\$9,942	\$413,470	\$668,435	\$303,323
Fed Gas Tax Revenue Earned	\$46,384	-	\$39,491	\$14,761	-
Total	\$511,901	\$360,473	\$771,816	\$984,867	\$593,357

Table 6-8 Township of Limerick's Annual Expenses for Transportation Services

Transportation Services Expenses	2012	2011	2010	2009	2008
Salaries and Benefits	\$128,318	\$107,290	\$108,375	\$96,016	\$93,677
Interest Charges	\$9,789	\$17,406	\$7,247	\$6,555	\$9,977
Materials	\$183,174	\$163,423	\$137,489	\$197,746	\$135,984
Contracted Services	\$1,228	\$618	-	\$905	-
Amortization	\$149,020	\$138,268	\$107,749	\$90,110	\$76,703
Total	\$471,529	\$427,005	\$360,860	\$391,332	\$316,341

“Contracted Services” is assumed to be the amount allocated for all projected works with the exception of road dragging and maintenance, which are performed by the Township. “Materials” is assumed to be the amount allocated for road dragging and maintenance. The average amount spent on contracted services and materials over the past five (5) years is approximately \$164,000 per year. The average forecasted transportation expenditures from Table 6-5 for the next ten years amount to \$319,000 per year. When combined with the annual recommended maintenance activities of \$102,000 proposed to provide the best overall lifecycle costs for the transportation assets, the annual sustainable budget for transportation infrastructure operations, maintenance and capital works, needs to be \$421,000. Based on the 2012 expenditures and the 5-year history of financial records, it will be difficult for the Township to fund the required capital upgrades of its transportation infrastructure. The upgrade of Highway 620 from a surface treated road to a paved asphalt road accounts for a significant portion of the recommended transportation budget, amounting to 42% of the annual budget for base capital expenditures. This level of capital investment cannot be funded by the Township’s current tax levy.

Recreation and Cultural Services

The breakdown of the yearly revenues and expenses for Recreation and Cultural Services as found in the Township’s Consolidated Financial Statements is presented below in Table 6-9 and Table 6-10, respectively.

Table 6-9 Township of Limerick's Annual Revenues for Recreation and Cultural Services

Recreation and Cultural Services Sources of Revenues	2012	2011	2010	2009	2008
Property Taxation	\$35,500	\$34,227	-	\$27,113	\$25,796
User Charges	\$2,500	\$1,375	\$1,845	\$1,250	\$1,775
Government Transfers - Operating	-	-	\$92,937	-	-
Government Transfers -Capital	-	-	-	-	\$14,800
Total	\$38,000	\$35,602	\$94,782	\$28,363	\$42,371

Table 6-10 Township of Limerick's Annual Expenses for Recreation and Cultural Services

Recreation and Cultural Services Expenses	2012	2011	2010	2009	2008
Salaries and Benefits	\$5,081	\$5,161	\$3,510	\$3,067	\$2,971
Materials	\$21,198	\$24,046	\$18,351	\$21,696	\$20,645
External Transfers	\$6,395	\$6,395	\$5,906	\$3,600	\$3,600
Amortization	\$4,280	\$4,280	\$3,952	\$1,038	\$1,038
Total	\$36,954	\$39,882	\$31,719	\$29,401	\$28,254

Based on Table 6-9 and 6-10, it is evident that the funding for recreational services is just able to cover the costs for provision of these services. Given that the Recreation facility will require rehabilitation within the next ten year planning horizon, there is currently no means for funding this anticipated expenditure.

6.3 Financial Evaluation

A funding shortfall is expected for the recommended capital road expenditures and the rehabilitation of the Limerick Community Centre. If the ratio of revenues to expenses remains unchanged, these funding shortfalls will not be able to be eliminated. The revenues can only be sufficiently increased by imposing a higher property tax and/or higher user charges. Alternatively, the expenses can only be sufficiently decreased by reducing the levels of service for Township roads and buildings. By reducing the levels of services, the roads and buildings will continue to gradually deteriorate and will not be able to undergo rehabilitation.

