

**MUNICIPALITY OF BROOKE-
ALVINSTON**

ASSET MANAGEMENT PLAN

DECEMBER 4, 2014



Plaza Three
101-2000 Argentia Rd.
Mississauga, Ontario
Canada L5N 1V9

Phone: (905) 272-3600

Fax: (905) 272-3602

e-mail: info@watson-econ.ca

www.watson-econ.ca

 **Planning for growth**

CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	(i)
1. INTRODUCTION	
1.1 Overview	1-1
1.2 Plan Development	1-1
1.3 Maintaining the Asset Management Plan	1-2
1.4 Plan Integration	1-3
2. STATE OF LOCAL INFRASTRUCTURE	
2.1 Scope and Process	2-1
2.2 Capital Asset Overview	2-2
2.3 Asset Age Analysis	2-5
2.4 Asset Condition	2-6
2.5 Data Accuracy and Completeness	2-8
3. EXPECTED LEVELS OF SERVICE	
3.1 Scope and Process	3-1
3.2 Current Levels of Service vs. Expected Levels of Service	3-1
3.3 Level of Service Performance Measures	3-3
4. ASSET MANAGEMENT STRATEGY	
4.1 Scope and Process	4-1
4.2 Risk Assessment	4-1
4.3 Priority Identification	4-4
4.4 Long-Term Forecast	4-5
4.5 Procurement Methods	4-9
5. FINANCING STRATEGY	
5.1 Scope and Process	5-1
5.2 Historical Results	5-2
5.3 Financing Strategy	5-4
5.4 Funding Shortfall	5-9
6. RECOMMENDATIONS	6-1

CONTENTS

	<u>Page</u>
<u>APPENDICES</u>	
A DETAILED ASSET INVENTORY	A-1
B ASSET MANAGEMENT ASSUMPTIONS	B-1
C DATA VERIFICATION AND CONDITION ASSESSMENT GUIDELINE	C-1
D LEVEL OF SERVICE IMPACT ANALYSIS	D-1
E SCENARIO ANALYSIS – CAPITAL FORECASTS	E-1
F TAX SUPPORTED ASSET MANAGEMENT STRATEGY & FINANCING STRATEGY	F-1
G WATER ASSET MANAGEMENT STRATEGY & FINANCING STRATEGY	G-1
H WASTEWATER ASSET MANAGEMENT STRATEGY & FINANCING STRATEGY	H-1

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This report contains the Asset Management Plan for the Municipality of Brooke-Alvinston (Municipality) and has been organized as follows:

- Chapter 1: Introduction;
- Chapter 2: State of Local Infrastructure;
- Chapter 3: Expected Levels of Service;
- Chapter 4: Asset Management Strategy;
- Chapter 5: Financing Strategy; and
- Chapter 6: Recommendations.

The “state of local infrastructure” chapter provides an overview of the capital assets owned by the Municipality. This includes detailed information on the Municipality’s asset inventory, including asset attributes, accounting valuations, replacement costs, useful life, age and asset condition. This information provides the foundation for other sections of the asset management plan.

“Expected levels of service” compares the current level of service provided by the Municipality to the level of service determined to be expected in each area. This analysis combines both descriptions/comments as well as performance measures in establishing service levels.

The “asset management strategy” provides a long term operating and capital forecast for asset related costs, indicating the requirements for maintaining, rehabilitating, replacing/disposing and expanding the Municipality’s assets, while moving towards the specified expected levels of service identified above. The goal of the asset management strategy is to have the Municipality in (or moving towards) a sustainable asset management position over the forecast period.

The “financing strategy” identifies a funding plan for the asset management strategy, including a review of historical results and recommendations with respect to the required amounts and types of funding (revenue) annually. Also, any infrastructure funding deficits/shortfalls are identified and recommendations are made regarding potential approaches to reduce and mitigate the shortfall over the forecast period.

Overall, this asset management plan is a tool to be used by Municipal staff for capital and financial decision making. It can be tied to various existing reports (such as the Municipality’s budget, official plan and strategic planning reports) to ensure the asset management plan can be updated to reflect any changes in Municipality priorities.

1. INTRODUCTION

1. INTRODUCTION

1.1 Overview

The main objective of an asset management plan is to use a municipality's best available information to develop a comprehensive long term plan for capital assets. In addition, the plan should provide sound methodologies and support in order to improve the accuracy of the plan on a forward basis.

Watson & Associates Economists Ltd. (Watson) was retained by the Municipality to prepare an asset management plan. This plan is intended to be a tool for Municipal staff to use during various decision making processes, including the annual budgeting process and capital grant application processes. This plan will serve as a road map for sustainable infrastructure planning going forward.

The following assets are included in this asset management plan:

- Road related (roads, bridges, street lights, and sidewalks);
- Stormwater mains;
- Facilities;
- Land Improvements;
- Vehicles;
- Machinery and Equipment;
- Water related (mains, facilities and equipment); and
- Wastewater (mains, facilities, vehicles and equipment).

The Municipality's goals and objectives with respect to their capital assets relate to the level of service being provided to Municipality residents. Services should be provided at expected levels, as defined within this asset management plan. Municipality infrastructure and other capital assets should be maintained at condition levels that provides a safe and functional environment for its residents. Therefore, the asset management plan and its implementation will be evaluated based on the Municipality's ability to meet these goals and objectives.

1.2 Plan Development

The asset management plan was developed using a program that leverages the Municipality's asset database information, staff input and asset management principles.

The development of the Municipality's asset management plan was based on the steps summarized below:

- 1) Develop a complete listing of capital assets to be included in the plan, including attributes such as size/material type, useful life, age, accounting valuation and current valuation. Update current valuation, where required, using applicable inflationary indices.
- 2) Assess current condition of the assets, based on a combination of existing Municipality reports and an asset age analysis.
- 3) Assess the risk of asset failure for each asset, based on determining the probability of each asset failing, as well as the consequence of the asset failing. This risk analysis identifies priority projects for inclusion in the Municipality's capital forecast, as well as high risk assets that require mitigation.
- 4) Determine and document current levels of service, as well as expected levels of service, based on discussions with Municipal staff.
- 5) Prepare an asset management strategy (i.e. operating and capital forecast) based on the asset inventory, identified priorities, forecast scenarios, and level of service analysis discussed above.
- 6) Determine a financing strategy to support asset management strategy, thus determining how the operating and capital related expenditure forecast will be funded over the period.
- 7) Prepare a comprehensive Asset Management Plan final report.

1.3 Maintaining the Asset Management Plan

The asset management plan should be updated as the capital needs and priorities of the Municipality change. This can be accomplished in conjunction with specific asset legislative requirements as well as the Municipality's budget process. Municipal staff will have the tools available to perform updates to the plan when needed.

When updating the asset management plan, note that the state of local infrastructure, expected levels of service, asset management strategy and financing strategy are integrated and impact each other. Looking at these components in reverse order, the financing strategy outlines how the asset management strategy will be funded. The asset management strategy illustrates the costs required to maintain expected levels of service at a sustainable level. The expected levels of service component summarizes and links each service area to specific assets contained in the state of local infrastructure section and thus determines how these assets will be used to provide expected service levels.

While this report covers a forecast period of 20 years, the full lifecycle of the Municipality's assets was considered in the calculations. It is suggested that more focus and attention be put

on the first 5 years of the asset management plan, to ensure accurate capital planning in the short term.

1.4 Plan Integration

The municipal environment is a continually changing and demanding environment when it comes to legislation and other responsibilities. Integrating the asset management plan with the Municipality's budget process as well as Public Sector Accounting Board Section 3150 (PSAB 3150) requirements can make updates in all three areas more efficient.

With respect to integrating the Municipality's budget process with asset management planning, both require a projection of capital and operating costs of a future period. The budget outlines total operating and capital requirements of the Municipality, while the asset management plan focuses in on specific asset related requirements. With this link to the annual budget, the budget update process can become an asset management plan update process.

Both asset management and PSAB 3150 require a complete and accurate asset inventory. The significant difference between the two lies in valuation approaches; PSAB 3150 requires historical cost valuation, while asset management requires future replacement cost valuation. Using a single asset inventory containing both valuation methods is an effective approach to maintaining the Municipality's asset data.

Further integration into other Municipality financial/planning documents would assist in ensuring the ongoing accuracy of the asset management plan, as well as the integrated financial/planning documents. The asset management plan has been developed to allow linkages to documents such as:

- Official Plan;
- Water and Wastewater Rate Study;
- Strategic Planning Reports;
- Fiscal Impact/Operating Studies; and
- Insurance valuations and records.

2. STATE OF LOCAL INFRASTRUCTURE

2. STATE OF LOCAL INFRASTRUCTURE

2.1 Scope and Process

This section of the plan provides an opportunity to develop a greater understanding of the capital assets owned by the Municipality. The state of local infrastructure analysis includes:

- An asset database documenting asset types, sub-types including quantities, materials and other similar asset attributes;
- Financial accounting valuation (where available);
- Replacement cost valuation;
- Asset age distribution analysis and asset age as a proportion of expected useful life;
- Asset condition information;
- Data Verification and Asset Condition policies; and
- Documentation of assumptions made in creating the asset inventory.

The Municipality has a detailed inventory listing, created for PSAB 3150 purposes. This asset inventory is updated annually and was used as a starting point in fulfilling the requirements of this report. This inventory provides current financial account valuations (i.e. historical cost, accumulated amortization and net book value) as well as attributes such as useful life and age. The financial accounting valuations were inflated, using applicable inflationary indices to estimate current replacement cost. Appendix B contains the assumptions made while completing the asset management plan.

The following data and reports were used to supplement the Municipality's asset inventory during the initial process:

- a) 2009 Road Needs Study;
- b) 2013 Bridge Assessment Report;
- c) 2013 Water Financial Plan; and
- d) Discussions with Municipal staff.

A great short-term goal includes the ability to link these reports to the PSAB 3150 asset inventory in order to create a consolidated asset inventory for all purposes, including asset management. In addition, other supplemental reports will be needed to provide more accurate information in some areas, such as buildings and overall current asset valuation.

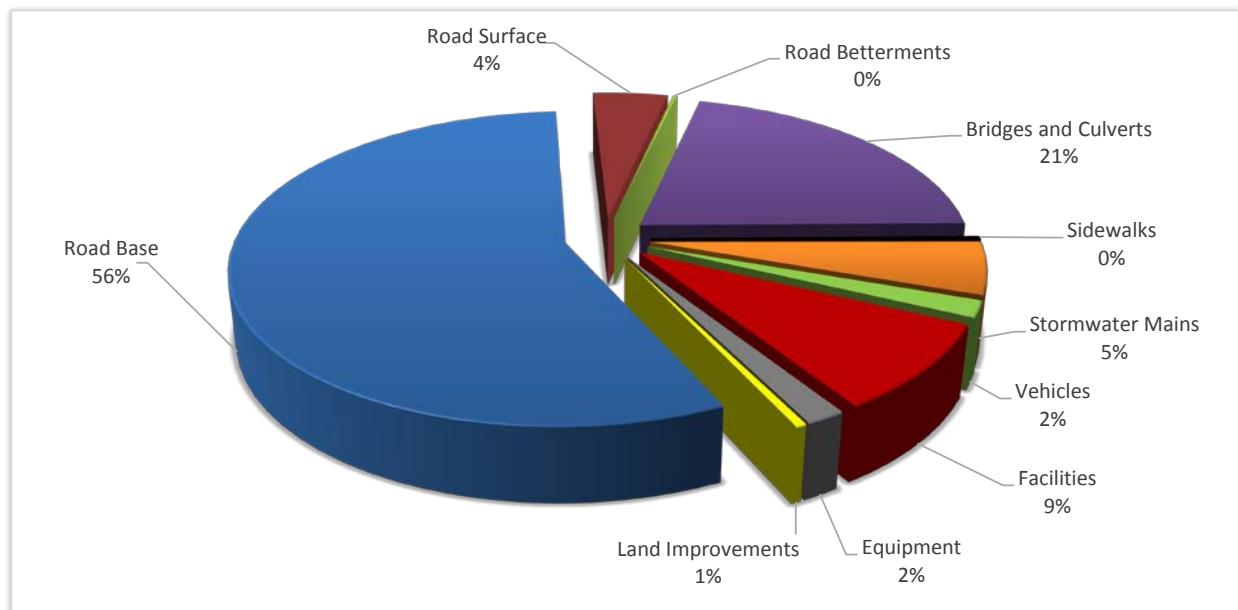
2.2 Capital Asset Overview

The Municipality presently owns and manages tax supported capital assets with a 2014 replacement value of approximately \$129.2 million (excluding land assets as they are not included in this plan). Table 2-1 outlines the breakdown of these totals and Figure 2-1 illustrates the breakdown.

