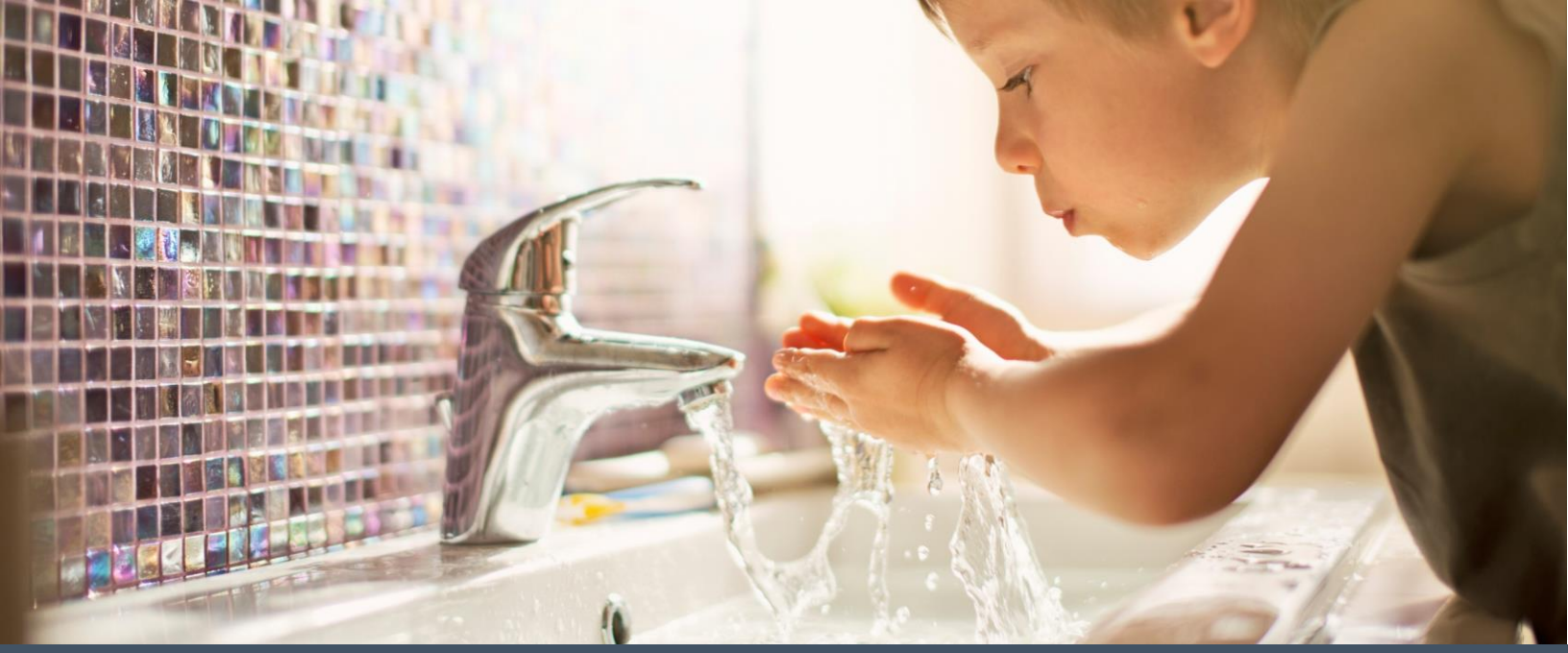

Water and Wastewater Rate Study

Town of Petawawa

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September 24, 2020

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List of Acronyms and Abbreviations

Acronym	Full Description of Acronym
D.C.	Development Charges
G.I.S.	Geographic Information System
L.P.A.T.	Local Planning Appeals Tribunal
M.P.A.C.	Municipal Property Assessment Corporation
O.Reg.	Ontario Regulation
P.S.A.B.	Public Sector Accounting Board
Q.S.R.	Quick Score Rating
S.D.W.A.	Safe Drinking Water Act

Report

Chapter 1
Introduction

1. Introduction

1.1 Background

The Town of Petawawa (Town) has a present population of approximately 17,200 people. There are approximately 4,444 water customers and 3,077 wastewater customers using the municipal systems. the Town provides both water and wastewater services to Garrison Petawawa, which is considered one metered customer for both water and wastewater purposes.

The treatment, storage, and distribution/collection of water and wastewater are the responsibility of the Town; however, a minor portion of water demand (approximately 3%) is currently being supplied by the City of Pembroke. The water and wastewater systems are largely unmetered with approximately 1% of users on metered rate systems. It is noted that all new non-residential customers connecting to the Town's water and wastewater systems are required to have a water meter installed. For the metered customers, rates are imposed on a consumptive basis (i.e. $ per cubic meter) with a minimum quarterly bill imposed. Unmetered customers are charged an annual flat rate based on customer type. The water and wastewater rates currently imposed are summarized below in Table 1-1.

Table 1-1
Town of Petawawa
2020 Water and Wastewater Rates

2020 Rates		
Flat Rate Customers (annual charge)		
Customer Type	**Water**	**Wastewater**
Residential	$ 352.29	$ 463.70
Non-Residential	$ 480.66	$ 643.26
Metered Customers (per m^3)		
Metered Non-Residential	$ 1.3321	$ 1.3620
Garrison	$ 1.1020	$ 1.2047
Minimum Quarterly Bill	$ 120.17	$ 160.82

1.2 Study Process

The Town retained Watson & Associates Economists Ltd. (Watson) to undertake a water and wastewater rate study and prepare a Water Financial Plan in accordance with Ontario Regulation (O.Reg.) 453/07. This current study is an update to the Town's 2016 Water and Wastewater Rate Study (2016 Rate Study) and 2017 Water and Wastewater Rate Study Update. 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 identified in the Town's 2019 Development Charges (D.C.) Background Study report;
- 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 Town's Asset Management Plan with specific needs identified by Town staff, OCWA, and the Town's 2019 D.C. Background Study
- Identify potential methods of cost recovery for 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;
- Develop an equitable long-term water and wastewater rate forecast;
- Present findings to staff and Council for their consideration; and
- Prepare a water financial plan that satisfies the requirements of O. Reg. 453/07.

In approaching this study, the following analysis in provided:

Chapter 2 – Forecast Growth and Service Demands
Chapter 3 – Capital Infrastructure Needs
Chapter 4 – Capital Cost Financing Options
Chapter 5 – Operating Expenditure Forecast

1.3 Legislative Context

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.

1.3.1 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.

1.3.2 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.

1.3.3 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 Licence.
- 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 licence.
- 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.

1.3.4 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.

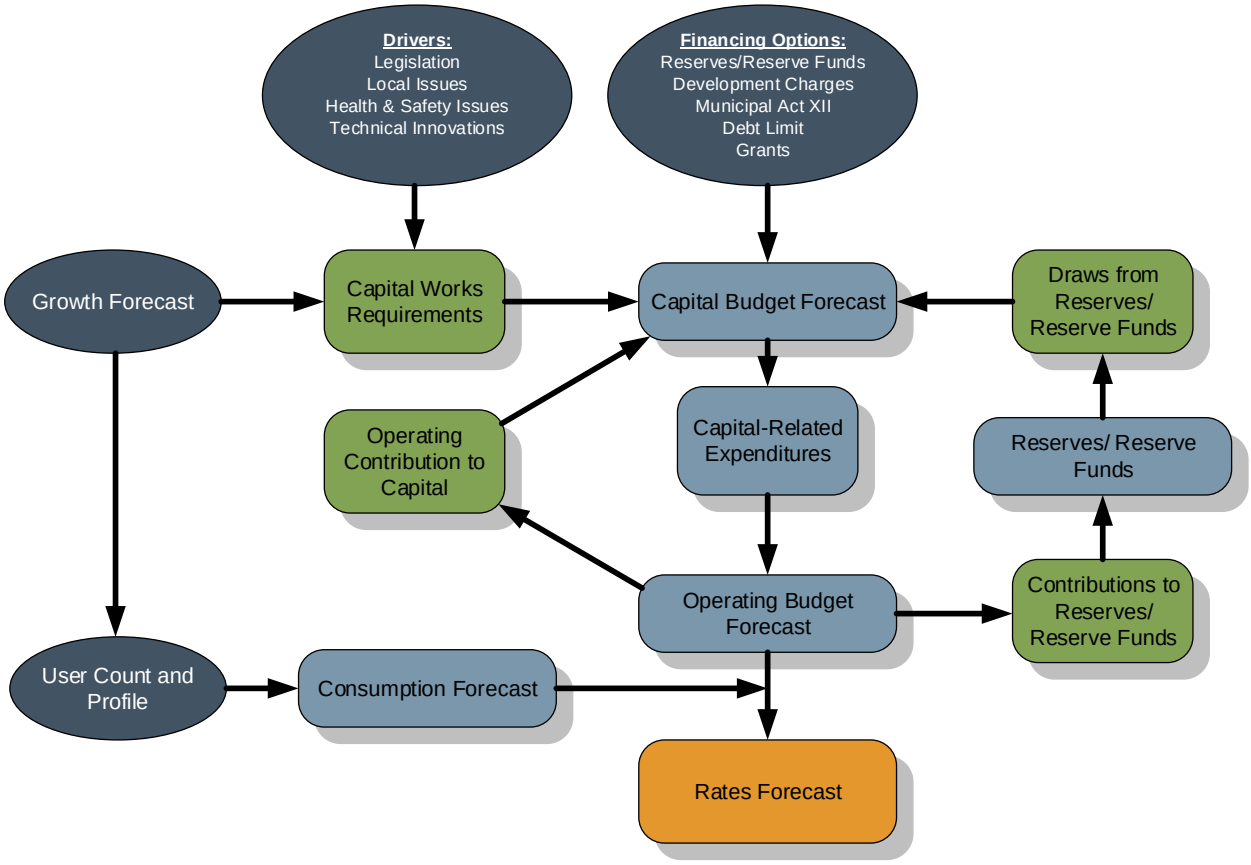
Regulations will prescribe:

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

1.4 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:

1.4.1 Customer Demands and Consumption Forecast

As noted in Section 1.1, the Town employs a rate structure consisting of a flat fee for most users and a consumptive rate for those customers who are metered. The flat fee is imposed based on customer class with higher charges imposed on non-residential users, generally reflective of higher average consumption and greater capital infrastructure demands. The consumptive rate is imposed at a constant rate based on

consumption. Furthermore, Garrison Petawawa is charged a separate consumptive rate based on metered water and wastewater flows.

This first step in the analysis is important as it produces the current revenue by source and assumptions for forecasting purposes. The flat fee revenues are forecast with customer growth. The customer profile forecast is modeled based on the Town's 2019 D.C. Background Study growth forecast by type. Moreover, the customer forecast is modelled for the water and wastewater systems independently to identify differences in service demands.

The water consumption forecast is prepared by applying average annual consumption estimates to future development. Consumption estimates are based on average consumption levels by customer class drawn from 2019 billing records. However, all customer growth has been forecasted to occur as flat rate users (i.e. non-metered customers) and therefore forecasted consumption for metered users remains constant. Consistent with the customer forecast, the water consumption forecast used to determine the wastewater consumptive rates is adjusted to reflect differences in service demands.

