



TOWN OF NEW
TECUMSETH ASSET
MANAGEMENT PLAN

November 2013



**R.V. Anderson
Associates Limited**

engineering • environment • infrastructure



**BEST
MANAGED
COMPANIES**

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November 29, 2013

RVA 132804

Corporation of the Town of New Tecumseth
10 Wellington Street East
Alliston, ON
L9R 1A1

Attention: Brendan Holly, Deputy CAO

Dear Mr. Holly:

Re: Town of New Tecumseth Asset Management Plan

We are pleased to submit our final report for the Town of New Tecumseth Asset Management Plan (AMP). The report represents the Town's first AMP. It is a strategic planning document designed to assist in the development of a long term strategy for the management of the Town's tangible capital assets. These assets are the infrastructure owned by the Town to provide a particular service to its residents and businesses.

A side benefit in preparing this report is giving the Town of New Tecumseth access to the Province of Ontario's Municipal Infrastructure Investment Initiative. The Province has made this funding available to municipalities that have prepared an AMP that meets their guidelines. The Province, and indeed all levels of government, have recognized the benefit of asset management processes to the long term well-being of municipalities and to Canada.

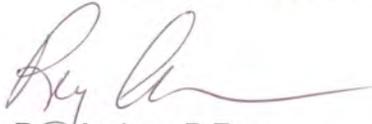
The stage was set for the asset management initiative in 2009 when every municipality in Canada was required to report all tangible capital assets on their financial statements as part of the PSAB initiative. A complete inventory and valuation of the Town's assets were developed as part of the PSAB process. The next logical management issue for the Town is to understand the level of investment needed to sustain the infrastructure such that it delivers the expected level of service throughout its life cycle.

As part of the asset management project an initial assessment of the Town of New Tecumseth's current assets and the Town's annual budget to sustain this infrastructure has identified an investment gap. This is reported in the accompanying AMP Report. The challenge for the Town is to commit to a strategic plan to address the investment gap. The commitment relates to undertaking further refinements in the plan to identify strategies to reduce the investment need and increase the available funding until the need and funding are essentially equal. This is the essence of the report to be considered by the Town.

We appreciate the opportunity to assist the Town of New Tecumseth with this strategic undertaking. We look forward to the opportunity to present and discuss the report with all stakeholders in the Town. Please contact the undersigned should you have any questions.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED



Reg Andres, P.Eng.
Vice-President



Nick Larson, MEPP, P.Eng.
Project Manager



Calvin Hawke, CA
TCA Consulting Limited

Encls.

TOWN OF NEW TECUMSETH ASSET MANAGEMENT PLAN

FINAL REPORT

Prepared for:

The Town of New Tecumseth

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RVA 132804

November 29, 2013

EXECUTIVE SUMMARY

In 2012, Ontario's Ministry of Infrastructure released a guide titled *Building Together: Guide for Municipal Asset Management Plans*. This guide forms part of a comprehensive strategy called the Municipal Infrastructure Investment Initiative (MIII) which aims to develop a strong and cooperative relationship between municipalities and the Province of Ontario to address the significant challenges that currently face our deteriorating infrastructure.

The Province is seeking to achieve standardization and consistency in the management of municipal infrastructure. To achieve this, they are requiring that any municipality seeking provincial capital funding for infrastructure projects be required to prepare an Asset Management Plan (AMP) to demonstrate the particular need of a project to the social, economic or environmental priorities of the community.

This report represents the Town of New Tecumseth's first iteration of a strategic AMP that has been completed based on readily available information in the Town. It establishes a framework that supports an informed decision making process that is used to improve the management of the Town's infrastructure. The Town has committed to continually improving this AMP over the coming years as additional information is collected and as knowledge of asset management in the Town increases.

The Town's 2005 Strategic Plan provides a strategy to provide high quality of services to residents through a series of Strategic Actions and Desired Outcomes. The Plan recognizes the balance that is required to preserve the small town character of the community while providing the opportunity for growth and maintaining the delivery of high quality services to residents. This AMP has been structured to develop processes that can be used to achieve the Town's vision for the management of their infrastructure as described in the Strategic Plan. However, it should be emphasized that this AMP is primarily focused on the Town's **existing** infrastructure.

This AMP includes the following sections:

- Section 1 introduces asset management and establishes goals for the long term management of infrastructure in the Town.
- Section 2 summarizes the state of the infrastructure in the Town, including the distribution of both the physical condition and priority ratings of the assets.
- Section 3 summarizes the existing levels of service of the Town's infrastructure and provides a series of suggested performance metrics that the Town can use to track the performance of their assets.
- Section 4 establishes the average long term (100 year) capital investment needs to sustain the Town's existing infrastructure and develops a prioritized short term (10 year) list of asset renewal needs.
- Section 5 reviews the Town's finances and provides a strategy to achieve a sustainable level of investment to renew the existing infrastructure in perpetuity.
- Section 6 summarizes the analysis that was completed to prepare this report and recommends a strategic approach to sustain the Town's infrastructure over the long term.

This first iteration of the AMP identifies a long-term need of approximately \$14 million per year to renew the Town's existing infrastructure. This long-term need has been established based on a strategic review of the Town's asset inventory. It is important to recognize that the Town is striving to reach a position where the infrastructure needs equal the available revenues. Over the coming years, the Town will continually review the infrastructure needs as better information becomes available and as technological improvements reduce the cost of renewing infrastructure. The Town will also consider approaches to increase the revenue that is available to fund the renewal of existing infrastructure, including pursuing Provincial or Federal infrastructure grants. This strategy positions the Town on a path to ultimately reach a point where the infrastructure needs equal the available revenues.

TOWN OF TECUMSETH ASSET MANAGEMENT PLAN

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1.0 INTRODUCTION

This report represents the first strategic Asset Management Plan (AMP) for the Town of New Tecumseth. It establishes a strategy that supports an informed decision making process that is used to improve the management of the Town's infrastructure.

1.1 Provincial Guideline

In 2012, Ontario's Ministry of Infrastructure released a guide titled *Building Together: Guide for Municipal Asset Management Plans*. This guide forms part of a comprehensive strategy called the Municipal Infrastructure Investment Initiative (MIII) which aims to develop a strong and cooperative relationship between municipalities and the Province of Ontario to address the significant challenges that currently face our deteriorating infrastructure.

The Province is seeking to achieve standardization and consistency in the management of municipal infrastructure. To achieve this, they are requiring that any municipality seeking provincial capital funding for infrastructure projects be required to prepare an AMP to demonstrate the particular need of a project to the social, economic or environmental priorities of the community.

This report represents the Town of New Tecumseth's first iteration of the AMP that has been completed based on readily available information in the Town. The Town has committed to continually improving this AMP over the coming years as additional information is collected and as knowledge of asset management in the Town increases.

1.2 Vision for Infrastructure in the Town of New Tecumseth

The Town's 2005 Strategic Plan provides a strategy to provide high quality of services to residents through a series of Strategic Actions and Desired Outcomes¹. The Plan recognizes the balance that is required to preserve the small town character of the community while providing the opportunity for growth and maintaining the delivery of high quality services to residents. This AMP has been structured to develop processes that can be used to achieve the Town's vision for the management of their infrastructure as described in the Strategic Plan.

