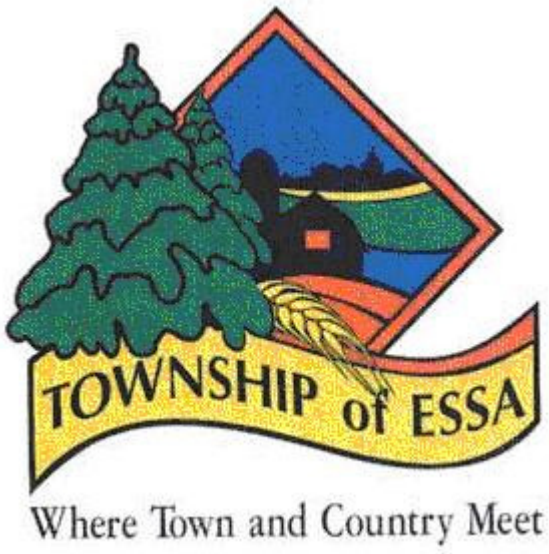

Township of Essa

Asset Management Plan

For the Ten Year Period from 2014 to 2023

December 10, 2014

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Executive Summary

The Township of Essa prepared this Asset Management Plan to document, quantify, and shed light on its infrastructure deficit and guide future investments in infrastructure.

It is in keeping with the Province of Ontario's "Building Together, Guide for Municipal Asset Management Plans' and the key elements of a plan:

- Executive summary
- Introduction
- State of local infrastructure
- Expected levels of service
- Asset management strategy
- Financing strategy

The Township has an infrastructure deficit. It has tangible capital assets with a historical cost of over $ 150,000,000 and a net book value of over $ 100,000,000.

The replacement cost of the Essa's tangible capital assets is estimated to be over $ 200,000,000 or twice their net book value.

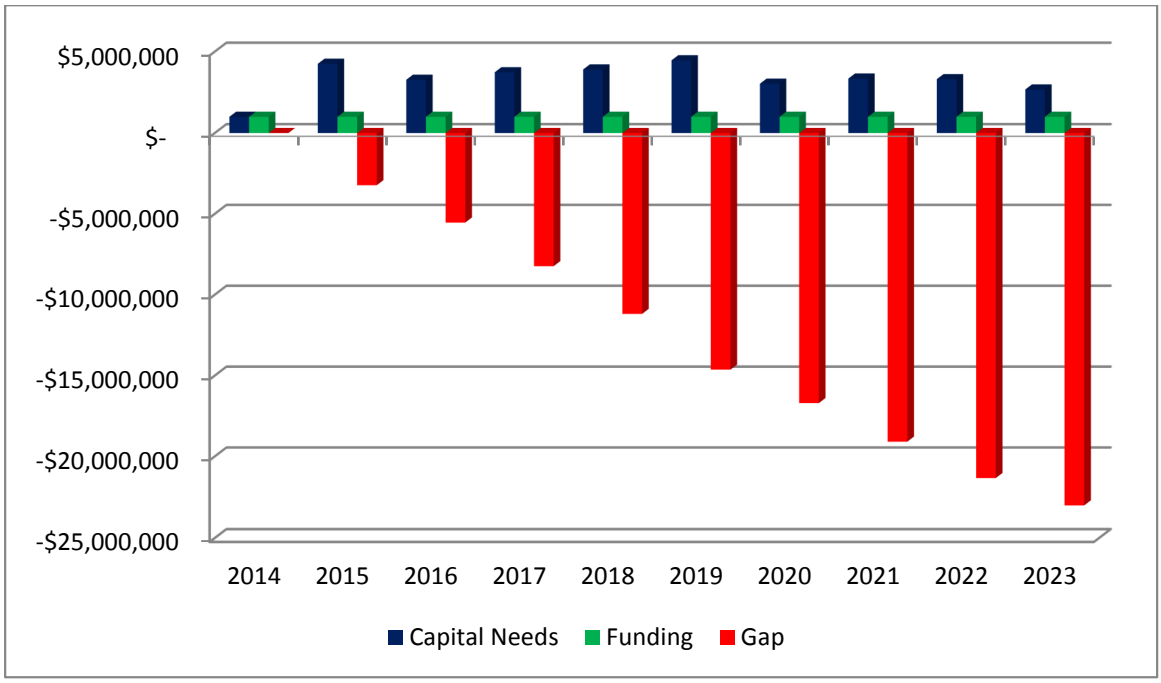
The Plan was designed from the outset to include all major categories of service provided by the Township and all major asset classes within each category of service. The state of local infrastructure and expected levels of service are addressed by asset class within service categories.

The following are summaries of the Bridges, Roads, Storm Sewers, Watermains, and Sanitary Sewer Trunks Infrastructure condition ratings.

	Bridges, Roads, Storm Sewer, Watermains, and Sanitary Sewer Trunks Infrastructure Condition Rating Summaries					
Condition Rating	**Condition Description**	**Bridges (count, %)**	**Roads**	**Storm Sewers**	**Water mains**	**Sanitary Sewer Trunks**
	Very Good	2 10%	90.30%	39.45%	0.33%	56.55%
	Good	14 70%	4.50%	40.08%	84.90%	22.77%
	Fair	4 20%	1.40%	20.45%	14.11%	20.68%
	Poor	0 0%	3.80%	0.02%	0.66%	0.00%
	Very Poor	0 0%	0.00%	0.00%	0.00%	0.00%
	Total	20 100%	100.00%	100.00%	100.00%	100.00%

Over the next ten years, the Township has $ 33,000,000 in net capital needs and a base level of tax supported capital funding of only $ 1,000,000 per year. This leaves a net tax supported capital needs infrastructure funding gap of $ 23,000,000 over the ten year period from 2014 to 2023, or $ 2,300,000 per year.

Net Tax Supported Capital Needs Infrastructure Funding Gap and Cumulative Infrastructure Deficit for the Ten Year Period from 2014 to 2023



Without stable and sustainable funding, the Township cannot address its infrastructure deficit in a meaningful manner. While the Plan begins to address the infrastructure deficit and funding issues facing Essa, it does not resolve the issues of sustainable funding and pressures on municipal services.

Township of Essa infrastructure investments over the next ten years should focus on remedying structural needs and deficiencies of Roads, Bridges, and Arenas.

While from a snapshot of the Township's financial position at a point in time it would appear that it is in good shape, the longer term view shows that tax rate increases are required to maintain, replace, and renew core infrastructure assets.

The Plan as well as the Capital Investment Plan will guide future operating and capital budgets.

Highlights of the recommendations stemming from the Plan include:

- RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated property tax rate increase of **3%** for **2015** be used to fund infrastructure and asset replacement and directed to eliminate the infrastructure funding gap for all services except for roadways, bridges and culverts.

- RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated property tax rate increase of **3%** for **2016** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for bridges and culverts.

- RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated property tax rate increase of **3%** for **2017** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for roadways.

- RECOMMENDATION: In light of the growing infrastructure deficit, that consideration be given to further review of the roads' levels of service, roads' backlog of projects, and roads' needs priorities.

- RECOMMENDATION: In light of the growing infrastructure deficit, that consideration be given to directing new sources of unconditional funding to identified capital needs in order to narrow the infrastructure funding gap and reduce the infrastructure deficit.

- RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated water rate increase of **4%** for **2015** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for municipal water services.

- RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated sewer rate increase of **4%** for **2015** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for municipal sanitary sewer services.

Ministry Requirements

The Province of Ontario, through the Ministry of Infrastructure, released "Building Together, Guide for Municipal Asset Management Plans" (the "Guide") in 2012. The municipal infrastructure strategy identifies that "maintaining roads, bridges, water, wastewater and social housing should be a top priority".

Building Together, Guide for Municipal Asset Management Plans, 2012, page 3

Part 3 of the Guide, Elements of a Detailed Asset Management Plan, provides as follows:

> "An asset management plan is a strategic document that states how a group of assets is to be managed over a period of time. The plan describes the characteristics and condition of infrastructure assets, the levels of service expected from them, planned actions to ensure the assets are providing the expected level of service, and financing strategies to implement the planned actions. A detailed asset management plan has the following sections:
>
> - Executive summary
> - Introduction
> - State of local infrastructure
> - Expected levels of service
> - Asset management strategy
> - Financing strategy"

Building Together, Guide for Municipal Asset Management Plans, 2012, page 29

The Township of Essa was entitled to receive $ 26,000 in grant funding towards asset management under the Municipal Infrastructure Investment Initiative (MIII).

Introduction

The Township has an infrastructure deficit. It has tangible capital assets with a historical cost of over $ 150,000,000 and a net book value of over $ 100,000,000.

2012 Township of Essa, Tangible Capital Assets (TCA)

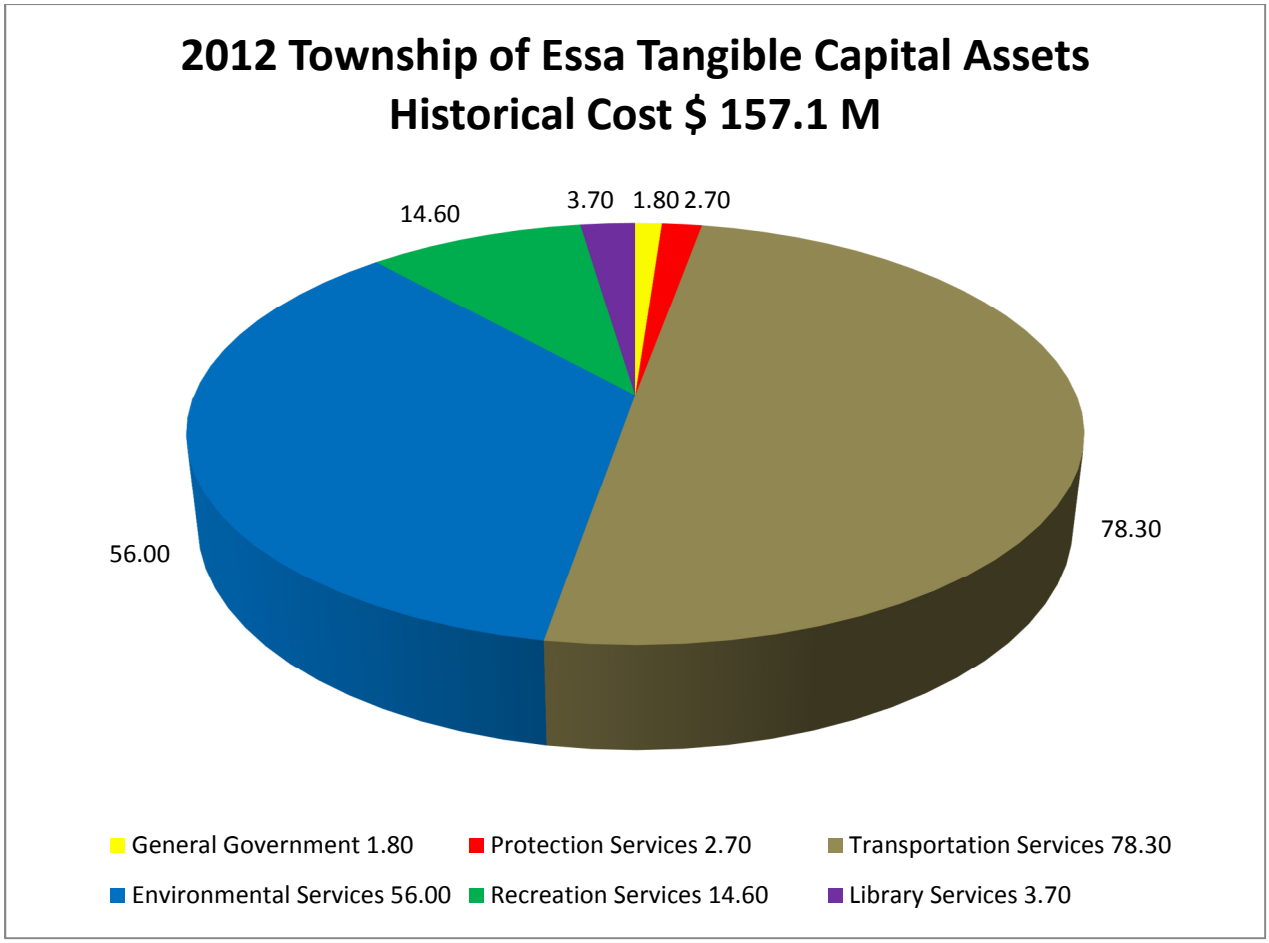
	Functional Classification	Historical Cost (TCA)	Accumulated Amortization	Net Book Value	Replacement Cost Estimate	
	General Government	$ 1,784,569	$ 386,245	$ 1,398,324	$ 3,000,000	
	Protection Services					
	Fire	$ 2,528,919	$ 1,265,612	$ 1,263,307	$ 6,500,000	
	Police	$ 0	$ 0	$ 0	$ 0	
	Protective Inspection and Control	$ 19,615	$ 12,751	$ 6,864	$ 30,000	
	Building Permit and Inspection	$ 33,092	$ 6,576	$ 26,516	$ 40,000	
	Emergency Measures	$ 152,920	$ 27,828	$ 125,092	$ 180,000	
	Transportation Services					
	Roads Paved	$ 52,058,033	$ 25,659,045	$ 26,398,988	$ 73,000,000	
	Roads Gravel	$ 3,198,854	$ 2,459,637	$ 739,217	$ 5,000,000	
	Bridges and Culverts	$ 7,714,466	$ 2,936,422	$ 4,778,044	$ 18,500,000	
	Sidewalks	$ 1,707,537	$ 367,723	$ 1,339,814	$ 7,500,000	
	Street Lights	$ 2,146,835	$ 1,152,996	$ 993,839	$ 3,000,000	
	Urban Storm Sewer System	$ 11,475,832	$ 1,880,585	$ 9,595,247	$ 18,000,000	
	Rural Storm Sewer System	$ 0	$ 0	$ 0	$ 0	
	Environmental Services					
	Water Treatment	$ 10,540,840	$ 2,561,016	$ 7,979,824	$ 12,500,000	
	Water Distribution	$ 15,633,673	$ 2,465,690	$ 13,167,983	$ 20,000,000	
	Wastewater Treatment	$ 19,721,168	$ 6,983,669	$ 12,737,499	$ 25,000,000	
	Wastewater Collection	$ 10,130,707	$ 1,877,933	$ 8,252,774	$ 12,500,000	
	Recreation and Cultural Services					
	Parks and Trails	$ 7,422,537	$ 757,242	$ 6,665,295	$ 4,500,000	
	Recreation Facilities	$ 7,160,329	$ 3,217,641	$ 3,942,688	$ 18,500,000	
	Libraries	$ 3,688,155	$ 580,630	$ 3,107,525	$ 4,500,000	
	Total	$157,118,081	$ 54,599,241	$102,518,840	$232,250,000	

Note: Tangible Capital Assets include Land which is not amortized

Note: Roads Paved functional classification includes Public Works Land, Buildings, and Equipment, and Ditches (Rural Storm Sewer System)

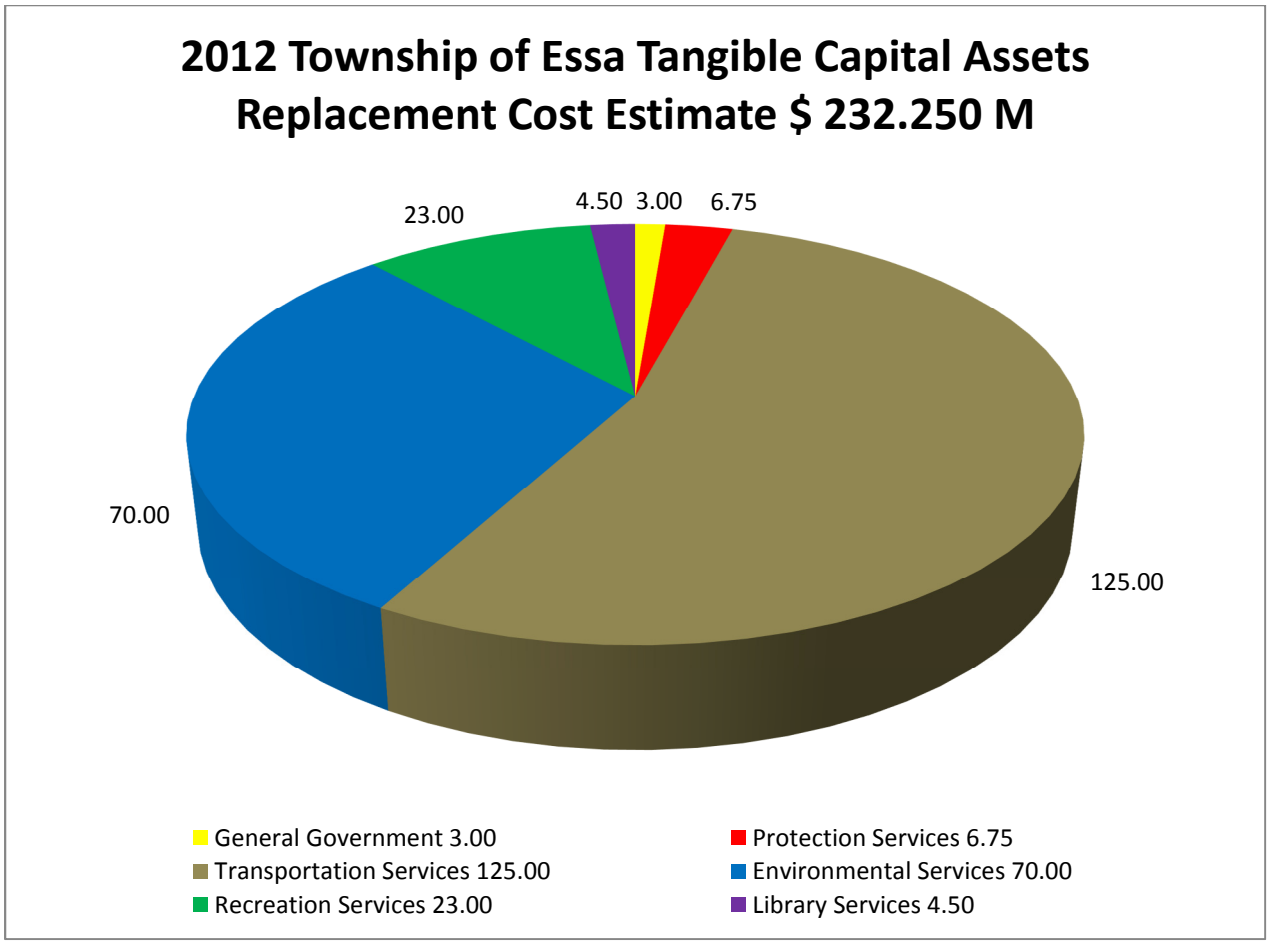
Note: Roads Gravel functional classification includes Ditches (Rural Storm Sewer System)

Note: Bridges and Culverts, excludes Centre Street Bridge (County)



The replacement cost of the Essa's tangible capital assets is estimated to be over $ 200,000,000 or twice their net book value.

Without stable and sustainable funding, the Township cannot address its infrastructure deficit in a meaningful manner. While the Plan begins to address the infrastructure deficit and funding issues facing Essa, it does not resolve the issues of sustainable funding and pressures on municipal services.



Overview

The Township of Essa is located in the County of Simcoe, in the south central region of the Province of Ontario, southwest of the City of Barrie. It is a lower tier municipality with a mix of urban and rural development. In 2011, Essa had a population of 18,505 and 6,405 households according to Statistics Canada, 2011 Census Data. The Township has an area of 25,204 ha (62,279 ac). The major settlement areas are Angus, Baxter, and Thornton. Smaller hamlets include Colwell, Egbert, Elmgrove, Ivy, and Utopia. Canada's largest Canadian Forces training base, CFB Borden, is located inside Essa and the adjacent Township of Adjala-Tosorontio, just west of Angus.

Historically, the Township has had one of the lowest property tax rates of the lower tier municipalities in Simcoe County. Essa has a base township tax levy of $ 4.0 M; a 1.00% increase in property taxes represents only $ 40,000 of additional funds for infrastructure investment. These low tax rates have not been sufficient to support the required capital investment in aging infrastructure.

According to Statistics Canada 2011 Census, the median and average household total incomes in 2010 for the Township of Essa are $ 79,877 and $ 90,651, respectively.

Source: <http://www.statcan.gc.ca>, <http://www12.statcan.gc.ca>, see Statistics Canada for definitions

2013 property taxes for a $ 275,000 home would represent 2.56% of the median household total income or 2.26% of the average household total income.

Growth does not pay for itself. Taxes and municipal revenues have been invested in new infrastructure to support growth and development.

In 2001, the current Official Plan of the Township of Essa was approved. A Growth Strategy Study was undertaken by Ainley Group on behalf of the Township in 2013. It is recognized that Angus, which is serviced with municipal water and sanitary sewers, is the Township's primary settlement area and the primary area of future growth pursuant to the Township's Official Plan. This growth is dependent upon municipal infrastructure and services.

In 2003, Essa undertook a Community Strategic Plan that was adopted by Council. The Plan is in keeping with the Community Strategic Plan, in particular, "… maintenance of a high quality of life through infrastructure improvements …"

In 2005, a water financial plan was undertaken by Sharratt Water Management Ltd. on behalf of the Township as required under the *Sustainable Water and Sewage Systems Act, 2002*. The plan, entitled "Bill 175 Cost Recovery Study Report Component No. 2 Final Cost Recovery Plan for the Township of Essa", dated September 2, 2005, was adopted and forms the basis for current user rates. In 2011, a drinking water system financial plan was undertaken by Sharratt Water Management Ltd. on behalf of the Township. Water and Wastewater (sanitary sewer) user fees have already been implemented in keeping with the approach and recommendations of the plans. The fees, while a significant burden on current users, were a move towards more sustainable water and sewer services over the longer term.

Purpose

The purpose of the Plan is to document the Township's approach to asset management and meet the requirements of the Province.

It builds upon the work that has been undertaken to meet the Tangible Capital Asset requirements of the Public Sector Accounting Board and the completion of Fire Master Plan, Roads Needs Study report, Bridges and Culverts Structural Inspection report, Arena Structural Inspection reports, and Active Transportation Plan. A Capital Investment Plan has also been initiated.

The Plan as well as the Capital Investment Plan will guide future operating and capital budgets.

Scope

The Plan is intended to address the major infrastructure assets and services provided by Essa. It covers more than the minimum core services of roads, bridges, water and wastewater systems, and social housing listed in the Province's Building Together Guide. In keeping with the relative size of the municipality and available resources, the Plan is relatively straight forward in its approach to the set of complex and inter-related policies, maintenance practices, capital programs, and services involved. Time and resources have been invested in the Plan. It is intended to be a practical approach for the Township that can be implemented. It is not written to sit on a shelf and gather dust. This is the first iteration of an Asset Management Plan under the Province's Building Together Guide. It is intended that the scope of the Plan will be expanded and improved upon through review and updates over time.

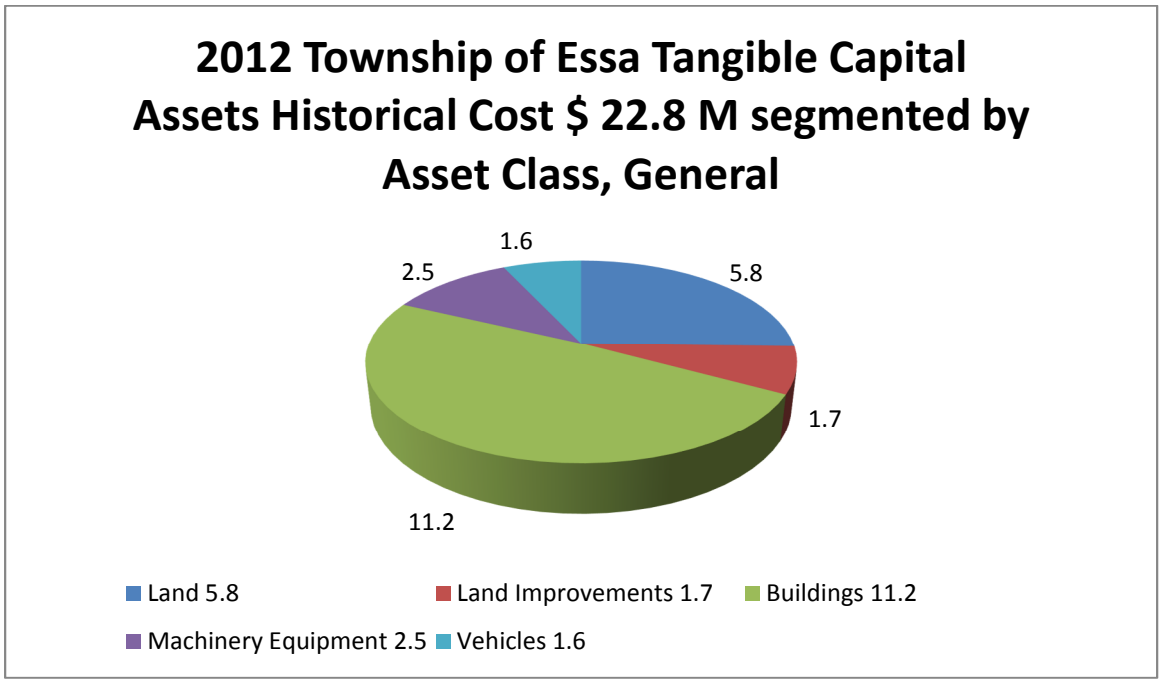
The Plan was developed by staff with direction from Council and technical input from engineering consultants and OCWA. The Plan is a basis or starting point for future public consultation, discussion, and feedback. Staff have participated in Asset Management Plan workshops, seminars, and collaborative meetings to gain insight into the approaches used by other municipalities in developing their Asset Management Plans. Feedback had been received from representatives of the Ministry of Municipal Affairs and Housing on components of the Plan as it was being developed. Larger municipalities in Ontario are further along the process of asset management than Essa. Their plans, while much more comprehensive, especially that of the City of Cambridge, have been reviewed for ideas, inspiration, and direction. Asset management does not happen overnight. It is a dynamic and evolving process.

The Plan covers the ten year period from 2014 to 2023 with an eye to the longer term. The longer life cycle of certain infrastructure asset classes and infrastructure assets is taken into account where information is available particularly for water and wastewater services.

