Water and Wastewater Rate Study

Municipality of Trent Hills

Final Report

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Water and Wastewater Rate Study Report

Chapter 1
Introduction

1. Introduction

1.1 Background

The Municipality of Trent Hills (Municipality) provides water and wastewater services to its constituents located in the urban serviced areas of the Municipality. The Municipality provides water services through three separate systems in Campbellford, Hastings, and Warkworth providing service to 2,716 water customers and 2,296 wastewater customers.

The water rates are imposed based on a monthly service charge, differentiated by meter size and a consumptive rate charged per m^3 of water consumption. Wastewater customers are currently billed based on 172% surcharge of their monthly water bill (both service charge and consumptive components).

Water and wastewater rates imposed in the Municipality for 2019 are presented in Table 1-1[1].

Table 1-1
2019 Water and Wastewater Rates

2019 - Water Billing Rates	
Service Charge	
¾"	$27.16
1"	$61.10
1 ½"	$141.08
2"	$335.67
3"	$598.12
4"	$1,190.94
6"	$2,238.56
Non-Metred	$84.00
Volume Charge	
per m^3	$1.150

2019 - Wastewater Billing Rates	
Service Charge	
¾"	$46.72
1"	$105.09
1 ½"	$242.66
2"	$577.35
3"	$1,028.77
4"	$2,048.42
6"	$3,850.32
Non-Metred	$144.48
Basic Sewer Surcharge	$76.39
Volume Charge	
per m^3	$1.978

[1] 2019 Wastewater surcharge converted to monthly service charge and volumetric rate per m^3 water consumption

1.2 Study Process

Watson & Associates Economists Ltd. (Watson) was retained by the Municipality to undertake a comprehensive Water and Wastewater Rate Study (Rate Study). This Rate Study has been prepared to assess the water and wastewater rates in the Municipality over the period from 2020-2029 as well as the *Municipal Act C*onnection Charges (connection charges) that are imposed for new connections to the water and wastewater systems. The objectives of the study and the steps involved in carrying out this assignment are summarized below:

- Update water and wastewater service demand assumptions based on analysis of historical consumption and recent trends;
- Estimate future consumption levels by applying revised demand assumptions to forecast growth based on the historical growth in the serviced areas of the Municipality in recent years and forecast growth in the Municipality's 2019 Development Charges (D.C.) Background Study.;
- Identify all current and future water and wastewater system capital needs to assess the immediate and longer-term implications;
- Build a capital program that blends lifecycle needs arising from the Municipality's Asset Management Plan and asset inventory with the annual capital spending required over the forecast period;
- Identify potential methods of cost recovery from the capital needs listing. These recovery methods may include other statutory authorities (e.g. *Development Charges Act, 1997* (D.C.A.), *Municipal Act*, etc.) as an offset to recovery through the water and wastewater rates;
- Forecast annual operating costs and rate-based funding requirements;
- Provide an impact assessment on the rate payers;
- Update connection charges for water and wastewater systems;
- Update water and wastewater rate and connection charge implementation policies; and
- Develop a long-term water and wastewater rate forecast and present findings to staff and Council for their consideration;

In approaching this study, the following analysis in provided herein:

Chapter 1 – Introduction

Chapter 2 – Forecast Growth and Service Demands

Chapter 3 – Capital Infrastructure Needs

Chapter 4 – Capital Cost Financing Options

Chapter 5 – Operating Expenditure Forecast

Chapter 6 – *Municipal Act* Connection Charge Calculation

Chapter 7 – Forecast Water and Wastewater Rates

Chapter 8 – *Municipal Act* Connection Charge and Water and Wastewater Rate Policies

Chapter 9 - Recommendations

1.3 Regulatory Changes in Ontario

Resulting from the water crisis in Walkerton, significant regulatory changes have been made in Ontario. These changes arose as a result of the Walkerton Commission and the 93 recommendations made by the Walkerton Inquiry Part II report. Areas of recommendation included:

- watershed management and source protection;
- quality management;
- preventative maintenance;
- research and development;
- new performance standards;
- sustainable asset management; and
- lifecycle costing.

The following sections describe significant applicable regulatory areas.

1.4 Sustainable Water and Sewage Systems Act

The *Sustainable Water and Sewage Systems Act* was passed on December 13, 2002. The intent of the Act was to introduce the requirement for municipalities to undertake an assessment of the "full cost" of providing their water and the wastewater services. In total, there were 40 areas within the Act to which the Minister may make Regulations, however regulations were never issued. On December 31, 2012, the *Sustainable Water and Sewage Systems Act* was repealed.

1.5 Safe Drinking Water Act

The *Safe Drinking Water Act* was passed in December 2002. The *Safe Drinking Water Act* provides for 50 of the 93 Walkerton Part II recommendations. It focuses on the administrative and operational aspects of the provision of water.

The purposes of the *Safe Drinking Water Act* are to "recognize that the people of Ontario are entitled to expect their drinking water to be safe and to provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water systems and drinking water testing. 2002, c. 32, s. 1."

The following is a brief summary of the key elements included in the *Safe Drinking Water Act*:

- Mandatory licensing and accreditation of testing laboratories;
- New standards for treatment, distribution quality and testing;
- Mandatory operator training and certification;
- Mandatory licensing of municipal water providers;
- Stronger enforcement and compliance provisions; and
- "Standard of care" requirements for municipalities.

This legislation impacts the costs of operating a water system with the need for higher skilled operators including increased training costs, increased reporting protocols and requirements, continuing enhancements to quality standards and the costs to licence each water system.

1.6 Financial Plans Regulation

On August 16, 2007, the Ministry of Environment introduced O.Reg. 453/07 which requires the preparation of financial plans for water systems (and municipalities are encouraged to prepare plans for wastewater systems). The Ministry of Environment has also provided a Financial Plan Guideline to assist municipalities with preparing the plans. A brief summary of the key elements of the regulation is provided below:

- The financial plan will represent one of the key elements to obtain a Drinking Water License.
- The plan is to be completed, approved by Council Resolution, and submitted to the Ministry of Municipal Affairs and Housing as part of the application for receiving approval of a water license.
- The financial plans shall be for a period of at least six years but longer planning horizons are encouraged.
- As the regulation is under the *Safe Drinking Water Act*, the preparation of the plan is mandatory for water services and encouraged for wastewater services.
- The plan is considered a living document (i.e. can be updated if there are significant changes to budgets) but will need to be undertaken at a minimum every five years.
- The plans generally require the forecasting of capital, operating and reserve fund positions, and providing detailed capital inventories. In addition, Public Sector Accounting Board full accrual information on the system must be provided for each year of the forecast (i.e. total non-financial assets, tangible capital asset acquisitions, tangible capital asset construction, betterments, write-downs, disposals, total liabilities, net debt, etc.).
- The financial plans must be made available to the public (at no charge) upon request and be available on the Municipality's web site. The availability of this information must also be advertised.

In general, the financial principles of this regulation follow the intent of the *Sustainable Water and Sewage Systems Act*, 2002 to move municipalities towards financial sustainability for water services. However, many of the prescriptive requirements have been removed (e.g. preparation of two separate documents for provincial approval, auditor opinions, engineer certifications, etc.).

A guideline ("Towards Financially Sustainable Drinking-Water and Wastewater Systems") has been developed to assist municipalities in understanding the Province's direction and provides a detailed discussion on possible approaches to 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: Lifecycle 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.

1.7 Water Opportunities Act

The *Water Opportunities Act* received Royal Assent on November 29, 2010. The Act provides for the following elements:

- Foster innovative water, wastewater and stormwater technologies, services and practices in the private and public sectors;
- Prepare water conservation plans to achieve water conservation targets established by the regulations; and
- Prepare sustainability plans for municipal water services, municipal wastewater services and municipal stormwater services.

With regard to the sustainability plans:

- The Bill extends from the water financial plan and requires a more detailed review of the water financial plan and requires a full plan for wastewater and stormwater services; and
- Regulations (when issued) will provide performance targets for each service – these targets may vary based on the jurisdiction of the regulated entity or the class of entity.

The Financial Plan shall include:

- An asset management plan for the physical infrastructure;
- Financial Plan;
- For water, a water conservation plan;
- Assessment of risks that may interfere with the future delivery of the municipal service, including, if required by the regulations, the risks posed by climate change and a plan to deal with those risks; and
- Strategies for maintaining and improving the municipal service, including strategies to ensure the municipal service can satisfy future demand, consider technologies, services and practices that promote the efficient use of water and reduce negative impacts on Ontario's water resources, and increase co-operation with other municipal service providers.

Performance indicators will be established by service:

- May relate to the financing, operation or maintenance of a municipal service or to any other matter in respect of which information may be required to be included in a plan; and
- May be different for different municipal service providers or for municipal services in different areas of the Province.

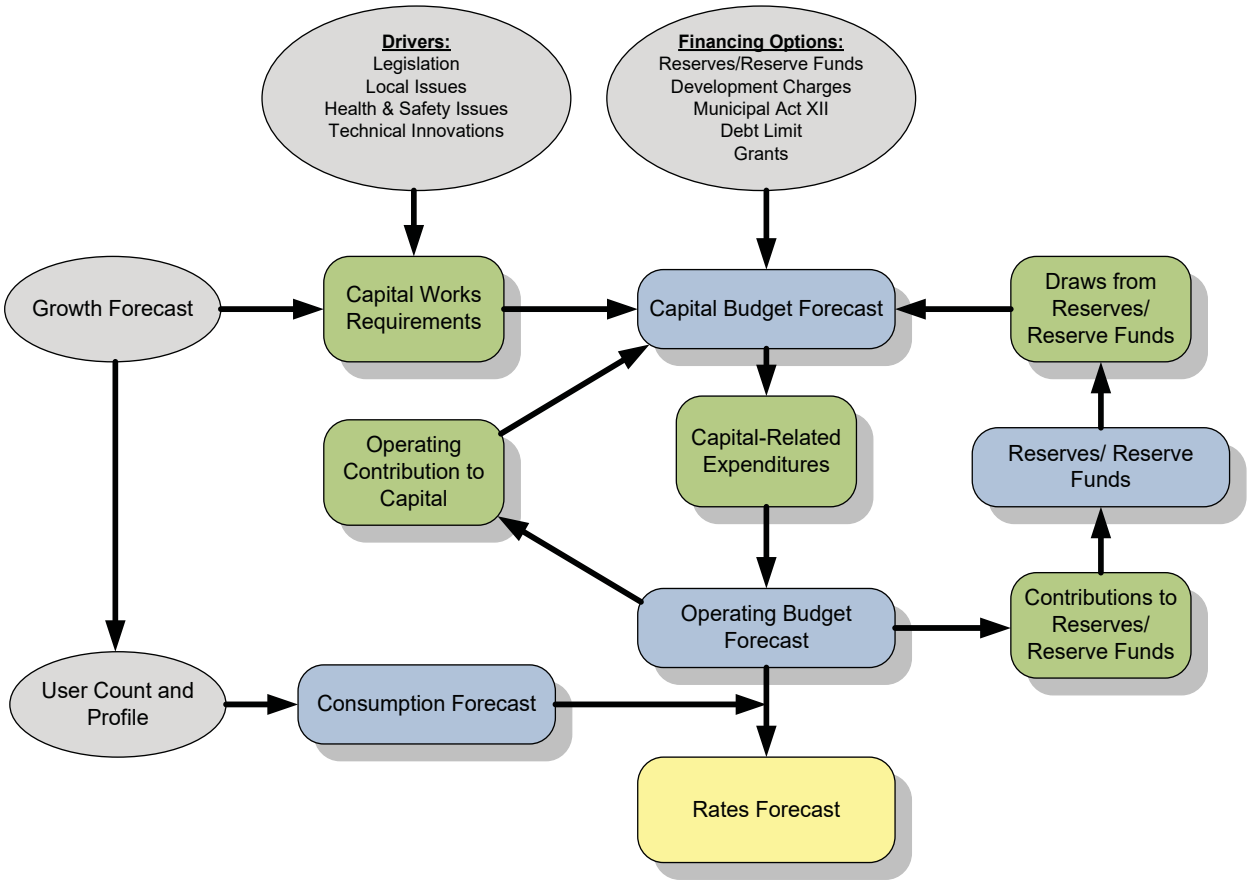
Regulations will prescribe:

- Timing;
- Contents of the plans;
- Identifying what portions of the plan will require certification;
- Public consultation process; and
- Limitations, updates, refinements, etc.

1.8 Water and Wastewater Rate Calculation Methodology

Figure 1-1 illustrates the general methodology used in determining the full cost recovery water and wastewater rate forecast.

Figure 1-1
Water and Wastewater Rate Calculation Methodology



The methodology employed generally consists of 5 major elements:

1. **Customer Demands and Consumption Forecast**

   As noted in section 1.1, the Municipality employs rate structures consisting of monthly service charges, and consumptive rates.

