COWICHAN VALLEY REGIONAL DISTRICT

Corporate Strategic Asset Management Plan

2020

Board of Directors

"The CVRD Board endorses the Corporate Strategic Asset Management Plan and recognizes the importance of applying asset management principles to maximize the value from our infrastructure assets and to achieve sustainable service delivery," - Aaron Stone, Chair

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DEBRA TOPOROWSKI
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KATE MARSH
Municipality of North Cowichan

Message from the CAO

I am very pleased to introduce the CVRD Corporate Strategic Asset Management Plan. This plan will provide the strategies and processes necessary for sustainable service delivery related to the operation and maintenance of the municipal infrastructure that serves our residents and our communities.

The CVRD owns and manages approximately $363M in assets that include water and sewer utilities, recreation centres, parks and trails, fire halls and recycling centres to name a few. Our residents value and rely on these services and as a local government, we have an obligation to plan for, maintain and replace our assets over time to ensure services are available without interruption and at a reasonable cost.

The components that make up this plan have been under development for the past three years and completion of this plan is the result of significant effort and perseverance on the part of the CVRD staff members who are responsible for managing the various services and assets of the regional district.

This plan is based on the Asset Management BC framework which involves recording the assets we own, assessing the condition of those assets, confirming the level of service each asset is to provide and establishing operational and financial strategies to cost-effectively maintain and replace our assets over time. This also includes understanding the risks associated with a changing climate and how we can mitigate these risks, or adapt our infrastructure to ensure maximum value of the services we deliver.

Successful implementation of this strategic asset management plan will require commitment and diligence on the part of staff and the Board of Directors to ensure that management processes and systems are adhered to and that appropriate funding is allocated for timely maintenance, repair and replacement of our assets. We must also be committed to continuous improvement through training, regular reviews of our processes and reporting of outcomes and performance measures.

Regards,

Brian Carruthers
Chief Administrative Officer, Cowichan Valley Regional District

Executive Summary

The Corporate Strategic Asset Management Plan (SAMP) is a document that establishes the CVRDs approach to ensure the long-term value from infrastructure can be achieved. Asset Management (AM) is the set of coordinated activities that an organization uses to realize value from assets in the delivery of its objectives. Long term realization of value requires the achievement of a balance of costs, risks and benefits. This strategic document identifies the activities required for successful AM implementation throughout the CVRD.

The CVRDs asset portfolio has a replacement value of $363M. This Infrastructure provides many services to the CVRD community from ornamental street lighting

systems to recreation centres with ice rinks and water and sewer utility systems. It is estimated that to maintain existing infrastructure over the next 10 years will cost $35.4M, and there is only $8.6M (24%) set aside in established reserves.

The Corporate SAMP defines the Board's expectations around the management of the CVRDs infrastructure assets, and further articulates the organization's commitment by including an Implementation Plan that identifies resource requirements, determines timelines and establishes responsibilities for successful implementation. The purpose of the Corporate SAMP is:

- To develop a set of actions for improving and sustaining asset management practices across the CVRD;
- To ensure that these practices are applied consistently across the CVRD;
- To help the CVRD maintain its assets at appropriate condition levels and maximise their useful lives; and
- To establish data driven decision-making frameworks to enable the most effective actions, on the right assets, at the right time, while balancing risks and affordability.

It is expected that the Corporate SAMP will be reviewed and refreshed with every new Board of Directors. Progress will be monitored, measured and reported. Over time, and through the adoption of a continuous improvement process, it will evolve in response to internal and external changes or challenges faced by the CVRD.

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Introduction

The CVRD is a complex service delivery organization with responsibility for managing an Asset Portfolio with a 2018 replacement value of $363M in public infrastructure. As of 2018, the CVRD budget has over 180 independent services, many of them rely on infrastructure to support the delivery of services.

Asset management is a business process that maximises the value of infrastructure to deliver these services. To provide the expected service levels to the public, the CVRD must ensure that the infrastructure assets which support these services are managed in a way that balances risk, and affordability. The importance of the assets to the community along with their significant capital and operating cost implications need to form an integral part of the CVRD long-term financial and service delivery planning. It must also be recognized that the most important asset is CVRD staff. Staff have experience managing assets and have been able to maintain service levels with limited resources and amongst competing priorities. However, this approach to managing assets has been primarily reactionary, which is why the preparation of Corporate Strategic Asset Management Strategy was identified as Strategic Focus Area in 2016.

SERVICES INCLUDE:

- Sewer Systems
- Recreations Centres
- Community Centres
- Community Halls
- Administration
- Public Safety
- Parks and Trails
- Waste Management
- Water Systems
- Drainage Systems
- Ornamental Street Lights
- Transit

The CVRDs Corporate Strategic Asset Management Plan (SAMP) is the first strategic and holistic attempt to incorporate asset management (AM) principles into CVRD business processes. The Corporate SAMP provides the strategy for reliable, repeatable and transparent decision-making to establish sustainable service delivery. AM principles have been systematically developed with the intention of integrating them across all departments. The purpose of this document is to identify processes and practices to ensure the sustainable delivery of CVRD services to future generations.

The CVRD community is unique among regional districts, it covers a large rural area and operates more individual water and sewer systems than any other regional district in British Columbia. The regional district government structure places many restrictions on CVRD authorities and responsibilities. The services delivered by the CVRD vary in scale and scope adding another layer of complexity to any asset management planning process. The infrastructure that supports service delivery also has unique operating and financial requirements that add additional further complications to the implementation of a Corporate SAMP.

The effective implementation of the Corporate SAMP will lead to the sustainable funding of future infrastructure renewals, the identification of future demands or changes (ex. regulatory, environmental, demographic) to service delivery, and the management of customer and stakeholder expectations.

1.1 Our Community

The CVRD is one of 28 regional districts in BC. It is comprised of nine electoral areas and four municipalities in the southern part of Vancouver Island. With a population of over 80,000 residents it covers a land area of 3,473.12 km^2 (Figure 1).

FIGURE 1 MAP OF CVRD MUNICIPALITIES AND ELECTORAL AREAS

The CVRD is governed by a 15 member Board comprised of appointed directors from the four municipalities and an elected director from each of the nine electoral areas. The CVRD Board elects a Chairperson and Vice-Chairperson annually. The Chairperson is responsible for establishing the committee structure of the Board.

Funds required to operate the various regional district services are generated through parcel taxes, requisition, user fees and sometimes grants when and if they are available. Unlike municipalities, regional districts are required to match the costs and benefits of its services to the residents that benefit from them; this means residents pay for the services they receive. This poses a significant challenge because electoral areas and individual service areas often lack the populations and resources to effectively and efficiently manage complex infrastructure.

1.2 Our Services

The CVRD provides a broad range of services to its residents. While a small number of these services are mandated by the Province (solid waste, emergency planning, land- use planning), the majority of services provided by the CVRD are determined by the Board. However, services can only be provided with the approval of the electors who will receive them. The delivery of these services depends on infrastructure that is generally owned, operated, and maintained by the CVRD.

The services provided can be regional, sub-regional or local in their delivery (Table 1).

1.3 Our Asset Portfolio

The CVRDs Asset Portfolio is defined as the infrastructure that is within scope of the current Corporate SAMP. The CVRDs infrastructure includes the built environments that enable the CVRD to provide core

TABLE 1 CORE CVRD SERVICES

SCALE OF SERVICE	SERVICES PROVIDED
Regional	Solid Waste Management, 9-1-1, Emergency Planning, Administration, Economic Development, Environmental Services, Regional Parks, Capital Financing for Hospitals
Sub-Regional	Land Use Planning, Bylaw Enforcement, Building Inspection, Recreation Centres, Parks, Transit
Local	Fire Protection, Water and Wastewater Systems, Community Parks, Community Centres/ Halls, Ornamental Street Lights

services to the community. This infrastructure has been classified into Asset Systems, which are groups of infrastructure that provide common services with similar operational and financial requirements. Each Asset System contains numerous individual systems and components, which may have independent budgets, unique operations and maintenance requirements, and distinct management structures. The CVRD is directly responsible for owning and managing the infrastructure within these Asset Systems.

Some Asset Systems have been excluded from this analysis for various reasons including, lack of available information, unique governance structures, unrefined methodologies, and limited staff capacity/resources. The following Asset Systems were excluded: Fleet, Drainage Systems, Information

CVRD Asset System Infrastructure Supporting Specific Services

RECREATION CENTRES

Three (3) Recreation Centres with ice plants, hockey rinks, curling rinks, and **one (1)** theatre space (Cowichan Performing Arts Centre)

COMMUNITY HALLS

Five (5) Community Halls not staffed by CVRD and used primarily by community groups

COMMUNITY CENTRES

Two (2) Community Centres with CVRD staff and regular programs

PUBLIC SAFETY

Six (6) Volunteer Fire Halls and an Emergency Communications Network

TRANSIT

Twenty-seven (27) Bus Shelters

ORNAMENTAL STREET LIGHTING

Six (6) Street Lighting Networks

WASTE MANAGEMENT

One (1) Municipal Solid Waste Transfer Station, with operational and administrative facilities, and **two (2)** Recycling Centres.

WATER SYSTEMS

Nineteen (19) Water Treatment Plants and **118 km** of underground pipe

SEWER SYSTEMS

Sixteen (16) Wastewater Treatment Plants and **100 km** of underground pipe

ADMINISTRATION

One (1) Administrative Office Building

PARKS AND TRAILS

Eight (8) Regional Parks comprised of **112 km** of managed trails, and **202** Community Parks, **48 km** of managed community trails, and **one (1)** Regional Recreation Area

Technology Systems, Flood Management, and Natural Capital Assets. These systems will be included in future iterations of the Corporate SAMP, providing appropriate resources are allocated.

WHY IS THIS IMPORTANT?

THE CVRD RELIES ON INFRASTRUCTURE TO PROVIDE SERVICES. THE INFRASTRUCTURE IDENTIFIED IN THE ASSET PORTFOLIO IS OPERATIONALLY AND FINANCIALLY MANAGED DIRECTLY BY THE CVRD, WHICH MEANS THE APPLICATION OF ASSET MANAGEMENT (AM) OBJECTIVES CAN BE STRATEGICALLY IMPLEMENTED. ADDITIONAL ASSET SYSTEMS WILL BE INCLUDED AS RESOURCES ARE COMMITTED, AND AS THE CVRDs AM CAPABILITIES MATURE.

Asset Management and the CVRD

The CVRD started its asset management (AM) journey in 2009 with the introduction of Public Sector Accounting Board (PSAB) 3150 accounting standard that required reporting of tangible capital assets in the annual financial statements. The intent of this financial accounting exercise was to allow the public and Board to gain a greater sense of the stewardship responsibilities of the organization. This was the first attempt to establish an asset inventory, but a holistic and strategic approach to AM planning was not established for another seven years.

The preparation of a Corporate Strategic Asset Management Plan (SAMP) was identified as a strategic priority by the Board in 2015, and work to develop the SAMP started in 2016. An Executive Steering Committee, with the Chief Administrative Officer (CAO) as the Project Sponsor and the General Manager of Engineering Services as the Project Manager, was established to guide the planning process. The AM planning process was based on the Asset Management BC Framework. Additional actions included the creation of an Asset Coordinator staff position to coordinate the AM planning activities. Our approach to developing a strategy has included establishing a governance structure, collecting data, preparing an AM Policy, and building the AM capabilities of CVRD staff.

The Corporate SAMP is a strategic document which establishes the actions required to implement AM principles as core business processes throughout the CVRD. This includes how AM information will be communicated to stakeholders, recognizes the importance of striving for continuous improvement, and measuring and monitoring the progress of AM implementation throughout the organization. Successful AM implementation requires the development of standardized data management processes to assess asset information, which will foster a greater understanding of the condition of infrastructure and the financial requirements to maintain clearly defined levels of service. Life cycle management strategies and financial strategies must be applied and aligned at the tactical level, with operational/ budgeting processes and policies. These strategic documents make the connections between all of these organizational requirements for successful implementation of the Corporate SAMP.