¹ <http://newtecumseth.ca/business/studies/strategic-plan/>

The following are a select list of the Desired Outcomes that directly related to the management of the Town's infrastructure:

- Existing public infrastructure is optimized.
- Citizens feel informed and engaged in discussions about the future of the community.
- Visible improvements in the physical and aesthetic amenities of the public streetscape
- Downtown cores are pedestrian friendly
- Quality of parks and open space is improved
- Water quality in streams improves
- Tree cover in the Town increases
- Recreation and cultural facilities are upgraded and increased in number
- Tax rates are competitive and the Town is financially sustainable
- The condition of transportation infrastructure is improved

The items listed above will have a significant impact on the amount of money that is spent on infrastructure in the Town. It is essential that the Town understands what the long term funding needs are for the *existing* infrastructure before deciding to construct new infrastructure. This Plan is a first step in that process.

1.3 Goals of Asset Management

Asset Management strives to continually improve the management of infrastructure. The following is a list of goals that asset management programs and processes aim to achieve:

- Reduced life cycle cost (i.e. total operating, maintenance and capital resources) of providing services to residents.
- An informed and transparent decision making process that provides elected officials with the knowledge that they need to make decisions regarding capital expenditures, operating costs and revenue requirements (i.e. rate and tax levels).
- A mechanism to ensure that the services that are delivered through infrastructure can be provided at a sustainable level at a cost that is affordable to residents.

1.4 Scope of the AMP

This AMP covers a period of 100 years with a focus on the next 10 years, and reports on all of the assets owned by the Town, including:

- Water mains and water distribution system appurtenances
- Water treatment, storage and pumping facilities
- Sanitary sewer and wastewater collection system appurtenances
- Wastewater treatment and pumping facilities
- Roads
- Bridges and culverts
- Buildings
- Storm sewers and storm water management infrastructure
- Parks and park infrastructure
- Vehicles
- All other machinery & equipment owned by the Town

Section 2 of this report provides a summary of all of the assets in the Town. It should be noted that the Town of New Tecumseth does not own any social housing related assets.

1.5 Development of the AMP

This AMP was developed with a project team from the Town, R.V. Anderson Associates Limited (RVA) and TCA Consulting. The following documents were reviewed and incorporated throughout the development of this AMP:

- Town of New Tecumseth Official Plan (2010)
- Town of New Tecumseth Engineering Design Criteria and Standards (2012)
- 2008 Road Needs Study (AECOM; 2008)
- 2010 Municipal Structure Inventory and Inspection (AECOM; 2010)
- Loss Control Inspection/Valuation Report (JLT,2013)
- Building on the Foundation: Town of New Tecumseth Strategic Plan (2005)
- O/Reg 239/02 for the Minimum Maintenance Standards for Municipal Highways
- Various Master Servicing Plans
- GIS Databases
- TCA Documentation
- Town Budgets and other Financial Documents
- Internal Facility Assessment Documents
- Other Relevant Town Correspondence

1.6 Refinement of the AMP

The Town is realistic in recognizing that this AMP is a first step along a pathway that will be able to achieve the goals outlined above. The Town will be developing an Asset Management Implementation Strategy that includes a series of activities that will improve subsequent iterations of the AMP.

2.0 STATE OF INFRASTRUCTURE

This section summarizes the state of the Town's infrastructure, including:

- Inventory of all assets
- Value of assets
- Condition of assets
- A review of assets based on both the probability of failure (i.e. condition) and consequences of failure

2.1 Asset Inventory

The Town of New Tecumseth has several asset inventories at varying levels of detail, summarized as follows:

1. A Tangible Capital Asset (TCA) Register that includes every asset owned by the municipality. This Asset Register was developed to achieve the requirements of the Public Sector Accounting Board (PSAB) 3150 regarding full accrual accounting of assets in municipalities. While this Asset Register is comprehensive, the level of detail on the linear assets (roads, water mains, sewers) is not ideal to complete the analysis in this report. This is because the linear assets have been pooled to simplify the tracking of transactions and to reduce the work required to perform the annual updates of the Asset Register. For these reasons, better sources of information on the asset inventory were used if available.
2. The Town manages a GIS inventory of the Town's water mains, sanitary sewers and storm sewers. The GIS inventories provide pipe-by-pipe information and are a much better source of information compared to the information contained in the Asset Register.
3. The Roads Needs and Bridge Needs studies that have been completed by the Municipality provide the best inventory of these two asset types, in addition to providing information on the current physical condition of the assets. These inventories are also a much better source of information compared to the Asset Register.

Table 1 provides a summary of the Town's existing assets.

Table 1 – Inventory of Assets in this AMP

Asset Class	Type of Assets Included	Inventory
Bridge and Culverts	Bridges and culverts with a span over 3 meters	56 bridges, 18 culverts
Buildings	Administration, fire halls, libraries, museums, and arenas, park infrastructure	22 buildings, 50 park structures
Water	Water facilities that pump or store water, and water mains, hydrants and valves	1 water treatment plant, 6 storage facilities, 11 wells, 193 km watermain
Wastewater	Wastewater facilities that treat or pump wastewater, sanitary sewers and manholes	3 wastewater treatment plants, 11 pump stations, 125 km sanitary sewer
Roads	Roads, sidewalks, streetlights and traffic signals	336 km of roads
Storm Sewer	Storm sewers, manholes, catchbasins	49 km
Miscellaneous	Fleet, IT services, fire equipment, library	142 vehicles, pooled assets

2.2 Asset Value

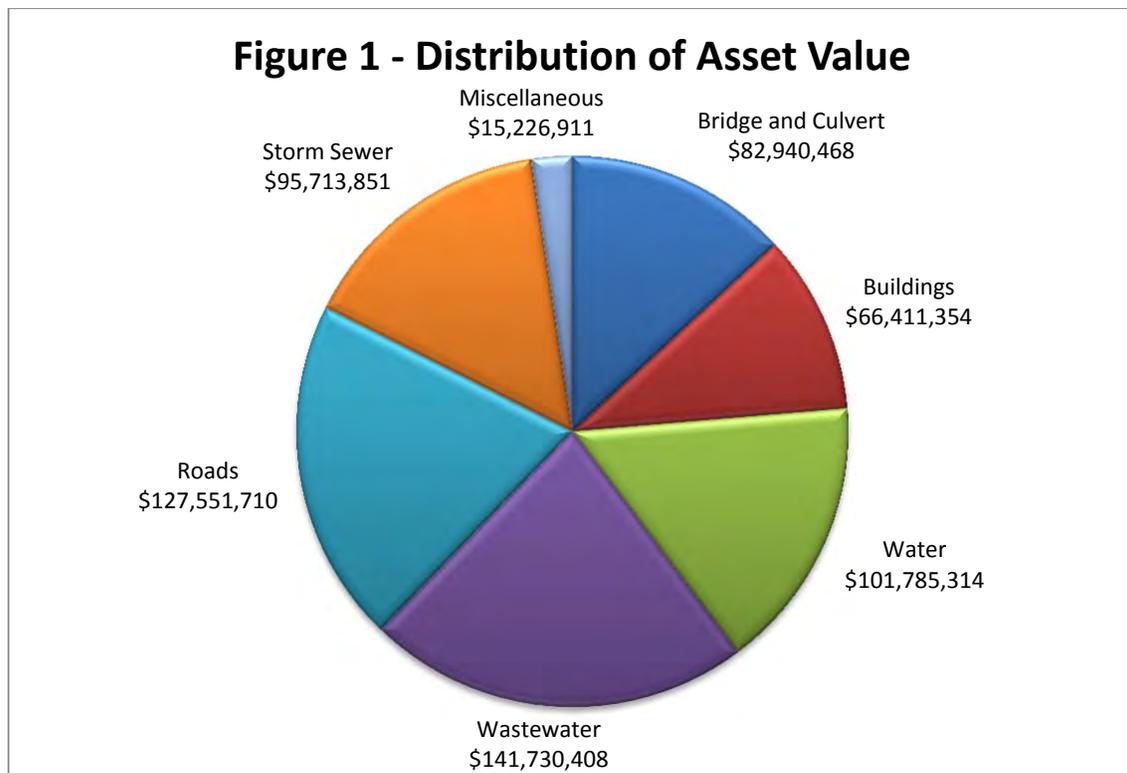
The value of the assets that are included in the scope of this Plan is summarized in Table 2 and Figure 1. The value was developed using one of two approaches applicable to the asset type, including:

- Using a cost index to bring the historical acquisition cost to a current replacement cost; or
- Estimating unit replacement costs for linear assets or complete replacement costs for discrete vertical assets based on the available information such as size and material.

It is apparent from Table 2 and Figure 1 that the replacement value of the assets that are in the scope of this study is \$631 million. It is also apparent that 87% of the total value of the Town's infrastructure is managed by the Engineering and Public Works Departments.

Table 2 – Value of Assets by Asset Class

Asset Class	Replacement Cost
Bridge and Culverts	\$82,940,468
Buildings	\$66,411,354
Water (incl. plants/pumping stations/storage facilities)	\$101,785,314
Wastewater (incl. plants/pumping stations)	\$141,730,408
Roads	\$127,551,710
Storm Sewer	\$95,713,851
Miscellaneous	\$15,226,911
Total	\$631,360,015



2.3 Asset Condition

Understanding the condition of the Town’s assets is an essential component to an AMP. Ideally the condition information is based on assessment activities that provide first-hand knowledge of the condition of the infrastructure. However, for most of the assets in the Town, condition information based on visual observations or first-hand knowledge is not readily available. This is very common in municipalities in Ontario and across Canada. Therefore, in most cases the condition of the assets had to be estimated.

The best practice to estimate the condition of an asset where assessment activities have not been completed is to evaluate the amount of its useful life that has been consumed. For example, an asset that has a useful life of 10 years would be considered to be in excellent condition if it is 1 year old and poor condition if it is 9 years old. Although this approach does not always provide an accurate condition of the asset, particularly in cases of buried linear infrastructure (i.e. water mains and sewers), it is a reasonable starting point where actual condition information is not easily accessible. The Town's various asset inventories contain information on the asset age and the useful life that has been estimated based on industry standards, and therefore it is possible to estimate the condition of the assets using this approach.

For the purposes of this report, the condition of the assets where actual condition information was not available was estimated based on Table 3.

Table 3 – Estimated of Condition based on Useful Life Remaining

Percent of Useful Life Remaining	Estimated Condition
80% or above	Excellent
60-79%	Good
30-59%	Fair
1-29%	Poor
0%	Very Poor

It should be noted that there was actual condition information readily available for the following asset types:

- Roads
- Bridges and large culverts

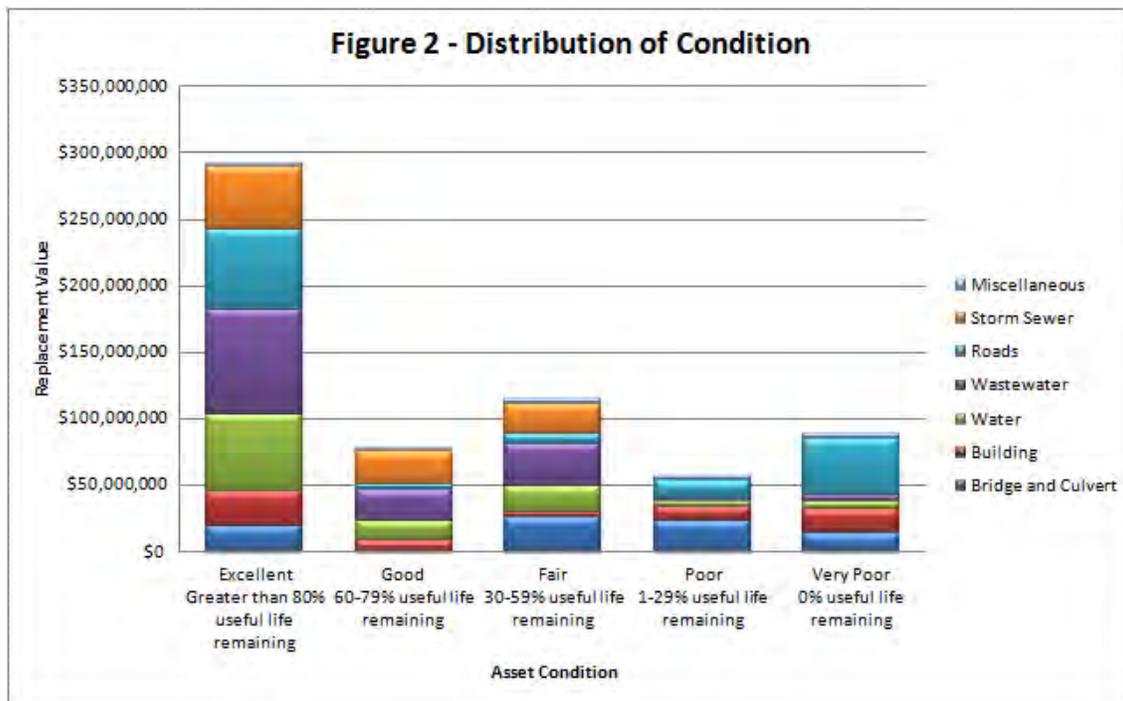
Appendix A details how the condition assessment information on the above noted asset types were converted to a condition score for the purposes of the analysis performed in this report.

Table 4 and Figure 2 summarize the condition of the Town's infrastructure. It is apparent that approximately \$89 million worth of assets have a condition that is considered very poor (i.e. the asset age has exceeded its useful life).

It should be noted that the approach of using the combination of the asset age and useful life can produce condition results that appear worse than what would be observed with actual condition assessment because of the theoretical assumption that any asset which has reached the end of its useful life is in critical condition. For example a sewer that has a useful life of 80 years in the TCA register may continue to provide a reasonable level of service for 100 or more years.

Table 4 – Value of Assets by Condition Score

Condition Score	Replacement Cost	% of Total
Excellent	\$292,103,235	47%
Good	\$77,965,424	12%
Fair	\$115,513,634	18%
Poor	\$56,807,142	9%
Very Poor	\$88,970,580	14%
Total	\$631,360,015	100%



2.4 Identifying Priority Assets

The state of the Town's infrastructure is not only limited to the physical condition. To achieve a better understanding of the needs of the infrastructure the assets were prioritized based on their probability and consequence of failure. Appendix A contains a full description of the probability and consequence of failure scores that were assigned to each asset class in the departments in the Town.

