REPORT

PREPARED FOR THE CENTRAL COAST REGIONAL DISTRICT

Asset Management Investment Plan 2017

URBAN systems

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1.0 Executive Summary

The Central Coast Regional District (CCRD) owns and maintains a large portfolio of infrastructure assets upon which it greatly relies for the delivery of services to the community. These include the CCRD's, water, building, airport, park/recreation, furniture/fixture and fleet assets.

The CCRD's assets have served the community well however many of these assets are now nearing the end of their useful lifespans and will eventually need to be replaced or rehabilitated.

The Asset Management Investment Plan (AMIP) provides a review of all of the Regional District's infrastructure assets to answer the following questions;

- What assets does the CCRD own?
- What is the cost to replace the asset?
- How much money needs to be invested annually (on average) to sustain the CCRD's assets?

By understanding the answer to these questions the CCRD will be able to budget and plan for the replacement of their infrastructure. Failure to plan would put the community at risk of service disruptions, emergency repairs and the need for sudden and significant tax and user fee increases. By being proactive today the CCRD can ensure that services are sustainable so that current and future generations can enjoy the same levels of service as well as reasonable tax rates and user fees.

WHAT ASSETS DOES THE DISTRICT OWN?

For the purposes of the AMIP, the CCRD's assets have been separated into 6 categories; water, building, airport, parks and recreation, furniture and fixture and fleet systems.

- The **Water System** is comprised of over 3.3 km of water pipes in addition to numerous fire hydrants, valves other appurtenances.
- The **Building System** includes 4 civic buildings and 8 recreational assets
- The **Airport System** is comprised of approximately 2.3 km of runway and contains other assets such as the apron, taxi runway, parking lot and drainage systems.
- The **Parks and Recreation System** includes the baseball diamond, various park amenities and signage features
- The **Furniture and Fixture System** includes office equipment, airport furniture and other assets
- The **Fleet and Other System** includes the fire, refuse and yard trucks

These infrastructure assets are required to deliver services which are valued by the residents of CCRD.

What is Asset Management?

The process of bringing together the skills and activities of people; with information about the community's physical infrastructure assets and financial resources to ensure long term sustainable service delivery.

Sound asset management practices support sustainable service delivery by considering community priorities, informed by an understanding of the trade-offs between the available resources, risk and the desired services.

Sustainable service delivery ensures that current community services are delivered in a social, economic, and environmentally responsible manner that does not compromise the ability of future generations to meet their own needs.


Figure 1.1: Asset Management for Sustainable Service Delivery, A BC Framework

WHAT IS THE COST TO REPLACE THE ASSETS?

The total replacement value of the Regional District's infrastructure is approximately $22.6 million, based on current construction costs. Broken down as follows;

Asset Category	Replacement Value
Water System	$2,100,000
Building System	$5,800,000
Airport Systems	$12,700,000[1]
Parks and Recreation	$400,000
Furniture and Fixtures	$900,000
Fleet System	$680,000
Total	**$22,600,000**

Airport System, 56%
Water System, 9%
Fleet System, 3%
Building System, 26%
Parks & Recreation System, 2%
Furniture & Fixtures System, 4%
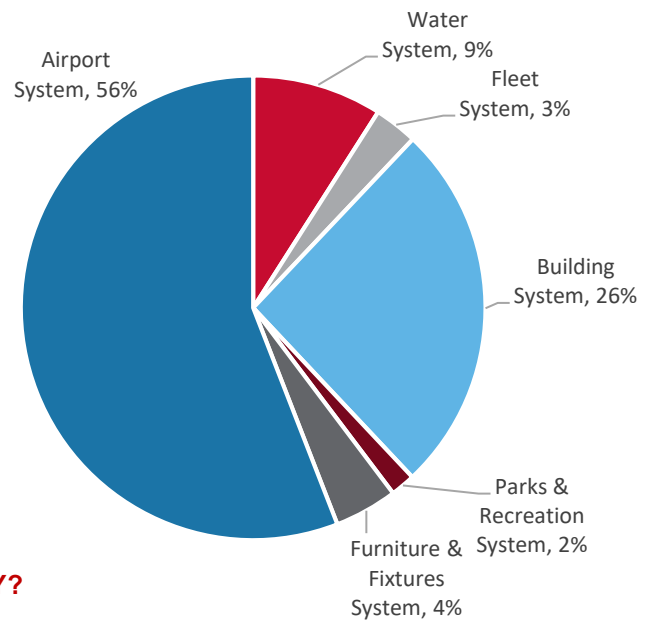
HOW MUCH MONEY NEEDS TO BE INVESTED ANNUALLY?

There is no single "correct" answer to this question. Accurately predicting when infrastructure will need to be replaced is very difficult, if not impossible to do. The service life of an asset such as a pipe depends on many factors such as the materials it is constructed from, the properties of the soils that it is buried in, how it was installed and many, many other factors. For this reason lifespan estimates are generally based on *"rule of thumb"* values. Most rule of thumb lifespans applied by engineers are conservative (on the safe side). In reality many assets could actually last much longer (50% longer or possibly more) than these estimates. For this reason the annual average investment required by the CCRD is presented as a range between a high of $420,000 annually if a conservative rule of thumb lifespan is applied down to $280,000 if an optimistic assumption is made that assets will last 50% longer than the conservative estimate. The correct answer probably lies somewhere between these two values. By assuming the assets will last longer, the CCRD assumes more risk. It is at the discretion of the CCRD board of directors to decide what level of funding they are comfortable with and to revisit those assumptions on a regular basis.

Average Annual Lifecycle Investment (AALCI) Summary			
Asset Category	Scenario 1	Scenario 2	Scenario 3
Description	Standard Service Life (SL)	SL Increased by 25%	SL Increased by 50%
Water System	$30,000	$25,000	$20,000
Building System	$110,00	$90,000	$75,000
Airport System	$170,000	$135,000	$115,000

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[1] This figure reflects CCRD owned portion of the airport system only.

Parks and Recreation	$20,000	$15,000	$13,000
Furniture and Fixtures	$65,000	$55,000	$45,000
Fleet System	$25,000	$20,000	$15,000
Total	**$420,000**	**$340,000**	**$280,000**

2.0 Introduction

CCRD strives to be a sustainable and resilient community, with a diverse, affordable and sustainable infrastructure base to deliver services for its residents.

The key to sustainably delivering services lies in how a community manages its infrastructure. The first step CCRD took was the production of a financial report that provided information on its tangible capital assets (TCAs). The TCA exercise looked at what CCRD spent on its infrastructure in the past. This exercise is taking that a step further, using the AMIP to look at what it needs to be invested in infrastructure in the future. This relationship can be seen in Figure 2.1.