1.4.2 Capital Needs Forecast

The capital needs forecast is developed to measure program/service level adjustments, lifecycle requirements, and growth-related needs. The Town's Asset Management Plan and the OCWA Major Maintenance Forecast provided the base capital forecast. Included in the capital forecast are the growth-related needs identified in the Town's 2019 D.C. Background Study. Capital expenditures are forecast with inflationary adjustments based on capital cost indices.

1.4.3 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, and debt for program/service level improvements. Growth-related sources of funding include development 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 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 Town's debt policies and annual repayment limits to ensure a practical and sustainable funding mix.

1.4.4 Operating Budget Forecast

The operating budget forecast considers adjustments to the Town'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 base charge and consumptive rate components net of anticipated operating revenues.

1.4.5 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 base charge 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 demand forecast for water and wastewater services, the Town provided historical water consumption for all metered water and wastewater users and water consumption and wastewater flows for Garrison Petawawa over the past three years (i.e. 2017-2019).

As noted in the introduction, to provide for equity in the recommended rate structure the annual production figures were considered to estimate annual non-metered water demands. Table 2-1 summarizes these calculations for the 2017-2019 period. Summarizing these calculations, in 2019 annual treated water totaled 2.25 million m^3. Accounting for annual water loss between water production and consumption for maintenance activities, main breaks, etc. it is assumed that approximately 1.84 million m^3 was consumed by water customers. Approximately 861,600 m^3 of water was consumed in total by Town metered users and Garrison Petawawa, therefore indicating that flat rate users consumed an estimated 979,400 m^3 of water. Non-metered residential equivalent customers on the water system in 2019 totaled 4,462, suggesting an annual average consumption of 220 m^3.

Table 2-1
Town of Petawawa
Annual Water Production and Consumption

	2019	2018	2017
Annual Treated Water (m^3)	2,245,098	2,552,886	2,146,223
Estimated Water Loss (18%)	(404,118)	(459,519)	(386,320)
Estimated Annual Water Consumption	1,840,980	2,093,367	1,759,903
Garrison Petawawa Annual Consumption	807,475	998,364	926,824
Town of Petawawa Metered User Consumption	54,133	59,685	67,089
Estimated Annual Flat Fee User Consumption	979,372	1,035,318	765,990
Non-Metered Residential Equivalent Customers	4,462	4,413	4,375
Estimated Avg. Annual Non-Metered User Consumption	220	235	175

2.2 Forecast Service Demands

Flat rate customer levels were adjusted over the forecast period based on the Town's growth projections to forecast future service demands. The growth forecast was extracted from the Town's 2019 D.C. Background Study.

Over the next ten years (i.e. to 2030), the number of "residential equivalent" water and wastewater system customers is anticipated to increase by 899 flat rate customers. This results in an increase from 4,499 customers at the start of 2020 to 5,398 by 2030 for the water system. It is expected that all new development will be connected to both water and wastewater services. Based on the foregoing, the number of municipal wastewater customers is projected to increase from 3,122 at the start of 2020 to 4,021 by 2030. Tables 2-2 and 2-3 provide the detailed customer forecast for the period 2020-2030 for water and wastewater, respectively.

Consumption records for metered customers from 2017 to 2019 were provided and analyzed to develop a forecast of water demands for the period 2020-2030. Average annual consumption levels by customer type were calculated based on 2019 records. For wastewater, the flow estimates are based on each account's water consumption, except for Garrison Petawawa where a dedicated meter is used to measure actual wastewater flows.

Attributing all customer growth to flat rate users results in constant annual water and wastewater consumption for all metered users throughout the forecast period. Utilizing the estimated average annual water consumption for non-metered users identified in Section 2.1 together with anticipated growth allows for the forecasting of non-metered user consumption. Tables 2-4 and 2-5 provide the detailed consumption forecasts by customer type for water and wastewater, respectively.

Table 2-2
Town of Petawawa
Water Customer Forecast

Water Customer Forecast (Residential Equivalent)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing - Non-Metered	4,462	4,462	4,462	4,462	4,462	4,462	4,462	4,462	4,462	4,462	4,462
New - Growth	44	132	219	304	389	474	559	644	729	814	899
Total Non-Metered	**4,506**	**4,594**	**4,681**	**4,766**	**4,851**	**4,936**	**5,021**	**5,106**	**5,191**	**5,276**	**5,361**
Metered	37	37	37	37	37	37	37	37	37	37	37
Total	**4,543**	**4,631**	**4,718**	**4,803**	**4,888**	**4,973**	**5,058**	**5,143**	**5,228**	**5,313**	**5,398**

Table 2-3
Town of Petawawa
Wastewater Customer Forecast

Wastewater Customer Forecast (Residential Equivalent)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing - Non-Metered	3,095	3,095	3,095	3,095	3,095	3,095	3,095	3,095	3,095	3,095	3,095
New - Growth	44	132	219	304	389	474	559	644	729	814	899
Total Non-Metered	**3,139**	**3,227**	**3,314**	**3,399**	**3,484**	**3,569**	**3,654**	**3,739**	**3,824**	**3,909**	**3,994**
Metered	27	27	27	27	27	27	27	27	27	27	27
Total	**3,166**	**3,254**	**3,341**	**3,426**	**3,511**	**3,596**	**3,681**	**3,766**	**3,851**	**3,936**	**4,021**

Table 2-4
Town of Petawawa
Water Consumption Forecast (m³) – Water Customers

Water Volume Forecast (m³)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Metered Users	54,133	54,133	54,133	54,133	54,133	54,133	54,133	54,133	54,133	54,133	54,133
Bulk Water Sales	4,922	4,922	4,922	4,922	4,922	4,922	4,922	4,922	4,922	4,922	4,922
Garrison	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475
Estimated Non-metered Users	989,031	1,008,347	1,027,444	1,046,102	1,064,759	1,083,417	1,102,075	1,120,733	1,139,391	1,158,049	1,176,706
Total	**1,855,561**	**1,874,877**	**1,893,974**	**1,912,632**	**1,931,290**	**1,949,948**	**1,968,605**	**1,987,263**	**2,005,921**	**2,024,579**	**2,043,237**

Table 2-5
Town of Petawawa
Wastewater Consumption Forecast (m³) – Wastewater Customers

Wastewater Flows Forecast (m³)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Metered Users	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619
Garrison	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272
Estimated Non-metered Users	689,126	708,442	727,539	746,197	764,855	783,513	802,170	820,828	839,486	858,144	876,802
Total	**1,530,017**	**1,549,333**	**1,568,430**	**1,587,088**	**1,605,746**	**1,624,404**	**1,643,061**	**1,661,719**	**1,680,377**	**1,699,035**	**1,717,693**

Note: Above flows for Metered & Non-metered Users are water flows on which the wastewater billing will be calculated

Chapter 3
Capital Infrastructure Needs

3. Capital Infrastructure Needs

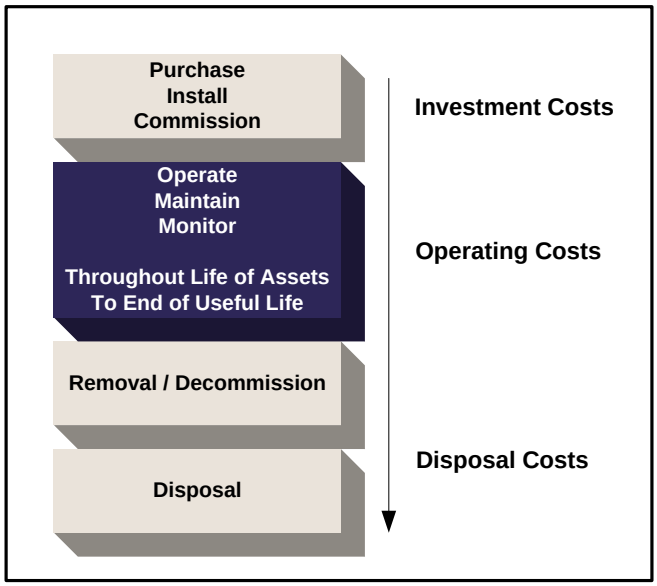
3.1 Overview of Lifecycle Costing

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.

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 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 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.

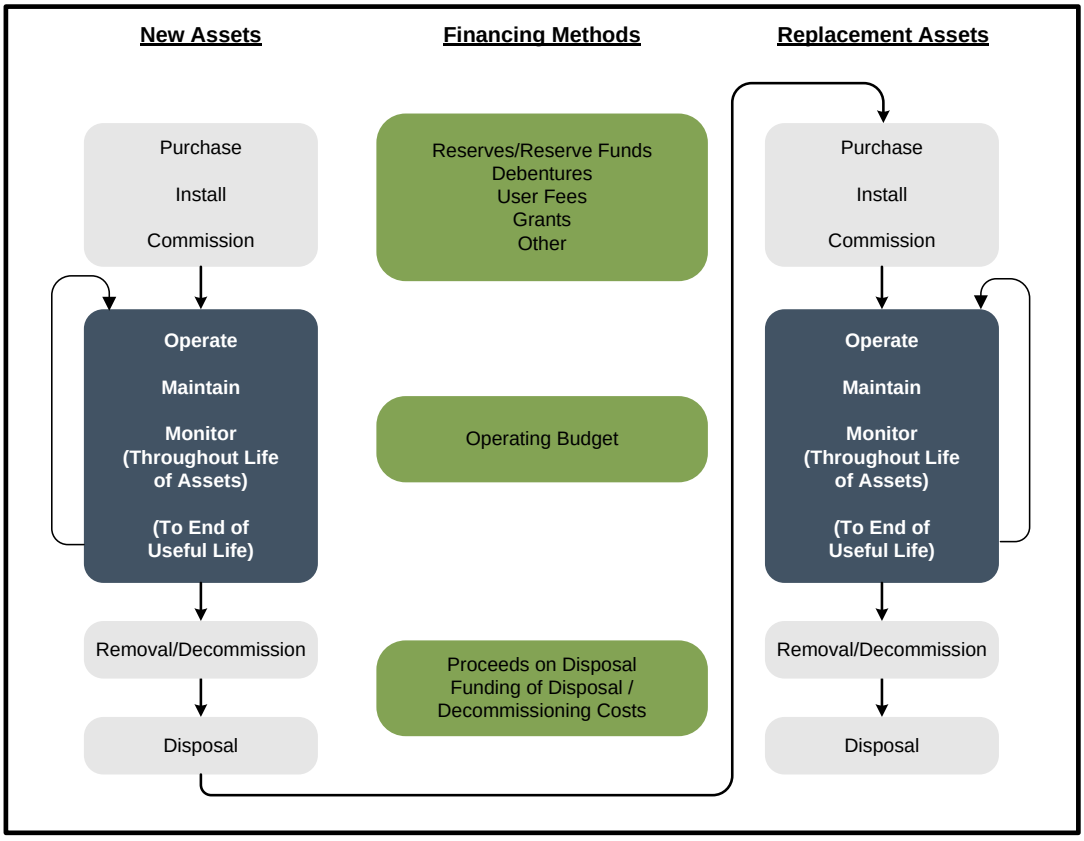
As referred to earlier, growth-related financing methods such as development charges and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner

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 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 he 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.