2.4.1 Probability of Failure

A probability of failure score is given to each asset based on the condition information. Although the probability of an asset failing is not necessary indicative of its age (i.e. some newer water mains can fail more frequently than older water mains due to their production methods), the Town does not maintain records that could be used to better estimate the probability of an asset failing. Table 5 summarizes the probability of failure score that was assigned to each asset based on the estimate of its physical condition.

Table 5 – Probability of Failure Score

Estimated Condition	Probability of Failure Description	Probability of Failure Score
Excellent	Improbable	1
Good	Unlikely	2
Fair	Possible	3
Poor	Likely	4
Very Poor	Highly Probable	5

2.4.2 Consequence of Failure

The consequence of failure score for each asset is based on a review of information that was provided by the Town, such as:

- Size/capacity of the asset
- The use of the asset
- The importance of the asset to the operation of the system/facility

Table 6 summarizes the approach to establishing the consequence of failure score for each asset.

Table 6 – Consequence of Failure Score Information

Consequence of Failure Description	Consequence of Failure Score
Very low measurable effect of any kind	1
Low/marginal change in the function, serviceability, or capacity of the asset and (or) effect on public safety and the environment	2
Moderate change in the function, serviceability, or capacity of the asset and (or) effect on public safety and the environment	3
Major change in the function, serviceability, or capacity of the asset and (or) effect on public safety and the environment	4
Catastrophic loss of infrastructure affecting public safety or having severe environmental consequences.	5

2.4.3 Priority Assessment

The final step in the priority assessment for each asset is to multiply the consequence of failure score and the probability of failure scores. This results in a priority score for each asset of between 1 and 25. A priority category was then established for each asset based on the priority score. Figure 3 summarizes the process that was used to categorize each asset.

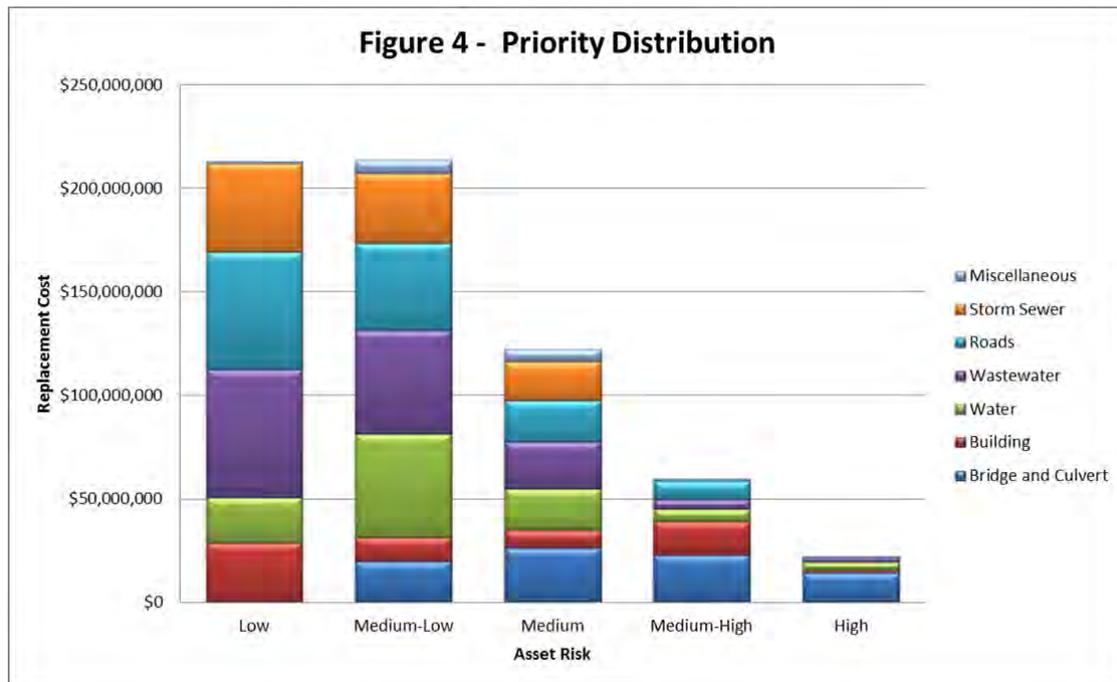
Figure 3 – Priority Matrix

		Probability of Failure				
		1	2	3	4	5
Consequence of Failure	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

Table 7 and Figure 4 summarize the priority distribution of the assets in the Town. It is apparent that approximately \$82 million worth of assets are in a medium-high or high priority category. Addressing the needs of these assets is a priority over renewing other assets.

Table 7 – Priority Distribution

Priority	Replacement Cost
Low (assets with the last priority for renewal)	\$213,075,525
Medium-Low	\$213,760,199
Medium	\$122,240,645
Medium-High	\$59,786,251
High (assets with the first priority for renewal)	\$22,497,396
Total	\$631,360,015



2.5 Engagement of Town Staff

Town of New Tecumseth staff members were fully engaged with the project team throughout this report to provide their understanding of the infrastructure systems to the project. The Town recognizes that the general approach and prioritization strategy for each asset will be refined over the coming years as better information becomes available.

3.0 LEVELS OF SERVICE

A “level of service” is a term that is used to describe **how much** of a service is being provided or **the quality** of a service that is being provided. In the context of asset management plans, levels of service are established as a way to guide the management of infrastructure in a manner that aims to achieve the level of service goal. This develops a systematic process for:

1. Deciding the appropriate level at which to provide each service.
2. Tracking the current level of service.
3. Preparing a strategy to achieve the service level goal if the tracking process in step (2) shows that the goal is not being met.
4. Establishing a clear linkage between the costs of higher service levels.
5. Discussing the willingness to pay for higher service levels.

3.1 Types of Levels of Service

Levels of service vary widely depending on the level of sophistication of an organization. They can be related to regulations, customer expectations, or corporate vision. In terms of municipal infrastructure, the services that they provide are generally related to either condition or capacity. Levels of service can also be based on managing the consequence that the failure of the asset has on the service that it provides. This section of the AMP includes a summary table that provides the current levels of services that have been defined in the Town’s existing documentation and current infrastructure management practices.

3.2 Condition Levels of Service

The most basic level of service for the Town is established around maintaining infrastructure in an acceptable state of repair. The levels of service that the Town has been practicing are relatively informal and are not structured in a framework to support an integrated asset management strategy.

The levels of service that have been established in the capital works planning process addresses the infrastructure that is in the worst state of repair and would result in large consequences if it were to fail. This process is coordinated between Town staff and Council.

Although undocumented, the current capital planning process that the Town is practicing represents a prioritized based approach to managing their infrastructure. The analysis

completed in this AMP provides a more formalized approach to managing the infrastructure by prioritizing the renewal of assets based on their probability and consequence of failure.

3.3 Capacity Levels of Service

As described in Section 3.2, the Town has well established management practices that are used to drive decision making with respect to the renewal of assets according to their condition. However, similar to most municipalities in Ontario, the Town does not have specific levels of service that are used to address the renewal of existing infrastructure based on capacity issues. The Town does prepare master servicing plans for their water and wastewater systems that are developed to achieve specific capacity service levels. However these plans are primarily related to new assets (i.e. not the renewal of existing assets).

It should be recognized that the master servicing plans are an ideal opportunity to consider more sophisticated reviews of current and planned service levels. At a minimum, the master servicing plans should include a full life cycle financial analysis of the servicing options that are being considered.

