

WATER & WASTEWATER RATE STUDY



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EXECUTIVE SUMMARY

The Township of Springwater provides potable water from nine different systems to about 3,800 connections located throughout various service areas of the Township. In addition, wastewater is collected and treated by two systems – one in Snow Valley and one in Elmvale. A third wastewater treatment system in Centre Vespra has been constructed and the Township is expected to receive ownership of the plant in 2019. The Township maintains all infrastructure and bills their customers based on the uniform rates established through the 2013 Water and Wastewater Rate Study.

The Township of Springwater last completed a comprehensive Water and Wastewater Rate Study in 2013 with a view that the study be updated in three to five years. This study identified and recommended increases to the Township's rates and a schedule of rate increases covering the period 2014 to 2023. Following the direction of the 2013 study, the Township has continued to increase utility rates in accordance with the recommendations put forth – water rates have been increased at a rate of 3.5 per cent per annum while wastewater rates were increased at 3.0 per cent per annum.

Since the five-year review period is nearly complete, the Township of Springwater has initiated this Water and Wastewater Rate Study. The scope of the assignment will be to deliver a long-term water and wastewater financial recovery plan to fund current and future operations (direct and indirect), growth related capital expansion (and associated financing costs), and the rehabilitation and eventual replacement of existing infrastructure. Furthermore, the analysis will ensure the water and wastewater rate structure developed will allow Springwater to meet its financial obligations and ensure long-term sustainability. In addition to the financial analysis, this study was to review and recommend a new user rate structure and new water and wastewater rates that address the following:

- Water consumption and wastewater usage by different types of users;
- Total anticipated water and wastewater demand;
- Full recovery of system operating costs;
- Full recovery of capital infrastructure financing needs; and
- Establishment of reserves to fund the rehabilitation and replacement of infrastructure.

In undertaking the analysis, a long-term financial planning model covering a ten-year period from 2018 to 2027 was developed. As the Township is moving into a period

where substantial growth is anticipated and cost and revenue assumptions can change, it is recommended that the Township review the rate study in the next three-to-five years as details surrounding growth and costs become more refined. Although this analysis includes the ten-year period, Township staff and Council should consider the immediate three-to-five years for rate setting purposes. The analysis was prepared using 2017 budget information to inform new utility rates for 2018.

The proposed three key rate structure adjustments following the review are as follows:

Proposed Rate Structure Adjustments		
Rate Structure Changes	Existing Situation	Proposed Change
1. Realign the fixed charge recovery for wastewater services	<p>The fixed charge component of the wastewater bill recovers a higher share of costs versus the total water bill.</p> <p>Based on a typical residential bill, the fixed charge represents about 37% of the total water bill while this fixed component represents about 45% of the total wastewater bill.</p>	<p>It is proposed that the fixed charge recovery for wastewater services be realigned over the long-term to be more in-line with water services.</p> <p>This adjustment will still maintain fiscal stability for the Township while providing more financial incentives to conserve water.</p>
2. Adjust consumption tiers (wastewater only)	<p>Residential customers connected to the wastewater system are charged on an inclining block structure relative to the amount of water used. Under the existing structure, customers pay for wastewater that may not be returned to the sewer system (e.g. related to watering the garden, filling pools, washing cars, etc.). Currently a four tier consumption structure exists:</p> <p>Tier 1: 0 – 15m³ /month Tier 2: 15 – 30m³ /month Tier 3: 31 – 45m³ /month Tier 4: >45 m³/month</p>	<p>It is proposed the four tier inclining block structure be amended and wastewater be charged on a single tier rate basis.</p> <p>Therefore, the charge per cubic metre remains constant regardless of use. Under the revised rate structure, all consumption (for all users) would be charged the Tier 1 rate.</p>
3. Apply uniform rate structure	<p>Currently, not all users are subject to the same rate structure. Commercial customers pay the same rate per m³ regardless of use while residential customers are charged for water and wastewater consumption on an inclining block basis.</p>	<p>It is proposed that the rate structure be applied to all system users uniformly.</p> <p>Therefore, commercial customers are treated similar to the residential sector and pay according to the inclining block structure for water services.</p>

The full cost analysis reveals that:

- The required water user rate revenue in 2018 is forecast to be \$2.48 million. This is the amount of revenue which must be collected through the sale of water to fully recover operating, capital, rehabilitation and replacement costs of the water system.
- The required wastewater user rate revenue in 2018 is forecast to be \$1.15 million. This is the amount of revenue which must be collected through the wastewater rates to fully recover operating, capital, rehabilitation and replacement costs of the wastewater system.
- Over the long-term, the net rate funding requirements for both the Township's water and wastewater systems are expected to increase. The cost increases can largely be attributed to carrying out the capital asset repair and replacement program, increasing utility operational costs as well as increased capital asset management contributions. It is projected that the water and wastewater net rate funding requirements will increase to \$3.0 million and \$1.81 million respectively over the five-year period.

In order for the Township to recover the costs associated with providing these services, necessary adjustments to the utility rates are required. The table below provides a snapshot of the calculated 2018 utility rates required under the proposed rate structure.

Calculated 2018 Utility Rates		
All Accounts	Water ⁽¹⁾	Wastewater ⁽²⁾
Fixed Charge: \$/Month		
Residential	\$18.48	\$31.18
Commercial	\$30.81	\$38.98
Consumption Charge: \$/m³		
Tier 1: 0 – 15m ³ /month	\$1.695	n/a
Tier 2: 15 – 30m ³ /month	\$1.778	n/a
Tier 3: 31 – 45m ³ /month	\$2.224	n/a
Tier 4: >45 m ³ /month	\$3.113	n/a
Constant Rate per m ³	n/a	\$2.103

Note 1: Inclining block water rates are now applied to all users (residential and commercial)

Note 2: Wastewater Consumption charges are constant and will not increase with use

In order to test the impact of the new rate structure on Township residents and businesses, a sensitivity analysis was undertaken to quantify the range of rate impacts

to both the residential and non-residential properties. The results of the sensitivity analysis is illustrated in the table and figures below.

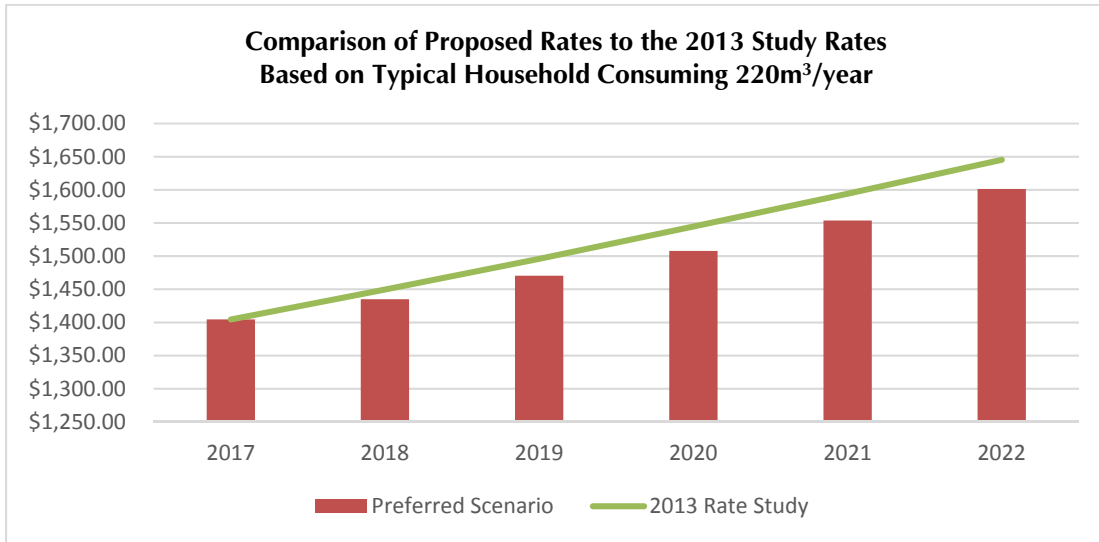
For residential properties, the 2018 rate changes vary depending on the type of user. As a result of the structure change:

- high volume users will see a decrease in their total bill (in 2018 only) as those users benefit from a single tier consumption rate as opposed to paying for wastewater consumption on an inclining block basis;
- The impact on low volume and typical users is minimal and those users will see increases around the rate of inflation; and
- The recommended structure and resulting rates are lower than those projected in the 2013 rate study (see the figure below following the table).

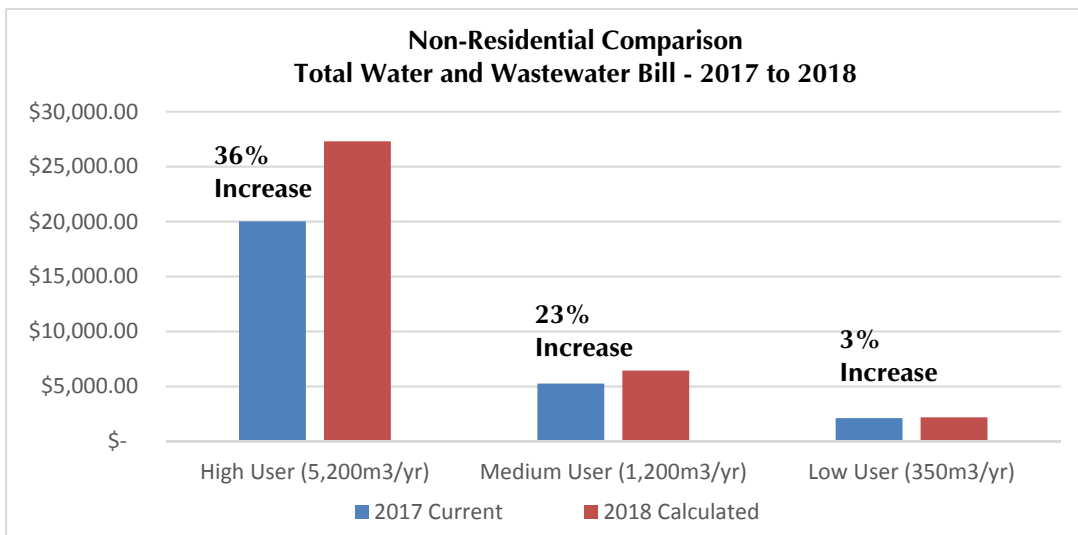
Comparison of Water and Wastewater Charges per Typical Household Current vs. Calculated (Per Annum) ⁽¹⁾⁽²⁾			
Household Consumption	2017 Existing	2018 Calculated	Change (\$ and %)
1. High User: Annual Consumption of 700m ³	\$3,905	\$3,592	(\$313) or -8.0%
2. Medium-High User: Annual Consumption of 450m ³	\$2,383	\$2,368	(\$16) or -0.7%
3. Typical User: Annual Consumption of 220m ³	\$1,405	\$1,435	\$30 or 2.2%
4. Low User: Annual Consumption of 70m ³	\$843	\$862	\$18 or 2.2%

Note 1: Typical household consumption figures shown are based on the average consumption trends seen in the Township over the last several years.

