West Elgin Wastewater System

Rate Report

Sharratt Water Management Ltd.
Sustainable Water Management Specialists

July 15, 2019

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1. EXECUTIVE SUMMARY

The Municipality retained the services of Sharratt Water Management Ltd to develop rates for the West Elgin Wastewater System. The rate has been prepared as follows. The renewal dates for all assets have been projected out to 2080, the life of the longest wastewater assets, the renewal costs have been inflated to reflect the replacement or rehabilitation costs at that future date and funding levels have been determined that need to be set aside now to have sufficient funds available when renewal is needed. In addition, future operating costs have been projected to 2030 and include inflation. Based on these cost projections, full cost water rate surcharges were developed separately for the Rodney and West Lorne systems. The rate surcharges have been set to bring both to an equal surcharge, when rounded, by 2020 and then keep them equal from 2020 to 2030, the ten-year time chosen to develop rates.

1.1 Proposed Wastewater Surcharges

The current rate is a surcharge on the water bill expressed in percentage terms and covers both the monthly fixed and variable components of the water bill. The proposed wastewater surcharges are shown in Table 1.

Table 1 Proposed Township of West Elgin Wastewater Surcharges 2018-2030

Rodney	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
WW Surcharge	149%	153%	157%	161%	164%	166%	169%	173%	177%	181%	185%	190%	194%
West Lorne	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
WW Surcharge	130%	143%	157%	161%	164%	166%	169%	173%	177%	181%	185%	190%	194%

These rate increases are needed urgently to provide funding for the almost complete renewal and rehabilitation of the Rodney and West Lorne wastewater systems over the next twenty to thirty years.

2. PROJECT PURPOSE

The Municipality retained the services of Sharratt Water Management Ltd to develop rates for the West Elgin Wastewater System. The wastewater system is comprised of a system serving the community of Rodney and a separate system serving West Lorne community.

The rate has been prepared as follows separately, for each system. The renewal dates for all assets have been projected out to 2080, the life of the longest wastewater assets, the renewal costs have been inflated to reflect the replacement or rehabilitation costs at that future date and future operating costs have been projected to 2030 and include inflation. Based on these cost projections, full cost water rate surcharges were developed separately for the Rodney and West Lorne systems. The rate surcharges have been set to bring both to an equal surcharge by 2020 and then keep them equal from 2020 to 2030, the ten-year time chosen to develop rates.

3. BACKGROUND

Setting the wastewater rates involves a number of steps:

1. Development of a near-term capital and major maintenance plan 2019 to 2024
2. Projection of capital investment needed to be set aside now to help replace current aging infrastructure. This involved a projection of the lifetimes of all current assets to 2080, beyond the life of wastewater mains, the longest-lived current asset, and identifying the funds that need to be set aside now, and in each future year, to ensure that sufficient funding will be on hand when the asset is renewed. This applies to any asset that requires renewal between 2019 and 2080. Some assets with shorter than a 75 year lifetime could be replaced more than once in the next 60 years.
3. Projection of future inflated operating costs to 2030, the ten-year time chosen for the preparation of rates.
4. Developing a projection of needed user's fees to make the financial plan for the wastewater system viable and a calculation of the size of the wastewater surcharge that should be applied to the water bill.
5. Illustrating the future wastewater bills for various classes of customers associated with the proposed rates.

4. LEGISLATIVE CONTEXT

There have been a number of legislative initiatives affecting water and wastewater system management and operations over the past two decades. These commenced with the water borne illness tragedy in Walkerton in 2000. Following this event, the government established a public inquiry to look into the tragedy, chaired by the Honorable Dennis O'Connor. The Inquiry Report recommended a comprehensive approach to the delivery of safe drinking water in Ontario. A number of legislative and regulatory changes have been made. In 2007, the Ontario Ministry of Environment, the regulatory agency responsible for water and wastewater, issued guidelines. They apply and are followed in the preparation of this report. The Guidelines set out nine principles to guide the preparation of water Financial Plans that are covered in a separate water financial plan report, and by implication, wastewater rates. Financial Plan preparation is mandatory for water systems and recommended for wastewater systems. The nine principles are as follows:

1. *Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system(s) to which they relate*. The owner of the drinking water system must make the Financial Plan available, on request, to members of the public who are served by the drinking water system without charge, publish them on the internet, if one is available, and provide notice to the public of the availability of the document.

2. *An integrated approach to planning among water, wastewater and storm water systems is desirable given the inherent relationship among these services*. If one entity plans for both water and wastewater, then this arrangement allows owners and operators to make more rational decisions about operations, capital investment and environmental protection – choices that recognize the inter-relationship between water and wastewater services. Many municipalities pay for the costs of wastewater services by levying a surcharge on water rates. This is a valuable linkage, as those who use water will generate equivalent amounts of water. However, the guideline encourages municipalities to structure their accounts to reflect the three separate activity areas: water, wastewater and storm water. Costs are to be computed on a service basis for water and separately for wastewater. Separating fire protection costs from other system costs is desirable. Recovering costs for storm water through a surcharge on water bills does not satisfy the user pay principle.

3. *Revenues collected for the provision of water and wastewater services should ultimately be used to meet the needs of those services.* This can be done by establishing dedicated reserve funds, in which excess utility revenues above current cash costs and capital expenditures are saved for future utility needs.

4. *Financial planning with midcourse corrections is preferable to planning over the short term, or not planning at all*. It is recommended that utilities, when they undertake capital investment planning, adopt a planning horizon that encompasses the entire life cycle of the asset base. This may not be immediately possible, but in the interim, a planning horizon of at minimum 35 years is desirable.

5. *An asset management planning approach is a key input to the development of a financial plan*. A very useful starting assumption, in preparing capital investment plans is that each asset

will need to be replaced at the end of the estimated life that is assigned to it for accounting purposes. The intent of an asset management plan, the rates and accompanying financial plan is to ensure that when assets need to be maintained, rehabilitated or replaced; municipalities are in a financial position to do so.

6. *A sustainable level of revenue allows for reliable service that meets or exceeds environmental standards, while providing sufficient resources for future rehabilitation and replacement needs.* A sustainable utility is one that can adequately cover current operating costs, maintain and repair its existing asset base, replace assets when appropriate, fund future growth and service enhancements, and account for inflation and changes in technology. Capital expenditures can be funded through user fees, new debt issuance and cash reserves. The use of debt is limited by the municipality's debt ceiling. Many municipalities wish to avoid the use of debt and, accordingly, need to raise additional revenues from ratepayers today to pay for future investment needs. According to the guidelines, it is a good practice for the funding plan to clearly identify the contribution of various funding sources towards satisfying capital investment plan requirements over the projection periods. A related best practice is for the funding plan to include projected balances for debt and cash reserves in each period of the projection horizon. Additional best practices include:

- Avoiding large fluctuations in rates from year to year
- Keeping debt within a sustainable level
- Avoiding depleting cash reserves or, conversely, building up large cash balances that do not reflect future cash needs

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 rendered.* Rate structures should promote financial sustainability and water conservation. Metering and the use of rates are preferable to cross subsidization using property taxes.

