

November 2019

# Curran Road Wastewater Local Service Asset Management Plan





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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 Curran Road 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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# CURRAN ROAD WASTEWATER LOCAL SERVICE ASSET MANAGEMENT PLAN

## 1. Local Service Information



Figure 1 – Map of Wastewater Local Service Area and Infrastructure

- Address: 5521 Curran road
- Original Construction: 1982
- Taken over by Sunshine Coast Regional District (SCRD): 1994
- Establishment of Local Service: 1996
- Major Upgrades: 2014 (Replacement of the treatment system)
- Treatment System Owner: SCRCD
- Number of Fronting Parcels: 70 Residential
- Number of Users: 50
- Treatment Process: RBC and BioMicrobics FAST® 12.0 plant
- Treatment Permit #: PE-5779
- Permitted Discharge Amount: 200 m<sup>3</sup>/day
- Regulatory Authority: Ministry of Environment Permit
- Effluent Receiving: Ocean
- EOCP Classification: SWWS-M (Small Wastewater Systems – Mechanical)
- Statutory Right of Ways: GB60112 (registered June 2, 1988, for side yard access to the collection system)

## CURRAN ROAD WASTEWATER LOCAL SERVICE ASSET MANAGEMENT PLAN

### 1.1. Development Details

The Curran Road wastewater local service area is located in the Halfmoon Bay Electoral Area (Area B) of the SCRD. The treatment systems is located in a vacant parcel of land used exclusively for the processing of wastewater.

The community wastewater systems were constructed in 1982 to assist with the development of new single-family dwellings in the neighbourhood. The ground conditions in this area are very rocky and were identified as having insufficient pervious soil material in their yards for constructing an onsite drainfield. The service area was expanded in 1999. The systems were managed by the developer until 1994 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 Curran Road wastewater local service, as listed in Table 1.

*Table 1 – Established Bylaws Pertaining to the Wastewater Local Service*

<b>Bylaw No.</b>	<b>Bylaw Name</b>	<b>Purpose</b>
<b>232A.4</b>	Package Plants Service Unit (1994)	Established a designated area for the purpose of providing sewage collection, treatment and disposal within Areas A, B and E.
<b>1026</b>	Sewage Treatment Facilities Local Service (1996)	Converted the Package Plants Service Unit to a local service.
<b>428.19</b>	Sewage Treatment Facilities Service Unit (2019)	Establishment of, and subsequent updates thereto, sewage treatment facilities frontage and user charges.
<b>512</b>	Sewage Treatment Facilities Reserve Fund (2001)	Established a capital reserve fund for sewage treatment facilities.
<b>608</b>	Sewage Treatment Facilities Service Operating Reserve Fund (2007)	Established an operating reserve fund for sewage treatment facilities.

## **2. Description of Assets**

### **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 a 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 where primary solids settle. The wastewater is then gravity fed into the dose tank and then pumped to the rotating biological contactor (RBC). Effluent from the RBC is then pumped through a filter into the effluent tank, where it is pumped through another filter and disinfected by UV before it discharges to the ocean. The FAST plant was designed to treat higher volumes of flow, however those flows are not anticipated to be reached until development increases the number of the users in the local service area. (The FAST plant has not been accepted by the SCRD as it cannot be properly tested until flow volumes increase.)

The effluent disposes through a 150 mm diameter, high density polyethylene (HDPE) outfall pipe approximately 400 m offshore at a depth of 43 m in the open ocean.

### **2.2. Collection System**

The collection system has approximately 555 m of 150 mm and 200 mm diameter, polyvinyl chloride (PVC) gravity mains, 1140 m of 50 mm pressurized PVC mains, and six manholes. The infrastructure depth varies between 1.50 m and 4.95 m below grade.

Approximately 60 m of the mains is accessed through a Statutory Right of Way that extends through the side yard of a dwelling between Jorgensen Drive and Hydaway Place.

### **2.3. Asset Accessibility**

There are a couple of accessibility concerns regarding infrastructure maintenance and replacement.

- One manhole on Curran Road is approximately 5 m below grade, which poses accessibility concerns due to its depth.