2.1 Asset Management BC Framework

The CVRD utilizes the Asset Management BC Framework as its high-level systematic approach to the asset management (AM) planning process (Figure 2). This framework establishes AM as a process of continuous improvement that involves engaging and communicating with internal and external stakeholders to assess financial/technical information of infrastructure to ensure sustainable service delivery. This information forms the Sustainable Service Delivery Plans and strategies, which identify the actions required and roles/responsibilities for the implementation of AM practices. This framework also recognizes that each organization will have unique requirements for AM implementation and that there is not a one size fits all approach.

FIGURE 2 ASSET MANAGEMENT BC – ASSET MANAGEMENT FRAMEWORK

WHY IS THIS IMPORTANT?

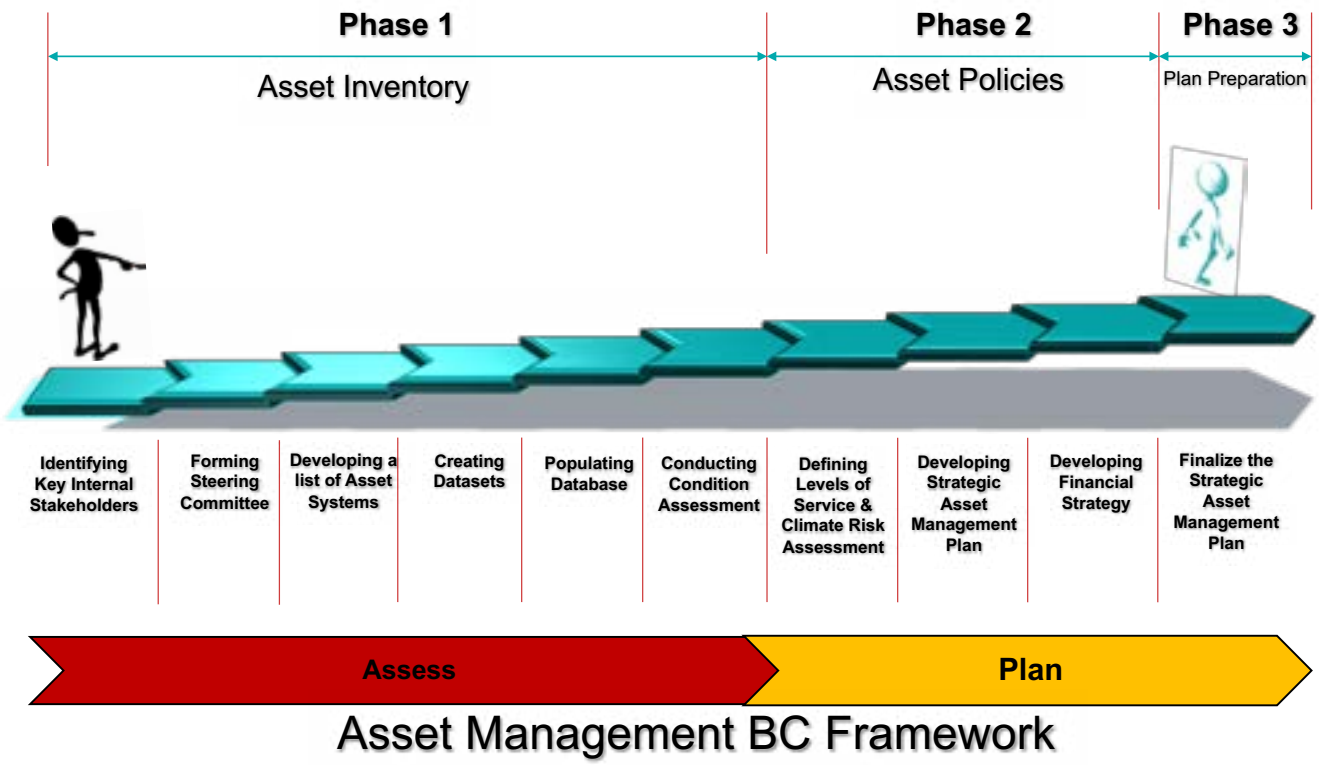
(AM) PROGRAMS. ASSET MANAGEMENT BC PROVIDES GUIDANCE, IDENTIFIES BEST PRACTICES, AND SUPPORTS A NETWORK OF AM PRACTITIONERS TO PROMOTE A CONSISTENT APPROACH TO DEVELOPING AM ACTIVITIES THROUGHOUT BC.

2.2 Our Approach

The CVRDs Asset Management Executive Steering Committee established an asset management planning process with the objective of developing a Corporate SAMP. (Figure 3). Roles and responsibilities were defined and a timeline established. The Asset Coordinator was assigned to ensure there was internal staff capacity dedicated to the completion of the planning process. The CVRDs approach lines up with the first two phases of the Asset Management BC Framework. Phase 1 – Asset Inventory (ASSESS) included establishing a Steering Committee, identifying the Asset Portfolio (i.e. in-scope Asset Systems), refining the Asset Inventory, and conducting condition assessments where resources were available. Phase 2 – Asset Policies (PLAN) has involved defining current Levels of Service, establishing a Climate Risk Assessment Framework, and identifying operational and financial strategies required to prepare the Corporate SAMP.

CVRD staff were able to secure additional resources throughout this process, which has enabled some additional activities (ex. defining of Levels of Service and Climate Risk Assessments). As expected the timeline had to be adjusted to accommodate this scope creep. It has taken approximately 3.0 years, and 75% of a FTE Asset Coordinator to collect the data and prepare the Corporate SAMP with substantial input from operational staff and management. The publication of the Corporate SAMP indicates the completion of the asset management planning process and initiation of the Asset Management Implementation.

FIGURE 3 CVRD APPROACH TO ASSET MANAGEMENT PLANNING



WHY IS THIS IMPORTANT?

EVERY ORGANIZATION MUST DEVELOP ITS OWN PATH TOWARDS INTEGRATION OF ASSET MANAGEMENT AS A CORE BUSINESS PROCESS. A FIRM COMMITMENT FROM THE BOARD AND THE EXECUTIVE LEADERSHIP TEAM, THAT INCLUDES A DETAILED PROJECT PLAN WITH DEFINED SCOPE, APPROPRIATE RESOURCES AND REALISTIC TIMELINES, IS CRITICAL TO THE DEVELOPMENT AND IMPLEMENTATION OF A SUCCESSFUL CORPORATE SAMP.

2.3 Asset Management Objectives

The successful implementation of the Corporate SAMP will achieve the following objectives:

- Improve decision-making accountability and transparency;
- Demonstrate the long-term consequences of short-term decisions;
- Reduce life cycle costs while maintaining appropriate acceptable levels of service;
- Link infrastructure investment decisions to service outcomes; and
- Improve customer service.

2.4 Asset Management Principles

The Corporate SAMP recognizes the following principles to further guide the effective application of asset management (AM) best practices (Table 2). These principles can be applied to further develop AM capabilities and tactical operational procedures and policies at the department and divisional levels.

TABLE 2 AM PLANNING PRINCIPLES

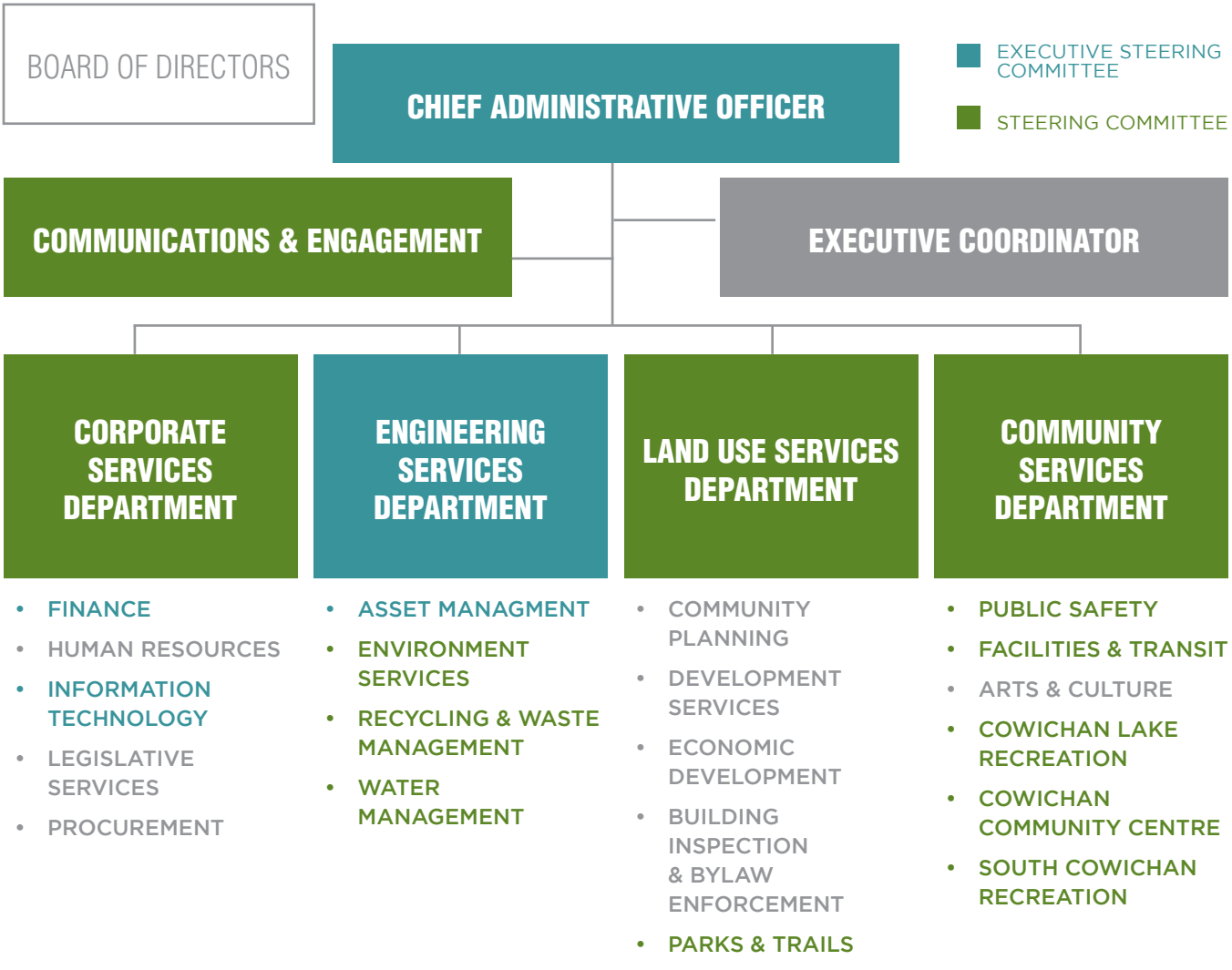
PRINCIPLE	DEFINITION
Customer Focused	The CVRD will have appropriate levels of service clearly defined and apply asset management practices to maintain the confidence of the community in how CVRD assets are managed.
Forward Looking	The CVRD will make the appropriate decisions to ensure assets will meet future challenges, including changing demographics/population, customer expectations, legislative requirements, technology, fuel sources and environmental factors.
Service Focused	The CVRD will consider all the assets in a service context and consider their interrelationships as opposed to optimizing individual assets in isolation.
Risk-Based	The CVRD will manage the asset risk associated with attaining the agreed levels of service by focusing resources, expenditures and priorities based upon risk assessments and the corresponding cost-benefit analysis, recognizing that public safety is the priority.
Value-Based/ Affordable	The CVRD will choose practices, interventions and operations that aim at reducing the life cycle cost of asset ownership, while satisfying agreed levels of service. Decisions are based on balancing service levels, risks and cost.
Holistic	The CVRD will take a comprehensive approach that looks at the big picture and consider the combined impact of managing all aspects of the asset life cycle.
Sustainability	The CVRD will consider social, environmental and economic factors, and implications when making and implementing asset management decisions. The needs of current and future community members will be balanced with the functionality, capacity and quality of the physical and natural assets required to provide the expected level of service over the whole of life of the asset.
Climate Change	The impacts of climate change and other environmental changes are understood, and adaptation, mitigation and compensation strategies will form part of the approach to evaluating actions and alternatives.