Figure 2.1: The TCA versus AMIP Relationship
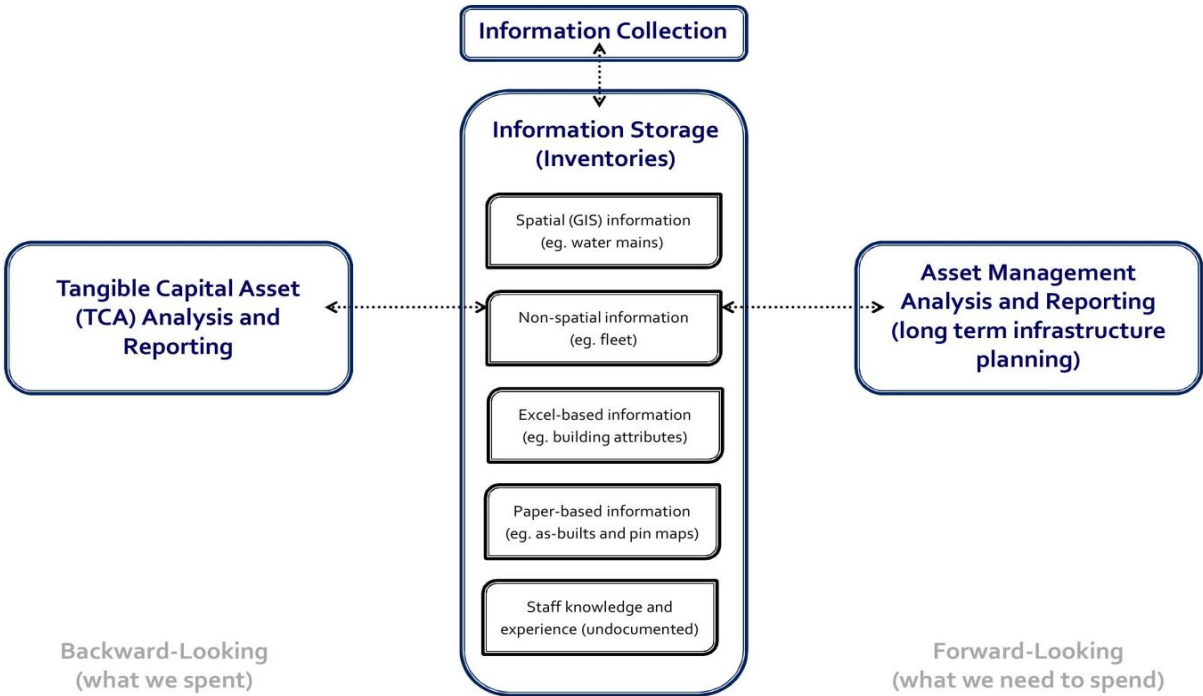
The AMIP is a 20 year cost cash flow analysis which includes the renewal costs, remaining life, deficit, renewal costs and timing for its major infrastructure categories including; water, building, airport, park/recreation, furniture/fixture and fleet assets. The AMIP also provides a cost profile that shows the revenue requirements needed to fund infrastructure over the long term.

3.0 Methodology

The AMIP is an ideal launching point for a community's asset management program as it involves all of the CCRD's decision-makers, includes all infrastructure assets and presents a relatively accurate[2] long term cost outlook. The AMIP can be used to inform decision-making regarding the management of, and investment in, community infrastructure. With the completion of the AMIP, CCRD can now identify its theoretical long term revenue generation requirements.

The two main steps followed to develop the AMIP are detailed below:

Step 1: Inventory Details

Through this project, an asset inventory was developed for the Regional District's major linear and non-linear assets. Inventory data for each major asset category was compiled using GIS, TCA records, engineering reports and staff knowledge. This inventory information is now in a consolidated inventory that can be accessed by all staff. Assumptions made in the inventory can be found within the model and in Appendix D – Asset Inventory Data Sources.

Step 2: Asset Valuation and Renewal Plan

Once the inventory was developed, it was imported into the Asset Management Investment Plan (AMIP) model so each asset could be evaluated. Key information calculated for each asset category includes:

Table 3.1: AMIP Attributes

Attributes	Question Addressed
Asset Service Life	How long will the asset last? (Appendix C)
Replacement Value	How much will it cost to replace the asset? (Appendix B)
Remaining Life	When does the asset need to be replaced?
Infrastructure Renewal Deficit (backlog)	Which assets have pasted their theoretical service life and need to be inspected for condition?
Total 20 Year Investment	How much should theoretically be invested over the next 20 years to renew existing infrastructure?
20 Year Average Annual Investment (20 Year AAI)	How much are we theoretically expected to invest on average per year to address the 20 year total investment?
Average Annual Life Cycle Investment (AALCI)	How should we spend annually to sustain infrastructure over the long term? **Note:** AALCI must be considered in conjunction with infrastructure renewal deficit (backlog) as this is forward looking parameter that does not consider historical expenditures.
Timing of each infrastructure replacement	When should we be anticipating infrastructure expenditures?

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[2] Cost accuracy is based on the most recent and available information provided by CCRD, supplemented by estimates where necessary. Accuracy can be enhanced through condition assessments that enable a service life adjustment

The attributes above were used to develop the AMIP level 1 summary (see appendix A) which provides decision makers with key information to make more informed decisions about future infrastructure investment level.

3.1   AMIP Results

The estimated full replacement value of the CCRD's major infrastructure assets is approximately $22.6 million (2016).

Table 3.2 provides a summary of the replacement value of existing infrastructure only; it does not touch on regulatory requirements, growth/expansion, safety improvements, and economic development. These items can be incorporated into future iterations of the AMIP.

Table 3.2: Asset Replacement Value Summary

Asset Category	Replacement Value
Water System	$2,100,000
Building System	$5,800,000
Airport Systems	$12,700,000[3]
Parks and Recreation	$400,000
Furniture and Fixtures	$900,000
Fleet System	$680,000
Total	**$22,600,000**

Figure 3.1 illustrates the percent breakdown of the CCRD's infrastructure value.

Figure 3.1: Infrastructure Value Distribution
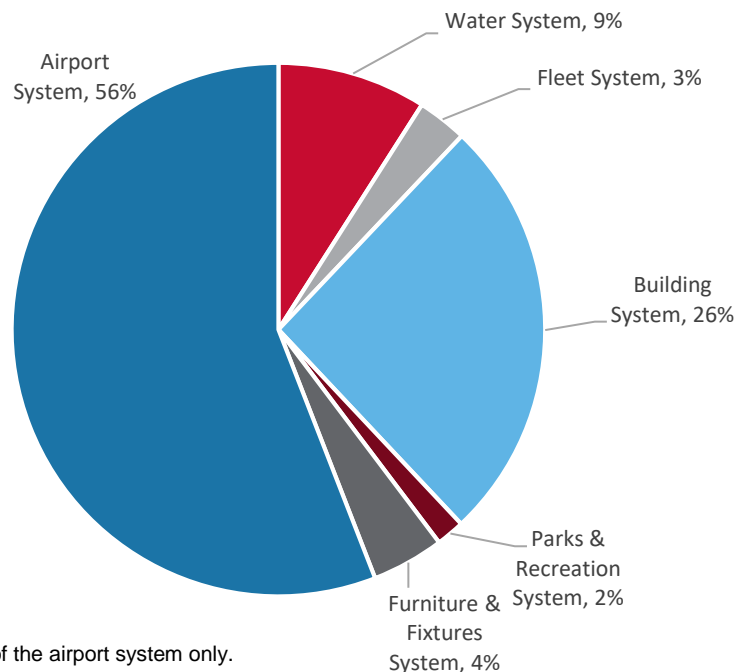
3 This figure reflects CCRD owned portion of the airport system only.

Over 85% of the CCRD's infrastructure is made of up of Airport, Building and Water assets which means the majority of the total long term expenditures should be into these assets. On average, the CCRD assets are considered to be in average condition with an average age of 50% of their expected life span. Although most assets are considered to be in average condition, some assets have passed their theoretical service life (identified as an infrastructure deficit) and therefore should be inspected in the field to confirm whether or not they need to be scheduled for replacement or not.

Anticipated infrastructure investments over the next 20 years is illustrated in Figure 3.2 below.

