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***Water and Wastewater Rate Study and  
Long Range Financial Plan  
Forecast***

***Introduction***

## Introduction

### Study Mandate

BMA Management Consulting Inc. (BMA) was retained by the Town of Gananoque to develop a long range financial plan and to undertake a review of the Town's water/wastewater rate structure. The project included two key components:

#### Long-Range Financial Plan (LRFP)

The objectives of the long range financial plan were to ensure that:

- There are sufficient reserves available for funding shortfalls, financial emergencies and capital requirements;
- There is sufficient financial flexibility within the plan;
- The Town is covering the full cost of its operation and not postponing costs to a future period;
- The rates remain affordable; and
- The Town is operating in accordance with Ontario Regulation 453/07 Financial Plans.

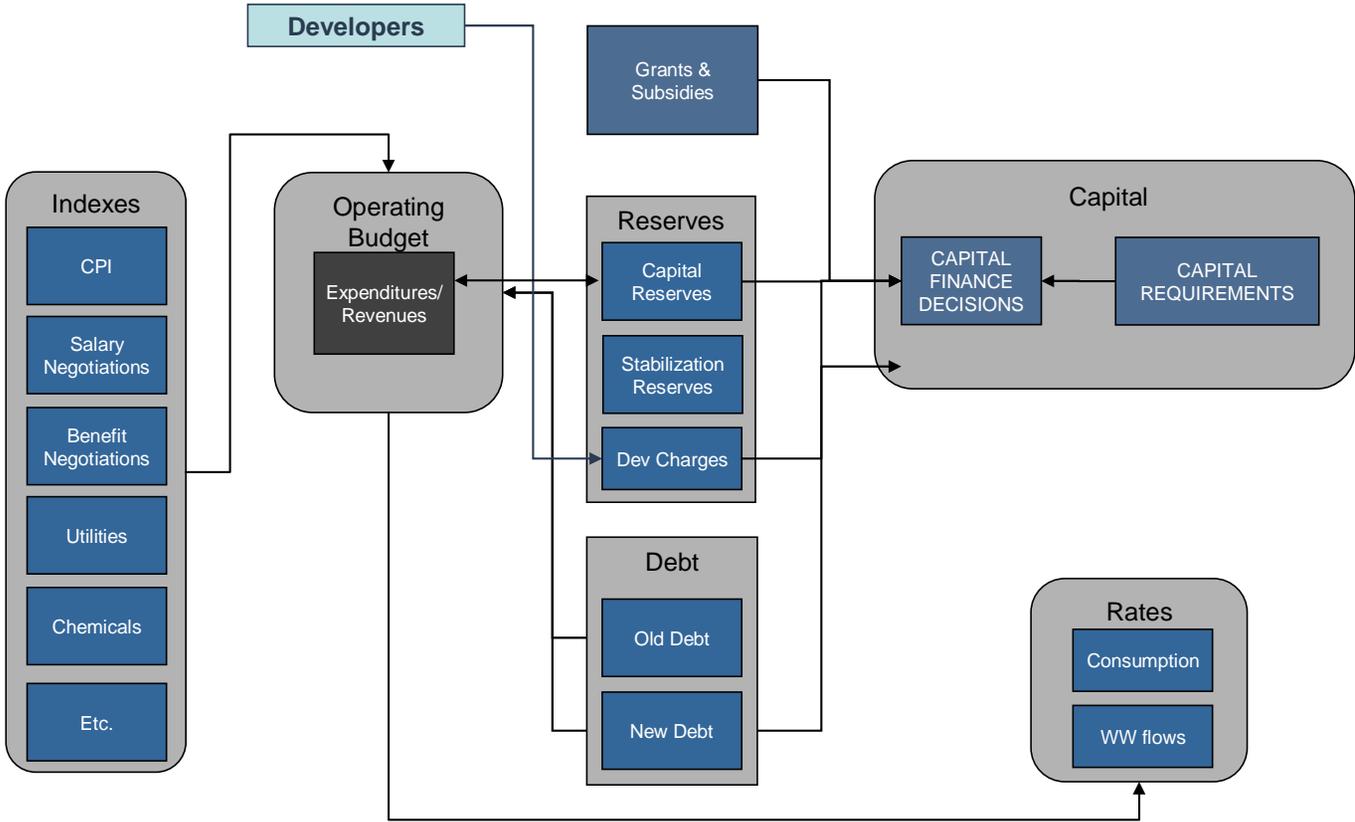
The focus of the LRFP was to identify the full cost to plan, operate and maintain the water and wastewater systems at current levels of service over a 10-year time frame. This included forecasting operating costs, identifying key budget drivers, making recommendations with respect to reserve and debt policies and defining capital budget requirements. The LRFP also included the preparation of the Financial Statements as set out in Ontario Regulation 453/07 Financial Plans.

#### Rate Study

Despite industry trends in rate schedules, as stated by the Canadian Water and Wastewater Association (CWWA), there is, and always will be, a lot of variation in water and wastewater rate setting practices given that there is no single rate setting approach or rate structure. The Rate Study considered various rate setting options based on the goals and objectives of the Town. The approach was to consider the pros and cons of each potential rate option in relation to the goals and objectives. This section also included an impact analysis to help understand the impact of various rate decisions on different customers (e.g. residential low consumption, high volume residential, mid-large commercial and industrial properties, etc.)

**Model Development**

The LRFPP is developed based on an analysis of all factors impacting the capital and operating budget. As shown below, due to the inter-relationship between all components of the plan, changes in any of the assumptions will potentially have an impact throughout the LRFPP.



**Proposed Goals and Objectives**

The following table provides a description of the proposed goals and objectives that were used to guide the Rate Study and Long Range Financial Plan.

<b>Goal and Objective</b>	<b>Description</b>
<b>Sustainability</b>	Life-cycle planning will be employed to ensure that sustainable levels of revenue are available to provide sufficient resources for future rehabilitation and replacement needs.
<b>Revenue Stability</b>	The rate structure and financial plan will provide for a steady and predictable stream of revenues such that the Town is capable of meeting its current financial requirements. The rate structure and the financial plan will consider revenue stability and take the appropriate actions to maintain/improve revenue stability.
<b>Fairness and Equity</b>	The rate structure and financial plan will ensure that customers are contributing equitably towards revenue requirements. Fair sharing in the distribution of resources between current and future ratepayers will be employed.
<b>Affordability</b>	The rate structure and financial plan will incorporate policies that support affordable water and wastewater services for all customers while, at the same time, ensuring that the full cost of service is being recovered.
<b>Conservation</b>	The rate structure will encourage the efficient and justifiable uses of water as well as assist in managing system demand. Programs that promote efficient water usage may reduce operating costs and capital investment needs over time. The less water consumed and hence less sewage generated will result in deferral of plant expansions, thereby avoiding capital expenditures for all customers.
<b>Economic Development</b>	The rate structure will align with other economic development initiatives and will consider the competitive positioning of commercial and industrial properties in Gananoque and the Town's ability to attract new business to the community.
<b>Practical</b>	The rate structure will support principles of fairness and equity but, at the same time, be simple to understand, rational and easy to update and administer.

***Water and Wastewater Long Range Financial Plan***



## Introduction—Long Range Financial Plan

### Review of Regulatory and Legislative Requirements

On August 14, 2007, the Ministry of the Environment (MOE) filed Ontario Regulation 453/07 (O. Reg. 453/07), which is the Financial Plans Regulation under the Safe Drinking Water Act (SDWA). This new regulation requires holders of a Drinking Water Licence under the SDWA to develop and implement a comprehensive Financial Plan that addresses long-term capital and operating costs for the municipal drinking water system over a set timeframe.

To assist in the development of these financial plans, the MOE prepared a guideline entitled “Toward Financially Sustainable Drinking-Water and Wastewater Systems”. The Town’s Financial Plan incorporates the fundamental principles of that document.

Following the May 2000 contaminated water tragedy in Walkerton, Justice Dennis O’Connor released his Report of the Walkerton Inquiry, which set out strategies for preventing such a tragedy from reoccurring. Among the many recommendations made in this Report, Justice O’Connor recommended that the provincial government require all owners of municipal water systems to obtain a licence for the operation of their drinking water systems. Justice O’Connor further recommended that the municipal owners be required to submit a financial plan as a condition of obtaining this licence.

Justice O’Connor explained that proper financial planning is a necessary component of providing safe drinking-water because it helps to ensure that drinking-water systems become self-financing and sustainable, and thus helps to ensure that systems have adequate funds to finance both ongoing operational costs and infrastructure repairs and upgrades as required. According to Justice O’Connor, sustainable financial planning entails two components: first, a “full-cost accounting” of the water system (including the long-term infrastructure needs) to determine the true cost of providing safe water; and second, a “full-cost recovery” plan to determine how the municipality will raise the funds necessary to cover the full costs.

*Ontario Regulation 453/07* requires all owners of municipal residential drinking-water systems to prepare and submit Financial Plans that detail the system’s financial information for a period of at least six years into the future. It also sets out the minimum required content of financial plans, whilst allowing municipalities to vary their approach to preparing their respective plans to suit local needs/conditions. The Municipal Act, Part VII, Section 293 requires municipalities to establish reserves for dealing with long-term liabilities. This applies directly to the pipe networks, other assets and the future liabilities associated with their age and condition. The Municipal Act also permits the Town to establish fees for cost recovery and requires public input prior to any fee adjustments.

Ontario Reg. 453/07 provides the following parameters with regards to s.30 (1) part b of the Safe Drinking Water Act for new water systems:

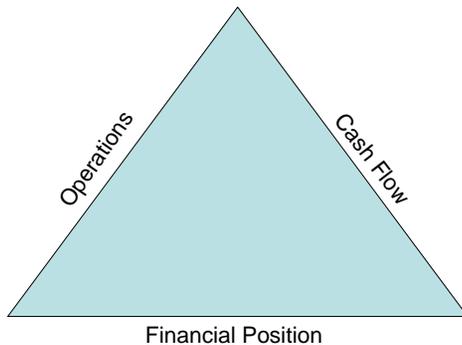
- Financial plan must be approved by Council resolution (or governing body) indicating that the drinking water system is financially viable;
- Financial plan must include a statement that the financial impacts have been considered and apply for a minimum six year period (commencing when the system first serves the public);
- Financial plan must include detail regarding proposed or projected financial operations itemized by total revenues, total expenses, annual surplus/deficit and accumulated surplus/deficit (i.e. the components of a “Statement of Operations” as per PSAB) for each year in which the financial plans apply;
- Financial plans are to be made available to the public upon request and at no charge;
- If a website is maintained, financial plans are to be made available to the public through publication on the Internet at no charge; and
- Notice of the availability of the financial plans is to be given to the public.

### ***Long Range Financial Plan***

The Town of Gananoque, along with other Ontario municipalities that are responsible for the provision of drinking water, are required to meet the requirements set out in the Financial Plans Regulations O.Reg.453/07. While the regulations are directed at **water systems**, the approach as encouraged by the Province and being undertaken by the Town was to undertake a similar process for the Town’s **wastewater systems**.

The Town is taking a proactive approach and has recognized the need for a long-term financial planning process that assesses the financial implications of current and proposed policies as well as Council approved decisions in its water and wastewater operations. The goal is to provide the Town with a realistic and informed view of operating and capital expenditures needed over time to maintain the integrity and health of its physical infrastructure and to accommodate growth and new environmental standards. As such, a Long Range Financial Plan (LRFP) creates a more purposeful approach to long-term financial management and helps align short term actions with long term financial strategies.

The components of the financial plans indicated by the regulation are consistent with the requirements for financial statement presentation as set out in section PS1200 of the Canadian Institute of Chartered Accountants (CICA) Public Sector Accounting Handbook. The categories can be found in three statements:



The Statement of Operations summarizes the revenues and operating expenses associated with the water and wastewater operations. These are typically outlays that need to be made to keep operations running on a day to day basis. The Statement of Financial Position reports on whether enough revenue was generated in a period to cover the expenses in the period and whether sufficient resources have been generated to support current and future activities. The Statement of Cash Flow reports on how activities were financed for a given period which provides a measure of the changes in cash for that period.

The categories of financial information have been developed;

- to ensure that they provide a sound picture of the financial position of a drinking water system;
- to ensure that they are aligned with municipal financial statements prepared on a full accrual accounting basis, beginning on January 1, 2009; and
- to ensure consistent financial planning for municipal water services.

This document puts the Town's water and wastewater financial condition in perspective, discusses the current challenges and risks and provides a sustainable financial forecast. The plan also provides a framework for guiding the annual budget and the financial planning over a longer horizon. The LRFP helps to understand the implications that today's decisions have on future budgets. The LRFP is a living document that needs to be updated as assumptions and economic conditions change.

### ***Principles of Financial Sustainability***

The Ministry of the Environment released a guideline (“Towards Financially Sustainable Drinking-Water and Wastewater Systems”) that provides possible approaches to achieving sustainability. The Province’s Principles of Financially Sustainable Water and Wastewater Services are provided below:

- **Principle #1:** Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system(s) to which they relate.
- **Principle #2:** An integrated approach to planning among water, wastewater, and storm water systems is desirable given the inherent relationship among these services.
- **Principle #3:** Revenues collected for the provision of water and wastewater services should ultimately be used to meet the needs of those services.
- **Principle #4:** Life-cycle planning with mid-course corrections is preferable to planning over the short-term, or not planning at all.
- **Principle #5:** An asset management plan is a key input to the development of a financial plan.
- **Principle #6:** A sustainable level of revenue allows for reliable service that meets or exceeds environmental protection standards, while providing sufficient resources for future rehabilitation and replacement needs.
- **Principle #7:** Ensuring users pay for the services they are provided leads to equitable outcomes and can improve conservation. In general, metering and the use of rates can help ensure users pay for services received.
- **Principle #8:** Financial Plans are “living” documents that require continuous improvement. Comparing the accuracy of financial projections with actual results can lead to improved planning in the future.
- **Principle #9:** Financial plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal council.

The LRFP will be instrumental in the Town’s ability to meet the Provincial reporting requirements included in O.Reg. 453/07 for water and wastewater operations and has been developed in recognition of the above noted principles.

***Importance of a Long Range Financial Plan***

A LRFP is a framework to guide the Town in planning and decision-making to help ensure that the Town:

- Has a plan to protect and maintain its assets;
- Has a reasonable degree of stability and predictability in the rate burden;
- Has a fair sharing in the distribution of resources between current and future ratepayers;
- Has sustainable cash flows in the long term;
- Maximizes its financial flexibility;
- Minimizes financial vulnerability during economic downturns; and
- Maintains programs and services at their desired levels.

***General Approach to Preparing the Town's LRFP***

The LRFP identifies the key financial strategies that will influence the building of a sustainable long-term financial future and takes into account:

- Expected expenses and capital outlays for each year of the plan;
- Expected revenues for each year and their source;
- Assumptions that have been used in the development of the LRFP; and
- Sensitivity analysis on key assumptions most likely to affect long-range financial planning and sustainability to ensure that the Town is aware of the key levers that will impact the LRFP and that should be monitored over time

## General Challenges and Proposed Strategies

The Town of Gananoque has taken a proactive approach, recognizing the need to assess the long-range financial implications of current policies in light of the challenges in the water and wastewater operations. The following summarizes the key challenges to long-term financial sustainability:

- **Financial Position**—The Town's Water and Wastewater Reserves are low in relation to the assets they support. Wastewater Reserves are currently in a negative position. Strategies have been included in this section of the report to address this problem.
- **Asset Renewal/Replacement**—The Town has \$19.6 million in water assets (based on historical costs) and \$10.0 million in wastewater assets. On a replacement cost basis, this is estimated to be \$60.8 million in water assets and \$24.4 million in wastewater assets. There are currently insufficient transfers to the capital reserves to achieve full lifecycle replacement of these assets.
- **Unaccounted for Water**—Unaccounted for water is the difference between water supplied and water metered and billed to the customer. The Town is experiencing higher than industry norms in terms of water losses. These losses increase the cost to customers. Recommendations have been included to reduce unaccounted for water losses.
- **Meter Replacement Program**—Meters are the Town's cash registers. Malfunctioning meters can under register so it is important to have a meter replacement program which coincides with the useful life of the meter. The Town is in the process of replacing water meters but based on a review of the billing data and a review of the percentage of unaccounted for water, there appears to be a number of meters that are not registering properly.
- **Inflow and Infiltration**—The Town is currently in the process of addressing the inflow and infiltration through a capital program which is funded in part from a Provincial grant. Once completed, this will help reduce the wastewater cost of service.
- **Challenges with Respect to Revenue Stability**—With a relatively low amount of costs recovered from the fixed fee and with the majority of costs to operate the water and wastewater systems, there are risks to revenue stability. Recommendations have been included in the rate section of the report to improve revenue stability by increasing the allocation of costs to be recovered from the fixed fees.
- **Annual Variations in Water Consumption**—The annual volume consumed has varied and in fact, has been trending downward. A recommendation to maintain reserves at a minimum of 10% of annual revenues is proposed to address deficits that may result from greater than anticipated declines in consumption.

The next section provides additional detail on each of the noted challenges and provides recommendations to support the sustainability of the Town's water/wastewater services.