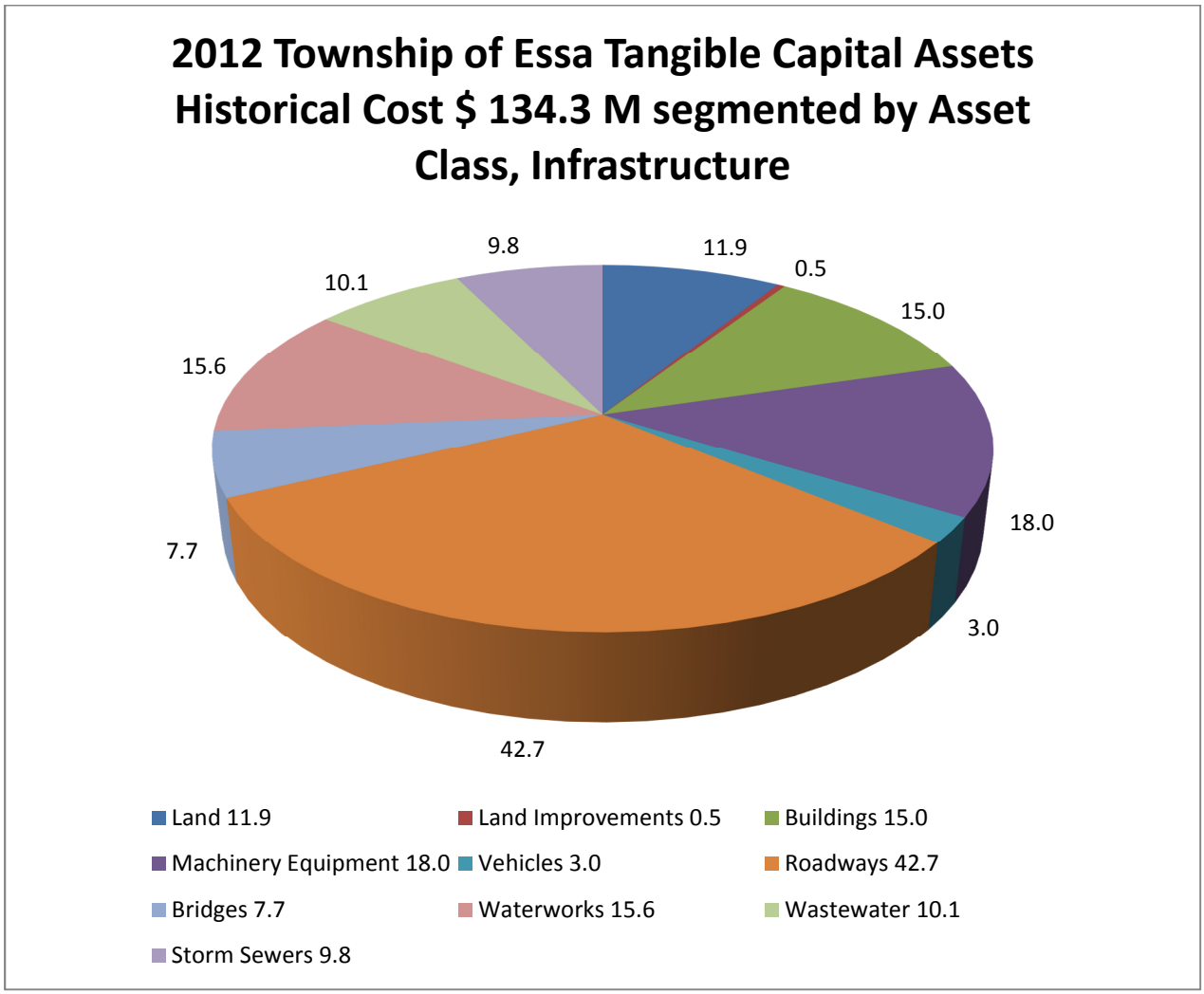
Classes of Assets

Generally, capital assets have been classified in keeping with Township Tangible Capital Asset policy, Financial Information Return Tangible Capital Asset presentation, and Financial Report Tangible Capital Asset disclosure, by functional area or department, with additional sub-classes where material or where warranted by differing asset management strategies.

List of Asset Classes includes Land and Buildings, Land and Site Improvements, Equipment, Rolling Stock and Fleet, Linear Infrastructure, Roadways, Sidewalks, Watermains, Sanitary Sewer Trunks, Storm Sewers, and Structures. Different approaches to management of asset classes may be incorporated into updates of the Plan. Additional asset classes and sub-classes may be incorporated through future reviews and updates of the Plan.



Many components of certain classes of municipal infrastructure have useful lives and life cycles that extend over many generations. Road bases, bridge structures, water treatment plants, water storage reservoirs, watermains, wastewater treatment plants, sewage pumping stations, sanitary sewer trunks, and urban storm sewers all have very long lives.



Human Resources

Employee recruitment and retention are key factors in the Township's ability to provide services to residents, businesses, and the public. Employee recruitment and retention are addressed through the Township's employee and personnel policies. While human resources are not capital assets, sound asset management could not happen without them.

State of Local Infrastructure

The goal of the Plan is to have formalized condition assessments of infrastructure asset classes and infrastructure assets based on field observations.

Implementation schedule for infrastructure asset classes**:** roads, 2013 and every five years thereafter**;** bridges 2010, 2012, and every two years thereafter**;** water treatment plant and water storage reservoirs, 2013 and every five years thereafter**;** watermains, to be prioritized and determined within three years after initial Plan has been completed**;** wastewater treatment plant and sewage pumping stations, 2013 and every five years thereafter**;** sanitary sewer trunks and pipes, to be prioritized and determined within three years after initial Plan has been completed**;** and urban storm sewers, to be prioritized and determined within three years after initial Plan has been completed.

The following are summaries of the Bridges, Roads, Storm Sewer, Watermains, and Sanitary Sewer Trunks Infrastructure condition ratings.

	Bridges, Roads, Storm Sewers, Watermains, and Sanitary Sewer Trunks Infrastructure Condition Rating Summaries					
Condition Rating	**Condition Description**	**Bridges (count, %)**	**Roads**	**Storm Sewers**	**Water mains**	**Sanitary Sewer Trunks**
	Very Good	2 10%	90.30%	39.45%	0.33%	56.55%
	Good	14 70%	4.50%	40.08%	84.90%	22.77%
	Fair	4 20%	1.40%	20.45%	14.11%	20.68%
	Poor	0 0%	3.80%	0.02%	0.66%	0.00%
	Very Poor	0 0%	0.00%	0.00%	0.00%	0.00%
	Total	20 100%	100.00%	100.00%	100.00%	100.00%

Condition assessments of other asset classes and assets, where available, have also been recognized and incorporated into the Plan. Arena condition assessments were completed in 2012 and are to be updated every five years.

Expected Levels of Service

Level of service is one factor that drives capital investment requirements and operating costs. Expected levels of service are discussed within each major service category. Different measures are documented for levels of service for different asset classes and types of infrastructure.

A number of factors feed into levels of service including:

- Regulatory Requirements
- Corporate Goals and Strategic Vision
- Condition of Assets
- Capacity of Assets, and
- Ratepayer and Public Expectations

For Bridges and Culverts, the desired level of service is to maintain all bridges and culverts to a condition rating of "Good". For Roadways, the desired level of service is to maintain 75% of roadways to a condition rating of "Good".

Extracts from the reported 2012 MPMP Results for Drinking Water and Wastewater (Sewage) are included in the Appendices. More tangible near-term measures for levels of service are required for municipal water and sanitary sewer services as the MPMP measures are too broadly based and subject to too many factors to provide meaningful assessment of the success of operational and capital plans.

For Arenas, both Arenas are required to maintain the desired level of service for indoor ice surfaces.

The minimum legislative requirements set out base levels of service. While higher levels of service may be desirable in some areas, they come at a price. The Township must balance levels of service against the cost of providing services.

Asset Management Strategy

Asset management strategies are "… to provide a long term operating and capital forecast indicating the cost requirements of maintaining, rehabilitating, replacing, disposing, and expanding the capacity of capital assets at a specified level of service in a sustainable and financially feasible manner …" The Plan begins to address asset management strategies. It does not resolve the issues of sustainable funding and pressures on municipal services. Asset management strategies are discussed within each major service category and may differ based on the nature of the asset class. For the overall Plan and asset management strategies, the current focus is on identified capital needs and required funding of them. Other aspects of asset management strategies can be expanded upon when the Plan is reviewed.

The Township's road maintenance programs are in place to meet the expected levels of service and extend the useful life of the road surfaces. The road maintenance varies depending on the traffic volume and classification of the roads. Road maintenance programs include street sweeping of urban roads, removal of sand build up on the shoulders of rural roads, grading of gravel roads, patching, ditching, tree trimming, and roadside maintenance. A crack sealing program may be investigated in the future to further extend the useful life of the road surfaces.

Bridge and structure maintenance deficiencies are generally addressed within the year of them being identified through bi-annual inspections. Bridges are cleaned each spring to remove sand and debris following the winter season.

The Township's storm sewer systems are relatively new and require little annual maintenance at this time. Catch basins are cleaned and inspected each year. Cleaning the catch basins assists in keeping the storm sewers free of debris.

General Government

2012 General Government, Tangible Capital Assets (TCA)

	Functional Classification	Historical Cost (TCA)	Accumulated Amortization	Net Book Value	Replacement Cost Estimate	
	General Government					
	Land	$ 1,255,863	$ 0	$ 1,255,863		
	Land Improvements	$ 23,285	$ 22,121	$ 1,164		
	Buildings	$ 491,465	$ 350,168	$ 141,297		
	Furniture Equipment	$ 0	$ 0	$ 0		
	Vehicles	$ 13,956	$ 13,956	$ 0		
	Total	$ 1,784,569	$ 386,245	$ 1,398,324	$ 3,000,000	

The total estimated replacement cost of general government tangible capital assets is in a range of $ 3.0 M to $ 4.0 M.

Administration

Land and Buildings

The Administration Centre is centrally located at 5786 County Road 21, east of the community of Baxter. Constructed in 1984, the building is a two storey structure, 5,457 sq. ft. per floor, with brick exterior and a baked-enamel steel roof. The Council Chambers is in the Administration Centre as well as offices for the Mayor, CAO and Clerk's Department, Treasury, Building Inspection, By-law Enforcement, Canine Control, Public Works administration, Parks and Recreation administration, and Planning and Development Department.

Condition Assessment and Evaluation

In 2013, a building condition assessment of the Administration Centre was completed by the Chief Building Official and Chief Administrative Officer. Generally, the major exterior building and interior building components were rated in "Good" condition. Generally, the major mechanical systems and site features were rated in "Fair" condition. Accessibility needs were also documented. The more significant capital needs, maintenance issues, and accessibility needs are summarized as follows:

Township of Essa, Administration Centre
Summary of Capital Needs, Maintenance Issues, and Accessibility Needs

Component	Description	Condition	Year	Est. Cost
Exterior Building	Foundation and structure improvements	Fair	2015**	$ 9,000
Interior Building	Flooring replacement	Good	2014	$ 5,000
	Ceiling tile replacement	Fair	2015	$ 3,000
Mechanical Systems	Plumbing fixture replacements	Fair	2015	$ 1,500
	Heating and Cooling systems replacements	Fair	2015	$ 36,000
	Lighting fixture replacements	Fair	2014	$ 1,500
Safety Bldg Code	Storage area , floor drains	Fair	2014	$ 1,000
Site Features	Retaining wall restoration or replacement	Poor	2015** to 2018	$ 30,000
Accessibility	Accessible barrier free doors for entrances and washrooms	Poor	2014 2015	$ 5,000 $ 46,000
	Accessible barrier free customer service counters*	Poor	2014 2015	$ 10,000 $ 4,000
	Accessible barrier free lift or stair chair	Poor	2016	$ 100,000

Note: *accessible barrier free customer service counters were considered in 2013 budget process and grant application(s); ** year has been updated since original building condition assessment was completed

Some recent quotes have indicated that estimated costs may be higher than shown.

While some of the items can be readily upgraded or replaced, other items will require further investigation by a qualified professional prior to proceeding with the Works.

RECOMMENDATION: That the CAO and Clerk should include identified capital needs and maintenance issues in annual departmental budget submissions for the improvements to Administration Centre to remedy structural needs and deficiencies.

RECOMMENDATION: That the CAO and Clerk should refer identified capital needs and maintenance issues to qualified professionals for project assessment and costing where determined appropriate.

RECOMMENDATION: That the CAO and Clerk apply for Federal and Provincial Accessibility grant programs as they become available for the improvements to the Administration Centre to remedy accessibility needs.

Exterior Servicing, Well and Septic System

The Administration Centre is serviced by a drilled well for water services and a septic system for sanitary sewer services. The water flows through an ultraviolet (UV) filter. The system is inspected by OCWA on a regular and systematic (monthly) basis in accordance with regulatory requirements.

Computer System and Information Technology Infrastructure

The Township has an internal computer network system at the Administration Centre. Its financial information system and Township Property System (TPS, MOAR) are hosted by the Town of Innisfil. The Township is serviced by a fibre optic line for internet access and has access to the County of Simcoe for internet services and Simcoe Community Access Network (SCAN). It is intended that the system will be reviewed and updated over the next ten years. Servers are intended to be replaced. Desktop and laptop computers are intended to be systematically replaced over the next ten years in accordance with the computer replacement schedule. Continuous improvements and investment are required to keep pace with changing technologies.

The Township requires a computer network system in order to maintain the current level of service. Desired level of service is to have scheduled service interruptions outside of regular office hours for maintenance of the system and to minimize unscheduled service interruptions. The system should not be out of service for a consecutive period of more than 24 hours at any given time. The system should not be out of service more than one day per month.

Individual desktop and laptop computers fall below the capitalization threshold for the Township's Tangible Capital Assets. Nonetheless, the desired level of service for desktop and laptop computers is to have one desktop or laptop computer per full time equivalent office position and the average age of all desktop and laptop computers not to exceed three (3) years, that is, a four (4) year replacement cycle.

The telephone system is owned by the Township and maintained through Bell Canada and a local service provider. The two-way radio systems are owned by the Township and maintained through the Fire Department and Roads (Public Works) Department along with a local service provider (Telequip Systems Limited).

Desired level of service is to have regular scheduled service and maintenance of the system to minimize unscheduled service interruptions. If the Fire system is out of service, then it requires immediate repairs. The Public Works system should not be out of service for a consecutive period of more than 24 hours at any given time. The system should not be out of service more than one day per month.

The radio communications systems have a secondary (back up) system to provide emergency communications.

Computer Software Needs

The Township does not have integrated asset management computer software. Software that is integrated with the financial information system is required to track, maintain, manage, and report on assets in an efficient and effective manner.

RECOMMENDATION: That the Township should research asset management computer software that is integrated with the financial information system and reporting.

Clerk's Department

The Clerk's Department has offices in the Administration Centre. It relies upon the Township's network system, financial information system, and records management system.

The Department does not have any identified critical infrastructure deficiencies that are specific to the Department at this time. Its asset management and funding requirements will be addressed through General Government Administration.

Treasury

The Treasury has offices in the Administration Centre. It relies upon the Township's network system, financial information system, TPS, and MOAR.

The Department does not have any identified critical infrastructure deficiencies that are specific to the Department at this time. Its asset management and funding requirements will be addressed through General Government Administration. Continuous improvements and investment in the financial information system and related software are required to keep pace with changing technologies and legislative requirements.

Protection Services

Fire Services

2012 Fire Services, Tangible Capital Assets (TCA)

	Functional Classification	Historical Cost (TCA)	Accumulated Amortization	Net Book Value	Replacement Cost Estimate	
	Fire Services					
	Land	$ 42,602	$ 0	$ 42,602		
	Land Improvements	$ 13,690	$ 9,811	$ 3,879		
	Buildings	$ 721,758	$ 272,320	$ 449,438		
	Furniture Equipment	$ 328,473	$ 200,836	$ 127,637		
	Fire Apparatus Vehicles	$ 1,422,396	$ 782,645	$ 639,751		
	Total	$ 2,528,919	$ 1,265,612	$ 1,263,307	$ 6,500,000	

The total estimated replacement cost of the fire services tangible capital assets is in a range of $ 6.5 M to $ 7.5 M.

The Township has a volunteer firefighter service. The area serviced includes urban settlement, rural, farmland, and recreational properties. The Township is a member of the mutual aid reciprocal agreement with other fire services. Services are also provided to portions of adjacent municipalities. Costs include contracted dispatch services. The Department has a complement of about 58 part time volunteer firefighters.

Essa Fire Station No. 1 located in Thornton has a Public Fire Protection Classification (Industrial, Commercial, Institutional, and Multi-Residential) of Class 7 in Hydrant Protected Areas that are within 5 kms of the station and Class 9 in areas that are over 5 kms from the station. It has a Dwelling Protection Grade (Single detached Residential) of Class 3A in Hydrant Protected Areas that are within 8 kms of the station, Class 3B in areas without hydrant protection that are within 8 kms of the station, and Class 5 in areas over 8 kms from the station.

Essa Fire Station No. 2 located in Angus has a Public Fire Protection Classification (Industrial, Commercial, Institutional, and Multi-Residential) of Class 6 in Hydrant Protected Areas that are within 5 kms of the station and Class 9 in areas that are over 5 kms from the station. It has a Dwelling Protection Grade (Single detached Residential) of Class 3A in Hydrant Protected Areas that are within 8 kms of the station, Class 3B in areas without hydrant protection that are within 8 kms of the station, and Class 5 in areas over 8 kms from the station.

These classifications were confirmed by the Fire Underwriters Survey in a letter dated April 19, 2002. The Township has a Superior Tanker Shuttle Accreditation as confirmed through the recertification process by the Fire Protection Survey Service in a letter dated Sept. 28, 2013. These are the desired levels of service for fire services.

A Fire Master Plan was undertaken by Dillon Consulting Limited on behalf of the Township in 2012 and 2013.

Land and Buildings

Essa has two fire stations. Station No 1, located at 34 Robert Street in Thornton, being 6,524 sq. ft., was built in 1980 with an addition in 2006. Station No 2, located at 135 King Street in Angus, being 5,280 sq. ft., was built in 1971 with an addition in 1977 and a renovation in 1991. They are required in order to maintain the current level of service.

Condition Assessment and Evaluation

In 2013, a building condition assessment of the Essa Fire Station No. 1 was completed by the Chief Building Official and Chief Administrative Officer. Generally, the major exterior building and interior building components were rated in "Good" condition. Generally, the major mechanical systems and site features were rated in "Good" condition. The more significant capital needs and maintenance issues are summarized as follows:

Township of Essa, Essa Fire Station No. 1, Thornton
Summary of Capital Needs and Maintenance Issues

Component	Description	Condition	Year	Est. Cost
Exterior Building	Flat roof replacement	Fair	2018	$ 20,000
Interior Building				
Mechanical Systems	Electrical System, upgrade to 3-phase	Good	2020	$ 40,000
	Heating radiant heat tubing replacement	Good	2023	$ 5,000
Safety Bldg Code				
Site Features	Septic System upgrade or replacement		2019 to 2023	$ 25,000

In 2013, a building condition assessment of the Essa Fire Station No. 2 was completed by the Chief Building Official and Chief Administrative Officer. Generally, the major exterior building and interior building components were rated in "Good" condition. Generally, the major mechanical systems and site features were rated in "Good" condition. The more significant capital needs and maintenance issues are summarized as follows:

Township of Essa, Essa Fire Station No. 2, Angus Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Est. Cost
Exterior Building				
Interior Building				
Mechanical Systems	Electrical System, upgrade to 3-phase	Poor	2023	$ 30,000
	Heating radiant heat tubing replacement	Good	2023	$ 5,000
	Ceiling tile replacement	Good	2015	$ 1,000
Safety Bldg Code				
Site Features				

Some recent quotes have indicated that estimated costs may be higher than shown.

While some of the items can be readily upgraded or replaced, other items will require further investigation by a qualified professional prior to proceeding with the Works.

It is anticipated that an expansion of Station No. 2, Angus, will be required in five (5) to ten (10) years. The Development Charges Background Study includes a proposed cost of $ 412,500, based on 1,375 sq ft floor space at $ 300/sq ft, for the growth-related expansion to the Angus firehall in 2020. Depending upon the amount and timing of growth, a review of the nature, cost, size, and timing of the addition will be required.

RECOMMENDATION: That the Fire Chief should include identified capital needs and maintenance issues in annual departmental budget submissions for the improvements to Station No 1 and Station No 2 to remedy structural needs and deficiencies.

RECOMMENDATION: That the Fire Chief should refer identified capital needs and maintenance issues to qualified professionals for project assessment and costing where determined appropriate.

Personal Protective Equipment

Fire Services has Self Contained Breathing Apparatus (SCBA) and related air bottles (cylinders) for use by firefighters. They are required in order to maintain the current level of service. They are inspected and maintained on a regular basis. Condition assessments are completed at the time of inspection with a “Pass” or “Fail” rating. Replacement is generally based on age and guidelines as well as condition assessment, available replacement parts, and repair costs. A number of alternatives for replacement are available. A program is proposed to replace 30 SCBA packs over six years at 5 packs per year at a cost of $ 165,000 (30 x $ 5,500)

and replace 90 air bottles (cylinders) over six years at 15 air bottles (cylinders) per year at a cost of $ 67,500 (90 x $ 750).
Source of Funding: Taxation, Reserves, and Reserve Funds

Fire Services has Protective Gear (bunker gear) and related boots, helmets, gloves, and balaclava for use by firefighters. They are required in order to maintain the current level of service. They are inspected and maintained on a regular basis. Condition assessments are completed at the time of inspection with a "Pass" or "Fail" rating. To avoid replacement of all sets in one year, a program is proposed to replace six to seven sets of bunker gear per year.
Source of Funding: Taxation, Reserves, and Reserve Funds

Communications System and Equipment

The radio communication system has a main tower and repeater site. The two-way radio systems are owned by the Township and maintained through the Fire Department and Roads (Public Works) Department along with a local service provider (Telequip Systems Limited). The radio communications systems have a secondary (back up) system to provide emergency communications. The analog system components are being replaced or upgraded in a phased approach to meet Industry Canada requirements for a digital radio communication system.
Source of Funding: Taxation, Reserves, and Reserve Funds

Specialized Equipment

Fire Services has a number of specialized pieces of equipment for fire and rescue response, including heavy hydraulic equipment, lifting devices, and containment kits. They are critical and are required in order to maintain the current level of service. They are inspected and maintained on a regular basis. Condition assessments are completed at the time of inspection.
Source of Funding: Taxation, Reserves, Reserve Funds, and Donations

Utopia Industrial Area Non-Potable Fire Protection Line

The existing Utopia Industrial Area has a number of high hazard industries and occupancies related to propane, commercial waste, and chemical storage. It has been developed without a pressurized fire protection system. It is an important employment and future development area within the Township that would benefit from improved fire protection. Servicing will also help to attract non-residential development.

Over the years, a number of solutions have been considered to improve fire protection to the area. Construction of a non-potable water line for fire flow purposes will assist the Fire Department to establish fire suppression water with sufficient capacity immediately upon arrival at the scene. In addition to the costs already incurred, an estimated cost for construction of this project is $ 788,000. This new infrastructure is recommended as a priority for the Fire Department, however cost and other factors may preclude the Township from proceeding with the project on its own. If the municipal project does not proceed, then each owner in the Utopia Industrial Area shall be required to construct an on-site fire suppressant system to meet the requirements of the Building Code and Fire Code on its lands at its own expense.
Sources of Funding: Federal Grants, Provincial Grants, Benefitting Owner Contributions, and Taxation

RECOMMENDATION: That the Manager of Public Works in conjunction with the Fire Chief pursue the Utopia Industrial Area Non-Potable Fire Protection Line or comparable solution to improve fire protection to the area as an infrastructure priority for future consideration.

RECOMMENDATION: That the Manager of Public Works and Treasurer in conjunction with the Fire Chief apply for Federal and Provincial grant programs as they become available to construct the Utopia Industrial Area Non-Potable Fire Protection Line or comparable solution to improve fire protection to the area.

Rolling Stock, Fleet

Fire Services has a fleet of fourteen (14) vehicles with useful lives of eight (8) to twenty (20) years depending upon their nature, use, and purpose. They are required in order to maintain the current level of service. They are inspected and maintained on a regular basis in accordance with National Fire Protection Association 1911, 2012 edition, chapter 19, “Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus”. Condition assessments are completed at the time of annual inspection. Replacement is generally based on age and Fire Underwriters Survey guidelines as opposed to relying solely upon condition. A number of alternatives

for replacement are available. Pumper P-1 was replaced in 2010. Tanker T-1 was replaced in 2012. Ladder L-4 was replaced in 2013. The remaining vehicles in the fleet are scheduled to be replaced between 2014 and 2022 at an estimated cost of $1,350,000.
Source of Funding: Taxation, Reserves, and Reserve Funds

RECOMMENDATION: That the Fire Chief in conjunction with the Treasurer should develop a long term financing strategy for Fire Fleet and Apparatus replacement.

Police Services

Essa is a member of the Nottawasaga Police Services Board, a joint police services board with the Town of New Tecumseth and the Township of Adjala-Tosorontio. The Nottawasaga Detachment of the Ontario Provincial Police (OPP) provides policing services was under a five year contract from 2013 to 2018; a new six-month contract was entered into for 2015. The expected levels of service are set out in the contract. The desired level of service will need to be reviewed due to escalating policing costs.

In a letter to Mayors/Reeves OPP Policed Municipalities dated May 7, 2013, Rick Philbin, Superintendent Commander, Municipal Policing Bureau, Ontario Provincial Police, stated “At this time the projected salary increase for 2014 will be 8.55 percent.” (Rick Philbin, Superintendent Commander, Municipal Policing Bureau, Ontario Provincial Police, letter to Mayors/Reeves OPP Policed Municipalities, dated May 7, 2013). Salaries represent 85% of the police services budget. Based on the salary increases guaranteed to the OPP by the Province of Ontario, Essa expected an increase of not less than $ 222,000 or 7.26% over the 2013 policing services contract budget of $ 3,057,591. This represents an increase of 5.09% in the local municipal tax levy of $ 4,369,165 before considering all other revenues and expenses. This increase combined with proposed future increases will have an adverse effect on the municipality’s ability to manage capital assets and fund capital projects in the near term.
Source of Funding: Taxation and Police Services component of Ontario Municipal Partnership Fund grant (OMPF).

While OPP policing services costs continue to escalate, Essa can expect to be charged a lower share of the total costs and have them phased in over the next four or five years based on the estimated costs of the OPP policing services costing model.

Protective Inspection and Control, Municipal By-law Enforcement, Canine Control

Protective Inspection and Control, Municipal By-law Enforcement, and Canine Control have offices in the Administration Centre. They rely upon the Township's network system.

The Department does not have any identified critical infrastructure deficiencies that are specific to the Department at this time. Its asset management and funding requirements have been addressed.

Rolling Stock, Fleet

Municipal By-law Enforcement and Canine Control have one 2006 van with a useful life of ten years. It is required in order to maintain the current level of service. It is inspected and maintained on a regular basis. A formal condition assessment has not been completed at this time, however, it is expected to be taken out of service and disposed of prior to 2016. A number of alternatives for replacement are available. It is scheduled to be replaced in 2015 at an estimated cost of $ 30,000.
Source of Funding: Taxation, User Charges, and Reserves

Building Permit and Inspection Services

Building Permit and Inspection have offices in the Administration Centre. They rely upon the Township's network system, financial information system, TPS, and MOAR.

The Department does not have any identified critical infrastructure deficiencies that are specific to the Department at this time. Its asset management and funding requirements have been addressed.

Rolling Stock, Fleet

Building Inspection have two 2011 pick up trucks with useful lives of ten years. They are required in order to maintain the current level of service. They are inspected and maintained on a regular basis. Formal condition assessments have not been completed at this time as the vehicles are relatively new and known to be in good condition. A number of alternatives for replacement are available. They are scheduled to be replaced in 2020 and 2021 at an estimated cost of $ 20,000 each.
Source of Funding: User Charges and Reserves

Emergency Measures

Specialized Equipment, Emergency Generators

The Township has emergency generators located at the Administration Centre, Angus Arena, Public Works garage, Thornton Firehall, and Angus Firehall. Generators are installed as part of emergency management initiative to maintain continuity of service and response capabilities during temporary and prolonged power disruptions and during emergency and disaster events. The Administration Centre is the primary location for the Emergency Control Group and is identified as the Township emergency Operations Centre. Thornton Fire Station No 1 and the adjacent library are identified as the Township alternate Emergency Operations Centre. The Public Works Garage is identified as an emergency fuel compound. Angus Arena is recognized as a functional building during power, emergency, and disaster events for a reception centre.