- Access to the wastewater collection system in the Statutory Right of Way will require removal of the existing vegetation, including various bushes and trees.

## **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.

The treatment system installed in 2014 has not been able to meet the regulatory requirements due to the low volume of flow from the users. The original treatment system, which was installed in 1982, is still in operation until development allows for the newer system to be utilized. Based on the estimated useful life (EUL), the original treatment tank has approximately 26% of its lifespan remaining. There are concerns regarding a recent failure of the original RBC plant and whether it is feasible for it to be repaired. The treatment system is in poor condition.

The ocean outfall was last inspected in February 2018 and observed to be in good working condition. However the majority of the ballast weights that hold that outfall in place are failing or have already failed. Failure of the ballast will result in the outfall floating to the surface. The disposal system is in poor condition and can be upgraded with the replacement of the anchors.

The condition of the collection system was assessed in 2018 through CCTV inspections. During the inspection all four of the gravity pipe segments were observed to only have minor defects. The collection system is in good condition.



## 2.5. Asset Replacement Value

It is expected that once the new treatment system has been accepted by the SCRD, that type of treatment process along with the current ocean outfall will meet regulatory requirements when it is due for replacement.

Replacement value for the collection system was estimated based on individual component replacement values. Additional costs for the removal and replacement of bushes and trees located on the north end of the statutory right of way were factored into the replacement cost.

*Table 2 – Asset Replacement Value Summary*

<b>Asset Type</b>	<b>Replacement Cost (2018 \$)</b>	<b>Year Installed</b>	<b>Estimated Useful Life</b>	<b>Remaining Useful Life</b>
<b>Treatment System</b>	\$ 1,385,097	2014	50	45
<b>Ocean Outfall</b>	\$ 357,035	1982	85	48
<b>Collection System</b>	\$ 713,618	1982	85	48
<b>Collection System</b>	\$ 847,375	1999	85	65

## 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 Curran Road wastewater local service are charged user fees of \$475.00 per year (including a 25% increase in user fees in 2019) and those properties within the service area boundary as outlined in Bylaw No. 1026 are

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charged \$153.00 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 Curran Road wastewater local service from 2015 to 2018 are shown in Table 3.

*Table 3 – Budgeted and Actual Operations and Maintenance Expenditures*

<b>Expenditures</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>Average</b>
<b>Budget</b>	\$ 19,220.00	\$ 19,029.00	\$ 18,593.00	\$ 19,028.00	\$ 18,967.50
<b>Actual</b>	\$ 31,023.00	\$ 19,447.00	\$ 25,914.00	\$ 21,781.31	\$ 24,541.33
<b>Variance</b>	\$(11,803.00)	\$ (418.00)	\$(7,321.00)	\$(2,753.31)	\$(5,573.83)

Overall, the operations budget decreased by 1% between 2015 and 2018. The actual expenditure decreased by 30% during the same period of time, however each year the actual expenditures exceeded the budgeted amount. The majority of the actual expenditure (44%) was to pay for staffing expenses of operational and administrative staff, while other significant expenditures include B.C. Hydro (28%) and equipment repairs and maintenance (10%).

Actual expenditure overages in the last four years are primarily a result of attempting to implement the FAST plant in the treatment process and repairing deficiencies in the RBC plant.

### 3.3. Potential O&M Budget

The potential O&M budget was created based on an optimal level of service for the systems at Curran Road local service area. Similar to the existing O&M budget, staff wages account for the majority of the potential annual O&M budget for Curran Road. 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;
- Annual material and equipment replacement;
- Annual and proportioned 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 Curran Road wastewater local service is \$42,687.00. The potential user fee for this budget is \$837.00, a 76% 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 Curran Road.

### **4.1. Investment of Reserves**

As of the end of 2018, there was \$68,225.68 contributed to operating reserves and \$19,179.07 in capital 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 Curran Road to have a set level, by either denomination or percentage, of reserves in place. Based on the current reserve balance and 2019 budget transfers, Curran Road's reserves are 2% 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.