Without the upgrade of Highway 620 to a paved asphalt surface, the road will require resurfacing in the near future. However, if Highway 620 remains surface treated, it will continue to rapidly deteriorate due to high traffic volumes and as such, will continue to require resurfacing frequently in the future.

Without the rehabilitation of the Limerick Community Centre, the Township will continue to operate the Community Centre under the current circumstances and will not be able to replace the building at the end of its useful service life in approximately 11 years

(PSAB, 2010). Heating costs will remain high and inadequate office and storage space for Township business will remain at the Township/Roads/Fire Building.

Therefore, a potential tax rate and user charge increase was reviewed to determine if the Township can eliminate the funding shortfalls.

6.3.1 Transportation Services Funding Options

There are a number of scenarios that could be looked at to fund the recommended road works, including user rate increases, tax based funding and budget reallocation or a combination of these options. Scenario 1 analysed a combination of current spending, additional revenue and a tax rate increase needed to cover the recommended roads works, excluding the upgrade of Highway 620. Scenario 2 analysed a tax rate increase used to fund the upgrade of Highway 620 to a paved asphalt road.

Scenario 1

The Township will require approximately \$286,000 per year over the next ten year period in order to undertake the recommended road works, excluding the upgrade of Highway 620. The average amount spent on contracted services and materials over the past five (5) years is approximately \$164,000 per year. Additionally, there was remaining revenue from 2012 amounting to approximately \$40,000. The remaining funding required to undertake the recommended roads works, excluding the upgrade of Highway 620 is approximately \$82,000. To cover the remaining funding a tax rate increase was reviewed.

The population of the Township of Limerick is 352, with 427 households (2011 FIR).

The tax rate and user charge increase required to fund the recommended road works excluding the upgrade of Highway 620 amounts to approximately \$192/year for each property.

Scenario 2

In order to fund the future upgrade of Highway 620 in the recommended timeframe (2015), this scenario looked at using a reserve fund built up over the next year and financing used to fund the remainder of the project, with a loan period of not more than 9 years.

Reserve Fund \$170,000
Project Loan \$1,180,000
Financing Charges \$350,000
Total Project Costs \$1,700,000

The population of the Township of Limerick is 352, with 427 households (2011 FIR).

The tax rate and user charge increase required to fund the upgrade of Highway 620 amounts to approximately \$398/year for each property over a ten year period.

6.3.2 Recreation and Cultural Services Funding Options

The Township will require approximately \$300,000 in order to undertake the rehabilitation of the Community Center. There are a number of scenarios that could be looked at to fund the Recreation centre rehabilitation, including user rate increases, tax based funding and budget reallocation or a combination of these options. In order to fund the future rehabilitation in the recommended timeframe (2016), two funding scenarios were reviewed. Scenario 1 analysed a tax rate increase used to cover the entire cost of the rehabilitation. Scenario 2 looked at partial funding through taxes and reallocation from the transportation services budget.

Scenario 1

This scenario looked at the option of upgrading the recreation centre in 2016 using reserve funds built up over the next two years and financing used to fund the remainder of the project, with a loan period of not more than 8 years.

Reserve Fund	\$72,000
Project Loan	\$228,000
Financing Charges	\$60,000
Total Project Costs	\$360,000

The population of the Township of Limerick is 352, with 427 households (2011 FIR).

The tax rate and user charge increase required to fund 100% of the rehabilitation of the Community Center amounts to approximately \$84/year for each property over a ten year period.

Scenario 2

Based on the financial summary presented in Scenario 1, it is clear that \$36,000 in annual funding would be required for the Recreation Centre rehabilitation. Scenario 2 looks at the option of reallocation from other Limerick Department budgets. Based on a review of the 2012 and 2011 financial statements, it appears that there are sufficient surpluses within other departments to fund the \$36,000 annual charge for the rehabilitation of the Recreation centre. Please note however, that this is a high level analysis and a detailed review was not conducted to determine the source or reason for surplus/deficits in other departments. As outlined previously, there is also a budget shortfall forecasted for transportation services which will need to be considered as well.