Emergency Generators

Location	Make	Size kW	Fuel	Year Installed	Useful Life	Age in Years	Comments
Administration Centre	Duetz	80 kW	diesel	2005	35	**39**	**circa 1974** industrial
Angus Arena	Generac	80 kW	natural gas	2008	25	05	commercial
Public Works Garage	John Deere	60 kW	diesel	2009	25	04	commercial
Thornton Fire Station No 1	Generac	20 kW	natural gas	2010	25	03	commercial
Angus Fire Station No 2	Generac	20 kW	natural gas	2010	25	03	commercial

The Township maintains a contract with a certified generator technician to complete semi-annual inspections and servicing. Annually, the generators are assessed for condition, serviceability, and maintenance needs. The emergency generators are required to maintain the current level of service for emergency management.

The Department does not have any identified critical infrastructure deficiencies that are specific to the Department at this time. However, the emergency generator located at the Administration Centre has exceeded its useful life. There are no dedicated reserves for equipment replacement. The Department's asset management and funding requirements may be addressed through taxation, reserves, and reserve funds.

Source of funding: Taxation, Reserves, and Reserve Funds

ALTERNATIVE: Consideration should be given to establish an Emergency Measures Reserve and an annual contribution to the reserve of $ 4,000, over a period of 10 years, to a cumulative amount of $ 40,000, being equivalent to the maximum cost of replacing one emergency generator, should be considered through the budget process.

ALTERNATIVE: Consideration should be given to replacing one emergency generator, at a maximum cost of $ 40,000, from the capital equipment replacement reserve through the budget process.

RECOMMENDATION: That the Fire Chief and Treasurer apply for Federal and Provincial Emergency Management grant programs as they become available to replace the Emergency Operations Centre generator in two (2) to four (4) years' time.

Transportation Services

2012 Transportation Services, Tangible Capital Assets (TCA)

	Functional Classification	Historical Cost (TCA)	Accumulated Amortization	Net Book Value	Replacement Cost Estimate	
	Public Works					
	Land	$ 94,442	$ 0	$ 94,442		
	Land Improvements	$ 55,257	$ 7,614	$ 47,643		
	Buildings	$ 1,040,927	$ 264,736	$ 776,191		
	Machinery Equipment	$ 422,707	$ 136,799	$ 285,908		
	Vehicles	$ 2,969,951	$ 1,716,976	$ 1,252,975	$ 7,000,000	
	Roads, Paved					
	Land	$ 8,865,072	$ 0	$ 8,865,072		
	Land Improvements	$ 109,668	$ 20,102	$ 89,566		
	Linear Infrastructure	$ 38,500,009	$ 23,512,818	$ 14,987,191	$ 66,000,000	
	Roads, Gravel					
	Land	$ 739,217	$ 0	$ 739,217		
	Land Improvements	$ 0	$ 0	$ 0		
	Linear Infrastructure	$ 2,459,637	$ 2,459,637	$ 0	$ 5,000,000	
	Bridges and Culverts					
	Infrastructure	$ 7,714,466	$ 2,936,422	$ 4,778,044	$ 18,500,000	
	Sidewalks					
	Linear Infrastructure	$ 1,707,537	$ 367,723	$ 1,339,814	$ 7,500,000	
	Street Lights					
	Equipment	$ 2,146,835	$ 1,152,996	$ 993,839	$ 3,000,000	
	Urban Storm Sewer					
	Land	$ 1,676,322	$ 0	$ 1,676,322		
	Land Improvements	$ 0	$ 0	$ 0		
	Linear Infrastructure	$ 9,799,510	$ 1,880,585	$ 7,918,925	$ 18,000,000	
	Rural Storm Sewer					
	Land	$ 0	$ 0	$ 0		
	Land Improvements	$ 0	$ 0	$ 0		
	Linear Infrastructure	$ 0	$ 0	$ 0	$ 0	
	Total	$ 78,301,557	$ 34,456,408	$ 43,845,149	$125,000,000	

Note: Roads Paved functional classification includes Public Works Land, Buildings, and Equipment, and Ditches (Rural Storm Sewer System)

Note: Roads Gravel functional classification includes Ditches (Rural Storm Sewer System)

Note: Bridges and Culverts, excludes Centre Street Bridge (County)

Roadways

The transportation roadways network consists of 235.48 kilometres of assumed roads, 11.59 kilometres of unassumed roads, and 22.46 kilometres of unopened road allowances, for a total of 269.53 kilometres.

Township of Essa, Transportation Roadways Network
Summary of Roads (km) by Surface Type and Cross-section

Surface Type	Urban Cross-section	Semi-urban Cross-section	Rural Cross-section	Other	Total km
Paved Roads, HCB	18.76	13.83	33.93	0.00	66.52
Surface Treated Roads, LCB	0.00	0.00	135.99	0.19	136.18
Gravel Roads	0.00	0.00	32.78	0.00	32.78
Concrete Surface Roads				0.00	0.00
Earth Roads, Path				0.00	0.00
Sub-total	**18.76**	**13.83**	**202.70**	**0.19**	**235.48**
Unassumed Roads, HCB	11.59	0.00	0.00	0.00	11.59
Unopened Road Allowances				22.46	22.46
Other				0.00	0.00
Total	**30.35**	**13.83**	**202.70**	**22.65**	**269.53**

Note: rounding

The desired level of service for roadways is to maintain 75% of roadways to a condition rating of “Good”. Roadways form part of the core transportation services and are an infrastructure priority of the Township.

Road Needs Study

In 2013, Ainley Group undertook a Road Needs Study, or Road Management Plan. It was completed in 2014. The roads system was mapped and inventoried. Condition assessments were completed and condition ratings were determined for municipally maintained roads. The condition rating system is on a numerical scale from 0 to 10, where 0 would be an un-drivable road and 10 would be a brand new road. Municipal records, engineering experience and judgement, and available sources of information were used to provide realistic, detailed condition assessments together with lifecycle costing and capital needs over a five year period. The Study incorporated standard road construction practices, benchmark costs, and deterioration rates to arrive at the capital needs.

The following are summaries of the road condition ratings from the Study.

km	Transportation Services, Road Network Systems, Infrastructure Road Needs Study Condition Rating Summary					
Condition Rating	**Condition**	**Paved Roads, HCB**	**Surface Treated Roads, LCB**	**Gravel Roads**	**Other Roads**	**Total Roads**
8.0 to 10.0	Very Good	58.79 km	121.13 km	32.78 km	0.00 km	212.70 km
7.0 to 7.9	Good	2.70 km	7.83 km	0.00 km	0.00 km	10.53 km
6.5 to 6.9	Fair	0.91 km	2.27 km	0.00 km	0.00 km	3.18 km
5.0 to 6.4	Poor	4.12 km	4.76 km	0.00 km	0.00 km	8.88 km
0.0 to 4.9	Very Poor	0.00 km	0.00 km	0.00 km	0.19 km	0.19 km
Total km		66.52 km	135.99 km	32.78 km	0.19 km	235.48 km

Note: rounding

%	Transportation Services, Road Network Systems, Infrastructure Road Needs Study Condition Rating Summary					
Condition Rating	**Condition**	**Paved Roads, HCB**	**Surface Treated Roads, LCB**	**Gravel Roads**	**Other Roads**	**Total Roads**
8.0 to 10.0	Very Good	88.4%	89.0%	100.0%		90.3%
7.0 to 7.9	Good	4.1%	5.8%	0.0%		4.5%
6.5 to 6.9	Fair	1.4%	1.7%	0.0%		1.4%
5.0 to 6.4	Poor	6.1%	3.5%	0.0%		3.8%
0.0 to 4.9	Very Poor	0.0%	0.0%	0.0%	n/a	0.0%
Total		100.0%	100.0%	100.0%	n/a	100.0%

Note: rounding

The following is a summary of the road needs from the Study adjusted for program reclassification and extended from a period of five years to a period of ten years.

To develop paving programs, using the 0 to 10 condition rating scale, it is assumed that the High Cost Bituminous (HCB) road condition will decrease by 0.4 per year and Low Cost Bituminous (LCB) road condition will decrease by 0.5 per year.

The Spot Improvement, LCB Resurfacing, HCB Resurfacing, and Road Reconstruction Programs are described in the Road Needs Study. Intersection traffic light projects have been added in under the Road Reconstruction Program heading.

Cost savings may be available through the co-ordination of spot improvements and road reconstruction projects.

Road Needs Summary from 2014 to 2018

	2014	2015	2016	2017	2018	Road Costs 2014 to 2018
Spot Improvements	$ 4,000	$ 541,500	$ 445,000	$ 136,000	$ 236,000	$ 1,362,500
LCB Resurfacing	$ 8,500	$ -	$ 27,500	$ 201,500	$ -	$ 237,500
HCB Resurfacing	$ -	$ 88,500	$ -	$ 185,000	$ 73,500	$ 347,000
Road Reconstruction	$ 558,000	$ 3,718,000	$ 1,345,000	$ 1,727,000	$ 1,662,000	$ 9,010,000
Gravel Road HardResufacing	$ -	$ -	$ -	$ -	$ -	$ -
Slurry Seal	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 1,200,000
Total	$ 810,500	$ 4,588,000	$ 2,057,500	$ 2,489,500	$ 2,211,500	$ 12,157,000

Note: adjusted for program reclassification and extended from a period of five years to a period of ten years
Note: $ 289,500 of Spot Improvements and $ 1,718,000 of Road Reconstruction were deferred from 2014 to 2015

Road Needs Summary Extension from 2019 to 2023

	2019	2020	2021	2022	2023	Road Costs 2019 to 2023
Spot Improvements	$ -	$ -	$ -	$ -	$ -	$ -
LCB Resurfacing	$ 432,000	$ 456,000	$ 744,500	$ 580,000	$ 1,010,500	$ 3,223,000
HCB Resurfacing	$ 220,000	$ 306,000	$ 337,500	$ 630,500	$ 344,300	$ 1,838,300
Road Reconstruction	$ 2,843,000	$ 1,689,000	$ 913,000	$ 1,270,000	$ 441,000	$ 7,156,000
Gravel Road HardResufacing	$ -	$ -	$ -	$ -	$ -	$ -
Slurry Seal	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 240,000	$ 1,200,000
Total	$ 3,735,000	$ 2,691,000	$ 2,235,000	$ 2,720,500	$ 2,035,800	$ 13,417,300

Note: adjusted for program reclassification and extended from a period of five years to a period of ten years

The above levels of roads expenditures are not achievable or sustainable within the current funding envelope and overall infrastructure needs of the Township. A number of different approaches are available to address the needs.

From the Road Needs Study, $ 289,500 of Spot Improvements and $ 1,718,000 of Road Reconstruction costs were deferred from 2014 to 2015 as reflected in the above tables. There is a growing backlog of roads' capital projects.

In essence, the above resurfacing programs require full funding of resurfacing on a replacement cost basis within 12 ½ years for HCB roads and 10 years for LCB roads. Annual maintenance programs may extend the replacement life cycle for resurfacing.

LCB Resurfacing projects of $ 888,000 and HCB Resurfacing projects of $ 2,931,200 have been identified for 2024 and 2025 without adversely affecting the overall long term condition of the roads network.

The Township could more evenly distribute the overall timing and costs of the Road Reconstruction Program to reduce the funding impact by, for example, deferring the 11th Line from 20 Sideroad to 25 Sideroad project by two years moving it from 2018 and 2019 into 2020 and 2021. This approach will not adversely affect the overall long term condition of the roads network.

Roads and Related Capital Program

There is a Roads and Related Capital Program to accommodate growth. It includes the urbanization of certain roads in Angus. The estimate cost of the proposed works is $ 9,895,070 with $ 7,462,320 being funded from development charges leaving $ 2,432,750 to be funded from taxation and other sources. This Program, as adjusted, is taken into account within the Road Reconstruction Program of the above Road Needs Summary and the Road Needs Summary Extension.

The Township, through financial contributions from the development community of over $ 2,500,000, has constructed the new Willoughby Road. It was brought into service for public use along with the new Willoughby Road Bridge in the summer of 2012. This represents a significant investment in municipal infrastructure.

Gravel Roads Hard Surfacing Program

Over the past ten years and more, the Township has been pursuing a program to reconstruct and provide hard surfacing (surface treatment) to the majority of its gravel concession roads and sideroads, in order to reduce the number of kilometres of gravel

roads that are required to be maintained. This program is intended to continue over the next ten years for the identified gravel roads. The benefits of the program include reduced dust control costs, annual gravel application, and grading. The average annual costs of the program are $ 850,000, being $ 261,500 per km, with 32.78 km remaining to be constructed under the program, for a total of $ 8,500,000. The program is primarily funded through Federal Gas Tax revenue and taxation.

The estimate replacement cost of gravel roads, based on recent benchmark costs, is in the order of $ 150 per metre or $ 150,000 per km. The total replacement costs of 32.78 km of gravel roads is in the order of $ 4,900,000, however, given the program to reconstruct and provide for hard surfacing, these costs are not built into the capital program.

It is assumed that gravel roads will be kept at an acceptable condition rating with regular maintenance. When traffic volumes exceed 800 vehicles per day, it is recommended that the surface be upgraded to surface treatment or hot mix asphalt.

The Gravel Roads Hard Surfacing Program is not included in the Road Needs Study. As presented, the Program would cover 3.3 km per year or 33 km over a ten year period. The Program could readily be reduced to 3.0 km per year and extended over an eleven or twelve year period. That is, $ 775,000 per year on average. This would provide room for higher priority Bridge Rehabilitation, Road Resurfacing, and Road Reconstruction projects to proceed in the near term. The Program could also be suspended until 2024 and the available funding be redistributed to priority needs.

Slurry Seal Program

The Township is continuing its slurry seal program to extend the useful life of paved roadways and reduce maintenance costs. The average annual costs of the program are $ 240,000, being $ 13,000 to $ 13,600 per km, with 180 km intended to be covered over the next ten years under the program, for a total of $ 2,400,000. The program is primarily funded through taxation.

The Slurry Seal Program is included in the Road Needs Study. As presented, the Slurry Seal Program would cover 18.0 km per year or 180 km over a ten year period. Given that there are only 135 km of LCB surface treated roads in total at this time as detailed through the Road Needs Study, the Slurry Seal Program could readily be reduced to 9.0 km per year for five years and 18.0 km per year over the following five years or an average of 13.5 km per year over a ten year period. This would provide room for higher priority Bridge Rehabilitation, Road Resurfacing and Road Reconstruction projects to proceed in the near term.

Hot Mix Paving Program

The Township is continuing its hot mix paving program to extend the useful life of paved roadways and reduce maintenance costs. The program generally entails paving an overlay of asphalt on existing paved surfaces in the urban communities of Angus and Thornton. It may include pulverizing the existing surface or laying glass grid geotextile. The average annual costs of the program are $ 50,000, being $ 75.00 to $ 90.00 per metre, with 555 to 666 metres intended to be covered in 2014. The program is primarily funded through taxation.

Moving forward, based on the Road Needs Study, the hot mix paving program may be rolled into the HCB Resurfacing Program.

RECOMMENDATION: That the Manager of Public Works prioritize the projects of identified Road Needs within the available levels of funding.

Winter Control

The Municipal Performance Measurement Program (MPMP) requires municipalities to report the percentage of winter events where the response met or exceeded locally determined municipal service levels for road maintenance. Under the Asset Management Plan, Essa's desired level of service for winter control is to have the response meet or exceed locally determined municipal service levels for road maintenance for 90% of reported winter events. A qualified and trained roads crew with a well maintained fleet of snow plows and clearing equipment are required to achieve the target. The reported Township results show that roads crew has met or exceeded local service levels for 100% of recent winter events.

Sidewalks Program

The Township of Essa has over 37,000 metres of sidewalks servicing parts of Angus (25,700 m), Baxter (1,000 m) and Thornton (10,300 m). The sidewalks, being generally made of concrete and a standard width of 1 ½ metres or 5 feet, were installed from 1957 through to 2012 and continue to be installed as new subdivisions are developed. Sidewalks are included in paved roads linear infrastructure costs.

Sidewalks are inspected annually and maintained pursuant to the Municipal Act, 2001, O. Reg. 239/02 Minimum Maintenance Standards for Municipal Highways as amended by O. Reg. 23/10. This is a proxy for the desired level of service.

The estimated remaining useful life of infrastructure may be used as a proxy for condition on a high level basis. The inferred condition for sidewalks based on age compared to their assumed useful life is shown below. Based on the analysis, 10% of the sidewalks are in "Very Poor" condition. A number of sidewalks were installed prior to 1964. Given their relatively low and old historical cost base, they are underrepresented in terms of dollar value and as a percentage. While the analysis is based on historical costs as opposed to current or future replacement costs, it provides for an order of magnitude of the distribution of linear infrastructure by age.

2012 Transportation Services, Sidewalks, Linear Infrastructure Inferred Condition Based on Age compared to Assumed Useful Life of 50 Years			
Remaining Useful Life (Estimate)	**Inferred Condition (Estimate)**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 1,177,358.59	68.95%
61% to 85%	Good	$ 193,436.00	11.33%
41% to 60%	Fair	$ 173,832.83	10.18%
16% to 40%	Poor	$ 0.00	0.00%
0% to 15%	Very Poor	$ 162,909.83	9.54%
Total		$ 1,707,537.25	100.00%

Note: some components may have a useful life of less than 50 years; some older linear infrastructure may have an original useful life of less than 50 years

There are in the order of 3,500 metres of sidewalks in "Very Poor" condition. At a cost of $ 225 per metre, the replacement cost of these sidewalks would be in the order of $ 787,500. It would take over fifteen years to replace these sidewalks at an annual capital program level of $ 50,000 or over ten years at $ 75,000 per year.

2012 Transportation Services, Sidewalks, Linear Infrastructure Projected Condition in Ten Years' Time			
Remaining Useful Life (Estimate)	**Projected Condition (Estimate) 2023**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 0.00	0.00%
61% to 85%	Good	$ 1,208,328.60	70.76%
41% to 60%	Fair	$ 162,465.99	9.51%
16% to 40%	Poor	$ 173,832.83	10.18%
0% to 15%	Very Poor	$ 162,909.83	9.54%
Total		$ 1,707,537.25	100.00%

Note: some components may have a useful life of less than 50 years; some older linear infrastructure may have an original useful life of less than 50 years

In ten years' time, based on the analysis of existing infrastructure, without taking into account new infrastructure, 10% of the sidewalks will be in "Very Poor" condition and 10% will move from "Fair" to "Poor" condition.

Developers build new sidewalks in accordance with the engineering standards for the municipality. The municipality assumes these works as part of the subdivision approval process and incorporates them into its infrastructure programs. Operation and maintenance programs must also be expanded to include these works.

The Township constructed new sidewalks near the new Angus secondary school in support of active transportation and safe pedestrian travel. The average annual costs were $ 120,000, being $ 225 per metre, with 1,068 metres intended to be covered over the two years, for a total of $ 240,000 (2012 730 m, 2013 338 m, 2014 186 m phase on hold County Road No 10, Angus). The 2014 approved budget included construction of 300 metres of a new sidewalk near one of the Angus elementary schools at a cost of $ 67,400, being $ 225 per metre. The costs were primarily funded through the Special Projects Reserve.

Beginning in 2014, the Township has a non-capital sidewalk repair program to maintain existing sidewalks and to upgrade sidewalks that do not meet the minimum maintenance standards. The average annual costs of the program are $ 10,000, being $ 80.00 per metre, with 1,250 metres intended to be covered over the next ten years under the program, for a total of $ 100,000. The program may be adjusted in conjunction with the proposed sidewalk replacement program where it is more effective to replace older sidewalks than to repair sections of them. The program is primarily funded through operations.

RECOMMENDATION: That the Manager of Public Works update the sidewalk inventory and condition assessment and identify capital needs, maintenance issues, and priorities.

RECOMMENDATION: That consideration be given to a $ 50,000 per year sidewalk replacement program for older sidewalks, beginning in 2016 (2023), and that the Manager of Public Works include the program, as prioritized, in annual departmental budget submissions to address capital needs and remedy deficiencies.

Bridges and Culverts

The Nottawasaga River is a major river that flows through the Township from the south to the north. There are a number of bridges crossing this River and other rivers within the Township that are integral to the transportation network.

The desired level of service for Bridges and Culverts is to maintain all bridges and culverts to a condition rating of "Good". Bridges and Culverts form part of the core transportation services and are an infrastructure priority of the Township.

There is interplay between condition assessment, risk of failure, impact of failure, level of service, load limit posting, key performance indicator(s), and lead time to repair or replace.

Bridge and structure inspections are required under the Public Transportation and Highway Improvement Act, R.S.O. 1990.

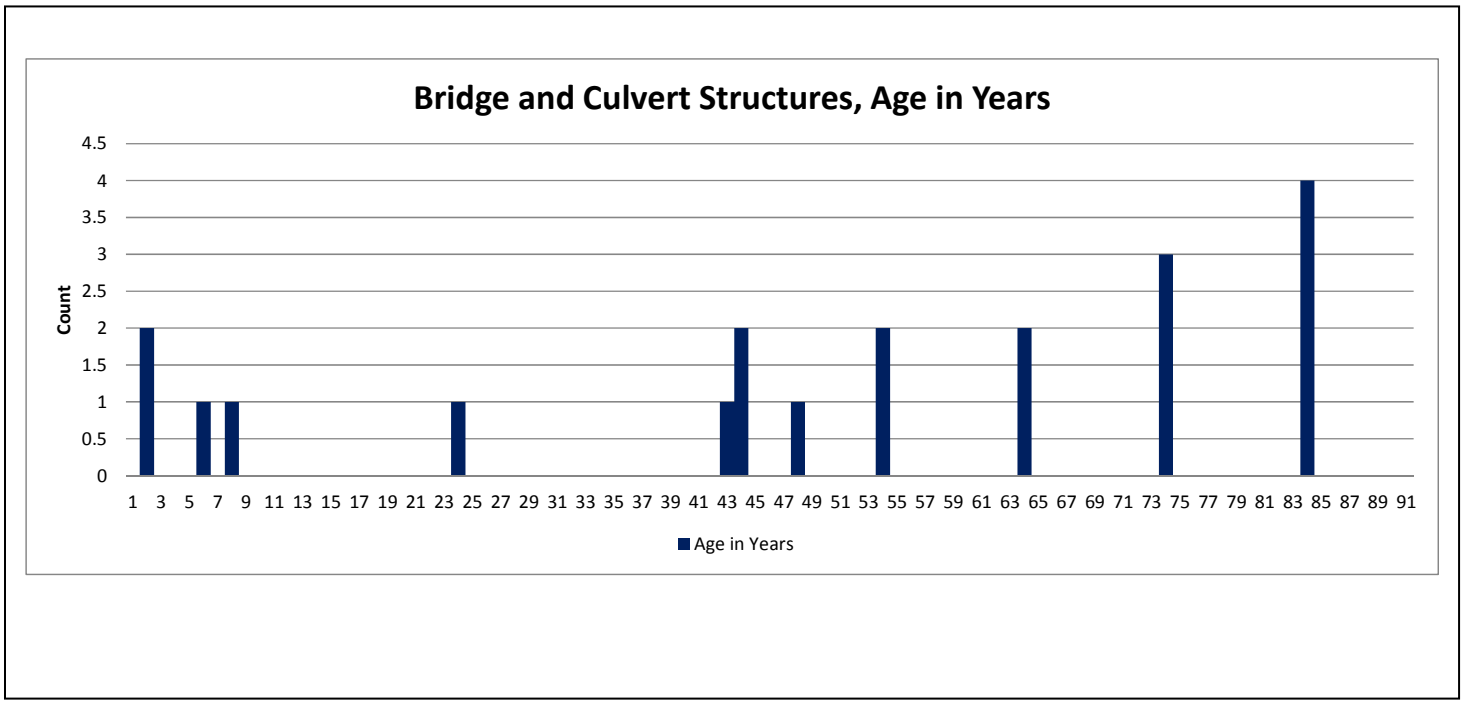
Bridge and structure inspections were completed as described in the report, "TOWNSHIP OF ESSA MUNICIPAL STRUCTURE INVENTORY AND INSPECTION – 2012" Report, as prepared by AECOM, Professional Engineers, dated February 2013.

Bridges and Culverts Needs Summary

			Now Needs	1 to 5 Years	6 to 10 Years	Total Needs
Engineering Investigation		1	$ -	$ 15,000	$ -	$ 15,000
Bridge Guiderail		5	$ 208,000	$ -	$ -	$ 208,000
Culvert Guiderail		1	$ 78,000	$ -	$ -	$ 78,000
Bridge Rehabilitation		12	$ 184,000	$ 2,342,000	$ 173,000	$ 2,699,000
Culvert Rehabilitation		3	$ -	$ 87,000	$ 92,000	$ 179,000
Total			$ 470,000	$ 2,444,000	$ 265,000	$ 3,179,000

"The average age of the Township's bridge structures is 36.2 years; the average age of the culvert structures is 58.5 years." The total estimated replacement cost of the bridges and culverts is in a range of $ 18.5 M to $ 20.5 M.

Generally, older bridge structures had a design life of fifty years, whereas newer bridge structures have a design life of seventy-five years.



Bridges and Culverts Condition Assessment Summary, Condition Rating

Identification	Location	Year	2009	2010	2011	2012	2013	BPR	CPR
Bridge #1	5th Line	1960	Good	Good	Good	Good	Good	13	
Bridge # 2	30th Sideroad	1970	Good	Good	Good	Good	Good	11	
Bridge # 3	30th Sideroad	1940	Good	Good	Good	Good	Good	05	
Bridge #4	5th Line	1970	Good	Good	Good	Good	Good	09	
Culvert #5	6th Line	1990	Good	Good	Good	Good	Good		05
Bridge #6	King Street	1950	Good	Good	Good	Good	Good	07	
Bridge #7	9th Line	2006	Good	Good	Good	Good	Good	08	
Bridge #8	8th Line	1960	Good	Good	Good	Good	Good	04	
Bridge #9	5th Line	1950	Good	Good	Good	Fair	**Fair**	**01**	
Bridge #10	6th Line	1940	Good	Good	Good	Good	Good	10	
Culvert #11	9th Line	1930	Good	Good	Good	Good	Good		04
Culvert #12	10th Line	1930	Good	Good	Good	Good	Good		02
Culvert #13	6th Line	1930	Good	Good	Good	Good	Good		01
Culvert #14	5th Line	1930	Good	Good	Good	Good	Good		03
Bridge #15	5th Sideroad	1966	Fair	Fair	Fair	Fair	**Fair**	**03**	
Bridge #16	6th Line	1971	Fair	Fair	Fair	Fair	**Fair**	**06**	
Bridge #17	5th Line	2008	Good	Good	Good	Good	Good	12	
Bridge #18	Elizabeth Street	1940	Poor	Poor	Poor	Poor	**Fair**	**02**	
Culvert #19	King Street old	1930	Poor	Poor	Poor	*			
Culvert #19	King Street new	2012				Good	Good		06
Bridge #20	Willoughby Road	2012				Good**	Good	14	

Bridge Condition Index, Condition Ratings: Good, Fair, Poor (Good = Good or Very Good)

"Year" represents estimated year of original construction, excluding deck and structure widening

BPR Bridge Priority Ranking

CPR Culvert Priority Ranking

* Culvert #19 was replaced in 2012

** Bridge #20 was constructed in 2012

Bridge No 9, 5th Line north of 20 Sideroad, constructed in 1950, has a condition rating of "Fair" due to the width of the deck while the structure itself is in good condition. It has a bridge priority ranking of 01. It is proposed to widen the deck at an estimated cost of $ 800,000 (updated from $ 719,000) with funding from roads and related development charges reserve fund. Interim financing may be required due to the timing of this and other growth-related capital projects.

The estimated cost to replace Bridge No 9 is $ 1,782,000 (2012). If Bridge No 9 is required to be replaced within the next ten years, then even with dedicated reserves the Township will not have sufficient funding to cover the cost of replacement.