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.* From time to time, it is good practice to review the accuracy of projections in both capital investment and funding plans. The appropriate frequency is likely to be once in 3 to 5 years.

9. *Financial Plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal council*.

This rate report has been prepared in consideration of the various pieces of MOE legislation and regulations and in particular, with the above mentioned MOE guideline document. Achieving financial sustainability in the Province's municipal water and wastewater sector long-term goal, although financial plans are mandatory only for water systems.

5. WATER/WASTEWATER SERVICE FINANCING

Municipalities have a number of alternative financing mechanisms available to fund water and wastewater services:

Development Charges - Such charges are applied to developers and others connecting new non-serviced areas to the existing water and wastewater systems. The growth related costs of building additions to the system can be passed on to these developers or new customers. Existing users are thus spared the capital cost of expanding infrastructure to accommodate new users to the system. The Municipality of West Elgin currently does not utilize a development charges by-law.

Connection Charges - Fees are charged to landowners who wish to connect to the system. The fee covers the cost to the water/wastewater utility associated with installing a water main and a service line or drain from the existing water main or large sewer to the edge of the property line. Some costs may be assessed to cover past infrastructure investments by current users that are not reflected in the water rates. The Municipality of West Elgin charges new users 100% of the cost of service lines to connect new users to the system.

Government Grants - The Ontario and Federal governments provide funding on a shared basis with municipalities. The formula is one-third Federal government, one-third Provincial government and one third municipal funding. Grants have been received in the past, to build the Tri-County water treatment plant. A grant has also be obtained to finance the rehabilitation of the West Lorne wastewater plant in 2018-20. However, no grants have been assumed as a funding source from 2020 forward. Should such grants be obtained, they would be used to supplement the reserve and reduce debt.

Reserves - Reserves are set up to deal with unexpected equipment repairs and to ensure that funds are available to renew ageing water and wastewater systems when they reach the end of their expected life at various points in the future. Increasingly, municipalities are carrying out studies to look out many years to identify capital renewal or replacement projects that need to be funded by a reserve. This project assesses the funding that needs to be set aside now and invested in reserves so that current assets can be financed when they reach the end of their life. This spreads the cost of renewal over several generations of water users rather than requiring a single generation of ratepayers to pay the full cost when the asset is renewed. The Municipality currently has reserves that will be used in the short term to fund capital renewal projects and will be replenished and augmented during the study period and to fund future projected water capital renewal projects.

Debentures - Money has traditionally been borrowed in the form of debentures to provide upgrades to service existing users. Utilizing debentures and loans allows principal and interest to be recovered over a period from a large cohort of water users, rather than having the full cost burden fall on one group of water users at one time. The Municipality will need a loan in 2019 to fund renewal projects in West Lorne and in 2021 to fund a rehabilitation project in Rodney. Loans are projected in future years as the capital assets in both the Rodney and West Lorne wastewater systems are reaching the end of their projected life.

User Fees – Smaller, recurring capital maintenance and renewal projects are often financed out of the annual operating funds of the water system. User fees cover all the costs not covered by other financing approaches.

Most water systems use some or all of the above means. In this project, revenue generation will rely upon user rates, connection fees, reserves, grants and loans.

6. WATER/WASTEWATER RATE TYPES

There are a number of rate types that are in use in Ontario. These are as follows:

Flat Rate - All users are assessed an annual fee that does not depend on the amount of water used. The Municipality's users are metered and do not pay a flat rate.

Decreasing Block - Users pay less per cubic metre as water use increases. This rate provides an economic advantage to large industrial or institutional water users. The Municipality does not use a declining block.

Increasing Block - Users pay more per cubic metre as water use increases. This is sometimes called the conservation rate, as it was designed to encourage large users to be more careful with their water use. The Municipality does not utilize this rate.

Two Part Constant Unit – In this rate type, there is a fixed portion paid by all users and a variable part that is based on the water use. For the variable part, the user pays the same for each cubic metre of water used. This is the rate currently used by the Municipality for both residential and commercial users.

Seasonal Rate – Higher rates in the summer when the system is closest to capacity. This rate is not used in the Municipality.

Flat rates are commonly utilized in about a tenth of Ontario municipalities that are not metered, and in communities that are only partially metered. Decreasing block rates were formerly very popular as they provided some relief for large users. However, the popularity of this rate type is declining. The management of a system that is reaching capacity and will face expensive expansion often employs increasing block rates. An increasing number of municipalities in Ontario utilizes it. The West Elgin water system is not reaching capacity. The two-part constant unit rate is now the most commonly used rate type and is used by the West Elgin secondary water system.

Wastewater rates can be a separate charge from water or it can be surcharged to the water bill. The surcharge approach is commonly used as there is no practical way to meter wastewater generated by water users. With this approach, it is assumed that there is a strong relationship between the amount of wastewater generated and the amount of water that was registered on the users meter. Hence, the wastewater fees are surcharged to the water bill usually expressed as a percentage. Thus, 100% is applying the same charge for wastewater as water. 200% is a wastewater charge that is double the water charge. This is the current approach to billing wastewater services in West Elgin and it is recommended that this approach be continued.

7. CURRENT WEST ELGIN 2018-19 WATER/WASTEWATER RATES

The current water rates and wastewater surcharges are set out in table 2

Table 2 West Elgin Water/Wastewater System Rates: Effective July 1, 2018:

Water/Wastewater Rates Effective July 1, 2018			
	Water		Wastewater Surcharge
	Bi-Monthly Fixed	Variable Charge/M3	
West Lorne	$ 38.11	$ 1.39	130%
Rodney	$ 38.11	$ 1.39	149%

The Municipality for all metered users utilizes a two-part rate for water billing. This includes a fixed charge applied bi-monthly, to all water users, including the assessment of renters that is added to the property owners water and wastewater bills in multi-unit buildings. This is paid regardless of the amount of water used. The charge in 2018 is $38.11 every two months ($18.06 per month). The cost of all water that passes through the user's meter is $1.39 per cubic metre. For multi-unit buildings, with one service connection to the property, the owner is billed the fixed monthly fee for each unit plus all the water use registered on the meter. For all those connected to the wastewater system in West Lorne in 2018, the wastewater charge is calculated by surcharging the water bill, both the fixed and variable component, by 130% in West Lorne and in Rodney the water bill is surcharged by 149%.

8. PROPOSED RODNEY WASTEWATER SYSTEM RATES FOR 2019-2030

8.1 Approach

The wastewater rate setting approach begins by establishing an estimate of capital renewal needs to 2080, the projection of operating costs needs, and lastly, computation of water rate surcharges to 2030.