3.4 Existing Levels of Service

The two primary resources that contain service levels for infrastructure in the Town are the Town's Official Plan (supported by the master servicing plans) and the Town's Development and Engineering Standards. These two documents are summarized in the following sections.

3.4.1 Town of New Tecumseth Official Plan

The Town's Official Plan provides some direction on the levels of services of the asset groups in the Town at a strategic level. It should be noted that the Official Plan is a comprehensive document that discusses the economic, social and environmental considerations for **growth** in the Town. It is designed to guide the future levels of service that will be provided in each community.

The Town has also established a Natural Heritage System with respect to Oak Ridges Moraine Conservation Plan that includes a process to identify and delineate environmentally

significant areas and establish policies regarding the development or alteration of the site, including set-backs from the boundary of the areas where development is permitted. This System is also primarily intended to guide future development.

3.4.2 Town of New Tecumseth Engineering Design Criteria and Standards

The Town of New Tecumseth Engineering Design Criteria and Standards establish tactical or operational levels of service for the infrastructure that is constructed in the Town. These standards relate to the capacity of infrastructure or the availability of an infrastructure service. There are no levels of service related to the condition of infrastructure in the Engineering Design Criteria and Standards.

3.4.3 Documented Service Levels

Table 8 provides a summary of the Levels of Services that are documented in the Official Plan and Development and Engineering Standards, as well as in other documents or informal policies in the Town.

3.5 Performance Metrics

Performance metrics are used to assess how well the infrastructure is achieving the service levels. Table 8 also provides a series of suggested performance metrics that the Town can use in future review of its infrastructure. Subsequent AMPs can complete the State of Local Infrastructure analysis by comparing levels of service to performance metric goals.

Table 8 – Existing Service Levels in the Town and Suggested Performance Metrics

Department	Levels of Service	Suggested Performance Metric
Water Mains & Water Facilities	<ol style="list-style-type: none"> 1. Provide services to accommodate growth 2. Water system designed to meet Town Design Guidelines 3. Services at least 19 mm; Water mains at least 150 mm in diameter 4. Meet all regulated drinking water quality goals (i.e. meet MOE Drinking Water Systems Regulation O. Reg. 170/03 and Certificate of Approval) 5. Provide reliable water service 6. Provide clear drinking water 	<ol style="list-style-type: none"> 1. Number of development applications that are delayed due to insufficient water infrastructure 2. Locations where existing infrastructure does not meet design guidelines confirmed through hydraulic modeling or field testing 3. Locations with mains or services that are smaller than the minimum sizes 4. Number of times the regulated drinking water quality goals are not achieved 5. Number of water main failures per km of water main per year AND number of locations with no redundancy in water supply system 6. Number of rusty water complaints
Sanitary Sewers & Wastewater Facilities	<ol style="list-style-type: none"> 1. Provide services to accommodate growth 2. Sanitary sewer system designed per guidelines; 200 mm minimum size 3. Discourage the use of force mains and sewage pumping stations 4. Meet all regulated wastewater quality goals 5. Minimize the number of sewer backups that occur due to Town's infrastructure failures 6. Minimize the number of emergency sewer bypass events that occur 	<ol style="list-style-type: none"> 1. Number of development applications that are delayed due to insufficient wastewater infrastructure 2. Locations with sub-standard infrastructure (size, slope) confirmed through review of designs 3. Number of force mains/sewage pumping stations in the Town 4. Number of times the regulated wastewater quality goals are not achieved 5. Number of sewer backups that occur due to Town infrastructure failures 6. Number of emergency sewer bypass events that occur
Storm Sewers/ Storm Water Management Facilities	<ol style="list-style-type: none"> 1. Provide services to accommodate growth 2. Level of protection established based on nature of area drained (loss/damage of life/property) as outlined in the Town's Engineering Design Criteria and Standards for Subdivision and Capital Works Projects 3. Improve the water quality in Town streams 	<ol style="list-style-type: none"> 1. Number of development applications that are delayed due to insufficient storm water infrastructure 2. Number of locations where infrastructure does not meet protection for a specified storm return period 3. Results of annual water quality testing

Department	Levels of Service	Suggested Performance Metric
Roads & Bridges	<ol style="list-style-type: none"> 1. Provide services to accommodate growth 2. Sidewalks on two sides of urban arterial and residential collector, one side on all other urban roads. 3. Concrete curb & gutter (and storm sewer) on all urban roads 4. Provide maintenance standards in accordance with O/Reg 239/02 5. All bridges should be maintained to be safe for use 6. Provide adequate tree planting in boulevards adjacent to parking lots as per Town's Urban Tree Program 	<ol style="list-style-type: none"> 1. Number of development applications that are delayed due to insufficient road infrastructure 2. Number of roads that meet sidewalk level of service 3. Number of roads that do not meet curb/gutter/storm sewer level of service 4. Number of times road maintenance is not in accordance with O/Reg 239/02 5. Percentage of recommended repairs completed in accordance with timing identified in the biannual bridge (OSIM) inspections 6. Number of boulevards with insufficient tree cover.
Parking Lots	<ol style="list-style-type: none"> 1. Parking lots in the Downtown Core Commercial designation are not to be located in front the building facing the street 	<ol style="list-style-type: none"> 1. Number of parking lots that do not follow guideline
Fire	<ol style="list-style-type: none"> 1. Provide fire services that meet best practices as recommended by regulated authorities, insurance coverage, National Fire Protection Association and Ontario Office of the Fire Marshall 2. Response times for the Town based on Community Fire Risk Profiles for existing and projected zone areas 3. Maintain fire halls in state of good repair 	<ol style="list-style-type: none"> 1. Number of locations that do not meet the recommended best practices by the relevant group/organizations 2. Number of events that do not meet the target response time 3. Number of fire halls with outstanding repair/rehabilitation activities
Buildings	<ol style="list-style-type: none"> 1. All infrastructure should comply with the Accessibility for Ontarians with Disabilities Act (AODA) 2. Minimize the number of accidents and legal actions that occur that are directly attributed to improper maintenance of a facility 	<ol style="list-style-type: none"> 1. Number of facilities in the Town that do not comply with the AODA 2. Number of accidents and legal actions directly related to improper maintenance of a facility
Parks	<ol style="list-style-type: none"> 1. Encourage integration of parks and open space with Greenlands system where possible 	<ol style="list-style-type: none"> 1. Number of parks in Greenland system
Recreation and Culture	<ol style="list-style-type: none"> 1. Provide adequate access to recreation and cultural facilities. 	<ol style="list-style-type: none"> 1. Number of recreation and cultural facilities and proximity to each community
Streetlights	<ol style="list-style-type: none"> 1. Streetlights shall be in full accordance with ESA 22/04 regulations 	<ol style="list-style-type: none"> 1. Number of streetlights that do not meet regulations

4.0 ASSET MANAGEMENT STRATEGY

4.1 Asset Management Strategy Overview

The asset management strategy component of the AMP represents the set of planned activities to ensure that the state of the infrastructure achieves the level of service goals.

The strategy is generally related to optimizing decisions with respect to:

- The replacement or rehabilitation of assets
- The optimal level of maintenance investment required to minimize the long term costs of the assets (i.e. does more maintenance result in a longer useful life)
- Disposing of assets that are not required to meet service levels
- Addressing Town policies that impact the strategy for how to renew the asset (i.e. does the asset size/design need to change to meet policies from the Official Plan or Master Servicing Plans)

The items summarized above are the goals for an AMP (and the associated systems that support the plan) to achieve through an analysis of readily available information. In this first iteration of the Town's AMP, achieving a process that optimizes these goals is difficult due to a lack of readily available information and established processes to support the decisions.