Applications have been submitted for Federal and Provincial Infrastructure grant funding.

Bridge No 18, Elizabeth Street east of Simcoe Street, constructed in 1940, has a condition rating of "Fair". It has a bridge priority ranking of 02. The estimated cost to rehabilitate it is $ 158,000.

The rehabilitation of Bridge No 18 will improve the condition from "Fair" to "Good" and, given its age, will extend the remaining life of the structure to fifteen to twenty-five years.

Bridge No 15, 5th Sideroad east of 6th Line, constructed in 1966, has a condition rating of "Fair". It has a bridge priority ranking of 03. The estimated cost to rehabilitate it is $ 898,000.

The estimated cost to replace Bridge No 15 is $ 2,470,000 (2012). Because the condition rating of the abutments is "Good", a full replacement should not be necessary within the ten year period. The rehabilitation of Bridge No 15 will improve the condition from "Fair" to "Good" and, given its age, will extend the remaining life of the structure to beyond the next ten to fifteen years.

Bridge No 16, 6th Line north of Highway 89, constructed in 1971, has a condition rating of "Fair". It has a bridge priority ranking of 06. The estimated cost to rehabilitate it is $ 614,000.

The estimated cost to replace Bridge No 16 is $ 2,333,000 (2012). Because the condition rating of the abutments is "Good", a full replacement should not be necessary within the ten year period. The rehabilitation of Bridge no 16 will improve the condition from "Fair" to "Good" and, given its age, will extend the remaining life of the structure to beyond the next ten to fifteen years.

The Township has invested over $ 175,000 in the replacement of the King Street Culvert, Culvert No 19. It was brought back into service for the public in the autumn of 2012.

The Township, through financial contributions from the development community of over $ 1,250,000, has constructed the new Willoughby Road Bridge, Bridge #20. It was brought into service for public use along with the new Willoughby Road in the summer of 2012. This represents a significant investment in municipal infrastructure.

There are no remaining dedicated reserves for bridge and culvert replacement. Annual funding of $ 246,000 over ten years is required to address the identified needs for bridges and culverts. This does not address the replacement costs of the bridges and culverts. With funding, the Township would be able to implement the engineers' recommendations regarding critical bridge and culvert structures needs.

Continued deterioration of the structures will result if the engineers' recommendations are not implemented through a maintenance and rehabilitation program.

Alternative funding through the use of about half of the Federal Gas Tax Program grant, being $ 246,000 per year over ten years. Individual, project-by-project approval may be required to apply Federal Gas Tax money to bridge and culvert works. This would require a reduction in the funding of the Roadways Capital Program which would shift the infrastructure deficit from Bridges to Roadways. In turn, this would stretch the Roadways Capital Program from ten years to fifteen to twenty years without taking into account future roadways capital requirements.

Alternative financing through debt of $ 2,460,000. At an interest rate of 5.00% over 15 to 20 years and an annual repayment of $ 237,000 to $ 197,400, this would require an increase of $ 237,000 to $ 197,400 representing an increase of 5.925% to 4.935% of the base municipal tax levy, respectively. This would stretch the needs from ten years to fifteen to twenty years without taking into account future bridge and culvert capital requirements. This would also be added on top of any service-related and external tax increases.

Alternative financing through debt of $ 3,180,000. At an interest rate of 5.00% over 15 to 20 years and an annual repayment of $ 306,400 to $ 255,200, this would require an increase of $ 306,400 to $ 255,200 representing an increase of 7.66% to 6.38% of the base municipal tax levy, respectively. This would stretch the needs from ten years to fifteen to twenty years without taking into account future bridge and culvert capital requirements. This would also be added on top of any service-related and external tax increases.

Alternative funding through an annual contribution to reserves of $ 160,000, representing 4.00% of the base municipal tax levy, implemented through the budget process to provide for future bridge and culvert rehabilitation. This would stretch the needs from ten years to twenty years without taking into account future bridge and culvert capital requirements. This would also be added on top of any service-related and external tax increases.

Once bridge and culvert needs have been addressed, then the reserve may be redirected towards bridge and culvert replacement.

RECOMMENDATION: An annual contribution to reserves, representing a percentage of the base municipal tax levy, should be implemented through the budget process to provide for bridge and culvert rehabilitation. This does not address bridge replacement.

RECOMMENDATION: That the Manager of Public Works include proposed Works in annual departmental budget submissions for the rehabilitation of Bridges and Culverts to remedy structural needs and deficiencies.

RECOMMENDATION: That the Manager of Public Works and Treasurer apply for MIII, OCIF, and other Federal and Provincial Infrastructure grant programs as they become available for the rehabilitation of Bridges and Culverts to remedy structural needs and deficiencies.

Street Lights Program

The Township has over 1,250 street lights with cobra head type fixtures generally with High Pressure Sodium (HPS) bulbs that were installed between 1974 and 2012. Due to intended replacement, a formal condition assessment of the street lights has not been completed at this time. Newer technologies should have a longer service life. A number of alternatives for replacement are available. It is intended that all older street lights will be systematically replaced in the near term. Energy cost savings from the replacement should be quantified. This replacement is expected to include upgrading to Light Emitting Diode (LED) technology thereby improving energy efficiency and conservation. This may be undertaken in conjunction with energy management opportunities. A review of project partners may include Honeywell, Association of Municipalities of Ontario (AMO) Local Authority Services (LAS) RealTerm Energy, and other suppliers.
Project estimated cost range $ 750,000 (1,250 x $ 600)
Source of Funding: Reserves, Debt, and Taxation

At a cost of $ 600 per fixture, the replacement cost of all of the streetlights would be in the order of $ 750,000. It would take fifteen years to replace these streetlights at an annual capital program level of $ 50,000 or ten years at $ 75,000 per year.

The Township intends to update its standards to require compatible LED street lights for all future developments and Township projects.

The 2014 approved budget included installation of new LED streetlights along Willoughby Road at a cost of $ 100,000. The costs were primarily funded through Reserves and the Roads Capital Reserve Fund.

RECOMMENDATION: That the Manager of Public Works update the streetlight inventory providing age, energy cost savings, and priority.

RECOMMENDATION: That consideration be given to a $ 50,000 per year streetlight replacement program for older streetlights, beginning in 2016 (2023), and that the Manager of Public Works include the program and energy costs savings, as prioritized, in annual departmental budget submissions to improve energy efficiency and conservation.

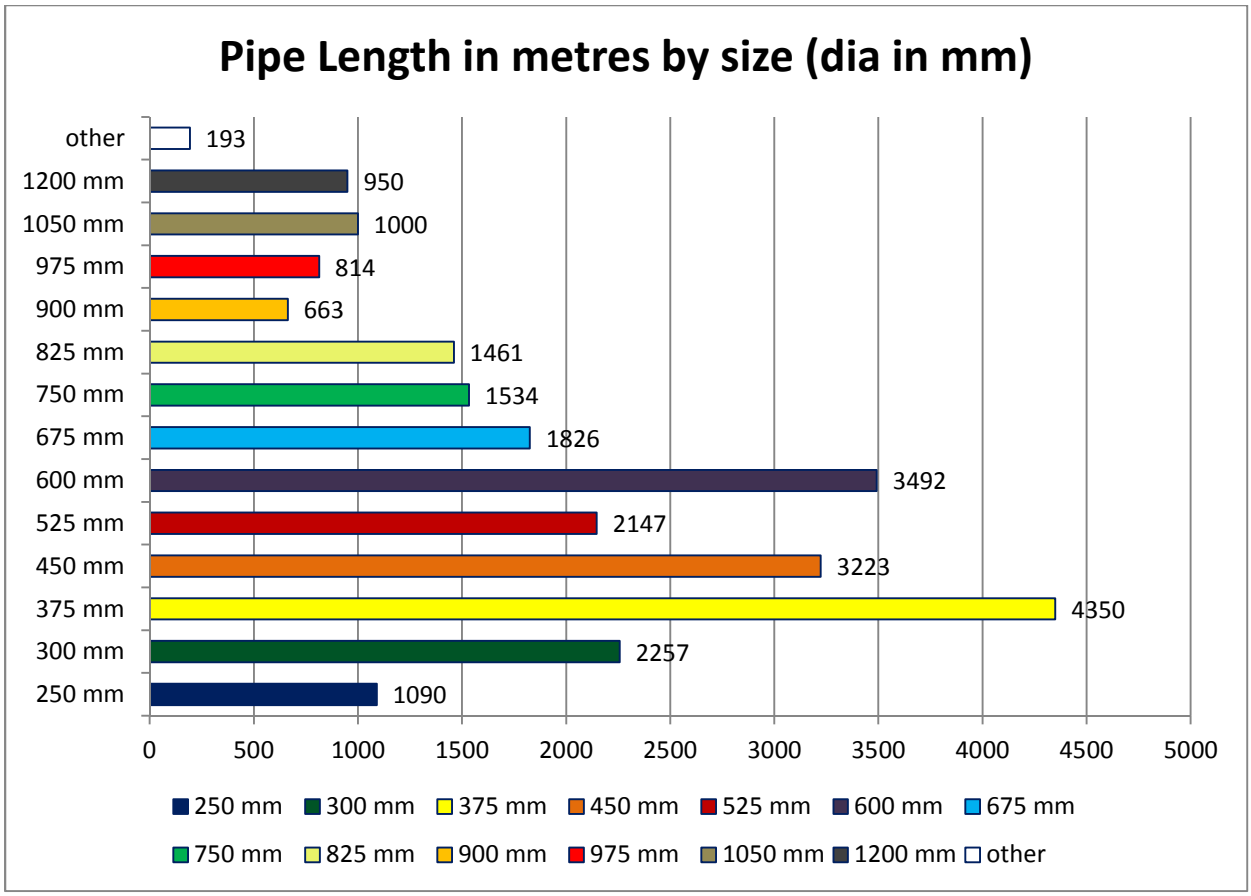
RECOMMENDATION: That the Manager of Public Works update the Township's engineering standards to require compatible LED street lights for all future developments and Township projects.

Storm Sewer Systems

Storm Sewer Systems, Urban Storm Sewers

The Township has over 25,000 metres of storm sewers servicing parts of Angus (19,250 m) and Thornton (5,750 m). The storm sewers were installed from 1981 through to 2012 and continue to be installed as new subdivisions are developed. The systems are relatively new compared to the useful lives of underground storm sewers. It is intended that inspections and condition assessments be completed through a future multi-year, tiered CCTV (closed circuit television) program (Canadian Standards Association, Pipeline Inspection Guideline, CSA Plus 4012) within ten years.

The total estimated replacement cost of the urban storm sewer systems is in a range of $ 16.0 M to $ 18.0 M. This represents an average of $ 640/metre to $ 720/metre.



The estimated remaining useful life of infrastructure may be used as a proxy for condition on a high level basis. The inferred condition for sidewalks based on age compared to their assumed useful life is shown below. Based on the analysis, the storm sewer systems are in "Fair" to "Excellent" condition.

2012 Transportation Services, Storm Sewer Systems, Underground Infrastructure Inferred Condition Based on Age compared to Assumed Useful Life of 50 Years			
Remaining Useful Life (Estimate)	**Inferred Condition (Estimate)**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 3,865,975.44	39.45%
61% to 85%	Good	$ 3,927,987.51	40.08%
41% to 60%	Fair	$ 2,003,733.88	20.45%
16% to 40%	Poor	$ 1,812.11	0.02%
0% to 15%	Very Poor	$ 0.00	0.00%
Total		$ 9,799,508.94	100.00%

Note: some components may have a useful life of less than 50 years; some older linear infrastructure may have an original useful life of less than 50 years

In ten years' time, based on the analysis of existing infrastructure, without taking into account new infrastructure, none of the storm sewer systems will be in "Very Poor" condition and 20% will move from "Fair" to "Poor" condition.

2012 Transportation Services, Storm Sewer Systems, Underground Infrastructure Projected Condition in Ten Years' Time			
Remaining Useful Life (Estimate)	**Projected Condition (Estimate) 2023**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 0.00	0.00%
61% to 85%	Good	$ 5,859,319.14	59.79%
41% to 60%	Fair	$ 1,934,643.81	19.74%
16% to 40%	Poor	$ 2,005,545.99	20.47%
0% to 15%	Very Poor	$ 0.00	0.00%
Total		$ 9,799,508.94	100.00%

Note: some components may have a useful life of less than 50 years; some older linear infrastructure may have an original useful life of less than 50 years

Higher density development and intensification are driving the need for the extension of urban storm sewer works. There is a Roads and Related Capital Program to accommodate growth. It includes the urbanization of certain roads, that is, the construction of new urban storm sewers.

As the storm sewers age, the risk of breakage and replacement needs increase. A storm sewer video inspection program should be considered in the medium term to inspect older, deeper storm sewers. The program results may identify the need to replace or rehabilitate specific sections of pipe.

The program should be considered after the review of the sanitary sewer video inspection program has been evaluated.

RECOMMENDATION: That consideration be given to a storm sewer video inspection program for older, deeper storm sewers and that the Manager of Public Works include the program, as prioritized, in annual departmental budget submissions.

Storm Sewer System, Storm Water Management (SWM) Ponds

The Township has twelve active stormwater management ponds of which six have been assumed by the municipality and six are in various stages of approval, development, and construction maintenance period. Stormwater management ponds are to be inspected annually to meet the requirements of their respective maintenance plans. It is typical that sediment will need to be removed from the ponds every twenty to twenty-five years.

RECOMMENDATION: That the Manager of Public Works prepare an inventory and maintenance guide for the future needs of the Township's stormwater management ponds and program for sediment removal.

Erosion Control

The Township commissioned the "Nottawasaga River Erosion Hazard Assessment Class Environmental Assessment, Schedule B" study to assess identified erosion problems occurring along the Nottawasaga River through the community of Angus. It was completed by Parish Geomorphic under Schedule 'B' of the Municipal Class Environmental Assessment procedures in 2013.

"The main objective of the erosion hazard assessment was to characterize the Nottawasaga River in the vicinity of the study area and develop an undertaking of the river's existing stability and function, especially with respect to channel planform change and bank erosion, and ultimately delineate a hazard corridor through the community." "Alternative D – Reconfigure channel and floodplain to promote the river to migrate away from the eroding valley wall – has been advanced as the preferred solution." (Nottawasaga River Erosion Hazard Assessment Class Environmental Assessment, Schedule B, Parish Geomorphic, Dec 2013, pages 1 and 39, respectively)

The estimated costs to implement the preferred solution have not been included in the Asset Management Plan at this time. Proposed works are under consideration.

The Township will address the erosion issues taking place in the vicinity of Brown's Line and Nottawasaga Drive. The approach to address the erosion issues in these locations is under consideration.

The erosion remediation works to be done in the vicinity of Nadmarc Court in the Nottawasaga Village Phase 4 subdivision and the Storm Water Management pond in the Brownley Meadows subdivision are to be funded by the benefitting developers.

Flood Control

The Nottawasaga Valley Conservation Authority monitors and provides flood watch and flood warning advisories, when appropriate, to the Township, adjacent municipalities, and the public.

The flood plain associated with the Nottawasaga, Pine, and Mad River systems consists of two zones for Official Plan purposes: the floodway and the flood fringe.

The Township retained Planning Solutions Inc. to review Essa's current floodplain management policies and background documentation and prepare revised floodplain management policies to be contained in its Official Plan.

No new municipal flood control works are anticipated to be constructed at this time.

Municipal Drainage

The Township has a number of municipal drains that were constructed under the Drainage Act. The municipal drains are inspected and maintained as required.

- Arnold Corbett Drain and Branches, By-law 857, Oct. 1958
- Braden Deahn Drain and Branches, By-law 757, Feb. 1952
- Currie McLean Branch of Arnold Corbett Drain, By-law 916, July 1961
- Ballantyne-Bulman Drain and Branches, By-law 936, April 1962
- County Road Drain, By-law 837, July 1957
- Davis, MacSay, Prosz Drain and Branches, By-law 868, May 1959
- Smith Drain and Branches, By-law 915, July 1961
- Wilson Drain, By-law 564, Nov. 1932

No new municipal drainage works are anticipated to be constructed at this time.

Public Transit

Inter-municipal public transit was introduced in the summer of 2013. The service is provided under agreement with the City of Barrie. The Township's share of the annual operating costs are in the order of $ 215,000 to $ 230,000 based on ridership.

Public Works Land and Buildings

The Roads Depot is centrally located at 5654 County Road 21at the intersection with County Road 56. Constructed in 1961 with an addition in 1975, the building is 10,000 sq. ft. An Equipment Storage Building was built in 1989, being 3,200 sq. ft. In 2008, the Sand and Salt Storage Dome was built, being 16,000 sq. ft. (80' x 200'), along with an Equipment Storage Building, being 7,000 sq. ft. (50' x 140'). They are required in order to maintain the current level of service.

Condition Assessment and Evaluation

In 2013, building condition assessments of the Roads Depot, Roads Equipment Storage Building, and Sand and Salt Storage Dome were completed by the Chief Building Official and Chief Administrative Officer. Generally, the major exterior building and interior building components were rated in "good" condition. Generally, the major mechanical systems and site features were rated in "good" condition. The more significant capital needs and maintenance issues are summarized as follows:

Township of Essa, Roads Depot
Summary of Capital Needs and Maintenance Issues

Component	Description	Condition	Year	Est Cost
Exterior Building	Roof replacement	Poor	2016	$ 100,000
Interior Building	Upstairs storage room flooring replacement	Poor	2015	$ 5,000
Mechanical Systems	Heating replace propane furnaces with natural gas furnaces	Fair	2014	$ 6,000
	Communications network		2016	$ 10,000
Safety Bldg Code				$ 0
Site Features	Fencing, gate installation		2016	$ 40,000

Township of Essa, Sand and Salt Storage Dome Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Est Cost
Exterior Building	Repair bowed out portion of wooden exterior wall	Fair	2014	$ 15,000
	Upgrade electric door operators	Good	2018	$ 12,000
Interior Building	Install containment system for pre-wet, de-icer materials (equipment storage area)		2016	$ 75,000
	Install insulation, interior cladding, and heating system (equipment storage area)		2019	$ 125,000
Mechanical Systems	see above			$ 0
Safety Bldg Code				$ 0
Site Features				$ 0

Township of Essa, Roads Equipment Storage Building Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Est Cost
Exterior Building				$ 0
Interior Building				$ 0
Mechanical Systems				$ 0
Safety Bldg Code				$ 0
Site Features				$ 0

Note: no significant capital needs or maintenance issues identified

Some recent quotes have indicated that estimated costs may be higher than shown.

While some of the items can be readily upgraded or replaced, other items will require further investigation by a qualified professional prior to proceeding with the Works.

RECOMMENDATION: That the Manager of Public Works include identified capital needs and maintenance issues in annual departmental budget submissions for the improvements to Roads Facilities to remedy structural needs and deficiencies.

RECOMMENDATION: That the Manager of Public Works refer identified capital needs and maintenance issues to qualified professionals for project assessment and costing where determined appropriate.

Public Works Rolling Stock, Fleet

Public Works has a fleet of twenty-five (25) vehicles, machinery, and equipment with useful lives of eight (8) to twenty (20) depending upon their nature, use, and purpose. They are required in order to maintain the current level of service. They are inspected and maintained on a regular basis. Condition assessments are completed at the time of annual inspection. Replacement is generally based on age, hours of operation, repair history, and condition. The vehicles are scheduled to be replaced between 2014 and 2023, except for a) the newer tandem dump plow trucks which will be replaced in the following ten year period, b) the 2005 Gradall excavator which will be replaced in the following ten year period, and c) the 1999 Champion grader which is not scheduled to be replaced if the majority of gravel roads are paved during 2014 to 2023.

It is proposed that the Public Works fleet will include additions to accommodate growth-related demands.

RECOMMENDATION: That the Manger of Public Works in conjunction with the Treasurer develop a long term financing strategy for Fleet replacement.

Environmental Services

2012 Environmental Services, Tangible Capital Assets (TCA)

	Functional Classification	Historical Cost (TCA)	Accumulated Amortization	Net Book Value	Replacement Cost Estimate	
	Water Treatment					
	Land	$ 409,379	$ 0	$ 409,379		
	Land Improvements	$ 58,894	$ 28,545	$ 30,349		
	Buildings	$ 4,890,166	$ 873,541	$ 4,016,625		
	Machinery Equipment	$ 5,182,401	$ 1,658,930	$ 3,523,471		
	Infrastructure	$ 0	$ 0	$ 0	$ 12,500,000	
	Water Distribution					
	Linear Infrastructure	$ 15,633,673	$ 2,465,690	$ 13,167,983	$ 20,000,000	
	Wastewater Treatment					
	Land	$ 71,627	$ 0	$ 71,627		
	Land Improvements	$ 296,154	$ 190,435	$ 105,719		
	Buildings	$ 9,071,024	$ 3,256,598	$ 5,814,426		
	Machinery Equipment	$ 10,282,363	$ 3,536,636	$ 6,745,727		
	Infrastructure	$ 0	$ 0	$ 0	$ 25,000,000	
	Wastewater Collection					
	Linear Infrastructure	$ 10,130,707	$ 1,877,933	$ 8,252,774	$ 12,500,000	
	Total	$ 56,026,388	$ 13,888,308	$ 42,138,080	$ 70,000,000	

Water Treatment

Water Treatment, Water Supply, Water Treatment Plant

The Township provides municipal water services to Angus, Baxter, and Thornton.

	Angus	L/sec	m^3/day	
1	Mill Street WTP		3,927	
2	McGeorge WTP		2,627	
3	Brownley WTP		4,251	
4	Daily difference from Baxter		0	
			10,805	
	Baxter			
1	Collingwood Alliston New Tecumseth Pipeline		100	
			100	
	Thornton			
1	Well No 1, Glen Avenue	6.05	523	
2	Well No 2, Glen Avenue	6.05	523	
3	Well No 3, Thornton Creek Subdivision	5.70	492	
4	Well No 4, Thornton Creek Subdivision	3.80	328	
			1,866	
	Total			12,771

Water Supply and Treatment Plants form part of the core environmental services and are an infrastructure priority of the Township.

Water Supply and Treatment Plant capacity, once supplemented by future supply and works, is sufficient to provide for current and near term growth.

Angus Water Supply

Mill Street Water Treatment Plant

The Mill Street Water Treatment Plant is part of the Angus Well System and is located at 28 Mill Street. It has a rated capacity of 3,932 m^3/day. The Plant is a ground water supply and treatment system consisting of:

- One (1) groundwater wells with flow meters
- Three (3) high lift pumps for distribution and one (1) fire pump
- Chlorine addition for incoming water from well as well as from Collingwood to Allistion pipeline
- Sodium silicate addition for Iron sequestering
- Supervisory Control and Data Acquisition (SCADA) system
- Pump house building
- Back up diesel generator for standby power and diesel tank
- Associated valves, piping, and instrumentation

McGeorge Water Treatment Plant

The McGeorge Water Treatment Plant is part of the Angus Well System and is located at 6130 Centre Street. It has a rated capacity of 2,592 m^3/day. The Plant is a ground water supply and treatment system consisting of:

- Two (2) groundwater wells with flow meters
- Two (2) high lift pumps for distribution
- Chlorine addition
- Sodium silicate addition for Iron sequestering
- Supervisory Control and Data Acquisition (SCADA) system
- Pump station building
- Back up diesel generator for standby power and diesel tank
- Associated valves, piping, and instrumentation

Brownley Water Treatment Plant

The Brownley Water Treatment Plant is part of the Angus Well System and is located at 8610 5th Line on the west side of Concession V. It has a rated capacity of 4,251 m^3/day. The Plant is a ground water supply and treatment system consisting of:

- Three (3) groundwater wells with flow meters
- Three (3) high lift pumps for distribution
- Chlorine addition pre-reservoir and post-reservoir
- Sodium silicate addition for Iron sequestering
- Supervisory Control and Data Acquisition (SCADA) system
- High lift pump station building and well pump house building
- Back up diesel generator for standby power and diesel tank
- Associated valves, piping, and instrumentation

Baxter Water Supply

Baxter Water Supply and Treatment System

The Baxter Water Supply and Treatment System is located at 6 Marshall Cresecent. It has a rated capacity of 100 m^3/day. It receives all of its water from the Collingwood to Alliston pipeline. The System consists of:

- Two (2) high lift pumps for distribution
- Sodium hypochlorite re-chlorination system
- Supervisory Control and Data Acquisition (SCADA) system
- Pump house building
- Back up diesel generator for standby power and diesel tank
- Associated valves, piping, and instrumentation

Thornton Water Supply

Glen Avenue Water Supply and Treatment System

The Glen Avenue Water Supply and Treatment System is located at 11 Glen Avenue. It has a rated capacity of 1,540 m^3/day. The Plant is a ground water supply and treatment system consisting of:

- Four (4) groundwater wells (with flow meters), two (2) located at the pump house and two (2) at a remote location
- Three (3) high lift pumps for distribution
- Chlorine addition
- Supervisory Control and Data Acquisition (SCADA) system
- Pump house building
- Back up diesel generator for standby power and diesel tank
- Associated valves, piping, and instrumentation

Water and Wastewater Condition Assessment Report

In 2013, Ontario Clean Water Agency's Engineering Services Group undertook a Water and Wastewater Condition Assessment study. The report was completed in 2013. Condition assessments were completed and condition ratings were determined for municipal water and wastewater systems. The condition rating system is on a numerical scale from 1 to 5: 1 Excellent or New; 2 Good; 3 Fair; 4 Poor; and, 5 Very Poor. Municipal records, engineering experience and judgement, and available sources of information were used to provide realistic, detailed condition assessments together with lifecycle costing and capital needs over the ten year period. The condition was assessed based on visual inspection of the equipment whenever feasible. For assets that were not readily visible such as submersible pumps and underground tanks, the condition was approximated based on operator knowledge and asset age.

2013 Environmental Services, Water and Wastewater Infrastructure, Condition Rating			
Grade	**Condition**	**General Description Statement**	
1	New to Excellent	The unit is in outstanding condition	
2	Good	The overall condition of the unit is acceptable. Wear and/or aging related deficiencies may require some repairs in the study period	
3	Fair	Compromised / Although functioning, the unit is in a substandard condition. Regular unit repairs and/or part replacements are necessary any time in the study period	
4	Poor	The unit performance is below standards. The likelihood of malfunction and/or complete failure is high in the initial years of the study period. Unless significant capital is spent on repairs and part replacements, the complete unit should be replaced. Further in depth inspection would be required to refine the actual remaining lifespan	
5	Very Poor	The unit is beyond its life cycle. The unit performance and reliability jeopardize the overall system operation. Complete unit replacement is necessary as soon as possible.	