### ***Financial Position—Analysis of Key Financial Indicators***

An overview of a number of key financial indicators has been prepared to provide an overview of the Town's financial position with respect to the water and wastewater operations. This includes a review of the reserve position in relation to the assets that they support; debt in relation to the size of the budget and operating surplus/deficit to identify if the Town is setting the rates at a sufficient level to support the future replacement of assets.

#### Operating Surplus/Deficit

Operating surplus (deficit) arises when operating revenue exceeds (is less than) operating expenses including amortization. When an operating surplus is achieved, the amount is available to fund the replacement/refurbishment of capital assets. Long term financial sustainability is dependent upon ensuring that on average, over time, expenses are less than revenues. In essence, this requires current ratepayers to fully meet the cost of water and wastewater services. The presence of an accounting surplus does not necessarily represent financial sustainability.

While a surplus is clearly better than a deficit, an accounting surplus may not be large enough for future asset replacement as the accounting amortization is based on historical costs not future replacement cost. Taking into account future replacement costs in determining the appropriate level of surplus is a critical step toward financial sustainability. Some level of surplus is both appropriate and required. Identifying the appropriate level of surplus must be done as a long term forward looking planning process that takes into account future capital investment needs.

The operating surplus ratio is the operating surplus (deficit) expressed as a percentage of user rates. A negative ratio indicates the percentage increase in total rates that would be required to achieve a break-even result.

Municipalities consistently achieving operating surpluses, having regard to asset management and meeting service level needs, are a good indication of financial sustainability. As shown on the next page, Gananoque experienced an operating deficit in 2009 and 2010 in water and an operating surplus in wastewater operations during the same period. The water deficit is driven by the fact that the Town is not setting aside funds for the Water Capital Reserve commensurate to the historical amortization expense. Municipalities operating with a deficit over several years should ensure that the long range financial plan provides clear direction to turn this around. This has been addressed in the Financial Plan.

Conversely, the Town is setting aside a larger transfer to the Wastewater Capital Reserve than the historical annual amortization, very close to the amortization based on replacement costs. Additional funds are required for the lagoon expansion.

	Gananoque 2009	Gananoque 2010	80+ Ontario Municipalities - Average	80+ Ontario Municipalities - Median
Water Operating Surplus (Deficit) Ratio	-34.8%	-32.0%	4.4%	8.4%
WW Operating Surplus (Deficit) Ratio	28.4%	31.1%	1.5%	4.4%

Asset Management Strategies

The following provides the proposed asset management principles:

- Asset management is a systematic process of maintaining, upgrading, and operating physical assets cost effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision making for the replacement/refurbishment of tangible capital assets in a sustainable manner. Thus, asset management provides a framework for handling both short and long-range planning.
- Often overlooked in the budgeting process are the long range costs of owning and maintaining the asset (the “full-life” cycle costs), therefore, policies and plans will assist in managing capital asset acquisition, maintenance, replacement and retirement.

- PSAB 3150 required the Town to inventory and classify all tangible capital assets, implement new reporting requirements and develop financial/operational policies and procedures for all major categories of tangible capital assets. The Government Finance Officers Association recommends that municipalities adopt a policy to assess the condition of all major assets.
- Accumulated deferred maintenance has a cost. Major physical infrastructure failure can lead to sizeable downtime, increased costs to local business, and impact the Town's ability to serve residents.
- Deferred maintenance also carries associated health and public safety risks, higher utility consumption and other operating costs, and a higher number of unforeseen repairs and replacement work.

The following table reflects the annual amortization of water and wastewater assets based on historical cost information for the Town as of December 31, 2010. The annual amortization provides an estimate of the minimum amount of money that should be set aside annually for the replacement/refurbishment of the Town’s assets. This is a conservative estimate as it is based on historical costs and, therefore, based on replacement costs, the annual amortization understates the actual requirements.

Water Annual Amortization Expense	\$ 532,921
WW Annual Amortization Expense	\$ 265,637

This suggests that the Town should be including in its Operating Budget an annual transfer to the reserves of a minimum of the above noted figures in order to have sufficient funds available upon replacement of existing assets. This is significantly lower than the existing transfers which vary from year to year based on surplus funds and the capital budget. In 2010, the amount transferred to the reserves for water was \$193,800 and \$475,700 for wastewater. Strategies are being recommended to gradually move toward planned reserve contributions in accordance with asset management practices.

Asset Consumption Ratio

The asset consumption ratio shows the written down value of tangible capital assets relative to their historical costs. This ratio seeks to highlight the age of the assets and the potential asset replacement needs.

A higher ratio may indicate significant replacement needs. However, if assets are renewed and replaced in accordance with an asset management plan a high ratio should not be a cause for concern. As shown in the table, the Town’s asset consumption ratio is significantly higher than the survey average and median of 80+ Ontario municipalities. This reflects a relatively older asset base in comparison to the survey. As such, there is a greater need to ensure that sufficient funds are set aside for the replacement of future water and wastewater assets.

	Gananoque 2010	80+ Ontario Municipalities - Average	80+ Ontario Municipalities - Median
Water Asset Consumption Ratio	48.5%	29.2%	28.6%
WW Asset Consumption Ratio	46.6%	32.1%	30.3%

Reserves/Reserve Funds

A Reserve and Reserve Fund is a financial provision or amount that is designated for a future purpose that extends beyond the current fiscal year. While its balance may vary over the course of a year, the Reserve/Reserve Fund is carried forward from one fiscal year to the next to facilitate multi-year financial planning. Reserves/Reserve Funds can be established to meet specific liabilities such as the replacement/acquisition of capital assets or to protect against known risks or unforeseen circumstances that may create financial difficulties. They are a critical component of a municipality’s long-term financing plan. The purpose for maintaining reserves/reserve funds includes:

- To provide rate stabilization in the face of variable and uncontrollable factors
- To provide financing for one-time or short term requirements without permanently impacting the water/ww rates
- To make provisions for replacements/renewals/acquisitions of assets/infrastructure that are currently being consumed

- To avoid spikes in funding requirements for large capital projects by reducing their reliance on long-term debt borrowings
- To smooth the tax impact of major capital projects on the operating budget
- To provide a source of internal financing
- To ensure adequate and sustainable cash flows
- To provide **financial sustainability**

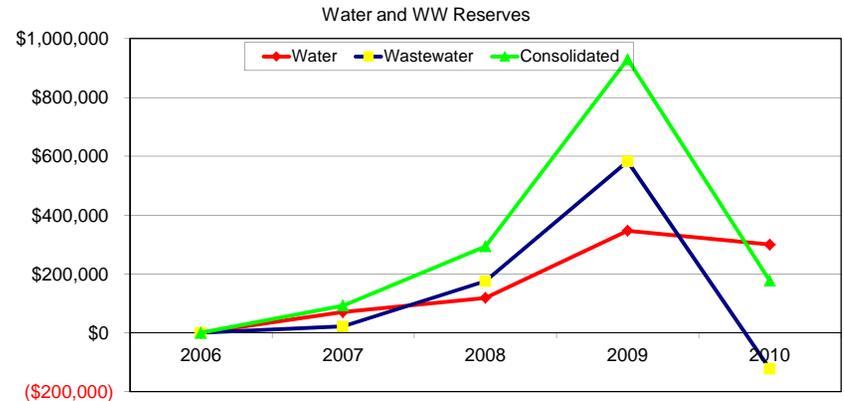
The Town of Gananoque has one reserve for Water and one reserve for Wastewater. The water and wastewater capital reserves are used for rate stabilization and capital expenditures. The Town’s consolidated Water and Wastewater Capital Reserves/ Reserve Funds as a percentage of Accumulated Amortization are as follows:

	Gananoque 2010	80+ Ontario Municipalities - Average	80+ Ontario Municipalities - Median
Water Reserves as a % of Accumulated Amortization	3.2%	15.4%	9.9%
WW Reserves as a % of Accumulated Amortization	-2.8%	14.8%	5.0%

The Town’s Water Reserves as a percentage of Accumulated Amortization is 3.2% compared with the survey median of 9.9% and the Wastewater Reserve which is in a negative balance has a percentage of -2.8% compared with the survey median of 5.0%.

Optimally, the Town’s reserves as a percentage of closing amortization should be at, or greater than, the asset consumption ratio. In the case of the Town, this is not the case. This further reinforces the need to review reserve practices.

The following provides the historical reserve year end positions from 2006-2010 (less commitments).



As shown above, the Water and Wastewater Capital Reserves declined from 2009 to 2010 and are relatively low in relation to the assets that they support. The LRFP addresses this issue by gradually increasing the transfer to the reserves.

Debt

A debt management strategy improves the quality of decisions, identifies policy goals and demonstrates a commitment to long range financial planning. Debt can be an effective tool to finance capital improvements, new non-growth related projects, new initiatives and to smooth out short-term expenditures; however, its misuse can cause serious financial problems.

When local governments issue debentures, they enter into a long-term commitment that requires them to make timely principal and interest payments over the life of the debentures. Hence, they need to ensure that:

- future debt service payments to bondholders can be made in full and on time, without jeopardizing the provision of essential services;
- an acceptable degree of flexibility is available, including sufficient revenues, to meet unanticipated expenditures;
- outstanding debt obligations will not threaten long-term financial stability of the municipality; and
- the amount of outstanding debt will not place undue burden on residents and businesses.

The following table reflects the debt service ratio (the interest payment as a percentage of revenues) in 2010 in Gananoque in comparison to other municipalities surveyed.

	Gananoque 2010	80+ Ontario Municipalities - Average	80+ Ontario Municipalities - Median
Water Debt Service Ratio	1.9%	2.8%	0.2%
WW Debt Service Ratio	1.5%	2.8%	0.2%

**Summary of Financial Indicators**

The Town's debt is low and the water reserves are not keeping pace with the depreciation of the Township's water assets. The Town's current rate setting practice which includes contributions to reserves for the replacement of assets is generating a deficit in water because the amount being set aside for the future replacement of water assets is lower than the annual amortization expense based on historical costs. The long range plan addresses this situation and moves the water operations into a surplus by 2012. The wastewater operations are currently in a surplus position which will help support the replacement of assets and the expansion of the lagoon.

The next section of the report provides the proposed financial policies to support financial sustainability in the water and wastewater operations.

**Lifecycle Costing**

The full cost of managing the Town’s water and wastewater systems has been taken into consideration for calculating the revenue requirements for the supply of water and the treatment of wastewater over the long-term. The approach undertaken in the analysis of lifecycle costing was to use the PSAB data to develop a replacement schedule based on the useful life and estimated replacement cost.

Water and Wastewater Pipelines

The Town’s assets include approximately 34 kms of water pipelines and 31.7 kms of wastewater pipelines. The table summarizes the inventory of water/wastewater pipelines by meter diameter and also provides a summary of the estimated replacement cost for these assets.

As reflected in the table, the replacement cost of the water pipelines is estimated to be \$49.5 million and \$21.7 million for the wastewater pipeline system.

Meter Diameter	Waterline Cost per metre	Sewerline Cost per metre	Waterline length in meters	Sewerline length in meters	Water Estimated Replacement Cost	Wastewater Estimated Replacement Cost
100	\$ 1,325	\$ 525	2,007	-	\$ 2,659,275	\$ -
125	\$ 1,325	\$ 525	200		\$ 265,000	\$ -
150	\$ 1,375	\$ 575	14,120	75	\$ 19,415,000	\$ 43,125
200	\$ 1,400	\$ 600	4,579	14,611	\$ 6,410,600	\$ 8,766,444
225	\$ 1,400	\$ 600		5,736	\$ -	\$ 3,441,660
250	\$ 1,450	\$ 650	3,520	2,916	\$ 5,104,000	\$ 1,895,296
300	\$ 1,550	\$ 775	4,696	3,693	\$ 7,278,800	\$ 2,862,052
350	\$ 1,650	\$ 850	3,519	1,357	\$ 5,806,350	\$ 1,153,535
375	\$ 1,650	\$ 850		436	\$ -	\$ 370,600
450	\$ 1,750	\$ 1,000	1,000	1,147	\$ 1,750,000	\$ 1,147,000
525	\$ 1,750	\$ 1,000		182	\$ -	\$ 182,000
600	\$ 1,850	\$ 1,200	453	1,535	\$ 838,050	\$ 1,841,736
<b>Total</b>			<b>34,094</b>	<b>31,688</b>	<b>\$ 49,527,075</b>	<b>\$21,703,448</b>

The age, material and condition of the City's pipelines varies. The following table provides a summary of the water and wastewater pipelines by age.

Built Date	metres of Water Pipe	Water % of Total	metres of WW Pipe	Water % of Total
> 40 years	14,440	42%	14,811	47%
30-40 years	7369	22%	4,822	15%
20-30 years	4112	12%	3,299	10%
10-20 years	3939	12%	1,305	4%
0-10 years	4234	12%	7,451	24%
<b>Total</b>	<b>34,094</b>	<b>100%</b>	<b>31,688</b>	<b>100%</b>

As shown above, approximately 42% of the water pipes and 47% of wastewater are 40 years or older and have been fully amortized in accordance with the Town's PSAB policy which is 40 years. This may be a contributing factor to the high unaccounted for volume of water and inflow and infiltration for wastewater which will be discussed later in this report. Further, the pipe material is also a good indicator of condition. As shown in the table below, 36% of the water pipes are cast iron and 56% are ductile iron. The Town has been undertaking replacement work over the years and should continue to do so.

	Water	% of Total
Cast Iron	12,439	36%
Ductile Iron	18,934	56%
High Density Polyethylene	2,721	8%
<b>Total</b>	<b>34,094</b>	<b>100%</b>

Plants, Pumping Stations and Other Assets

In addition to the pipelines, the Town has a water treatment plant, pumping stations, equipment and vehicles which are included in the water and wastewater systems. As shown below, the replacement value for the water treatment plan is estimated at \$10.9 million and the sewer facilities \$1.1 million. Vehicles are shared 50/50 between water and wastewater operations.

Water	Replacement Value 2011
Equipment Water	\$ 313,093
Buildings Water	\$ 10,896,538
Vehicle Combined	\$ 34,207
<b>Total</b>	<b>\$ 11,243,838</b>
<b>Wastewater</b>	
	<b>Replacement Value 2011</b>
Equipment WW	\$ 1,528,712
Buildings WW	\$ 1,120,190
Vehicle Combined	\$ 34,207
<b>Total</b>	<b>\$ 2,683,109</b>

Annual Amortization Summary

The annual amortization provides an indication of the amount of monies that should be annually set aside for the future replacement/refurbishment of the existing assets. As illustrated below, the annual amortization using historical costs is approximately half of the amortization using replacement costs.

<b>Water</b>	<b>Annual Amortization Based on Historical Costs</b>	<b>Annual Amortization Based on Replacement Costs</b>
Equipment Water	\$ 31,928	\$ 38,551
Buildings Water	\$ 189,664	\$ 272,413
Vehicle Combined	\$ 3,020	\$ 5,067
Waterline	\$ 308,309	\$ 707,530
<b>Total</b>	<b>\$ 532,921</b>	<b>\$ 1,023,560</b>
<b>Wastewater</b>	<b>Annual Amortization Based on Historical Costs</b>	<b>Annual Amortization Based on Replacement Costs</b>
Equipment WW	\$ 87,576	\$ 91,002
Buildings WW	\$ 18,007	\$ 27,937
Vehicle Combined	\$ 3,020	\$ 5,067
Sewerline (Waste Water)	\$ 157,035	\$ 310,049
<b>Total</b>	<b>\$ 265,637</b>	<b>\$ 434,056</b>

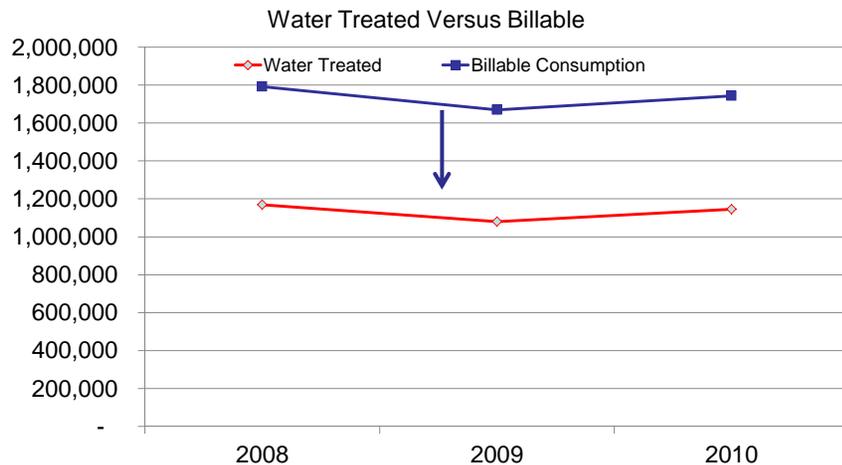
Based on replacement costs, the annual amount that should be set aside for water and wastewater assets are \$1.02 million and \$0.434 million for wastewater. The annual amortization based on replacement costs more accurately reflects the amount required on an annual basis to replace the existing assets. However, for accounting purposes, PSAB requires municipalities to record the amortization based on historical costs.

Based on the 2011 Operating Budget, the Town is currently transferring \$0.212 million to the Water Capital Reserve and \$0.558 million to the Wastewater Capital Reserve. There is an under contribution to the Water program and an over contribution to the Wastewater programs. However, the Town is planning the development of a lagoon treatment expansion program in 2018 and 2019 which will require additional funds from the Wastewater Capital Reserve to support this capital initiative.

