November 2019

Jolly Roger 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 Jolly Roger 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

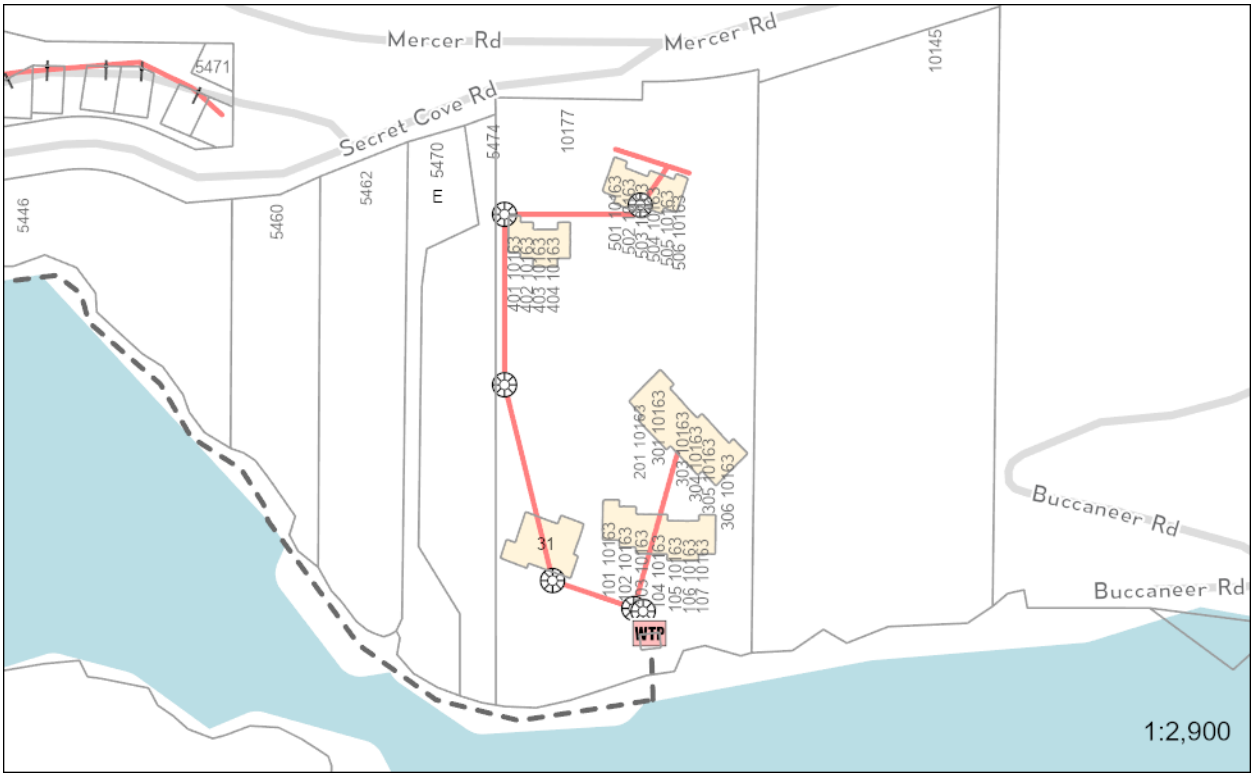

Figure 1 – Map of Wastewater Local Service Area and Infrastructure

- Address: 10177 Mercer Road
- Original Construction: 1979
- Taken over by Sunshine Coast Regional District (SCRD): 1985
- Establishment of Local Service: 1996
- Major Upgrades: None to date
- Treatment System Owner: SCRD (on private land)
- Number of Fronting Parcels: 30 Residential, 1 restaurant
- Number of Users: 31
- Treatment Process: NPS sequencing batch reactor
- Treatment Permit #: PE-4769
- Permitted Discharge Amount: 57 m³/day
- Regulatory Authority: Ministry of Environment Permit
- Effluent Receiving: Ocean
- EOCP Classification: Small Wastewater System – Mechanical (SWWS-M)
- Statutory Right of Ways: None in place; required for access on to strata common property and over neighbouring property to access treatment plant

1.1. Development Details

The Jolly Roger wastewater local service area is located in the Halfmoon Bay Electoral Area (Area B) of the SCRD. The treatment system is located to the south of the strata property, near the waterfront, and is accessed from the driveway leading to the marina.