Source: Township of Essa Water and Wastewater Condition Assessment, OCWA Engineering Services, November 25, 2013

Township of Essa, Environmental Services, Waterworks System, Mill Street Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Cost
Wells				
Well No 1	Pump test	2	2014	$ 10,000
Well No 1	Rebuild pump	2	2019	$ 20,000
Well No 1	Replace flow meter	2	2021	$ 10,000
Water Treatment Plant				
High Lift Pump No1	Rebuild pump	3	2015	$ 15,000
High Lift Pump No2	Rebuild pump	3	2018	$ 15,000
High Lift Pump No3	Rebuild pump	3	2021	$ 15,000
High Lift Pump No4	Fire pump no costs	1	2022	$ 0
Other		2 to 4	2013 to 2022	$ 64,100
Emergency Repairs	Allowance for minor repairs, periodic flushing, and general maintenance	n/a	2014 to 2022	$ 45,000
Water Storage				
Reservoirs	Inspect and clean	3	2015	$ 20,000
Reservoirs	Inspect and clean	3	2020	$ 20,000
Water Distribution System				
Piping Watermains		2	2022	$ 0
Sub-total				$ 234,100
Contingency 15%				$ 35,115
Total				$ 269,215

Township of Essa, Environmental Services, Waterworks System, McGeorge Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Cost
Wells				
Well No 1 & 2	Pull and rebuild pumps	2	2015	$ 10,000
Well No 1 & 2	Pull and rebuild pumps	2	2020	$ 10,000
Water Treatment Plant				
High Lift Pump No1	Rebuild pump	3	2016	$ 5,000
High Lift Pump No2	Rebuild pump	3	2017	$ 10,000
Other		2 to 3	2014 to 2022	$ 41,400
Emergency Repairs	Allowance for minor repairs, periodic flushing, and general maintenance	n/a	2014 to 2022	$ 45,000
Water Storage				
Reservoir	Inspect and clean	3	2015	$ 5,000
Reservoir	Inspect and clean	3	2020	$ 5,000
Water Distribution System				
Piping Watermains		2	2022	$ 0
Sub-total				$ 131,400
Contingency 15%				$ 19,710
Total				$ 151,110

Township of Essa, Environmental Services, Waterworks System, Brownley Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Cost
Wells				
Well No 4 5 & 6	Pump tests (3)	2	2015	$ 15,000
Well No 4 5 & 6	Rebuild pumps (3)	2	20209	$ 30,000
Water Treatment Plant				
High Lift Pump No1	Rebuild pump	2	2019	$ 15,000
High Lift Pump No2	Rebuild pump	2	2021	$ 15,000
High Lift Pump No3	Rebuild pump	2	2022	$ 15,000
Other		2 to 4	2014 to 2022	$ 27,900
Emergency Repairs	Allowance for minor repairs, periodic flushing, and general maintenance	n/a	2014 to 2022	$ 45,000
Water Storage				
Reservoir	Inspect and clean	2	2016	$ 5,000
Reservoir	Inspect and clean	2	2021	$ 5,000
Water Distribution System				
Piping Watermains		2	2022	$ 0
Sub-total				$ 172,900
Contingency 15%				$ 25,935
Total				$ 198,835

Township of Essa, Environmental Services, Waterworks System, Baxter Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Cost
Wells				
Well No n/a	n/a	n/a	2022	$ 0
Water Treatment Plant				
High Lift Pump No1	Rebuild pump	2	2018	$ 5,000
High Lift Pump No2	Rebuild pump	2	2018	$ 5,000
Other		2 to 4	2014 to 2019	$ 33,000
Emergency Repairs	Allowance for minor repairs, periodic flushing, and general maintenance	n/a	2014 to 2022	$ 45,000
Water Storage				
Tank	Inspect and clean	2	2018	$ 5,000
Tank	Inspect and clean	2	2022	$ 0
Water Distribution System				
Piping Watermains		2	2022	$ 0
Sub-total				$ 93,000
Contingency 15%				$ 13,950
Total				$ 106,950

Township of Essa, Environmental Services, Waterworks System, Thornton Glen Avenue Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Cost
Wells				
Well No 1 2 3 & 4	Pull and test pumps (4)	3	2013	$ 30,000
Well No 3 & 4	Replace pumps (2)	3	2016	$ 20,000
Well No 1 2 3 & 4	Pump tests (4)	3	2018	$ 20,000
Other		3	2018 to 2022	$ 20,000
Monitoring Well	Replace one well	n/a	2019	$ 75,000
Water Treatment Plant				
High Lift Pumps	Inspect pumps (3)	3	2014	$ 15,000
High Lift Pump No1	Rebuild pump	3	2015	$ 10,000
Other		2 to 4	2014 to 2022	$ 35,400
Emergency Repairs	Allowance for minor repairs, periodic flushing, and general maintenance	n/a	2014 to 2022	$ 45,000
Water Storage				
Standpipe No 1		2	2022	$ 0
Standpipe No 2		2	2022	$ 0
Water Distribution System				
Piping Watermains		2	2022	$ 0
Sub-total				$ 270,400
Contingency 15%				$ 40,560
Total				$ 310,960

Energy Cost Savings Measures

In 2014, Council authorized entering into an agreement with Honeywell Limited to complete capital works that will provide energy savings at the Township's Water Treatment Facilities and Angus Wastewater Treatment Plant.

2014 Environmental Services, Water and Wastewater Infrastructure, Energy Infrastructure Improvement Report, Cost Savings Measures			
Project ID	**Project Name**	**Project Budget**	
	Wastewater		
SD1401	EIIR CSM P1 Retrofit Fine Bubble Aeration System	$ 294,775	
SD1402	EIIR CSM P2 Retrofit Sludge Storage Handling	$ 495,125	
SD1403	EIIR CSM P3 Headworks Screening Improvements	$ 195,104	
SD1404	EIIR CSM P4 UV System and Disk Filter Addition	$ 475,957	
SD1405	EIIR CSM P5 Clarifier Cross Connection	$ 235,457	
SD1406	EIIR CSM P6 Retrofit and Changes to Lift Stations	$ 61,336	
	Water		
WD1407	EIIR CSM P7 Water Pumping Measure	$ 259,870	
		$ 2,017,624	

Source: Township of Essa Capital Project Reports

There may be additional savings and efficiencies through the co-ordination of the Water and Wastewater Capital Needs and the Honeywell Cost Savings Measures.

There are guaranteed savings of $ 197,844 per year, being $ 115,562 from utilities and $ 82,287 from operations, over ten years

Source of Funding: Reserves for Water and Sewer Infrastructure and such funds be paid back from annual savings during the pay back period.

Water Treatment, Water Storage Reservoirs

The Township has municipal water storage reservoirs in Angus, Baxter, and Thornton.

	Angus	m^3	m^3	m^3
1	Mill Street WTP	2,500	902	3,402
2	McGeorge WTP	157	95	252
3	Brownley WTP	2,500	0	2,500
4	Future Water Storage Reservoir 2,500 m^3			0
				6,154
	Baxter			
1	Marshall Crescent above ground tower	300	0	300
				300
	Thornton			
1	Thornton Creek Subdivision above ground tanks	556	556	1,112
2	Future expansion of above ground tanks 386 m^3	0	0	0
3				
4				
				1,112
	Total			7,566

Water Storage Capacity, once supplemented by the future water storage reservoir in Angus and the expansion of the above ground tanks in Thornton, is sufficient to provide for current and near term growth.

The Township has invested over $ 1,750,000 in the new Brownley Water Supply, Pumphouse, and Storage Reservoir. They were brought into service for the public in the spring of 2012.

Water Distribution

Water Distribution, Water Booster Pumping Stations

The Township does not have any water booster pumping stations in service at this time.

Water Distribution, Watermains

The Township has over 45,000 metres of watermains servicing Angus, Baxter, and Thornton. Baxter was connected to the Collingwood Alliston New Tecumseth Pipeline in 2008. The watermains were installed from 1971 through to 2012 and continue to be installed as new subdivisions are developed. The system is relatively new compared to the useful lives of underground watermains. It is intended that inspections and condition assessments be completed through a future multi-year, tiered leak detection and water loss testing program within ten years.

There is interplay between condition assessment, risk of failure, impact of failure, level of service, number of watermain breaks, key performance indicator(s), and lead time to repair or replace.

The estimated remaining useful life of infrastructure may be used as a proxy for condition on a high level basis. The inferred condition for watermains based on age compared to their assumed useful life is shown below. Based on the analysis, the watermains are in “Fair” to “Excellent” condition.

2012 Environmental Services, Water Distribution Systems, Underground Infrastructure Inferred Condition Based on Age compared to Assumed Useful Life of 80 Years			
Remaining Useful Life (Estimate)	**Inferred Condition (Estimate)**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 9,583,120.23	61.30%
61% to 85%	Good	$ 5,947,693.50	38.04%
41% to 60%	Fair	$ 102,859.55	0.66%
16% to 40%	Poor	$ 0.00	0.00%
0% to 15%	Very Poor	$ 0.00	0.00%
Total		$ 15,633,673.28	100.00%

Note: some components may have a useful life of less than 80 years; some older linear infrastructure may have an original useful life of less than 80 years

In ten years' time, based on the analysis of existing infrastructure, without taking into account new infrastructure, none of the watermains will be in "Very Poor" condition and less than 1% will move from "Fair" to "Poor" condition.

2012 Environmental Services, Water Distribution Systems, Underground Infrastructure Projected Condition in Ten Years' Time			
Remaining Useful Life (Estimate)	**Projected Condition (Estimate) 2023**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 51,325.96	0.33%
61% to 85%	Good	$ 13,274,279.53	84.90%
41% to 60%	Fair	$ 2,205,208.24	14.11%
16% to 40%	Poor	$ 102,859.55	0.66%
0% to 15%	Very Poor	$ 0.00	0.00%
Total		$ 15,633,673.28	100.00%

Note: some components may have a useful life of less than 80 years; some older linear infrastructure may have an original useful life of less than 80 years

The Township has invested over $ 1,100,000 in the new Willoughby Road Watermain. It was brought into service for the public in the summer of 2013. This has provided watermain looping to increase the reliability of the water distribution system.

Condition assessments have not been completed on the Township's watermains. The majority of the watermains are relatively new and have been maintained by Ontario Clean Water Agency (OCWA) in accordance with regulations.

Due to the relatively new watermain infrastructure, the Township has not experienced many watermain breaks.

As the watermains age, the risk of breakage and replacement needs increase. As noted above, an inspection and condition assessment program should be considered in the medium term for watermains. The program results may identify the need to replace or rehabilitate specific sections of pipe.

A program should be considered after the review of the sanitary sewer video inspection program has been evaluated.

RECOMMENDATION: That consideration be given to inspections and condition assessments completed through a future multi-year, tiered leak detection and water loss testing program and that the Manager of Public Works include the program, as prioritized, in annual departmental budget submissions.

Water Meters Program

The Township has over 3,500 residential water meters that were installed between 2003 and 2012 in Angus, Baxter, and Thornton. Due to intended replacement, a formal condition assessment of the water meters has not been completed at this time. A number of alternatives for replacement are available. It is intended that all current residential water meters will be systematically replaced in the near term. This replacement is expected to include upgrading to and implementation of electronic flow meters with radio read technology. This may be undertaken in conjunction with energy management opportunities. A review of project partners may include Honeywell, WAMCO, and other suppliers.
Project estimated cost range $ 700,000 (3,500 x $ 200)
Source of Funding: Reserves and User Charges

At a cost of $ 600 per meter, the replacement cost of all of the residential water meters would be in the order of $ 700,000. It would take fifteen years to replace these meters at an annual capital program level of $ 50,000, ten years at $ 75,000 per year, or eight years at $ 87,500 per year.

The Township intends to update its standards to require compatible electronic flow meters with radio read technology for all future residential developments and Township projects

RECOMMENDATION: That consideration be given to a $ 87,500 per year water meter replacement program for older meters, beginning in 2016, and that the Manager of Public Works include the program, as prioritized, in annual departmental budget submissions.

RECOMMENDATION: That the Manager of Public Works should update the Township's engineering standards to require compatible electronic flow meters with radio read technology for all future residential developments and Township projects.

Wastewater Treatment and Disposal

Angus Sewage Treatment System

The Township provides municipal wastewater and sanitary sewer services to Angus. The Angus Wastewater Treatment Plant (Angus Sewage Treatment Plant, Angus WWTP), located at 147 Centre Street, has a design capacity of 5,511 m^3/day.

The Wastewater Treatment Plant forms part of the core environmental services and is an infrastructure priority of the Township.

Wastewater Treatment Plant capacity, once supplemented by future capacity and works, is sufficient to provide for current and near term growth.

The Angus WWTP was originally commissioned in 1982 with upgrades occurring in the mid-2000's, including the construction of a new aeration tank, clarifier, and sludge holding tank. The new treatment system will be referred to as the new plant, treating approximately 57% of the flow, while the older treatment system will be referred to as the old plant, treating the remaining 43% of the flow.

The key processes at the Angus WWTP include:

- Inlet works, shaftless screw screen, vortex grit separator and classifier, flow splitter chamber with 2 rectangular weirs, septage truck empty station;
- Two separate aeration systems each with two aeration tanks and fine bubble diffused air systems;
- Two centre feed, circular clarifiers equipped with scum and sludge removal mechanisms;
- Nine (9) continuous contact sand filters in three (3) equipped with an air system;
- Ultraviolet (UV) disinfection system;
- Two (2) circular, glass-fused-to-steel sludge holding tanks;
- One (1) two-stage digester; and,
- Three (3) buildings, administration filter disinfection building, utility building, and grit separator and classifier building

The Angus WWTP has a design capacity of 5,511 m^3/day with a peak design flow rate of 11,911 m^3/day. According to the MOE Inspection report in 2012, the average daily flow was approximately 2,445 m^3/day in 2011 with a maximum daily flow of approximately 6,493 m^3/day. The average daily flow equates to 44% of the Plant's design capacity.

It should be noted that proposed new development in the Baxter service area will be required to pay for their proportionate share of costs of the Angus Sewage Treatment Plant and Collection System including the existing plant capacity and debt. The capital costs for the internal sewage collection system, sewage pumping station(s), and forcemain are to be paid for by the developer. The estimated costs to implement the Environmental Assessment's preferred solution for Baxter sanitary servicing have not been included in the Asset Management Plan at this time.

Water and Wastewater Condition Assessment Report

In 2013, Ontario Clean Water Agency's Engineering Services Group undertook a Water and Wastewater Condition Assessment study. The report was completed in 2013. Condition assessments were completed and condition ratings were determined for municipal water and wastewater systems. The condition rating system is on a numerical scale from 1 to 5: 1 Excellent or New; 2 Good; 3 Fair; 4 Poor; and, 5 Very Poor. Municipal records, engineering experience and judgement, and available sources of information were used to provide realistic, detailed condition assessments together with lifecycle costing and capital needs over the ten year period. The condition was assessed based on visual inspection of the equipment whenever feasible. For assets that were not readily visible such as submersible pumps and underground tanks, the condition was approximated based on operator knowledge and asset age.

2013 Environmental Services, Water and Wastewater Infrastructure, Condition Rating			
Grade	**Condition**	**General Description Statement**	
1	New to Excellent	The unit is in outstanding condition	
2	Good	The overall condition of the unit is acceptable. Wear and/or aging related deficiencies may require some repairs in the study period	
3	Fair	Compromised / Although functioning, the unit is in a substandard condition. Regular unit repairs and/or part replacements are necessary any time in the study period	
4	Poor	The unit performance is below standards. The likelihood of malfunction and/or complete failure is high in the initial years of the study period. Unless significant capital is spent on repairs and part replacements, the complete unit should be replaced. Further in depth inspection would be required to refine the actual remaining lifespan	
5	Very Poor	The unit is beyond its life cycle. The unit performance and reliability jeopardize the overall system operation. Complete unit replacement is necessary as soon as possible.	

Source: Township of Essa Water and Wastewater Condition Assessment, OCWA Engineering Services, November 25, 2013

Township of Essa, Environmental Services, Wastewater System Summary of Capital Needs and Maintenance Issues				
Component	Description	Condition	Year	Cost
Angus WWTP				
Clarifiers	Clarifier cross connection*	2	2015	$ 100,000
Contact Sand Filters	Replace with disc filters**	2	2016	$ 250,000
Blowers, air	Replace with turbo blower****	4	2016	$ 75,000
New Digester	Purchase sludge thickener***	5	2016	$ 500,000
New Sludge Holding Tank	Replace blower heads	2	2016	$ 50,000
Old Aeration Tanks	Replace aeration diffuser heads	3	2017	$ 90,000
New Aeration Tanks	Replace aeration diffuser heads	2	2017	$ 55,000
Blowers	Replace with turbo blower****	4	2018	$ 75,000
Old Sludge Holding Tank	Replace blower heads	2	2020	$ 50,000
Other		2 to 4	2013 to 2022	$ 340,000
Emergency Repairs	Allowance for minor repairs, unexpected issues, and general maintenance	n/a	2014 to 2022	$ 270,000
Inlet Works				
Grit Separator and Classifier	Modify flow	3	2016	$ 25,000
Inlet Screw Screen	Rebuild screw screen	3	2013 to 2022	$ 100,000
Sewage Pumping Stations				
SPS 1 Emergency Generator	Replace emergency generator	3	2019	$ 50,000
Other		2 to 4	2014 to 2022	$ 135,000
Sewage Collection System				
Emergency Repairs	Allowance for minor repairs, periodic cleaning, and general maintenance	2	2014 to 2022	$ 225,000
Sub-total				$2,390,000
Contingency 15%				$ 358,500
Total				$2,748,500

Note: Individual costs in above summary do not include Contingency 15%

Note: *The recommended installation of a cross connection between the old clarifier and the new clarifier at a cost of $ 115,000 in 2015 will not be required with the implementation of EIIR CSM P5 Clarifier Cross Connection at a cost of $ 235,457.

Note: **The recommended replacement of sand filters with disc filters of $ 287,500 in 2016 will not be required with the implementation of EIIR CSM P4 UV System and Disk Filter Addition at a cost of $ 475,957.

Note: ***The recommended purchase of a sludge thickener of $ 575,000 in 2016 will not be required with the implementation of EIIR CSM P2 Retrofit Sludge Storage Handling at a cost of $ 495,125.

Note: ****The recommended replacement of two blowers with two turbo blowers $ 86,250 each in 2016 and 2018, replacement of diffuser heads of $ 103,500 and $ 63,250 in 2017 will not be required with the implementation of EIIR CSM P1Retrofit Fine Bubble Aeration System with New Blowers and Aeration Heads at a cost of $ 294,775.

Energy Cost Savings Measures

In 2014, Council authorized entering into an agreement with Honeywell Limited to complete capital works that will provide energy savings at the Township's Water Treatment Facilities and Angus Wastewater Treatment Plant.

2014 Environmental Services, Water and Wastewater Infrastructure, Energy Infrastructure Improvement Report, Cost Savings Measures			
Project ID	**Project Name**	**Project Budget**	
	Wastewater		
SD1401	EIIR CSM P1 Retrofit Fine Bubble Aeration System****	$ 294,775	
SD1402	EIIR CSM P2 Retrofit Sludge Storage Handling***	$ 495,125	
SD1403	EIIR CSM P3 Headworks Screening Improvements	$ 195,104	
SD1404	EIIR CSM P4 UV System and Disk Filter Addition**	$ 475,957	
SD1405	EIIR CSM P5 Clarifier Cross Connection*	$ 235,457	
SD1406	EIIR CSM P6 Retrofit and Changes to Lift Stations	$ 61,336	
	Water		
WD1407	EIIR CSM P7 Water Pumping Measure	$ 259,870	
		$ 2,017,624	

Source: Township of Essa Capital Project Reports

Note: *The recommended installation of a cross connection between the old clarifier and the new clarifier at a cost of $ 100,000 in 2015 will not be required with the implementation of EIIR CSM P5 Clarifier Cross Connection at a cost of $ 235,457.

Note: **The recommended replacement of sand filters with disc filters of $ 287,500 in 2016 will not be required with the implementation of EIIR CSM P4 UV System and Disk Filter Addition at a cost of $ 475,957.

Note: ***The recommended purchase of a sludge thickener of $ 575,000 in 2016 will not be required with the implementation of EIIR CSM P2 Retrofit Sludge Storage Handling at a cost of $ 495,125.

Note: ****The recommended replacement of two blowers with two turbo blowers $ 86,250 each in 2016 and 2018, replacement of diffuser heads of $ 103,500 and $ 63,250 in 2017 will not be required with the implementation of EIIR CSM P1Retrofit Fine Bubble Aeration System with New Blowers and Aeration Heads at a cost of $ 294,775.

There may be additional savings and efficiencies through the co-ordination of the Water and Wastewater Capital Needs and the Honeywell Cost Savings Measures.

There are guaranteed savings of $ 197,844 per year, being $ 115,562 from utilities and $ 82,287 from operations, over ten years

Source of Funding: Reserves for Water and Sewer Infrastructure and such funds be paid back from annual savings during the pay back period.

Wastewater Collection

Wastewater Collection, Sewage Pumping Stations

The Township has sewage pumping stations located on Elizabeth Street (SPS #1), Centre Street (SPS #2), and Commerce Road (SPS #3).

There are three (3) lift stations in the system each comprising of a circular concrete collection manhole. Pumping Stations 1 and 2 are equipped with two (2) submersible pumps and a pump house while Pumping Station 3 has one (1) pump with no pump house. All pumping stations are equipped with valve and pump controls.

Wastewater Collection, Sanitary Sewer Trunks, Sanitary Sewer Pipes

The Township has over 35,000 metres of sewer trunks and pipes servicing Angus. The trunks and pipes were installed from 1981 through to 2012 and continue to be installed as new subdivisions are developed. The system is relatively new compared to the useful lives of underground trunks and pipes. It is intended that inspections and condition assessments be completed through a future multi-year, tiered CCTV (closed circuit television) program (Canadian Standards Association, Pipeline Inspection Guideline, CSA Plus 4012) within ten years.

There is interplay between condition assessment, risk of failure, impact of failure, level of service, number of sewer trunk breaks, key performance indicator(s), and lead time to repair or replace.

The estimated remaining useful life of infrastructure may be used as a proxy for condition on a high level basis. The inferred condition for sanitary sewer trunks based on age compared to their assumed useful life is shown below. Based on the analysis, the sanitary sewer trunks are in “Fair” to “Excellent” condition.

2012 Environmental Services Wastewater Collection Systems Underground Infrastructure Inferred Condition Based on Age compared to Assumed Useful Life of 80 Years			
Remaining Useful Life (Estimate)	**Inferred Condition (Estimate)**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 5,728,919.05	56.55%
61% to 85%	Good	$ 2,307,125.98	22.77%
41% to 60%	Fair	$ 2,094,661.50	20.68%
16% to 40%	Poor	$ 0.00	0.00%
0% to 15%	Very Poor	$ 0.00	0.00%
Total		$ 10,130,706.53	100.00%

Note: some components may have a useful life of less than 80 years; some older linear infrastructure may have an original useful life of less than 80 years

In ten years' time, based on the analysis of existing infrastructure, without taking into account new infrastructure, none of the sanitary sewer trunks will be in "Very Poor" or "Poor" condition and 10% will move from "Good" to "Fair" condition.

2012 Environmental Services Wastewater Collection Systems Underground Infrastructure Projected Condition in Ten Years' Time			
Remaining Useful Life (Estimate)	**Projected Condition (Estimate) 2023**	**Historical Cost (TCA)**	**Historical Cost (TCA)**
86% to 100%	New to Excellent	$ 54,763.79	0.54%
61% to 85%	Good	$ 6,949,909.86	68.60%
41% to 60%	Fair	$ 3,126,032.88	30.86%
16% to 40%	Poor	$ 0.00	0.00%
0% to 15%	Very Poor	$ 0.00	0.00%
Total		$ 10,130,706.53	100.00%

Note: some components may have a useful life of less than 80 years; some older linear infrastructure may have an original useful life of less than 80 years

As the sanitary sewers age, the risk of breakage and replacement needs increase. As noted above, a sanitary sewer video inspection program should be initiated in the near term to inspect older, deeper sanitary sewers. The program results may identify the need to replace or rehabilitate specific sections of pipe.

The effectiveness of the program will be evaluated after three years.

RECOMMENDATION: That consideration be given to a $ 20,000 per year sanitary sewer video inspection program for older, deeper sanitary sewers, beginning in 2016, for three years, and that the Manager of Public Works include the program, as prioritized, in annual departmental budget submissions.

Solid Waste Collection and Disposal

Solid waste collection, disposal, waste diversion, recycling, and landfills are the responsibility of the upper tier municipality. The County of Simcoe provides solid waste collection, disposal, waste diversion, recycling, and landfill services.

Health Services

Ambulance Services and Dispatch

Ambulance services and dispatch are the responsibility of the upper tier municipality. The County of Simcoe provides paramedic, ambulance, and dispatch services.

Social and Family Services

General Assistance, Assistance to Aged Persons, and Child Care

General assistance, assistance to aged persons, and child care are the responsibility of the upper tier municipality. The County of Simcoe provides general assistance, assistance to aged persons, and child care services.

Social Housing

Public Housing, Non-Profit Housing, Co-operative Housing, and Rent Supplement Programs

Public housing, non-profit housing, co-operative housing, and rent supplement programs are the responsibility of the upper tier municipality. The County of Simcoe provides public housing, non-profit housing, co-operative housing, and rent supplement program services.

Recreation and Cultural Services

Parks and Recreational Facilities

The Township has two Arenas. Arenas form part of the core recreation services and are an infrastructure priority of the Township.

Angus Arena, also known as the Essa Recreation Centre or Angus Recreational Centre, is located at 8527 County Road 10 in Angus, being 38,932 sq. ft., was built in 1977 with additions in 1985, 2005, and 2010. The estimated replacement cost would be in the order of $ 6.75M to $ 7.00M.

Thornton Arena, also known as the Thornton Recreation Centre or Thornton Community Centre, is located at 246 Barrie Street in Thornton, being 27,240 sq. ft., was built in 1975 with additions in 2000 and 2006. The estimated replacement costs would be in the order of $ 4.75M to $ 5.00M.

2012 Parks and Recreational Facilities, Tangible Capital Assets (TCA)

	Functional Classification	Historical Cost (TCA)	Accumulated Amortization	Net Book Value	Replacement Cost Estimate	
	Parks and Trails					
	Land	$ 4,212,993	$ 0	$ 4,212,993		
	Land Improvements	$ 1,504,261	$ 348,082	$ 1,156,179		
	Buildings	$ 1,068,042	$ 121,879	$ 946,163		
	Machinery Equipment	$ 526,787	$ 212,776	$ 314,011		
	Vehicles	$ 110,454	$ 74,505	$ 35,949		
	Angus Arena					
	Land	$ 4,492	$ 0	$ 4,492		
	Land Improvements	$ 114,041	$ 12,391	$ 101,650		
	Buildings	$ 2,324,831	$ 1,630,558	$ 694,273		
	Machinery Equipment	$ 285,478	$ 147,526	$ 137,952		
	Vehicles					
	Thornton Arena					
	Land	$ 220,716	$ 0	$ 220,716		
	Land Improvements	$ 51,862	$ 15,237	$ 36,625		
	Buildings	$ 1,793,525	$ 946,170	$ 847,355		
	Machinery Equipment	$ 196,437	$ 64,743	$ 131,694		
	Vehicles					
	Community Buildings					
	Land	$ 37,242	$ 0	$ 37,242		
	Land Improvements	$ 28,009	$ 8,786	$ 19,223		
	Buildings	$ 2,103,696	$ 392,230	$ 1,711,466		
	Total	$ 14,582,866	$ 3,974,883	$ 10,607,983	$ 23,000,000	

The total estimated replacement cost of parks and recreational facilities tangible capital assets is in a range of $ 23.0 M to $ 25.0 M.

Land and Buildings

Ainley & Associates Limited reported on the Angus Arena Structural Inspection in a letter dated December 6, 2012.

Ainley & Associates Limited reported on the Thornton Arena Structural Inspection in a letter dated December 6, 2012.

Condition Assessment and Evaluation

In 2013, building condition assessments of the Angus Arena and Thornton Arena were completed by Ainley & Associates Limited (Ainley Group) and provided in the "Township of Essa, Building Condition Assessments for Angus Recreation Centre and Thornton Arena Banquet Facility" report dated November 2013. Proposed works have been prioritized base on a risk analysis and risk score (%).

For the Angus Arena, the major exterior building and interior building components were generally rated in "Fair" to "Good" condition. The major mechanical process systems were generally rated in "Poor" condition. Accessibility needs were also documented. The more significant capital needs, maintenance issues, and accessibility needs are summarized below.