The LRFP gradually increases contributions to the Water Capital Reserve to help address the deficit. The Wastewater Capital Reserve transfers are appropriate based on the proposed lagoon treatment expansion and replacement costs.

**Unaccounted for Water and Meter Replacement**

The Town measures and records the total water treated and the total consumption billed. The difference between the water treated and the water billed is the unaccounted for water. There will always be some degree of unaccounted for water due to underground leakage, unauthorized use, inaccurate meters, firefighting and flushing. Municipalities generally attempt to target 10%-15% or less for unaccounted for water. As shown in the following graph, the water losses in the Town of Gananoque are high compared with industry standards. For example, unaccounted for water losses, from 2008-2010 averaged 48%, well above industry norms. This impacts the cost of service and ultimately the rates. The following graph reflects the water treated compared with the billable consumptions.



Water losses can be caused by two primary issues:

- Losses arising from leaks in transmission and distribution mains and leaks from in service connections. This could be a signal of a deterioration in the water main condition.
- Losses due to meter inaccuracy

Losses result in additional costs for pumping and treating water that is not ultimately delivered to the customer.

Leak Management

In order to reduce water losses due to leakage, a municipality should maintain a proactive water loss program. These losses can be reduced by efficient leakage management, improved response time to repair leaks and improved system maintenance, replacement and rehabilitation. A structured approach to leakage management has proven to be successful in limiting losses in other municipalities. Potential elements of an active water loss program include:

- Conducting regular inspections and soundings of all water main fittings and connections;
- Using a water loss modeling program;
- Metering individual pressure zones; and
- Reducing repair time on leaks since long-running small to medium size leaks can be the greatest volume of annual leakage.

Additional reserve fund transfers are being recommended to help the Town improve its water leak management program.

Meter Replacement

Water meters act as the municipality’s cash register. Studies have shown that the accuracy of meters decline over time. Unaccounted for water is a significant cost to all customers and therefore a program is needed to maintain/replace water meters on a timely basis. A municipality can reduce water loss through proper maintenance and replacement of aging meters.

A plan for proactive maintenance and meter replacement is essential to ensure that the meters accurately reflect the actual volume of water consumed. Without a comprehensive replacement program the Town risks the loss of revenues since water meters tend to slow down as they age and measure less consumption than was actually used. Accurate water meters are essential for customer equity and water system management.

It is recommended that water meters be tested, maintained and replaced regularly to accurately measure volumetric water consumption. A program is required for small, mid and large meters.

American Waterworks Association recommends that meters in service should be tested, on average:

- 5/8” to 1” meter                      every 10 years
- 1.5” to 4”                                every 5 years

Mid to large meters, although not large in numbers, are significant in that they record a larger volume and are susceptible to errors that can be significant in terms of revenue and water usage. The Financial Plan includes an increase in the transfer to the Water Capital Reserve to develop a program for meter replacement.

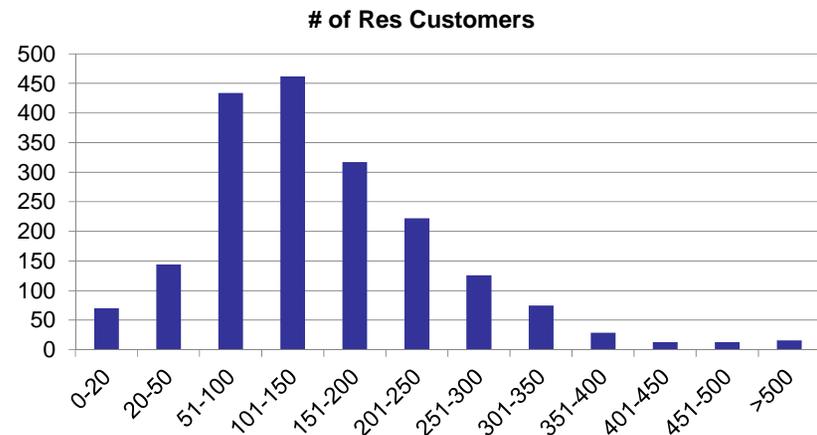
The following tables reflect the number of meters by meter size and the associated consumption.

	# of Customer	3 Yr Avg Consumption	% of Total Customers	% of Total Consumption
5/8"	2,061	341,960	93.0%	57.8%
3/4"	56	25,967	2.5%	4.4%
1"	36	44,116	1.6%	7.5%
1 1/2"	35	69,136	1.6%	11.7%
2"	20	80,523	0.9%	13.6%
3"	6	9,037	0.3%	1.5%
4"	2	17,735	0.1%	3.0%
Rural	1	2,846	0.0%	0.5%
<b>Total</b>				
	2,217	591,321	100.0%	100.0%

While 5/8" meters constitute 93% of the total number of meters, these meters only account for 58% of the total consumption. There are 55 mid size meters (1 1/2" and 2") that consume almost 25% of the water consumed. It is recommended that a water meter maintenance and replacement program to help minimize water losses be initiated. The age of all meters was not available through the Town's database, however, a review of the majority of residential meters indicates that 42% of the 5/8" meters (831 meters) are 14 years and another 50% are 11 years old. This will require funds to replace meters on a timely basis.

5/8" Meter Age	# of Meters	% of Total
1 years old	0	0%
2 years old	0	0%
3 years old	51	3%
4 years old	8	0%
5 years old	24	1%
6 years old	52	3%
7 years old	9	0%
8 years old	1	0%
9 years old	0	0%
10 years old	0	0%
11 years old	999	50%
12 years old	2	0%
13 years old	9	0%
14 years old	483	24%
15 years old	318	16%
16 years old	4	0%
17 years old	0	0%
18 years old	0	0%
19 years old	20	1%
20 years old	0	0%
21 years old	6	0%
<b>Total</b>	<b>1986</b>	<b>100%</b>

An analysis of the annual residential consumption by consumption threshold is reflected below. Approximately 34% of the residential customer's meters read less than 100 m<sup>3</sup> per year. In fact, 58% of residential customers are consuming 150 m<sup>3</sup> or less. Research suggests that an average household consumes approximately 230-280 m<sup>3</sup> a year compared to the average in Gananoque which is approximately 153 m<sup>3</sup>. This is considerably less than what is considered typical which may indicate a problem with the meter accuracy.



***Inflow and Infiltration***

There is the base volume of inflow and infiltration (I&I) into the sewer system that contributes to overall flows into the plant for treatment. The Town is active in assessing and reducing the I&I volumes. The Capital Budget incorporates a program to address I&I. From 2011 to 2015, the Town's Capital Budget includes an annual budget of \$260,000 for their inflow and infiltration reduction program.

***Proposed Financial Policies and Strategies***

- The Town will maintain all Water/Wastewater infrastructure in a state of good repair by implementing life cycle costing and providing annual contributions to the replacement reserves to fund the future rehabilitation/replacement of assets.
- The Town will target setting aside the annual amortization based on historical costing in the short term and the replacement cost of assets over time. These funds will be transferred to the Town's Water and Wastewater Capital Reserves. A phase-in strategy will be implemented to move the contributions to the capital reserves.
- To ensure that the reserves also provide for revenue stabilization, water and wastewater reserves be maintained at approximately 10% or greater of the water and wastewater annual revenues.
- Future debt service payments will be made while ensuring the following:
  - The provision of essential services is not jeopardized.
  - Financial flexibility is maintained by ensuring that there are sufficient revenues to meet unanticipated expenditures and accommodate revenue fluctuations.
  - Outstanding debt obligations will not threaten long-term financial stability.
  - The amount of outstanding debt will not place an undue burden on local ratepayers.
- The Town's Water and Wastewater debt interest service ratio as a percentage of own source revenues, will not exceed 10% as considered acceptable by credit rating agencies.
- The Town will develop and maintain a meter replacement program with a focus on the meters that generate the best payback.
- The Town will develop a leak management plan and establish a target to reduce the amount of unaccounted for water.

## Water and Wastewater Forecast

### Operating Expenditures

Operating expenses can be generally defined as recurring expenses associated with providing a service. They are straightforward and are typically outlays that need to be made to keep the operation running on a day-to-day basis. In general, operating expenses are easily identifiable, measurable, and can be readily verified (or audited) as they are based on actual cash outlays and liabilities.

Operating expenditures are projected based on estimation of service costs over time. This estimation/projection considers the following parameters:

- Future customer demands
- Projected repair and maintenance costs
- Input commodity costs (such as power supply and treatment chemicals)

The Town's key operating expenses currently include personnel costs, materials and supplies, utilities, and administration costs.

Calculation of the Town's full cost of managing the water and wastewater system is based on estimating and projecting the annual costs related to the primary activities required to collect and treat wastewater.

These include:

- Annual operations and maintenance (O&M) costs including allowances for operational adjustments;
- Replacement of existing assets based on the underlying useful life of the assets based on life expectancy and age;
- Annual contributions to a capital reserve fund for financing capital projects and revenue stabilization; and
- Repayment of existing and proposed future debt.

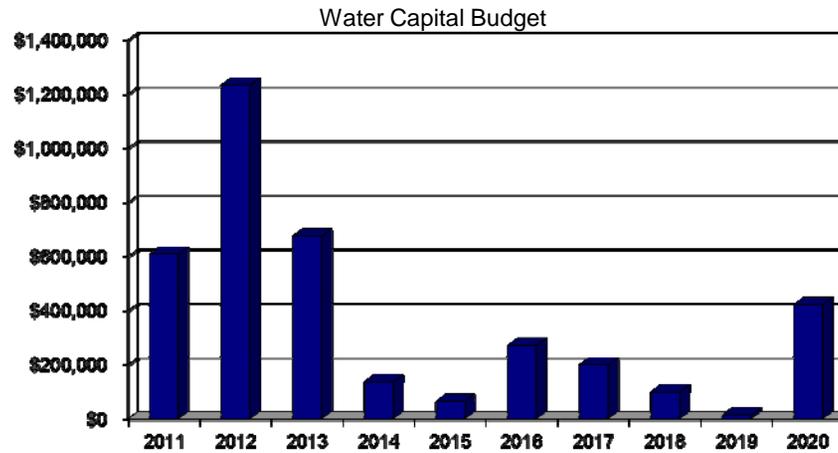
### **Key Assumptions**

The following provides the key assumptions in the Forecast:

- **Capital Projects**—Water and Wastewater Capital Forecast is based on the capital needs as identified by the Town. The plan includes \$3.7 million for water and \$15.9 million for wastewater capital expenditures over the next 10 years.
- **Water & Wastewater Capital Reserves**—The opening balance for 2011 Water and Wastewater Capital Reserves is based on the year-end balance for 2010. Annual contributions to the reserves are made to gradually increase the reserve position.
- **Sources of Financing**—Based on the Town's estimates for federal and provincial grants as well as gas tax revenues, availability of reserves and debt policies.
- **Debt Financing**—Debt is issued at 5% for 10 years.
- **Service Standards**—Water and wastewater programs are maintained at their current service levels.
- **Inflationary Increases**—3% annual increase for all expenses except utilities which is assumed at 5% annually
- **Disposals**—assumes no disposals of tangible capital assets.
- **Useful Life**—based on the Town's tangible capital asset policies.

**Water Capital Budget**

As shown below, the Town's 10-year Water Capital Budget is \$3.7 million. The table below provides the sources of financing.

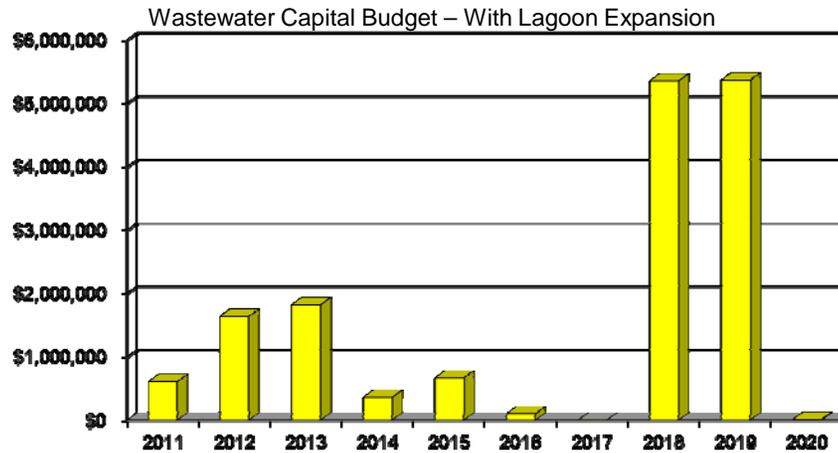


As shown below, the majority source of funding of the capital program is through transfers from the Water Reserve. Due to the relatively low reserve balance in the first few years of the plan, approximately \$1.2 million in debt will be issued (either internally or externally) to fund the capital program. Appendix A provides the details associated with the 10 year capital budget.

Funding Source - WATER	\$2,011.00	\$2,012.00	\$2,013.00	\$2,014.00	\$2,015.00	\$2,016.00	\$2,017.00	\$2,018.00	\$2,019.00	\$2,020.00	Total 2011-2020
Debt		\$ 1,063,283	\$ 100,000								\$ 1,163,283
Grants - Federal & Provincial	\$ 242,879										\$ 242,879
Gas Tax Deferred Revenue Fund	\$ 71,987		\$ 200,000								\$ 271,987
Unexpended Capital Financing	\$ 9,887										\$ 9,887
Water Capital Reserve Fund	\$ 283,632	\$ 169,500	\$ 375,333	\$ 137,500	\$ 65,000	\$271,000	\$200,000	\$100,000	\$ 15,000	\$422,500	\$ 2,039,465
<b>Grand Total</b>	<b>\$ 608,385</b>	<b>\$ 1,232,783</b>	<b>\$ 675,333</b>	<b>\$ 137,500</b>	<b>\$ 65,000</b>	<b>\$271,000</b>	<b>\$200,000</b>	<b>\$100,000</b>	<b>\$ 15,000</b>	<b>\$422,500</b>	<b>\$ 3,727,501</b>

**Wastewater Capital Budget**

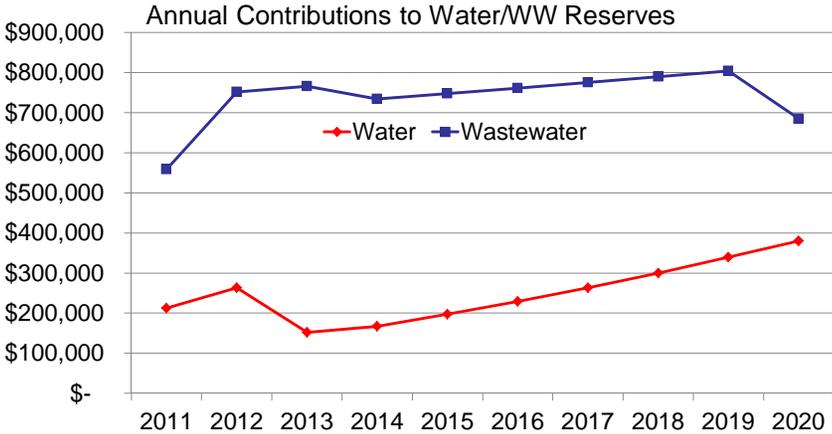
As shown below, the Town’s 10-year Wastewater Capital Budget is \$15.9 million which includes the lagoon treatment expansion in 2018 and 2019. The table below provides the sources of financing.



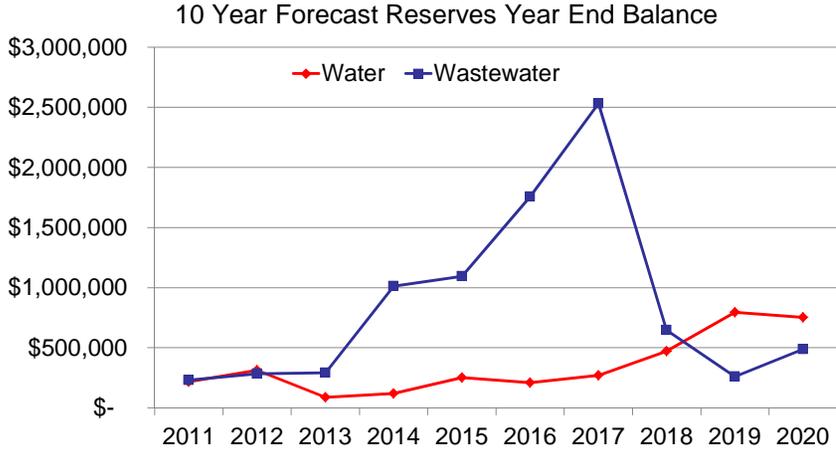
As shown in the table, limited debt financing is required due to a gradual increase in the contributions to the Water Capital Reserve. The largest sources of financing are Federal/Provincial Grants and Transfers from the Wastewater Capital Reserve.