6.3.3 Financial Conclusions

The most effective strategy for managing the Township of Limerick's infrastructure is to perform annual maintenance and complete timely renewal works. Implementing these planned actions will prolong the life of the infrastructure and reduce long-term spending.

Based on the sustainable infrastructure planning approach outlined in this plan, it is clear that funding of major capital works will be a challenge for Limerick Township. The current plan has an annual funding shortfall of approximately \$247,000.

It is recommended that the Township of Limerick and neighbouring municipalities develop formal cost sharing agreements for boundary roads and the Deer River Bridge.

The Ministry of Municipal Affairs and Housing has produced a procurement by-law development guideline, available through the Ministry of Municipal Affairs and Housing website (www.mah.gov.on.ca/Page172.aspx).

Based on the 2012 expenditures and the 5-year history of financial records, it will be difficult for the Township to fund the required capital upgrades of its transportation infrastructure. The upgrade of Highway 620 from a surface treated road to a paved asphalt road accounts for a significant portion of the recommended transportation budget, amounting to 42% of the annual budget for base capital expenditures. In order to fund the recommended road works excluding the upgrade of Highway 620 an annual tax increase of approximately \$193 per household would be required. To fund the upgrade of Highway 620, an additional tax increase of \$398 per household would be required. It is clear from the funding scenarios that this level of capital investment cannot be funded by the Township's current tax base.

A funding shortfall is also expected for the recommended rehabilitation of the Limerick Community Centre. The rehabilitation of the Community Centre is necessary to resolve the heating, accessibility, office space and records storage issues. Additionally, the rehabilitation will extend the useful life of the building. In order to fund the future rehabilitation of the Community Centre, a combination of budget reallocations from other Township departments and possible tax increases should be considered. With the assistance of this asset management plan, the Township of Limerick can forecast upcoming capital projects and will be able to impose the recommended tax increase and/or apply for funding as needed.

Asset management is a cost effective measure to help optimize investments, create long term savings and better manage infrastructure risks. The implementation of this asset management plan will assist the Township of Limerick in making informed decisions to meet the desired levels of service, reduce overall risk and improve the infrastructure over the ten year timeframe of the plan.

This asset management plan should be updated when regular inspections are completed and when conditions are re-assessed; every two (2) years for bridges, every three (3) years for roads and every five (5) years for buildings.