The community wastewater systems were constructed in 1979 to assist with the development of new multi-family dwellings in the strata development. The individual strata parcels in the Jolly Rogers development are too small for an onsite septic system. The systems were managed by the developer until 1985 when the SCRD began overseeing the service.

1.2. Established Bylaws

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

Table 1 – Established Bylaws Pertaining to the Wastewater Local Service

Bylaw No.	Bylaw Name	Purpose
232A.1	Package Plants Service Unit (1985)	Established a designated area for the purpose of providing sewage collection, treatment and disposal within Areas A, B and E.
1026	Sewage Treatment Facilities Local Service (1996)	Converted the Package Plants Service Unit to a local service.
428.19	Sewage Treatment Facilities Service Unit (2019)	Establishment of, and subsequent updates thereto, sewage treatment facilities frontage and user charges.
512	Sewage Treatment Facilities Reserve Fund (2001)	Established a capital reserve fund for sewage treatment facilities.
608	Sewage Treatment Facilities Service Operating Reserve Fund (2007)	Established an operating reserve fund for sewage treatment facilities.

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 above ground fiberglass tank with a series of divider walls forming individual treatment sections within. The top of the tank is a fiberglass lid with fiberglass hatches that open into each section.

Wastewater enters into a solids retention tank where fluid has to pass through a screened section into the aeration tank. Treatment is conducted in batches controlled by float switches, timers and levels. After aeration treatment, effluent is transferred into final clarifier for settling and discharge to the ocean. Odors are collected from each treatment tank through a piping manifold and sent through an activated carbon filter via an inline centrifugal fan.

The effluent from the Jolly Roger wastewater treatment local service area is diverted along the shoreline in a 200 mm diameter, high density polyethylene (HDPE) pipe that connects with 200 mm diameter HDPE outfall pipe from the Secret Cover wastewater treatment local service area. The two local service areas discharge their effluent though a shared outfall that is discharged approximately 1070 m offshore at a depth of 26 m in the open ocean.

2.2. Collection System

The SCRD is not responsible for the collection system infrastructure at the Jolly Roger wastewater local service area.

2.3. Asset Accessibility

There are multiple accessibility concerns regarding infrastructure maintenance and replacement at Jolly Roger.

- The land that the treatment system is on is not owned by the SCRD. Additionally, a Statutory Right of Way or memorandum of understanding could not be located that authorizes the SCRD to enter the property to construct, install, maintain, and operate a Regional District wastewater system.

- The treatment plant is in an undesirable location; it is situated adjacent to a cliff and at the edge of a raised platform, which only allows for access to the tanks from one side.
- Access to the current treatment system requires crossing the neighbour's property. The SCRD is not named on the Statutory Right of Way.

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.

Based on the estimated useful life (EUL), the community septic tank has approximately 20% of its lifespan remaining. There were no reported structural concerns noted when the tank was last pumped out in 2019. The treatment system is in fair condition.

The ocean outfall is in good condition, however the anchors have been replaced at several locations in recent years. This is largely the result of boat anchors getting caught under the outfall and damaging the infrastructure.

2.5. Asset Replacement Value

It is expected that the treatment process that was installed 40 years ago will not be permitted once the treatment plant is due for replacement. A replacement value was estimated based on the treatment system at Roberts Creek Co-Housing wastewater local service area.

At Roberts Creek Co-Housing, wastewater enters the septic tanks where primary solids settle. Aeration occurs as aerated water is cascaded over honeycomb media. Effluent from the trickle filter is pumped through sand filters into the final clarifier before disposal.