Funding Source - Wastewater	\$2,011.00	\$2,012.00	\$2,013.00	\$2,014.00	\$2,015.00	\$2,016.00	\$2,017.00	\$2,018.00	\$2,019.00	\$2,020.00	Total 2011-2020
Debt		\$ -	\$ 360,000					\$ -	\$ 1,000,000		\$ 1,360,000
Internal Financing from Taxation									\$ 500,000		\$ 500,000
Grants - Federal & Provincial	\$136,535	\$ 550,240	\$ 603,744					2,675,000	2,675,000		\$ 6,640,519
Gas Tax Deferred Revenue Fund	\$270,378	\$ 390,000	\$ 100,000	\$345,000							\$ 1,105,378
Wastewater Capital Reserve Fund	\$199,215	\$ 698,593	\$ 757,089	\$ 15,000	\$ 665,000	\$ 100,000		2,675,000	1,190,000	\$ 12,500	\$ 6,312,397
<b>Grand Total</b>	<b>\$606,128</b>	<b>\$ 1,638,833</b>	<b>\$ 1,820,833</b>	<b>\$360,000</b>	<b>\$ 665,000</b>	<b>\$ 100,000</b>	<b>\$ -</b>	<b>\$5,350,000</b>	<b>\$ 5,365,000</b>	<b>\$ 12,500</b>	<b>\$ 15,918,294</b>

**Water and Wastewater Capital Reserve Funds**

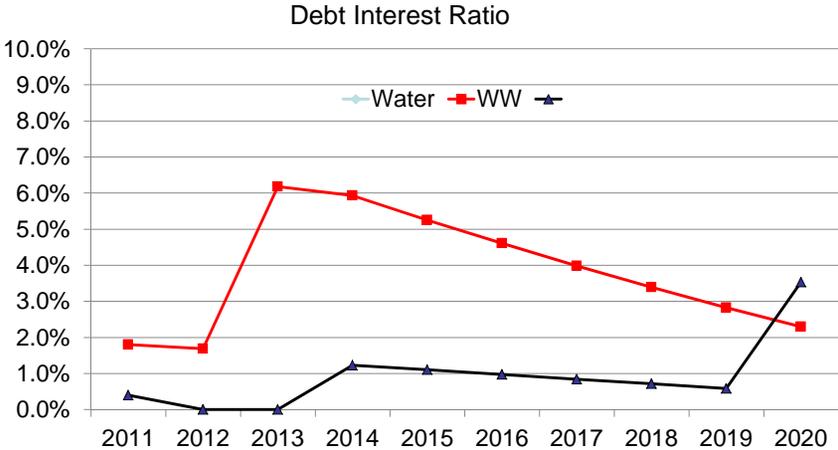
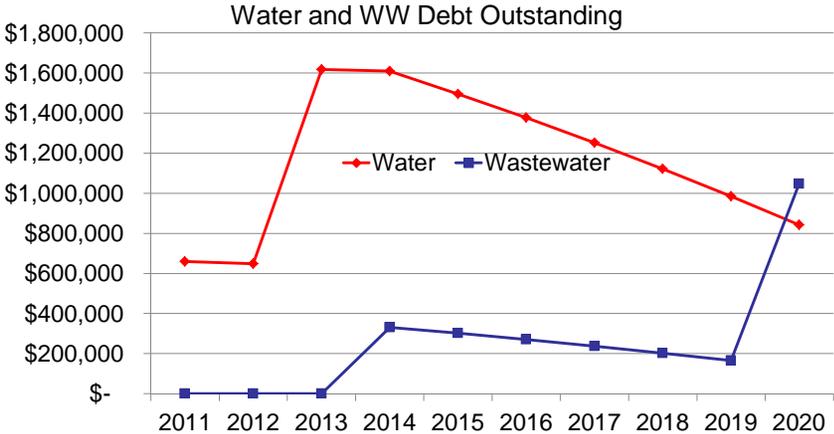


As shown above, annual contributions are being made to the Water and Wastewater Capital Reserve Funds. Adjustments are made annually to ensure that the water and wastewater rate increases are smoothed over time and take into consideration the policies recommended with respect to minimum reserve balances and annual amortization.



As shown above, the Wastewater Capital Reserve Fund grows until 2017 and, in 2018 and 2019, this Reserve is used extensively to fund the expansion of the lagoon treatment facility. By 2020, the annual contribution to the Water Reserve is \$380,000 and the annual amortization for this period is \$629,000. While still not equal to the annual amortization, this has significantly reduced the accounting operating deficit from 2011-2020 as will be shown later in the Financial Statements. By 2020, the contribution to the Wastewater Capital Reserve Fund is \$685,000 and the annual amortization is \$811,500.

**Water and Wastewater Debt Summary**



Debt outstanding in Water peaks at \$1.6 million in 2013, declining to \$0.8 million in 2020. Debt peaks at \$1.05 million in Wastewater in 2020 related to the expansion of the lagoon treatment facility.

As shown in the graphs above, the Town’s debt interest service ratio peaks at 6.2% in water in 2013 and 3.5% in wastewater in 2020, well below the recommended policy of maintaining the debt service ratio at or below 10%.

**Summary of Operating Budget Requirements**

The Town’s objective in establishing the Water and Wastewater rates is to avoid large fluctuations from year to year and are set at a level to adequately cover current operating costs, maintain and repair the Town’s existing asset base and replace assets where appropriate.

Efforts are being made in this plan to gradually grow/maintain the Reserves to provide a source of funding for the ongoing replacement/refurbishment of capital assets. The following tables reflect the forecast revenue rate requirements.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Water Revenue Rate Requirements	\$ 1,016,970	\$ 1,067,504	\$ 1,120,985	\$ 1,176,843	\$ 1,235,604	\$ 1,296,831	\$ 1,361,851	\$ 1,430,457	\$ 1,502,328	\$ 1,577,029
WW Revenue Rate Requirements	\$ 1,271,212	\$ 1,303,395	\$ 1,336,468	\$ 1,370,503	\$ 1,404,380	\$ 1,438,945	\$ 1,474,722	\$ 1,511,236	\$ 1,549,013	\$ 1,587,585
Total Rate Revenue Requirements	\$ 2,288,182	\$ 2,370,898	\$ 2,457,453	\$ 2,547,346	\$ 2,639,985	\$ 2,735,777	\$ 2,836,573	\$ 2,941,693	\$ 3,051,341	\$ 3,164,614
% Change in Water		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
% Change in WW		2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Total % Change		3.6%	3.7%	3.7%	3.6%	3.6%	3.7%	3.7%	3.7%	3.7%

As shown above the annual increases in consolidated water and wastewater is 3.6%-3.7% from 2012-2020. Appendix B provides the Operating Budget Forecast for Water and Wastewater. This is lower than the current 10 year projection which is approximately 4.7% annually.

***The LRFP is Dynamic—Regular Updates Will Be Undertaken***

Although great effort has been made to present accurate financial projections, based upon the data available at this time, a LRFP is a dynamic document and should be updated and re-evaluated, on an ongoing basis. This document will also help keep Council members and the general public informed of projected costs related to water system infrastructure over the duration of this Financial Plan.

In accordance with the regulations, financial plans are only required to be updated in conjunction with every application for licence renewal (i.e. every 5 years), however, there are many potential circumstances that could occur within the short to medium term that would affect the assumptions in the projections for operating and capital. Council priorities, planning policies, changes to service levels, consumption projections and infrastructure requirements, will certainly lead to changes and the Financial Plan should be adjusted to reflect these changes as they occur.

It is anticipated that updates to the LRFP will:

- Amend the assumptions, projections and strategies, as required, based on changes in the municipal environment;
- Continue building awareness of future changes in current operating and capital spending and funding levels;
- Assist the Town in determining the extent of its financial challenges;
- Reconfirm the key financial goals and strategies that should guide future planning; and
- Spur the development of actions in future business plans that would respond to the long-term strategies.



*Reporting Requirements—O.Reg. 453/07*



## Water and Wastewater Reporting Requirements—O.Reg. 453/07

While the O. Reg. 453/07 only applies to Water, the Town has prepared statements for both water and wastewater operations. Paragraph 4 of subsection 3(1) of the regulation requires that financial plans include the following:

1. Details of the proposed or projected **financial position** of the drinking water system itemized by:
  - a. total financial assets
  - b. total liabilities
  - c. net debt
  - d. non-financial assets that are tangible capital assets, tangible capital assets under-construction, inventories of supplies and prepaid expenses
  - e. changes in tangible capital assets that are additions, donations, write-downs and disposals
2. Details of the proposed or projected **financial operations** of the drinking water system itemized by:
  - a. Total revenues, further itemized by water rates, user charges and other revenues
  - b. Total expenditures itemized by amortization expenses, interest expenses and other expenses
  - c. Annual surplus or deficit
  - d. Accumulated surplus or deficit
3. Details of the drinking water systems proposed or projected gross **cash receipts or gross cash payments (Cash Flows)** itemized by:
  - a. Operating transactions that are cash received from revenues, cash paid for operating expenses and financing charges
  - b. Capital transactions that are proceeds on sale of tangible capital assets and cash used to acquire capital assets
  - c. Investing transactions that are acquisitions and disposal of investments
  - d. Financial transactions that are proceeds from the issuance of debt and debt repayment
  - e. Changes in cash and cash equivalents during the year
  - f. Cash and cash equivalents at the beginning and end of the year

**Statement of Financial Operations—Water**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Water Total Revenues</b>										
Rate Revenues	\$ 1,016,970	\$ 1,067,504	\$ 1,120,985	\$ 1,176,843	\$ 1,235,604	\$ 1,296,831	\$ 1,361,851	\$ 1,430,457	\$ 1,502,328	\$ 1,577,029
Miscellaneous Revenues	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575
<b>Total Revenues</b>	<b>\$ 1,053,545</b>	<b>\$ 1,104,079</b>	<b>\$ 1,157,560</b>	<b>\$ 1,213,418</b>	<b>\$ 1,272,179</b>	<b>\$ 1,333,406</b>	<b>\$ 1,398,426</b>	<b>\$ 1,467,032</b>	<b>\$ 1,538,903</b>	<b>\$ 1,613,604</b>
<b>Water Total Expenses</b>										
<b>Operating Expenses</b>										
Labour/Benefits	\$ 333,886	\$ 340,031	\$ 350,231	\$ 360,738	\$ 371,561	\$ 382,707	\$ 394,189	\$ 406,014	\$ 418,195	\$ 430,741
Materials	\$ 139,580	\$ 135,894	\$ 139,971	\$ 144,170	\$ 148,495	\$ 152,950	\$ 157,539	\$ 162,265	\$ 167,133	\$ 172,147
Small Equipment	\$ 29,000	\$ 29,870	\$ 30,766	\$ 31,689	\$ 32,640	\$ 33,619	\$ 34,628	\$ 35,666	\$ 36,736	\$ 37,838
Utilities	\$ 90,350	\$ 94,868	\$ 99,611	\$ 104,591	\$ 109,821	\$ 115,312	\$ 121,078	\$ 127,132	\$ 133,488	\$ 140,163
Contracted	\$ 110,906	\$ 99,233	\$ 102,210	\$ 105,276	\$ 108,435	\$ 111,688	\$ 115,038	\$ 118,490	\$ 122,044	\$ 125,706
Repairs	\$ 28,300	\$ 29,149	\$ 30,023	\$ 30,924	\$ 31,852	\$ 32,807	\$ 33,792	\$ 34,805	\$ 35,850	\$ 36,925
Office and Other	\$ 6,967	\$ 7,176	\$ 7,391	\$ 7,613	\$ 7,841	\$ 8,077	\$ 8,319	\$ 8,569	\$ 8,826	\$ 9,090
Payment in lieu of taxes	\$ 47,348	\$ 48,769	\$ 50,232	\$ 51,739	\$ 53,291	\$ 54,889	\$ 56,536	\$ 58,232	\$ 59,979	\$ 61,778
Insurance, Audit	\$ 25,424	\$ 26,695	\$ 28,030	\$ 29,431	\$ 30,903	\$ 32,448	\$ 34,071	\$ 35,774	\$ 37,563	\$ 39,441
<b>Total Operating Expenses</b>	<b>\$ 811,761</b>	<b>\$ 811,684</b>	<b>\$ 838,466</b>	<b>\$ 866,173</b>	<b>\$ 894,839</b>	<b>\$ 924,498</b>	<b>\$ 955,188</b>	<b>\$ 986,947</b>	<b>\$ 1,019,814</b>	<b>\$ 1,053,829</b>
<b>Debt Charges</b>										
Debt Charges - Interest Payments	\$ 18,967	\$ 18,668	\$ 71,526	\$ 71,983	\$ 66,823	\$ 61,412	\$ 55,737	\$ 49,786	\$ 43,545	\$ 36,999
<b>Amortization Expense</b>										
Water Assets	\$ 532,921	\$ 548,580	\$ 574,400	\$ 591,283	\$ 594,721	\$ 597,524	\$ 604,299	\$ 624,299	\$ 626,799	\$ 628,942
<b>Total Expenses</b>	<b>\$ 1,363,648</b>	<b>\$ 1,378,933</b>	<b>\$ 1,484,392</b>	<b>\$ 1,529,439</b>	<b>\$ 1,556,382</b>	<b>\$ 1,583,434</b>	<b>\$ 1,615,225</b>	<b>\$ 1,661,032</b>	<b>\$ 1,690,157</b>	<b>\$ 1,719,770</b>
<b>Annual Surplus/(Deficit)</b>	<b>\$ (310,103)</b>	<b>\$ (274,854)</b>	<b>\$ (326,831)</b>	<b>\$ (316,022)</b>	<b>\$ (284,203)</b>	<b>\$ (250,028)</b>	<b>\$ (216,799)</b>	<b>\$ (194,000)</b>	<b>\$ (151,254)</b>	<b>\$ (106,166)</b>

The annual deficit decreases from \$310,000 in 2011 to \$106,000 by 2020.

**Statement of Cash Flow/Cash Receipts—Water**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Total Revenues</b>	\$ 1,053,545	\$ 1,104,079	\$ 1,157,560	\$ 1,213,418	\$ 1,272,179	\$ 1,333,406	\$ 1,398,426	\$ 1,467,032	\$ 1,538,903	\$ 1,613,604
<b>Cash Paid For</b>										
Operating Costs	\$ 811,761	\$ 811,684	\$ 838,466	\$ 866,173	\$ 894,839	\$ 924,498	\$ 955,188	\$ 986,947	\$ 1,019,814	\$ 1,053,829
Debt Repayment - Debt Interest	\$ 18,967	\$ 18,668	\$ 71,526	\$ 71,983	\$ 66,823	\$ 61,412	\$ 55,737	\$ 49,786	\$ 43,545	\$ 36,999
<b>Cash Provided From Operating Transactions</b>	\$ 222,817	\$ 273,726	\$ 247,569	\$ 275,261	\$ 310,518	\$ 347,496	\$ 387,501	\$ 430,299	\$ 475,545	\$ 522,776
<b>Capital Transactions</b>										
Acquisition of TCA	\$ 608,385	\$ 1,232,783	\$ 675,333	\$ 137,500	\$ 65,000	\$ 271,000	\$ 200,000	\$ 100,000	\$ 15,000	\$ 422,500
<b>Finance Transactions</b>										
Proceeds from Debt Issues	\$ -	\$ 1,063,283	\$ 100,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Proceeds from Other Sources	\$ 242,879	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Proceeds from Gas Tax Revenues	\$ 71,987	\$ -	\$ 200,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Debt Repayment - Principal	\$ (10,428)	\$ (10,726)	\$ (95,569)	\$ (108,061)	\$ (113,222)	\$ (118,633)	\$ (124,308)	\$ (130,259)	\$ (136,500)	\$ (143,045)
<b>Increase/(Decrease) in Cash Equivalents</b>	\$ (81,129)	\$ 93,500	\$ (223,333)	\$ 29,700	\$ 132,296	\$ (42,137)	\$ 63,193	\$ 200,040	\$ 324,045	\$ (42,770)
<b>Cash and Cash Equivalents at Beginning Balance</b>	\$ 299,915	\$ 218,786	\$ 312,286	\$ 88,953	\$ 118,653	\$ 250,949	\$ 208,812	\$ 272,005	\$ 472,045	\$ 796,090
<b>Cash and Cash Equivalents at Ending Balance</b>	\$ 218,786	\$ 312,286	\$ 88,953	\$ 118,653	\$ 250,949	\$ 208,812	\$ 272,005	\$ 472,045	\$ 796,090	\$ 753,320

**Statement of Financial Position—Water**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Financial Assets</b>										
Cash	\$ 218,786	\$ 312,286	\$ 88,953	\$ 118,653	\$ 250,949	\$ 208,812	\$ 272,005	\$ 472,045	\$ 796,090	\$ 753,320
<b>Liabilities</b>										
Debt - Principal Outstanding	\$ 659,997	\$ 649,271	\$ 1,616,985	\$ 1,608,924	\$ 1,495,702	\$ 1,377,070	\$ 1,252,762	\$ 1,122,503	\$ 986,003	\$ 842,958
<b>Net Financial Assets</b>	<b>\$ (441,211)</b>	<b>\$ (336,985)</b>	<b>\$ (1,528,033)</b>	<b>\$ (1,490,271)</b>	<b>\$ (1,244,754)</b>	<b>\$ (1,168,258)</b>	<b>\$ (980,757)</b>	<b>\$ (650,458)</b>	<b>\$ (189,914)</b>	<b>\$ (89,638)</b>
<b>Non-Financial Assets</b>										
<b>Tangible Capital Assets</b>	<b>\$ 9,536,934</b>	<b>\$ 10,021,136</b>	<b>\$ 10,122,070</b>	<b>\$ 9,668,287</b>	<b>\$ 9,138,566</b>	<b>\$ 8,812,042</b>	<b>\$ 8,407,743</b>	<b>\$ 7,883,444</b>	<b>\$ 7,271,645</b>	<b>\$ 7,065,203</b>
Cash as a % of Net Fixed Assets	2.3%	3.1%	0.9%	1.2%	2.7%	2.4%	3.2%	6.0%	10.9%	10.7%
Debt as a % of Net Fixed Assets	6.9%	6.5%	16.0%	16.6%	16.4%	15.6%	14.9%	14.2%	13.6%	11.9%

The Water Reserve balance increases from \$218,786 in 2011 to \$753,320 in 2020.