Figure 3-2
Financing Lifecycle Costs

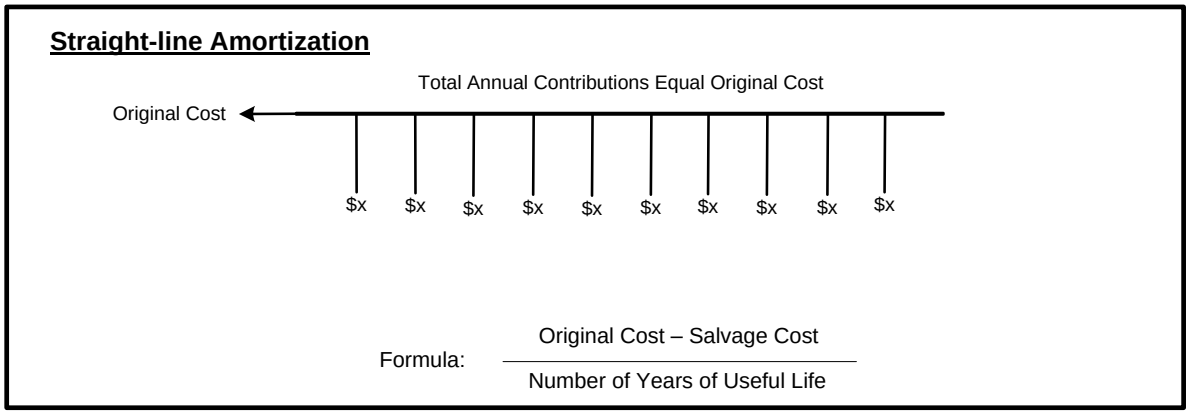


3.1.3 Costing Methods

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 reducing balance method.

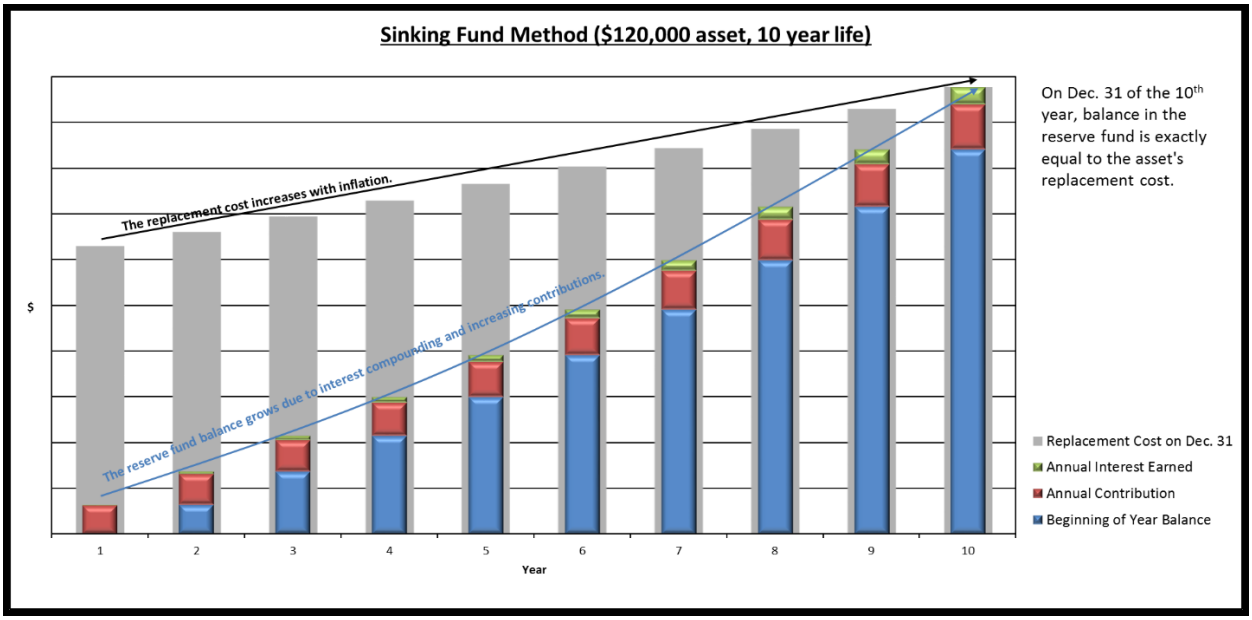
The straight-line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing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

Figure 3-3
Straight-line Amortization Method



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.

Figure 3-4
Sinking Fund Method



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

3.1.4 Asset Inventory

Detailed water and wastewater capital asset inventory information was obtained from the Town's asset management database.

Lifecycle "sinking fund" contribution amounts for each piece of infrastructure have also been included. These calculations 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 (2020$).

Table 3-1
Town of Petawawa
Summary of Water and Wastewater Infrastructure (2020$)

Asset Type	Replacement Value of Assets	Annual Lifecycle Contribution
Water		
Facilities	22,052,255	714,784
Linear	33,754,686	814,857
Total Water	**55,806,942**	**1,529,642**
Wastewater		
Facilities	44,131,242	1,523,482
Linear	16,065,802	361,915
Total Wastewater	**60,197,044**	**1,885,397**
Grand Total	**116,003,986**	**3,415,039**

3.2 Capital Needs Forecast

Ten-year capital forecasts have been developed by Town staff and OCWA for the water and wastewater systems to address capital needs across all areas of the system.

The total capital forecast includes approximately $36.88 million in capital needs for water ($11.20 million) and wastewater ($25.69 million) services in current dollars. The capital forecast includes lifecycle renewal/replacement needs, major maintenance, and level of service/capacity improvements. It is noted that the capital forecast does not

include the potential expansion of the Town's Water Treatment Plant that was identified in the Filter Assessment Report prepared by Hatch in August 2020. Given that the expansion would be required strictly to accommodate demands arising from future population and employment growth, it is assumed that the capital costs associated with it would be recovered through development charges. The Town should consider updating the Development Charges Background Study to include this expansion project.

On this basis, the average annual value of the non-growth-related capital program for water and wastewater is approximately $2.92 million. This level of expenditure is lower than the long-term infrastructure needs identified in Section 3.1.4, which suggest long-term rate supported capital needs of $3.42 million (2020 $) annually. This suggests that longer-term capital funding requirements are higher than the 10-year forecast of specific infrastructure renewal and replacement needs identified in this study.

The listing of water and wastewater capital needs, summarized by asset category, is presented in Tables 3-2 and 3-3, respectively. For rate determination purposes, the capital needs forecast has been indexed by 3.5% annually. This is generally reflective of the historical annual capital cost inflation witnessed in the Statistics Canada Building Construction Price Index over the past 20 years.

Table 3-2
Town of Petawawa
Water Capital Budget Forecast (Uninflated $)

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	455,000	-	95,000	75,000	135,000	35,000	10,000	10,000	40,000	10,000	35,000	10,000
Water Plant	195,000	195,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - Water Mains	8,075,000	-	807,500	807,500	807,500	807,500	807,500	807,500	807,500	807,500	807,500	807,500
Major Distribution Capital - OCWA	1,310,000	-	55,000	40,000	25,000	540,000	10,000	85,000	500,000	55,000	-	-
Water System	176,790	176,790	-	-	-	-	-	-	-	-	-	-
Growth Related												
Portage Rd. Watermain Expansion	983,250	687,413	295,837	-	-	-	-	-	-	-	-	-
Total Capital Expenditures	**11,195,040**	**1,059,203**	**1,253,337**	**922,500**	**967,500**	**1,382,500**	**827,500**	**902,500**	**1,347,500**	**872,500**	**842,500**	**817,500**

Table 3-3
Town of Petawawa
Wastewater Capital Budget Forecast (Uninflated $)

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	4,786,000	-	671,000	2,925,000	480,000	265,000	115,000	115,000	115,000	15,000	70,000	15,000
Sewage Plant	353,000	353,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - WW Mains	6,125,000	-	612,500	612,500	612,500	612,500	612,500	612,500	612,500	612,500	612,500	612,500
Major Collection Capital - OCWA	50,000	-	-	-	-	-	25,000	-	-	-	25,000	-
Sewage System	776,600	776,600	-	-	-	-	-	-	-	-	-	-
Growth Related												
Renfrew St. Pumping Station Expansion	650,000	-	450,000	200,000	-	-	-	-	-	-	-	-
Wastewater Treatment Plant - Mechanical Bar Screen	696,980	696,980	-	-	-	-	-	-	-	-	-	-
Wastewater Treatment Plant Expansion - EA	250,000	-	-	-	-	250,000	-	-	-	-	-	-
Wastewater Treatment Plant Expansion	12,000,000	-	-	-	-	-	7,000,000	5,000,000	-	-	-	-
Total Capital Expenditures	**25,687,580**	**1,826,580**	**1,733,500**	**3,737,500**	**1,092,500**	**1,127,500**	**7,752,500**	**5,727,500**	**727,500**	**627,500**	**707,500**	**627,500**

Chapter 4
Capital Cost Financing Options

4. Capital Cost Financing Options

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 by-laws); while others appear to restrict them (Bill 98 in 1997 providing amendments to the *Development Charges Act*).

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 Regulation 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
Development Charges Act, 1997	4.2
Municipal Act, 2001 o Fees and Charge o Local Improvements	4.3
Grant Funding	4.4
Reserves/Reserve Funds	4.5
Debenture Financing	4.6

4.1 Development Charges Act, 1997

The *Development Charges Act* received royal asset 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 *Development Charges Act,* 1997 as amended (D.C.A.) provides for limitations and ceilings on services that can be included in the charges.

The Town imposes D.C.s on new development and the capital funding plan identifies D.C.s as a source of funding for anticipated capital needs. For water services, $695,200 and for wastewater services $854,200 has been identified as funded from D.C.s over the forecast period.

4.2 Municipal Act

The *Municipal Act, 2001*, came into force January 1, 2003. Part XII Fees and Charges, gives municipalities the statutory authority to recover the costs of services, including capital costs, through by-law. Municipalities have used these types of charges to recover infrastructure costs associated with the extension of municipal services to private service users, to recover capital improvement costs from existing developments, and to recover growth related costs of service extension. These by-laws are typically used where D.C.s would not be applicable (e.g. recovery from existing developments) or where existing and growth-related cost recovery would be simplified under the administration of one by-law.

The Town does not recover capital costs through fees imposed under the *Municipal Act*.

4.3 Grant Funding Availability

No grant funding has been shown as an expected funding source over the forecast period. To the extent that the Town is successful in securing additional grant funding for

future infrastructure needs and the financial impacts are material, the rate forecast may be revisited.

4.4 Existing Reserves/Reserve Funds

The Town has established reserves and reserve funds for water and wastewater capital costs. These reserves have been used in the capital funding forecast for rate-based needs. D.C. reserve funds for water and wastewater have been utilized for growth-related capital purposes. The following table summarizes the water and wastewater reserves/reserve funds utilized in this analysis and the respective estimated December 31, 2019 closing balances.

Table 4-1
Town of Petawawa
Water and Wastewater Projected Reserve/Reserve Fund Balances

Description	Estimated Balance as at Dec. 31, 2019
Water	
Water Lifecycle	6,849,128
Water DC	30,469
Total Water	**6,879,597**
Wastewater	
Wastewater Lifecycle	4,316,968
Wastewater DC	344,071
Total Wastewater	**4,661,039**
Grand Total	**11,540,636**

4.5 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 and Housing regulates the level of debt incurred by Ontario municipalities through its powers established under the Municipal Act. Ontario Regulations 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 purpose revenue may be allotted for servicing the debt (i.e. debt charges).