For example, the decision to rehabilitate or replace water mains using one of several techniques is dependent on knowing if the water main size should be increased or if the structural failure frequency exceeds a target threshold. This decision making process is best supported by a more detailed needs study of the water distribution system that identifies a specific renewal strategy for each water main based on capacity and condition service levels.

4.2 Existing Asset Management Strategies in the Town

An asset management strategy can take many forms, such as formalized Needs studies or less formal activities such as coordination meetings between departments. A workshop was held with the Town to determine the asset management strategies and practices that are currently employed by Staff. The following paragraphs summarize the current asset management strategies that are practiced in the Town.

The Town currently has a well-established asset management strategy for the road and bridge assets. The strategy for the road assets are supported by a Road Needs Study

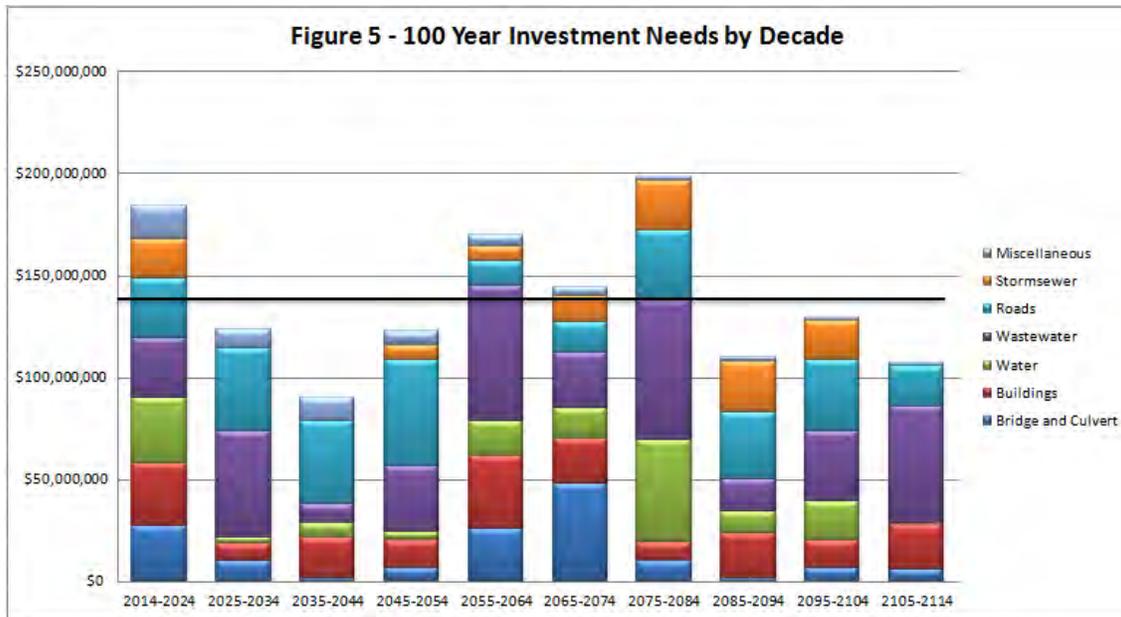
(AECOM; 2008) that is updated on a periodic basis. This approach includes completing detailed pavement condition surveys of all of the roads in the Town and establishing renewal needs such as crack sealing, surface overlays and full road reconstructions. The renewal activities are established to increase the useful life of the road segments, and may result in a priority being given to road rehabilitation activities as opposed to full road reconstruction projects. The recommendations of work in the Roads Needs Study are prioritized by average annual daily traffic counts and the condition rating of the road to achieve an established level of service target relating to the condition of the road.

The strategy for the bridge assets are supported by the regular inspections that are mandated by the Province. The inspections are performed on all bridges and any culvert with a span greater than three meters. The inspections are completed by qualified personnel who develop recommendations with respect to the optimal renewal strategy, including minor repairs, rehabilitation or replacement of the assets.

The asset management strategies for the other assets owned by the Town are less formal and are often completed on an asset-by-asset basis as opportunities are presented. The primary strategy is based on coordination between departments to establish priorities or replacing an asset based on its lifecycle.

4.3 Long Term Infrastructure Needs

Figure 5 provides the long term (100 year) capital investment needs for the renewal of the Town's existing infrastructure based on a strategic review of the replacement cost and theoretical useful life of each asset. It is apparent that on average the Town's existing infrastructure needs approximately \$14 million per year to be sustained (in constant 2013 dollars) using this strategic approach. Over the coming years, the Town will continually review the infrastructure needs as better information becomes available and as technological improvements reduce the cost of renewing infrastructure.



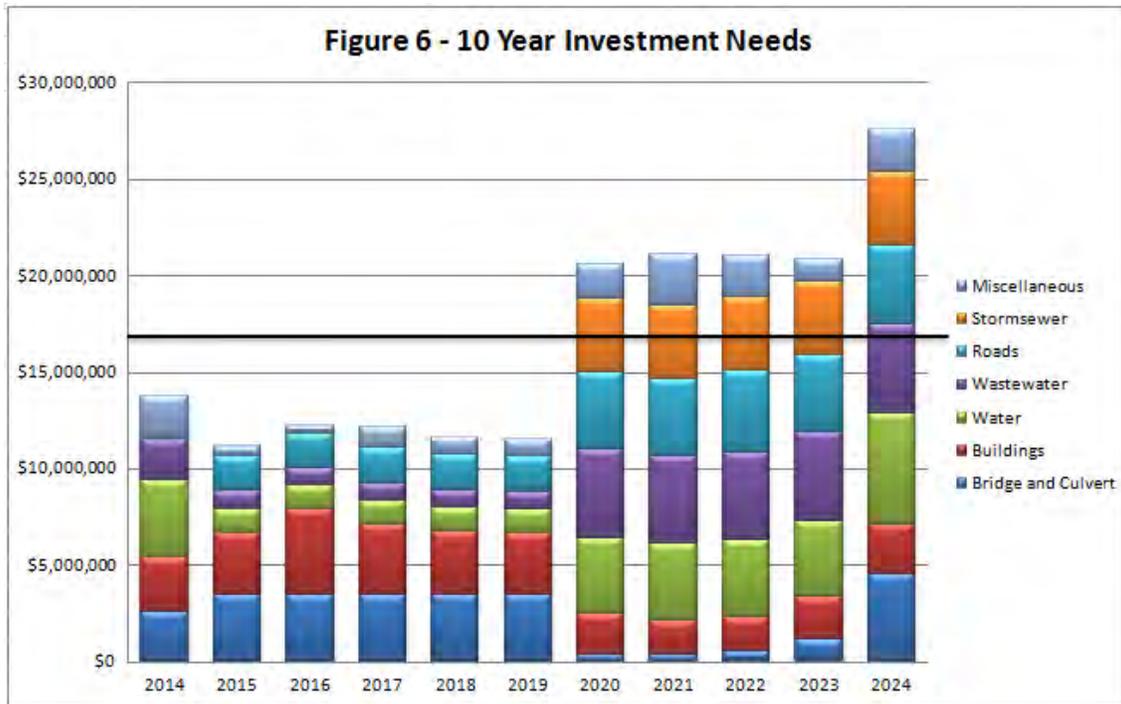
4.4 Short Term Infrastructure Needs – Prioritizing Asset Renewal

This AMP establishes a strategy for prioritizing the renewal of existing assets based on a combination of the probability and consequence of failure – essentially to renew assets that are in poor condition and would have a significant impact on service levels or cause other significant consequences if they were to fail. This strategy develops a renewal plan that is based on addressing the highest priority assets first according to the priority ratings that were established in Section 2 of this report and the renewal timing summarized in Table 9.