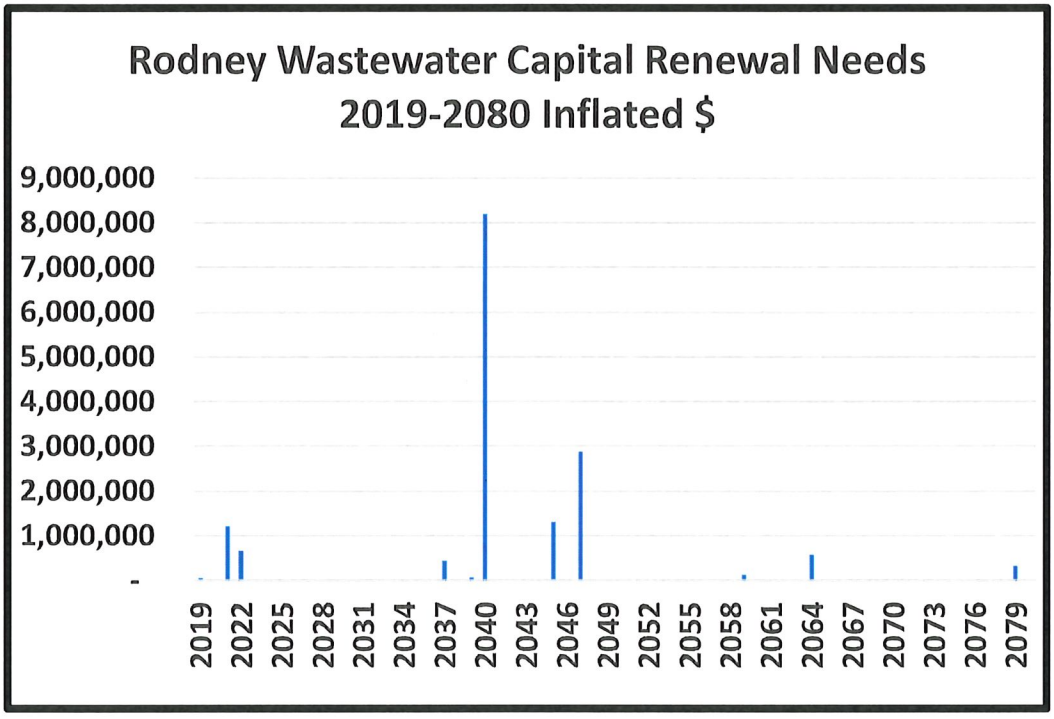
8.2 Assumptions

- Rate Type — Two part rate – a fixed and a volume based component with a wastewater surcharge on both the fixed and volume components of the water bill.
- Inflation — Operating 3% per annum, Capital 3%
- Interest on Investments — 2.0% per annum
- Interest on loans — 3.5% per annum

8.3 Wastewater System Capital Expenditures

Projected capital needs as they are known now from 2019 to 2080 are shown in Figure 1.

Figure 1 Capital Renewal Needs Projection 2019 to 2080 Inflated $



The major capital projects affecting wastewater surcharge rates include the following:

- 2021-22 Tentative projected rehabilitation of the wastewater plant, proposed to confirmed by a capital assessment carried out in 2019
- 2037 Sewage pumping station rehabilitation with a new roof
- 2040 Control and office building rehabilitation and refurbishment of the Furnivall pumping station
- 2045 Filter building repairs
- 2047 Sanitary sewer replacement of most of the system (likely spread over 10 years)

The expenditures appear large however; they are in inflated dollars with an inflation rate projected of 3% per annum. These increases are consistent with construction cost inflation over the past sixty years or so. These costs are built into today's rates, and the reserve will accumulate sufficient funds to pay for these projects when the assets reach the end of their life through 2080 however, there will be two periods when borrowing will be required to manage costs. After 2049, the reserve is in a projected surplus until 2080, the end of the study period.

8.4 Wastewater Operating Revenue and Expenditure Plan

The summary operating revenue and expenditure plan for the water system for 2018 to 2030 is set out in Table 3

User fees are shown in line 1 of table 3 and revenues from all sources, including user fees, are summarized in line 4. Projected operating expenditures are summarized in line 17. All surpluses of revenues over expenditures are transferred to the reserve or taken from the reserve in order to balance revenues and expenditures in any given year. This contribution is shown in line 23.

8.4.1 User Fee Requirements

Projected user fees, set out in line 1 of table 3, are shown in figure 2 below:

Figure 2 Rodney Wastewater System User Fees 2018-2030

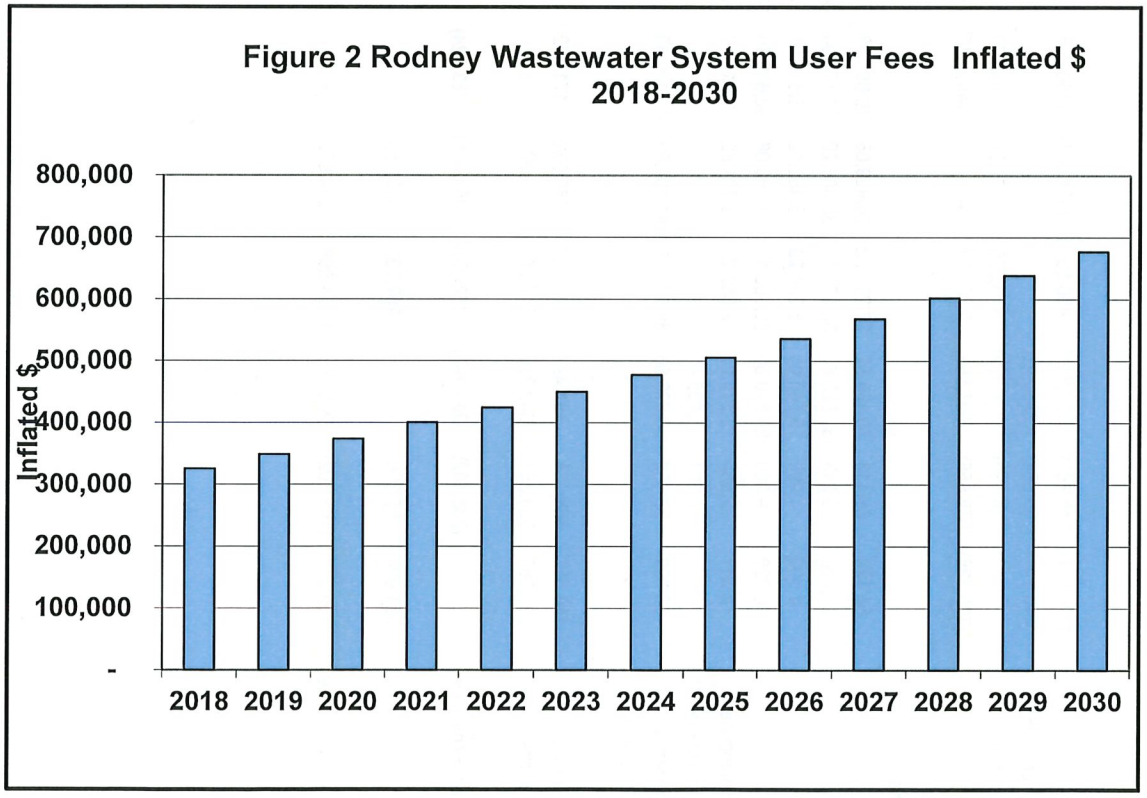


Table 3 Rodney Water Operating Revenue and Expenditure Plan 2018-30 Inflated $

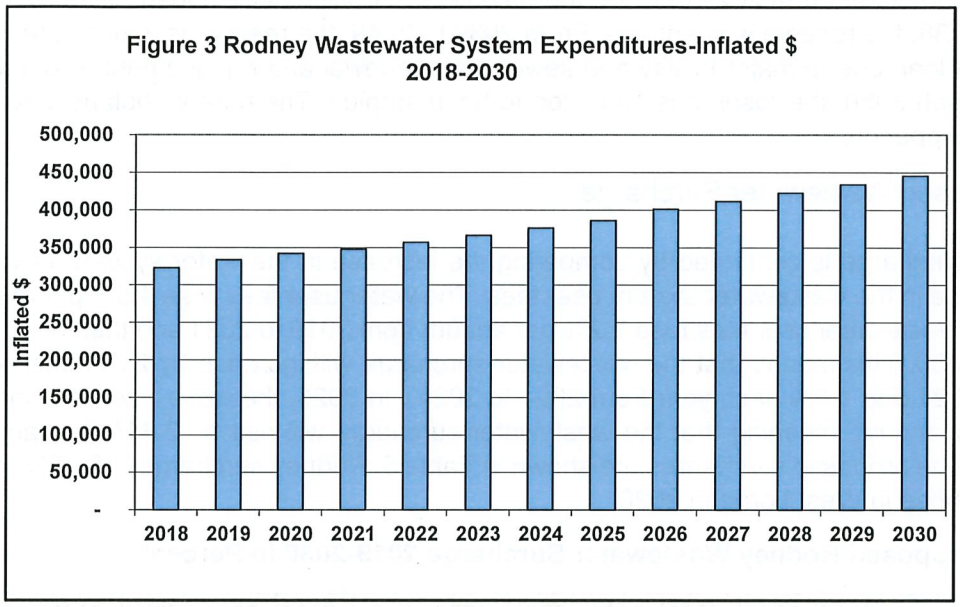
	Rodney													
	Revenues													
1	Sewer Billings	(325,587)	(348,867)	(373,811)	(400,538)	(424,571)	(450,045)	(477,048)	(505,670)	(536,011)	(568,171)	(602,262)	(638,397)	(676,701)
2	Grant CWWF or OCIF	(440,141)	(225,658)	(225,822)										
3	Interest on Reserve		(4,130)	(7,932)	(13,238)	17,259	38,070	35,140	31,603	27,411	22,690	17,216	10,931	3,776
4	Total Revenues	(765,728)	(578,655)	(607,565)	(400,538)	(424,571)	(450,045)	(477,048)	(505,670)	(536,011)	(568,171)	(602,262)	(638,397)	(676,701)
5														
6	**Expenditures**													
7	Hydro	66,129	68,113	70,156.52	72,261.22	74,429.05	76,661.93	78,961.78	81,330.64	83,770.56	86,283.67	88,872.18	91,538.35	94,284.50
8	Water	27,936	29,613	30,826.68	32,090.57	33,406.29	34,775.94	36,201.76	37,686.03	39,231.16	40,839.63	42,514.06	44,257.13	46,071.68
9	Insurancce	4,690	4,990	5,140.00	5,294.20	5,453.02	5,616.61	5,785.11	5,958.66	6,137.42	6,321.55	6,511.19	6,706.53	6,907.73
10	Taxes	40,728	29,000	29,870.00	30,766.10	31,689.08	32,639.76	33,618.95	34,627.52	35,666.34	36,736.33	37,838.42	38,973.58	40,142.78
11	Grounds Maintenance	2,241	2,500	2,575.00	2,652.25	2,731.82	2,813.77	2,898.19	2,985.13	3,074.68	3,166.93	3,261.93	3,359.79	3,460.58
12	Contracts and Agreement	-	3,307	3,406.42						5,000	5,150.00	5,304.50	5,463.64	5,627.54
13	Sewer Maintenance	23,009	37,699	38,829.86	39,994.75	41,194.59	42,430.43	43,703.34	45,014.44	46,364.88	47,755.82	49,188.50	50,664.15	52,184.08
14	Equipment Purchase	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Postage	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Contracted Service	158,331	158,331	161,497	164,727	168,022	171,382	174,810	178,306	181,872	185,510	189,220	193,004	196,864
17	Total Expenditures	323,063	333,553	342,302	347,786	356,926	366,321	375,979	385,909	401,117	411,764	422,711	433,967	445,543
18														
19	**Revenue less Expenses**		**(245,102)**	**(265,263)**	**(52,752)**	**(67,645)**	**(83,724)**	**(101,069)**	**(119,762)**	**(134,893)**	**(156,408)**	**(179,551)**	**(204,430)**	**(231,158)**
20														
21	Capital	551,924	55,000	0	1,207,750	662,250	-	-	-	-	-	-	-	-
22														
23	Transfers (to) from reserve	(109,259)	(190,102)	(265,263)	1,154,998	594,605	(83,724)	(101,069)	(119,762)	(134,893)	(156,408)	(179,551)	(204,430)	(231,158)
24														
25	**Net**	-	-	-	-	-	-	-	-	-	-	-	-	-

User fees are projected to increase by 7% per annum including inflation from 2019-2021 and then 6% until 2051, when they stabilize at the rate of inflation. This increase is need as the plants facilities and the sewer lines will need to be rehabilitated significantly or replaced in the next 30 years. The capital renewal needs should be assessed to more accurately determine a repair, rehabilitation and replacement schedule. Rates and reserve balances should be reviewed every year and be thoroughly reviewed in a study to be done every 5 year.

8.4.2 Operating Expenses

Future operating expenditures are summarized in line 17 in Table 3, and illustrated in figure 3

Figure 3 Rodney Wastewater System Projected Operating Expenditures 2018-2030



Projected operating costs after 2019 are inflated at 3% per annum, the projected level of inflation.

8.4.3 Debt

As of December 31, 2019, there was no debt on the system. If the rehabilitation of the wastewater plant proceeds in 2021-22, there will need to be a loan for about eight to ten years from 2021-2029. A second loan will be needed to rehabilitate the remaining facilities and to renew the sewer lines. This loan would last about ten years from 2039-2049 depending on the construction schedule. By 2050 or so, the loan should be paid off and no more loans are projected through 2080. Should government grants be obtained, they would help offset the need for loans to finance the rehabilitation and renewal projects. An important fact to keep in mind is that regulations regarding effluent treatment and disposal may change in future years. This could add additional costs to future capital projects or require construction of new facilities.

8.4.4 Reserve Funds

The projected water reserve fund is shown in table 4:

Table 4 Rodney Wastewater System Projected Reserve Fund 2019-25 Inflated $

		2019	2020	2021	2022	2023	2024	2025
Opening - Surplus (deficit)		206,510	396,612	661,875	(493,123)	(1,087,728)	(1,004,004)	(902,935)
Reserves from (to) Operations		190,102	265,263	(1,154,998)	(594,605)	83,724	101,069	119,762
Year End - Surplus (deficit)	$206,510	**396,612**	**661,875**	**(493,123)**	**(1,087,728)**	**(1,004,004)**	**(902,935)**	**(783,173)**

The reserve begins with a small surplus until 2021 when the projected rehabilitation of the wastewater plant is proposed to take place. This is to be confirmed by a capital assessment carried out in 2019. From 2021 to 2029, the reserve is in deficit that is a loan to the system. From 2030 to 2038, the reserve is in surplus. From 2039 to 2049, the reserve is in deficit reflecting the need for a loan due to major facility and sewer main renewal and replacement. From the end of 2049 through 2080, the reserve is projected to be in surplus. The reserve balances to 2080 are set out in Appendix 1.

