2019

Asset Management Review and Implementation Report

Version 2019.01
March 7, 2019

Regional District of Nanaimo

REGIONAL DISTRICT OF NANAIMO: Asset Management Review and Implementation Report

Version 2019.1

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1 INTRODUCTION

1.1 Background

While this is the first document of this kind generated by the RDN, the RDN has responsibly and effectively managed assets for more than fifty years. The focus within asset management on integration, sustainability, and whole lifecycle optimization, however, has only more recently gained traction.

As the region has grown and flourished, a diverse portfolio of assets has been established to support services that deliver a high quality of life to residents of the region, including parks, recreational opportunities, drinking water, waste water processing, solid waste collection and disposal, transportation services, and emergency planning. If these service areas had to replace their assets today, it would cost an estimated $382,000,000.

These assets are part of interrelated networks that require significant resources to be operated throughout their lifecycles, ensuring that they are maintained, monitoring their performance, and eventually replacing and disposing of them. By applying the principles of effective asset management, the RDN will get the most value from these significant investments in terms of ensuring levels of service and minimizing risks.

1.2 Purpose

The purpose of this Asset Management Review and Implementation Report (Review) is to:

- Document current asset management (AM) practices across the full range of departments responsible for infrastructure in the Regional District of Nanaimo (RDN);
- Provide a high level overview of the state the infrastructure assets owned and managed by the RDN; and
- Outline an implementation framework to continue best practices in asset management.

1.3 Goals

The three key goals for RDN's Asset Management program are to:

- Manage assets in a consistent fashion, to support financial and capital planning;
- Guide maintenance and asset investment is based on informed decision-making; and
- Enhance inter-departmental and inter-jurisdictional collaboration on projects that involve AM.

Fulfilling these goals will formalize the RDN's asset management practices across the organization, laying the foundation for more advanced asset management practices in all departments. The RDN's first corporate-wide Review will result in a more consistent, cohesive approach to defining, costing, and forecasting service delivery options for the RDN and ensure that infrastructure and service delivery decisions are being made with an understanding of long-term cost implications.

1.4 AMBC Roadmap

This Review and the broader Asset Management Program are guided by the Asset Management BC Roadmap (Roadmap), developed by Asset Management British Columbia (AMBC). The Roadmap is a

simple model designed to assist in the implementation of best asset management practices. The Roadmap consists of six building blocks, as illustrated below in Figure 1.1.

Figure 1.1 - Asset Management BC Roadmap: Building Blocks

Each of the Roadmap's building blocks are further defined by modules that are required for basic level asset management; the Roadmap building blocks and modules are illustrated in Figure 1.2. For this Review, the objective is to complete all modules of the Roadmap to achieve a basic level of asset management across the organization. Initial efforts have focussed on building asset inventories and understanding the current levels of asset investment. In turn, this information forms the basis of the individual Asset Snapshots included as Sections 3 to 10 in this Review.

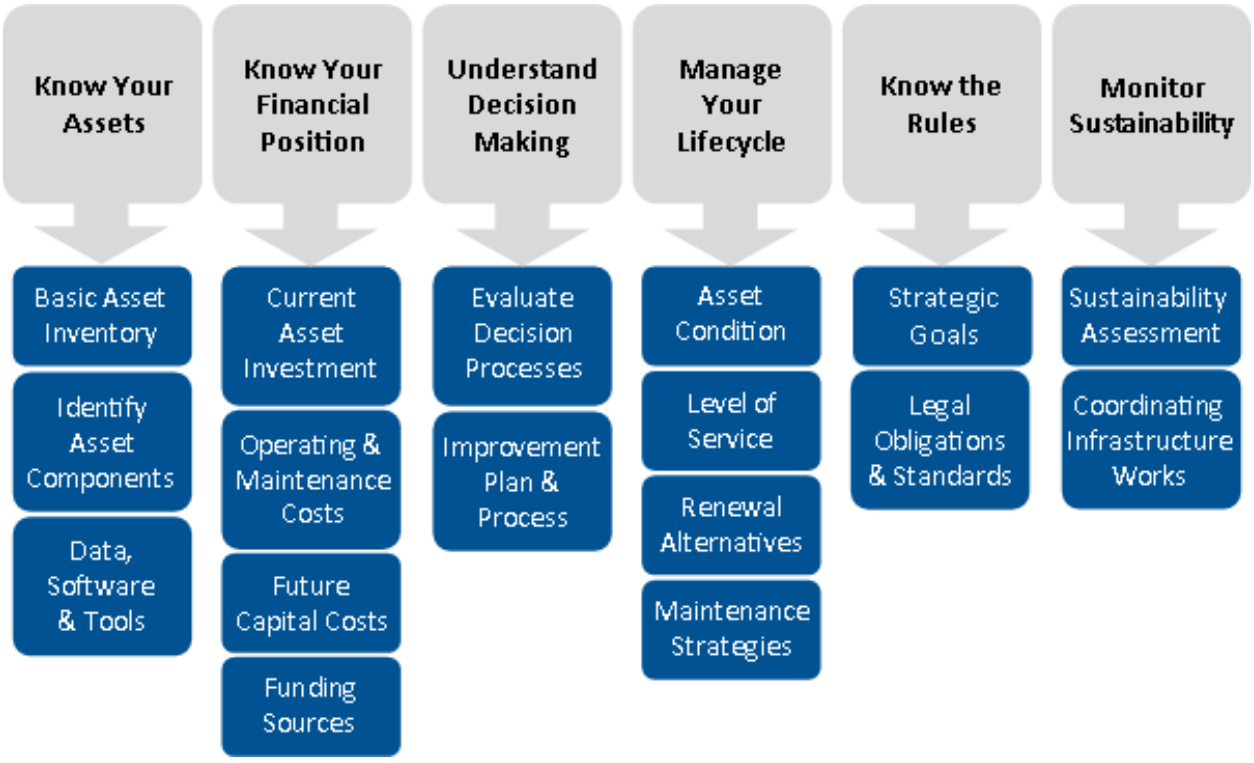


Figure 1.2 - Asset Management BC Roadmap: Modules Required for Basic Level Asset Management

1.5 Assets Included

This asset review is intended to include all assets; however some asset groups and service areas are lacking data. Where data is lacking, or if there is a lower confidence level in the information available, this has been noted. The following service areas that support the RDN's core services are included in this Review:

Service Area (or Department)	Total Asset Replacement Value (2017)	
Southern Communities Wastewater Service Area	$	111,300,000
Northern Communities Wastewater Service Area	$	53,400,000
Nanoose Bay Peninsula Water Service Area	$	42,600,000
Oceanside Place Arena	$	25,000,000
Fairwinds Sewer/Nanoose Bay Pollution Control Centre	$	14,200,000
French Creek Sewer Service Area	$	13,500,000
Ravensong Aquatic Centre	$	12,000,000
Transportation Administration Building	$	11,500,000
Main Administration Building	$	9,700,000
Cedar Road Landfill	$	8,300,000
Duke Point Wastewater Service	$	7,500,000
District 69 Arena (Parksville Curling Club)	$	7,300,000
Nanoose Bay Fire Service Area	$	7,200,000
Church Road Transfer Centre	$	6,800,000
Englishman River Water Service Area	$	5,700,000
Errington Fire Service Area	$	5,000,000
French Creek Water Service Area	$	4,700,000
Dashwood Fire Service Area	$	4,700,000
San Pareil Water Service Area	$	4,400,000
Coombs Hilliers Fire Service Area	$	4,200,000
Bow Horn Bay Fire Service Area	$	3,600,000
Corporate Vehicle Fleet	$	2,300,000
Whiskey Creek Water Service Area	$	2,100,000
Streetlighting Service Areas	$	2,100,000
Extension Fire Service Area	$	2,100,000
Cassidy Waterloo Fire Service Area	$	2,000,000
Barclay Crescent Sewer Service Area	$	1,800,000
Information Technology Infrastructure	$	1,600,000
Cedar Sewer Service Area	$	1,200,000
Melrose Terrace Water Service Area	$	1,100,000
Decourcey Water Service Area	$	1,050,000
Surfside Water Service Area	$	688,000
Surfside Sewer Service Area	$	634,000
Emergency Planning Services	$	350,000
Wharves	$	325,000
Total	**$**	**381,947,000**

Non-physical and natural assets not included in this Review are:

- Digital and non-digital records (Data);
- Human resources (staff); and
- Non-engineered assets such as watersheds and drinking water recharge areas.

1.6 Data Sources

Information sources for the Review included:

- Department specific asset software (Water and Waste Water Services)
- Geographic Information Systems (GIS)
- Tangible Capital Asset (TCA) Register
- Engineering Studies
- Financial Plans and Reports
- Insurance valuations and appraisals
- Record drawings
- Department managed Excel spreadsheets
- Operations records
- Observations and information provided by staff

Individual departments manage the above data sources independently. Other than the centralized financial reporting and budgeting tools, no common asset information system is in place.

1.7 Gaps and Limitations

This Review is based on the best available information. Where information is limited, assumptions include:

- Asset ages where installation or acquisition dates are unavailable;
- Replacement costs of system sub-components when only whole-facility replacement cost data is available;
- Asset condition based on age in the absence of formal condition assessments; and
- Cost estimates based on professional judgment where cost information is unavailable.

In addition to the assumptions above, areas for improvement include:

- Developing consistent approaches to asset management across the organization;
- Developing centralized asset management system that offers a complete asset inventory and summary project information;
- Continuing to refine asset inventory information;
- Developing a level-of-service registry to track levels of service for all service areas;
- Formalizing and documenting condition assessment procedures for all departments;
- Defining and formalizing a decision-making process to prioritize infrastructure investment; and
- Formalizing asset management plans at the individual service level.

2 CURRENT STATE OF ASSET MANAGEMENT

This section outlines common asset management practices across the RDN, details current practices in each department responsible for the management of infrastructure assets, and examines opportunities to improve current asset management practices. Throughout this section, current practice descriptions and opportunities for improvement are aligned to the AMBC Roadmap.

Following each departmental overview are Asset Snapshots for each service area dependent on infrastructure assets. These are essential, two-page summaries of the current-state-of-the-assets for each relevant department in the RDN.

The key information in each Asset Snapshot includes level of service, current replacement costs, total replacement value, lifecycle period, average useful life of all assets in the service, and average annual replacement costs for the service area. The Asset Snapshots also compare planned capital investment against average annual replacement cost to illustrate whether annual capital expenditures align with lifecycle replacement costs. The Asset Snapshots conclude with an assessment of asset condition based on age.

The information contained in this Review is the result of extensive interviews with RDN staff and management including input from the RDN Asset Management Working Group.

2.1 Asset Snapshot Descriptions

2.1.1 Level of Service

Each Asset Snapshot includes a level of service description that provides a brief statement about the specific service provided to participating residents. These originate from departmental business plans, various management plans, annual reports and other documents in use in the RDN.

2.1.2 Current Replacement Cost and Total Replacement Value

Current replacement costs refers to the dollar value to replace individual assets in a service area at the present time. For this Review, current replacement costs are shown in 2017 dollars[1] (unless otherwise noted), and are illustrated as time series graphs that show the dollar value of all the asset replacements anticipated in each year of the Lifecycle Period. These graphs illustrate costs over a time period ranging from 10 to 100 years, depending on the anticipated useful life of the longest-lived assets in a given service area.

The sum total cost to replace all of the assets in a given service area is referred to as Total Replacement Value. Current Replacement Costs and Total Replacement Value should be updated on a three to five year basis to ensure accurate long-term financial planning. Replacement costs for the RDN will be updated in 2019.

Current replacement costs are given a data confidence rating from 1 to 5 (1 being the lowest confidence rating) based on the following table:

[1] See Section 3.3, a new Comprehensive Replacement Cost Study will update values in 2019.

Confidence Rating	Description of Replacement Cost Data
1 (low)	Inflated historic costs: Replacement costs are from historic cost inflated to present day dollars using a simple 2% annual inflation rate.
2	Market unit cost indices: Replacement costs are from Industry cost indices such as Hanscomb (2016) Yardsticks for Costing: Cost Data for the Canadian Construction Industry, or anecdotal knowledge from operational staff.
3	Property insurance values: Replacement costs are from most recent insurance appraisal, or technical documents greater than three-years old.
4	Third Party Cost Estimates: Replacement costs are from recent third-party cost estimates within the last three years.
5 (high)	Tender pricing and recent unit costs: Replacement costs are from on actual tender bids of like projects within the last three years.

2.1.3 Lifecycle Period

Lifecycle Period refers to the period, in years, over which all of the assets currently in use in a service will be replaced. Lifecycle Period is equal to the anticipated useful life of the longest-lived asset in a service. Presently, PVC pipes are anticipated to last 100 years. This is the longest Lifecycle Period in use for RDN service areas.

2.1.4 Average Useful Life

Average useful life is the average of all the useful lives of all individual assets in a service area. If a service area has 10 assets, and five of those assets have a 20-year life and five have a 50-year life, the average useful life of is calculated as follows:

((5 X 20) + (5 X 50)) / 10
= 350 / 10
= 35 years

2.1.5 Annual Average Replacement Cost

Annual Average Replacement Cost is the result of dividing the Total Replacement Value for all assets in a service by the Average Useful Life of all assets in a service**.** In the example above, if the total replacement value of the 10 assets in the service is $100,000, the Annual Average Replacement Cost is calculated as:

$100,000 / 35 years
= $2,857 / year

This cost is important for two reasons. Firstly, dividing the Total Replacement Value by Average Useful Life takes into consideration multiple replacements of assets with short useful lives during a Lifecycle Period. Secondly, the Annual Average Replacement Cost smooths out the annual variability in actual replacement costs. This reveals a target value for capital investment (including contributions to reserves) on an annual basis. Some years will demand more investment as costly assets are replaced, requiring transferring funds from reserve or borrowing. Some years will demand less, resulting in larger contributions to reserves in preparation for future expenditures.

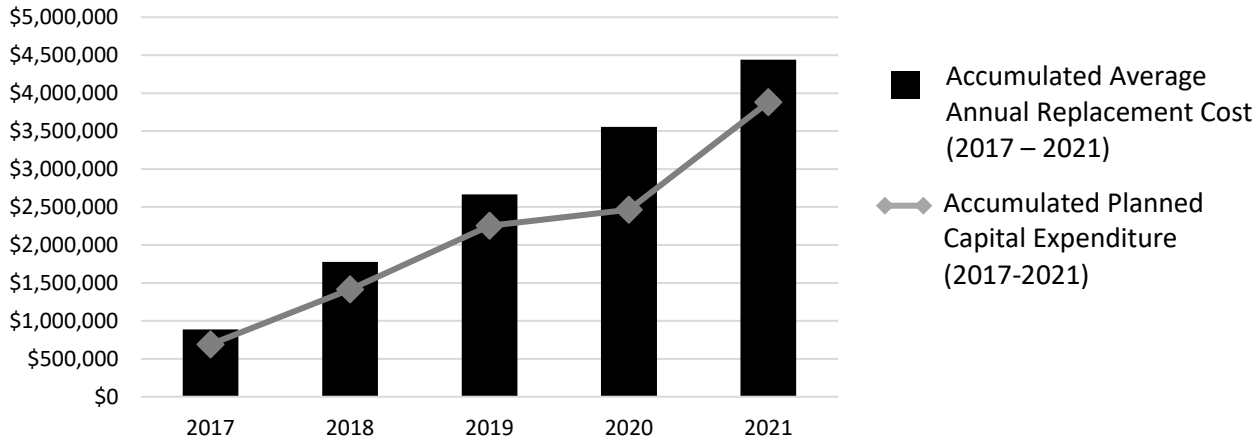
Annual Average Replacement Cost must be revised at the same time as current replacement costs to reflect current year dollars (no more than 3-5 years old). This improves accuracy in longer-term financial planning and ensures that contributions to reserves take into account inflation over time.

2.1.6 Planned Capital Expenditure & Annual Average Replacement Cost

Planned Capital Expenditure refers to actual figures identified in the RDN 5-Year Financial Plan and the annual budget. Planned Capital Expenditure includes anticipated costs on actual capital projects, contributions to reserve, and a portion of operations and maintenance costs. A portion of operations and maintenance costs are included to reflect that currently some renewal expenditures are captured as operation and maintenance costs by RDN Departments. Over time, as asset management practices mature, it will be increasingly possible to distinguish renewal costs from other more general operations and maintenance costs.

Comparing Planned Capital Expenditure against Average Annual Replacement Costs is a good indicator of whether planned expenditure aligns with anticipated costs for the asset. Showing these figures as accumulated costs over time reveals a trend of continued alignment or divergence of expenditures and costs, as shown in the example below and in each asset snapshot.

Overall alignment of the Accumulated Average Annual Replacement Costs (black bar) and Accumulated Planned Capital Expenditure (grey line) indicates that planned infrastructure spending corresponds with the anticipated costs over the five-year period. When the accumulated expenditure diverges above the accumulated costs, it indicates a period of re-investment in infrastructure. Conversely, when the accumulated expenditure diverges below the accumulated costs, it indicates growing deficit in infrastructure spending.



In the example above, Annual Average Replacement Costs equal about $890,000 per year. Over five years, this sum accumulates evenly to a total of almost $4.5 million. By contrast, Planned Capital Expenditure proceeds more unevenly, as spending inevitably varies year-over-year. Ongoing Planned Capital Expenditures (including contributions to reserve and a portion of operations and maintenance) is generally keeping up with the costs one would expect to incur over time, and there is a minimal infrastructure deficit developing.

2.1.7 Asset Age and Condition

The Asset Snapshots (outlined in Sections 0-2.11) conclude with an examination of the age and condition of assets. For this Review, where a comprehensive condition assessment program is not in place, age serves as a proxy for condition. This final section of the Asset Snapshots shows a bar graph illustrating the total value of assets in each age category as well as a pie graph showing the actual number of assets in each age category. For this analysis, age and condition categories are as follows:

- New 0-30% of useful life Very Good Condition
- Medium 30-60% of useful life Good Condition
- Aging 60-90% of useful life Fair Condition
- End of Life 90-99% of useful life Poor Condition
- Deficit 100 + % of useful life Very Poor Condition

In accordance with asset management best practice, a formal condition assessment program should be initiated for assets once they reach 60% of their estimated useful life. Formalizing a condition assessment program based on this best practice is a key next step.

2.2 Common Asset Management Practices Across the RDN

Asset management practices are well-established across all RDN departments responsible for the development and maintenance of infrastructure assets. The organization's current asset management practices are described relative to the AMBC Roadmap in the table below and include budgeting, financial tools, and documentation of processes. This table highlights good practices, as well as areas to address across the RDN.

Table 1 Common RDN Asset Management Practices

AMBC Category	Current Asset Management Practice
Know Your Assets	RDN's Accounting Services maintain the Tangible Capital Asset (TCA) inventory for all RDN departments. RDN Policy A2.05 *Capital Asset Accounting Budgeting* requires that when an asset is purchased, the asset and its attributes, including its expected lifespan is to be reported in the inventory. RDN Policy A2.12 *Asset Disposal* requires reporting asset disposal.
	Corporate-wide systems to monitor expenditures for materials, contracted services and other cost centres are well-used. Estimated useful life is not updated on a regular basis (actual rate of deterioration, age, or condition of assets).
	Budgeting tools that include up to 10 years of capital planning and investment are well-used.
	Multiple software systems and tools used to manage assets by different departments in the RDN and current software applications meet the individual needs of the department. Integrated asset management software will be implemented across the RDN.

AMBC Category	Current Asset Management Practice
Know Your Financial Position	Current practices around budget forecasting provide a strong foundation for long-term capital planning in accordance with a 10-year budget forecast period however this period does not encompass the full lifecycle of many assets and for applicable assets separate financial planning process are in place to augment this 10-year horizon.
	The 10-year financial planning horizon is relatively long in the local government context. Improvements will come from calculating full lifecycle costs for all assets in a service area to determine funding requirements to maintain expected levels of service over the long-term.
Understand Decision-Making	Current practices for decision-making procedures are not formally documented and consolidated, resulting in challenges when reviewing and analysing the decision-making process on assets.
Manage Asset Lifecycle	The cost of providing higher or lower levels of service are determined through the RDN budget process. Current levels of service descriptions do not universally connect the full cost of a service to the quality or level of service.
	Response to conditions currently drives alternatives considered for infrastructure repair, renewal, and replacement. Asset management practice will drive proactively evaluate alternatives and recommend the best options for action.
Know the Rules	Strategic goals are known. Links between Board strategy and departmental business strategies have been established, including broad linkages to day-to-day asset management activities.
Monitor Sustainability	Analysis and review is required to ensure existing services and current service levels are sustainable over the long term.
	The majority of asset intense departments have been consolidated in Regional Community Utilities Division which allows the RDN to capitalize and coordinate infrastructure management across departments. With representation from departments across RDN the Asset Management Working Group is sharing knowledge and expertise in this area.

2.3 Opportunities to Improve Common Asset Management Practices Across the RDN

Aligning with the AMBC Roadmap, the following table outlines key opportunities to improve Asset Management practices across the RDN.

Table 2 Opportunities to Improve RDN Asset Management Practices

AMBC Category	Opportunities to Improve
Know Your Assets	Knowing Your Assets is the foundation for effective asset management. At the RDN, most departments have a baseline inventory of their assets in electronic form. Across the organization there are varied levels of information on data and system governance practices, asset componentization, and the ability to differentiate assumed from verified values.
Know Your Financial Position	In the Know Your Financial Situation category, gaps that are being addressed include verified replacement costs in current dollars for the purpose of long term financial planning, recording full cost of operations including maintenance of key assets.
Understand Decision-Making	In the Understand Decision-Making category, formal documentation of decision-making processes varies across the RDN. Individuals and departments responsible for making recommendations know the relevant processes. Formal documentation will increase utilization pre-determined procedures across the organization.
Manage Asset Lifecycle	Level of service measures and indicators are in place but are not oriented to assess the quality of service. Gaps in the Manage Asset Lifecycle category are addressed by asset condition monitoring and documentation of maintenance strategies.
Know the Rules	Compliance monitoring and reporting is managed by each service area. There are minimal gaps in the Know the Rules category as staff involved with managing assets and related activities have high capacity as it relates to their work areas.
Monitor Sustainability	For the Monitor Sustainability category, the RDN is at an early stage of implementing organization-wide asset management and improving the level of information and detail necessary to reliably assess the different elements of sustainability in terms of service delivery. Improvements in the Monitor Sustainability category are a relatively lower priority.

2.4 Water and Utility Services

The Water and Utility Services department is responsible for nine domestic drinking water systems, components of a bulk water distribution system, six sewer collection systems, and eight street lighting service areas. Pump stations within the sewer collection systems are managed by the RDN's Wastewater Services, and the streetlight inventory is rented from BC Hydro.

The RDN does not have a management role over street lighting systems, but is responsible for the maintenance of poles.

Table 3 Water and Utility Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	Approximately 90% of the water and sewer asset inventory is compiled. Linear assets are segmented and facilities are identified as single-point assets. Sanitary pump stations are componentized in the Wastewater Services asset management program *Webworks*. Improving asset inventory data and componentization is a continuous process that forms part of day-to-day operations.
	Asset data is digitally recorded in a custom-built system called AMS that enables the use and manipulation of asset information which is supported using the RDN GIS system. Maintaining an up-to-date asset inventory that is aligned between AMS and GIS is an ongoing activity that requires resources to be consistent.
	Software applications should be updated to improve efficiency, ensure integration, and support implementation of a work order system.
Know Your Financial Position	The data stored in the AMS system enables calculating current replacement values for a large portion of the asset inventory and resources need to be directed to updating replacement costs regularly. Recorded useful lives of assets need to be revised to reflect verified condition or the rate of deterioration.
	Systems should be updated to facilitate linking assets with maintenance expenditures and operational costs.
	Beyond the annual budget and 5-Year Financial Plan, the budgeting process also includes estimates and parcel taxes for a 10-year period, based on anticipated operational needs and capital requirements. Development Cost Charges and Capital Cost Charges are used to fund increases in service levels necessary to accommodate new development.
Understand Decision-Making	Decision processes for planning and capital projects and determining budget requirements are well established. These are well structured, consistent, and known by staff. Formal documentation of these processes are required.
Manage Asset Lifecycle	General work history for assets is available in AMS but should be more consistently tied to specific assets. Most preventive maintenance conducted in the field is recorded in AMS and asset failures need to be consistently recorded.
	Formalize procedures and tools for recording work history on assets.
	Asset condition is known by operational and technical staff. Formal systems required to improve ability to monitor and assess asset condition.

	Preventive maintenance activities are diligently scheduled and monitored by Water Services staff.
Know the Rules	Relevant staff know legislative requirements and responsibilities are clear. In all cases, the manager is responsible to ensure the terms and conditions of permits are met and formal checklist of legislative requirements is in development for operational information.

2.4.1 Decourcey Water Service Area (DWSA)

Level of Service

The DWSA provides treated drinking water to five residential connections.

The water is sourced from one groundwater well, stored in one reservoir and chlorinated manually. Over the course of 2017, all measured parameters for water quality were within Canadian Water Quality Standards.

Average per capita water consumption in the service area in 2017 was 157 litres per person per day. This consumption is 45 percent less than the 283 litres per person per day average for all other RDN water systems. This system is regularly placed under Stage 4 water usage restrictions in order to protect the community drinking water supply, and to maintain water storage for fire protection.

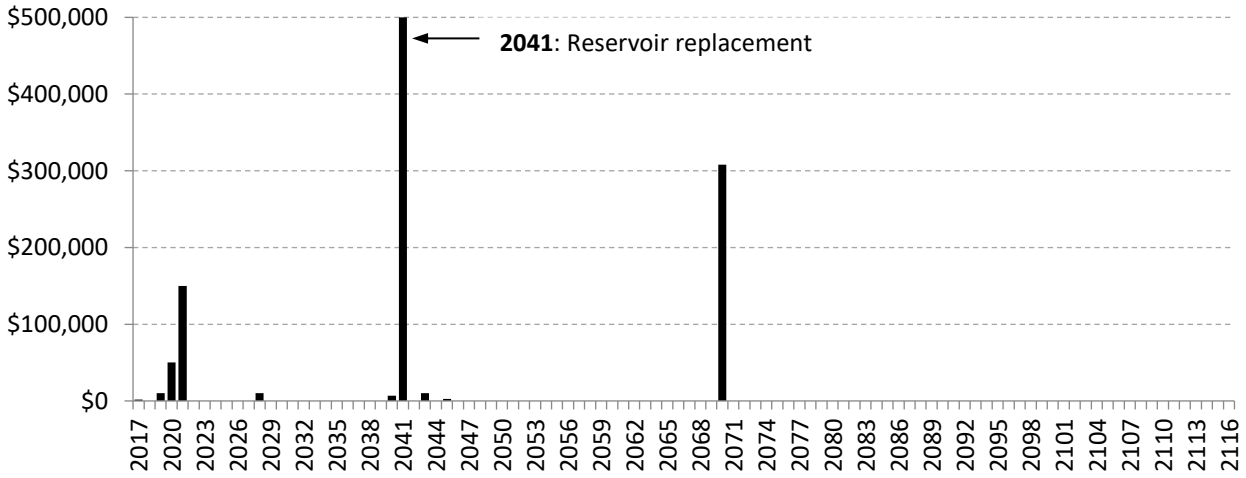
The cost per connection in the DWSA in 2017 was $1,637.20 per parcel, plus an average of $235.76 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement costs for the DWSA are based on values for the Nanoose Bay Peninsula Water Service Area as provided by a third-party engineering firm in 2015. This provides a data confidence rating of '3' due to differences in the scale of the respective water systems and the age of the comparative data.

Total Replacement Value (2016 Dollars)	***$1,050,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***60 years***
Average Annual Replacement Cost	***$17,500***

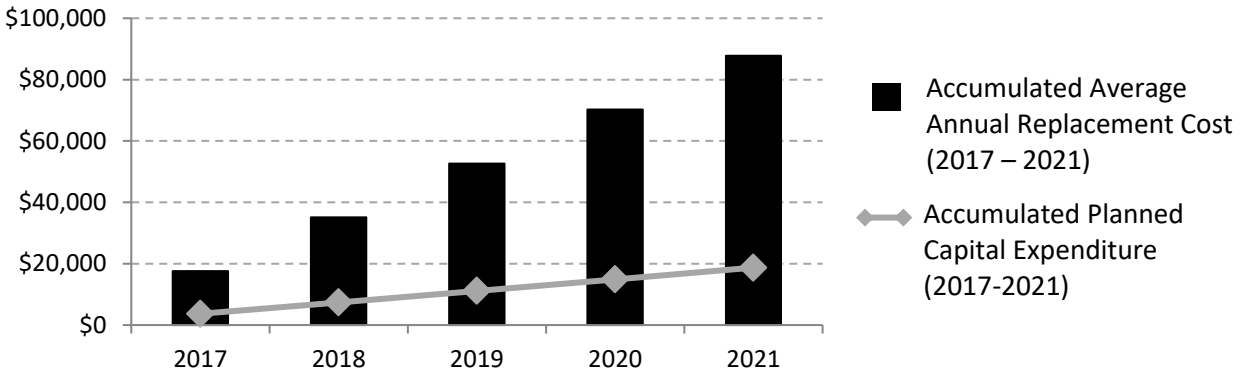
DWSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the DWSA there are $18,700 in Planned Capital Expenditures over the 2017-2021 period. This is significantly below the Average Annual Replacement Costs for the system, and highlights the challenge of charging for the full cost of infrastructure ownership when those costs are shared across a small number of service area participants.

DWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

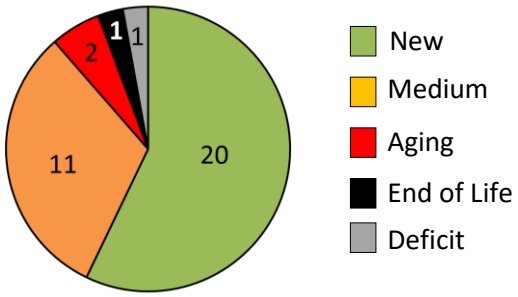


Capital Reserve Opening Balance (2018): ***$18,000***

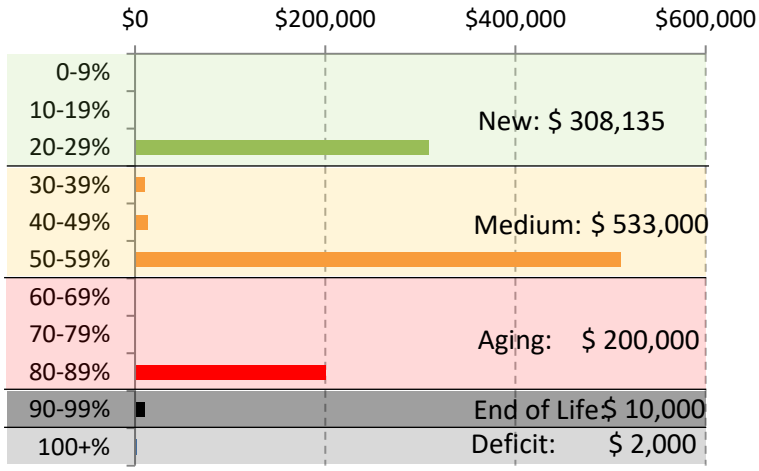
Age and Asset Condition

For the DWSA, asset age provides a proxy for asset condition. For the DWSA, 88% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*, while 12% of assets are nearing or have exceeded their estimated useful lives. 80% of the value of all the assets are in the *New* or *Medium* category. Assets that have entered the Aging category will benefit from a condition assessment to confirm the need for replacement.

DWSA: Total Number of Assets by Age Class



DWSA: Total Asset Value by Age Class



2.4.2 Englishman River Water Service Area (ERWSA)

Level of Service

The ERWSA provides treated drinking water to 157 residential connections, serving an estimated 375 residents. Over the course of 2017, all measured parameters for water quality were within Canadian Water Quality Standards.

Average per capita water consumption in the service area in 2017 was 417 litres per person per day. This consumption is 47% higher than the 283 litres per person per day average for all other RDN water systems.

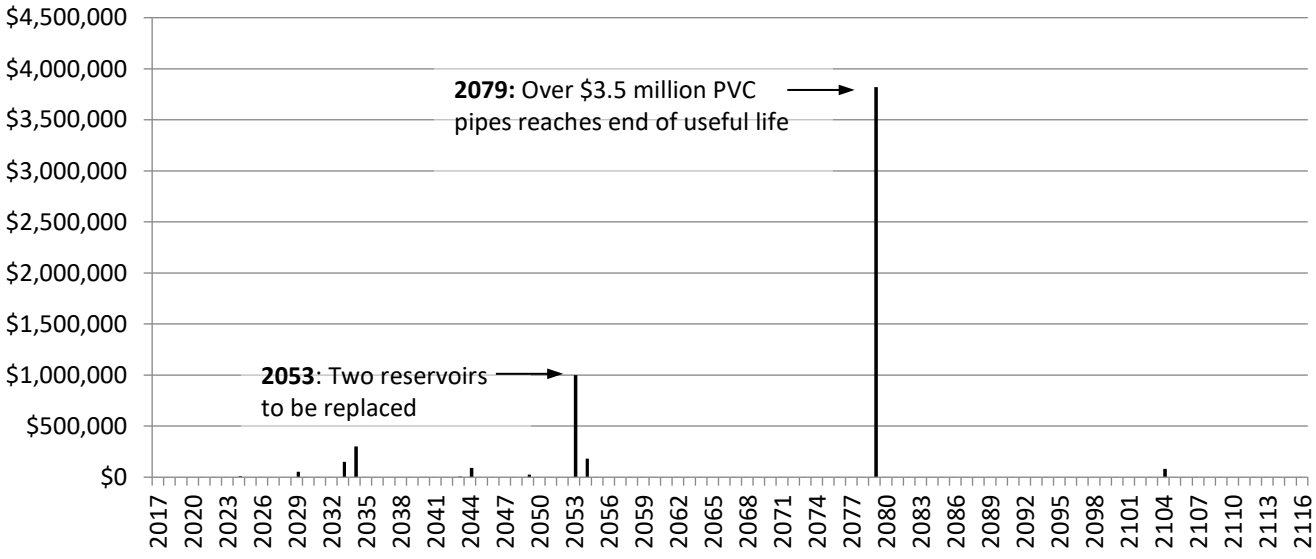
The cost of water in the ERWSA in 2017 was $239.50 per parcel in the service area, plus an average of $543.79 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement costs values for the ERWSA are based on Nanoose Bay Peninsula Water Service Area values as provided by a third-party engineering firm in 2015. This provides a data confidence rating of '3' due to differences in the scale of the respective water systems and the age of the comparative data.

Total Replacement Value (2016 Dollars)	***$5,700,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***60.9 years***
Average Annual Replacement Cost	***$93,600***

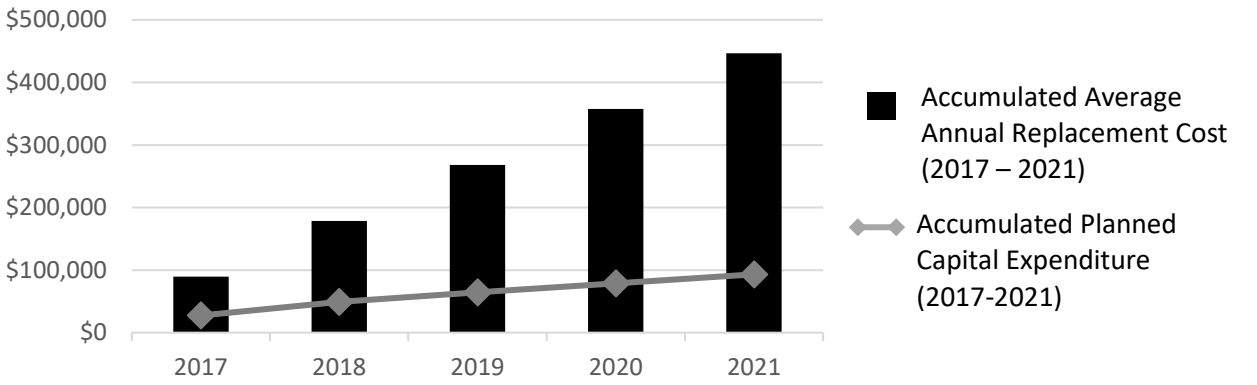
ERWSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the ERWSA there are $96,000 in planned capital expenditures over the 2017-2021 period. This reflects the generally young age of the water system, but also highlights that contributions to capital reserves are low early in infrastructure lifecycles, when replacements are not imminent. There is an opportunity for the ERWSA to increase reserve contributions gradually to ensure that assets can be replaced with minimal borrowing over the course of the asset lifecycle.

ERWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

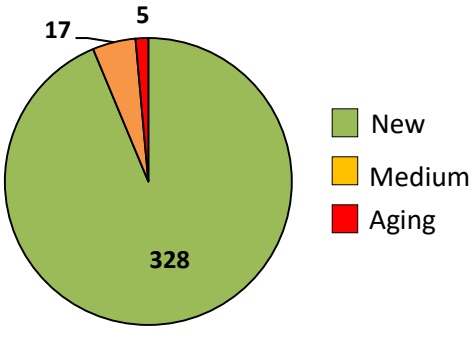


Capital Reserve Opening Balance (2018): ***$290,000***

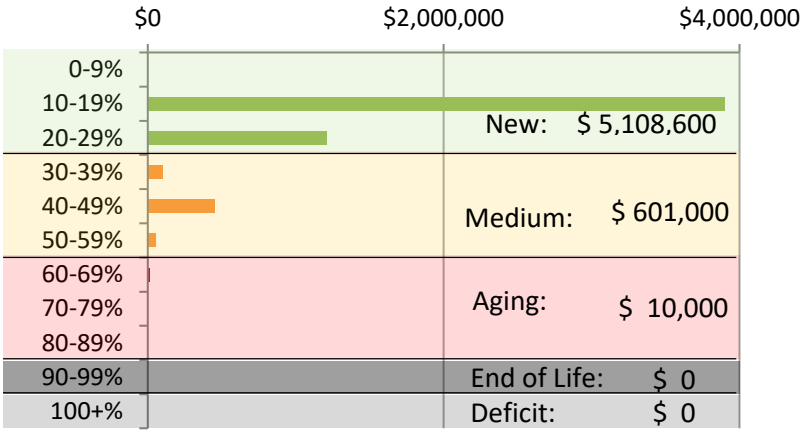
Age and Asset Condition

Asset age indicates asset condition. For the ERWSA, 99% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. 99.8% of the value of all the assets are in the *New* or *Medium* category. This shows that assets in the ERWSA are early in their lifecycle, and are in good or very good condition.

ERWSA: Total Number of Assets by Age Class



ERWSA: Total Asset Value by Age Class



2.4.3 French Creek Water Service Area (FCWSA)

Level of Service

The FCWSA provides treated drinking water to 239 residential connections, serving an estimated 570 residents. Over the course of 2017, all measured parameters for water quality were within Canadian Water Quality Standards with the exception of high readings of iron and manganese which exceeded the aesthetic standard but did not pose health concerns.

Average per capita water consumption in the service area in 2017 was 231 litres per person per day. This consumption is 18% lower than the 283 litres per person per day average for all other RDN water systems.

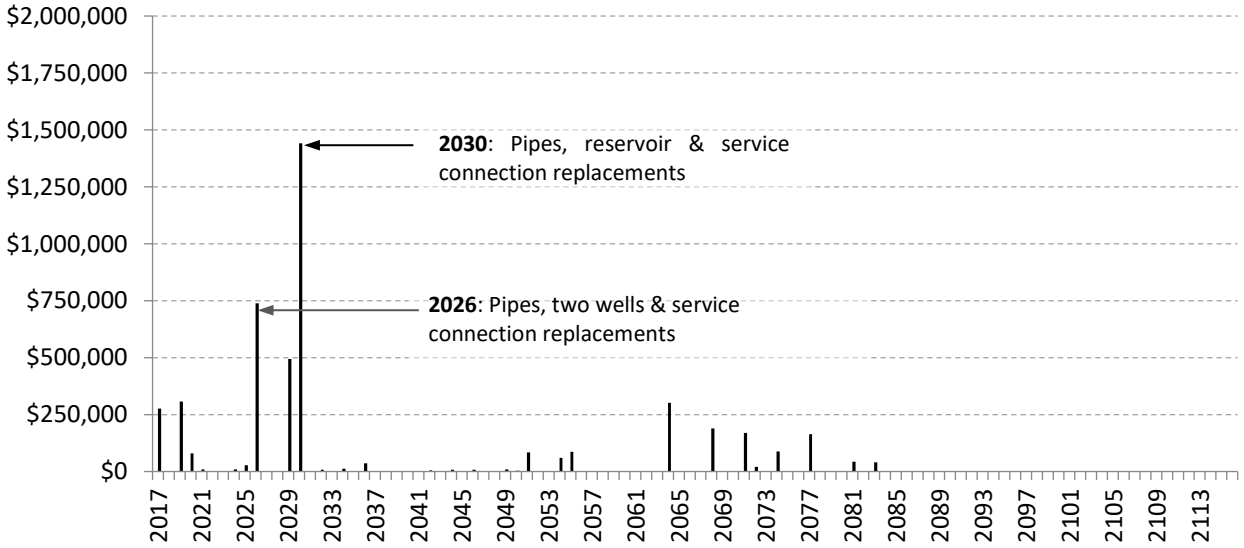
The cost of water in the FCWSA in 2017 was $323.43 per parcel in the service area, plus an average of $245.78 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement cost values for the FCWSA are based on the Nanoose Bay Peninsula Water Service Area values as provided by a third party engineering firm in 2015. This provides a data confidence rating of '3' due to differences in the scale of the systems and the fact that the data is currently 3-years out of date.

Total Replacement Value (2016 Dollars)	***$4,700,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***55 years***
Average Annual Replacement Cost	***$85,500***

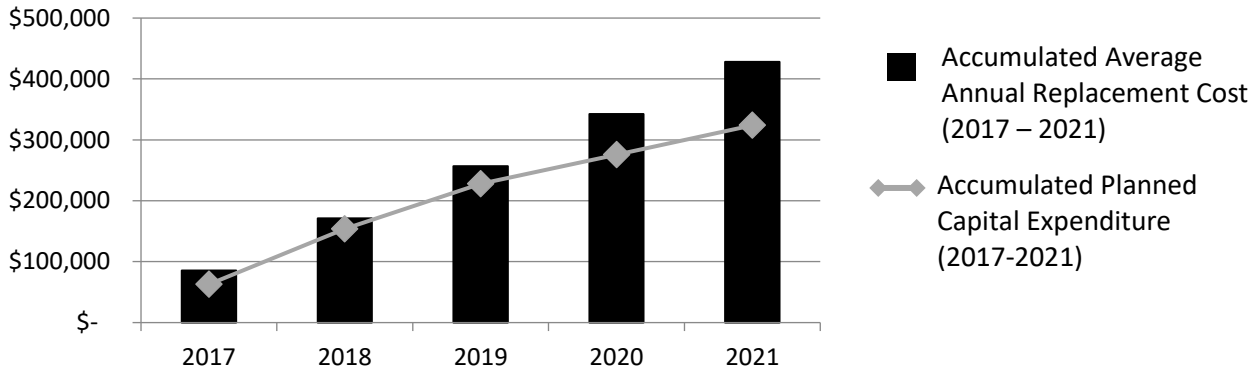
FCWSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

Planned capital expenditures for the FCWSA over the next five years amounts to $310,000, including upgrades to two well heads. There is a modest deficit in infrastructure expenditure emerging by 2020-2021. Significant capital expenditures are anticipated over the 2025-2029 period as many assets reach the end of their anticipated useful lives.

FCWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

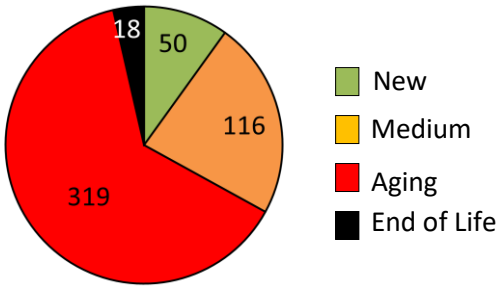


Capital Reserve Opening Balance (2018): ***$189,000***

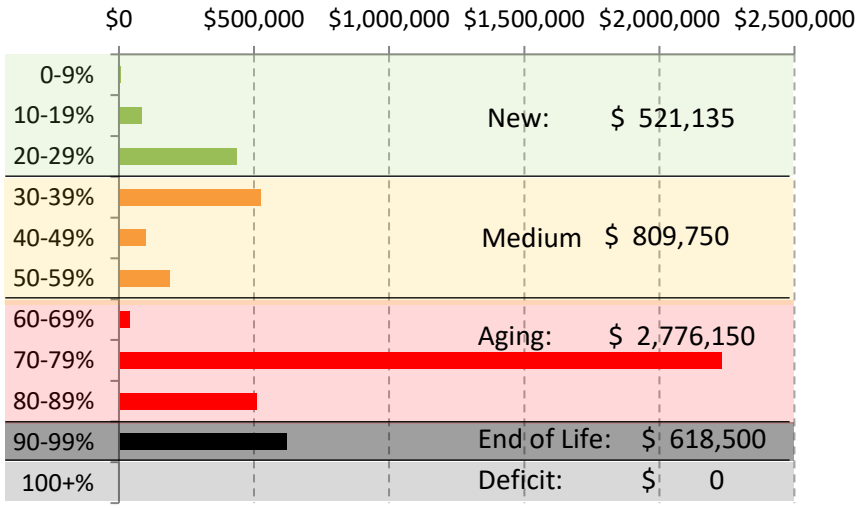
Age and Asset Condition

Asset age indicates asset condition. For the FCWSA, 67% of all assets are in the *Aging* or *End of Life* age category, resulting in a condition rating of *Fair* or *Poor*. 72% of the value of all the assets are in the *Aging* or *End of Life* category. This shows that the majority of assets in the FCWSA are at or nearing replacement.