   This first step in the analysis is important as it produces the current base revenue by source for service charges and assumptions for forecasting purposes. The customer profile forecast is modeled based on the annual growth identified in the Municipality's 2019 D.C. Background Study. Furthermore, this level of growth is consistent with historical growth in the Municipality over the past four years (2015 to 2019).

The water consumption forecast is prepared by applying average annual consumption estimates to future development. The forecast may adjust the base consumption levels for anticipated water conservation based on historical trends and industry witnessed practices. Consumption estimates are based on average consumption levels by customer type drawn from municipal billing records over multiple years. The non-residential consumption estimates are generally adjusted to net out large consuming water customers that may skew anticipated consumption levels of future growth. Consistent with the customer forecast, the water consumption forecast used to determine the wastewater consumptive rates is adjusted to reflect differences in service demands.

2. Capital Needs Forecast

The capital needs forecast is developed to measure program/service level adjustments, lifecycle requirements and growth-related needs. The Municipality provided outstanding funding requirements to be funded from future water and wastewater rates as well the average annual capital needs that are anticipated over the 10-year forecast period. Capital expenditures are forecast with inflationary adjustments based on capital costs indices.

3. Capital Funding Plan

The capital funding plan considers the potential funding sources available to address the capital needs forecast. The sources of capital funding include rate-based support, reserves/reserve funds, grants, and debt for program/service level improvements. Growth-related sources of funding include water and wastewater connection charges and debt. The use of rate-based funding is measured against the revenue projections and affordability impacts. The reserve/reserve fund sources are measured against the sustainability of these funds, relative to lifecycle demands, revenue projections and affordability impacts. Debt financing is typically considered for significant capital expenditures, where funding is required beyond long-term lifecycle needs or to facilitate rate transition policies. Debt financing is measured against the Municipality's debt policies and annual repayment limits to ensure a practical and sustainable funding mix.

4. Operating Budget Forecast

The operating budget forecast considers adjustments to the Municipality's base budget reflecting program/service level changes, operating fund impacts associated with infrastructure, and financing for capital needs. The operating expenditures are forecast with inflationary adjustments and growth in service demand, based on fixed and variable cost characteristics. The operating budget forecast ties the capital funding plan and reserve/reserve fund continuity forecast to the rate-based revenue projections. This ensures sufficient funding for both the ongoing annual operation and maintenance of water and wastewater services, as well as the capital cost requirements to ensure service sustainability. Operating revenues are projected to identify the rate components net of anticipated operating revenues, such as hydrant rentals, fees and penalties, and other miscellaneous revenues.

5. Rate Forecast and Structure

The rate forecast and structure component of the analysis considers various rate structures to recover the forecast rate-based revenue from the projected customer demands. At this stage in the analysis the full costs of service are measured against the customer growth and consumption demands to determine full cost recovery rates. The analysis may consider alternative structures for minimum bill and consumptive components of the rates, consistent with municipal policies/strategies, industry practice and customer affordability. Providing context to the rate forecast, the results are quantified to measure the impacts on a range of customer types and in relation to other municipalities.

Chapter 2
Forecast Growth and Service Demands

2. Forecast Growth and Service Demands

2.1 Current Service Demands

In preparing the demands forecast for water and wastewater services, information on the number of customers and water consumption volumes was obtained from the Municipality for the period 2015-2019. As of 2019, the number of metered water customers in the water and wastewater systems was 2,716 and 2,296 respectively. The number of customers by meter size is presented in Table 2-1.

Table 2-1
Metered Customers by Meter Size[1]

Meter Size	Water	Wastewater
¾"	2,638	2,267
1"	37	14
1 ½"	13	5
2"	22	8
3"	4	2
4"	1	
6"	-	-
Total	**2,716**	**2,296**

Water consumption across the Municipality in 2019 is estimated at 645,000 m^3 including water purchased by Asphodel Norwood (approximately 11,300 m^3). Billed water consumption for properties also receiving Municipal wastewater services, has been estimated at 429,000 m^3 annually based on historical wastewater billing records. Of the total annual water consumption, 50% is currently contributed by residential uses.

2.2 Forecast Service Demands

In determining the growth forecast estimates, both the forecast growth within the Municipality's 2019 D.C. Background Study and the average annual historical growth in the serviced areas of the Municipality (2015-2019) were considered. The growth in residential units over the historical period has been consistent with the forecast growth (42 units annually vs. 43 units annually in the 2019 D.C. Background Study). As such the forecast service demands have been based on the rate of growth contained in the

[1] Wastewater customers by meter size estimated based historical billing data

2019 D.C. Background Study. In total, water and wastewater system customers are anticipated to increase by 352 customers by 2029 across the three serviced areas. The 2019 D.C. Background Study identified that of the incremental 427 additional residential units anticipated over the 10-year forecast period, 70 of those units would be apartment dwelling units. This Rate Study has assumed that those apartment dwelling units will occur within three high density residential connections over the forecast period. Of the additional 352 connections that are anticipated over the 10-year forecast period, 342 are anticipated to be residential (97%), with all but three of those being new ¾" meter connections. In total, these assumptions result in an increase from 2,716 customers currently to 3,068 for the water systems and from 2,296 currently to 2,648 for the wastewater systems. Table 2-2 provides the detailed growth forecast for the period.

Annual water demands per customer decreased over the 2015-2018 period from 137 m^3 per customer in 2015 to 132 m^3 per residential customer 2018 (last complete year of billing data) and from 629 m^3 per customer to 551 m^3 per non-residential customer. As such, average annual consumption from 2018 has been used as an estimate of the expected future consumption for residential and non-residential uses to project future service demands. No changes have been projected to water consumption from Asphodel Norwood.

Applying these assumptions to new customers results in an estimated increase in total water consumption from 645,000 m^3 currently to 704,000 m^3 by 2029 (+9%). Total wastewater flows are anticipated to increase from 429,000 m^3 currently to 487,000 m^3 by 2029 (+14%). Table 2-3 provides the detailed water consumption and wastewater flow forecast.

Table 2-2
Water and Wastewater Customer Forecast

Connections - Water System											
Description	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Residential	2,365	2,383	2,419	2,455	2,491	2,527	2,563	2,599	2,635	2,671	2,707
Non-Residential	350	351	352	353	354	355	356	357	358	359	360
Asphodel Norwood	1	1	1	1	1	1	1	1	1	1	1
Total	**2,716**	**2,735**	**2,772**	**2,809**	**2,846**	**2,883**	**2,920**	**2,957**	**2,994**	**3,031**	**3,068**

Connections - Wastewater System											
Description	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Residential	1,995	2,013	2,049	2,085	2,121	2,157	2,193	2,229	2,265	2,301	2,337
Non-Residential	301	302	303	304	305	306	307	308	309	310	311
Total	**2,296**	**2,315**	**2,352**	**2,389**	**2,426**	**2,463**	**2,500**	**2,537**	**2,574**	**2,611**	**2,648**

Table 2-3
Water Consumption and Wastewater Flow Forecast

Consumption (m^3) - Water System											
Description	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Residential	311,556	314,322	319,947	325,572	331,198	336,823	342,448	348,073	353,698	359,323	364,948
Non-Residential	322,463	323,014	323,565	324,115	324,666	325,217	325,767	326,318	326,869	327,420	327,970
Asphodel Norwood	11,329	11,329	11,329	11,329	11,329	11,329	11,329	11,329	11,329	11,329	11,329
Total	**645,348**	**648,665**	**654,841**	**661,017**	**667,193**	**673,369**	**679,544**	**685,720**	**691,896**	**698,072**	**704,248**

Flows (m^3) - Wastewater System											
Description	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Residential	262,813	265,580	271,205	276,830	282,455	288,080	293,705	299,331	304,956	310,581	316,206
Non-Residential	165,764	166,314	166,865	167,416	167,966	168,517	169,068	169,619	170,169	170,720	171,271
Total	**428,577**	**431,894**	**438,070**	**444,246**	**450,422**	**456,598**	**462,773**	**468,949**	**475,125**	**481,301**	**487,477**

Chapter 3
Capital Infrastructure Needs

3. Capital Infrastructure Needs

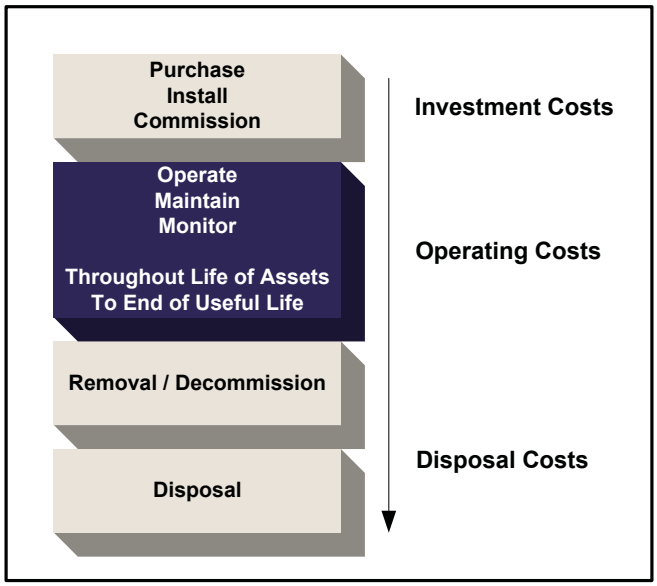
3.1 Overview of Lifecycle Costing

3.1.1 Definition

For many years, lifecycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and use in the areas of industrial decision-making and the management of physical assets.

By definition, lifecycle costs are all the costs which are incurred during the lifecycle of a physical asset, from the time its acquisition is first considered, to the time it is taken out of service for disposal or redeployment. The stages which the asset goes through in its lifecycle are specification, design, manufacture (or build), installation, commissioning, operation, maintenance and disposal. Figure 3-1 depicts these stages in a schematic form.

Figure 3-1
Lifecycle Costing



3.1.2 Financing Costs

This section will focus on financing mechanisms in place to fund the costs incurred throughout the asset's life.

In a municipal context, services are provided to benefit tax/rate payers. Acquisition of assets is normally timed in relation to direct needs within the community. At times, economies of scale or technical efficiencies will lead to oversizing an asset to accommodate future growth within the municipality. Over the past few decades, new financing techniques such as development charges and *Municipal Act* capital charges have been employed based on the underlying principle of having tax/rate payers who benefit directly from the service paying for that service. Operating costs which reflect the cost of the service for that year are charged directly to all existing tax/rate payers who have received the benefit. Operating costs are normally charged through the tax base or user rates.

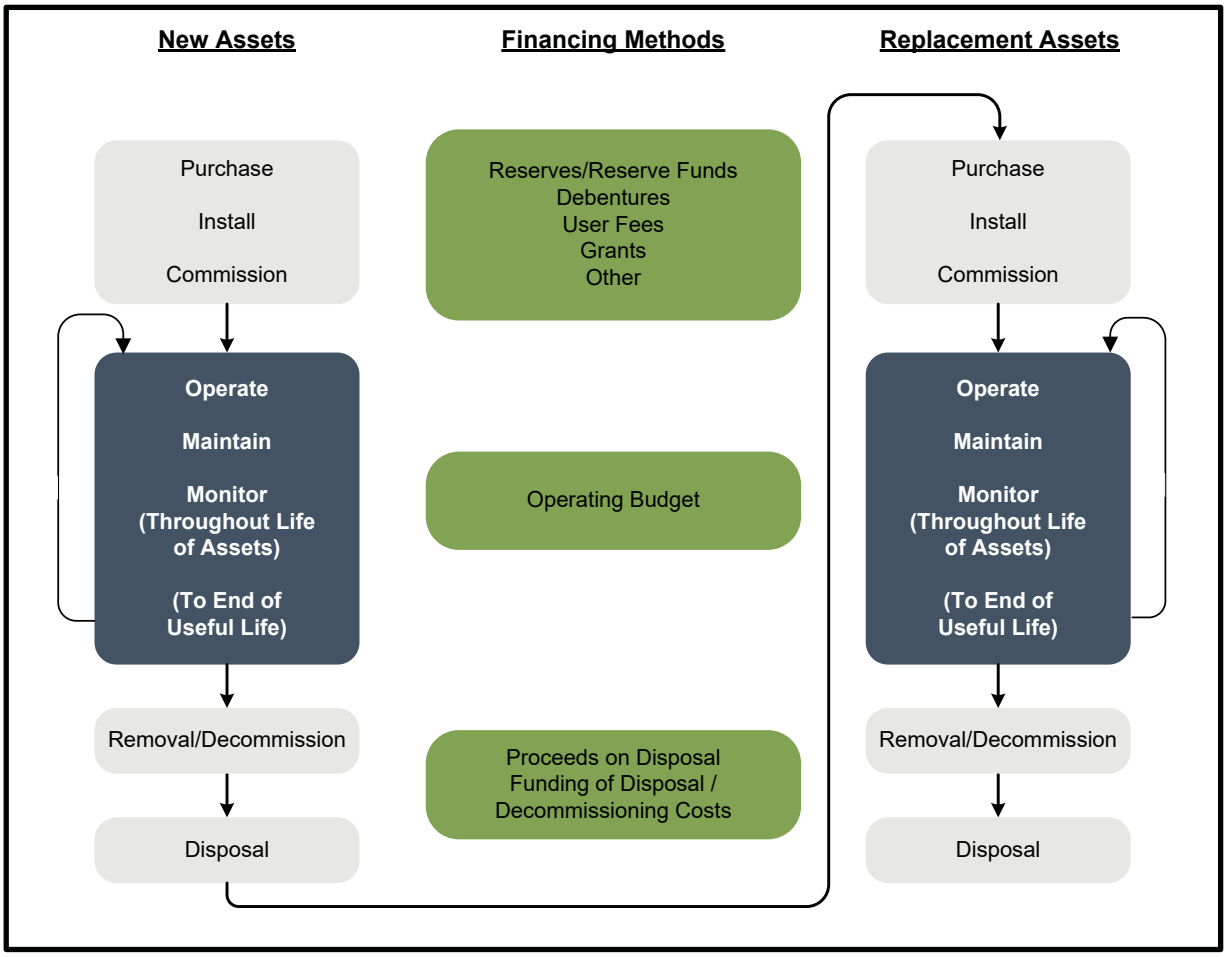
Capital expenditures are recouped through several methods, the most common being operating budget contributions, development charges, reserves, developer contributions and debentures.

