



Central Coast Regional District Solid Waste Management Plan



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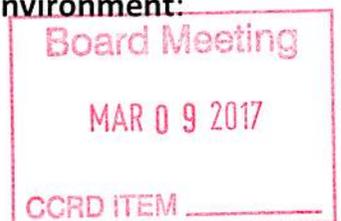




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1 Introduction

In British Columbia, regional districts develop solid waste management plans under the provincial Environmental Management Act. These plans are long term visions of how each regional district would like to manage its solid wastes in accordance with the pollution prevention hierarchy. This plan will be renewed on a 10-year cycle to ensure that it reflects the current needs of the Central Coast Regional District (CCRD) as well as current market conditions, technologies and regulations.

The CCRD submitted their first solid waste management plan to the Province for approval in 1996. This plan was not approved due to concerns regarding plan financing. Consequently the CRRD revisited the planning process and prepared a revised plan which the Province approved in 2004. The history of the planning process is discussed further in section 2.2.

This draft document represents an update of the CCRD’s solid waste management plan and once approved by the Province (along with any approval conditions), becomes a regulatory document for solid waste management and serves to guide the solid waste management related activities and policy development in the CCRD. In conjunction with regulations and operational certificates that may apply, this plan regulates the operation of sites and facilities that make up the region’s waste management system (see Section 2.3).

1.1. Guiding Principles

The principles guiding the development and implementation of this plan are illustrated in Table 1-1.

Table 1-1 Provincial Guiding Principles

1.	Promote zero waste approaches and support a circular economy
2.	Promote the first 3 Rs (Reduce, Reuse and Recycle)
3.	Maximize beneficial use of waste materials and manage residuals appropriately
4.	Support polluter and user-pay approaches and manage incentives to maximize behaviour outcomes <i>wherever practical</i>
5.	Prevent organics and recyclables from going into the garbage wherever practical
6.	Collaborate with other regional districts wherever practical
7.	Develop collaborative partnerships with interested parties to achieve regional targets set in plans
8.	Level the playing field within regions for private and public solid waste management facilities

These guiding principles are identical to those established by the Province in the Guide to Solid Waste Management Planning with the exception of Principle 4. For this principle the CCRD has included the qualifier “wherever practical” given the challenges faced by the CCRD with respect to financing their solid waste services as discussed in Section 2.2.



1.1 Pollution Prevention Hierarchy and Targets

This plan adopts the 5 R pollution prevention hierarchy as illustrated in Figure 1.1

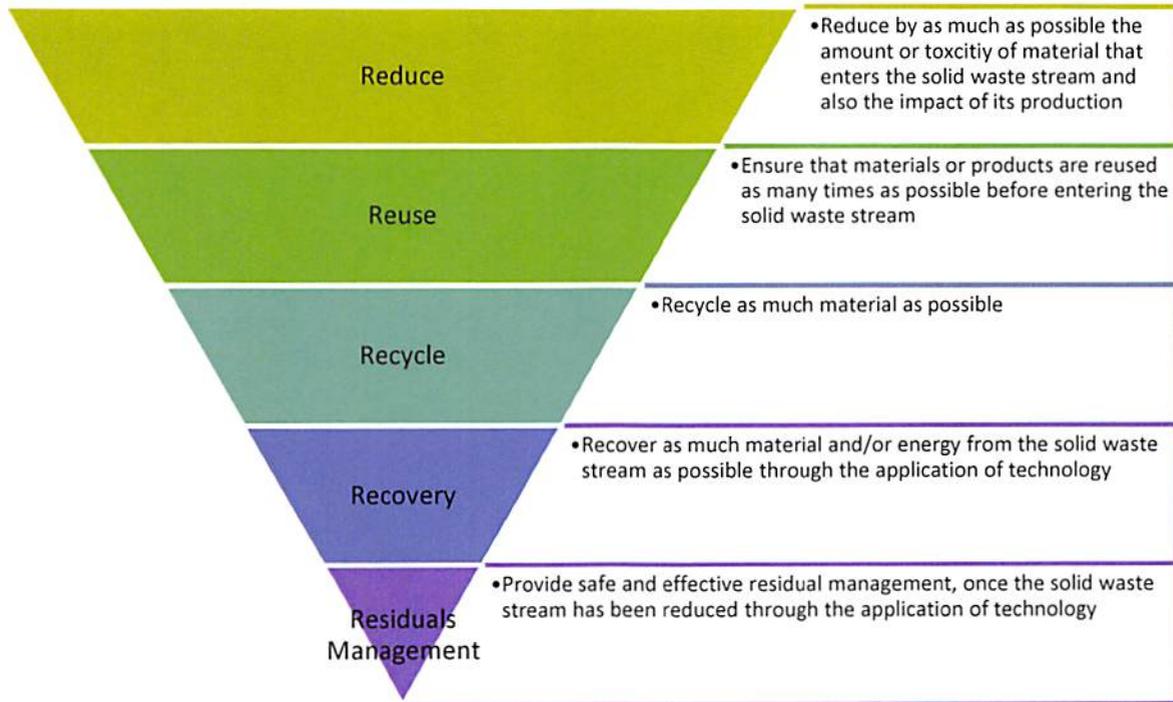


Figure 1-1 Pollution Prevention Hierarchy

Strategies to address the hierarchy are laid out in section 3. Implementation of these strategies over the plan’s 10-year timeframe is expected to contribute to a reduction in the provincial disposal rate, and result in achievement of the following regional target(s):

- Increase the diversion of residential packaging and printed paper from the MMBC reported 2016 baseline by 50% by 2021.
- Decrease the estimated per capita MSW disposal rate by 20% from the estimated 2016 baseline of 450 kg per capita (Note that measuring progress towards this target assumes the installation of weigh scales at the Thorsen Creek Waste and Recycling Centre).



2 Background

2.1 Plan Area

The Central Coast Regional District encompasses some 25,000 square kilometres on the central coast of British Columbia as indicated in Figure 2-1.

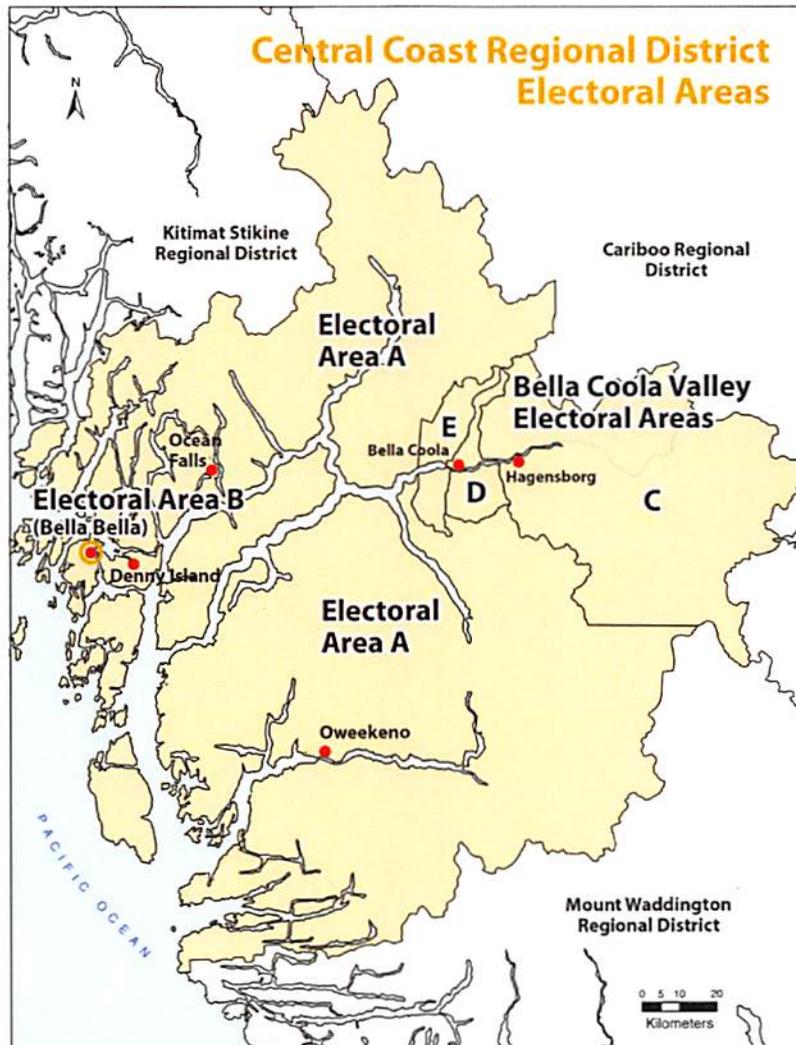


Figure 2-1 Map of the Central Coast Regional District

The regional district contains five electoral areas and is unique in British Columbia in that that it is the only regional district which contains no incorporated municipalities within its boundaries. A detailed description of the electoral area boundaries is presented in Table 2-1.



Table 2-1 CCRD Electoral Areas

Electoral Area A	Commonly referred to as the “Outer Coast,” Area A includes Ocean Falls, Denny Island and Oweekeno, and all points in between. The boundary commences west of the Bella Coola town site and follows the regional district boundaries north almost to the First Nations community of Klemtu, and south past Rivers Inlet and Oweekeno, home of the Wuikinuxv First Nation.
Electoral Area B	Consists of seven square kilometres and is located on Campbell Island, also known as Bella Bella. The Heiltsuk community is primarily comprised of First Nations residents.
Electoral Area C	Located in the eastern portion of the regional district, at the upper end of the Bella Coola Valley and borders the Cariboo Regional District
Electoral Area D	Commences in Hagensborg and runs from the Augsburg Church west to Tatsquan Creek
Electoral Area E	The Bella Coola town site and consists of a small residential population and contains the majority of the commercial activity in the valley.

The population of the CCRD has remained relatively unchanged since the 2006 census. BC Stats estimates the 2016 population to be 3,350 residents. In twenty years, the population is projected to be 3,831. Population density in CCRD is 0.13 persons per square kilometer. This means that the CCRD has the lowest population and population density amongst BC regional districts.

Table 2-2 provides a breakdown of this population by community.

Table 2-2 Estimated 2016 Population, By Community

Area	% of CCRD total	Estimated Population
Bella Coola Valley	59%	1,973
Bella Bella	36%	1,206
Ocean Falls	1%	35
Denny Island	2%	70
Oweekeno	2%	66
Central Coast Regional District	100%	3,350

The Bella Coola Valley (Electoral Areas C, D and E) is the main population centre in the CCRD and the only area where the Regional District provides solid waste management services to an estimated population of roughly 2,000 residents. Approximately half of the population of the valley are members of the Nuxalk Nation that live on reserve lands. The Nuxalk Nation has a financial agreement with the CCRD that enables them to participate as a partner in the CCRD’s solid waste service.



Bella Bella (Electoral Area B), located on Campbell Island consists primarily of the Heiltsuk Nation who operate their own solid waste management system with support from Indian and Northern Affairs Canada (INAC). Bella Bella does not participate in the CCRD solid waste management service.

Denny Island (Electoral Area A) is home to the Shearwater Resort & Marina and roughly 70 residents. The community is also serviced by BC Ferries and is a popular destination for boaters. The Shearwater Resort & Marina provide recycling and residual waste management services to the island. Denny Island does not currently participate in the CCRD solid waste management service.

Ocean Falls (Electoral Area A) is a community of roughly 35-60 people, most of which are summer residents only. The community is serviced by BC Ferries. The area is governed by the Ocean Falls Improvement District (OFID) who provide solid waste management services to the community. Ocean Falls does not currently participate in the CCRD solid waste management function.

Oweekeno (Electoral Area A) is a community of roughly 66 residents from the Wuikinuxv Nation who, like the Heiltsuk on Bella Bella, operate their own solid waste management system with support from INAC. Oweekeno does not participate in the CCRD solid waste management service.