For the Thornton Arena, the major exterior building and interior building components were generally rated in "Fair" to "Good" condition. The major mechanical process systems were generally rated in "Very Good Excellent" condition having been recently replaced. Accessibility needs were also documented. The more significant capital needs, maintenance issues, and accessibility needs are summarized below.

Township of Essa, Angus Arena Summary of Capital Needs, Maintenance Issues, and Accessibility Needs				
Component	Description	Condition	Year	Est. Cost
Exterior Building	Repair masonry, repair cladding, repoint masonry	Fair	2014	$ 25,000
	Repair eaves trough and down spouts	Fair	2014	$ 10,000
	Replace caulking for windows and doors	Fair	2014	$ 10,000
	Connect support frame, install diagonal brace	Fair	2014	$ 9,000
	Inject foundation walls	Fair	2014	$ 20,000
	Gym exterior doors replacement	Fair	2014	$ 20,000
	Reface exterior walls	Fair	2016	$ 5,000
	Exterior bay windows replace	Fair	2018	$ 20,000
	Repair cladding, overhead and panels	Moderate	2019	$ 10,000
	Exterior wall assembly	Poor	2016	$ 150,000
Interior Building	Repair ceiling	Fair	2014	$ 2,000
	Repaint dressing room washroom ceilings, re-grout showers	Fair	2016	$ 10,000
	Gym floor replacement, walls	Fair	2023	$ 80,000
	Modify grandstand egress	Moderate	2019	$ 25,000
	Repaint steel girders, repair insulation	Moderate	2020	$ 90,000
	Investigate for hazardous substances, strip and repaint interior	Fair	2020	$ 40,000
Roof	Membrane replacement	Fair	2017	$ 10,000
	EPDM replacement	Moderate	2018	$ 200,000
Mechanical Systems	HVAC various	Moderate	2022	$ 7,500
	Plumbing install recirculation hot water line	Moderate	2022	$ 5,000
	Plumbing install automatic flush valves in public washrooms	Moderate	2022	$ 6,000
	Electrical	Very Good		$ 0
	Process Systems including	Poor	2014	$ 550,000
	refrigeration system, arena floor			
Safety Bldg Code	Safety lighting in stairwells	Fair	2014	$ 2,000
Site Features	Grading	Moderate	2014	$ 5,000
	Parking Lot	Moderate	2015	$ 5,000
Accessibility	Replace door hardware in gym locker rooms, revise ramp and viewing platform	Fair	2014	$ 8,000
Total				**$1,324,500**

Note: Condition scale 1 Very Good Excellent, 2 Good, 3 Moderate, 4 Fair, 5 Poor

Township of Essa, Thornton Arena Summary of Capital Needs, Maintenance Issues, and Accessibility Needs				
Component	Description	Condition	Year	Est. Cost
Exterior Building	Repair and paint siding and masonry, inject foundation, repoint masonry	Fair	2015	$ 50,000
	Replace caulking for windows and doors	Poor	2014	$ 7,000
Interior Building	Replace washroom millwork, replace change room floor, replace washroom caulking	Good	2018	$ 30,000
	Paint structural roof steel framing in arena	Moderate	2020	$ 80,000
	Reinforce steel guards, grout steel roof beams	Moderate	2015	$ 9,000
	Revise grandstand stairs	Moderate	2018	$ 18,000
Roof	Membrane replacement	Fair	2016	$ 105,000
Mechanical Systems	Furnace replacement	Poor	2014	$ 7,500
	HVAC various	Poor to Fair	2014 to 2020	$ 26,800
	Plumbing various	Poor to Mod	2014 to 2022	$ 17,750
	Electrical lighting	Fair	2014	$ 500
	Process Systems	Very Good *		$ 0
Safety Bldg Code	Provide adequate fire separation	Poor	2014	$ 85,000
	Renovate timekeeper booth	Fair	2022	$ 9,000
	Reconstruct office and staircase	Fair	2018	$ 12,000
	Provide fire dampers, modify air supply to mech HVAC room	Fair	2014	$ 6,000
	Other			$ 1,900
	Install fire protection sprinkler system throughout facility	Poor	2017	$ 400,000
Site Features	Grade			$ 15,000
	Parking Lot			$ 50,000
Accessibility	Modify existing barrier free washrooms, modify upstairs washrooms	Moderate	2017	$ 50,000
	Replace ramp handrail, door hardware in meeting room washroom	Poor	2014	$ 5,000
	Replace front doors to provide barrier free access to facility	Moderate	2017	$ 30,000
Total				**$1,015,450**

Note: * Thornton Arena ice surface was replaced in 2012 and refrigeration system was replaced in 2013 under the Community Infrastructure Improvement Fund (CIIF) program

While some of the items can be readily upgraded or replaced, other items will require further investigation by a qualified professional prior to proceeding with the Works.

Desired level of service is in the range of one indoor ice surface for every 7,500 to 10,000 persons: 1:7,500 to 1:10,000. The desired level of service may also be expressed as 3.60 to 4.80 sq ft per capita or 0.33 to 0.44 sq m per capita for indoor recreation floor space. The level of service will be revisited once Bridge and Arena structural deficiencies have been remedied.

There are no dedicated reserves for arena replacement and rehabilitation. Annual funding of $ 234,000 over ten years is required to address the identified needs for arenas. This does not address the replacement costs of the arenas. With funding, the Township would be able to implement the engineers' recommendations regarding critical and identified arena infrastructure needs.

Continued deterioration of the structures will result if the engineers' recommendations are not implemented through a maintenance and rehabilitation program.

Alternative funding through the use of Special Projects Reserve, being $ 234,000 per year over ten years. This would require a reduction in the funding of other capital projects from the Special Projects Reserve. Reserves were available as a source of funding for past parks and recreation capital projects. Current reserves will no longer be available as a source of funding for capital projects without them being replenished.

Alternative financing through debt of $ 2,340,000. At an interest rate of 5.00% over 15 to 20 years and an annual repayment of $ 225,400 to $ 187,800, this would require an increase of $ 225,400 to $ 187,800 representing an increase of 5.635% to 4.695% of the base municipal tax levy, respectively. This would stretch the needs from ten years to fifteen to twenty years without taking into account future arena capital requirements. This would also be added on top of any service-related and external tax increases.

Alternative funding through an annual contribution to reserves of $ 117,000, representing 2.925% of the base municipal tax levy, implemented through the budget process to provide for future arena rehabilitation. This would stretch the needs from ten years to twenty years without taking into account future arena capital requirements. This would also be added on top of any service-related and external tax increases.

Consideration should be given to an annual contribution to reserves, representing a proportion of the base municipal tax levy, implemented through the budget process to provide for future arena rehabilitation. This does not address arena replacement.

Given their ages, consideration should be given to the future replacement of the arenas. This may be accomplished through a community recreation needs assessment. An assessment should address, among other things, community needs, nature, scope, scale, timing, decision points, milestones, sources of funding, operational impact, and implementation schedule. An assessment may be undertaken as part of a broader recreation master plan.

RECOMMENDATION: That the Arena Manager should include identified capital needs and maintenance issues in annual departmental budget submissions for the improvements to Angus Arena and Thornton Arena to remedy structural needs and deficiencies.

RECOMMENDATION: That the Arena Manager should refer identified capital needs and maintenance issues to qualified professionals for project assessment and costing where determined appropriate.

RECOMMENDATION: That the CAO and Treasurer apply for MIII and other Provincial Infrastructure grant programs as they become available for the improvements to the Angus Arena and Thornton Arena to remedy structural needs and deficiencies.

RECOMMENDATION: That the CAO and Treasurer apply for Federal and Provincial Accessibility grant programs as they become available for the improvements to the Angus Arena and Thornton Arena to remedy accessibility needs.

Arena operations are funded from ice rentals, user fees, and taxation. Traditionally, user fees have not been available to support Arena capital projects.

In the near term, Arena operations should be able to readily achieve a target of 80% recovery of operating expenses through operating revenues including ice rentals and user fees.

Ice rental rates and user fees rates may need to be increased to meet increasing operating costs. Consideration should be given to reviewing recreation user fees.

Increased ice rental rates and user fees will allow room for taxation to be directed towards Arena structural needs and deficiencies.

Angus Arena Approved Annual Operating Budgets				
	2011	2012	2013	2014
Revenues				
Ice Rentals and User Fees	$ 222,650	$ 207,150	$ 226,550	$ 239,950
	67%	71%	72%	77%
Contributions from Taxation	$ 107,759	$ 85,681	$ 89,643	$ 73,538
	33%	29%	28%	23%
Expenses				
Operating Expenses	$ 330,409	$ 292,831	$ 316,193	$ 313,488
	100%	100%	100%	100%
Net	$ 0	$ 0	$ 0	$ 0

Note: Operating Expenses exclude amortization and depreciation
Source: Treasury Department

Thornton Arena Approved Annual Operating Budgets				
	2011	2012	2013	2014
Revenues				
Ice Rentals and User Fees	$ 246,550	$ 244,978	$ 250,475	$ 237,700
	81%	80%	80%	74%
Contributions from Taxation	$ 57,460	$ 62,155	$ 63,838	$ 81,972
	19%	20%	20%	26%
Expenses				
Operating Expenses	$ 304,010	$ 307,133	$ 314,313	$ 319,672
	100%	100%	100%	100%
Net	$ 0	$ 0	$ 0	$ 0

Note: Operating Expenses exclude amortization and depreciation
Source: Treasury Department

Enclosed Outdoor Rinks

The Township has enclosed outdoor rinks located at 1) 152 Greenwood Drive, Angus, 2) 42 McCarthy Crescent, Angus, 3) 119 Murphy Road, Baxter, and 4) 246 Barrie Street, Thornton. The enclosed outdoor rinks are relatively new compared to the useful lives of these structures. Formal condition assessments of the enclosed outdoor rinks have not been completed at this time. The desired level of service for enclosed outdoor rinks has not been determined at this time. The level of service will be revisited once Bridge and Arena structural deficiencies have been remedied.

Parks

Essa has over 82 hectares (ha) or 202 acres (ac) of parkland and open space. The desired level of service is in the range of 4 ha per 1,000 persons to 5 ha per 1,000 persons: 4:1,000 to 5:1,000. It is also desired to have new parks meet the accessibility regulations. "The open space standard recommended by the Sports and Fitness Division of the Ministry of Culture and Recreation is 20 acres of developed parkland per 1,000 population. … As well as this developed parkland, there should be ten acres of open space within the region that is left in its natural state per 1,000 population." ("Guidelines for Developing Public Recreation Facility Standards", Ministry of Culture and Recreation, Sports and Fitness Division, 13-02-21, http://lin.ca/sites/default/files/attachments ...) The Township exceeds these standards.

Trails

Essa has 10 kilometres (km) of trails. The desired level of service is in the range of 1 km per 1,000 persons to 3 km per 1,000 persons: 1:1,000 to 3:1,000. It is also desired to have new trails meet the accessibility regulations.

2012 Trails Kilometres (km) for Lower Tier Municipalities in Simcoe County plus Uxbridge as a Comparison

	Households	Population	Trails km	km / 1,000
Adjala-Tosorontio	3,913	10,603	2	0.189
Innisfil	13,960	33,504	12	0.358
New Tecumseth	11,548	31,787	13	0.409
Essa	**6,408**	**18,505**	**10**	**0.540**
Clearview (2009)	5,984	14,088	11	0.781
Wasaga Beach	12,205	17,537	15	0.855
Penetanguishene	3,745	9,111	10	1.098
Midland	7,675	16,295	19	1.166
Bradford West Gwillimbury	9,968	24,936	32	1.283
Oro-Medonte	9,083	20,079	31	1.544
Tay	5,256	9,339	19	2.034
Tiny	9,564	11,232	23	2.048
Springwater	7,141	18,223	41	2.250
Severn	6,994	11,220	29	2.585
Collingwood	10,757	19,241	60	3.118
Ramara	6,215	8,212	45	5.480
Uxbridge	*7,754*	*20,623*	*152*	*7.370*

Source: MAH 2012 (2009) FIR data, SLC 02 0040 01 SLC 02 0041 01 SLC 92 7152 05 SLC 92 7152 07

Development of new trails is included in the Capital Investment Plan. Trails are included in the Parks and Recreation Capital Program of the Development Charges Background Study.

An Active Transportation Plan was undertaken by MHBC Planning Limited on behalf of the Township in 2013. A number of different trail routes and corridors have been proposed.

Specialized Equipment, Ice Resurfacers

The Arenas have two propane-powered ice resurfacers with useful lives of twenty years; however, it is intended that they be replaced after ten years of service: Angus 2003 and Thornton 2006. An ice resurfacer is required in each arena in order to maintain the current level of service. They are inspected and maintained on a regular basis. Formal condition assessments have not been completed at this time. A number of alternatives for replacement are available including electric-powered ice resurfacers. They are scheduled to be replaced in 2014 and 2016 at an estimated cost of $ 80,000 each.
Source of Funding: Taxation and User Charges

Rolling Stock, Fleet

Parks and Recreation has pick up trucks and other equipment in their fleet. The desired level of service has not been determined at this time. Formal condition assessments have not been completed at this time. A number of alternatives for replacement are available including replacing them with those from Building Inspection and Public Works as they themselves are scheduled to be replaced. A replacement schedule has not been determined at this time.
Source of Funding: Proceeds of Disposition, Surplus Fleet, Other Departments

It is proposed that Parks and Recreation capital will include additions to accommodate growth-related demands.

Library Services

2012 Library Services, Tangible Capital Assets (TCA)

	Functional Classification	Historical Cost (TCA)	Accumulated Amortization	Net Book Value	Replacement Cost Estimate	
	Library Services					
	Land	$ 6,000	$ 0	$ 6,000		
	Buildings	$ 2,642,766	$ 174,522	$ 2,468,244		
	Furniture Equipment	$ 364,274	$ 61,740	$ 302,534		
	Books Collection	$ 675,115	$ 344,368	$ 330,747		
	Total	$ 3,688,155	$ 580,630	$ 3,107,525	$ 4,500,000	

The total estimated replacement cost of the library tangible capital assets is in a range of $ 4.5 M to $ 5.5 M.

Land and Buildings

The new Angus branch of the Essa Public Library is located at 8505 County Road 10 in Angus with 10,335 sq. ft., being part of the Nottawasaga Pines Secondary School. The Township has invested over $ 2,200,000 in the new branch. It was brought into service for the public in January of 2012. As the structure and its components are new, they are considered to be in good condition for the purposes of condition assessment. The Township entered into an agreement with the Simcoe County District School Board authorized by By-law No. 2011-75, dated December 21, 2011. The agreement covers shared responsibilities for repairs, maintenance, and any building renewal costs related to the branch.

The Thornton branch of the Essa Public Library, located at 34 Robert Street in Thornton with 2,738 sq. ft., was built in 1996 with an addition in 2007. A formal condition assessment of the building and its components was completed in conjunction with the Thornton Fire Station No. 1.

The desired level of service is 0.60 sq ft per capita or 0.06 sq m per capita. The Library currently exceeds this level of service. The level of service will be revisited once Bridge and Arena structural deficiencies have been remedied.

Books and Collection Materials

The Essa Public Library has over 50,000 books and other materials in its collection with a historical cost of over $ 500,000 and a replacement value of over $ 750,000. The desired level of service is 2.20 items per capita with an average age of the collection of not greater than seven years. The Library currently exceeds this level of service. The level of service will be revisited once Bridge and Arena structural deficiencies have been remedied. The collection is growing and being replaced in a proactive manner with consistent funding of over $ 75,000 on an annual basis. Library books and collections materials are funded primarily from the Township of Essa's property tax levies.

In addition, it is intended that the collection grow to keep pace with development and maintain or exceed the desired level of service. Growth-related capital costs are funded from development charges (90%) and the Township of Essa's property tax levies (10%). Development charges collections are anticipated to support funding of $ 10,000 for new materials on an annual basis.

Computer System and Information Technology Infrastructure

The Essa Public Library owns about 34 desktop and 14 laptop computers. The replacement cycle is every four or five years for primary computers. The primary computers are intended to be systematically replaced over the next ten years in accordance with the computer replacement schedule. Library computers are funded primarily from the Township of Essa's property tax levies and government grants.

The desired level of service for desktop and laptop computers is one desktop or laptop computer for every 1,000 persons and the average age of primary desktop and laptop computers not to exceed three (3) years, that is, a four (4) or five (5) year replacement cycle, subject to Federal and Provincial program support and renewal.

Specialized Equipment, Circulation, Checkout, and Security System

The Essa Public Library utilizes an Integrated Library System (ILS) called Symphony, hosted by the County of Simcoe. The ILS software manages the patron, collection and circulation databases. The Essa Public Library converted to a new radio frequency identification (RFID) system in 2011, with implementation in 2011 and 2012, to complement the bar coding identification and tracking system. The new system integrates with the ILS. The systems and technologies are expected to meet the library's needs over the next ten years. The systems are supported, upgraded, and maintained under agreements with the suppliers. The Essa Public Library branches are

serviced by fibre optic lines for internet access through the Simcoe Community Access Network (SCAN). The Library's internet services are hosted by the County of Simcoe. Library operations are funded primarily from the Township of Essa's property tax levies.

The Library requires a circulation, check out, and security system in order to maintain the current level of service. Desired level of service is to have scheduled service interruptions outside of regular office hours for maintenance of the system and to minimize unscheduled service interruptions. The system should not be out of service for a consecutive period of more than 24 hours at any given time. The system should not be out of service more than one day per month.

Library Services do not have any identified critical infrastructure deficiencies at this time. Their asset management and funding requirements have been addressed.

Planning and Development Services

The Planning and Development Department has offices in the Administration Centre. It relies upon the Township's network system, financial information system, TPS, and MOAR. The Economic Development office is located in the Essa Recreation Centre.

The Department does not have any identified critical infrastructure deficiencies that are specific to the Department at this time. Its asset management and funding requirements will be addressed through General Government Administration.

Land Use Planning and Zoning, Commercial and Industrial Development, Residential Development, Agriculture and Reforestation, Tile Drainage, and Other Services are not separately addressed.

Future Demand on Systems

Growth and development will place additional demands on municipal infrastructure. A Development Charges Background Study was undertaken by Hemson Consulting on behalf of the Township in 2013 to determine growth-related funding requirements for capital programs. These programs also require funding from taxation and other sources, especially the Roads and Related Capital Program which includes urban storm sewer works.

The Background Study identifies the amounts as “Replacement & Benefit to Existing” and “Required Service Discount”, but does not secure funding of the required amounts.

RECOMMENDATION: That sufficient amounts be raised to meet the capital needs of “Replacement & Benefit to Existing” amounts and “Required Service Discount” amounts as identified in the Development Charges Background Study and subsequent studies.

Financing Strategy

The financing strategy is discussed under the four sub-headings of 1) Property Taxes and Affordability, 2) Reserves and Reserve Funds, 3) Debt and Debt Capacity, and 4) Capital Investment and Sources of Financing.

There are a number of approaches that can be used for municipal financing.

One approach to financial management is “pay as you go”, that is, raise money to pay for goods and services before you incur the costs and spend the money. Under this approach, a project would not go ahead unless the funding was in place. The “pay as you go” approach is used for current year operations. Long term borrowing to pay for operating expenses is generally not a recommended practice or best practice. Where reserves are too low to support cash flow requirements, short term in-year borrowing may be required through an operating loan.

Another approach is to build reserves over time to pay for future projects. Then, once balances in the reserves have accumulated enough money, the projects would proceed fully funded. The municipality can avoid incurring interest costs using this approach. Reserves provide a municipality with financial flexibility. They may also provide a buffer against unexpected events.

Debt management is one of the key components of a capital financing strategy. Planned borrowing for capital projects is generally acceptable where there is an identified source to repay the debt or service the debt. The municipality incurs interest costs to carry the debt. Borrowing, and subsequent debt repayments, effectively push the costs of longer life projects into the future to be paid for by those who will use or enjoy the benefits and services delivered through the project over time.

There are advantages and disadvantages to each approach.

Municipalities often use a balance or mix of the various approaches to manage their finances.

There are a variety of common sources of funding for municipal infrastructure and capital needs including:

- Property Taxes, Taxation
- Water and Sewer Rates
- User Fees (Parks and Recreation, Building Permits)
- Development Charges
- Developer Contributions
- Donations and Fundraising
- Federal, Provincial, and Other Municipality Grants
- Other

The majority of the Township's annual revenues are generated from property taxes. Water and sewer user fees are the next largest annual source. Recreation user fees and Building Permit user fees are smaller sources of annual revenues.

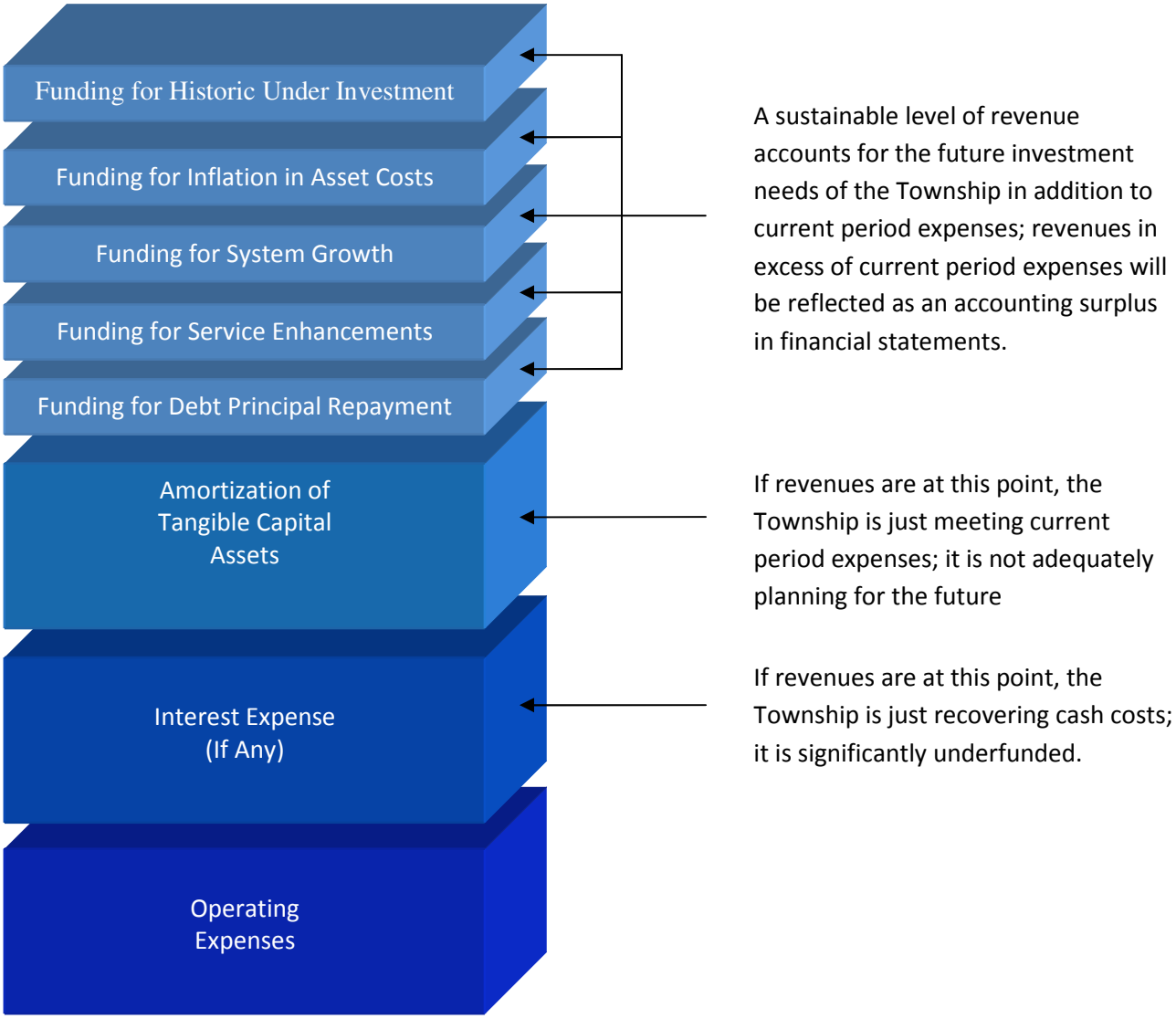
There are conditions and restrictions associated with how a municipality may use or apply certain sources of funding including: development charges may only be used for growth related capital costs; water and sewer user fees may only be used for water and sewer services; and, building permit user fees may only be used for building inspection and related services.

Reserves and reserve funds, themselves, are not an original source of funding as they generally receive transfers from other sources of funding.

Debt is a financing tool; debt, itself, is not a source of funding.

A building block approach to determining capital needs is shown below. This framework may be referenced when discussing funding for infrastructure and capital needs.

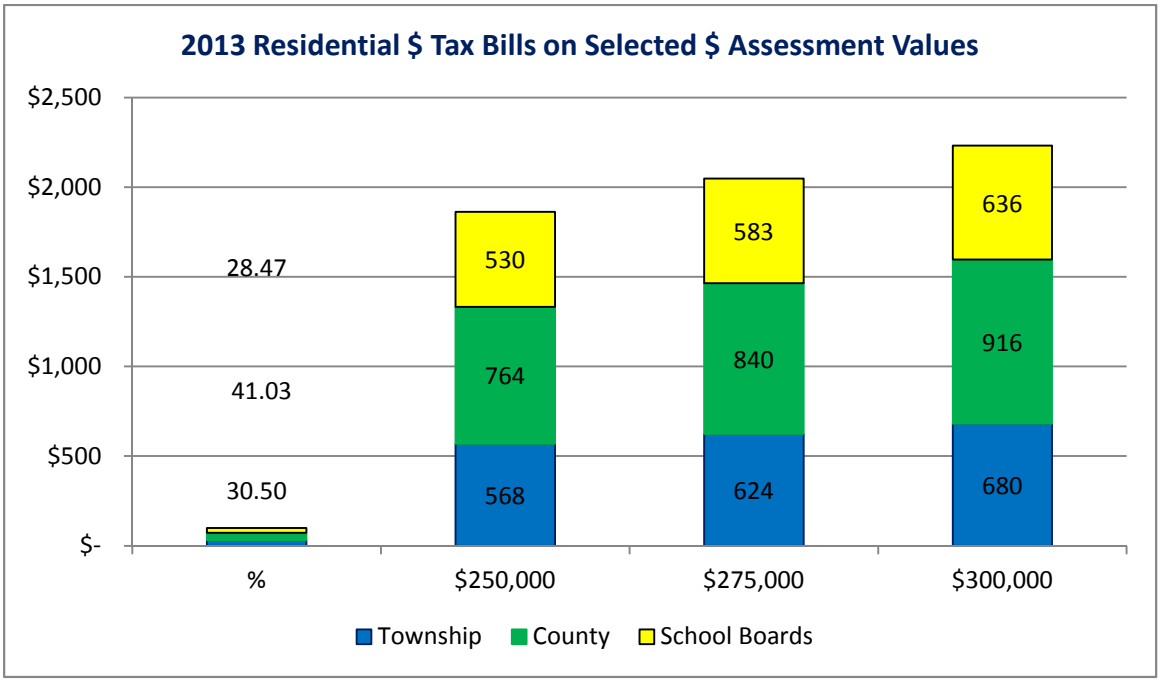
A Building Block Approach to Determining Capital Needs



Source: adapted from Toward Financially Sustainable Drinking Water and Wastewater Systems,
. Ministry of the Environment, August 2007

Property Taxes and Affordability, Impact on Ratepayers

Taxpayers in the Township of Essa pay property taxes for lower tier (local, township) purposes, upper tier (county) purposes, and education (school boards) purposes. The following chart shows the breakdown of the proportions of property taxes for 2013.