The Town has no outstanding external debt for water and wastewater services.

The capital forecast proposes debt financing for the Wastewater Treatment Plant expansion that is planned to be undertaken from 2024-2026. The debt financing has a growth-related component of $3.90 million and a non-growth-related component of $7.80 million. It is proposed that principal and interest payments associated with the growth-related component would be funded from development charges. The growth-related share of the expansion project was established through the Town's 2019 Development Charges Background Study.

4.6 Recommended Approach

The following table summarizes the recommended capital funding sources supporting the capital needs forecast, for consideration by the Town:

Table 4-2
Town of Petawawa
2020-2030 Water and Wastewater Capital Funding Program (Inflated $)

Description	Water	Wastewater	Total
Provincial/Federal Grants	-	-	-
Development Charges Reserve Fund	695,389	854,245	1,549,634
Non-Growth Related Debenture Requirements	-	7,800,000	7,800,000
Growth-Related Debenture Requirements	-	3,902,000	3,902,000
Operating Contributions (2020 only)	578,014	1,652,335	2,230,349
Reserve Funds (non-D.C.)	11,986,800	15,769,000	27,755,800
Total Capital Funding	**13,260,203**	**15,769,000**	**43,237,783**

Tables 4-3 and 4-4 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.

Table 4-3
Town of Petawawa
Water Service Capital Budget Forecast – Inflated$

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	518,000	-	98,000	80,000	150,000	40,000	12,000	12,000	51,000	13,000	48,000	14,000
Water Plant	195,000	195,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - Water Mains	9,805,000	-	836,000	865,000	895,000	927,000	959,000	993,000	1,027,000	1,063,000	1,101,000	1,139,000
Major Distribution Capital - OCWA	1,572,000	-	57,000	43,000	28,000	620,000	12,000	104,000	636,000	72,000	-	-
Water System	176,790	176,790	-	-	-	-	-	-	-	-	-	-
Growth Related												
Portage Rd. Watermain Expansion	993,413	687,413	306,000	-	-	-	-	-	-	-	-	-
Total Capital Expenditures	**13,260,203**	**1,059,203**	**1,297,000**	**988,000**	**1,073,000**	**1,587,000**	**983,000**	**1,109,000**	**1,714,000**	**1,148,000**	**1,149,000**	**1,153,000**
Capital Financing												
Provincial/Federal Grants	-	-	-	-	-	-	-	-	-	-	-	-
Development Charges Reserve Fund	695,389	481,189	214,200	-	-	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	578,014	578,014	-	-	-	-	-	-	-	-	-	-
Water Reserve Fund	11,986,800	-	1,082,800	988,000	1,073,000	1,587,000	983,000	1,109,000	1,714,000	1,148,000	1,149,000	1,153,000
Total Capital Financing	**13,260,203**	**1,059,203**	**1,297,000**	**988,000**	**1,073,000**	**1,587,000**	**983,000**	**1,109,000**	**1,714,000**	**1,148,000**	**1,149,000**	**1,153,000**

Table 4-4
Town of Petawawa
Wastewater Service Capital Budget Forecast – Inflated$

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	5,223,000	-	694,000	3,133,000	532,000	304,000	137,000	141,000	146,000	20,000	95,000	21,000
Sewage Plant	353,000	353,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - WW Mains	7,437,000	-	634,000	656,000	679,000	703,000	727,000	753,000	779,000	807,000	835,000	864,000
Major Collection Capital - OCWA	64,000	-	-	-	-	-	30,000	-	-	-	34,000	-
Sewage System	776,600	776,600	-	-	-	-	-	-	-	-	-	-
Growth Related												
Renfrew St. Pumping Station Expansion	680,000	-	466,000	214,000	-	-	-	-	-	-	-	-
Wastewater Treatment Plant - Mechanical Bar Screen	696,980	696,980	-	-	-	-	-	-	-	-	-	-
Wastewater Treatment Plant Expansion - EA	287,000	-	-	-	-	287,000	-	-	-	-	-	-
Wastewater Treatment Plant Expansion	14,460,000	-	-	-	-	-	8,314,000	6,146,000	-	-	-	-
Total Capital Expenditures	**29,977,580**	**1,826,580**	**1,794,000**	**4,003,000**	**1,211,000**	**1,294,000**	**9,208,000**	**7,040,000**	**925,000**	**827,000**	**964,000**	**885,000**
Capital Financing												
Provincial/Federal Grants	-	-	-	-	-	-	-	-	-	-	-	-
Development Charges Reserve Fund	854,245	174,245	466,000	214,000	-	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements	7,800,000	-	-	-	-	-	6,300,000	1,500,000	-	-	-	-
Growth Related Debenture Requirements	3,902,000	-	-	-	-	287,000	2,078,500	1,536,500	-	-	-	-
Operating Contributions	1,652,335	1,652,335	-	-	-	-	-	-	-	-	-	-
Wastewater Reserve	15,769,000	-	1,328,000	3,789,000	1,211,000	1,007,000	829,500	4,003,500	925,000	827,000	964,000	885,000
Total Capital Financing	**29,977,580**	**1,826,580**	**1,794,000**	**4,003,000**	**1,211,000**	**1,294,000**	**9,208,000**	**7,040,000**	**925,000**	**827,000**	**964,000**	**885,000**

Chapter 5
Net Operating Expenditure Forecast

5. Net Operating Expenditure Forecast

5.1 Operating Expenditures

The Town's 2020 Operating Budget and updated Major Maintenance Forecast prepared by OCWA formed the basis for the water and wastewater services net operating expenditure forecast, which was further refined through discussions with Town staff. The operating expenditure estimates were inflated at 2% annually, reflecting historical Consumer Price Index (C.P.I.) rates.

The operating budget forecast generally includes two components – the operating expenditures and capital-related expenditures. The former is based on the Town's projected annual spending for ongoing operations and maintenance, while the latter is based on the capital funding plan decisions (i.e. transfers to reserve funds, debt repayment, and capital fund transfers) presented earlier.

Capital-related annual expenditures in the forecast include annual debt repayments and contributions to reserves and reserve funds to support the forecast and future needs. While the 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, gross operating expenditures for water services are anticipated to increase from $2.63 million in 2020 to $4.24 million by 2030. Similarly, for wastewater services annual gross expenditures are forecast to increase from $3.12 million to $4.78 million by 2030.

5.2 Operating Revenues

Transfers from D.C. reserve funds to offset the principal and interest payments for growth-related debentures have been included in the operating revenues.

Tables 5-1 to 5-2 provide the water and wastewater operating budget forecasts. The operating budget forecasts are presented in inflated dollars.

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

Description	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
EXPENDITURES											
Operating Costs											
Waterworks Salaries	47,900	48,900	49,800	50,800	51,800	52,900	53,900	55,000	56,100	57,200	58,400
Training/Associations	9,000	9,200	9,400	9,600	9,700	9,900	10,100	10,300	10,500	10,800	11,000
Dispatch/Alarm Monitoring	1,000	1,000	1,000	1,100	1,100	1,100	1,100	1,100	1,200	1,200	1,200
Audit	8,500	8,700	8,800	9,000	9,200	9,400	9,600	9,800	10,000	10,200	10,400
Service Contract-OCWA	770,100	896,479	914,400	932,700	951,400	970,400	989,800	1,009,600	1,029,800	1,050,400	1,071,400
Service Contract-OCWA Extra	55,500	-	-	-	-	-	-	-	-	-	-
Waterworks Administration	112,200	114,400	116,700	119,100	121,400	123,900	126,400	128,900	131,500	134,100	136,800
Water Purchase-Pembroke	191,500	70,000	71,400	72,800	74,300	75,800	77,300	78,800	80,400	82,000	83,700
Tools/Parts/Supplies	21,200	2,000	2,000	2,100	2,100	2,200	2,200	2,300	2,300	2,300	2,400
Water Distribution System Maintenance (OCWA Forecast)											
Leak Repairs	-	51,000	52,000	53,100	54,100	55,200	56,300	57,400	58,600	59,800	60,900
Third-party Contractor Hydrant Maintenance & Installation	-	42,300	43,200	44,000	44,900	45,800	46,700	47,700	48,600	49,600	50,600
Other Distribution System Maintenance	61,000	6,100	6,200	6,400	6,500	6,600	6,800	6,900	7,000	7,200	7,300
Miscellaneous Maintenance	27,600	-	-	-	-	-	-	-	-	-	-
Water Rate Review	16,600	-	-	-	-	18,300	-	-	-	-	20,200
Emergency Repairs	29,000	-	-	-	-	-	-	-	-	-	-
Hydrant Installation	20,000	-	-	-	-	-	-	-	-	-	-
Public Works - Hydrant Maintenance	23,200	-	-	-	-	-	-	-	-	-	-
Water Treatment System Maintenance (OCWA Forecast)											
Water Treatment Plant	109,000	121,400	123,800	126,300	128,800	131,400	134,000	138,700	139,400	142,200	145,100
Minor Capital	22,000	39,800	20,800	32,900	10,800	7,700	14,600	8,000	34,000	8,400	12,200
Water Plant Electricity	244,000	248,900	253,900	258,900	264,100	269,400	274,800	280,300	285,900	291,600	297,400
Insurance	27,000	27,500	28,100	28,700	29,200	29,800	30,400	31,000	31,600	32,300	32,900
Elevated Tank-Woodland	7,100	400	400	400	400	400	400	500	500	500	500
Elevated Tank-Tower Road	10,500	8,000	8,200	8,300	8,500	8,700	8,800	9,000	9,200	9,400	9,600
Booster Station 1-Brumm	10,000	6,000	6,100	6,200	6,400	6,500	6,600	6,800	6,900	7,000	7,200
Booster Station 2-Blvd	17,700	12,500	12,800	13,000	13,300	13,500	13,800	14,100	14,400	14,600	14,900
Hydrant Maintenance	5,300	-	-	-	-	-	-	-	-	-	-
Infrastructure/Mapping Update	31,900	30,000	30,600	31,200	31,800	32,500	33,100	33,800	34,500	35,100	35,900
Water System PILT County	12,000	12,200	12,500	12,700	13,000	13,200	13,500	13,800	14,100	14,300	14,600
Sub-Total Operating	**1,890,800**	**1,756,779**	**1,772,100**	**1,819,300**	**1,832,800**	**1,884,600**	**1,910,200**	**1,943,800**	**2,006,500**	**2,020,200**	**2,084,600**

Table 5-1 (continued)
Town of Petawawa
Water Service Operating Budget Forecast – Inflated$