**Statement of Financial Operations—Wastewater**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Wastewater Total Revenues</b>										
Rate Revenue	\$ 1,271,212	\$ 1,303,395	\$ 1,336,468	\$ 1,370,503	\$ 1,404,380	\$ 1,438,945	\$ 1,474,722	\$ 1,511,236	\$ 1,549,013	\$ 1,587,585
Miscellaneous Revenues	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500
<b>Total Revenues</b>	<b>\$ 1,309,712</b>	<b>\$ 1,341,895</b>	<b>\$ 1,374,968</b>	<b>\$ 1,409,003</b>	<b>\$ 1,442,880</b>	<b>\$ 1,477,445</b>	<b>\$ 1,513,222</b>	<b>\$ 1,549,736</b>	<b>\$ 1,587,513</b>	<b>\$ 1,626,085</b>
<b>Wastewater Total Expenses</b>										
<b>Operating Expenses</b>										
Labour/Benefits	\$ 320,503	\$ 326,246	\$ 336,033	\$ 346,114	\$ 356,498	\$ 367,193	\$ 378,209	\$ 389,555	\$ 401,242	\$ 413,279
Materials	\$ 104,955	\$ 105,231	\$ 108,388	\$ 111,639	\$ 114,988	\$ 118,438	\$ 121,991	\$ 125,651	\$ 129,420	\$ 133,303
Utilities	\$ 40,000	\$ 42,000	\$ 44,100	\$ 46,305	\$ 48,620	\$ 51,051	\$ 53,604	\$ 56,284	\$ 59,098	\$ 62,053
Contracted	\$ 89,730	\$ 82,422	\$ 84,895	\$ 87,441	\$ 90,065	\$ 92,767	\$ 95,550	\$ 98,416	\$ 101,369	\$ 104,410
Office and Other	\$ 6,967	\$ 7,176	\$ 7,391	\$ 7,613	\$ 7,841	\$ 8,077	\$ 8,319	\$ 8,569	\$ 8,826	\$ 9,090
Insurance, Taxes, Audit	\$ 25,543	\$ 26,820	\$ 28,161	\$ 29,569	\$ 31,048	\$ 32,600	\$ 34,230	\$ 35,942	\$ 37,739	\$ 39,626
<b>Total Operating Expenses</b>	<b>\$ 587,698</b>	<b>\$ 589,895</b>	<b>\$ 608,968</b>	<b>\$ 628,682</b>	<b>\$ 649,060</b>	<b>\$ 670,125</b>	<b>\$ 691,902</b>	<b>\$ 714,416</b>	<b>\$ 737,693</b>	<b>\$ 761,760</b>
<b>Debt Charges</b>										
Debt Charges - Interest Payments	\$ 5,285	\$ -	\$ -	\$ 17,354	\$ 15,897	\$ 14,366	\$ 12,757	\$ 11,065	\$ 9,287	\$ 57,418
<b>Amortization Expense</b>										
Wastewater Assets	\$ 265,637	\$ 295,772	\$ 394,718	\$ 497,613	\$ 514,113	\$ 539,417	\$ 541,917	\$ 541,917	\$ 675,667	\$ 811,560
<b>Total Expenses</b>	<b>\$ 858,620</b>	<b>\$ 885,667</b>	<b>\$ 1,003,686</b>	<b>\$ 1,143,650</b>	<b>\$ 1,179,071</b>	<b>\$ 1,223,908</b>	<b>\$ 1,246,576</b>	<b>\$ 1,267,398</b>	<b>\$ 1,422,647</b>	<b>\$ 1,630,738</b>
<b>Annual Surplus/(Deficit)</b>	<b>\$ 451,092</b>	<b>\$ 456,228</b>	<b>\$ 371,282</b>	<b>\$ 265,354</b>	<b>\$ 263,810</b>	<b>\$ 253,537</b>	<b>\$ 266,646</b>	<b>\$ 282,338</b>	<b>\$ 164,866</b>	<b>\$ (4,653)</b>

Revenues are projected to increase by approximately \$316,000 from 2011 to 2020 while operating expenses are increasing by approximately \$174,000. However, debt charges and amortization expenses have increased by \$772,000.

**Statement of Cash Flow/Cash Receipts—Wastewater**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Total Revenues</b>	\$ 1,309,712	\$ 1,341,895	\$ 1,374,968	\$ 1,409,003	\$ 1,442,880	\$ 1,477,445	\$ 1,513,222	\$ 1,549,736	\$ 1,587,513	\$ 1,626,085
<b>Cash Paid For</b>										
Operating Costs	\$ 587,698	\$ 589,895	\$ 608,968	\$ 628,682	\$ 649,060	\$ 670,125	\$ 691,902	\$ 714,416	\$ 737,693	\$ 761,760
Debt Repayment - Debt Interest	\$ 5,285	\$ -	\$ -	\$ 17,354	\$ 15,897	\$ 14,366	\$ 12,757	\$ 11,065	\$ 9,287	\$ 57,418
<b>Cash Provided From Operating Transactions</b>	\$ 716,729	\$ 752,000	\$ 766,000	\$ 762,967	\$ 777,923	\$ 792,954	\$ 808,563	\$ 824,255	\$ 840,533	\$ 806,907
<b>Capital Transactions</b>										
Acquisition of TCA	\$ 606,128	\$ 1,638,833	\$ 1,820,833	\$ 360,000	\$ 665,000	\$ 100,000	\$ -	\$ 5,350,000	\$ 5,365,000	\$ 12,500
<b>Finance Transactions</b>										
Proceeds from Debt Issues	\$ -	\$ -	\$ 360,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,500,000	\$ -
Proceeds from Other Sources	\$ 136,535	\$ 550,240	\$ 603,744	\$ -	\$ -	\$ -	\$ -	\$ 2,675,000	\$ 2,675,000	\$ -
Proceeds from Gas Tax Revenues	\$ 270,378	\$ 390,000	\$ 100,000	\$ 345,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Debt Repayment - Principal	\$ (158,444)	\$ -	\$ -	\$ (28,467)	\$ (29,923)	\$ (31,454)	\$ (33,063)	\$ (34,755)	\$ (36,533)	\$ (617,907)
<b>Increase/(Decrease) in Cash Equivalents</b>	\$ 359,070	\$ 53,407	\$ 8,911	\$ 719,500	\$ 83,000	\$ 661,500	\$ 775,500	\$ (1,885,500)	\$ (386,000)	\$ 176,500
<b>Cash and Cash Equivalents at Beginning Balance</b>	\$ (129,225)	\$ 229,845	\$ 283,252	\$ 292,163	\$ 1,011,663	\$ 1,094,663	\$ 1,756,163	\$ 2,531,663	\$ 646,163	\$ 260,163
<b>Cash and Cash Equivalents at Ending Balance</b>	\$ 229,845	\$ 283,252	\$ 292,163	\$ 1,011,663	\$ 1,094,663	\$ 1,756,163	\$ 2,531,663	\$ 646,163	\$ 260,163	\$ 436,663

**Statement of Financial Position—Wastewater**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Financial Assets</b>										
Cash	\$ 229,845	\$ 283,252	\$ 292,163	\$ 1,011,663	\$ 1,094,663	\$ 1,756,163	\$ 2,531,663	\$ 646,163	\$ 260,163	\$ 436,663
<b>Liabilities</b>										
Debt - Principal Outstanding	\$ 126,702	\$ 100,000	\$ -	\$ 331,533	\$ 301,610	\$ 270,156	\$ 237,092	\$ 202,338	\$ 165,804	\$ 1,047,898
<b>Net Financial Assets</b>	<b>\$ 103,143</b>	<b>\$ 183,252</b>	<b>\$ 292,163</b>	<b>\$ 680,130</b>	<b>\$ 793,053</b>	<b>\$ 1,486,008</b>	<b>\$ 2,294,571</b>	<b>\$ 443,826</b>	<b>\$ 94,359</b>	<b>\$ (611,234)</b>
<b>Non-Financial Assets</b>										
Tangible Capital Assets	\$ 5,381,628	\$ 5,706,368	\$ 7,049,430	\$ 8,475,545	\$ 8,337,932	\$ 8,488,818	\$ 8,049,401	\$ 7,507,484	\$ 12,315,567	\$ 17,004,900
Cash as a % of Net Fixed Assets	4.3%	5.0%	4.1%	11.9%	13.1%	20.7%	31.5%	8.6%	2.1%	2.6%
Debt as a % of Net Fixed Assets	2.4%	1.8%	0.0%	3.9%	3.6%	3.2%	2.9%	2.7%	1.3%	6.2%

Debt outstanding increases from \$126,702 in 2011 to \$1.047 million in 2020 due mainly to the lagoon expansion. The tangible capital assets increase during the 10 year period by \$11.6 million. The Wastewater Reserve position increased from \$229,845 in 2011 to \$436,663 in 2020.

***Water and Wastewater Rate Study***

## Water/Wastewater Rate Study

### Existing Water/Wastewater Rate Structure

The Town of Gananoque has a two-part rate structure for water and wastewater operations; a fixed charge which varies by meter connection size (referred to as meter equivalency (ME)) and a uniform per unit volumetric rate. This is the most common rate structure employed across Ontario.

In the current rate structure, all customers pay the same volumetric rate which supports principles of **fairness and equity** as does the existing strategy of charging different fixed fees based on the size of the meter. Wastewater rates are currently set at 125% of the water rates. As discussed in the LRFP, because the capital requirements differ between water and wastewater over the next 10 years and because of the existing operating deficit in the water operations, the annual wastewater rate changes as a percentage of water rates will vary from year to year. For example, over the next 10 years, the capital requirements for water is \$3.7 million while the capital cost for wastewater is \$15.9 million. The recommended strategy in setting rates is to calculate a fixed and volumetric rate for each of the water and wastewater services based on the underlying costs. This can then be translated into a percentage of water.

Rates will change on September 1, 2011 based on By-law 2011-035. The focus of this study is to establish rates for 2012.

### Consumption and Customer Information

	2008 m <sup>3</sup>	2009 m <sup>3</sup>	2010 m <sup>3</sup>	3 Year Average Consumption m <sup>3</sup>	% of Total Consumption 3 Yr Avg	# of Customers	% of Customers
Residential	372,379	357,990	335,497	355,289	60.1%	1,979	89.3%
Commercial	192,586	184,498	184,219	187,101	31.6%	218	9.8%
Industrial	50,945	41,989	45,322	46,085	7.8%	19	0.9%
Rural	3,786	2,289	2,465	2,846	0.5%	1	0.0%
<b>Total</b>	<b>619,696</b>	<b>586,765</b>	<b>567,503</b>	<b>591,321</b>	<b>100.0%</b>	<b>2,217</b>	<b>100%</b>

The table above reflects the customer breakdown and the three year consumption trend from 2008-2010. The Residential customer class represents 89% of the number of customers and approximately 60% of the total consumption. Approximately 9.8% of the customers are in the Commercial class and they represent approximately 32% of the total water consumption. It is important to understand the impact for each customer type when reviewing various rate structure options. As such, customer profiles have been developed to help understand the customer composition in Gananoque.

Consumptions have declined 8.4% from 2008 to 2010. This may reflect changes in customer behavior as well as possible meter inaccuracies, as described earlier in the report. Since most of the costs for water and wastewater are fixed (which will be discussed in further detail), and do not vary by consumption, rates need to be increased to compensate for the reduction in consumption.

Currently rates are being set assuming approximately 596,250 m<sup>3</sup> in annual consumption. If the downward consumption trend continues to occur and adjustments are not made in the calculation of rates, the Town will experience revenue shortfalls.

Moving forward, it is recommended that rates be set using the best available data on consumption for the upcoming year, taking into consideration growth forecasts, changes in the commercial and industrial base as well as changes in residential customer behavior. The annual consumptions should be monitored closely for each type of customer and annual adjustments should be made to the forecast consumption, prior to setting rates.

In the interim, until a detailed analysis can be undertaken, it is recommended that the 2012 rates be based on the average of the previous two years to more accurately reflect the existing consumption trend. This takes into consideration the potential impact of weather conditions (e.g. wet summer, dry summer) and the most recent consumption data. This recommendation will increase the rates over and above the budgeted inflationary increases. Compared with the consumption that is currently being used to set rates, this will increase the rates overall by 3.2%. The impact of this change will be shown later in the report to help isolate the impact that decreases in consumption have on water and wastewater rates. As discussed earlier in the report, as meters get replaced, it is anticipated that billed consumptions may increase and adjustments to future rates can be made accordingly.

Additional information on the customer profiles is reflected below:

- Approximately 17 Gananoque customers consume 3,000 m<sup>3</sup> per year or greater including two large customers that consumed 20,000 m<sup>3</sup> per year or more;
- The residential customer profiles were provided earlier in the report reflecting an average annual consumption of 153 m<sup>3</sup> which is considered low. The average annual residential consumption in most Ontario municipalities is approximately 230-280 m<sup>3</sup>.

#### ***Benchmarking Water/WW Cost of Service***

There are a number of factors that impact the cost of service in each area municipality as well as the cost of service for each type of customer including the following:

- Age and condition of the infrastructure
- Number of customers and customer base
- Complexity of the system
- Financial policies
- Goals and objectives of the municipality which will impact the rate structure implemented

The table on the next page reflects the cost of service in 2011.

**Benchmarking Water/WW Cost of Service**

A comparison of the 2011 water and wastewater costs in 10 Ontario municipalities was undertaken across a variety of customer types, meter sizes and consumption patterns. The table has been data sorted from lowest to highest for customers consuming 150 m<sup>3</sup> annually.

Annual Consumption Meter Size	Residential	Residential	Residential	Residential	ICI	ICI	ICI
	150 m <sup>3</sup> 5/8"	200 m <sup>3</sup> 5/8"	250 m <sup>3</sup> 5/8"	300 m <sup>3</sup> 5/8"	3,000 m <sup>3</sup> 2"	10,000 m <sup>3</sup> 2"	21,000 m <sup>3</sup> 3"
Brockville	\$ 420	\$ 504	\$ 589	\$ 673	\$ 5,735	\$ 14,198	\$ 28,267
Owen Sound	\$ 712	\$ 805	\$ 896	\$ 990	\$ 7,840	\$ 22,175	\$ 46,217
Kingston	\$ 745	\$ 820	\$ 894	\$ 969	\$ 6,263	\$ 15,382	\$ 31,362
Smiths Falls	\$ 771	\$ 835	\$ 898	\$ 963	\$ 6,486	\$ 18,385	\$ 38,011
North Grenville	\$ 809	\$ 943	\$ 1,074	\$ 1,208	\$ 10,099	\$ 28,718	\$ 59,118
Gravenhurst	\$ 825	\$ 1,011	\$ 1,196	\$ 1,381	\$ 12,202	\$ 38,146	\$ 81,315
Napanee	\$ 949	\$ 1,102	\$ 1,255	\$ 1,409	\$ 12,590	\$ 28,174	\$ 57,726
The Blue Mountains	\$ 961	\$ 1,121	\$ 1,292	\$ 1,460	\$ 13,084	\$ 41,994	\$ 89,763
Prescott	\$ 983	\$ 1,036	\$ 1,087	\$ 1,140	\$ 3,978	\$ 11,335	\$ 22,896
Leeds and Thousand Islands	\$ 1,176	\$ 1,176	\$ 1,223	\$ 1,470	\$ 16,500	\$ 54,998	\$115,500
Average	\$ 835	\$ 935	\$ 1,041	\$ 1,166	\$ 9,478	\$ 27,350	\$ 57,017
Median	\$ 817	\$ 977	\$ 1,081	\$ 1,174	\$ 8,969	\$ 25,174	\$ 51,971
Gananoque	\$ 700	\$ 830	\$ 960	\$ 1,090	\$ 8,789	\$ 26,975	\$ 55,790
Difference to the Average	-16.1%	-11.2%	-7.7%	-6.5%	-7.3%	-1.4%	-2.2%
Difference to the Median	-14.3%	-15.0%	-11.2%	-7.2%	-2.0%	7.2%	7.3%

The cost of service for residential and low volume customers in Gananoque is below the survey average and survey median. Large non-residential customers are paying more for water/wastewater services in Gananoque than the survey median. As shown above, there is a significant range in the cost of service, particularly for large volume customers across the survey, driven largely by the type of rate structure.

**Assessment of the Town's Existing Rate Structure Assessment Against Goals and Objectives**

The following table reviews the Town's existing water/wastewater rate structure against the goals and objectives and identifies key areas where improvements could be made.