Figure 3.2: Infrastructure Investment Profile
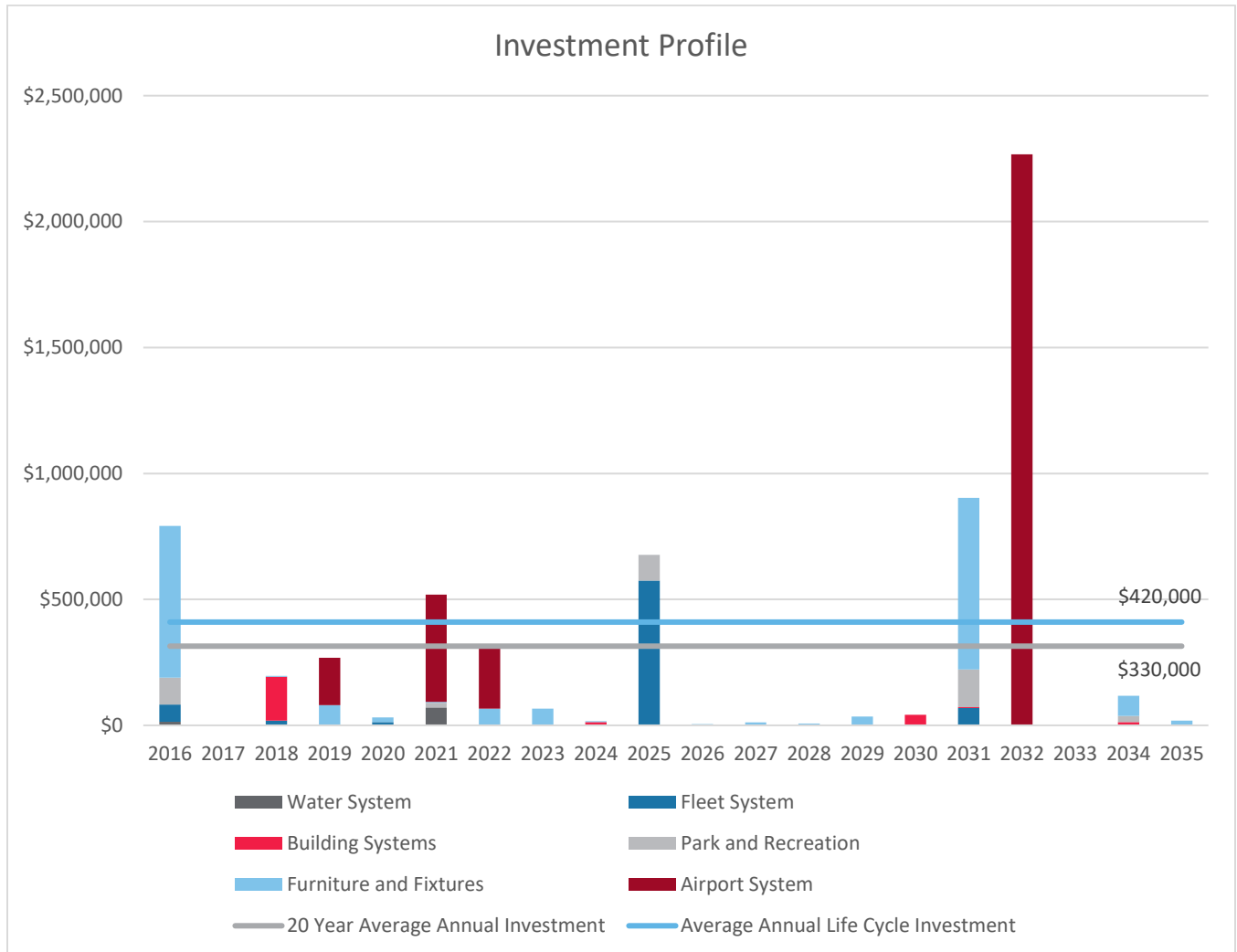
4.0 Investment Level Indicators

There is a direct tradeoff between risk and invest level in existing infrastructure. The more funds that are invested in replacing existing infrastructure, the less risk there is. In order to understand these trade-off's and determine what investment level is right for CCRD, three investment level indicators are presented below:

Average Annual Life Cycle Investment (AALCI): annual investment needed to sustain existing infrastructure over its service life (over the next 20 years and beyond).

Note: AALCI must be considered in conjunction with infrastructure renewal deficit (backlog) as this is forward looking parameter that does not consider historical expenditures.

20 Year Average Annual Life Cycle Investment (AAI): annual investment needed to pay for expected infrastructure replacements over the next 20 years (within the 20 year horizon).

Infrastructure Renewal Deficit: is a measure of the amount of infrastructure that has passed its theoretical service life but is still providing service to the community. This infrastructure should be inspected to determine if replacement is necessary or not.

Each of these indicators are a function of replacement costs (Appendix B) and service life's (Appendix C), of which service life presents the greatest uncertainty and is the most sensitivity parameter of the two. This uncertainty stems from factors that affect service life such as construction technique, soil type, maintenance demand and material. Since there is much uncertainty with service life, it's important to understand how the each indicator is affected as the service life changes. Three scenarios were analyzed to determine this:

- ▸ Scenario 1: Standard Asset Service Live's (based on accounting best practices)
- ▸ Scenario 2: Service Life Increased by 25%
- ▸ Scenario 3: Service Life Increased by 50%

Each investment indicator will explained in more detail below.

Note: Infrastructure investment refers to spending money to renewal existing infrastructure (capital expenditure) or saving funds in a protected reserve for future asset renewal.

Average Annual Life Cycle Investment (AALCI):

The Average Annual Life Cycle Investment (AALCI) is defined as the summation of each asset's annual depreciation which is based on the assets replacement cost and service life.

$$\sum \frac{\text{Replacement Cost}}{\text{Service Life}}$$

The AALCI is the ideal funding level for sustaining existing infrastructure and should be a long term target for the community. When planned for appropriately, the AALCI can be used in ensuring revenue stability, preventing unnecessary risk, and enabling a community to apply one-time funding to support new asset needs as opposed to addressing emergency situations.

AALCI is sensitive to changes in the service life so it's important to understand how the investment level could change based on how long an asset provides service. Understanding this sensitivity will help decision makers when deciding what investment level is best for the community. Table 4.1 below illustrates the AALCI for service life scenarios 1 to 3.

Table 4.1: AALCI – Risk Level

Average Annual Lifecycle Investment (AALCI) Summary			
Asset Category	**Risk Level 1**	**Risk Level 2**	**Risk Level 3**
Description	**Standard Service Life (SL)**	**SL Increased by 25%**	**SL Increased by 50%**
Water System	$30,000	$25,000	$20,000
Building System	$110,00	$90,000	$75,000
Airport System	$170,000	$135,000	$115,000
Parks and Recreation	$20,000	$15,000	$13,000
Furniture and Fixtures	$65,000	$55,000	$45,000
Fleet System	$25,000	$20,000	$15,000
Total	**$420,000**	**$340,000**	**$280,000**

It is quite clear that as the service life of the asset increases (risk level 1 to 3), annual investment can be reduced. Based on the results, the annual investment can be reduced from $420,000 to $280,000 million if the service life is increased by 50%.

The distribution of the total AALCI between asset categories is summarized in Figure 4.2 below.