Table 2-1
2014 Tax Supported Assets

Asset Type	Historical Cost 12/31/2013	Accumulated Amortization 12/31/2013	Net Book Value 12/31/2013	Replacement Cost 2014\$
Transportation (Public Works)				
Road Base	4,397,200	2,457,500	1,939,700	72,505,457
Road Surface	3,335,014	2,630,397	704,617	5,544,971
Road Betterments	286,399	178,999	107,400	309,662
Bridges and Culverts	4,533,797	2,496,082	2,037,714	27,235,128
Sidewalks	221,355	20,488	200,867	246,653
Stormwater Mains	1,637,942	535,612	1,102,330	6,986,192
Vehicles	1,532,089	765,915	766,175	2,189,003
Facilities	3,268,656	1,135,389	2,133,267	11,470,916
Equipment	1,662,420	1,110,671	551,749	2,135,817
Land Improvements	375,589	213,854	161,736	589,624
Total Tax Supported Capital Assets	\$ 21,250,462	\$ 11,544,907	\$ 9,705,555	\$ 129,213,423

Figure 2-1
2014 Tax Supported Assets Distribution
Based on Replacement Cost

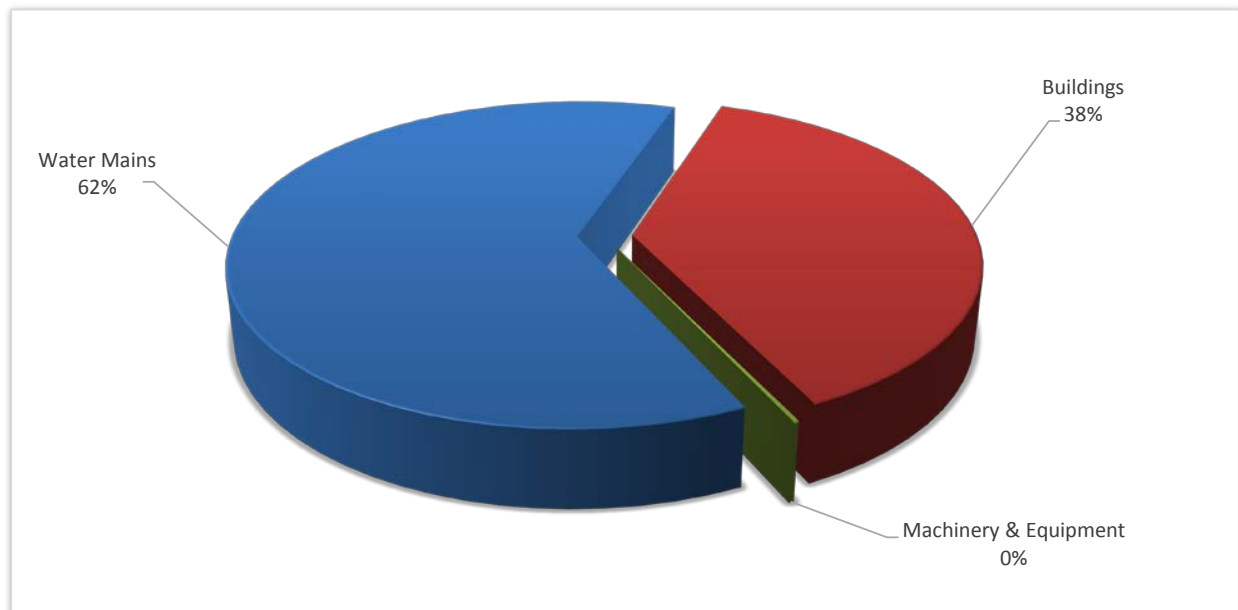


The Municipality presently owns and manages water capital assets with a 2014 replacement value of approximately \$15.9 million (excluding land assets as they are not included in this plan). Table 2-2 outlines the breakdown of these totals and Figure 2-2 illustrates the breakdown.

Table 2-2
2014 Water Assets

Asset Type	Historical Cost 12/31/2013	Accumulated Amortization 12/31/2013	Net Book Value 12/31/2013	Replacement Cost 2014\$
Water Mains	3,922,861	887,897	3,034,964	9,870,693
Buildings	1,112,434	571,924	540,510	6,003,498
Machinery & Equipment	29,899	18,137	11,762	34,854
Total Water Assets	\$ 5,065,194	\$ 1,477,958	\$ 3,587,236	\$ 15,909,045

Figure 2-2
2014 Water Assets Distribution
Based on Replacement Cost

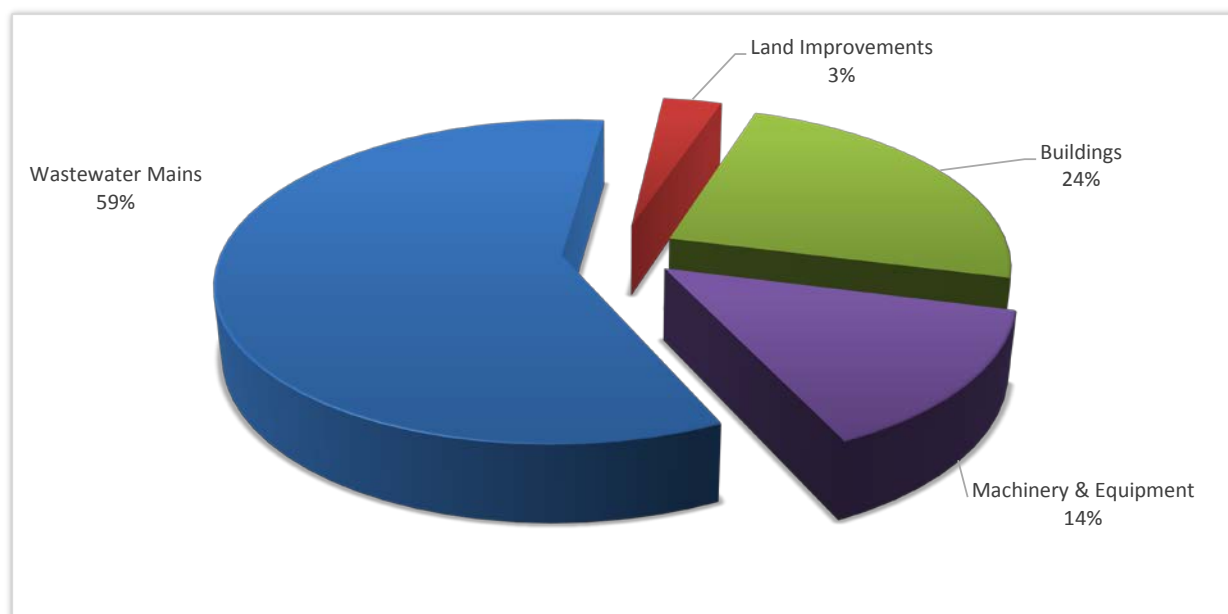


The Municipality presently owns and manages wastewater capital assets with a 2014 replacement value of approximately \$13.1 million (excluding land assets as they are not included in this plan). Table 2-3 outlines the breakdown of these totals and Figure 2-3 illustrates the breakdown.

Table 2-3
2014 Wastewater Assets

Asset Type	Historical Cost 12/31/2013	Accumulated Amortization 12/31/2013	Net Book Value 12/31/2013	Replacement Cost 2014\$
Wastewater Mains	3,736,141	912,080	2,824,061	7,709,337
Land Improvements	397,355	28,229	369,126	429,630
Buildings	1,039,741	443,623	596,118	3,126,884
Machinery & Equipment	1,342,869	628,238	714,631	1,844,506
Total Wastewater Assets	\$ 6,516,106	\$ 2,012,169	\$ 4,503,937	\$ 13,110,357

Figure 2-3
2014 Wastewater Assets Distribution
Based on Replacement Cost



Tables 2-1, 2-2 and 2-3 also shows the Municipality's financial accounting valuation summary by asset type. Since 2009, the Municipality has been required under PSAB 3150 to maintain asset listings complete with historical cost (i.e. the original cost to purchase or construct an asset), accumulated amortization and net book value. These values are reported on the Municipality's audited financial statements each year.

The detailed capital asset inventory is contained in Appendix A. Assumptions pertaining to the asset inventory were documented as part of the asset management process are shown in Appendix B.

2.3 Asset Age Analysis

Each asset is tracked based on estimated total useful life and remaining service life. Using this information, an age analysis of the Municipality's assets can assist in identifying potential areas of focus for the asset management plan.

Table 2-4 provides an age analysis summary, including the weighted (based on replacement cost) average useful life and weighted average remaining useful life for all of the assets included in this plan. This analysis can assist in identifying potential short-term priorities within specific asset areas.

Table 2-4
Asset Age Analysis

Tax Supported

Asset Type	Weighted Average (rounded)		
	Useful Life	Remaining Useful Life	% Remaining Useful Life
Transportation (Public Works)			
Road Base	100	5	5.0%
Road Surface	17	3	17.6%
Road Betterments	8	3	37.5%
Bridges and Culverts	55	14	25.5%
Sidewalks	50	45	90.0%
Stormwater Mains	75	26	34.7%
Vehicles	20	9	45.0%
Facilities	66	31	47.0%
Equipment	14	5	35.7%
Land Improvements	22	7	31.8%

Water Assets

Asset Type	Weighted Average (rounded)		
	Useful Life	Remaining Useful Life	% Remaining Useful Life
Water Mains	75	47	63%
Buildings	83	32	39%
Machinery & Equipment	14	6	43%

Wastewater Assets

Asset Type	Weighted Average (rounded)		
	Useful Life	Remaining Useful Life	% Remaining Useful Life
Wastewater Mains	75	50	67%
Land Improvements	74	69	93%
Buildings	75	43	57%
Machinery & Equipment	37	22	59%

Total useful life and remaining service life for each capital asset is documented in Appendix A.

While this analysis can be useful in looking at the overall age characteristics of specific asset areas, asset condition (see below) will assist in providing a more accurate assessment of assets reaching the end of their useful life.

2.4 Asset Condition

Including condition assessments in the asset management plan provides for a higher level of accuracy than simply relying on useful life assumptions, especially when it comes to older, highly used or more financially significant assets. Condition assessments can provide more realistic estimates of remaining service life, which can then be used to establish rehabilitation or replacement schedules.

For the purposes of this plan, condition ratings were derived from applicable external reports (i.e. road needs study, bridge assessment reports) and staff discussions. When condition information was not available it was estimated by looking at the asset's age in relation to useful life (i.e. an asset age analysis). These ratings are based on a numerical rating of between 0 and 5, where 5 indicates an asset with most of its useful life remaining. An exception to this 0 to 5 condition rating is bridge and culverts, where a 0 and 4 rating was used. A high level summary of the weighted average condition in each asset category is as follows:

Table 2-5
Weighted Average Condition by Asset Category

Tax Supported

Asset Type	Weighted Condition (*indicates age based analysis)
Transportation (Public Works)	
Road Base*	0
Road Surface	6
Road Betterments	4
Bridges and Culverts (see note)	3
Sidewalks*	5
Stormwater Mains*	2
Vehicles*	2
Facilities*	2
Equipment*	2
Land Improvements*	2

Note: Bridges and Culverts have a condition rating out of 4.