2.5 Asset Management Governance

The asset management planning process was initiated with the CAO as the corporate sponsor, and has been guided by the Executive Steering Committee with the General Manager (GM) of the Engineering Services Department as the Project Manager and additional representatives from the Finance and IT Divisions. The Executive Steering Committee provides direction to the Asset Coordinator and keeps the rest the organization informed through meetings of the Asset Management Steering Committee which includes representatives from all Departments/Divisions directly responsible for managing infrastructure required for service delivery (Figure 4). A full list of Steering Committee Members can be found in Appendix A.

Implementation of the Corporate SAMP will require additional responsibilities at the operational levels, which may require a shuffle of the current governance structure.

FIGURE 4 CVRD AM GOVERNANCE STRUCTURE DIAGRAM



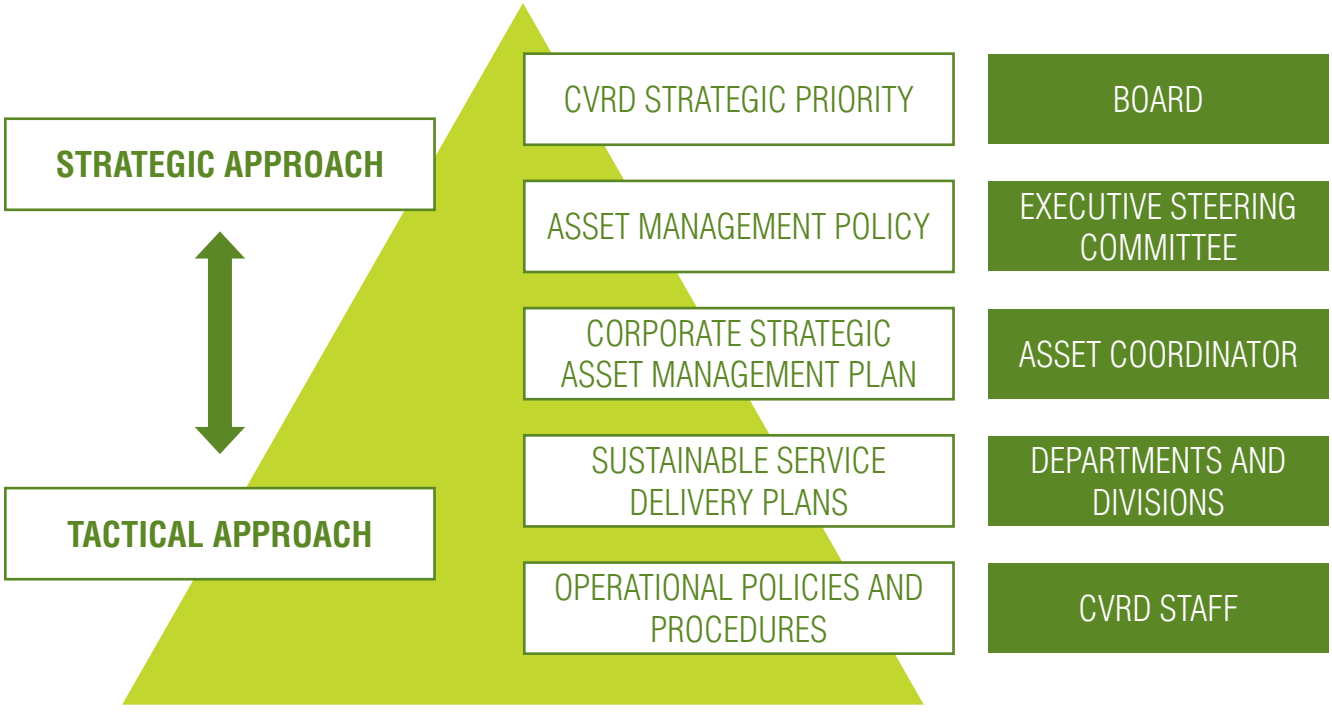
WHY IS THIS IMPORTANT?

HAVING THE CAO AS THE PROJECT SPONSOR IS CRUCIAL TO THE SUCCESS OF ANY CORPORATE WIDE INITIATIVE. THE CAOs LEADERSHIP AND COMMITMENT TO ASSET MANAGEMENT ENSURES INCLUSION OF ALL DEPARTMENTS AND SERVICE AREAS. CLEARLY DEFINED ROLES AND RESPONSIBILITIES WILL BE CRITICAL TO THE SUCCESSFUL IMPLEMENTATION OF THE CORPORATE SAMP.

2.6 CVRD Asset Management Framework

The CVRD Asset Management Framework is a collection of people, processes, tools and resources that is identified in the Corporate SAMP (Figure 5). This framework recognizes a systems approach to strategic planning requirements that guides tactical operational procedures. Coordination between departments is critical as various stakeholders have unique requirements and responsibilities to achieve asset management objectives.

FIGURE 5 CVRD ASSET MANAGEMENT FRAMEWORK



2.6.1 CVRD STRATEGIC FOCUS AREA

The 2014-2018 CVRD Corporate Strategic Plan set the course for CVRD Board and staff. It provides a map and focus areas to help the organization collectively address challenges and opportunities. The development of a Corporate SAMP was an Action identified under the Strategic Focus Area of Sound Fiscal Management. The objective is to achieve the highest degree of value, transparency and accountability in the management of the CVRDs resources. The CVRD will do this by developing a comprehensive plan, strategies and associated policies to ensure sustainability of infrastructure and the services they provide.

WHY IS THIS IMPORTANT?

INCLUDING AM AS A STRATEGIC PRIORITY IS IMPORTANT BECAUSE IT PROVIDES CLEAR DIRECTION TO CVRD STAFF AND MANAGEMENT TO PRIORITIZE ASSET MANAGEMENT PLANNING ACTIVITIES.

2.6.1.1 Strategic Alignment

The CVRD provides many services throughout the region that include a number of strategic documents that should be aligned with asset management principles. Alignment of these important initiatives with the Corporate SAMP will enable effective use of CVRD resources to meet strategic goals and objectives.

POTENTIAL STRATEGIC DOCUMENTS THAT SHOULD BE ALIGNED WITH THE SAMP:

- Cowichan 2050
- Climate Action Plans
- Strategic Energy Management Plan
- Business Continuity Plan
- Emergency Preparedness Plan
- Corporate Risk Management Framework
- Official Community Plans
- Regional Growth Strategy
- Parks Master Plans
- Watershed Master Plans
- Liquid Waste Management Plan
- Solid Waste Management Plan
- Regional Recreation Strategic Plan
- Five Year Financial Plans

WHY IS THIS IMPORTANT?

ALIGNMENT OF ALL STRATEGIC AND OPERATIONAL CORPORATE OBJECTIVES ENSURES THAT THERE IS A COORDINATED AND STRATEGIC APPROACH THROUGHOUT THE ORGANIZATION TO DELIVER SERVICES TO MEET REGIONAL PRIORITIES.

2.6.2 ASSET MANAGEMENT POLICY

The CVRD produced its first Asset Management Policy in 2016, which was refreshed in 2019 to include considerations of the impacts of climate change (Appendix B). This Policy details the CVRDs key objectives for asset management, identifies key strategic documents, and establishes a foundation for the CVRDs Corporate Asset Management Program. The purpose of the policy is to clearly define the overall objectives and direction of the CVRD Asset Management Strategy and the application of continuous improvement in the management of its assets in order to:

- Complete and maintain a structured asset management inventory of current fixed assets including condition and replacement costs;
- Identify the appropriate level of service to meet the community's current and future needs;
- Review asset risk and tolerance to a range of hazards;
- Develop structured financial policies to support ongoing asset management and end of life replacement;
- Ensure that the policy and supporting strategy are adopted across the whole of the organization in an integrated fashion;
- Manage the necessary data as a part of ongoing operational activities; and
- Ensure that assets are managed in a way that supports regional priorities.

The policy identifies the key strategic documents to be presented to the Board and reviewed on a regular basis (Table 3).

TABLE 3 KEY STRATEGIC ASSET MANAGEMENT DOCUMENTS

STRATEGIC DOCUMENT	DESCRIPTION	FREQUENCY FOR REVIEW
Asset Management Policy	Establishes the Board's expectations around the management of the CVRDs assets and infrastructure.	Every Four Years
Corporate Strategic Asset Management Plan	Defines the organization's commitment and approach to achieving the Board's approved policy.	Every Four Years
Levels of Service Framework	Defines the levels to which assets are to be maintained to achieve defined levels of service.	Every Four Years
Condition Assessment Framework	Defines data requirements and methodology to conduct condition assessments.	Every Four Years
Climate Risk Assessment Framework	Identifies climate risks and methodology for identifying vulnerable infrastructure and conducting risk assessments.	Every Four Years
Sustainable Service Delivery Plans	Documents how assets are to be managed, at the tactical level, through their life cycle in support of the delivery of services, and monitors Key Performance Indicators.	Annually
State of the Infrastructure Report	Provides information on the state of the CVRDs physical assets, which can be referenced when making infrastructure asset investment decisions as part of the annual budget and long-range financial planning processes.	Every Four Years

WHY IS THIS IMPORTANT?

THE AM POLICY STATES THE CVRDs ORGANIZATIONAL OBJECTIVES, ROLES AND RESPONSIBILITIES, AND SETS THE DIRECTION FOR CORPORATE SAMP. IT ALSO IDENTIFIES THE KEY STRATEGIC DOCUMENTS OF AN ASSET MANAGEMENT PROGRAM.

2.6.3 CORPORATE STRATEGIC ASSET MANAGEMENT PLAN (SAMP)

The Corporate SAMP has been developed using a systems approach that recognizes the interdependencies between procedures, people and infrastructure that are required for sustainable service delivery. It further identifies the guiding principles that explain how an organization will adopt AM best practices as core business procedures. Preparation of this plan has required the development and documentation of condition assessment framework, climate risk assessment framework and defining the current levels of

service. Furthermore, a tactical approach must be developed which will require preparation of operational plans and procedures at the departmental/divisional level. These tactical documents are referred to as Departmental Asset Management Plans or Sustainable Service Delivery Plans.

WHY IS THIS IMPORTANT?

THE CORPORATE SAMP DEFINES THE CVRDs COMMITMENT AND APPROACH TO ACHIEVING THE ASSET MANAGEMENT (AM) OBJECTIVES OUTLINED IN AM POLICY.

2.6.4 SUSTAINABLE SERVICE DELIVERY PLANS

These tactical plans will guide the day-to-day activities of staff and contractors to help ensure sustainable service delivery. They will ensure the activities outlined within the Corporate SAMP will be implemented at the divisional level. This will enable the inclusion of unique operating and financial considerations within each department. Templates, which will be developed with regular reporting requirements, will include data from asset inventories related to condition assessments and long term financial plans, key performance indicators linked to defined levels of service, risk assessments, and other requirements developed in the life cycle and financial management strategies.

TABLE 4 SUSTAINABLE SERVICE DELIVERY PLANS

Asset System	# of Sustainable Service Delivery Plans
Recreation Centres	3
Community Centres	2
Community Halls	5
Administration	1
Public Safety	6 Fire Halls & 7 Communications Networks
Parks and Trails	8 Regional Parks & 9 Community Parks (by Electoral Area)
Waste Management	3
Water Systems	19
Sewer Systems	16
Ornamental Street Lighting	1
Transit	1
Total	**81**

WHY IS THIS IMPORTANT?

DEPARTMENTAL ASSET MANAGEMENT PLANS (OR SUSTAINABLE SERVICE DELIVERY PLANS) DOCUMENT HOW ASSETS ARE TO BE MANAGED THROUGHOUT THEIR LIFE CYCLE AND INCLUDES THE REGULAR REPORTING OF KEY PERFORMANCE INDICATORS IN SUPPORT OF SUSTAINABLE SERVICE DELIVERY.