<b>Goal and Objective</b>	<b>Current Rate Structure Observations</b>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>Addressed in the Long Range Financial Plan section of the report</li> </ul>
<b>Revenue Stability</b>	<ul style="list-style-type: none"> <li>Opportunities exist for further revenue stability by increasing the allocation of costs to the fixed monthly charge and ensuring that there are minimum balances in the reserves (as recommended in the Long Range Financial Plan).</li> </ul>
<b>Fairness and Equity</b>	<ul style="list-style-type: none"> <li>In the existing rate structure, all customers pay the same volumetric rate for water consumed which supports fairness and equity</li> <li>Customers pay different fixed charges based on the service size which is consistent with best practice research—a review of the ratios was undertaken to confirm the appropriateness of the Town's fixed charge differentials</li> </ul>
<b>Affordability</b>	<ul style="list-style-type: none"> <li>The cost of service for residential properties is below the survey average</li> </ul>
<b>Conservation</b>	<ul style="list-style-type: none"> <li>Consumption has been declining</li> </ul>
<b>Economic Development</b>	<ul style="list-style-type: none"> <li>Relatively high non-residential water/wastewater costs for large volume customers as a result of lower allocation of costs to fixed</li> <li>Opportunities were explored to improve economic development</li> </ul>
<b>Practical</b>	<ul style="list-style-type: none"> <li>Current rate structure is simple to understand and easy to administer</li> </ul>

**Rate Structure Options**

As stated by the Canadian Waterworks Association (CWWA), at the heart of the methodology for setting water rates is the concept of a two-part rate structure; a volumetric charge and a fixed charge. This is consistent with the Town’s rate structure and with the practice across Ontario whereby approximately 70% of the Ontario municipalities surveyed (80+ Ontario municipalities from the BMA Municipal Study) have a two part rate structure. As such, there are two key decisions that a municipality must consider in establishing its water/wastewater rate structure:

- What type of volumetric rate to implement?
- How much costs should be recovered from the fixed volumetric rate?

Volumetric Rate Options

The following table summarizes the rate structures employed across 83 Ontario municipalities (representing 85% of the Ontario population—BMA Municipal Study) to provide a larger sample set of structures than what was presented earlier in the report.

	Water Rate Structure Res.	Water Rate Structure Non-Res.	WW Rate Structure Res.	WW Rate Structure Non-Res.
Uniform	67%	66%	77%	76%
Declining	16%	20%	16%	17%
Inclining	11%	6%	7%	6%
Humpback	6%	8%	0%	1%

Appendix C includes additional details on the various rate setting options. The next section summarizes volumetric options and the recommended rate structure for the Town of Gananoque.

- **Uniform Rate** - The volume per unit rate is the same for all customers regardless of consumption and the customer class. This is generally accepted as the most **equitable** approach in conjunction with an appropriate allocation of costs to be recovered from the fixed charge. A uniform rate structure also supports **conservation** objectives in that as customers consume more, they pay for the water they consume. It also supports **affordability** objectives as, unlike an inclining rate structure, large families are not paying higher per unit costs for water consumed. It is recommended that the Town continue to employ a uniform rate structure for the above noted reasons.
- **Inclining Block Rate Structure** - The per unit rates in an inclining rate structure increase as consumption increases. Thresholds or blocks are established at which the rate increases. The main objective of this structure is to encourage **conservation**. This method requires the collection and analysis of consumption patterns by customer classification to establish rates. Based on the experiences of other municipalities, this approach typically results in increased **revenue instability**. Further, given that consumptions in Gananoque are relatively low, an inclining rate structure is not recommended.

- **Declining Block Rate Structure** - The per unit price of water decreases as the volume consumed increases. This structure charges low volume customers the highest rate which is often residential consumers. This is generally used by municipalities that want to encourage **economic development**, however, this approach does not support **conservation** and can compromise the **sustainability** of the Town's assets. As such, this is not recommended.
- **Humpback Rate Structure** - A humpback rate structure uses a combination of increasing and decreasing block rates: rates first increase, then decrease in steps as consumption increases. This approach reduces the cost for high volume and low volume customers but is the most complex to administer and rationalize from a **fairness and equity** perspective. As such, this is not recommended.

#### Fixed Monthly Charge

A survey of 80+ Ontario municipalities reflects a range of 0% from fixed to 100% (flat rate). The extent of costs that are recovered from the fixed and volumetric charge varies across municipalities based on their respective goals and objectives. For example, municipalities where **conservation** is a high priority tend to have a lower allocation of costs to fixed. Municipalities that allocate a large percentage of costs to be recovered from the fixed portion of the bill increase **revenue stability**, however, this increases costs to low volume residential customers which can compromise **affordability** and reduce the incentive to conserve.

Based on trends that BMA has tracked across Ontario over the past 10 years, a number of municipalities have increased their allocation to the fixed charge due to **revenue stability** issues that have been experienced as a result of declining and unpredictable consumptions. An increase in the allocation of costs to be recovered from the fixed charge also recognizes the fact that the majority of costs to operate water and wastewater services are in fact fixed and do not vary by volumes consumed. By increasing the allocation to the fixed charge, **fairness and equity** is supported as all customers are required to contribute toward the fixed costs of the system. These fixed costs include water main and sewer main replacements, maintenance of the treatment facility, costs associated with reading and maintaining the meters and administration.

The following approach was undertaken in determining the most appropriate allocation to fixed charges for the Town of Gananoque:

- Consider practices employed in other jurisdictions and recommended through CWWA/AWWA;
- Identify all costs that could be allocated to fixed based on whether the cost varies by volumes consumed or is fixed;
- Consider current practices, rate history and the impact on various classes of customers; and
- Consider the impact of a change to fixed on specific goals and objectives such as conservation, affordability, economic development, fairness and equity and revenue stability.

The current allocation of Gananoque’s budget is 32% to be recovered from the fixed charge. However, the percentage of the total water and wastewater customer bill that is a fixed charge varies by customer based on the level of consumption and the fixed monthly fee (meter size). Further, the allocation of costs to be recovered from the fixed portion of the bill differs across the municipal survey. In order to illustrate the allocation of costs to fixed versus volumetric, a comparison was made of a residential water/ww bill for a customer consuming 200 m<sup>3</sup> annually.

Annual Consumption Meter Size	% Fixed 200 m <sup>3</sup>
Napanee	27%
Gravenhurst	27%
The Blue Mountains	42%
Owen Sound	54%
North Grenville	60%
Kingston	64%
Brockville	69%
Smiths Falls	69%
Prescott	80%
Leeds and Thousand Islands	100%
Average	59%
Median	62%
Gananoque	33%

For a customer consuming 200 m<sup>3</sup> of water annually, approximately 33% of a customer’s bill in Gananoque is related to the fixed charge compared to 59% in the survey average. As in the table, the allocation of costs to be recovered from fixed in Gananoque is amongst the lowest in the survey.

The Town’s existing rate setting practice is to increase the volumetric rate by 6% annually and the fixed charge by 2% annually. Over time, this approach reduces the amount collected from the fixed component which increases the revenue instability and results in a proportionally larger increase to large volume customers each year which compromises the objective of **economic development**. The LRFPP presented earlier in the report recommends a change to this practice such that the same budgeted percentage increase in each year will be applied to both the fixed and volumetric rate.

CWWA recommends that a fixed charge be used for costs that are not related to volumes consumed and are attributable to the number and type of customer. There are a number of costs that can be linked directly to a customer in general or specifically to a class of customer such as meter replacement and repair, meter reading, billing/collections and customer service. It can also be argued that the cost of debt service, reserve requirements and capital improvements could also be included in a fixed charge as these do not vary by volumes consumed.

Costs that are driven by volumes consumed generally include water supply, transmission and distribution costs and costs to maintain the systems. An analysis of the Town’s budget was undertaken to identify the underlying cost drivers for each expenditure. The table below summarizes the 2011 operating budget expenditures and assigns these costs to fixed or volumetric based on the principles set out by CWWA. As shown below, 78% of the costs in Water are fixed and 89% of the costs are fixed in Wastewater.

Summary 2011 Operating Budget Expenditures	Water	WW
Fixed	\$ 823,615	\$ 1,164,757
Volumetric	\$ 229,930	\$ 144,955
Total	\$ 1,053,545	\$ 1,309,712
% That Could Be Allocated to Fixed Based on Underlying Costs	78%	89%

By allocating all fixed costs to be recovered from the fixed charge improves **revenue stability** and is **fair and equitable**, meeting two Town objectives. However, it is not recommended due to the impact on low volume customers (**affordability**) and it’s potential impact on **conservation**. Based on the goals and objectives and in consideration of CWWA standards and benchmarking, the current allocation of 32% is low and should be increased to improve **revenue stability, fairness and equity** and **economic development**.

Based on an impact analysis of a wide range of customers and in recognition of the need to balance all the Town’s goals and objectives, it is recommended that 40% of water and wastewater costs be recovered from the fixed charge.

Meter Equivalency

Similar to the majority of municipalities surveyed and, in conjunction with CWWA/AWWA practices, the Town currently charges customers different fixed rates based on the size of the service (meter and pipe size) which is referred to a meter equivalency factor. Meter equivalent (ME) ratios for the meters and services are based on representative metering costs. The costs for installing, maintaining and replacing customer meters and services increase with the size of the service and the corresponding equivalent meter ratio increases for this reason. ME ratios for the meters and services are based on representative metering costs using 5/8” meter as a base.

An analysis of the Town’s MEs was undertaken which reflected that the overall strategy to establish ME ratios is consistent with AWWA but somewhat lower than standards set out by AWWA.

The following table reflects the current ME standards in Gananoque compared with the AWWA standards.

# of Meters by Size	Gananoque Existing ME	AWWA ME
5/8"	1.0	1.0
3/4"	1.2	1.5
1"	1.6	2.5
1 1/2"	2.3	5.0
2"	3.2	8.0
3"	4.0	9.0
4"	9.3	30.0
Rural	1.6	2.5

It is recommended that the Town implement the AWWA ratios as part of the 2012 rate structure. An alternative model has been included in the appendix which continues to use the existing ratios.

**Impact Analysis and Scenarios**

Various scenarios were run to show the impact of the recommendations and help isolate the impact of each decision. All models have been run to reflect the actual amount that a customer would pay in each year, assuming that rates change September 1. Three models were prepared for 2011 to reflect the existing cost of service and what the cost of service would be if the rate structure were changed in 2011. This is provided for illustrative purposes only as the recommended rate structure change is for 2012.

- Existing Rates for 2011 based on the Town’s by-law 2011-035
- Model 1—increasing the allocation of 2011 fixed costs from 33% to 40%
- Model 2—2011 fixed costs at 40%, AWWA standard MEs

The next three models provides a comparison of the 2012 rates if no change was made to the existing rate structure and uses the 2012 Town budget. Models 3 and 4 provide the impact of the new rate structure is implemented using the recommended operating budget as reflected in the LRFP and model 4 also reduces the consumption to reflect current patterns.

- Existing Rates for 2012 based on the Town’s model
- Model 3—fixed costs at 40%, AWWA standard MEs, using the 2012 budget
- Model 4—fixed costs at 40%, AWWA standard MEs, using the 2012 budget, correcting for the consumption decline using the two year average

2011 Impact Analysis (New Rates set September 1, 2011)

Annual Consumption Meter Size	Residential 150 m <sup>3</sup> 5/8"	Residential 200 m <sup>3</sup> 5/8"	Residential 250 m <sup>3</sup> 5/8"	Residential 300 m <sup>3</sup> 5/8"	ICI 3,000 m <sup>3</sup> 2"	ICI 10,000 m <sup>3</sup> 2"	ICI 21,000 m <sup>3</sup> 3"
<b>2011 (Actual)</b>							
Water	\$ 311	\$ 369	\$ 427	\$ 484	\$ 3,906	\$ 11,989	\$ 24,795
WW	\$ 389	\$ 461	\$ 533	\$ 606	\$ 4,883	\$ 14,986	\$ 30,994
<b>Total Existing</b>	<b>\$ 700</b>	<b>\$ 830</b>	<b>\$ 960</b>	<b>\$ 1,090</b>	<b>\$ 8,789</b>	<b>\$ 26,975</b>	<b>\$ 55,790</b>
<b>Benchmarking to Existing Rate Structure</b>							
Survey Median	\$ 817	\$ 977	\$ 1,081	\$ 1,174	\$ 8,969	\$ 25,174	\$ 51,971
Difference to Survey Median and Existing Model	\$ (117)	\$ (147)	\$ (121)	\$ (84)	\$ (181)	\$ 1,801	\$ 3,818
% Difference to Survey Median	-16.7%	-17.7%	-12.6%	-7.7%	-2.1%	6.7%	6.8%
<b>Model 1- 40% Fixed Rate - 2011 (Assuming Sept 1, 2011 Start)</b>							
Water	\$ 315	\$ 371	\$ 427	\$ 483	\$ 3,826	\$ 11,652	\$ 24,061
WW	\$ 394	\$ 464	\$ 534	\$ 603	\$ 4,782	\$ 14,565	\$ 30,076
<b>Total</b>	<b>\$ 709</b>	<b>\$ 835</b>	<b>\$ 960</b>	<b>\$ 1,086</b>	<b>\$ 8,608</b>	<b>\$ 26,216</b>	<b>\$ 54,138</b>
Model 1 \$ Difference to Existing 2011	\$ 9	\$ 4	\$ 0	\$ (4)	\$ (181)	\$ (759)	\$ (1,652)
Model 1 % Difference to Existing 2011	1.2%	0.5%	0.0%	-0.4%	-2.1%	-2.8%	-3.0%
<b>Model 2 - 40% Fixed Rate, AWWA - 2011 Budget (Assuming Sept 1, Start)</b>							
Water	\$ 310	\$ 366	\$ 422	\$ 478	\$ 3,997	\$ 11,823	\$ 24,238
WW	\$ 387	\$ 457	\$ 527	\$ 597	\$ 4,996	\$ 14,779	\$ 30,298
<b>Total</b>	<b>\$ 697</b>	<b>\$ 823</b>	<b>\$ 949</b>	<b>\$ 1,075</b>	<b>\$ 8,994</b>	<b>\$ 26,602</b>	<b>\$ 54,536</b>
Model 2 \$ Difference to Existing 2011	\$ (3)	\$ (7)	\$ (11)	\$ (15)	\$ 205	\$ (373)	\$ (1,254)
Model 2 % Difference to Existing 2011	-0.4%	-0.9%	-1.2%	-1.4%	2.3%	-1.4%	-2.2%
<b>Benchmarking Cost of Service 2011</b>							
Survey Median	\$ 817	\$ 977	\$ 1,081	\$ 1,174	\$ 8,969	\$ 25,174	\$ 51,971
Difference to Survey Median and Recommended Model	\$ (120)	\$ (154)	\$ (132)	\$ (100)	\$ 24	\$ 1,428	\$ 2,564
% Difference to Survey Median	-14.7%	-15.7%	-12.2%	-8.5%	0.3%	5.7%	4.9%

These models are for illustrative purposes only to help understand the impact of each decision on various types of customers as the proposed rate change would not take place until September 1, 2012.

#### Model 1

This reflects an increase in the allocation of costs to be recovered from fixed of 32% to 40% for both water and wastewater. This increase in allocation to fixed is justified on the basis that costs well in excess of the allocation of 40% is actually fixed. This results in a \$9 increase for a residential property consuming 150 m<sup>3</sup> in 2011. Large volume customers would experience a reduction in the cost of service. This model improves **revenue stability, economic development and fairness and equity.**

#### Model 2

This reflects the impact of moving to a 40% fixed component (as in Model 1) but also incorporates the AWWA standards for meter equivalencies. This has the impact of increasing the costs to customers with large meters but this is offset to some extent by the 40% allocation of costs to fixed. For example, under the existing rate structure, a 3" customer consuming 21,000 m<sup>3</sup> annually pays \$55,790 compared with \$54,536 in the recommended model.

#### 2012 Analysis

The next page provides an overview of the impact that would be experienced in 2012 if the recommended rate structure were implemented September 1, 2012. The 2012 existing rates and associated budget reflects increases ranging from 4.2% to 5.9% depending on the property. This is because the Town's practice is to increase the volumetric rates by 6% and the fixed rate 2%. As such, properties with higher relative consumptions experience larger increases. As discussed previously, this practice is not recommended and has not been included in Models 3 or 4.

#### Model 3

This reflects the recommended budget for 2012 as presented in the LRFP, a 40% allocation of costs to be recovered from fixed and AWWA meter equivalencies. This assumes that the new rate structure would be implemented on September 1, 2012, therefore the first nine months are at the 2011 rates approved by By-law 2011-035. A full year impact of the rates will be presented later in the report to give a better appreciation of the impact of the new rates over a full year. As shown in the table on the next page Model 3 is a comparison of existing rate structure and costs in 2012 against the proposed 2012 budget and rate changes. Model 3 reflects lower costs for all customers because the budgeted increase as reflected in the LRFP is 5% for Water and 2.5% for Wastewater which is lower than the Town's existing budget.

