November 2019

Woodcreek Park Wastewater Local Service Asset Management Plan

SUNSHINE COAST REGIONAL DISTRICT

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Version Log

This document was carefully prepared so that it can be maintained as a living document; a document that is continually edited and updated. Through the various edits and updates, this document may evolve and be expanded as needed. This may be as a result of infrastructure replacement or could be due to changes in regulatory requirements, technology, staffing, or environmental conditions. Regardless of the reason, updates to this asset management plan will be key to the ongoing operation of the Woodcreek Park wastewater local service.

Version	Revised By	Date	Description
1	D. Joseph	November 28, 2019	Final report for Board of Directors approval

Acknowledgements

Completion of this Asset Management Plan would not have been possible without contributions and support from the following staff:

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1. Local Service Information

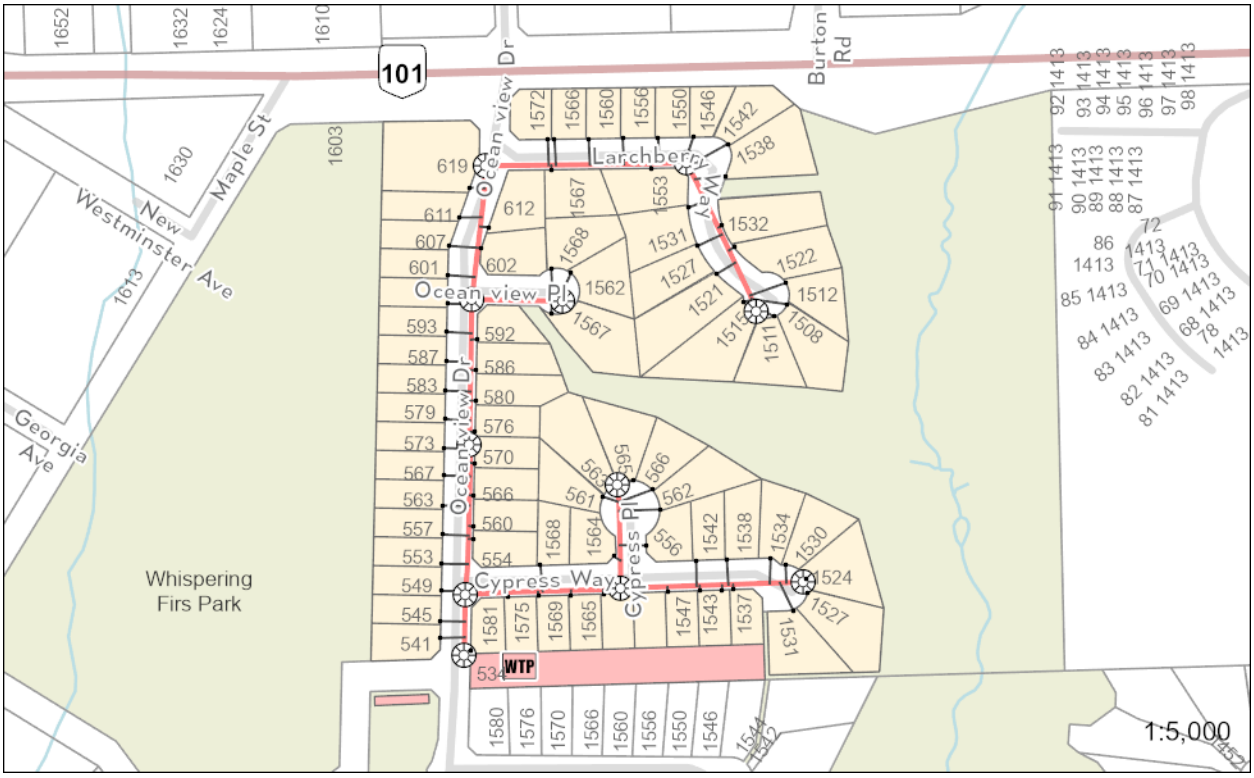

Figure 1 – Map of Wastewater Local Service Area and Infrastructure

- Address: 534 Oceanview Drive
- Original Construction: 1980
- Major Upgrades: 1999 (Replacement of treatment and disposal systems)
- Taken over by Sunshine Coast Regional District (SCRD): 1992
- Establishment of Local Service: 1996
- Treatment System Owner: SCRD
- Number of Fronting Parcels: 73 Residential
- Number of Users: 73
- Treatment Process: Recirculating gravel filter
- Treatment Permit #: PE-4183
- Permitted Discharge Amount: 75 m³/day
- Regulatory Authority: Ministry of Environment Permit
- Effluent Receiving: Ground
- EOCP Classification: SWWS-M (Small Wastewater Systems – Mechanical)
- Statutory Right of Ways: None required

1.1. Development Details

The Woodcreek Park wastewater local service area is located in the Elphinstone Electoral Area (Area E) of the SCRD. The treatment and disposal systems are located in a vacant parcel of land used exclusively for the processing of wastewater, and is located to the south of the houses within the service area.

The community wastewater systems were constructed in 1980 to assist with the development of new single-family dwellings in the neighbourhood. Many of the parcels in this service area were identified as being not large enough for constructing an onsite drainfield. The systems were managed by the developer until 1992 when the SCRD began overseeing the service. The original treatment plant failed in 1991 and a pollution abatement order was issued in October 1992.

1.2. Established Bylaws

There have been various bylaws adopted by the SCRD Board of Directors that are relevant to the Woodcreek Park wastewater local service, as listed in Table 1.