Note 2: All charges illustrated include both water and wastewater services.



For non-residential properties, the rate changes vary depending on the type of user. In order to carry out the sensitivity analysis, a sample of three different properties, serviced by both water and wastewater, with different usage patterns were chosen. Overall, the quantum of the rate change will be dependent on the specific property and tied directly to the amount of water consumed. Generally, most commercial customers will see an increase on their total bill as they now begin to pay for water use beyond Tier 1. The highest increase for commercial properties serviced by both water and wastewater is estimated at around 36 per cent in 2018, however, most commercial users in the Township have relatively low consumption and would see an increase in the range of 3 per cent. It should be noted that some high volume users connected only to municipal water are estimated to see increases in excess of the 36 per cent noted – those water only users represent less than 10 accounts. Overall, it is anticipated that less than 2 per cent of all connections (residential and non-residential) will see an increase on their total bill above 5 per cent.



The table below outlines the proposed utility rates required over the immediate 5-year period to support the system. In general, a few important considerations:

- The water rates are proposed to be held constant over the next three years (to 2020) as revenues are anticipated to be sufficient to cover expenditures. Rate increases beyond 2020 are projected to be modest at 1.1 per cent per annum;
- The wastewater rates are projected to increase above the rate of inflation to keep with increasing operating expenditures while ensuring sufficient monies are available to fund the non-growth related capital expenditures;
- The proposed water and wastewater rates combined are lower than those identified in the 2013 rate study; and
- Beyond 2022, the annual rate increases are calculated to be in-line with those increases set out in 2022 (for water and wastewater services).

Calculated Utility Rates: 5-Year Projection					
All Accounts	2018	2019	2020	2021	2022
<u>Water</u>					
Fixed Charge: \$/Month					
Residential	\$18.48	\$18.48	\$18.48	\$18.68	\$18.89
Commercial	\$30.81	\$30.81	\$30.81	\$31.15	\$31.49
<i>Change (in %):</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>1.1%</i>	<i>1.1%</i>
Consumption Charge: \$/m³					
Tier 1: 0 – 15m ³ /month	\$1.695	\$1.695	\$1.695	\$1.714	\$1.733
Tier 2: 15 – 30m ³ /month	\$1.778	\$1.778	\$1.778	\$1.798	\$1.818
Tier 3: 31 – 45m ³ /month	\$2.224	\$2.224	\$2.224	\$2.248	\$2.273
Tier 4: >45 m ³ /month	\$3.113	\$3.113	\$3.113	\$3.147	\$3.182
<i>Change (in %):</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>1.1%</i>	<i>1.1%</i>
<u>Wastewater</u>					
Fixed Charge: \$/Month					
Residential	\$31.18	\$32.12	\$33.08	\$34.07	\$35.09
Commercial	\$38.98	\$40.15	\$41.35	\$42.59	\$43.87
<i>Change (in %):</i>	<i>3.0%</i>	<i>3.0%</i>	<i>3.0%</i>	<i>3.0%</i>	<i>3.0%</i>
Consumption Charge: \$/m³					
Constant rate per m ³ /month	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585
<i>Change (in %):</i>	<i>5.3%</i>	<i>5.3%</i>	<i>5.3%</i>	<i>5.3%</i>	<i>5.3%</i>

Staff have been provided with the utility rate setting full costing model to monitor costs and revenues and assist with future fee updates. As part of its process for updating fees:

- It is recommended the Township undertake a comprehensive review every three to five years to ensure that a nexus between costs and revenues is maintained over time.
- This is especially important as the Township moves into a period where significant growth is projected as a result of the Midhurst Secondary Plan Area development which is anticipated to occur in the latter end of the planning period. The costs associated with this growth are difficult to determine at this point. Therefore, it is recommended that an update rate study be undertaken in three to five years time, well before the Township assumes responsibility of Midhurst (Secondary Plan Area) water and wastewater operations. At the time of writing this study, such operations are not anticipated to occur until at least 2026 or 2027.
- The rates remain competitive with surrounding municipalities.
- Both residential and non-residential consumption trends are monitored closely.

I BACKGROUND AND STUDY OBJECTIVE

A. BACKGROUND

The Township of Springwater is located in central Ontario and has a current population of approximately 19,100 persons.

The Township of Springwater provides potable water from nine different systems to about 3,800 connections located throughout various service areas in the Township. In addition, wastewater is collected and treated by two systems – one in Snow Valley and one in Elmvale. A third wastewater treatment system in Centre Vespra has been constructed and the Township is expected to receive ownership of the plant in 2019. The Township maintains all infrastructure and bills their customers based on the uniform rates established through the 2013 Water and Wastewater Rate Study.

The Township of Springwater last completed a comprehensive Water and Wastewater Rate Study in 2013 with a view that the study be updated in three to five years. This study identified and recommended increases to the Township's rates and a schedule of rate increases to 2023. Following the direction of the 2013 study, the Township has continued to increase utility rates in accordance with the recommendations put forth – water rates have been increased at a rate of 3.5 per cent per annum while wastewater rates were increased at 3.0 per cent per annum.

B. STUDY OBJECTIVE

Since the five-year review period is near completion, the Township of Springwater has initiated this Water and Wastewater Rate Study. The objective of this study was to review and recommend, as necessary, a new water and wastewater rate structure that addresses the full cost of providing services. As part of this process, a review of the existing structure was undertaken to ensure an equitable and fair treatment of the various user types was employed. The analysis and model are built on full cost recovery rates consistent with the Township's overall cost recovery policies.

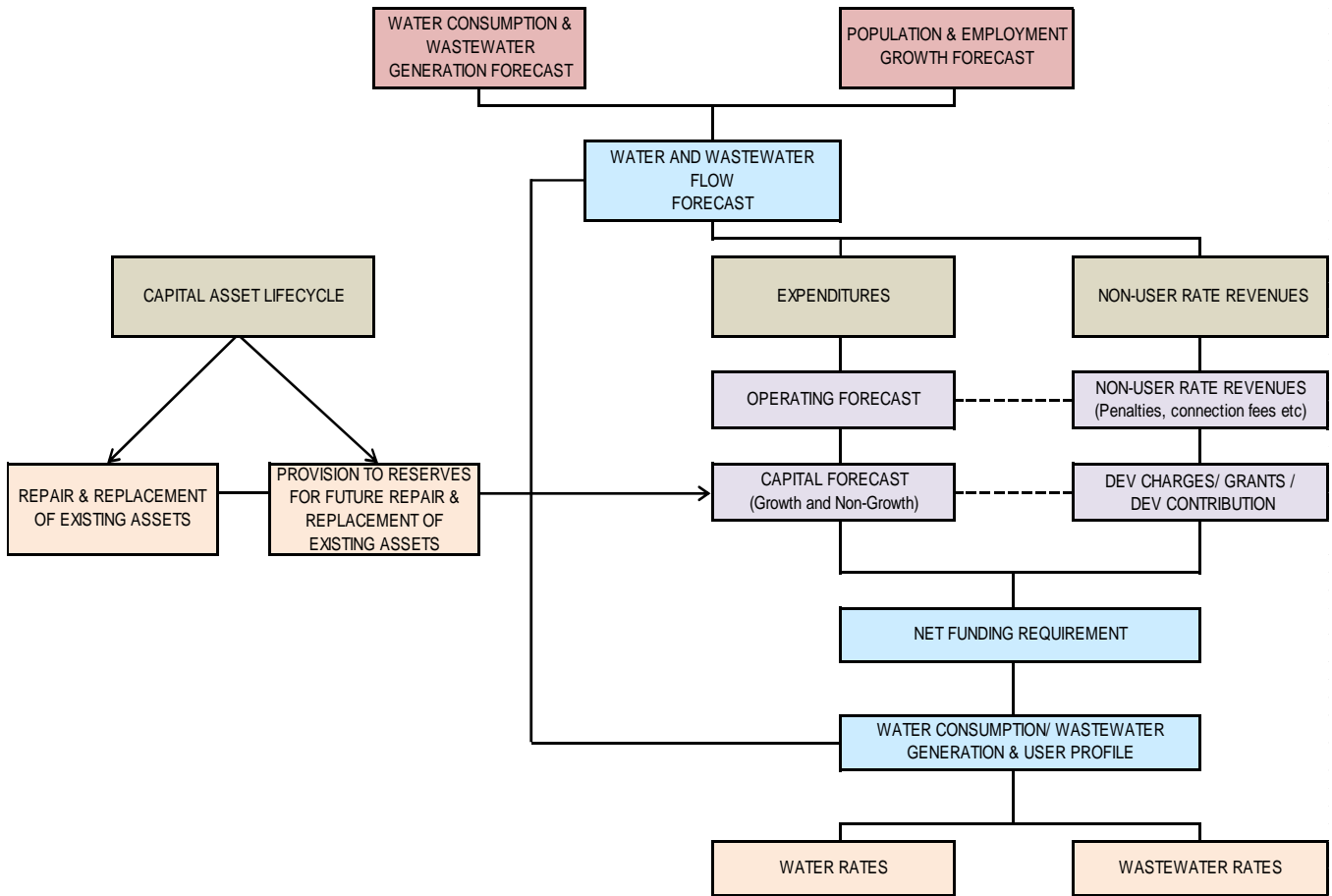
The first step in a study of this nature is to establish a population and household forecast, as this is the basis for determining anticipated water consumption and wastewater generation levels. The study period examines the period from 2018 through 2027. However, it should be noted that the study and analysis was prepared using 2017 budget information to inform new utility rates for 2018.