New construction related to growth could produce development charges, capital charges, and developer contributions (e.g. works internal to a subdivision which are the responsibility of the developer to construct) to fund a significant portion of projects, where new assets are being acquired to allow growth within the municipality to continue. As well, debentures could be used to fund such works, with the debt charge carrying costs recouped from taxpayers in the future.

However, capital construction to replace existing infrastructure is largely not growth-related and will therefore not yield development charges or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon debentures, reserves and contributions from the operating budget to fund these works.

Figure 3-2 depicts the costs of an asset from its initial conception through to replacement and then continues to follow the associated costs through to the next replacement.

Figure 3-2
Financing Lifecycle Costs



As referred to earlier, growth-related financing methods such as development charges and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner who benefits directly from the installation of this asset. Other financing methods may be used as well to finance the non-growth-related component of this project; reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers, connection charges and debenturing which will be carried by future tax/rate payers. Ongoing costs for monitoring, operating and maintaining the asset will be charged annually to the existing tax/rate payer.

When the asset requires replacement, the sources of financing will be limited to reserves, debentures and contributions from the operating budget. At this point, the

question is raised; "If the cost of replacement is to be assessed against the tax/rate payer who benefits from the replacement of the asset, should the past tax/rate payer pay for this cost or should future rate payers assume this cost?" If the position is taken that the past user has used up the asset, hence they should pay for the cost of replacement, then a charge should be assessed annually, through the life of the asset to have funds available to replace it when the time comes. If the position is taken that the future tax/rate payer should assume this cost, then debenturing and, possibly, a contribution from the operating budget should be used to fund this work.

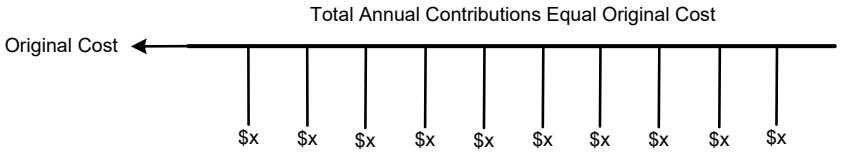
Charging for the cost of using up of an asset is the fundamental concept behind amortization methods utilized by the private sector. This concept allows for expending the asset as it is used up in the production process. The tracking of these costs forms part of the product's selling price and hence end users are charged for the asset's amortization. The same concept can be applied in a municipal setting to charge existing users for the asset's use and set those funds aside in a reserve to finance the cost of replacing the asset in the future.

3.1.3 Costing Methods

There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Amortization Method. This method recognizes the reduction in the value of the asset through wear and tear, and aging. There are two commonly used forms of amortization: the straight-line method and the sinking fund method.

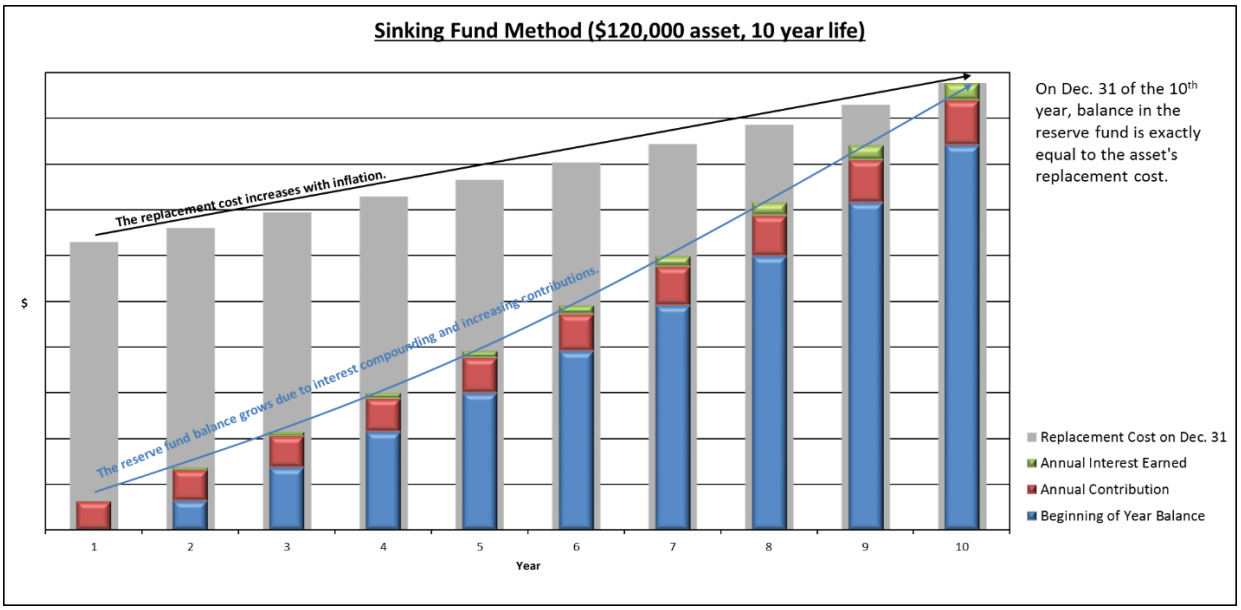
The straight-line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing a fixed percentage rate and this rate is applied annually to the undepreciated balance of the asset value.

Straight-line Amortization



$$\text{Formula: } \frac{\text{Original Cost – Salvage Cost}}{\text{Number of Years of Useful Life}}$$

The second method of lifecycle costing is the sinking fund method. This method first estimates the future value of the asset at the time of replacement. This is done by inflating the original cost of the asset at an assumed annual inflation rate. A calculation is then performed to determine annual contributions (equal or otherwise) which, when invested, will grow with interest to equal the future replacement cost.



The preferred method used herein is the sinking fund method of lifecycle costing.

3.2 Asset Inventory

Lifecycle "sinking fund" contribution amounts for the infrastructure have been calculated to determine the level of capital investment to be included in the full cost assessment and rate forecast. Table 3-1 summarizes the current asset replacement value and long-term annual lifecycle replacement needs, in 2019 dollars. These values were calculated based on the detailed water and wastewater capital asset inventory information obtained from the Municipality's 2018 Asset Management Plan. In calculating the annual lifecycle replacement costs, revisions were made to the useful life estimates for water and wastewater facilities and components to reflect industry standards.

Table 3-1
Summary of Water and Wastewater Infrastructure (2019$)

Description	Replacement Cost	Annual Lifecycle Replacement Costs
Water	67,074,000	1,693,000
Wastewater	78,236,000	2,037,000
Total	**145,310,000**	**3,730,000**

3.3 Capital Forecast

10-year capital forecasts have been developed for the water and wastewater systems to address the funding required to complete 2019 water and wastewater projects and annual capital provisions for future years. Provisions for anticipated annual capital needs reflect the average anticipated needs of the respective water and wastewater systems. As the Municipality proceeds with their annual budget process, specific capital needs will be identified within the forecast period to provide for the sustainable replacement of the systems.

The capital forecasts are summarized in Tables 3-2 and 3-3 for the water and wastewater systems respectively. These capital needs are forecast in 2019$ valuations. The water capital plan totals $6.3 million including approximately $137,000 for Doxsee Avenue in 2019 plus annual costs of $615,000. For wastewater services, the capital plan totals $4.2 million for the forecast period including $228,000 for Doxsee Avenue in 2020, plus $400,000 annually.

For rate determination purposes, the capital needs forecast will be indexed by 2.5% annually. This is reflective of the annual capital cost inflation witnessed in the Statistics Canada Non-Residential Building Construction Price Index in recent years.

Table 3-2
Water Service
Capital Forecast – Uninflated (2019$)

Description	Total	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Capital Expenditures											
Campbellford											
Doxsee Ave Water	136,738	136,738									
Lifecycle:	-										
Provision	6,150,000	615,000	615,000	615,000	615,000	615,000	615,000	615,000	615,000	615,000	615,000
Total Capital Expenditures	**6,286,738**	**751,738**	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**

Table 3-3
Wastewater Service
Capital Budget Forecast – Uninflated (2019$)

Description	Total	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Capital Expenditures											
Cambellford											
Doxsee Ave - Sewer	227,776	227,776									
Lifecycle:	-										
Provision	4,000,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Total Capital Expenditures	**4,227,776**	**627,776**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**

Chapter 4
Capital Cost Financing Options

4. Capital Cost Financing Options

4.1 Summary of Capital Cost Financing Alternatives

Historically, the powers that municipalities have had to raise alternative revenues to taxation to fund capital services have been restrictive. Over the past number of years, legislative reforms have been introduced. Some of these have expanded municipal powers (e.g. Bill 130 providing for natural person powers for fees and charges bylaws); while others appear to restrict them (Bill 98 in 1997 providing amendments to the D.C.A.).

The most recent *Municipal Act* came into force on January 1, 2003, with significant amendments in 2006 through the *Municipal Statute Law Amendment Act*. Part XII of the Act and Ontario Reg. 584/06, govern a Municipality's ability to impose fees and charges. This Act provides municipalities with broadly defined powers and provides the ability to impose fees for both operating and capital purposes. Under s.484 of the *Municipal Act*, 2001, the Local Improvement Act was repealed with the in-force date of the Municipal Act (January 1, 2003). The municipal powers granted under the *Local Improvement Act* now fall under the jurisdiction of the *Municipal Act*.

The methods of capital cost recovery available to municipalities are provided as follows:

Recovery Methods	Section Reference
• D.C.A., 1997	4.2
• *Municipal Act* o Fees and Charge o Local Improvements	4.3
• Grant Funding	4.4
• Reserves/Reserve Funds	4.5
• Debenture Financing	4.6

4.2 Development Charges Act, 1997

The D.C.A. received royal assent on December 8, 1997, replacing the previous act, which had been in-force since November 23, 1989.

The Province's stated intentions were to "create new construction jobs and make home ownership more affordable" by reducing the charges and to "make municipal Council decisions more accountable and more cost effective." The basis for this Act is to allow municipalities to recover the growth-related capital cost of infrastructure necessary to accommodate new growth within the municipality. The D.C.A. provides for limitations and ceilings on services that can be included in the charges.

D.C.s imposed in the Municipality do not include costs for water and wastewater services. As such, D.C.s have not been included as a source of capital financing in the financial plan.

4.3 Municipal Act

Part XII of the *Municipal Act* provides municipalities with broad powers to impose fees and charges via passage of a by-law. These powers, as presented in s. 391 (1), include imposing fees or charges:

- "for services or activities provided or done by or on behalf of it;
- for costs payable by it for services or activities provided or done by or on behalf of any other municipality or local board; and
- for the use of its property including property under its control."

Restrictions are provided to ensure that the form of the charge is not akin to a poll tax. Any charges not paid under this authority may be added to the tax roll and collected in a like manner. The fees and charges imposed under this part are not appealable to the Ontario Municipal Board.

s. 391 (2) of the *Municipal Act* permits municipalities to impose charges to recover capital costs, by by-law, from owners or occupants of land who receive an immediate benefit or a benefit at some later point in time. For a by-law imposed under this section of the Act:

- A variety of different means could be used to establish the rate, and recovery of the costs could be imposed by a number of methods at the discretion of Council (i.e. lot size, frontage, number of benefiting properties, etc.);
- Rates could be imposed in respect to costs of major capital works, even though an immediate benefit is not enjoyed;
- Non-abutting owners could be charged;
- Recovery could be authorized against existing works, where new infrastructure was added to such works, "notwithstanding that the capital costs of existing works has in whole or in part been paid";
- Charges on individual parcels could be deferred;
- Exemptions could be established; and
- Ontario Municipal Board approval is not required.