Table 1 – Established Bylaws Pertaining to the Wastewater Local Service

Bylaw No.	Bylaw Name	Purpose
416	Woodcreek Park Sewer Loan Authorization (1995)	Authorizes the borrowing of funds for the construction of the replacement sewage treatment plant and drainfield.
1022	Woodcreek Park Sewer Local Service (1995)	Established a local service for the purpose of providing sewer service.
430.10	Woodcreek Park Sewer User Rates (2019)	Establishment of, and subsequent updates thereto, sewage treatment frontage and user charges.
665	Woodcreek Park Waste Water Plant Capital Reserve Fund (2012)	Established a capital reserve fund.
666	Woodcreek Park Waste Water Plant Operating Reserve Fund (2012)	Established an operating reserve fund.

2. Description of Assets

The following sections outline the current state of the wastewater systems by providing answers to the following questions:

- What do we own?
- Where is it?
- What is its condition?
- What is its useful life?
- What is its value?

2.1. Treatment and Disposal Systems

Treatment of the influent takes place in an underground cast-in-place concrete tank with a series of divider walls forming individual treatment sections within. The top of the tank is concrete with built-in ground level access lids. Adjacent to the tank is a site building that houses the electrical and mechanical equipment.

Wastewater enters the septic tanks, flows through inline filters to a recirculation tank which doses the sand filter. From the sand filter the effluent enters the discharge chamber and is pumped to the drainfield. Currently the sand filter has not been functioning and is bypassed in the treatment process.

Once the effluent has been pumped from the discharge chamber, it passes through the flow meter and sampling manhole where it can be diverted to three separate drainfields. Two of the drainfields are located in the same parcel as the treatment plant and the other is located on the west side of Oceanview Drive, south of McIntyre Road. The fields provide effluent disposal through a combined 850 m of perforated drainage pipe.

2.2. Collection System

The collection system has approximately 940 m of 150 mm diameter, asbestos cement (AC) gravity mains, and eleven manholes. The infrastructure depth varies between 1.72 m and 4.70 m below grade.

2.3. Asset Accessibility

While there are no surface related accessibility issues with the infrastructure at Woodcreek Park, the infrastructure will be challenging to access in certain locations due to its depth below grade.

2.4. Asset Condition

Wastewater treatment system condition was determined by staff based on several factors.

- Previous or immanent failure of the system;
- Frequency of system repairs;
- Age of system; and
- Ability to regularly meet effluent quality regulations.