Following the demographic analysis, the current water and wastewater rates, reserves and annual operating and capital budgets are analyzed. Based on this analysis, the financial position of the Township's water and wastewater systems is determined.

The next step in the study process is to examine the existing rate structure and provide recommendations for change. Following the review, three key rate structure adjustments are proposed. It should be noted that the proposed rate structure will continue to allow the Township to generate sufficient funds on an annual basis to cover operating and capital improvement works. The final step in the process is to evaluate the impacts of implementing the proposed rate structure and resulting full cost recovery rates to the residents and businesses of the Township.

In undertaking this analysis, a financial model was developed and serves as a dynamic rate setting tool. Using the model, the Township is able to perform sensitivity analyses of water and wastewater rates, rate structure and also future phase-in options. The model calculates future capital expenditure requirements and projects future operating and maintenance costs. It also calculates the water and wastewater rates necessary to recover the full costs of the Township's water and wastewater systems. The following diagram (Figure 1) illustrates the overall approach.

Figure 1
Utility Rate Setting Model

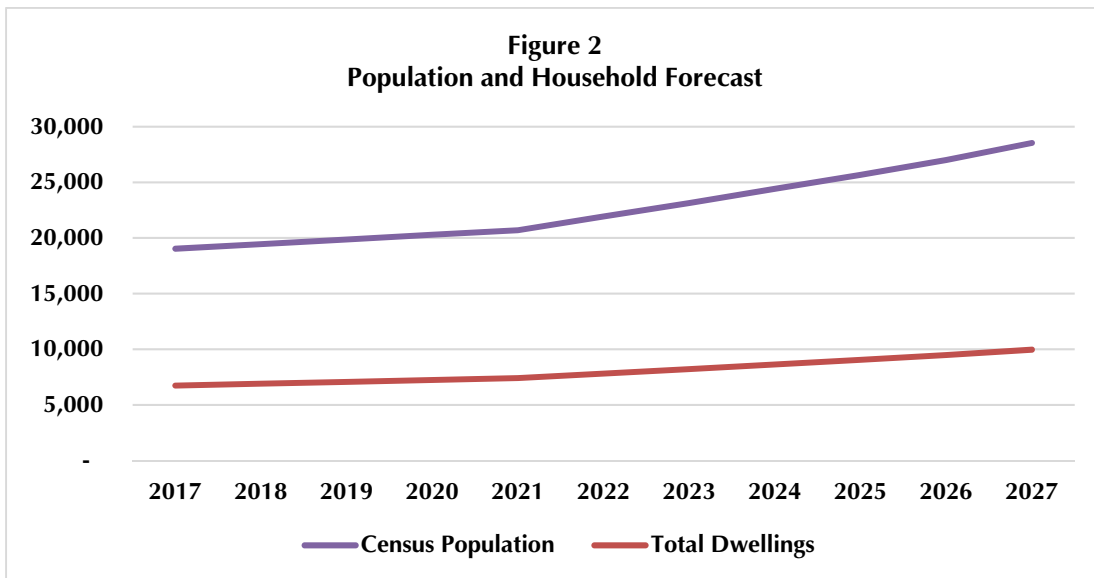


II DEMAND ANALYSIS

Future costs of the Township's water and wastewater systems will largely be driven by demands placed on the system by water consumers. A forecast of future consumption demands must therefore be developed.

A. GROWTH FORECAST

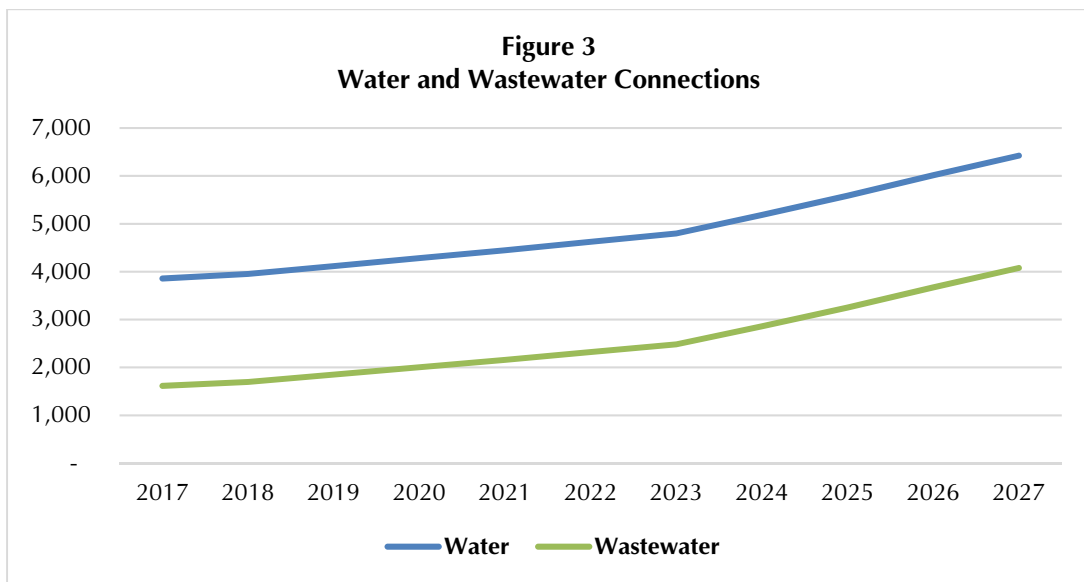
The population and household projections used in this study were based on the Township's Long Range Financial Plan medium growth scenario. The Township's current census population of approximately 19,000 persons is expected to increase to nearly 30,000 persons by 2027. This growth translates into about 3,230 new households over the same period. Most growth is expected to occur in the Midhurst and Centre Vespra areas. Figure 2 below illustrates the projected growth in population and households over the planning period.



Source: Hemson Consulting Ltd. based on Township's Long Range Financial Plan

B. METERED CONNECTIONS

In 2017, the Township has about 3,860 billable connections that receive water services and 1,615 connections that receive wastewater services. It is anticipated that the Township will bill 3,951 water connections for water services and 1,698 wastewater connections for wastewater services in 2018. As shown in Figure 3, the number of connections are expected to increase to about 6,400 and 4,070 by 2027 for water and wastewater services. Much of this growth is anticipated to occur outside of the immediate three to five year planning period and largely driven by the Midhurst Secondary Plan Area development.



For the purposes of this study, it is assumed most new households will be connected to both water and wastewater services¹, however, any existing unserved households are not anticipated to connect to the system.

C. WATER CONSUMPTION FORECASTS

The water demand forecast over the planning period of 2018-2027 was developed using actual 2010 to 2016 metered consumption data.

In our most recent water and wastewater rate studies, we have found that customer profiles have been changing over time: generally, water consumption patterns have

¹ *Communities of Anten Mills, Apto Estates, Minessing and Carson Ridge are to be serviced by water only.*

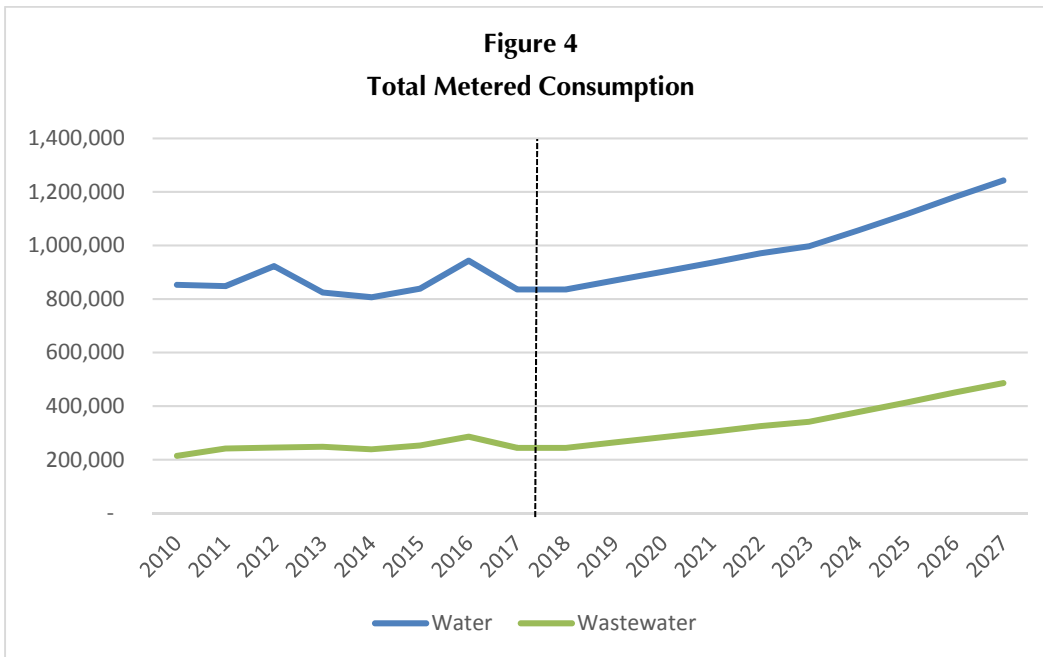
been declining, even with the addition of new residential and non-residential units – similar to the trend seen in the Township and other jurisdictions across the province. The reduced level of water consumption can largely be related to:

1. Demographic changes and household formation sizes – there are fewer people residing in each dwelling unit ultimately reducing the water use in each household;
2. Initiatives by industrial/commercial operations – non-residential users continue to adapt their business processes to be more efficient and environmentally friendly; and
3. Efficiency improvements for household appliances – technological improvements have noticeably reduced demand; present-day dishwashers and washing machines are very economical in terms of water use.

Generally, water consumption is projected to increase over the planning period as the Township adds a significant amount of new residential units to the system. Although total consumption is increasing, metered consumption per connection is forecast to moderately decline throughout the period. This trend is consistent with what is seen in other municipalities across the province.

Unlike water consumption, wastewater flows are not metered. For the purposes of this analysis, wastewater flows were assumed to be equivalent to water flows for the serviced connections. This assumption allows for an equitable distribution of the wastewater system costs to users. Figure 4 illustrates the forecast of metered² water throughout the planning period to 2027. In 2018, the Township is anticipated to bill approximately 835,700 m³ of water.

² For the purpose of setting a utility rate, only the water that is billed to the end-user is incorporated into the analysis and used to calculate new utility rates. This is referred to as billable (or metered) water.