Description	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital-Related											
Existing Debt (Principal) - Growth Related											
Existing Debt (Interest) - Growth Related											
New Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Principal) - Non-Growth Related											
Existing Debt (Interest) - Non-Growth Related											
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	578,014	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	159,664	931,672	1,055,846	1,155,379	1,296,226	1,406,782	1,551,962	1,698,002	1,824,264	2,009,331	2,154,011
Sub-Total Capital-Related	**737,678**	**931,672**	**1,055,846**	**1,155,379**	**1,296,226**	**1,406,782**	**1,551,962**	**1,698,002**	**1,824,264**	**2,009,331**	**2,154,011**
Total Expenditures	**2,628,478**	**2,688,451**	**2,827,946**	**2,974,679**	**3,129,026**	**3,291,382**	**3,462,162**	**3,641,802**	**3,830,764**	**4,029,531**	**4,238,611**
REVENUES											
Operating											
Miscellaneous Revenue/Grant	5,000	-	-	-	-	-	-	-	-	-	-
Contributions from Development Charges Reserve Fund	-	-	-	-	-	-	-	-	-	-	-
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**5,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Billing											
Waterworks User Charges	2,623,478	-	-	-	-	-	-	-	-	-	-
Flat Rate Billing	-	1,684,882	1,797,552	1,908,247	2,033,166	2,155,642	2,295,743	2,441,661	2,589,067	2,756,087	2,920,687
Consumptive Billing	-	1,003,569	1,030,394	1,066,433	1,095,861	1,135,740	1,166,419	1,200,142	1,241,698	1,273,444	1,317,924
Total Billing Revenue	**2,623,478**	**2,688,451**	**2,827,946**	**2,974,679**	**3,129,026**	**3,291,382**	**3,462,162**	**3,641,802**	**3,830,764**	**4,029,531**	**4,238,611**
Total Revenues	**2,628,478**	**2,688,451**	**2,827,946**	**2,974,679**	**3,129,026**	**3,291,382**	**3,462,162**	**3,641,802**	**3,830,764**	**4,029,531**	**4,238,611**

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

Description	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
EXPENDITURES											
Operating Costs											
Sewage System Salaries	16,000	16,300	16,600	17,000	17,300	17,700	18,000	18,400	18,700	19,100	19,500
Training/Associations	4,000	4,100	4,200	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900
Audit	5,600	5,700	5,800	5,900	6,100	6,200	6,300	6,400	6,600	6,700	6,800
Service Contract-OCWA	872,900	958,876	978,100	997,600	1,017,600	1,037,900	1,058,700	1,079,900	1,101,400	1,123,500	1,145,900
Serv Contract-OCWA Extra	27,700	-	-	-	-	-	-	-	-	-	-
Sewage System Admin	80,800	82,400	84,100	85,700	87,500	89,200	91,000	92,800	94,700	96,600	98,500
Sewage Collection System Maintenance (OCWA Forecast)											
Collection System	57,500	239,700	228,900	233,500	238,100	242,900	247,800	252,700	257,800	262,900	268,200
Wastewater Rate Review	16,600	-	-	-	-	18,300	-	-	-	-	20,200
Sewage Treatment System Maintenance (OCWA Forecast)											
Sewage Treatment Plant	145,000	143,800	164,900	168,200	171,600	175,000	172,900	179,000	185,300	191,800	198,600
Minor Capital	28,500	56,600	197,700	18,000	10,800	16,600	132,900	17,200	14,600	-	-
Flow Meters Electricity	600	600	600	600	600	700	700	700	700	700	700
Insurance	25,000	25,500	26,000	26,500	27,100	27,600	28,200	28,700	29,300	29,900	30,500
Infrastruct/Mapping Updat	25,000	25,500	26,000	26,500	27,100	27,600	28,200	28,700	29,300	29,900	30,500
Sewage System PILT County	10,900	11,100	11,300	11,600	11,800	12,000	12,300	12,500	12,800	13,000	13,300
Sub-Total Operating	**1,316,100**	**1,570,176**	**1,744,200**	**1,595,300**	**1,619,900**	**1,676,100**	**1,801,500**	**1,721,600**	**1,755,900**	**1,778,900**	**1,837,600**
Capital-Related											
Existing Debt (Principal) - Growth Related											
Existing Debt (Interest) - Growth Related											
New Growth Related Debt (Principal)		-	-	-	-	9,638	79,823	134,614	139,999	145,599	151,423
New Growth Related Debt (Interest)		-	-	-	-	11,480	94,234	152,502	147,117	141,517	135,693
Existing Debt (Principal) - Non-Growth Related											
Existing Debt (Interest) - Non-Growth Related											
New Non-Growth Related Debt (Principal)		-	-	-	-	-	211,565	270,400	281,216	292,465	304,164
New Non-Growth Related Debt (Interest)		-	-	-	-	-	252,000	303,537	292,721	281,473	269,774
Transfer to Capital	1,652,335	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	156,328	1,057,782	1,045,431	1,365,951	1,523,529	1,660,715	1,277,033	1,464,473	1,661,491	1,884,040	2,085,995
Sub-Total Capital-Related	**1,808,663**	**1,057,782**	**1,045,431**	**1,365,951**	**1,523,529**	**1,681,833**	**1,914,656**	**2,325,526**	**2,522,545**	**2,745,094**	**2,947,049**
Total Expenditures	**3,124,763**	**2,627,958**	**2,789,631**	**2,961,251**	**3,143,429**	**3,357,933**	**3,716,156**	**4,047,126**	**4,278,445**	**4,523,994**	**4,784,649**

Table 5-2 (continued)
Town of Petawawa
Wastewater Service Operating Budget Forecast – Inflated$

Description	Budget	Forecast									
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Expenditures	**3,124,763**	**2,627,958**	**2,789,631**	**2,961,251**	**3,143,429**	**3,357,933**	**3,716,156**	**4,047,126**	**4,278,445**	**4,523,994**	**4,784,649**
REVENUES											
Operating											
Miscellaneous Revenue/Grant	-	-	-	-	-	-	-	-	-	-	-
Contributions from Development Charges Reserve Fund	-	-	-	-	-	21,118	174,058	287,116	287,116	287,116	287,116
Contributions from Reserves / Reserve Funds	584,058	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**584,058**	**-**	**-**	**-**	**-**	**21,118**	**174,058**	**287,116**	**287,116**	**287,116**	**287,116**
Billing											
Sewage System User Charges	2,540,705	-	-	-	-	-	-	-	-	-	-
Flat Rate Billing	-	1,496,561	1,553,953	1,662,736	1,787,337	1,913,113	1,960,432	2,119,681	2,288,693	2,470,807	2,658,496
Consumptive Billing	-	1,131,397	1,235,679	1,298,515	1,356,093	1,423,702	1,581,666	1,640,329	1,702,636	1,766,071	1,839,037
Total Billing Revenue	**2,540,705**	**2,627,958**	**2,789,631**	**2,961,251**	**3,143,429**	**3,336,815**	**3,542,098**	**3,760,010**	**3,991,329**	**4,236,878**	**4,497,533**
Total Revenues	**3,124,763**	**2,627,958**	**2,789,631**	**2,961,251**	**3,143,429**	**3,357,933**	**3,716,156**	**4,047,126**	**4,278,445**	**4,523,994**	**4,784,649**

Chapter 6
Forecast Water and Wastewater Rates

6. Forecast Water and Wastewater Rates

To summarize the analysis undertaken thus far, Chapter 3 reviewed capital-related issues for all customers within the water and wastewater systems and responds to the lifecycle needs of the Town. Chapter 4 provided a review of capital financing options of which internal sources (i.e. reserve fund transfers) and external sources (i.e. debt) will be the predominant basis for financing future capital needs. Chapter 5 established the 10-year operating forecast of expenditures for the Town's water and wastewater systems. This chapter presents the calculated rates over the next 10-year period. These calculations are based on the net operating expenditures identified in Chapter 5.

One of the objectives of the rate study is to propose an equitable rate structure. To this end, the rate forecast has been developed such that by 2025, the cost allocation between different customer classes (i.e. flat-rate customers, metered customers, Garrison Petawawa) would be consistent with their respective water demands.

Water and wastewater rates specific to Garrison Petawawa were calculated consistent with the methodology established during the 2017 Water and Wastewater Rate Study Update. Based on this methodology, the operating costs are shared equally between all users based on the relative share of water consumption. However, only a portion of the total capital costs is shared with Garrison Petawawa, based on the relative share of capital assets that are of mutual benefit to all customers, including Garrison Petawawa.

6.1 Water Rates

The recommended rate forecast is provided to address full costs of the municipal water system, including annual operating and capital expenditures from both a lifecycle and growth-related perspective.

To achieve full cost recovery identified above, flat rates would be required to increase by approximately 4-5% annually. Non-residential consumptive rates would need to increase by 6% in 2021, 9-10% annually from 2022-25, then 4-5% annually thereafter. Lastly, the Garrison Petawawa consumptive rate would need to increase by 2-3% annually.

The resultant rate forecast is presented in Table 6-1 below. The detailed financial forecast and rate calculations for water services are provided in Appendix A to this report.

Table 6-1
Town of Petawawa
Water Rate Forecast

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Water Billing Recovery		2,688,451	2,827,946	2,974,679	3,129,026	3,291,382	3,462,162	3,641,802	3,830,764	4,029,531	4,238,611
Consumption		-	-	-	-	-	-	-	-	-	-
Garrison		807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475
Town Metered Users[A]		59,055	59,055	59,055	59,055	59,055	59,055	59,055	59,055	59,055	59,055
Total Metered Consumption (m3)		866,530	866,530	866,530	866,530	866,530	866,530	866,530	866,530	866,530	866,530
Consumptive Rates (per m^3)											
Garrison	1.1020	1.1399	1.1632	1.1978	1.2230	1.2610	1.2922	1.3270	1.3716	1.4030	1.4506
Non-Residential	1.3321	1.4079	1.5427	1.6802	1.8341	1.9897	2.0831	2.1786	2.2723	2.3799	2.4821
Flat Rates (per year)											
Residential	352.29	366.78	384.03	400.41	419.14	436.74	457.25	478.22	498.78	522.41	544.83
Non-Residential	480.66	495.15	518.44	540.55	565.85	589.60	617.29	645.59	673.36	705.25	735.52
Annual Percentage Increase											
Consumptive Rates											
Garrison		3.4%	2.0%	3.0%	2.1%	3.1%	2.5%	2.7%	3.4%	2.3%	3.4%
Non-Residential		5.7%	9.6%	8.9%	9.2%	8.5%	4.7%	4.6%	4.3%	4.7%	4.3%
Flat Rates											
Residential		4.1%	4.7%	4.3%	4.7%	4.2%	4.7%	4.6%	4.3%	4.7%	4.3%
Non-Residential		3.0%	4.7%	4.3%	4.7%	4.2%	4.7%	4.6%	4.3%	4.7%	4.3%

[A] Includes bulk water sales.

6.2 Wastewater Rates

The recommended rate forecasts are provided to address full costs of the municipal systems, including annual operating and capital expenditures from both a lifecycle and growth-related perspective.

To achieve full cost recovery identified above, flat rates would be required to increase by approximately 0% in 2021, 1% in 2022, 4-5% annually from 2023-2025, marginally in 2026, and then 5-6% annually thereafter. Non-residential consumptive rates would need to increase by 9% in 2021, 12% in 2022, 16% in 2023, 12-13% annually from 2024-2025, marginally in 2026, and then 5-6% annually thereafter. Lastly, the Garrison Petawawa consumptive rate would need to increase 11% in 2021, 9% in 2022, 4-5% annually from 2023-2025, 12% in 2026, and then 4% annually thereafter.