Consequently the goals, strategies and actions identified in this plan apply to Electoral Areas C, D and E located in the Bella Coola Valley. Over this plan's ten year time-frame the CCRD will consult with residents on Denny Island and in Ocean Falls regarding their willingness to participate in either a regional or local solid waste management service operated by the regional district.

2.2 Plan History

The CCRD began solid waste management planning in 1992 with provincial funding assistance. An advisory committee was struck and eventually a consultant was retained to draft the solid waste management plan. The general public was consulted and this effort was documented in the consultant's report.

The goal of the plan was to develop a comprehensive program of municipal solid waste management for a period of at least 20 years. The plan included strategies and actions that were economically and technically feasible, environmentally sound, acceptable to the public, and maximized the potential for adopting the Provincial pollution prevention hierarchy given the region's climate, remoteness and financial resources.

The key method for achieving the plan's waste reduction goals was a comprehensive education strategy that encouraged backyard composting, the use of existing Provincial stewardship programs, as well as a proposed Free Store and other recycling options that would be made available at the Bella Coola Valley landfill. The Plan also included residual management strategies to improve the operation and environmental impact of the Bella Coola Valley landfill.

At the time of plan development, the community was opposed to the implementation of tipping fees at the Bella Coola Valley landfill because all parties were sure that that user fees would not work. The community was also opposed to raising money through taxation given that 50 percent of the area's population were from the Nuxalk Nation and did not contribute to property taxes. Instead the plan recommended a system whereby the regional district would issue business licenses and use the



resulting revenues for solid waste operations. This system was seen to be more equitable and supportive of a user pay approach.

This plan was submitted to the Province for approval in 1996. Although Provincial environment staff was satisfied that the plan fulfilled their requirements for solid waste plans, the Inspector of Municipalities did not approve the proposed business licensing system and consequently the Minister of Environment could not approve the plan.

Consequently the CRRD restarted the planning process and prepared a revised plan based on the 1996 plan. The modified plan abandoned the concept of funding the solid waste management system through a business licensing system. In its place the new plan adopted a funding model that included traditional property taxes, a contribution from the Nuxalk Nation, and site user fees. This plan was submitted to and approved by the Minister of Environment in 2004. Information regarding the implementation of the 2004 Solid Waste Management Plan is contained in the Existing Solid Waste Management System report included as Schedule A.

2.3 Existing Facilities

Figure 2-2 shows the key areas of waste management in the Bella Coola Valley, as well as the general flow of waste from its source (waste generation), through the various collection channels, to either a diversion activity or disposal. These activities are supported by communication and education initiatives, as well as government policies and bylaws.

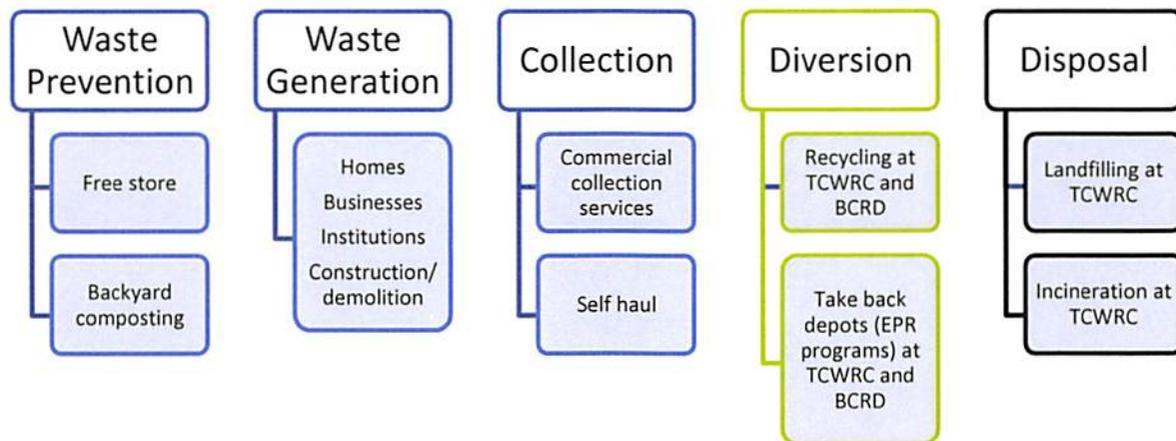


Figure 2-2 Bella Coola Valley Waste Flows

As indicated in Figure 2-2, municipal solid waste generated by residents, business and institutions is either self-hauled (by most residents) or collected by commercial collection vehicles (for some large businesses and institutions and a small number of residents) to either the Thorsen Creek Waste and Recycling Centre (TCWRC) or Bella Coola Recycling Depot (BCRD) for recycling and to the TCWRC for disposal.



The Thorsen Creek Waste and Recycling Centre (formerly the Bella Coola Landfill) serves as the primary facility for solid waste management in the Bella Coola Valley. This facility is authorized under Operational Certificate MR-4223 issued to the CCRD by the Province in 2006. The facility is currently open on Wednesdays and Saturdays from 8:30 am to 5:30 pm.

Features of the TCWRC include:

- A transfer area for small vehicles
- The active area for disposal of municipal solid waste (subject to daily cover using on-site gravelly soils)
- Electric fencing around the active filling area to detract bears from the site
- A scrap metal storage area
- A tire storage area
- Collection areas for a wide variety of EPR materials, including residential packaging and printed paper
- A Free Store for reusable items
- An area for burnable wood
- An area for burnable commercial cardboard
- A fill area for inert waste (e.g. concrete, asphalt shingles)

Issues associated with the Thorsen Creek Waste and Recycling Centre include:

- Lack of tipping fees on self-haul waste provides limited incentive to participate in recycling programs (household recyclables noted in bags of garbage deposited in the transfer bins)
- Minimal monitoring of incoming loads of garbage (for recyclables and hazardous materials)
- Free Store area is unkempt which may discourage some users in participating in this aspect of the Centre (Note: this issue should be improved once the new transfer station is operational).

Additionally, a review by landfill engineers from Morrison Hershfield in May 2016 indicated the following landfill-related issues at the TCWRC:

- Landfill does not have a design, operation and closure plan
- Filled areas have not undergone final cover (to minimize the infiltration of rain)
- The slopes of some of the filled areas are too steep and need to be regraded for long-term slope stability
- A groundwater monitoring program is needed.

Detailed information regarding the existing solid waste management system in the Bella Coola Valley as well as waste management system in the communities that are not participating in this plan (Bella Bella, Denny Island, Ocean Falls and Oweekeno) can be found in the Existing Solid Waste Management System Report attached as Schedule A.



2.4 Future Facilities

During this plan update process, the CCRD began the design and construction of an eco-depot and transfer station directly across the street from the landfill site. This facility has been designed to move public drop-off facilities off the landfill footprint to not only provide more disposal capacity but also to create a safe, efficient, self-haul drop off site that maximizes waste diversion. This \$660,000 facility is being funded through the Community Works Fund (CWF) which is part to the Federal Gas Tax Fund.

The new facility, which is scheduled to be operational by July 2017, will include an improved Free Store, recycling depot, grade separated drop-off area for garbage and construction/demolition waste, as well as areas for storage of major appliances and other product stewardship materials. A concept plan for the facility is provided in Figure 2-3



Figure 2-3 New TCWRC Eco-Depot and Transfer Site

Once the site is operational and all public activities have been removed from the landfill footprint, major improvements to landfill infrastructure will be implemented as discussed in Section 3.2.



2.5 Waste Generation and Management

Waste Disposal and Diversion

There are currently no scales at the Thorsen Creek Waste and Recycling Centre, consequently waste disposal for the Bella Coola Valley must be extrapolated from comparable communities with scales. Using an average of waste disposal data from Valemount, Port McNeill and Port Alice, it is estimated that the Bella Coola Valley disposes of roughly 450 kg per capita annually, including residential, commercial and construction/demolition sources. For the Bella Coola Valley, with an estimated population of 2,000, roughly 900 tonnes of waste is disposed (landfilled) annually.

The two main locations for recycling in the Bella Coola Valley are the Thorsen Creek Waste and Recycling Centre and the Bella Coola Recycling Depot. Collectively, these 2 facilities are estimated to divert 478 tonnes annually, as detailed in Table 2-3. Consequently, the estimated diversion rate for the Bella Coola Valley is 35%. (See Schedule A: Existing Solid Waste Management System for more details on diversion)

Table 2-3 Estimated Diversion in the Bella Coola Valley

Material	Tonnes
EPR products	155
Tires (also an EPR product)	48
Scrap metal	275
TOTAL	478

For regional comparative purposes, the community of Bella Bella, which operates their solid waste management system with support from INAC and provides residents with blue and red bins to store and transport their recyclables, a full-scale staffed recycling depot and a community compost program that currently provides service to 200 households, disposed of 467 tonnes of solid waste in 2015. This equates to a disposal rate of 389 kg per capita based on an estimated population of 1,200 residents.

For the CRRD as whole, the regional disposal rate would equate to roughly 1,435 tonnes annually for a regional disposal rate of 428 kg per capita annually. For provincial comparative purposes, the BC average disposal rate was 520 kg per capita based on 2014 data.

Waste Composition

Figure 2-4 shows the estimated composition (by weight) of the waste disposed of in the Bella Coola Valley. This is an estimate based on composition study undertaken by the Sunshine Coast Regional District at their Pender Harbour Transfer Station in 2015. Pender Harbour is a small community without municipal curbside collection services for garbage or recyclables.

As shown, the largest components of the landfilled waste stream, by weight, are compostable materials (30%), recyclable materials (26%, a combination of glass, paper, cardboard, plastic and metal) and building materials (17%). This study data is comparable to the composition of many BC communities and is intended to be illustrative of the potential opportunities to increase the amount of diversion of materials away from the landfill.