8.5 Proposed Wastewater Surcharge

The rate surcharge is computed by comparing the increase in the water system user fees with the increase in the wastewater system user fees. The water user fees rose 4.5% per annum from 2019-24. Wastewater user fees rose 7.2% per annum from 2019 to 2021 and then 6% per annum through 2030. This means that the wastewater surcharge will increase by 2.6% each year from 2019 to 2021 and 1.5% each year from 2021 to 2024. In 2025, the water user fees increase by 3.59% per annum, meaning that the wastewater surcharge will rise by 2.41% per annum from 2025-30. The proposed surcharges are shown in Table 5. Rodney surcharges of 157% will be the same as those in West Lorne in 2020.

Table 5 Proposed Rodney Wastewater Surcharge 2019-2030 in Percent

Rodney	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
WW Surcharge	149%	153%	157%	161%	164%	166%	169%	173%	177%	181%	185%	190%	194%

Note: the surcharge is applied to the fixed and volumetric component of the water bill

8.6 Sample Wastewater Bills for Various User Groups

The bills for the current rate structure with the fixed component and a variable component is utilized from 2019 to 2025, with tenants paying the bi-monthly fixed charge. A projected bi-monthly water bill for various types of water users is set out in Table 8.

Table 6 Rodney Hypothetical Wastewater User Bi-Monthly Projected Water Bills 2018-25

User Category - Bi Monthly Bill	2018	2019	2020	2021	2022	2023	2024	2025
Renters	56.73	60.86	65.28	70.03	74.28	78.78	83.56	88.65
Sindle Person - 16.7 M3 bi -monthly	87.79	97.80	104.91	112.54	119.37	126.61	134.29	142.47
Family - Using 60 M3 bi -monthly	168.53	193.86	207.96	223.07	236.61	250.96	266.19	282.39
Business Using 200 M3 bi monthly	429.38	504.21	540.87	580.18	615.39	652.72	692.33	734.47

A number of hypothetical user groups were selected to determine the impacts of the proposed rate in this option. For tenants with no meter, they would pay $60.86 every two months later in 2019, and this would rise to $88.65 bi-monthly by 2025. For a metered residential customer such as a single person or a frugal senior using a 16.7 cubic metres every two months, the 2019 bi-monthly wastewater bill will be $97.80, rising to $142.47 in 2025. For a family using 60 cubic metres every two months, the 2019 wastewater bill would be $193.86 in later 2019, rising to $282.39 in 2025. A medium sized restaurant, such as Tim Hortons, would see a wastewater bill every two months of $504.21 in 2019 and $734.47 in 2025.

These higher wastewater bills are urgently needed to pay for the very substantial renewal and rehabilitation of the entire wastewater system over the next twenty years or so.

9. PROPOSED WEST LORNE WASTEWATER RATES FOR 2019-2030

The West Elgin wastewater System is comprised of a wastewater system in West Lorne and another in Rodney. There are separate rates for each. Following is the calculation of the West Lorne wastewater system rates for 2019-2030.

9.1 Approach

The wastewater rate setting approach begins by establishing an estimate of the inflated capital renewal needs to 2080, the projection of inflated operating costs needs to 2030, the time chosen for the setting of rates in this project and, finally, the projection of user fee revenue needs to pay for all expenditures.

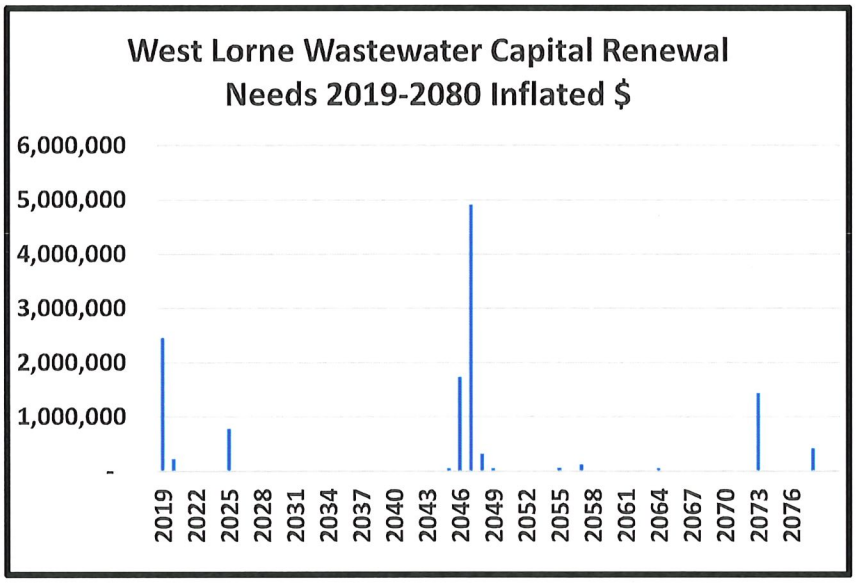
9.2 Assumptions

- Rate Type — Two part rate – a fixed and a volume based water rate component with a wastewater surcharge on both the fixed and volume components of the water bill.
- Inflation — Operating 3% per annum, Capital 3%
- Interest on Investments — 2.0% per annum
- Interest on loans — 3.5% per annum

9.3 Wastewater System Capital Expenditures

Projected capital needs, inflated, as they are known now, from 2019 to 2080 are shown in Figure 4.

Figure 4 West Lorne Capital Renewal Needs Projection 2019 to 2080 Inflated $



The major capital projects affecting rates include the following:

- 2018-20 Rehabilitation of the control building (underway)
- 2025 Filtration building rehabilitation
- 2045-2049 Sanitary sewer replacement for much of the system (likely spread over 10 years)
- 2073 Sewage lift station rehabilitation
- 2078 Sanitary sewer replacement

The expenditures appear large however; they are in inflated dollars with an inflation rate projected of 3% per annum. These costs are built into today's rates, and the reserve will accumulate sufficient funds to pay for most of these projects when the assets reach the end of their life through 2080 however, there a loan will be needed from 2019-2022 to manage the control building rehabilitation. Otherwise, the reserve is in a surplus.

9.4 Water Operating Revenue and Expenditure Plan

The summary operating revenue and expenditure plan for the water system for 2018 to 2030 is set out in Table 7.