Water Assets

Asset Type	Weighted Condition (*indicates age based analysis)
Water Mains*	3
Buildings*	2
Machinery & Equipment*	2

Wastewater Assets

Asset Type	Weighted Condition (*indicates age based analysis)
Wastewater Mains*	4
Land Improvements*	5
Buildings*	3
Machinery & Equipment*	3

Further discussion of condition assessments will take place in Chapter 4 when assessing asset risk and identifying asset priorities. Furthermore, detailed asset conditions are documented in Appendix A to this report. As some condition assessments are currently based on the age of the assets, it is recommended that these condition assessments be updated as new information becomes available. Please see section 2.5 for further details.

2.5 Data Accuracy and Completeness

An important element of this asset management plan is ensuring that tools and procedures are in place to maintain accuracy and completeness of the asset data and calculations moving forward. As time passes, assets are used, maintained, improved, disposed of, and replaced. All of these lifecycle events can trigger changes to the asset database used within the asset management plan. Therefore, tools and procedures are essential to ensure the asset data remains accurate and complete. Please refer to Appendix C to this report for the “Data Verification and Condition Assessment Guideline” for the Municipality. This guideline illustrates how the asset data could be updated and verified going forward. This includes the timing of condition assessments for each asset area, as well as what should be included within the condition assessment procedures.

3. EXPECTED LEVELS OF SERVICE

3. EXPECTED LEVELS OF SERVICE

3.1 Scope and Process

A level of service (LOS) analysis gives the Municipality an opportunity to document the level of service that is currently being provided and compare it to the level of service that is expected. This can be done through a review of current practices and procedures, an examination of trends or issues facing the Municipality, or through an analysis of performance measures and targets that staff can use to measure performance.

Expected LOS can be impacted by a number of factors, including:

- Legislative requirements;
- Strategic planning goals and objectives;
- Resident expectations;
- Council or Municipal staff expectations; and
- Financial or resource constraints.

The previous task of determining the state of the Municipality's local infrastructure establishes the asset inventory and condition, as well as asset management policies and principles to guide the refinement and upkeep of asset infrastructure. The LOS analysis will utilize this information and factors in the impact of asset service level targets. It is important to document an expected LOS that is realistic to the Municipality. It is common to strive for the highest LOS, however these service levels usually come at a cost. It is also helpful to consider the risk associated with a certain LOS. Therefore, expected LOS should be determined in a way that balances both level of investment and associated risk to the Municipality.

3.2 Current Levels of Service versus Expected Levels of Service

The Municipality's current LOS has resulted in the current state of infrastructure discussed in chapter 2. The current LOS also relates to the risk assessment discussed in later report sections. Regarding the cost of LOS, the Municipality has established an operating and capital budget for the current year that includes the cost of providing this LOS to residents.

Therefore in moving from the current LOS to an expected LOS, consideration has to be made for the associated cost (or impact on the Municipality's current budget). The table below outlines broad LOS descriptions (both current and expected LOS). This analysis was documented through discussions with Municipal staff. It is anticipated that Municipal staff will further refine this analysis in future updates to the asset management plan. As this analysis relates to services that are guided by legislative requirements and standards (i.e. roads, parks, water and wastewater), the current and expected LOS are similar.

**Table 3-1
Level of Service Analysis**

Roads Related

Department	Level of Service Description	
	Current	Expected
Public Works	Exceed "Minimum Maintenance Standards" as defined by Ontario Regulation 239/02.	Exceed "Minimum Maintenance Standards" as defined by Ontario Regulation 239/02.
Public Works	Annual gravel maintenance program.	Resurface every gravel road every 2 years.
Public Works	Proactive capital program.	Proactive capital program.

Bridges & Culverts

Department	Level of Service Description	
	Current	Expected
Public Works	Maintain adequate condition and load limits.	Maintain adequate condition and load limits.
Public Works	Proactive Bridge and Culvert maintenance (incl. bridge washing, brush cutting and drain clearing).	Proactive Bridge and Culvert maintenance (incl. bridge washing, brush cutting and drain clearing).
Public Works	Proactive Bridge and Culvert rehabilitation.	Proactive Bridge and Culvert rehabilitation (based on bridge report).
Public Works	Bridge inspections as required.	Bridge inspections (i.e. using OSIM reports) required every 2 years.

Water & Wastewater

Department	Level of Service Description	
	Current	Expected
Water & Wastewater	Meet all legislative requirements.	Meet all legislative requirements.
Water & Wastewater	Proactive maintenance procedures.	Proactive maintenance procedures. Main relining program.
Water & Wastewater	Track complaints by segment.	Track complaints by segment.
Water & Wastewater	Monitor and minimize water main breaks & wastewater main backups.	Monitor and minimize water main breaks & wastewater main backups.

Buildings, Equipment & Vehicles

Department	Level of Service Description	
	Current	Expected
Various	Meet legislative requirement (Building Code, Fire Code, Accessibility, Health & Safety, etc.)	Meet legislative requirement (Building Code, Fire Code, Accessibility, Health & Safety, etc.)
Various	Replace Equipment/Vehicles as required. Track and monitor machine hours by vehicle.	Replace Equipment/Vehicles as required. Track and monitor machine hours by vehicle.

Please refer to Appendix D of this report for a table summarizing the estimated budget impacts associated with implementing the expected LOS over the 20 year forecast period. This impact analysis will be factored into the asset management strategy discussed in chapter 4 of this report.

3.3 Level of Service Performance Measures

As mentioned above, using performance measures in the LOS review can also be helpful in measuring the Municipality's goals and objectives when it comes to asset management. The Municipality currently tracks specific performance measures as part of the Municipal Performance Measurement Program (MPMP) which the province has in place as part of the annual Financial Information Return (FIR) submission. The FIR provides the annual financial results of the Municipality, while the MPMP provides an evaluation of the Municipality's "performance". The following table provides a summary of the specific MPMPs relating to capital asset effectiveness, which will be tracked by Municipal staff on a go-forward basis.

Table 3-2
Performance Measures Analysis

Department	Assets	Performance Measure Description	Historical Performance			Goal
			2014	2015	2016	
Fire	Buildings, Equipment, Vehicles	Residential fire civilian injuries per 1,000 persons				Minimize
Fire	Buildings, Equipment, Vehicles	Residential fire civilian fatalities per 1,000 persons				Minimize
Fire	Buildings, Equipment, Vehicles	Number of residential structural fires per 1,000 households				Minimize
Police	Buildings, Equipment, Vehicles	Total crime rate per 1,000 persons				Minimize
Transportation	Roads	Percentage of paved lane Km where condition is rated as good to very good				Maximize
Transportation	Bridges & Culverts	Percentage of bridges & culverts where condition is rated as good to very good				Maximize
Transportation	Roads	Percentage of winter events where response met or exceeded local service levels				Maximize
Wastewater	Wastewater Mains	Number of wastewater main backups per 100 KM of mains				Minimize
Wastewater	Buildings	Percentage of wastewater estimated to have by-passed treatment				Minimize
Water	Water mains	Weighted # days when a boil water advisory was issued				Minimize
Water	Water mains	Number of water main breaks per 100 KM of pipe				Minimize
Solid Waste	Buildings, Vehicles	Number of complaints received concerning garbage & recycling collection				Minimize
Recreation & Culture	Buildings	Participant hours for recreation programs per 1,000 persons				Maintain or Increase
Library	Buildings	Total library uses per person				Maintain or Increase

The Municipality will calculate and monitor these performance measures, both for MPMP and asset management purposes moving forward. As the Municipality's asset management plan evolves over time, new performance measures can be introduced to further measure the LOS being provided in each service area.

4. ASSET MANAGEMENT STRATEGY

4. ASSET MANAGEMENT STRATEGY

4.1 Scope and Process

The asset management strategy provides the recommended course of actions required to maintain (or move towards) a sustainable asset funding position while delivering the expected levels of service discussed in the previous chapter. The course of actions, when combined together, form a long-term operating and capital forecast that includes:

- a) Non-infrastructure solutions: reduce costs and/or extend expected useful life estimates;
- b) Maintenance activities: regularly scheduled activities to maintain existing useful life levels, or repairs needed due to unplanned events;
- c) Renewal/Rehabilitation: significant repairs or maintenance planned to increase the useful life of assets;
- d) Replacement/Disposal: complete disposal and replacement of assets, when renewal or rehabilitation is no longer an option; and
- e) Expansion: given planned growth or other expansion or due to the introduction of new services.

Priority identification becomes a critical process during the asset management strategy development. Priorities have been determined based on assessment of the overall risk of asset failure, which is determined by looking at both the probability of an asset failing, as well as the consequences of failure. The consequences of the Municipality not meeting desired levels of service must also be considered in determining risk. As discussed in chapter 3, moving to expected levels of service results in both operating and capital budget impacts over the 20 year forecast period. This has to be taken into consideration, with the overall objective of reaching sustainable levels while mitigating risk.

4.2 Risk Assessment

The risk of an asset failing is defined by the following calculation:

$$\text{Risk of Asset Failure} = \text{Probability of Failure} \times \text{Consequence of Failure}$$

Probability of failure has been linked to the condition assessment for each of the assets, assuming that an asset with a condition rating of 1 would have a high probability of failure. For some assets (i.e. stormwater mains) other factors, such as material rating, were also used to assess probability of failure.

Consequence of failure has been determined by examining each asset type separately. Consequence refers to the impact on the Municipality if a particular asset were to fail. Types of impacts include the following:

- **Cost Impacts:** the cost of failure to the Municipality (i.e. capital replacement, rehabilitation, fines & penalties, damages, etc.);
- **Social impacts:** potential injury to residents or Municipal staff;
- **Environmental impacts:** the impact of the asset failure on the environment;
- **Service delivery impacts:** the impact of the asset failure on the Municipality's ability to provide services at desired levels; and
- **Location impacts:** the varying impact of asset failure based on the asset's location within the Municipality.

Each type of impact was discussed with Municipal staff. Consequence of failure was determined by using the information contained in Table 4-2 for each asset type with the exception of the following, where the consequence of failure considerations are as follows:

- a) Roads (Base and Surface): based on roadside environment and traffic rating;
- b) Water and Stormwater Mains: based on pipe diameter; and
- c) Wastewater Mains: based on pipe diameter and type (gravity vs. force main).

**Table 4-2
Consequence of Failure Matrix**

Consequence of Failure	Cost	Social	Environmental	Service Delivery
5 - Significant	Significant Cost - Difficult to Recover	Serious Injury	Long-term Impact - Permanent	Major Interruptions
4 - Major	Substantial Cost - Multi-year Budget Impacts	Major Injury	Long-term Impact - Fixable	Significant Interruptions
3 - Moderate	Considerable Cost - Requires Revisions to	Moderate Injury	Medium-term Impact - Fixable	Moderate Interruptions
2 - Minor	Small/Minor Cost within Budget Allocations.	Minor Injury	Short-term/Minor Impact - Fixable	Minor Interruptions
1 - Insignificant	Negligible or Insignificant Cost	No injury	No Impact	No Interruptions

With both probability of failure and consequence of failure documented, total risk of asset failure was determined using the matrixes contained in Table 4-3. Total risk has been classified under the following categories:

- **Extreme Risk (E):** risk well beyond acceptable levels (red);
- **High Risk (H):** risk beyond acceptable levels (orange);
- **Medium Risk (M):** risk at acceptable levels, monitoring required to ensure risk does not become high (yellow); and
- **Low Risk (L):** risk at or below acceptable levels (green).

Table 4-3
Total Risk of Asset Failure Matrix

Bridges

Probability of Failure	Consequence of Failure			
	1	2	3	4
1	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16

Land Improvements, Facilities, Machinery and Equipment, Vehicles and Sidewalks

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

Water and Wastewater Mains

Probability of Failure	Consequence of Failure									
	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50

Stormwater Mains and Roads

Probability of Failure	Consequence of Failure									
	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Risk levels can be reduced or mitigated through planned maintenance, rehabilitation and/or replacement. An objective of this asset management plan is to reduce risk levels where they are deemed to be too high, as well as ensure assets are maintained in a way that maintains risk at acceptable levels.