FCWSA: *Total Number of Assets by Age Class*



FCWSA: *Total Asset Value by Age Class*



2.4.4 Melrose Terrace Water Service Area (MTWSA)

Level of Service

The MTWSA provides treated drinking water to 28 residential connections, serving an estimated 60 residents. Over the course of 2017, all measured parameters for water quality were within Canadian Water Quality Standards.

Average per capita water consumption in the service area in 2017 was 221 litres per person per day. This consumption is 22% lower than the 283 litres per person per day average for all other RDN water systems.

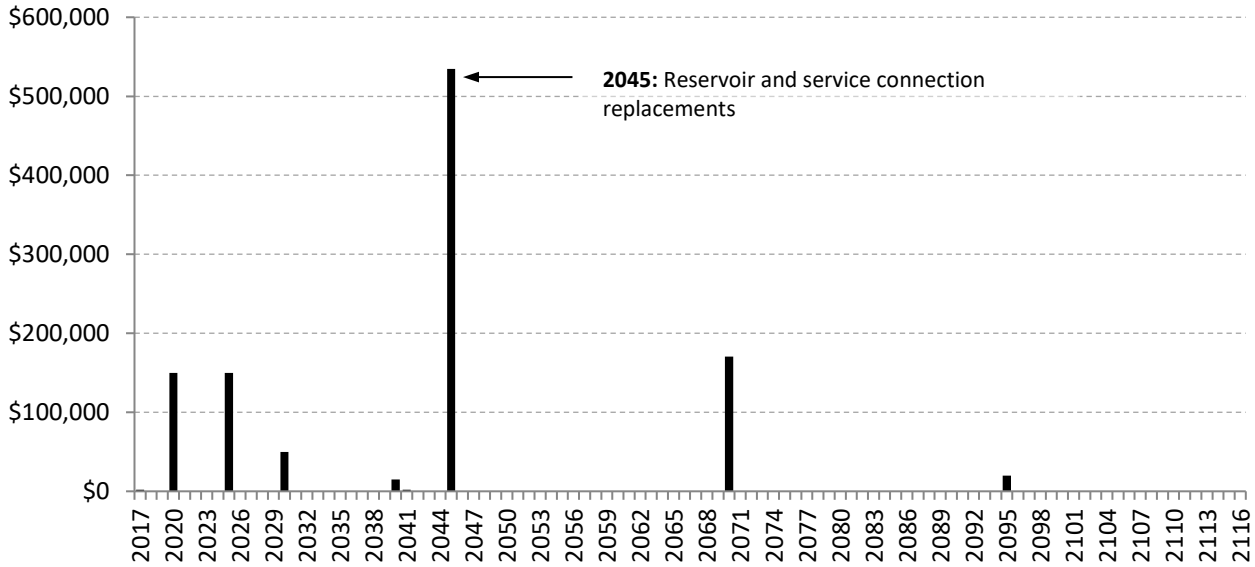
The cost of water in the MTWSA in 2017 was $823.18 per parcel in the service area, plus an average of $171.40 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement cost values for the MTWSA were based on the Nanoose Bay Peninsula Water Service Area values as provided by a third-party engineering firm in 2015. This provides a data confidence rating of '3' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$1,100,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***57.5 years***
Average Annual Replacement Cost	***$19,000***

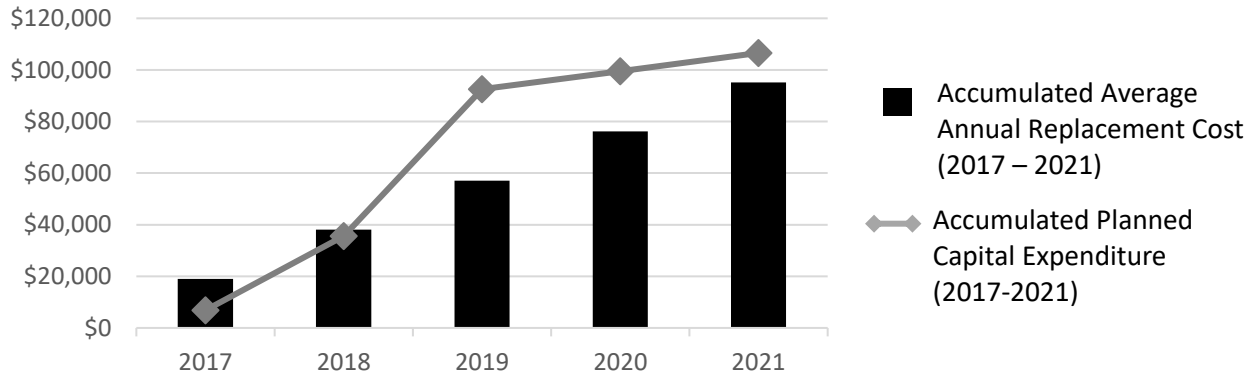
MTWSA: Current Replacement Costs (2017-2117)



Planned Capital Planned Capital Expenditure & Average Annual Replacement Costs

For the MTWSA there are planned capital expenditures of $106,000 over the 2017-2021 period including a reservoir replacement project in 2019. Infrastructure replacement in the WTWSA are generally well aligned to annual average replacement costs.

MTWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

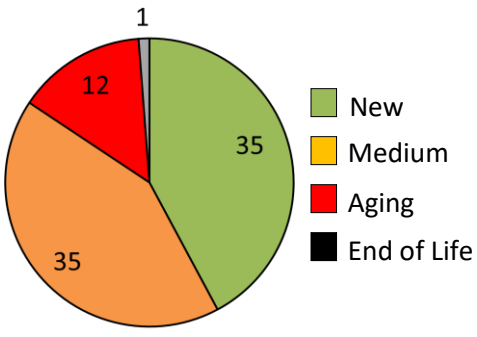


Capital Reserve Opening Balance (2018): ***$11,000***

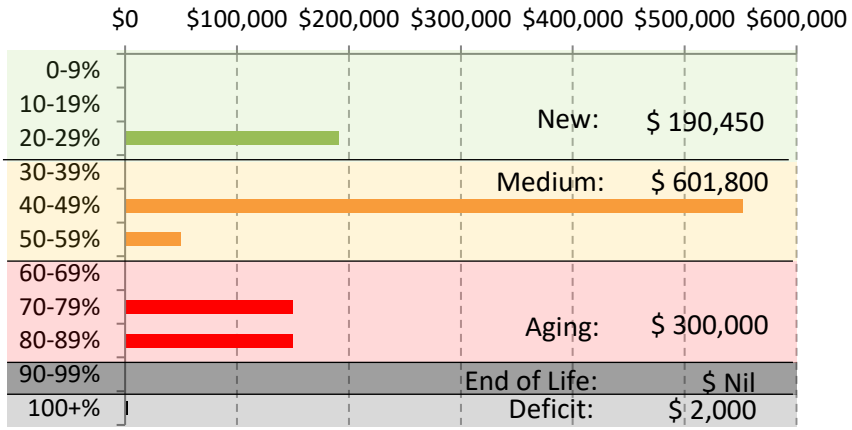
Age and Asset Condition

Asset age indicates asset condition. For the MTWSA, 84% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. 72% of the value of all the assets are in the *New* or *Medium* category. This shows that a majority of assets in the MTWSA are early in their lifecycle, however renewals or replacements need to be planned for approximately 25% of assets in the foreseeable future.

MTWSA: Total Number of Assets by Age Class



MTWSA: Total Asset Value by Age Class



2.4.5 Nanoose Bay Peninsula Water Service Area (NBWSA)

Level of Service

The NBPWSA provides treated drinking water to 2098 residential and 67 commercial connections, serving an estimated 5,700 residents. This is expected to increase to approximately 11,000 people over 25 years.

For 2017, all measured parameters for water quality were within Canadian Water Quality Standards. Average per capita water consumption in the service area in 2017 was 285 litres per person per day, compared to 283 litres per person per day for all water services.

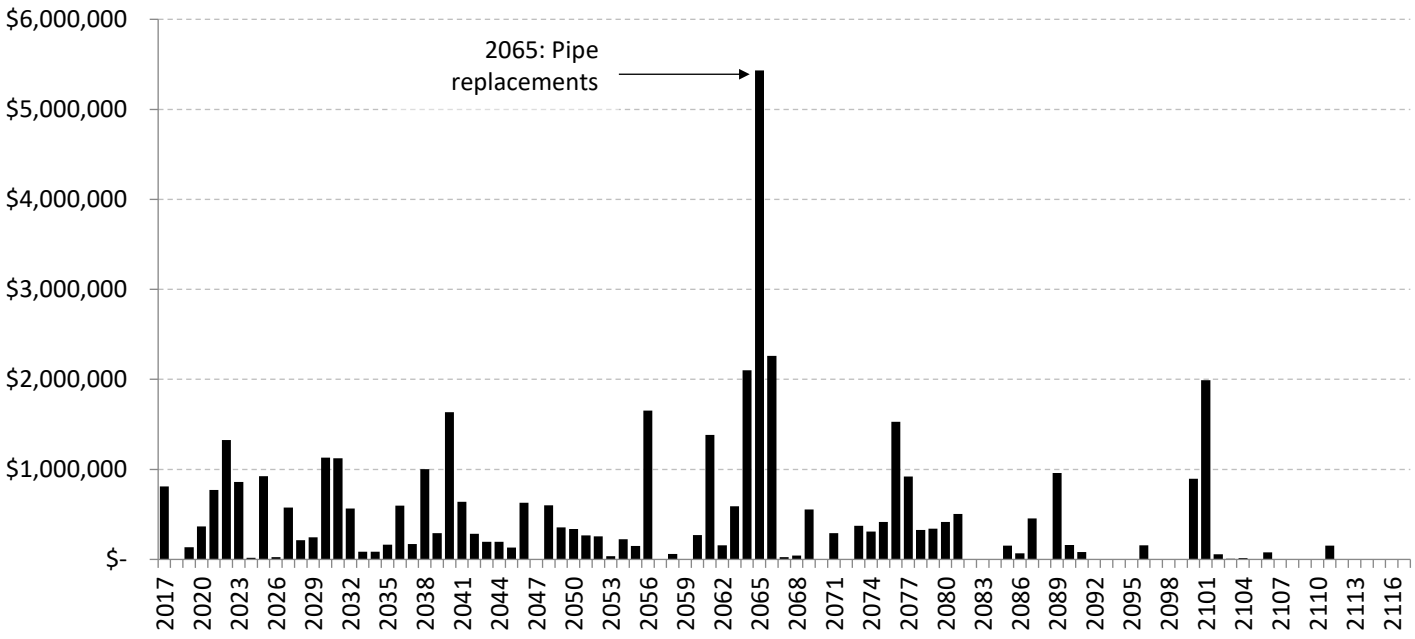
The cost of water in the NBPWSA in 2017 was $357.90 per parcel in the service area, plus an average of $325.80 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement cost values for the NBPWSA were provided by a third-party engineering firm in 2015. This provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$42,600,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***48 years***
Average Annual Replacement Cost	***$887,500***

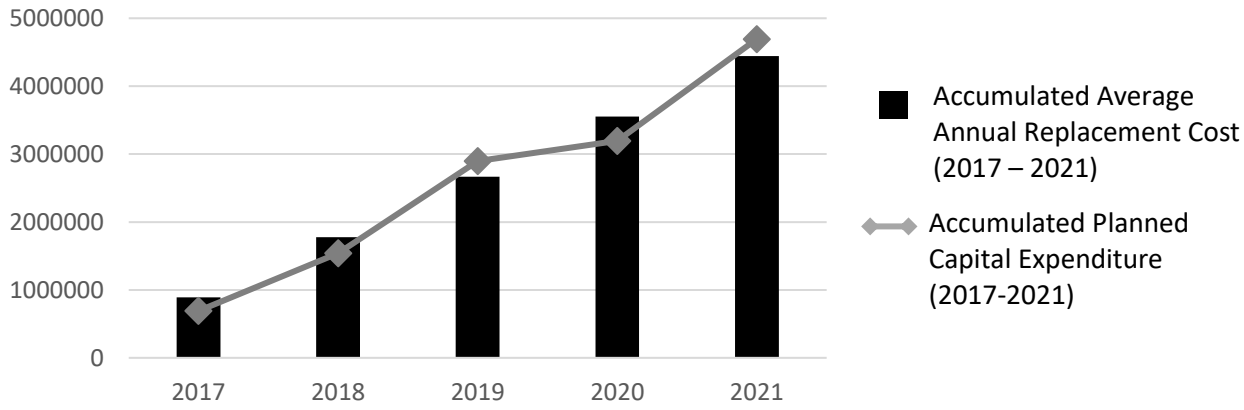
NBPWSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the NBPWSA, $4.7 million in planned capital expenditures include anticipated expenditures on planned capital projects; annual contributions to reserve, which cover future capital spending; and anticipated expenditures on underground utilities replacements. Planned capital expenditures are well aligned to average annual replacement costs.

NBPWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

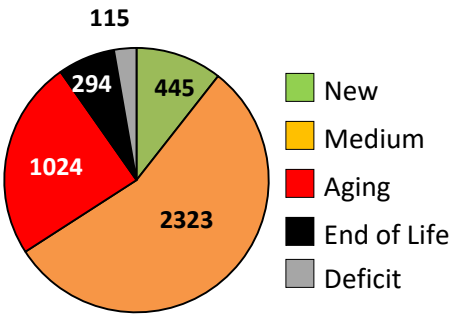


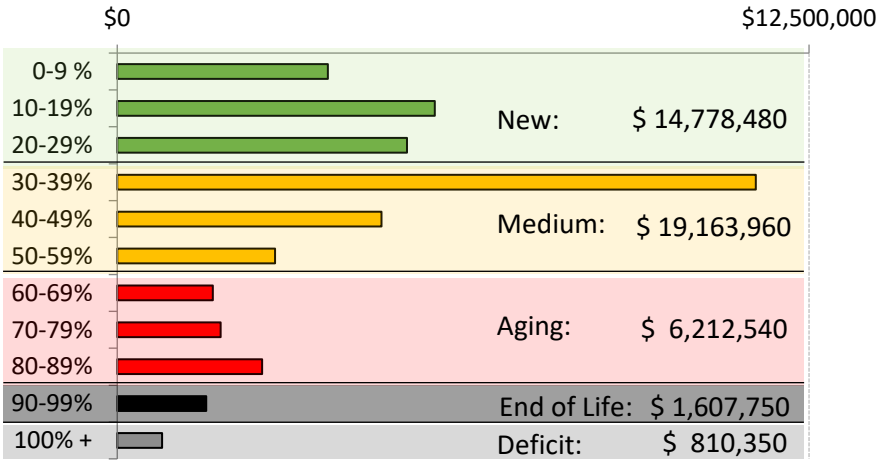
Capital Reserve Opening Balance (2018): ***$770,000***

Age and Asset Condition

Asset age indicates asset condition. For the NBPWSA, 66% of all assets are in the New or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. 80% of the value of all the assets are in the *New* or *Medium* category. This shows that assets in the NBPWSA are relatively early in their lifecycle, and are in good or very good condition.

NBPWSA: Total Number of Assets by Age Class **NBPWSA**: Total Asset Value by Age Class (millions)





2.4.6 San Pareil Water Service Area (SPWSA)

Level of Service

The SPWSA provides treated drinking water to 290 residential connections, serving an estimated 690 residents. Over the course of 2017, all measured parameters for water quality were within Canadian Water Quality Standards.

Average per capita water consumption in the service area in 2017 was 256 litres per person per day. This consumption is 90% of the 283 litres per person per day average for all other RDN water systems.

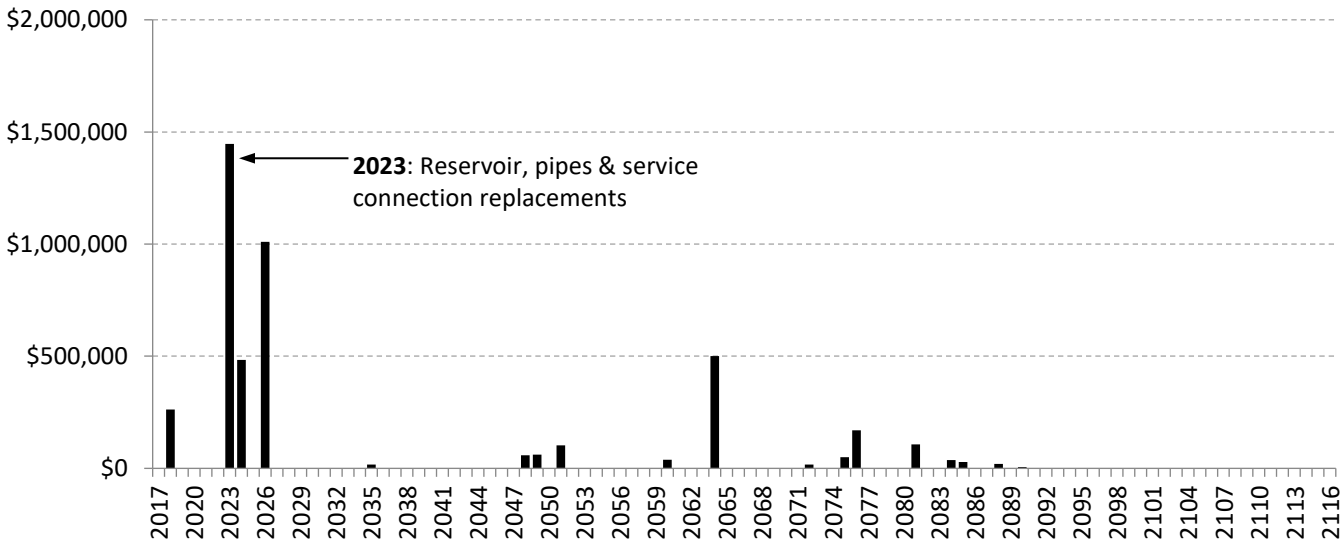
The cost of water in the SPWSA in 2017 was $460.28 per parcel in the service area, plus an average of $283.86 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement cost values for the SPWSA were based on values for the Nanoose Bay Peninsula Water Service Area as provided by a third-party engineering firm in 2015. This provides a data confidence rating of '3' due to differences in the scale of the respective water systems and the age of the comparative data.

Total Replacement Value (2016 Dollars)	***$4,400,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***56 years***
Average Annual Replacement Cost	***$78,500***

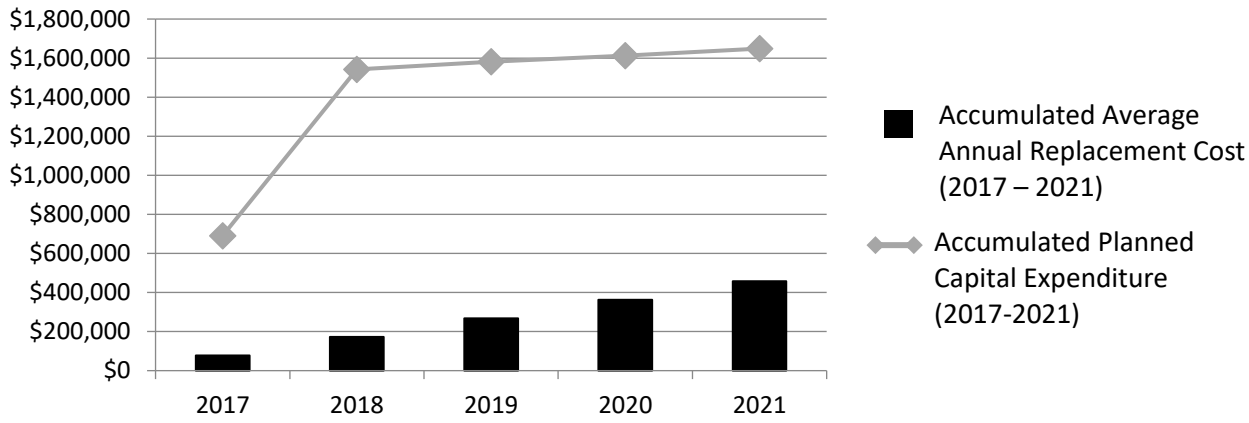
SPWSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

A new ultraviolet treatment was installed in the SPWSA system over the 2017-2018 period. This was a major capital expenditure that was required by the Provincial Ministry of Health, skewing the relationship between planned capital expenditures and average annual replacement costs. The replacement costs for the new UV system have not been incorporated into average annual replacement value for the system.

SPWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

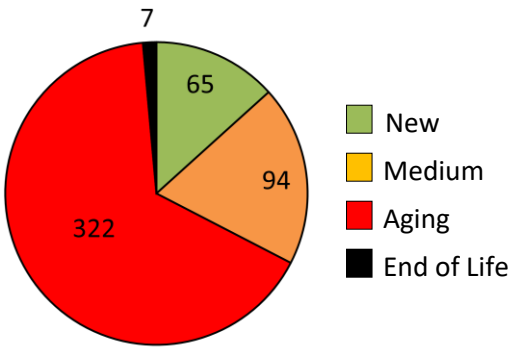


Capital Reserve Opening Balance (2018): ***$28,000***

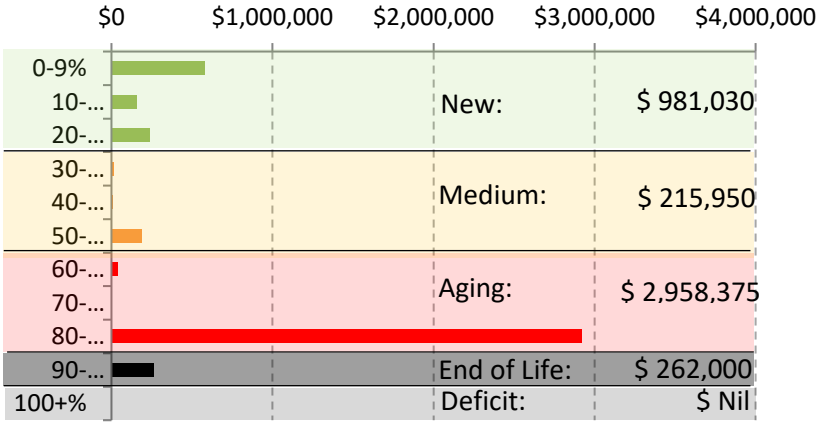
Age and Asset Condition

Asset age indicates asset condition. For the SPWSA, 66% of all assets are in the *Aging* age category, resulting in a condition rating of *Fair*. 67% of the value of all the assets are in the *Fair* category. This shows that assets in the SPWSA are nearing the point of requiring more frequent condition assessments, with plans for renewal or replacement to be prioritized.

SPWSA: Total Number of Assets by Age Class



SPWSA: Total Asset Value by Age Class



2.4.7 Surfside Water Service Area (SWSA)

Level of Service

The SWSA provides treated drinking water to 39 residential connections, serving an estimated 90 residents. There is no reservoir the SWSA; water is sourced from two groundwater wells and pumped into the system via a dual pressure tank arrangement. Over the course of 2017, all measured parameters for water quality were within Canadian Water Quality Standards.

Average per capita water consumption in the service area in 2017 was 276 litres per person per day, which is 2% lower than the 283 litres per person per day average for all other RDN water systems.

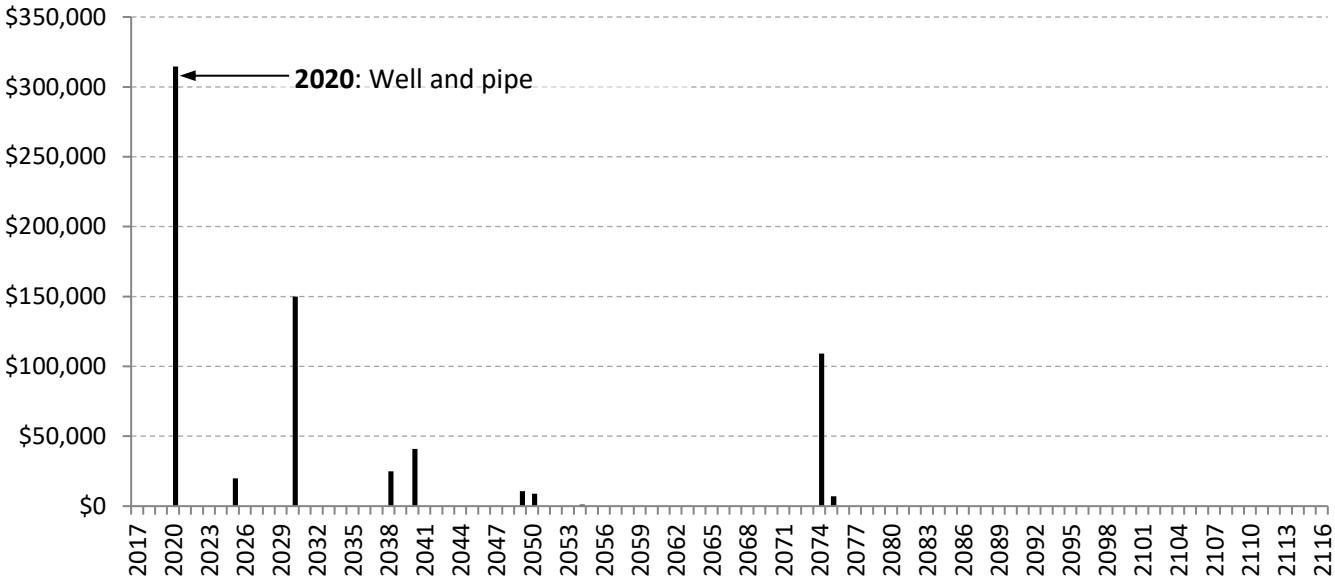
The cost of water in the SWSA in 2016 was $371.92 per parcel in the service area, plus an average of $335.07 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement cost values for the SWSA were based on values for the Nanoose Bay Peninsula Water Service Area as provided by a third-party engineering firm in 2015. This provides a data confidence rating of '3' due to differences in the scale of the respective water systems and the age of the comparative data.

Total Replacement Value (2016 Dollars)	***$688,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***54.3 years***
Average Annual Replacement Cost	***$12,500***

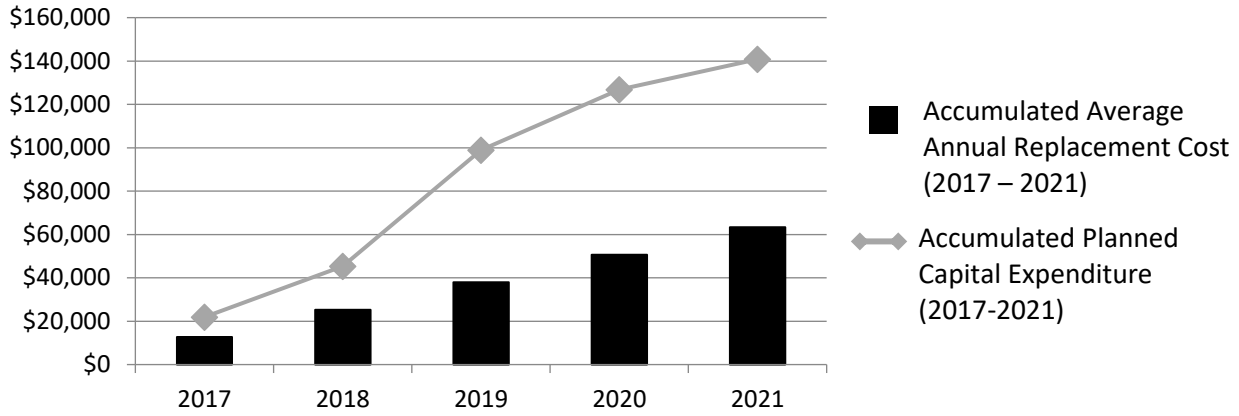
SSWSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the SWSA there is planned capital expenditures of $141,000 for the 2017-2021 period, including renewal work on the wellheads planned for 2019-2020. This level of expenditure above the average annual replacement costs is consistent with high levels of anticipated expenditures.

SWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

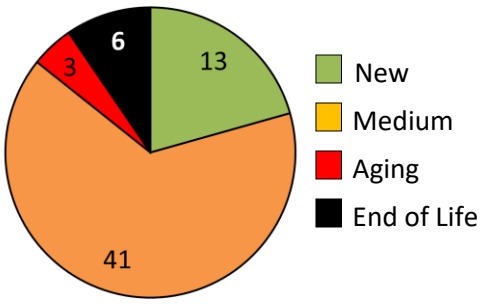


Capital Reserve Opening Balance (2018): ***$3,500***

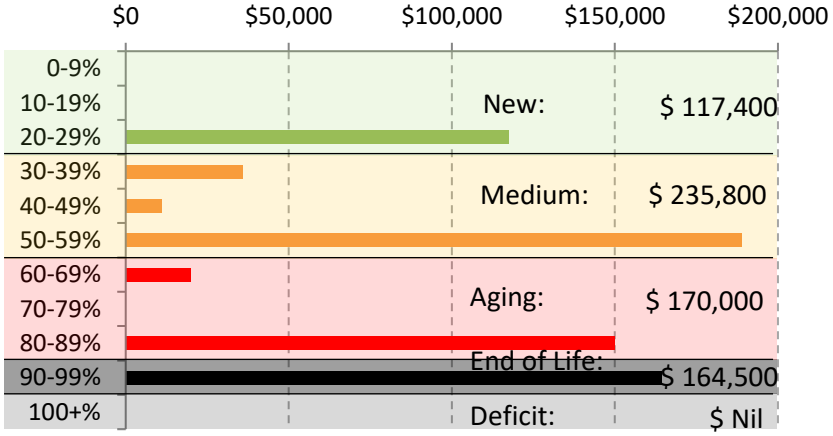
Age and Asset Condition

Asset age indicates asset condition. For the SWSA, 86% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. While 51% of the value of all the assets are in the *New* or *Medium* category, 49% of the value of all the assets are considered to be *Aging* or *End of Life*. This shows that a small number of high value assets are at or nearing the time for replacement or renewal.

SWSA: Total Number of Assets by Age Class



SWSA: Total Asset Value by Age Class



2.4.8 Whiskey Creek Water Service Area (WCWSA)

Level of Service

The WCWSA provides treated drinking water to 126 residential connections, serving an estimated 300 residents.

Over the course of 2017, all measured parameters for water quality were within Canadian Water Quality Standards. There were occasional high turbidity events in the Spring and Fall that required temporary shutdowns of the system while drinking water was trucked-in from another RDN water system nearby to top up the water storage reservoir until the high turbidity event passed.

Average per capita water consumption in the service area in 2017 was 232 litres per person per day. This consumption is 18% lower than the 283 litres per person per day average for all other RDN water systems.

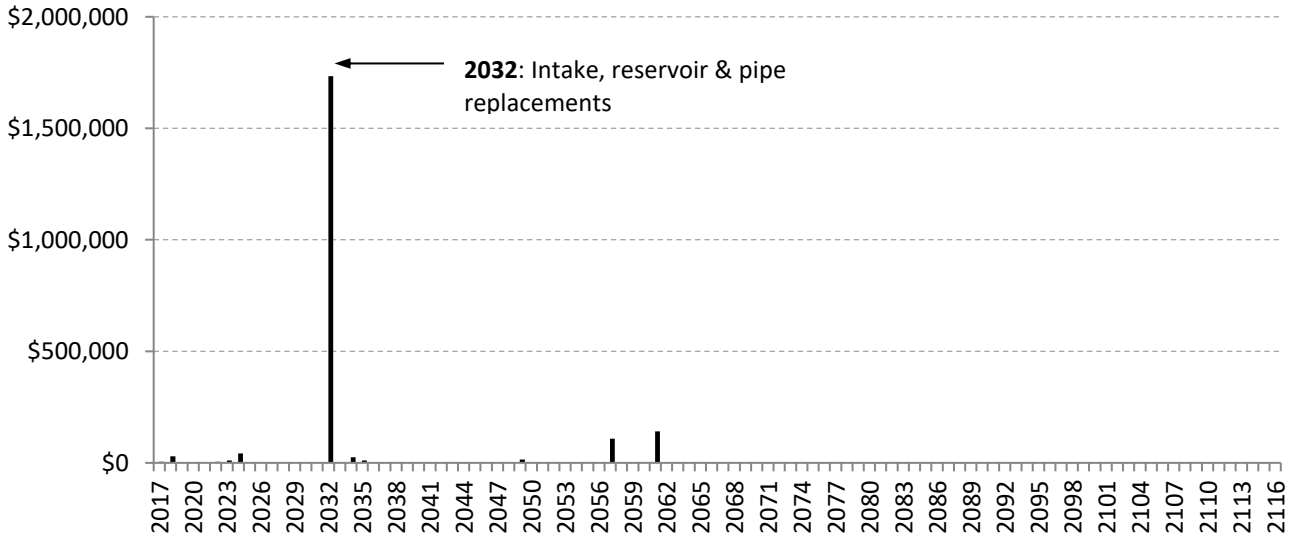
The cost of water in the WCWSA in 2017 was $720.02 per parcel in the service area, plus an average of $326.05 in metered charges.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement cost values for the WCWSA were based on values for the Nanoose Bay Peninsula Water Service Area as provided by a third-party engineering firm in 2015. This provides a data confidence rating of '3' due to differences in the scale of the respective water systems and the age of the comparative data.

Total Replacement Value (2016 Dollars)	***$2,100,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***54.7 years***
Average Annual Replacement Cost	***$38,500***

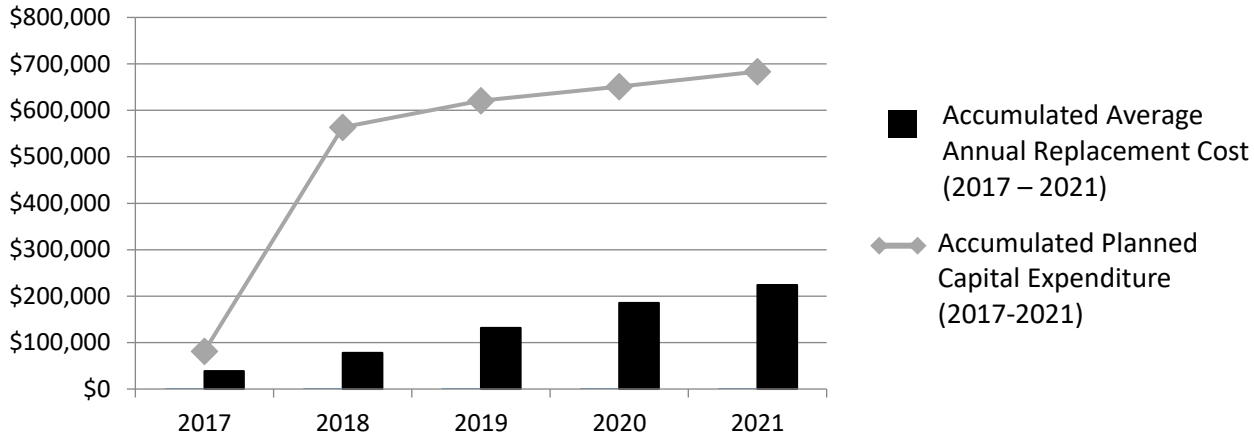
WCWSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the WCWSA there are planned capital expenditures of $685,000 over the 2017-2021 period, including the installation of a new well and distribution system. This new well will eliminate reliance on the current surface water source, and is a high priority project to ensure quality drinking water with reduced operational costs.

WCWSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

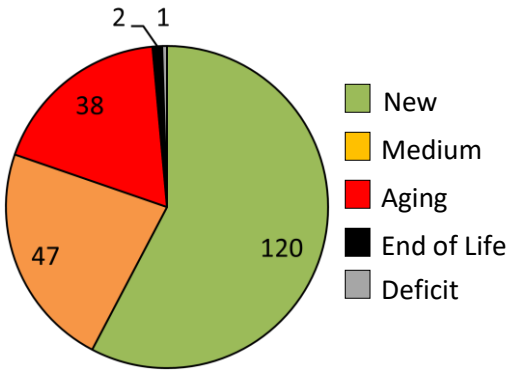


Capital Reserve Opening Balance (2018): ***$40,000***

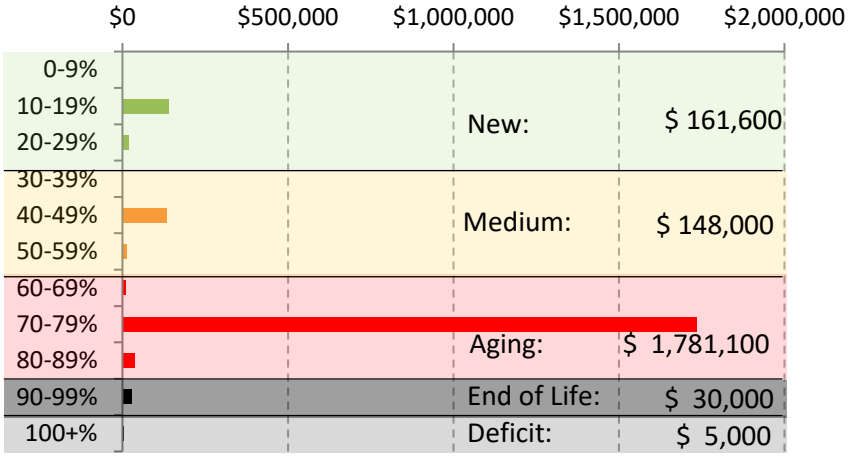
Age and Asset Condition

Asset age indicates asset condition. For the WCWSA, 81% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. However, 85% of the value of all the assets are in the *Aging* or *End of Life* category meaning a number of costly assets are at or nearing the time for replacement or renewal.

WCWSA: Total Number of Assets by Age Class



WCWSA: Total Asset Value by Age Class



2.4.9 Westurne Heights Water Service Area (WHWSA)

Level of Service

The WHWSA provides treated drinking water to 17 residential connections, serving an estimated 40 residents. Ownership of the water utility was transferred to the RDN in September 2016. The water system is comprised of one groundwater well, two underground cisterns, a pumphouse, and a short network of watermains.

In the time the RDN has managed the system, all measured parameters for water quality were within Canadian Water Quality Standards.

Average per capita water consumption in the service area in 2017 was 231 litres per person per day. This consumption is 18% lower than the 283 litres per person per day average for all other RDN water systems.

The cost of water in the WHWSA in 2017 was $1,135.00 per parcel in the service area, plus an average of $147.56 in metered charges.

Current Replacement Costs ***Data Confidence Rating: N/A***

No information is available at this time to calculate replacement costs. An asset registry has not been completed. Over the course of 2017 the RDN completed a number of upgrades to the existing infrastructure as well as installing new meters for each connection.

The data, along with age and condition ratings will be available in 2019 and included in the updated asset snapshot for this service area.

Planned Capital Expenditure & Current Replacement Costs

Following the acquisition and initial capital investments in the system over 2016 and 2017, minimal capital expenditures are planned for the WHWSA. Contributions to capital reserves vary from $5,000 to $6,000 dollars per year between 2018 and 2021.

Capital Reserve Opening Balance (2018): ***$0***

2.4.10 Barclay Crescent Sewer Service Area (BCSSA)

Level of Service

The BCSSA was established in 2005 and comprises an area south of the Island Highway between Drew Road and Barclay Crescent (in Electoral Area G between the municipalities of Parksville and Qualicum Beach). There are currently 247 residential and no commercial connections to the system. The sanitary sewer collection system discharges into a trunk sewer system that conveys the sewage to the French Creek Pollution Control Centre located on Lee Road.

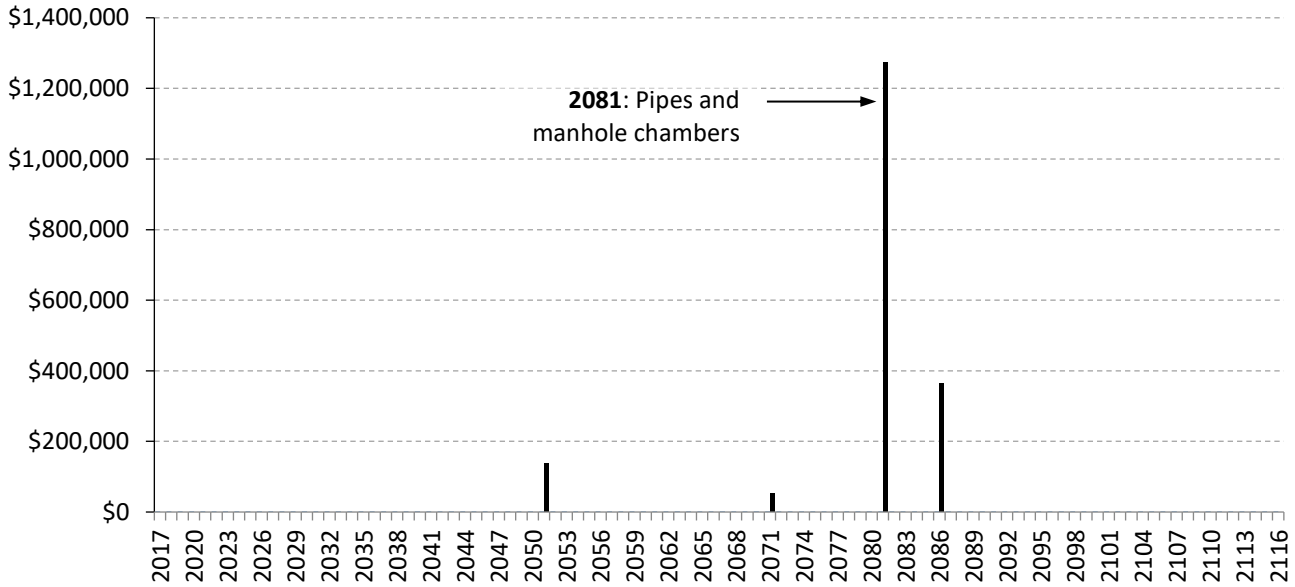
The infrastructure cost per parcel in the service area in 2017 was $336.97 for 57 of the connections, and $722.55 for 190 connections. The annual utility fee (usage charge) for the homes on the BCSSA was $250.37.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement cost values for the majority of components in the BCSSA were based on the Nanoose Bay Peninsula Water Service Area values as provided by a third-party engineering firm in 2015. This evaluation data was comparable for analysis purposes but not specific to a sewer service so there is a lower data confidence rating of '2' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$1,800,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***74.1 years***
Average Annual Replacement Cost	***$24,500***

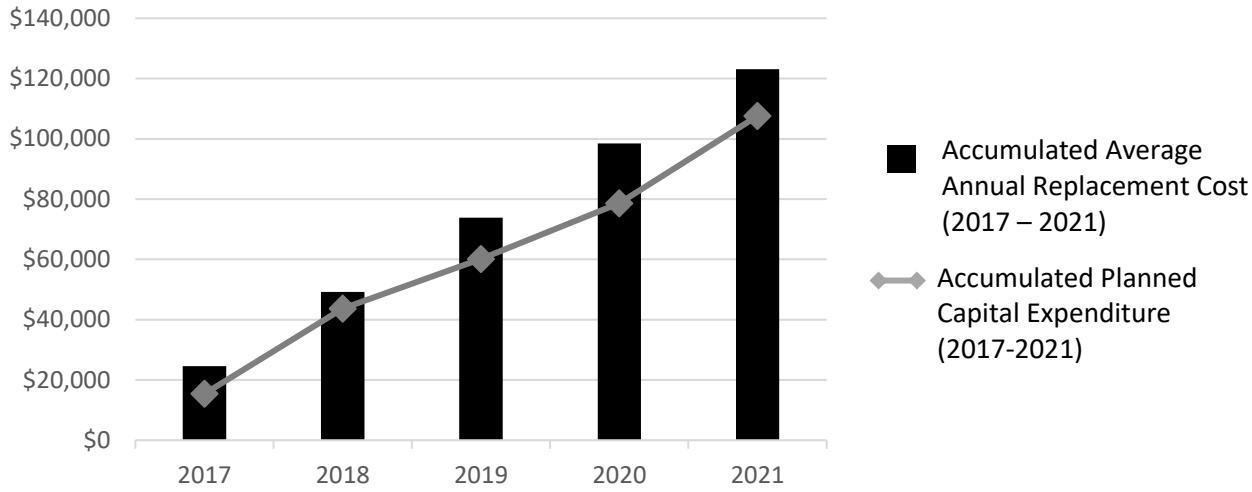
BCSSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the BCSSA there are planned capital expenditures of $108,000 over the 2017-2021 period, including a planned pump replacement. There is a close alignment between planned capital expenditures and average annual replacement costs, with a minimal infrastructure deficit developing over the 2017-2021 period.

BCSSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

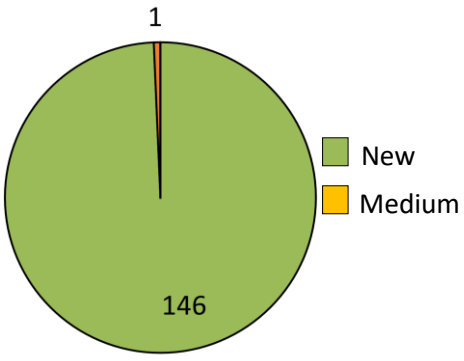


Capital Reserve Opening Balance (2018): ***$5,000***

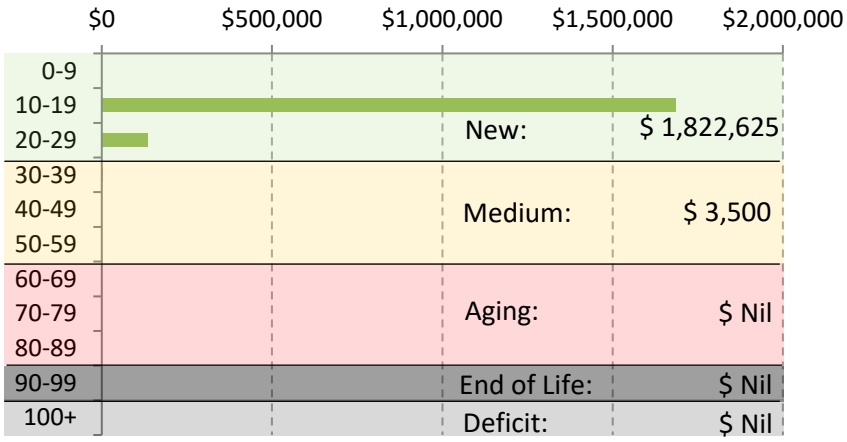
Age and Asset Condition

Asset age indicates asset condition. For the BCSSA, 99% of all assets are in the *New* age category, resulting in a condition rating of *Very Good*. The entire 100% of the value of the assets are in the *New* category meaning the system is early in its life cycle.

BCSSA: Total Number of Assets by Age Class



BCSSA: Total Asset Value by Age Class



2.4.11 Cedar Sewer Service Area (CSSA)

Level of Service

The Cedar Sewer Service Area was established in 2010 and serves 68 residential and commercial connection in the Cedar town core, on parts of MacMillan Road and Cedar Road. The sanitary sewer collection system discharges into a trunk sewer system that conveys wastewater to the Duke Point Pollution Control Centre.

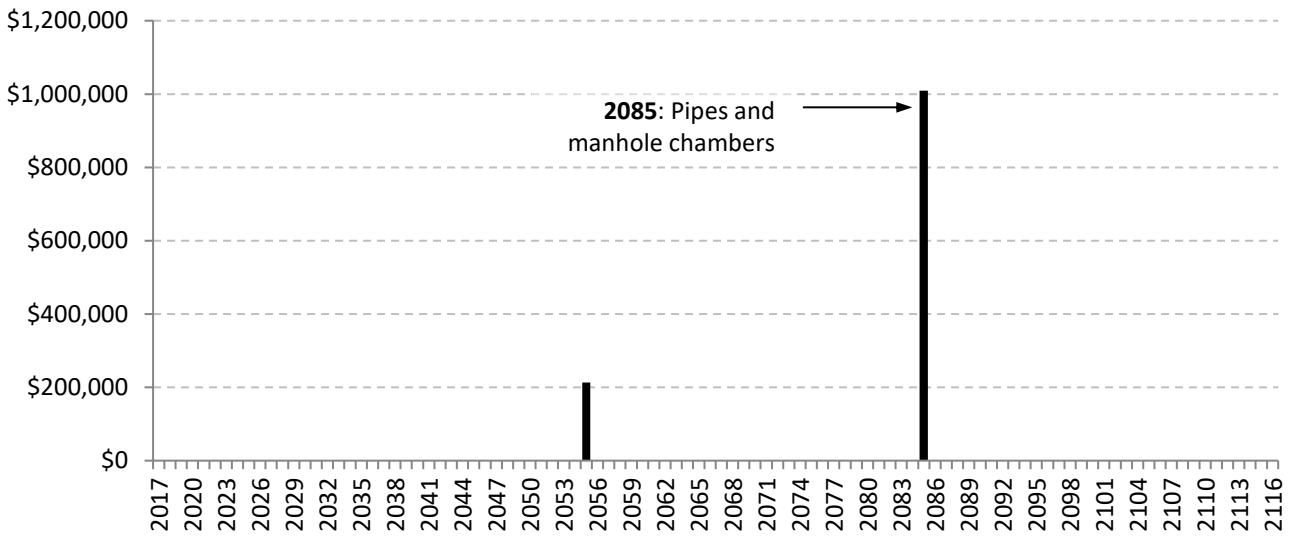
Infrastructure costs are calculated on the basis of size and land use, and vary considerably widely per connection. The annual utility fee for the homes on the CSSA was $233.40 plus $1.60/day.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement cost values for the majority of components in the CSSA were based on the Nanoose Bay Peninsula Water Service Area values as provided by a third-party engineering firm in 2015. This evaluation data was comparable for analysis purposes but not specific to a sewer service so there is a lower data confidence rating of '2' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$1,200,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***74.7 years***
Average Annual Replacement Cost	***$16,000***

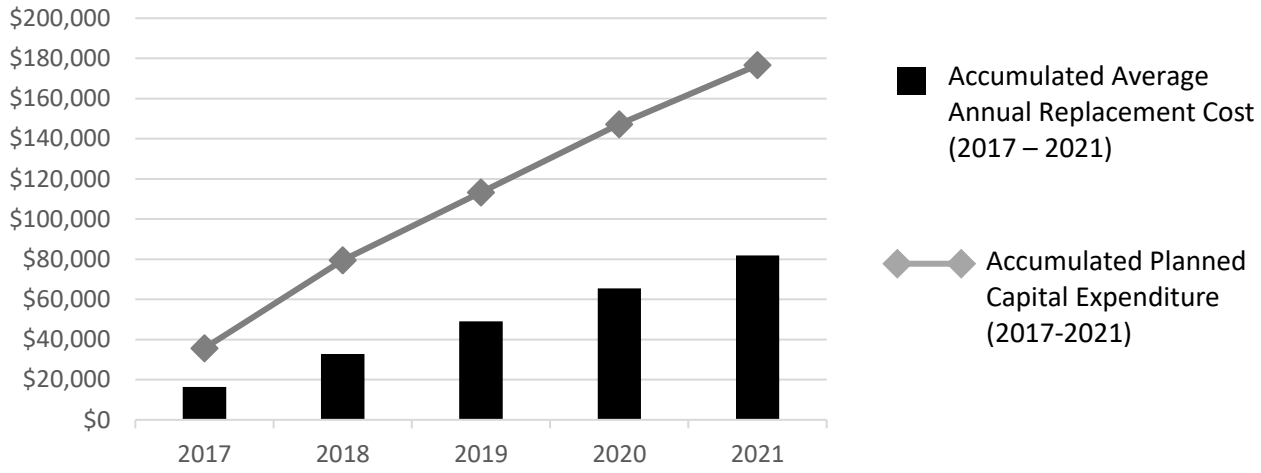
CSSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the CSSA there are $177,000 in planned capital expenditures over the 2017-2021 period. This is above the anticipated capital expenditures given the young age and average annual replacement values for the CSSA. A closer examination of operating costs included as capital expenditures is necessary to refine the schedule of planned capital expenditures for the CSSA.

CSSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

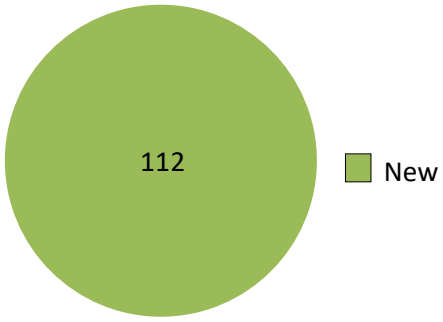


Capital Reserve Opening Balance (2018): ***$87,000***

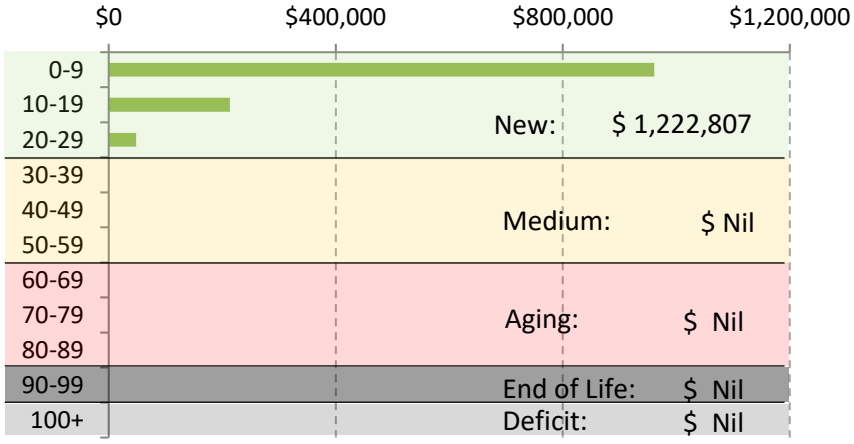
Age and Asset Condition

Asset age indicates asset condition. For the CSSA, 100% of all assets are in the *New* age category, resulting in a condition rating of *Very Good*. The entire 100% of the value of the assets are in the *New* category meaning the system is early in its life cycle.

CSSA: Total Number of Assets by Age Class



CSSA: Total Asset Value by Age Class



2.4.12 French Creek Sewer Service Area (FCSSA)

Level of Service

The French Creek Sewer Service Area was established in 1980 and comprises an area west of Drew Road and south of the Island Highway between the City of Parksville and the Town of Qualicum Beach. There are currently 1,918 residential and commercial connections to the system. The sanitary sewer collection system discharges into a trunk sewer system that conveys the sewer to the French Creek Pollution Control Centre located on Lee Road.

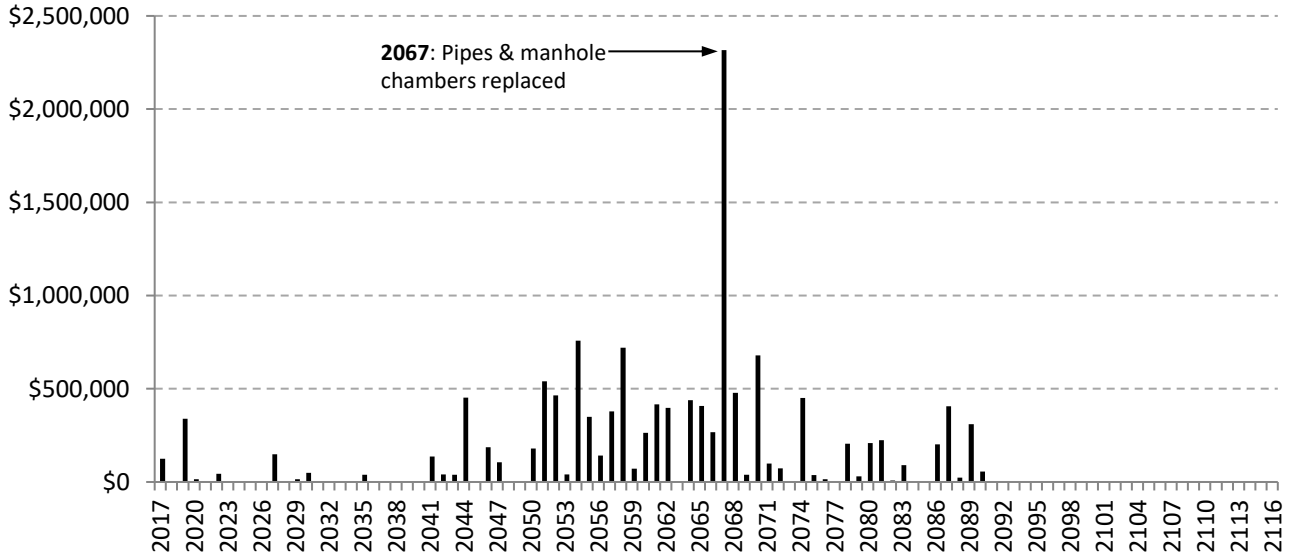
The infrastructure cost per parcel in the service area in 2017 was $357.61. The annual utility fee (usage charge) for the homes on the FCSSA was $175.63.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement cost values for the FCSSA were based on the Nanoose Bay Peninsula Water Service Area values as provided by a third-party engineering firm in 2015. This evaluation data was comparable for analysis purposes but not specific to a sewer service so there is a lower data confidence rating of '2' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$13,500,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***71.7 years***
Average Annual Replacement Cost	***$230,000***

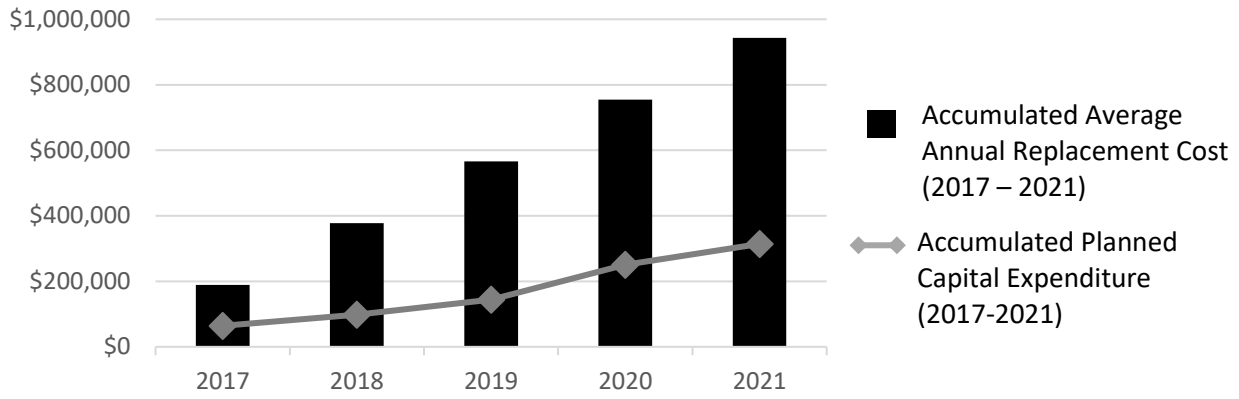
FCSSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the FCSSA there are planned capital expenditures of $315,000 over the 2017-2021 period, including a pump station upgrade. This expenditure is well below the average annual replacement costs for the FCSSA, reflecting the relatively young age of the system. Due to the age of this system there a need for a closer examination of planned capital expenditures to ensure that asset renewal and replacements can proceed over the longer-term without significant changes to utility rates.

FCSSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

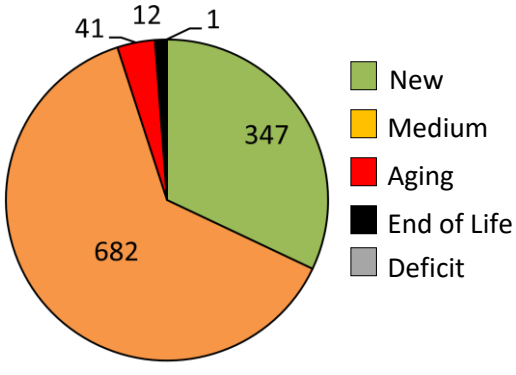


Capital Reserve Opening Balance (2018): ***$498,000***

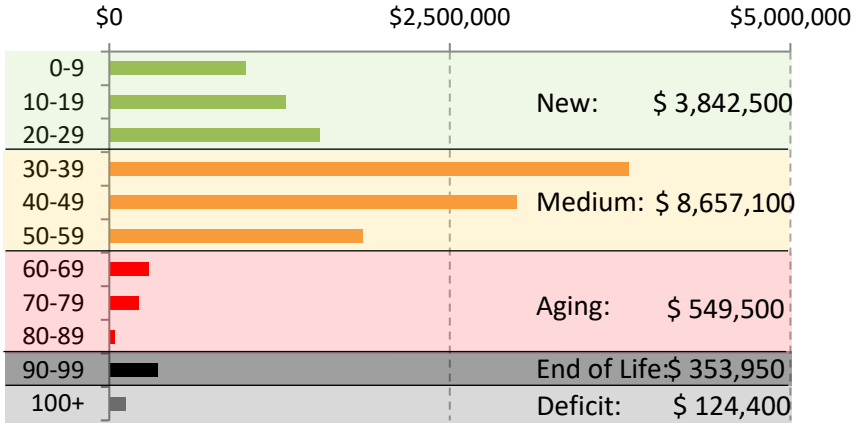
Age and Asset Condition

Asset age indicates asset condition. For the FCSSA, 95% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. In terms of asset value, 92% of the value of all the assets are in the *New* or *Medium* category. 1% of assets (4% by value) are at or nearing the time for replacement or renewal.

FCSSA: Total Number of Assets by Age Class



FCSSA: Total Asset Value by Age Class



2.4.13 Surfside Sewer Service Area (SSSA)

Level of Service

The Surfside Sewer Service Area was established in 1998 and comprises an area north of Qualicum Beach in the McFeely Drive and Kinkade Road area. There are currently 27 residential connections and no commercial connections to the system. The sanitary sewer collection system discharges into a trunk sewer system that conveys the sewer to the French Creek Pollution Control Centre located on Lee Road.

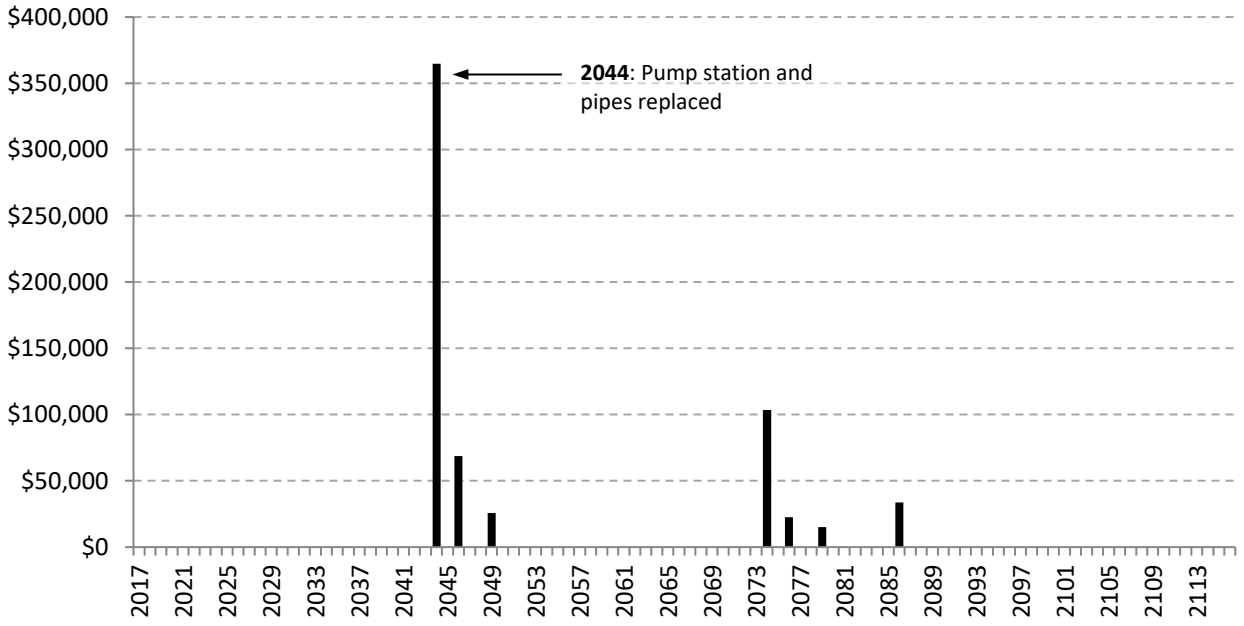
The infrastructure cost per parcel in the service area in 2017 was $801.22. The annual utility fee (usage charge) for the homes on the SSSA was $145.66.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement cost values for the SSSA were based on the Nanoose Bay Peninsula Water Service Area values as provided by a third-party engineering firm in 2015. This evaluation data was comparable for analysis purposes but not specific to a sewer service so there is a lower data confidence rating of '2' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$634,000***
Lifecycle Period	***100 years***
Average Useful Life of All Assets	***62.4 years***
Average Annual Replacement Cost	***$10,000***

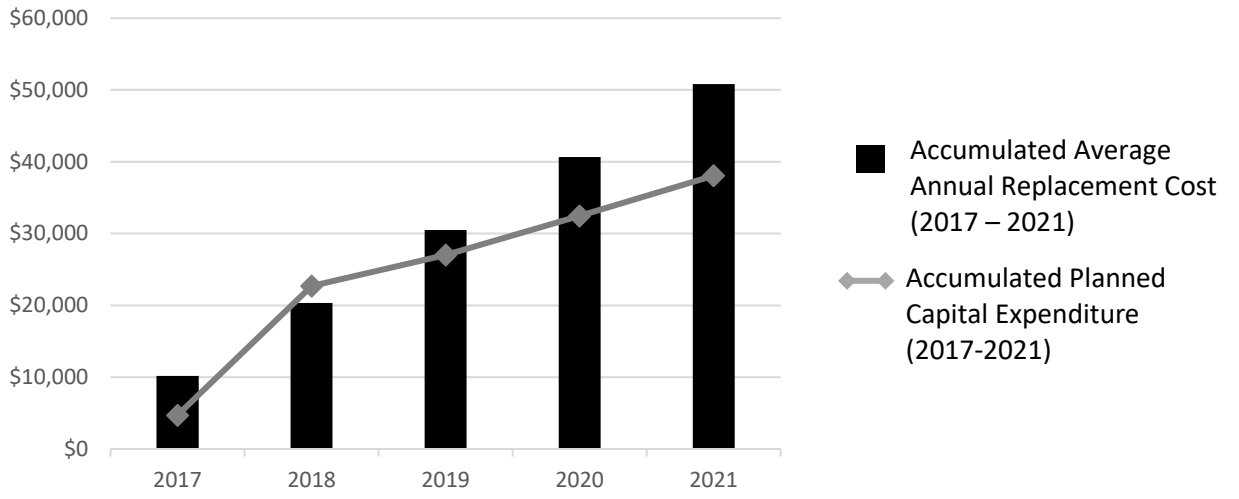
SSSA: Current Replacement Costs (2017-2117)



Planned Capital Expenditure & Average Annual Replacement Costs

For the SSSA there are planned capital expenditures of $38,000 over the 2017-2021 period. This is closely aligned to the average annual replacement costs for the system, with a small deficit in infrastructure investment developing in 2020-2021.

SSSA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

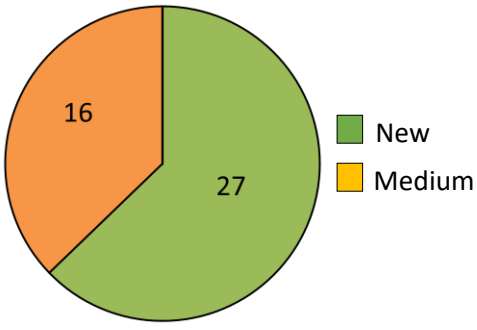


Capital Reserve Opening Balance (2018): ***$8,100***

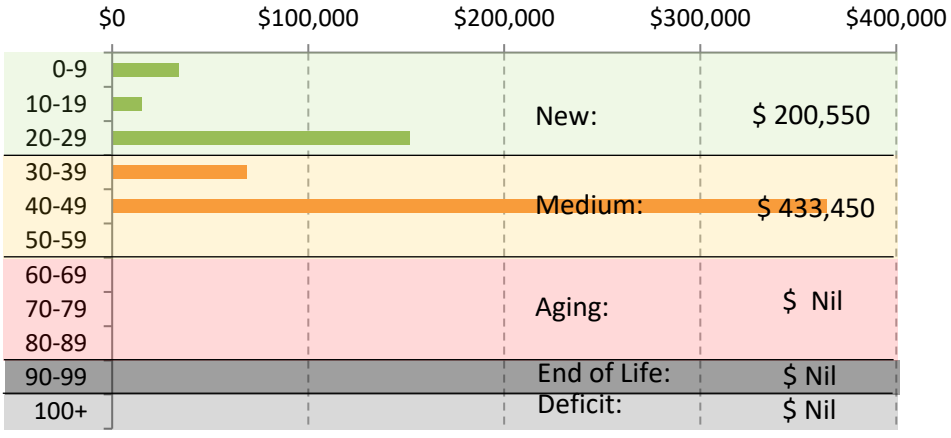
Age and Asset Condition

Asset age indicates asset condition. For the SSSA, 100% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. The value of all 100% of the assets are in the *New* or *Medium* category meaning the assets are early in their lifecycles.

SSSA: Total Number of Assets by Age Class



SSSA: Total Asset Value by Age Class



2.4.14 Street Lighting Local Service Areas (SLSSA)

Level of Service

There are seven street lighting local service areas (SLLSAs) in the RDN, each established through separate bylaws.

- Bylaw 789, Fairwinds
- Bylaw 869.01, Morningstar
- Bylaw 909, Sandpiper
- Bylaw 1062, French Creek Village
- Bylaw 791, French Creek / Nanoose rural
- Bylaw 1048, Highway 4 Intersection
- Bylaw 1353, Englishman River

The SLLSAs are non-contiguous, self-contained areas that are financially supported by the properties within each individual service area.

The two types of streetlights installed in the SLLSAs are the more common cobra-head streetlights attached to hydro poles, or ornamental streetlights which are installed by developers at the time of construction in newer subdivisions. An electrical contractor maintains and repairs the ornamental streetlights within local services areas. BC Hydro looks after the repair and maintenance of all other streetlights.

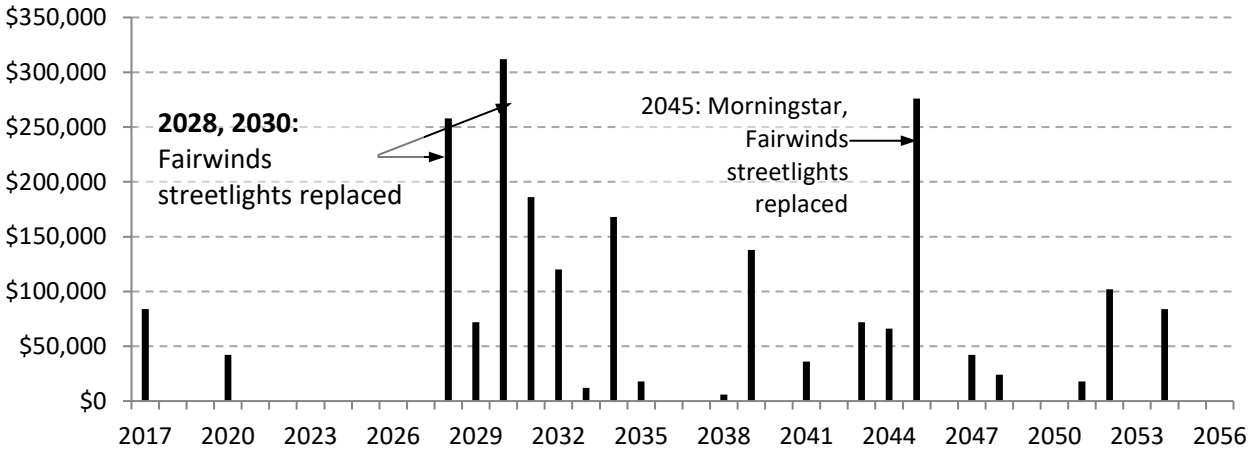
The cost of service in the SLLSAS in 2016 was $720.02 per parcel in the service area, plus an average of $239.39 in metered charges.

Current Replacement Costs ***Data Confident Rating: 2***

Current replacement costs for the SLLSAS are based on operations staff knowledge. This provides a data confidence rating of '2'.

Total Replacement Value (2016 Dollars)	***$2,100,000***
Lifecycle Period	***40 years***
Average Useful Life of All Assets	***39.4 years***
Average Annual Replacement Cost	***$53,000***

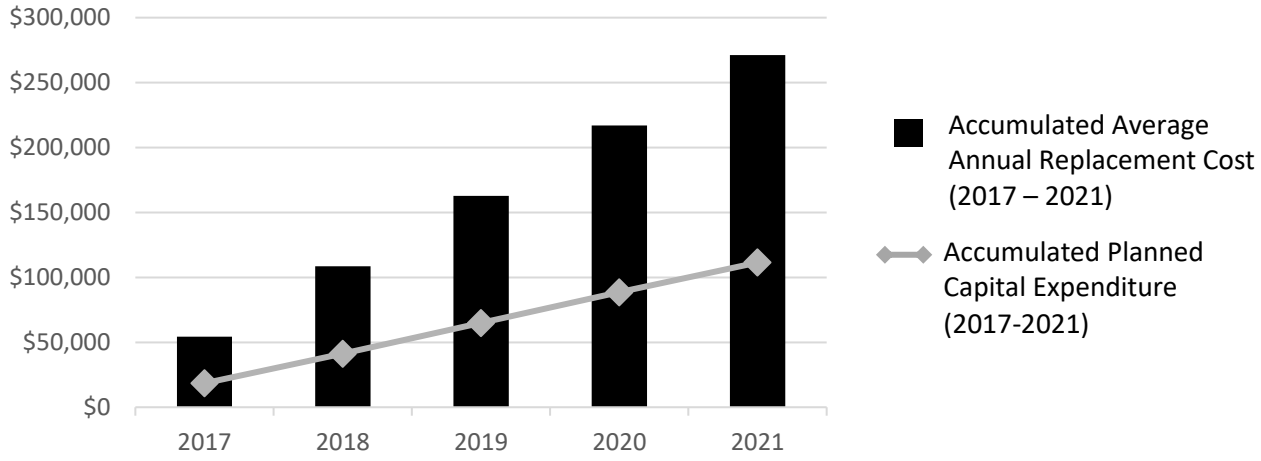
SLLSAS: Current Replacement Costs (2017-2056)



Planned Capital Expenditure & Average Annual Replacement Costs

For the SLLSAS $111,000 of planned capital expenditures over the 2017-2021 period contribute to extending the life of these assets, however expenditures on actual capital are minimal, resulting in a growing infrastructure deficit over time.

SLLSAS Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)



Capital Reserve Opening Balances (2018):

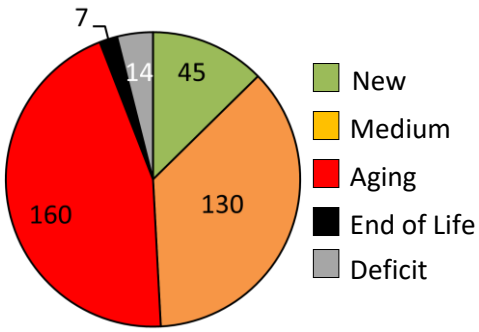
Fairwinds:	$35,000	Morningstar:	$13,000
EA E & G:	$13,000	Eng. River:	$8,000

(Other Streetlighting Service Areas do not have capital reserves.)

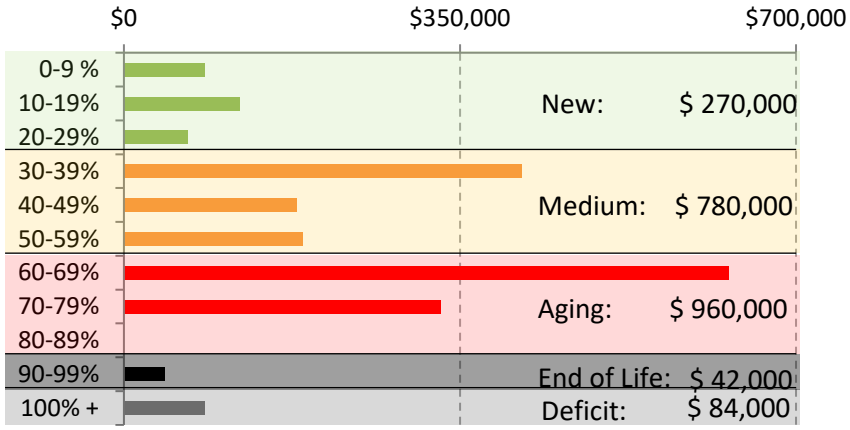
Age and Asset Condition

Asset age indicates asset condition. For the SLLSAS, 50% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. Regarding the value of assets, 6% of the value of all the assets are in the *End of Life* or *Deficit* category meaning a number of the assets are at or nearing the time for replacement or renewal.

SLLSAS: Total Asset Value by Age Class



SLLSAS: Total Number of Assets by Age Class



2.5 Wastewater Services

The Wastewater Services department treats sewage and discharges effluent through the Duke Point, French Creek, Greater Nanaimo and Nanoose Pollution Control Centres.

The department is also responsible for sewer mains and pump stations, and conducts maintenance of the sewer pump stations operated by the Water and Utility Services department.

Table 4 Wastewater Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	The overall asset inventory is estimated at more than 90% accurate. Asset inventories for pump stations and treatment plants, as well as equipment details are stored in Web Works. The diameter and material of linear assets are stored in an Excel spreadsheet. Inclusion of gravity mains, outfalls, and forcemain assets into GIS are ongoing. An $82 million upgrade and expansion to the Greater Nanaimo Pollution Control Centre is currently underway.
	Web Works is the primary software tool in use to manage asset information, with information on linear assets stored in Excel and ArcGIS. Treatment process data is stored in WaterTrax and Intelex is the Environmental Management System (EMS) software. Configuration and use of software tools such as Web Work will be improved to support advanced decision-making and data analysis.
	The costs for all wastewater systems are tracked and kept within individual cost centres and service areas.
Know Your Financial Position	Current replacement values for assets is available Web Work and in a reinvestment planning spreadsheet. Lifespans have been revised to reflect the rate of deterioration of assets with ground-truthing and resources will be directed to keep these values current. The foundational elements under this category are complete.
	The long-range financial plan for Wastewater Services includes new capital projects and is reinvestment rather than lifecycle focused.
	Wastewater staff can differentiate operations from maintenance costs as far as 17 years back and resources will be directed to improve data capture at the asset level.
	Taxation funds operations and maintenance for all wastewater systems. The amount of revenue collected through taxation is apportioned according to the volume of wastewater each area or participant generates. There are also user charges for septage receiving and pump and haul customers. Expansions to accommodate additional capacity are funded in part through DCCs and grants as well as taxation.
Understand Decision-Making	Decision making in this service area is based on an understanding of good asset management practices through staff. Wastewater services documents purchase decisions in Web Work and decisions that require expertise undergo a documented process. Options for repairs are known by key personnel, but documentation of the range of repair options considered requires development.

	A procedure to improve the process for entering assets and asset information into Web Works has been developed.
Manage Asset Lifecycle	A portion of work history indicative of asset condition can be found in Web Work.
	The condition of the assets is well understood by technical staff. The condition of certain assets has been verified by external expertise. Condition data is recorded against relevant assets in Web Work. It is also kept in separate technical documents.
	The Wastewater Service uses Web Work to generate work orders to ensure preventive maintenance is completed as identified in equipment maintenance manuals or as reported by staff. Review of maintenance options depend on the criticality and the risk of failure of the equipment.
Know the Rules	Legislative requirements are known and documented within the EMS Intelex, WaterTrax and Web Work systems. These systems ensure continuity across staffing changes, reflect active monitoring and provide evidence of compliance.

2.5.1 Wastewater Services - Level of Service

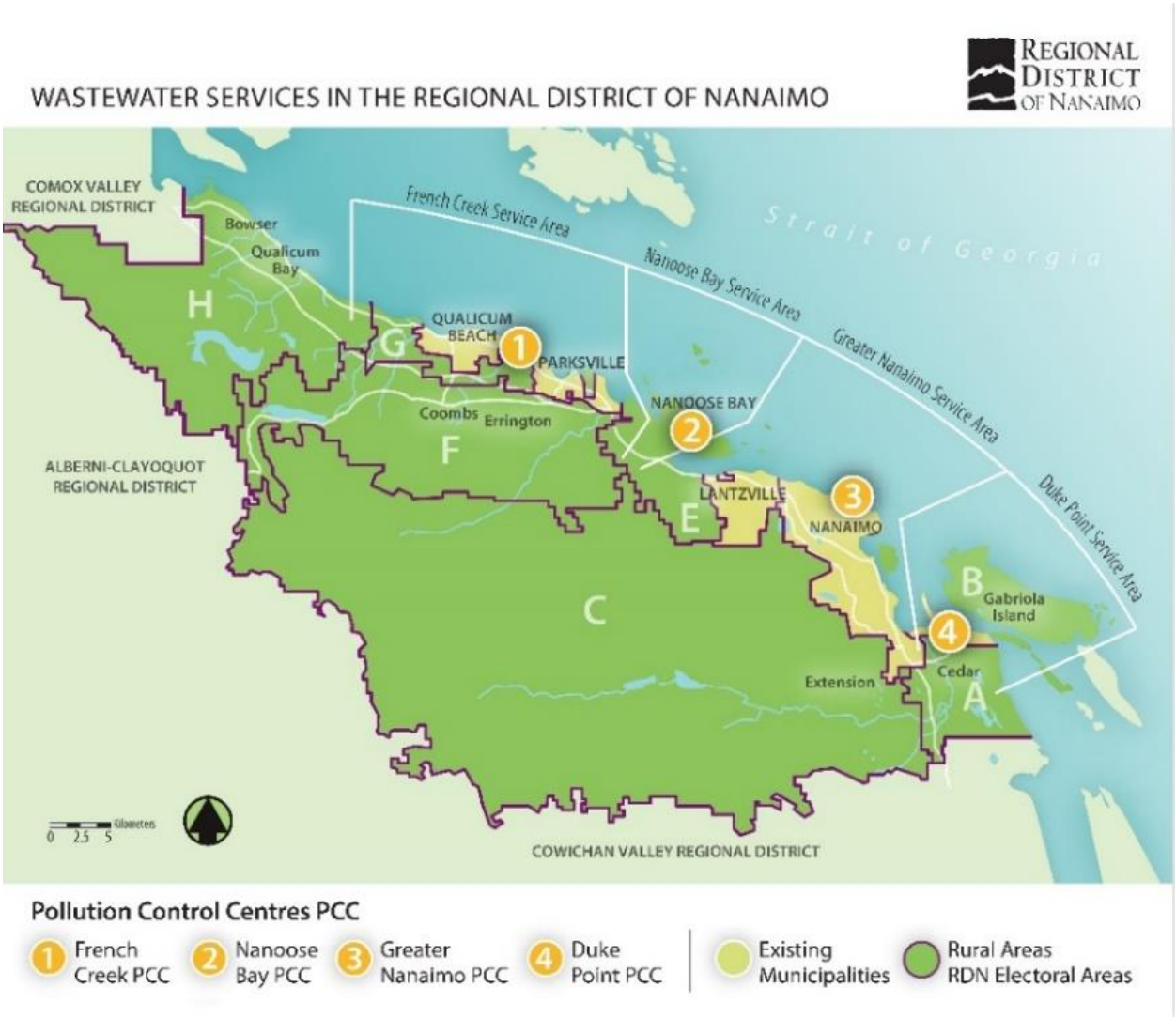
The Regional District operates four wastewater treatment facilities, 23 pump stations, and two septage receiving sites to transport and treat wastewater from about 110,000 homes and businesses. This number includes homes and businesses located within the municipalities of Nanaimo, Parksville, Qualicum Beach, and Lantzville and in sewer service areas located in Electoral Areas A, E and G.

Property owners not connected to sewer, largely those residing in rural areas and island communities, are responsible for their own wastewater treatment, and often use privately-owned septic and onsite systems. A small number of properties are authorized by Island Health to use pump and haul services and the RDN receives and treats holding tank waste from these properties as well as septage from pumped septic tanks.

There is a vast network of pipes, interceptors, pumps, lift stations, chamber, manholes, valves, treatment facilities and outfall pipes. The asset inventory is the largest of any of the RDN departments, and the estimated replacement value is by far the greatest. Many parts of the system (such as interceptors and other piping) have been in the ground for decades. Due to the complexity of the network, work is ongoing to fully update the inventory with details such as replacements costs and estimated useful lives.

A conservative estimate for the total replacement value of RDN waste water services, based on inflated historic costs, known replacement values, and current construction pricing, is about $186.4 million.

Significant capital investment is currently underway at the Greater Nanaimo facility. The expansion and upgrade to secondary treatment began in May 2017 and will continue to December 2019. The project budget is $82 million including contingency. The upgrade project will be paid for through a combination of reserves, development cost charges, grants and borrowing.


WASTEWATER SERVICES IN THE REGIONAL DISTRICT OF NANAIMO
REGIONAL DISTRICT OF NANAIMO
COMOX VALLEY REGIONAL DISTRICT
Bowser
Qualicum Bay
French Creek Service Area
Strait of Georgia
Nanoose Bay Service Area
Greater Nanaimo Service Area
Duke Point Service Area
H
G
QUALICUM BEACH
1
PARKSVILLE
NANOOSE BAY
2
Coombs
Errington
F
ALBERNI-CLAYOQUOT REGIONAL DISTRICT
LANTZVILLE
3
NANAIMO
E
B
Gabriola Island
C
4
Cedar
Extension
A
0 2.5 5 Kilometres
COWICHAN VALLEY REGIONAL DISTRICT
Pollution Control Centres PCC
1 French Creek PCC
2 Nanoose Bay PCC
3 Greater Nanaimo PCC
4 Duke Point PCC
Existing Municipalities
Rural Areas RDN Electoral Areas

2.5.2 Fairwinds Sewer Service Area and Nanoose Bay Pollution Control Centre

Level of Service

The Fairwinds Sanitary Sewer Service Area (FSSA) serves approximately 800 residential and commercial connections in the Fairwinds neighbourhood of Nanoose Bay. The collection system and main trunk sewer conveys liquid waste to the Nanoose Bay Pollution Control Centre (NBPCC) for treatment. Wastewater is gravity fed and pumped to NBPCC from nine pump stations.

The infrastructure cost per parcel in the service area in 2017 was $731.05. The usage charge for the homes on the FSSA was $77.09.

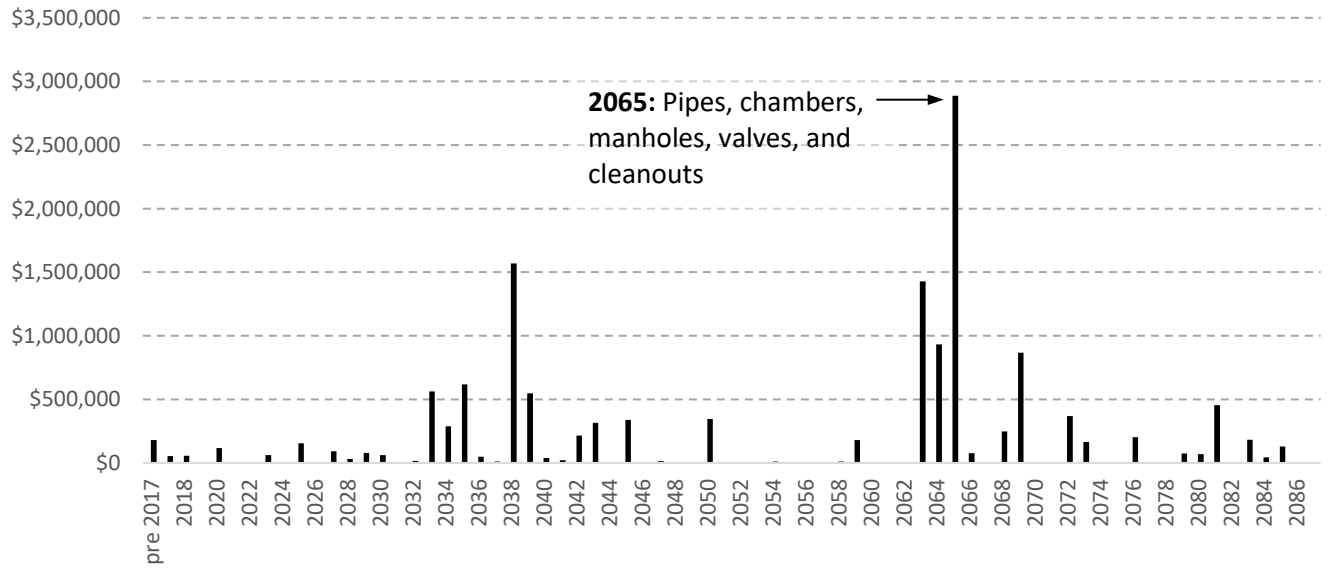
The NBPCC uses chemically-enhanced primary treatment to remove up to 70% of biological oxygen demand (BOD) and up to 80% of total suspended solids (TSS). Sludge from NBPCC is trucked to the French Creek Pollution Control Centre where it undergoes further treatment.

Current Replacement Costs ***Data Confidence Rating: 3***

A detailed asset inventory is available for both the FSSA and NBPCC. This provides a data confidence rating of 3.