Table 7 Water Operating Revenue and Expenditure Plan 2018-30 Inflated $

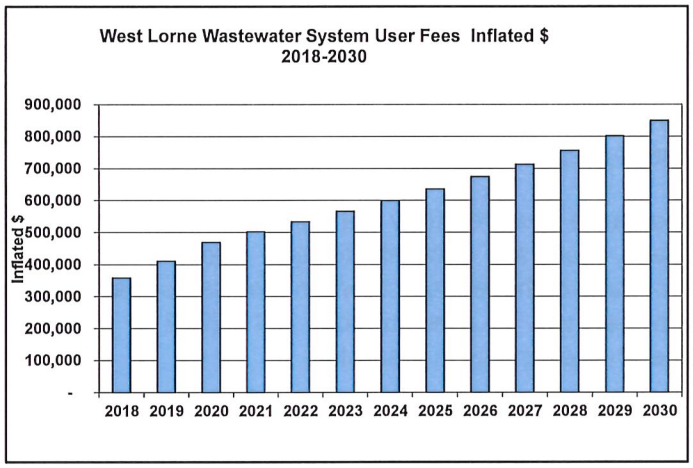
	West Lorne	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Grant SCF	(119,362)	(1,631,856)											
2	Sewer Billings	(358,618)	(410,259)	(469,337)	(502,190)	(533,828)	(565,858)	(599,809)	(635,798)	(673,946)	(713,035)	(755,817)	(801,166)	(849,236)
3	Long Term Financing	-												
4	Interest on Loan (Reserves)		7,390	8,770	1,423	(6,788)	(9,069)	(14,794)	(9,493)	(21,577)	(19,859)	(28,084)	(37,051)	(46,810)
5	**Total Revenues**	**(477,980)**	**(2,042,115)**	**(469,337)**	**(502,190)**	**(533,828)**	**(565,858)**	**(599,809)**	**(635,798)**	**(673,946)**	**(713,035)**	**(755,817)**	**(801,166)**	**(849,236)**
6														
7	Hydro	47,940	49,378	50,859	52,385	53,957	55,575	57,243	58,960	60,729	62,551	64,427	66,360	68,351
8	Water	1,719	1,822	1,895	1,970	2,049	2,131	2,216	2,305	2,397	2,493	2,593	2,696	2,804
9	Insurance	4,617	4,912	5,109	5,313	5,526	5,747	5,977	6,216	6,464	6,723	6,992	7,271	7,562
10	Taxes	18,537	19,000	19,570	20,157	20,762	21,385	22,026	22,687	23,368	24,069	24,791	25,534	26,300
11	Grounds Maintenance	2,563	2,600	2,678	2,758	2,841	2,926	3,014	3,105	3,198	3,294	3,392	3,494	3,599
12		-	3,307	3,307	3,307	3,307	3,307	3,307	3,307	3,307	3,307	3,307	3,307	3,307
13	Sewer Maintenance	15,862	23,000	23,690	24,401	25,133	25,887	26,663	27,463	28,287	29,136	30,010	30,910	31,837
14	Equipment Purchase	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Other Services	951	-	-	-	-	-	-	-	-	-	-	-	-
16	Contracted Services	174,938	174,941	178,439	182,008	185,648	189,361	193,149	197,011	200,952	204,971	209,070	213,252	217,517
17	**Total Expenses**	**267,127**	**278,960**	**285,547**	**292,300**	**299,223**	**306,319**	**313,595**	**321,054**	**328,701**	**336,542**	**344,582**	**352,825**	**361,278**
18		-	-	-	-	-	-	-	-	-	-	-	-	-
19	**Revenue less Expenses**	(210,853)	(1,763,156)	(183,789)	(209,890)	(234,606)	(259,539)	(286,215)	(314,744)	(345,244)	(376,492)	(411,235)	(448,341)	(487,958)
20			-	-	-	-	-	-	-	-	-	-	-	-
21	Capital	170,550	2,457,784	223,214	-	-		-	783,195	-	-	-	-	-
22														
23	Transfers (to) from reserve	(40,303)	694,628	39,425	(209,890)	(234,606)	(259,539)	(286,215)	468,451	(345,244)	(376,492)	(411,235)	(448,341)	(487,958)
24														
25	**Net**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

User fees are shown in line 2 of table 7 and revenues from all sources, including user fees, are summarized in line 5. Operating expenditures are summarized in line 17. All surpluses of revenues over expenditures are transferred to the reserve. This contribution is shown in line 23.

9.4.1 User Fee Requirements

Projected user fees, set out in line 2 of table 7, are shown in figure 5 below:

Figure 5 West Lorne Wastewater System User Fee Projections 2018-30 Inflated $

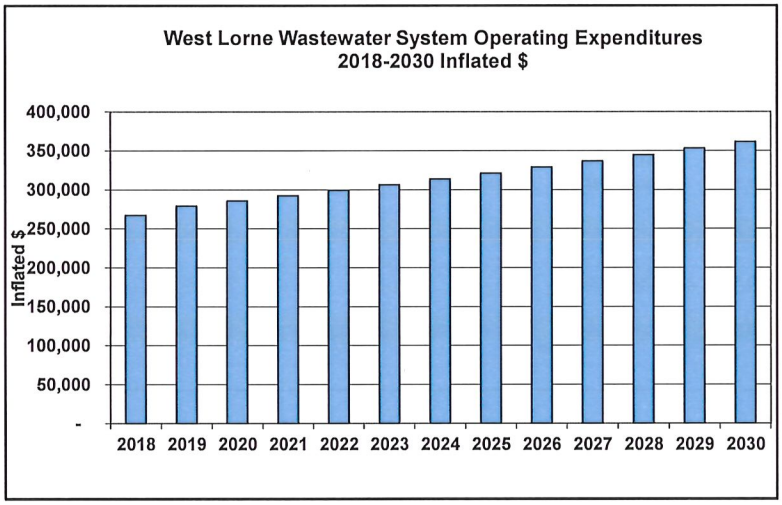


User fees are projected to increase by 12% per annum in 2019-20, 7% in 2021 and then 6% from 2022 to 2030 and 3% thereafter. The increase is needed as the plants facilities and the sewer lines will need urgently to be rehabilitated or replaced in the next 30 years. The capital renewal needs should be assessed to more accurately determine a final repair, rehabilitation and replacement schedule. Rates and reserve balances should be reviewed every year and be thoroughly reviewed in a study to be done every 5 year.

9.4.2 Operating Expenses

Future operating expenditures are summarized in line 17 in Table 7, and illustrated in figure 6

Figure 6 West Lorne Wastewater Projected Operating Expenditures 2018-30 Inflated $



Operating costs, for most expenditure items, after 2019 are inflated at 3% per annum, the projected level of inflation.

9.4.3 Debt

The West Lorne wastewater system is undergoing a period of renewal and rehabilitation. Most of the facilities were built in the 1970s and are now reaching the ends of their useful lives. At the moment, rehabilitation is taking place on the control building. A large grant has been obtained that greatly helps financing this rehabilitation. Also, there are some funds in the reserve that will be used. However, some short-term borrowing is needed over the next three years to properly finance the needed work. The total debt as the end of 2019 is projected at $211,136 rising to $250,561 in 2020 and then eliminated by the end of 2022. No additional debt is foreseen. Should additional government grants be obtained, they would help offset the need for future rate increases to finance the rehabilitation and renewal projects. An important fact to keep in mind is that regulations regarding effluent disposal may change in future years. This could add additional costs to future capital projects or require construction of new facilities.