Please refer to Appendix A for the detailed risk assessment for each of the Municipality's capital assets. It is recommended that this risk assessment be refined further by Municipal staff in the future.

4.3 Priority Identification

Through discussions with Municipal staff and review of the asset risk of failure assessment, the following assets/categories were identified as being priorities of the Municipality:

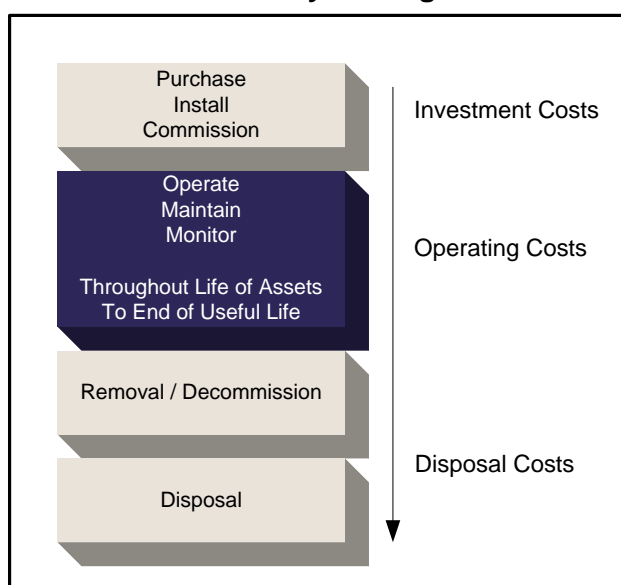
**Table 4-4
Priorities Based on Asset Risk**

Area / Category	Description	Total Risk	Planned Action
Roads	River Street - Various Sections	High	Replacement in short-term capital
Roads	Centre Street - Various Sections	High	Replacement in short-term capital
Roads	Weidman Line - Various Sections	High	Replacement in short-term capital
Storm	Elgin Street - Various Sections	High	Replacement in short-term capital
Storm	Mill Street - Various Sections	High	Replacement in short-term capital
Storm	Morrell Street - Various Sections	High	Replacement in short-term capital
Water	Water Tower Rehabilitation	High	Replacement in short-term capital
Wastewater	Treatment Plant - Instrumentation/HVAC, Blower	High	Replacement in short-term capital
Wastewater	Pumping Station River South Rehabilitation	High	Replacement in short-term capital
Facilities	Alvinston Fire Hall Mechanical	High	Replacement in short-term capital

4.4 Long-term Forecast

For many years, lifecycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and has been used recently in the management of capital assets. By definition, lifecycle costs are all the costs which are incurred during the lifecycle of a capital asset, from the time it is purchased or constructed, to the time it is taken out of service for disposal. The stages which an asset goes through in its lifecycle are as follows:

Figure 4-1
Asset Lifecycle Diagram



In defining the long-term forecast for the Municipality's asset management strategy, costs incurred through an asset's lifecycle were considered and documented.

Asset Replacement Analysis

In forecasting the Municipality's asset replacement needs, comparisons were made between the following scenarios:

- *Scenario 1: Replacement forecast based on "PSAB 3150 Asset Data"*
 - Utilizing the PSAB 3150 inventory, year of installation and estimated service life, the replacement of each asset was projected.
- *Scenario 2: Replacement forecast based on "Phased-in Approach";*
 - In addition to using the installation date, estimated useful life, the LOS, condition information and staff identified priorities were used, where applicable to better predict the timing of replacement. Results were smoothed over the forecast period.

Scenario 1: Replacement forecast based on “PSAB 3150 Asset Data”

The replacement forecast based on the PSAB 3150 asset data provides a snapshot of assets at or nearing the end of their useful lives from a purely financial accounting perspective.

Figures 4-2 to 4-4 below show the forecasts over a 10 year period, where approximately \$84.99 million (replacement cost) in tax supported capital assets, \$0 million in water capital assets and \$1.9 million in wastewater capital assets are showing as “immediate needs”. For this scenario, this simply means that these assets have reached the end of their accounting useful lives. Please refer to Appendix E for charts and graphs depicting the entire 20 year forecast for this scenario.

**Figure 4-2
10 Year Forecast**

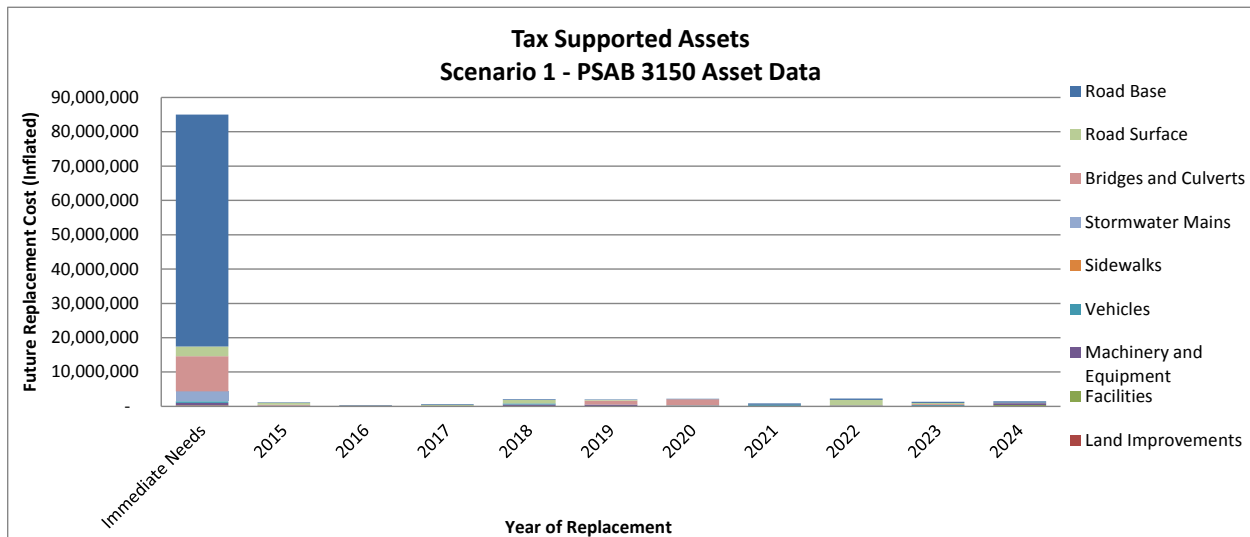


Figure 4-3
10 Year Forecast

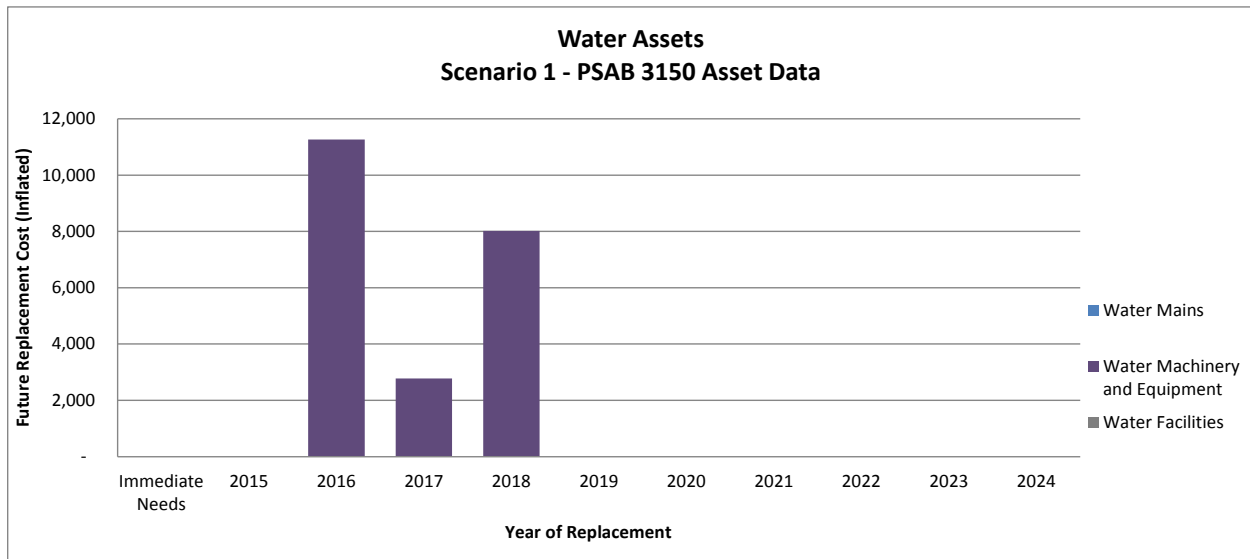
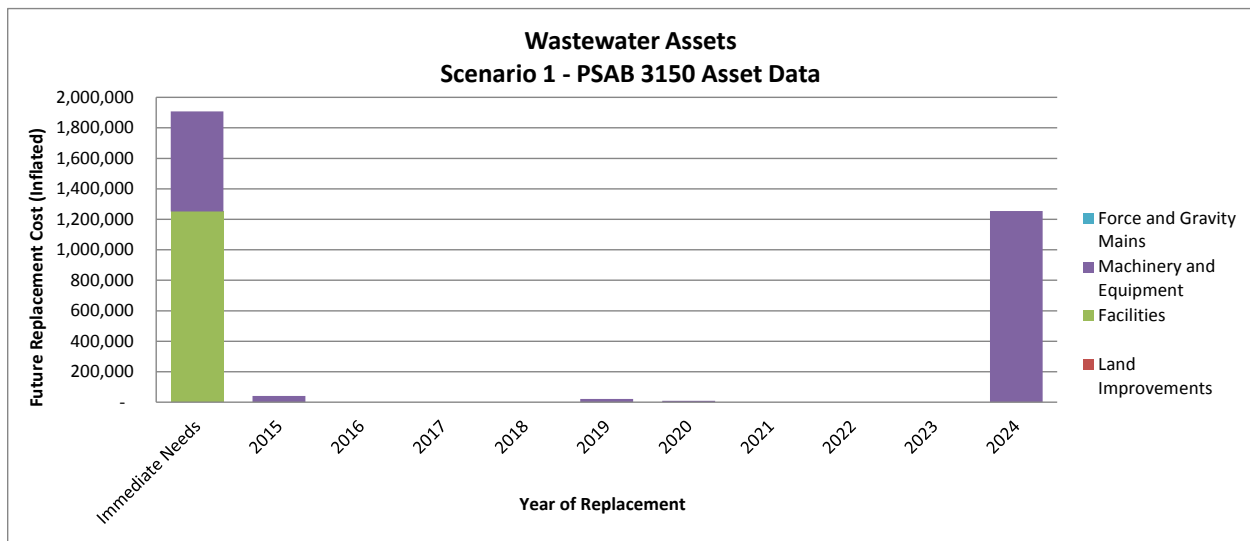


Figure 4-4
10 Year Forecast



Scenario 2: Replacement forecast based on “Phased-In Approach”

Within this scenario, adjustments were made based on discussions with staff and items that had been identified under the previous scenario have been distributed within the forecast period. The result of these adjustments is, \$0 of tax supported capital assets, water capital assets and wastewater capital assets are identified as “immediate needs”. Figures 4-8 to 4-10 show the 10 year forecasts under this scenario.

This is the recommended scenario for the Municipality, and should be reviewed and revised as necessary by Municipal staff as part of annual budget deliberations. This scenario allows for a

gradual increase in capital investments over the forecast period, with Municipal staff using the risk/priority rankings described in this chapter as a basis for selecting specific project timing.