Under the previous *Local Improvement Act*:

- A variety of different types of works could be undertaken, such as watermain, storm and sanitary sewer projects, supply of electrical light or power, bridge construction, sidewalks, road widening and paving;
- Council could pass a by-law for undertaking such work on petition of a majority of benefiting taxpayers, on a 2/3 vote of Council and on sanitary grounds, based on the recommendation of the Minister of Health. The by-law was required to go to the Ontario Municipal Board, which might hold hearings and alter the by-law, particularly if there were objections;
- The entire cost of a work was assessed only upon the lots abutting directly on the work, according to the extent of their respective frontages, using an equal special rate per meter of frontage; and
- As noted, this Act was repealed as of April 1, 2003; however, Ontario Reg. 119/03 was enacted on April 19, 2003 which restores many of the previous *Local Improvement Act* provisions; however, the authority is now provided under the *Municipal Act*.

The Municipality uses *Municipal Act* Connection Charges to recover the costs from new connections to the system associated with their benefitting share of treatment, storage, and major distribution and collection infrastructure.

The Municipality's use of water and wastewater connection charges are discussed further in Chapter 6.

4.4 Grant Funding Availability

In August 2012, the Province of Ontario initiated the Municipal Infrastructure Investment Initiative. In supporting the efforts of communities to restore and revitalize their public infrastructure, this initiative provides one-time provincial funding to improve asset management planning in small municipalities and local service boards. In addition, funding will be made available for municipal infrastructure projects under this initiative. Any municipality or local service board seeking capital funding in the future must demonstrate how its proposed project fits within a detailed asset management plan. To assist in defining the components of an asset management plan, the Province produced a document entitled, "Building Together: Guide for Municipal Asset Management Plans." This guide documents the components, information and analysis that are required to be included in a Municipality's asset management plan under this initiative.

The capital plan has identified that $307,200 OCIF funding will be applied to the remaining costs for Doxsee Avenue in 2020 (water and wastewater). No additional grants have been identified over the forecast period of 2020 to 2029. To the extent that the Municipality is successful in achieving additional grant funding for future infrastructure needs and the financial impacts are material, the rate forecast may be revisited.

4.5 Existing Reserves/Reserve Funds

The Municipality has established reserves and reserve funds for water and wastewater capital costs. The established water and wastewater reserves have been used in the capital funding forecast for rate-based needs.

2019 opening balances for water and wastewater reserve balances are $2.0 million for the water systems and $2.5 million for the wastewater systems.

4.6 Debenture Financing

Although it is not a direct method of minimizing the overall cost to the ratepayer, debentures are used by municipalities to assist in cash flowing large capital expenditures.

The Ministry of Municipal Affairs regulates the level of debt incurred by Ontario municipalities, through its powers established under the *Municipal Act*. Ontario Reg. 403/02 provides the current rules respecting municipal debt and financial obligations. Through the rules established under these regulations, a Municipality's debt capacity is capped at a level where no more than 25% of the Municipality's own source revenue may be allotted for servicing the debt (i.e. annual debt charges).

The Municipality has a Debt Management Policy which sets out the parameters regarding the type of debt that may be issued, the timing, types, and terms of permissible debt. The objectives of the Debt Management Policy are to manage debt in a consistent manner, limit financial risk, protect municipal credit quality, and promote integration with other long term planning, financial, and management objectives of the Municipality. Within the Debt Management Policy is a limitation whereby the committed debt should not exceed a target of 65% of the legislated debt capacity.

The Municipality has outstanding municipal-wide debt for which the annual repayments ($2.6 million) constitute 53% of the legislated debt capacity. Regarding the requirement for additional debt financing for forecast water and wastewater needs, the Municipality is issuing $2.7 million debt for the Campbellford Potable Water Supply System in 2019, however, no further water and wastewater debt financing is anticipated.

With forecast growth in own source revenues based on the rate forecast presented herein, growth in the Municipality more generally[1], and the retirement of municipal debt over the forecast period, the Municipality's debt capacity utilization would decrease from 53% of the legislated limit to 32% by 2029. This would place the Municipality well within the Debt Management Policy limit of 65% of the legislated limit and preserve debt funding capacity for unanticipated water and wastewater expenditures and other municipal services.

4.7 Recommended Approach

In undertaking the Rate Study, multiple scenarios were assessed to allow the Municipality to fully fund the water and wastewater systems (including long-term annual capital replacement contributions), while having regard for the Municipality's Debt

[1] Growth in non-rate based own-source revenues forecast based on net own-source revenues from 2018 FIR (net of rate based revenue) and anticipated population growth.

Management Policy, the sufficiency of reserves, and the affordability impacts of recommended rate increases. The capital funding plan envisions reaching full lifecycle funding levels over a 20-year period.

The following table summarizes the recommended capital funding sources supporting the capital needs forecast, for consideration by the Municipality of Trent Hills:

Table 4-1
2020-2029 Water and Wastewater Capital Funding Program (Inflated $)

Description	Water	Wastewater
Provincial/Federal Grants	115,194	191,990
Debenture Requirements	-	-
Reserves/Reserve Funds	7,085,806	4,635,010
Total	**7,201,000**	**4,827,000**

Tables 4-2 and 4-3 provide for the full capital expenditure and funding program by year for water and wastewater services respectively. These capital funding plans are provided in inflated dollars.

Based on the capital funding plans identified in Tables 4-2 and 4-3 and the 2019 water and wastewater reserve balances in Section 4.5, the water and wastewater reserve continuity schedules are presented in Tables 4-4 and 4-5 respectively. By 2029, water reserves are anticipated to decrease from $2.0 million to $0.8 million and wastewater reserves are anticipated to increase from $2.5 million to $9.7 million.

Table 4-2
Water Service
Capital Budget Forecast – Inflated $

Description	Total	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Capital Expenditures											
Campbellford	-	-	-	-	-	-	-	-	-	-	-
Doxsee Ave Water	140,000	140,000	-	-	-	-	-	-	-	-	-
Lifecycle:	-	-	-	-	-	-	-	-	-	-	-
Provision	7,061,000	630,000	646,000	662,000	679,000	696,000	713,000	731,000	749,000	768,000	787,000
Total Capital Expenditures	**7,201,000**	**770,000**	**646,000**	**662,000**	**679,000**	**696,000**	**713,000**	**731,000**	**749,000**	**768,000**	**787,000**
Capital Financing											
Provincial/Federal Grants	115,194	115,194									
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-
Water Reserve	7,085,806	654,806	646,000	662,000	679,000	696,000	713,000	731,000	749,000	768,000	787,000
Total Capital Financing	**7,201,000**	**770,000**	**646,000**	**662,000**	**679,000**	**696,000**	**713,000**	**731,000**	**749,000**	**768,000**	**787,000**

Table 4-3
Wastewater Service
Capital Budget Forecast – Inflated $

Description	Total	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Capital Expenditures											
Campbellford	-	-	-	-	-	-	-	-	-	-	-
Doxsee Ave - Sewer	233,000	233,000	-	-	-	-	-	-	-	-	-
Lifecycle:	-	-	-	-	-	-	-	-	-	-	-
Provision	4,594,000	410,000	420,000	431,000	442,000	453,000	464,000	475,000	487,000	500,000	512,000
Total Capital Expenditures	**4,827,000**	**643,000**	**420,000**	**431,000**	**442,000**	**453,000**	**464,000**	**475,000**	**487,000**	**500,000**	**512,000**
Capital Financing											
Provincial/Federal Grants	191,990	191,990									
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-
Wastewater Reserve	4,635,010	451,010	420,000	431,000	442,000	453,000	464,000	475,000	487,000	500,000	512,000
Total Capital Financing	**4,827,000**	**643,000**	**420,000**	**431,000**	**442,000**	**453,000**	**464,000**	**475,000**	**487,000**	**500,000**	**512,000**

Table 4-4
Water Reserve Continuity– Inflated $

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Opening Balance	2,010,882	1,744,218	1,313,420	945,628	618,958	335,688	99,683	29,024	13,018	189,364	452,845
Transfer from Operating	299,001	77,604	132,098	189,046	248,743	311,760	491,126	560,165	764,921	864,475	944,278
Connection Charge Proceeds		133,400	136,748	140,156	143,664	147,249	150,927	154,699	158,550	162,523	166,591
Transfer to Capital	582,935	654,806	646,000	662,000	679,000	696,000	713,000	731,000	749,000	768,000	787,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	**1,726,948**	**1,300,416**	**936,266**	**612,830**	**332,364**	**98,697**	**28,737**	**12,889**	**187,489**	**448,361**	**776,714**
Interest	17,269	13,004	9,363	6,128	3,324	987	287	129	1,875	4,484	7,767

Table 4-5
Wastewater Reserve Continuity– Inflated $

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Opening Balance	2,475,859	2,005,631	2,289,500	2,699,337	3,197,496	3,788,747	4,477,486	5,297,711	6,226,210	7,283,965	8,475,651
Transfer from Operating	459,809	468,535	553,348	641,501	733,337	828,455	956,101	1,059,293	1,183,011	1,310,891	1,427,321
Connection Charge Proceeds		243,675	249,763	255,999	262,402	268,952	275,671	282,560	289,626	296,877	304,307
Transfer to Capital	949,895	451,010	420,000	431,000	442,000	453,000	464,000	475,000	487,000	500,000	512,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	**1,985,774**	**2,266,831**	**2,672,611**	**3,165,837**	**3,751,235**	**4,433,154**	**5,245,258**	**6,164,564**	**7,211,847**	**8,391,734**	**9,695,279**
Interest	19,858	22,668	26,726	31,658	37,512	44,332	52,453	61,646	72,118	83,917	96,953

Chapter 5
Operating Expenditure Forecast

5. Operating Expenditure Forecast

5.1 Operating Expenditures

In this report the forecasted operating budget figures for water and wastewater services are based on the Municipality's 2019 operating budgets. The expenditures for each component of the operating budget have been reviewed with staff to establish inflationary adjustments.

Capital-related annual expenditures in the forecast include annual debt repayments and contributions to reserves and reserve funds to support the capital forecast and future needs. While operating aspects identified above generally increase with inflation over the period (i.e. 2% annually), the capital-related aspects tend to increase more specifically with the increase in capital funding requirements.

As a result of the inflationary and capital-related expenditure increases, the water and wastewater operating expenditures are anticipated to increase over the forecast period.

5.1.1 Water Services

Debt repayment costs are expected to decrease from $499,000 in 2020 to $231,000 by 2029 as some debentures mature. Reserve transfers are projected to increase from $78,000 to $944,000 over the same period. Other operating expenditures are also expected to increase from $1.3 million in 2020 to $1.6 million by the end of the forecast period.

Overall, gross operating expenditures for water services are anticipated to increase from $1.9 million in 2020 to $2.8 million by 2029.

5.1.2 Wastewater Services

For wastewater services, debt repayment costs are expected to decrease over the 2020-2029 forecast period from $589,000 to $456,000 as existing wastewater debt is retired. Reserve transfers are projected to increase from $392,000 to $1.3 million over the same period. Other operating expenditures are also expected to increase from $1.2 million in 2020 to $1.4 million by the end of the forecast period.

Overall, gross operating expenditures for wastewater services are anticipated to increase from $2.2 million in 2020 to $3.2 million by 2029.

5.2 Operating Revenues

Water and wastewater rate revenue from the Municipality's monthly service charges and consumptive rates (i.e. $/m^3 of water consumption) comprise the greatest share of annual revenue. The Municipality also has operating revenue sources such as fees for hydrant rentals, bulk sales, penalties, water meter sales, and other miscellaneous sources for the water system, and sewer connection and other miscellaneous revenue for the wastewater systems. Revenues for the processing of waste at the Campbellford and Hastings Wastewater Treatment Facilities have not been included in the analysis due to the uncertainty of future revenues.

5.2.1 Water Services

Non-rate revenues for the water system are forecast to increase with annual inflation (i.e. 2% annually). The service charge and consumptive rate revenues have been forecast based on the underlying system growth assumptions and the Municipality's forecast service charge and consumptive rates for the 2020-2029 period

The total annual operating revenues (miscellaneous and rate revenue) are forecast to increase from $1.9 million in 2020 to $2.8 million by 2029.

5.2.2 Wastewater Services

Non-rate revenues for the wastewater system are also forecast to increase with annual inflation (i.e. 2% annually). Rate based revenues (currently comprised of a sewer charge based on annual water bills) are forecast to increase based on the underlying system growth assumptions and the Municipality's forecast service charge and consumptive rates for the 2020-2029 period

The total annual operating revenues (miscellaneous and rate revenue) are forecast to increase from $2.2 million in 2020 to $3.2 million by 2029.

Tables 5-1 to 5-2 provide the water and wastewater operating budget forecasts (2020 to 2029) which are presented in inflated dollars.