*Figure 4.1: **Total AALCI** between Asset Categories*
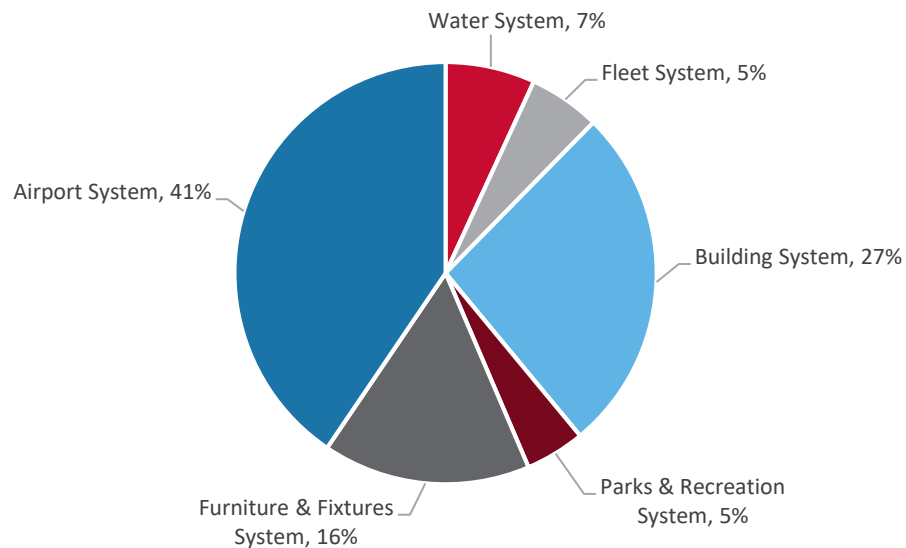
The AALCI has a relatively equal distribution between each asset category which means annual investment levels should be relatively similar (with the exception of the water system and landfill).

20 Year Average Annual Capital Expenditure

Another indicator that can be used to determine the trade-off between risk and investment level is the 20 Year Average Annual Investment (AAI).

$$\frac{\text{20 Year Total Anticipated Capital Expenditure}}{20}$$

This indicator provides an idea of how much should be spent on an annual basis to fund asset replacements anticipated over the next 20 years.

Service life directly affects the 20 year expenditures as it dictates when an asset is scheduled for replacement. For example: If the asset service life is extended, the replacement year might change from 2030 to 2040 which push's the project outside the 20 year planning horizon and reduces 20 Year AAI. It is important to note that this does not make the expenditure disappear but instead it just postpones it. This is why the AALCI is a better financial indicator because it accounts for replacements outside the planning horizon. Although AALCI takes a more long term vision to funding it does not account for the infrastructure renewal deficit. Therefore, it is important to consider AALCI and infrastructure renewal deficit together.

Table 4.2 below illustrates the changes in the 20 Year AAI for the three risk scenarios.

Table 4.2: 20 Year Average Annual Investment – Risk Level

20 Year Average Annual Investment (AAI)			
Asset Category	Risk Level 1	Risk Level 2	Risk Level 3
Description	Standard Service Life (SL)	SL Increased by 25%	SL Increased by 50%
Water System	$5,000	$1,000	$1,000
Building System	$15,000	$10,000	$10,000
Airport System	$160,000	$45,000	$45,000
Parks and Recreation	$25,000	$15,000	$10,000
Furniture and Fixtures	$85,000	$80,000	$45,000
Fleet System	$40,000	$40,000	$5,000
20 Year AAI	**$330,000**	**$190,000**	**$116,000**

It is quite clear that as the service life of the asset increases (risk level 1 to 3), annual investment can be reduced. Based on the results, the annual investment can be reduced from $330,000 to $116,000 if the service life is increased by 50% over the rule of thumb estimates.

Infrastructure Deficit

Infrastructure deficit is a measure of the amount of infrastructure that has passed its theoretical service life but is still providing service to the community.

Current Year > Year of Asset Replacement

Although the asset is still providing service, it is typically nearing the end of its life and will require field investigation to determine if the asset needs to be replaced or not.

Changes in the asset service life can turn future expenditures to a deficit or vice versa. For example: an asset is scheduled for replacement in 2015 which means the asset has passed its theoretical service life and will be recorded as a deficit. If that assets service life is extended, the asset is now scheduled in a future year as an asset replacement and not a deficit.

Table 4.3 below illustrates the infrastructure deficit for the three risk scenarios.

Table 4.3: Infrastructure Deficit – Risk Level

Infrastructure Deficit			
Asset Category	**Risk Level 1**	**Risk Level 2**	**Risk Level 3**
Description	**Standard Service Life (SL)**	**SL Increased by 25%**	**SL Increased by 50%**
Water System	$15,000	$0	$0
Building System	$0	$0	$0
Airport System	$0	$0	$0
Parks and Recreation	$110,000	$85,000	$45,000
Furniture and Fixtures	$605,000	$525,000	$510,000
Fleet System	$70,000	$70,000	$70,000
Total	**$800,000**	**$680,000**	**$625,000**

From the figure above, it is apparent that infrastructure renewal deficit can be reduced if the service life is increased.

In order to address the infrastructure deficit, we would recommend developing a field condition inspection program which targets assets that have passed their theoretical service lives. In doing so, the community can better understand what assets actually need to be scheduled for replacement.

Overall, there is a direct correlation between investment level and risk. There are three indicators that can be used to determine the appropriate investment level; AALCI, 20 Year AAI and Infrastructure Renewal Deficit. Each of these indicators are directly affected by service life which is a highly uncertain parameter. For now, it is important for decision makers to use the investment level indicators to set a long term funding targets. In the meanwhile, the Regional District should consider completing initiatives to understand costs, revenue, level of service and risk as well as develop systems and processes which support good asset management practices (further defined in the recommendations). **For example:** The Regional District could consider developing a condition assessment program to better understand the actual service lives of assets in the communities. If assets are found to be in better condition than expected, the remaining life on each asset can be increased and the annual investment level can be reduced.

5.0 State of the CCRD's Infrastructure

This section details the AMIP findings by each of the CCRD's six (6) asset categories based on typical construction costs and service lives (Risk Level 1).

5.1   Water System

The water system has a total value of approximately $2.1 million, including 3.3 km of pipes. It has an expected remaining life of 59%, meaning that the overall condition of the water system is good. There is an infrastructure deficit of $15,000 and the AALCI is $33,000 (see Table 5.1).

Table 5.1: Water System Summary Details

Asset Category	Replacement Value	Average of Expected Remaining Life	Infrastructure Deficit (Backlog)	20 Year Total	20 Year Average Annual Investment (AAI)	Average Annual Life Cycle Investment (AALCI)
Water System						
Linear						
Main	$1,400,000	75%	$0	$0	$0	$20,000
Total	**$1,400,000**	**75%**	**$0**	**$0**	**$0**	**$20,000**
Non-Linear						
Hydrant	$105,000	73%	$0	$0	$0	$2,000
Reservoir	$400,000	73%	$0	$0	$0	$5,500
Standpipe	$8,000	20%	$0	$7,500	$500	$500
Gate Valve	$65,000	20%	$0	$65,000	$3,000	$2,500
Blowoff	$2,000	20%	$0	$2,000	$500	$500
Meter	$15,000	0%	$15,000	$15,000	0	$1,000
Building	65,000	73%	0	0	0	$1,000
Total	**$660,000**	**39%**	**$15,000**	**$89,500**	**$4,000**	**$13,000**
Total	**$2,060,000**	**59%**	**$15,000**	**$89,500**	**$4,000**	**$33,000**

The water system capital renewal schedule for the next 20 years is shown in Figure 5.1.