Based on these factors each system in the local service area was assigned a condition rating from excellent to poor. An excellent condition is assigned to systems in near new condition, good to systems with few minor defects, fair to systems with moderate defects or signs of aging, and poor to systems that cannot currently function as designed, or will soon cease functioning without repair, due to flow volumes, defects, or aging.

Treatment of the wastewater has been significantly affected by infiltration in the collection system and the nonfunctioning sand filter. In 2018, the treatment plant had numerous instances of being in non-compliance with the water quality requirements for effluent water. The treatment system is in poor condition.

A percolation test on the drainfield was conducted in 2019 to assess the condition of the perforated pipe (the test determines the water absorption rate at an exposed section of the pipe). While there has been no surface issues noted with the drainfield, and the drainfield is well within its Estimated Useful Life (EUL), years of effluent distribution after bypassing the nonfunctioning sand filter raised concern for potential failure in the near future. The results of the percolation test revealed no issues with percolation on all four of the runs tested. The disposal system is in good condition.

The condition of the collection system was assessed in 2018 through CCTV inspections. During the inspection one pipe segment and one manhole were observed to have moderate defects and seven segments having minor defects (only two segments were observed to have no defects). In addition, there is an infiltration problem with the service connection inspection chambers along Cypress Way as a result of being damaged by a third-party. The overall condition of the collection system is fair and can be upgraded upon completion of the necessary repairs.

2.5. Asset Replacement Value

It is expected that the treatment process and drainfield configuration that were installed 20 years ago would still meet regulatory requirements once they are due

for replacement. The imminent replacement of the inoperable sand filter is necessary to bring the treatment plant back in to regulatory compliance and has been valued separately from the rest of the treatment system.

Replacement value for the collection system was estimated based on individual component replacement values. The depth of some of the infrastructure contributed to higher than average replacement costs.

Table 2 – Asset Replacement Value Summary

Asset Type	Replacement Cost (2018 $)	Year Installed	Estimated Useful Life	Remaining Useful Life
Treatment System	$ 1,236,338	1999	50	30
Sand Filter	$ 254,258[1]	1999	40	Nonfunctioning[2]
Drainfield (Primary)	$ 424,987	1999	40	20
Drainfield (Auxiliary)	$ 35,022	1999	40	20
Collection System	$ 1,254,165	1980	85	46

3. Operations and Maintenance (O&M) Plan

Operations and maintenance (O&M) are the activities that ensure the wastewater systems are able to continue to function as designed throughout their EUL. These activities include routine inspections and readings, unforeseen repairs, effluent sampling, and ongoing condition assessments. User fees and parcel taxes are collected annually to fund these activities.

As discussed in the Wastewater Service Review, the current fees and taxes are combined and can be used to fund the operational expenditures for the year. The recommendation in the Wastewater Service Review is for user fees to provide sufficient revenue for operational expenditures and for parcel taxes to be invested in capital renewal and replacement.

[1] A 2019 budget proposal was approved for an engineering review and detailed design for a remediation solution for the sand filter. This project will provide the SCRD with a better understanding of the cost to replace the sand filter, however the work had not been completed prior to the preparation of this plan. The 2018 Replacement Cost was determined by using an estimate from 2014.
[2] This asset was installed at the same time as the treatment plant but has failed and is currently out of commission.

3.1. Current O&M Fees

The users of the Woodcreek Park wastewater local service are charged user fees of $500.00 per year (including a 25% increase in user fees in 2019) and those properties within the service area boundary as outlined in Bylaw No. 1022 are charged $102.00 in parcel tax per year (including a 2% parcel tax increase in 2019).

3.2. Current O&M Budget

The budgeted and actual expenditures of the Woodcreek Park wastewater local service from 2015 to 2018 are shown in Table 3. The breakdown between expenditure related to the collection system and the treatment and disposal systems has not been recorded. As there have been no recent issues identified with the collection system, all expenditure is assumed to be for the treatment and disposal systems.