Total Replacement Value (2016 Dollars)	***$14,200,000***
Lifecycle Period	***70 years***
Average Useful Life of All Assets	***65.7 years***
Average Annual Replacement Cost	***$216,000***

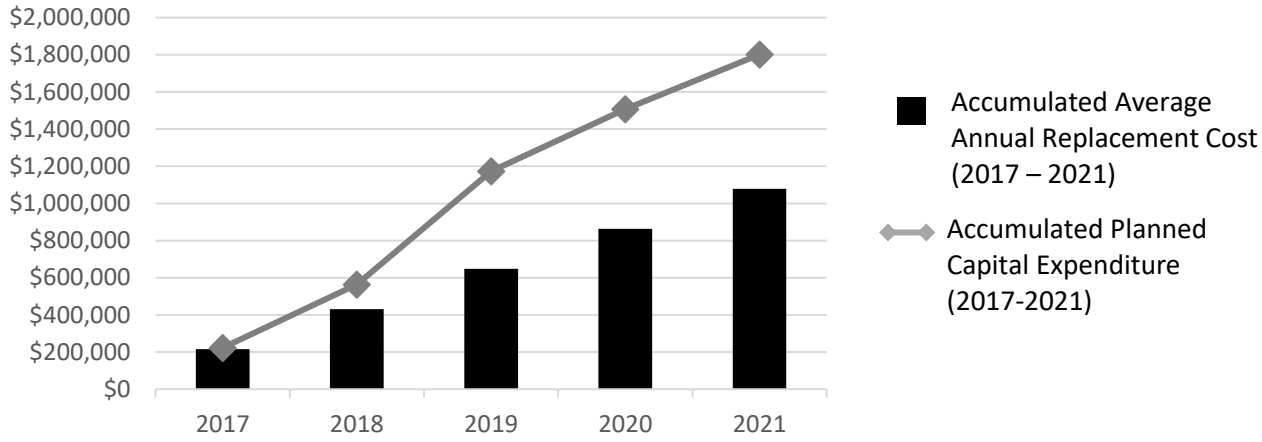
Fairwinds Sewer and NBPCC: Current Replacement Costs (2017-2087)



Planned Capital Expenditure & Average Annual Replacement Costs

The NBPCC has planned capital expenditures of $1.8 million over the 2017-2021 period. Items of expenditure include back-up pumps for lift stations, a new generator and generator truck, and replacement of major lift station components.

FSSA & NBPCC Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

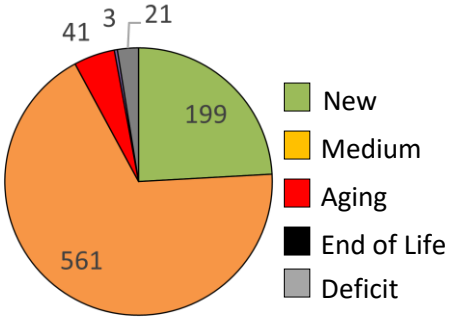


Capital Reserve Opening Balance (2018): ***$1,035,000***

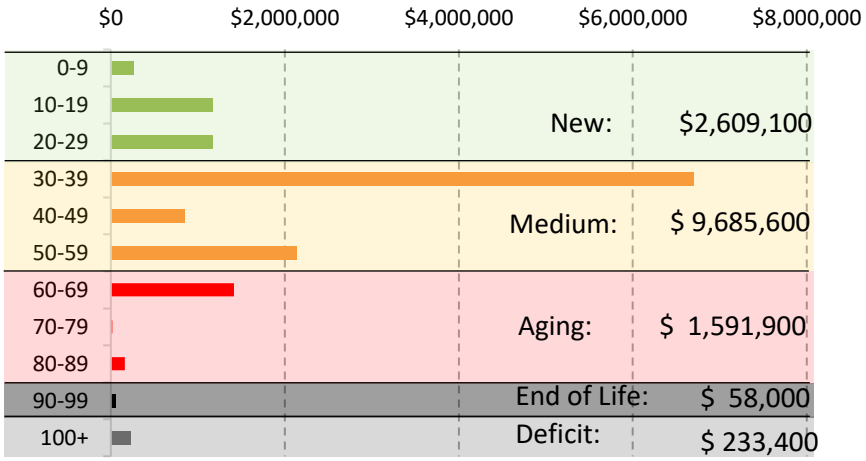
Age and Asset Condition

Asset age indicates asset condition. For the FSSA and NBPCC service area, 97% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. A total of 87% of the value of all the assets are in the *New* or *Medium* category. The majority of assets are early in their lifecycles.

FSSA, NBPCC: Total Number of Assets by Age Class



FSSA/ NBPCC: Total Value of Assets by Age Class



2.5.3 Duke Point Waste Water Service (DPWW)

Level of Service

Wastewater from 56 connections in the Duke Point service area is treated at the Duke Point Pollution Control Centre (DPPCC). Wastewater is gravity fed and pumped to DPPCC via three pump stations.

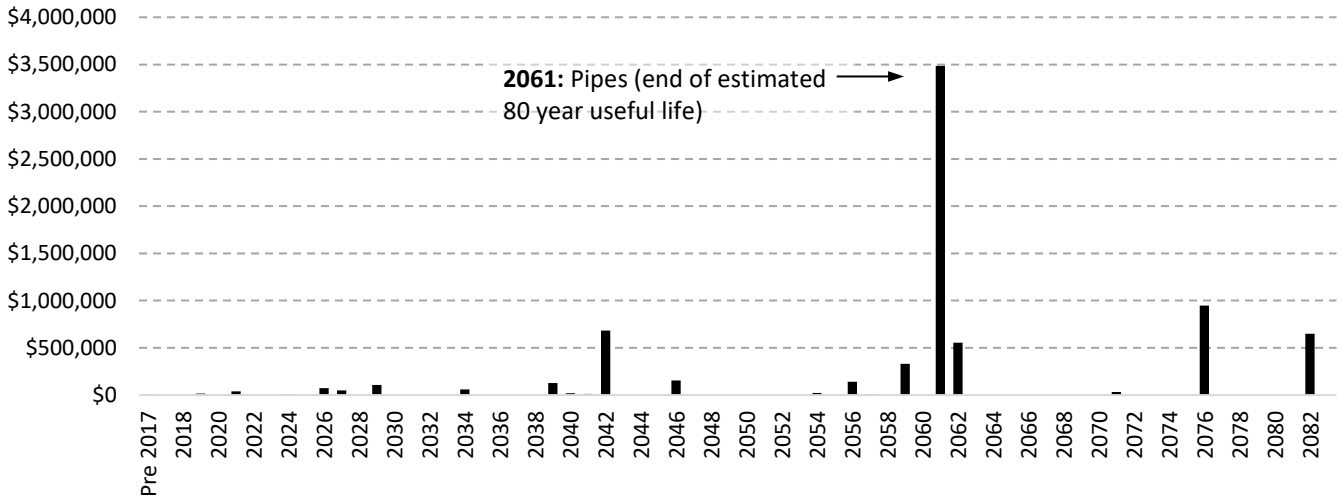
The DPPCC uses Secondary Treatment to remove 95% of biological oxygen demand (BOD) and total suspended solids (TSS). Sludge from DPPCC is trucked to the Greater Nanaimo Pollution Control Centre where it undergoes further treatment.

Current Replacement Costs ***Data Confidence Rating: 2***

An asset inventory is available for the system. Current replacement costs and anticipated useful life are based on historic values and known market costs. The data confidence rating is 2.

Total Replacement Value (2016 Dollars)	***$7,500,000***
Lifecycle Period	***65 years***
Average Useful Life of All Assets	***53 years***
Average Annual Replacement Cost	***$124,000***

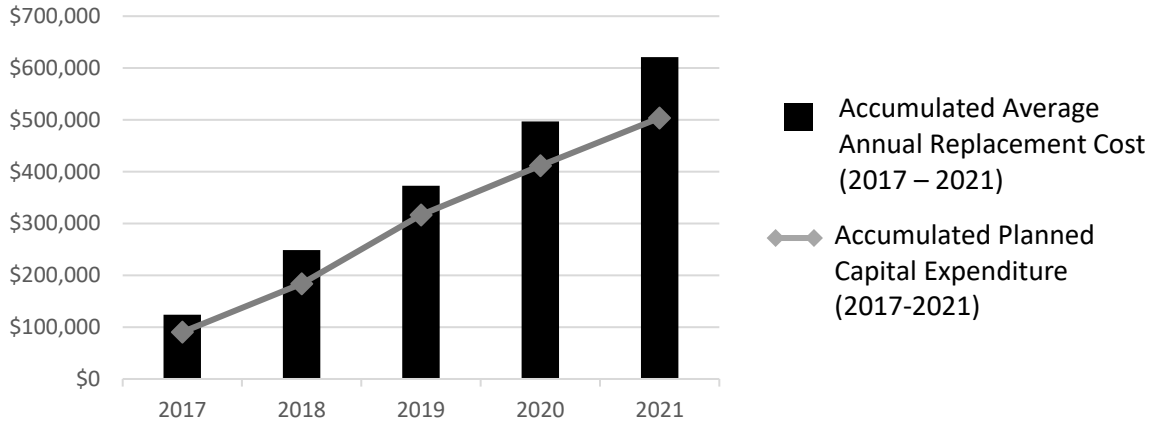
Duke Point Waste Water: Current Replacement Costs (2017-2082))



Planned Capital Expenditure & Average Annual Replacement Costs

For the DPPCC there are planned capital expenditures of $424,000 over the 2017-2021 period. Items of expenditure include new pumps and blowers for the treatment plant, in addition to anticipated routine plant maintenance and equipment repairs.

DPPCC Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

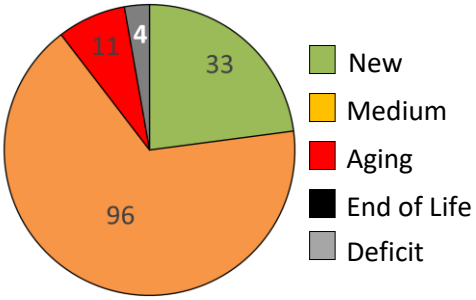


Capital Reserve Opening Balance (2018): ***$216,000***

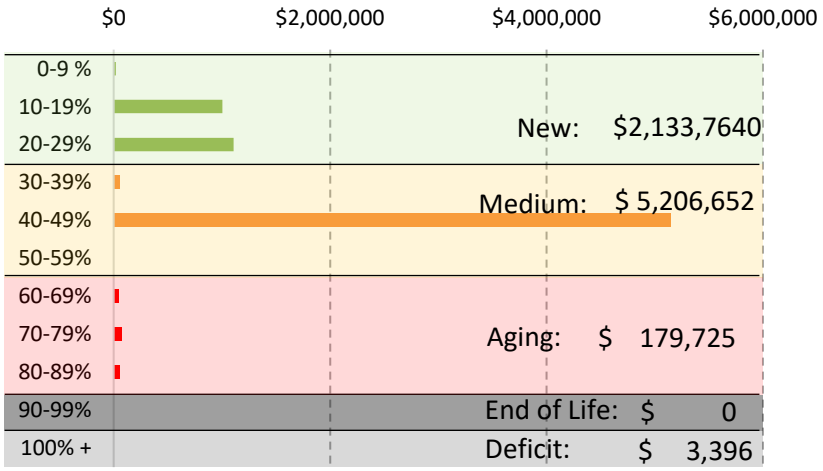
Age and Asset Condition

Asset age indicates asset condition. For the DPPCC, 90% of assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. A total of 98% of the value of all the assets are in the *New* or *Medium* category. The majority of assets are early in their lifecycles.

DPPCC Total Number of Assets by Age Class



DPPPC Total Value of Assets by Age Class



2.5.4 Northern Community Waste Water (NCWW)

Level of Service

The Northern Community Waste Water service area treats wastewater from residential and commercial connections (an estimated population of 30,000) in Parksville, Qualicum Beach and five RDN sewer service areas at the French Creek Pollution Control Centre (FCPCC). Wastewater is gravity fed and pumped via three major pump stations. FCPCC also accepts septage from residential onsite septic systems and wastewater from pump-and-haul clients. Treated effluent is discharged into the Strait of Georgia at a depth of 61 metres, 2,440 metres offshore.

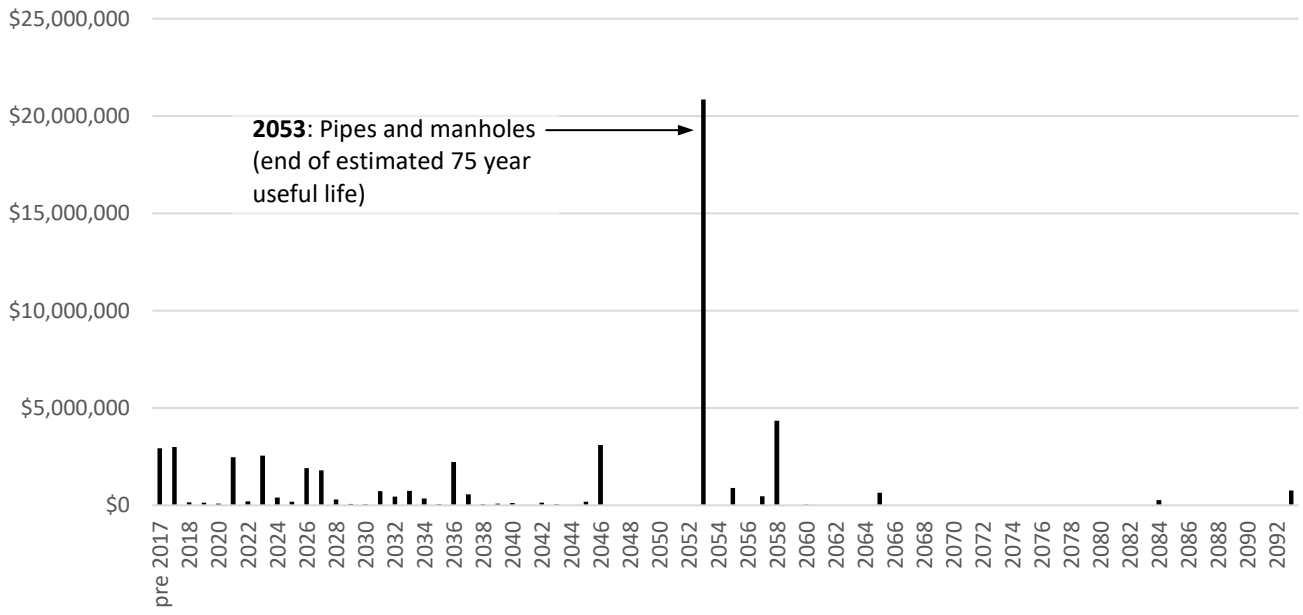
The FCPCC opened in 1977 and has received several upgrades and improvements over the years. Secondary Treatment processes remove 94% of Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS).

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement costs and lifecycle information are based on historic values and known market costs. The data confidence rating is 2.

Total Replacement Value (2016 Dollars)	***$53,400,000***
Lifecycle Period	***75 years***
Average Useful Life of All Assets	***38.2 years***
Average Annual Replacement Cost	***$1,400,000***

Northern Community Waste Water: Current Replacement Costs (2017-2092)

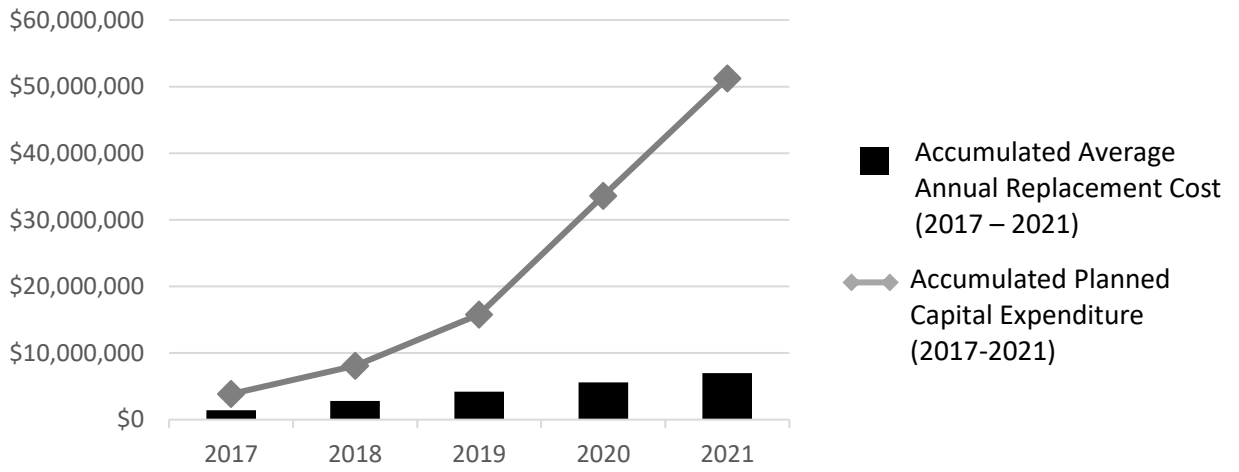


Planned Capital Expenditure & Average Annual Replacement Costs

For the Northern Community Waste Water service area, planned capital expenditures over the 2017-2021 period total $51 million. The largest item is an expansion to the plant itself, at $33 million. A pump station upgrade is budgeted at $2.5 million, and renewal or replacement of interceptors, pumps and other treatment plant infrastructure are also planned for.

The expansion work is being funded through a combination of taxation, reserves, DCCs, and grants.

NCWW Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

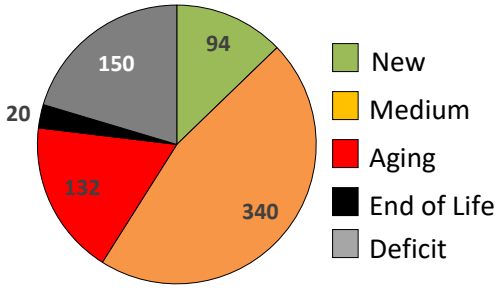


Capital Reserve Opening Balance (2018): ***$11,890,000***

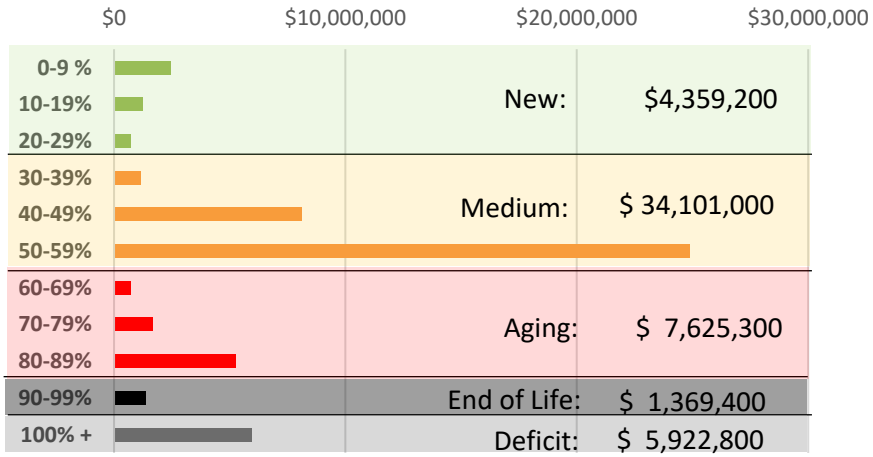
Age and Asset Condition

Asset age indicates asset condition. For the NCWW service area, 60% of assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. A total of 72% of the value of all the assets are in the *New* or *Medium* category.

NCWW Total Number of Assets by Age Class



NCWW Total Value of Asset by Age Class



2.5.5 Southern Community Waste Water (SCWW)

Level of Service

The Southern Community Waste Water service serves an estimated population of 93,000 in the City of Nanaimo, Snuneymuxw First Nation, and parts of Lantzville. Wastewater is gravity fed and pumped via three major pump stations to the Greater Nanaimo Pollution Control Centre (GNPCC). The Chase River pump station also accepts septage from residential onsite (septic) systems and wastewater from pump-and-haul clients. Treated effluent is discharged into the Strait of Georgia 2,030 metres offshore at a depth of 70 metres.

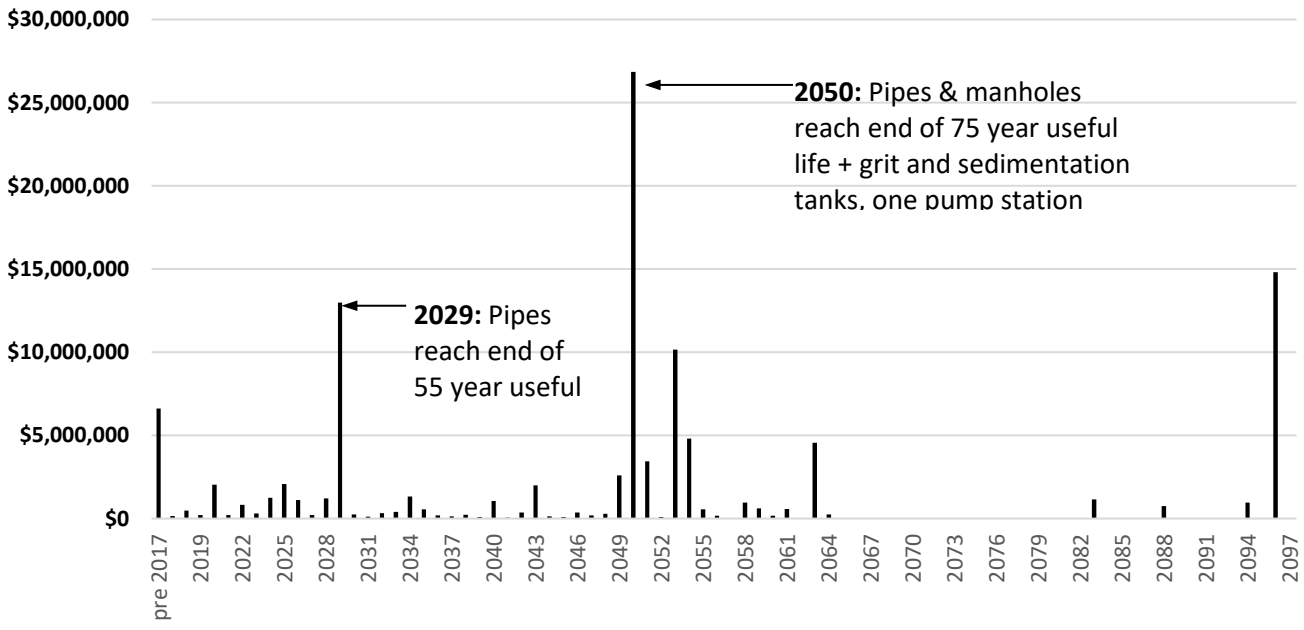
A Secondary Treatment upgrade project is currently underway with completion due December 2019. This service level change will result in new data for replacement costs.

Current Replacement Costs ***Data Confidence Rating: 2***

A Current replacement costs and anticipated useful life information are based on historic values and known market costs. The data confidence rating is 2.

Total Replacement Value (2016 Dollars)	***$111,300,000***
Lifecycle Period	***80 years***
Average Useful Life of All Assets	***45.2 years***
Average Annual Replacement Cost	***$2,462,000***

SCWW: Current Replacement Costs (2017-2117)

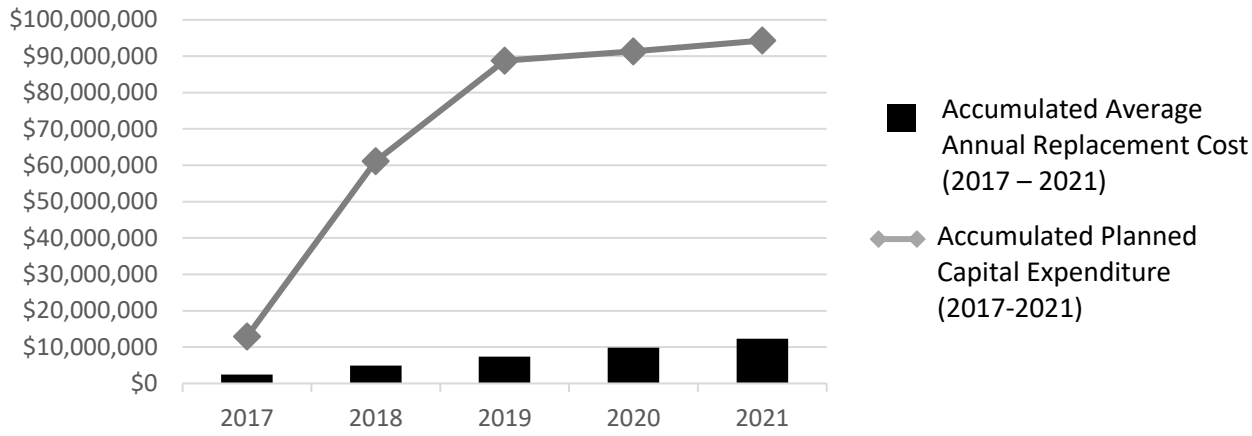


Planned Capital Expenditure & Average Annual Replacement Costs

Planned capital expenditures for the Southern Community Waste Water service area total $95 million over the 2017-2021 period. The largest item is the secondary treatment upgrade at $82 million, which is currently underway. Forcemain inspections, a new centrifuge, pump station works and digester upgrades are also planned.

The upgrade work is being funded through a combination of grants, borrowing and from contributions from reserve funds.

SCWW Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

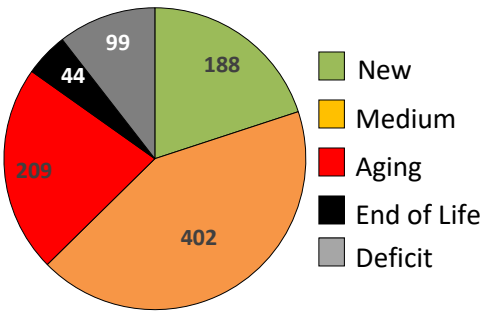


Capital Reserve Opening Balance (2018): ***$22,981,000***

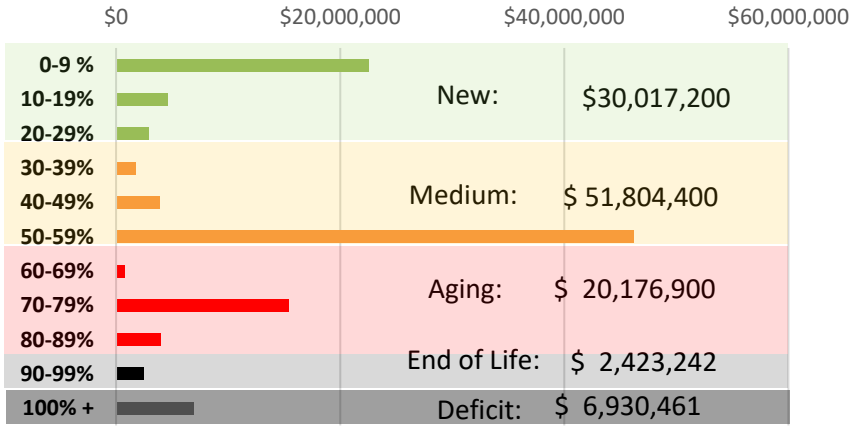
Age and Asset Condition

Asset age indicates asset condition. Asset age indicates asset condition. For the NCWW service area, 63% of assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. A total of 73% of the value of all the assets are in the *New* or *Medium* category.

SCWW Total Number of Assets by Age Class



SCWW Total Value of Asset by Age Class



2.6 Recreation and Parks Services

The RDN has a comprehensive regional and community parks and trails network. This network encompasses the lowlands and foothills, ranging from oceanfront, lakefront and riverside parks, to alpine and forest parks, as well as small local community parks. Physical amenities within community and regional parks include pedestrian bridges, playgrounds, and benches and other furnishing. Other assets include vehicles and machinery required for park maintenance.

RDN recreational facilities provide many of the recreational and cultural programs offered in Electoral Areas A, C, E, F, G, and H, as well as Parksville and Qualicum Beach. Facilities include the Oceanside Place arena, the Ravensong Aquatic Centre, the District 69 Arena/ Parksville Curling Club and the Cedar Heritage Centre.

Table 5 Recreation and Parks Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	Much of the information for Parks Services is captured in the RDN GIS system. Many park assets do not meet the value threshold to be recorded as Tangible Capital Assets therefore are not included in long-term plans for replacement. Information such as serial numbers and warranty expiration dates are stored in spreadsheets. Staff maintain detailed asset inventories for recreational facilities that are owned and operated by the RDN (Ravensong Aquatic Center and Oceanside Place Arena). Detailed asset inventories for facilities operated by third parties (District 69 Arena and the Cedar Heritage Centre) requires resourcing.
	Recreation facilities' components, such as equipment, are identified separately. For Regional and Community Parks, bridge and road components with different service lives are not identified separately.
	The Recreation Service has developed an in-house work order system within Sharepoint. Significant operations and maintenance activities as well as invoicing are logged in this system.
	Parks Service activities are tracked on a work plan. Projects, project costs and some maintenance costs are tracked on spreadsheets. Operational tasks, park inspections and service requests are tracked and monitored using the City Reporter software program. .
Know Your Financial Position	Replacement costs for Parks and Recreation assets requires updating. A procedure to consistently and comprehensively revise the assets replacement is in development. Currently, the replacement of assets relies on personnel identifying and scheduling important replacements. Recreation Services has developed a 20-year capital plan.
	The ten-year financial plan for the Parks and Recreation Services includes the cost of operations based on rolling the past year's budget forward with adjustments for inflation and known capital expenditures.
	For Parks and Recreation services, the costs of operations and maintenance are not tracked at the asset level.

	Community parks are funded through a combination of taxes raised by individual Electoral Areas, available Community Works Funds and various contributions made through the development process. Taxation for the Regional Parks Acquisition and Capital Development Fund is collected by a parcel tax on every household in the region. Operations and maintenance costs for regional parks are collected on a per capita basis. Recreational facilities are funded through a combination of taxes from participating communities and user fees.
Understand Decision-Making	In the Recreation Service, the process to identify and prioritize capital projects is consistent. At the time of budget planning Parks staff review anticipated projects and those listed in management plans.
	For both Parks and Recreation Services, maintenance of assets is driven by staff knowledge and asset condition.
Manage Asset Lifecycle	The condition of the assets maintained by the Parks and Recreation departments are recorded on a scale of 1 to 5. A portion of the work history is available on SharePoint. The condition of assets maintained by external service providers is not currently tracked.
	Recreation has well-defined levels of service. The Recreation business plan indicates each offering with service indicators and a service goal. Business plans describe major programs for each function, and include indicators for current, targeted and benchmark levels of service. Levels of service are outlined in Park Services business plans and measure planned works against a historic baseline.
	There are maintenance strategies in place for Parks and Recreation assets. Existing practices and maintenance strategies are based on the knowledge and experience of staff and resources are being directed to develop additional documentation on asset groups.
Know the Rules	Stakeholders are consulted on management plans and strategies.
	Legislative requirements are known by staff and documented in manuals and training is provide as to address knowledge gaps related to staff changes.

2.6.1 Community Parks

Level of Service

In the seven Electoral Areas, the RDN is responsible for managing and maintaining over 200 parcels of land (610 hectares in total) that have a Community Park designation. Community Park land is typically provided as a result of subdivision and/or rezoning. While a number of parkland properties have been acquired outright, some parkland is not owned by the RDN but managed through a license of occupation or permit from the landowner (such as a Ministry of Transportation water access).

Development of parks, such as construction of amenities, has been occurring at a steady pace in recent years. These projects include viewing benches, trails, signage, parking lots, fencing, skate parks, playgrounds, washrooms, and landscaping. The majority of the amenities are reasonably new having been installed over the past 10 years. Park development and maintenance are paid for through local taxes from each community (Electoral Area), from grants, or as an amenity contribution through a rezoning.

Current Replacement Costs ***Data Confidence Rating: 2***

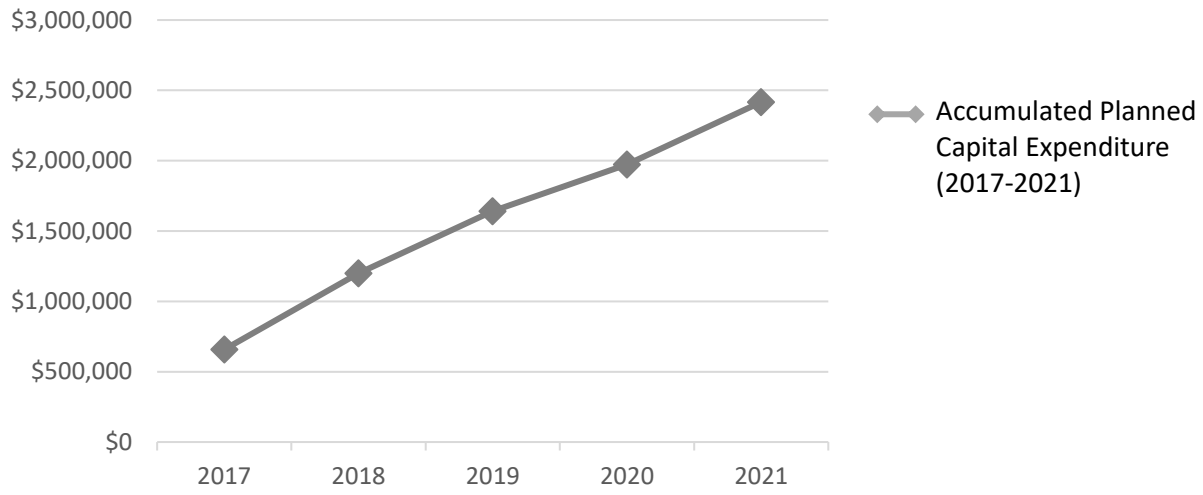
The most significant asset class for community parks is land, which is not included in asset management planning. Work is underway to identify and prepare current replacement cost values for the various amenities within the over 200+ Community Parks in the RDN. Park amenities have been mapped using the RDNs GIS system. Typically, assets that fall beneath Tangible Capital Asset reporting requirements are accounted for in annual operations budgets. For larger capital items (such as bridges, buildings, etc.) the asset register is in the process of being updated to include acquisition and installation dates, expected useful life, and replacement costs.

Planned Capital Expenditure & Average Annual Replacement Costs

Capital project expenses total $1.8 million over the 2017-2021 period, spread across all parks in each Electoral Area of the region. Planned major projects include park trails, playgrounds, sport courts, parking areas, and general landscape improvements.

In addition to work funded through the Community Parks budgets, Community Works Funds have been allocated to projects in a number of Community and Regional Parks.

Community Parks Planned Capital Expenditures (2017-2021)



The Planned Capital Expenditure data shows ongoing investment in operations and maintenance of RDN Community Parks. Resources are being identified and directed to develop replacement cost and expected useful life information for RDN Community Parks in order to generate Average Annual Replacement Cost data.

Age and Asset Condition

Resources are being identified and directed to develop an age and asset value breakdown for Community Parks' assets, however most Community Park amenities are less than 10 years old.

2.6.2 Regional Parks and Trails

Level of Service

There are twelve Regional Parks in the RDN. Since 1995, the area of land managed for regional parks has increased from 25 hectares to more than 2,100 hectares. In addition to the parks, over 85 kilometres of Regional Trail have also been developed.

While some of the park land is owned by the RDN, the majority is managed under license from the Crown or private landowners (such as forest companies). Regional trails have been developed within existing rights-of-way, for which the RDN holds permits, or licenses to access private land on behalf of the public.

Development of Regional Parks and Trails has been occurring at a steady pace in recent years. These projects include picnic tables and benches, trails, signage, parking lots and access controls, bridges, washrooms, camping facilities and landscaping.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement cost values for the many and varied amenities within the Regional Parks and Trails have not been calculated. Many smaller amenities have been, and continue to be, funded from operating budgets, and not tracked through the Tangible Capital Asset registry.

A number of larger assets have been constructed by the RDN on land accessed through license, lease, permit or agreement. These tenures have limited terms which further complicates assigning a useful life value to an asset which the RDN may not be able to replace if the tenure ends.

Available information on the assets provides a moderate data confidence rating of '3' for current replacement costs.

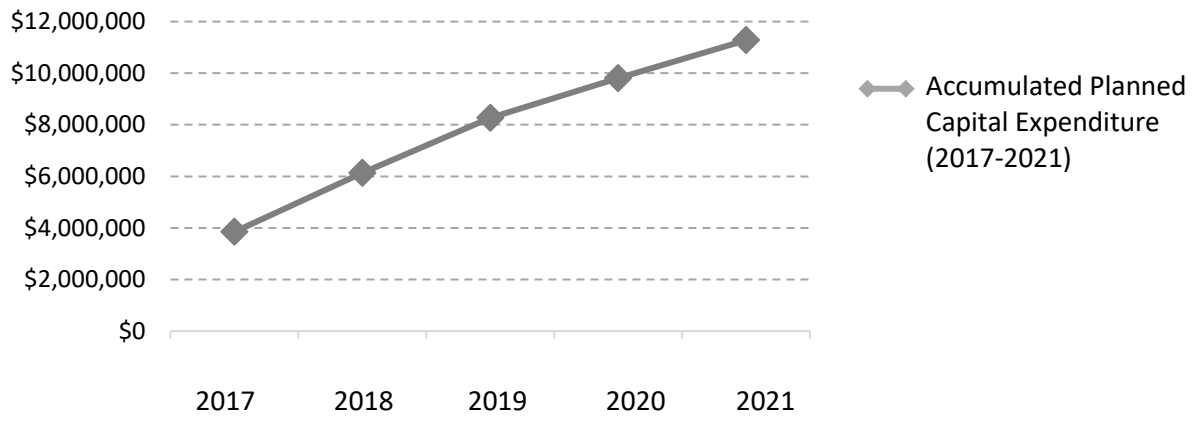
Given that many of the smaller value amenities in regional parks and along trails fall below the threshold for being considered a "capital expense", building an asset registry based on the Tangible Capital Asset registry records has proven challenging. Plentiful information as to what is in each park and trail is available courtesy of GIS data. For larger capital items (such as bridges, buildings, etc.) the asset register is in the process of being updated to include acquisition and installation dates, expected useful life, and replacement costs.

Planned Capital Expenditure & Average Annual Replacement Costs

Development of amenities within Regional Parks and Trails is happening at a rapid pace, with many smaller projects funded through operating budgets. Capital project expenses are in excess of $11 million over the next five years, excluding potential land acquisition. Planned projects include parking facilities, bridge construction, new trails, park buildings, park access development, stairs and related infrastructure.

In addition to work funded through the Regional Parks and Trails budgets, Community Works Funds have been allocated to projects in a number of Community and Regional Parks.

Regional Parks and Trails Planned Capital Expenditures (2017-2021)



The Planned Capital Expenditure data shows the steady pace of development within Regional Parks and Trails. Resources are being identified and directed to develop replacement cost and expected useful life information for RDN Regional Parks and Trails in order to generate Average Annual Replacement Cost data.

Age and Asset Condition

Resources are being identified and directed to develop an age and asset value breakdown for Regional Parks and Trails assets, however most Park or Trail amenities are less than 10 years old. Staff will continue to compile this data to be inserted into the next iteration of this Review.

2.6.3 Oceanside Place Arena (OP)

Level of Service

The Oceanside Place Arena (OP) is a public facility located in the Wembley Mall on Highway 19A in the French Creek area between Qualicum Beach and Parksville. The facility was built in 2003. Operations and management activities are provided by Regional District staff.

The public-accessible components consists of two NHL size ice sheets (17,000 sq-ft each), a separate leisure ice surface, multipurpose over ice floor cover available for shows and events, 1,200 total spectator seating, a 1,200 sq-ft dividable Multi-Purpose Room, meeting room, and 3500 sq-ft Lobby available for event use. In addition, the facility contains the administration space for the Regional District Recreation Department staff with a suite of offices and work spaces.

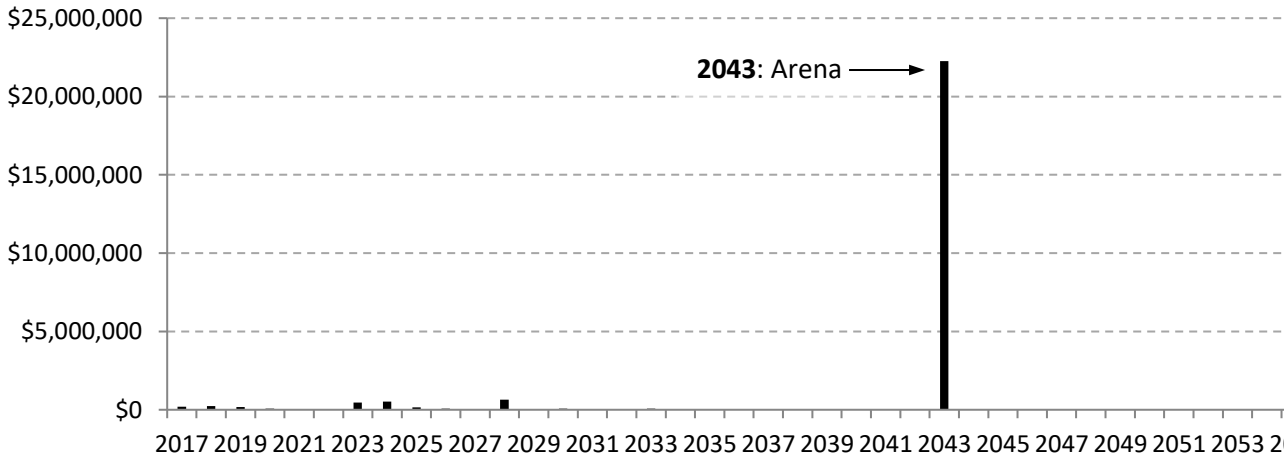
The arena offers a wide range of ice and dry-surface based programs and events for all ages.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement cost values for the Oceanside Place Arena are based on a combination of historic cost, market unit costs and insurance values. The combination of information provides a data confidence rating of '2' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$25,000,000***
Lifecycle Period	***40 years***
Average Useful Life of All Assets	***18 years***
Average Annual Replacement Cost	***$1,390,000***

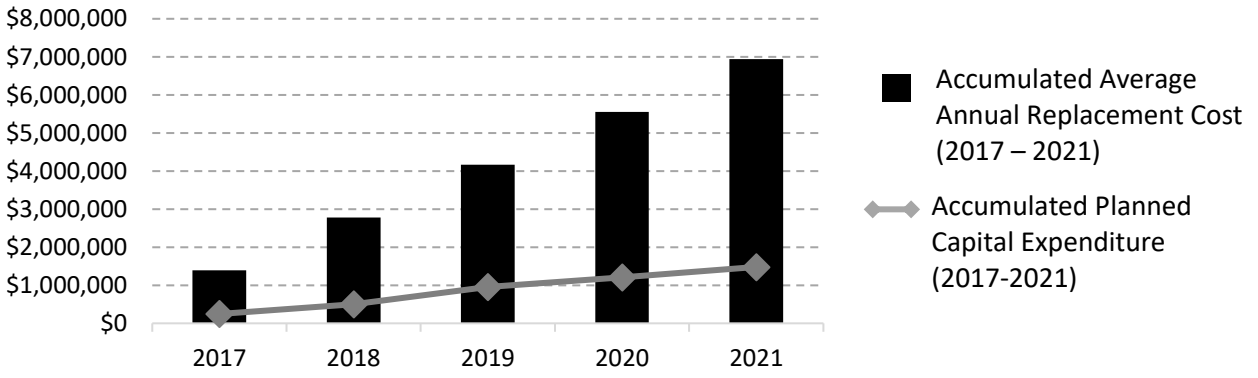
Oceanside Place Arena: Current Replacement Costs (2017-2057)



Planned Capital Expenditure & Current Replacement Costs

For the Oceanside Place Arena there are planned capital expenditures of $1.5 million over the 2017-2021 period. Expenditures include a new Zamboni, upgrades and renewals to ice plant components, air handling units and HVAC systems, and planned retrofits of the building's interior finishings (paint, lighting, sound system, flooring etc.). The Average Annual Replacement Cost is based on the wholesale replacement of the arena, estimated at $25 million, while planned capital expenditures focus on renewal and replacement of mechanical systems and infrastructure that keep the arena operating well. The infrastructure deficit arising over the next 5-years should be verified to ensure adequate preparation for the replacement of the arena in 25-years.

Oceanside Place Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

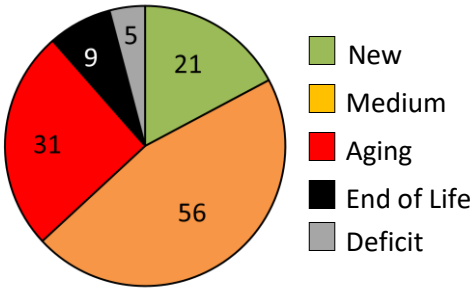


Capital Reserve Opening Balance (2018): ***$226,000***

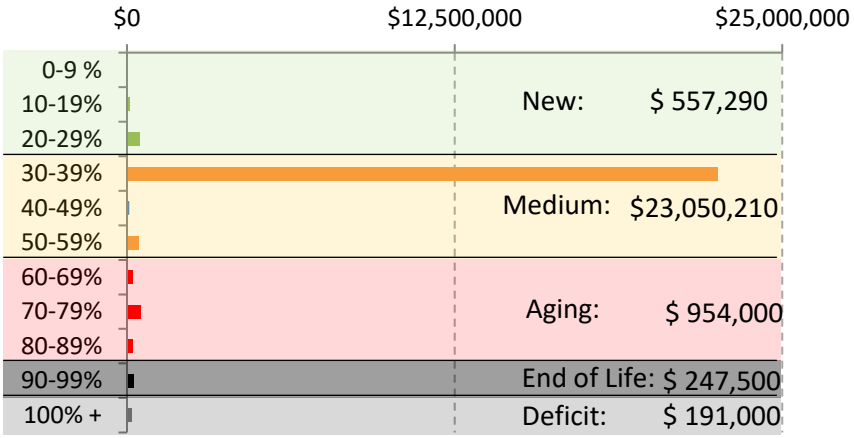
Age and Asset Condition

Asset age indicates asset condition. For the Oceanside Place Arena, 63% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. Over 90% of the value of all the assets are in the *New or Medium* category meaning most assets are early in their lifecycle.