Figure 5.1: Water System Capital Renewal Schedule
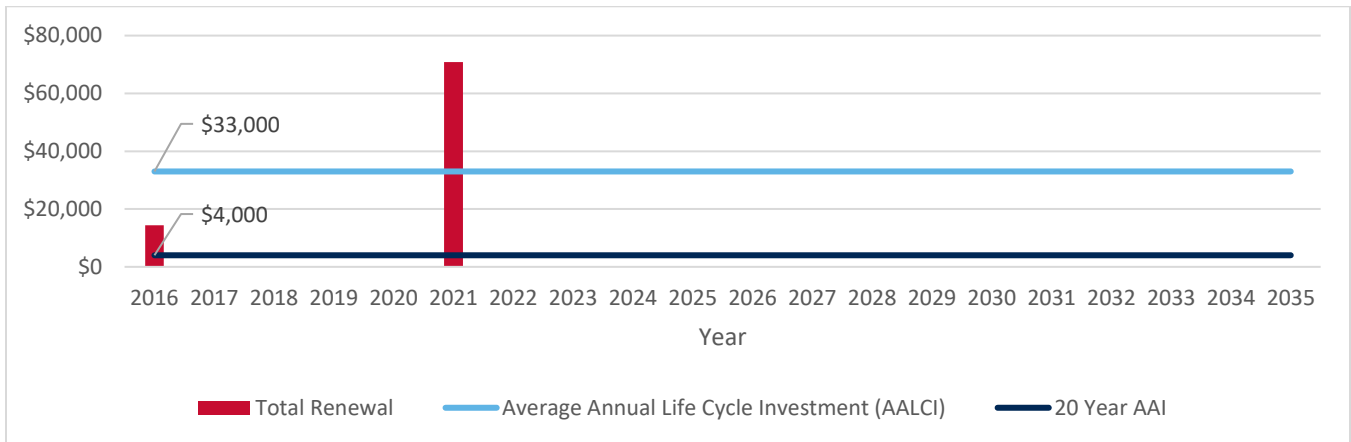
5.2   Buildings

The building system has a total value of approximately $5.8 million, including 4 civic buildings and 8 recreational assets. It has an expected remaining life of 78%, meaning that the building system is in excellent condition overall. There is no infrastructure deficit and the AALCI is $70,100 (see Table 5.2).

Table 5.2: Building System Summary Details

Asset Category	Replacement Value	Average of Expected Remaining Life	Infrastructure Deficit (Backlog)	20 Year Total	20 Year Average Annual Investment (AAI)	Average Annual Life Cycle Investment (AALCI)
Building Systems						
Civic						
Airport Terminal	$1,110,000	49%	$0	$0	$0	$15,000
Fire Hall	$560,000	32%	$0	$0	$0	$8,000
Municipal Office	$790,000	71%	$0	$0	$0	$11,000
Waste & Recycling	670,000	96%	$0	$0	$0	$9,000
Total	**$3,130,000**	**78%**	**$0**	**$0**	**$0**	**$43,000**
Recreation						
Barbeque Shelter	$30,000	67%	$0	$0	$0	$1,000
Bear-proof Refuse bins	$4,500	75%	$0	$5,000	$500	$500
Concession Stand	$225,000	100%	$0	$0	$0	$4,000
Outdoor Skating Rink/Lighting	$190,000	7%	$0	$205,000	$10,500	$8,000
Pool	$2,180,000	100%	$0	$0	$0	$55,000
Storage Shed	$15,000	65%	$0	$0	$0	$500
Warming Hut	$45,000	35%	$0	$45,000	$2,000	$1,000
Total	**$2,710,000**	**79%**	**$0**	**$255,000**	**$13,000**	**$70,000**
Total	**$5,840,000**	**78%**	**$0**	**$255,000**	**$13,000**	**$113,000**

The building system capital renewal schedule for the next 20 years is shown in Figure 5.2.

Figure 5.2: Building System Investment Profile
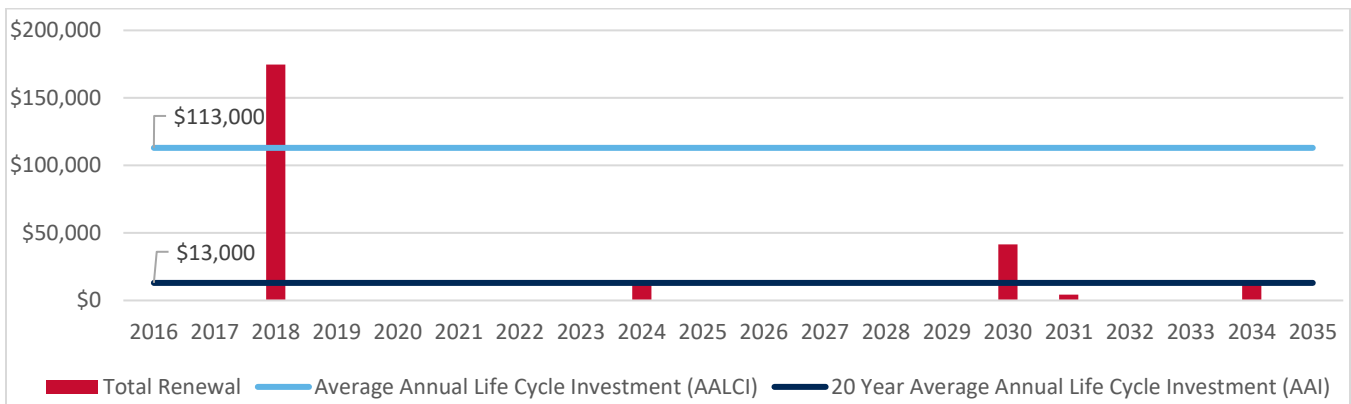
5.3 Airport

The airport has a total value of approximately $19.6 million, of which the CCRD owns 12.7 million in assets and the federal government owns the remaining $6.9 million. The remaining life of the CCRD's and federal government assets is 50% and 43% respectively, meaning that the airport is in average condition. There is currently no infrastructure deficit and the combined CCRD and Federal government AALCI is $345,000. (see Table 5.3).

Table 5.3: Airport Summary Details

Asset Category	Replacement Value	Average of Expected Remaining Life	Infrastructure Deficit (Backlog)	Sum of 20 Year Total	20 Year Average Annual Investment	Average of Average Annual Life Cycle Investment
Airport						
CCRD						
Pavement	$3,200,000	26%	$0	$3,200,000	$160,000	95,000
Base / Sub-Base	$8,200,000	69%	$0	$0	$0	$60,000
Drainage Pipe	$1,300,000	73%	$0	$0	$0	$20,000
Total	**$12,700,000**	**50%**	**$0**	**$3,200,000**	**$160,000**	**$175,000**
Federal Gov't						
Pavement	3,300,000	18%	$0	3,300,000	$165,000	$135,000
Base / Sub-Base	3,600,000	68%	$0	0	$0	$35,000
Total	**6,900,000**	**43%**	**$0**	**3,300,000**	**$165,000**	**$170,000**
Total	**$19,600,000**	**48%**	**$0**	**$6,500,000**	**$325,000**	**$345,000**

The airport system capital renewal schedule for the CCRD owned assets over the next 20 years is shown in Figure 5.3.