Table 3 – Budgeted and Actual Operations and Maintenance Expenditures

Expenditures	2015	2016	2017	2018	Average
Budget	$ 32,252.00	$ 31,066.00	$ 29,791.00	$ 30,411.00	$ 30,880.00
Actual	$ 19,667.00	$ 14,672.00	$ 25,577.52	$ 32,679.04	$ 23,148.89
Variance	$ 12,585.00	$ 16,394.00	$ 4,213.48	$ (2,268.04)	$ 7,731.11

Overall, the operations budget decreased by 6% between 2015 and 2018, while the actual expenditure increased by 66% during the same period of time. The majority of the actual expenditure (53%) was to pay for staffing expenses of operational and administrative staff, while other significant expenditures include contracted services (24%) and equipment repairs and maintenance (14%).

The irregularity noted in this budget review, 2018, incurred costs in excess of the budgeted amount due to regular work on the recirculating sand filter, attempting to make it function once again.

3.3. Potential O&M Budget

The potential O&M budget was created based on an optimal level of service for the systems at Woodcreek Park local service area. Similar to the existing O&M budget, staff wages account for the majority of the potential annual O&M budget for Woodcreek Park. The required semi-weekly, monthly, quarterly, semi-annual, and annual tasks are primarily completed by a Utility Technician.

Significant expenses in the potential operating budget include:

- Staffing expenses, consisting of:
  - O&M staffing requirement;
  - Administration of the wastewater system by Utilities Services staff;
  - SCRD Administration Services contribution;
- Proportioned charges for non-annual materials replacement;
- Proportioned charges for non-annual contracted services;
- B.C. Hydro utility charges; and
- Proportioned share of service vehicles, tools, and miscellaneous expenses.

With the inclusion of all ancillary charges, the potential operating budget for Woodcreek Park wastewater local service is $48,983.00. The potential user fee for the 73 users in this local service area is $671, a 34% increase from 2019 rates. This increase is primarily attributed to the separation of property tax revenue from the operating budget and improving the level of service delivered to this local service area.

4. Capital Plan

Capital expenditure is required for the periodic renewal or replacement of wastewater systems or system components. A capital plan considers many of the topics already covered in this plan including asset replacement values and EULs, asset condition, and following a well-developed O&M plan.

The SCRD does not have a long-term capital funding plan in place for the wastewater infrastructure at Woodcreek Park.

4.1. Reserve Balances

As of the end of 2018, there was $24,947.10 in capital reserves and $158,382.20 contributed to operating reserves. Under the existing method of revenue collection and use, these reserves could be combined to invest in capital renewal or replacement projects if required.

There is currently no requirement for Woodcreek Park to have a set level, by either denomination or percentage, of reserves in place. Based on the current reserve balance and 2019 budget transfers, Woodcreek Park's reserves are 5% of the estimated replacement value of the infrastructure.

4.2. Potential Capital Budget

Budget models considering four different time frames (10, 20, 50, and 80 year periods) were prepared for consideration, each with varying impact on parcel tax and with different systems requiring replacement over the selected time frame. For each model two plans were prepared: a 10% parcel tax increase every five years, or a fixed parcel tax throughout the model time frame.

Each model factors in funding the full cost of the infrastructure requiring replacement within the life of the model. Any debt incurred during the timeframe of the model is paid off in full with interest and the model terminates with a reserve balance equal to 10% of the projected value of the infrastructure in the last year of the model.

The highlighted budget plans represent the shortest term in which all infrastructure (i.e. the treatment, disposal, and collection systems) will need to be replaced.