The resultant rate forecast is presented in Table 6-2 below. The detailed financial forecast and rate calculations for wastewater services are provided in Appendix B to this report.

Table 6-2
Town of Petawawa
Wastewater Rate Forecast

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Wastewater Billing Recovery		2,627,958	2,789,631	2,961,251	3,143,429	3,336,815	3,542,098	3,760,010	3,991,329	4,236,878	4,497,533
Consumption		-	-	-	-	-	-	-	-	-	-
Garrison		797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272
Town Metered Users		43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619
Total Metered Consumption (m3)		840,891	840,891	840,891	840,891	840,891	840,891	840,891	840,891	840,891	840,891
Consumptive Rates (per m^3)											
Garrison	1.2047	1.3378	1.4588	1.5230	1.5816	1.6521	1.8501	1.9161	1.9864	2.0576	2.1408
Non-Residential	1.3620	1.4856	1.6653	1.9316	2.1802	2.4417	2.4439	2.5824	2.7263	2.8792	3.0320
Flat Rates (per year)											
Residential	463.70	463.70	468.84	489.12	512.94	535.97	536.45	566.84	598.43	632.01	665.54
Non-Residential	643.26	644.54	651.69	679.87	712.99	744.99	745.66	787.91	831.82	878.49	925.11
Annual Percentage Increase											
Consumptive Rates											
Garrison		11.0%	9.0%	4.4%	3.8%	4.5%	12.0%	3.6%	3.7%	3.6%	4.0%
Non-Residential		9.1%	12.1%	16.0%	12.9%	12.0%	0.1%	5.7%	5.6%	5.6%	5.3%
Flat Rates											
Residential		0.0%	1.1%	4.3%	4.9%	4.5%	0.1%	5.7%	5.6%	5.6%	5.3%
Non-Residential		0.2%	1.1%	4.3%	4.9%	4.5%	0.1%	5.7%	5.6%	5.6%	5.3%

6.3 Forecast Water and Wastewater Rate Impacts

Table 6-3 summarizes the impacts of the recommended rates on five types of customers:

- Residential flat rate customer;
- Non-residential flat rate customer;
- Small metered customer consuming 320 m^3 per year;
- Median metered customer consuming 1,100 m^3 per year; and
- Large metered customer consuming 3,170 m^3 per year.

At current rates, the annual water and wastewater bill for a flat rate residential customer would total approximately $816 (i.e. $352 for water and $464 for wastewater). The proposed 2021 annual bill would be approximately $830 (i.e. $367 for water and $464 for wastewater). This represents a $14 (2%) increase relative to what the bill would be based on the rates that are currently in effect.

At current rates, the annual water and wastewater bill for a flat rate non-residential customer would total approximately $1,124 (i.e. $481 for water and $643 for wastewater). The proposed 2021 annual bill would be approximately $1,140 (i.e. $495 for water and $645 for wastewater). This represents a $16 (1.4%) increase relative to what the bill would be based on the rates that are currently in effect.

A small non-residential metered customer consuming 320 m^3 annually could expect an annual water and wastewater bill of approximately $862 (i.e. $426 for water and $436 for wastewater) at current rates. The proposed 2021 annual bill would be approximately $926 (i.e. $451 for water and $475 for wastewater). This represents a $64 (7%) increase relative to what the bill would be based on the rates that are currently in effect.

A median non-residential metered customer consuming 1,100 m^3 annually could expect an annual water and wastewater bill of approximately $2,964 (i.e. $1,465 for water and $1,498 for wastewater) at current rates. The proposed 2021 annual bill would be approximately $3,183 (i.e. $1,549 for water and $1,634 for wastewater). This represents a $219 (7%) increase relative to what the bill would be based on the rates that are currently in effect.

A large non-residential metered customer consuming 3,170 m^3 annually could expect an annual water and wastewater bill of approximately $8,540 (i.e. $4,223 for water and $4,318 for wastewater) at current rates. The proposed 2021 annual bill would be approximately $9,173 (i.e. $4,463 for water and $4,709 for wastewater). This represents a $632 (7%) increase relative to what the bill would be based on the rates that are currently in effect.

Table 6-3
Town of Petawawa
Annual Water and Wastewater Bill Impact

	Flat Rate		Metered		
	Residential	Non-Res.	Small User (320m³)	Median User (1,100m³)	Large User (3,170m³)
Water Bill					
Current Bill	352.29	480.66	426	1,465	4,223
Proposed 2021 Rates	366.78	495.15	451	1,549	4,463
Difference ($)	**14.49**	**14.49**	**24**	**83**	**240**
Difference (%)	**4.1%**	**3.0%**	**5.7%**	**5.7%**	**5.7%**
Wastewater Bill					
Current Bill	463.70	643.26	436	1,498	4,318
Proposed 2021 Rates	463.70	644.54	475	1,634	4,709
Difference ($)	**(0.00)**	**1.28**	**40**	**136**	**392**
Difference (%)	**0.0%**	**0.2%**	**9.1%**	**9.1%**	**9.1%**
Total Bill					
Current Bill	815.99	1,123.92	862	2,964	8,540
Proposed 2021 Rates	830.47	1,139.69	926	3,183	9,173
Difference ($)	**14.48**	**15.77**	**64**	**219**	**632**
Difference (%)	**1.8%**	**1.4%**	**7.4%**	**7.4%**	**7.4%**

6.4 Recommendations

Based upon the analysis in this report, the following recommendations are provided for Council's consideration:

1. That Council provide for the recovery of all water and wastewater costs through full cost recovery rates and maintain reserve funds for water and wastewater services;

2. That Council approve the 2021 water and wastewater rates as shown in Chapter 6, and direct staff to review the Rate Study in five years; and

3. That Council approve the Rate Study and direct staff to prepare the Water Financial Plan in the format required under O.Reg. 453/07 and submit the plan to the Province to maintain the Town's Municipal Drinking Water Licence.

Appendices

Appendix A
Water Services

Table W-1a
Town of Petawawa
Water Service
Capital Budget Forecast
Uninflated $

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	455,000	-	95,000	75,000	135,000	35,000	10,000	10,000	40,000	10,000	35,000	10,000
Water Plant	195,000	195,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - Water Mains	8,075,000	-	807,500	807,500	807,500	807,500	807,500	807,500	807,500	807,500	807,500	807,500
Major Distribution Capital - OCWA	1,310,000	-	55,000	40,000	25,000	540,000	10,000	85,000	500,000	55,000	-	-
Water System	176,790	176,790	-	-	-	-	-	-	-	-	-	-
Growth Related												
Portage Rd. Watermain Expansion	983,250	687,413	295,837	-	-	-	-	-	-	-	-	-
Total Capital Expenditures	**11,195,040**	**1,059,203**	**1,253,337**	**922,500**	**967,500**	**1,382,500**	**827,500**	**902,500**	**1,347,500**	**872,500**	**842,500**	**817,500**

Table W-1
Town of Petawawa
Water Service
Capital Budget Forecast
Inflated $

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	518,000	-	98,000	80,000	150,000	40,000	12,000	12,000	51,000	13,000	48,000	14,000
Water Plant	195,000	195,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - Water Mains	9,805,000	-	836,000	865,000	895,000	927,000	959,000	993,000	1,027,000	1,063,000	1,101,000	1,139,000
Major Distribution Capital - OCWA	1,572,000	-	57,000	43,000	28,000	620,000	12,000	104,000	636,000	72,000	-	-
Water System	176,790	176,790	-	-	-	-	-	-	-	-	-	-
Growth Related												
Portage Rd. Watermain Expansion	993,413	687,413	306,000	-	-	-	-	-	-	-	-	-
Total Capital Expenditures	**13,260,203**	**1,059,203**	**1,297,000**	**988,000**	**1,073,000**	**1,587,000**	**983,000**	**1,109,000**	**1,714,000**	**1,148,000**	**1,149,000**	**1,153,000**
Capital Financing												
Provincial/Federal Grants	-	-	-	-	-	-	-	-	-	-	-	-
Development Charges Reserve Fund	695,389	481,189	214,200	-	-	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	578,014	578,014	-	-	-	-	-	-	-	-	-	-
Water Reserve Fund	11,986,800	-	1,082,800	988,000	1,073,000	1,587,000	983,000	1,109,000	1,714,000	1,148,000	1,149,000	1,153,000
Total Capital Financing	**13,260,203**	**1,059,203**	**1,297,000**	**988,000**	**1,073,000**	**1,587,000**	**983,000**	**1,109,000**	**1,714,000**	**1,148,000**	**1,149,000**	**1,153,000**

Table W-2
Town of Petawawa
Water Service
Schedule of Non-Growth Related Debenture Repayments
Inflated $

Debenture Year	Principal (Inflated)	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-			-	-	-	-	-	-	-	-	-
2022	-				-	-	-	-	-	-	-	-
2023	-					-	-	-	-	-	-	-
2024	-						-	-	-	-	-	-
2025	-							-	-	-	-	-
2026	-								-	-	-	-
2027	-									-	-	-
2028	-										-	-
2029	-											-
2030	-											
Total Annual Debt Charges	**-**	-	-	-	-	-	-	-	-	-	-	-

Table W-3
Town of Petawawa
Water Service
Schedule of Growth Related Debenture Repayments
Inflated $

Debenture Year	Principal (Inflated)	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-			-	-	-	-	-	-	-	-	-
2022	-				-	-	-	-	-	-	-	-
2023	-					-	-	-	-	-	-	-
2024	-						-	-	-	-	-	-
2025	-							-	-	-	-	-
2026	-								-	-	-	-
2027	-									-	-	-
2028	-										-	-
2029	-											-
2030	-											
Total Annual Debt Charges	**-**	-	-	-	-	-	-	-	-	-	-	-

Table W-4
Town of Petawawa
Water Service
Water Lifecycle Reserve Fund Continuity
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	6,849,128	7,148,968	7,137,796	7,349,755	7,580,777	7,435,804	8,016,777	8,628,934	8,785,195	9,650,689	10,721,240
Transfer from Operating	159,664	931,672	1,055,846	1,155,379	1,296,226	1,406,782	1,551,962	1,698,002	1,824,264	2,009,331	2,154,011
Transfer to Capital	-	1,082,800	988,000	1,073,000	1,587,000	983,000	1,109,000	1,714,000	1,148,000	1,149,000	1,153,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	**7,008,792**	**6,997,840**	**7,205,642**	**7,432,135**	**7,290,004**	**7,859,586**	**8,459,739**	**8,612,936**	**9,461,459**	**10,511,019**	**11,722,251**
Interest	140,176	139,957	144,113	148,643	145,800	157,192	169,195	172,259	189,229	210,220	234,445

Table W-5
Town of Petawawa
Water Service
Water Development Charges Reserve Fund Continuity
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	30,469	(415,304)	(598,426)	(565,861)	(531,780)	(496,067)	(458,689)	(421,051)	(381,735)	(340,707)	(297,855)
Development Charge Proceeds	43,560	42,812	43,660	44,508	45,440	46,372	45,894	46,801	47,708	48,692	49,676
Transfer to Capital	481,189	214,200	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	**(407,161)**	**(586,692)**	**(554,766)**	**(521,353)**	**(486,340)**	**(449,695)**	**(412,795)**	**(374,250)**	**(334,027)**	**(292,015)**	**(248,179)**
Interest	(8,143)	(11,734)	(11,095)	(10,427)	(9,727)	(8,994)	(8,256)	(7,485)	(6,681)	(5,840)	(4,964)
Required from Development Charges	481,189	214,200	-	-	-	-	-	-	-	-	-