***OP:** Total Number of Assets by Age Class*



***OP:** Total Asset Value by Age Class*



2.6.4 District 69 Arena/ Parksville Curling Club (D69 Arena)

Level of Service

The Parksville (District 69) Arena (D69 Arena) is a dedicated curling facility located in the Parksville Community Park. The arena was constructed in 1974 as a community facility for hockey, skating and community events and was converted to a curling facility in 2003 when Oceanside Place opened. It is owned by the Regional District and has been operated under a lease agreement by the Parksville Curling Club since 2003.

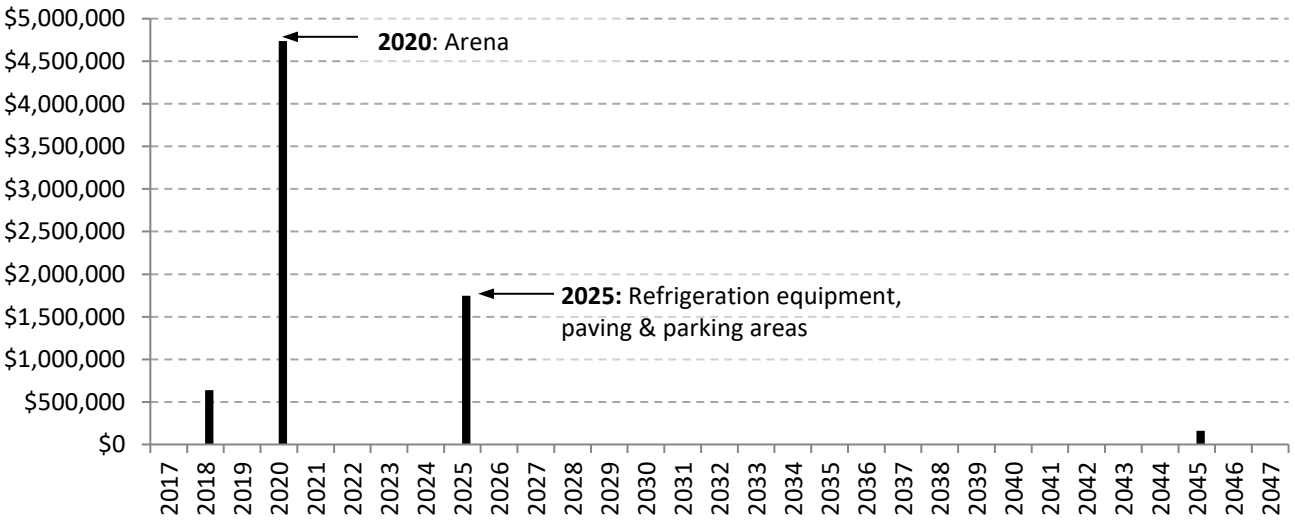
As a dedicated curling facility the ice surface hosts five curling sheets. The Club has 14 weekly leagues, and hosts Special Olympics, school and junior curling programs. Up to ten bonspiels are held during the year, along with events that bring instructors and curlers from across North America and around the world. The Club has hosted a number of regional, provincial and national championships.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement cost values for the D69 Arena were based on a combination of historic cost, market unit costs and insurance values. This provides a lower data confidence rating of '2' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$7,300,000***
Lifecycle Period	***30 years***
Average Useful Life of All Assets	***29 years***
Average Annual Replacement Cost	***$252,000***

Parksville (District 69) Arena: Current Replacement Costs (2017-2047)



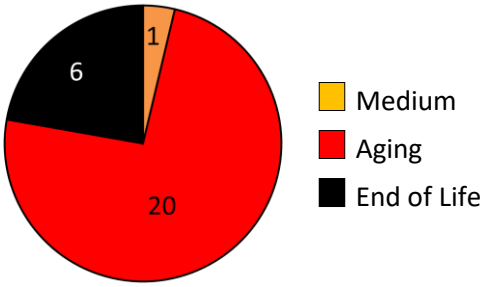
Planned Capital Expenditure & Average Annual Replacement Costs

For the D69 Arena, budgeted capital expenditures over the next five years are focused on developing reserves to prepare its demolition once determined the facility is no longer viable for public use. Maintenance tasks and capital replacement for facility infrastructure and equipment are handled and funded by the Curling Club as the lessee. The facility is generally nearing the end of its useful life. Significant asset reinvestment over the next decade is necessary to maintain service at current levels. The D69 Arena is at a critical juncture in its service life where future service levels must be reviewed.

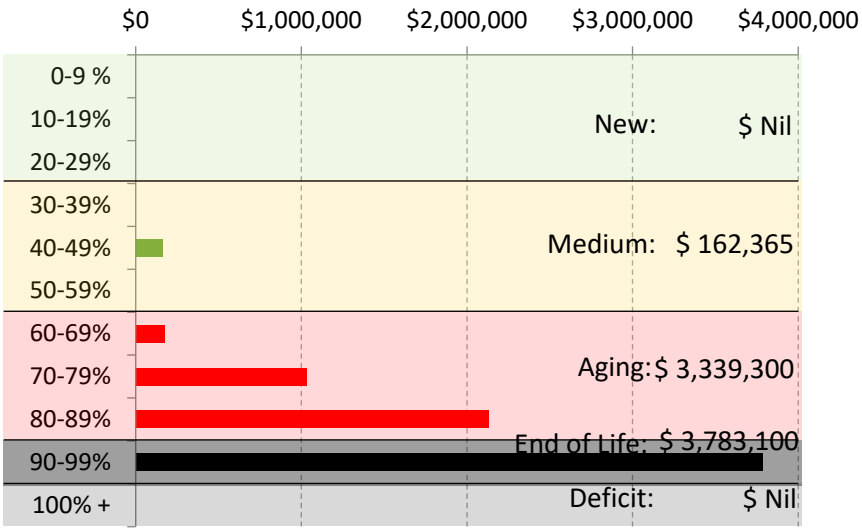
Age and Asset Condition

Asset age indicates asset condition. The facility is approaching 40 years of age, as evidenced by 96% of all assets being in the *Aging* or *End of Life* age category, resulting in a condition rating of *Fair* or *Poor*. Over 50% of the value of all the assets are in the *End of Life* category meaning the assets are approaching the end of their expected lifecycles.

***D69 Arena**: Total Number of Assets by Age Class*



***D69 Arena**: Total Asset Value by Age Class*



2.6.5 Ravensong Aquatic Centre (RAC)

Level of Service

The Ravensong Aquatic Centre (RAC) is a public facility located in the Qualicum Beach Community Park adjacent to the Qualicum Beach Civic Centre. The facility was built in 1995 and received a $4.9 million remediation in 2010. Operations and management are provided by Regional District staff and the land is leased from the Town of Qualicum Beach.

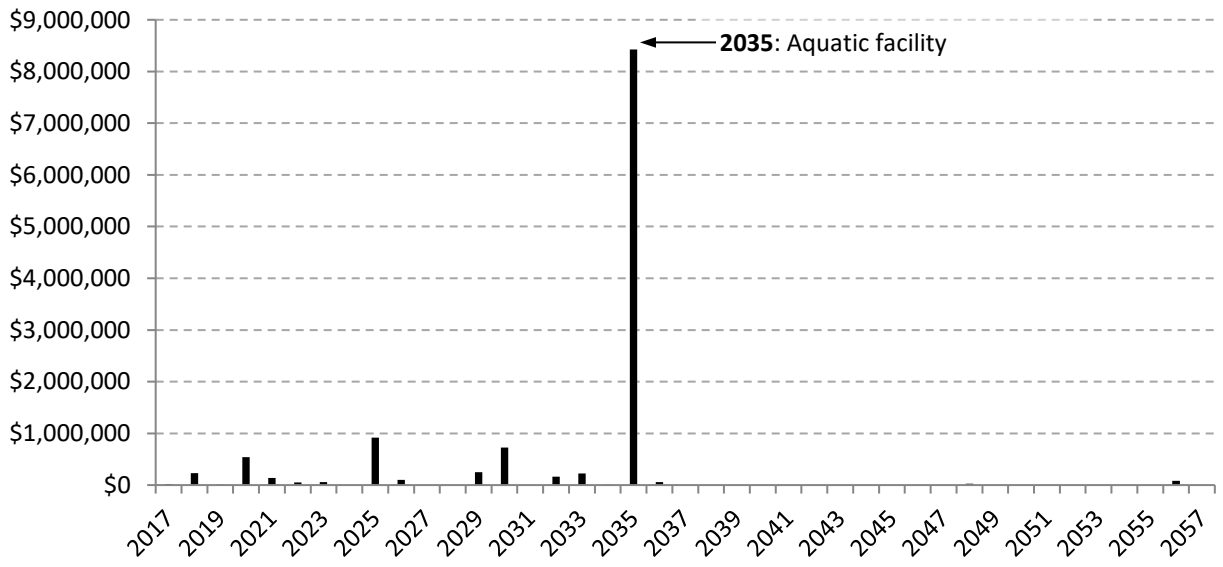
The facility consists of a main 25 metre (6 lane) pool, small leisure pool, 25 person hot tub, steam room and infra-red sauna. RAC operates between 6:00 am and 9:00 pm / 10:00 pm, seven days per week. An annual three-week maintenance shut down takes place each August-September. The facility offers a wide range of aquatic based programs and services for all ages.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement costs are based on a combination of historic cost, market unit costs and insurance values. This provides a data confidence rating of '3' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$12,000,000***
Lifecycle Period	***40 years***
Average Useful Life of All Assets	***16.3 years***
Average Annual Replacement Cost	***$736, 000***

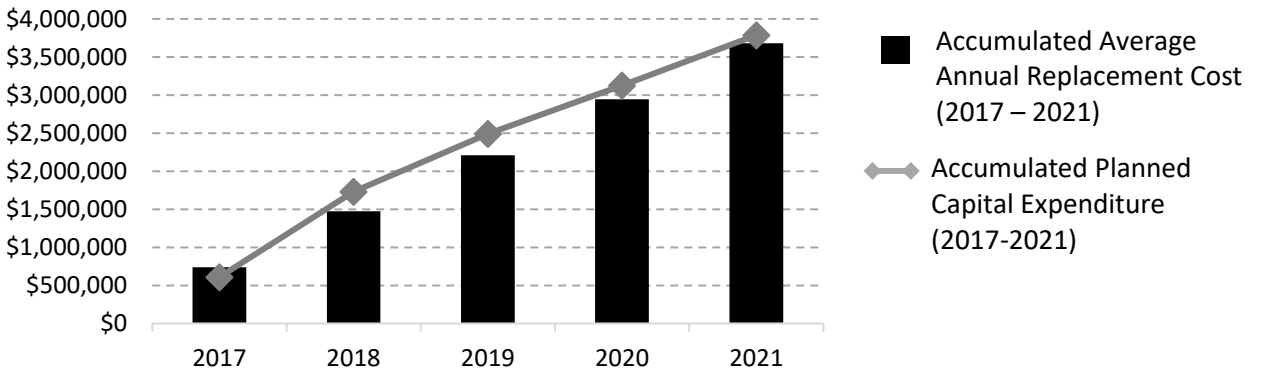
Ravensong Aquatic Centre: Current Replacement Costs (2017-2057)



Planned Capital Expenditure & Average Annual Replacement Costs

For the RAC there are planned capital expenditures of $3.8 million over the 2017-2021 period. The majority of this is for upgrades and renewals to air handling units and HVAC systems, energy efficiency upgrades, and planned retrofits of the building's interior finishings (paint, lighting, sound system etc.). Planned capital expenditures closely align to average annual replacement costs, suggesting that asset renewal and reinvestment is at an appropriate level.

RAC Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

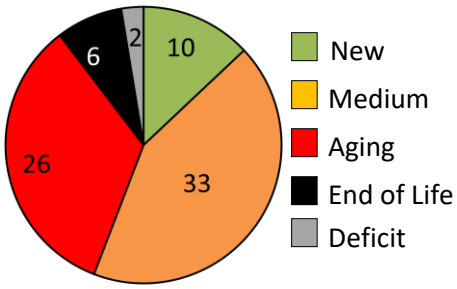


Capital Reserve Opening Balance (2018): ***$1,347,000***

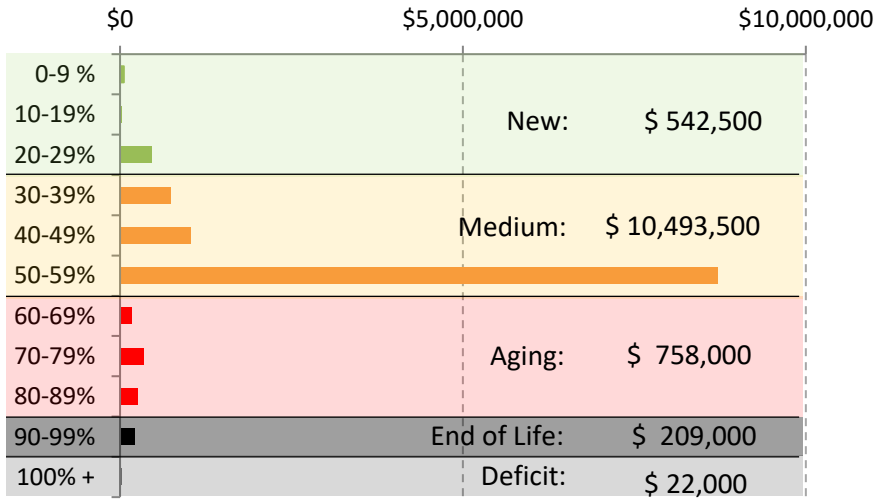
Age and Asset Condition

Asset age indicates asset condition. For the Ravensong Aquatic Centre, 56% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. Over 90% of the value of all the assets are in the *New or Medium* category meaning most assets are early in their lifecycle.

RAC: Total Number of Assets by Age Class



RAC: Total Asset Value by Age Class



2.6.6 Cedar Heritage Centre (CHC)

Level of Service

The Cedar Heritage Center (CHC) was constructed in 1921 as a three room school house, and served as a school building until 2000. The building has undergone renovations, alterations, expansion and contraction by the previous owner during its long-term school use.

The building's current configuration is similar to the original design, but instead of school use the building now serves as a Community Center operated by the Cedar School and Community Enhancement Society (CSCES)

The building sits on property owned by School District 68 and leased to the RDN. The building ownership was transferred to the RDN in 2001.

The CSCES presently has a lease with the RDN for use and the operation and routine maintenance of the building.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement cost value for the CHC is estimated at $550,000 based on a calculation of market unit costs. This provides a lower data confidence rating of '2' for current replacement costs.

A Building Condition Assessment Report was completed in January 2019 by Herold Engineering. Findings from the report will be used to prepare a Current Replacement Cost chart for the facility.

Planned Capital Expenditure & Current Replacement Costs

The January 2019 Building Condition Assessment report recommends $1,000 be allocated and expended for capital works within one year and $76,000 within five years.

The Electoral Area 'A' Recreation Services function is carrying $800,000 in reserve allowing urgent or unforeseen capital expenditures to be covered.

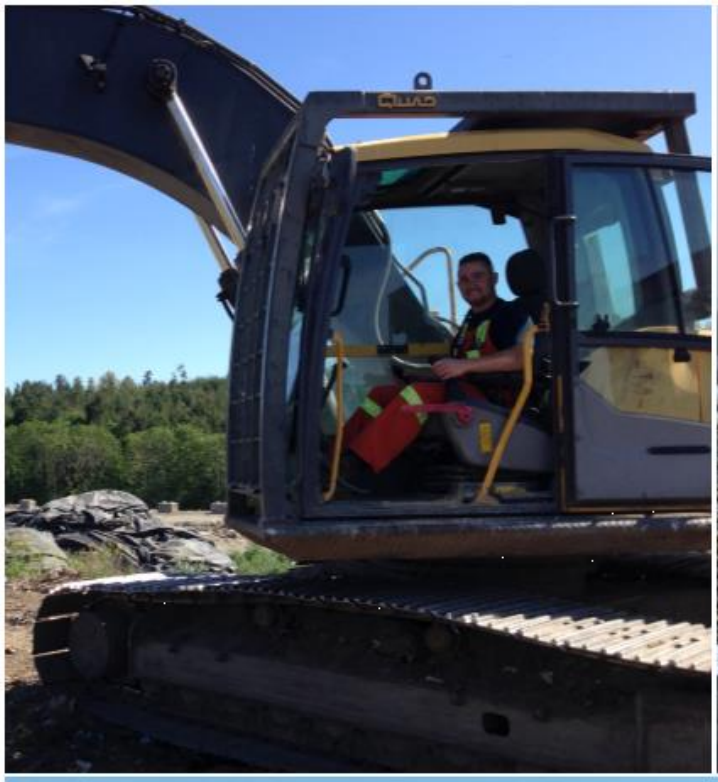
2.7 Solid Waste Services

The RDN Solid Waste Services department owns and operates the Regional Landfill and the Church Road Transfer Station, and provides residential curbside collection to over 29,000 households throughout the region. The City of Nanaimo provide Solid Waste services within its boundaries. Delivery of the curbside collection service is provided by a third-party contractor.

Table 6 Solid Waste Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	The asset inventory is estimated to be 75% complete. Information gaps are limited to older assets as more information has been captured for newer assets. The asset inventory requires detailed componentization.
Know Your Financial Position	Less than 10% of the Department's budget is funded by tax revenue. The primary revenue source is tipping fees collected for waste disposal at the Church Road Transfer Station and Cedar Road Landfill. The residential curbside collection program is entirely paid by participants in the service through a utility fee.
	The record of replacement costs, in current dollars, can be improved. Many of the assets are permanent installations within the landfill and will never be replaced (e.g. landfill gas collection system). Anticipated useful life is considered for equipment that will be replaced during the operational life of the landfill. Financial planning is reinvestment rather than lifecycle focused. A post-closure reserve has been established to finance monitoring and maintenance of the site once it reaches capacity.
	Maintenance and operations budgets are based on past experience and staff knowledge. Limited information on the work completed on assets year over year is recorded. Improvements can be made to better separate maintenance and operating costs, and link them to specific assets.
Understand Decision-Making	Decision processes exist for planning capital projects and determining budget requirements.
Manage Asset Lifecycle	New tools are required to better monitor and track the condition of assets over time. The condition of assets is verified through the annual budget process involving discussion with staff.
	The level of service currently provided is well understood and documented. The desired level of service is revised through Solid Waste Management Plan updates and through the Zero Waste program. The cost of service is well documented.
	Some maintenance tasks are scheduled (e.g. by equipment operating hours) while other tasks are scheduled through staff knowledge and experience. The completion of some preventative maintenance work and calibration is monitored through maintenance contracts (heavy equipment, scales) and formal monitoring is in development.

Know the Rules	The goals and objectives of the organization's stakeholders are defined in the Solid Waste Management Plan, levels of service, and cost of service delivery (tipping fee and curbside collection).
	Processes for compliance and monitoring report submission rely on staff preparing documents as required. A formalized system to identify deadline dates is in development, as well as more formal procedures document listing legal obligations and individuals responsible for the Solid Waste Services.



2.7.1 Church Road Transfer Station (CRTS)

Level of Service

The Church Road Transfer Station (CRTS) is located at 860 Church Road, four kilometres southwest of Parksville. The facility opened in 1991, and was significantly redeveloped in 2009-2010 to meet the needs of the growing region and to extend the facility's lifespan. The site is approximately two hectares in area. The CRTS receives garbage, food waste, yard waste, wood waste, construction/demolition waste, and recyclables from communities in the northern portion of the Regional District of Nanaimo: Parksville, Qualicum Beach, and Electoral Areas E, F, G, and H.

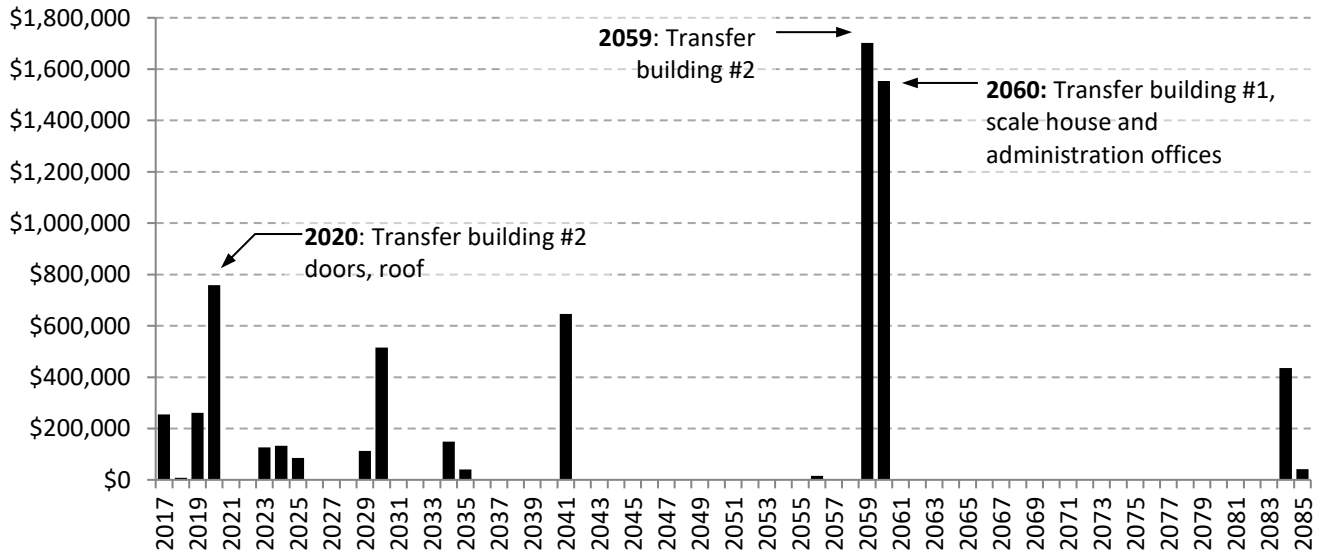
The CRTS is open to the public seven-days a week (with the exception of statutory holidays). Waste is accepted with tipping fees charged based on weight and material type. Material brought to the CRTS is transferred to the appropriate licensed disposal facilities elsewhere in the region.

Current Replacement Costs ***Data Confidence Rating: 3***

Current replacement costs are based on the historic costs, staff knowledge of current unit pricing, and from insurance values. This information provides a data confidence rating of '3' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$6,800,000***
Lifecycle Period	***70 years***
Average Useful Life of All Assets	***25.4 years***
Average Annual Replacement Cost	***$245,000***

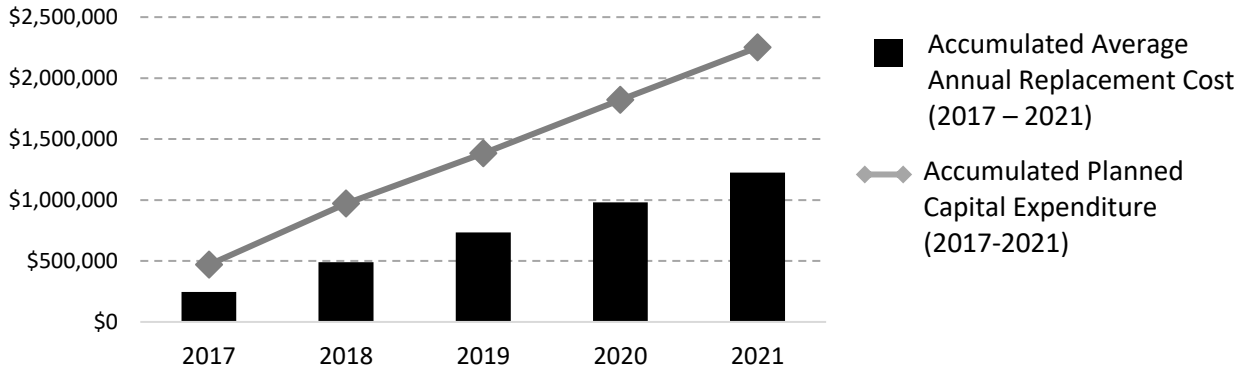
Church Road Transfer Station: Current Replacement Costs (2017-2087)



Planned Capital Expenditure & Average Annual Replacement Costs

For the CRTS, there are planned capital expenditures of $2.2 million over the 2017-2021 period. The major items in these expenditures include replacing the tipping floor in one transfer building and replacing waste water tanks. The Current Replacement cost table above shows that the 2017-2020 period is a period of significant asset renewal. This is also reflected in comparison between planned capital expenditures and annual average replacement costs.

CRTS: Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

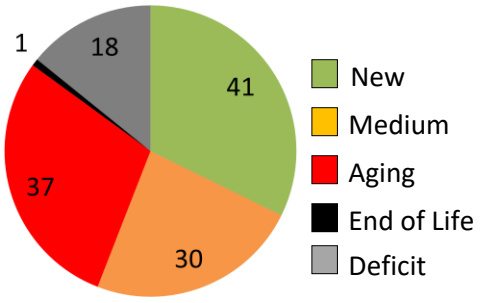


Capital Reserve Opening Balance (2018): ***$2,337,000***

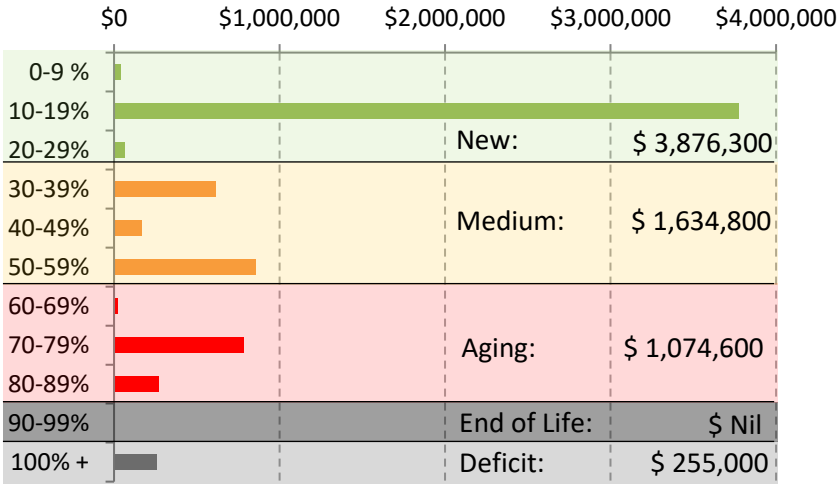
Age and Asset Condition

Asset age indicates asset condition. For the CRTS, 56% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. Two thirds (67%) of the value of all the assets are in the *New or Medium* category meaning most assets are early in their lifecycles.

CRTS: Total Number of Assets by Age Class



CRTS: Total Asset Value by Age Class



2.7.2 Regional Landfill (Landfill)

Level of Service

The Regional Landfill (Landfill) is located at 1105 Cedar Road, 5 kilometres south of downtown Nanaimo. The site opened in the 1940s and is approximately 37 hectares in size. The 13.7-hectare operational area of the site has a high-density plastic liner and has been receiving municipal solid waste since 1991. The 8.8-hectare unlined portion of the site was closed in 1996.

The Landfill operates under an operational certificate issued by the BC Ministry of Environment. Landfill gas and leachate are collected from throughout the landfill site. Leachate is directed into the sanitary sewer system for treatment at the Greater Nanaimo Pollution Control Centre. The landfill gas collection system directs the gas to a privately owned and operated on-site electricity producing plant.

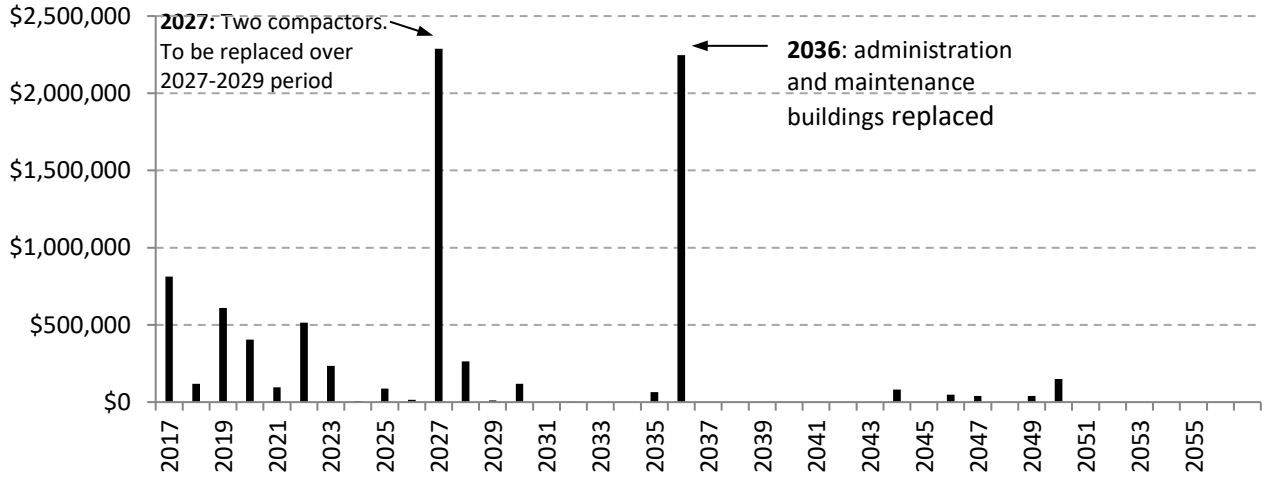
The Landfill is open to the public seven-days a week (with the exception of statutory holidays). Waste is accepted with tipping fees charged based on weight and material type.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs for "above ground" assets at the Landfill were based on the historic costs, staff knowledge of current unit pricing, and from recent construction work completed. This information provides a data confidence rating of '4' for current replacement costs. Buried (in-ground) infrastructure was not costed because it will not be replaced.

Total Replacement Value (2016 Dollars)	***$8,300,000***
Lifecycle Period	***40 years***
Average Useful Life of All Assets	***17.6 years***
Average Annual Replacement Cost	***$470,000***

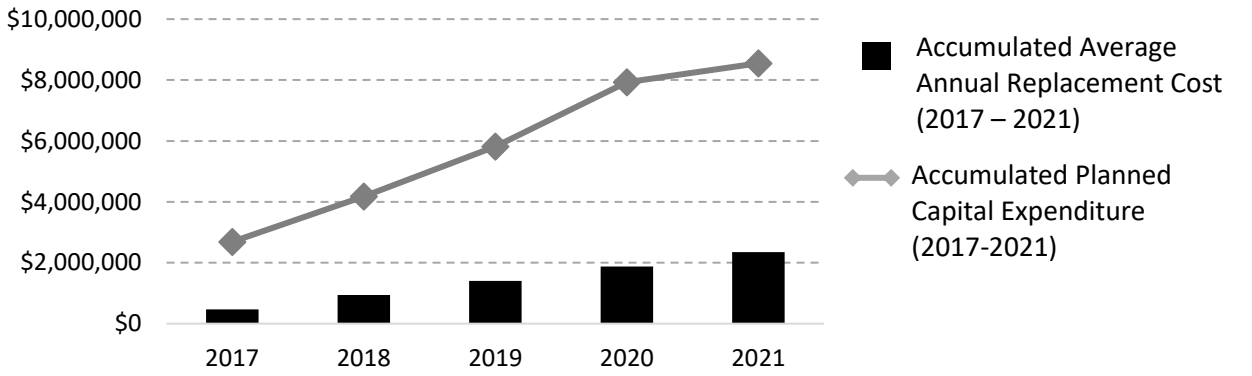
Landfill: Current Replacement Costs (2017-57)



Planned Capital Expenditure & Average Annual Replacement Costs

The Landfill has planned capital expenditures for above ground assets of $8.5 million over the 2017-2021 period. Major items contained within this amount include heavy equipment replacements, scale house and scale replacement, as well as site improvements. The 2017-2022 period is a period of significant investment in the overall lifecycle of the facility. This provides an explanation for the high level of planned capital expenditures relative to average annual replacement costs.

Landfill Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)



Capital Reserve Opening Balance (2018): ***$2,337,000***

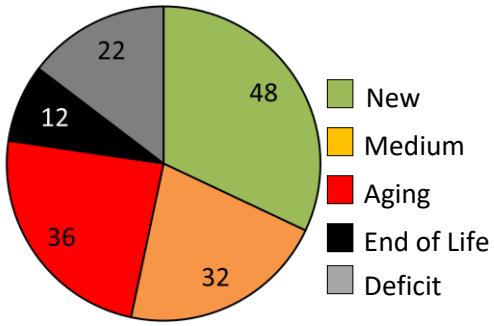
(Same reserve fund as Church Road Transfer Station)

Post-Closure Reserve Fund Opening Balance (2018) ***$1,844,000***

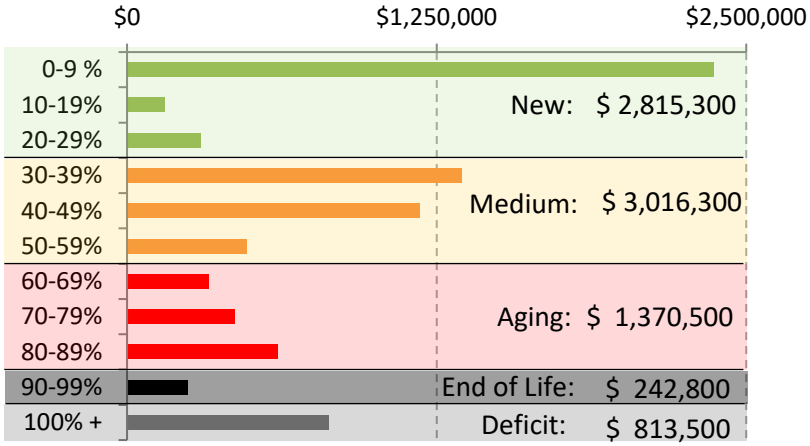
Age and Asset Condition

Asset age indicates asset condition. For the Landfill, 53% of all assets are in the *New* or *Medium* age category, while 23% are in the *Aging* or *End of Life* category. In terms of value, 71% of the value of all the assets are in the *New* or *Medium* category while 13% of the value of the assets are at or nearing the time for replacement or renewal.

Landfill: Total Number of Assets by Age Class



Landfill: Total Asset Value by Age Class



2.8 Transportation Services

Transportation Services is responsible for the delivery of regional transit operations and is housed in the Transportation Administration Building, which is currently managed by NAI Commercial, a Vancouver Island property management firm. Regional transit operations include operating a fleet of full size, compressed natural gas buses, as well as door-to-door HandyDart services. Transportation Services is also responsible for the Descanso Bay Emergency Wharf, and the Green's Landing Wharf on Gabriola Island.

Due to in-house expertise in the department, Transportation Services also manages and maintains much of the RDN vehicle fleet. Though the vehicles that comprise the fleet are owned by a variety of other service areas, the Asset Snapshot for the RDN fleet is included in this section.

Table 7 Transportation Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	The complete asset list owned by the Fleet and Transit is not sufficiently componentized and consolidated to facilitate decision-making. It is estimated that 70% of the inventory needs to be broken down into more detail but there is reliable information on the transit building, shelters, and components in the transit shop.
	A work order system tracks maintenance completed on fleet vehicles and other components. Work orders begin as paper records that are then sent to a Transit supervisor. There is coordination between BC Transit and the RDN for warranty work that is not automated. The name of the BC Transit maintenance program is RTS Connect. The work completed on the wharves are tracked trough purchase orders.
Know Your Financial Position	There is no long-term planning document that outlines assets owned, asset replacement dates, and replacement costs, though this information is now captured in Asset Snapshots. For the buses. BC Transit is responsible for financial records and maintains a full life cycle analysis which includes depreciation, repair costs, and replacement of the buses.
	There is a very detailed budget coding and cost tracking system. It is particularly robust for the buses that are leased from BC Transit because it allows the RDN to determine the costs that are to be shared with BC Transit. Wharf costs, fuel stations and corporate fleet are accounted for in the budgeting software FMW and in comprehensive spreadsheets.
	Funding for the Transit System is shared between the RDN and BC Transit. The transit building and fleet are cost shared with BC Transit (46.69% BCT, 53.31% RDN). The wharves are funded completely by the RDN through tax requisition.
Understand Decision-Making	Decision processes exist for planning capital projects and determining budget requirements. Decisions about fares, routes and service levels are made by the Board, based on information and planning provided by Transit Services and BC Transit. The decision making processes are well documented and consistent for all areas in transit (building included) and the wharves.

	Monitoring the condition of the assets is completed in an ad-hoc fashion and it does not cover the entire asset inventory.
Manage Asset Lifecycle	BC Transit defines the hours of service the RDN is to provide by contract, the RDN board defines the allocation of that time, and Transit Planning defines and schedules the routes. The relationship with the cost of service and level of service is not sufficiently defined. It has been partially determined for the wharf.
Know the Rules	The board develops strategic goals for the RDN to inform annual work plans. Strategic goals and business plan are connected and key performance indicators that relate back to the strategic goals are used.
	All motor vehicle and professional driver legislation, safety procedures, and other directives from the RDN are outlined in the Transportation Manual. The Superintendent is responsible for keeping this document current and communicating updates to staff.

2.8.1 Transportation Services (TS)

Level of Service

The RDN's Transportation Service (TS) is an integrated service connecting communities from Deep Bay in the north, to Electoral Area A (Cedar) south of the City of Nanaimo. Conventional and Custom (handyDart) service buses are leased from BC Transit; and are not classified as assets owned by the RDN.

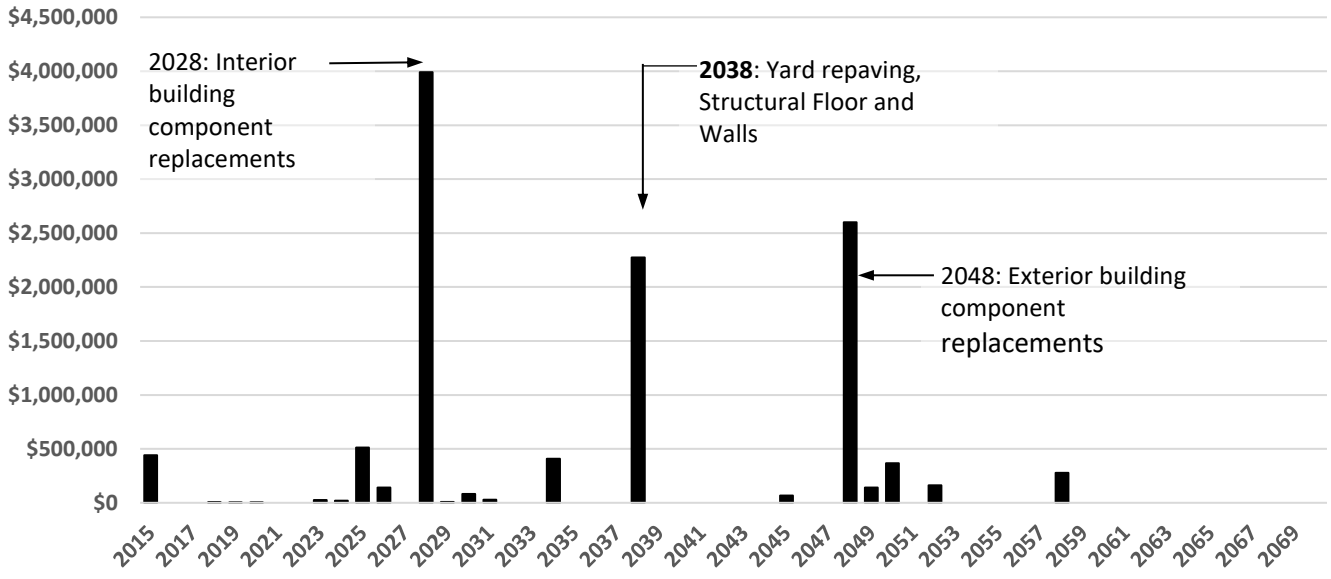
The Transit building at 6400 Applecross Road, Nanaimo accommodates the operational, dispatch and administrative functions of the TS. In addition to offices and public reception, the building houses maintenance bays for servicing as well as exterior painting. Adjacent to the building is a natural gas compressing and fueling station. The original structure dates from the 1970's; with significant upgrades in 2008, and 2012. Three transit exchanges and a number of shelters are included for asset management purposes.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement costs are based on historic costs from financial records, and property insurance valuation. The asset inventory is not considered to be complete. This information provides a data confidence rating of '2' for current replacement costs.

Total Replacement Value (2017 dollars)	***$11,500,000***
Lifecycle Period	***41 years***
Average Useful Life of All Assets	***17.8 years***
Average Annual Replacement Cost	***$650,000***

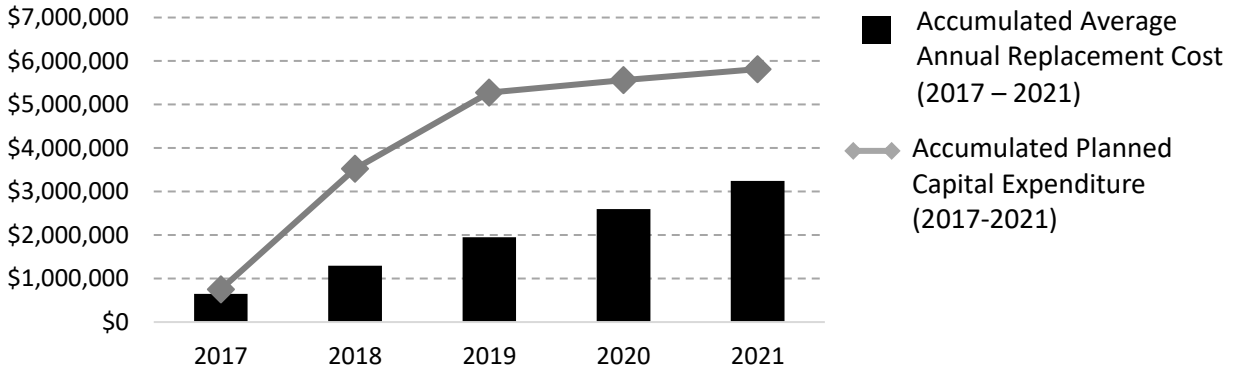
TS: Current Replacement Costs (2017-2058)



Planned Capital Expenditure & Average Annual Replacement Costs

For the TS there are planned capital expenditures of $5.8 million over the next five years. The majority of this is for a new transit exchange construction and improvements to existing exchanges in Nanaimo. Distinguishing capital expenditures that support current service levels from those that introduce new service levels, including new bus exchanges is necessary to better align planned capital expenditures and average annual replacement costs.

T**S:** Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

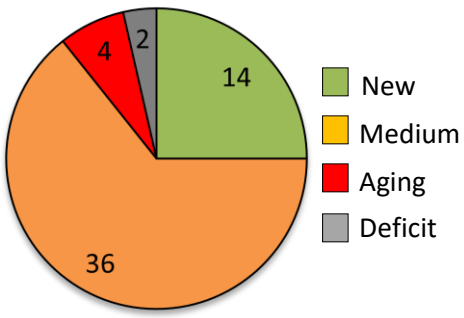


Capital Reserve Opening Balance (2018): ***$3,732,000***

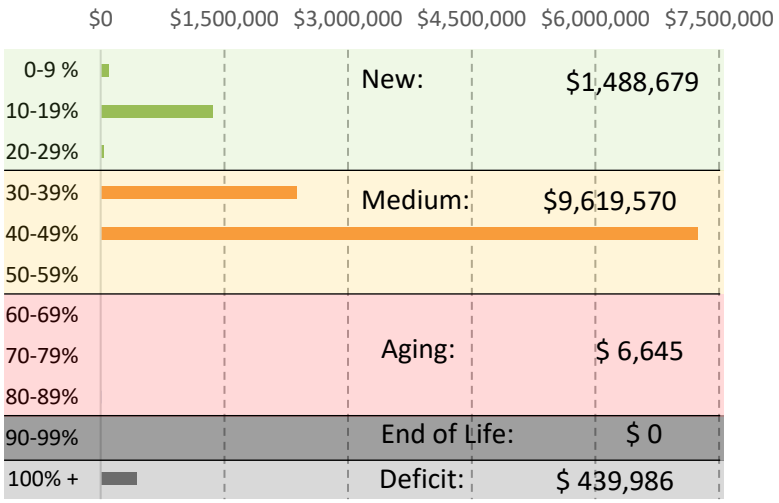
Age and Asset Condition

Age is a simple indicator of asset condition. For the Transportation Services, 96% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. A total of 4% of the value of all the assets are in the *End of Life* category meaning a number of the assets are at the time for replacement or renewal.

TS: Total Asset Value by Age Class



TS: Total Number of Assets by Age Class



2.8.2 Vehicle Fleet

Level of Service

The Regional District's Vehicle Fleet includes over 45 on-road passenger vehicles used daily by staff throughout the region (cars, vans and pickup trucks), plus numerous smaller mobile equipment assets for use in operations (such as trailers, bobcats, dump trucks, and utility vehicles).