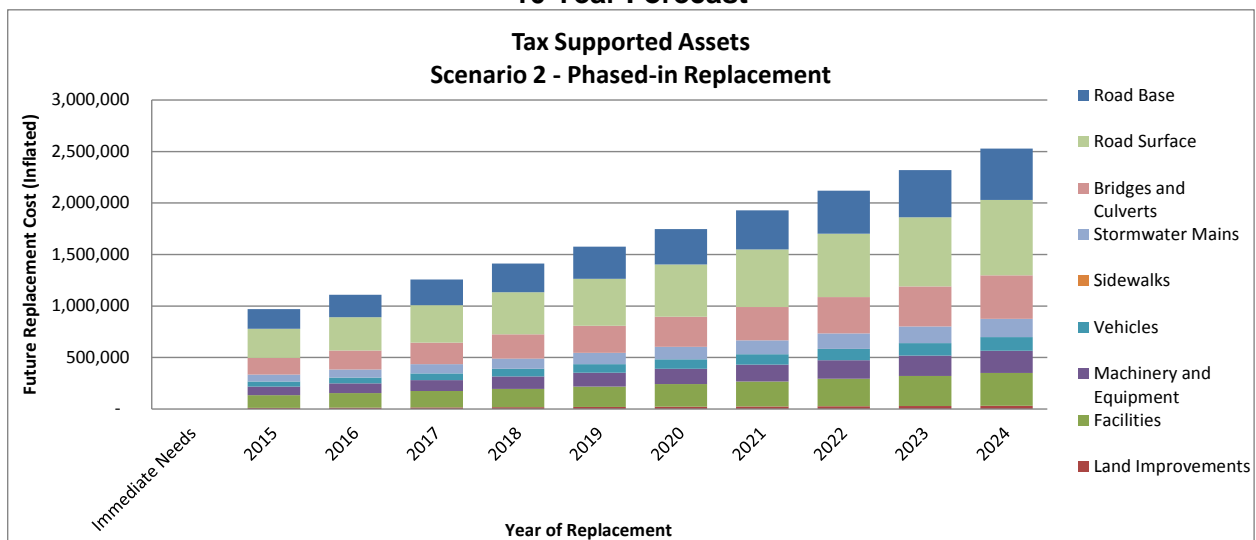
Please refer to Appendix E for charts and graphs depicting the entire 20 year forecast for this scenario. A total of \$56.35 million in tax supported, \$2.7 million in water capital and \$3.9 million in wastewater capital replacement needs are identified over the 20 year forecast period (\$16.96 million, \$22,100 and \$2.3 million respectively in the first 10 years).

Maintenance, Non-Infrastructure Solutions, Renewal & Rehabilitation

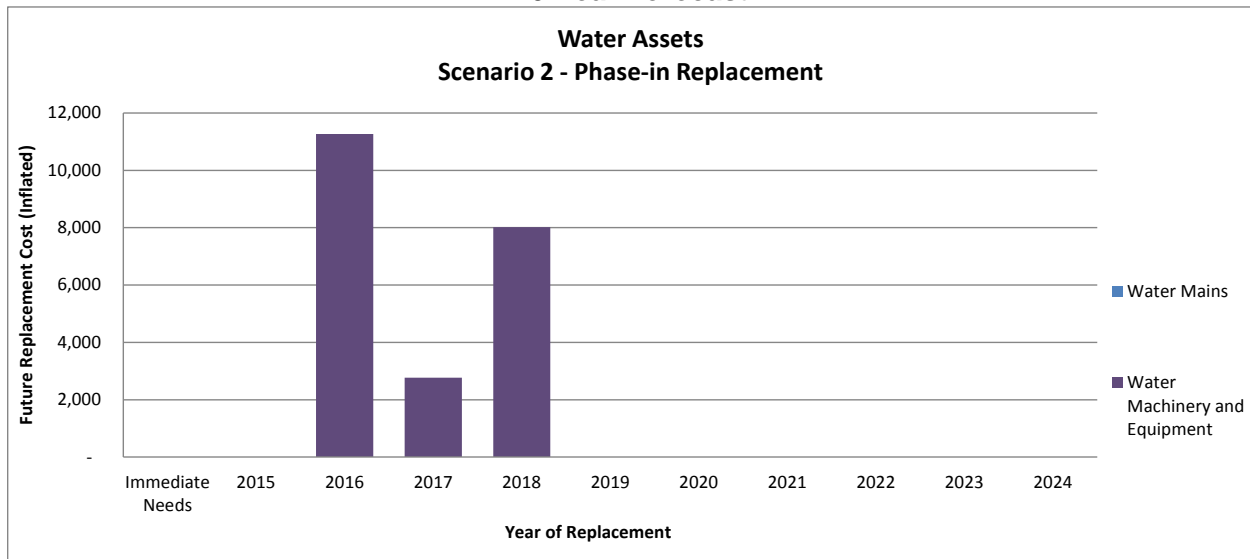
For the recommended scenario to be feasible, the level of service adjustments discussed in Chapter 3 and Appendix D are required in conjunction with current level of service amounts in order to effectively maintain and rehabilitate the assets as needed. Appendix D provides additional rehabilitation and maintenance requirements over the forecast period.

The financing strategy discussed in the next Chapter will incorporate the level of service adjustments outlined in Appendix D into the recommended financing analysis. In addition, expansion related needs will be layered into the forecast to determine total capital needs for each year.

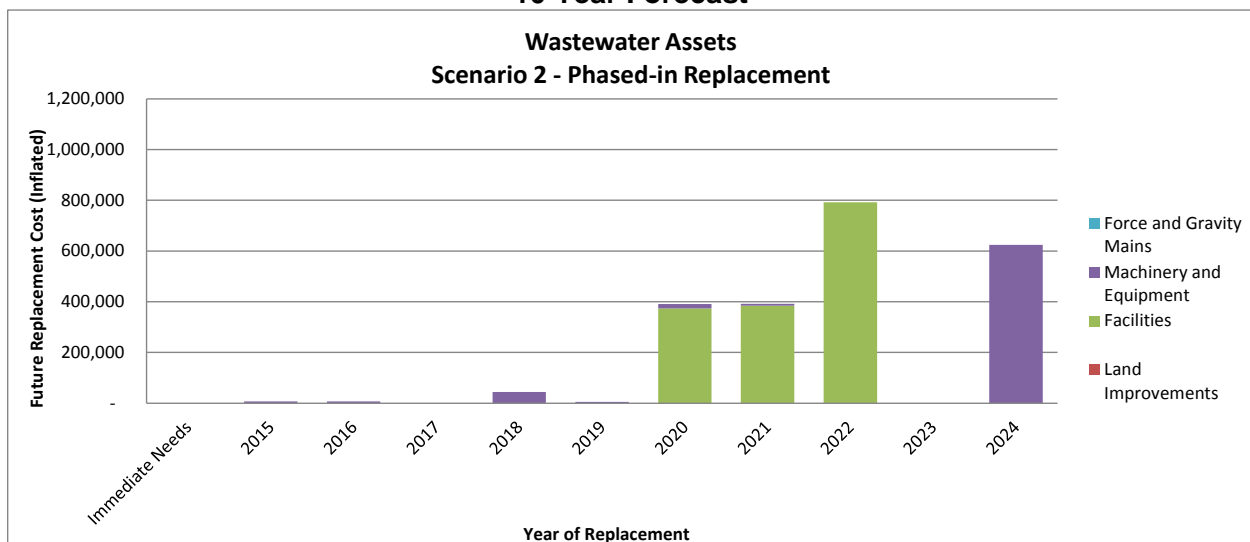
**Figure 4-5
10 Year Forecast**



**Figure 4-6
10 Year Forecast**



**Figure 4-7
10 Year Forecast**



4.5 Procurement Methods

Section 270(1) of the Municipal Act, S.O. 2001, provides that municipalities (and local boards) shall adopt and maintain policies with respect to its procurement of goods and services. Procurement policies are developed to provide a framework to support open, fair, transparent and accountable purchasing processes, and to ensure procurement processes are consistently managed. Moreover, the establishment of a by-law adopting the procurement policy provides a document which has the approval of Council, which allows an opportunity for public debate.

An effective procurement policy assists municipalities in identifying cost-effective options for providing services, while at the same time reducing risk. Innovative project management

models, such as public-private partnerships (P3's) or co-operative purchasing, can help bring together expertise, resources and funding opportunities. Where appropriate, bidders can be required to provide lifecycle costing for the products and/or services being tendered. Lifecycle costs can include initial construction/purchase price, plus operating costs for a contracted period of time. Incorporating a lifecycle perspective in the procurement process can encourage effective asset management in the time period following the initial capital investment.

In order to have an effective and efficient procurement program, especially related to the purchase/construction of large capital assets, the procurement policy can include clauses to protect the Municipality, as well as assist in receiving competitive responses. Examples include:

- Identification of the criteria used to determine the type of competitive process to be followed (i.e. tender, RFP, RFQ);
- Identification of circumstances when Sole Sourcing, Negotiation, and/or In-House Bids can be used;
- Description of the methods to be used for advertising a competitive process;
- Providing direction for purchasing in cases of emergency;
- Providing direction for purchasing as part of a co-operative purchasing group;
- Outlining any requirements related to bid deposits or other financial security;
- Inclusion of a non-discrimination clause highlighting positions such as having a 'no local preference' policy;
- Notification that any bid can be rejected by the Municipality;
- Identification of reasons for terminating a contract with a supplier/contractor (i.e. poor performance, unethical behaviour);
- Identification of restrictions on the types and/or amounts of damages to which bidders may be entitled, arising from their responding to a competitive process; and
- Requirement for bidders to supply proof of insurance and WSIB.

As part of the continuous asset management update process, it is recommended that the Municipality's procurement policies and procedures be reviewed and compared against procurement best practices to ensure resources are being allocated in an efficient manner.

5. FINANCING STRATEGY

5. FINANCING STRATEGY

5.1 Scope and Process

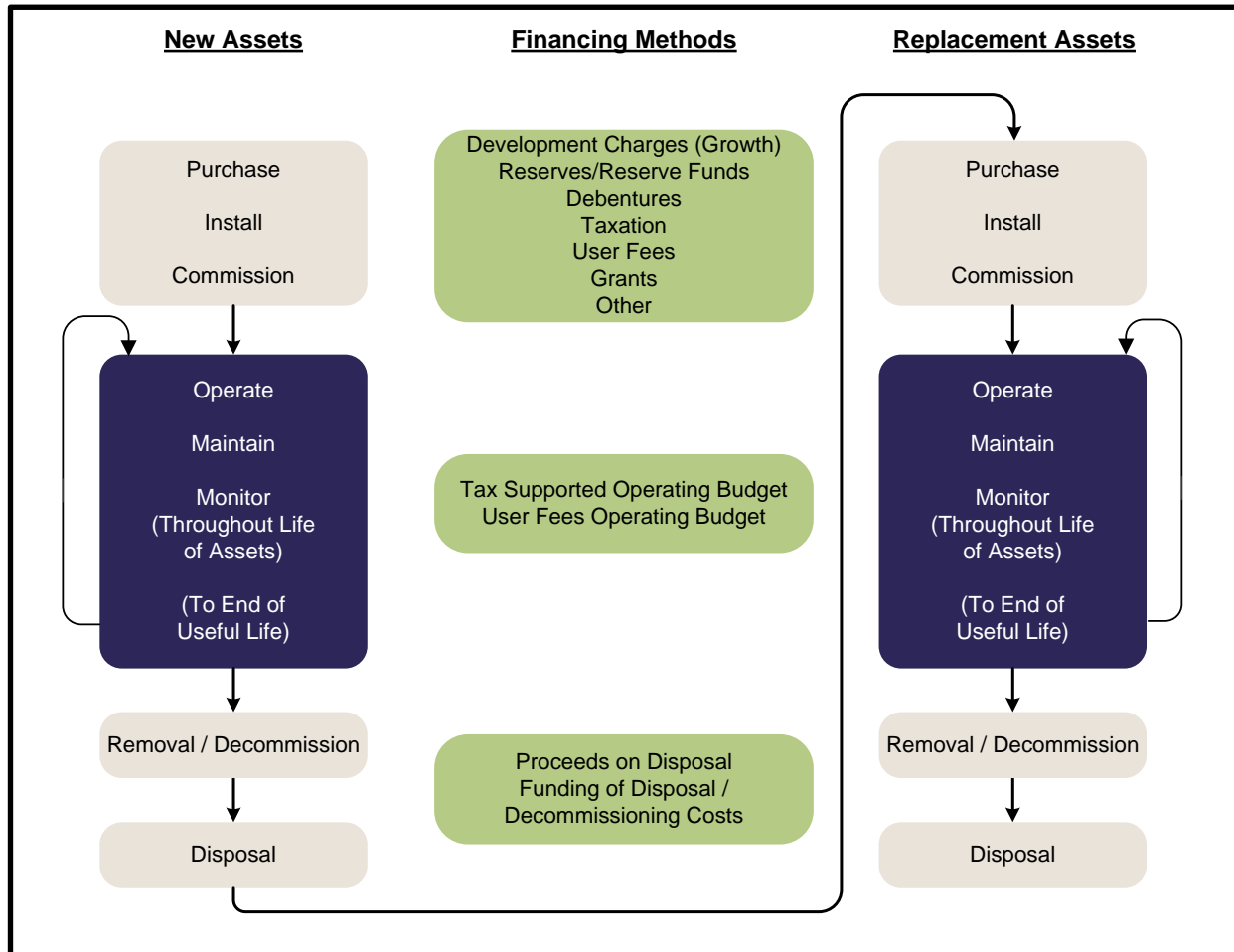
The financing strategy outlines the suggested financial approach to funding the recommended asset management strategy outlined in Chapter 4, while utilizing the Municipality's existing budget structure. This section of the asset management plan includes:

- Annual expenditure forecasts broken down by:
 - Maintenance/non-infrastructure solutions;
 - Renewal/rehabilitation activities;
 - Replacement/disposal activities; and
 - Expansion activities.
- Actual expenditures in the above named categories for 2012, 2013 and budget expenditures for 2014;
- A breakdown of annual funding/revenue by source;
- Identification of the funding shortfall, including how the impact will be managed; and
- All key assumptions are documented within Appendix B.

The long-term financing strategy forecast (including both expenditure and revenue sources) was prepared, consistent with the Municipality's departmental budget structure, so that it can be used in conjunction with the annual budget process. Various financing options, including taxation, reserves, reserve funds, debt, user fees and grants were considered and discussed with Municipal staff during the process. Figure 5-1 provides a visual representation of how various financing methods can be used for both initial asset purchases, as well as asset replacements.

For the recommended asset management strategy scenario, a detailed twenty (20) year plan was generated. The plan identifies specific maintenance & non-infrastructure solutions, renewal & rehabilitation, replacement & disposal, and expansion activities required for the 20 year forecast period as described in Chapter 4.

Figure 5-1
Financing Methods of Lifecycle Costs



5.2 Historical Results

Table 5-1 outlines the historical tax supported maintenance/non-infrastructure costs for 2012 and 2013, as well as 2014 budgeted results. All maintenance for assets was funded through taxation revenue for tax supported assets, water rates for water related assets and wastewater rates for wastewater related assets based on the Municipality's budget structure.

Table 5-1
Historical Results
Maintenance & Non-Infrastructure Solutions

Tax Supported

Description	Actual 2012	Actual 2013	Budget 2014
Asset Maintenance	683,370	521,958	706,856
Taxation Funding	683,370	521,958	706,856
Net Unfunded	-	-	-

Water Services

Description	Actual 2012	Actual 2013	Budget 2014
Asset Maintenance	134,371	111,028	170,109
Water Rate Revenue	134,371	111,028	170,109
Net Unfunded	-	-	-

Wastewater Services

Description	Actual 2012	Actual 2013	Budget 2014
Asset Maintenance	92,099	103,113	120,327
Wastewater Rate Revenue	92,099	103,113	120,327
Net Unfunded	-	-	-

Tables 5-2 outlines the historical capital results for 2012, 2013 and budgeted results for 2014, including renewal/rehabilitation, replacement/disposal, and expansion. The capital funding includes the use of reserve/reserve funds, gas tax funds, grants, as well as contributions from the operating budget.

Table 5-2
Tax Supported Historical Results
Renewal/Rehabilitation, Replacement/Disposal & Expansion

Description	Actual 2012	Actual 2013	Budget 2014
Capital Expenses			
Administration	11,588	4,874	45,000
Protection	71,846	64,015	85,244
Transportation	352,147	579,765	557,000
Environmental	-	-	-
Health	-	-	-
Recreation and Cultural	97,092	218,169	121,790
Planning and Development	8,200	-	50,000
Other - Assist River St Project	-	60,000	-
Capital Expenditures	540,873	926,823	859,034
Capital Financing			
Provincial/Federal Grants	-	73,525	-
Debt	-	-	-
Fees and Charges	-	4,142	8,300
Alvinston Fire	10,332	11,301	12,132
Inwood Fire	6,377	3,449	7,893
Enniskellen Share Culvert	-	4,035	-
County Share of Culverts	17,978	-	-
Other	16,154	-	-
Current Fund	490,033	649,756	703,719
Reserves / Reserve Funds: General		-	50,000
Reserves / Reserve Funds: Gas Tax		150,615	-
Reserves / Reserve Funds: Inwood Drainage		30,000	-
Reserves / Reserve Funds: CC Olympia		-	76,990
Total Capital Financing	540,873	926,823	859,034
Total Capital Expenditures less Capital Financing	-	-	-

5.3 Financing Strategy

Tax Supported

Table 5-3 shows the tax supported expenditure forecast for maintenance, renewal/rehabilitation, replacement/disposal and expansion for the first 10 years of the forecast. While this summary only shows high level cost classifications, further detail (including the full 20 year forecast) can be obtained from Appendix F.

Table 5-3
Tax Supported Expenditure Forecast Summary

Asset Lifecycle Costs	Forecast									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Maintenance: Current Service Levels	720,993	735,413	750,121	765,124	780,426	796,034	811,955	828,194	844,758	861,653
Maintenance: LOS Adjustment	-	-	-	-	-	-	-	-	-	-
Total Asset Maintenance	720,993	735,413	750,121	765,124	780,426	796,034	811,955	828,194	844,758	861,653
Renewal/Rehabilitation/Replacement	968,982	1,108,946	1,256,436	1,411,777	1,575,308	1,747,380	1,928,358	2,118,623	2,318,568	2,528,603
Replacement/Disposal - LOS Adjustment	2,575	2,652	2,732	2,814	2,898	2,985	3,075	3,167	3,262	3,360
Total Replacement/Disposal	971,557	1,111,598	1,259,167	1,414,591	1,578,206	1,750,365	1,931,433	2,121,790	2,321,830	2,531,963
Total	1,692,550	1,847,011	2,009,289	2,179,714	2,358,632	2,546,399	2,743,388	2,949,984	3,166,588	3,393,616

Items in Table 5-3 labelled as “LOS Adjustment” refer to the level of service analysis discussed in Chapter 3 and Appendix D.

Table 5-4 summarizes the recommended strategy to finance the asset related costs identified in Table 5-3.

Table 5-4
Breakdown of Annual Tax Supported Funding (Revenue) by Source

Funding (Revenue) by Source	Forecast									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Taxation	720,993	735,413	750,121	765,124	780,426	796,034	811,955	828,194	844,758	861,653
Grants	-	-	-	-	-	-	-	-	-	-
Debentures	-	300,000	300,000	300,000	400,000	400,000	400,000	300,000	400,000	300,000
Gas Tax Reserve Funds	73,778	73,778	73,778	73,778	73,778	73,778	73,778	73,778	73,778	73,778
Capital Reserve Fund	897,778	737,820	885,389	1,040,812	1,104,427	1,276,586	1,457,655	1,748,012	1,848,052	2,158,184
Total	1,692,550	1,847,011	2,009,289	2,179,714	2,358,632	2,546,399	2,743,388	2,949,984	3,166,588	3,393,616

These lifecycle costs are being recovered through several methods:

- Taxation funding is suggested for all maintenance costs, as well as level of service adjustment related costs related to operations.
- Debt financing is shown as required in years where significant capital needs are identified.
- Gas Tax funding has been shown as a stable and long-term funding source for eligible capital projects.
- The Municipality will be dependent upon maintaining healthy capital reserves/reserve funds in order to provide the remainder of the required lifecycle funding over the forecast period. This will require the Municipality to proactively increase amounts being transferred to these capital reserves during the annual budget process.

While the annual funding requirement may fluctuate, it is important for the Municipality to implement a consistent, yet increasing annual investment in capital so that the excess annual funds can accrue in capital reserve funds.

In order to fund the recommended asset requirements over the forecast period using the Municipality's own available funding sources (i.e. using taxation, gas tax funding and debentures), an increase in the Municipality's taxation levy of 5.20% per year would be required for each year of the forecast period. This assumes that operating related accounts within the Municipality's budget will increase at 2% per year. However, if other funding sources become available (i.e. grant funding) or if maintenance and rehabilitation practices allow for the deferral of capital works, then the impact on the Municipality's taxation levy would decrease.

Water

Table 5-5 shows the water expenditure forecast for maintenance, renewal/rehabilitation, replacement/disposal and expansion for the first 10 years of the forecast. While this summary only shows high level cost classifications, further detail (including the full 20 year forecast) can be obtained from Appendix G.

Table 5-5
Water Expenditure Forecast Summary

Asset Lifecycle Costs	Forecast									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Maintenance: Current Service Levels	173,511	176,982	180,521	184,132	187,814	191,571	195,402	199,310	203,296	207,362
Maintenance: LOS Adjustment	-	-	-	-	-	-	-	-	-	-
Total Asset Maintenance	173,511	176,982	180,521	184,132	187,814	191,571	195,402	199,310	203,296	207,362
Renewal/Rehabilitation/Replacement	-	11,263	2,773	8,021	-	-	-	-	-	-
Replacement/Disposal - LOS Adjustment	-	-	-	-	-	-	-	-	-	-
Total Replacement/Disposal	-	11,263	2,773	8,021	-	-	-	-	-	-
Total	173,511	188,244	183,294	192,153	187,814	191,571	195,402	199,310	203,296	207,362

Items in Table 5-5 labelled as "LOS Adjustment" refer to the level of service analysis discussed in Chapter 3 and Appendix D

Table 5-6 summarizes the recommended strategy to finance the asset related costs identified in Table 5-5.

Table 5-6
Breakdown of Annual Water Funding (Revenue) by Source

Funding (Revenue) by Source	Forecast									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Water Rate Revenue	173,511	176,982	180,521	184,132	187,814	191,571	195,402	199,310	203,296	207,362
Grants	-	-	-	-	-	-	-	-	-	-
Debentures	-	-	-	-	-	-	-	-	-	-
Gas Tax Reserve Funds	-	-	-	-	-	-	-	-	-	-
Capital Reserve Fund	-	11,263	2,773	8,021	-	-	-	-	-	-
Total	173,511	188,244	183,294	192,153	187,814	191,571	195,402	199,310	203,296	207,362

These lifecycle costs are being recovered through several methods:

- Water rate revenue is suggested for all maintenance costs, as well as level of service adjustment related costs related to operations.

- The Municipality will be dependent upon maintaining healthy capital reserves/reserve funds in order to provide the remainder of the required lifecycle funding over the forecast period. This will require the Municipality to proactively increase amounts being transferred to these capital reserves during the annual budget process.

While the annual funding requirement may fluctuate, it is important for the Municipality to implement a consistent, yet increasing annual investment in capital so that the excess annual funds can accrue in capital reserve funds.

In order to fund the recommended asset requirements over the forecast period using the Municipality's own available funding sources (i.e. using water rate revenue and debentures), an increase in revenue (i.e. combination of growth and rate increases) of 25.0% per year would be required for each of the first two years of the forecast period, declining to 5.38% per year thereafter. The significant increases noted for the first two years are required for the water system to become self-sustaining over a two-year period, as currently the water system is being subsidized by taxation.