Appendix A

Asset Inventory

Table 1: Township of Limerick Roads

*Section No.	Asset Name	From	To	Classification	Type	Length (km)	Surface Width (m)	Speed Limit (km/hr)	Last Year of Construction	Life Expectancy (years)	Estimated Replacement Value (2013)	Condition (2013)	Recommended Works	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
10 (B)	Old Hastings Road	N Steenburg Lake Road	Hwy 620	5	Gravel	8.7	4	50	1901	30	\$3,445,200	6	Dragging and rolling							\$87,000				
20 (B)	Old Hastings Road	Hwy 620	Faraday Boundary	4	Gravel	9	5.5	80	1901	30	\$4,900,500	6	Dragging and rolling								\$90,000			
30	North Steenburg Lake Road	Old Hastings Rd	Maple Landing	5	ST	2.2	6	50	2007	30	\$1,579,600	7	***Reconstruct						\$207,900					
40	North Steenburg Lake Road	Maple Landing	East Bay Rd	5	ST	4.5	6	50	2007/2012	30	\$3,231,000	7	***Reconstruct					\$330,750						
50	North Steenburg Lake Road	East Bay Rd	Hwy 62	5	ST	1	6	50	2012	30	\$718,000	10	None											
60	East Bay Road	S Steenburg Lake Rd	N Steenburg Lake Rd	6	Gravel	0.45	3	80	1901	30	\$133,650	3	Dragging and rolling							\$4,500				
70 (B)	South Steenburg Lake Road	Hwy 62	East Bay Rd	4	Gravel	1.6	4.5	80	1901	30	\$712,800	5	Dragging and rolling				\$16,000							
80 (B)	South Steenburg Lake Road	East Bay Rd	Boundary	6	Gravel	0.5	4.5	80	1901	30	\$222,750	6	Dragging and rolling				\$5,000							
90	St. Ola Road	Hwy 62	Sutton Road	5	ST	1.65	6	60	2004	30	\$1,184,700	5	Resurface						\$33,000					
100	St. Ola Road	Sutton Road	Wadsworth Lake Rd	5	ST	3.1	6	60	2004	30	\$2,225,800	6	Resurface						\$62,000					
110	St. Ola Road	Wadsworth Lake Rd	Boundary	**6	Gravel	4.1	4.5	80	1901	30	\$1,826,550	7	Dragging and rolling Ditching									\$41,000	\$77,900	
120	Weskemkoon Lake Road	Boundary	Old Boundary Rd	4	ST	1.15	6.4	80	unknown	30	\$825,700	9	None											
130	Pleasure Bay Road	St. Ola Rd	Goat Lane	6	ST	3.4	4	80	2011	30	\$2,441,200	9	None											
140 (B)	Sutton Road	St. Ola Rd	Boundary	6	Gravel	1.3	4	80	1901	30	\$514,800	7	Dragging and rolling Ditching										\$13,000	\$24,700
150	Elizabeth Street	St. Ola Rd	St. Ola Rd	6	Gravel	0.4	4	80	1901	30	\$158,400	7	Dragging and rolling										\$4,000	
160	Elizabeth Court	St. Ola Rd	St. Ola Rd	6	Gravel	0.05	3.2	80	1901	30	\$15,840	7	Dragging and rolling										\$500	
170	Woodhaven Road	St. Ola Rd	St. Ola Rd	6	Gravel	0.3	3.5	80	1901	30	\$103,950	5	Dragging and rolling										\$3,000	
180	Limerick Lake Road	St. Ola Rd	Tripps Rd	**5	Gravel	1.3	5.4	80	1998	30	\$694,980	5	Dragging and rolling				\$13,000							
190	Limerick Lake Road	Tripps Rd	Hwy 62	5	Gravel	4.6	5.4	50	1998	30	\$2,459,160	5	Dragging and rolling				\$46,000							
200	Tripps Road	Limerick Lake Rd	Limerick Lake Rd	6	Gravel	0.5	4.8	80	1901	30	\$237,600	6	Dragging and rolling										\$5,000	
210	Turnbull Road	Limerick Lake Rd	Limerick Lake Rd	6	Gravel	1.75	3	80	1901	30	\$519,750	4	Dragging and rolling										\$17,500	
220	Limerick Lodge Road	Limerick Lake Rd	Limerick Lake Rd	6	Gravel	0.6	5	80	1901	30	\$297,000	6	Dragging and rolling										\$6,000	
230	Phillips Lane	St. Ola Rd	St. Ola Rd	6	Gravel	1.9	3	80	1901	30	\$564,300	3	Dragging and rolling							\$19,000				
240	Brinklow Road	Limerick Lake Rd	Hwy 62	6	Gravel	6.5	3.5	80	1901	30	\$2,252,250	3	Dragging and rolling				\$65,000							
250	Benfield Road	Brinklow Rd	Brinklow Rd	6	Gravel	1.5	3	80	1901	30	\$445,500	3	Dragging and rolling							\$15,000				
260	Hwy 620	Boundary	Hwy 62	4	ST	3.9	6.6	80	2008	30	\$2,800,200	5	Upgrade to asphalt road		\$1,350,000									
270	Sarafians Road	Hwy 62	Hwy 62	6	ST	0.33	4.5	80	2011	30	\$236,940	9	None											
280	Robinson Lake Road	Hwy 62	Hwy 62	5	Gravel	1.5	3.5	30	1901/1995	30	\$519,750	5	Dragging and rolling								\$15,000			