Table 9 – Renewal Strategy based on Priority Rating

Priority Rating	Renewal Time Period
High	Immediate (as soon as possible)
Medium-High	Short Term (next 5 years)
Medium	Medium Term (next 10 years)
Medium-Low and Low	Long Term - regular planned renewal based on age of asset and expected useful life or when asset reaches a higher priority level (i.e. probability or consequence of failure increases)

Figure 6 provides the prioritized short term (10 year) capital investment needs for the Town’s infrastructure. The costs identified in Figure 6 address the needs of the infrastructure that are a medium, medium-high and high priority for renewal. It is apparent that over the next 10 years there are priority assets in all of the infrastructure groups in the Town.



4.5 Asset Management Strategies to Reduce the Cost of Infrastructure Needs

The Town has committed to advancing asset management practices in the organization. However, some of these processes will take several years to develop. The infrastructure needs provided in Figures 5 and 6 are based on the assumption that the Town will replace the existing infrastructure with an identical asset and therefore use the replacement costs included in the Town’s TCA register. However, it may be feasible to replace infrastructure at a lower cost by using alternative procurement methods, rehabilitating assets, or by taking advantage of other technological advancements that reduce the cost of asset renewal activities. The following is a list of strategies that the Town should consider to reduce the costs of addressing the immediate infrastructure needs:

- Review the potential cost savings of multi-year contracts to renew infrastructure (i.e. road resurfacing, water main replacement, etc.). This may reduce the unit costs of the capital construction projects.

-
- Review the potential of undertaking partnerships with neighbouring municipalities to achieve greater economies of scale with respect to infrastructure replacement contracts. This may reduce the unit costs of the capital construction projects.
 - Review the potential cost savings of undertaking structural rehabilitation of water mains or sewers. However, it is recognized that it may not be cost-effective to complete these types of rehabilitation activities in smaller municipalities where the cost of replacement is lower than in large municipalities and the cost of the rehabilitation is often more expensive due to quantities of scale and the availability of qualified contractors.
 - Review the feasibility of rehabilitating some assets instead of replacing them. Rehabilitation can result in lower long term costs of owning and operating some assets.

5.0 FINANCING STRATEGY

The financing strategy is the final component of the AMP. It provides a plan to move forward with the asset management strategy that was provided in Section 4 of this report.

5.1 Review of Town Capital Expenditures

Section 4 indicated that that on average the Town's existing infrastructure needs approximately \$14 million per year to be sustained (refer to Figure 5). The review of infrastructure needs in Section 4 also recognized that over the coming years the Town will continually review the infrastructure needs.

Table 10 summarizes the Town's 2013 expenditures on renewal of existing infrastructure. It is apparent that the Town spent a total of approximately \$3.1 million in 2013 to renew existing infrastructure.

Table 10 – 2013 Town Financing on Renewal of Existing Infrastructure

Contribution to Capital from Taxation	\$356,350
Gas Tax	\$849,728
Sidewalk Financing	\$95,493
Annual Road Rehabilitation Debenture	\$1,000,000
Total General Capital Financing	\$2,301,571
Total Water Rates Capital Financing	\$107,995
Wastewater Rates Capital Financing	\$140,771
Debenture ending in 2013 for Alliston WWTP	\$555,175
Total Wastewater Capital Financing	\$695,946

5.2 Comparison of Expenditures and Revenues

Table 11 summarizes the 2013 expenditures, the long term needs and the 2013 revenues. It is apparent that there is a shortfall of approximately \$10.9 million. Table 11 also identifies the Town's 2013 revenues from the water/wastewater rate and the general tax levy.

Table 11 – Review of Financing Shortfall

	2013 Expenditures	Long Term Needs	Shortfall	2013 Tax/Rate Levy
General Capital Financing	\$2,301,571	\$8,500,000	\$6,198,429	\$22,249,244
Water Capital Financing	\$107,995	\$1,600,000	\$1,492,005	\$4,410,982
Wastewater Capital Financing	\$695,946	\$3,900,000	\$3,204,054	\$4,063,673
Total	\$3,105,512	\$14,000,000	\$10,894,488	\$30,723,899

5.3 Addressing the Financing Shortfall over the Short Term

The following is a list of alternatives that should be considered to address the financing shortfall:

- Increase tax/rate revenues: The following table identifies the year at which the revenues will equal the expenditures needs for a range of taxation/rate increases.

Annual Taxation/ Rate Levy % Inc.	Year Capital Levy Equals Expenditures		
	Tax Supported	Water Rate	Wastewater Rate
1%	2038	2043	2072
2%	2026	2028	2043
3%	2022	2023	2033
4%	2020	2021	2028
5%	2019	2019	2025

- Pursue Provincial and Federal grants whenever possible: The Capital Budget assumes only Gas Tax funding from the Provincial and Federal Governments. This is a conservative approach that is recommended in the Provincial Government's Asset Management guide. Both senior levels of government have acknowledged that they should share in addressing the infrastructure deficit. It is reasonable to assume that funds will become available in the future from both senior levels of government. The Town of New Tecumseth should develop a methodology to secure a share of these funds.

- Refine the asset management processes described in this AMP for all of the assets in the Town: This would include developing a list of needs based on more sophisticated service levels and an improved asset management strategy based on additional information. The Town will be developing an Implementation Strategy to improve this AMP over the next few years. This AMP should be viewed as the first step in a long range plan to improve the management of the Town's infrastructure. This AMP should be reviewed and revised on a periodic basis as more information is available to establish updated annual investment needs.

5.4 Addressing the Financing Shortfall over the Long Term

The best approach to address the long-term financing shortfall is to develop the improved asset management strategies that will be suggested in the Town's Implementation Strategy. This will allow the Town to prepare a more refined estimate of the infrastructure needs that is not simply based on replacing infrastructure when it is at the end of its useful life. These strategies will include the following:

- Establish levels of service and the associated performance metrics to track how well the infrastructure is meeting the service levels. This may result in some higher priority assets being renewed at a later time than what was established in the analysis performed in this AMP. However, this may also result in some lower priority assets becoming a higher priority for renewal at an earlier time than what was established in this AMP. For example, some storm water infrastructure that is identified as a low priority asset may need to be replaced because it is not meeting a level of service regarding flood protection.
- Collect and review additional condition/performance information for the Town's infrastructure to better assess the probability of failure. For example, tracking and reviewing water main break records is a much better indicator for the future probability of failure of the asset. This analysis can then be used to adjust the infrastructure needs.
- Complete detailed investigations into the operating and maintenance costs of the Town's infrastructure, and complete analyses to determine if they are within industry standards or if they can be optimized to reduce the long term costs. For example, this may demonstrate that the construction of a new, energy efficient facility to replace an old facility will have a long term financial savings to the Town. This will allow the money being used to operate the facilities to be used to address the renewal of other infrastructure.