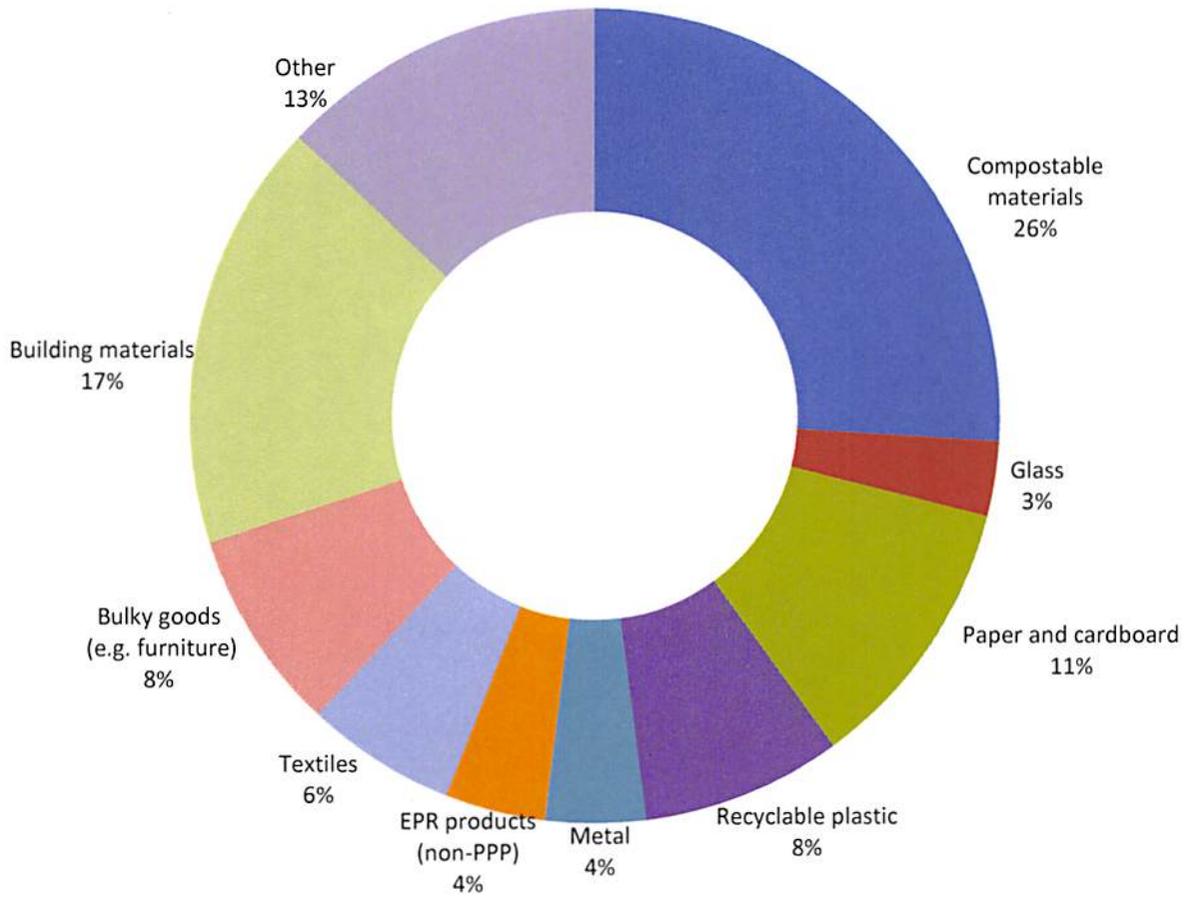


Figure 2-4 Estimated Composition of Waste Disposed in the CCRD

Based on observations at the TCWRC landfill and discussions with CCRD staff, it is estimated that 70% of the waste landfilled at TCWRC is residential and 30% comes from commercial sources such as businesses, construction and renovation projects, and institutions (schools, hospitals, government offices, etc.).



Waste Management System Participants

Table 2-4 provides a list of the various organizations that contribute to municipal solid waste management in the CCRD.

Table 2-4 Municipal Solid Waste Management Participants

Who	Roles in Solid Waste Management
Federal Government	<ul style="list-style-type: none"> Provides solid waste management funding assistance to the Heiltsuk, Nuxalk and Wuikinuxv Nations through Indian and Northern Affairs Canada (INAC).
Provincial Government	<ul style="list-style-type: none"> Various ministries have regulatory authority related to waste management
Regional District (Board and staff)	<ul style="list-style-type: none"> Develops plan to provide big picture oversight of waste management in the region Through plans and plan implementation (including bylaws), works to meet waste disposal goals and targets and ensures that the community has access to waste management services that are environmentally sound and cost effective Ensures that legislative and policy requirements are followed, including monitoring and reporting Operates the Thorsen Creek Waste and Recycling Centre Supports Product Stewardship programs in the CCRD Provides waste management related education
First Nations	<ul style="list-style-type: none"> Provide waste management services (Heiltsuk and Wuikinuxv) and participate in the Bella Coola Valley waste management service (Nuxalk)
Product Stewardship Producers and Agencies	<ul style="list-style-type: none"> Ensure reasonable and free consumer access to collection facilities Collect/process stewarded products Coordinate local government delivery as a service provider where applicable Provide and/or fund education and marketing Provide deposit refunds to consumers (where applicable) Monitor/report on key performance indicators such as recovery rates
Private Sector	<ul style="list-style-type: none"> Provide recycling and waste management collection services to residents and businesses
Residents and Businesses	<ul style="list-style-type: none"> Responsible for carrying out proper waste reduction, recycling and disposal activities



3 Goals and Strategies

The development of the 2016 Solid Waste Management Plan identified the following key goals for this plan to address:

Goal 1: Increase participation in diversion programs available at the Thorsen Creek Waste and Recycling Centre.

Goal 2: Improve landfill management practices at the Thorsen Creek Waste and Recycling Centre to meet the requirements of the new Provincial Landfill Criteria (June 2016).

The following strategies and actions have been developed to meet these goals and are consistent with the guiding principles outlined in Section 1.1.

3.1 Goal 1: Increase Waste Diversion

Strategy 1.1: Provide an integrated education and communications program to coincide with the opening of the new Eco-Depot and Transfer Station.

<i>Actions:</i>	<i>Cost Estimate</i>
<ul style="list-style-type: none"> Improve the operation of the Free Store (includes new building at Eco-Depot) 	\$223,200
<ul style="list-style-type: none"> Increase the budget for communication and promotion activities such as a newsletter, website, news column and school education program 	\$2,000
<ul style="list-style-type: none"> Contract a part-time waste diversion educator to work at the Eco-Depot and Transfer Station to raise awareness of diversion opportunities and train customers on the use of the facility and expected behaviors 	\$8,000
<ul style="list-style-type: none"> Purchase blue boxes to help residents to store and transfer their recyclables. These boxes will be distributed free of charge from the new Eco-Depot combined with appropriate promotional materials and a short on-site training session 	\$4,000

Strategy 1.2: Provide a community composting operation at the new Eco-Depot and Transfer Station

<i>Actions:</i>	<i>Cost Estimate</i>
<ul style="list-style-type: none"> Undertake a feasibility study for organic waste composting to determine the potential for diversion and review options for composting such as that provided to residents of Bella Bella. 	Staff
<ul style="list-style-type: none"> Collaborate with the Nuxalk Nation regarding plans to build a waste water treatment plant and potential for co-composting of biosolids 	Staff



- Design and construct a small scale, basic compost building at the new Eco-Depot and Transfer Station. \$55,200
- Purchase/lease necessary equipment to prepare feedstocks and aerate compost piles \$115,000
- Develop a drop-off program for compostable waste Staff
- Incorporate wildlife conflict mitigation measures into compost operations Staff

Strategy 1.3: Provide regulatory incentives to encourage source-separation

<i>Actions:</i>	<i>Cost Estimate</i>
• Amend Refuse Disposal Regulatory Bylaw No. 348, 2002 to not only reflect current operational policies and procedures at the TCWRC but also to restrict the disposal of Product Stewardship materials at the new Eco-Depot and Transfer Station	Staff
• Gradually increase revenues from user fees contained in the bylaw for non-household waste where practical to encourage waste diversion behaviors and improve the financial sustainability of the solid waste management system in the Bella Coola Valley.	Staff
• Restrict the disposal of commercial cardboard if the CCRD and MMBC are able to collaborate on the costs of transporting this material to markets.	Staff

3.2 Goal 2: Improve Landfill Management Practices

Strategy 2.1: Strive to meet the requirements of the new Landfill Criteria where applicable, practical and financially viable

<i>Actions:</i>	<i>Cost Estimate</i>
• Undertake a Landfill Criteria Conformance Review and prepare any required upgrading plans for items that are not already anticipated in this SWMP	\$17,250
• Prepare a filling plan and final landfill closure plan. These two plans are the priority for the Bella Coola Landfill as the filling plan will guide the operations for the site and the closure plan will outline where to fill to final contours and install interim/progressive cover to minimize infiltration of precipitation.	\$51,750
• Prepare a Design, Operations and Closure Plan (DOCP) to guide the landfill operations and outline the progressive closure strategy with the landfill lifespan in mind. The DOCP will incorporate the previous work described in the actions above as well as a lifespan analysis, closure plan and other requirements outlined in the Landfill Criteria.	\$57,500



- Undertake a hydrogeology and hydrology assessment that will include a drilling program and the installation of monitoring wells to provide a better assessment of the potential impacts that the landfill may have on ground or surface water \$97,950
- Improve stormwater management at the site by constructing an interim cover system on the crest of the landfill and improve drainage to shed water away from the landfill \$327,750
- Purchase a portable scale to track the weight of materials transferred to disposal \$50,000
- Purchase an excavator, wheel loader and horizontal grinder if required \$500,000

Strategy 2.2: Increase the operational efficiency of the residual waste management system

<i>Actions:</i>	<i>Cost Estimate</i>
• Purchase a roll-off truck and roll-off bins to service the Eco-Depot and Transfer Station	\$70,000

Separate from the goals, strategies and actions described above, as discussed in Section 2.1, over this plan’s ten year time-frame the CCRD will consult with residents on Denny Island and in Ocean Falls regarding their willingness to participate in either a regional or local solid waste management service operated by the regional district.

3.3 Plan Targets

The Plan targets, as listed earlier in Section 1.1 are proposed to be:

- **Increase the diversion of residential packaging and printed paper from the reported MMBC 2016 baseline by 50% by 2021**
CCRD collects residential packaging and printed paper on behalf of the Multi-Material BC. All of the materials diverted to this EPR program are tracked and measured. The initiatives listed in this SWMP are intended to increase awareness and participation of available recycling opportunities. Increased participation in the MMBC program would provide an excellent indicator of the general success of these initiatives.
- **Decrease the estimated per capita MSW disposal rate by 20% from the estimated 2016 baseline of 450 kg per capita**
The Province has a goal to decrease the BC per capita disposal rate to 350 kg. By decreasing the per capita amount of disposal in the Bella Coola Valley, CCRD is contributing to achieving this Provincial goal. It is noted however, that the 2016 baseline of 450 kg per capita is an estimate only. Once weigh scales are installed at the Thorsen Creek Waste and Recycling Centre, this baseline number and disposal target may need to be adjusted accordingly.



4 Finance

As discussed in previous sections, the CCRD is a remote, rural regional district with limited financial resources. As indicated in Table 4-1, in the 2017 -2021 Financial Plan the annual base budget for solid waste management is less than roughly \$350,000 per year. This modest solid waste management service is funded through property taxes and the provincial basic grant (53%), Nuxalk Nation contribution (40%), EPR revenue (3%) and user fees (4%). To be able to undertake the programs and projects identified in this plan, the CCRD will need to obtain significant grant funding and/or assistance from INAC.

Table 4-1 Solid Waste Management Base Funding 2017-2021

	2017	2018	2019	2020	2021
REVENUE					
Property Tax	\$96,123	\$98,045	\$100,000	\$100,000	\$100,000
Provincial Basic Grant	\$46,677	\$46,777	\$46,777	\$46,777	\$46,777
Nuxalk Nation	\$103,750	\$105,825	\$107,942	\$107,942	\$107,942
EPR Revenue	\$11,000	\$12,200	\$13,400	\$14,600	\$15,800
User Fees	\$20,000	\$25,000	\$25,000	\$25,000	\$25,000
Surplus	\$70,000	\$0	\$0	\$0	\$0
Total Revenue	\$347,550	\$287,847	\$293,119	\$294,319	\$295,519
EXPENDITURES					
Operating Expenditures					
Diversion Programs - Base Operating	\$69,358	\$68,054	\$64,981	\$65,927	\$66,890
Residual Management - Base	\$208,192	\$209,693	\$218,038	\$218,292	\$218,529
Total Annual Operating Expenditures	\$277,550	\$277,747	\$283,019	\$284,219	\$285,419
Capital Expenditures					
Residual Management - Base	\$70,000	\$10,000	\$10,000	\$10,000	\$10,000
Total Annual Expenditures	\$347,550	\$287,747	\$293,019	\$294,219	\$295,419

Table 4-2 summarizes the estimated capital and operating expenditures for current and new diversion and residual management services for the 2017-2021 financial plan time frame. Capital expenditures to improve landfill environmental control systems as well as equipment required for the new eco-depot, transfer station and compost facility increase significantly over the five year period. A detailed list of estimated expenditures and funding source is attached in Section 6 as Schedule B.

Operating expenditures for diversion programs have been adjusted to include additional annual funding of \$8,000 for a part-time educator, \$2,000 for communication/education materials and \$4,000 to purchase blue boxes for 2017 to 2018.