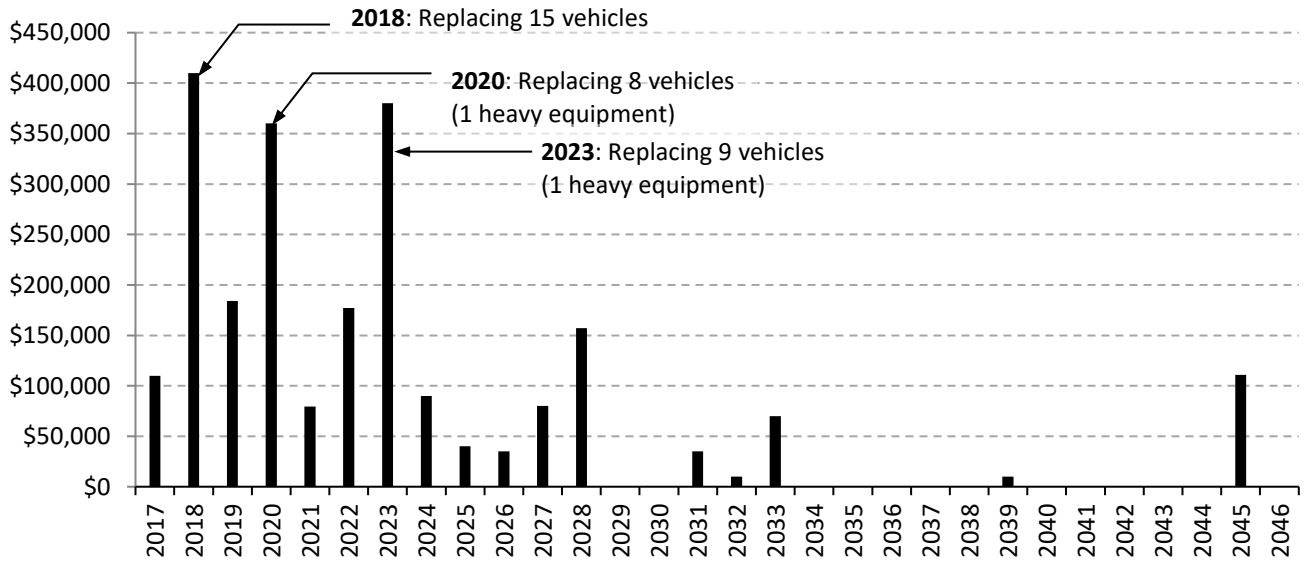
Included in the fleet are vehicles in the shared pool – not assigned to any one department – as well as vehicles effectively owned by specific departments. Equipment and vehicles based at RDN solid waste facilities, transit buses, and vehicles based at the volunteer fire departments have been excluded from this Snapshot.

Current Replacement Costs ***Data Confidence Rating: 5***

Current replacement cost values for the Vehicle Fleet are based on recent tender pricing for replacements and from market place knowledge. This provides a data confidence rating of '5' for current replacement costs.

Total Replacement Value (2016 dollars)	***$2,300,000***
Lifecycle Period	***30 years***
Average Useful Life of All Assets	***15 years***
Average Annual Replacement Cost	***$153,000***

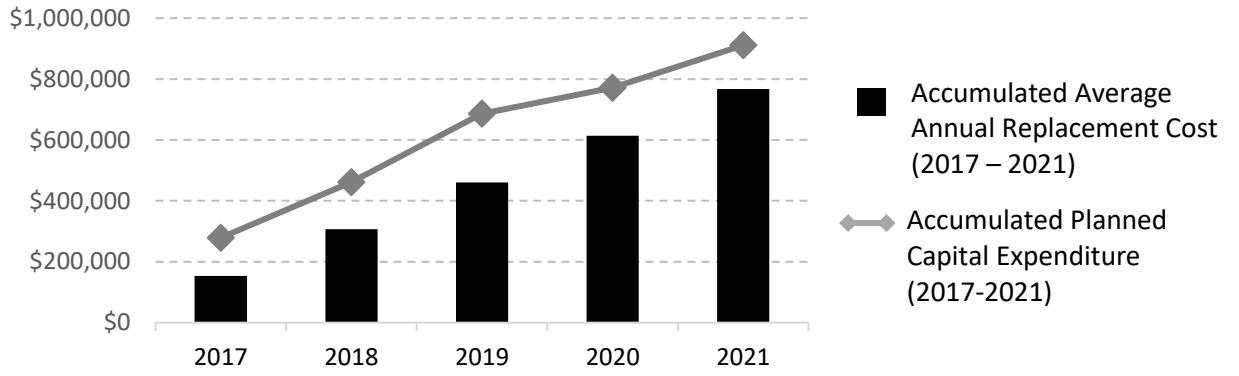
Vehicle Fleet: Current Replacement Costs (2017-2047)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Vehicle Fleet, there are planned capital expenditures of $911,000 over the 2017-2021 period. Replacements are planned for several of the shared pool vehicles, specific department vehicles, as well as utility-type equipment in the Waste Water department. The replacement program for vehicles is well established, as evident in the alignment between planned capital expenditures and average annual replacement costs.

Vehicle Fleet Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

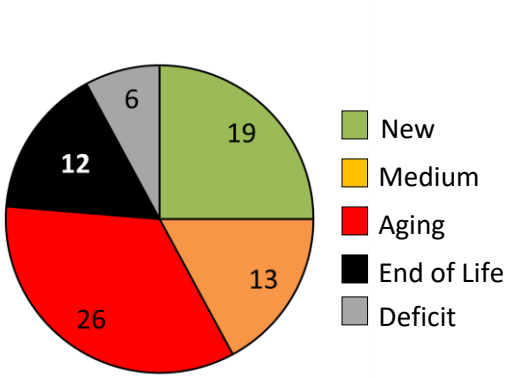


Capital Reserve Opening Balance (2018): ***$377,000***

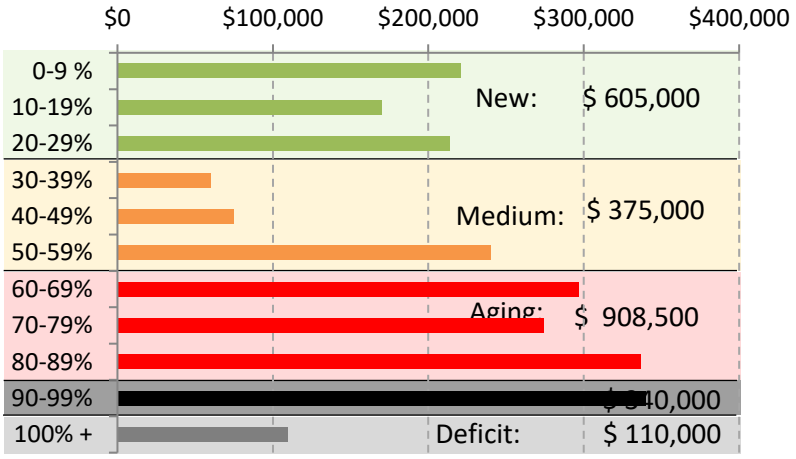
Age and Asset Condition

Asset age indicates asset condition. The Vehicle Fleet has assets in all age classes, with 32% of assets in the *Aging* or *End of Life* age category, resulting in a condition rating of *Poor* or *Very Poor*. Regular inspections and maintenance ensure these aging vehicles continue to be roadworthy. By value, the assets in the *Aging* or *End of Life* category make up 19% of all the Vehicle Fleet.

Fleet: Total Number of Assets by Age Class



Fleet: Total Asset Value by Age Class



End of Life:

2.8.3 Wharves

Level of Service

The Regional District is responsible for operating and maintaining two wharves, both located on Gabriola Island.

The Gabriola Island Emergency Wharf is located adjacent to the BC Ferries ferry terminal at Descanso Bay. It was constructed in 2004. The wharf is not accessible to the public but maintained for emergency purposes such as medical evacuation.

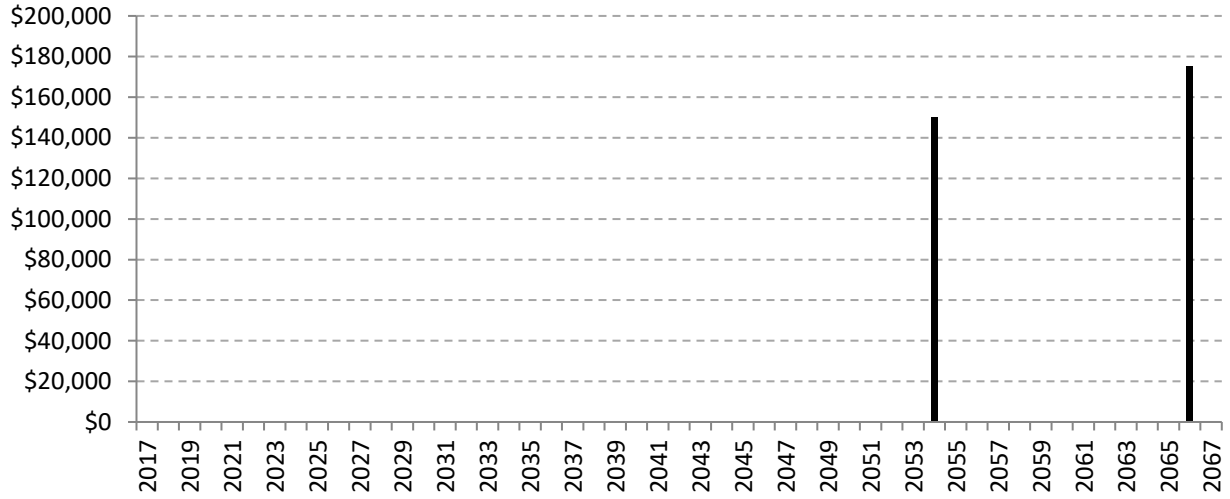
Green's Landing Wharf was constructed in 1959 by the Federal Government. Ownership was transferred to the RDN in 2016 to ensure continued public access. The majority of its use is by residents accessing Mudge Island.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs are based on a combination of recent engineer's appraisal (Green's Landing), and the historic cost (Emergency Wharf). This information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 dollars)	***$325,000***
Lifecycle Period	***50 years***
Average Useful Life of All Assets	***50 years***
Average Annual Replacement Cost	***$6,500***

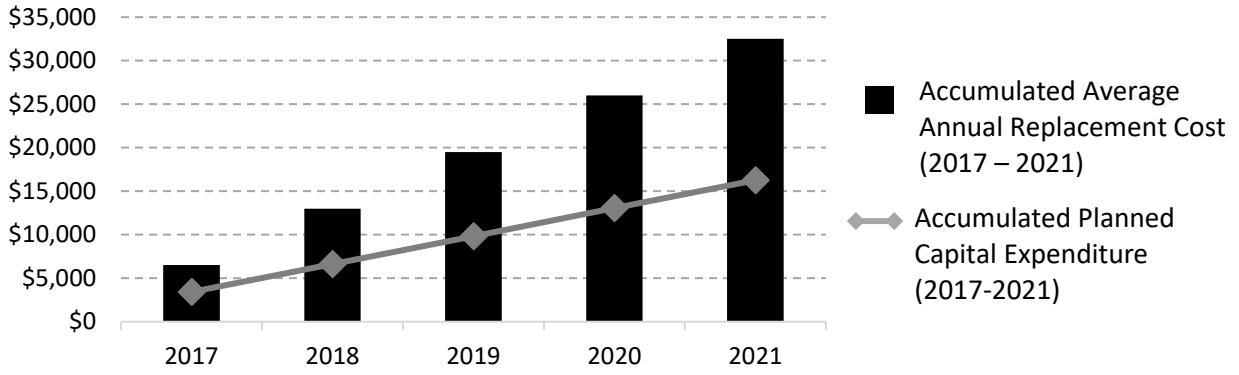
WHARVES: Current Replacement Costs (2017-2067)



Planned Capital Expenditure & Average Annual Replacement Costs

There are $16,000 in planned capital expenditures over the 2017-2021 period for the wharves. This includes contributions to reserve funds as well as a portion of operating costs. As is commonly the case for assets early in their estimated useful life, planned capital expenditures are trending below average annual replacement costs.

WHARVES Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

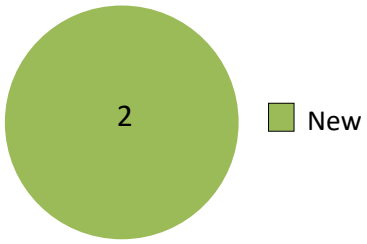


Capital Reserve Opening Balance (2018): ***$204,000***

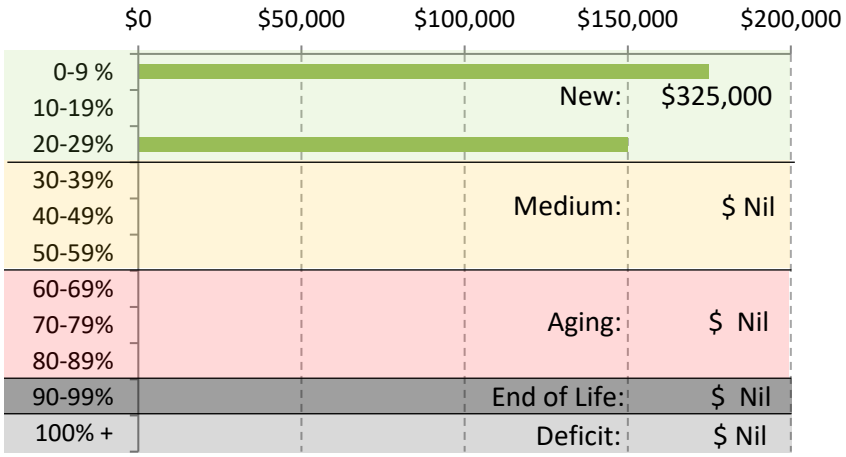
Age and Asset Condition

Asset age indicates asset condition. For the Wharves, 100% of both assets are in the *New* age category, resulting in a condition rating of *Very Good*. Subsequently, 100% of the value of both Wharves is also in the *New* category meaning they are early in their lifecycles.

WHARVES: Total Number of Assets by Age Class



WHARVES: Total Asset Value by Age Class



2.9 Administrative Services

The Administrative Services Department is responsible for the RDN Main Administration Building. Maintenance and repairs of the building are coordinated and managed by a local property management company (NIA) working with staff support from Building and Bylaw Services. NAI has managed the RDN offices for over ten years. Building servicing is completed entirely by subcontractors hired by NIA.

The Administrative Services Department is also responsible for Information Technology and the corporate vehicle pool fleet used by all departments. Operations, maintenance and replacement of the vehicle pool fleet is managed by RDN Transit Services employees and is included in the Transportation Services Section.

Table 8 Administrative Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	The asset for the RDN Main Administration is estimated at 75% complete. It includes details such as interior/exterior painting and carpets.
Know Your Financial Position	For the Administration Building, the RDN uses an insurance appraisal document to calculate replacement values for basic building components, and there are no tools in place to record lifespan estimates of building components.
	Funds budgeted for reinvestment are placed into reserve to provide funding for miscellaneous replacements as required. Significant projects like replacement of the roof are included in a ten-year capital plan.
	The majority of the operation and maintenance information is logged in report documents; however, there is no simple method to generate reports and analyze operations and maintenance history. Resources are being directed to create a detailed cost tracking system that links costs to assets.
	The operations, maintenance and management costs of the building are covered by the Administrative Services department budget. The department is funded from interdepartmental transfers charged to every department housed in the building.
Understand Decision-Making	Asset repairs or replacements are prioritized and managed by the RDN property management contractor in consultation with RDN staff. The individual responsible for the property management contract is also responsible for managing Building Inspection Services, therefore has some technical knowledge of building systems.
Manage Asset Lifecycle	The condition of assets are not consistently recorded and submitted to the RDN through the contracted property management firm. Documentation is being developed to relate work history to assets and condition of assets.
	Renewal alternatives are assessed the contracted property management firm and brought forward to RDN staff for approval. RDN staff do not participate in the process of assessing alternatives except for major work.
	Maintenance of the building is reactive. As system to verify maintenance strategies for the assets is in development by the RDN.

2.9.1 Administration Building

Level of Service

The RDN Administration Building is the political and administrative centre for the RDN. It is a 25,000 square foot, LEED Silver certified office building that provides workspace and meeting rooms for almost 90 staff; front counter services to the public; and Chambers for the RDN Board of Directors. The building is currently at full capacity, with no space available to accommodate additional staff. Addressing this capacity issue will be a key challenge as staffing needs increase.

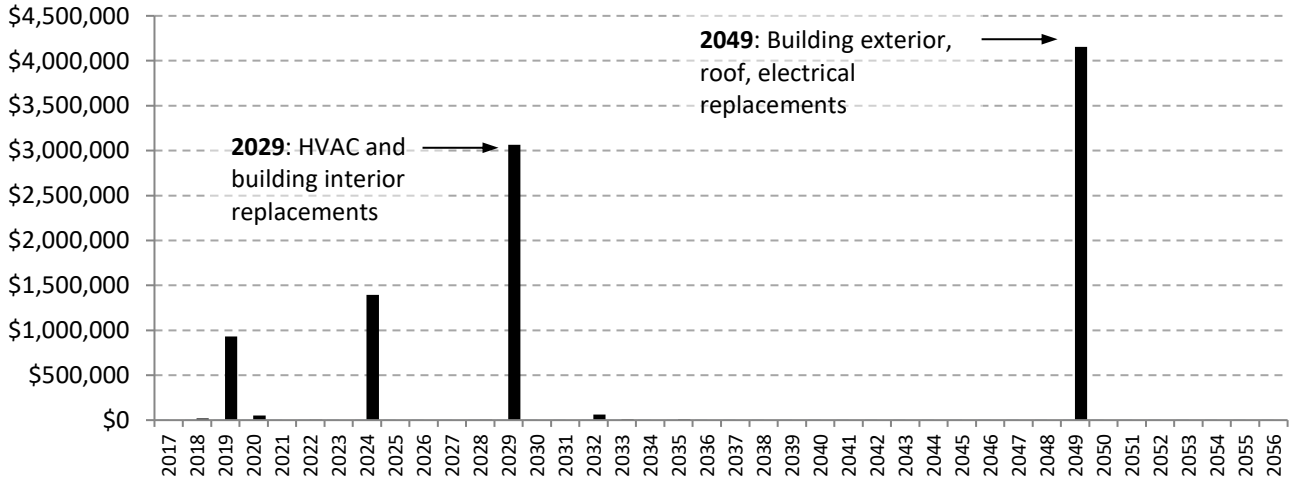
In addition to the capacity challenge, the building has undergone several renovations and expansions since its initial construction in 1972. As a result, different areas if the building provide different comfort levels for occupants, and competing mechanical systems operate with diminished efficiency. Off-street parking for 155 vehicles is shared with the adjacent Transportation Services Building and is also at capacity.

Current Replacement Costs ***Data Confidence Rating: 2***

Current replacement costs are based on historic costs from financial records, and property insurance valuation. The asset inventory is not considered complete. This provides a data confidence rating of '2' for current replacement costs for the RDN Administration Building.

Total Replacement Value (2016 dollars)	***$9,700,000***
Lifecycle Period	***40 Years***
Average Useful Life of All Assets	***17 years***
Average Annual Replacement Cost:	***$485,000***

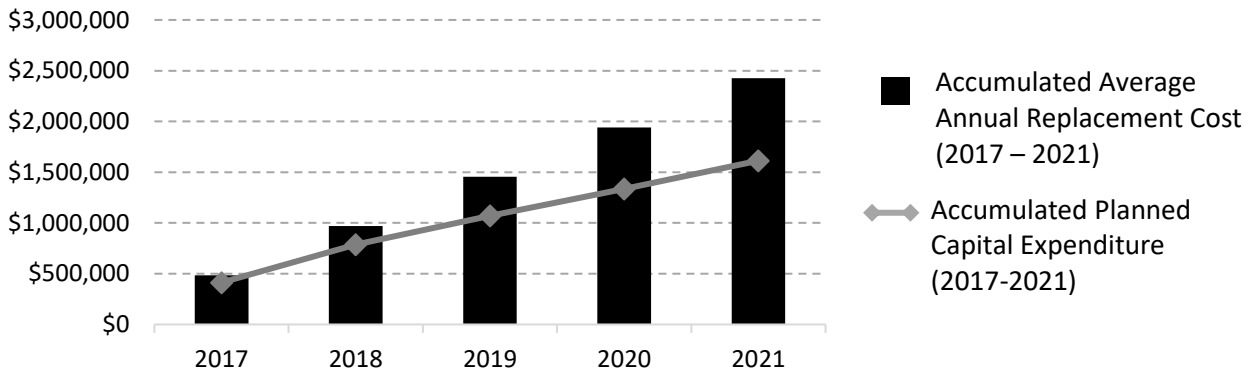
Administration Building: Current Replacement Costs (2017-2056)



Planned Capital Expenditure & Average Annual Replacement Costs

Planned capital expenditures for the Administration Building total $1.6 million over the 2017-2021 period, including roof and HVAC replacements, and technological upgrades for the building. The 12-year period from 2017-2029 is a time of reinvestment in the RDN Admin Building, however to justify that reinvestment, an overall assessment of the facility is needed.

Admin Building Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)



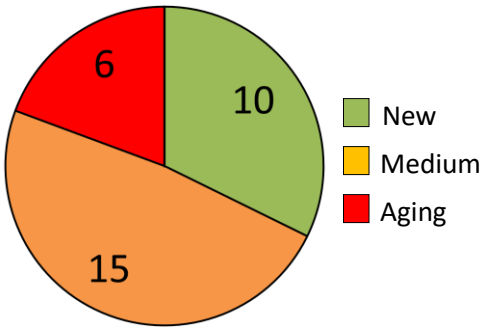
Capital Reserve Opening Balance (2018): ***$339,000***

Age and Asset Condition

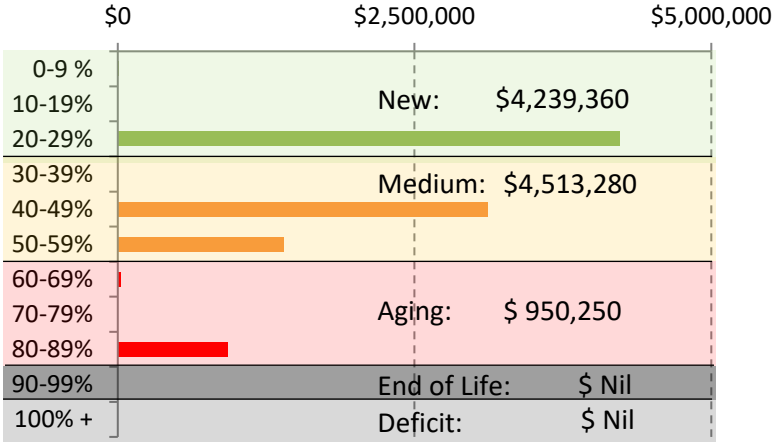
For the Administration Building, 81% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*.

90% of the value of all the assets are in the *New* or *Medium* category. Completing a more detailed asset registry will increase confidence in this analysis.

Admin Building: T*otal Number of Assets by Age Class*



Admin Building: *Total Asset Value by Age Class*



2.9.2 Information Technology

Level of Service

The Information Services department plans and implements the utilization of computer technology, provides advice to inter-departmental projects, and maintains all aspects of the network / telecom communications related equipment on behalf of the organization.

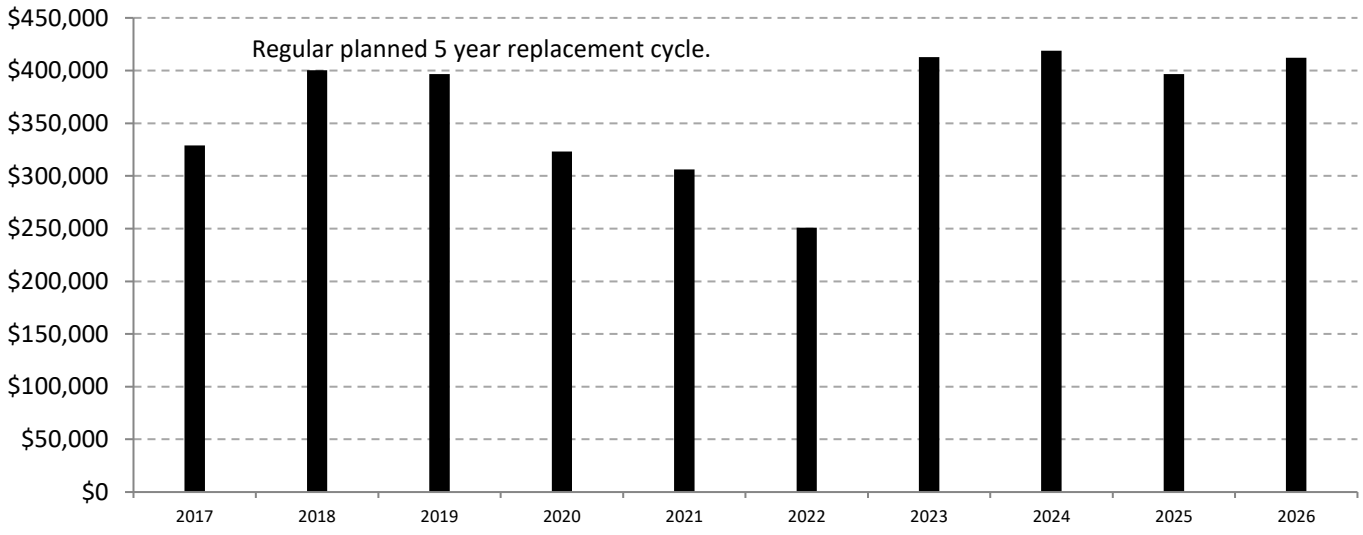
The Regional District has computing resources in 27 locations across the region (including offices, public facilities, and operations buildings). Physical infrastructure includes 324 personal computers, 64 file/application servers (the majority of which operate in a virtual server environment), 156 Wireless Device users and associated peripheral equipment, and telecommunications equipment.

Current Replacement Costs ***Data Confidence Rating: 5***

Current replacement cost values for the Information Technology (hardware) are based on the ongoing replacement and upgrading program set in place by the Information Systems Department Manager. This provides a high data confidence rating of '5' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$1,600,000***
Lifecycle Period	***10 years***
Average Useful Life of All Assets	***5.2 Years***
Average Annual Replacement Cost	***305,000***

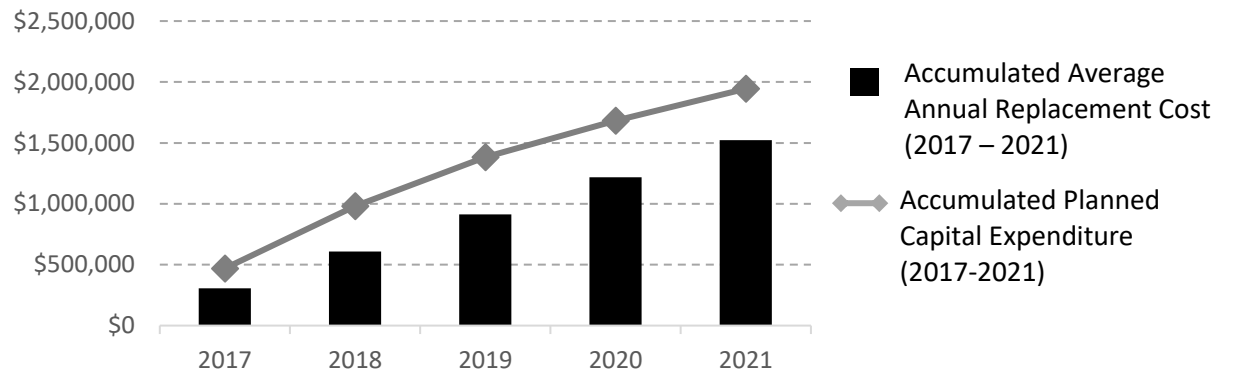
Information Technology: Current Replacement Costs (2017-2026)



Planned Capital Expenditure & Average Annual Replacement Costs

Planned Capital Expenditures attributed to the Information Services Department includes workplace personal computers and phones which are expensed to the individual departments. There are planned capital expenditures of $1.9 million over the 2017-2021 period.

IT: Planned Capital Expenditures & Average Annual Replacement Costs (2017-2022)

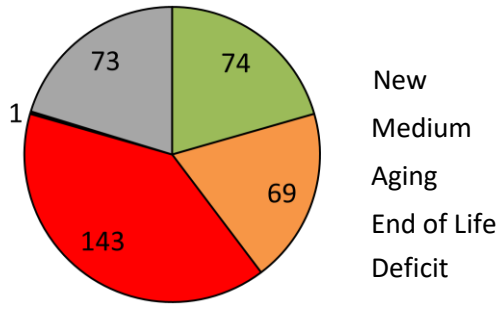


Capital Reserve Opening Balance (2018): ***$1,946,000***

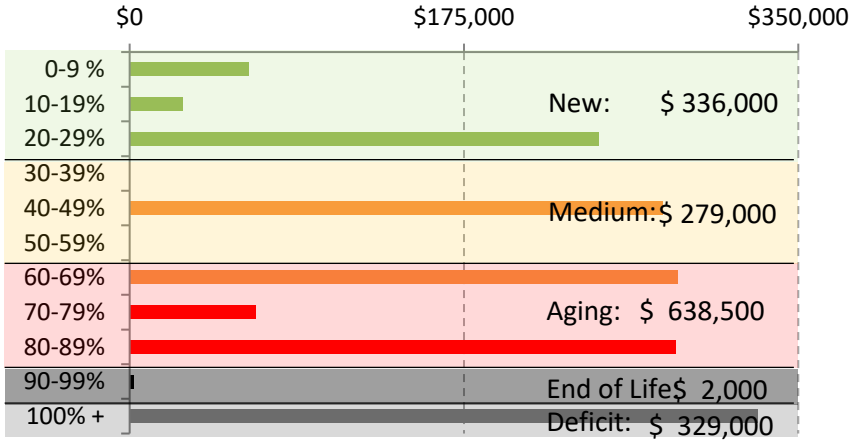
Age and Asset Condition

For the Information Services Department, 40% of all assets are in the *New* or *Medium* age category, while 20% are in the *Deficit* category. Many of these "aged out" assets are still in use having been re-purposed for non-frontline applications. Twenty-one percent (21%) of the value of all the assets are in the *End of Life* or *Deficit* category meaning the assets are at or nearing the time for replacement or renewal.

IT: *Total Number of Assets by Age Class*



IT: *Total Asset Value by Age Class*



2.10 Fire Protection Services

The RDN Fire Services Coordinator, in collaboration with the Accounting Services Department, oversees budgeting including capital project financing, and asset procurement for six volunteer-based fire department societies. These societies provide fire protection and emergency response services in Electoral Areas C, E, F, portions of Electoral Area G and portions of Electoral Area H. Other areas are served by member municipalities or local improvement districts independent from the RDN.

The volunteer fire department societies are responsible for day-to-day management of fire departments as well as operational guidance to their volunteers. They also advise the RDN of their capital improvement requirements. The fire protection assets are owned by the RDN.

Table 9 Fire Protection Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	The assets located at each fire hall are generally listed in the TCA Inventory spreadsheet maintained by the Finance Department. The fire services assets require componentization to provide the information required to support decision-making.
	The RDN and Fire Halls' information systems are under review for alignment and service integration. Resources are being directed to improve coordination and sharing of asset information between the RDN and the Fire Halls. This will support improved decision-making and data analysis.
Know Your Financial Position	Long range capital reinvestment plans and replacement cost, in current dollar value, for the fire services assets owned by RDN is under development. RDN staff work with the fire halls to budget replacement of trucks.
	Operations and Maintenance costs are under review for linkage to individual assets. Annual operations and maintenance costs are approximated based on the prior year's budget with little detailed information on work completed and what is required.
	The Fire Halls are financed through tax requisition. Installments are paid on a quarterly basis that the Fire Halls use to run their facilities and operations.
Understand Decision-Making	Of the fire departments within the RDN there are six that the RDN has contracts with. Part of each contract agreement indicates that their assets became the property of the RDN.
	Fire Halls are staffed by volunteer staff in the electoral areas. The six departments submit a budget that has been approved by their board. Finance enters these budgets into the FMW budget program which is then approved by the RDN board.
	Spending of the taxes collected on behalf of the Fire Halls is decided by the fire society board or chief, in consultation with the RDN.
Manage Asset Lifecycle	. Condition and work history condition and work history of the trucks, buildings, and other firefighting equipment is readily available at each Fire Hall through the fire service provider..

	Maintenance of Fire Services assets is managed by the volunteers and these procedures have been communicated to the RDN.
Know the Rules	The RDN has laid out specific fire protection goals and has identified the stakeholders of the service.
	The RDN has knowledge of legislation and standards to follow. The RDN Fire Departments have lists of these documents.

2.10.1 Fire Protection in the Regional District - Level of Service

Fifteen fire departments operate 23 fire halls throughout the RDN, providing fire protection for all four municipalities and most unincorporated areas.

Nine of these fire departments are administered and financed by municipalities and improvement districts, and operate independently of the RDN.

A. Municipal or Improvement District Fire Departments

- Cranberry
  - *contracts with RDN to provide service to portions of Electoral Areas A and C*
- Deep Bay
- East Wellington (Mountain Improvement District)
- Gabriola Island
- District of Lantzville
- City of Nanaimo
  - *contracts with RDN to provide service for a portion of Electoral Area C*
- North Cedar
- City of Parksville
  - *contracts with RDN to provide service to portions of Electoral Area G*
- Town of Qualicum Beach
  - *contracts with RDN to provide service for a portion of Electoral Area G*

B. RDN Volunteer Fire Departments

The remaining six fire departments are volunteer fire department societies. These societies provide fire protection and emergency response services in all, or portions of, Electoral Areas C, E, F, G, and H.

- Bow-Horn Bay
- Coombs-Hilliers
- Dashwood
- Errington
- Extension
- Nanoose Bay

The RDN collects property taxes for these fire departments, and provides financing for their operations and capital expenses. The volunteer fire department societies are responsible for day-to-day management of their fire departments, and operational guidance to their volunteers. They also advise the RDN of their capital improvement requirements. Planning assistance and financial oversight is provided by the RDN Fire Services Coordinator.

2.10.2 Bow Horn Bay

Level of Service

The Bow Horn Bay Volunteer Fire Department (VFD) was established in 1952 as the Qualicum Bay Fire Department. A purpose-built, three-bay hall was erected on Lions Way in Qualicum Bay in 1978. Two additional bays were added on to the rear of the hall in the early 1980's.

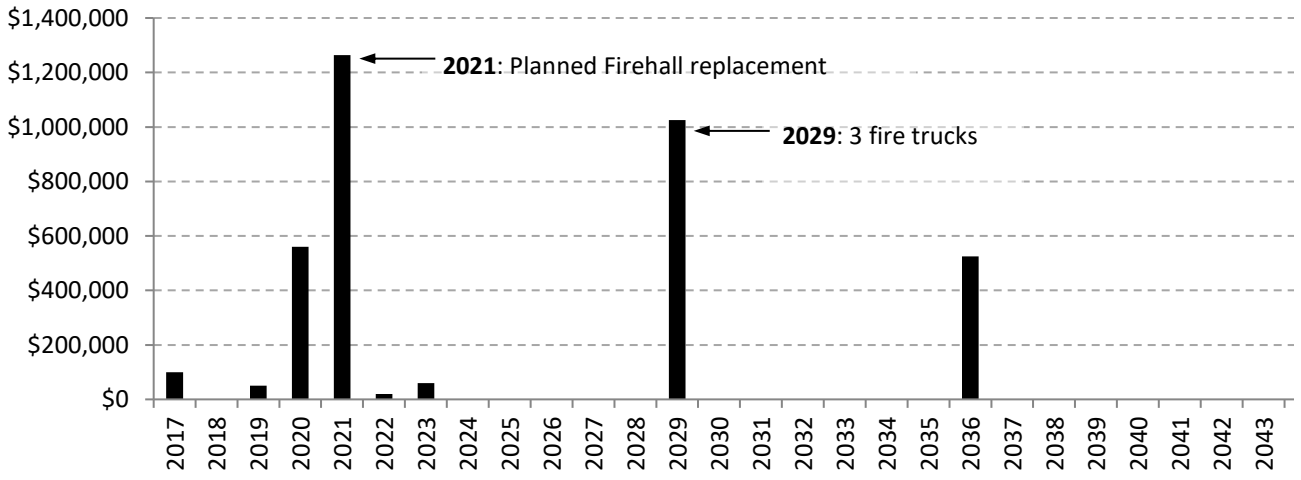
The department presently has eleven pieces of major equipment including tanker trucks, pumper apparatus, command vehicle, rescue vehicles, a communications trailer, an ATV, and a hydrant maintenance vehicle. The VFD is comprised of the Fire Chief, a Deputy Chief, three Captains, two Lieutenants, and 13 volunteer firefighters.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs include the Fire Hall and fire trucks. Personal gear and other equipment are not included. Values are based on quotes from recent fire truck purchases and fire hall construction undertaken by other local VFDs. This level of information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$3,600,000***
Lifecycle Period	***30 years***
Average Useful Life of All Assets	***20.8 Years***
Average Annual Replacement Cost	***$175,000***

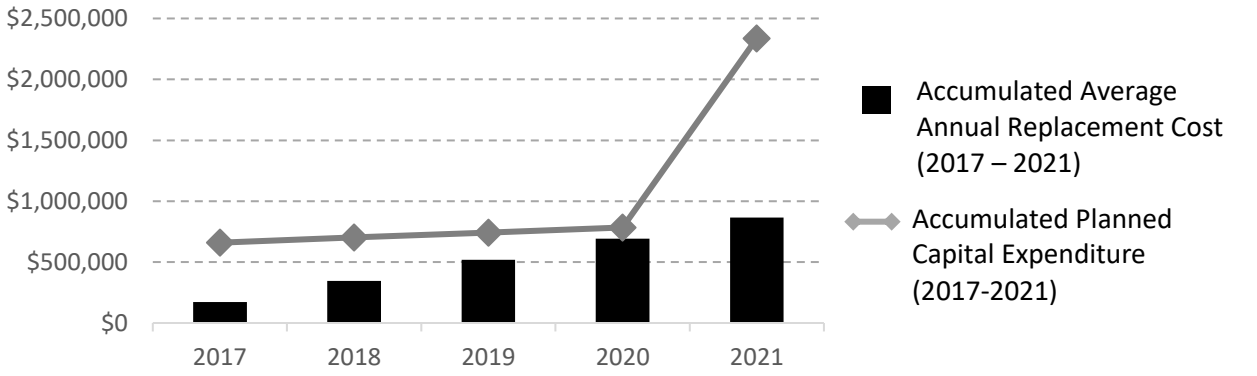
Bow Horn Bay VFD: Current Replacement Costs (2017-2046)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Bow Horn Bay VFD there are planned capital expenditures of $2.3 million over the 2017-2021 period, including construction of a satellite fire hall, replacement of the existing aging hall, and the purchase of a new generator.

Bow Horn Bay VFD Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

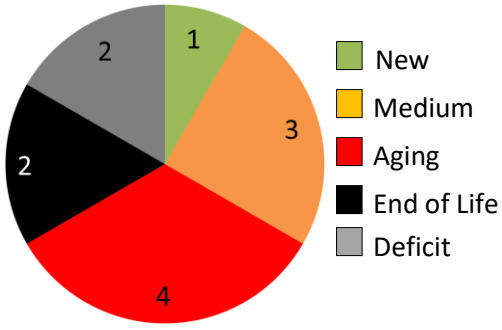


Capital Reserve Opening Balance (2018): ***$410,000***

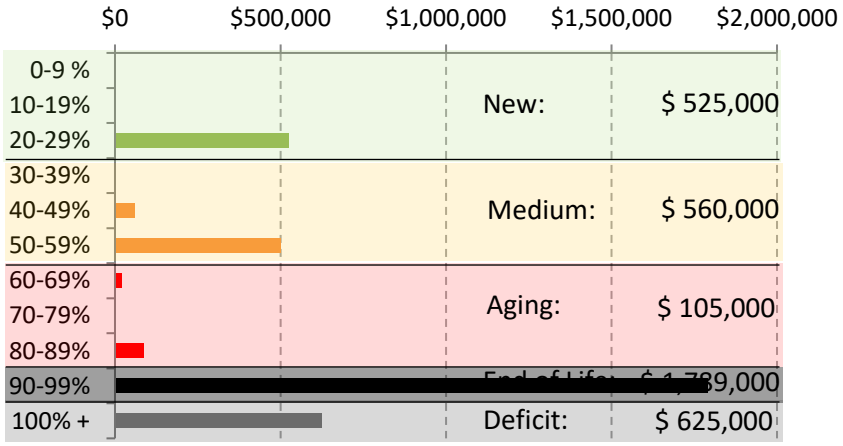
Age and Asset Condition

For the Bow Horn Bay VFD, 58% of all assets are in the *Medium* or *Aging* age category, resulting in a condition rating of *Good* or *Fair*. However, 67% of the value of all the assets are in the *Aging* or *End of Life* category meaning a number of the assets are at or nearing the time for replacement or renewal.

Bow Horn Bay: Total Number of Assets by Age Class



Bow Horn Bay: Total Asset Value by Age Class



2.10.3 Cassidy - Waterloo

Level of Service

The Cassidy Waterloo Fire Protection Area (FPA)of the RDN (encompassing portions of Electoral Areas A and C in the southern end of the district) does not have a VFD but is serviced under contract by the Cranberry VFD.

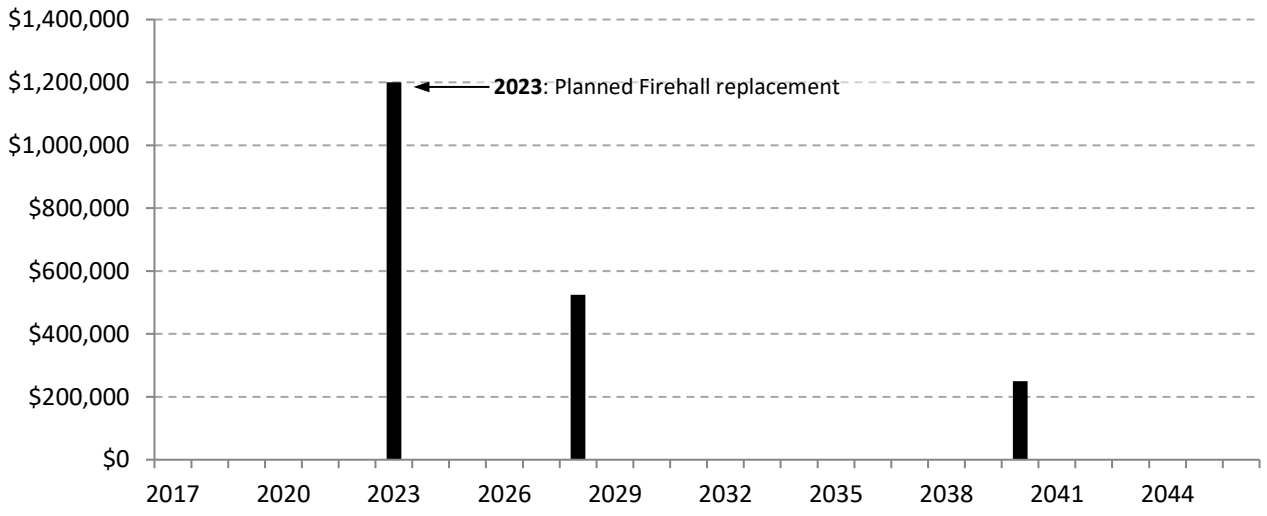
The RDN owns the fire hall located at Hallberg Road, which is a simple structure housing two fire trucks, namely a pumper truck and a tanker, along with hose, equipment and related firefighting gear. This is known as Fire Hall # 2

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs are for the Fire Hall and the two trucks only. Personal gear and other equipment are not included in the asset register. Values are based quotes from recent fire truck purchases and fire hall construction undertaken by other local VFDs. This level of information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$2,000,000***
Lifecycle Period	***30 years***
Average Useful Life of All Assets	***28.3 years***
Average Annual Replacement Cost	***$70,000***

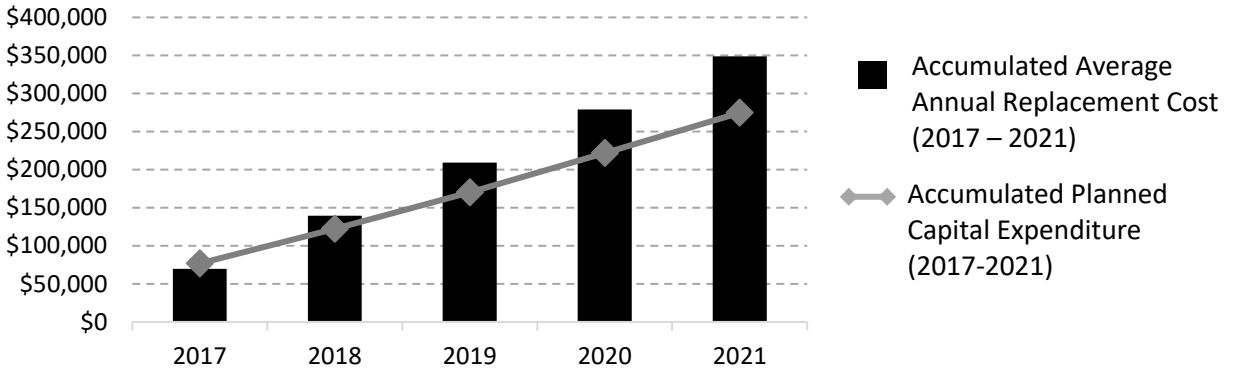
Cassidy Waterloo FPA: Current Replacement Costs (2017-2046)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Cassidy Waterloo FPA there is $275,000 in planned capital expenditures over the 2017-2021 period. Expenses shown represent contributions to reserve funds and a portion of operating expenses dedicated to maintaining current assets. Planned capital expenditures and average annual replacement costs are very closely aligned over the 2017-2021 period.