The treatment process from Roberts Creek Co-Housing was chosen for determining a replacement cost for Jolly Roger based on a similar number of users and it is a process that is commonly used in new development. An additional factor was applied to the replacement cost from Roberts Creek Co-Housing due to the difficulty presented by the topography of the land. A feasibility study should be completed by a professional engineer to determine the treatment and disposal process best suited for the conditions at Jolly Roger wastewater local service.

Financial contributions to the ocean outfall is evenly shared between Jolly Roger wastewater local service area and Secret Cove wastewater local service area; only Jolly Rogers' share has been included in Table 2.

Table 2 – Asset Replacement Value Summary

Asset Type	Replacement Cost (2018 $)	Year Installed	Estimated Useful Life	Remaining Useful Life
Treatment System	$ 772,619	1979	50	10
Ocean Outfall	$ 410,364	1979	85	45

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.

3.1. Current O&M Fees

The users of the Jolly Roger wastewater local service are charged user fees of $412.50 per year (including a 25% increase in user fees in 2019) and those properties within the service area boundary as outlined in Bylaw No. 1026 are charged $20.40 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 Jolly Roger wastewater local service from 2015 to 2018 are shown in Table 3.

Table 3 – Budgeted and Actual Operations and Maintenance Expenditures

Expenditures	2015	2016	2017	2018	Average
Budget	$ 11,886.00	$ 11,609.00	$ 11,052.00	$ 11,315.00	$ 11,465.50
Actual	$ 5,758.00	$ 8,174.00	$ 22,690.00	$ 6,605.99	$ 10,807.00
Variance	$ 6,128.00	$ 3,435.00	$(11,638.00)	$ 4,709.01	$ 658.50

Overall, the operations budget decreased by 5% between 2015 and 2018. The actual expenditure increased by 15% during the same period of time. The majority of the actual expenditure (44%) was to pay for staffing expenses of operational and administrative staff, while other significant expenditures include equipment repairs and maintenance (15%) and B.C. Hydro utility payment (18%).

The irregularity in this budget review, 2017, incurred costs in access of the budgeted amount due to the outfall sustaining a catastrophic failure. The damage to the outfall appeared to have been caused by a vessel anchor catching the pipe and dragging it. Approximately half of the 2017 budget (48%) went to paying contracted services to repair the damaged outfall.

3.3. Potential O&M Budget

The potential O&M budget was created based on an optimal level of service for the systems at Jolly Roger local service area. Similar to the existing O&M budget, staff wages account for the majority of the potential annual O&M budget for Jolly Roger. The required 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 equipment replacement;

- Proportioned charges for non-annual contracted services;
- B.C. Hydro utility charges; and
- Proportioned share of service vehicles, tools, and miscellaneous expenses.

Future replacement of the treatment system may result in an increased O&M budget. The treatment system mentioned in the Section 2.5 would increase the required O&M hours by as much as 30%.

With the inclusion of ancillary charges, the potential operating budget for Jolly Roger wastewater local service is $21,049.00. The potential user fee for this budget is $679, a 65% increase from 2019 rates. Improving the level of service delivered to this local service area is the primary contributing factor for the significant increase in user fees.

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 Jolly Roger.

4.1. Reserve Balances

As of the end of 2018, there was $35,498.24 in capital reserves and $17,020.67 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 Jolly Roger to have a set level, by either denomination or percentage, of reserves in place. Based on the current reserve balance and 2019 budget transfers, Jolly Roger'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 value of the infrastructure in the last year of the model.