2012 Impact Analysis (New Rates September 1, 2012)

Annual Consumption Meter Size	Residential 150 m <sup>3</sup> 5/8"	Residential 200 m <sup>3</sup> 5/8"	Residential 250 m <sup>3</sup> 5/8"	Residential 300 m <sup>3</sup> 5/8"	ICI 3,000 m <sup>3</sup> 2"	ICI 10,000 m <sup>3</sup> 2"	ICI 21,000 m <sup>3</sup> 3"
<b>Existing Model - 2012</b>							
Water	\$ 324	\$ 386	\$ 447	\$ 508	\$ 4,123	\$ 12,691	\$ 26,261
WW	\$ 405	\$ 482	\$ 558	\$ 635	\$ 5,153	\$ 15,863	\$ 32,827
<b>Total</b>	<b>\$ 730</b>	<b>\$ 868</b>	<b>\$ 1,005</b>	<b>\$ 1,143</b>	<b>\$ 9,276</b>	<b>\$ 28,554</b>	<b>\$ 59,088</b>
Model \$ Difference to Existing 2011	\$ 30	\$ 37	\$ 45	\$ 53	\$ 488	\$ 1,579	\$ 3,298
Model % Difference to Existing 2011	4.2%	4.5%	4.7%	4.9%	5.5%	5.9%	5.9%
<b>Model 3 - 40% Fixed Rate, AWWA, 2012 Budget (Assuming Sept 1, 2012)</b>							
Water	\$ 324	\$ 383	\$ 443	\$ 502	\$ 4,221	\$ 12,512	\$ 25,661
WW	\$ 396	\$ 468	\$ 541	\$ 613	\$ 5,016	\$ 15,161	\$ 31,380
<b>Total</b>	<b>\$ 720</b>	<b>\$ 852</b>	<b>\$ 983</b>	<b>\$ 1,115</b>	<b>\$ 9,237</b>	<b>\$ 27,672</b>	<b>\$ 57,041</b>
Model 3 \$ Difference to Existing 2012	\$ (10)	\$ (16)	\$ (22)	\$ (28)	\$ (40)	\$ (882)	\$ (2,047)
Model 3 % Difference to Existing 2012	-1.4%	-1.9%	-2.3%	-2.6%	-0.5%	-3.3%	-3.7%
<b>Model 4 - 40% Fixed Rate, AWWA, Corrected Consumption 2012 Budget (Assuming Sept 1, 2012)</b>							
Water	\$ 326	\$ 385	\$ 445	\$ 505	\$ 4,249	\$ 12,604	\$ 25,856
WW	\$ 397	\$ 470	\$ 543	\$ 616	\$ 5,177	\$ 15,396	\$ 31,602
<b>Total</b>	<b>\$ 723</b>	<b>\$ 856</b>	<b>\$ 988</b>	<b>\$ 1,121</b>	<b>\$ 9,426</b>	<b>\$ 28,001</b>	<b>\$ 57,457</b>
Model 4 \$ Difference to Existing 2012	\$ (7)	\$ (12)	\$ (17)	\$ (22)	\$ 150	\$ (553)	\$ (1,631)
Model 4 % Difference to Existing 2012	-1.0%	-1.4%	-1.8%	-2.0%	1.7%	-2.1%	-2.9%

#### Model 4

As discussed earlier, in order to accurately establish the volumetric rates, updated assumptions for consumption were used in Model 4. While the cost of service is slightly higher in Model 4 than Model 3, the cost of service is lower for all but one type of customer in comparison to the existing 2012 rates. This model also includes the change in allocation of costs to fixed at 40% and AWWA meter equivalencies. This model improves **sustainability and revenue stability** objectives.

#### Summary

In summary, the recommended rate structure and rate setting approach includes:

- Allocating 60/40 of budgetary costs to be recovered from volumetric and fixed respectively which improves **revenue stability** and **fairness and equity** as currently not all customers are contributing equitably for the full cost of service. Further, this improves **economic development** objectives for large volume customers.
- Updating the meter equivalencies to AWWA standards to improve **fairness and equity**
- Updating the forecast consumption to reflect the downward trend in annual consumptions which improves **revenue stability** and **sustainability**

The table on the next page provides the impact of the rates for an entire year; from September 1, 2012, to August 31, 2013. As shown on the next page, the majority of properties will pay less than they would pay under the Existing rate model because the budget increases are not as high as the existing model. The impact varies across the different customers because of the other policy recommendations which includes changes to the allocation of costs to fixed and the new meter equivalencies.

Given that the cost of service for large volume customers is above the survey median, Appendix D provides two alternative scenarios for the 2012 rates:

- Alternative A—45% allocation of costs to be recovered from fixed given the significant fixed cost component of the budget. This model results in lower costs for large volume customers. This is a viable alternative to further promote **economic development**.
- Alternative B—Maintaining the existing meter equivalencies and using a 40% allocation of costs from fixed. This model lowers the cost of service for large volume customers.

2012 Impact Analysis (New Rates September 1, 2012)

	Residential 150 m <sup>3</sup> 5/8"	Residential 200 m <sup>3</sup> 5/8"	Residential 250 m <sup>3</sup> 5/8"	Residential 300 m <sup>3</sup> 5/8"	ICI 3,000 m <sup>3</sup> 2"	ICI 10,000 m <sup>3</sup> 2"	ICI 21,000 m <sup>3</sup> 3"
<b>Existing 2012 Rates Annualized from September 1, 2012 - August 31, 2013</b>							
Water	\$ 335	\$ 399	\$ 462	\$ 526	\$ 4,292	\$ 13,240	\$ 27,409
WW	\$ 418	\$ 498	\$ 578	\$ 658	\$ 5,365	\$ 16,550	\$ 34,262
<b>Total</b>	<b>\$ 753</b>	<b>\$ 897</b>	<b>\$ 1,041</b>	<b>\$ 1,184</b>	<b>\$ 9,658</b>	<b>\$ 29,790</b>	<b>\$ 61,671</b>
<b>Model 4 - 40% Fixed Rate, AWWA, Corrected Consumption 2012 Budget (September 1, 2012 - August 31, 2013)</b>							
Water	\$ 339	\$ 397	\$ 455	\$ 513	\$ 4,796	\$ 12,895	\$ 25,786
WW	\$ 386	\$ 452	\$ 518	\$ 584	\$ 5,461	\$ 14,682	\$ 29,361
<b>Total</b>	<b>\$ 725</b>	<b>\$ 849</b>	<b>\$ 973</b>	<b>\$ 1,097</b>	<b>\$ 10,257</b>	<b>\$ 27,577</b>	<b>\$ 55,147</b>

**Summary of Recommended Rate Structure Against Goals and Objectives**

The recommended rate structure offers the following advantages:

<b>Goal and Objective</b>	<b>Recommended Rate Structure</b>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>• Addressed in the Long Range Financial Plan section of the report</li> <li>• Plan includes a gradual increase in contributions to reserves with a plan to gradually increase to the annual amortization</li> </ul>
<b>Revenue Stability</b>	<ul style="list-style-type: none"> <li>• Improved through increasing the allocation of costs to the fixed monthly service charge and establishing a minimum reserve balance</li> </ul>
<b>Fairness and Equity</b>	<ul style="list-style-type: none"> <li>• All customers pay the same volumetric rate for water consumed which supports fairness and equity</li> <li>• AWWA standards will be applied so that customers pay different fixed fees based on the service sizes which is consistent with best practice research</li> <li>• Increased recovery of costs from the fixed improves fairness and equity—recommended strategy is 60% from volumetric and 40% from fixed</li> </ul>
<b>Affordability</b>	<ul style="list-style-type: none"> <li>• The cost of service for residential properties is below the survey average</li> </ul>
<b>Conservation</b>	<ul style="list-style-type: none"> <li>• Other non-rate programs are available to support conservation such as water restrictions and the Town’s water consumption is amongst the lowest which suggest that little more can be done to encourage conservation</li> </ul>
<b>Economic Development</b>	<ul style="list-style-type: none"> <li>• Increased recovery of costs from fixed improves economic development as the cost of service for mid-large volume customers will decrease.</li> </ul>
<b>Practical</b>	<ul style="list-style-type: none"> <li>• Rate structure recommended continues to be simple to understand and administer</li> </ul>

*Appendices*

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**Appendix A—Water 10 Year Capital Budget**

Project	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total 2011-2020
2010 GMC - 50%					\$ 10,000						\$ 10,000
Maple Street - shelf ready		\$ 20,000	\$ 200,000							\$ 12,500	\$ 232,500
Steel Street		\$ 13,750		\$ 137,500							\$ 151,250
Valve Operator - Carry \$15,000 over from 2010 operating	\$ 25,000										\$ 25,000
Decommission of Chemical Rooms	\$ 50,000										\$ 50,000
Tower Safety & Exterior Surface Upgrade		\$ 320,000									\$ 320,000
Henrietta Street - shelf ready			\$ 108,333								\$ 108,333
Osborne Street		\$ 13,750	\$ 125,000								\$ 138,750
Hillside Drive		\$ 14,300	\$ 143,000								\$ 157,300
Ontario Street		\$ 7,700	\$ 77,000								\$ 84,700
Alberta Street			\$ 7,700			\$ 77,000					\$ 84,700
River Street			\$ 14,300			\$143,000					\$ 157,300
Secondary Backwash - Water Plant Upgrades	\$ 115,000							\$100,000			\$ 215,000
Chlorinators (pre/post/standby)						\$ 51,000					\$ 51,000
Low Lift Pumps										\$175,000	\$ 175,000
Diesel Generator - Rehab or Replace							\$200,000				\$ 200,000
2009 Chevy Van									\$ 15,000		\$ 15,000
High Lift Pumps										\$175,000	\$ 175,000
WTP Filter Media					\$ 55,000					\$ 60,000	\$ 115,000
Corrosion Control Plan	\$ 30,000	\$ 200,000									\$ 230,000
Compressor	\$ 20,000										\$ 20,000
Elm St. Distribution and Collection System Expansion - 50%	\$ 75,000										\$ 75,000
Water & Sewer Rate Study - 50%	\$ 12,000										\$ 12,000
John Street Reconstruction - shelf ready	\$ 3,750	\$ 643,283									\$ 647,033
Brock Street Reconstruction	\$ 269,866										\$ 269,866
Queen Street Water	\$ 7,769										\$ 7,769
<b>Total</b>	<b>\$ 608,385</b>	<b>\$ 1,232,783</b>	<b>\$ 675,333</b>	<b>\$ 137,500</b>	<b>\$ 65,000</b>	<b>\$271,000</b>	<b>\$200,000</b>	<b>\$100,000</b>	<b>\$ 15,000</b>	<b>\$422,500</b>	<b>\$ 3,727,501</b>

**Appendix A—Wastewater 10 Year Capital Budget**

Project	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total 2011-2020
Replace 2005 Chevy Pick-up (V0105)					\$ 10,000						\$ 10,000
Lagoon Chamber Replacements (4 Chambers)		\$ 100,000	\$ 100,000	\$100,000	\$ 100,000						\$ 400,000
VFS Drive - Motion 2009-390	\$ 25,000										\$ 25,000
VFS Drive - East End Pumping Station	\$ 25,000										\$ 25,000
John Street Study	\$ 3,750										\$ 3,750
Asset Management Software - GIS											\$ -
Maple Street - shelf ready		\$ 22,000	\$ 220,000								\$ 242,000
Osborne Street		\$ 16,500	\$ 165,000								\$ 181,500
Steel Street		\$ 13,750	\$ 137,500								\$ 151,250
2009 Chevy Van - Mobile 3									15,000		\$ 15,000
Elm St. Distribution and Collection System Extension	\$ 75,000										\$ 75,000
Hillside Drive		\$ 14,300	\$ 143,000								\$ 157,300
Alberta Street			\$ 7,700		\$ 77,000						\$ 84,700
River Street			\$ 14,300		\$ 143,000						\$ 157,300
Henrietta Street - shelf ready			\$ 108,333								\$ 108,333
2010 GMC - 50%										\$ 12,500	\$ 12,500
Lagoon Treatment Expansion					\$ 75,000	\$ 100,000		5,350,000	5,350,000		\$ 10,875,000
East End Pumping Station - Sewage Pump	\$ 70,000										\$ 70,000
Water & Sewer Rate Study - 50%	\$ 12,000										\$ 12,000
John Street Reconstruction - shelf ready		\$ 539,283									\$ 539,283
Sewage Pumping Station Upgrades	\$ 85,000	\$ 650,000									\$ 735,000
Brock Street Reconstruction	\$ 50,378										\$ 50,378
East End Pumping Station Bar Screens & Upgrades			\$ 665,000								\$ 665,000
Inflow & Infiltration Reduction Program	\$260,000	\$ 260,000	\$ 260,000	\$260,000	\$ 260,000						\$ 1,300,000
East End Pumping Station Aluminum Tank		\$ 23,000									\$ 23,000
<b>Total</b>	<b>\$606,128</b>	<b>\$ 1,638,833</b>	<b>\$ 1,820,833</b>	<b>\$360,000</b>	<b>\$ 665,000</b>	<b>\$ 100,000</b>	<b>\$ -</b>	<b>\$5,350,000</b>	<b>\$ 5,365,000</b>	<b>\$ 12,500</b>	<b>\$ 15,918,294</b>

**Appendix B—Water 10 Year Operating Budget**

	2011 Budget	2012 Budget	2013 Budget	2014 Budget	2015 Budget	2016 Budget	2017 Budget	2018 Budget	2019 Budget	2020 Budget
<b>Operating Costs</b>										
Labour/Benefits	\$ 333,886	\$ 340,031	\$ 350,231	\$ 360,738	\$ 371,561	\$ 382,707	\$ 394,189	\$ 406,014	\$ 418,195	\$ 430,741
Materials	\$ 139,580	\$ 135,894	\$ 139,971	\$ 144,170	\$ 148,495	\$ 152,950	\$ 157,539	\$ 162,265	\$ 167,133	\$ 172,147
Small Equipment	\$ 29,000	\$ 29,870	\$ 30,766	\$ 31,689	\$ 32,640	\$ 33,619	\$ 34,628	\$ 35,666	\$ 36,736	\$ 37,838
Utilities	\$ 90,350	\$ 94,868	\$ 99,611	\$ 104,591	\$ 109,821	\$ 115,312	\$ 121,078	\$ 127,132	\$ 133,488	\$ 140,163
Contracted	\$ 110,906	\$ 99,233	\$ 102,210	\$ 105,276	\$ 108,435	\$ 111,688	\$ 115,038	\$ 118,490	\$ 122,044	\$ 125,706
Repairs	\$ 28,300	\$ 29,149	\$ 30,023	\$ 30,924	\$ 31,852	\$ 32,807	\$ 33,792	\$ 34,805	\$ 35,850	\$ 36,925
Office and Other	\$ 6,967	\$ 7,176	\$ 7,391	\$ 7,613	\$ 7,841	\$ 8,077	\$ 8,319	\$ 8,569	\$ 8,826	\$ 9,090
Payment in lieu of taxes	\$ 47,348	\$ 48,769	\$ 50,232	\$ 51,739	\$ 53,291	\$ 54,889	\$ 56,536	\$ 58,232	\$ 59,979	\$ 61,778
Insurance, Audit	\$ 25,424	\$ 26,695	\$ 28,030	\$ 29,431	\$ 30,903	\$ 32,448	\$ 34,071	\$ 35,774	\$ 37,563	\$ 39,441
Sub Total	\$ 811,761	\$ 811,684	\$ 838,466	\$ 866,173	\$ 894,839	\$ 924,498	\$ 955,188	\$ 986,947	\$ 1,019,814	\$ 1,053,829
<b>Financing Costs</b>										
Debt Charges-New Estimate										
Debt Charges Interest			\$ 53,164	\$ 53,937	\$ 49,102	\$ 44,024	\$ 38,693	\$ 33,095	\$ 27,217	\$ 21,046
Debt Charge Principal			\$ 84,536	\$ 96,713	\$ 101,549	\$ 106,626	\$ 111,958	\$ 117,555	\$ 123,433	\$ 129,605
Debt Charges-Committed										
Debt Charges Interest	\$ 18,967	\$ 18,668	\$ 18,362	\$ 18,046	\$ 17,721	\$ 17,388	\$ 17,044	\$ 16,691	\$ 16,328	\$ 15,954
Debt Charge Principal	\$ 10,428	\$ 10,726	\$ 11,033	\$ 11,348	\$ 11,673	\$ 12,007	\$ 12,350	\$ 12,703	\$ 13,067	\$ 13,440
Transfer to Reserves	\$ 212,390	\$ 263,000	\$ 152,000	\$ 167,200	\$ 197,296	\$ 228,863	\$ 263,193	\$ 300,040	\$ 339,045	\$ 379,730
Sub Total	\$ 241,784	\$ 292,394	\$ 319,094	\$ 347,245	\$ 377,341	\$ 408,908	\$ 443,238	\$ 480,085	\$ 519,090	\$ 559,775
<b>Total Costs</b>	<b>\$ 1,053,545</b>	<b>\$ 1,104,079</b>	<b>\$ 1,157,560</b>	<b>\$ 1,213,418</b>	<b>\$ 1,272,179</b>	<b>\$ 1,333,406</b>	<b>\$ 1,398,426</b>	<b>\$ 1,467,032</b>	<b>\$ 1,538,903</b>	<b>\$ 1,613,604</b>
<b>Operating Revenues</b>										
Rate Revenue	\$ 1,016,970	\$ 1,067,504	\$ 1,120,985	\$ 1,176,843	\$ 1,235,604	\$ 1,296,831	\$ 1,361,851	\$ 1,430,457	\$ 1,502,328	\$ 1,577,029
Miscellaneous Revenues	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575	\$ 36,575
<b>Total Operating Revenues</b>	<b>\$ 1,053,545</b>	<b>\$ 1,104,079</b>	<b>\$ 1,157,560</b>	<b>\$ 1,213,418</b>	<b>\$ 1,272,179</b>	<b>\$ 1,333,406</b>	<b>\$ 1,398,426</b>	<b>\$ 1,467,032</b>	<b>\$ 1,538,903</b>	<b>\$ 1,613,604</b>