Details regarding the connections and forecast of consumption for the water and wastewater systems are set out in the detailed rate calculations illustrated in Appendix A.

III OPERATION AND MAINTENANCE COSTS

A. OPERATING EXPENDITURES

The Township of Springwater incurs costs to ensure the utility systems are operated in accordance to provincial legislation that guarantees safety and quality. The total operating expenditures for the water system in 2018 is expected to be \$1.7 million and anticipated to increase to \$2.1 million by 2027. The total operating expenditures for the wastewater system in 2018 is expected to be \$1.6 million and is expected to increase to \$2.3 million by 2027. Much of the cost increase on the wastewater system is related to the increased operating costs associated with the Centre Vespra Wastewater Treatment Plant, however, the cost increase is over the long-term and will be offset by revenues collected from new system users. Table 1 below summarizes the total forecasted operating expenditures for water and wastewater services. The transfers to reserves and in-year rate funded capital requirements are identified separately and can be found in Section IV of this report.

Anticipated Operating Expenditures (\$000)			
	Projected Costs		
	2018	2022	2027
Water	\$1,653	\$1,759	\$2,055
Wastewater	\$1,594	\$1,733	\$2,253

1. General Operating Expenditures

Using the Township's 2017 operating budget, most operating expenditures were increased at a rate of 1.5-2 per cent annually to account for inflation. Township contracts and chemical/utility costs were increased at 3 per cent and 5 per cent respectively to reflect higher historical costs.

2. Debt - Principal and Interest Payments

The Township does not currently have any utility rate supported debt. Moving forward, the Township may exercise the use of debt for capital related infrastructure investments over the next ten years. A general debt financing provision was included to offset those years (2018 and 2026) with particularly high wastewater expenditures. The annual principal and interest payments associated with this debt have been included in the analysis and funded through the wastewater rates. The Township may

explore other alternative financing means to smooth the capital expenditure spikes at the time of the project.

3. Centre Vespra Wastewater Treatment Plant

The Township expects to incur full responsibility of the Centre Vespra Wastewater Treatment Plant by 2019 with annual operating costs amounting to approximately \$400,000. In 2021, Phase 2 of this plant is expected to come online and some additional operational costs associated to the expansion are included in the analysis.

B. NON-USER RATE REVENUES

Non-user rate revenues are budget items which decrease the net operating budget and are not recovered through the Township's water or wastewater user rates. For the purposes of this report, the utility revenue received from meter sales, connection fees, late payments and other miscellaneous revenues are considered to be non-user rate revenue. The largest share of total non-user rate revenues is received from water meter sales. The forecast is consistent with the Township's internal revenue assumptions.

The Township is forecast to recover approximately \$173,000 by 2022 through non-user rate revenues for both the water and wastewater systems. Detailed operating expenditures and non-user rate revenues for the water and wastewater systems are set out in the detailed rate calculations illustrated in Appendix A. The 2018 figure, specifically for wastewater, also includes funding (from a third party) for operating the Centre Vespra Wastewater Treatment Plant. Post 2018, the third party funding is removed from the analysis as the Township is expected to maintain ownership of the plant in 2019.

Table 2			
Non-Metered Revenues (\$000)			
	Projected Non-Metered Revenues		
	2018	2022	2027
Water	\$139	\$156	\$188
Wastewater	\$446	\$17	\$36

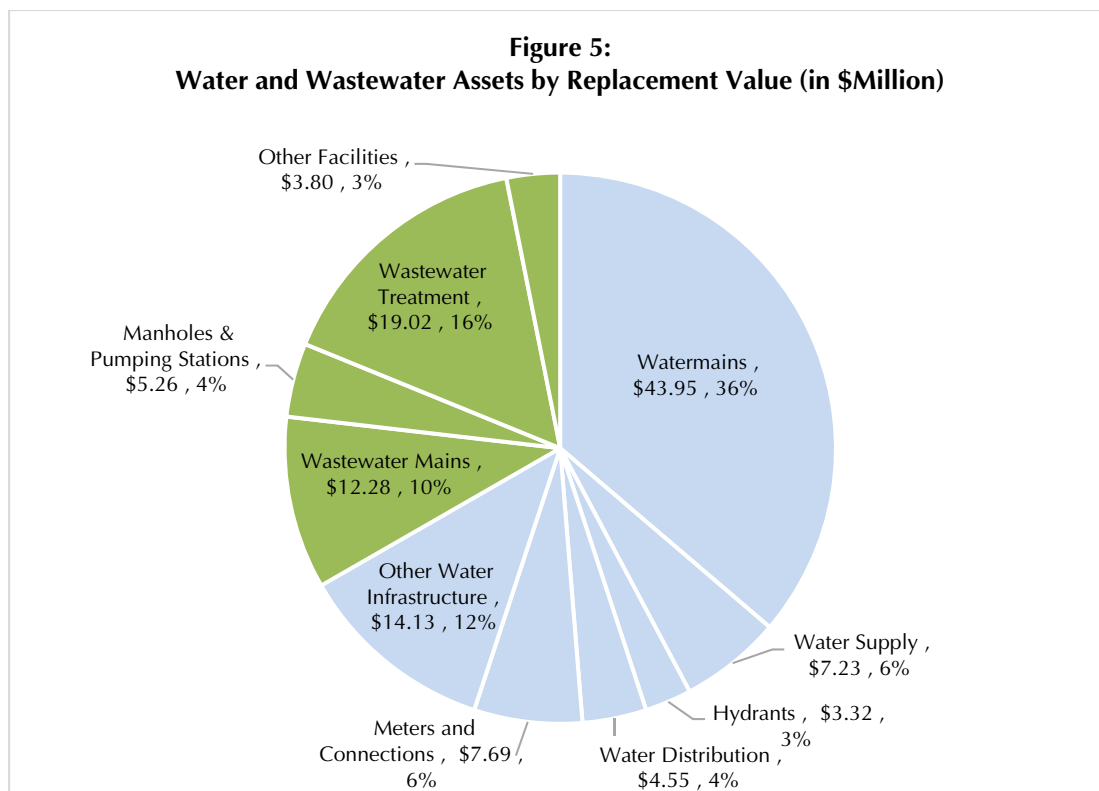
Note: Specifically for wastewater non-rate revenues also include funding (from third party) for operating the Centre Vespra Wastewater Treatment Plant in 2018. Post 2018, the third party funding is removed from the analysis.

IV INFRASTRUCTURE AND CAPITAL

A. WATER AND WASTEWATER INFRASTRUCTURE

The information contained in the analysis was gathered from the Township's existing tangible capital asset database and 2013 Asset Management Plan. The information is used not only to describe, but also define the quantity, age and replacement value of the existing infrastructure. The inventory was grouped into ten main asset categories, six of which relate to water servicing and the remaining to wastewater servicing. It should be noted that as the Township's asset management database is further developed, the updated information will better inform future analyses.

The Township's entire water and wastewater systems have a replacement value of about \$121.2 million. Of this value, about 46%, or \$56.2 million, is related to the Township's linear asset network (water and wastewater mains). Figure 5 below provides the breakdown, by category, of the replacement value of the infrastructure.



Source: Township of Springwater 2013 Asset Management Plan based on the Tangible Capital Asset database (2013 figures have been inflated to current \$2017)

Note: Water Asset Categories in Blue. Wastewater Asset Categories in Green

Both the water and wastewater systems are relatively new as about 66% (\$52.24 million) of the water assets and over 71% (\$28.71 million) of the wastewater infrastructure have a remaining useful life of 50 years or more. Tables 3 and 4 below summarize the Township's water and wastewater system assets by remaining useful life.

Table 3		
Water System Assets By Remaining Useful Life		
Category Description	Total Value (\$Million)	% of Total
0 Years, Overdue	\$1.79	2.2%
0 to 9 years	\$2.15	2.7%
10 to 19 years	\$2.09	2.6%
20 to 29 years	\$2.97	3.7%
30 to 39 years	\$5.96	7.4%
40 to 49 years	\$12.66	15.7%
50 years or more	\$52.24	65.8%
Total	\$80.87	100.0%

Table 4		
Wastewater System Assets By Remaining Useful Life		
Category Description	Total Value (\$Million)	% of Total
0 Years, Overdue	\$0.72	1.8%
0 to 9 years	\$0.56	1.4%
10 to 19 years	\$0.52	1.3%
20 to 29 years	\$1.25	3.1%
30 to 39 years	\$4.92	12.2%
40 to 49 years	\$3.69	9.2%
50 years or more	\$28.71	71.1%
Total	\$40.36	100.0%

B. CAPITAL AND CONTRIBUTIONS TO RESERVE

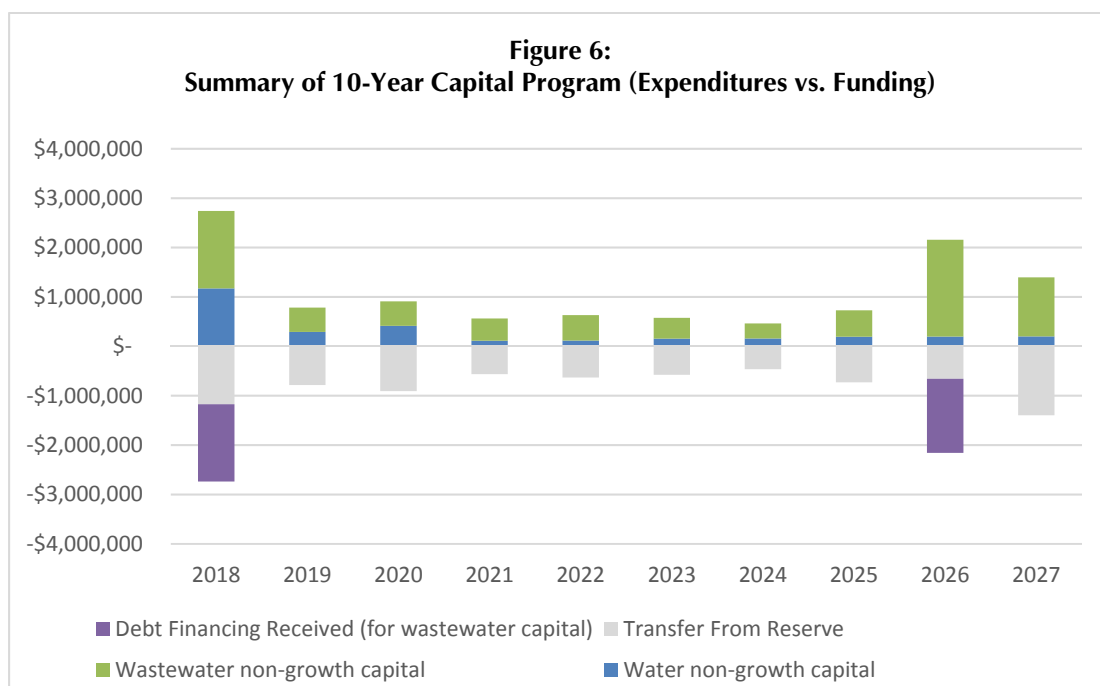
The approved 2017 capital budget (and 6-year projection), Tangible Capital Asset information, the draft 20-year capital plan prepared by the Ontario Clean Water

Agency and discussions with Township staff were used as the basis for preparing the ten-year capital forecast. In addition to the in-year capital requirements, Hemson has included annual provisions to reserves, which would allow the Township to prepare for the future repair and replacement of existing infrastructure.