																				\$28,500				
290	Nicholson Lane	Robinson Lake Rd	Robinson Lake Rd	6	Gravel	0.9	3	80	1901	30	\$267,300	4	Ditching									\$9,000		
300	Old Boundary Road	Weslemkoon Lake Rd	Weslemkoon Lake Rd	6	Gravel	0.4	4.3	80	1901	30	\$170,280	6	Dragging and rolling									\$4,000		
Total															\$0	\$1,350,000	\$0	\$145,000	\$330,750	\$302,900	\$125,500	\$133,500	\$118,900	\$86,700
Total with 3.0% Inflation															\$0	\$1,432,215	\$0	\$163,199	\$383,430	\$361,678	\$154,349	\$169,114	\$155,138	\$116,518

*(B) designates a boundary road.

**Updated road classification (2013).

***Planned reconstruction of North Steenburg Lake Rd.

Table 2: Township of Limerick Bridges and Culverts

Asset ID	Asset Name	Type	Size	Year of Construction	Life Expectancy (years)	Estimated Replacement Value (2013)	Condition (2013)	Recommended Works	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
I-1	Steenburg Creek Bridge	-	182.1m ²	2011	50	\$752,000	Good	None												
I-2	North Steenburg Lake Road Bridge	Poured in place	24.8m ²	1997	10	\$500,000	Poor	Replace bridge	\$500,000											
I-3	St. Ola Bridge	-	143m ²	1997	10	\$590,000	Fair	Repair bridge surface						\$5,000						
								Remove and patch concrete of deck soffit						\$20,000						
								Remove and patch miscellaneous concrete						\$10,000						
								Install barrier to meet code						\$40,000						
							Install approach railing						\$20,000							
-	Deer River Bridge	Poured in place with wooden platform	-	-	-	-	Good	None												
-	St. Ola Rd Culvert	CSP Pipe	16m @1200mm	2009	30	\$25,100	Good	None												
-	St. Ola Rd Culvert	CSP Pipe	12m @500mm	2009	30	\$13,300	Good	None												
-	Hwy 620 Culvert	-	-	2013	30	-	Excellent	None												
Total									\$500,000	\$0	\$0	\$0	\$0	\$95,000	\$0	\$0	\$0	\$0		
Total with 3.0% Inflation									\$515,000	\$0	\$0	\$0	\$0	\$113,435	\$0	\$0	\$0	\$0		

Table 3: Township of Limerick Buildings

Asset ID	Asset Name	Type	Size	Year of Construction	Life Expectancy (years)	Estimated Replacement Value (2013)	Condition (2013)	Recommended Works	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
B-15	Township Building (Roads Garage/Fire Hall/Municipal Office)	Pre-Engineered Building	-	1981	50	\$862,000	3	*Minor rehabilitation									\$64,000		
-	Waste Disposal/Transfer Site	Pre-Engineered Building	16 ft x 24 ft	2005	50	\$14,000	2	None											
B-7	Limerick Community Centre	Pre-Engineered Building	9,000 sq.ft	1974	50	\$702,000	4	**Major rehabilitation			\$300,000								
Total									\$0	\$0	\$300,000	\$0	\$0	\$0	\$0	\$0	\$64,000	\$0	
Total with 3.0% Inflation									\$0	\$0	\$327,818	\$0	\$0	\$0	\$0	\$0	\$0	\$83,505	\$0

*Includes replacement of windows, overhead doors and fire doors.

** Includes gutting of interior, building insulation, new interior finishes, accessibility measures, renovation/construction of office/records space.