2.7 Communications Plan

Fostering a culture that embraces AM practices requires the support and buy-in from CVRD staff, senior management and the Board of Directors. Additionally the broader community must understand the role AM plays in supporting strategic decision making regarding infrastructure investments. This will be accomplished through the launch of an AM Communications Plan that provides AM information in various forms to the various stakeholder groups, providing resources are available (Table 4). Content of this communications strategy could include general AM information, to detailed progress updates of AM milestones.

TABLE 5 AM COMMUNICATIONS PLAN

	STAKEHOLDER GROUP	STRATEGY	CONTENT	LEVEL OF IMPACT	RESOURCES	FREQUENCY
INTERNAL	Board of Directors	Annual Report / Presentation	General Info/Milestones/ Key Strategic Documents	High	$	Annually
	Senior Management Team	Quarterly Progress Updates	General Info/Milestones/ Key Strategic Documents	High	$	Quarterly
	Management	Progress Updates	General Info/Milestones/ Key Strategic Documents	Medium	$	Quarterly
	Staff	Presentations/ Surveys/ Workshops/ Training	General Info/Milestones/ Key Strategic Documents	Medium	$	As Required
EXTERNAL	Customers	Survey/ Workshops/ Kiosk/Website/ Presentations/ Community Meetings/ Letters/Videos/ Social Media	Specific Asset System Info/ Levels of Service/ Key Strategic Documents	High	$$$	As Required

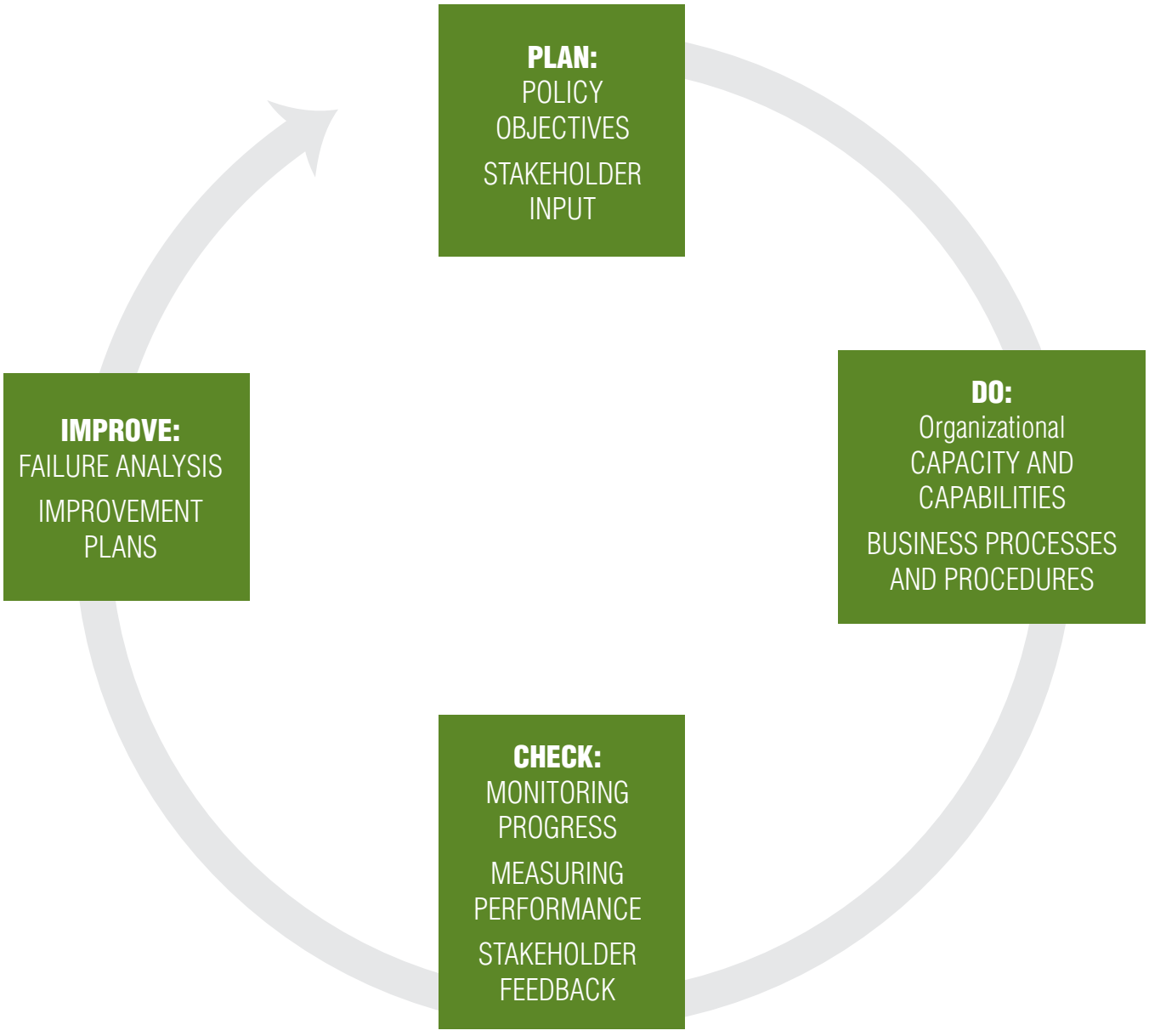
WHY IS THIS IMPORTANT?

A COMMUNICATIONS PLAN IDENTIFIES WHAT INFORMATION NEEDS TO PRESENTED TO VARIOUS STAKEHOLDERS, HOW THE INFORMATION SHOULD BE PRESENTED AND WITH WHAT FREQUENCY. THIS WILL ENHANCE STAKEHOLDER KNOWLEDGE OF ASSET MANAGEMENT (AM) PRACTICES AND PROVIDE A MEANS FOR STAKEHOLDERS TO PROVIDE MEANINGFUL INPUT TO ACHIEVE AM OBJECTIVES.

2.8 Continuous Improvement

Continuous improvement is a key component of the Corporate SAMP. This will ensure appropriate resources are committed to improve service delivery and to support the implementation of Corporate SAMP. The Continuous Improvement Process establishes four steps to generate iterative improvements and facilitate responsible adaptation to change (Figure 6).

FIGURE 6 THE CONTINUOUS IMPROVEMENT PROCESS



2.9 Performance

Defining and monitoring asset management (AM) performance is necessary to understanding the CVRDs progress towards developing AM capabilities throughout the organization. This process has two components:

1. The act of measuring and monitoring outcomes that were achieved.
2. The comparison of achieved outcomes with intended outcomes and communication of the results.

The performance analysis will help determine if any action items need to be re-evaluated, and could include refining the objectives and/or re-assessing the scope, schedule, and budget of identified activities.

The CVRD has identified two approaches to measuring performance of a Corporate Asset Management Program:

1. Monitoring progress towards achieving the activities outlined in the Implementation Plan, and
2. Assessing AM maturity throughout the organization.

WHY IS THIS IMPORTANT?

DEFINING AND MONITORING PERFORMANCE TOWARDS ACHIEVING ASSET MANAGEMENT (AM) OBJECTIVES ENABLES THE CVRD TO TRACK PROGRESS AND ASSESS ORGANIZATIONAL AM CAPABILITIES.

2.9.1 MONITORING PROGRESS

Implementation of the Corporate SAMP can be monitored by measuring the progress towards completion of activities identified in the Implementation Plan. Completion of activities on time and budget will indicate progress towards implementation and that assigned budgets and resources are appropriate.

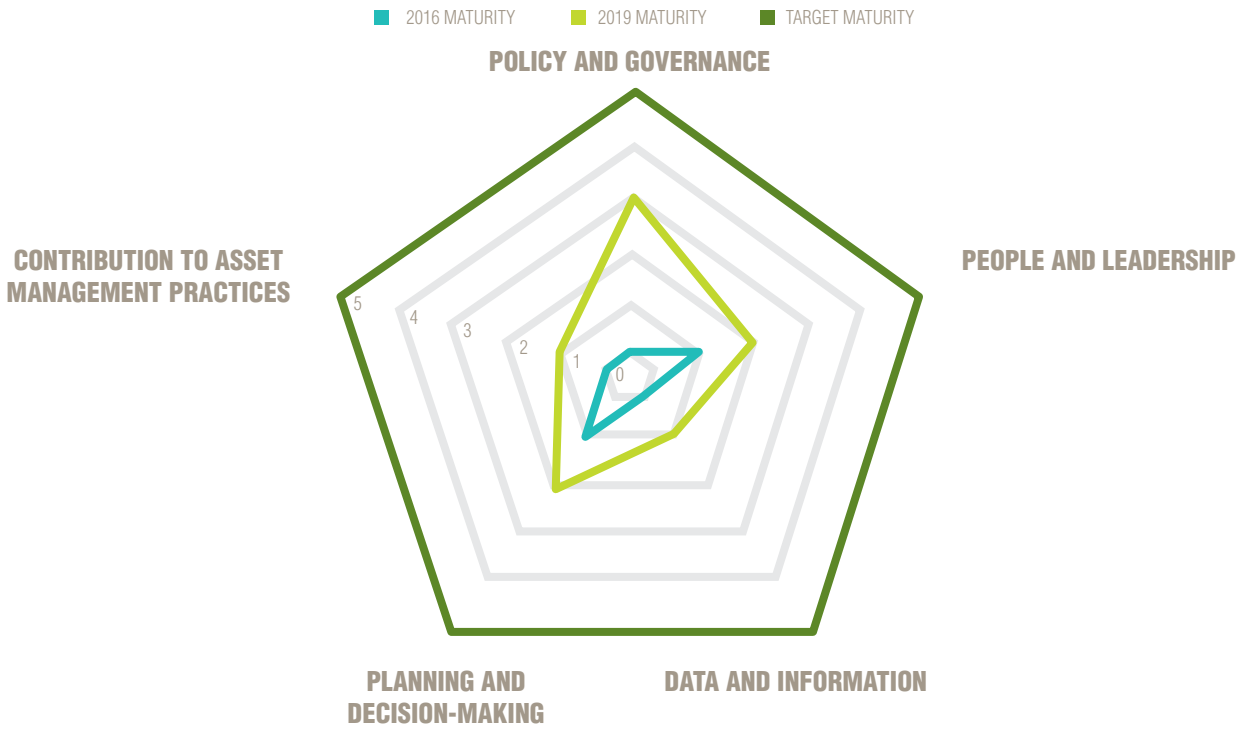
2.9.2 ASSET MANAGEMENT MATURITY

AM maturity is an indication of the level of knowledge and AM practices that exist within an organization. AM maturity should be regularly measured and reported at the departmental/divisional level and then tabulated for a corporate result. AM maturity will be monitored using an established method (Appendix C). The Federation of Canadian Municipalities – Asset Management Readiness Scale is a tool that an organization has developed to gauge its AM maturity in the following competency areas:

- Policy and Governance
- People and Leadership
- Data and Information
- Planning and Decision-Making
- Contribution to Asset Management Practices

Each competency area is given a ranking from one to five, where level one is just getting started, and level five is a holistic AM program. When we apply this methodology at the corporate level, our current maturity consists of ones and twos (Figure 7). This scale can be used to monitor the CVRDs progress towards integration of AM practices throughout the organization, but should be recognized that this is a long term commitment and achieving level five maturity across all competency areas will take a concerted effort and will depend on the continued support from the Board and the availability of resources.

FIGURE 7 CVRD ASSET MANAGEMENT CURRENT AND TARGET MATURITY LEVELS



2.10 Limitations

The Corporate Strategic Asset Management Plan was developed with the best available information and assumptions using professional judgement to address gaps when required.

Assumptions made during the preparation of the Corporate SAMP include:

- Installation dates if they were unavailable;
- Total Replacement Cost Valuation was estimated by combining various sub-components (such as structural, electrical, and mechanical);
- Use of age-based condition assessment in the absence of actual condition information; and
- Estimates of costs based on professional judgment where cost information was unavailable.

Limitations encountered during the preparation of the Corporate SAMP include:

- Unique approaches to managing assets between Departments and Asset Systems;
- Lack of consistent data management practices; and
- Limited integration between the software systems (ex. Finance, GIS, work orders).