1. Projected Capital Expenditures

Over the next ten-year period (2018-2027), infrastructure investments will be required to support new growth in the Township and maintain the existing infrastructure network. Infrastructure related to growth will receive funding through development charge revenues and other developer contributions. A development charge policy discount would result in a revenue shortfall and therefore any policy discount would need to be recovered through the user rates. Capital improvements and financing costs related to non-growth related infrastructure are the responsibility of the Township. These costs will need to be funded through user rates.

The total non-growth related capital expenditures which the Township will be responsible for funding is summarized in the tables below. Overall, approximately \$3.0 million in capital is required to support water services and an additional \$7.9 million to support the wastewater capital projects. It should be noted that water and wastewater reserve funds are largely used to fund in-year capital expenditure requirements while some debt financing measures are included to offset those years with particularly high wastewater expenditures – the associated principal and interest payments will be paid by way of future utility wastewater rates and have been included in the analysis.



In addition to the known capital works, an annual provision to reserves is included in the rate calculations as an effort to save for future repair and eventual replacement of existing assets while paying for the capital requirements identified in Figure 6.

2. Asset Repair and Replacement Provision

In addition to annual operating and maintenance costs, water and wastewater infrastructure will require periodic rehabilitation and eventual replacement. Capital expenditures to carry out the rehabilitation and replacement of the aging infrastructure are not growth related and therefore would not receive funding through developer contributions. When assets require rehabilitation or are due for replacement, the source of funds are essentially limited to reserves or contributions from operating. In maintaining a user-pay approach, it is important for the Township to build sufficient reserves for the scheduled replacement of infrastructure through contributions from operating.

The rehabilitation and replacement schedules were created using the TCA data provided by the Township. Provisions for infrastructure replacement are initially calculated for each asset based on their remaining useful life and the anticipated cost of replacement. The aggregate of all individual provisions form the required annual contribution to a reserve fund. A full cost approach is employed to calculate the annual reserve fund contributions and is recognized as a fair approach to charging customers for the use of these assets. In calculating the annual provisions, a number of assumptions are made to account for inflation, interest and the Township's policies and practices. A 2 per cent inflation rate and a 3.5 per cent investment rate are assumed throughout this analysis. The calculated full cost average annual contribution requirement amounts to \$1.55 million for water services and \$796,000 for wastewater services. This calculation is based solely on the infrastructure which the Township owns at the time of preparing this study and as new infrastructure is assumed, the Township should begin to save for the eventual replacement of that infrastructure as well. The annual contribution requirements for new assets have been identified in this analysis and detailed in Appendix A.

To mitigate an impractical increase of the user rates, reserve fund contributions are phased in gradually over the analysis. By the end of the planning period, 2027, the Township will be making more significant annual contribution to the reserves thereby providing a funding source for future infrastructure repair and replacement. Table 5 below provides a snapshot of the reserve fund balances, by service, in 2022 and 2027 relative to the total replacement value of the system.

Table 5		
Calculated Ending Reserve Balance Relative to Asset Replacement Value (\$000)		
System	2022	2027
Water	\$9,650.8 (10.8% of asset replacement value)	\$18,782.7 (19% of asset replacement value)
Wastewater	\$117.9 (0.5% of asset replacement value)	\$1,475.3 (0.5% of asset replacement value)
Total	\$9,768.8 (7% of asset replacement value)	\$20,258.1 (14% of asset replacement value)

Note: Asset Replacement Value based on assets in place at the time of writing this study and inflated (2% per annum) to the dollar of the comparing year (e.g. \$2022 and \$2027). Total 2017 Asset Value is \$121.2 million – Section IV.

V RATE STRUCTURES

Various water and wastewater rate structures are in place across Ontario municipalities. The varying rate structures include flat rates, constant rates, humpback block rates, declining block rates and inclining block rates. Rate structures may also include fixed or minimum charges. The implementation of a particular rate structure depends on a number of aspects including administrative and financial factors.

A. BACKGROUND

As shown in Table 6, the Township currently has in place a fixed fee based on the type of user (residential/multi-residential vs. commercial) in addition to a consumption based charge which is applied to each cubic meter of water consumed. The consumption charge is based on a four-tier inclining block rate structure – under this structure the cost per cubic meter of water increases as more water is consumed. Currently, commercial customers are only charged for consumption based on the Tier 1 rate. A similar rate structure is applied to both water and wastewater customers. Comparable to many municipalities across the province, wastewater charges are based on the metered water consumption in Springwater.

Existing 2017 Water and Wastewater Rates and Structure		
All Accounts	Water	Wastewater
Fixed Charge: \$/Month		
Residential	\$18.48	\$30.27
Commercial	\$30.81	\$37.84
Consumption Charge: \$/m³		
Tier 1: 0 – 15m ³ /month	\$1.695*	\$1.997*
Tier 2: 15 – 30m ³ /month	\$1.778	\$2.098
Tier 3: 31 – 45m ³ /month	\$2.224	\$2.621
Tier 4: >45 m ³ /month	\$3.113	\$3.671

Note: Commercial Buildings are charged a constant rate per cubic meter based on the Tier 1 unit rate*

B. ISSUES TO CONSIDER

Various rate structures were evaluated as part of the study and key objectives were targeted in evaluating a rate structure and calculating rates.

1. Cost Recovery

In determining water and wastewater rates, the full cost of providing services are recovered. The costs are to include, operation and maintenance, periodic rehabilitation and contributions to reserves for the eventual repair and ultimate replacement of water and wastewater infrastructure.

2. Equity

A ‘user-pay’ approach was used in selecting a rate structure and calculating water and wastewater rates. An entirely equitable approach is considerably more difficult to apply when not all connections are metered and also when water and wastewater systems vary greatly in age, value and size.

3. Conservation

Considering the direction of environmental awareness, it is important in determining a rate structure, if and when practical to do so, measures which promote conservation be taken into account. It is also important to recognize that not all users have the ability to change their levels of consumption and as such, should not be penalized.

4. Administration

An important part of a rate structure is transparency to both the users and service provider. Also, easing administrative requirements may reduce the overall administrative cost, which would ultimately provide for a reduction of rates.

5. Economic Development

While recognizing the importance of the above objectives, it is also important to maintain the Township’s attractiveness to industries which may rely heavily on water and or wastewater service to conduct business. A rate structure must allow the Township to continue to be competitive from an economic development perspective.

C. MOVING FORWARD

In consultation with Township staff, the current rate structure has been adjusted to better align with the Township’s ongoing consumption trends, consumer usage patterns and overall financial goals. The proposed rate structure will continue to allow

the Township to generate sufficient funds on an annual basis to cover operating and capital improvement works.

Three rate structure adjustments are proposed:

1. Realign the Fixed Charge Recovery for Wastewater Services

Based on a typical residential bill, the fixed charge represents about 37 per cent of the total water bill while the fixed component represents about 45 per cent of the total wastewater bill. From a fiscal sustainability standpoint, it is important that the Township ensures the fixed charge represents a reasonable share of costs to secure sufficient revenues to properly run the system while balancing the overall incentives to promote conservation efforts. That being said, it is proposed that the fixed charge recovery for wastewater services, be realigned over the long-term to provide slightly more of a reliance on the consumption based charge. The realignment will be marginal and should reduce the fixed charge to about 40 per cent (per typical user) by the end of the planning period and closer in-line with the water structure. This adjustment will maintain fiscal stability for the Township while providing greater financial incentives to conserve water.

2. Adjust Consumption Tiers (Wastewater Only)

Currently, residential customers connected to the wastewater system are charged on an inclining block structure relative to the amount of water used. Under the existing structure, customers pay for wastewater that may not to be returned to the sewer system (e.g. related to watering the garden, filling pools, washing cars, etc.). It is proposed the four tier inclining block structure be amended and wastewater be charged on a single tier rate basis. Therefore, under the revised rate structure, the charge per cubic metre will remain constant regardless of use for all users. The rate structure amendment is only proposed for wastewater services and water consumption will continue to be charged on an inclining block basis. The tables below provides a summary of the proposed changes.

Table 7A Existing 2017 Rate Structure: Wastewater Consumption	
Consumption Charge: \$/m³	Wastewater Services
Tier 1: 0 – 15m ³ /month	\$1.997*
Tier 2: 15 – 30m ³ /month	\$2.098
Tier 3: 31 – 45m ³ /month	\$2.621
Tier 4: >45m ³ /month	\$3.671

Note: Commercial Buildings are charged a constant rate per cubic meter based on the Tier 1 unit rate



Table 7B Proposed 2018 Rate Structure: Wastewater Consumption	
Consumption Charge: \$/m³	Wastewater Services
All Consumption	\$2.103

3. Apply the Rate Structure Uniformly to all Customers

Currently, not all users are subject to the same rate structure. Commercial customers pay the same rate per m³ regardless of use while residential customers are charged for water and wastewater consumption on an inclining block basis.

It is proposed that the rate structure be applied to all system users uniformly. Therefore, commercial customers are treated similar to the residential sector and pay according to the inclining block structure for water services. Under the revised structure for wastewater services, all consumption for all users will be based on a constant rate per cubic metre regardless of use.