The highlighted budget plans represent the model in which all infrastructure (i.e. the treatment, disposal, and collection systems) will all 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) Ocean Outfall (1)	Even Annual Contribution	$ 11,251,600	$ 4,537
Plan 2	80-Year	Treatment System (2) Ocean Outfall (1)	10% Increase Every Five Years	$ 16,119,859	$ 2,893
Plan 3	50-Year	Treatment System (1) Ocean Outfall (1)	Even Annual Contribution	$ 4,157,250	$ 2,682
Plan 4	50-Year	Treatment System (1) Ocean Outfall (1)	10% Increase Every Five Years	$ 4,819,876	$ 1,951
Plan 5	20-Year	Treatment System (1) Ocean Outfall (0)	Even Annual Contribution	$ 1,544,700	$ 2,491
Plan 6	20-Year	Treatment System (1) Ocean Outfall (0)	10% Increase Every Five Years	$ 1,581,421	$ 2,198
Plan 7	10-Year	Treatment System (1) Ocean Outfall (0)	Even Annual Contribution	$ 1,272,600	$ 4,105
Plan 8	10-Year	Treatment System (1) Ocean Outfall (0)	10% Increase Every Five Years	$ 1,278,375	$ 3,927

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

- One-time payment for the replacement of the remaining ocean outfall anchors; and
- Proportioned short-term debt payments for the purchase and replacement of two service vehicles.