Cassidy Waterloo FPA Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

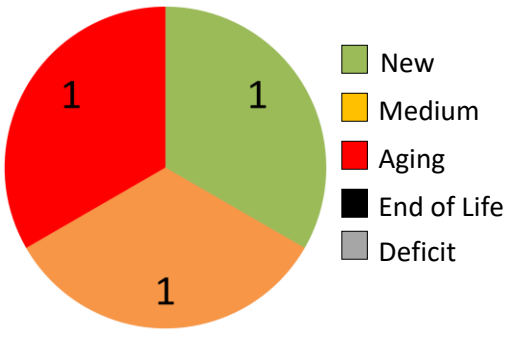


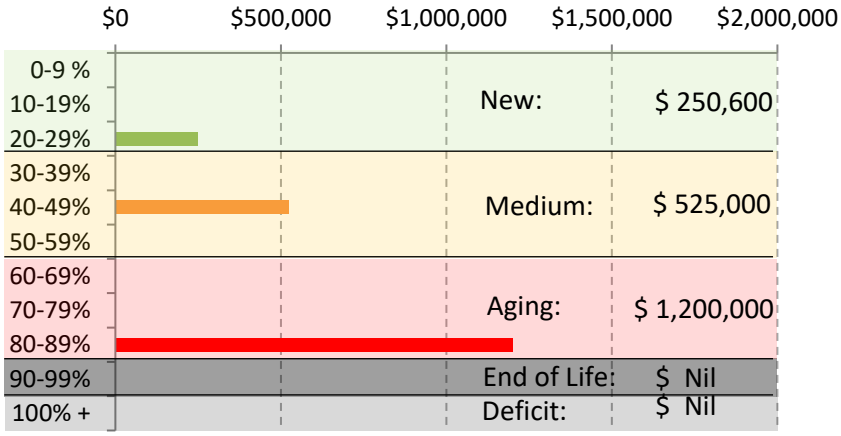
Capital Reserve Opening Balance (2018): ***$275,000***

Age and Asset Condition

Asset age indicates asset condition. For the Cassidy Waterloo FPA, 66% of all assets are in the *Medium* or *Aging* age category, resulting in a condition rating of *Good* or *Fair*. However, 61% of the value of all the assets are in the *Aging* category meaning a number of the assets are at or nearing the time for replacement or renewal.

CW FPA: Total Number of Assets by Age Class **CW FPA**: Total Asset Value by Age Class





2.10.4 Coombs-Hilliers (CHVFD)

Level of Service

The Coombs-Hilliers Volunteer Fire Department (VFD) was established in 1965. The Coombs-Hilliers VFD operates two fire halls and provides fire suppression, medical aid and rescue services to the Coombs-Hilliers area (Electoral Area F). The fire halls are located at Ford Road (Hall # 1) and on the Alberni Highway (Hall # 2).

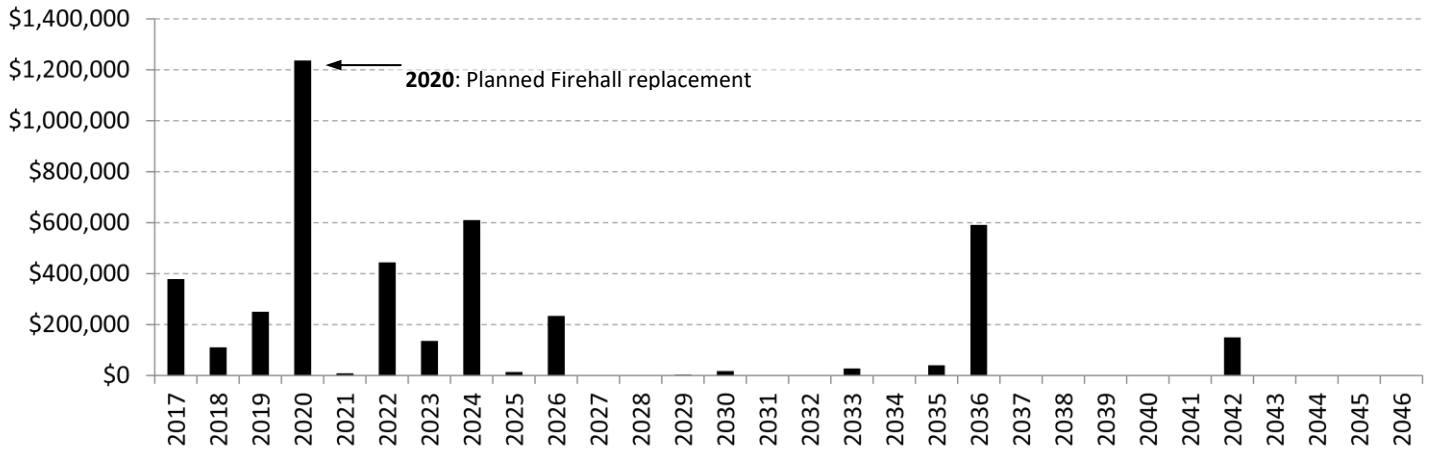
The department presently has eight pieces of major equipment including tanker trucks, tender and pumper apparatus, command vehicle, rescue vehicles, and an emergency response vehicle. The VFD is comprised of the Fire Chief, a Deputy Chief, two Captains, three Lieutenants, and 32 volunteer firefighters.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs are for two Fire Halls, major firefighting apparatus, plus firefighting gear and equipment. The asset register is considered complete and up-to-date. Values are based on recent fire truck and equipment purchases, and fire hall construction undertaken by other local VFDs. This level of information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$4,200,000***
Lifecycle Period	***30 years***
Average Useful Life of All Assets	***15 years***
Average Annual Replacement Cost	***$283,500***

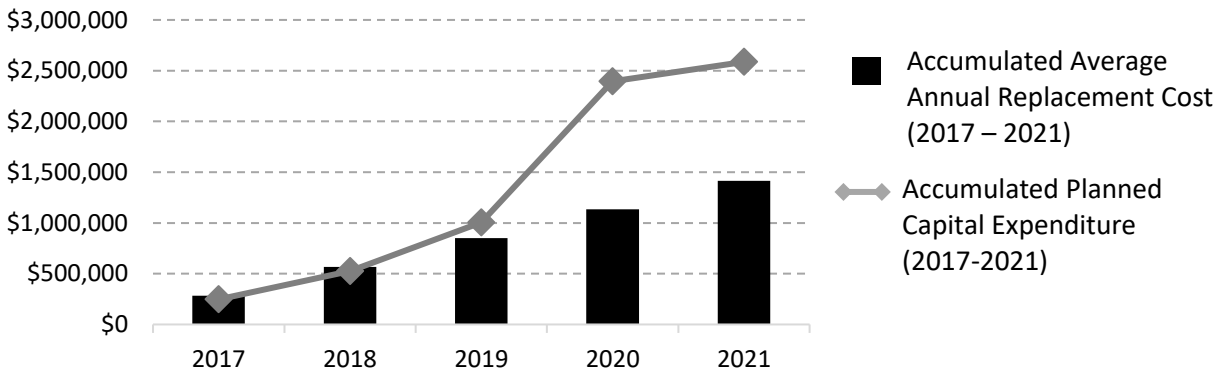
Coombs-Hilliers VFD: Current Replacement Costs (2017-2046)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Coombs-Hilliers VFD there are planned capital expenditures of $2.6 million to replace fire hall #2, replace and refurbish three firefighting apparatus, construct two new water storage tanks, and replace the SCBA (Self Contained Breathing Apparatus) equipment over the 2017-2021 period. This level of capital expenditure is evident in the graph below.

Coombs-Hilliers VFD: Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

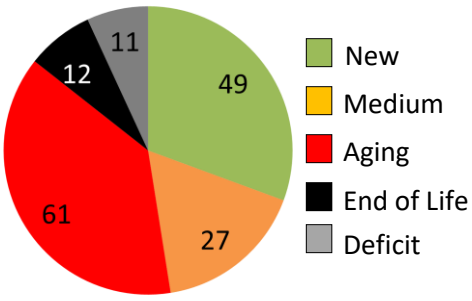


Capital Reserve Opening Balance (2018): ***$615,000***

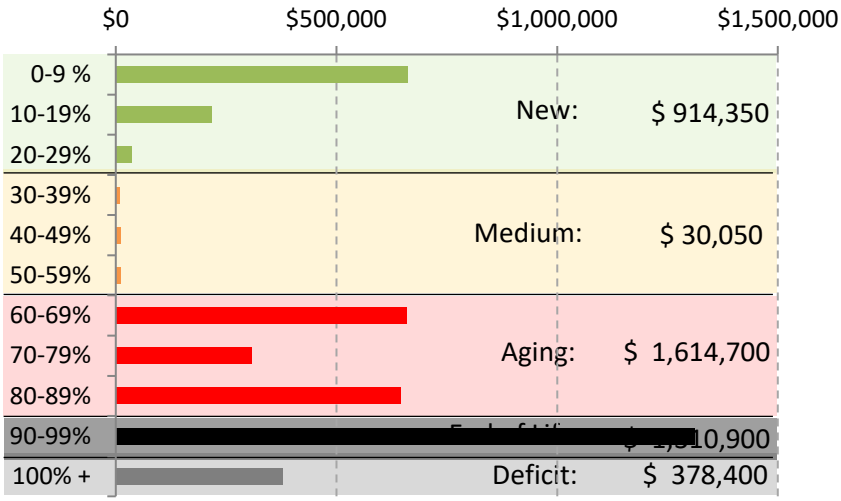
Age and Asset Condition

Asset age indicates asset condition. For the Coombs-Hilliers VFD, 48% of all assets are in the *New* or *Medium* category, resulting in a condition rating of *Very Good* or *Good*. However, 40% of the value of all the assets are in the *Aging* or *End of Life* category meaning a number of the assets are at or nearing the time for replacement or renewal.

CH VFD: Total Number of Assets by Age Class



CH VFD: Total Asset Value by Age Class



2.10.5 Dashwood

Level of Service

The Dashwood Volunteer Fire Department (VFD) was established in 1984. The Dashwood VFD operates two fire halls, and provides fire suppression, medical aid and rescue/extrication services to the Dashwood, Dunsmuir, and Meadowood communities in Electoral Areas F, G, and H. The fire halls are located at Hobbs Road (Station 61) and a secondary station at Galvin Place in the Meadowood area (Station 62).

The department presently has nine pieces of major equipment dispersed between the two halls including tanker trucks, tender and pumper apparatus, rescue vehicles, and an emergency response vehicle. The Dashwood VFD is comprised of a Fire Chief, a part-time Captain/Training Officer, one Captain, three Lieutenants, four acting Lieutenants, and 18 volunteer firefighters.

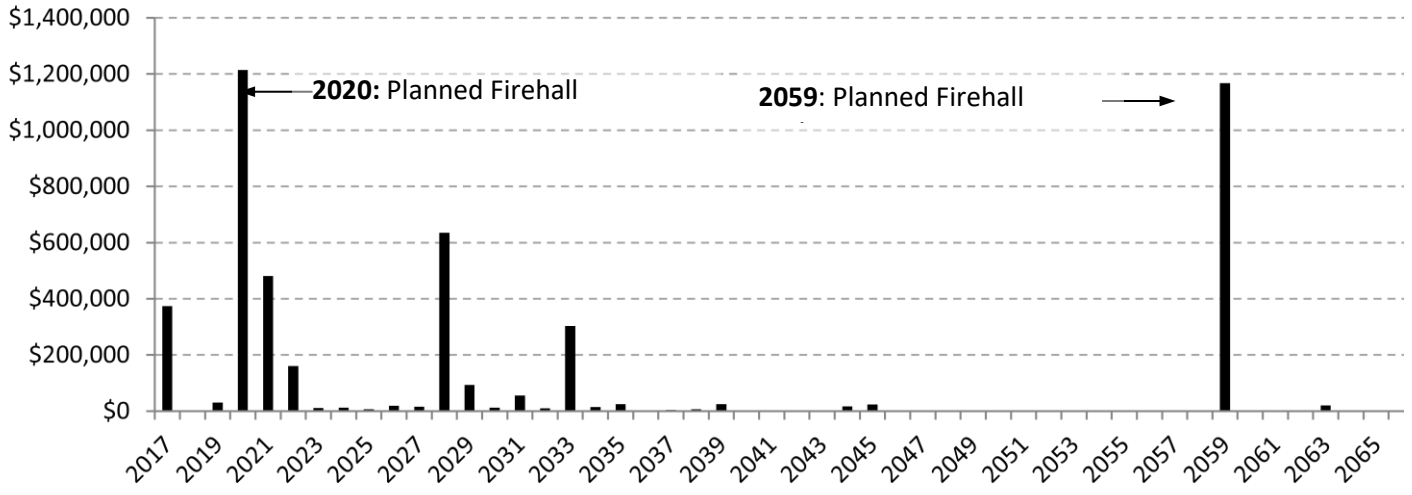
The VFD covers an area of approximately 130 km², serving about 1,700 properties with an estimated population of 3,700 citizens.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs are for the two Fire Halls, major firefighting apparatus, plus firefighting gear and equipment. The asset register is complete and up-to-date. Values are recent fire truck and equipment purchases, and fire hall construction undertaken by other local VFDs. This level of information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$4,700,000***
Lifecycle Period	***50 years***
Average Useful Life of All Assets	***17.6 years***
Average Annual Replacement Cost	***$269,500***

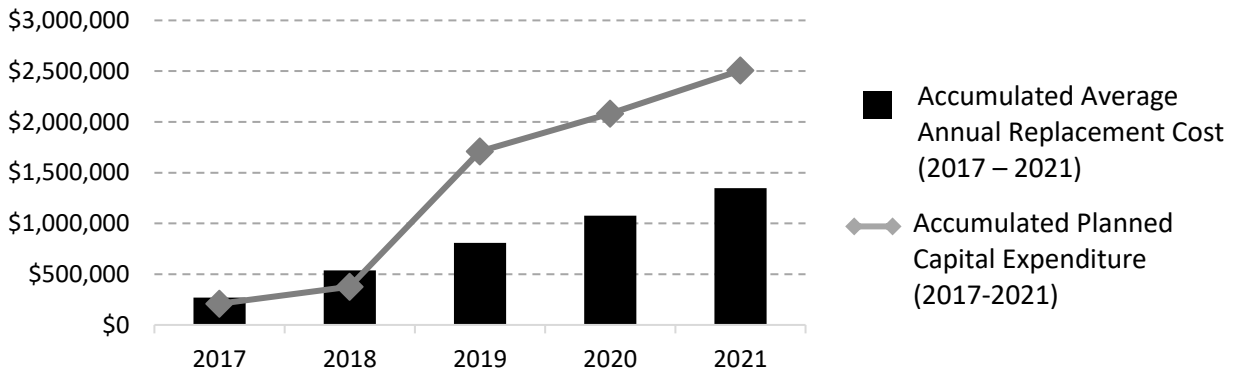
Dashwood VFD: Current Replacement Costs (2017-2066)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Dashwood VFD there are planned capital expenditures of $2.5 million over the next five years to seismically upgrade a fire hall (Station 61), replace two pumper trucks and a utility truck, and replace an air compressor along with some minor equipment. This level of capital expenditure is evident in the graph below.

Dashwood VFD: Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

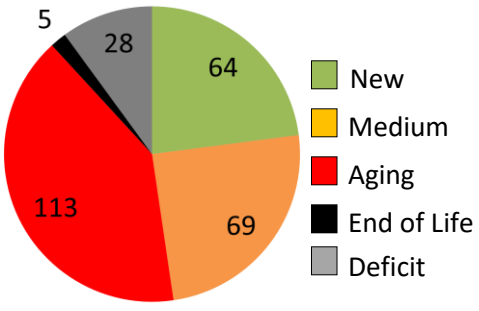


Capital Reserve Opening Balance (2018): ***$500,000***

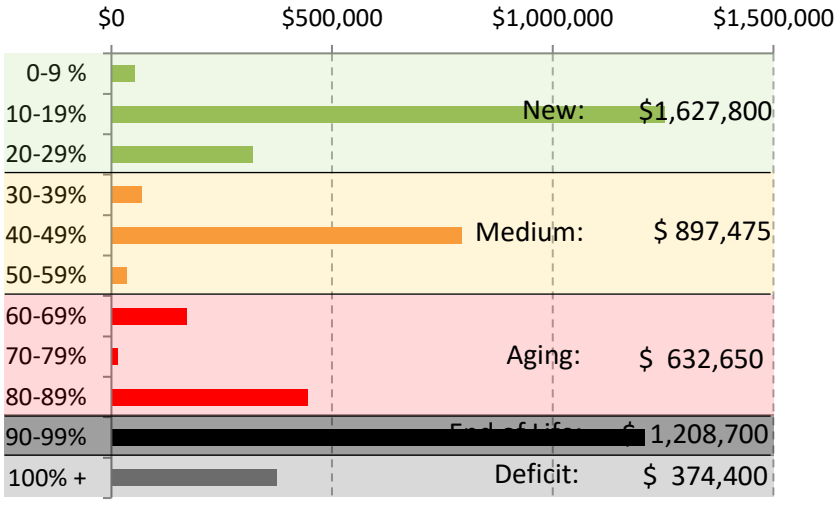
Age and Asset Condition

For the Dashwood VFD, 48% of all assets are in the *New* or *Medium* category, resulting in a condition rating of *Very Good* or *Good*. However, 33% of the value of all the assets are in the *End of Life* or *Deficit* category meaning a number of the assets are at the time for replacement or renewal.

Dashwood VFD: Total Number of Assets by Age Class



Dashwood VFD: Total Asset Value by Age Class



2.10.6 Errington

Level of Service

The Errington Volunteer Fire Department (VFD), which serves Electoral Area F, was first conceived in 1965 following a devastating lumber mill fire on Grafton Road. In the aftermath, a local resident personally committed equipment including a truck with 700 gallons capacity, hoses and a forestry pump to set up local firefighting capacity.

The first fire hall (still standing) was built beside the Errington War Memorial Hall, and was in use from 1968 to 1976. In 1976, Fire Hall #1 was constructed at 960 Errington Road. In 1983, construction of Fire Hall #2 commenced at 1930 Errington Road. In 1985 the training grounds beside Hall #2 was built. A four-bay addition was added to Hall #1 in 2004, while in 2006 a three-bay addition was added to Hall #2.

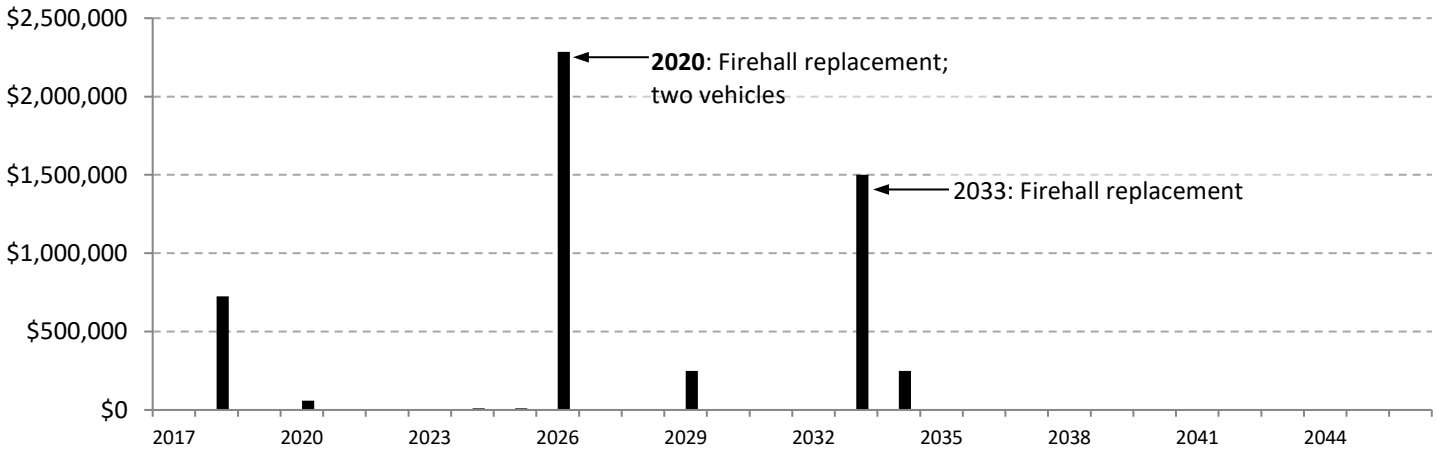
The department presently has eight pieces of major equipment including tanker trucks, tender and pumper apparatus, and utility vehicles. The Errington VFD is comprised of the Fire Chief, an acting Deputy Chief, two Captains, four Lieutenants, four acting Lieutenants, and 20 volunteer firefighters.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs are for two fire halls and major firefighting apparatus only. Personal gear and other equipment are not included in the asset registry. Values are based on recent fire truck purchases and fire hall construction undertaken by other local VFDs. This level of information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$5,000,000***
Lifecycle Period	***30 years***
Average Useful Life of All Assets	***27.7 years***
Average Annual Replacement Cost	***$180,500***

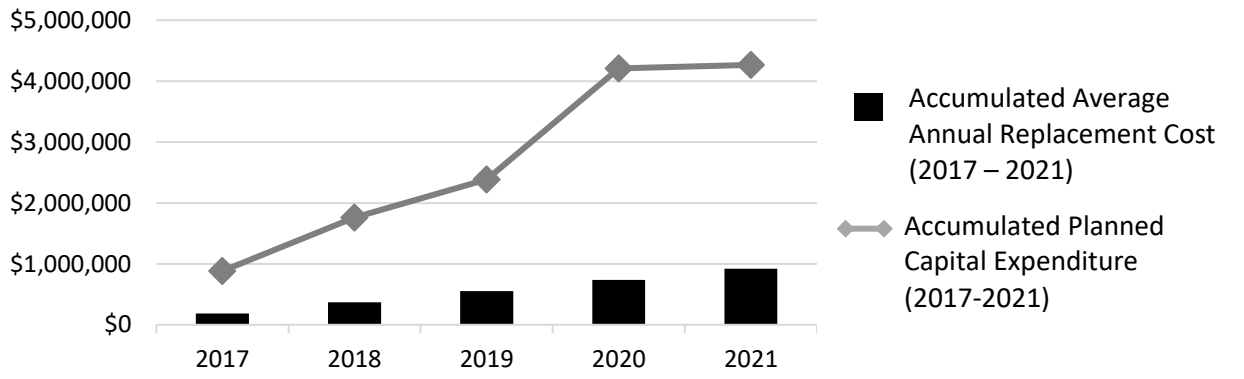
Errington VFD: Current Replacement Costs (2017-2046)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Errington VFD there are planned capital expenditures of $4.3 million over the 2017-2021 period to seismically upgrade fire hall #2, and to replace two aging fire tanker trucks. This level of capital expenditure is evident in the graph below.

Errington VFD Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

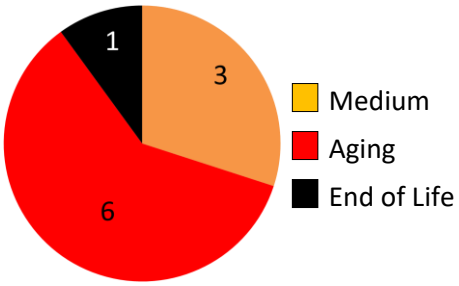


Capital Reserve Opening Balance (2018): ***$695,000***

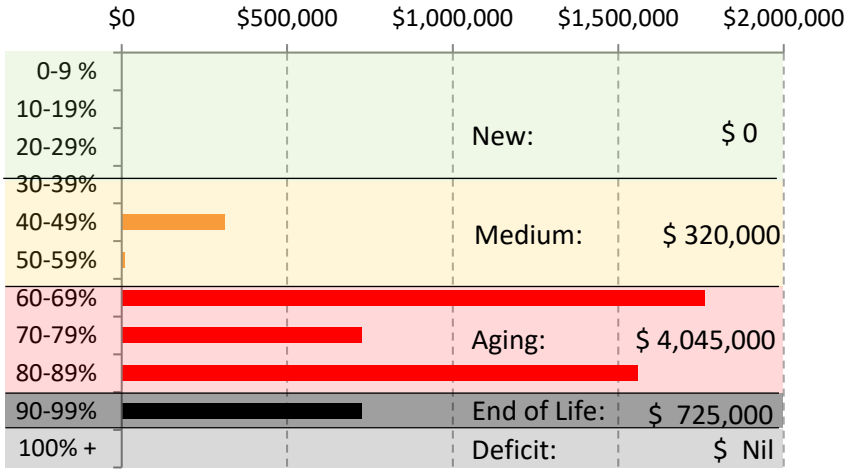
Age and Asset Condition

For the Errington VFD, 90% of all assets are in the *Medium* or *Aging* age category, resulting in a condition rating of *Good* or *Fair*. However, 94% of the value of all the assets are in the *Aging* or *End of Life* category meaning a number of the assets are at or nearing the time for replacement or renewal.

Errington VFD: Total Number of Assets by Age Class



Errington VFD: Total Asset Value by Age Class



2.10.7 Extension

Level of Service

The Extension Volunteer Fire Department (VFD) was established in 1985 to provide emergency response to residents of the Extension area, south of Nanaimo in Electoral Area C. The fire hall is located at Bramley Road.

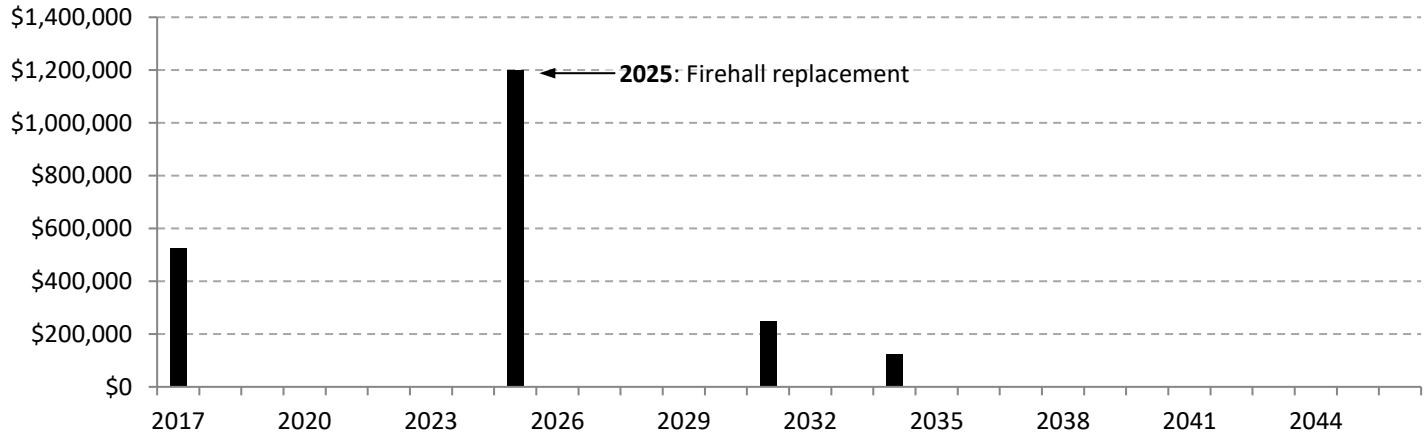
The department presently has three pieces of major equipment including two firefighting trucks, and one emergency vehicle. The Extension VFD is comprised of the Fire Chief, a Deputy Chief, four Captains, 2 Lieutenants, and 20 Firefighters including recruits and juniors.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs are for the Fire Hall and major firefighting apparatus only. Personal gear are other equipment are not included in the asset registry. Values are based on recent fire truck purchases and fire hall construction undertaken by other local VFDs. This level of information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$2,100,000***
Lifecycle Period	***30 years***
Average Useful Life of All Assets	***29 years***
Average Annual Replacement Cost	***$73,000***

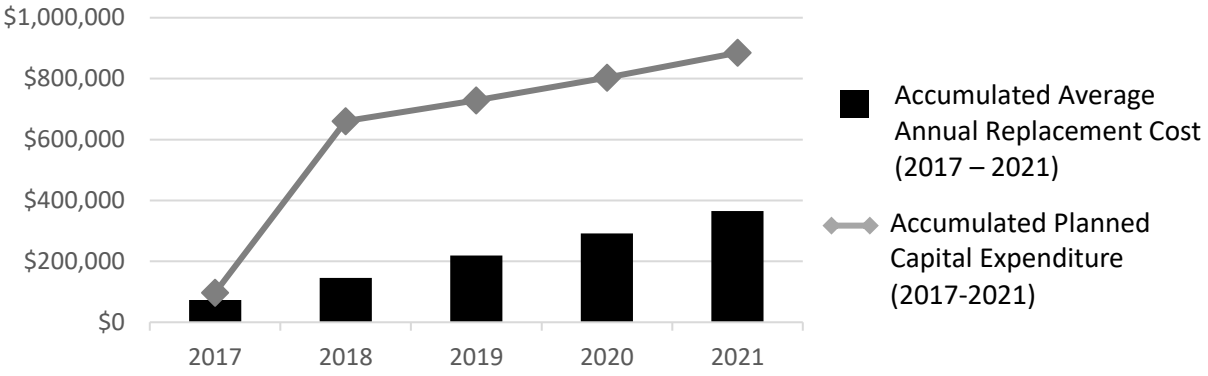
Extension VFD: Current Replacement Costs (2017-2046)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Extension VFD there are planned capital expenditures of $885,000 over the 2017-2021 period to refurbish the pumper truck. This level of capital expenditure is evident in the graph below.

Extension VFD Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

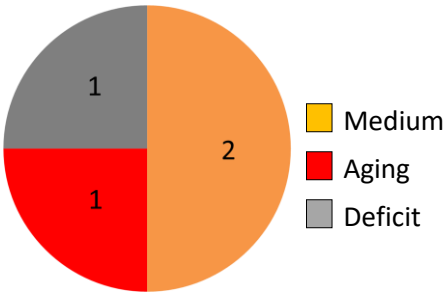


Capital Reserve Opening Balance (2018): ***$579,000***

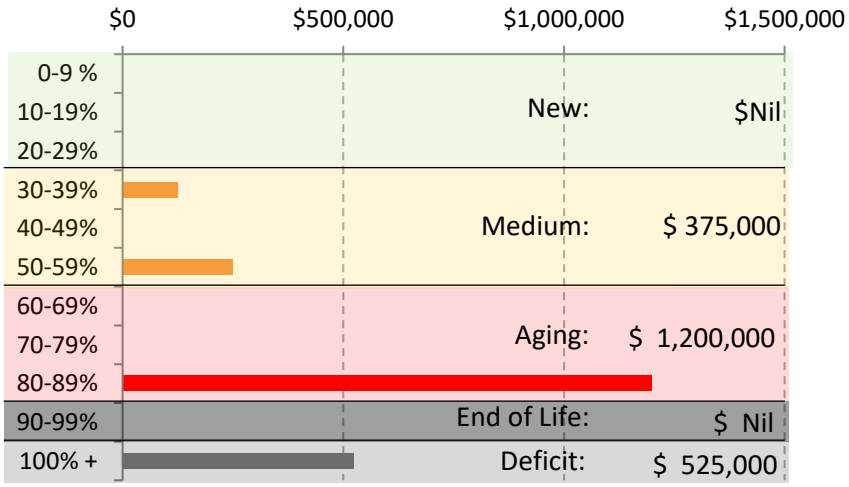
Age and Asset Condition

For the Extension VFD, 75% of all assets are in the *Medium* or *Aging* age category, resulting in a condition rating of *Good* or *Fair*. However, 25% of the value of all the assets are in the *Deficit* category meaning the time for replacement or renewal has arrived.

Extension VFD: Total Number of Assets by Age Class



Extension VFD: Total Asset Value by Age Class



2.10.8 Nanoose Bay

Level of Service

The Nanoose Volunteer Fire Department (VFD) was established in 1973. The VFD provides emergency response to residents of the Nanoose Bay area, (Electoral Area E), as well as the Englishman River (River's Edge) subdivision (Electoral Area G).

After operating out of a founding member's workshop/garage for two years, construction of the first fire hall was completed in 1975. In May 2013, a new fire hall was officially opened. Constructed on the site of the first hall on Nanoose Road, the facility was built to post-disaster seismic and LEED standards.

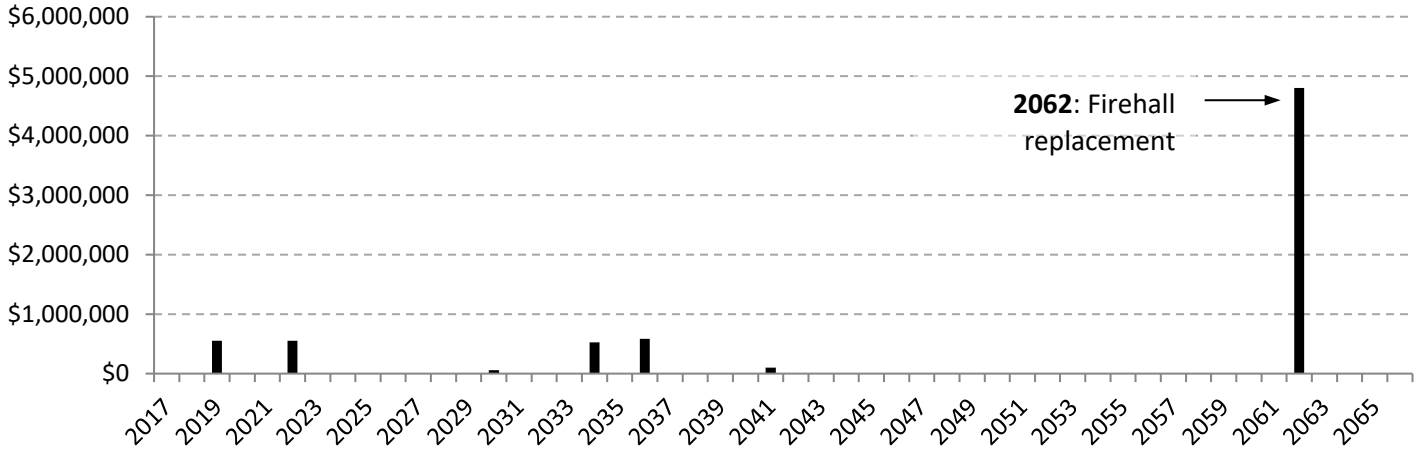
The department presently has seven pieces of major equipment including firefighting and pumper trucks, a rescue vehicle and one emergency vehicle. The Nanoose VFD is comprised of the Fire Chief, a Deputy Chief, one Training Officer, three Captains, four Lieutenants, and 24 Firefighters.

Current Replacement Costs ***Data Confidence Rating: 4***

Current replacement costs are for the Fire Hall and major firefighting apparatus only. Personal gear and other equipment are not included in the asset registry. Values are based on recent fire truck purchases and the recent fire hall construction. This level of information provides a high data confidence rating of '4' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$7,200,000***
Lifecycle Period	***50 years***
Average Useful Life of All Assets	***26 years***
Average Annual Replacement Cost	***$273,500***

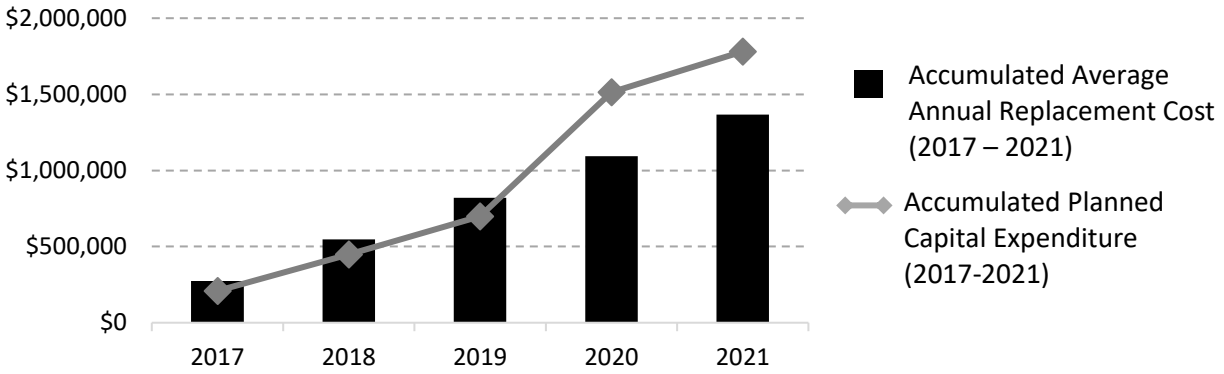
Nanoose VFD: Current Replacement Costs (2017-2066)



Planned Capital Expenditure & Average Annual Replacement Costs

For the Nanoose VFD there are planned capital expenditures of $1.8 million over the 2017-2021 period to replace one pumper truck, purchase a new breathing apparatus compressor and filling station along with new air bottles, and to undertake some minor work at the hall.

Nanoose VFD Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

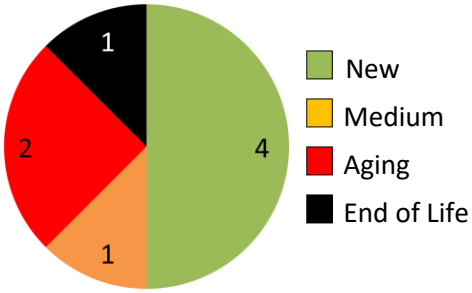


Capital Reserve Opening Balance (2018): ***$323,000***

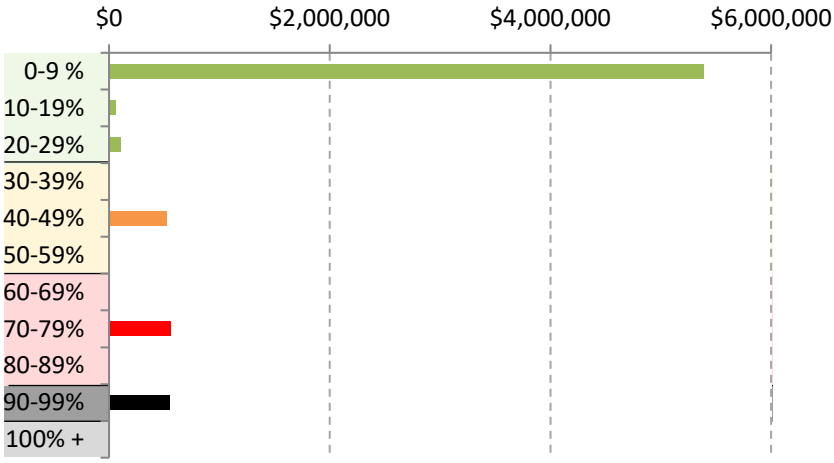
Age and Asset Condition

Asset age indicates asset condition. For the Nanoose VFD, 63% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. Only 8% of the value of all the assets are in the *End of Life* category meaning those assets are nearing the time for replacement or renewal.

Nanoose VFD: Total Number of Assets by Age Class



Nanoose VFD: Total Asset Value by Age Class



2.11 Emergency Planning Services

The Emergency Planning program ensures interagency operational readiness for emergency response and recovery. Within the scope of this program, the Emergency Planning department owns a Disaster Assistance trailer, several generators at local Emergency Social Service Reception Centres, and various communications equipment. Local emergency service volunteers are permitted to use and maintain these assets according to an agreement with the RDN.

Table 10 Emergency Planning Services AM Practices

AMBC Category	Summary of Current Asset Management Practice
Know Your Assets	Assets are listed on several documents and spreadsheets, including the TCA Inventory maintained by Finance.
	Assets require additional componentization to support lifecycle decision making.
	Generator usage is tracked via annual maintenance. Volunteers conduct monthly genset checks and record data in an onsite log book.
Know Your Financial Position	The estimated useful lives of most Emergency Management Program assets are less than two decades long and largely captured in the 10 year budget planning process. The Emergency Planning Program does not have replacement values for every asset in the inventory, but comprehensive replacement values are being developed.
	The RDN tracks operations and maintenance costs but has not separated operations from maintenance to support complete analysis.
	The program is funded through the general tax requisition for electoral areas only. The RDN also provides Emergency Planning services to the District of Lantzville on a contract basis.
Understand Decision-Making	The RDN manages projects, prepares budgets and trains volunteers to conduct routine checks on assets. All expenses are verified by the RDN. The Board approves all capital expenditures.
Manage Asset Lifecycle	The condition of some assets is monitored by Emergency Program volunteers with in-house systems.
	The department is responsible for emergency response, recovery, preparedness, and mitigation. This includes having emergency response assets on hand.
	Maintenance of assets is managed by volunteers where possible. Work that must be done by a specialist for insurance reasons is contracted out.
Know the Rules	Emergency service goals are laid out in the annual business plan and meet the requirements of the Emergency Program Act.
	The program is directed by provincial legislation. The Emergency Program Act outlines the responsibilities of local authorities in terms of response, mitigation, and other components of emergency programming. The Emergency Coordinator is responsible for compliance.


EMERGENCY COMMUNICATIONS TEAM

2.11.1 Emergency Management Program

Level of Service

The Regional District of Nanaimo's Emergency Management Program (EMP) encompasses mitigation, preparedness, response, and recovery. The Program plans and prepares communities and staff to respond to, and recover from, emergencies and major disasters.

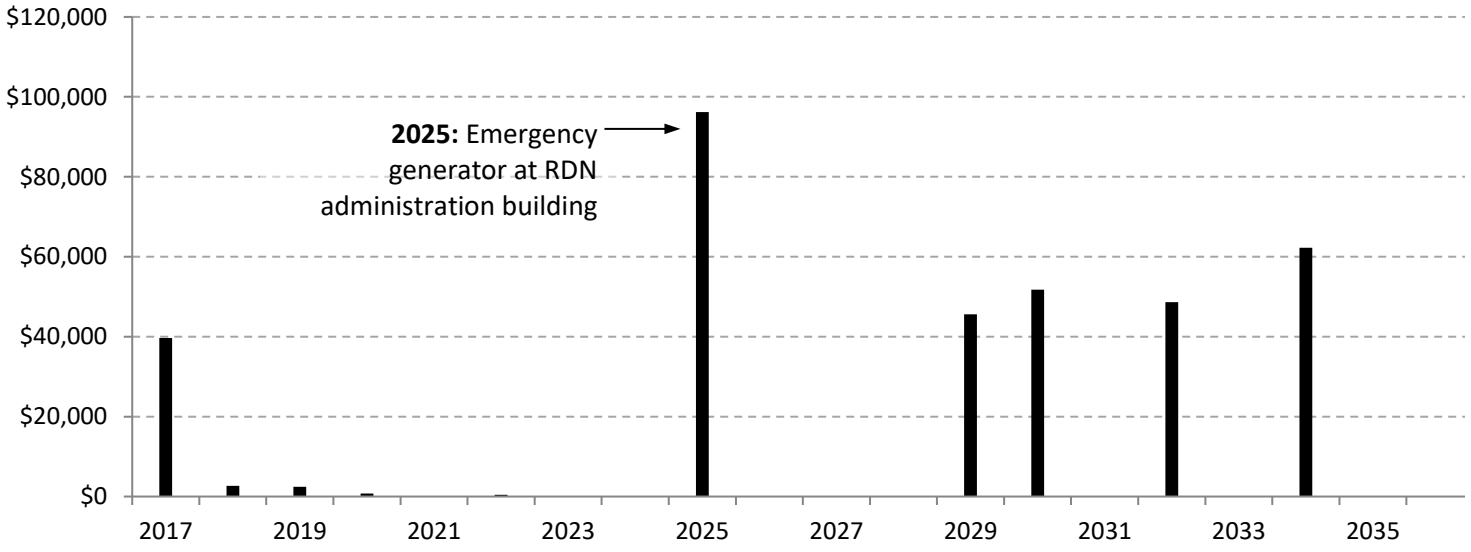
Activities undertaken by EMP include hosting emergency preparedness events, recruiting community volunteers to assist when an emergency occurs, conducting training sessions for staff and community volunteers, attending outreach events, and maintaining Emergency Operations Centre readiness at the RDN EOC. Working closely with Emergency Management staff at the four partnering municipalities is also a priority. There are eight Emergency Reception Centres located throughout the RDN electoral areas, seven of which are equipped with emergency power generators.

Current Replacement Costs ***Data Confidence Rating: 1***

Current replacement cost values for the EMP were based on inflated historic costs from the Tangible Capital Asset registry. This provides a low data confidence rating of '1' for current replacement costs.

Total Replacement Value (2016 Dollars)	***$350,000***
Lifecycle Period	***20 years***
Average Useful Life of All Assets	***13 years***
Average Annual Replacement Cost	***$27,000***

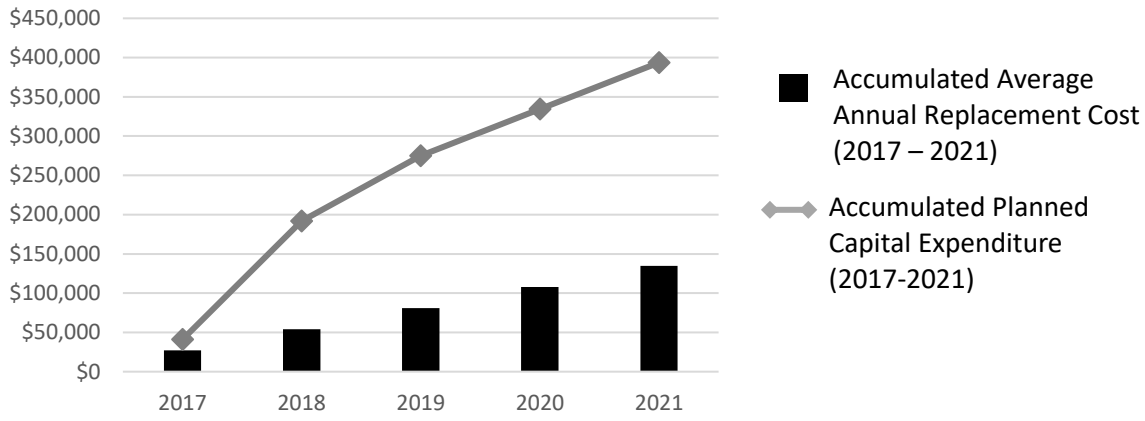
EMP: Current Replacement Costs (2017-2036)



Planned Capital Expenditure & Average Annual Replacement Costs

For the EMP there are planned capital expenditures of $89,000 over the 2017-2021 period to replace the aging communications trailer and to install a standby emergency generator.