Table 4-2: Solid Waste Management Base and New Grant Funding 2017-2021

	2017	2018	2019	2020	2021
REVENUE					
Property Tax	\$96,123	\$98,045	\$100,000	\$100,000	\$100,000
Provincial Basic Grant	\$46,677	\$46,777	\$46,777	\$46,777	\$46,777
Nuxalk Nation	\$103,750	\$105,825	\$107,942	\$107,942	\$107,942
EPR Revenue	\$11,000	\$12,200	\$13,400	\$14,600	\$15,800
User Fees	\$20,000	\$25,000	\$25,000	\$25,000	\$25,000
Miscellaneous Revenue	\$0	\$0	\$0	\$0	\$0
Surplus	\$70,000	\$0	\$0	\$0	\$0
Sub-Total - Base Operating Revenue	\$347,550	\$287,847	\$293,119	\$294,319	\$295,519
<i>Grants - Community Works Fund</i>	<i>\$17,250</i>				
<i>Grants -INAC - Borrowing</i>	<i>\$51,750</i>	<i>\$386,150</i>	<i>\$151,250</i>	<i>\$66,500</i>	<i>\$798,750</i>
Sub-Total Grant Funding	\$69,000	\$386,150	\$151,250	\$66,500	\$798,750
Total Revenue	\$416,550	\$673,997	\$444,369	\$360,819	\$1,094,269
EXPENDITURES					
Operating Expenditures					
Diversion Programs - Base Operating	\$69,358	\$68,054	\$64,981	\$65,927	\$66,890
Residual Management - Base	\$208,192	\$209,693	\$218,038	\$218,292	\$218,529
Residual Management - New Grant	<i>\$69,000</i>		<i>\$57,500</i>	<i>\$40,250</i>	
Total Annual Operating Expenditures	\$346,550	\$277,747	\$340,519	\$324,469	\$285,419
Capital Expenditures					
Residual Management - Base	\$70,000	\$10,000	\$10,000	\$10,000	\$10,000
<i>Residual Management - New Grants</i>		<i>\$386,150</i>	<i>\$93,750</i>	<i>\$26,250</i>	<i>\$798,750</i>
Total Annual Capital Expenditures	\$70,000	\$396,150	\$103,750	\$36,250	\$808,750
Total Annual Expenditures	\$416,550	\$673,897	\$444,269	\$360,719	\$1,094,169

Given the limited ability of the CCRD to fund required landfill capital improvements, as per Table 4-2, improvements will only be implemented with significant grant funding and borrowing.



5 Plan Implementation

5.1 Plan Implementation Schedule

Table 5-1 outlines the planned implementation schedule for the Solid Waste Management Plan from 2017 to 2026. Grant funding and borrowing will be required to fund the actions shown in yellow in this table.

Table 5-1: Proposed Implementation Schedule

	Plan Actions	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1.1	Integrated education and communications program										
	Improve Free Store										
	Increase budget for education and communications										
	Hire part-time educator										
	Purchase and distribute blue boxes										
1.2	Community composting at new Eco-Depot										
	Feasibility study of organic waste composting										
	Collaborate with Nuxalk on composting biosolids										
	Design and construct compost building										
	Purchase, lease new equipment										
	Develop a drop-off program										
	Implement wildlife conflict mitigation measures										
1.3	Regulatory Incentives										
	Amend bylaw - restrict EPR materials										
	Gradually increase user fees										
	Restrict disposal of commercial cardboard										
2.1	Landfill conformance review										
	Landfill fill plan and final closure plan										
	Landfill design and operations and closure plan										
	Hydrogeology and hydrology assessment										
	Improve storm water management										
	Purchase portable scale										
	Purchase an excavator, wheel loader and grinder										
2.2	Purchase a roll-off truck and purchase roll off bins										

Legend:

Base funding programs - development

Base funding programs - on-going

Capital projects dependent on grants/borrowing



5.2 Plan Monitoring

The Solid Waste Advisory Group (SWAG) established to provide advice on this plan will monitor the implementation of the plan and make recommendations to increase its effectiveness.



5.3 Annual reporting

The CCRD will provide annual reporting to the Ministry of Environment of waste disposal information via the ministry's municipal solid waste disposal calculator.

In addition the CCRD will also prepare an annual report to the Regional District Board. Topics that will be included in the report include:

- Programs delivered each year and how they support the waste management hierarchy, especially the first three Rs (reduce, reuse, recycle)
- The annual increase in the diversion of printed paper and packaging as reported by MMBC
- Challenges or opportunities identified by the SWAG
- Compliance activities
- Wildlife interactions and control measures

5.4 Five Year Effectiveness Review

The CCRD will carry out a review and report on the plan's implementation and effectiveness in 2022. The review will be conducted in-house or by consultants and will include:

- Overview of all actions undertaken in the first five years to support the plan goals and objectives – status (started, progress, complete); actual budget for each
- Description of all actions not yet started and reason; budget allocated for each
- Five year trend information for waste diversion per person (based on MMBC reports)
- Summary of compliance activities taken and wildlife incidences over the past five years
- Based on plan data from the first five years, an analysis of what's working well (strengths) and challenges meeting the plan goals and targets
- Based on the analysis, any recommended changes that the regional district would make to the plan and next steps regarding seeking those changes (consultation and minister approval for changes)

5.5 Plan Amendments

This plan represents the current understanding and approach to the solid waste management challenges faced by the CCRD. The plan is a "living document" that may be amended to reflect new considerations, technologies and issues as they arise.



6 Plan Schedules

6.1 Schedule A: Estimated Capital Expenditures for the TCWRC 2017-2026



Schedule A: Cost Estimate for Thorsen Creek Waste and Recycling Centre 2017-2026

ACTIVITY OR PURCHASE	Funding Source	Engineering / Planning	Capital	Sub-Total	Contingency (15%)	Total	2017	2018	2019	2020	2021	2022
1 Landfill Conformance Review	CCRF Gas Tax	\$15,000		\$15,000	\$2,250	\$17,250	\$17,250					
2 Filling Plan/Final Closure Contours	Grant Funding-INAC-Building Canada	\$30,000	\$15,000	\$45,000	\$6,750	\$51,750	\$51,750					
3 Hydrogeological Assessment	Grant Funding-INAC-Building Canada											
4 Drilling Program (estimate 3 holes)	Grant Funding-INAC-Building Canada	\$10,000	\$45,000	\$55,000	\$8,250	\$63,250		\$63,250				
5 Reporting	Grant Funding-INAC-Building Canada	\$30,000		\$30,000	\$4,500	\$34,500		\$34,500				
6 Design, Operations & Closure Plan	Grant Funding-INAC-Building Canada	\$50,000		\$50,000	\$7,500	\$57,500			\$57,500			
7 Interim Cover/Stormwater Management	Grant Funding-INAC-Building Canada											
8 Design interim cover system	Grant Funding-INAC-Building Canada	\$15,000		\$15,000	\$2,250	\$17,250				\$17,250		
9 Design stormwater management plan	Grant Funding-INAC-Building Canada	\$20,000		\$20,000	\$3,000	\$23,000				\$23,000		
10 Construction	Grant Funding-INAC-Building Canada		\$250,000	\$250,000	\$37,500	\$287,500					\$287,500	
11 Purchase Roll-Off Bins (3-4 in 2017, roll-off deck c/w water tank in 2018)	SWM Capital Budget		\$30,000.00	\$30,000.00	\$0.00	\$30,000.00	\$20,000.00	\$10,000.00				
12 Purchase Used Roll-off truck	SWM Capital Budget		\$50,000.00	\$50,000.00	\$0.00	\$50,000.00	\$50,000.00					
13 Construct 3600 sqft Free Store-Upcycling Centre	Grant Funding-INAC-Building Canada		\$216,000.00	\$216,000.00	\$7,200.00	\$223,200.00		\$223,200.00				
14 Composting - Construct Basic Compost Building 800 sq ft@560/sqft	Grant Funding-INAC-Building Canada		\$48,000.00	\$48,000.00	\$7,200.00	\$55,200.00		\$55,200.00				
14 Purchase Portable Scale 40K plus freight and install	Grant Funding-INAC-Building Canada		\$50,000.00	\$50,000.00	\$0.00	\$50,000.00			\$50,000.00			
15 Composting and Operations - Lease/Purchase Skid Steer	SWM Capital Budget/Financing/Borrowing		\$75,000.00	\$75,000.00	\$0.00	\$75,000.00			\$18,750.00	\$11,250.00	\$11,250.00	
16 Composting and Operations - Purchase Used Vermeer Wood Chipper	Grant Funding-INAC-Building Canada		\$25,000.00	\$25,000.00	\$0.00	\$25,000.00			\$25,000.00			
17 Composting and Operations - Purchase Windrow Turner for Skid	Grant Funding-INAC-Building Canada		\$15,000.00	\$15,000.00	\$0.00	\$15,000.00				\$15,000.00		
18 Landfill Temporary Cover Tarps-Alternative to Line 10	Grant Funding-INAC-Building Canada		\$60,000.00	\$60,000.00	\$0.00	\$60,000.00						
19 Replace Packer Truck	Grant Funding-INAC-Building Canada		\$100,000.00	\$100,000.00	\$0.00	\$100,000.00						
20 Purchase Excavator, Wheel Loader & Horizontal Grinder if required	Purchase-Financing/Borrowing		\$500,000.00	\$500,000.00	\$0.00	\$500,000.00					\$500,000.00	
Total From Capital Budget							\$70,000	\$10,000	\$18,750	\$11,250	\$511,250	\$11,250
Total From Community Works Funding (Gas Tax)							\$17,250	\$0	\$0	\$0	\$0	\$0
Total From Grants							\$51,750	\$376,150	\$132,500	\$56,250	\$287,500	\$0



6.2 Schedule B: Existing System Report



Carey McIver & Associates Ltd.
ENVIRONMENTAL CONSULTANTS

Existing Solid Waste Management System

Prepared for

Central Coast Regional District

By

Carey McIver and Associates

in association with
Maura Walker and Associates

July, 2016



Carey McIver & Associates Ltd.

ENVIRONMENTAL CONSULTANTS

July 15, 2016

Ken McIlwain, R.P.F., Public Works Manager
Central Coast Regional District
Box 186
Bella Coola, BC V0T 1C0

Dear Mr. McIlwain,

Re: Existing System Report

We are pleased to submit our draft Existing System report that describes the current solid waste management system in Central Coast Regional District and reports on the implementation status of the 2004 Solid Waste Management Plan.

We anticipate that the information contained in this report will be reviewed by Regional District staff and members of the Solid Waste Advisory Group before being finalized. We look forward to receiving feedback.

Yours truly,

Carey McIver, Principal
Carey McIver and Associates Ltd.



Glossary

Disposal	Landfilling
Diversion	Activities that divert waste materials away from disposal as garbage to alternatives such as recycling or composting. Does not include combustion of garbage to produce energy.
CR&D	Construction, renovation and demolition
EPR	Extended producer responsibility
Waste Generation	The sum of all materials discarded that require management as solid waste, including garbage, recycling and composting. Does not include organic waste composted at home.
HHW	Household hazardous waste e.g. leftover paint, pesticides, fuels, etc.
ICI	Industrial, commercial and institutional (does not include heavy industry)
MMBC	Multi-Material BC (residential recycling product stewardship organization)
MOE	BC Ministry of Environment
MSW	Municipal solid waste. Based on BC's Environmental Management Act, MSW is refuse that originates from residential, commercial, institutional, demolition or construction sources. It does not include hazardous waste produced by commercial and institutional sources.
Organic waste / organics	Kitchen scraps, food waste, yard and garden waste
Plan	Regional Solid Waste Management Plan
CCRD	Central Coast Regional District
SWAG	Bella Coola Valley Solid Waste Advisory Group: a group of solid waste management stakeholders from the Valley that provide input into the development of the solid waste management plan. In place for the duration of the process to update the 2004 solid waste management plan.
SWMP	Solid Waste Management Plan
TCWRC	Thorsen Creek Waste and Recycling Centre



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1 Introduction

The Central Coast Regional District (CCRD) is undertaking a review of the 2004 Regional Solid Waste Management Plan (SWMP). A Solid Waste Management Plan is a legally binding document that is mandated by the province for all regional districts. The purpose of the SWMP is to provide the CCRD with a guiding document that will direct the Region's solid waste management activities over the next 5 to 10 years, while also considering longer-term objectives and opportunities.