However, if other funding sources become available (i.e. grant funding) or if maintenance and rehabilitation practices allow for the deferral of capital works, then the impact on Municipality water rate revenue would decrease. In order to assess the impacts of the water rates specifically, a water rate study update would be required.

Wastewater

Table 5-7 shows the water expenditure forecast for maintenance, renewal/rehabilitation, replacement/disposal and expansion for the first 10 years of the forecast. While this summary only shows high level cost classifications, further detail (including the full 20 year forecast) can be obtained from Appendix H.

Table 5-7
Wastewater Expenditure Forecast Summary

Asset Lifecycle Costs	Forecast									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Maintenance: Current Service Levels	122,733	125,188	127,692	130,245	132,850	135,507	138,217	140,982	143,801	146,677
Maintenance: LOS Adjustment	-	-	-	-	-	-	-	-	-	-
Total Asset Maintenance	122,733	125,188	127,692	130,245	132,850	135,507	138,217	140,982	143,801	146,677
Renewal/Rehabilitation/Replacement	7,505	6,670	-	44,323	5,098	391,445	392,300	792,208	-	624,385
Replacement/Disposal - LOS Adjustment	-	-	-	-	-	-	-	-	-	-
Total Replacement/Disposal	7,505	6,670	-	44,323	5,098	391,445	392,300	792,208	-	624,385
Total	130,239	131,858	127,692	174,568	137,948	526,953	530,517	933,190	143,801	771,063

Items in Table 5-7 labelled as "LOS Adjustment" refer to the level of service analysis discussed in Chapter 3 and Appendix D.

Table 5-8 summarizes the recommended strategy to finance the asset related costs identified in Table 5-7.

Table 5-8
Breakdown of Annual Wastewater Funding (Revenue) by Source

Funding (Revenue) by Source	Forecast									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Wastewater Rate Revenue	122,733	125,188	127,692	130,245	132,850	135,507	138,217	140,982	143,801	146,677
Grants	-	-	-	-	-	-	-	-	-	-
Debentures	-	-	-	-	-	100,000	300,000	650,000	-	400,000
Gas Tax Reserve Funds	-	-	-	-	-	-	-	-	-	-
Capital Reserve Fund	7,505	6,670	-	44,323	5,098	291,445	92,300	142,208	-	224,385
Total	130,239	131,858	127,692	174,568	137,948	526,953	530,517	933,190	143,801	771,063

These lifecycle costs are being recovered through several methods:

- Wastewater rate revenue is suggested for all maintenance costs, as well as level of service adjustment related costs related to operations.
- Debt financing is shown as required in years where significant capital needs are identified.
- The Municipality will be dependent upon maintaining healthy capital reserves/reserve funds in order to provide the remainder of the required lifecycle funding over the forecast period. This will require the Municipality to proactively increase amounts being transferred to these capital reserves during the annual budget process.

While the annual funding requirement may fluctuate, it is important for the Municipality to implement a consistent, yet increasing annual investment in capital so that the excess annual funds can accrue in capital reserve funds.

In order to fund the recommended asset requirements over the forecast period using the Municipality's own available funding sources (i.e. using wastewater rate revenue and debentures), an increase in revenue (i.e. combination of growth and rate increases) of 30% per year would be required for each of the first two years of the forecast period, declining to 7.26% thereafter. The significant increases noted for the first two years are required for the wastewater system to become self-sustaining over a two-year period, as currently the wastewater system is being subsidized by taxation.

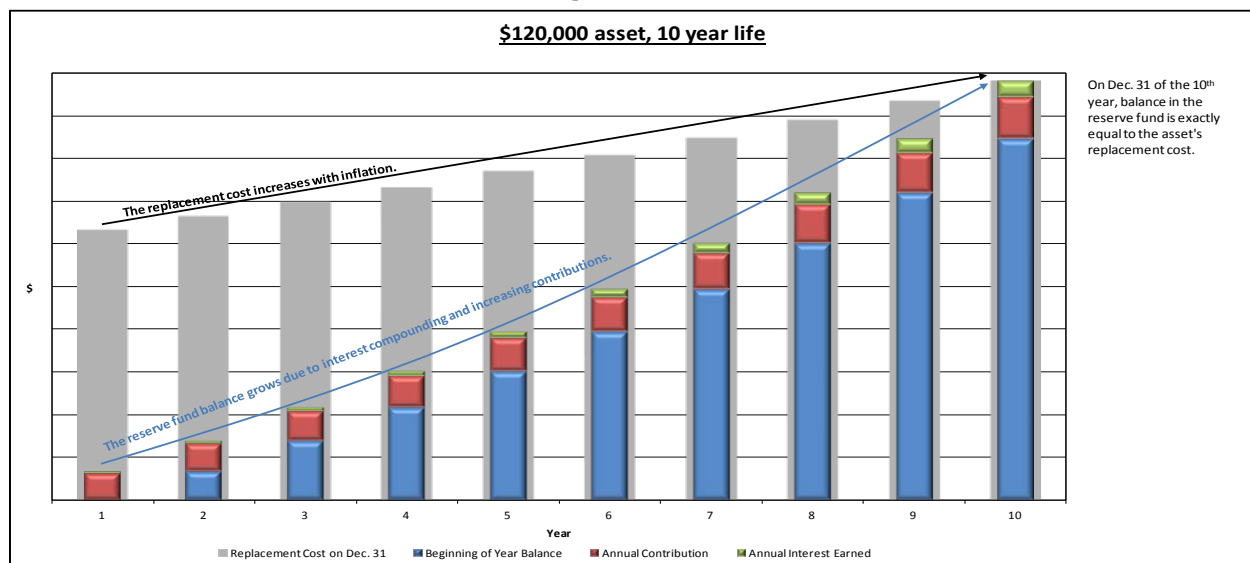
However, if other funding sources become available (i.e. grant funding) or if maintenance and rehabilitation practices allow for the deferral of capital works, then the impact on Municipality wastewater rate revenue would decrease. In order to assess the impacts of the wastewater rates specifically, a wastewater rate study update would be required.

5.4 Funding Shortfall

Assuming the Municipality maintains adequate capital reserve funds, the recommended asset management strategy discussed in Chapter 4 will be fully funded. It is believed this can be accomplished through each annual budget process. However, the recommended asset management strategy does defer significant capital replacements, in comparison to recommendations stated in various Municipality asset related reports. In the event that certain deferred replacements result in increased risks and/or projected asset failures, further funding may be required to address the costs associated with accelerating replacement timelines. In addition, in the event that the Municipality is not successful in recent grant applications, additional funding would be required in the short-term.

A fundamental approach to calculating the cost of using a capital asset and for the provision of the revenue required when the time comes to retire and replace it is the “sinking fund method”. This method first estimates the future value of the asset at the time of replacement, by inflating the current value of the asset at an assumed annual capital inflation rate. A calculation is then performed to determine annual contributions which, when invested in a reserve fund, will grow with interest to a balance equal to the future replacement cost. The contributions are calculated such that they also increase annually with inflation. Under this approach, an annual capital investment amount is calculated where funds are available for short-term needs while establishing a funding plan for long-term needs. Annual contributions in excess of capital costs in a given year would be transferred to a “capital replacement reserve fund” for future capital replacement needs. This approach provides for a stable funding base, eliminating variances in annual funding requirements, particularly in years when capital replacement needs exceed typical capital levy funding. Please refer to Figure 5-2 for an illustration of this method.

Figure 5-2
Sinking Fund Method



Tax Supported

From a tax supported asset base perspective, the estimated annual sinking fund requirement, based on using the calculations discussed above, is approximately \$3.62 million (in 2014 dollars). Based on the Municipality's 2014 budget, current annual capital investment is approximately \$1.02. This would provide a high level estimate of the Municipality's annual tax supported infrastructure funding deficit at \$2.59 million (in 2013 dollars).

Water

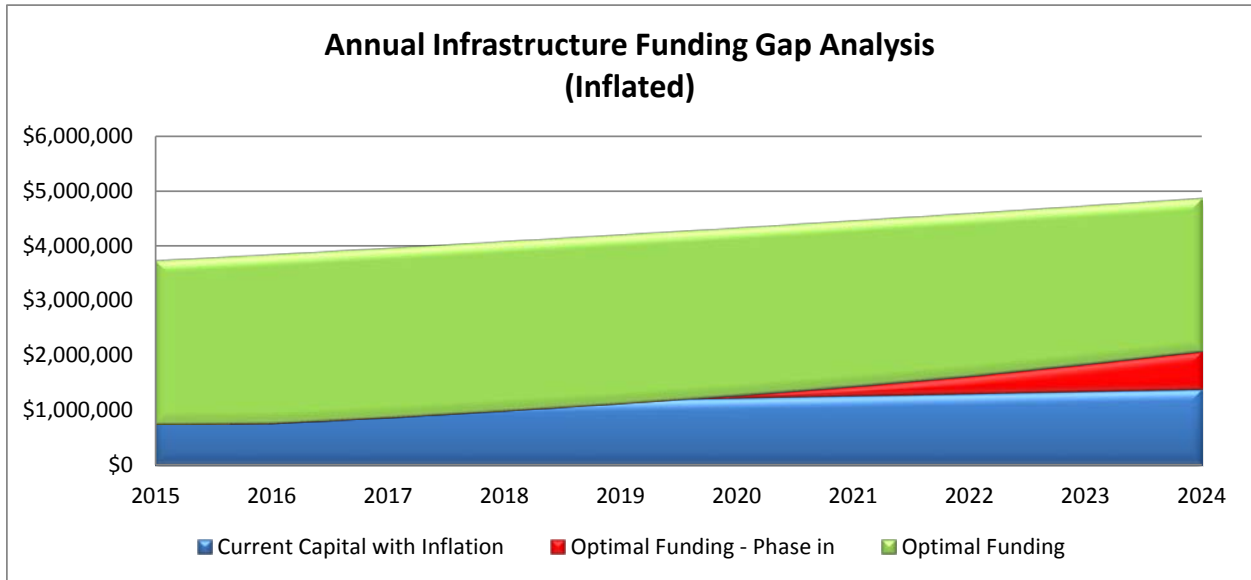
From a water asset base perspective, the estimated annual sinking fund requirement, based on using the calculations discussed above, is approximately \$370,000 (in 2014 dollars). Based on the Municipality's 2014 budget, current annual capital investment is approximately \$0. This would provide a high level estimate of the Municipality's annual water infrastructure funding deficit at \$370,000 (in 2014 dollars).

Wastewater

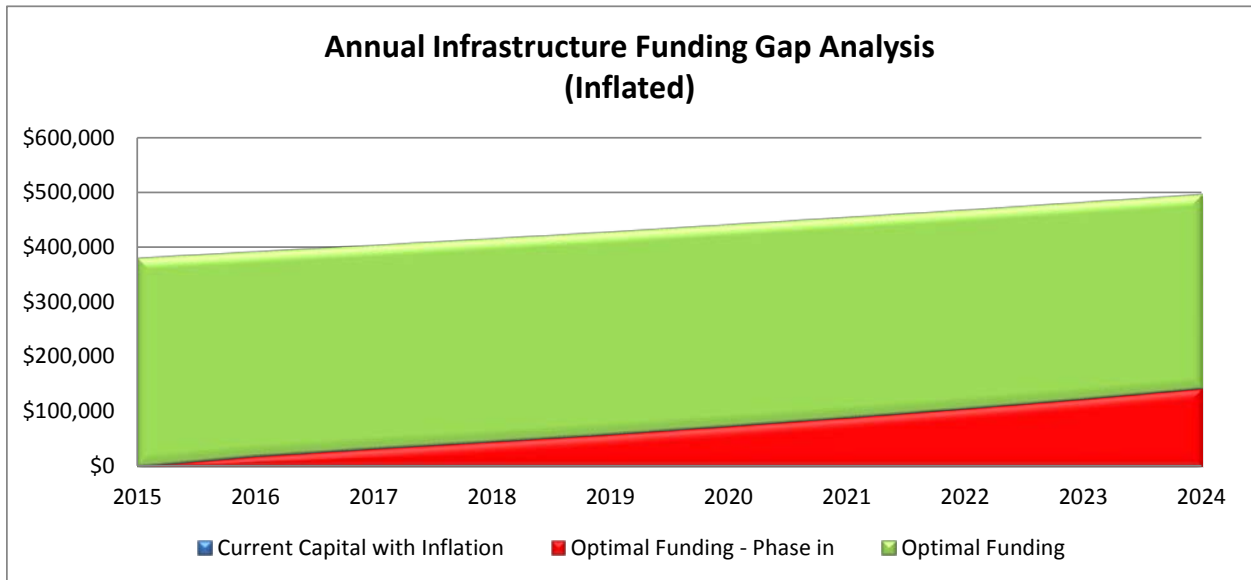
From a wastewater asset base perspective, the estimated annual sinking fund requirement, based on using the calculations discussed above, is approximately \$393,000 (in 2014 dollars). Based on the Municipality's 2014 budget, current annual capital investment is approximately \$0. This would provide a high level estimate of the Municipality's annual wastewater infrastructure funding deficit at \$393,000 (in 2014 dollars).