Table W-6
Town of Petawawa
Water Services
Operating Budget Forecast
Inflated $

Description	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
EXPENDITURES											
Operating Costs											
Waterworks Salaries	47,900	48,900	49,800	50,800	51,800	52,900	53,900	55,000	56,100	57,200	58,400
Training/Associations	9,000	9,200	9,400	9,600	9,700	9,900	10,100	10,300	10,500	10,800	11,000
Dispatch/Alarm Monitoring	1,000	1,000	1,000	1,100	1,100	1,100	1,100	1,100	1,200	1,200	1,200
Audit	8,500	8,700	8,800	9,000	9,200	9,400	9,600	9,800	10,000	10,200	10,400
Service Contract-OCWA	770,100	896,479	914,400	932,700	951,400	970,400	989,800	1,009,600	1,029,800	1,050,400	1,071,400
Service Contract-OCWA Extra	55,500	-	-	-	-	-	-	-	-	-	-
Waterworks Administration	112,200	114,400	116,700	119,100	121,400	123,900	126,400	128,900	131,500	134,100	136,800
Water Purchase-Pembroke	191,500	70,000	71,400	72,800	74,300	75,800	77,300	78,800	80,400	82,000	83,700
Tools/Parts/Supplies	21,200	2,000	2,000	2,100	2,100	2,200	2,200	2,300	2,300	2,300	2,400
Water Distribution System Maintenance (OCWA Forecast)											
Leak Repairs	-	51,000	52,000	53,100	54,100	55,200	56,300	57,400	58,600	59,800	60,900
Third-party Contractor Hydrant Maintenance & Installation	-	42,300	43,200	44,000	44,900	45,800	46,700	47,700	48,600	49,600	50,600
Other Distribution System Maintenance	61,000	6,100	6,200	6,400	6,500	6,600	6,800	6,900	7,000	7,200	7,300
Miscellaneous Maintenance	27,600	-	-	-	-	-	-	-	-	-	-
Water Rate Review	16,600	-	-	-	-	18,300	-	-	-	-	20,200
Emergency Repairs	29,000	-	-	-	-	-	-	-	-	-	-
Hydrant Installation	20,000	-	-	-	-	-	-	-	-	-	-
Public Works - Hydrant Maintenance	23,200	-	-	-	-	-	-	-	-	-	-
Water Treatment System Maintenance (OCWA Forecast)											
Water Treatment Plant	109,000	121,400	123,800	126,300	128,800	131,400	134,000	138,700	139,400	142,200	145,100
Minor Capital	22,000	39,800	20,800	32,900	10,800	7,700	14,600	8,000	34,000	8,400	12,200
Water Plant Electricity	244,000	248,900	253,900	258,900	264,100	269,400	274,800	280,300	285,900	291,600	297,400
Insurance	27,000	27,500	28,100	28,700	29,200	29,800	30,400	31,000	31,600	32,300	32,900
Elevated Tank-Woodland	7,100	400	400	400	400	400	400	500	500	500	500
Elevated Tank-Tower Road	10,500	8,000	8,200	8,300	8,500	8,700	8,800	9,000	9,200	9,400	9,600
Booster Station 1-Brumm	10,000	6,000	6,100	6,200	6,400	6,500	6,600	6,800	6,900	7,000	7,200
Booster Station 2-Blvd	17,700	12,500	12,800	13,000	13,300	13,500	13,800	14,100	14,400	14,600	14,900
Hydrant Maintenance	5,300	-	-	-	-	-	-	-	-	-	-
Infrastructure/Mapping Update	31,900	30,000	30,600	31,200	31,800	32,500	33,100	33,800	34,500	35,100	35,900
Water System PILT County	12,000	12,200	12,500	12,700	13,000	13,200	13,500	13,800	14,100	14,300	14,600
Sub-Total Operating	**1,890,800**	**1,756,779**	**1,772,100**	**1,819,300**	**1,832,800**	**1,884,600**	**1,910,200**	**1,943,800**	**2,006,500**	**2,020,200**	**2,084,600**

Table W-6
Town of Petawawa
Water Services
Operating Budget Forecast
Inflated $

Description	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital-Related											
Existing Debt (Principal) - Growth Related											
Existing Debt (Interest) - Growth Related											
New Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Principal) - Non-Growth Related											
Existing Debt (Interest) - Non-Growth Related											
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	578,014	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	159,664	931,672	1,055,846	1,155,379	1,296,226	1,406,782	1,551,962	1,698,002	1,824,264	2,009,331	2,154,011
Sub-Total Capital-Related	**737,678**	**931,672**	**1,055,846**	**1,155,379**	**1,296,226**	**1,406,782**	**1,551,962**	**1,698,002**	**1,824,264**	**2,009,331**	**2,154,011**
Total Expenditures	**2,628,478**	**2,688,451**	**2,827,946**	**2,974,679**	**3,129,026**	**3,291,382**	**3,462,162**	**3,641,802**	**3,830,764**	**4,029,531**	**4,238,611**
REVENUES											
Operating											
Miscellaneous Revenue/Grant	5,000	-	-	-	-	-	-	-	-	-	-
Contributions from Development Charges Reserve Fund	-	-	-	-	-	-	-	-	-	-	-
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**5,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Billing											
Waterworks User Charges	2,623,478	-	-	-	-	-	-	-	-	-	-
Flat Rate Billing	-	1,684,882	1,797,552	1,908,247	2,033,166	2,155,642	2,295,743	2,441,661	2,589,067	2,756,087	2,920,687
Consumptive Billing	-	1,003,569	1,030,394	1,066,433	1,095,861	1,135,740	1,166,419	1,200,142	1,241,698	1,273,444	1,317,924
Total Billing Revenue	**2,623,478**	**2,688,451**	**2,827,946**	**2,974,679**	**3,129,026**	**3,291,382**	**3,462,162**	**3,641,802**	**3,830,764**	**4,029,531**	**4,238,611**
Total Revenues	**2,628,478**	**2,688,451**	**2,827,946**	**2,974,679**	**3,129,026**	**3,291,382**	**3,462,162**	**3,641,802**	**3,830,764**	**4,029,531**	**4,238,611**

Table W-7
Town of Petawawa
Water Services
Water Rate Forecast
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Water Billing Recovery		2,688,451	2,827,946	2,974,679	3,129,026	3,291,382	3,462,162	3,641,802	3,830,764	4,029,531	4,238,611
Consumption		-	-	-	-	-	-	-	-	-	-
Garrison		807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475	807,475
Town Metered Users[A]		59,055	59,055	59,055	59,055	59,055	59,055	59,055	59,055	59,055	59,055
Total Metered Consumption (m3)		866,530	866,530	866,530	866,530	866,530	866,530	866,530	866,530	866,530	866,530
Consumptive Rates (per m^3)											
Garrison	1.1020	1.1399	1.1632	1.1978	1.2230	1.2610	1.2922	1.3270	1.3716	1.4030	1.4506
Non-Residential	1.3321	1.4079	1.5427	1.6802	1.8341	1.9897	2.0831	2.1786	2.2723	2.3799	2.4821
Flat Rates (per year)											
Residential	352.29	366.78	384.03	400.41	419.14	436.74	457.25	478.22	498.78	522.41	544.83
Non-Residential	480.66	495.15	518.44	540.55	565.85	589.60	617.29	645.59	673.36	705.25	735.52
Annual Percentage Increase											
Consumptive Rates											
Garrison		3.4%	2.0%	3.0%	2.1%	3.1%	2.5%	2.7%	3.4%	2.3%	3.4%
Non-Residential		5.7%	9.6%	8.9%	9.2%	8.5%	4.7%	4.6%	4.3%	4.7%	4.3%
Flat Rates											
Residential		4.1%	4.7%	4.3%	4.7%	4.2%	4.7%	4.6%	4.3%	4.7%	4.3%
Non-Residential		3.0%	4.7%	4.3%	4.7%	4.2%	4.7%	4.6%	4.3%	4.7%	4.3%

[A] Includes bulk water sales.

Appendix B
Wastewater Services

Table WW-1a
Town of Petawawa
Wastewater Service
Capital Budget Forecast
Uninflated $

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	4,786,000	-	671,000	2,925,000	480,000	265,000	115,000	115,000	115,000	15,000	70,000	15,000
Sewage Plant	353,000	353,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - WW Mains	6,125,000	-	612,500	612,500	612,500	612,500	612,500	612,500	612,500	612,500	612,500	612,500
Major Collection Capital - OCWA	50,000	-	-	-	-	-	25,000	-	-	-	25,000	-
Sewage System	776,600	776,600	-	-	-	-	-	-	-	-	-	-
Growth Related												
Renfrew St. Pumping Station Expansion	650,000	-	450,000	200,000	-	-	-	-	-	-	-	-
Wastewater Treatment Plant - Mechanical Bar Screen	696,980	696,980	-	-	-	-	-	-	-	-	-	-
Wastewater Treatment Plant Expansion - EA	250,000	-	-	-	-	250,000	-	-	-	-	-	-
Wastewater Treatment Plant Expansion	12,000,000	-	-	-	-	-	7,000,000	5,000,000	-	-	-	-
Total Capital Expenditures	**25,687,580**	**1,826,580**	**1,733,500**	**3,737,500**	**1,092,500**	**1,127,500**	**7,752,500**	**5,727,500**	**727,500**	**627,500**	**707,500**	**627,500**

Table WW-1
Town of Petawawa
Wastewater Service
Capital Budget Forecast
Inflated $

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures												
Facilities												
Major Treatment Capital - OCWA	5,223,000	-	694,000	3,133,000	532,000	304,000	137,000	141,000	146,000	20,000	95,000	21,000
Sewage Plant	353,000	353,000	-	-	-	-	-	-	-	-	-	-
Linear												
Integrated Road Reconstruction - WW Mains	7,437,000	-	634,000	656,000	679,000	703,000	727,000	753,000	779,000	807,000	835,000	864,000
Major Collection Capital - OCWA	64,000	-	-	-	-	-	30,000	-	-	-	34,000	-
Sewage System	776,600	776,600	-	-	-	-	-	-	-	-	-	-
Growth Related												
Renfrew St. Pumping Station Expansion	680,000	-	466,000	214,000	-	-	-	-	-	-	-	-
Wastewater Treatment Plant - Mechanical Bar Screen	696,980	696,980	-	-	-	-	-	-	-	-	-	-
Wastewater Treatment Plant Expansion - EA	287,000	-	-	-	-	287,000	-	-	-	-	-	-
Wastewater Treatment Plant Expansion	14,460,000	-	-	-	-	-	8,314,000	6,146,000	-	-	-	-
Total Capital Expenditures	**29,977,580**	**1,826,580**	**1,794,000**	**4,003,000**	**1,211,000**	**1,294,000**	**9,208,000**	**7,040,000**	**925,000**	**827,000**	**964,000**	**885,000**
Capital Financing												
Provincial/Federal Grants	-	-	-	-	-	-	-	-	-	-	-	-
Development Charges Reserve Fund	854,245	174,245	466,000	214,000	-	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements	7,800,000	-	-	-	-	-	6,300,000	1,500,000	-	-	-	-
Growth Related Debenture Requirements	3,902,000	-	-	-	-	287,000	2,078,500	1,536,500	-	-	-	-
Operating Contributions	1,652,335	1,652,335	-	-	-	-	-	-	-	-	-	-
Wastewater Reserve	15,769,000	-	1,328,000	3,789,000	1,211,000	1,007,000	829,500	4,003,500	925,000	827,000	964,000	885,000
Total Capital Financing	**29,977,580**	**1,826,580**	**1,794,000**	**4,003,000**	**1,211,000**	**1,294,000**	**9,208,000**	**7,040,000**	**925,000**	**827,000**	**964,000**	**885,000**