Appendix B

Road Condition Ratings

Table 4: Surface Treated Road Condition Rating

Surface Treated Roads		
Condition Rating	Performance Description	Possible Remedial Action
10	<ul style="list-style-type: none"> • Surface Treatment condition is excellent • Little or no evidence of cracking or distortion • Ditching and drainage are adequate • Riding quality excellent to good 	<ul style="list-style-type: none"> • If there is a good depth of granular of 250 mm (10") or more and good drainage the Surface Treatment should be relatively maintenance free for next 3 years • Single surface treatment required in 5 to 7 years
7	<ul style="list-style-type: none"> • Surface Treatment is good although there may be some loss of aggregate • Some evidence of localized cracking and minor distortion • Ditching and drainage appears adequate throughout the length of the road section • Riding quality is good to fair 	<ul style="list-style-type: none"> • Some localized surface treatment maintenance may be necessary now and over the next 3 years i.e. patching, soft spot base repair, shouldering • Single surface treatment required in 2 to 4 years • Ensure ditching and drainage are in good service
5	<ul style="list-style-type: none"> • Extensive areas cracking and distortion • Localized areas of breakup - usually in wheel paths or along edge of roadway • Localized base distortion may be severe in many areas • Aggregate loss may be extensive • Ditches may be silted or grassed and holding water • Riding quality is fair to poor 	<ul style="list-style-type: none"> • Single or double surface treatment now or in next 1 to 2 years with padding and shouldering • Some base repairs and localized strengthening with hot mix or gravel lift • Localized patching with hot or cold mix or spray patching • Ditching and drainage may require improvement
3	<ul style="list-style-type: none"> • Extensive cracking and distortion over most or entire length of road section • Extensive areas of breakup over the length of the road section • Evidence of water ponding in the wheel paths • Ditches silted or grassed and holding water • Riding quality is poor 	<ul style="list-style-type: none"> • Reconstruction including scarification and reshaping, some base excavation, gravel lift over entire length and single or double surface treatment • Ditching and drainage likely require improvement

Table 5: Gravel Road Condition Rating

Gravel Roads		
Condition Rating	Performance Description	Possible Remedial Action
10	<ul style="list-style-type: none"> Gravel surface well shaped and maintained from shoulder rounding to shoulder rounding for entire length of section No evidence of soft spots or heaving in the spring Ditches and drainage are adequate throughout the length of the road section 	<ul style="list-style-type: none"> Routine maintenance required i.e. blading, dust control etc. Gravel replacement necessary Could be surface treated, if warranted by traffic usage, with reshaping and additional gravel as necessary
7	<ul style="list-style-type: none"> Gravel surface well shaped and maintained from shoulder rounding to shoulder for most of the length of section Some evidence of localized soft spots and heaving during the spring Some loss of fines Ditches and drainage appears to be adequate 	<ul style="list-style-type: none"> Routine maintenance required i.e. blading, dust control etc. Repair of soft spots Gravel replacement as necessary Could be surface treated, if warranted by traffic usage, with reshaping and strengthening with gravel, and ditching improvement, if necessary
5	<ul style="list-style-type: none"> Gravel surface poorly shaped for half the section length Grass berms trap water along edge of travelled roadway Numerous soft spots and areas of heaving in the spring Barely sufficient gravel for grading Ditches and drainage are inadequate or non-existent 	<ul style="list-style-type: none"> Increased maintenance required Additional gravel required each year at localized areas for total length of road section Base improvement necessary and additional gravel required for strengthening for total length of road section Ditching and drainage improvements required for most or entire length of road section
3	<ul style="list-style-type: none"> Road base poor over most or entire length of road section Grass berms trap water along edge of travelled roadway Ditches and drainage inadequate or non-existent Very little or no crushed gravel Numerous soft spots or frost boils 	<ul style="list-style-type: none"> Reconstruction including excavation of base material, replace with sufficient depth of gravel, widening and ditching