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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*

<b>Capital Budget</b>	<b>Model</b>	<b>Infrastructure Replaced</b>	<b>Payment Method</b>	<b>Total Revenue</b>	<b>Parcel Tax (Year 1)</b>
<b>Plan 1</b>	80-Year	Treatment System (1) Ocean Outfall (1) Collection System (1)	Even Annual Contribution	\$ 22,004,800	\$ 3,929
<b>Plan 2</b>	80-Year	Treatment System (1) Ocean Outfall (1) Collection System (1)	10% Increase Every Five Years	\$ 31,495,558	\$ 2,503
<b>Plan 3</b>	50-Year	Treatment System (1) Ocean Outfall (1) Collection System (0)	Even Annual Contribution	\$ 10,750,500	\$ 3,072
<b>Plan 4</b>	50-Year	Treatment System (1) Ocean Outfall (1) Collection System (0)	10% Increase Every Five Years	\$ 12,428,004	\$ 2,228
<b>Plan 5</b>	20-Year	Treatment System (0) Ocean Outfall (0) Collection System (0)	Even Annual Contribution	\$ 620,800	\$ 443
<b>Plan 6</b>	20-Year	Treatment System (0) Ocean Outfall (0) Collection System (0)	10% Increase Every Five Years	\$ 634,889	\$ 391
<b>Plan 7</b>	10-Year	Treatment System (0) Ocean Outfall (0) Collection System (0)	Even Annual Contribution	\$ 465,300	\$ 665
<b>Plan 8</b>	10-Year	Treatment System (0) Ocean Outfall (0) Collection System (0)	10% Increase Every Five Years	\$ 467,355	\$ 636

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In addition to the replacement of the wastewater systems, other items that appear in the capital budget include proportioned short-term debt payments for the purchase and replacement of two service vehicles.