Table WW-2
Town of Petawawa
Wastewater Service
Schedule of Non-Growth Related Debenture Repayments
Inflated $

Debenture Year	Principal (Inflated)	2020	Forecast									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-			-	-	-	-	-	-	-	-	-
2022	-				-	-	-	-	-	-	-	-
2023	-					-	-	-	-	-	-	-
2024	-						-	-	-	-	-	-
2025	6,300,000							463,565	463,565	463,565	463,565	463,565
2026	1,500,000								110,373	110,373	110,373	110,373
2027	-									-	-	-
2028	-										-	-
2029	-											-
2030	-											
Total Annual Debt Charges	**7,800,000**	-	-	-	-	-	-	463,565	573,938	573,938	573,938	573,938

Table WW-3
Town of Petawawa
Wastewater Service
Schedule of Growth Related Debenture Repayments
Inflated $

Debenture Year	Principal (Inflated)	2020	Forecast									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-			-	-	-	-	-	-	-	-	-
2022	-				-	-	-	-	-	-	-	-
2023	-					-	-	-	-	-	-	-
2024	287,000						21,118	21,118	21,118	21,118	21,118	21,118
2025	2,078,500							152,940	152,940	152,940	152,940	152,940
2026	1,536,500								113,058	113,058	113,058	113,058
2027	-									-	-	-
2028	-										-	-
2029	-											-
2030	-											
Total Annual Debt Charges	**3,902,000**	-	-	-	-	-	21,118	174,058	287,116	287,116	287,116	287,116

Table WW-4
Town of Petawawa
Wastewater Service
Wastewater Lifecycle Reserve Fund Continuity
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	4,316,968	3,967,023	3,770,741	1,047,715	1,226,720	1,778,114	2,661,516	(66,250)	482,688	1,343,522	2,308,833
Transfer from Operating	156,328	1,057,782	1,045,431	1,365,951	1,523,529	1,660,715	1,277,033	1,464,473	1,661,491	1,884,040	2,085,995
Transfer to Capital	-	1,328,000	3,789,000	1,211,000	1,007,000	829,500	4,003,500	925,000	827,000	964,000	885,000
Transfer to Operating	584,058	-	-	-	-	-	-	-	-	-	-
Closing Balance	**3,889,238**	**3,696,805**	**1,027,172**	**1,202,667**	**1,743,250**	**2,609,330**	**(64,951)**	**473,223**	**1,317,178**	**2,263,562**	**3,509,829**
Interest	77,785	73,936	20,543	24,053	34,865	52,187	(1,299)	9,464	26,344	45,271	70,197

Table WW-5
Town of Petawawa
Wastewater Service
Wastewater Development Charges Reserve Fund Continuity
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	344,071	354,807	64,974	29,930	216,097	409,705	589,450	614,834	529,264	445,844	364,704
Development Charge Proceeds	178,024	174,893	178,369	181,930	185,575	189,305	187,386	191,168	194,954	198,825	202,777
Transfer to Capital	174,245	466,000	214,000	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	21,118	174,058	287,116	287,116	287,116	287,116
Closing Balance	**347,850**	**63,700**	**29,343**	**211,860**	**401,672**	**577,893**	**602,779**	**518,886**	**437,102**	**357,553**	**280,365**
Interest	6,957	1,274	587	4,237	8,033	11,558	12,056	10,378	8,742	7,151	5,607
Required from Development Charges	174,245	466,000	214,000	-	287,000	2,078,500	1,536,500	-	-	-	-

Table WW-6
Town of Petawawa
Wastewater Services
Operating Budget Forecast
Inflated $

Description	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
EXPENDITURES											
Operating Costs											
Sewage System Salaries	16,000	16,300	16,600	17,000	17,300	17,700	18,000	18,400	18,700	19,100	19,500
Training/Associations	4,000	4,100	4,200	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900
Audit	5,600	5,700	5,800	5,900	6,100	6,200	6,300	6,400	6,600	6,700	6,800
Service Contract-OCWA	872,900	958,876	978,100	997,600	1,017,600	1,037,900	1,058,700	1,079,900	1,101,400	1,123,500	1,145,900
Serv Contract-OCWA Extra	27,700	-	-	-	-	-	-	-	-	-	-
Sewage System Admin	80,800	82,400	84,100	85,700	87,500	89,200	91,000	92,800	94,700	96,600	98,500
Sewage Collection System Maintenance (OCWA Forecast)											
Collection System	57,500	239,700	228,900	233,500	238,100	242,900	247,800	252,700	257,800	262,900	268,200
Wastewater Rate Review	16,600	-	-	-	-	18,300	-	-	-	-	20,200
Sewage Treatment System Maintenance (OCWA Forecast)											
Sewage Treatment Plant	145,000	143,800	164,900	168,200	171,600	175,000	172,900	179,000	185,300	191,800	198,600
Minor Capital	28,500	56,600	197,700	18,000	10,800	16,600	132,900	17,200	14,600	-	-
Flow Meters Electricity	600	600	600	600	600	700	700	700	700	700	700
Insurance	25,000	25,500	26,000	26,500	27,100	27,600	28,200	28,700	29,300	29,900	30,500
Infrastruct/Mapping Updat	25,000	25,500	26,000	26,500	27,100	27,600	28,200	28,700	29,300	29,900	30,500
Sewage System PILT County	10,900	11,100	11,300	11,600	11,800	12,000	12,300	12,500	12,800	13,000	13,300
Sub-Total Operating	**1,316,100**	**1,570,176**	**1,744,200**	**1,595,300**	**1,619,900**	**1,676,100**	**1,801,500**	**1,721,600**	**1,755,900**	**1,778,900**	**1,837,600**
Capital-Related											
Existing Debt (Principal) - Growth Related											
Existing Debt (Interest) - Growth Related											
New Growth Related Debt (Principal)		-	-	-	-	9,638	79,823	134,614	139,999	145,599	151,423
New Growth Related Debt (Interest)		-	-	-	-	11,480	94,234	152,502	147,117	141,517	135,693
Existing Debt (Principal) - Non-Growth Related											
Existing Debt (Interest) - Non-Growth Related											
New Non-Growth Related Debt (Principal)		-	-	-	-	-	211,565	270,400	281,216	292,465	304,164
New Non-Growth Related Debt (Interest)		-	-	-	-	-	252,000	303,537	292,721	281,473	269,774
Transfer to Capital	1,652,335	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	156,328	1,057,782	1,045,431	1,365,951	1,523,529	1,660,715	1,277,033	1,464,473	1,661,491	1,884,040	2,085,995
Sub-Total Capital-Related	**1,808,663**	**1,057,782**	**1,045,431**	**1,365,951**	**1,523,529**	**1,681,833**	**1,914,656**	**2,325,526**	**2,522,545**	**2,745,094**	**2,947,049**
Total Expenditures	**3,124,763**	**2,627,958**	**2,789,631**	**2,961,251**	**3,143,429**	**3,357,933**	**3,716,156**	**4,047,126**	**4,278,445**	**4,523,994**	**4,784,649**

Table WW-6
Town of Petawawa
Wastewater Services
Operating Budget Forecast
Inflated $

Description	Budget 2020	Forecast 2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
REVENUES											
Operating											
Miscellaneous Revenue/Grant	-	-	-	-	-	-	-	-	-	-	-
Contributions from Development Charges Reserve Fund	-	-	-	-	-	21,118	174,058	287,116	287,116	287,116	287,116
Contributions from Reserves / Reserve Funds	584,058	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	**584,058**	**-**	**-**	**-**	**-**	**21,118**	**174,058**	**287,116**	**287,116**	**287,116**	**287,116**
Billing											
Sewage System User Charges	2,540,705	-	-	-	-	-	-	-	-	-	-
Flat Rate Billing	-	1,496,561	1,553,953	1,662,736	1,787,337	1,913,113	1,960,432	2,119,681	2,288,693	2,470,807	2,658,496
Consumptive Billing	-	1,131,397	1,235,679	1,298,515	1,356,093	1,423,702	1,581,666	1,640,329	1,702,636	1,766,071	1,839,037
Total Billing Revenue	**2,540,705**	**2,627,958**	**2,789,631**	**2,961,251**	**3,143,429**	**3,336,815**	**3,542,098**	**3,760,010**	**3,991,329**	**4,236,878**	**4,497,533**
Total Revenues	**3,124,763**	**2,627,958**	**2,789,631**	**2,961,251**	**3,143,429**	**3,357,933**	**3,716,156**	**4,047,126**	**4,278,445**	**4,523,994**	**4,784,649**

Table WW-7
Town of Petawawa
Wastewater Services
Wastewater Rate Forecast
Inflated $

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Wastewater Billing Recovery		2,627,958	2,789,631	2,961,251	3,143,429	3,336,815	3,542,098	3,760,010	3,991,329	4,236,878	4,497,533
Consumption		-	-	-	-	-	-	-	-	-	-
Garrison		797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272	797,272
Town Metered Users		43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619	43,619
Total Metered Consumption (m3)		840,891	840,891	840,891	840,891	840,891	840,891	840,891	840,891	840,891	840,891
Consumptive Rates (per m^3)											
Garrison	1.2047	1.3378	1.4588	1.5230	1.5816	1.6521	1.8501	1.9161	1.9864	2.0576	2.1408
Non-Residential	1.3620	1.4856	1.6653	1.9316	2.1802	2.4417	2.4439	2.5824	2.7263	2.8792	3.0320
Flat Rates (per year)											
Residential	463.70	463.70	468.84	489.12	512.94	535.97	536.45	566.84	598.43	632.01	665.54
Non-Residential	643.26	644.54	651.69	679.87	712.99	744.99	745.66	787.91	831.82	878.49	925.11
Annual Percentage Increase											
Consumptive Rates											
Garrison		11.0%	9.0%	4.4%	3.8%	4.5%	12.0%	3.6%	3.7%	3.6%	4.0%
Non-Residential		9.1%	12.1%	16.0%	12.9%	12.0%	0.1%	5.7%	5.6%	5.6%	5.3%
Flat Rates											
Residential		0.0%	1.1%	4.3%	4.9%	4.5%	0.1%	5.7%	5.6%	5.6%	5.3%
Non-Residential		0.2%	1.1%	4.3%	4.9%	4.5%	0.1%	5.7%	5.6%	5.6%	5.3%