Appendix C

Risk Assessment

Table 6: Township of Limerick Infrastructure Risk Assessment

Asset ID	Asset Name	Hazardous Event	Consequence	Likelihood	Severity	Total
Roads						
10 (B)	Old Hastings Road	Failure	Closure of 8.7 km of a class 5 road.	2	3	6
20 (B)	Old Hastings Road	Failure	Closure of 9 km of a class 4 road.	2	3	6
30	North Steenburg Lake Road	Failure	Closure of 2.2 km of a class 5 road.	2	2	4
40	North Steenburg Lake Road	Failure	Closure of 4.5 km of a class 5 road.	2	2	4
50	North Steenburg Lake Road	Failure	Closure of 1 km of a class 5 road.	1	2	2
60	East Bay Road	Failure	Closure of 0.45 km of a class 6 road.	4	1	4
70 (B)	South Steenburg Lake Road	Failure	Closure of 1.6 km of a class 4 road.	3	3	9
80 (B)	South Steenburg Lake Road	Failure	Closure of 0.5 km of a class 6 road.	2	1	2
90	St. Ola Road	Failure	Closure of 1.65 km of a class 5 road.	3	2	6
100	St. Ola Road	Failure	Closure of 3.1 km of a class 5 road.	2	2	4
110	St. Ola Road	Failure	Closure of 4.1 km of a class 6 road.	2	2	4
120	Weskemkoon Lake Road	Failure	Closure of 1.15 km of a class 4 road.	1	3	3
130	Pleasure Bay Road	Failure	Closure of 3.4 km of a class 6 road.	1	2	2
140 (B)	Sutton Road	Failure	Closure of 1.3 km of a class 6 road.	2	1	2
150	Elizabeth Street	Failure	Closure of 0.4 km of a class 6 road.	2	1	2
160	Elizabeth Court	Failure	Closure of 0.05km of a class 6 road.	2	1	2
170	Woodhaven Road	Failure	Closure of 0.3 km of a class 6 road.	3	1	3
180	Limerick Lake Road	Failure	Closure of 1.3 km of a class 5 road.	3	2	6
190	Limerick Lake Road	Failure	Closure of 4.6 km of a class 5 road.	3	3	9
200	Tripps Road	Failure	Closure of 0.5 km of a class 6 road.	2	1	2
210	Turnbull Road	Failure	Closure of 1.75 km of a class 6 road.	3	1	3
220	Limerick Lodge Road	Failure	Closure of 0.6 km of a class 6 road.	2	1	2
230	Phillips Lane	Failure	Closure of 1.9 km of a class 6 road.	4	1	4
240	Brinklow Road	Failure	Closure of 6.5 km of a class 6 road.	4	2	8
250	Benfield Road	Failure	Closure of 1.5 km of a class 6 road.	4	1	4
260	Hwy 620	Failure	Closure of 3.9 km of a class 4 road.	3	4	12
270	Sarafians Road	Failure	Closure of 0.33 km of a class 6 road.	1	1	1
280	Robinson Lake Road	Failure	Closure of 1.5 km of a class 5 road.	3	2	6
290	Nicholson Lane	Failure	Closure of 0.9 km of a class 6 road.	3	1	3
300	Old Boundary Road	Failure	Closure of 0.4 km of a class 6 road.	2	1	2
Bridges & Culverts						
I-1	Steenburg Creek Bridge	Failure	Potential injury/death. Inability to access area.	1	5	5

I-2	Steenburg Lake Road North Bridge	Failure	Potential injury/death. Inability to access area.	3	5	15
I-3	St. Ola Bridge	Failure	Potential injury/death. Inability to access area.	2	5	10
-	Deer River Bridge	Failure	Potential injury/death. Inability to access area.	1	5	5
-	St. Ola Rd Culvert	Failure	Potential injury/ vehicular damage. Access restrictions.	1	4	4
-	St. Ola Rd Culvert	Failure	Potential injury/ vehicular damage. Access restrictions.	1	4	4
-	Hwy 620 Culvert	Failure	Potential injury/ vehicular damage. Access restrictions.	1	4	4
Buildings						
B-15	Municipal Building (Roads Garage/Fire Hall/Municipal Office)	Failure	Potential injury/death. Damage to fire and roads vehicles and equipment.	2	5	10
B-13	Waste Disposal/Transfer Site	Failure	Potential environmental damage.	1	5	5
B-7	Limerick Community Centre	Failure	Potential injury/death. No community/recreation programs.	3	5	15
Average Infrastructure Risk						5.1

	15-25 Action Required
	5-12 Review and Address
	1-4 Acceptable