2013 Residential Tax Rates for Lower Tier Municipalities in Simcoe County			
Adjala-Tosorontio	0.00224121	0.224121%	1
Essa	**0.00226833**	**0.226833%**	**2**
Tiny	0.00253984	0.253984%	3
Severn	0.00341018	0.341018%	4
Ramara	0.00336655	0.336655%	5
Springwater	0.00348543	0.348543%	6
Oro-Medonte	0.00375716	0.375716%	7
Wasaga Beach	0.00483769	0.483769%	8
New Tecumseth	0.00526139	0.526139%	9
Innisfil	0.00597550	0.597550%	10
Clearview	0.00598612	0.598612%	11
Tay	0.00621595	0.621595%	12
Bradford West Gwillimbury	0.00646135	0.646135%	13
Collingwood	0.00741362	0.741362%	14
Penetanguishene	0.00915094	0.915094%	15
Midland	0.00933423	0.933423%	16
Average	*0.00510659*	*0.510659%*	
Median	*0.00504954*	*0.504954%*	

Source: Online Property Tax Analysis (OPTA)

According to Statistics Canada 2011 Census, the median and average household total income in 2010 for the Township of Essa are $ 79,877 and $ 90,651, respectively. (Source: <http://www.statcan.gc.ca>, <http://www12.statcan.gc.ca>, see Statistics Canada for definitions)

2013 property taxes for a $ 275,000 home would represent 2.56% of the median household total income or 2.26% of the average household total income. Notwithstanding the number of low income residents and the impact of property taxes on low income residents, Essa's property taxes are considered to be affordable. That is, there is some room to increase tax rates to fund infrastructure and asset replacement.

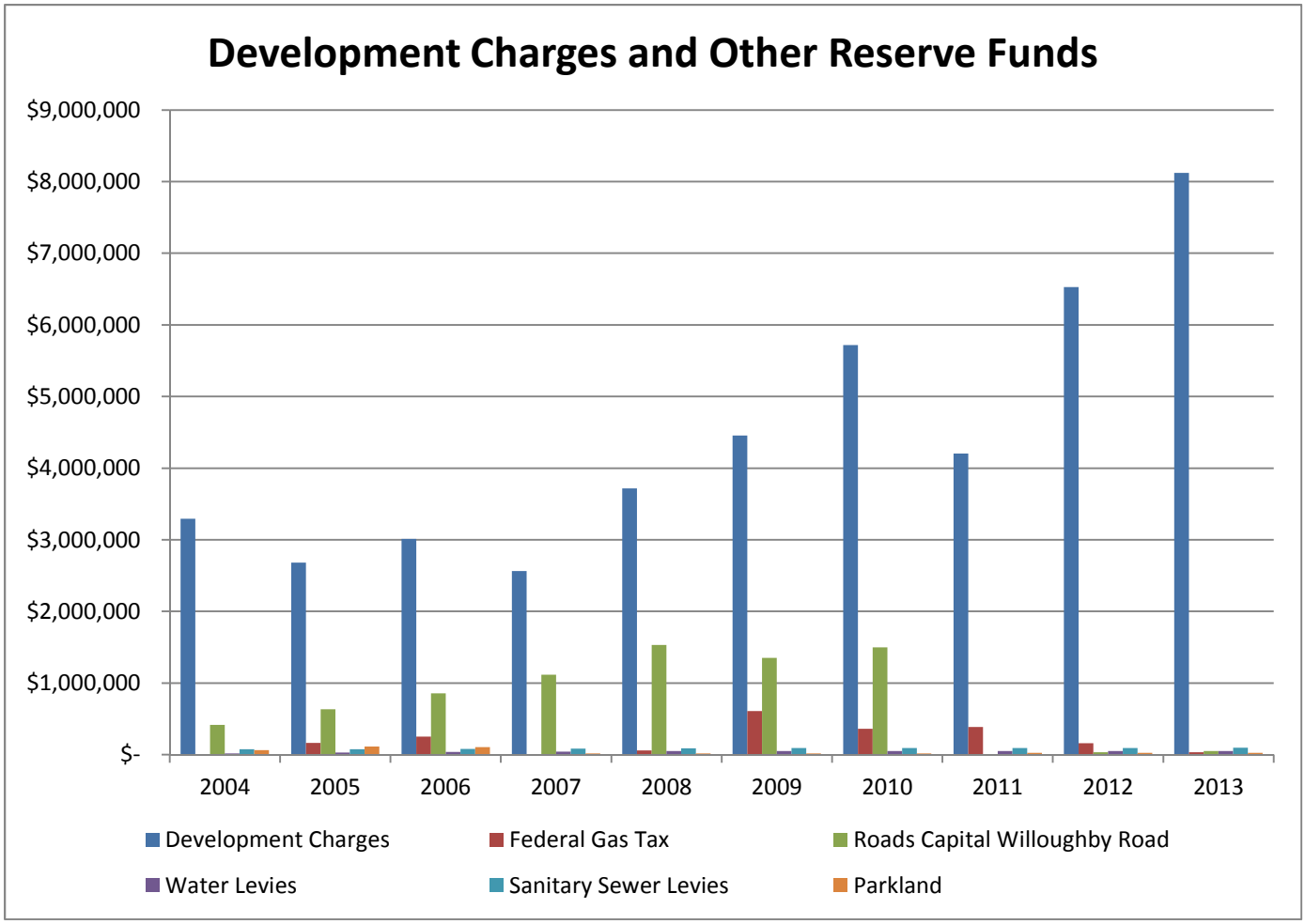
As reflected in the recently completed Development Charges Background Study, the Township is expected to grow at an average rate of 100 new residences per year. The development growth brings in building permit fees and development charges and triggers assessment growth. Based on an assessment value of $ 250,000 to $ 300,000, a new residence will raise $ 568 to $ 680 in new local municipal property taxes for the Township based on 2013 tax rates. Growth of 100 new residences per year with an average assessed value of $ 275,000 will generate in the order of $ 62,400 in new local municipal property taxes each year. This represents about 1.56% of the base township tax levy of $ 4.0 M. Recent growth in taxation has been directed to annual operations and capital budgets. There is no money "left over" to direct towards infrastructure renewal and replacement. The Township cannot rely upon growth to fund infrastructure renewal and replacement.

Currently, the economies of Simcoe County and Southern Ontario are experiencing slow growth rates. Over time, it is expected that they will return to more normal growth rates. Employment rates should improve as the economies improve.

RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that an incremental approach should be used for property tax rate increases to fund infrastructure and asset replacement.

Reserves and Reserve Funds

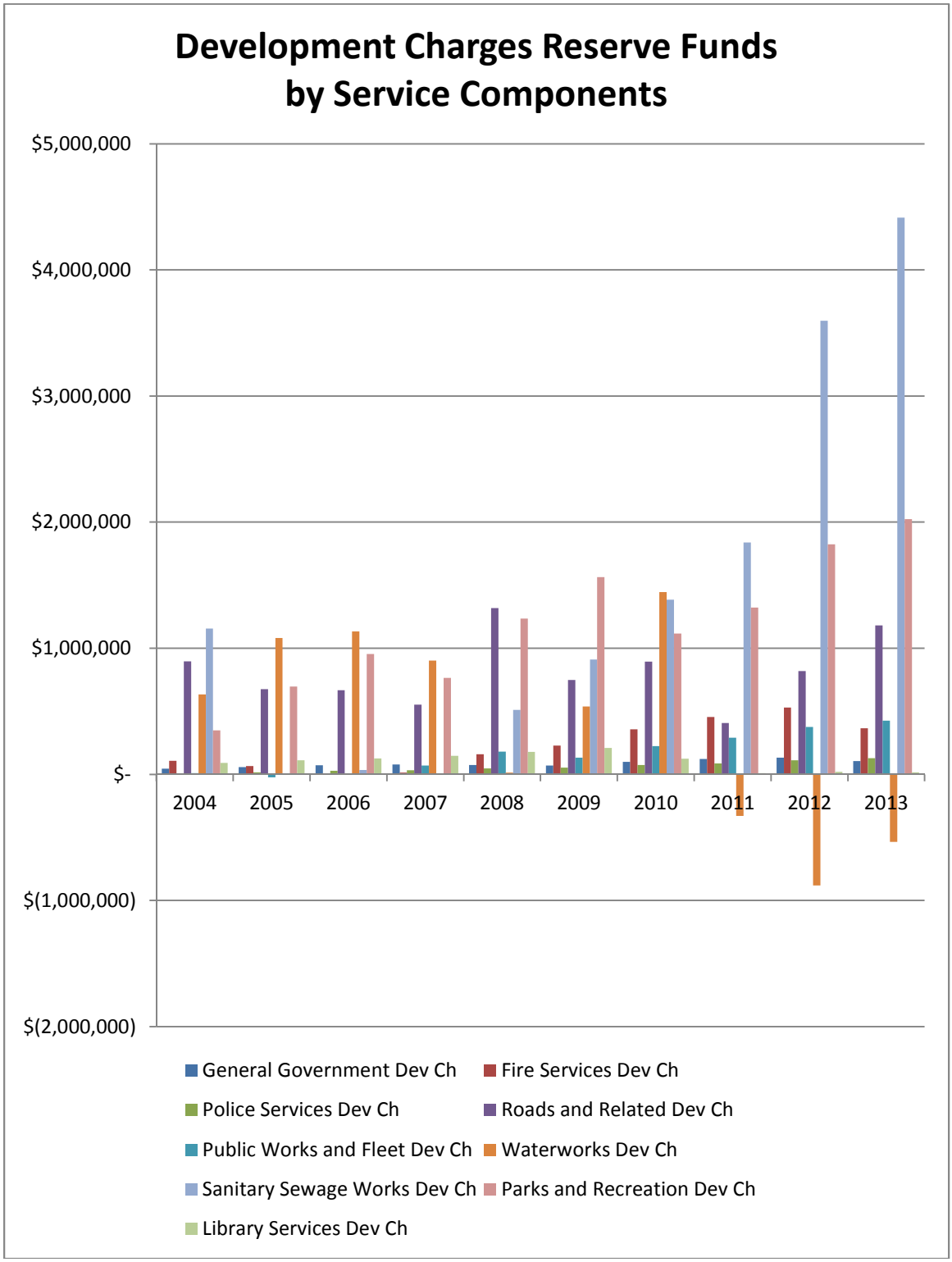
Reserves and Reserve Funds Strategies



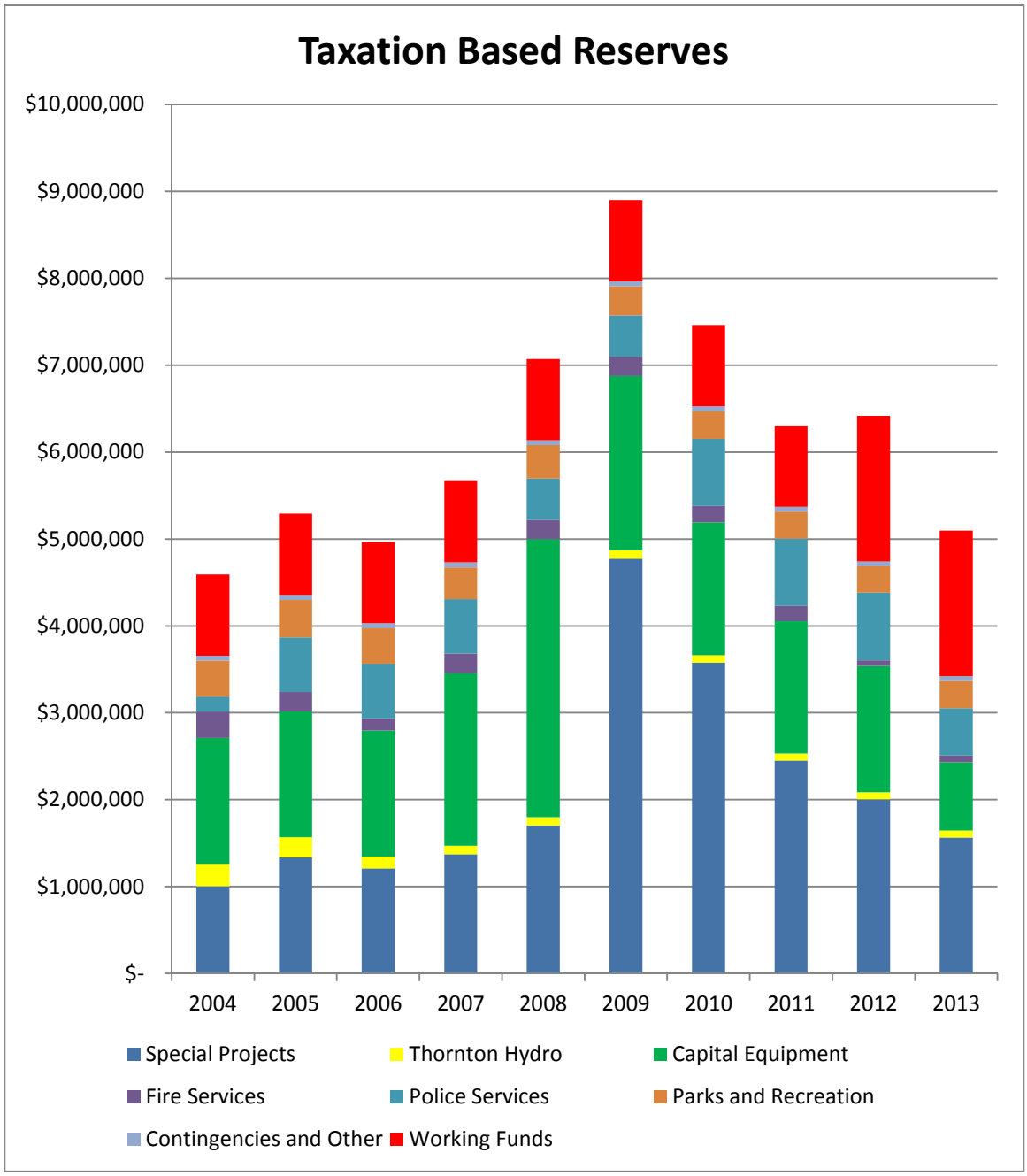
Development Charges Reserve Funds, Sources of Funds: collection of development charges; Uses of Reserve Funds: growth-related capital projects, debt servicing

Recreation Land (Parkland) Reserve Fund, Sources of Funds: cash in lieu of parkland, developer contributions, and proceeds of sale of parkland; Uses of Reserve Fund: parkland acquisition and parkland development (baseball diamonds, soccer pitches, tennis courts, playing fields); traditionally has not been required for parkland acquisition

Federal Gas Tax Reserve Fund, Sources of Funds: Federal Gas Tax grant; Uses of Reserve Fund: road reconstruction and rehabilitation, bridge reconstruction and rehabilitation, buses for transit, supplementary sand and salt storage dome



Note: Waterworks component of the Development Charges Reserve Funds is currently in a negative balance; this is expected to resolve itself through collections from growth in residential units.

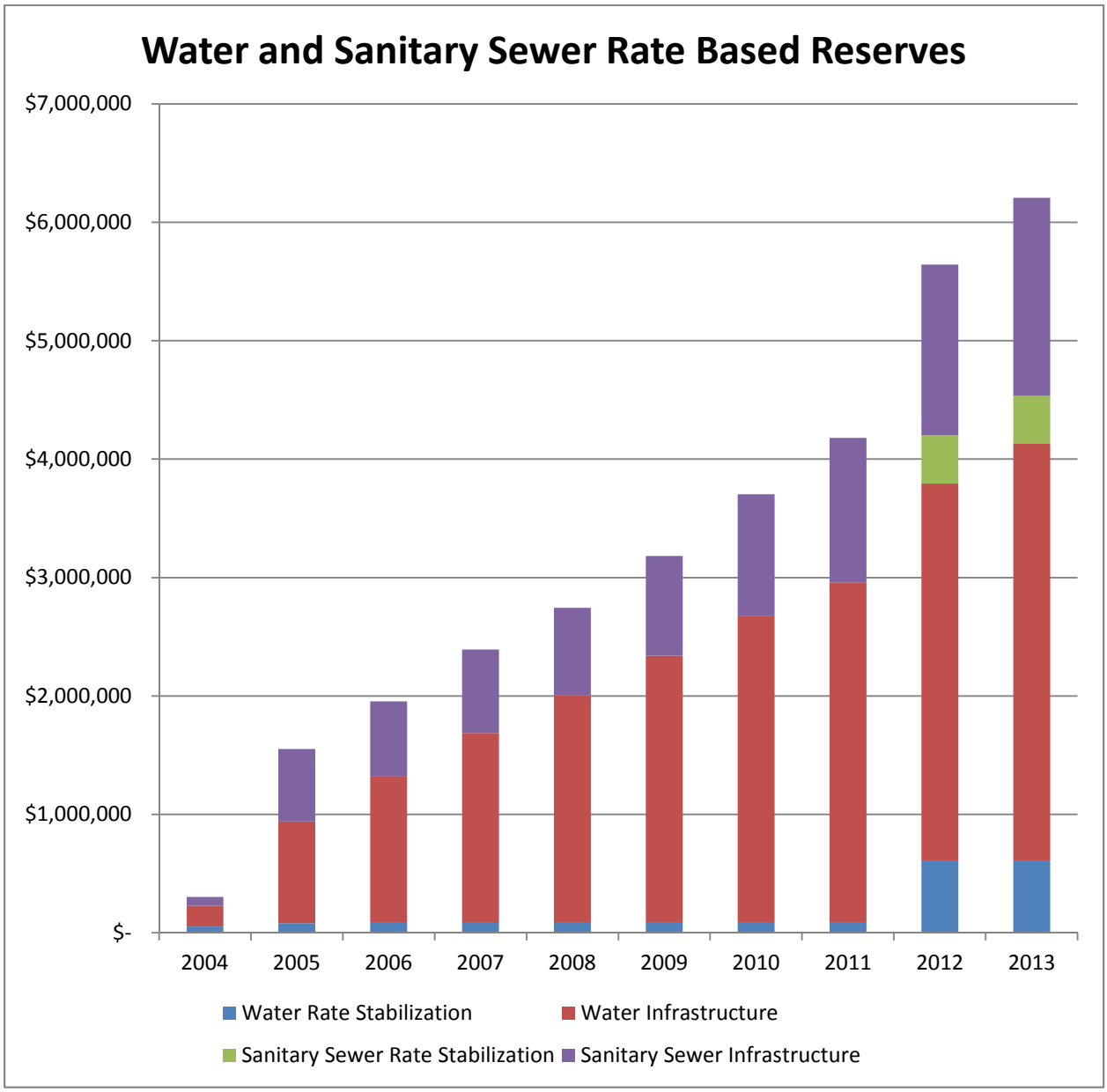

Taxation Based Reserves
$10,000,000
$9,000,000
$8,000,000
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Special Projects
Thornton Hydro
Capital Equipment
Fire Services
Police Services
Parks and Recreation
Contingencies and Other
Working Funds

The Capital Equipment Reserve cannot sustain funding for future replacement of capital equipment without contributions from taxation and other sources.

In 2009, net proceeds from the sale of property to the Simcoe County District School Board were transferred into the Special Projects Reserve. This Reserve was relied upon as a source of funding for many capital projects between 2009 and 2014 including the Township's share of grant supported capital projects. This Reserve cannot sustain funding of future capital projects as it has done in the past. It has now returned to its pre-2009 levels.

If these Reserves are to be utilized for future capital replacements, then they need consistent or sustainable contributions transferred into them. At this time, taxation would be the source of such contributions.

In addition, the Working Fund Reserve requires contributions transferred from taxation to provide sustainable cash flow for Township operations. Given the relative size of Township operations, a target balance of $ 2.0M may be appropriate for this Reserve. Contributions of $ 40,000 per year would be required to achieve such a target within the next ten years.



RECOMMENDATION: That the Township should develop reserve and reserve fund policies in keeping with the financing strategy of this Plan.

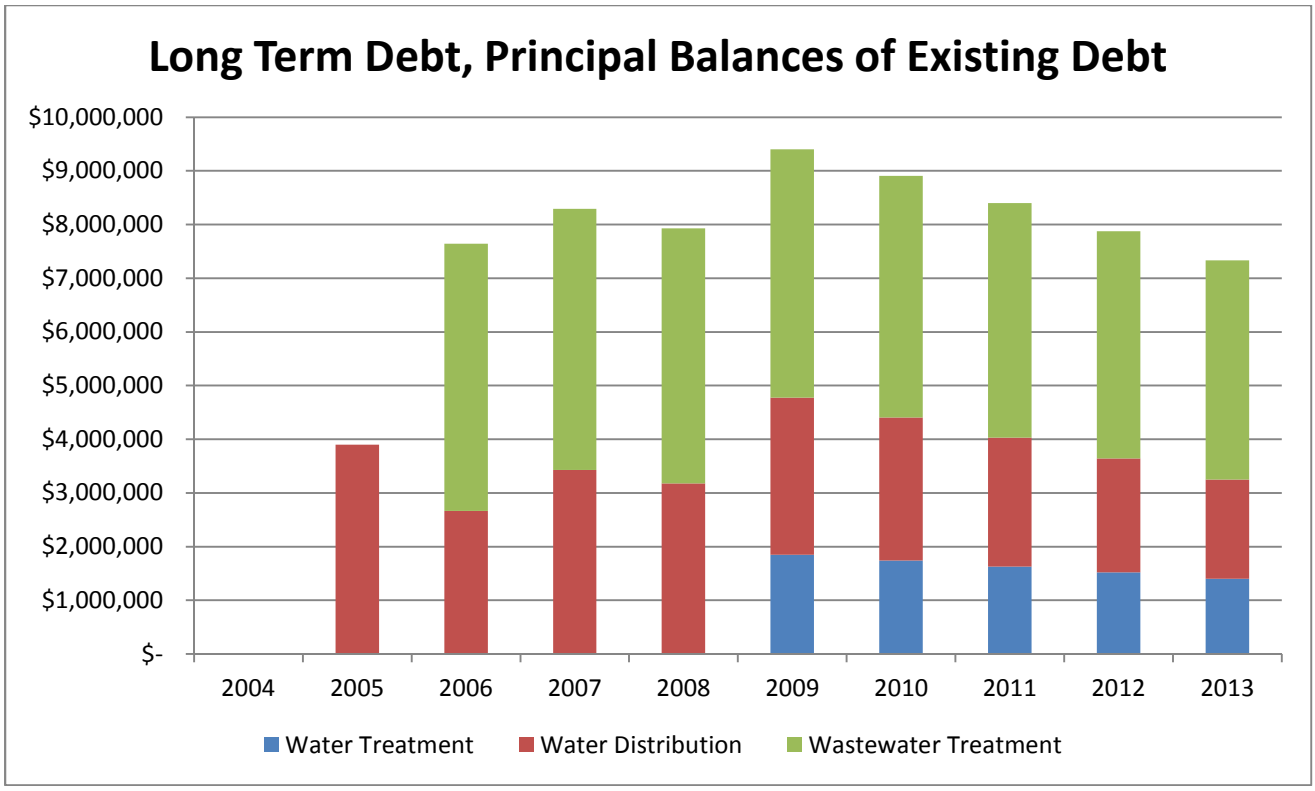
Debt and Debt Capacity

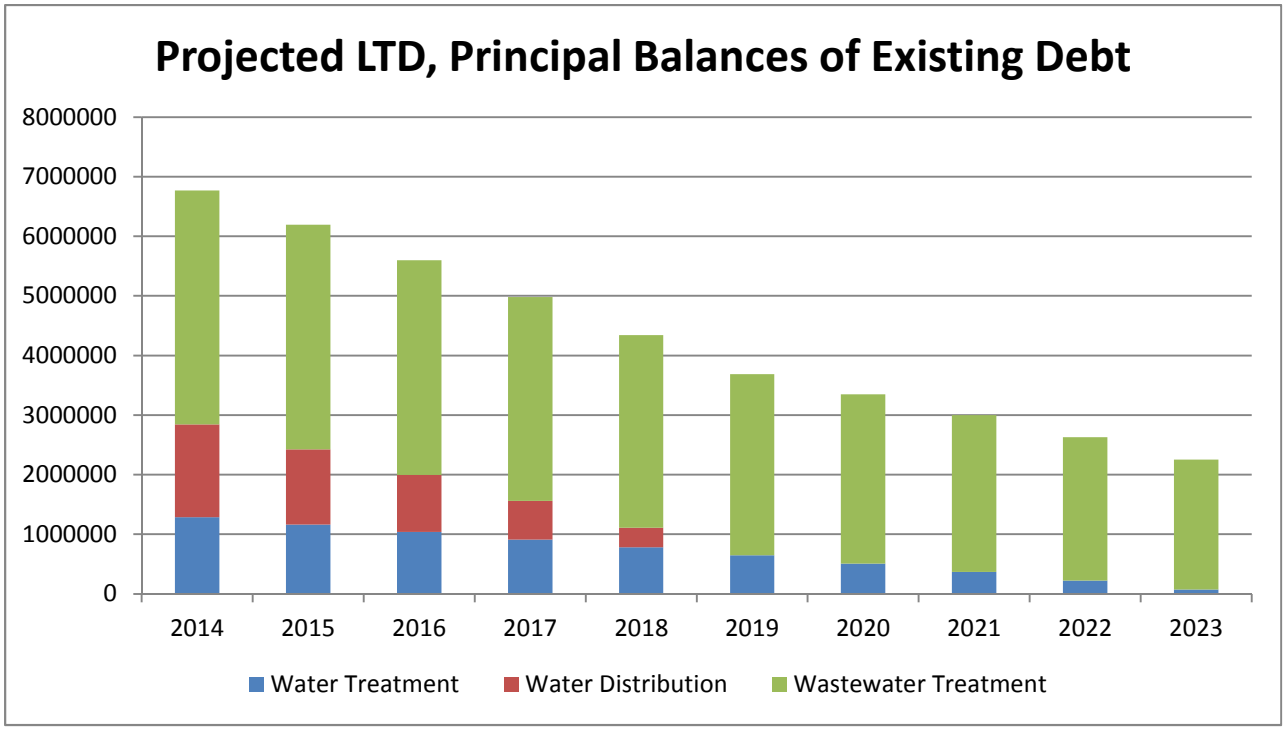
Historically, the Township has used debt and its debt capacity to finance water and wastewater capital works.

Capital charges and local improvement charges were levied at the time that municipal water and sanitary sewer services were extended in Angus. They continue to represent a debt against the properties of Angus ratepayers and the Corporation. Charges were also levied at the time that municipal water services were extended in Thornton. Any future increases in tax rates and user fees need to take these past increases into account when considering the cumulative impact on residents and businesses in these service areas.

Essa incurred long term debt for waterworks and sanitary sewer works through Infrastructure Ontario in the past ten years at favourable interest rates. The following chart provides the details of that debt. While debt provides financing for capital investment, debt itself is not a source of funding and it needs to be repaid. Essa requires user charges and the collection of development charges from growth to service the existing debt.