Under the recommended financing strategy, the Municipality would be making proactive attempts to mitigate these funding gaps over the forecast period. Please see Figures 5-3 to 5-5 below for a 10 year forecast of implementing this strategy for tax supported, water and wastewater assets respectively. The blue portion of the graph outlines the current capital investment amounts, increasing at inflation over the forecast period. The red portion indicates the result of implementing recommended increases in available funding sources (resulting in increases in capital investment annually). The green represents optimal annual capital investment amounts (calculated as described above). Please note "optimal" capital investment funding can come from a number of additional sources, such as grants, donations, debt and other contributions. Please refer to Appendices F (tax supported), G (water) and H (wastewater) for 20 year versions of these graphs, indicating that if recommended annual funding levels are achieved, the annual infrastructure funding gap would be eliminated during the forecast period.

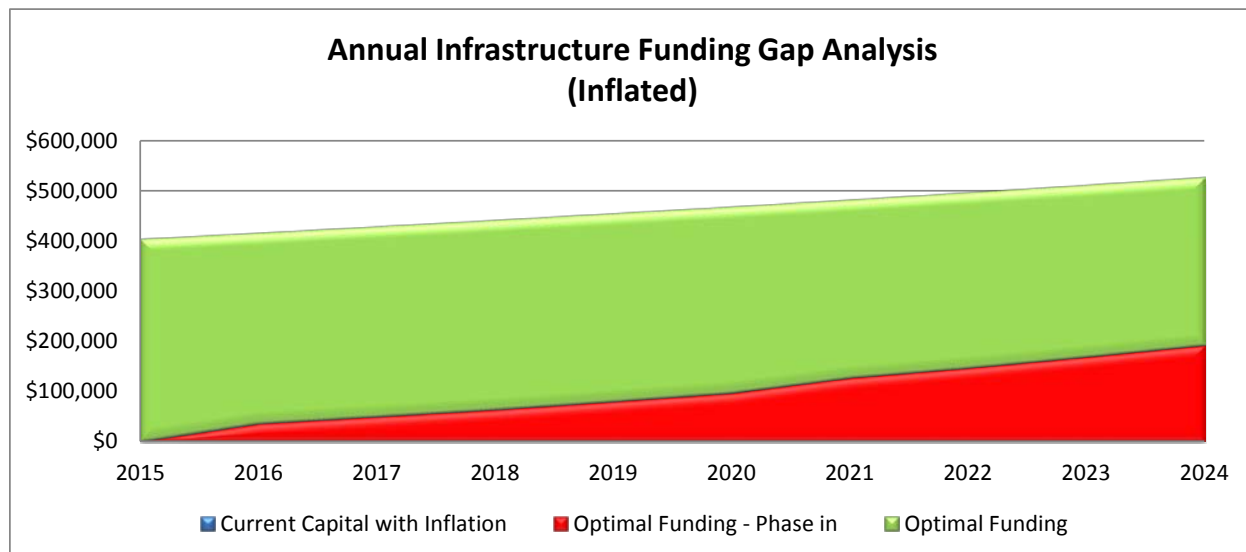
**Figure 5-3
Tax Supported Assets**



**Figure 5-4
Water Assets**



**Figure 5-5
Wastewater Assets**



To further mitigate the potential infrastructure funding deficit, the Municipality could consider:

- Decreasing expected levels of service to make available capital funding;
- Issuing debt for significant and/or unforeseen capital projects, in addition to the debt recommended within this report, while staying within the Municipality's debt capacity limits (this would have the impact of spreading out the capital repayment over a defined term);
- Actively seeking out and applying for grants;
- Consider approaching the development community for funding assistance with respect to growth/expansion related projects;
- Rate increases, where needed (i.e. taxation, user fees); or
- Implementing operating efficiencies (i.e. reduced operating costs to allow more capital investment).

6. RECOMMENDATIONS

6. RECOMMENDATIONS

The following recommendations have been provided for consideration:

- That the Municipality of Brooke-Alvinston Asset Management Plan be received and approved by Council;
- That consideration of this Asset Management Plan be made as part of the annual budgeting process to ensure sufficient capital funds are available to fund capital requirements; and
- That this Asset Management plan be updated as needed over time to reflect the current priorities of the Municipality.

The current level of funding for asset replacement and renewal at the Municipality will not sufficiently fund capital needs or close the infrastructure funding gap. As such, it is recommended that the following additional recommendations be considered during the annual budget process:

- Initiation of “level of service” (LOS) strategies discussed in Chapters 3, 4 and Appendix D;
- An increase in taxation as part of upcoming budget deliberations, dedicated to capital, to be transferred to capital reserve(s);
- Water and wastewater revenue increases consistent with the calculations provided in this report and should be verified through a rate study/financial plan project in the future;
- Allocating a portion (i.e. at least 50%) of any annual operating surplus to applicable capital reserve funds;
- Consider the capital priorities identified within this report when applying for future grants;
- When annual budget savings are realized from fully paying debt obligations, these budget savings are to be invested in future capital needs; and
- Increase the accuracy of the asset data (i.e. valuation, condition, useful life, remaining service life, etc...) in order to increase the accuracy of the overall asset management plan.

Substantial investment in capital needs will be required over the forecast period. Through the recommendations provided above, proactive steps would be taken to increase capital investment, as well as reduce the annual infrastructure funding gap for these assets. Enhanced level of service will assist in maintaining adequate asset conditions, mitigate asset risk, as well as potentially defer capital needs within the forecast period. In addition, the Municipality should pursue available capital grants, wherever possible, to further reduce the infrastructure funding gap.

Through the creation of this plan, Municipal staff have been provided with a model in which amendments and revisions can be made as needed. It is anticipated that the final plan adopted by Council will be monitored and updated frequently by Municipal staff as part of the budget process, with refinements and specific recommendations being provided with respect to the priority of each individual project.

APPENDIX A
DETAILED ASSET INVENTORY

APPENDIX B
ASSET MANAGEMENT ASSUMPTIONS

APPENDIX B: ASSET MANAGEMENT PLAN ASSUMPTIONS

The following assumptions were made during the creation of the Municipality's asset management plan.

1. STATE OF LOCAL INFRASTRUCTURE

- a) All external reports and documentation containing data relating to capital assets including condition data, replacement cost, age, etc..., where available, have been utilized.
- b) For any applicable, water, wastewater or stormwater main assets, the value in the plan may exclude the cost of road reinstatement. It is recommended, where required, that staff for budgeting purposes, determine where the road reinstatement costs are to be funded.
- c) Indexing: When inflating an asset value to current replacement value, the Non-Residential Building Construction Price Index (NRBCPI) was used for Roads, Sidewalks, Water and Wastewater related assets. The Consumer Price Index (CPI) was used for Machinery and Equipment, Vehicles and Land Improvements.
- d) In order to establish an initial condition assessment for some assets, calculations were performed to link condition to asset age. This was done in order to establish condition ratings for this report and it is recommended that the Municipality follow the "Condition Assessment Guideline" shown in Appendix C in the future.

2. ASSET MANAGEMENT STRATEGY

- a) Capital inflation rate will be assumed to be 3% annually.
- b) Operating budget inflation rate will be assumed to be 2% annually.
- c) Regarding operating expenses included in the Municipality's current budget, it is assumed that they will increase at an operating inflation rate annually, unless staff have provided alternative impacts.
- d) When any existing debenture payments are complete (if applicable), annual budget savings created through removing these payments have been dedicated to capital.

3. FINANCING STRATEGY

- a) Taxation assessment growth is assumed to be 3.0% annually.
- b) Development charges rates are assumed to increase at 2% annually.
- c) Gas tax revenue has been identified as a funding source for the purposes of this analysis (i.e. for asset replacement purposes), and has been assumed to continue throughout the forecast period.
- d) Interest rate earned on a Capital Replacement Reserve Fund will be 2% annually.
- e) In the case where debt financing is needed, the model assumed debt terms of 20 years at 5% annual interest. For growth related debt, debt payments are shown as funded directly from the development charge reserve funds.

APPENDIX C
DATA VERIFICATION AND CONDITION ASSESSMENT
GUIDELINE

APPENDIX C: DATA VERIFICATION AND CONDITION ASSESSMENT GUIDELINE

Municipality of Brooke-Alvinston Data Verification and Condition Assessment Guideline

Data Verification

1. The main source of asset data updating and editing will be through the Municipality's PSAB 3150 compliance procedures.
2. Asset additions, disposals, betterments, and write-offs will be recorded based on the Municipality's PSAB 3150 Compliance Policies.
3. Verification of the correct treatment of asset revisions will be completed through frequent annual reviews by the Municipality's Treasurer as well as an annual review by the Municipality's external auditor.
4. During years in which condition assessments are not being performed, asset replacement cost will be determined based on a combination of inflating previous current values or through the use of the current year's historical invoice data. Where indices are being used, the Non-Residential Building Construction Price Index (NRBCPI) shall be used for construction related assets (i.e. roads related, storm, water, and facilities) and the Consumer Price Index (CPI) shall be used for all other assets (i.e. machinery & equipment, vehicles and land improvements).

Condition Assessment

1. Condition assessments shall be performed as outlined in Table C-1 below. Condition assessments shall be performed by qualified individuals (or companies) and shall include a review of the following:
 - Current asset condition (consistent with the rating format used within this report, unless Municipal staff stipulate a new format);
 - i. Identify any unusual wear from asset use that may hinder asset performance and eventually reduce useful life.
 - ii. Assess asset performance and identify (if any) capital improvements that can be applied to extend the asset's useful life and/or bring the asset back to proper service levels.
 - Current asset replacement cost. This is to be based on replacing the asset under current legislation/requirements using the Municipality's specifications; and
 - Remaining service life, assuming current maintenance and usage levels.

The condition assessment process will continue to be guided by provincial legislation and environmental regulations. The provisions provided above are not intended to replace other required processes.

Table C-1
Condition Assessment Time Table

Asset Type	Frequency of Condition Assessment
Roads Related	Every 5 years, based on Minimum Maintenance Standards
Bridges and Culverts (greater than 3m)	Every 2 years, based on applicable legislation
Facilities	Every 5-10 years, with priority given to older buildings
Vehicles, Machinery and Equipment	Annually (typically by Municipal staff), part of maintenance program
Water, Wastewater, Storm Related	Every 5 years or more frequently based on applicable legislation and environmental regulations

APPENDIX D
LEVEL OF SERVICE IMPACT ANALYSIS



APPENDIX E
SCENARIO ANALYSIS – CAPITAL FORECASTS

APPENDIX F
TAX SUPPORTED ASSET MANAGEMENT STRATEGY &
FINANCING STRATEGY

APPENDIX G
WATER ASSET MANAGEMENT STRATEGY & FINANCING
STRATEGY

APPENDIX H
WASTEWATER ASSET MANAGEMENT STRATEGY &
FINANCING STRATEGY