The process to review the plan will be conducted in three steps. The first step is an assessment of the current system and a report on the implementation status of the 2004 Plan. The second step is the review of options to address the region's future solid waste management needs and the selection of preferred options. The final step will be a community and stakeholder consultation process to obtain input into the selected options.

This document outlines the implementation status of the 2004 Plan and describes the current waste management system in the CCRD. This information will be used as the baseline for developing an updated SWMP.

1.1 The Waste Management Hierarchy

The Province reports that solid waste management planning is a proven way to reduce the amount of solid waste requiring disposal, which also serves to protect of the environment and the public interest.¹ Consequently, the process to develop a solid waste management plan utilizes the waste management hierarchy, as shown in Figure 1-1.¹

1.2 Guiding Principles

The Province has proposed eight guiding principles, listed below, for regional districts to follow in developing their solid waste management plan. Additional guiding principles can be added to ensure that the principles are reflective of the CCRD.

1. Promote zero waste approaches and support a circular economy

Encourage a shift in thinking from waste as a residual requiring disposal, to waste as a resource that can be utilized in closed-loop systems. Zero waste approaches aim to minimize waste generation and enable the sustainable use and reuse of products and materials. At the local level, look to remove barriers or encourage opportunities that will contribute to towards the establishment of a circular economy.

2. Promote the first 3 Rs (Reduce, Reuse and Recycle)

Elevate the importance of waste prevention by prioritizing programming and provision of services for the first 3 Rs in the 5 R pollution prevention hierarchy (see Figure 1-1). Encourage investments in technology and infrastructure, and ensure they occur as high up on the hierarchy as possible.

¹ BC Ministry of Environment. *Guide to Solid Waste Management Planning DRAFT 2016-05-16*

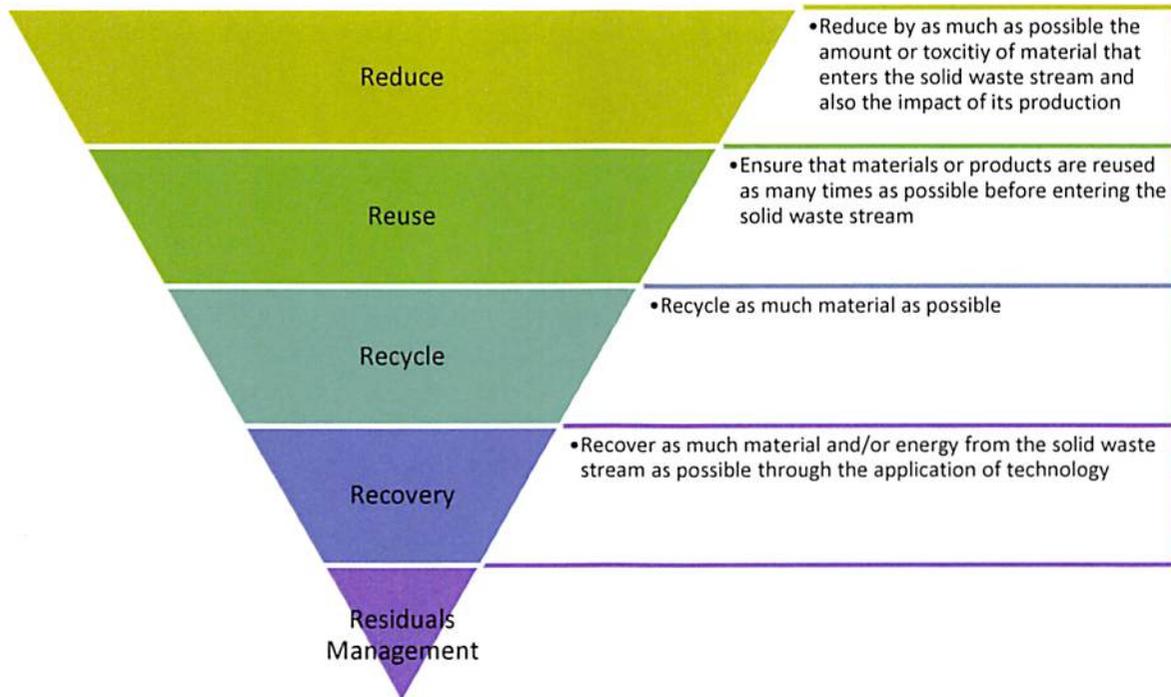


Figure 1-1 Waste Management Hierarchy

3. Maximize beneficial use of waste materials and manage residuals appropriately

Technology, best practices and infrastructure investments should continue to develop to recover any remaining materials and energy from the waste stream, and to manage residuals for disposal.

4. Support polluter and user-pay approaches and manage incentives to maximize behaviour outcomes

Producer and user responsibility for the management of products can be supported through the provision of market-based incentives, disposal restrictions on industry-stewarded products, zoning to support collection facilities, and support for reuse and remanufacturing businesses. Education and behaviour change strategies aimed at consumers and businesses will help foster further waste reduction, reuse and recycling. For example, user fees can be managed as incentives to increase waste reduction and diversion.

5. Prevent organics and recyclables from going into the garbage wherever practical

Maintaining a system to prevent organics and recyclables from going into the garbage will provide clean feedstock of greater economic value as well as a potential end product use to the recycling industry, while reinforcing behaviour to reduce, reuse and recycle. Innovation in separation solutions, establishment and enforcement of disposal restrictions or other creative means will influence this approach.

6. Collaborate with other regional districts wherever practical

Collaboration on many aspects of solid waste management (e.g., to access facilities and markets, share campaigns and programs) will support the most efficient and effective overall municipal solid waste system.



7. Develop collaborative partnerships with interested parties to achieve regional targets set in plans

Strengthen partnerships with interested parties to achieve regional targets. All waste and recycling service providers, industry product stewards and waste generators are key interested parties in achieving these targets. Cooperative efforts will optimize successful outcomes. Encourage a marketplace that will complement stewardship programs and drive private sector innovation and investment towards achievement of targets.

8. Level the playing field within regions for private and public solid waste management facilities

Solid waste management facilities within a given region should be subject to similar requirements. A consistent set of criteria should be used to evaluate the waste management solutions proposed by private sector and by a regional district or municipality

1.3 Implementation Status of the 2004 Regional Solid Waste Management Plan

The key objectives of the 2004 SWMP were to:

- Establish an effective financing mechanism for solid waste management
- Improve landfilling practices at the landfill serving the Bella Coola Valley (Thorsen Creek Waste and Recycling Centre)
- Work towards waste reduction

Each of these objectives has been achieved.

Table 1-1 lists the key actions in the 2004 SWMP and their implementation status as of May 2016. In general, most of the actions listed in the Plan were implemented or are in the process of being implemented. However, there are a number of programs and policies that were not implemented due to a lack of resources.

Table 1-1 2004 Solid Waste Management Plan: Key Actions and Implementation Status

Key Actions for the Bella Coola Valley	Status
Diversion Related Actions	
Improve waste reduction at Thorsen Creek	Complete – extensive recycling opportunities and Share Shed in place
Install bear-resistant fencing	Complete
Regulated open burning of wood and cardboard	Complete
Promote stewardship programs	Complete (on-going)
Implement tire and lead acid battery recycling	Complete
Implement Free Store (reuse area) at Thorsen Creek	Complete



Have scrap metal removed from Thorsen Creek	Complete (on-going)
Public reduce and reuse education	Complete (on-going)
Retailer reduce and reuse education	Incomplete
Investigate office paper and cardboard recycling	Complete. Determined to be financially unviable.
Promote home composting	Incomplete
Disposal Related Actions	
Expand landfill boundaries	Incomplete. Unable to acquire additional land. Moving the existing transfer station and depot off the landfill will expand the area available for future landfilling.
Improve landfill practices at Thorsen Creek	On-going
Scale attendant and operator training	Incomplete
Develop key control and a bylaw for landfill use	Complete but in need of an update
Implement weekly cover of landfilled waste	Complete
Inspect incoming loads of waste at Thorsen Creek	Underway. Capacity to inspect loads will improve at new transfer site.
CFC removal from fridges and freezers	Complete (on-going)
Develop a Closure Fund for the landfill	Complete
Twice annual litter pick-up at Bella Coola landfill/valley	Complete (on-going)
Conduct bear education to minimize the potential for bear-human conflict	Complete (undertaken by MOE and Bear Aware)
Establish a Plan Monitoring Committee	Incomplete
Enhance water quality monitoring	Incomplete
Burning select waste (e.g. wood) under good venting index only	Complete (on-going)
Other Actions	
Work with Nuxalk Nation on funding	Complete



2 Plan Area

The Central Coast Regional District CCRD is bound by Mount Waddington Regional District to the south, Cariboo Regional District to the east, Kitimat-Stikine Regional District to the north, and the Pacific Ocean to the west. It covers an area of more than 24,000 km². CCRD is the only regional district in British Columbia without any incorporated municipalities. The region's boundaries are divided into five electoral areas, as shown in Figure 2-1 and listed below:

- i. **Electoral Area A**, commonly referred to as the "Outer Coast," Area A includes Ocean Falls, Denny Island and Oweekeno, and all points in between. The boundary commences west of the Bella Coola town site and follows the regional district boundaries north almost to the First Nations community of Klemtu, and south past Rivers Inlet and Oweekeno, home of the Wuikinuxv First Nation.²

Electoral Area B consists of seven square kilometres and is located on Campbell Island, also known as Bella Bella. The Heiltsuk community is primarily comprised of First Nations residents.⁵

Electoral Area C is located in the eastern portion of the regional district, at the upper end of the Bella Coola Valley and borders the Cariboo Regional District.⁵

- ii. **Electoral Area D** commences in Hagensborg and runs from the Augsburg Church west to Tatsquan Creek.⁵
- iii. **Electoral Area E** is the Bella Coola town site and consists of a small residential population and contains the majority of the commercial activity in the valley.⁵

The population count has remained relatively unchanged since the 2006 census. BC Stats estimates the 2016 population to be 3,350³. In twenty years, the population is projected to be 3,831.⁴ Population density in CCRD is 0.13 persons per square kilometer.⁴

Table 2-1 Estimated 2016 Population, By Community⁵

Area	% of CCRD total	Estimated Population
Bella Coola Valley	59%	1,973
Bella Bella	36%	1,206
Ocean Falls	1%	35
Denny Island	2%	70
Oweekeno	2%	66
Central Coast Regional District	100%	3,350