Figure 5.3: Airport System Investment Profile
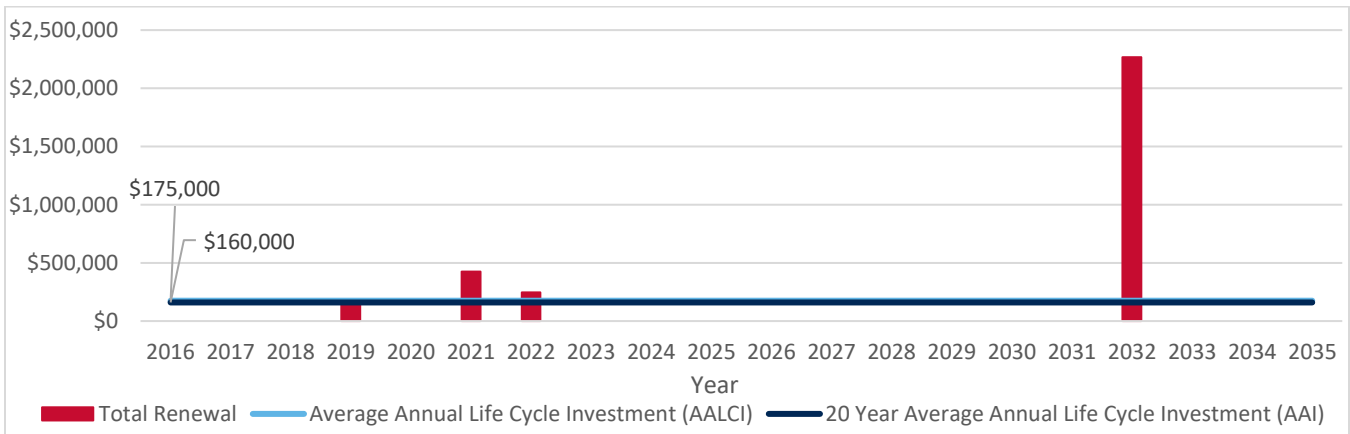
Note: This profile only shows CCRD expenditures

5.4   Parks and Recreation

The CCRD's parks and recreation system has a total value of approximately $387,000. It has an expected remaining life of 43%, meaning that the overall condition of the fleet is average. The current infrastructure deficit is $110,000 and the AALCI is $20,000 (see Table 5.4).

Table 5.4: Parks and Recreation Summary Details

Asset Category	Replacement Value	Average of Expected Remaining Life	Infrastructure Deficit (Backlog)	Sum of 20 Year Total	20 Year Average Annual Investment	Average of Average Annual Life Cycle Investment
Parks and Recreation						
Non-Linear						
Signage	$2,000	67%	$0	$2,000	$500	$500
Baseball Diamond	$100,000	50%	$40,000	$100,000	$5,000	$5,000
Park Amenities	$215,000	29%	$70,000	$235,000	$15,000	$11,000
Total	**$317,000**	**39%**	**$110,000**	**$340,000**	**$20,500**	**$16,500**
Linear						
Fencing	$70,000	75%	$0	$70,000	$3,500	$3,500
Total	**$70,000**	**75%**	**$0**	**$70,000**	**$3,500**	**$3,500**
Total	**$387,000**	**43%**	**$110,000**	**$410,000**	**$24,000**	**$20,000**

The parks and recreation system capital renewal schedule for the next 20 years is shown in Figure 5.4.

Figure 5.4: Parks and Recreation System Investment Profile
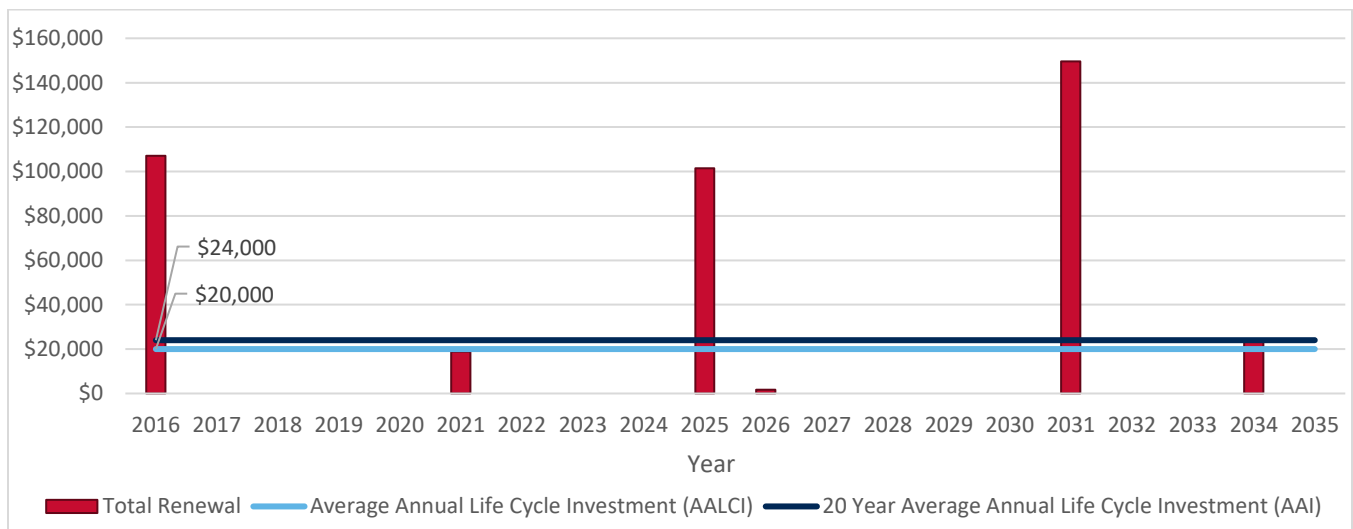
5.5   Furniture and Fixtures

The CCRD's furniture and fixtures system has a total value of approximately $900,000. It has an expected remaining life of 22%, meaning that the overall condition of the system is poor. The current infrastructure deficit is $605,000 and the AALCI is $60,000 (see Table 5.5).

Table 5.5: Furniture and Fixtures Summary Details

Asset Category	Replacement Value	Average of Expected Remaining Life	Infrastructure Deficit (Backlog)	Sum of 20 Year Total	20 Year Average Annual Investment	Average of Average Annual Life Cycle Investment
Furniture and Fixtures						
Equipment	$900,000	22%	$605,000	$1,600,000	$85,000	$60,000
Total	**$900,000**	**22%**	**$605,000**	**$1,600,000**	**$85,000**	**$60,000**

The furniture and fixtures system capital renewal schedule for the next 20 years is shown in Figure 5.5.