9.4.4 Reserve Funds

The projected water reserve fund are shown in table 8:

Table 8 West Lorne Wastewater System Projected Reserve Fund 2019-25 Inflated $

	2019	2020	2021	2022	2023	2024	2025
Opening - Surplus (deficit)	483,492	(211,136)	(250,561)	(40,671)	193,935	453,473	739,688
Reserves from (to) Operations	(694,628)	(39,425)	209,890	234,606	259,539	286,215	(468,451)
Year End - Surplus (deficit)	**(211,136)**	**(250,561)**	**(40,671)**	**193,935**	**453,473**	**739,688**	**271,237**

The reserve begins with a substantial surplus in early 2019 but ends 2019 with a projected deficit of $211,136 due to the projected rehabilitation of the wastewater plant. The deficit means that a loan of the amount shown in deficit is needed in that year. The reserve is in surplus by the end of 2022 and remains in surplus through 2080. The reserve balances to from 2018 to 2080 are set out in Appendix 2.

9.5 Proposed Wastewater Rate Surcharge

The rate surcharge is computed by comparing the increase in the water system user fees with the increase in the wastewater system user fees. The water user fees rose 4.5% per annum from 2019-24 and 3.59% from 2025 to 2030. Wastewater user fees are projected to increase at 12% per annum in 2019-20 and about 6% from 2021 onward to 2030. The proposed surcharges are shown in Table 9.

Table 9 Proposed West Lorne Wastewater Surcharge 2019-2030 in Percent

West Lorne	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
WW Surcharge	130%	143%	157%	161%	164%	166%	169%	173%	177%	181%	185%	190%	194%

9.6 Sample Wastewater Bills for Various User Groups

The bills for the current rate structure with the fixed component and a variable component is utilized from 2019 to 2025, with tenants paying the bi-monthly fixed charge. A projected bi-monthly water bill for various types of water users is set out in Table 10.

Table 10 West Lorne Hypothetical Wastewater Bi-Monthly Projected Water Bills 2018-25

User Category - Bi Monthly Bill	2018	2019	2020	2021	2022	2023	2024	2025
Renters	49.50	56.85	65.29	69.93	74.39	78.91	83.69	88.79
Sindle Person - 16.7 M3 bi -monthly	76.59	91.36	104.92	112.38	119.56	126.81	134.50	142.69
Family - Using 60 M3 bi -monthly	147.04	181.09	207.97	222.77	236.98	251.36	266.61	282.84
Business Using 200 M3 bi monthly	374.62	470.99	540.91	579.38	616.35	653.75	693.41	735.62

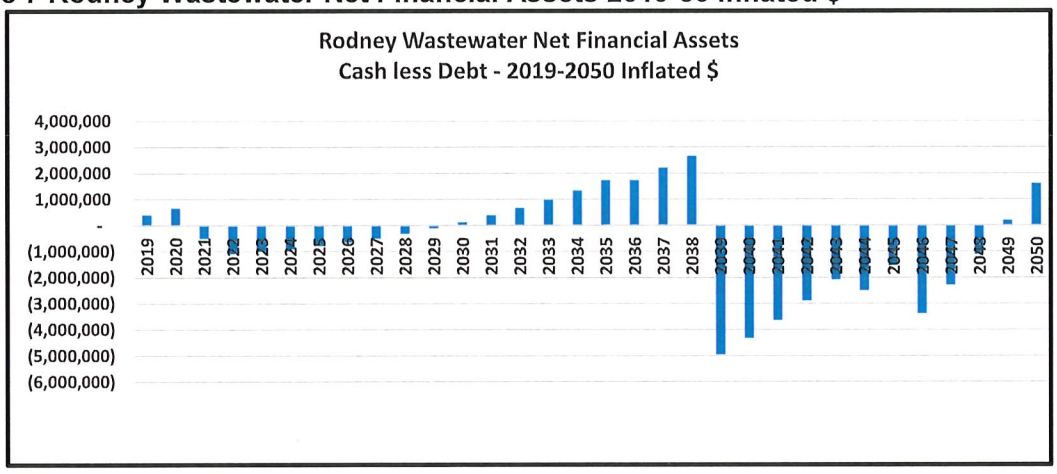
Note: the wastewater bill is caculated by multiplying the water bill for the user by the wastewater rate surcharge

A number of hypothetical user groups were selected to determine the impacts of the proposed rate. The renter assessment is applied to the bill of the owner of a multi-unit building and is proposed to be $56.85 every two months later in 2019, and this would rise to $88.79 bi-monthly by 2025. For a metered residential customer such as a single person or a frugal senior using a 16.7 cubic metres every two months, the 2019 bi-monthly wastewater bill will be $91.36, rising to $142.69 in 2025. For a family using 60 cubic metres every two months, the 2019 wastewater bill would be $181.09 in later 2019, rising to $282.84 in 2025. A medium sized restaurant, such as Tim Hortons, would see a wastewater bill every two months of $470.99 in 2019 and $735.62 in 2025.

10. WASTEWATER SYSTEM NET FINANCIAL ASSETS 2019-2050 INFL. $

10.1 Rodney Wastewater Net Financial Assets

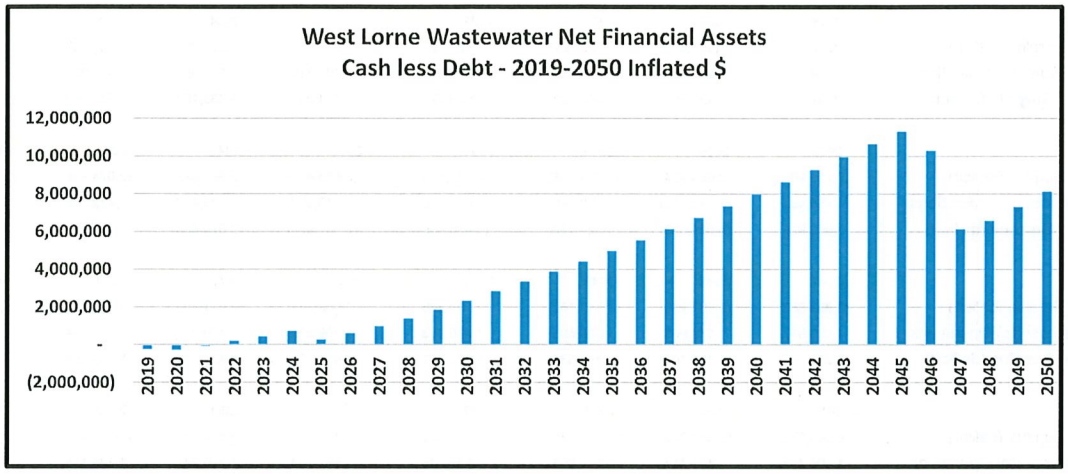
Figure 7 Rodney Wastewater Net Financial Assets 2019-50 Inflated $



The Rodney wastewater system faces periods of debt as it refurbishes and renews most of the system assets in the next 30 years. The pre-2039 debt appears to be quite manageable, provided the rate recommendations are adhered to, while the more substantial pain of the debt from 2039 to 2046 might be made more manageable by staggering and spreading out as much as possible the projected capital renewal. By the early 2050s, the system is in surplus and is projected to stay that way through 2080.