² <http://www.ccrd-bc.ca/board/areas.php>

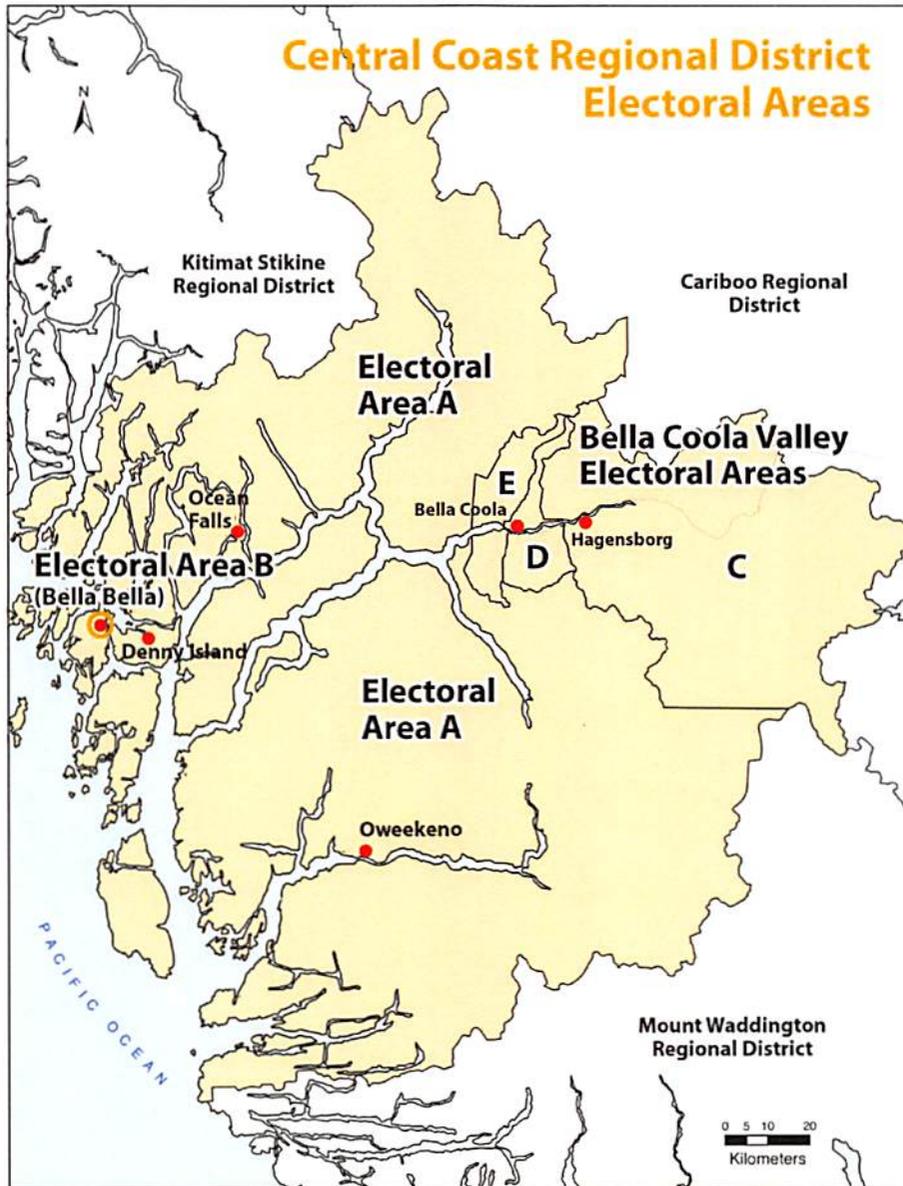
³ Source: <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationProjections.aspx>

⁴ Source: <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Census/2011Census/PopulationHousing/MunicipalitiesByRegionalDistrict.aspx>

⁵ Source: <http://www.ccrd-bc.ca/communities/>, Statistics Canada 2011 Census of Population, BC Stats population estimates



Figure 2-1 Map of Central Coast Regional District





2.1 Housing Data

In 2011, there were 1,210 occupied households in the CCRD. Table 2-2 provides a breakdown of the types of housing.⁶

Table 2-2 Housing Types

Housing Type	Occupied Units (2011)
Single-detached house	1,020
Apartment; building that has five or more storeys	0
Movable dwelling	40
Other dwelling	155
<i>Semi-detached house</i>	45
<i>Row house</i>	60
<i>Apartment; duplex</i>	15
<i>Apartment; building that has fewer than five storeys</i>	30
<i>Other single-attached house</i>	5
Total number of occupied private dwellings	1,210

⁶ Source: Statistics Canada 2011 Census of Population



3 Existing Solid Waste Management System

Figure 3-1 shows the key areas of waste management, as well as the general flow of waste from its source (waste generation), through the various collection channels, to either a diversion activity or disposal. These activities are supported by communication and education initiatives, as well as government policies and bylaws.

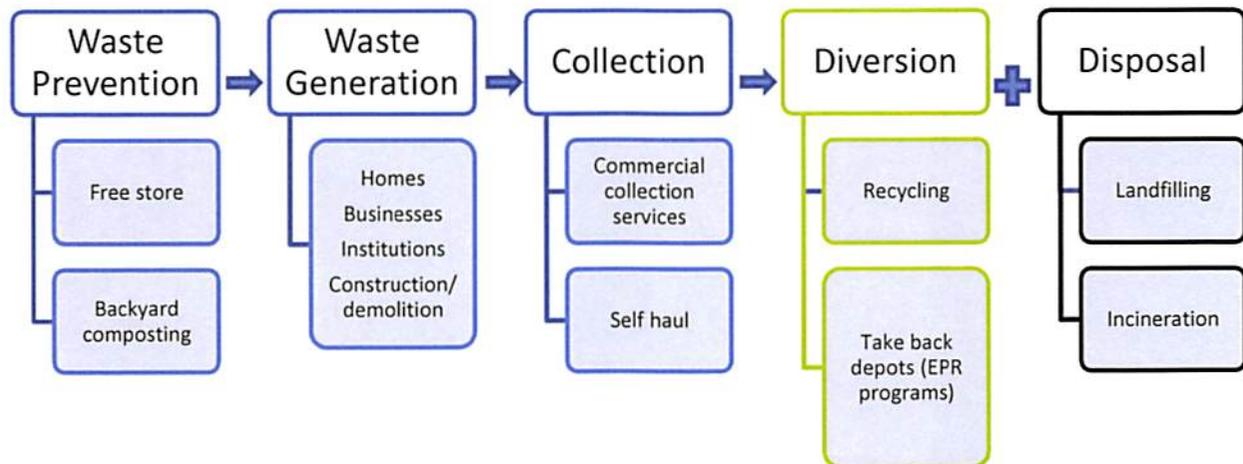


Figure 3-1 CCRD Waste Flow

Sections 3.1 through 3.4 of the report describe the existing waste management system in each of the population centres in the CCRD: Bella Coola Valley, Ocean Falls, Denny Island, Bella Bella and Oweekeno.

3.1 Bella Coola Valley

The Bella Coola Valley is the main population centre in the CCRD and the only area where the Regional District provides solid waste management services to an estimated population of 1,900 residents.

The Bella Coola Valley refers to Electoral Areas C, D and E and is comprised of roughly 59% of the CCRD's population. Approximately half of the population of the Valley are members of the Nuxalk Nation that live on reserve lands. The Nuxalk Nation has a financial agreement with the CCRD that allows them to contribute to the CCRD's solid waste function.

3.1.1 Reduction and Reuse Activities

Reduction and reuse activities minimize the amount of waste that needs to be managed through available recycling services or by disposal in the landfill.



In a recent on-line questionnaire conducted by the CCRD about solid waste management behaviours, 79% of resident of the Bella Coola Valley report that they compost yard waste and 62% compost vegetative kitchen scraps, which reduces the amount of waste that they need to bring to the landfill.

Formal reduction and reuse activities in the Bella Coola Valley include:

- The Share Shed at the CCRD's Thorsen Creek Waste and Recycling Centre (TCWRC), which allows residents and businesses to drop off and pick up reusable household goods at no cost. In that same questionnaire, 60% of respondents indicated that they use the Share Shed.
- The United Church operates a thrift shop on a monthly basis that sells donated used goods;
- The Co-op donates food that close to its "best before" date to local social service organizations.

3.1.2 Collection Services

There are two private collection companies serving the Bella Coola Valley. One company provides a commercial bin service to the industrial, commercial and institutional (ICI) sector and construction/renovation projects. The other company provides a curbside collection service, which primarily services residential customers.

The owner of the curbside waste collection company estimates that 10-15% of Valley residents contract for household waste collection, with the remaining homes hauling their own waste to the TCWRC.

3.1.3 Recycling

There are two recycling facilities in the Bella Coola Valley: the TCWRC and the privately run Bella Coola Recycling Depot.



Recycling Area at TCWRC



Bella Coola Recycling Depot

Figure 3-2 Recycling Facilities in the Bella Coola Valley



Table 3-1 lists the materials accepted at each facility. Note that most of these materials are part of an Extended Producer Responsibility (EPR) take back program. See section 5.5 for more information on EPR programs.

Table 3-1 Recycling in the Bella Coola Valley

Recyclable Materials	Accepted at Thorsen Creek Waste & Recycling Centre	Accepted at Bella Coola Recycling Depot
Paper	<ul style="list-style-type: none"> ▪ residential paper & cardboard 	
Plastic	<ul style="list-style-type: none"> ▪ most residential plastic packaging 	
Metal	<ul style="list-style-type: none"> ▪ all scrap metal ▪ metal food containers ▪ refundable cans (no refund given; containers given to charity) 	<ul style="list-style-type: none"> ▪ refundable cans (refund given)
Electrical products	<ul style="list-style-type: none"> ▪ large appliances, small appliances, power tools 	<ul style="list-style-type: none"> ▪ small appliances, power tools
Electronics	<ul style="list-style-type: none"> ▪ all electronics 	<ul style="list-style-type: none"> ▪ all electronics
Batteries	<ul style="list-style-type: none"> ▪ automotive ▪ rechargeable & non-rechargeable 	<ul style="list-style-type: none"> ▪ automotive ▪ rechargeable & non-rechargeable
Glass	<ul style="list-style-type: none"> ▪ food containers & non-refundable bottles ▪ refundable bottles (no refund given) 	<ul style="list-style-type: none"> ▪ refundable bottles (refund given)
Household hazardous waste	<ul style="list-style-type: none"> ▪ paint, pesticides, fuels, solvents ▪ motor oil, oil containers & filters ▪ antifreeze 	<ul style="list-style-type: none"> ▪ paint
Tires	<ul style="list-style-type: none"> ▪ car & light truck tires 	
Lighting	<ul style="list-style-type: none"> ▪ light bulbs & fixtures 	<ul style="list-style-type: none"> ▪ residential light bulbs & fixtures
Other	<ul style="list-style-type: none"> ▪ aseptic packaging (e.g. milk cartons, soup boxes) ▪ smoke & CO detectors ▪ thermostats 	<ul style="list-style-type: none"> ▪ smoke & CO detectors ▪ thermostats

The majority of the cost of residentially-generated recyclable paper and packaging are covered by an EPR program for these materials. This program, however, does not extend to paper and packaging (including cardboard) generated by businesses or institutions and as a result, the cost of recycling these



materials is prohibitive. Consequently commercial cardboard is burned at the TCWRC, which saves landfill space, and no recycling services are available for commercial paper or plastics.

3.1.4 Communications and Education

Beginning in 2015, the CCRD initiated a school program that brings information regarding the 3Rs of “reduce, reuse and recycle” to local schools. This program is undertaken by a contractor.

The CCRD also provides information on the TCWRC on their website, including facility hours, site rules and a detailed list of the items accepted for recycling.

A cursory review of residential garbage delivered to TCWRC indicated that many residents are not participating fully in the available recycling services. Without significant financial incentives available (such as tipping fees on garbage disposal) to incent waste diversion, there remains the opportunity to develop better behaviours through effective promotion and communication.

3.1.5 Extended Producer Responsibility

Extended Producer Responsibility (EPR) is a provincial policy tool that aims to shift the responsibility for end-of-life management of products (physically and financially) to the producer and away from local governments. This policy is also intended to create an incentive for producers to include environmental considerations in design of products.