VI CALCULATED RATES

In calculating the water and wastewater rates, a number of assumptions were applied. The water and wastewater rates are calculated to fully recover the cost of operating the system and identified in-year capital needs (inclusive of any debt servicing requirements). Furthermore, the rates continue to provide for contributions to asset replacement reserves. An immediate implementation of a rate that fully funded the calculated asset rehabilitation and replacement contributions would result in significant impacts to all users in the Township. The analysis is based on providing for a gradual movement towards full rates. These contributions, when combined with the Township's ongoing capital works, will demonstrate a significant movement to long-term full cost recovery rates.

Table 8 below provides a summary of the 2018 net rate funding requirement for each of the water and wastewater systems. The net rate funding need represents the amount of money that must be funded through the utility rates by Township of Springwater users only (excluding those not connected to the system).

Table 8			
Calculation of the 2018 Net Rate Funding Requirement			
Ref #	Categories	Water	Wastewater
1	Operating Expenditures	\$1,653,244	\$1,593,588
2	In-year rate funded capital ⁽¹⁾	\$0	\$0
3	Transfer to/(from) Reserve	\$968,875	\$5,690
4	Less: Non-metered Rate Revenue ⁽²⁾	\$139,271	\$445,537
	Total Net Rate Funding Need = (1+2+3-4)	\$2,482,829	\$1,153,741

Note 1: Existing reserves are used to pay for any in-year capital requirements (see section IV)

Note 2: Non-metered rate revenue include funds received for: sale of water meters, connections fees, late payment fees, etc. Specifically for wastewater, non-rate revenues also include funding (from third party) for the Centre Vespra Treatment Plant in 2018 as the plant will not be assumed by the Township until 2019.

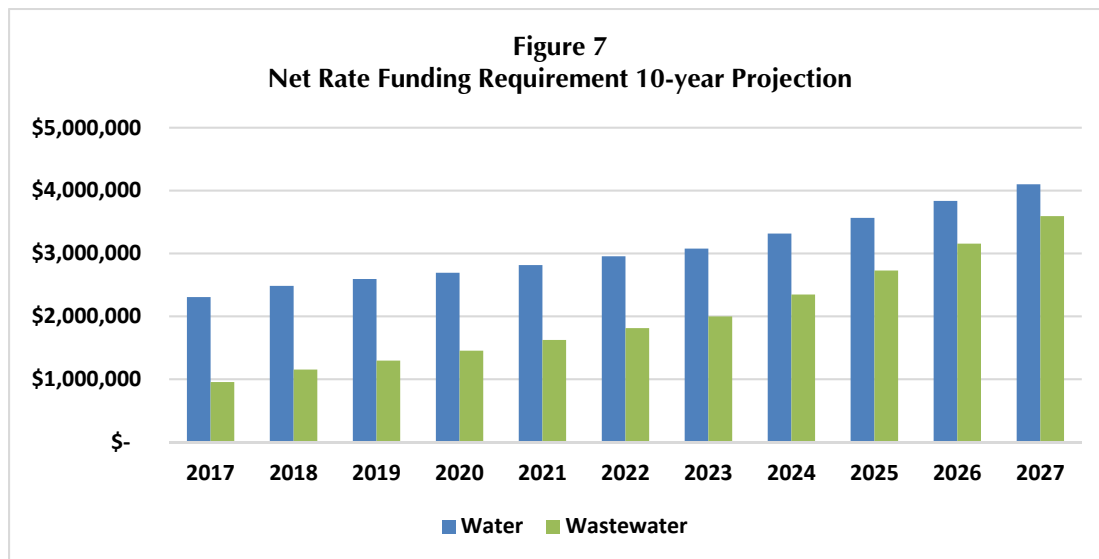
1. Calculated 2018 Utility Rates

Based on the information provided above, the required water and wastewater user rate revenue in 2018 is forecast to be \$2.48 million and \$1.15 million respectively. This is the amount of revenue which must be collected through the sale of water and treatment of wastewater to fully recover the operating, capital, rehabilitation and replacement costs of the systems. The calculated rates for 2018 are outlined in Table 9 below and the detailed calculations of the water and wastewater rates are outlined in Appendix A.

Table 9 Calculated 2018 Utility Rates		
All Accounts	Water	Wastewater
Fixed Charge: \$/Month		
Residential	\$18.48	\$31.18
Commercial	\$30.81	\$39.98
Consumption Charge: \$/m³		
Tier 1: 0 – 15m ³ /month	\$1.695	\$2.103
Tier 2: 15 – 30m ³ /month	\$1.778	\$2.103
Tier 3: 31 – 45m ³ /month	\$2.224	\$2.103
Tier 4: >45m ³ /month	\$3.113	\$2.103

2. Post 2018 Utility Rate Projection

Over the long-term, the net rate funding requirements for both the Township's water and wastewater system are expected to increase. The cost increases can largely be attributed to carrying out the capital asset repair and replacement program, general operating cost increases as well as increased contributions to the Township's asset management reserves. It is projected that the water and wastewater net rate funding requirements will increase to \$3.0 million and \$1.81 million respectively over the five-year period. Figure 7 below provides a snapshot of the annual year-over-year change in costs to 2027.



The table below outlines the proposed utility rates required over the immediate 5-year period to support the system. In general, a few important considerations:

- The water rates are proposed to be held constant over the next three years (to 2020) as revenues are anticipated to be sufficient to cover expenditures. Rate increases beyond 2020 are projected to be modest at 1.1 per cent per annum;
- The wastewater rates are projected to increase above the rate of inflation to keep with increasing operating expenditures while ensuring sufficient monies are available to fund the non-growth related capital expenditures;
- The water and wastewater rates combined are lower than those identified in the 2013 rate study (see figure 8); and
- Beyond 2022, the annual rate increases are calculated to be in-line with those increases set out in 2022 (for water and wastewater services).

Table 10					
Calculated Utility Rates: 5 Year Projection					
All Accounts	2018	2019	2020	2021	2022
<u>Water</u>					
Fixed Charge: \$/Month					
Residential	\$18.48	\$18.48	\$18.48	\$18.68	\$18.89
Commercial	\$30.81	\$30.81	\$30.81	\$31.15	\$31.49
<i>Change (in %):</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>1.1%</i>	<i>1.1%</i>
Consumption Charge: \$/m³					
Tier 1: 0 – 15m ³ /month	\$1.695	\$1.695	\$1.695	\$1.714	\$1.733
Tier 2: 15 – 30m ³ /month	\$1.778	\$1.778	\$1.778	\$1.798	\$1.818
Tier 3: 31 – 45m ³ /month	\$2.224	\$2.224	\$2.224	\$2.248	\$2.273
Tier 4: >45m ³ /month	\$3.113	\$3.113	\$3.113	\$3.147	\$3.182
<i>Change (in %):</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>1.1%</i>	<i>1.1%</i>
<u>Wastewater</u>					
Fixed Charge: \$/Month					
Residential	\$31.18	\$32.12	\$33.08	\$34.07	\$35.09
Commercial	\$38.98	\$40.15	\$41.35	\$42.59	\$43.87
<i>Change (in %):</i>	<i>3.0%</i>	<i>3.0%</i>	<i>3.0%</i>	<i>3.0%</i>	<i>3.0%</i>
Consumption Charge: \$/m³					
Constant rate per m ³ /month	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585
<i>Change (in %):</i>	<i>5.3%</i>	<i>5.3%</i>	<i>5.3%</i>	<i>5.3%</i>	<i>5.3%</i>

A. IMPACT ON A TYPICAL USER

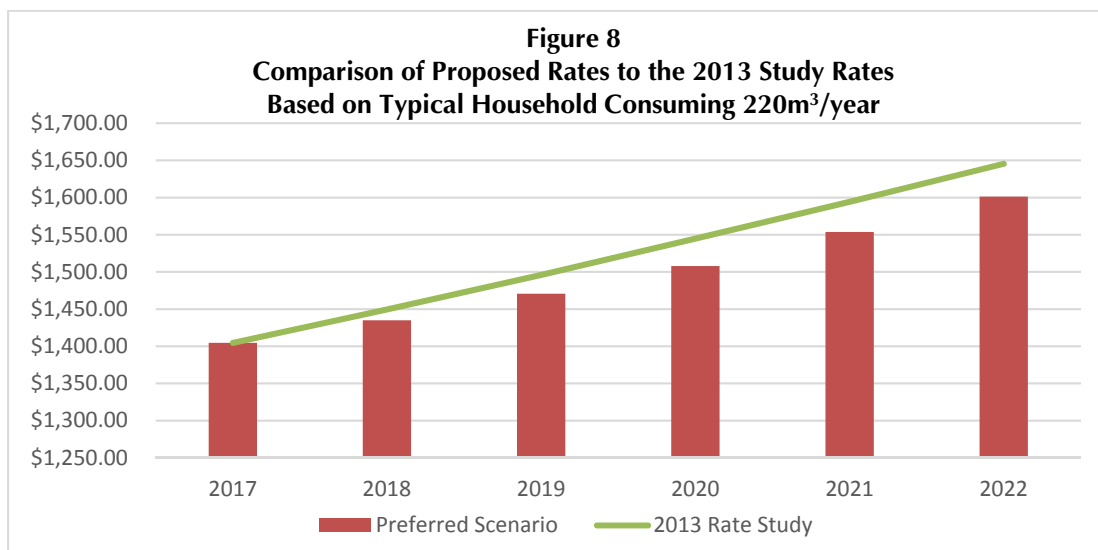
In order to test the impact of the new rate structure on Township residents and businesses, a sensitivity analysis was undertaken to quantify the range of rate impacts to both the residential and non-residential properties. Table 11 below illustrates the impact of the calculated water and wastewater rates on a range of residential users while Figure 9 illustrates the results of the sensitivity analysis for a sample of non-residential users. Overall, after the rate structure adjustment in 2018, the total utility bill for all users (residential and non-residential) will generally increase at around 2 to 3 per cent per annum depending on the volume of water consumed.