**Appendix B—Wastewater 10 Year Operating Budget**

	2011 Budget	2012 Budget	2013 Budget	2014 Budget	2015 Budget	2016 Budget	2017 Budget	2018 Budget	2019 Budget	2020 Budget
<b>Operating Costs</b>										
Labour/Benefits	320,503	326,246	336,033	346,114	356,498	367,193	378,209	389,555	401,242	413,279
Materials	104,955	105,231	108,388	111,639	114,988	118,438	121,991	125,651	129,420	133,303
Utilities	40,000	42,000	44,100	46,305	48,620	51,051	53,604	56,284	59,098	62,053
Contracted	89,730	82,422	84,895	87,441	90,065	92,767	95,550	98,416	101,369	104,410
Office and Other	6,967	7,176	7,391	7,613	7,841	8,077	8,319	8,569	8,826	9,090
PIL	0	0	0	0	0	0	0	0	0	0
Insurance, Taxes, Audit	25,543	26,820	28,161	29,569	31,048	32,600	34,230	35,942	37,739	39,626
Sub Total	587,698	589,895	608,968	628,682	649,060	670,125	691,902	714,416	737,693	761,760
<b>Capital Costs</b>										
Debt Charges-New Estimate										
Debt Charges Interest				\$ 17,354	\$ 15,897	\$ 14,366	\$ 12,757	\$ 11,065	\$ 9,287	\$ 57,418
Debt Charge Principal				\$ 28,467	\$ 29,923	\$ 31,454	\$ 33,063	\$ 34,755	\$ 36,533	\$ 117,907
Debt Charges-Committed										
Debt Charges Interest	\$ 5,285									
Debt Charge Principal	\$ 158,444									
Transfer to Reserves	\$ 558,285	\$ 752,000	\$ 766,000	\$ 734,500	\$ 748,000	\$ 761,500	\$ 775,500	\$ 789,500	\$ 804,000	\$ 689,000
Sub Total	\$ 722,014	\$ 752,000	\$ 766,000	\$ 780,321	\$ 793,820	\$ 807,320	\$ 821,320	\$ 835,320	\$ 849,820	\$ 864,325
<b>Total Costs</b>	<b>\$ 1,309,712</b>	<b>\$ 1,341,895</b>	<b>\$ 1,374,968</b>	<b>\$ 1,409,003</b>	<b>\$ 1,442,880</b>	<b>\$ 1,477,445</b>	<b>\$ 1,513,222</b>	<b>\$ 1,549,736</b>	<b>\$ 1,587,513</b>	<b>\$ 1,626,085</b>
<b>Revenues</b>										
Rate Income	\$ 1,271,212	\$ 1,303,395	\$ 1,336,468	\$ 1,370,503	\$ 1,404,380	\$ 1,438,945	\$ 1,474,722	\$ 1,511,236	\$ 1,549,013	\$ 1,587,585
Miscellaneous Revenues	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500	\$ 38,500
<b>Total Revenues</b>	<b>\$ 1,309,712</b>	<b>\$ 1,341,895</b>	<b>\$ 1,374,968</b>	<b>\$ 1,409,003</b>	<b>\$ 1,442,880</b>	<b>\$ 1,477,445</b>	<b>\$ 1,513,222</b>	<b>\$ 1,549,736</b>	<b>\$ 1,587,513</b>	<b>\$ 1,626,085</b>

## Appendix C—Rate Structure Background Information

### Uniform Rate Structure

*Goals/Objectives Supported: Revenue Stability, Fairness & Equity, Affordability, to some extent Conservation and Economic Development, Practical*

A uniform rate structure means that the price per unit remains constant despite consumption and despite the class of user. The cost is calculated by dividing the total cost of the service to be recovered from the volumetric rate by the total billable consumption. This is typically used in conjunction with a fixed charge (described in the previous section).



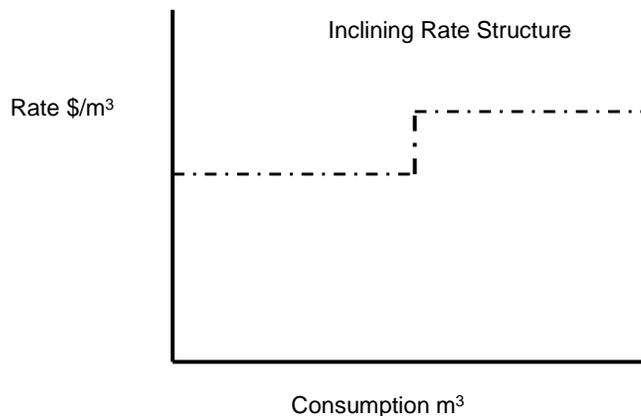
**Revenue stability** is promoted with this rate structure when accompanied by updated consumption information and a fixed charge. This rate structure is easy to implement and is simple for customers to understand (**practical**). To some extent, **conservation** and **economic development** objectives are promoted as the per unit rate stays the same; there are no incentives or disincentives to consume water. **Affordability** is also promoted as customers pay the same rate per unit for volumes consumed.

Given the significant amount of the operating costs that are fixed in water and wastewater operations, by charging a uniform rate for those fixed costs not recovered from the fixed charge, **fairness and equity** principles are supported. For all of the above noted reasons, a uniform rate structure, which is currently in place is recommended.

### Inclining Block Rate Structure

Goals/Objectives Supported: Conservation, Sustainability

The rates in an inclining rate structure increase as consumption increases by establishing thresholds (blocks) at which the rate increases. The main objective of an increasing block structure is to encourage **conservation**. For inclining block rate structures, the block (quantity) shift points are generally based upon the unique demand characteristics of each user class and are focused on user demand points to enhance water usage awareness. This method requires the collection and analysis of consumption patterns by user classification to establish rates. Approximately 6-11% of the Ontario municipalities surveyed employ an inclining rate structure including Owen Sound, Barrie, Kingston (water residential only), East Gwillimbury (water only), The Blue Mountains, Cobourg and King. This type of rate structure can also be employed on a seasonal basis (May to September).



The economic theory behind seasonal surcharges is that prices during peak demand periods should exceed prices during off-peak periods. It is peak use that strains the capacity of the system and triggers the need for expansion. Therefore, peak users should pay the extra costs associated with system expansion.

Challenges exist in establishing the most appropriate threshold or block(s) where rates will increase. Typically, block rate thresholds for residential properties try to establish the first block to reflect indoor water use and the second block to reflect outdoor use. Depending on how the rate blocks are established, inclining rate structures can become quite complex and subject to claims of unfair allocation of charges and controversy regarding the appropriateness of the blocks. Further, an inclining rate structure discourages **economic development**, and generally can be punitive to the ICI sector as a whole unless the block rate structure is established for the residential class only.

In addition to the increased administrative challenges associated with conservation pricing, one of the most frequently cited problems in municipalities that have implemented conservation pricing is **revenue stability** which is one of the goals and objectives of the Town. If consumers respond with a higher-than-expected reduction in water use, conservation will result in reduced revenues and unstable cash flow.

Many of the operating and capital costs within the Town's budget are fixed in nature, in that they exist, regardless of the amount of water consumed or sewage treated. Therefore, while a conservation rate structure may reduce volumes consumed, there is not a commensurate reduction on the cost of operations. Ultimately, to manage revenue instability risk associated with an inclining rate structure requires accurate monthly usage data by customer type over several years to accurately forecast the consumption within each block rate. This is currently only available on a bi-annual or quarterly basis in the Town of Gananoque.

Research has proven that to be effective in lowering consumption, premiums need to be significant due to the limited impact that price has on water demand, however, high premiums pose a challenge in terms of **affordability** for some sectors of the community such as large families with low incomes.

Research has also reflected that a conservation rate structure is more effective when applied to water and wastewater but there are public acceptance issues when applied to both water and wastewater, given that much of the excess use in summer months is related to lawn watering and does not enter the wastewater treatment facilities. As such, some municipalities such as Kingston apply the residential inclining rate structure to water only.

### Other Conservation Strategies

Conservation planning goals can take many forms. These include but are not limited to the following:

- Eliminating, reducing or postponing capital expansions;
- Extending the life of existing facilities;
- Lowering variable operating costs;
- Improving drought or emergency preparedness;
- Educating customers about the value of water; and
- Protecting and preserving environmental resources.

There are many strategies that a municipality can employ to promote conservation that have proven to be as or more effective than an inclining rate structure. Based on research undertaken from various sources such as the American Waterworks Association (AWWA) and the United States Environmental Protection Agency (USEPA), a worksheet was developed to summarize the types of programs/strategies available and the current practices in the Town to promote conservation. The measures are categorized into 3 levels (Level 1, being the most basic to Level 3 being the most advanced). The following summarizes the broad programs/strategies within each Level:

<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>
<ul style="list-style-type: none"><li>◆ Universal metering</li><li>◆ Water accounting and loss control</li><li>◆ Costing and pricing</li><li>◆ Information and education</li></ul>	<ul style="list-style-type: none"><li>◆ Water audits</li><li>◆ Retrofits</li><li>◆ Pressure management</li><li>◆ Landscape efficiency</li></ul>	<ul style="list-style-type: none"><li>◆ Replacements and promotions</li><li>◆ Reuse and recycling</li><li>◆ Water-use regulation</li><li>◆ Integrated resource management</li></ul>

If existing programs are successful, discretionary usage is minimized and there tends to be limited additional ability to further lower consumption levels through the implementation of an inclining rate structure. This is in fact the case in Gananoque where average consumptions are low.

The following provides a highlight of some of the strategies that have been employed by the Town:

- **Low Average Residential Consumption**—Based on a review of the 2010 residential water use, the average Residential consumption per household is approximately 153 m<sup>3</sup> per year which is low in comparison to a number of municipalities surveyed.
- **Watering Use Regulations**—The Town has maintained summer use water restrictions, repairs water leaks as identified with a more proactive program planned.
- **Education and Awareness**—The Town releases information about water conservation which includes tips about how to conserve water.
- **Metering Properties**—All properties in the Town are metered. Research reflects that metering reduces end-user consumption by 30-50%.

- **Meter Replacement Programs**—The Town is in the process of implementing a proactive meter replacement program.

#### Summary of Conservation Findings

- Water conservation continues to be a high priority for the Town of Gananoque.
- The Town has achieved reductions and water efficiencies through a range of existing programs and initiatives including, information programs and metering properties.
- Gananoque's average Residential consumption is amongst the lowest in the survey which indicates that consumption is being effectively managed.
- Given the relatively low levels of income and low current consumption levels, it is anticipated that there are limitations on the extent to which the implementation of a conservation pricing rate structure will achieve any further reductions in water consumption.

Given the above noted findings, a conservation rate structure is not recommended.

**Declining Block Rate Structure**

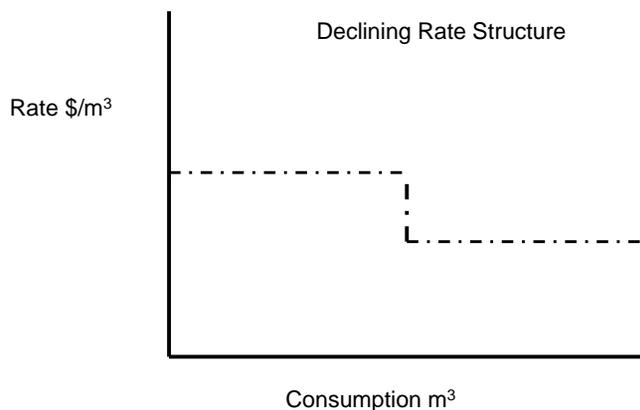
**Goals/Objectives Supported: Economic Development**

In a declining block rate structure, the unit price of water decreases as the volume consumed increases. Approximately 20% of the Ontario municipalities surveyed employ a declining rate structure. This is the approach that was formerly used in the Town of Gananoque and is currently being used by Brockville, Kingston (ICI water only), Napanee (ICI only), London (ICI water only), North Bay, Belleville and Chatham-Kent. Similar to the challenges faced in an inclining rate structure, issues arise in identifying a fair approach for establishing thresholds and the amount of discount. Depending on how the rate blocks are established, declining rate structures can become quite complex and will also compromise **affordability** for low volume customers.

It should be noted that the recommended increase in the allocation of costs to be recovered from the fixed charge supports **economic development** as shown earlier in the report where large volume customers will experience a reduction in water and wastewater costs, bringing these properties in line with neighbouring municipalities.

A declining structure charges low volume users the highest rate, which is often residential consumers or small business. This approach does not encourage **conservation** and also shifts the costs to low volume customers. This structure is designed to reflect the fact that at a certain level of consumption the cost of providing the service decreases, i.e. the fixed costs of the utility have already been met. However, as shown earlier in the report, 78% and 89% of the water and wastewater costs are actually fixed and therefore the implementation of a declining rate structure is not recommended.

A declining rate structure encourages higher consumption which may eventually push the system to exceed its capacity. In the long run, therefore, declining block rates are likely to increase costs by requiring systems to add capacity before they might otherwise have had to. As such, this approach is not recommended as it does not support the goal of **sustainability**.



### Humpback Rate Structure

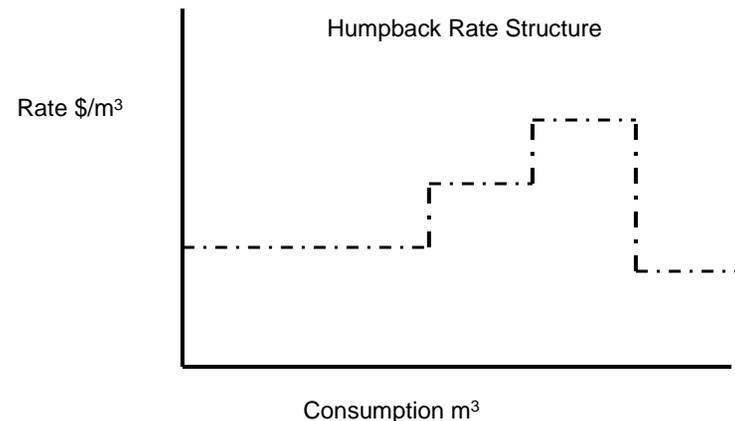
#### Goals/Objectives Supported: Conservation and Economic Development

A humpback rate structure uses a combination of increasing and decreasing block rates: rates first increase, then decrease in steps as consumption increases. This approach attempts to target high volume residential customers by charging higher rates for usage above what is considered average use, and then provides lower cost for high volume commercial and industrial customers to encourage economic development. Approximately 6% of the Ontario municipalities surveyed, including the municipalities in the Region of Halton (water only) and Sault Ste. Marie (ICI only), employ a humpback rate structure.

In effect, this type of rate structure provides an indirect way of allocating costs to different customer classes whose unit cost of service may vary. For example, the block rate can be set at thresholds to coincide with usage patterns of a typical large ICI user, thereby charging them less per unit as consumption passes a set threshold.

This approach promotes water **conservation** for low volume customers but actually discourages conservation for very high volume users. From an **economic development** this is typically used by municipalities to attract large firms that use large amounts of water where there is significant capacity.

Similar to the challenges that exist with an inclining and declining rate structure, it is difficult to determine or rationalize the blocks where rates will change. Further, this approach encourages higher consumption which may eventually push the system to exceed its capacity. Given the high level of costs that are actually fixed, this approach is not recommended as it would be difficult to support from a **fairness and equity** perspective.



**Appendix D—Alternative Rate Structure Options**

Annual Consumption Meter Size	Residential 150 m <sup>3</sup> 5/8"	Residential 200 m <sup>3</sup> 5/8"	Residential 250 m <sup>3</sup> 5/8"	Residential 300 m <sup>3</sup> 5/8"	ICI 3,000 m <sup>3</sup> 2"	ICI 10,000 m <sup>3</sup> 2"	ICI 21,000 m <sup>3</sup> 3"
<b>Alternate Option A - 45% Fixed Rate, AWWA, Corrected Consumption 2012 Budget (September 1 20102 - August 31, 2013)</b>							
Water	\$ 345	\$ 399	\$ 452	\$ 505	\$ 4,673	\$ 12,096	\$ 23,948
WW	\$ 393	\$ 454	\$ 514	\$ 574	\$ 5,320	\$ 13,773	\$ 27,268
<b>Total</b>	<b>\$ 739</b>	<b>\$ 852</b>	<b>\$ 966</b>	<b>\$ 1,079</b>	<b>\$ 9,993</b>	<b>\$ 25,869</b>	<b>\$ 51,216</b>
<b>Alternate Option B - 40% Fixed Rate, Corrected Consumption 2012 Budget (September 1 20102 - August 31, 2013)</b>							
Water	\$ 361	\$ 419	\$ 477	\$ 535	\$ 4,071	\$ 12,169	\$ 25,038
WW	\$ 411	\$ 477	\$ 543	\$ 609	\$ 4,635	\$ 13,856	\$ 28,509
<b>Total</b>	<b>\$ 772</b>	<b>\$ 896</b>	<b>\$ 1,020</b>	<b>\$ 1,143</b>	<b>\$ 8,707</b>	<b>\$ 26,026</b>	<b>\$ 53,546</b>