Township of Essa, Infrastructure Ontario, Long Term Debt (LTD)						
Description	Principal	Interest Rate	Debenture Date	Term Years	Annual Debt Service Principal and Interest	
Water Distribution	$ 4,127,000	2.62%	01/12/2004	15	$ 334,504	
Wastewater Treatment	$ 5,029,500	4.78%	01/02/2006	25	$ 346,906	
Water Treatment	$ 1,900,000	2.49%	01/05/2009	15	$ 152,568	
Total	$ 11,056,500				$ 833,978	


Long Term Debt, Principal Balances of Existing Debt
$10,000,000
$9,000,000
$8,000,000
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water Treatment
Water Distribution
Wastewater Treatment


Projected LTD, Principal Balances of Existing Debt
8000000
7000000
6000000
5000000
4000000
3000000
2000000
1000000
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Water Treatment
Water Distribution
Wastewater Treatment

Borrowing and debt limits of municipalities in Ontario are governed by *O. Reg. 403/02* and are based on 25% of own source revenues with adjustments. The Township's 2012 Annual Repayment Limit was $ 3,458,768 or $ 2,624,788 after taking into account current annual debt servicing amounts. The current annual debt servicing amounts are within the Township's Annual Repayment Limit. That is, there is room to increase debt levels to finance tax-based infrastructure and asset replacement. Increased debt levels will require debt servicing which in turn will require increased tax rates.

At this time, it may be more cost effective to invest revenues from increased tax rates directly to fund infrastructure and asset replacement as opposed to paying new debt servicing costs.

Where there is an established source of revenue to repay debt, then debt financing may be considered for longer life assets without adversely affecting tax rates. Once identified capital needs have been addressed, consideration should be given to using debt financing for the future replacement of bridges and culverts with repayments from the bridges and culverts reserve.

While bank prime interest rates have been at 3.00% in the recent past and Essa currently has access to loans at 3.00% to 4.50% in the near term, these favourable rates may not be relied upon to continue through the medium term into the long term. It is assumed that long term interest rates and borrowing costs on new debt will remain, on average, in a range of 3.00% to 7.00% for municipal infrastructure purposes.

RECOMMENDATION: That the Township should develop a debt and debt capacity policy in keeping with the financing strategy of this Plan.

Capital Investment and Sources of Financing

The Township has an annual base level of funding from taxation of about $ 1,000,000 for capital investment in infrastructure. Reserves and Reserve Funds have been available to fund infrastructure investments over the past five years.

Historical Levels of Investment of Taxation in Infrastructure

	Functional Classification	**2008**	**2009**	**2010**	**2011**	**2012**	
	General Government	$ 9,524	$ 0	$ 0	$ 0	$ 0	
	Protection Services						
	Fire	$ 11,427	$ 25,473	$ 67,471	$ 3,908	$ 3,806	
	Police	$ 0	$ 0	$ 0	$ 0	$ 0	
	Protective Inspection and Control	$ 0	$ 0	$ 0	$ 0	$ 0	
	Building Permit and Inspection	$ 0	$ 0	$ 0	$ 0	$ 0	
	Emergency Measures	$ 0	$ 13,000	$ 0	$ 0	$ 0	
	Transportation Services						
	Roads Paved	$ 72,660	$ 831,025	$ 830,486	$ 485,935	$ 528,698	
	Roads Gravel	$ 0	$ 0	$ 0	$ 31,693	$ 20,675	
	Bridges and Culverts	$ 8,553	$ 12,184	$ 21,009	$ 0	$ 93,395	
	Sidewalks	$ 110,507	$ 103,947	$ 33,346	$ 85,037	$ 0	
	Street Lights	$ 13,765	$ 4,980	$ 3,931	$ 0	$ 0	
	Urban Storm Sewer System	$ 0	$ 26,073	$ 0	$ 0	$ 0	
	Rural Storm Sewer System	$ 0	$ 0	$ 0	$ 0	$ 40,813	
	Environmental Services						
	Water Treatment	$ 0	$ 0	$ 0	$ 0	$ 0	
	Water Distribution	$ 0	$ 0	$ 0	$ 0	$ 0	
	Wastewater Treatment	$ 0	$ 0	$ 0	$ 0	$ 0	
	Wastewater Collection	$ 0	$ 0	$ 0	$ 0	$ 0	
	Recreation and Cultural Services						
	Parks and Trails	$ 27,212	$ 10,124	$ 53,792	$ 6,418	$ 7,632	
	Recreation Facilities	$ 33,279	$ 28,332	$ 119,308	$ 20,242	$ 1,583	
	Libraries	$ 73,231	$ 85,995	$ 65,322	$ 75,411	$ 83,567	
	Total	$ 360,158	$ 1,141,133	$ 1,194,665	$ 708,644	$ 780,169	

Note: *excluding debt servicing costs, excluding indirect transfers to reserves

The Township has an annual base level of funding from water and wastewater (sewage) user fees of about $ 300,000 and $ 200,000, respectively, for transfers to reserves. Reserves and Reserve Funds have been available to fund infrastructure investments over the past five years.

Historical Levels of Investment of User Fees in Infrastructure

	Functional Classification	2008	2009	2010	2011	2012	
	General Government	$ 0	$ 0	$ 0	$ 0	$ 0	
	Protection Services						
	Fire	$ 0	$ 0	$ 0	$ 0	$ 0	
	Police	$ 0	$ 0	$ 0	$ 0	$ 0	
	Protective Inspection and Control	$ 0	$ 0	$ 0	$ 0	$ 0	
	Building Permit and Inspection	$ 0	$ 0	$ 0	$ 16,521	$ 0	
	Emergency Measures	$ 0	$ 0	$ 0	$ 0	$ 0	
	Transportation Services						
	Roads Paved	$ 0	$ 0	$ 0	$ 0	$ 0	
	Roads Gravel	$ 0	$ 0	$ 0	$ 0	$ 0	
	Bridges and Culverts	$ 0	$ 0	$ 0	$ 0	$ 0	
	Sidewalks	$ 0	$ 0	$ 0	$ 0	$ 0	
	Street Lights	$ 0	$ 0	$ 0	$ 0	$ 0	
	Urban Storm Sewer System	$ 0	$ 0	$ 0	$ 0	$ 0	
	Rural Storm Sewer System	$ 0	$ 0	$ 0	$ 0	$ 0	
	Environmental Services						
	Water Treatment	$ 32,984	$ 25,210	$ 0	$ 0	$ 0	
	Water Distribution	$ 0	$ 3,756	$ 0	$ 0	$ 0	
	Wastewater Treatment	$ 32,316	$ 204,987	$ 0	$ 0	$ 0	
	Wastewater Collection	$ 0	$ 0	$ 13,420	$ 0	$ 0	
	Recreation and Cultural Services						
	Parks and Trails	$ 0	$ 0	$ 0	$ 0	$ 0	
	Recreation Facilities	$ 0	$ 0	$ 0	$ 0	$ 0	
	Libraries	$ 0	$ 0	$ 0	$ 0	$ 0	
	Total	$ 65,300	$ 233,953	$ 13,420	$ 16,521	$ 0	

Note: *excluding debt servicing costs, excluding indirect transfers to reserves

Traditionally, the following sources of financing have been available to the Township for infrastructure and capital replacement.

General Administration Capital and Computer Replacement, Sources of Financing: Capital Equipment Reserve (funded from Taxation) and Taxation

Fire Infrastructure, Sources of Financing: Federal and Provincial Infrastructure Grant Programs, Benefitting Owner Contributions, and Taxation

Fire Trucks Fleet Replacement, Sources of Financing: Capital Equipment Reserve (funded from Taxation), Fire Department Reserve (funded from Taxation)

Building Inspection Fleet Replacement, Sources of Financing: Building Inspection Surplus and Reserve (Future Enforcement of Building Code Act) (funded from Building Permit Fees)

Paved Roads Reconstruction, Resurfacing, and Hot Mix Paving, Sources of Financing: Federal Gas Tax Grant and Taxation

Gravel Roads Reconstruction and Surface Treatment, Sources of Financing: Federal Gas Tax Grant and Taxation

Slurry Seal, Source of Financing: Taxation

Sidewalk Reconstruction, Source of Financing: Taxation, Local Improvement Charges

Street Light Replacement, Sources of Financing: Reserves and Taxation

Bridges Replacement, Sources of Financing: Federal and Provincial Infrastructure Grant Programs, Federal Gas Tax Grant, and Taxation

Public Works Fleet Replacement, Sources of Funding: Capital Equipment Reserve (funded from taxation, user charges, inter-departmental charges and machine time charges) and Taxation

Waterworks Infrastructure, Sources of Funding: (past) Provincial Grants, Debt (repaid from Development Charges, User Capital Charges, and User Fees), Development Charges, User Capital Charges, and User Fees

Waterworks Infrastructure Replacement, Sources of Funding: User Fees, Rate Stabilization Reserve (funded from Annual Surpluses), and Replacement Reserve (annual contribution transfer from User Fees)

Sanitary Sewage Works Infrastructure, Sources of Funding: (past) Provincial Grants, Debt (repaid from Development Charges, User Capital Charges, and User Fees), Development Charges, User Capital Charges, and User Fees

Sanitary Sewage Works Infrastructure Replacement, Sources of Funding: User Fees, Rate Stabilization Reserve (funded from Annual Surpluses), and Replacement Reserve (annual contribution transfer from User Fees)

Arena Additions and Expansions, Sources of Funding: Federal and Provincial Grants, Donations, Taxation, Special Projects Reserve (funded from Proceeds of Sale of Land, not being replenished), Development Charges Reserve Fund

Arena Replacement, Sources of Funding: Federal and Provincial Grants, Donations, and Taxation

Parkland Development, Sources of Funding: Donations, Taxation, Special Projects Reserve (funded from Proceeds of Sale of Land, not being replenished), Development Charges Reserve Fund, Recreation Land Reserve Fund (funded from cash in lieu of parkland)

Parks and Recreation Facilities Replacement, Sources of Funding: Taxation

Parks and Recreation Equipment Replacement, Sources of Funding: Taxation

Non-Growth Share of Growth-Related Capital Program, Sources of Funding: Taxation

Investment Policy

The Township's Investment Policy, T12-01 was been reviewed and the Asset Management Plan is in keeping with the Investment Policy. There are no recommended changes to the Investment Policy stemming from the Asset Management Plan.

Capital Needs

Essa Net Tax Supported Capital Needs Summary from 2014 to 2018

	2014	2015	2016	2017	2018	Total Costs 2014 to 2018
Administration Gen Gov't	$ -	$ -	$ 100,000	$ 68,000	$ -	$ 168,000
Fire, Rescue, & Emer Services	$ 109,617	$ 175,487	$ 178,737	$ 178,737	$ 158,237	$ 800,815
Bldg Permits & Insp Services	$ -	$ -	$ -	$ -	$ -	$ -
Muni By-law Enforcement	$ -	$ 29,500	$ -	$ -	$ -	$ 29,500
Transportation Roadways	$ 770,350	$ 3,176,100	$ 1,737,500	$ 1,385,250	$ 2,449,000	$ 9,518,200
Bridges & Culverts	$ -	$ 301,000	$ 257,000	$ 898,000	$ 154,000	$ 1,610,000
Public Works	$ 6,500	$ 135,000	$ 512,000	$ 782,000	$ 731,000	$ 2,166,500
Waterworks	$ -	$ -	$ -	$ -	$ -	$ -
Wastewater Sewage Works	$ -	$ -	$ -	$ -	$ -	$ -
P & R Parks, Outdoor Rec	$ -	$ 72,500	$ 105,900	$ 90,000	$ 90,000	$ 358,400
P & R Angus Arena	$ -	$ 136,000	$ 165,000	$ 110,000	$ 120,000	$ 531,000
P & R Thornton Arena	$ -	$ 124,500	$ 113,910	$ 136,910	$ 118,910	$ 494,230
P & R Comm Buildings	$ -	$ 20,000	$ 20,000			$ 40,000
Library Services	$ 97,600	$ 83,000	$ 83,000	$ 83,000	$ 83,000	$ 429,600
Planning & Development	$ 3,000	$ 2,500	$ 1,000	$ 500	$ 500	$ 7,500
Other including Police Services	$ 12,933	$ 13	$ 53	$ 3	$ 53	$ 13,055
Total	$ 1,000,000	$ 4,255,600	$ 3,274,100	$ 3,732,400	$ 3,904,700	$ 16,166,800

Note: net of transfers from reserves, reserve funds, development charges and other sources of funding
Note: excludes Waterworks and Wasterwater (Sewage) Works which are user fee supported

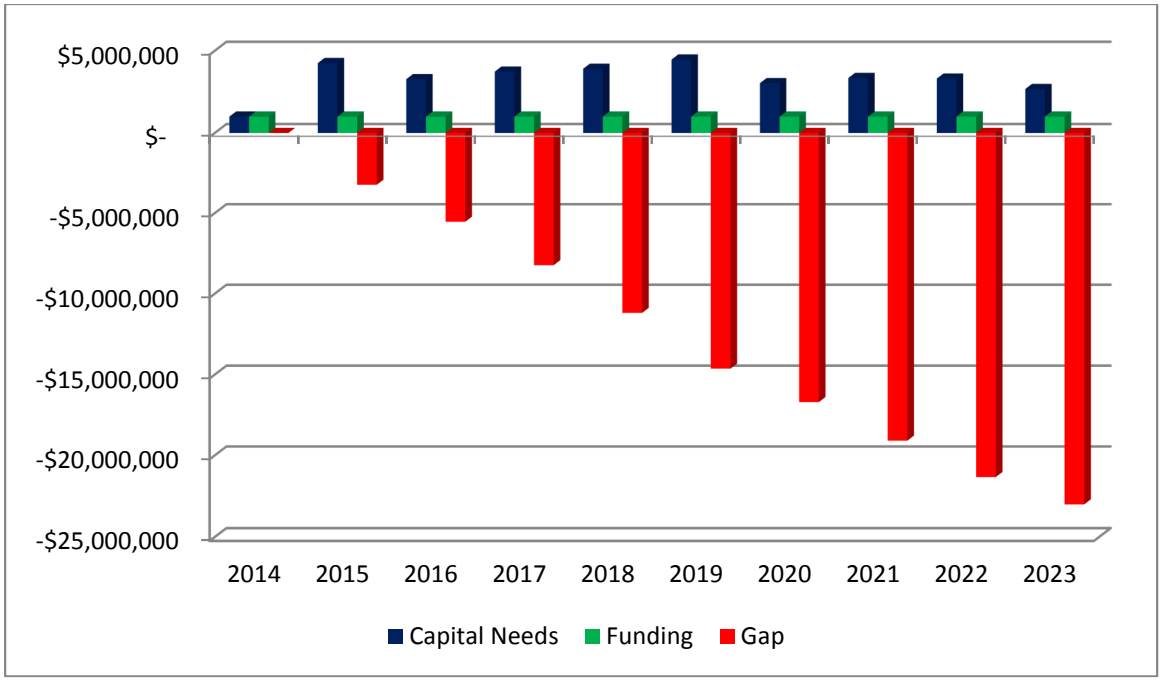
Essa Net Tax Supported Capital Needs Summary from 2019 to 2023

	2019	2020	2021	2022	2023	Total Costs 2019 to 2023
Administration Gen Gov't	$ -	$ -	$ -	$ 3,000	$ -	$ 3,000
Fire, Rescue, & Emer Services	$ 140,737	$ 128,237	$ 113,237	$ 124,487	$ 115,487	$ 622,185
Bldg Permits & Insp Services	$ -	$ -	$ -	$ -	$ -	$ -
Muni By-law Enforcement	$ -	$ -	$ -	$ -	$ 29,500	$ 29,500
Transportation Roadways	$ 2,632,000	$ 1,414,500	$ 1,672,000	$ 2,695,500	$ 2,055,050	$ 10,469,050
Bridges & Culverts	$ 614,000	$ 116,000	$ 66,000	$ 41,000	$ 13,000	$ 850,000
Public Works	$ 674,000	$ 990,000	$ 1,112,000	$ 100,000	$ 100,000	$ 2,976,000
Waterworks	$ -	$ -	$ -	$ -	$ -	$ -
Wastewater Sewage Works	$ -	$ -	$ -	$ -	$ -	$ -
P & R Parks, Outdoor Rec	$ 105,000	$ 100,000	$ 100,000	$ 65,000	$ 65,000	$ 435,000
P & R Angus Arena	$ 115,000	$ 100,000	$ 100,000	$ 98,500	$ 100,000	$ 513,500
P & R Thornton Arena	$ 103,910	$ 98,910	$ 100,000	$ 99,000	$ 97,000	$ 498,820
P & R Comm Buildings	$ -	$ -	$ -			$ -
Library Services	$ 83,000	$ 83,000	$ 83,000	$ 83,000	$ 83,000	$ 415,000
Planning & Development	$ -	$ 3,000	$ 2,000	$ -	$ -	$ 5,000
Other including Police Services	$ 53	$ 53	$ 63	$ 13	$ 15,963	$ 16,145
Total	$ 4,467,700	$ 3,033,700	$ 3,348,300	$ 3,309,500	$ 2,674,000	$ 16,833,200

Note: net of transfers from reserves, reserve funds, development charges and other sources of funding
Note: excludes Waterworks and Wasterwater (Sewage) Works which are user fee supported

Over the next ten years, the Township has $ 33,000,000 in net capital needs and a base level of tax supported capital funding of only $ 1,000,000 per year. This leaves a net tax supported capital needs infrastructure funding gap of $ 23,000,000 over the ten year period from 2014 to 2023, or $ 2,300,000 per year.

Net Tax Supported Capital Needs Infrastructure Funding Gap and Cumulative Infrastructure Deficit for the Ten Year Period from 2014 to 2023



It is assumed that a 1% increase in local municipal property taxes represents $ 40,000.

A tax increase of 3% directed to capital needs would eliminate the infrastructure funding gap for all services except for roadways, bridges and culverts. An additional tax increase of 6% directed to capital needs would eliminate the infrastructure funding gap for all services except for roadways. A further additional tax increase of 25% plus the deferral or reduction of certain roads' programs would be required to eliminate the infrastructure funding gap. A one-time cumulative tax increase of 34% is not realistic. However, it represents the magnitude of the funding gap.

Even a one-time cumulative tax increase of 34% does not build reserves for future asset replacement.

Essa Annualized Net Tax Supported Capital Needs Infrastructure Funding Gap
Cumulative Tax Increases with Corresponding Reductions in Gap

	Base Level $ 1.0M	plus Level 1 Tax Incr 3%	plus Level 2 Tax Incr 9%	plus Level 3 Tax Incr 34%	plus Level 4 Deferrals	
Annualized Net Tax Supported Needs	$ 3,300,000	$ 3,300,000	$ 3,300,000	$ 3,300,000	$ 3,300,000	
Deferral or Reduction of Programs and Redistribution of Funding to Priority Needs						
Gravel Road Hard Surfacing Deferral	$ -	$ -	$ -	$ -	$ (850,000)	
Slurry Seal Reduction	$ -	$ -	$ -	$ -	$ (60,000)	
Sidewalk Replacement	$ -	$ -	$ -	$ -	$ (15,000)	
Streetlight Replacement	$ -	$ -	$ -	$ -	$ (15,000)	
Funding Needs	$ 3,300,000	$ 3,300,000	$ 3,300,000	$ 3,300,000	$ 2,360,000	
Capital Needs Infrastructure Funding from Taxation						
Base Level $ 1.0M	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	
Level 1 Tax Incr 3%	$ -	$ 120,000	$ 120,000	$ 120,000	$ 120,000	3
Level 2 Tax Incr 6%	$ -	$ -	$ 240,000	$ 240,000	$ 240,000	6
Level 3 Tax Incr 25%	$ -	$ -	$ -	$ 1,000,000	$ 1,000,000	25
Level 4 Deferrals	$ -	$ -	$ -	$ -	$ -	0
	$ -	$ -	$ -	$ -	$ -	
Taxation	$ 1,000,000	$ 1,120,000	$ 1,360,000	$ 2,360,000	$ 2,360,000	
Annualized Capital Needs Infrastructure Funding Gap						
Gap	$ 2,300,000	$ 2,180,000	$ 1,940,000	$ 940,000	$ -	

Note: net of transfers from reserves, reserve funds, development charges and other sources of funding
Note: excludes Waterworks and Wasterwater (Sewage) Works which are user fee supported

A **3%** tax increase each year over the next ten years would only begin to address the long term capital needs of the Township, reducing the gap from $ 23,000,000 to about $ 17,600,000. However, in that time, additional capital needs would be identified which would, in turn, increase the gap.

In addition to the identified capital needs infrastructure funding gap, reserves for future infrastructure and capital replacement beyond the next ten years are required.

RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated property tax rate increase of **3%** for **2015** be used to fund infrastructure and asset replacement and directed to eliminate the infrastructure funding gap for all services except for roadways, bridges and culverts.

RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated property tax rate increase of **3%** for **2016** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for bridges and culverts.

RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated property tax rate increase of **3%** for **2017** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for roadways.

RECOMMENDATION: In light of the growing infrastructure deficit, that consideration be given to further review of the roads' levels of service, roads' backlog of projects, and roads' needs priorities.

RECOMMENDATION: In light of the growing infrastructure deficit, that consideration be given to directing new sources of unconditional funding to identified capital needs in order to narrow the infrastructure funding gap and reduce the infrastructure deficit.

Water and Sewer Rates

Essa Net Waterworks and Wasterwater (Sewage) User Fees Supported Capital Needs Summary from 2014 to 2018

	2014	2015	2016	2017	2018	Total Costs 2014 to 2018
	$ -	$ -	$ -	$ -	$ -	$ -
Waterworks	$ -	$ -	$ -	$ -	$ -	$ -
Wastewater Sewage Works	$ -	$ 63,250	$ 100,500	$ 106,250	$ 71,750	$ 341,750
Other including Police Services	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ -	$ 63,250	$ 100,500	$ 106,250	$ 71,750	$ 341,750

Note: net of transfers from reserves, reserve funds, development charges and other sources of funding
Note: Waterworks and Wasterwater (Sewage) Works are user fee supported services

Essa Net Waterworks and Wasterwater (Sewage) User Fees Supported Capital Needs Summary from 2019 to 2023

	2014	2015	2016	2017	2018	Total Costs 2014 to 2018
	$ -	$ -	$ -	$ -	$ -	$ -
Waterworks	$ -	$ -	$ -	$ -	$ -	$ -
Wastewater Sewage Works	$ 46,000	$ 97,750	$ 69,000	$ 69,000	$ 41,400	$ 323,150
Other including Police Services	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ 46,000	$ 97,750	$ 69,000	$ 69,000	$ 41,400	$ 323,150

Note: net of transfers from reserves, reserve funds, development charges and other sources of funding
Note: Waterworks and Wasterwater (Sewage) Works are user fee supported services

Over the next ten years, the Township has $ 664,900 in net capital needs and a base level of user fee supported capital funding of $ 0 per year. This leaves a net user fee supported capital needs infrastructure funding gap of $ 664,900 over the ten year period from 2014 to 2023, or $ 66,490 per year. The capital needs are primarily for wastewater (sewage) works. The gap can be closed through anticipated increases in user fees.

In addition to the identified capital needs infrastructure funding gap, reserves for future infrastructure and capital replacement beyond the next ten years are required.

Section 3.3 of the 2011 Water Financial Plan states "Based on the current funding plan, Essa user fees are projected to increase at 4% per annum in inflated $ for the 2012 to 2020 periods, and 3% for the 2021 to 2045 periods. This results from the need to provide for capital renewal along with an assumption that most operating as well as capital costs will inflate at 2.5% per annum, with energy costs increasing at 5% per annum." Capital renewal and replacement costs were built into the 2011 Water Financial Plan. While renewal and replacement needs are low for the period from 2011 to 2023, they increase substantially for the period from 2024 to 2045.

Essa last updated its water service consumption and fixed rate charges in 2011. The consumption or volumetric rate increased from $ 1.18 per m^3 to $ 1.23 per m^3 , being a 4% increase. The sanitary sewer services charges are based on 95% of the water charge and increased accordingly.

It is proposed that the rates will be increased in 2014 in keeping with the 2011 Water Financial Plan with the consumption of volumetric rate increasing from $ 1.23 per m^3 to $ 1.28 per m^3 , being a 4% increase.

Since 2011, as shown, the water and sanitary sewer rate based reserves have increased substantially. These reserves will be required for future renewal and replacement needs. The Water Financial Plan will need to be updated in 2016.

RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated water rate increase of **4%** for **2015** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for municipal water services.

RECOMMENDATION: Given the relatively weak economies in Simcoe County and Southern Ontario at this time, that Council give consideration to a dedicated sewer rate increase of **4%** for **2015** be used to fund infrastructure and asset replacement and directed to narrow the infrastructure funding gap for municipal sanitary sewer services.

Implementation

Risks of Strategies

The Township of Essa receives a legislated payment in lieu of taxation (PILOT) from CFB Borden. This Asset Management Plan assumes that "activities and complement at CFB Borden will not substantially change or adversely affect operations, expenses, or revenues of Essa". If CFB Borden requests additional services from Essa without providing an offsetting increase in the PILOT to cover those costs and it is deemed appropriate by Township Council to provide such services, then this may adversely affect the municipality's ability to manage capital assets and fund capital projects in the near term.

On July 8, 2013, Essa was subjected to a heavy downpour of rain and flash flooding. On January 7, 2014, it endured a blizzard. And on June 17, 2014, it experienced a tornado. While the municipality may anticipate future severe weather events and natural disasters, it has not built up reserves or the financial capacity to cover potential damages to municipal infrastructure. Insurance alone is not enough. Future events may adversely affect the municipality's ability to manage capital assets and fund capital projects.

Without putting a plan in place to fund the current infrastructure deficit, the Township runs the risk of an ever widening infrastructure gap or incurring undesirable debt at a time when interest rates are much higher.

Review and Subsequent Iterations

The Plan will be reviewed on an annual basis prior to or as part of the annual budget process. The Plan may be re-evaluated if one or more of the working assumptions do not hold for an extended period of time. It is intended that the Plan will have an administrative progress review within three years and a comprehensive public review under the direction of Council within five years.

There are a number of basic questions that may be asked when the Plan is reviewed:

- What Do We Own?
- Where Is It?
- What Did It Cost and What Is It Worth?
- What Condition Is It In?
- What Do We Expect Of It?
- What Do We Need To Do To It?
- When Do We Need To Do It?
- How Much Money Do We Need To Do It?
- Where Will The Money Come From?
- How Do We Reach Sustainability?

RECOMMENDATION: That the Township should develop a risk assessment matrix for core services of roads, bridges, storm sewer systems, waterworks, wastewater (sanitary sewer), and arenas.

RECOMMENDATION: That the Township should develop a five year operating budget that takes into account the maintenance programs as described in this Plan.

RECOMMENDATION: That the Township should develop a ten year capital budget that takes into account the capital programs as described in this Plan.

Limitation and Disclaimer

The Asset Management Plan, Capital Investment Plan, and Master Plans are only plans, that is, they are not budgets. The needs of the community are to be verified through appropriate studies; projects may be revised and substituted to meet the needs of the community, subject to appropriate approvals; some projects will require feasibility studies, analyses, evaluation of alternatives, and justification reports prior to proceeding; projects will require approval through the annual budget process. Inclusion in the Asset Management Plan does not represent pre-approval by Council of a project for budget purposes.

Conclusions

The Township has an infrastructure deficit. It has tangible capital assets with a historical cost of over $ 150,000,000 and a net book value of over $ 100,000,000.

The replacement cost of Essa's tangible capital assets is estimated to be over $ 200,000,000 or twice their net book value.

Without stable and sustainable funding, the Township cannot address its infrastructure funding gap and infrastructure deficit in a meaningful manner. While the Plan identifies and begins to address the infrastructure deficit and funding issues facing Essa, it does not resolve the issues of sustainable funding and pressures on municipal services.

Township of Essa infrastructure investments over the next ten years should focus on remedying structural needs and deficiencies of Roads, Bridges, and Arenas.

While from a snapshot of the Township's financial position at a point in time it would appear that it is in good shape, the longer term view shows that tax rate increases are required to maintain, replace, and renew core infrastructure assets.

The Plan as well as the Capital Investment Plan will guide future operating and capital budgets.

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