Household Consumption	2017 Existing	2018 Calculated	Change (\$)
1. High User: Annual Consumption of 700m ³	\$3,905	\$3,592	(\$313) or -8.0%
2. Medium-High User: Annual Consumption of 450m ³	\$2,383	\$2,368	(\$16) or -0.7%
3. Typical User: Annual Consumption of 220m ³	\$1,405	\$1,435	\$30 or 2.2%
4. Low User: Annual Consumption of 70m ³	\$843	\$862	\$18 or 2.2%

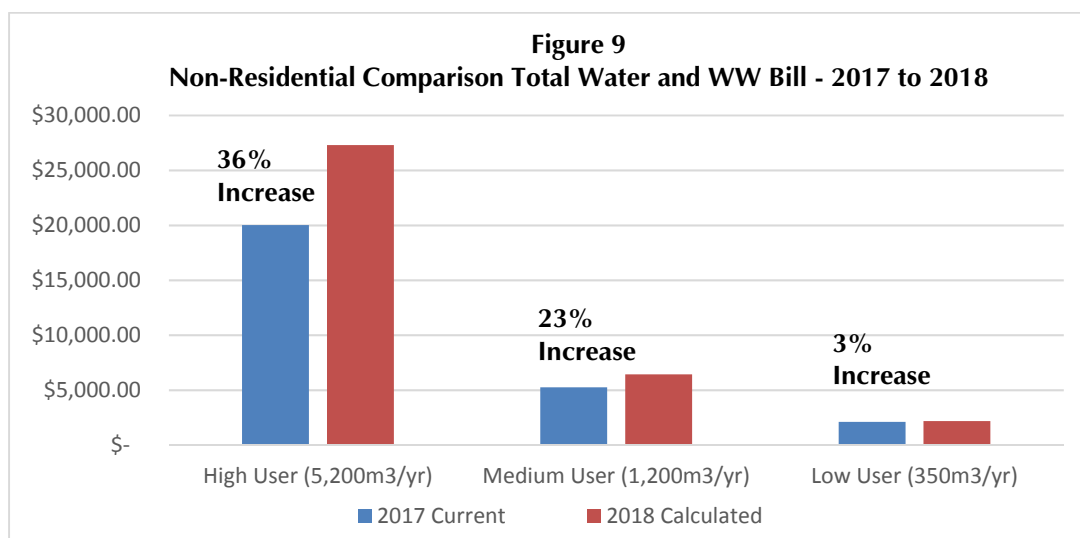
Note 1: Typical household consumption figures shown are based on the average consumption trends seen in the Township over the last several years.

Note 2: All charges illustrated include both water and wastewater services.

For residential properties, the 2018 rate changes vary depending on the type of user. Generally, as a result of the structure change, high volume users will see a decrease in their bill (in 2018 only) as those users benefit from a single tier consumption rate as opposed to paying for wastewater consumption on an inclining block basis. The rate impact on low volume and typical users is minimal and those users will see increases around the rate of inflation. It is important to note that the recommended rate structure and resulting rates are lower than those projected in the 2013 rate study (see Figure 8). Furthermore, after the rate structure adjustment in 2018, the total utility bill for all residential users (e.g. high, typical and low volume users) would increase.



For non-residential properties, the rate changes vary depending on the type of user. In order to carry out the sensitivity analysis, a sample of three different properties, serviced by both water and wastewater, with different usage patterns were chosen. Overall, the quantum of the rate change will be dependent on the specific property and tied directly to the amount of water consumed. Generally, most commercial customers will see an increase on their total bill as they now begin to pay for water use beyond Tier 1. The highest increase for commercial properties serviced by both water and wastewater is estimated at around 36 per cent in 2018, however, most commercial users in the Township have relatively low consumption and would see an increase in the range of 3.0 per cent. It should be noted that some high volume users connected only to municipal water are estimated to see increases in excess of the 36 per cent noted – those water only users represent less than 10 accounts. Overall, it is anticipated that less than 2 per cent of all connections (residential and non-residential) will see an increase on their total bill above 5 per cent.



VII RECOMMENDATIONS AND FINDINGS

The calculated rates presented establish water and wastewater rates to all users of the systems which are fair and equitable. The analysis considers the direction of environmental awareness; as a result, a rate structure which promotes customer control and water conservation measures has been taken into account.

The analysis included in this report ensures that the water and wastewater rates fully fund all of the Township's anticipated annual costs including all operating costs and capital financing needs and debt repayment requirements. It is fiscally prudent that the Township continue to contribute to reserves for the eventual repair and ultimate replacement of water and wastewater infrastructure. An immediate implementation of a rate that fully funded the calculated asset rehabilitation and replacement contributions would result in significant impacts to all users in the Township. The analysis demonstrates an increasing annual contribution to reserves for asset rehabilitation and replacement. These contributions, when combined with the Township's ongoing capital works, will demonstrate a significant movement towards long-term full cost recovery rates.

The results of this study are in part, Hemson and Township staff best estimates of what could transpire in the short-to-medium term using the data available. It is especially important that the Township continue to monitor all consumption data on a monthly basis to identify usage trends and variance in the projections to ensure costs and revenues are managed accordingly. A financial model was developed to undertake the analysis and serves as a dynamic rate setting tool. Using the model, the Township is able to perform sensitivity analyses of water and wastewater rates, rate structure and also phase-in options. It is recommended that this study be reviewed and updated in three to five years as details surrounding overall growth and costs become more refined.

APPENDIX A
DETAILED RATE CALCULATIONS

APPENDIX A
TABLE 1 - PAGE 1

TOWNSHIP OF SPRINGWATER
2017 WATER & WASTEWATER RATE STUDY
WATER RATE CALCULATIONS

Water Services	2017 Budget	2018 Projected	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected	2025 Projected	2026 Projected	2027 Projected
Expenditures											
Operating											
Annual Operating Expenditures	\$ 1,636,099	\$ 1,653,224	\$ 1,617,830	\$ 1,642,050	\$ 1,602,082	\$ 1,758,955	\$ 1,801,755	\$ 1,909,312	\$ 1,855,152	\$ 1,852,951	\$ 2,055,286
Debt Repayment (to be paid by DCs post 2017)	\$ 75,865	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal Annual Gross Operating Expenditures	\$ 1,711,964	\$ 1,653,224	\$ 1,617,830	\$ 1,642,050	\$ 1,602,082	\$ 1,758,955	\$ 1,801,755	\$ 1,909,312	\$ 1,855,152	\$ 1,852,951	\$ 2,055,286
Capital											
Annual Capital Renewal Expenditures											
Identified Non-Growth Related Capital Works Share	\$ 475,000	\$ 1,172,847	\$ 289,648	\$ 412,279	\$ 113,655	\$ 115,928	\$ 154,847	\$ 157,944	\$ 193,324	\$ 197,190	\$ 201,134
Transfer from Reserve (for capital)	\$ (475,000)	\$ (1,172,847)	\$ (289,648)	\$ (412,279)	\$ (113,655)	\$ (115,928)	\$ (154,847)	\$ (157,944)	\$ (193,324)	\$ (197,190)	\$ (201,134)
Debt Financing Received	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-total Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Asset Replacement Reserve Contribution											
Full Life-Cycle Calculated Annual Contribution ⁽¹⁾	\$ 2,985,015	\$ 1,705,169	\$ 1,705,169	\$ 1,686,263	\$ 1,686,263	\$ 1,637,158	\$ 1,582,440	\$ 1,445,270	\$ 1,416,906	\$ 1,638,004	\$ 1,637,679
Contribution To/(from) Reserves (included in calculations)	\$ 739,086	\$ 968,875	\$ 1,121,695	\$ 1,199,352	\$ 1,364,598	\$ 1,350,477	\$ 1,433,461	\$ 1,583,071	\$ 1,892,141	\$ 2,167,850	\$ 2,233,005
Total Capital Expenditures	\$ 739,086	\$ 968,875	\$ 1,121,695	\$ 1,199,352	\$ 1,364,598	\$ 1,350,477	\$ 1,433,461	\$ 1,583,071	\$ 1,892,141	\$ 2,167,850	\$ 2,233,005
Total Annual Expenditures	\$ 2,451,050	\$ 2,622,100	\$ 2,739,525	\$ 2,841,402	\$ 2,966,680	\$ 3,109,432	\$ 3,235,216	\$ 3,492,383	\$ 3,747,292	\$ 4,020,801	\$ 4,288,291
Non Metered Rate Revenues											
Water Meter Sales	\$ (111,300)	\$ (113,526)	\$ (115,797)	\$ (118,112)	\$ (120,475)	\$ (122,884)	\$ (125,342)	\$ (127,849)	\$ (130,406)	\$ (133,014)	\$ (135,674)
Misc revenue	\$ (5,000)	\$ (13,770)	\$ (14,045)	\$ (14,326)	\$ (14,613)	\$ (14,905)	\$ (15,203)	\$ (15,507)	\$ (15,817)	\$ (16,134)	\$ (16,456)
Connection Fees	\$ (15,750)	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ (5,000)
5% Charge (late payments and policies)	\$ (13,500)	\$ (6,975)	\$ (12,450)	\$ (12,300)	\$ (12,300)	\$ (13,125)	\$ (12,900)	\$ (29,025)	\$ (30,139)	\$ (31,872)	\$ (30,667)
Operating Grants	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Non-Metered Rate Revenues	\$ (145,550)	\$ (139,271)	\$ (147,292)	\$ (149,739)	\$ (152,388)	\$ (155,914)	\$ (158,445)	\$ (177,381)	\$ (181,362)	\$ (186,020)	\$ (187,797)
Net Rate Funding Need	\$ 2,305,500	\$ 2,482,829	\$ 2,592,233	\$ 2,691,663	\$ 2,814,293	\$ 2,953,518	\$ 3,076,771	\$ 3,315,002	\$ 3,565,930	\$ 3,834,781	\$ 4,100,494

1: Calculated annual contribution for full life-cycle replacement of existing assets and those estimated to be replaced over the period.