- Consider non-infrastructure solutions to achieve service levels. For example, providing an integrated trail network could be accomplished by partnering with community land owners partners and installing improved signage or undertaking educational campaigns, all of which would not require additional infrastructure.
- Consider consolidating or eliminating redundant infrastructure. For example, removing bridges that are under-utilized and which have alternate bridges that can be used by the community will reduce the long term infrastructure needs while maintaining service levels.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This first iteration of the AMP identifies a long-term need of approximately \$14 million per year to renew the Town's existing infrastructure. This long-term need has been established based on a strategic review of the Town's asset inventory. It is important to recognize that the Town is striving to reach a position where the infrastructure needs equal the available revenues. Over the coming years, the Town will continually review the infrastructure needs as better information becomes available and as technological improvements reduce the cost of renewing infrastructure. The Town will also consider approaches to increase the revenue that is available to fund the renewal of existing infrastructure, including pursuing Provincial or Federal infrastructure grants. This strategy positions the Town on a path to ultimately reach a point where the infrastructure needs equal the available revenues.

Appendix A

Information and Assumptions used to Develop Long Term and Prioritized Short Term Renewal Needs

Asset Group	Probability of Failure Score (1= low, 5 = high) ¹	Consequence of Failure Score (1= low, 5 = high) ¹	Useful Life (Years) ²	Replacement Cost ²
Bridges and Large Culverts	Based on 2010 OSIM Inspection – percentage of work suggested compared to the total cost of replacement Suggested work >15% of replacement value = 5 Suggested work 15% - 5% of replacement value = 4 Suggested work <5% of replacement value = 3 No work identified = 1	All bridges and large culverts = 5	Bridge = 50 Culvert = 25	Bridge Replacement Cost = \$11,000 per m ² (based on average replacement values identified in bridge needs study) Culvert cost based off of value assigned in 2006 and inflated to 2013

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.

Asset Group	Probability of Failure Score (1= low, 5 = high) ¹	Consequence of Failure Score (1= low, 5 = high) ¹	Useful Life (Years) ²	Replacement Cost ²
Buildings	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	General Government = 2 Fire = 5 Library, Historical = 3 Public Works = 2 Recreation= 4 Parking Lots = 1	Mechanical & Electrical = 15-20 Renovations/Additions/ Parking Lots = 25 Structural = 40-50	From TCA database indexed to current 2013 costs
Park Facilities	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	Shelters = 3 Sheds/Washroom = 5 Useable Facilities (i.e. pool, playground) = 4 Landscaping/Land = 1	Park Infrastructure = 15-25	From TCA database indexed to current 2013 costs

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.

Asset Group	Probability of Failure Score (1= low, 5 = high)¹	Consequence of Failure Score (1= low, 5 = high)¹	Useful Life (Years)²	Replacement Cost²
Water – Facilities	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	Building = 4 Process Equipment = 5 Landscaping =1	Process Equipment = 10-25 Building = 40-50 Wells = 80	From TCA database indexed to current 2013 costs
Water – Linear	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	Water Service = 1 100 mm diameter to 150 mm diameter = 2 200 mm diameter to 250 mm diameter = 3 >= 300 mm diameter = 5	Watermain = 80	Unit price based on pipe diameter, ex.: 150mm diameter = \$300/m 200mm diameter = \$400/m 300mm diameter = \$600/m
Wastewater – Facilities	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	Building = 4 Process Equipment, Outfall Lines = 5 Landscaping, Fencing, Parking = 1	Landscaping = 20 Process Equipment = 25 Structural = 40-50	From TCA database indexed to current 2013 costs

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.

Asset Group	Probability of Failure Score (1= low, 5 = high) ¹	Consequence of Failure Score (1= low, 5 = high) ¹	Useful Life (Years) ²	Replacement Cost ²
Wastewater – Linear	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	<= 200 mm diameter = 1 250 mm diameter to 375 mm diameter = 2 450 mm diameter to 600 mm diameter = 3 750 mm diameter to 900 mm diameter = 4 >= 1050 mm diameter= 5	Sanitary sewer = 80	Unit price based on pipe diameter, ex.: 250mm = \$500/m 600mm = \$1200/m 900mm = \$1800/m

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.

Asset Group	Probability of Failure Score (1= low, 5 = high) ¹	Consequence of Failure Score (1= low, 5 = high) ¹	Useful Life (Years) ²	Replacement Cost ²
Roads - Linear	Based on 2008 Roads Needs Study Structural Adequacy rating: Rating 1 – 7 = 5 Rating 8 – 11 = 4 Rating 12 – 14 = 3 Rating 15 – 20 = 1	Based on Functional Classification: Rural 100, 200, 300 = 1 Urban L/R = 2 Urban L/CI, Rural: 400, 500 = 3 Urban C/R, Rural: 600,700 = 4 Urban Art, C/CI, Rural: 800 = 5	Road Base = 60 Road Surface = 25	Unit Price as follows: Local Rural = \$310/m Collector Rural = \$375/m Urban = \$450/m Surface = 25% of total cost Base = 75% of total cost
Roads - Other	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	All sidewalk = 2 All streetlights = 3 All traffic lights = 4	Sidewalk = 50 Streetlights = 30 Traffic lights = 15	From TCA database indexed to current 2013 costs

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.

Asset Group	Probability of Failure Score (1= low, 5 = high) ¹	Consequence of Failure Score (1= low, 5 = high) ¹	Useful Life (Years) ²	Replacement Cost ²
Stormwater - Linear	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	Service= 1 150 mm diameter to 200 mm diameter = 2 250 mm diameter to 300 mm diameter = 3 375 mm diameter to 450 mm diameter = 4 >=1,250 mm diameter = 5	Storm sewer = 80	Unit price based on pipe diameter, ex.: 200mm = \$400/m 450mm = \$900/m 600mm = \$1200/m 900mm = \$1800/m 1200mm = \$2400/m

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.

Asset Group	Probability of Failure Score (1= low, 5 = high) ¹	Consequence of Failure Score (1= low, 5 = high) ¹	Useful Life (Years) ²	Replacement Cost ²
Miscellaneous - Fleet	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	Building Standards Dept = 1 By-Law = 1 Engineering = 1 Fire = 5 Parks & Recreation -Small = 1 -Other = 3 Roads -Heavy = 3 -Large = 3 -Small = 1 -Trailer = 2 Wastewater = 2 Water = 2	Fleet = 5-25	From TCA database indexed to current 2013 costs

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.

Asset Group	Probability of Failure Score (1= low, 5 = high) ¹	Consequence of Failure Score (1= low, 5 = high) ¹	Useful Life (Years) ²	Replacement Cost ²
Miscellaneous	Based on Age only – Refer to Table 3 & 5 in Section 2 of the AMP	All library = 1 All IT = 2 All fire equipment = 5	Library = 4 or 7 IT = 5 Fire equipment = 10-25	From TCA database indexed to current 2013 costs

Notes:

1. Probability of Failure and Consequence of Failure scores are a first iteration completed during the development of this AMP and will be adjusted by Town staff on an ongoing basis to refine the prioritization of asset to renewal.
2. Useful life and Replacement Costs are theoretical industry standards based on the Town's TCA information and generalizations within each asset group and will be adjusted by Town staff on an ongoing basis to refine the long term renewal needs.