Table 5-1
Water Service – Operating Budget Forecast – Inflated $

Description	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Expenditures										
Operating Costs										
Campbellford										
Water- C-ford Admin	471,700	481,100	490,700	500,500	510,500	520,700	531,100	541,700	552,500	563,600
Water Campbellford Asset Mgmt - Consultant Fees	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Water - C - Truck Maintenance	7,100	7,200	7,300	7,400	7,500	7,700	7,900	8,100	8,300	8,500
Water - C - Filtration Plant	259,900	265,100	270,400	275,800	281,300	286,900	292,600	298,500	304,500	310,600
Water - C - Water Tower	19,400	19,800	20,200	20,600	21,000	21,400	21,800	22,200	22,600	23,100
Water - C - Watermain Maintenance	12,800	13,100	13,400	13,700	14,000	14,300	14,600	14,900	15,200	15,500
Water - C - Water Service Maintenance	14,300	14,600	14,900	15,200	15,500	15,800	16,100	16,400	16,700	17,000
Water - C - Locates	700	700	700	700	700	700	700	700	700	700
Water - C - Hydrant Maintenance	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Water - C - Water Meter Maintenance	17,300	17,600	18,000	18,400	18,800	19,200	19,600	20,000	20,400	20,800
Hastings										
Water - Hastings Admin	194,600	198,500	202,500	206,600	210,700	214,900	219,200	223,600	228,100	232,700
Water - H - Truck Maintenance	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Water - H - Filtration Plant	121,200	123,600	126,100	128,600	131,200	133,800	136,500	139,200	142,000	144,800
Water - H - Water Tower	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,100	5,200
Water - H - Water Maintenance	8,700	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500
Water - H - Water Service Maintenance	8,200	8,400	8,600	8,800	9,000	9,200	9,400	9,600	9,800	10,000
Water - H - Locates	200	200	200	200	200	200	200	200	200	200
Water - H - Hydrant Maintenance	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Water - H - Water Meter Maintenance	12,200	12,400	12,600	12,900	13,200	13,500	13,800	14,100	14,400	14,700
Warkworth										
Water - W'worth Admin	92,200	94,000	95,900	97,800	99,800	101,800	103,800	105,900	108,000	110,200
Water - Warkworht - Asset Manage - Consultatn fees	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Water - W - Truck Maintenance - Fuel	2,600	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500
Water - W - Filtration Plant	78,300	79,900	81,500	83,100	84,800	86,500	88,200	90,000	91,800	93,600
Water - W - Water Tower	500	500	500	500	500	500	500	500	500	500
Water - W - Watermain Maintenance	5,400	5,500	5,600	5,700	5,800	5,900	6,000	6,100	6,200	6,300
Water - W - Water Service Maintenance	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600
Water - W - Locates	300	300	300	300	300	300	300	300	300	300
Water - W - Hydrant Maintenance	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Water - W - Water Meter Maintenance	6,600	6,700	6,800	6,900	7,000	7,100	7,200	7,300	7,400	7,500
Water - W/W Booster Pump	9,000	9,200	9,400	9,600	9,800	10,000	10,200	10,400	10,600	10,800
Sub Total Operating	**1,363,400**	**1,390,600**	**1,418,500**	**1,446,900**	**1,475,900**	**1,505,400**	**1,535,400**	**1,566,100**	**1,597,300**	**1,629,200**
Capital-Related										
Existing Debt (Principal) - Non-Growth Related	374,154	384,784	395,732	407,009	418,626	315,815	325,065	201,871	183,674	188,614
Existing Debt (Interest) - Non-Growth Related	125,828	115,199	104,251	92,973	81,357	70,777	61,527	52,667	47,303	42,363
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	77,604	132,098	189,046	248,743	311,760	491,126	560,165	764,921	864,475	944,278
Sub Total Capital Related	**577,586**	**632,080**	**689,028**	**748,725**	**811,742**	**877,718**	**946,757**	**1,019,458**	**1,095,452**	**1,175,255**
Total Expenditures	**1,940,986**	**2,022,680**	**2,107,528**	**2,195,625**	**2,287,642**	**2,383,118**	**2,482,157**	**2,585,558**	**2,692,752**	**2,804,455**
Revenues										
Service Charges	994,721	1,040,700	1,088,602	1,138,506	1,190,488	1,244,631	1,301,020	1,359,744	1,420,894	1,484,565
Other Revenue	176,300	179,800	183,400	187,100	190,800	194,600	198,500	202,500	206,600	210,700
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**1,171,021**	**1,220,500**	**1,272,002**	**1,325,606**	**1,381,288**	**1,439,231**	**1,499,520**	**1,562,244**	**1,627,494**	**1,695,265**
Water Billing Recovery - Operating	**769,966**	**802,180**	**835,525**	**870,019**	**906,354**	**943,887**	**982,637**	**1,023,314**	**1,065,258**	**1,109,190**

Table 5-2
Wastewater Service – Operating Budget Forecast – Inflated $

Description	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Expenditures										
Operating Costs										
Cambellford										
Sanitary - C'ford Admin	368,700	376,100	383,600	391,300	399,100	407,100	415,200	423,500	432,000	440,600
Sanitary Campbellford - Asset Mgmt Consultant Fees	4,100	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000
Sanitary - C- Sewer Flushing	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Sanitary - C - Sewer Collapse/Lat	6,600	6,700	6,800	6,900	7,000	7,100	7,200	7,300	7,400	7,500
Sanitary - C - CCTV	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100
Sanitary - C - Sewer Repairs	21,400	21,800	22,200	22,600	23,100	23,600	24,100	24,600	25,100	25,600
Sanitary - C - Sewer Locates	500	500	500	500	500	500	500	500	500	500
Sanitary - C - Treatment	308,000	314,200	320,500	326,900	333,400	340,100	346,900	353,800	360,900	368,100
Sanitary - C - Sask Ave PS	25,600	26,100	26,600	27,100	27,600	28,200	28,800	29,400	30,000	30,600
Sanitary - C - Trent Dr PS	7,800	8,000	8,200	8,400	8,600	8,800	9,000	9,200	9,400	9,600
Sanitary - C - Inkerman St. Pump Stn	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Sanitary - C - Manhole Repairs	7,700	7,900	8,100	8,300	8,500	8,700	8,900	9,100	9,300	9,500
Hastings										
Sanitary - Hastings Admin	139,400	142,200	145,000	147,900	150,900	153,900	157,000	160,100	163,300	166,600
Sanitary - H - Sewer Flushing - Full time wages and Contracted	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Sanitary - H - Sewer Collapse	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000
Sanitary - H - CCTV	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Sanitary - H - Sewer Repairs	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000
Sanitary - H - Sewer Locates	100	100	100	100	100	100	100	100	100	100
Sanitary - H - Treatment	152,000	155,000	158,100	161,300	164,500	167,800	171,200	174,600	178,100	181,700
Sanitary - H - Front St Pump Stn	8,400	8,600	8,800	9,000	9,200	9,400	9,600	9,800	10,000	10,200
Sanitary - H - Homewood	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Warkworth										
Sanitary - W'worth Admin	57,200	58,300	59,500	60,700	61,900	63,100	64,400	65,700	67,000	68,300
Sanitary - W - Sewer Flushing - Full time wages and Contracted	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000
Sanitary - W - Sewer Collapse/Lat	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Sanitary - W - CCTV	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000
Sanitary - W- Sewer Repairs	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Sanitary - W - Sewer Locates	200	200	200	200	200	200	200	200	200	200
Sanitary - W - Treatment	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500	10,700
Sanitary - W - Arena Pump #1	13,300	13,600	13,900	14,200	14,500	14,800	15,100	15,400	15,700	16,000
Sanitary - W - George St Pump #2	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100
Sub Total Operating	**1,204,000**	**1,228,200**	**1,252,800**	**1,277,900**	**1,303,400**	**1,329,500**	**1,356,100**	**1,383,000**	**1,410,500**	**1,438,500**
Capital-Related										
Existing Debt (Principal) - Non-Growth Related	417,944	423,993	430,236	436,682	443,335	421,509	427,831	418,244	407,696	413,037
Existing Debt (Interest) - Non-Growth Related	170,810	156,551	142,359	127,965	113,537	98,892	84,621	70,140	56,707	43,330
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	468,535	553,348	641,501	733,337	828,455	956,101	1,059,293	1,183,011	1,310,891	1,427,321
Sub Total Capital Related	**1,057,289**	**1,133,892**	**1,214,096**	**1,297,983**	**1,385,327**	**1,476,502**	**1,571,746**	**1,671,396**	**1,775,294**	**1,883,687**
Total Expenditures	**2,261,289**	**2,362,092**	**2,466,896**	**2,575,883**	**2,688,727**	**2,806,002**	**2,927,846**	**3,054,396**	**3,185,794**	**3,322,187**
Revenues										
Service Charges	1,379,273	1,442,388	1,507,967	1,576,101	1,646,881	1,720,401	1,796,761	1,876,061	1,958,409	2,043,911
Other Revenue	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**1,382,873**	**1,446,088**	**1,511,767**	**1,580,001**	**1,650,881**	**1,724,501**	**1,800,961**	**1,880,361**	**1,962,809**	**2,048,411**
Wastewater Billing Recovery - Operating	**878,416**	**916,004**	**955,129**	**995,882**	**1,037,846**	**1,081,501**	**1,126,885**	**1,174,034**	**1,222,986**	**1,273,777**

Figures 5-1 and 5-2 illustrate the annual net operating budget increase for water and wastewater services respectively over the forecast period by component, illustrating the increase in annual revenues for increased capital funding purposes (transfers to reserves and debt). The capital related component of annual operating expenditures has been forecast to increase at a rate such that full lifecycle funding will be reached over a 20-year period.

Figure 5-1
2020-2029 Water Annual Operating Cost Forecast by Major Component

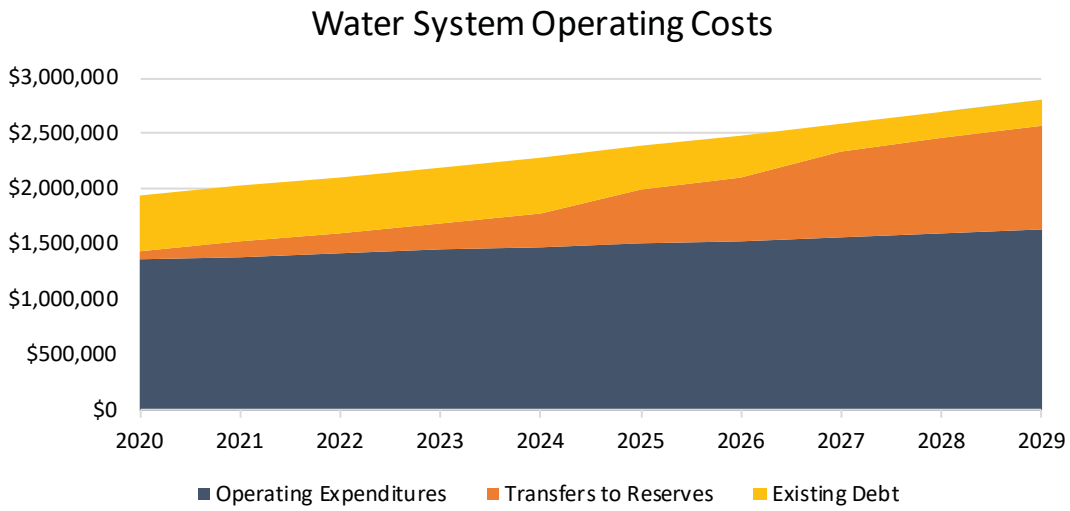
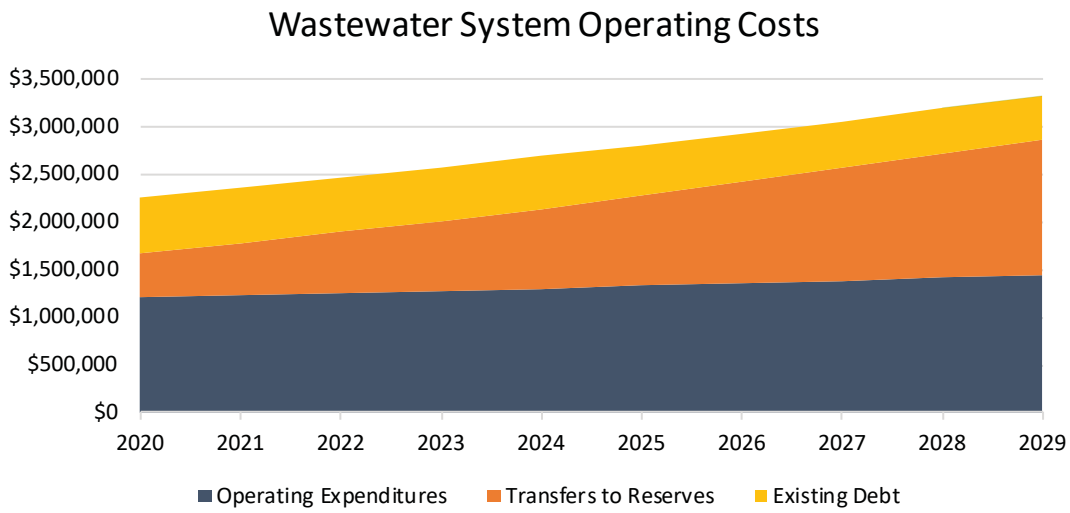


Figure 5-2
2020-2029 Wastewater Annual Operating Cost Forecast by Major Component



Chapter 6
Municipal Act Connection Charge Calculation

6. *Municipal Act* Connection Charge Calculation

6.1 Connection Charge Methodology and Calculation

The Municipality's policy of using connection charges to recover the costs from new connections to the system associated with their benefitting share of treatment, storage, and major distribution and collection infrastructure has been maintained. As such the inputs into the calculation of the charge have been updated through this study process. Connection charges are calculated based on average cost for capacity in existing major vertical and horizontal infrastructure.