APPENDIX A
TABLE 1 - PAGE 2

TOWNSHIP OF SPRINGWATER
2017 WATER & WASTEWATER RATE STUDY
WATER RATE CALCULATIONS

METERED RATE STRUCTURE	2017 Budget	2018 Projected	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected	2025 Projected	2026 Projected	2027 Projected
User Rates											
A) Fixed Charge per Meter- Monthly Fee											
Residential and Multi-Residential	\$ 18.48	\$ 18.48	\$ 18.48	\$ 18.48	\$ 18.68	\$ 18.89	\$ 19.10	\$ 19.31	\$ 19.52	\$ 19.73	\$ 19.95
Commercial	\$ 30.81	\$ 30.81	\$ 30.81	\$ 30.81	\$ 31.15	\$ 31.49	\$ 31.84	\$ 32.19	\$ 32.54	\$ 32.90	\$ 33.26
<i>Increase (%)</i>		0.0%	0.0%	0.0%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%
Number of Metered Connections: Residential and Commercial	3,857	3,951	4,118	4,283	4,448	4,624	4,797	5,185	5,588	6,014	6,424
Total Annual Fixed Revenue	-	\$ 900,439	\$ 937,621	\$ 974,359	\$ 1,019,439	\$ 1,070,589	\$ 1,122,054	\$ 1,224,198	\$ 1,331,957	\$ 1,447,371	\$ 1,561,342
Total Consumption Based Revenue	-	\$ 1,582,390	\$ 1,654,612	\$ 1,717,304	\$ 1,794,853	\$ 1,882,929	\$ 1,954,717	\$ 2,090,804	\$ 2,233,973	\$ 2,387,410	\$ 2,539,151
Total Annual Billed Consumption (m ³)	835,730	835,730	869,426	902,723	936,019	971,516	997,808	1,056,371	1,117,185	1,181,452	1,243,317
B) Charge per cubic meter											
Residential and Multi-Residential											
0-15 cubic metres/month	\$1.695	\$1.695	\$1.695	\$1.695	\$1.714	\$1.733	\$1.752	\$1.771	\$1.790	\$1.810	\$1.830
16-30 cubic metres/month	\$1.778	\$1.778	\$1.778	\$1.778	\$1.798	\$1.818	\$1.838	\$1.858	\$1.878	\$1.899	\$1.920
31-45 cubic metres/month	\$2.224	\$2.224	\$2.224	\$2.224	\$2.248	\$2.273	\$2.298	\$2.323	\$2.349	\$2.375	\$2.401
45 + cubic metres/month	\$3.113	\$3.113	\$3.113	\$3.113	\$3.147	\$3.182	\$3.217	\$3.252	\$3.288	\$3.324	\$3.361
Commercial											
0-15 cubic metres/month	\$1.695	\$1.695	\$1.695	\$1.695	\$1.714	\$1.733	\$1.752	\$1.771	\$1.790	\$1.810	\$1.830
16-30 cubic metres/month	\$1.695	\$1.778	\$1.778	\$1.778	\$1.798	\$1.818	\$1.838	\$1.858	\$1.878	\$1.899	\$1.920
31-45 cubic metres/month	\$1.695	\$2.224	\$2.224	\$2.224	\$2.248	\$2.273	\$2.298	\$2.323	\$2.349	\$2.375	\$2.401
45 + cubic metres/month	\$1.695	\$3.113	\$3.113	\$3.113	\$3.147	\$3.182	\$3.217	\$3.252	\$3.288	\$3.324	\$3.361
<i>Rate Increase (%)</i>		0.0%	0.0%	0.0%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%

APPENDIX A
TABLE 2 - PAGE 1

TOWNSHIP OF SPRINGWATER
2017 WATER & WASTEWATER RATE STUDY
WASTEWATER RATE CALCULATIONS

Sewer Services	2017 Budget	2018 Projected	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected	2025 Projected	2026 Projected	2027 Projected
Expenditures											
Operating											
Annual Operating Expenditures - Elmvale	\$ 699,608	\$ 658,019	\$ 661,235	\$ 628,967	\$ 704,842	\$ 690,974	\$ 756,009	\$ 745,726	\$ 783,958	\$ 797,391	\$ 924,498
Annual Operating Expenditures - Snow Valley	\$ 373,136	\$ 434,287	\$ 399,224	\$ 386,159	\$ 399,821	\$ 445,312	\$ 493,169	\$ 450,383	\$ 465,775	\$ 476,507	\$ 530,430
Annual Operating Expenditures - Centre Vespra (based on snow valley)	\$ 7,163	\$ 434,287	\$ 399,224	\$ 386,159	\$ 439,423	\$ 486,894	\$ 536,830	\$ 496,226	\$ 513,910	\$ 527,049	\$ 583,499
Debt Financing (New for Capital)	\$ -	\$ -	\$ 109,424	\$ 109,424	\$ 109,424	\$ 109,424	\$ 109,424	\$ 109,424	\$ 109,424	\$ 109,424	\$ 214,203
Revenues Remitted to Developer	\$ -	\$ 66,995	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal Annual Gross Operating Expenditures	\$ 1,079,907	\$ 1,593,588	\$ 1,569,107	\$ 1,510,711	\$ 1,653,510	\$ 1,732,605	\$ 1,895,432	\$ 1,801,759	\$ 1,873,067	\$ 1,910,371	\$ 2,252,630
Capital											
Annual Capital Renewal Expenditures											
Identified Non-Growth Related Capital Works Share	\$ 200,000	\$ 1,566,501	\$ 494,707	\$ 496,115	\$ 449,209	\$ 516,158	\$ 422,311	\$ 304,402	\$ 536,035	\$ 1,959,951	\$ 1,194,614
Transfer from Reserve (for capital)	\$ (200,000)	\$ -	\$ (494,707)	\$ (496,115)	\$ (449,209)	\$ (516,158)	\$ (422,311)	\$ (304,402)	\$ (536,035)	\$ (459,951)	\$ (1,194,614)
Debt Financing Received	\$ -	\$ (1,566,501)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (1,500,000)	\$ -
Sub-total Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Asset Replacement Reserve Contribution											
Full Life-Cycle Calculated Annual Contribution ⁽¹⁾	\$ 1,661,770	\$ 945,039	\$ 976,254	\$ 988,990	\$ 1,482,573	\$ 1,442,353	\$ 1,462,626	\$ 1,457,228	\$ 1,443,721	\$ 1,443,721	\$ 1,443,721
Contribution To/(from) Reserves (included in calculations)	\$ (108,244)	\$ 5,690	\$ (257,598)	\$ (41,589)	\$ (14,279)	\$ 96,199	\$ 119,368	\$ 579,181	\$ 890,932	\$ 1,282,281	\$ 1,378,220
Total Capital Expenditures	\$ (108,244)	\$ 5,690	\$ (257,598)	\$ (41,589)	\$ (14,279)	\$ 96,199	\$ 119,368	\$ 579,181	\$ 890,932	\$ 1,282,281	\$ 1,378,220
Total Annual Expenditures	\$ 971,663	\$ 1,599,278	\$ 1,311,509	\$ 1,469,121	\$ 1,639,231	\$ 1,828,803	\$ 2,014,801	\$ 2,380,941	\$ 2,763,999	\$ 3,192,653	\$ 3,630,850
Non Metered Rate Revenues											
5% Charge	\$ (5,000)	\$ (5,100)	\$ (5,202)	\$ (5,306)	\$ (5,412)	\$ (5,520)	\$ (5,631)	\$ (5,743)	\$ (5,858)	\$ (5,975)	\$ (6,095)
Connection Fees	\$ (4,500)	\$ (6,150)	\$ (11,400)	\$ (11,325)	\$ (11,475)	\$ (12,225)	\$ (12,075)	\$ (28,200)	\$ (29,314)	\$ (31,497)	\$ (30,292)
Transfer from Reserves	\$ (7,163)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Third Party Funding (centre vespra plant)	\$ -	\$ (434,287)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Non-Metered Rate Revenues	\$ (16,663)	\$ (445,537)	\$ (16,602)	\$ (16,631)	\$ (16,887)	\$ (17,745)	\$ (17,706)	\$ (33,943)	\$ (35,173)	\$ (37,473)	\$ (36,387)
Net Rate Funding Need	\$ 955,000	\$ 1,153,741	\$ 1,294,907	\$ 1,452,490	\$ 1,622,344	\$ 1,811,058	\$ 1,997,095	\$ 2,346,997	\$ 2,728,827	\$ 3,155,180	\$ 3,594,463

1: Calculated annual contribution for full life-cycle replacement of existing assets and those estimated to be replaced over the period.

APPENDIX A
TABLE 2 - PAGE 2

TOWNSHIP OF SPRINGWATER
2017 WATER & WASTEWATER RATE STUDY
WASTEWATER RATE CALCULATIONS

METERED RATE STRUCTURE	2017 Budget	2018 Projected	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected	2025 Projected	2026 Projected	2027 Projected
A) Fixed Charge - Monthly Fee											
Residential and Multi-Residential	\$ 30.27	\$ 31.18	\$ 32.12	\$ 33.08	\$ 34.07	\$ 35.09	\$ 36.14	\$ 37.22	\$ 38.34	\$ 39.49	\$ 40.67
Commercial	\$ 37.84	\$ 38.98	\$ 40.15	\$ 41.35	\$ 42.59	\$ 43.87	\$ 45.19	\$ 46.55	\$ 47.95	\$ 49.39	\$ 50.87
Increase (%)		3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Number of Metered Connections: Residential and Commercial	1,615	1,698	1,851	2,003	2,157	2,321	2,483	2,860	3,252	3,673	4,078
Total Annual Fixed Revenue	-	\$ 639,608	\$ 717,510	\$ 798,997	\$ 885,509	\$ 980,682	\$ 1,079,893	\$ 1,279,458	\$ 1,497,045	\$ 1,740,154	\$ 1,988,549
Total Annual Consumption Based Revenue	-	\$ 514,134	\$ 577,397	\$ 653,493	\$ 736,835	\$ 830,375	\$ 917,202	\$ 1,067,539	\$ 1,231,782	\$ 1,415,026	\$ 1,605,914
Total Annual Billed Consumption (m ³)	244,169	244,169	264,104	283,911	303,975	325,318	341,253	377,222	413,350	450,932	486,052
B) Charge per cubic meter											
i) Residential and Multi-Residential											
0-15 cubic metres/month	\$1.997	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
16-30 cubic metres/month	\$2.098	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
31-45 cubic metres/month	\$2.621	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
45 + cubic metres/month	\$3.671	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
ii) Commercial											
0-15 cubic metres/month	\$1.997	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
16-30 cubic metres/month	\$1.997	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
31-45 cubic metres/month	\$1.997	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
45 + cubic metres/month	\$1.997	\$2.103	\$2.214	\$2.331	\$2.455	\$2.585	\$2.722	\$2.866	\$3.018	\$3.178	\$3.346
Rate Increase (%)		5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%