Strategic Risks

The failure to implement the Corporate SAMP would result in reduced opportunities to maximize value from infrastructure assets. Additionally, the lack of a coordinated and strategic approach to implementation may result in the inability to sustain existing levels of service and increased risk due to lack of planning. The strategic risks associated with the successful implementation of the Corporate SAMP have been identified in the following table. The mitigation actions listed in the table have been incorporated in the Corporate SAMP Implementation Plan.

TABLE 6 STRATEGIC RISKS OF AM IMPLEMENTATION

NO.	RISK	POTENTIAL IMPACT	MITIGATION ACTION
1.	Failure to implement the Corporate SAMP	Failure to sustain service levels and renewal of critical infrastructure.	Implement the Corporate SAMP.
2.	Failure to get Board Approval	It will be difficult to implement the Corporate SAMP and achieve AM objectives.	1. Develop Communications Plan to ensure Board has received adequate information related to AM activities and that they receive regular status/progress reports. 2. Clearly Define Board's Roles and Responsibilities.
3.	Failure to get community support	Residents unwilling to pay costs associated with sustainable service delivery.	1. Develop Communications Plan to ensure the community has received adequate information related to AM activities. 2. Clearly define Levels of Service.
4.	Unclear Roles and Responsibilities	Overlapping and inefficient efforts by staff.	Clearly document roles and responsibilities and communicate them to appropriate stakeholders.
5.	Undefined Levels of Service	Unclear expectations from all stakeholders.	Define Levels of Service and seek stakeholder input.
6.	Unable to adequately assess risk	Unexpected asset failures and unsustainable service delivery.	Develop a Corporate Risk Management Framework which provides direction with regard to risk prioritization, identification, risk assessments, and risk thresholds.
7.	Too many AM initiatives	Progress of Corporate SAMP implementation and AM maturity will be restricted. Staff may be overwhelmed with change intiatives.	Employ Project Management strategies to implement AM Actions. Breakdown actions into smaller components, revise scopes, budgets and schedules when appropriate.

WHY IS THIS IMPORTANT?

IDENTIFYING STRATEGIC RISKS ASSOCIATED WITH ASSET MANAGEMENT IMPLEMENTATION AND THE ACTIONS TO REDUCE THOSE RISKS IS A CRITICAL RISK MANAGEMENT PROCESS.

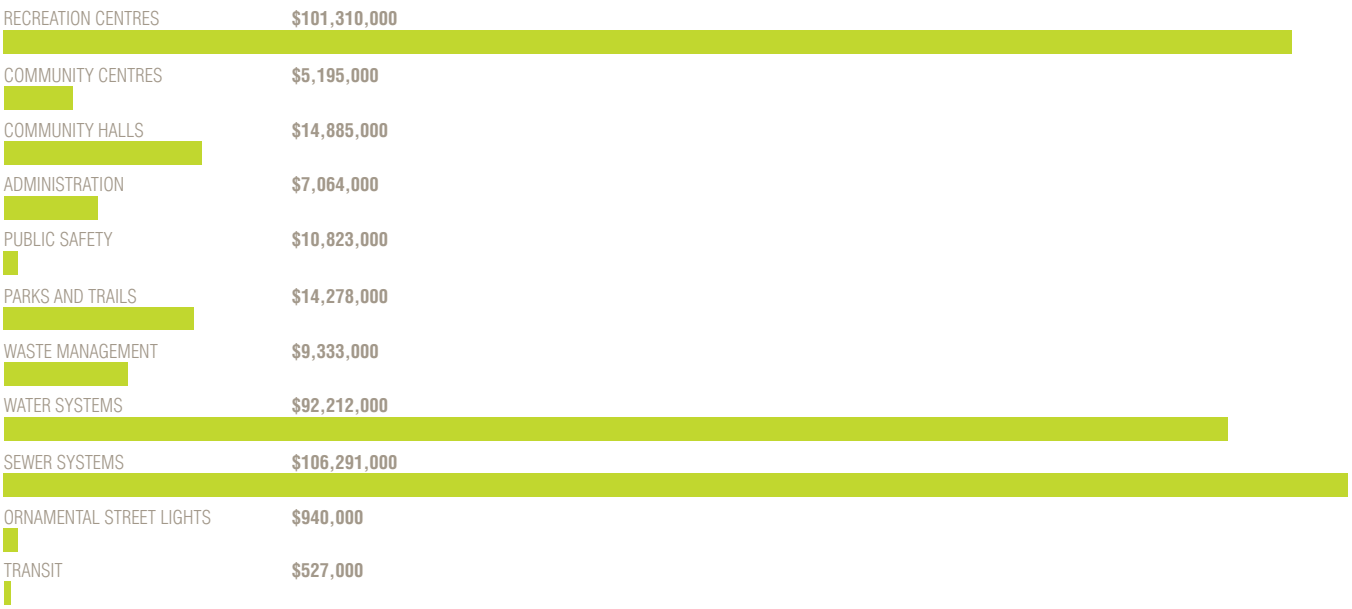
State of Infrastructure

The State of Infrastructure is a summary of the CVRDs asset inventories, replacement values and condition assessment results (Appendix D). The remaining useful life of a given asset is determined either based on its age or its condition assessment. This information can be used to forecast renewal requirements for each Asset System. The CVRD has developed a condition assessment framework for the asset portfolio that defines data collection requirements for the asset inventories.

4.1 Replacement Cost Valuation

Engineering consultants have estimated the total replacement value for each CVRD Asset System, with staff input when required. These values, or probable costs, are an indication of possible cost of remedial/renewal work based on the estimated useful life of an asset and combined total cost of individual components. These costs are based on replacing like-with-like, past repairs of the asset system, and professional judgement. Future replacement costs could also be impacted by changes in levels of service, improvements to functionality, updates to codes/standards, regulations, advancements in technology, and increasing construction costs. The total replacement value of CVRD infrastructure included within the scope of this report is $362,858,000 (Figure 8).

FIGURE 8 CVRD REPLACEMENT VALUES BY ASSET SYSTEM AS OF 2018



The following components of asset systems have not been included in the replacement value estimations: land value, contaminated sites, parking lots, and other site improvements. Replacement values for some of the Asset Systems excluded from this analysis were estimated from the CVRDs 2018 tangible capital asset reporting requirements: Fleet ($9,900,000), Drainage Systems ($3,284,000), and Information Technology Systems ($1,286,000). These replacement values will continue to be refined in future iterations of the Corporate SAMP.

4.2 Asset Condition Assessments

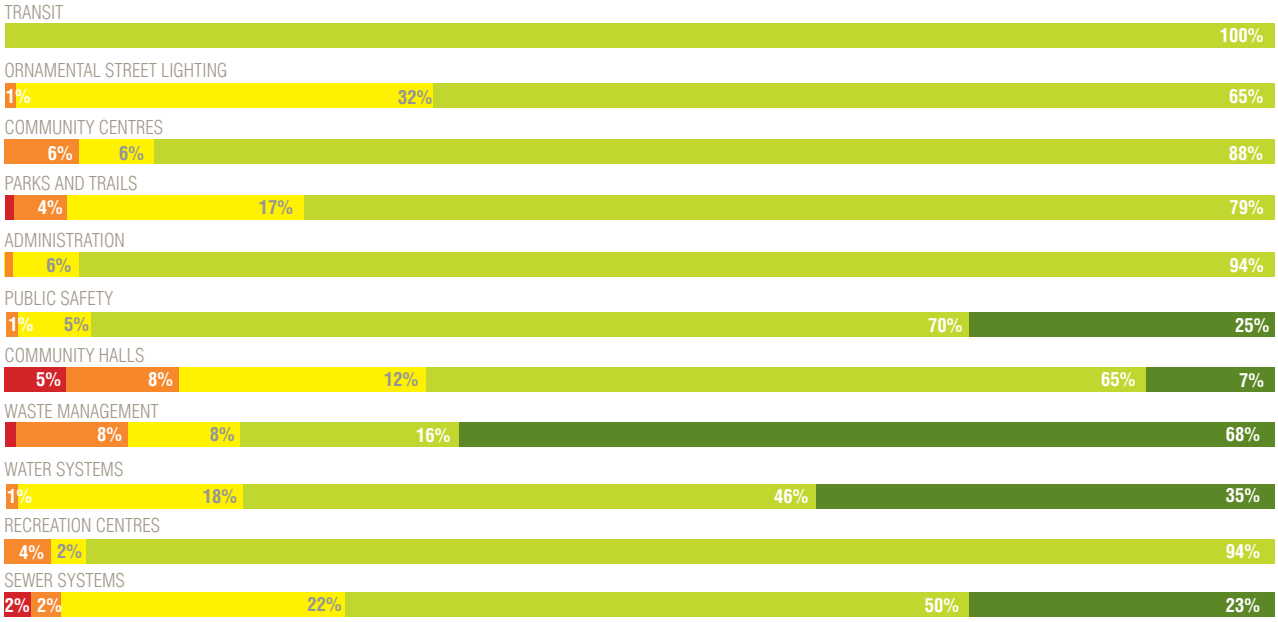
The condition assessments of CVRD infrastructure involved engineering consultants working with CVRD staff to first review existing documents, drawings, plans, maintenance records and then visually inspecting CVRD infrastructure. The complete condition assessment framework can be found in Appendix E. A simple condition rating scale was established to provide a standardized framework for comparative analysis within asset systems. The generalized condition rating scale used for these assessments assigned a rating of one through five for each component of the asset system (Table 7), where one is considered in very poor condition and five is in very good condition. Condition ratings were then assigned to the various components of each asset system using a similar condition ranking matrix specific to the asset system.

TABLE 7 PHYSICAL CONDITION RATING SYSTEM

Condition	Description
5 – Very Good	Well maintained, still in new condition, fit for future.
4 – Good	Acceptable, approaching mid stage of expected service life. Minor Defects only - adequate for now.
3 – Fair	Signs of deterioration, some elements show deficiencies. Requires attention. Maintenance required to return to accepted service level.
2 – Poor	Approaching end of service life, condition below standard. Increased potential of affecting service. Consider renewal - asset at risk of failure.
1 – Very Poor	Near or beyond expected service life, significant signs of advanced deterioration. Unfit to sustain service delivery.

When the conditions of each asset system's components are graphed as a percentage of total replacement value it shows that all CVRD asset systems are in good condition (Figure 9). This reflects the work that the CVRD staff has done to maintain assets in good repair whenever possible.

FIGURE 9 ASSET SYSTEM CONDITIONS AS PERCENTAGE OF TOTAL REPLACEMENT VALUE AS OF 2018



Now that the CVRD has an established framework for condition assessments, it will be the responsibility of each department/division to conduct condition assessments on a regular basis, with the assistance of the Asset Coordinator. This activity can be completed in-house when operational staff are in the field using the developed methodology, or could be contracted out if resources are available.

4.3 Useful Life of Assets

The useful life of an asset is defined as the period over which as asset or a component of the asset is expected to deliver the defined level of service. Considering the variety of services provided by the CVRD, the estimated useful life of the supporting assets range from a couple of years to several decades. A solid understanding of useful life is required to support long-term planning as similar componets of an asset system may have different useful lives depending on environmental conditions as well as other variables such as different materials and construction methods.

In general, the useful life of an asset provides baseline for potential replacement. It is also very important to note that most assets are not renewed or replaced just based on expected useful life, but a combination of the the physical condition, functionality and performance.

Levels of Service

If asset management is the business practice of balancing the competing priorities, while meeting the determined service level, at the lowest life cycle cost, then Levels of Service (LoS) are the outcomes that an organization delivers. They are key drivers for decisions on future investments in infrastructure assets. As such, they need to be clearly articulated in terms that end users and decision makers can understand. Having well defined Levels of Service will allow the CVRD to work with all stakeholders, from ratepayers to the Board, to staff, to find an appropriate balance between affordability and community expectations. The CVRD has established a Levels of Service Framework to define existing Levels of Service. The process involved facilitated workshops with staff to:

1. Identify all stakeholder groups;
2. Develop service statements to define the types of services provided for user groups;
3. Establish performance measures that could be used to quantify or qualify the delivery of services;
4. Identify factors that could influence future forecasts related to the types, quantities, or quality of services provided;
5. Review of historical surveys to gauge customer satisfaction; and
6. Develop a Levels of Service Engagement Plan to inform all stakeholders, and stimulate further analysis of future levels of service expectations.