EMP Planned Capital Expenditures & Average Annual Replacement Costs (2017-2021)

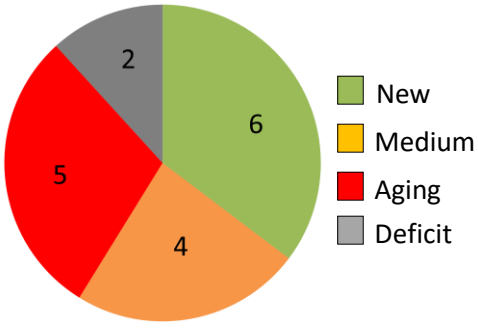


Capital Reserve Opening Balance (2018): ***$93,000***

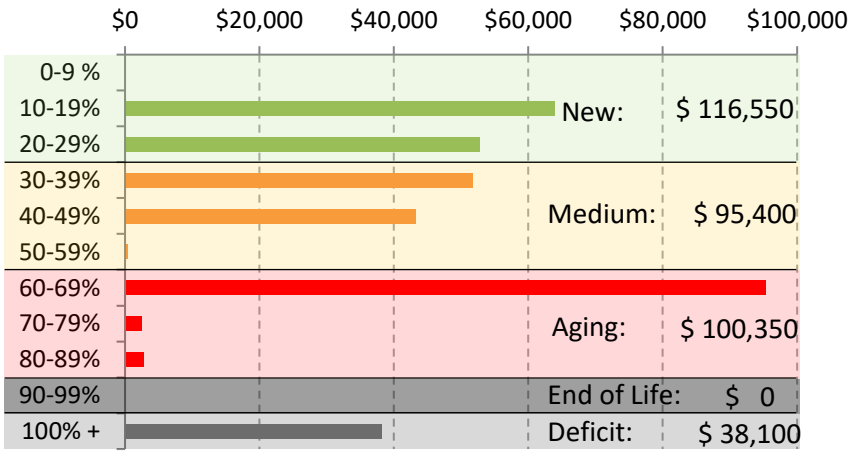
Age and Asset Condition

For the EMP, 59% of all assets are in the *New* or *Medium* age category, resulting in a condition rating of *Very Good* or *Good*. However, 11% of the value of all the assets are in the *Deficit* category meaning those assets are in service, but have exceeded their anticipated useful life and replacement should be imminent.

EMP: Total Number of Assets by Age Class



EMP: Total Asset Value by Age Class



3 ASSET MANAGEMENT IMPLEMENTATION FRAMEWORK

As outlined in the introduction to this Review, the three key goals for the RDN's integrated asset management program are to:

- Document current asset management practices across the full range of departments responsible for infrastructure in the RDN;
- Provide a high level overview of the state the infrastructure assets owned and managed by the RDN; and
- Outline an implementation framework to continue best practices in asset management.

To achieve these goals, this section lays out an overall implementation framework comprised of four components:

1. Continued program coordination through the RDN Asset Management Working Group;
2. Initiation of a formal Condition Assessment Framework;
3. Completion of a Comprehensive Replacement Cost Study; and
4. Investment in staff training and development.

3.1 RDN Asset Management Working Group

The RDN Asset Management Working Group is comprised of RDN staff responsible for acquisition, operation, maintenance, renewal and replacement of assets, and those departmental leaders tasked with implementing best asset management practices at the departmental level, including cultivating skills, expertise and talent in asset management practices across the organization.

The purpose of the Working Group is to:

- Improve interdepartmental asset management practices by providing a peer-to-peer forum to discuss asset management activities and initiatives, and to raise issues of concern and priorities for action;
- Ensure that essential asset management activities are implemented consistently across the organization at the departmental level;
- Improve outreach, engagement and internal capacity building with staff through training and educational opportunities; and by sharing information on current departmental asset management priorities and activities, opportunities for improvement and lessons learned; and
- Identify opportunities to reduce duplication of effort and improve organizational effectiveness and efficiency through cooperation and collaboration on asset management across the RDN, and with outside organizations.

The Working Group is to provide departmental updates to members and to report asset management activities back at departmental staff meetings. Through this process, each member of the Working Group will ensure that this Review is effectively implemented at the departmental level; that effective communication is provided to staff in representative departments; and that information updates including issues, concerns and priorities for action are communicated to the senior management team.

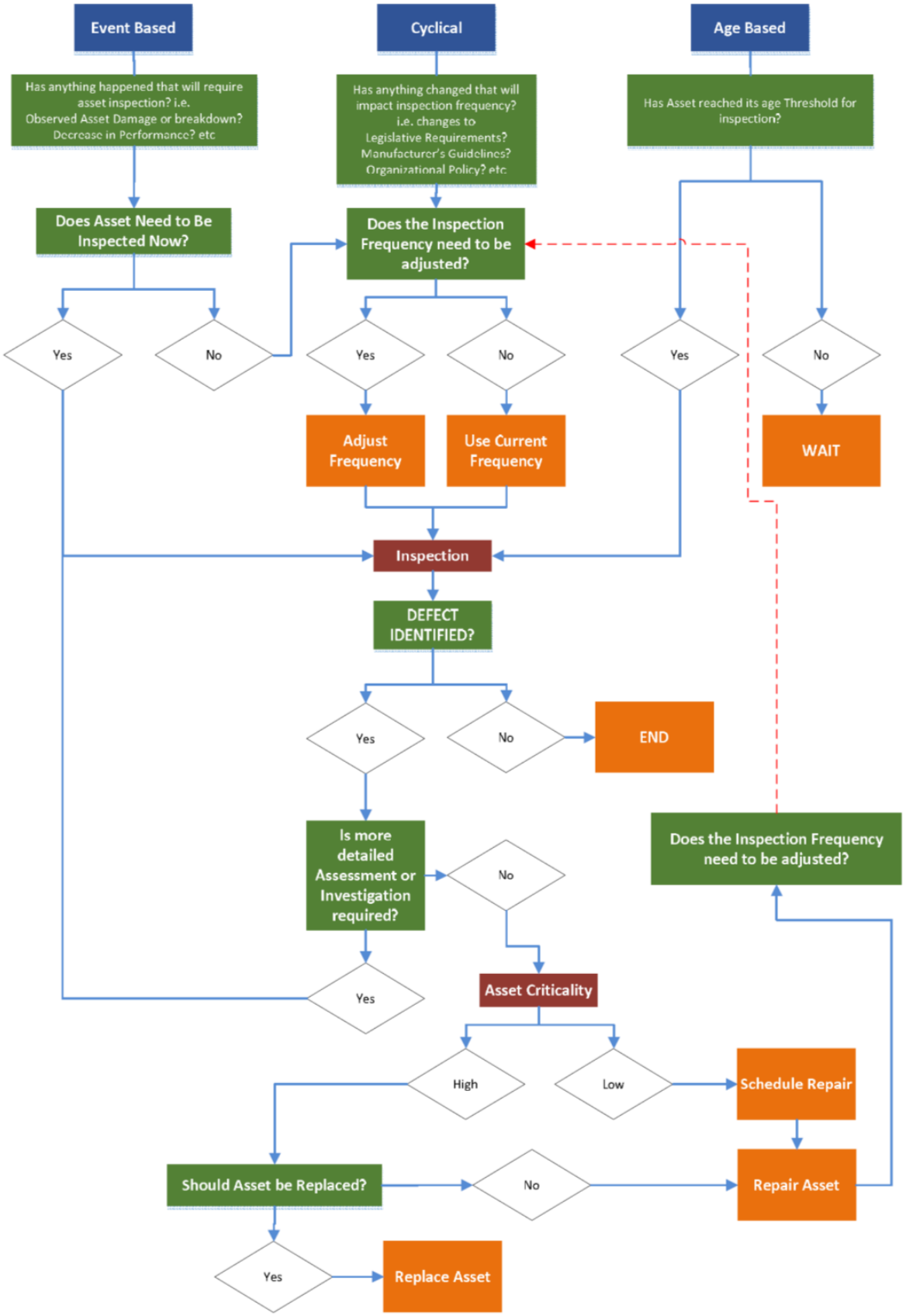
The Working Group is guided by a Terms of Reference that that should be reviewed and revised as needed on a three-year basis, or as otherwise recommended. The next review of the RDN Asset Management Working Group Terms of Reference should occur in 2019.

3.2 Condition Assessment Framework

In October 2017, the RDN completed a Condition Assessment Framework and Implementation Plan (Appendix 1). The Framework provides guidance on when to implement condition assessments of different assets, as well as tools to assist with condition rating. Departmental managers and members of the RDN Asset Management Working Group are to review the Condition Assessment Framework and implement condition assessment activities as appropriate in their respective departments. At a minimum, staff should initiate condition assessment activities on assets when they reach 60% of their estimated useful life, transitioning from the Medium to the Aging age category, when proxy condition automatically shifts from Good to Fair.

A simplified condition assessment framework, taken from Appendix 1, is illustrated in Figure 3.1.

Figure 3.1 Condition Assessment Framework



3.3 Comprehensive Replacement Cost Study

In 2019, the RDN will undertake a comprehensive Replacement Cost Study. The purpose of this work is to formalize an organization-wide approach to reviewing and updated current replacement costs for RDN assets. This is a major project, with $150,000 from the Provincial Strategic Priorities Fund budgeted for its completion. The result is anticipated to be updated replacement costs with regionally accurate data, accompanied by the documented processes, procedures and responsibilities to maintain and accurate, up-to-date current replacement costs for all assets owned by the RDN. Completing the Replacement Cost Study will also lay the foundation for more precise longer-term financial planning for infrastructure renewal and replacement.

3.4 Staff Training and Development

Moving forward, an essential activity for all departments responsible for infrastructure and assets will be to invest in staff training and development. This is important for all staff, from management and senior management to operational staff, and should be considered in each annual budget for relevant departments. At a minimum, all members of the RDN Asset Management Working Group should receive training in the fundamental concepts and principles of asset management and best asset management practices in the local government context.

Through the RDN Asset Management Working group, departments will identify opportunities and ensure that staff across the organization are trained in the basic concepts of asset management as well as asset management skills specific to their respective positions.

In addition, Working Group members will be responsible for building internal capacity for asset management in their respective departments, as well as across departments. This includes taking opportunities at staff meetings to outline key asset management concepts for all staff.

Following the completion of the Comprehensive Replacement Cost study in 2019, this Asset Management Review and Implementation report will be updated an overall Asset Management Plan Implementation Framework will be developed starting in 2020 for implementation in order to improve current practices and operationalize the RDN’s asset management program.

Regional District of Nanaimo

Condition Assessment Plan & Implementation Framework – User Guide

Regional District of Nanaimo

Condition Assessment Plan & Implementation Framework - User Guide

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Reference:
Status:

Contents

Introduction

The objective of this guide is to detail the methodology for the consistent and repeatable measurement and reporting of the condition of the Regional District's buildings and facilities, wharves and bridges, and other assets that require condition assessments to be conducted for legislative or best practice purposes.

This guide is organized into four main sections:

- Section 1 describes the purpose and scope of this document.
- Section 2 provides an overview of the spreadsheet model including brief descriptions for each tab, each column in the asset data tabs, and instructions on how to edit data within the spreadsheet (adding removing data etc.).
- Section 3 provides an overview of how the major assets are split into asset sub-types and components, and provides instructions on how to assess and report their condition.
- Section 4 includes some example inspection forms.

1 Document Purpose & Scope

The purpose of this document is to inform the Regional District staff on how to use the condition assessment spreadsheet model, describe the condition rating methodology for buildings and facilities, and provide condition ratings for buildings, bridge structures, and pipes.

The condition assessment plan is a MS Excel spreadsheet containing a rudimentary asset inventory dataset from the District's NAMS spreadsheets. The Condition Assessment Plan enables District staff to program condition assessments on all assets that are critical to service delivery, or for long term work planning or financial forecasting purposes.

This guidance document will describe the workings of the asset condition go through each of the tabs and describe what each column is used for, and provide details of how to add or remove inventory items, change the status of assets requiring condition assessments, their inspection types, decision making options, and frequencies. The document will also describe the condition ratings for building and facilities, and the Districts pipe network, and provide example inspection forms for buildings, pipes and manholes, and bridge structures.

2 Spreadsheet Model

2.1 Overview

The spreadsheet model has 6 tabs at the bottom of the page and are described in Table 1 below:

Table 1 – Tabs in Spreadsheet

Tab Name	Description
Implementation Schedule	This tab contains a 10 year inspection program of all assets that require condition assessments.
CA Data Requirements	This tab has the implementation framework within it. The data requirement describes what data is required and why.
Process Flow	This tab contains the process flow of the drivers for condition inspections.
Lookups	This tab contains the lookup codes and fields that are used to select the following: • Assessment year – This value is used to in the calculation of whether estimated useful life has been reached, or to calculate when aged based inspections are required. • CA Type – This is the type of condition inspection to be conducted. • CAM Code - This is used to select an applicable Condition Assessment Method for each asset type. • CRM Code - This is used to select an applicable Condition Rating Methodology for each asset type. • PR Code – This code provides the reason for the condition inspection. • DM Code – This code is used to describe the decision making outcome from the data being collected. • Frequency – This lookup field is used to select the applicable frequency of the condition assessments. • Yes/No Code – The decision metrics to determine whether an asset requires a condition inspection or not • High/Low Decision – Used for asset criticality ratings if appropriate.
Regional & Community Services	This tab represents a rudimentary asset inventory that has been made available for the Water, Wastewater and Solid Waste departments
Corporate Administration	This tab represents a rudimentary asset inventory that has been made available for the Corporate Administration and IT Departments
Transportation & Emergency Services	This tab represents a rudimentary asset inventory that has been made available for the Transit and Fire Protection Departments.
Parks & Recreation	This tab represents a rudimentary asset inventory that has been made available for the Parks and Recreational Services Departments.

2.2 Implementation Schedule Worksheet

The implementation worksheet provides a 10 year inspection program for all assets that have been identified as requiring condition assessments. Table 2 below describes the data and functions within each column.

Table 2 – Implementation Schedule Worksheet columns and descriptions

Column	Column Name	Description
A	CAP_Ref	This column contains a calculation script that produces a unique identifier for all assets within each asset group that require a condition inspection.
B	ID	The data within this column contains the unique identifier for each asset. This ID corresponds to the asset ID in the District Asset Registers. *District staff must ensure that all Asset ID attributes are populated.*
C	Dept	The data within this column contains a code to signify the department or service area that the asset belongs to. The column contains a lookup code to each of the Service Area Spreadsheets.
D	Service Area	The data within this column contains the service area that the asset is located in. The column contains a lookup code to each of the Service Area Spreadsheets.
E	Asset	The data within this column contains the name of the facility where the assets are situated. The column contains a lookup code to each of the Service Area Spreadsheets.
F	Assessment Type	The data within this column identifies the type of condition assessment required. The column contains a lookup code to each of the Service Area Spreadsheets.
G	Rating Method	The data within this column defines the condition rating methodology used for a particular asset. The column contains a lookup code to each of the Service Area Spreadsheets.
H	Responsibility	The data within this column defines the person responsible for organizing and or conducting the condition assessment and reporting the assessment results. The column contains a lookup code to each of the Service Area Spreadsheets.
I - R	Years	The data within this column contains the year in which the condition inspection is programmed. The columns contain a lookup that is linked to Column S.
S	Next Assmt	This column is used to determine the year in which the next condition assessment is programmed. The column contains a lookup code to each of the Service Area Spreadsheets, so it is important that the dates of next inspection are populated in each service area tab.

2.3 Service Area Worksheets

In each tab that represents the service areas is a worksheet. Table 3 describes the data and functions within each column.

Table 3 Worksheet columns and descriptions

Column	Column Name	Description
A	CAP_Ref	This column contains a calculation script that produces a unique identifier by concatenating the value within the cell and the data values from column AI.
B	Asset ID	The data within this column contains the unique identifier for each asset. This ID corresponds to the asset ID in the District Asset Registers. *District staff must ensure that all Asset ID attributes are populated.*
C	Service Area	The data within this column contains the service area that the asset is located in. This data can also be used to record asset condition by service area.
D	Asset Name	The data within this column contains the name of the facility where the assets are situated.
E	Asset Group	The data within this column contains the data for each asset by asset group. For example: buildings are an asset group that have many asset types, sub-types and components.
F	Asset Type	The data within this column contains the data for each asset by asset type. For example: buildings are an asset group that have many asset types, sub-types and components.
G	Asset Sub-type	The data within this column contains the data for each asset by asset sub-type. For example: buildings are an asset group that have many asset types, sub-types and components.
H	Component Type	The data within this column contains the data for each asset by component type. For example: buildings are an asset group that have many asset types, sub-types and components.
I	Size	This column is used for asset size.
J	Current Condition Assessment Type	The data within this column shows the current method used to assess condition of the Districts assets.
K	Current Frequency	The data within this column shows the current frequency of those inspections.
L	Current Condition Rating	The data within this column shows the current condition rating used to record asset condition where available.

M	Current Rating Type	The data within this column shows the current rating type used to report asset condition where available.
N	Notes	This column is a notes filed that has input from District staff relevant to the current condition assessments, types, ratings, and reporting where appropriate.
O	Manager	This column shows the person responsible for maintaining this condition data spreadsheet.
P	Install Year	The cells within this column contain the Install Year for each asset. *District staff should ensure that the values in this column are correct.*
Q	EUL	The cells in this column contain the Estimated Useful Life for each asset. *District staff should ensure that the values in this column are correct.*
R	Replacement Date	The cells in this column display the year of replacement for each asset. This is based on a simple calculation of adding the EUL to the install year. Cells that are highlighted in red represent values that are less than the current year. *District staff must ensure that all install dates and EUL attributes are populated.* *District staff must also check the install date and EUL attributes for accuracy where the sum of both attributes equal a replacement date that is less than the current year.*
S	Asset Criticality	The cells in this column contain a 1-High or 2-Low criticality rating for assets.
T	Condition Rating	The cells in this column are to be populated with the current condition rating value (1-5), where 1 = excellent, and 5 = very poor.
U	Need Condition Assessment?	The cells in this column contain a Yes/No decision value in a drop down menu. The user can assess whether the asset requires a condition assessment. Opus have pre populated this spreadsheet to take buildings, structures, and critical assets into account.
V	New CRM Code	The cells in this column contain the codes to select the applicable condition rating methodology for each asset in a drop down menu
W	New Condition Rating Method	The cells in this column look up the code in column U and present the name of the condition rating method to be used.
X	Condition Why Code	The cells in this column contain codes to select the primary reason why a the asset needs a condition assessment in a drop down menu
Y	Why Does Asset Need Condition Assessment?	The cells in this column look up the code in column W and present the primary reason for the condition assessment being chosen.
Z	Decision Code	The cells within this column contain the codes for the decisions that are made from the results of the condition inspections.

AA	Decision Making Process	The cells in this column look up the code in column Y and presents the description of the code. The primary reason is for works programming and repair/replacement decision making.
AB	New Condition Assessment Type	The cells within this column contain a “Cyclical” or “Age Based” condition assessment type.
AC	New CAM Code	The cells in this column contain codes to define the condition assessment method to be used for each asset.
AD	New Condition Assessment Method	The cells in this column look up the codes in column AB ad present the description of the condition assessment method.
AE	Condition Frequency	The data within this column is used to specify the frequency at which each type of assessment is completed.
AF	Age Threshold	The data within this column is a percentage of useful life at which age based condition assessments could start. This field is user defined, and is editable.
AG	Year of Last Condition Assessment	This column is used to enter the last year the condition assessment was completed.
AH	Year of Next Condition Assessment	The cells in this column contain a calculation script that adds the inspection frequency to the year used in column AF, or displays the year that an age based condition assessment is to be conducted. The cells that are highlighted in red represent values that are less than the current year. Where the value is equal to the frequency of the condition assessment, the year of last inspection needs to be populated. Where the value is less than the current year, District staff are to check the install year and EUL values for accuracy.
AI	CAP_Ref Count	The first cell in this column contains a calculation script that counts and assigns a number to the asset if it is labelled as requiring a condition assessment from the value in column U. Where condition assessments are not required, the cell is left blank and is not counted. Subsequent cells in this column also use this script, but add a 1 to the calculated value to number each asset requiring a condition assessment consecutively.

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2.4 Asset Inventory

The asset inventory is contained within columns A-H, and is divided into Asset groups, Asset Types, Asset Sub-types, and Components. Table 4 shows the asset groups by department.

Table 4: Asset Groups by Department

Department	Asset Groups	Department	Asset Groups
Regional & Community Utilities	Buildings	**Transportation & Emergency Services**	Buildings
	Fleet		Bus Shelters
	Sanitary Distribution		Bus Stops
	Sanitary Treatment		Equipment
	Solid Waste		Fleet
	Street Lighting		Wharves
	Water Distribution	**Parks & Recreation**	Buildings
	Water Supply		Equipment
Corporate Administration	Buildings		Fleet
	Equipment		Parks
			Trails

Within each asset group, there are multiple asset types, sub-types, and components. Table 5 provides an example of the asset types and sub-types for the building asset group.

Table 5 –Buildings: Asset Type and Sub-Type List and Definition

Asset Types	Asset Sub-Types
Substructure	• Foundations: Walls, columns, pilings other structural components • Basement: Materials, insulation, slab, floor underpinnings
Shell	• Superstructure / structural frame: columns, pillars, walls • Roof: Roof surface, gutters, eaves, skylights, chimney surrounds • Exterior: Windows, doors, and all finishes (paint, masonry) • Shell appurtenances: Balconies, fire escapes, gutters, downspouts
Interiors	• Partitions: walls, interior doors, fittings such as signage • Stairs: Interior stairs and landings • Finishes: Materials used on walls, floors, and ceilings

	This component covers all interior spaces, regardless of use.
Conveyance	• Elevators • Escalators • Lifts: any other such fixed apparatuses for the movement of goods or people
Plumbing	• Fixtures • Water distribution • Sanitary waste • Rain water drainage
HVAC	• Energy supply • Heat generation and distribution systems • Cooling generation and distribution systems • Testing, balancing, controls and instrumentation • Chimneys and vents
Fire Protection	• Sprinklers • Standpipes • Hydrants and other fire protection specialties
Electrical	• Electrical service & distribution • Lighting & branch wiring (interior and exterior) • Communications & security • Other electrical system-related pieces such as lightning protection, generators, and emergency lighting
Equipment	• Equipment related to the function of the facility, including maintenance or vehicle service equipment *For clarity, includes only items valued above $10,000 and related to facility function*
Site	• Roadways/driveways and associated signage, markings, and equipment • Parking lots and associated signage, markings, and equipment • Pedestrian areas and associated signage, markings, and equipment • Site development such as fences, walls, and miscellaneous structures • Landscaping and irrigation • Site Utilities

2.5 Editing the spreadsheet

2.5.1 Adding New Inventory Data

In order to add a new asset to the asset data tables, the user can add lines using the methodology listed below:

If the assets belong in a particular service area or asset group, insert row or rows in the dataset where appropriate.
If the assets are in a new service area, add the data in at the bottom of the dataset.
Populate the columns A-P with the Asset ID, Service Area, Asset Name, Asset Group, Asset Type, Asset Sub-type, Component Type, Size, Current Assessment Type, Current Frequency, Current Condition rating, Current Rating Type, any Notes, Manager Responsible, Install Year, and EUL attribute data.

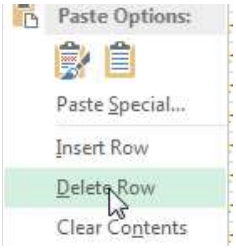
In columns Q to AG, populate all columns with necessary information either manually typing, or by highlighting cells and dragging down from the bottom right hand side of cells when the black cross icon appears to populate (use only where data is the same or where calculation scripts are used as shown). Please note that numerical fields will often increase in value when using this method. Ensure that all data in the rows is valid and save.

If any of the assets require a different condition assessment type, rating methodology, frequency, or decision making type, add new values in the "Lookups" tab, add a new codes as described in section 2.4.5.

2.5.2 Deleting and Asset from the list

In order to remove an asset from the list, the user can add lines using the methodology listed below:

In the department tabs, select the asset that is to be removed.
Highlight the row and right click the mouse to retrieve the options menu.
Select "delete row" to delete it.
Save spreadsheet.



2.5.3 Changing Install dates

To revise install dates for each asset, simply overtype the year of install. The calculation scripts within the spreadsheet will automatically change the replacement date and date of next inspection.

2.5.4 Changing EUL values

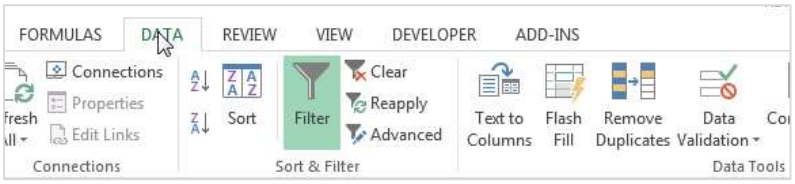
To revise the EUL values for each asset, simply overtype the year of install. The calculation scripts within the spreadsheet will automatically change the replacement date and date of next inspection.

2.5.5 Adding new lookup codes

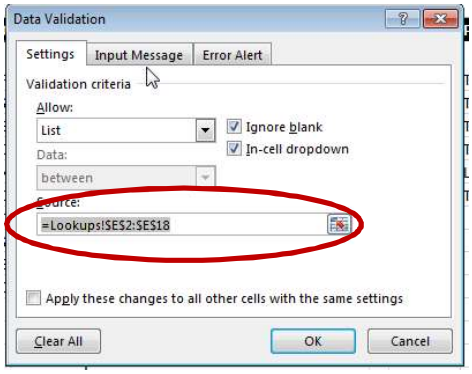
To add new lookup codes, go to the "Lookups" tab in the workbook.

To add another Condition Assessment Method (CAM) code, add another value to the bottom of the values listed in column C, and add a description in the column next to it.

Once completed, Go into the asset worksheets and go to the top row of Column AB (CAM Code). Highlight all rows within that column and go to "data" at the top of the screen and select "Data Validation".



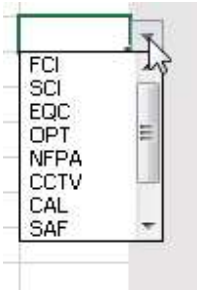
Once selected, a small pop-up screen will appear. Select the "Source" and click onto the button on the right of the selection field. This will take you to the lookups tab.



Once in the lookups tab, the column for the code will be highlighted and the data validation selection drop down will be shown. To add the new code into the data validation criteria, delete the value in the drop down and select all values in the CAM column by highlighting them. To go back to the main data validation pop-up, press the  button.

Once back in the data validation pop-up menu, select OK.

You will then be back at the asset data worksheet. In order to choose the newly added condition assessment method, select cell, and choose option from the drop down in the cell. Once chosen, the adjacent column will automatically populate with the description of the new code.



To add any other new codes, use the same process as described above.

3 Condition Ratings

3.1 Building & Building Component Condition Ratings

3.1.1 Overall Building Condition

The overall condition and component condition ratings are based on the Federal Highway Administration (FHWA) rating system for buildings and facilities. However, to achieve consistent condition rating across all asset groups, the condition rating has been reversed. The FHWA rating system was a 5-1 rating (where 5 = excellent and 1 =poor), whereas all other rating systems have a 1-5 rating (where 1=excellent and 5 = very poor). Table 6 below shows the condition rating and description used for overall condition of a building or facility.

Table 6 - General Condition Assessment Rating Scale for Buildings

Rating	Condition	Description
1	Excellent	No visible defects, new or near new condition, may still be under warranty if applicable
2	Good	Good condition, but no longer new, may have some slightly defective or deteriorated component(s), but is overall functional
3	Adequate	Moderately deteriorated or defective components; but has not exceeded useful life
4	Marginal	Defective or deteriorated component(s) in need of replacement; exceeded useful life
5	Poor	Critically damaged component(s) or in need of immediate repair; well past useful life

3.1.2 Building Component Condition

Using the FHWA methodology, and to provide the overall condition index, each building component is rated for condition. Table 7 provides the condition descriptions for all building components.

Table 7: Condition Rating Descriptions for Buildings by Asset Component

Component	Rating	Description
A. Substructure • Foundation • Basement	1: Excellent	New construction, no visible defects.
	2: Good	Minor improvement or superficial repairs needed, can be addressed through routine maintenance. No significant visible damage such as cracking, spalling, sagging, rust, or shifting.
	3: Adequate	Needs some repairs. There may be surface cracking, rust, shifting, and spalling on components. Insulation or drainage may need maintenance. Substructure is cosmetically “fair”, and functioning as designed; within useful life.
	4: Marginal	Components need extensive repair at a minimum. They show signs of significant cracking, sagging, rust, shifting, and spalling / decay. Significant insulation or drainage issues may be present. There are no apparent safety issues, however. Components are functional but have exceeded their useful lives.
	5: Poor	Components show critical defects affecting function, health, or safety. They are visibly in poor condition. They cannot be repaired; must be replaced. They have exceeded their useful life and warrant structural review.

Component	Rating	Description
B. Shell • Superstructure / structural frame, including columns, pillars, and walls • Roof: Roof surface, gutters, eaves, skylights, chimney surrounds • Exterior: Windows, doors, and all finishes (paint, masonry) • Shell appurtenances: Balconies, fire escapes, gutters, downspouts	1: Excellent	New construction, no visible defects or damage.
	2: Good	Minor improvement needed; sub-components are more than five years old but are functioning without issue under routine maintenance. Only minor superficial damage or defect. No sagging, corrosion, cracking, shifting, or leaks.
	3: Adequate	Repairs are needed. Component or sub-components show signs of minor cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically "fair", but functioning as designed.
	4: Marginal	Component or sub-components show signs of significant cracking, sagging, swelling, corrosion, leaks, or shifting. Significant repairs are needed, but there currently does not appear to be a safety issue on any single sub-component.
	5: Poor	Component or sub-components have critical defects affecting function, health, or safety. They are in visibly poor condition and must be replaced rather than repaired. They have exceeded their useful life and warrant structural review.
C. Interiors • Partitions: Walls, interior doors, fittings, signage • Stairs: Interior stairs and landings • Finishes: Materials used on walls, floors, and ceilings	1: Excellent	New construction, no visible defects or damage.
	2: Good	Minor improvement needed; only shows superficial damage or defect. Minimal signs of wear, no major problems, minimal signs of deterioration. Primarily cosmetic issues with no functional impact, which can be addressed through routine maintenance.
	3: Adequate	Repairs are needed. Component or sub-components show signs of cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically "fair", but functioning as designed.
	4: Marginal	Interior shows deterioration: cracking, sagging, swelling, corrosion, leaks, etc. Finishes are worn. Significant repairs or upgrades are needed, but there currently does not appear to be a safety issue.
	5: Poor	Component or sub-components have critical defects affecting function, health, or safety. They are in visible poor condition and must be replaced rather than repaired. They have exceeded their useful life and warrant structural review.
D. Conveyance	1: Excellent	New construction, no visible defects or damage.

Component	Rating	Description
• Elevators • Escalators • Lifts: any other such fixed apparatuses for the movement of goods or people	2: Good	Minor improvement needed; only shows superficial damage or defect with no functional impact. Issues are addressed via routine maintenance.
	3: Adequate	Repairs are needed; components show signs of corrosion and damage. They are cosmetically "fair", but functioning as intended under maintenance schedule.
	4: Marginal	Component or sub-components need extensive repair at a minimum. More substantial part replacement and/or repair is frequent. There currently does not appear to be any safety issue. Maintenance schedule is interrupted by more frequent breakdowns.
	5: Poor	Component or sub-components have critical defects affecting function. They are in visibly poor condition and must be replaced rather than repaired. Maintenance schedule is reactive rather than proactive due to frequent malfunction. Apparatuses have exceeded their useful life and warrant detailed review.
E. Plumbing • Fixtures • Water distribution • Sanitary waste • Rain water drainage	1: Excellent	New construction, no visible defects or damage.
	2: Good	Minor wear and tear or superficial deterioration or defect with no functional impact typically addressed through routine maintenance. No corrosion or leaks.
	3: Adequate	Repairs are needed; some deterioration exists, such as corrosion. Repairs are typical to more intensive routine maintenance and system is functioning as designed.
	4: Marginal	Plumbing system components need extensive repair at a minimum. Currently does not appear to be any safety issue.
	5: Poor	System has defects affecting function and necessitating frequent maintenance. Plumbing is in poor condition and must be replaced rather than repaired. The system has exceeded its useful life and warrants detailed review.
F. HVAC • Energy supply • Heating / cooling generation and distribution systems	1: Excellent	New construction, no visible defects or damage. Meets efficiency and capacity goals and maintains desired temperature and air quality throughout the facility.
	2: Good	Minor improvements needed, may be slightly outdated and less efficient and consistent. Minor deterioration or defect

Component	Rating	Description
• Testing, balancing, controls and instrumentation • Chimneys and vents		with no functional impact typically addressed through routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets needs. Still within its useful life.
	4: Marginal	System has exceeded its useful life; fails to meet standards or needs. Components need extensive repair at a minimum. Currently does not appear to be any safety issue.
	5: Poor	System is well past its useful life and has critical defects affecting function; its issues are beyond repair and warrant detailed review.
G. Fire Protection • Sprinklers • Standpipes • Hydrants and other fire protection specialties	1: Excellent	New system, no visible defects or damage. Meets facility needs.
	2: Good	Minor wear and tear; system may be slightly outdated but still meets needs of facility with routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets requirements. Still within its useful life.
	4: Marginal	System has exceeded its useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum. Currently does not appear to be any safety issue.
	5: Poor	System is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.
H. Electrical • Electrical service & distribution • Lighting & branch wiring (interior and exterior) • Communications & security	1: Excellent	New system, no apparent defects. Meets facility needs.
	2: Good	Minor deterioration; system may be slightly outdated but still meets needs of facility with minimal routine maintenance. Limitation on system flexibility such as future expansion.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. There is limited flexibility for improvement. However, the system meets requirements and is still within its useful life.

Component	Rating	Description
• Other electrical system-related pieces such as lightning protection, generators, and emergency lighting	4: Marginal	System has exceeded its useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum. Currently does not appear to be any safety issue.
	5: Poor	System is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.
J. Site • Roadways, driveways and associated signage, markings, and equipment • Parking lots and associated signage, markings, and equipment • Pedestrian areas and associated signage, markings, and equipment • Site development such as fences, walls, and miscellaneous structures • Landscaping and irrigation • Site Utilities	1: Excellent	New construction, no apparent defects, serving the needs of the facility.
	2: Good	Minor deterioration, primarily cosmetic defects such as damaged signage or small pavement cracks, landscaping updates. Still meets needs of facility with routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, such as signs needing replacement and pavement cracks needing fill. More routine maintenance is needed. However, site is still functioning as designed.
	4: Marginal	Site sub-components are worn and need extensive repair at a minimum. Pavement may show damage beyond what can be fixed with crack filler (over 2" wide / potholes). Signage may be outdated, fences need replacement, irrigation no longer efficient, etc.
	5: Poor	Site has critical defects affecting function, health, or safety. Issues are beyond repair and warrant detailed review.

3.2 Condition Rating Descriptions for Underground Pipes

For the underground utilities (sewer and storm), CCTV cameras are used to assess condition of the piped network. Table 8 describes the condition states using the 1-5 rating system.

Table 8: Condition states for Sewer and storm pipes

Condition Rating No.	Condition Description
1	Pipe segment has minor defects - failure unlikely in the foreseeable future.
2	Pipe segment has minor defects - pipe unlikely to fail for at least 20 years.
3	Pipe segment has moderate defects - deterioration may continue, at a ten to twenty year timeframe.
4	Pipe segment has severe defects - risk of failure within the next five to ten years.
5	Pipe segment has failed or will likely fail within the next five years - requires immediate attention.

3.3 Condition Rating Descriptions for Bridges and Structures

Bridges and other structures are rated for condition in a similar way to buildings. Each structure is divided into components. Each component will be rated for condition based on a percentage of the number of, or size of component that is in each condition state. A weighting is typically applied to each component group based on criticality. Table 9 describes the condition states using the 1-5 rating system.

Table 9: Condition states for Bridges and Structures

Condition Rating No.	Condition Description
1	Excellent Condition – as new condition
2	Good Condition - normal wear and deterioration not requiring maintenance or repair.
3	Fair Condition - minor defects, deterioration or collision damage requiring maintenance or repair.
4	Poor Condition - advanced deterioration, significant defects or collision damage requiring repairs in the next five years.
5	Very Poor Condition - serious defects, deterioration or collision damage. Imminent failure of component requiring immediate repair or replacement and/or load restrictions.

4 Example Inspection Forms

4.1 Facility Inspection Form

Inspection Date	
Inspector Name	
Facility/Building Name	
Address/Location	

ID	Component	Asset Quantity	Unit of Measure	Percentage of Asset Quantity by Condition						Notes
				1 Excellent	2 Good	3 Adequate	4 Marginal	5 Poor	N/A	
A	Roof									
B	Shell									
C	Interior									
D	Conveyance									
E	Plumbing									
F	HVAC									
G	Fire Protection									
H	Electrical									
I	Equipment									
J	Site									

4.2 Manhole Inspection Form

Name:	Date:	Time:	Street:	House# or Cross St.

MH ID #	Asset #	Material	Rim to Invert:	Photo #s
		__Brick __Concrete __Polymer __Combination __Other:		_____ _____

Outgoing Pipe	Incoming Pipe1
Clock Pos: 6	Clock Pos:
Pipe ID#:	Pipe ID#:
Test ID#:	Test ID#:
Test Result:	Test Result:
Incoming Pipe2	**Incoming Pipe3**
Clock Pos:	Clock Pos:
Pipe ID#:	Pipe ID#:
Test ID#:	Test ID#:
Test Result:	Test Result:

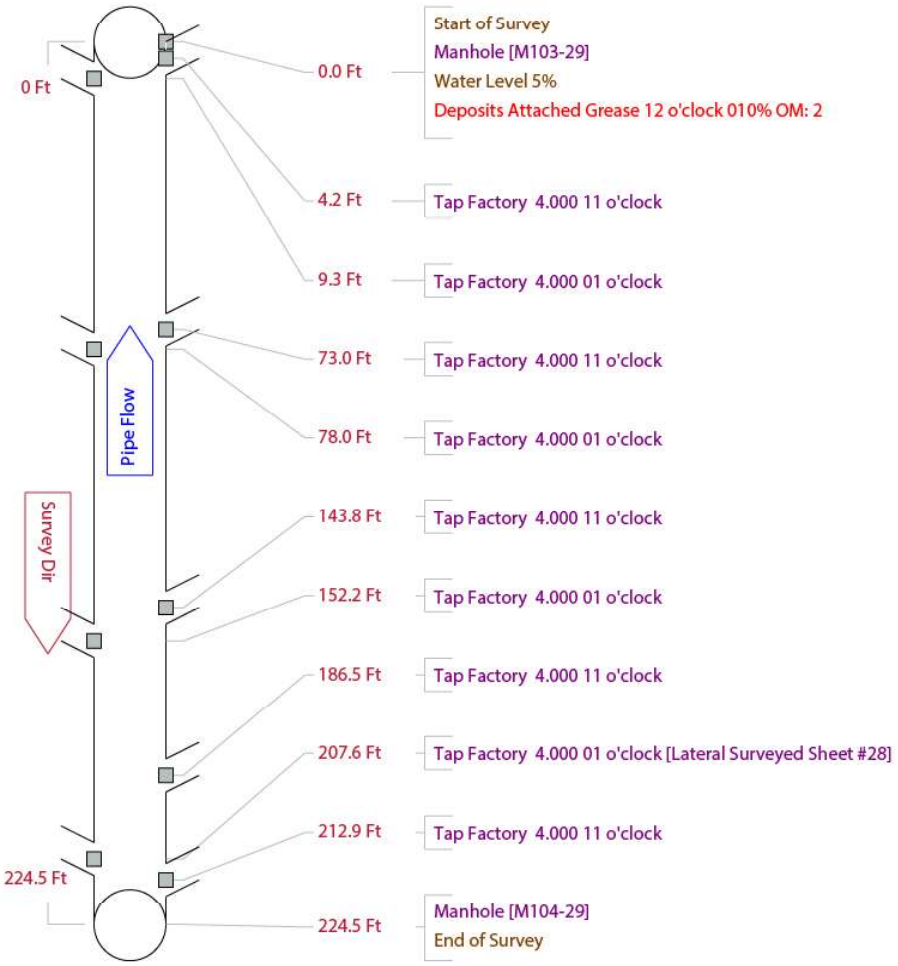
Weather	Runoff / Inflow	Infiltration
__Dry __Heavy Rain __Light Rain __Snow __Saturated __Damp __Very Dry	__None __Sheeting __Ponding __Inundated	__None __Stain __Weeping __Dripping __Gushing Component: Chimney Cone Wall Bench Channel Pipe Inlet/Outlet

MH Type	Evidence of Surcharge	Debris Deposits	Structural Defects
__Concentric __Eccentric __Flat Top __Other	__No __Yes Component: Chimney Cone Wall Bench Channel Pipe Inlet/Outlet	__No __Yes Describe:_____ Component: Chimney Cone Wall Bench Channel Pipe Inlet/Outlet	__No __Yes Describe:_____ Component: Chimney Cone Wall Bench Channel Pipe Inlet/Outlet

Flow in Upstream Pipe										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

4.3 Pipeline Inspection Form

Setup	425	**Surveyor**	MAD	**Certificate #**	03-647	**System Owner**	Anytown, Florida
Drainage	ZONE 5			**Survey Customer**	SL77-29		
P/O #	438	**Date**	2007/12/03	**Time**	11:17	**Street**	16508 EAST BERRY LANE
City	Anytown			**Further location details**			
Up	M104-29			**Rim to invert**		**Grade to invert**	**Rim to grade** Ft
Down	M103-29			**Rim to invert**		**Grade to invert**	**Rim to grade** Ft
Use	Sanitary	**Direction**	Upstream	**Flow control**	Not Controlled	**Media No**	ZONE 5 S12
Shape	Circular	**Height**	8	**Width**	ins	**Preclean** N	**Date Cleaned**
Material	Polyvinyl Chloride			**Joint length**	Ft	**Total length** 224.5 Ft	**Length Surveyed** 224.50 Ft
Lining				**Year laid**		**Year rehabilitated**	**Weather** Dry
Purpose	Maintenance Related					**Cat**	Not known
Additional info	SL77-29					Structural	O & M Constructional
Location	Light Highway					Miscellaneous	Hydraulic
Project						**Work Order**	
Northing				**Easting**		**Elevation**	
Coordinate System						**GPS Accuracy**	



4.4 Bridge/Structure Inspection Form

Structure Number		Structure Name		Inspection Date (yyyy/mm/dd)	

	COMPONENT	PERCENT CONDITION RATING Enter % in each condition. See BMI8 User Manual 15.2.2 E G F P V X	N	INSPECTION NOTES BY COMPONENT All poor or very poor conditions should be explained with notes and documented by photos. Label explanation(s) with component numbers.
	HYDROTECHNICAL			
1	Debris Risk			
2	Channel			
3	Erosion Protection			
4	Substructure Scour			
	SUBSTRUCTURE			
5	Foundation Movement			
6	Abutments			
7	Wing/Retaining Walls			
8	Embankment			
9	Footings/Piling			
10	Pier Columns/Walls/Cribs			
11	Bearings			
12	Caps			
13	Corbels			
14	Dolphins/Fenders			
	SUPERSTRUCTURE			
15	Floor Beams/Transoms			
16	Stringers			
17	Girders			
18	Portals			
19	Bracing/Diaphragms			
20	Truss Chords/Arch Ribs			
21	Arch Ties			
22	Truss Diagonals			
23	Truss Rods/Verticals			
24	Cables			Partial Inspection Notes:
25	Panels			
26	Pins/Bolts/Rivets			
27	Camber/Sag			General Inspection Notes:
28	Live Load Vibration			
29	Coating (structure)			
	DECK			Utility Concern Notes (Contact Utility Owner):
30	Sub Deck/Cross Ties			
31	Wearing Surface			
32	Deck Joints			Urgency Rating Notes:
33	Curbs/Wheelguards			
34	Sidewalk(s)			
35	Railings/Parapets			
36	Median Barrier			
37	Drains/Pipes			
38	Coating (Railings)			
	APPROACHES			
39	Signing/Lighting			
40	Roadway Approaches			
41	Roadway Flares			

Condition Codes			
E	Excellent	V	Very Poor
G	Good	X	Not Inspected
F	Fair	N	Not Applicable
P	Poor		

For Condition Guidelines see BMI8 User Manual 15.2.2

Urgency Rating

_____

For definition see BMI8 User Manual 15.2.8
"4" and "5" rating must be explained.

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