Table 4 – Potential Capital Budget Options Based on Model and Payment Method

Capital Budget	Model	Infrastructure Replaced	Payment Method	Total Revenue	Parcel Tax (Year 1)
Plan 1	80-Year	Treatment System (2) Drainfield (2) Collection System (1)	Even Annual Contribution	$ 33,382,400	$ 5,716
Plan 2	80-Year	Treatment System (2) Drainfield (2) Collection System (1)	10% Increase Every Five Years	$ 47,780,786	$ 3,641
Plan 3	50-Year	Treatment System (1) Drainfield (1) Collection System (1)	Even Annual Contribution	$ 12,154,000	$ 3,330
Plan 4	50-Year	Treatment System (1) Drainfield (1) Collection System (1)	10% Increase Every Five Years	$ 14,050,434	$ 2,415

Capital Budget	Model	Infrastructure Replaced	Payment Method	Total Revenue	Parcel Tax (Year 1)
Plan 5	20-Year	Treatment System (0) Drainfield (1) Collection System (0)	Even Annual Contribution	$ 1,757,800	$ 1,204
Plan 6	20-Year	Treatment System (0) Drainfield (1) Collection System (0)	10% Increase Every Five Years	$ 1,797,923	$ 1,061
Plan 7	10-Year	Treatment System (0) Drainfield (0) Collection System (0)	Even Annual Contribution	$ 598,900	$ 820
Plan 8	10-Year	Treatment System (0) Drainfield (0) Collection System (0)	10% Increase Every Five Years	$ 601,650	$ 785

In addition to the replacement of the wastewater systems, other items that appear in the capital budget include:

- Replacement of the recirculating sand filter;
- Replacement of the privacy fence between the residential properties and the drainfield; and
- Proportioned short-term debt payments for the purchase and replacement of two service vehicles.