In the context of managing the CVRDs assets and supporting growing communities, there is a need to understand the long term financial and operational obligations associated with the acquisition of new infrastructure and increased Levels of Service.

Infrastructure expansion should be strategically planned, as every new asset that is added will increase the funding challenges related to managing existing assets due to the costs of operating, maintaining, rehabilitating and eventually replacing or disposing of the assets. This includes assets that are donated as part of a new development or paid for with development fees as the ongoing operational and life cycle costs will be the responsibility of the CVRD. It is generally accepted in the asset management world that the capital cost of new infrastructure is approximately only 20% of the total lifecycle costs of that asset. The other 80% covers the operational and maintenance expenses required to maximize the useful life of the infrastructure. The complete Levels of service Framework can be found in Appendix F.

WHY IS THIS IMPORTANT?

CLEARLY DEFINED LEVELS OF SERVICE HELPS MANAGE STAKEHOLDER EXPECTATIONS, ESTABLISHES THE COMMUNITIES' WILLINGNESS TO PAY FOR AND GAUGES SATISFACTION WITH CVRD SERVICES.

5.1 Levels of Service - Performance Measures

Levels of Service Performance Measures indicate the stakeholder's experience from the service that is delivered. For each performance measure, a target value is set to define the level of service. Comparison of performance delivered (measured results) to performance targets (target values) will assist CVRD in strategic planning, operational, and investment decisions.

Performance Criteria may be defined by one or more performance measures. For each Asset System, the performance criteria listed for the various service statements were developed and specific performance measures were identified.

Service statements were summarized based on key Performance Criteria that would describe the key intent that these service statements would represent and the kinds of Performance Measures that would relate to these criteria. The following are the Performance Criteria were defined as follows:

1. Access - Statements that speak to access to the service for users, including availability of the service, scope of the service, and other factors that would enable users to utilize the infrastructure
2. Financial - Statements that speak to financial aspects of the service, including costs, budgets, affordability, and rates
3. Quality - Statements related to the quality of the service
4. Reliability - Statements related to how reliable the service or infrastructure is in the community
5. Safety - Statements that speak to the safety related criteria or expectations
6. Satisfaction - Statements relating to how satisfied the users are with the service

Potential performance measures were identified for each service area and linked to the appropriate stakeholder group(s). Many of these measures are currently tracked or can be tracked from current operating data or inventory records. Some measures may require additional information to be collected or processed to monitor the performance measures. Further work will be required to identify the metrics and values representing current service levels, and to identify the target metrics that will define future Levels of Service for each service area. It will be the responsibility of each division to track these measures annually.

WHY IS THIS IMPORTANT?

ESTABLISHING PERFORMANCE MEASURES FOR LEVELS OF SERVICE WILL ENABLE THE CVRD TO MONITOR AND MEASURE EXISTING SERVICE LEVELS.

Life Cycle Management Strategies

It is no surprise that different Life Cycle Management Strategies are required for each Asset System, but even within a single Asset System, multiple strategies may be applied to the individual components. These management strategies vary depending on identified risks to the service, various operating conditions, and where the asset lies in its life cycle. Typically, when an asset is still relatively new or recently renewed, the interventions consist of monitoring and minor maintenance. Then as it gets older and routine maintenance can no longer ensure the provision of the intended service, the types of interventions may migrate towards more significant maintenance, actions such as renewal/rehabilitation or even replacement. Deferring or not funding these interventions can reduce the service life of a given piece of infrastructure.

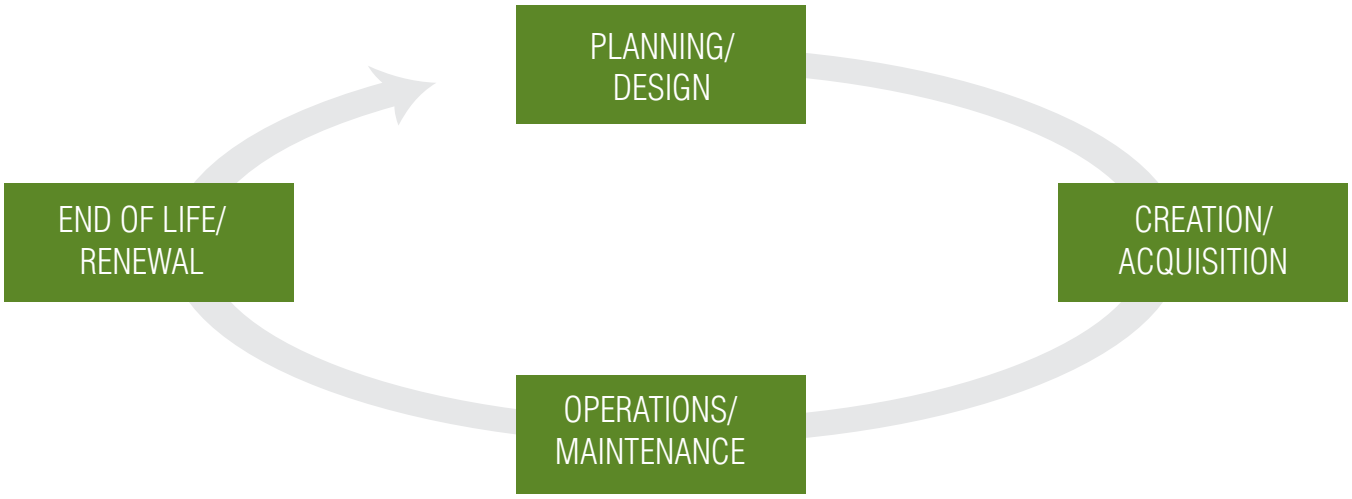
The CVRD needs an integrated planning framework that connects the corporate level strategic documents and initiatives with operational asset management practices. This crucial step ensures the awareness and application of good asset management practice at all stages of an asset's life cycle from design to disposal, and even when planning for the acquisition of existing infrastructure (ex. take over of existing utilites).

The Departmental/Divisional Asset Management Plan (or Sustainable Service Delivery Plan) is a tactical document that will link the CVRDs AM objectives with day-to-day activities such as inspection, operation, maintenance, repair, and record keeping for each asset system.

6.1 Life Cycle of an Asset

Asset management principles apply to the entire life of a given asset. There are four high-level stages of an asset's life cycle (Figure 10). The choices made at each stage of the life cycle will impact the next stages. The requirements for each stage should be developed with asset management principles in mind and consideration of relevant stakeholders including end users and operational staff. It is important that decision makers consider the costs at each stage of life cycle because the creation/acquisition costs generally have the highest visibility, but the total cost of ownership will typically be significantly more.

FIGURE 10 THE LIFE CYCLE OF AN ASSET



6.2 Planned Actions

A set of Planned Actions will enable the Asset Systems to provide the desired Levels of Service, while managing risk at the lowest life cycle cost. The Planned Actions have been identified in the following table:

TABLE 8 PLANNED ACTIONS FOR LIFE CYCLE MANAGEMENT

PLANNED ACTION	DESCRIPTION
1. Non-infrastructure Solutions	These solutions or policies can lower the cost or extend the asset life. For example, better integrated infrastructure planning & land use management, climate change, insurance, optimized processes, managing failures, etc.
2. Maintenance Activities	These activities include regularly scheduled inspection & maintenance, more significant repairs, and activities associated with unexpected events or emergencies.
3. Renewal/ Rehabilitation Activities	These activities include significant repairs that are required to extend the life of an asset, ex. lining of a cast iron water main can defer the need for replacement.
4. Replacement Activities	These activities are expected to happen once an asset reaches the end of its useful life and when renewal/rehabilitation is no longer an option.
5. Disposal Activities	These activities are associated with disposing of an asset once it reaches the end of its life or the local government no longer needs it.
6. Expansion Activities	These are planned activities that are required to extend services to an un-serviced area. Expansion of a service is also required to meet growth demand.

6.3 Decision Making and Project Prioritisation

Currently there is no structured decision-making or project prioritization approach within the CVRD. The Corporate SAMP recognizes the need for a transparent and data driven decision making process and project prioritization framework.

The CVRD is striving to improve this process and has identified the following approaches to enhance the decision-making and project prioritization process.

- Life Cycle Cost Analysis
- Triple Bottom Line Assessments
- Risk Based Decision Making

At present, the CVRD has been using Condition Assessment information to inform the budget process, where infrastructure in 'very poor' or 'poor' condition, has been prioritized. Further work will be required to establish a decision-making process and project prioritization framework.

DIRECT BENEFITS:

- Operational efficiencies and network effects
- Maximized asset life cycles
- Reduced risk of injury
- Reduced environmental impacts
- Resilient Infrastructure

INDIRECT BENEFITS:

- Wellbeing and health
- Amenity values
- Values of historical / cultural/ ecological significance
- Reputation of the regional district

6.4 Project Management

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. A project has a defined beginning and end in time, is not a routine operation, and therefore has defined scope and resources. The CVRD currently lacks a coordinated approach to project management. A standardized approach to project management that incorporates the principles of asset management would result in:

- Better control of financial, physical, and human resources;
- Improved customer relations;
- Shorter development times; and
- Lower costs.

A CVRD Project Management Handbook has been initiated with the goal of achieving these results (Appendix G).

WHY IS THIS IMPORTANT?

A TRANSPARENT AND CONSISTENT DECISION MAKING APPROACH WILL ENABLE THE BOARD AND STAFF TO IDENTIFY INVESTMENT NEEDS AND POTENTIAL BENEFITS OF INVESTMENT USING A COMMON LENS.

6.5 Data Management

The CVRD is a complex organization with over 180 functions, supporting unique Asset Systems and the delivery of services. Keeping track of historical data, and even current data, is a challenge. Current asset management (AM) data management is conducted primarily in excel spreadsheets, and a Tangible Capital Asset Database, with some asset systems slowly migrating towards GIS. As data drives AM decision making and prioritization, the quality of those decisions will depend on the quality of the data. Data is quickly becoming a critical asset, key to the successful implementation of the Corporate SAMP. The data management objectives are to establish one true source of data for all infrastructure information (ex. condition assessments, maintenance schedules, budgets, construction drawings, photos, reports, inspections etc.) and implement records management best practices. A single database that contains a geo-referenced asset inventory linked to the financial data will ensure quality data is available to inform decision making. This database will also improve operational efficiency once new work flows are established. To achieve this, the CVRD will, confirm data management roles and responsibilities related to asset inventories, continue to migrate asset inventories to GIS and establish requirements for AM software package, planning for its eventual implementation.

WHY IS THIS IMPORTANT?

GOOD DECISIONS RELY ON GOOD DATA. ESTABLISHING DATA MANAGEMENT PROCEDURES AND ONE SINGLE DATABASE THAT CONTAINS ALL ASSET MANAGEMENT INFORMATION WILL ENSURE QUALITY DATA IS AVAILABLE AND MAINTAINED TO INFORM DECISION MAKING.

6.5.1 ASSET INVENTORIES

Asset inventories are a record of asset information. The inventory identifies the individual components of the Asset System and includes attributes such as: quantity, type, replacement cost, condition, and estimated useful life. This information is currently stored in individual excel files, which makes analysis difficult and quality control challenging. It is expected that data requirements (ex. functionality, criticality) will continue to evolve as our organizational capacity for data management improves over time. It is important that asset owners take responsibility for their asset inventories as they should be updated regularly and used for annual reporting, developing budgets and establishing five year financial plans. Some components of assets still need to be included in the asset inventories (Table 9). Additional time and resources will be required to complete asset inventories for the Asset Portfolio.