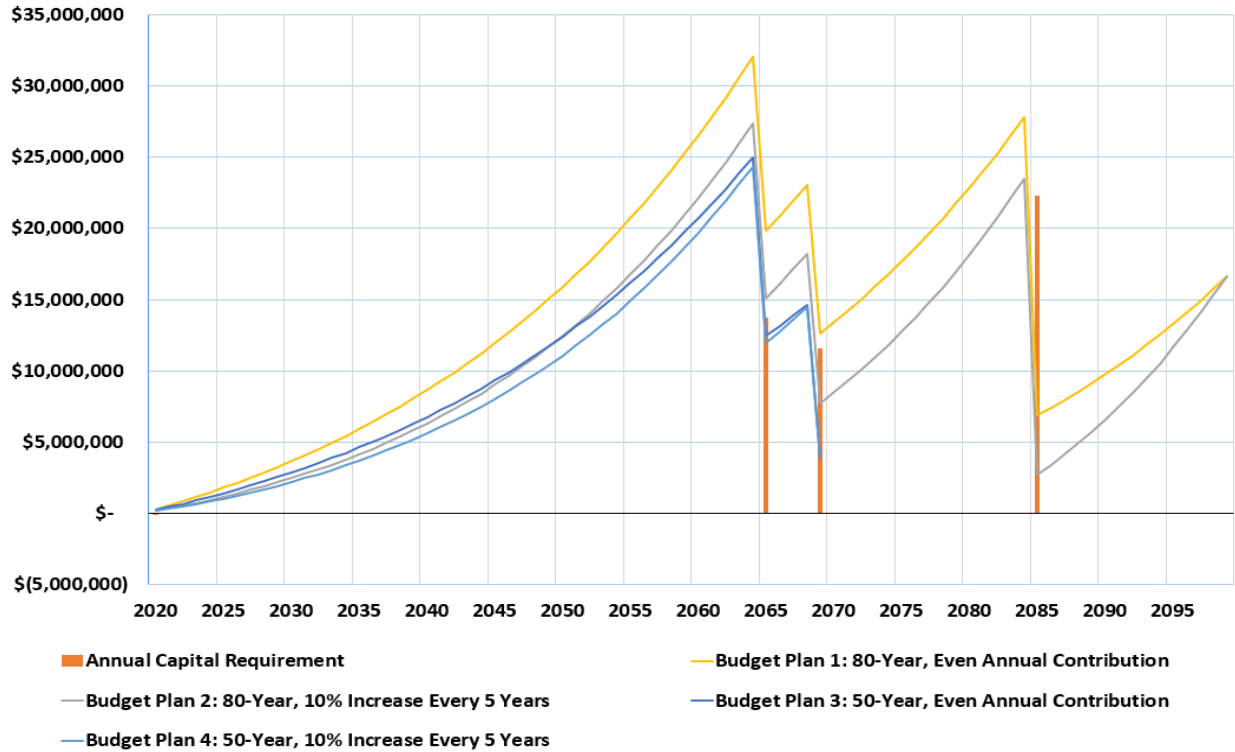


Figure 2 – Wastewater Local Service 50-Year and 80-Year Capital Plans

# CURRAN ROAD WASTEWATER LOCAL SERVICE ASSET MANAGEMENT PLAN

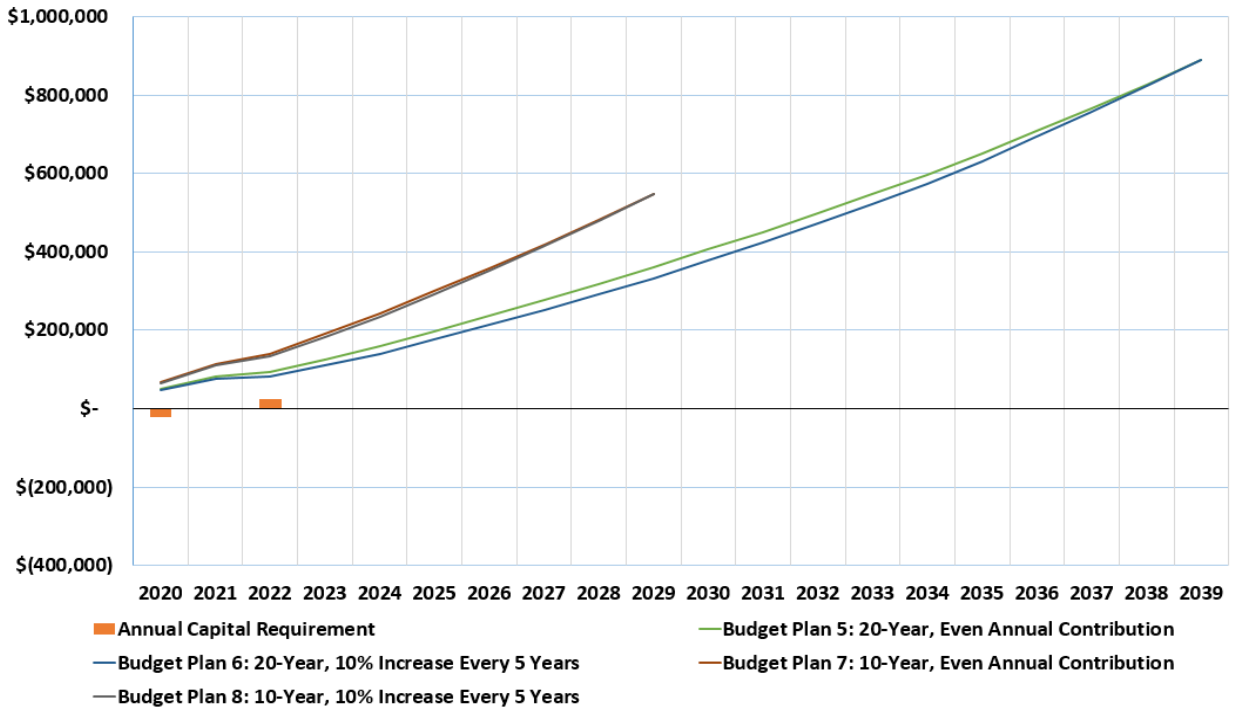


Figure 3 – Wastewater Local Service 10-Year and 20-Year Capital Plans

## 5. Additional Local Service Improvement Actions

There is no additional operational work required in the Curran Road wastewater local service area at this time.