EPR programs in BC are mandated by Recycling Regulation 449/2004, under the *Environmental Management Act*. The regulation requires producers of the designated products to develop a program for their end-of-life collection and recovery of materials and to consult stakeholders (including local governments) when developing their plans.

The range of products managed through EPR programs has expanded significantly in the last decade. Table 3-2 provides a list of the products currently covered by an EPR program and the estimated quantities collected by each program. This data has been extracted from annual reports developed by the various stewardship organizations or provided by the CCRD. Roughly 200 tonnes of EPR end-of-life products are collected in the CCRD annually.

In the Bella Coola Valley, the collection of end-of-life EPR products is done at the TCWRC and the Bella Coola Recycling Depot. Refer to Table 3-1 for a list of what items are accepted at each location.

CCRD provides information and monitor the activities of the BC Product Stewardship Council, a body that advocates on behalf of local government for effective product stewardship programs.

The CCRD is experiencing some issues associated with poor service or low costs recovery from some EPR programs that will need to be addressed through on-going advocacy, direct contract negotiations and possibly working through the province to ensure that all EPR programs meet their statutory obligations.



Table 3-2 EPR programs in BC

Product Category	Program(s)	Estimated tonnes collected in CCRD in 2014 ⁷
Antifreeze, Used Lubricating Oil, Filters and Containers	BC Used Oil Management Association	8.3
Beverage Containers	Encorp (non-alcoholic and wine, spirits, coolers and import beer in non-refillable containers)	36.5
	Brewers Distributed Limited (fillable and canned beer)	
Electronics and Electrical	Call2Recycle/Recycle My Cell (batteries and cell phones)	0.1
	Electronics Products Recycling Association (EPRA) (electronics: Computers, televisions, audio-visual, medical equipment, office equipment)	6.1
	LightRecycle (lamps and lighting equipment)	0.1
	Major Appliance Recycling Roundtable (MARR) (large appliances)	23.0
	Outdoor Power Equipment Institute (OPEI) (Outdoor Power Equipment)	
	Canadian Electric Stewardship Association (CESA) (small appliances, power tools, sports and exercise equipment, hobby, craft)	3.0
	AlarmRecycle (smoke and carbon monoxide alarms)	0.0
	Switch the 'Stat (thermostats)	0.0
	Canadian Brandowner Residual Stewardship Corporation (toys –electric and electronic)	0.0
	Lead Acid Batteries	Canadian Battery Association & Interstate Battery System
Packaging and Printed Paper (residential only)	Multi-Material BC	36.5
Paint and Solvents and Flammable Liquids, Gasoline and Pesticides	Product Care	1.3
Pharmaceuticals	Health Product Stewardship Association	0.0
Tires	Tire Stewardship BC	48.0

⁷ Estimates developed from 2014 annual reports submitted by each of the stewardship organizations to the Ministry of Environment. These reports are posted on the Ministry's website at: <http://www2.gov.bc.ca/gov/content/environment/waste-management/recycling/product-stewardship>



3.1.6 Residual Waste Management

Residual waste refers to discarded materials that are not diverted to reuse, recycling or composting and therefore require landfilling. In the Bella Coola valley, residual waste is landfilled at the Thorsen Creek Waste and Recycling Centre (TCWRC).

Features of the TCWRC include:

- A transfer area for small vehicles
- The active area for disposal of municipal solid waste (subject to daily cover using on-site gravelly soils)
- Electric fencing around the active filling area to detract bears from the site
- A scrap metal storage area
- A tire storage area
- Collection areas for a wide variety of EPR materials, including residential packaging and printed paper
- A share shed for reusable items
- An area for burnable wood
- An area for burnable commercial cardboard
- A fill area for inert waste (e.g. concrete, asphalt shingles)

Refer to Figures 3-4 and 3-5 for pictures of some of these features. Based on an estimated population of 2,000 people in the Bella Coola Valley, including people living on Reserves, and an estimate disposal rate of 450 kg/capita, the landfill receives approximately 900 tonnes of residual waste per year.



Figure 3-3 Cardboard and Wood Waste Burn Piles



Figure 3-4 Active Filling Area and Bear Fence

Issues associated with the Thorsen Creek Waste and Recycling Centre include:

- Lack of tipping fees on self-haul waste provides limited incentive to participate in recycling programs (household recyclables noted in bags of garbage deposited in the transfer bins)
- Minimal monitoring of incoming loads of garbage (for recyclables and hazardous materials)
- Share Shed area is unkempt which may discourage some users in participating in this aspect of the Centre (Note: this issue should be improved once the new transfer station is operational).

Additionally, a review by landfill engineers from Morrison Hershfield in May 2016 indicated the following landfill-related issues at the TCWRC:

- Landfill does not have a design, operation and closure plan
- Filled areas have not undergone final cover (to minimize the infiltration of rain)
- The slopes of some of the filled areas are too steep and need to be regraded for long-term slope stability
- A groundwater monitoring program is needed.

These landfill engineering-related issues have significant budget implications and how to pay for them will need to be addressed as part of this planning process.

3.1.7 Bylaws and Policies

There are two bylaws associated with solid waste management in the CCRD. The first is the Refuse Disposal Regulatory Bylaw, No. 375. This bylaw gives the CCRD the authority to receive and manage refuse and assess tipping fees in the Bella Coola Valley. The current tipping fee structure, as shown in



Table 3-3 applies to non-household waste. Examples of non-household waste, as defined by the CCRD, include metals, large plastics, appliances, furniture, construction and demolition waste, land clearing/yard waste, wood waste and automobile hulks. Fees are assessed on a volume basis since there are no weigh scales at the site. In practice, however, only non-household garbage such as construction/demolition waste and scrap metal is assessed a tipping fee. Recyclable materials are accepted at no cost to the customer with the exception of metals.

Table 3-3 Thorsen Creek Waste and Recycling Centre Tipping Fees for Non-Household Waste

Single item or small load	\$5
½ Pick up truck load	\$13
Full pick up truck load	\$25
Mid-sized load (1-2 ton single axle truck)	\$50
Large load (3-5 ton single axle truck)	\$75
Oversize load (tandem axle gravel truck)	\$175
Other (subject to determination by attendant)	TBD

The second bylaw is Bylaw No. 447, which establishes a reserve fund for the landfill closure and post-closure monitoring and maintenance. This bylaw was established in 2014.

The CCRD currently bans specific materials from disposal in the landfill. These items are accepted at the Thorsen Creek Waste and Recycling Centre, but they must be kept separate from the garbage and deposited in the appropriate storage area at the centre:

- cardboard
- batteries
- metal, including large appliances
- wood
- yard waste
- liquid wastes
- small appliances and electronics
- paint and paint cans
- used oil and antifreeze
- tires
- waste containing asbestos
- propane tanks and other pressurized vessels.

The Refuse Disposal Bylaw requires updating to reflect shifting operational policies, including the disposal restrictions listed above. Further, the application of tipping fees could also be reviewed to provide revenue to fund landfill engineering projects and incentivize waste diversion.

3.2 Ocean Falls

Ocean Falls is a community of roughly 35-60 people, most of which are summer residents only. The community is serviced by BC Ferries. The area is governed by the Ocean Falls Improvement District (OFID)

OFID provides solid waste management services to the community, which includes

- Scrap metal storage (Figure 3-6);



- A burn area for wood waste;
- A small scale agricultural incinerator for combustible municipal solid waste(Figure 3-7); and
- A disposal pit for incinerator ash, tires and inert materials likes glass (Figure 3-8).

The incinerator was purchased in 2012 and is located on crown land.



Figure 3-5 Scrap Metal Pile

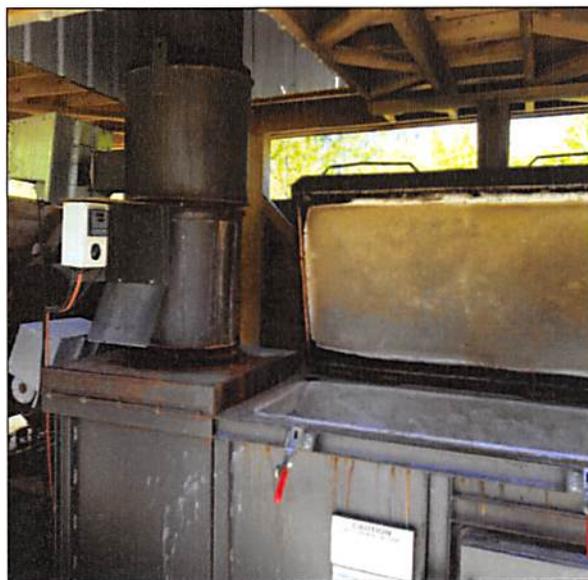


Figure 3-6 Incinerator



Figure 3-7 Disposal Pit

Refundable beverage containers are currently collected by a local resident.

Issues associated with the Ocean Falls waste management system include:

- The site of the incinerator was changed from its original site at the request of the Crown but the operational certificate for the incinerator is for the old location. The OFID requested that their operational certificate be amended accordingly 2 years ago but have not received an updated certificate.
- The location of the incinerator and the disposal pit area are on Crown land and the OFID does not have a lease of occupation.

3.3 Denny Island

Denny Island is home to the Shearwater Resort & Marina and roughly 70 residents. The community is also serviced by BC Ferries and is a popular destination for boaters. Because of its popularity for tourists, the small community is has a significant number of commercial services including hotels, restaurants, a campground, shipyard, grocery store, liquor store, hardware store and laundromat, with the majority of these businesses provided by the Shearwater Resort.

Recycling collection is available at the Shearwater Resort for area residents, transient boaters, and Shearwater's businesses, as shown in Figure 3-9. The following items are collected:

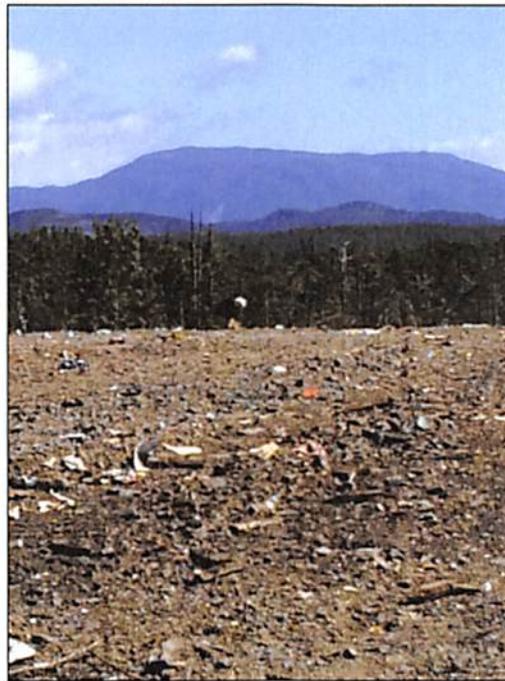


- cardboard
- lead-acid batteries
- scrap metal
- refundable beverage containers
- used oil and antifreeze



Figure 3-8 Recycling on Denny Island

The Shearwater Resort & Marina also provides residual waste management services to the island. They operate a permitted landfill for municipal solid waste (see Figure 3-9) and an air curtain burner for wood waste and cardboard (see Figure 3-10).



Top of Denny Island
Landfill (covered)



Toe of Denny Island
Landfill

Figure 3-9 Denny Island Landfill



Figure 3-10 Air Curtain Burner at Denny Island Landfill

The community has a Waste Reduction Committee that is working with the resort to establish a full-scale, staffed recycling depot.

Issues associated with the Denny Island waste management system include:

- funding for the recycling program proposed for the island; and
- litter debris management at the landfill.

3.4 Bella Bella and Owekeeno

Residents of Bella Bella and Owekeeno are primarily First Nations and operate their solid waste management system with support from Aboriginal Affairs and Northern Development Canada (AANDC).