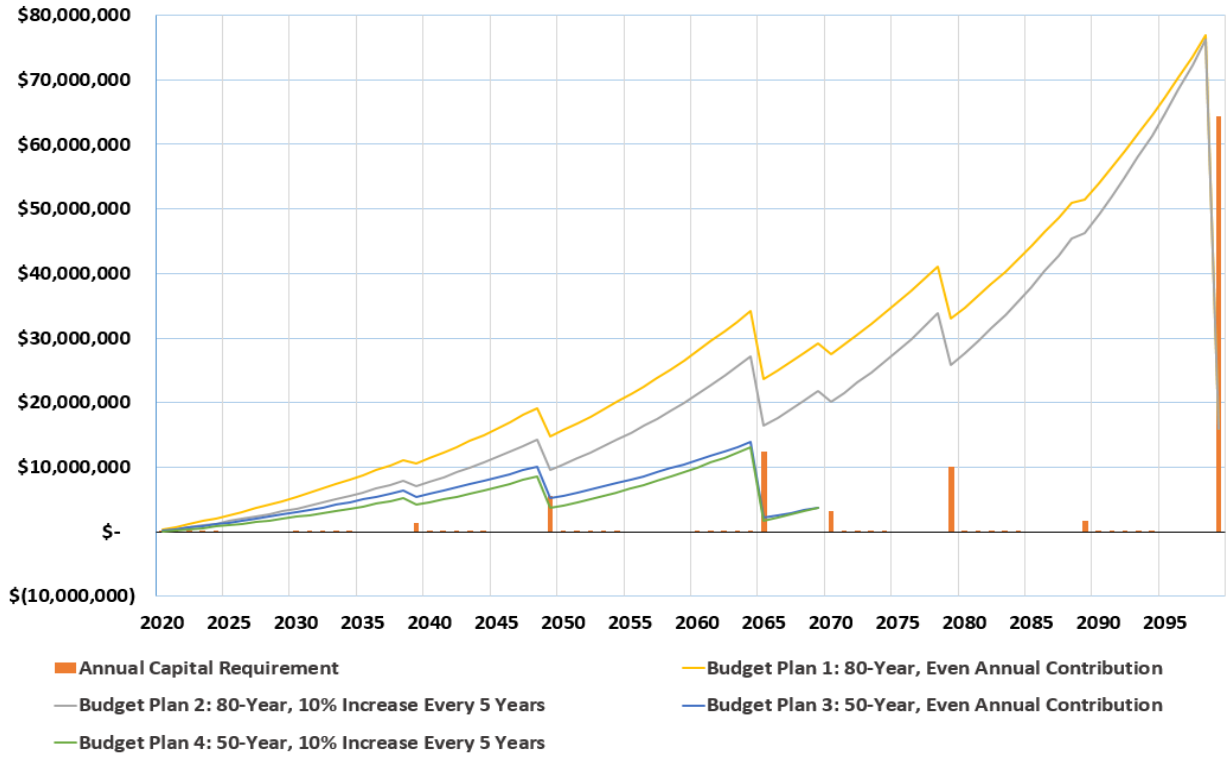

Figure 2 – Wastewater Local Service 50-Year and 80-Year Capital Plans

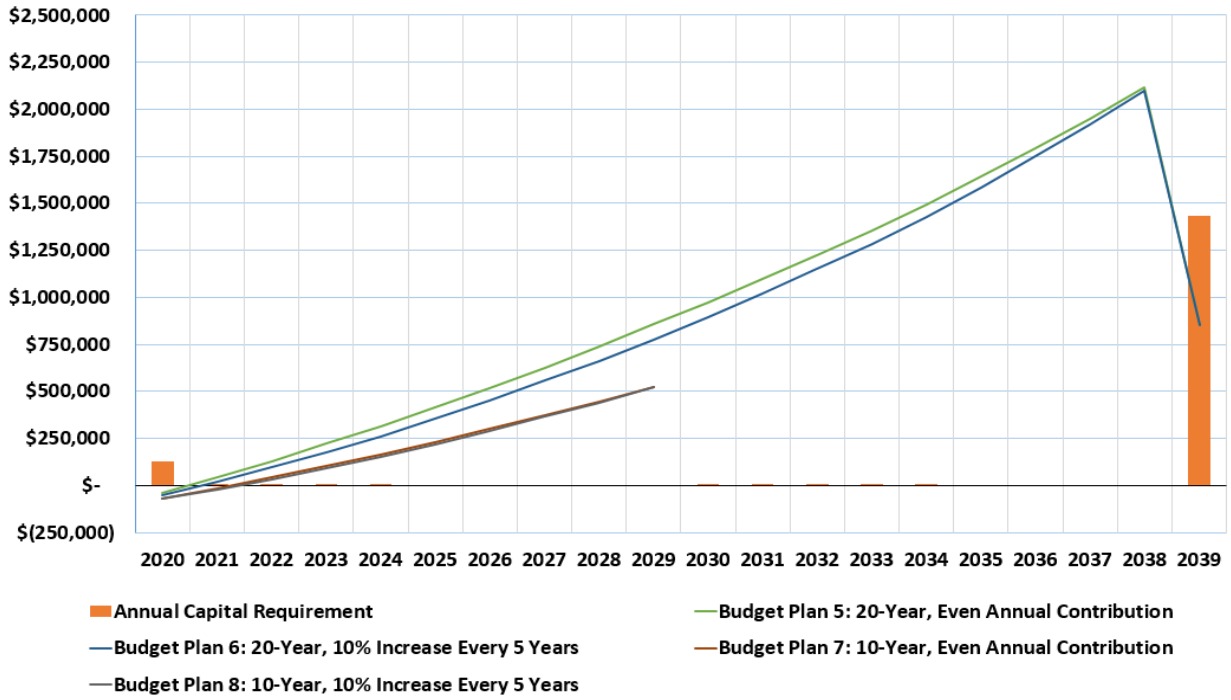

Figure 3 – Wastewater Local Service 10-Year and 20-Year Capital Plans

5. Additional Local Service Improvement Actions

Additional operational work is required in the Woodcreek Park wastewater local service area that falls outside of the typical operational and maintenance plan. These items have been listed due to the potential financial impact that they may have on the users and fronting properties of the local service.

Table 5 – Local Service Improvement Actions

Action Item	Target Year	Cost Estimate	Result
Repair the service connection inspection chambers that were damaged by a third-party to rectify the infiltration issues affecting the plant performance.	2020	$ 6,000	To be determined.
Repair the moderate rated defects in the collection system noted in the CCTV inspection.	2021-2023	$ 4,000	To be determined.

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