Figure 5.5: Furniture and Fixtures System Investment Profile

5.6   Fleet
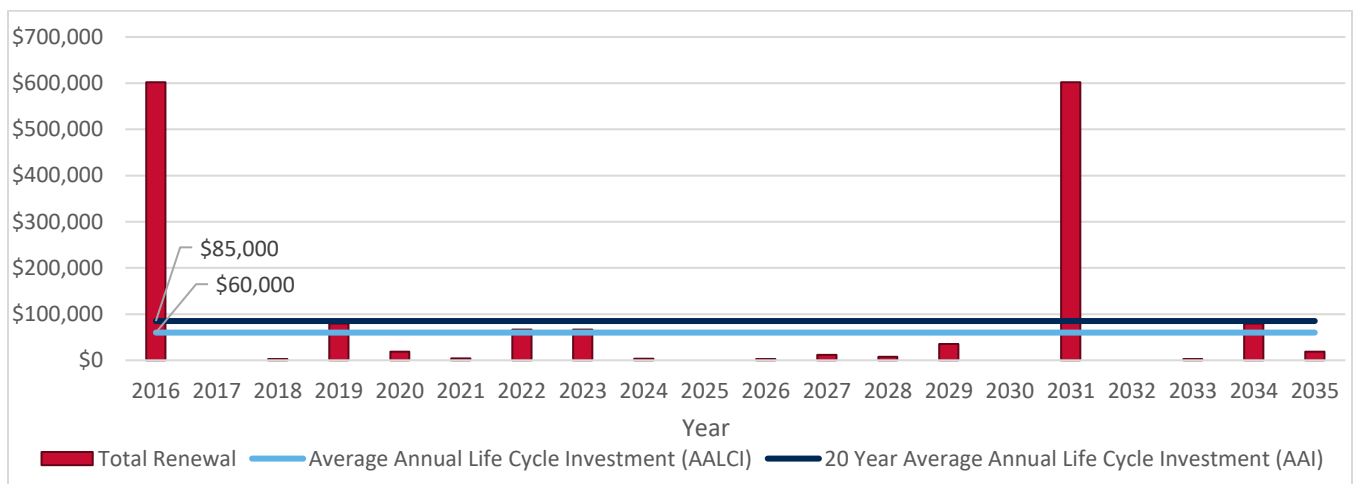
The CCRD's vehicle fleet has a total value of approximately $680,000. It has an expected remaining life of 13%, meaning that the overall condition of the fleet is poor. The current infrastructure deficit is $70,000 and the AALCI is $26,600 (see Table 5.6).

Table 5.6: Fleet Summary Details

Asset Category	Replacement Value	Average of Expected Remaining Life	Infrastructure Deficit (Backlog)	Sum of 20 Year Total	20 Year Average Annual Investment	Average of Average Annual Life Cycle Investment
Fleet						
Light						
Miscellaneous	$70,000	0%	$70,000	$140,000	$7,000	$5,000
Toyota Tacoma	$15,000	16%	$0	$15,000	$1,000	$1,000
Total	**$85,000**	**8%**	**$70,000**	**$155,000**	**$8,000**	**$5,000**
Heavy						
Spartan Fire Truck	$575,000	26%	$0	$575,000	$30,000	$20,000
Volvo Refuse Truck	$20,000	10%	$0	$20,000	$1,000	$1,000
Total	**$595,000**	**18%**	**$0**	**$595,000**	**$31,000**	**$21,000**
Total	**$680,000**	**13%**	**$70,000**	**$750,000**	**$39,000**	**$27,000**

The fleet capital renewal schedule for the next 20 years is shown in Figure 5.6.

Figure 5.6: Fleet Investment Profile
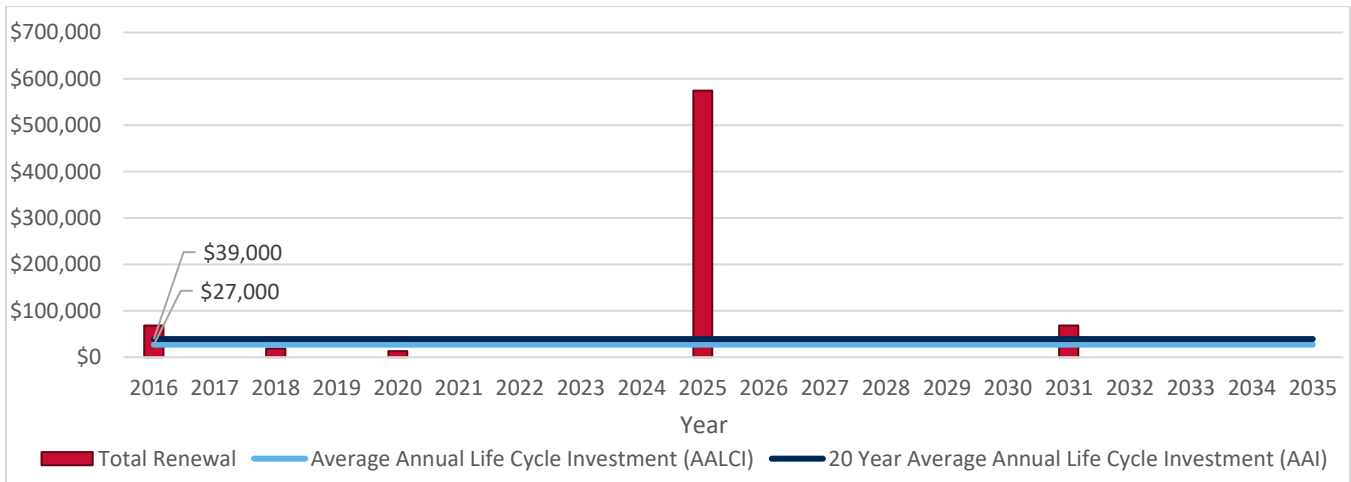
6.0 Conclusions

The CCRD owns $22.6 million in infrastructure that requires strategic investment over the next 20 years in order to ensure the infrastructure is sustained. In order to ensure these assets can continue to provide service, decision makers must determine what level of investment is appropriate for their community based on their willingness to take on risk, current budget and ability to generate new revenue. Table 6.1 below summaries three key investment indicators that will help decision makers determine this.

Table 6.1: Investment Level Indicators

Asset Category	Replacement Value	Average Annual Life Cycle Investment (AALCI)	20 Year Average Annual Investment (AAI)	Infrastructure Deficit (Backlog)
Water System	$2,100,000	$20,000 - $30,000	$1,000 - $5,000	$0 - $15,000
Building System	$5,800,000	$75,000 – $110,000	$10,000 - $15,000	$0
Airport Systems	$12,700,000[4]	$115,000 – $170,000	$45,000 - $160,000	$0
Parks and Recreation	$400,000	$13,000 - $20,000	$10,000 - $25,000	$45,000 - $110,000
Furniture and Fixtures	$900,000	$45,000 - $65,000	$45,000 - $85,000	$510,000 - $610,000
Fleet System	$680,000	$15,000 - $25,000	$5,000 - $40,000	$70,000
Total	**$22,600,000**	**$280,000– $420,000**	**$116,000 - $330,000**	**$625,000 – $800,000**

The range of values represent three service life scenarios 1 to 3 with the lower value representing a scenario where SL is increased by 50%) and the larger value representing scenario 1 which uses standard service life information.

These investment level indicators should be used to set long term funding targets and in the meanwhile the community should continue to improve their asset management capacity (further defined in section 7 – recommendations and next steps).

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[4] This figure reflects CCRD owned portion of the airport system only.

7.0 Recommendations and Next Steps

The CCRD has improved their asset management capacity throughout this project and now has an up to date asset inventory, condition assessment information and asset management plan. By completing this project, the CCRD is demonstrating they are making progress as it relates to asset management and are in alignment with the Asset Management BC framework.

Moving forward, the CCRD will want to consider some of the other components of the BC Framework and identify where they wish to make improvements to their current status. Indications are that this will be needed in 2017 as part of the Community Works Fund requirements.