TABLE 9 EXCLUDED COMPONENTS OF ASSET SYSTEM'S REPLACEMENT VALUES

ASSET SYSTEM	EXCLUDED REPLACEMENT VALUES
Recreation Centres	Land Value, Parking Lots, Playing Fields, and other Site Improvements
Community Centres	Land Value, Parking Lots, and Site Improvements
Community Halls	Land Value, Parking Lots, and Site Improvements
Administration	Land Value, Parking Lot
Public Safety	Land Value, Parking Lots, Site Improvements, and Emergency Communications Network
Parks and Trails	Land Value, Newer Infrastructure, Parking Lots, Trails, Culverts and other Site Improvements
Waste Management	Land Value, Parking Lots, Site Improvements, and Contaminated Sites
Water Systems	Land Value, Parking Lots, and Site Improvements
Sewer Systems	Land Value, Parking Lots, and Site Improvements
Ornamental Street Lighting	Underground Infrastructure
Transit	None

6.5.2 GIS

GIS (geographic Information systems) is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. The CVRDs GIS Division has been providing these services to the organization for many years. Best practices indicate GIS as the logical and most effective place to store asset management (AM) information, especially for linear assets such as underground pipes, or park trails. The alignment of the GIS Division with AM practices will require additional training and dedicated resources.

6.5.3 ASSET MANAGEMENT SOFTWARE

Asset management (AM) software is typically a georeferenced asset inventory database capable of complex financial analysis/reporting and can even be linked to work orders and maintenance tracking. There is a wide range of AM software packages currently available, everything from open source applications that are inexpensive and are great for small communities with relatively simple infrastructure requirements to enterprise solutions that link financial information directly to the asset inventory and a GIS database. These packages can also include mobile applications that will modernize operational procedures and enable quality real time data collection. Although some growing pains are to be expected, the implementation of an AM software package is expected to increase the efficiency and reliability of AM business practices.

6.6 Workforce Capability

Staff have been identified as the CVRDs most important asset. CVRD staff is responsible for the tactical delivery of services, which is generally accomplished with limited resources. Staff has been managing assets for years, but applying the principles of asset management (AM) to achieve organizational objectives is a relatively new concept. Advancing AM capabilities throughout the organization will require staff participation and engagement. Providing the knowledge and skills required for effective AM has been done internally through the AM Steering Committee, however select staff have been involved in external AM training activities to enhance their individual capabilities. A balanced approach to staff training that includes a combination of internal and external opportunities will be necessary to develop mature AM practices throughout the organization.

6.7 Business Processes

A business process is a series of steps performed by a group of stakeholders to achieve a concrete goal. The CVRD lacks a formalized approach to developing business processes. The development of business processes throughout the organization would:

- Identify what tasks are important to meet organizational objectives;
- Clarify communication between people/functions/departments to accomplish specific tasks; and
- Establish standardized procedures to complete tasks.

The establishment of business processes of CVRD core functions would not only increase the efficiency of day-to day tasks but also improve staff satisfaction as tasks and accountabilities are clearly defined.

6.8 Land Use Planning

The CVRD is currently in the process of modernizing the Official Community Plans (OCPs) of the Electoral Areas. This presents an opportunity to embed Asset Management (AM) principles to achieve desired objectives within the OCPs. Encouraging compact developments and the expansion or amalgamation of existing infrastructure, over the creation of new infrastructure, will make implementing AM practices more achievable.

6.9 Risk Management

A core component of Asset Management (AM) decision-making is understanding service delivery risks. Risk management can be a complex subject, covering everything from purchasing insurance to Business Continuity, to project prioritization. A Corporate Risk Management Framework must be established to identify corporate risk management objectives, priorities, methodologies, roles and responsibilities, and resource requirements.

Although a framework for assessing climate risks of CVRD infrastructure has been developed, there are other risk management activities to ensure AM objectives will be achieved. It was also recognized that risk assessments, at the asset system level, must include all risks (financial, operational, health and safety etc.) to obtain a full understanding of potential risks to service delivery.

6.9.1 CLIMATE RISK ASSESSMENTS

The CVRD has established a framework for conducting risk assessments of climate change impacts on CVRD infrastructure. The Climate Risk Assessment Framework establishes a methodology to identify vulnerable asset systems and assess risks (Appendix H).

Climate impacts related to increased storm activity, flooding, extended droughts, sea level-rise, and wildfire have been identified for the region. These events will impact each asset system differently, and a process to prioritise mitigation activities must be established. Using GIS to screen infrastructure vulnerable to sea level rise, flooding and wildfires has been completed. The identified asset systems must complete a climate risk assessment. A list of vulnerable CVRD infrastructure can be found in Appendix I.

WHY IS THIS IMPORTANT?

UNDERSTANDING CLIMATE CHANGE IMPACTS TO CVRD IS CRITICAL TO ENSURE SUSTAINABLE SERVICE DELIVERY. SIGNIFICANT RISKS TO INFRASTRUCTURE CAN BE PRIORITIZED AND A COORDINATED EFFORT CAN BE ESTABLISHED, THROUGH ADAPTATION AND MITIGATION, TO REDUCE THOSE RISKS.

6.10 Climate Action

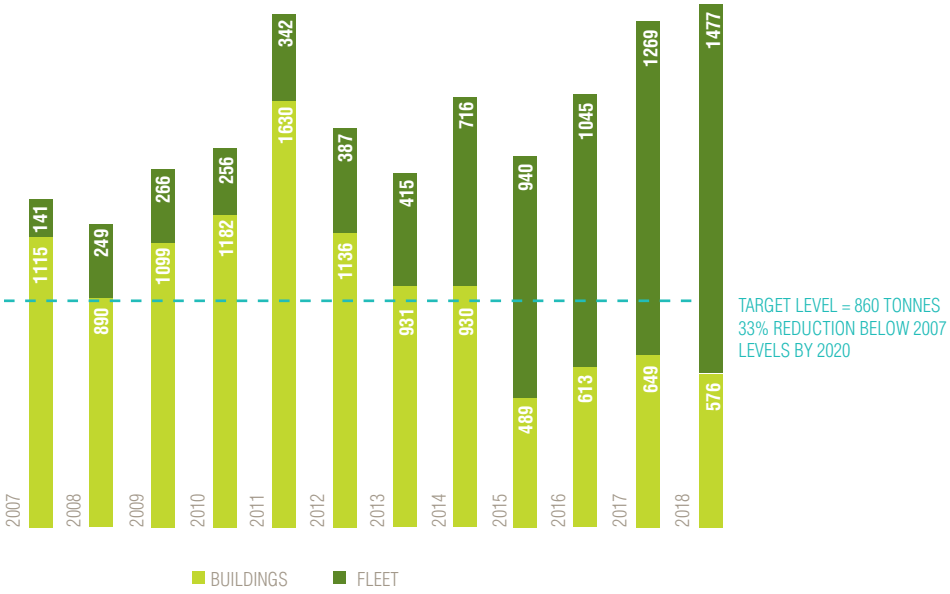
The CVRD is required to report on corporate greenhouse gas emissions, as signatory to the Climate Action Charter. The joint Provincial-UBCM Green Communities Committee has established a common approach to determining carbon neutrality for the purposes of the Climate Action Charter, including a Carbon Neutral Framework and supporting guidance for local governments on how to become carbon neutral. The framework includes the following four steps:

1. Measure your total corporate GHG emissions;
2. Reduce them where possible;
3. Balance the remaining emissions through the purchase of carbon offsets and / or through investments in local GHG reduction projects; and
4. Report to your public on the actions you have taken.

Through the establishment of voluntary offset credits from the yard and garden waste diversion program ,the CVRD is able to balance corporate GHG emissions and has claimed carbon neutral status since 2012.

The 2018 CVRD GHG inventory includes emissions from fleet and buildings (Figure 11). Total emissions for the 2018 calendar year were 2,015 tCO2e. The increase in emissions from the baseline is primarily due to an increase in emissions associated with the CVRD fleet and contracted services (ex. solid waste transportation).

FIGURE 11 CVRD CORPORATE GREENHOUSE GAS EMISSIONS 2007-2018



Climate action also includes supporting the creation of complete, compact, energy efficient rural and urban communities, which must be addressed in the modernization of CVRD official community plans and through the implementation of a community energy plan.

6.10.1 ENERGY MANAGEMENT

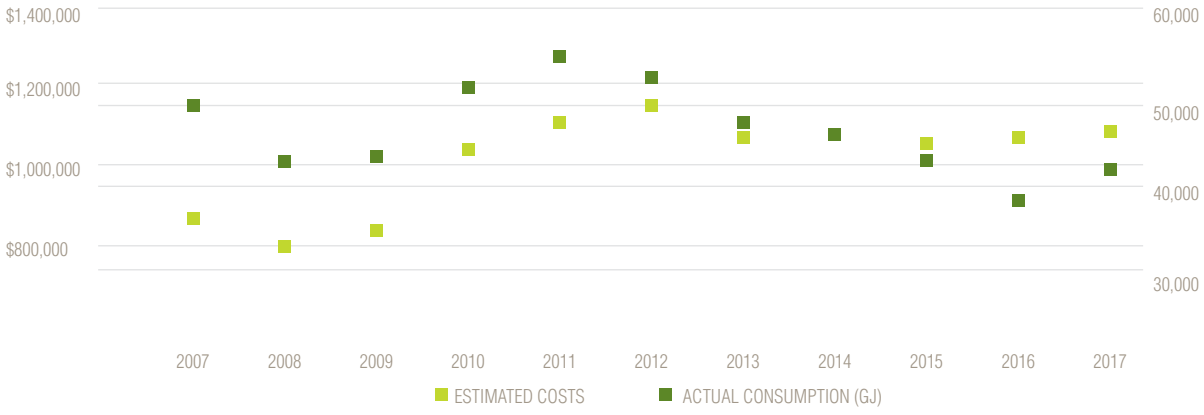
The CVRD has a Strategic Energy Management Plan (SEMP) that was first initiated in 2012. The organization's commitment to resourcing an Energy Manager position has contributed to the successful implementation of numerous technical, behavioural and organizational projects/ programs, which have mainly focused on CVRD facilities.

Many energy conservation measures have already been identified and implemented. Although CVRDs services and functions have expanded since the 2012 baseline, significant achievements have been accomplished in reducing energy consumption, which have resulted in significant avoided costs and reduction in greenhouse gas (GHG) emissions (Figure 12). As of 2017, total corporate energy consumption (excluding fleet) has been reduced by 10,158 gigajoules (GJ) or 19%. This reduction includes 4,039 GJ, or 1,122,000 kilowatt-hours (kWh), of reduced electricity use and 6,119 GJ from reduced fossil fuel consumption.

THE GOALS OF THE SEMP:

- Reduce operating costs;
- Become more efficient with energy use;
- Reduce GHG emissions;
- Identify low-impact sources of heating, cooling, and electrical energy;
- Elevate the skills and education of staff; and
- Lead by example in energy conservation and environmental practices.

FIGURE 12 CVRD HISTORICAL ENERGY CONSUMPTION AND COSTS 2007-2017



There is already a strong linkage between energy management and asset management activities. The energy management program utilizes energy consumption data to establish energy reduction targets, assess lifecycle costs and prioritize projects based on financial indicators (ex. simple payback, internal rate of return, net present value). By the end of 2018, with the continued implementation of the SEMP, the ongoing support from the CVRD Board and Senior Management, the targeted energy savings is 20% below the 2012 baseline. This results in cumulative cost savings of over $1.45 million.

Financial Strategies

The significant value of CVRD infrastructure and the dependency on those assets to deliver services make the Asset Management Financial Strategy the most critical component of Corporate SAMP. The 2018 value of the CVRD Asset Portfolio is estimated at $363M, with a 10-Year Renewal Plan valued at $35.4M to maintain existing Levels of Service, with only $8.6M in reserves. The strategy to fund these renewal requirements to maintain current levels of service will require a coordinated approach that captures the asset management principles and accounts for the challenges of the regional district governance structure.

There are over 180 individual budgets throughout the CVRD that will require refined data collection/analysis/reporting procedures for effective implementation of the Corporate SAMP. This will require careful planning, coordination, and training between all CVRD departments. Another challenge is the rural scale of CVRD infrastructure (i.e. smallest water system has 26 customers), which makes the user pay system virtually impossible without imposing large increases on user fees.