10.2 West Lorne Net Financial Assets

Figure 8 West Lorne Net Financial Assets 2019-2050 – Inflated $



West Lorne will have a small debt over the next three years. From 2022 onward, the financial assets are in surplus and build up to cover the renewal of the collection system in the late 2040s and then remains in surplus until through 2080.

APPENDIX 1 RODNEY WASTEWATER CAPITAL RENEWAL RESERVE 2019 – 2080 INFLATED $

	2020	2021	2022	2023	2024	2025	2026	2027
Opening Surplus (deficit)	396,612	661,875	(493,123)	(1,087,728)	(1,004,004)	(902,935)	(783,173)	(648,280)
Reserves from (to) Operations	265,263	(1,154,998)	(594,605)	83,724	101,069	119,762	134,893	156,408
Year End Surplus (deficit)	661,875	(493,123)	(1,087,728)	(1,004,004)	(902,935)	(783,173)	(648,280)	(491,872)
	2029	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Opening Surplus (deficit)	(312,321)	(107,891)	123,267	383,122	673,773	974,083	1,333,169	1,730,193
Reserves from (to) Operations	204,430	231,158	259,856	290,651	300,310	359,086	397,024	(5,886)
Year End Surplus (deficit)	(107,891)	123,267	383,122	673,773	974,083	1,333,169	1,730,193	1,724,307
	2038	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**
Opening Surplus (deficit)	2,205,463	2,660,924	(4,954,888)	(4,324,139)	(3,636,469)	(2,887,973)	(2,074,495)	(2,497,391)
Reserves from (to) Operations	455,461	(7,615,812)	630,749	687,670	748,497	813,477	(422,896)	956,967
Year End Surplus (deficit)	2,660,924	(4,954,888)	(4,324,139)	(3,636,469)	(2,887,973)	(2,074,495)	(2,497,391)	(1,540,424)
	2047	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**
Opening Surplus (deficit)	(3,383,883)	(2,287,235)	(1,113,167)	193,338	1,602,241	3,011,799	4,421,610	5,831,254
Reserves from (to) Operations	1,096,647	1,174,068	1,306,505	1,408,903	1,409,558	1,409,811	1,409,644	1,409,040
Year End Surplus (deficit)	(2,287,235)	(1,113,167)	193,338	1,602,241	3,011,799	4,421,610	5,831,254	7,240,294
	2056	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**	**2063**
Opening Surplus (deficit)	8,648,274	10,054,720	11,459,138	12,730,530	14,129,325	15,524,482	16,915,422	18,301,540
Reserves from (to) Operations	1,406,446	1,404,417	1,271,393	1,398,795	1,395,158	1,390,940	1,386,118	801,360
Year End Surplus (deficit)	10,054,720	11,459,138	12,730,530	14,129,325	15,524,482	16,915,422	18,301,540	19,102,899
	2065	**2066**	**2067**	**2068**	**2069**	**2070**	**2071**	**2072**
Opening Surplus (deficit)	20,477,463	21,845,244	23,205,534	24,557,600	25,900,677	27,233,972	28,556,660	29,867,884
Reserves from (to) Operations	1,367,781	1,360,290	1,352,066	1,343,077	1,333,295	1,322,688	1,311,224	1,298,870
Year End Surplus (deficit)	21,845,244	23,205,534	24,557,600	25,900,677	27,233,972	28,556,660	29,867,884	31,166,754
	2074	**2075**	**2076**	**2077**	**2078**	**2079**	**2080**	
Opening Surplus (deficit)	32,452,345	33,723,697	34,979,811	36,219,653	37,442,146	37,442,147	37,442,148	
Reserves from (to) Operations	1,271,352	1,256,115	1,239,842	1,222,493	879,990	879,991	879,992	
Year End Surplus (deficit)	33,723,697	34,979,811	36,219,653	37,442,146	38,322,136	38,322,137	38,322,138	

APPENDIX 2 WEST LORNE WASTEWATER RESERVE 2020-2080 INFLATED $

	2020	2021	2022	2023	2024	2025	2026	2027
Opening Surplus (deficit)	(211,136)	(250,561)	(40,671)	193,935	453,473	739,688	271,237	616,481
Reserves from (to) Operations	(39,425)	209,890	234,606	259,539	286,215	(468,451)	345,244	376,492
Year End Surplus (deficit)	(250,561)	(40,671)	193,935	453,473	739,688	271,237	616,481	992,974
	2029	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Opening Surplus (deficit)	1,404,209	1,852,549	2,340,507	2,841,028	3,354,423	3,881,008	4,421,109	4,975,058
Reserves from (to) Operations	448,341	487,958	500,521	513,394	526,585	540,101	553,950	568,138
Year End Surplus (deficit)	1,852,549	2,340,507	2,841,028	3,354,423	3,881,008	4,421,109	4,975,058	5,543,197
	2038	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**
Opening Surplus (deficit)	6,125,873	6,723,443	7,336,273	7,964,736	8,609,214	9,270,100	9,947,794	10,642,705
Reserves from (to) Operations	597,570	612,830	628,463	644,479	660,886	677,694	694,911	655,001
Year End Surplus (deficit)	6,723,443	7,336,273	7,964,736	8,609,214	9,270,100	9,947,794	10,642,705	11,297,706
	2047	**2048**	**2049**	**2050**	**2051**	**2052**	**2053**	**2054**
Opening Surplus (deficit)	10,292,159	6,133,556	6,583,105	7,314,232	8,121,611	8,949,358	9,797,966	10,667,937
Reserves from (to) Operations	(4,158,603)	449,549	731,127	807,379	827,747	848,607	869,972	891,852
Year End Surplus (deficit)	6,133,556	6,583,105	7,314,232	8,121,611	8,949,358	9,797,966	10,667,937	11,559,789
	2056	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**	**2063**
Opening Surplus (deficit)	10,511,096	11,448,302	12,284,833	13,269,602	14,279,012	15,313,653	16,374,130	17,461,060
Reserves from (to) Operations	937,206	836,532	984,769	1,009,410	1,034,641	1,060,477	1,086,930	1,114,015
Year End Surplus (deficit)	11,448,302	12,284,833	13,269,602	14,279,012	15,313,653	16,374,130	17,461,060	18,575,075
	2065	**2066**	**2067**	**2068**	**2069**	**2070**	**2071**	**2072**
Opening Surplus (deficit)	19,663,611	20,833,749	22,032,955	23,261,918	24,521,346	25,811,961	27,134,499	28,489,717
Reserves from (to) Operations	1,170,138	1,199,206	1,228,964	1,259,428	1,290,614	1,322,539	1,355,218	1,388,669
Year End Surplus (deficit)	20,833,749	22,032,955	23,261,918	24,521,346	25,811,961	27,134,499	28,489,717	29,878,386
	2074	**2075**	**2076**	**2077**	**2078**	**2079**	**2080**	
Opening Surplus (deficit)	10,635,640	12,093,593	13,587,417	15,117,951	16,686,059	16,686,060	16,686,061	
Reserves from (to) Operations	1,457,954	1,493,823	1,530,535	1,568,107	1,189,330	1,645,910	1,686,179	
Year End Surplus (deficit)	12,093,593	13,587,417	15,117,951	16,686,059	17,875,388	17,875,389	17,875,390	