Based on our current understanding of the CCRD's current Asset Management status some next steps that would be appropriate include in the next 1-3 years;

1. Undertake an Asset Management gap assessment to gain a clearer understanding of the CCRD's current status and gaps that may need to be addressed.
2. Implement a Geographic Information System (GIS) to track assets, asset information and their locations.
3. Develop an Asset Management Policy that sets a clear direction for how infrastructure renewal will be funded and what the role of the various fiscal tools will be (i.e. debt, reserves, taxation, user fees, grants, etc.).
4. Create a Long Term Financial Plan (10+ years) which links the Asset Management Plan with the Policy including any required adjustments to taxation and user fees.
5. Implement a formal Risk Assessment Framework to help prioritize infrastructure renewal projects

AMIP Level 1

Asset Category	Replacement Value - Total	Loss in Value	Remaining Value	Average of Expected Remaining Life	Infrastructure Deficit (Backlog)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	20 Year Total	20 Year Average Annual Investment	Average Annual Life Cycle Investment
Water System																												
Linear	$1,400,000	$345,000	$1,055,000	75%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$$0	$20,000
Non-Linear	$659,500	$225,000	$434,500	60%	$15,000	$15,000	$0	$0	$0	$0	$74,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$89,500	$4,100	$13,00
Total	$2,059,500	$570,000	$1,489,500	63%	$15,000	$15,000	$0	$0	$0	$0	$74,500	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$89,500	$4,100	$33,000
Building System																												
Civic	$3,130,000	$1,200,000	$1,930,000	78%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$43,000
Recreation	$2,710,000	$210,000	$2,500,000	79%	$0	$0	$0	$0	$175,000	$0	$0	$0	$0	$15,000	$0	$0	$0	$0	$0	$45,000	$4,500	$0	$0	$15,000	$0	$254,500	$13,100	$70,100
Total	$5,840,000	$1,410,000	$4,430,000	79%	$0	$0	$0	$175,000	$0	$0	$0	$0	$0	$15,000	$0	$0	$0	$0	$0	$45,000	$4,500	$0	$0	$15,000	$0	$254,000	$13,100	$113,100
Airport System																												
CCRD	$12,700,000	$4,300,000	$8,400,000	50%	$0	$0	$0	$0	$200,000	$0	$430,000	$245,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,325,000	$0	$0	$0	$3,200,000	$160,000	$175,000
Total	$12,700,000	$4,300,000	$8,400,000	50%	$0	$0	$0	$0	$200,000	$0	$430,000	$245,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,325,000	$0	$0	$0	$3,200,000	$160,000	$175,000
Parks and Recreation																												
Non-Linear	$317,000	$200,000	$117,000	**39%**	$110,000	$105,000	$0	$0	$0	$0	$20,000	$0	$0	$0	$100,000	$2,000	$0	$0	$0	$0	$85,000	$0	$0	$25,000	$0	$337,000	$20,500	$16,500
Linear	$70,000	$20,000	$50,000	**75%**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$70,000	$0	$0	$0	$0	$70,000	$3,500	$3,500
Total	$387,000	$220,000	$167,000	43%	$110,000	$105,000	$0	$0	$0	$0	$20,000	$0	$0	$0	$100,000	$2,000	$0	$0	$0	$0	$155,000	$0	$0	$25,000	$0	$407,000	$24,000	$16,500
Furniture and Fixtures																												
Equipment	$900,000	$775,000	$125,000	22%	$605,000	$600,000	$0	$2,500	$80,000	$20,000	$4,000	$65,000	$65,000	$3,500	$0	$3,000	$10,000	$10,000	$34,400	$0	$600,000	$0	$2,600	$80,000	$20,000	$1,600,000	$85,000	$60,000
Total	$900,000	$775,000	$125,000	22%	$605,000	$600,000	$0	$2,500	$80,000	$20,000	$4,000	$65,000	$65,000	$3,500	$0	$3,000	$10,000	$10,000	$34,400	$0	$600,000	$0	$2,600	$80,000	$20,000	$1,600,000	$85,000	$60,000
Fleet																												
Light	$85,000	$80,000	$5,000	**0%**	$70,000	$70,000	$0	$0	$0	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$70,000	$0	$0	$0	$0	$155,000	$8,000	$5,600
Heavy	$595,000	$445,000	$150,000	16%	$0	$0	$0	$20,000	$0	$0	$0	$0	$0	$0	$575,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$595,000	$31,000	$21,000
Total	$680,000	$525,000	$155,000	8%	$70,000	$70,000	$0	$20,000	$0	$15,000	$0	$0	$0	$0	$575,000	$0	$0	$0	$0	$0	$70,000	$0	$0	$0	$0	$750,000	$39,000	$26,600
CCRD Total	$22,566,500.00	$7,800,000	$14,766,500	50%	$800,000	$790,000	$0	$197,500	$280,000	$35,000	$528,500	$310,000	$65,000	$18,500	$675,000	$5,000	$10,000	$10,000	$34,400	$45,000	$829,500	$2,325,000	$2,600	$120,000	$20,000	6,300,500	$325,200	$424,200
Federal Government																												
Airport	$6,900,000	3,600,000	3,300,000	43%	$0	$0	$0	$0	$450,000	$0	$2,700,000	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,300,000	$165,000	$170,000
Total	$6,900,000	3,600,000	3,300,000	43%	$0	$0	$0	$0	$450,000	$0	$2,700,000	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,300,000	$165,000	$170,000
Grand Total	$29,466,500	$11,400,000	$18,136,500	50%	$800,000	$790,000	$0	$197,500	$730,000	$35,000	$3,228,500	$460,000	$65,000	$18,500	$675,000	$5,000	$10,000	$10,000	$34,400	$45,000	$829,500	$2,325,000	$2,600	$120,000	$20,000	$9,600,500	$490,200	$594,200

APPENDIX B

Replacement Costs

Linear Water Distribution System Costs											
Description	Units	Diameter									
		600	500	450	400	350	300	250	200	150	100
Pipe	$/m	$600	$550	$500	$450	$400	$325	$230	$200	$175	$150
Valves	each	$6,500	$4,900	$4,500	$4,200	$4,200	$3,500	$2,600	$1,700	$1,200	$1,000
Asphalt	$/m	$92	$86	$82	$80	$78	$76	$54	$53	$51	$50
Gravel	$/m	$60	$56	$53	$52	$51	$49	$41	$40	$39	$38
* Excludes engineering and contingency											

Non-Linear Water Distribution System Costs		
Description	Unit	Unit Cost*
Hydrant	each	$4,000
Air Relief Valve/Meter & Chamber	each	$10,000
Blowoff	each	$1,100
*Excludes contingency and engineering		

Other Assets	
Description	Source
Buildings	Insurance Report
Parks and Recreation	Insurance Report
Fleet	TCA Indexed to 2016 $'s using ENR CPI
Airport	West Coast Road Testing + Tetra Tech Reports
Furniture and Fixture	TCA Indexed to 2016 $'s using ENR CPI

APPENDIX C

Service Lives

Asset Service Lives	
Description	**Scenario 1 (yrs)**
Water System	
PVC	100
Hydrant	75
Meter	20
Gate Valve	25
Standpipe	25
Check Value	30
Tee	25
Reservoir	75
Buildings	
Various	60-75
Airport Systems	
Asphalt	25-40
Base/Sub-base	100-140
Park and Rec	
Various	15-25
Furniture and Fixtures	
Various	15
Fleet	
Various	15-35

*The service life values were based on conversations with CCRD staff.

APPENDIX D

Asset Inventory Data Source

Asset Category	Data Source
Water System	**Linear Infrastructure:** GIS was used as the primary source for developing the inventory for this asset category**.** **Non-Linear Inventory:** TCA, engineering reports and operator knowledge was used as the primary source for developing the inventory for this asset category.
Building System	Insurance reports were used as the primary source for developing the inventory for this asset category.
Parks and Recreation system	Insurance reports were used as the primary source for developing the inventory for this asset category.
Pool system	Bella Coola Recreation Feasibility Study completed by Carscadden was the primary source for developing this inventory
Airport system	West Coast Road Testing and Paving condition assessment report was the primary source for developing this inventory
Fleet System	TCA was used as the primary source for developing the inventory for this asset category.

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