The Financial Strategy will establish a transparent process to link expenditures to defined Levels of Service, confirm funding sources and revenue projections, and recognize the CVRDs commitment to maintaining existing infrastructure. This will require additional financial reporting requirements and procedures that will be detailed in the applicable policy reviews or through the development of new policies where required.

Specific data management, reporting requirements and procedures for each Asset System will need to be established, these will include:

- Required updates to policies and procedures;
- A five year history of expenditures;
- 10-25-50 year projections of funding sources and revenues;
- 10-25-50 year renewal plan;
- Identification of funding shortfalls;
- Establish actions to address funding shortfalls;
- Alignment of procurement and grant management activities.

7.1 Policy Review

The following policies will need to be reviewed and refreshed regularly to establish alignment with the Corporate SAMP, departmental roles, responsibilities and reporting procedures:

1. Tangible Capital Asset Policy
2. Asset Disposal Policy
3. Operating Reserve Policy
4. Procurement Policy
5. Utility System Acquisition Policy
6. Capital/Renewal Reserve Policy (NEW)
7. Risk Tolerance Policy (NEW)
8. Investment Policy (NEW)

7.2 Annual Expenditures

The Financial Strategy will establish regular reporting requirements for each Asset System within the Asset Portfolio and will include a 10 year financial plan that includes annual major and minor capital expenditures broken down by the following categories:

1. Non-Infrastructure
2. Maintenance
3. Renewal /Rehabilitation Activities
4. Replacement Activities
5. Disposal
6. Expansion Activities
7. Reserve Allocation

7.3 Funding Sources

Each Asset System has unique funding sources which can change over time. Potential funding sources include:

- Requisition – property tax based assessment
- Parcel Tax – property tax based on a unit of land, area or frontage
- User Fees – a fee for a service
- Internal Allocations – a recovery from other CVRD functions

Grants can also be considered a funding source, but they are less predictable. Grant programs will be utilized whenever possible based on strategic priorities.

7.4 Revenue Forecast

A revenue forecast shows expected cash flows and anticipates future growth scenarios for each Asset System. Revenue forecasting is a planning tool used to provide revenue estimations based on the best available information. Revenue forecasts are based on previous years' revenues for each asset system. However it is possible to model future revenues based on growth scenarios.

7.4.1 GROWTH SCENARIOS

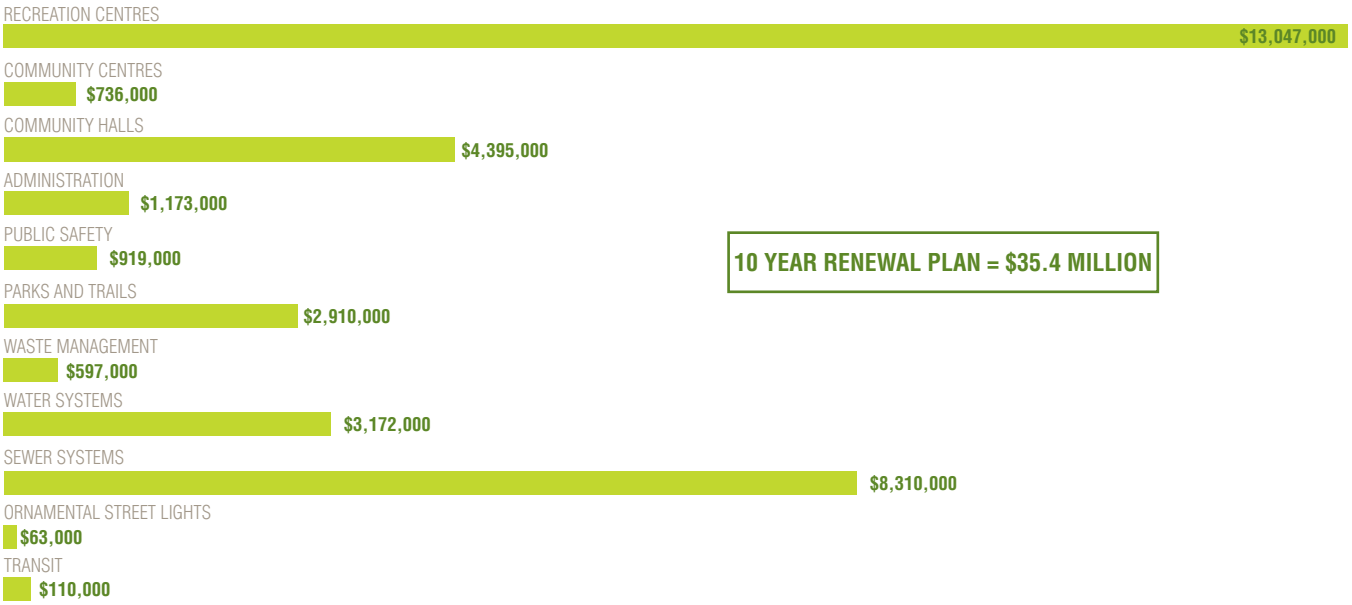
Growth scenarios could have positive or negative impacts on revenue forecasts. Sustainable land use practices encouraging increased density and the amalgamation of rural scale infrastructure (ex.. water and sewer systems) would lead to increased revenue projections. While the proliferation of rural scale infrastructure would likely lead to more challenging revenue forecasts. A consistent approach to identifying growth scenarios should be established and used across the CVRD for long term planning purposes.

7.5 10-Year Renewal Plan

The 10-year Renewal Plan was established specific to the Asset Portfolio, based on condition assessment and expected useful lives. It is defined as the funds required to maintain infrastructure at existing Levels of Service over the next 10 years.

Figure 13 shows total 10-year Renewal Plan of $35.4M as of 2018, with a majority of the funds associated with the Recreation Centres ($13M) and Sewer Systems ($8.3M). Some of the work that was completed in 2018 may not be reflected in this analysis. Additionally some Asset Systems already have established reserves. These reserves may already be allocated and not actually applied to the Renewal Plan. There was approximately $8.6M in Capital Reserves associated with these asset systems in 2018, however further analysis is required to determine the impact on the 10-year renewal plan.

FIGURE 13 2018 10-YEAR RENEWAL PLAN BY ASSET SYSTEM



7.6 Procurement

The CVRD procurement procedures should incorporate the asset management (AM) principles. The procurement process can be used to assess life cycle costs, achieve triple bottom line objectives, establish data management requirements (ex. GIS, asset inventories, fuel consumption etc.), and return on investment analysis (ex. Payback, Net Present Value, Internal Rate of Return, Multi-Criteria Analysis etc.). A standardized procurement process that embodies AM principles will enable effective decision-making and project prioritisation objectives, when assessing multiple options.

WHY IS THIS IMPORTANT?

THE PROCUREMENT PROCESS IS AN OPPORTUNITY TO SYSTEMATICALLY ASSESS THE BENEFITS AND IMPACTS OF ANY PROJECT AND ENSURE THAT OPTIONS CAN BE ANALYSED USING ESTABLISHED SUSTAINABILITY CRITERIA.

7.7 Grant Management

The need to enhance asset management (AM) practices across the country has been recognized by many funding agencies. It is now common for federal grant applications to require documented AM practices. There are many grant opportunities to achieve AM objectives. There are also many funding

opportunities for major and minor capital projects, new infrastructure, and other strategic plans. This multitude of funding opportunities presents a challenge to CVRD staff who are consistently lacking financial resources, and can be distracted by chasing the money as opposed to achieving strategic priorities. Grant applications may require extensive resources to prepare (ex. feasibility studies, staff time) and inter-departmental coordination. A procedure to manage and prioritize opportunities that is linked to the Corporate SAMP would further enhance the CVRDs AM objectives.

WHY IS THIS IMPORTANT?

DOCUMENTED ASSET MANAGEMENT PRACTICES ARE NOW A REQUIREMENT FOR MANY FUNDING OPPORTUNITIES. A STRATEGIC APPROACH TO GRANT MANAGEMENT WILL ENSURE EFFICIENT USE OF STAFF TIME AND RESOURCES, AND WILL PRIORITISE CRITICAL INFRASTRUCTURE RENEWALS AND CAPACITY BUILDING.

7.8 Gas Tax - Community Works Fund

The Community Works Fund (CWF) portion of the Gas Tax Program was intended to provide local governments with a source of stable, long-term funding for environmentally sustainable local government infrastructure and capacity building projects with a focus on clean air, clean water, reducing greenhouse gas emissions and asset management.

In the past CWF has been used to develop the Corporate SAMP though:

- Refreshing Asset Inventories,
- Conducting Condition Assessments, and
- Renewing aging infrastructure.

The CWF is a good fit to fund future infrastructure renewals and capacity building activities (ex. purchasing and implementation of an asset management software package).

The CWF allocation process has evolved over time and has not always been strategically applied to address existing infrastructure funding shortfalls. Project prioritisation criteria that is focused on CVRD existing infrastructure must be established.

Corporate Strategic Asset Management Plan - Implementation Plan

The implementation of the Corporate SAMP will require dedicated staff and resources. The CVRD Corporate SAMP Implementation Plan (Appendix J) identifies the activities required for the successful development of a CVRD AM Program. Each activity will be assigned a lead department/division, a cost estimate and a timeline for achievement. These are high-level estimates that may require further revisions to scope and schedule as the requirements are confirmed. Process mapping of each of these activities will be critical to the successful implementation of the SAMP, which will define the responsibilities of the AM team. The progress of the CVRD Asset Management Implementation Plan will be monitored by tracking internal asset management (AM) performance and evaluating the progression of CVRDs AM maturity.

WHY IS THIS IMPORTANT?

THE CORPORATE SAMP IMPLEMENTATION PLAN PROVIDES THE DIRECTION FOR THE COORDINATED IMPLEMENTATION OF THE CORPORATE SAMP.

Appendix A
Steering Committee members

NAME	POSITION	DEPARTMENT
Brian Carruthers	Chief Administrative Officer	Executive Office
Kris Schumacher	Manager, Communications & Engagement	Executive Office
Hamid Hatami	General Manager	Engineering Services
Austin Tokarek	Asset Coordinator	Engineering Services
Tauseef Waraich	Manager, Recycling & Waste Management	Engineering Services
Jason Adair	Solid Waste Operations Superintendent	Engineering Services
Brian Dennison	Manager, Water Management	Engineering Services
Tod Etherington	Utility Operations Superintendent	Engineering Services
Kate Miller	Manager, Environmental Services	Engineering Services
Mark Kueber	General Manager	Corporate Services
Natalie Wehner	Manager, Finance (Financial Admin. Officer)	Corporate Services
Tracy Bowen	Assistant Finance Manager - Operations	Corporate Services
Talitha Soldera	Assistant Finance Manager - Planning	Corporate Services
Erin Annis	Procurement Specialist	Corporate Services
Sharon Heppner	Manager, Information Technology	Corporate Services
Rob Grant	GIS Supervisor	Corporate Services
John Elzinga	General Manager	Community Services
Jim Wakeham	Manager, Facilities & Transit Management	Community Services
Tony Liddle	South Cowichan Facility Coordinator	Community Services
Rob Frost	North/Central Cowichan Facility Coordinator	Community Services
Brad Coleman	West Cowichan Facility Coordinator	Community Services
Keir Gervais	Manager, Public Safety	Community Services
Jason deJong	Fire Rescue Services Coordinator	Community Services
Anne Kjerulf	General Manager	Land Use Services
Mike Tippett	Manager, Community Planning Division	Land Use Services
Brian Farquhar	Manager, Parks and Trails	Land Use Services
Ryan Dias	Parks Operations Superintendent	Land Use Services

Appendix B
Asset Management Policy

Appendix C
FCM AM Maturity Scale

Appendix D
2019 State of Infrastructure

Appendix E
Condition Assessment Framework

Appendix F
Levels of Service Framework

Appendix G
Project Management Handbook

APPENDIX G

Appendix H
Climate Risk Assessment Framework

Appendix I
Vulnerable Infrastructure

Appendix J
Implementation Plan