Some of the needs for water and wastewater services generated by additional development consists of local services related to a plan of subdivision. As such, they will be required as a condition of subdivision agreements or consent conditions. The Municipality's Local Service Policy as it pertains to water and wastewater services is contained in Appendix C.

To summarize, the approach to the calculation of the charge involved the following steps:

1. **Determine total water and wastewater system capacity**

The total servicing capacity of the water treatment plants in Campbellford, Hastings, and Warkworth were determined to be 9,661 m^3/day. The total servicing capacity of the wastewater treatment plants in in Campbellford, Hastings, and Warkworth were determined to be 7,784 m^3/day.

2. **Determine total replacement value and cost per m^3 per day of water and wastewater infrastructure**

Replacement costs included in the calculation of the charge for water and wastewater infrastructure comprise only treatment, storage, major distribution, and collection infrastructure. The replacement costs of the broader service infrastructure for water and wastewater systems to be included in the calculation are $30.7 million and $45.2 million respectively. Based on the total system capacity identified in step #1, the cost per m^3/day is $3,181 for water and $5,811 for wastewater.

3. **Calculate the Connection Charge per Residential Dwelling Unit and per m^2 of Non-Residential Gross Floor Area (G.F.A.)**

The residential and non-residential connection charge calculations described below are presented in Tables 6-1 and 6-2.

Residential

Based on demand assumptions per residential connection of 0.375 m^3/capita/day, the average replacement cost per capita of the water and wastewater systems is $1,193 and $2,179 respectively. The cost per capita is converted to a charge per dwelling unit for four housing types (single and semi-detached, apartments – 2+ bedrooms, apartments – bachelor and 1 bedroom, and other multiples) consistent with the Municipality's D.C. By-law. The following occupancy assumptions from the Municipality's 2019 D.C. Background Study were used to convert the charge per capita to a per dwelling unit charge.

- Single and Semi-Detached Dwelling – 2.529
- Apartments (2 + Bedrooms) – 1.748
- Apartments (Bachelor and 1 Bedroom) – 1.284
- Other Multiples – 2.031

The charges by residential dwelling unit are presented in Table 6-2.

Non-Residential

Non-residential demand assumptions of 28 m^3/ha/day and 40 employees per ha were utilized to determine the demand per employee of 0.7 m^3/day. Based on the average employees per m^2 of G.F.A. (i.e. 78) from the Municipality's 2019 D.C. Background Study, the non-residential demand per m^2 of G.F.A. is 0.009 m^3/day.

Based on the non-residential demand per m^2 of G.F.A. and the cost per m^3/day identified in step #2, the connection charges per m^2 of G.F.A. are $28.55 and $52.15 for water and wastewater respectively.

Table 6-1
Connection Charges Calculations

Description	Service	
	Water	Wastewater
Replacement Cost	$30,736,192	$45,236,226
Capacity (m^3/day)	9,661	7,784
$/$m^3$/day	**$3,181**	**$5,811**
Residential		
m^3/capita/day	0.375	0.375
Cost per Capita	**$1,193**	**$2,179**
Non-Residential		
m^3/m^2 of G.F.A./day	0.009	0.009
Cost per m^2	**$28.55**	**$52.15**

Table 6-2
Schedule of Calculated Connection Charges

Service	RESIDENTIAL				NON-RESIDENTI
	Single and Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments - Bachelor and 1 Bedroom	Other Multiples	per sq.m. of Gross Floor Area
Wastewater	5,511	3,809	2,798	4,426	52.15
Water	3,017	2,085	1,532	2,423	28.55
Total	**8,529**	**5,895**	**4,330**	**6,849**	**80.71**

6.2 Connection Charge Impacts

Table 6-3 compares the calculated connection charges presented above with those currently in force. For a single and semi-detached residential dwelling unit the charge is expected to increase from $5,000/unit to $8,529/unit, or 71%. The increase for other multiples would be $1,849 (37%) and for Apartments – 2 + Bedrooms the increase would be $895 (18%). For Apartments – Bachelor and 1 Bedroom, the charge would decrease by $670 (-13%). The charge for non-residential development would increase by $68.71 per m2 of G.F.A. (573%).

In assessing the impacts, it is noted that while the By-law 2008-124 identified indexing of the connection charges annually this has not been done to date. For reference the

underlying index for capital cost indexing has increased by approximately 28% over the 2008-2019 period.

Table 6-3
Comparison of Current and Calculated Connection Charges

Service	RESIDENTIAL				NON-RESIDENTIAL
	Single and Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments - Bachelor and 1 Bedroom	Other Multiples	per sq.m. of Gross Floor Area
Calculated					
Wastewater	5,511	3,809	2,798	4,426	52.15
Water	3,017	2,085	1,532	2,423	28.55
Total	**8,529**	**5,895**	**4,330**	**6,849**	**80.71**
Existing					
Wastewater	2,500	2,500	2,500	2,500	6.00
Water	2,500	2,500	2,500	2,500	6.00
Total	**5,000**	**5,000**	**5,000**	**5,000**	**12.00**
Difference	**3,529**	**895**	**(670)**	**1,849**	**68.71**
% Increase	**71%**	**18%**	**-13%**	**37%**	**573%**

Connection charge revenues form an integral part of the overall financial plan. Connection charge revenues have been forecast based on the calculated charges provided in Table 6-3, adjusted annually for capital cost inflation (2.5%), and the underlying growth assumptions form the Municipality's 2019 D.C. Background Study. On average annual connection charge revenue is anticipated at $150,000 for water and $273,000 for wastewater. Based on the anticipated development by type, approximately 84% of anticipated connection charge revenue is from residential development with the remaining 16% from non-residential development.

Chapter 7
Forecast Water and Wastewater Rates

7. Forecast Water and Wastewater Rates

7.1 Introduction

To summarize the analysis undertaken thus far, Chapter 3 reviewed capital infrastructure needs within the water and wastewater systems and responds to the lifecycle needs of the Municipality. Chapter 4 provided a review of capital financing options of which internal sources (i.e. reserve fund transfers) will be the predominant basis for financing future capital needs. Chapter 5 established the 10-year operating forecast of expenditures for Trent Hills water and wastewater systems. Chapter 6 calculated the connection charges to be imposed on new connections to the water and wastewater systems. The following calculations will be based on the net operating expenditures provided in Chapter 5, divided by the customers and volumes forecast provided in Chapter 2.

The Municipality's current rate structure comprising a monthly service charge and consumptive rate component is proposed to be maintained. However, it is proposed that the wastewater charges will be calculated separately vs. the current approach of imposing a sewer surcharge based on the monthly water bill. This approach will allow for the determination of wastewater rates that are reflective of the specific needs of the wastewater systems.

The monthly service charges which are differentiated by meter size, have been revised for meter sizes greater than ¾" to reflect the available service capacity based on American Water Works Association (AWWA) meter factors and industry best practices.

As the service charges are intended to be reflective of the service capacity made available, the approach utilized in this Rate Study is that monthly service charges should be designed such that annual revenue approximates the long-term annual lifecycle costs of the systems. Based on the capital funding plan and strong reserve positions by 2029 identified in Chapter 4, rate increases to reach full lifecycle funding are being phased in over a 20-year period. Further rate increases beyond the 10-year period to reach full lifecycle funding levels will be re-assessed in future reviews to assess changes in forecast demands, capital needs and operating costs.

The forecast water and wastewater rates are discussed in Section 7.2 and 7.3, with further analysis of the customer billing impacts in Section 7.4.

7.2 Water Rates

Monthly service charges are forecast to increase by 3.2% annually over the forecast period for ¾" meter customers. For customers with meters greater than ¾", there will be a decrease in the monthly service charge in 2020 followed by 3.2% annual increases thereafter. Forecast monthly service charges by meter size are presented in Table 7-1.

The water billing recovery from Table 5-1 (the product of total annual expenditures less operating revenues and service charge revenues) are divided by the water consumption forecast to calculate the consumptive rates.

The resultant consumptive rate forecast for water services is summarized in Table 7-2. The detailed financial forecast and rate calculations for water services are provided in Appendix A to this report.

The detailed financial forecast and rate calculations for water services are provided in Appendix A to this report.

7.3 Wastewater Rates

As with water service charges, wastewater service charges for customers with meters greater than ¾", will be decreased in 2020 followed by annual increases consistent with ¾" meters thereafter (i.e. 2.8% annually). Forecast monthly service charges by meter size are presented in Table 7-3.

Similar to water services, forecast consumptive rates are arrived at by dividing the net wastewater billing recovery by the wastewater flows forecast to occur.

The detailed financial forecast and rate calculations for wastewater services are provided in Appendix B to this report.

Table 7-1
Water Service
Monthly Service Charge Forecast

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
¾"	27.16	28.03	28.93	29.85	30.81	31.79	32.81	33.86	34.94	36.06	37.22
1"	61.10	47.65	49.17	50.75	52.37	54.05	55.78	57.56	59.40	61.31	63.27
1 ½"	141.08	92.50	95.46	98.51	101.66	104.92	108.27	111.74	115.31	119.00	122.81
2"	335.67	148.55	153.31	158.21	163.28	168.50	173.89	179.46	185.20	191.13	197.24
3"	598.12	280.29	289.26	298.52	308.07	317.93	328.10	338.60	349.44	360.62	372.16
4"	1,190.94	468.09	483.07	498.52	514.48	530.94	547.93	565.46	583.56	602.23	621.50
6"	2,238.56	933.37	963.24	994.06	1,025.87	1,058.70	1,092.58	1,127.54	1,163.62	1,200.86	1,239.28

Table 7-2
Water Service
Consumptive Rate Forecast

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total Water Billing Recovery	742,150	769,966	802,180	835,525	870,019	906,354	943,887	982,637	1,023,314	1,065,258	1,109,190
Total Volume (m^3)	645,348	648,665	654,841	661,017	667,193	673,369	679,544	685,720	691,896	698,072	704,248
Constant Rate	**1.15**	**1.19**	**1.23**	**1.26**	**1.30**	**1.35**	**1.39**	**1.43**	**1.48**	**1.53**	**1.58**
Annual Percentage Change		**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**

Table 7-3
Wastewater Service
Monthly Service Charge Forecast

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
¾"	46.72	48.03	49.39	50.79	52.22	53.70	55.21	56.77	58.38	60.02	61.72
1"	105.09	81.66	83.97	86.34	88.78	91.28	93.86	96.51	99.24	102.04	104.92
1 ½"	242.66	158.51	162.99	167.60	172.33	177.20	182.20	187.35	192.64	198.08	203.67
2"	577.35	254.58	261.77	269.17	276.77	284.59	292.63	300.89	309.39	318.13	327.11
3"	1,028.77	480.35	493.91	507.86	522.21	536.96	552.12	567.72	583.75	600.24	617.20
4"	2,048.42	802.18	824.84	848.13	872.09	896.72	922.05	948.09	974.87	1,002.41	1,030.72
6"	3,850.32	1,599.55	1,644.73	1,691.19	1,738.96	1,788.07	1,838.58	1,890.51	1,943.90	1,998.81	2,055.26

Table 7-4
Wastewater Service
Consumptive Rate Forecast

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total Wastewater Billing Recovery	878,416	916,004	955,129	995,882	1,037,846	1,081,501	1,126,885	1,174,034	1,222,986	1,273,777
Total Volume (m^3)	431,894	438,070	444,246	450,422	456,598	462,773	468,949	475,125	481,301	487,477
Constant Rate	**2.03**	**2.09**	**2.15**	**2.21**	**2.27**	**2.34**	**2.40**	**2.47**	**2.54**	**2.61**
Annual Percentage Change	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**

7.4 Water and Wastewater Rates Annual Impacts

Table 7-5 summarizes the annual impacts to a typical residential water and wastewater customer. The table assumes average annual water consumption of 132 m^3 and a water meter of ¾". A typical residential customer with these demand patterns would have a total annual water and wastewater bill of $1,299 in 2019 (i.e. $478 for water and $822 for wastewater).