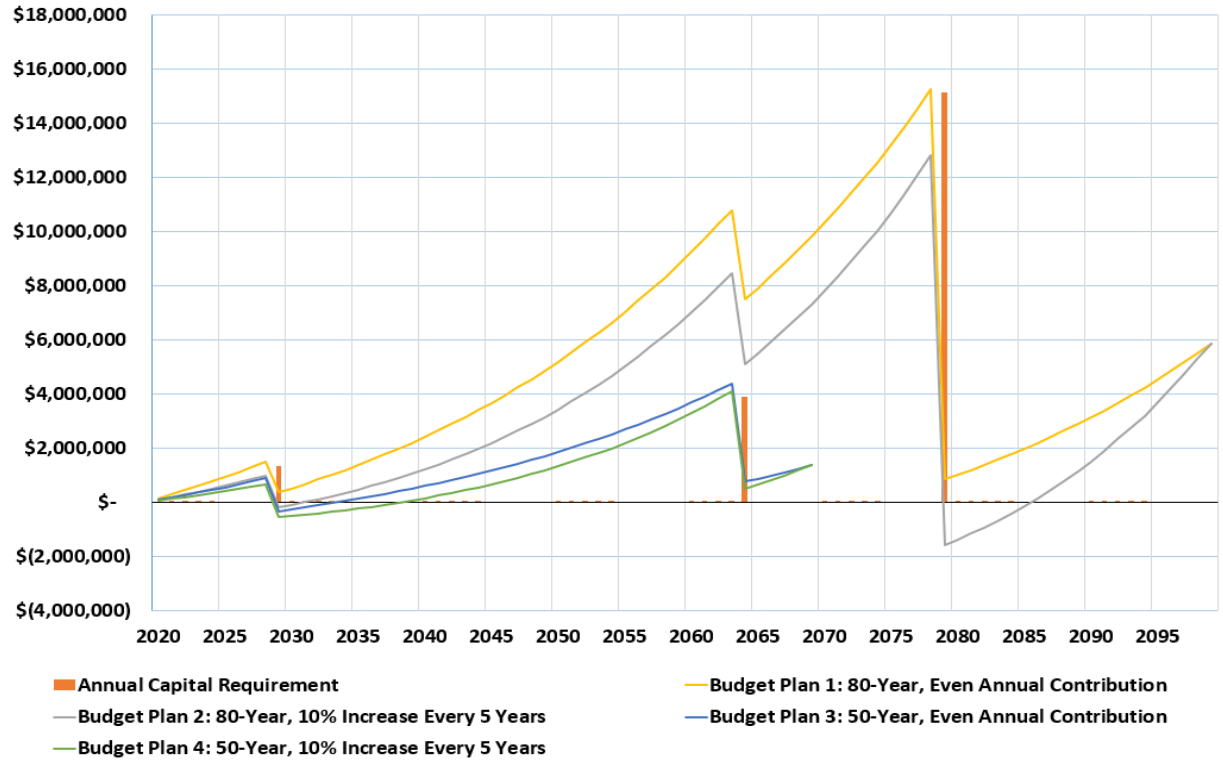

Figure 2 – Wastewater Local Service 50-Year and 80-Year Capital Plans

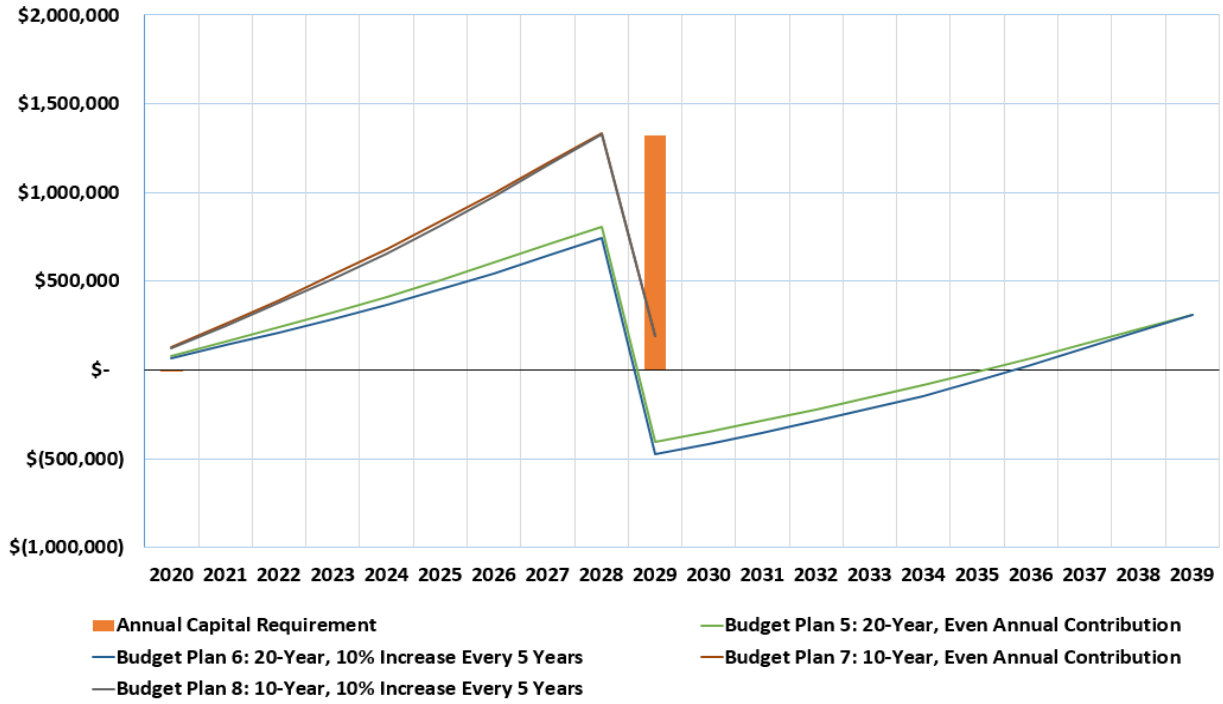

Figure 3 – Wastewater Local Service 10-Year and 20-Year Capital Plans

5. Additional Local Service Improvement Actions

Additional operational work is required in the Jolly Roger wastewater local service area that falls outside of the typical operational and maintenance plan. These items have been listed due to the potential 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
Engage consulting services to complete a feasibility study on potential options for treatment replacement.	2020	$ 10,000	To be determined.
Secure a Statutory Right of Way for legal access onto the property.	2021	$ 1,300	To be determined.

Action Item	Target Year	Cost Estimate	Result
Review the Statutory Right of Way over the neighbouring property to determine whether agents of the SCRD are covered by that agreement. If that Statutory Right of way does not cover agents of the SCRD, secure a Statutory right of way with the owner of the neighbouring property to ensure uninterrupted access through their property for the SCRD and agents of the SCRD.	2021	$ 400 minimum	To be determined.

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