Bella Bella has a full-scale, staffed recycling depot and transfer station owned and operated by the Heiltsuk Nation. Their recycling depot is a collector of many EPR products, including residential packaging and paper, small appliances, electronics, paints, pesticides, fuels and tires. Garbage, recycling and EPR products are barged out of the community to the Regional District of Mount Waddington's 7 Mile Landfill near Port Hardy.

The waste management system at Owekeeno is operated by the Owekeeno Band. Additional information on the system was not available at the time of preparing this report.



4 Waste Stream Characterization

This section provides a general description of the solid waste generated in the CCRD, including estimates of the composition of the waste disposed and how much is landfilled vs. recycled. This information, along with the system description in Section 0, provides an overview of the current solid waste management system.

4.1 Waste Disposed

There are no scales at any of the waste disposal facilities in the CCRD and therefore there is no CCRD-specific data available regarding the amount of waste landfilled. However, data from comparable communities with scales can provide an indication of the amount of waste disposed in the CCRD. Using an average of waste disposal data from Valemount, Port McNeill and Port Alice, it is estimated that CCRD disposes of roughly 450 kg per capita annually, including residential, commercial and construction/demolition sources. For comparative purposes, the BC average disposal rate was 523 kg per capita based on 2014 data. Assuming that the 2016 CCRD population is 3,350, roughly 1,508 tonnes of waste is disposed (landfilled) from the CCRD annually. For the Bella Coola Valley, with an estimated population of 2,000, roughly 900 tonnes of waste is disposed (landfilled) annually.

4.2 Waste Diverted

Waste diversion refers to activities which provide an alternative to landfilling discarded materials. This includes organized efforts to reuse materials (such as the Share Shed at the Thorsen Creek Waste and Recycling Centre), recycling program and Extended Producer Responsibility (EPR) programs. (See Section 3.1.5 for more details on EPR.)

The two main locations for recycling in the Bella Coola Valley are the Thorsen Creek Waste and Recycling Centre and the Bella Coola Recycling Depot. Collectively, these 2 facilities are estimated to divert 478 tonnes annually, as detailed in Table 4-1. Consequently, the estimated diversion rate for the Bella Coola Valley is 35%.⁸

Table 4-1 Estimated Diversion in the Bella Coola Valley

Material	Tonnes
EPR products	155
Tires (also an EPR product)	48
Scrap metal	275
TOTAL	478

There are additional waste diversion initiatives happening in Bella Bella (undertaken by the Heiltsuk Nation) and Shearwater (undertaken by Shearwater Marine).

⁸ Diversion rate = tonnes of diverted material / (tonnes of diverted material + tonnes disposed) x 100%: = 478t / (478t + 900t) x 100%



4.3 Composition of Waste Disposed

Figure 4-1 shows the estimated composition (by weight) of the waste disposed of in the Bella Coola Valley. This is an estimate based on composition study undertaken by the Sunshine Coast Regional District at their Pender Harbour Transfer Station in 2015. Pender Harbour is a small community without municipal curbside collection services for garbage or recyclables. As shown, the largest components of the landfilled waste stream, by weight, are compostable materials (30%), recyclable materials (26% - the combination of glass, paper, cardboard, plastic and metal) and building materials (17%). This study data is comparable to the composition of many BC communities and is intended to be illustrative of the potential opportunities to increase the amount of diversion of materials away from the landfill.

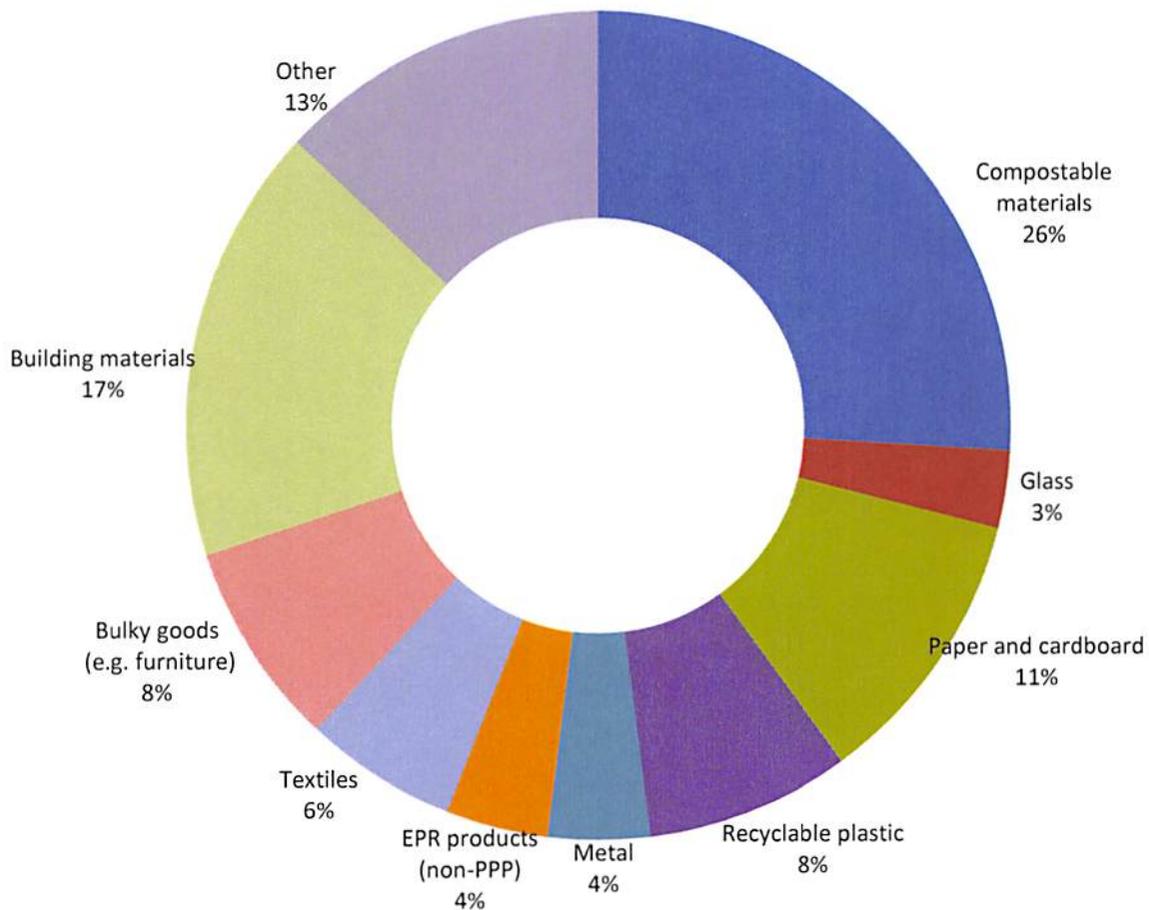


Figure 4-1 Estimated Composition of Waste Disposed in the CCRD



4.4 Source of Delivered Waste

Based on observations at the TCWRC landfill and discussions with CCRD staff, it is estimated that 70% of the waste landfilled at TCWRC is residential and 30% comes from commercial sources such as businesses, construction and renovation projects, and institutions (schools, hospitals, government offices, etc.).



5 Provincial Legislation

Solid waste management is regulated by the Province of BC and both public and private facilities are subject to these regulations. Each of the key pieces of legislation related to the management of solid waste is described below.

5.1 Environmental Management Act

The *Environmental Management Act* governs the management of waste in British Columbia. The act provides the authority for introducing wastes into the environment in a manner that protects human health and the environment. The act enables the use of permits, regulations and codes of practice to authorize discharges to the environment and enforcement options to encourage compliance.

5.2 Recycling Regulation

This regulation requires producers of the designated products to develop a program for their end-of-life collection and recovery of materials and to consult stakeholders when developing their plans. The current list of designated products currently includes most beverage containers, most household hazardous waste, household goods powered by electricity and batteries, and residentially-generated paper and packaging.

5.3 Open Burning Smoke Control Regulation

This regulation applies to fires for purposes such as land clearing, silviculture, forestry, wildlife habitat enhancement, and domestic range improvement. The intent of the regulation is to reduce smoke emissions and impacts without requiring an Air Emission Permit from the BC. The regulation outlines when and how open burning can occur and is currently under review.

5.4 Organic Matter Recycling Regulation (OMRR)

The Organic Matter Recycling Regulation of B.C. (OMRR) governs the production, quality and land application of certain types of organic matter. It provides guidance for compost producers on composting requirements to ensure the protection of soil quality and drinking water sources. This regulation is currently under review.

5.5 Landfill Criteria for Municipal Solid Waste

BC's Landfill Criteria for Municipal Solid Waste applies to all new landfills and expansions of existing landfills, designed and constructed for the disposal of MSW. These criteria are currently under review and a draft version of the revised criteria has been published.

5.6 Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills

These guidelines are intended to assist landfill owners and operators to design and implement an environmental monitoring program for groundwater and surface water as required by the *Landfill Criteria for Municipal Solid Waste*.



5.7 Landfill Gas Management Regulation

The Landfill Gas Management Regulation applies to all regulated landfill sites that:

- Have 100,000 tonnes or more of municipal solid waste in place, or
- Receive 10,000 or more tonnes of municipal solid waste for disposal into the landfill site in any calendar year after 2008.

Based on their small size, none of the landfills operating in the CCRD are affected by this regulation.



6 Financing of the Regional District's Solid Waste Services

As discussed in Section 3.1, the CCRD solid waste management function is limited to the Bella Coola Valley. The following Table 6-1 provides a breakdown of the revenues and expenditures contained in the 2016 Financial Plan for the solid waste management service.

Table 6-1 2016 Solid Waste Management Financial Plan

Financial Plan	2016
Income	
Property Taxation	\$ 94,239
CCRD (Provincial Basic Grant)	\$ 46,677
Nuxalk Nation Contribution	\$ 103,750
Multi-Material BC	\$ 6,950
User Fees	\$ 11,000
Total Income	\$ 262,616
Expense	
Apportioned Administration Fees	\$ 56,226
Advertising & Promotion	\$ 9,000
Capital Works	\$ 56,687
Communications	\$ 1,200
Contingency	\$ 18,000
Planning	\$ 12,000
Insurance	\$ 816
Maintenance	\$ 11,500
Memberships, Dues & Subscriptions	\$ 650
Operating Expenses	\$ 103,913
Payroll Expenses	\$ 30,500
Professional Development	\$ 7,000
Special Projects	\$ 20,000
Supplies & small tools	\$ 12,500
Utilities	\$ 1,200
Asset Replacement Fund	\$ 9,424
Landfill Closure Reserve	\$ 30,000
Total Expense	\$ 380,616
Net Ordinary Income - surplus/(deficit)	\$ (118,000)
Other Income - prior year surplus	\$ 131,000
Budget Surplus - end of year	\$ 13,000

It is important to note that the 2016 Financial Plan contains significant one-time expenditures for capital works and special projects that will not be required in 2017. Consequently, if no new projects or programs are added, the 2017 Financial Plan should be in balance.



7 Summary of Issues

There are several significant issues associated with the existing solid waste management system in the CCRD that will need to be addressed in the updated SWMP. These issues were discussed in detail in Section 3 of this report and can be summarized as follows:

- Many residents are not participating fully in the available recycling services. This may be due to lack of financial incentives as well as effective promotion and education initiatives.
- There are landfill-related issues at the TCWRC that will have significant budget implications:
 - Landfill does not have a design, operation and closure plan
 - Filled areas have not undergone final cover (to minimize the infiltration of rain)
 - The slopes of some of the filled areas are too steep and need to be regraded for long-term slope stability
 - A groundwater monitoring program is needed.
- Refuse Disposal Bylaw Regulatory Bylaw No. 375 requires updating to reflect current operational policies and procedures at the TCWRC.
- The current Financial Plan may have insufficient income to fund new programs or landfill related projects.