As per the water financial plan, the service charge (i.e. monthly charge by meter size) would increase by 3.2% annually over the forecast period. The consumptive rate (i.e. $/$m^3$ consumed) would also increase by 3.2% annually. This would result in a combined impact over the forecast period of a 3.2% annual increase in the water bill, or an increase of between $15 to $20 per year (i.e. $1 to $2/month).

As per the wastewater financial plan, the service charge (i.e. monthly charge by meter size) would increase by 2.8% annually over the forecast period. The consumptive rate (i.e. $/$m^3$ water consumed) would increase by 2.8% annually over the forecast period. This would result in a combined impact of 2.8% annual rate increases or increases of between $23 and $30 per year ($2 to $3/month).

A typical residential customer with both water and wastewater services, would see an average annual increase in their water and wastewater bills of $44 over the forecast period (3.0% annually)

Table 7-5
Municipality of Trent Hills
Annual Water Bill Impacts for a Typical Residential Customer (132 m^3 annual water consumption and 3/4" meter)

Water	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Monthly Base Rate	$27.16	$28.03	$28.93	$29.85	$30.81	$31.79	$32.81	$33.86	$34.94	$36.06	$37.22
Constant Rate	$1.15	$1.19	$1.23	$1.26	$1.30	$1.35	$1.39	$1.43	$1.48	$1.53	$1.58
Total Annual Bill	**$478**	**$493**	**$509**	**$525**	**$542**	**$559**	**$577**	**$595**	**$615**	**$634**	**$654**
% Increase - Base Rate		3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
% Increase - Volume Rate		3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
% Increase - Total Annual Bill		**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**
$ Increase - Total Annual Bill		**$15**	**$16**	**$16**	**$17**	**$17**	**$18**	**$18**	**$19**	**$20**	**$20**

Wastewater	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Monthly Base Rate	$46.72	$48.03	$49.39	$50.79	$52.22	$53.70	$55.21	$56.77	$58.38	$60.02	$61.72
Constant Rate	$1.98	$2.03	$2.09	$2.15	$2.21	$2.27	$2.34	$2.40	$2.47	$2.54	$2.61
Total Annual Bill	**$822**	**$845**	**$869**	**$893**	**$919**	**$944**	**$971**	**$998**	**$1,027**	**$1,056**	**$1,086**
% Increase - Base Rate		2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
% Increase - Volume Rate		2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
% Increase - Total Annual Bill		**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**
$ Increase - Total Annual Bill		**$23**	**$24**	**$25**	**$25**	**$26**	**$27**	**$27**	**$28**	**$29**	**$30**

Water and Wastewater	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total Annual Bill	**$1,299**	**$1,338**	**$1,378**	**$1,418**	**$1,460**	**$1,504**	**$1,548**	**$1,594**	**$1,641**	**$1,690**	**$1,740**
% Increase - Base Rate		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
% Increase - Volume Rate		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
% Increase - Total Annual Bill		**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**	**3.0%**
$ Increase - Total Annual Bill		**$39**	**$40**	**$41**	**$42**	**$43**	**$45**	**$46**	**$47**	**$49**	**$50**

Chapter 8
Municipal Act Connection Charge and Water and Wastewater Rate Policies

8. *Municipal Act* Connection Charge and Water and Wastewater Rate Policies

The following policies are proposed for the implementation of connection charges and Water and Wastewater Rates. A draft connection charges by-law is contained in Appendix D to this report.

8.1 Water and Wastewater Service Charges

Monthly water and wastewater service charges are to be imposed based on the size of the water meter installed in the property. It is the intent of the Municipality to require the alignment of service line sizes, meter sizes, and the Municipality's design guidelines in all new connections to the municipal systems.

Properties with additional fire protection lines will be charged a monthly service charge for the fire protection line equal to the monthly service charge in Tables 7-1 and 7-2.

8.2 Requirement to Connect

The owner of any new or existing houses, buildings or properties used for human occupancy, employment, recreation or other purposes, situated within the mandatory connection area of the Municipality and abutting on any street, alley, right of way, or easement in which a water main or sanitary sewer has been constructed, is required at the owners expense to connect to the water main and/or the sanitary sewer in accordance with Municipal procedures.

For existing buildings or structures where there is an existing water main or sanitary main on the abutting street, alley, right of way, or easement, the owner will be given three (3) years from the date the by-law comes into effect to make the mandatory connection.

For existing buildings or structures where water and sewer connections become available through a newly constructed water and/or sanitary main on the abutting street, alley, right of way, or easement, the owner will be given three (3) years from the date of construction of the water main and/or sanitary main to make the mandatory connection.

Existing properties that do not make the mandatory connection within the required three (3) years will be charged the *Municipal Act* Connection Charge as well as the monthly service charge (Tables 7-1 and 7-3 for water and wastewater respectively) in accordance with the Municipality's design guidelines for the line and meter size for the type of development.

Furthermore, the requirement to connect will not apply to buildings or structures within the mandatory connection area, which cannot be reasonably serviced by the municipal sewer and water system, at the sole determination of the Municipality.

8.3 Connection Charges

8.3.1 Timing and Calculation of Payment

Connection charges are due and payable in full to the Municipality on the date a building permit is issued for any land, buildings or structures or where no building permit is required, before the connection for water or wastewater service is made.

8.3.2 Redevelopment Credit

The by-law provides for connection charge credits for residential and non-residential redevelopments for structures to be demolished or converted from one principal use to another, provided the structure existed on the same land within two years prior to the date of payment of the connection charges and was serviced with water and wastewater services. The redevelopment credit period is extended to five years for the replacement of a building or structure destroyed by fire or a similar unintended action.

8.3.3 Exemptions

The following exemptions from the payment of connection charges are provided:

- Every building or land which has paid a prior local improvement charge for water and wastewater services;
- Every building or any land which cannot be reasonably serviced by the municipal sewer and water system;
- Buildings on primarily residential property which are not used as a dwelling unit or units and which are not connected to water and sewer service which are not

used for commercial or industrial purposes, namely detached garages, garden sheds and similar buildings;

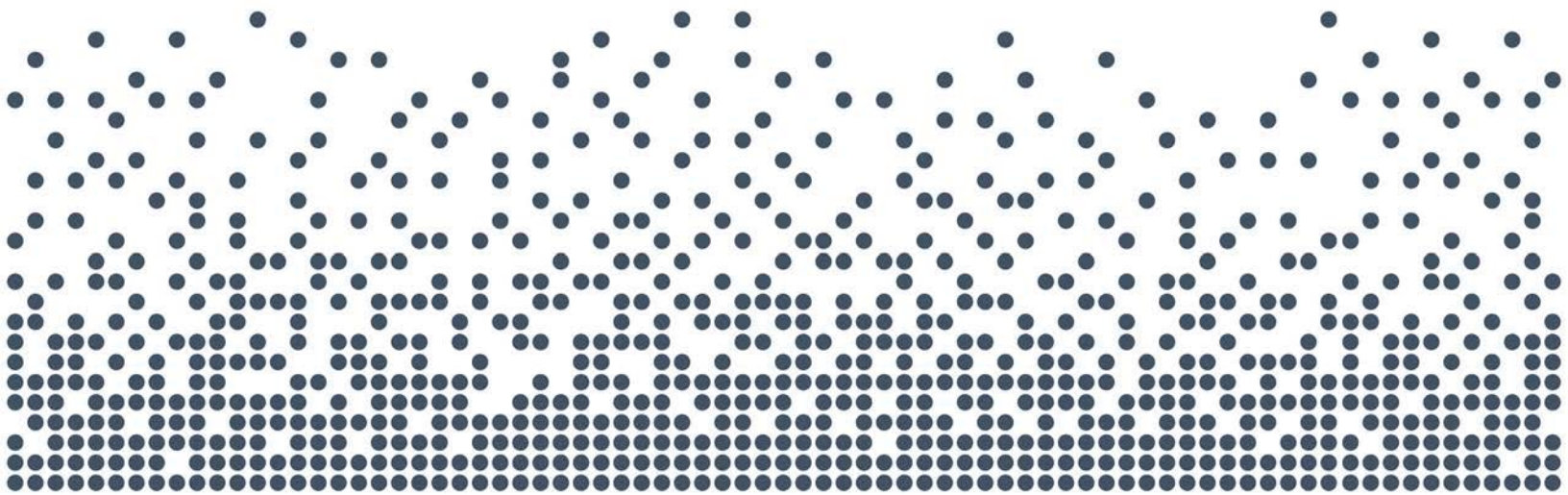
- The following exemptions are provided for buildings or structures connected to the municipal water and/or sewer service:
    - Industrial building additions of up to and including 50% of the existing gross floor area (G.F.A.) of the building; for industrial building additions which exceed 50% of the existing G.F.A., only the portion of the addition in excess of 50% is subject to connection charges;
    - Residential development that results in only the enlargement of an existing dwelling unit , or that results only in the creation of up to two additional dwelling units;
- Buildings or structures owned by and used for the purposes of any Municipality, local board or Board of Education (s.3); and
- Buildings or structures used as farm buildings;
- Buildings or structures to be used as hospitals as governed by the Public Hospitals Act, R.S.O., 1900;
- Existing buildings or structures where there is an existing water main or sanitary main on the abutting street, alley, right of way, or easement, that make the mandatory connection within three (3) years of this by-law coming into effect; and
- Existing buildings or structures where water and sewer connections become available through a newly constructed water and/or sanitary main on the abutting street, alley, right of way, or easement, that make the mandatory connection within three (3) years from the date of construction of the water main and/or sanitary main.
-

Chapter 9
Recommendations

9. Recommendations

Based upon the above analysis, the following recommendations are put forth for Council's consideration:

1. That Council approve the Financial Plan contained in this Rate Study;
2. That Council provide for the recovery of all water and wastewater costs through full cost recovery rates;
3. That Council consider the recommended water and wastewater connection charges and rates as shown in Chapters 6 and 7 respectively for adoption;
4. That Council maintain the reserves and reserve funds for water and wastewater services as discussed in section 4.5; and
5. That Council direct staff to review Rate Study in five years to validate Study results and make any necessary rate adjustments.



Appendices

Appendix A
Water Services

Table 1
Municipality of Trent Hills
Water Service
Capital Budget Forecast
Inflated $

Description	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Capital Expenditures										
Campbellford	-	-	-	-	-	-	-	-	-	-
Doxsee Ave Water	140,000	-	-	-	-	-	-	-	-	-
Lifecycle:	-	-	-	-	-	-	-	-	-	-
Provision	630,000	646,000	662,000	679,000	696,000	713,000	731,000	749,000	768,000	787,000
Total Capital Expenditures	**770,000**	**646,000**	**662,000**	**679,000**	**696,000**	**713,000**	**731,000**	**749,000**	**768,000**	**787,000**
Capital Financing										
Provincial/Federal Grants	115,194									
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-
Water Reserve	654,806	646,000	662,000	679,000	696,000	713,000	731,000	749,000	768,000	787,000
Total Capital Financing	**770,000**	**646,000**	**662,000**	**679,000**	**696,000**	**713,000**	**731,000**	**749,000**	**768,000**	**787,000**

Table 2
Municipality of Trent Hills
Water Service
Schedule of Non-Growth Related Debenture Repayments
Inflated $

Debenture	Forecast									
Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
2019	-	-	-	-	-	-	-	-	-	-
2020		-	-	-	-	-	-	-	-	-
2021			-	-	-	-	-	-	-	-
2022				-	-	-	-	-	-	-
2023					-	-	-	-	-	-
2024						-	-	-	-	-
2025							-	-	-	-
2026								-	-	-
2027									-	-
2028										-
2029										
Total Annual Debt Charges	-	-	-	-	-	-	-	-	-	-

Table 3
Municipality of Trent Hills
Water Service
Water Reserves/ Reserve Funds Continuity
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Opening Balance	1,744,218	1,313,420	945,628	618,958	335,688	99,683	29,024	13,018	189,364	452,845
Transfer from Operating	77,604	132,098	189,046	248,743	311,760	491,126	560,165	764,921	864,475	944,278
Connection Charge Proceeds	133,400	136,748	140,156	143,664	147,249	150,927	154,699	158,550	162,523	166,591
Transfer to Capital	654,806	646,000	662,000	679,000	696,000	713,000	731,000	749,000	768,000	787,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-
Closing Balance	**1,300,416**	**936,266**	**612,830**	**332,364**	**98,697**	**28,737**	**12,889**	**187,489**	**448,361**	**776,714**
Interest	13,004	9,363	6,128	3,324	987	287	129	1,875	4,484	7,767

Table 4
Municipality of Trent Hills
Water Services
Operating Budget Forecast
Inflated $

Description	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Expenditures										
Operating Costs										
Campbellford										
Water- C-ford Admin	471,700	481,100	490,700	500,500	510,500	520,700	531,100	541,700	552,500	563,600
Water Campbellford Asset Mgmt - Consultant Fees	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Water - C - Truck Maintenance	7,100	7,200	7,300	7,400	7,500	7,700	7,900	8,100	8,300	8,500
Water - C - Filtration Plant	259,900	265,100	270,400	275,800	281,300	286,900	292,600	298,500	304,500	310,600
Water - C - Water Tower	19,400	19,800	20,200	20,600	21,000	21,400	21,800	22,200	22,600	23,100
Water - C - Watermain Maintenance	12,800	13,100	13,400	13,700	14,000	14,300	14,600	14,900	15,200	15,500
Water - C - Water Service Maintenance	14,300	14,600	14,900	15,200	15,500	15,800	16,100	16,400	16,700	17,000
Water - C - Locates	700	700	700	700	700	700	700	700	700	700
Water - C - Hydrant Maintenance	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Water - C - Water Meter Maintenance	17,300	17,600	18,000	18,400	18,800	19,200	19,600	20,000	20,400	20,800
Hastings										
Water - Hastings Admin	194,600	198,500	202,500	206,600	210,700	214,900	219,200	223,600	228,100	232,700
Water - H - Truck Maintenance	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Water - H - Filtration Plant	121,200	123,600	126,100	128,600	131,200	133,800	136,500	139,200	142,000	144,800
Water - H - Water Tower	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,100	5,200
Water - H - Water Maintenance	8,700	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500
Water - H - Water Service Maintenance	8,200	8,400	8,600	8,800	9,000	9,200	9,400	9,600	9,800	10,000
Water - H - Locates	200	200	200	200	200	200	200	200	200	200
Water - H - Hydrant Maintenance	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Water - H - Water Meter Maintenance	12,200	12,400	12,600	12,900	13,200	13,500	13,800	14,100	14,400	14,700
Warkworth										
Water - W'worth Admin	92,200	94,000	95,900	97,800	99,800	101,800	103,800	105,900	108,000	110,200
Water - Warkworht - Asset Manage - Consultatn fees	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Water - W - Truck Maintenance - Fuel	2,600	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500
Water - W - Filtration Plant	78,300	79,900	81,500	83,100	84,800	86,500	88,200	90,000	91,800	93,600
Water - W - Water Tower	500	500	500	500	500	500	500	500	500	500
Water - W - Watermain Maintenance	5,400	5,500	5,600	5,700	5,800	5,900	6,000	6,100	6,200	6,300
Water - W - Water Service Maintenance	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600
Water - W - Locates	300	300	300	300	300	300	300	300	300	300
Water - W - Hydrant Maintenance	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Water - W - Water Meter Maintenance	6,600	6,700	6,800	6,900	7,000	7,100	7,200	7,300	7,400	7,500
Water - W/W Booster Pump	9,000	9,200	9,400	9,600	9,800	10,000	10,200	10,400	10,600	10,800
Sub Total Operating	**1,363,400**	**1,390,600**	**1,418,500**	**1,446,900**	**1,475,900**	**1,505,400**	**1,535,400**	**1,566,100**	**1,597,300**	**1,629,200**

Description	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Capital-Related										
Existing Debt (Principal) - Non-Growth Related	374,154	384,784	395,732	407,009	418,626	315,815	325,065	201,871	183,674	188,614
Existing Debt (Interest) - Non-Growth Related	125,828	115,199	104,251	92,973	81,357	70,777	61,527	52,667	47,303	42,363
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	77,604	132,098	189,046	248,743	311,760	491,126	560,165	764,921	864,475	944,278
Sub Total Capital Related	**577,586**	**632,080**	**689,028**	**748,725**	**811,742**	**877,718**	**946,757**	**1,019,458**	**1,095,452**	**1,175,255**
Total Expenditures	**1,940,986**	**2,022,680**	**2,107,528**	**2,195,625**	**2,287,642**	**2,383,118**	**2,482,157**	**2,585,558**	**2,692,752**	**2,804,455**
Revenues										
Service Charges	994,721	1,040,700	1,088,602	1,138,506	1,190,488	1,244,631	1,301,020	1,359,744	1,420,894	1,484,565
Other Revenue	176,300	179,800	183,400	187,100	190,800	194,600	198,500	202,500	206,600	210,700
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**1,171,021**	**1,220,500**	**1,272,002**	**1,325,606**	**1,381,288**	**1,439,231**	**1,499,520**	**1,562,244**	**1,627,494**	**1,695,265**
Water Billing Recovery - Operating	**769,966**	**802,180**	**835,525**	**870,019**	**906,354**	**943,887**	**982,637**	**1,023,314**	**1,065,258**	**1,109,190**

Table 5
Municipality of Trent Hills
Water Services
Water Rate Forecast
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total Water Billing Recovery	769,966	802,180	835,525	870,019	906,354	943,887	982,637	1,023,314	1,065,258	1,109,190
Total Volume (m^3)	648,665	654,841	661,017	667,193	673,369	679,544	685,720	691,896	698,072	704,248
Constant Rate	**1.19**	**1.23**	**1.26**	**1.30**	**1.35**	**1.39**	**1.43**	**1.48**	**1.53**	**1.58**
Annual Percentage Change	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**	**3.2%**

Appendix B
Wastewater Services

Table 1
Municipality of Trent Hills
Wastewater Service
Capital Budget Forecast
Inflated $

Description	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Capital Expenditures										
Cambellford	-	-	-	-	-	-	-	-	-	-
Doxsee Ave - Sewer	233,000	-	-	-	-	-	-	-	-	-
Lifecycle:	-	-	-	-	-	-	-	-	-	-
Provision	410,000	420,000	431,000	442,000	453,000	464,000	475,000	487,000	500,000	512,000
Total Capital Expenditures	**643,000**	**420,000**	**431,000**	**442,000**	**453,000**	**464,000**	**475,000**	**487,000**	**500,000**	**512,000**
Capital Financing										
Provincial/Federal Grants	191,990									
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-
Wastewater Reserve	451,010	420,000	431,000	442,000	453,000	464,000	475,000	487,000	500,000	512,000
Total Capital Financing	**643,000**	**420,000**	**431,000**	**442,000**	**453,000**	**464,000**	**475,000**	**487,000**	**500,000**	**512,000**

Table 2
Municipality of Trent Hills
Wastewater Service
Schedule of Non-Growth Related Debenture Repayments
Inflated $

Debenture Year	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
2019	-	-	-	-	-	-	-	-	-	-
2020		-	-	-	-	-	-	-	-	-
2021			-	-	-	-	-	-	-	-
2022				-	-	-	-	-	-	-
2023					-	-	-	-	-	-
2024						-	-	-	-	-
2025							-	-	-	-
2026								-	-	-
2027									-	-
2028										-
2029										
Total Annual Debt Charges	-	-	-	-	-	-	-	-	-	-

Table 3
Municipality of Trent Hills
Wastewater Service
Wastewater Reserves/ Reserve Funds Continuity
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Opening Balance	2,005,631	2,289,500	2,699,337	3,197,496	3,788,747	4,477,486	5,297,711	6,226,210	7,283,965	8,475,651
Transfer from Operating	468,535	553,348	641,501	733,337	828,455	956,101	1,059,293	1,183,011	1,310,891	1,427,321
Connection Charge Proceeds	243,675	249,763	255,999	262,402	268,952	275,671	282,560	289,626	296,877	304,307
Transfer to Capital	451,010	420,000	431,000	442,000	453,000	464,000	475,000	487,000	500,000	512,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-
Closing Balance	**2,266,831**	**2,672,611**	**3,165,837**	**3,751,235**	**4,433,154**	**5,245,258**	**6,164,564**	**7,211,847**	**8,391,734**	**9,695,279**
Interest	22,668	26,726	31,658	37,512	44,332	52,453	61,646	72,118	83,917	96,953

Table 4
Municipality of Trent Hills
Wastewater Services
Operating Budget Forecast
Inflated $

Description	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Expenditures										
Operating Costs										
Cambellford										
Sanitary - C'ford Admin	368,700	376,100	383,600	391,300	399,100	407,100	415,200	423,500	432,000	440,600
Sanitary Campbellford - Asset Mgmt Consultant Fees	4,100	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000
Sanitary - C- Sewer Flushing	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Sanitary - C - Sewer Collapse/Lat	6,600	6,700	6,800	6,900	7,000	7,100	7,200	7,300	7,400	7,500
Sanitary - C - CCTV	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100
Sanitary - C - Sewer Repairs	21,400	21,800	22,200	22,600	23,100	23,600	24,100	24,600	25,100	25,600
Sanitary - C - Sewer Locates	500	500	500	500	500	500	500	500	500	500
Sanitary - C - Treatment	308,000	314,200	320,500	326,900	333,400	340,100	346,900	353,800	360,900	368,100
Sanitary - C - Sask Ave PS	25,600	26,100	26,600	27,100	27,600	28,200	28,800	29,400	30,000	30,600
Sanitary - C - Trent Dr PS	7,800	8,000	8,200	8,400	8,600	8,800	9,000	9,200	9,400	9,600
Sanitary - C - Inkerman St. Pump Stn	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Sanitary - C - Manhole Repairs	7,700	7,900	8,100	8,300	8,500	8,700	8,900	9,100	9,300	9,500
Hastings										
Sanitary - Hastings Admin	139,400	142,200	145,000	147,900	150,900	153,900	157,000	160,100	163,300	166,600
Sanitary - H - Sewer Flushing - Full time wages and Contracted	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Sanitary - H - Sewer Collapse	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000
Sanitary - H - CCTV	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Sanitary - H - Sewer Repairs	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000
Sanitary - H - Sewer Locates	100	100	100	100	100	100	100	100	100	100
Sanitary - H - Treatment	152,000	155,000	158,100	161,300	164,500	167,800	171,200	174,600	178,100	181,700
Sanitary - H - Front St Pump Stn	8,400	8,600	8,800	9,000	9,200	9,400	9,600	9,800	10,000	10,200
Sanitary - H - Homewood	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Warkworth										
Sanitary - W'worth Admin	57,200	58,300	59,500	60,700	61,900	63,100	64,400	65,700	67,000	68,300
Sanitary - W - Sewer Flushing - Full time wages and Contracted	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000
Sanitary - W - Sewer Collapse/Lat	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Sanitary - W - CCTV	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000
Sanitary - W- Sewer Repairs	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Sanitary - W - Sewer Locates	200	200	200	200	200	200	200	200	200	200
Sanitary - W - Treatment	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500	10,700
Sanitary - W - Arena Pump #1	13,300	13,600	13,900	14,200	14,500	14,800	15,100	15,400	15,700	16,000
Sanitary - W - George St Pump #2	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100
Sub Total Operating	**1,204,000**	**1,228,200**	**1,252,800**	**1,277,900**	**1,303,400**	**1,329,500**	**1,356,100**	**1,383,000**	**1,410,500**	**1,438,500**
Capital-Related										
Existing Debt (Principal) - Non-Growth Related	417,944	423,993	430,236	436,682	443,335	421,509	427,831	418,244	407,696	413,037
Existing Debt (Interest) - Non-Growth Related	170,810	156,551	142,359	127,965	113,537	98,892	84,621	70,140	56,707	43,330
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	468,535	553,348	641,501	733,337	828,455	956,101	1,059,293	1,183,011	1,310,891	1,427,321
Sub Total Capital Related	**1,057,289**	**1,133,892**	**1,214,096**	**1,297,983**	**1,385,327**	**1,476,502**	**1,571,746**	**1,671,396**	**1,775,294**	**1,883,687**
Total Expenditures	**2,261,289**	**2,362,092**	**2,466,896**	**2,575,883**	**2,688,727**	**2,806,002**	**2,927,846**	**3,054,396**	**3,185,794**	**3,322,187**
Revenues										
Service Charges	1,379,273	1,442,388	1,507,967	1,576,101	1,646,881	1,720,401	1,796,761	1,876,061	1,958,409	2,043,911
Other Revenue	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	4,500
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**1,382,873**	**1,446,088**	**1,511,767**	**1,580,001**	**1,650,881**	**1,724,501**	**1,800,961**	**1,880,361**	**1,962,809**	**2,048,411**
Wastewater Billing Recovery - Operating	**878,416**	**916,004**	**955,129**	**995,882**	**1,037,846**	**1,081,501**	**1,126,885**	**1,174,034**	**1,222,986**	**1,273,777**

Table 5
Municipality of Trent Hills
Wastewater Services
Wastewater Rate Forecast
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total Wastewater Billing Recovery	878,416	916,004	955,129	995,882	1,037,846	1,081,501	1,126,885	1,174,034	1,222,986	1,273,777
Total Volume (m^3)	431,894	438,070	444,246	450,422	456,598	462,773	468,949	475,125	481,301	487,477
Constant Rate	**2.03**	**2.09**	**2.15**	**2.21**	**2.27**	**2.34**	**2.40**	**2.47**	**2.54**	**2.61**
Annual Percentage Change	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**