

# Maintenance Cost Estimate Report

## PHASE 1: TELKWA-SMITHERS PATHWAY PROJECT



AUGUST 23<sup>RD</sup>, 2019



August 23<sup>rd</sup>, 2019

Cycle 16 Trail Society  
Smithers, BC

Re: Maintenance Cost Report – Phase 1 Telkwa-Smithers Pathway Project

On behalf of Dan Boissevain and Liliana Dragowska, Planning and Community Engagement Services, I am pleased to present this maintenance cost report for Phase 1 of the Telkwa-Smithers Pathway Project.

This report has been designed to present information on trail maintenance standards in BC, Regional Districts' role in trail maintenance, and maintenance cost budget approaches used for active transportation trails in BC. The research and information collected have been applied to the long-term maintenance, and capital replacements cost estimates for Phase 1 of the Cycle 16 commuter trail.

We want to acknowledge and thank those who responded to our inquiries and helped us to understand current trail initiatives and maintenance approaches for regional active transportation trails in BC. Their input and resources paired with the research of other similar initiatives will continue to offer useful lessons as we seek to develop active transportation infrastructure here in the Bulkley Valley.

If you have any questions or concerns about the contents of this report, please do not hesitate to contact us by phone or email below.

Kind Regards,

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# BACKGROUND

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The proposed Telkwa-Smithers Pathway project is located along a 12 kilometer stretch of the Highway 16 Right-of-Way corridor connection between the Village of Telkwa and the Town of Smithers. Since completion of the Concept Design Report in 2018, Cycle 16 has collaborated with local governments, regulatory bodies, utility operators, and private landowners to work through potential solutions for the identified challenge areas and overall alignment of the commuter trail.

To assist with this process, Cycle 16 partnered with the Village of Telkwa to acquire funding through the BC Alliance for Healthy Living and the Rural Dividend Fund to conduct a preliminary design; and a maintenance cost estimate for Phase 1 of the project. The Phase 1 Project is approximately 3.5 km of the proposed trail from the Bulkley Bridge to the Babine Lake Road/Highway 16 intersection. McElhanney Consulting Services has now completed the *Phase 1 Preliminary Design Report*.

This **Maintenance Cost Estimate Report** fulfills the second goal of the funding received from the Village of Telkwa and aims to:

- Conduct research on trail maintenance standards in BC; the role that Regional Districts play in trail maintenance in other parts of BC, and examples of maintenance cost budgets and approaches used for active transportation trails in BC and
- Provide options for long-term maintenance and capital replacements cost estimates for Phase 1 of the Cycle 16 commuter trail.

## 1. APPROACHES TO MAINTENANCE

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### MAINTENANCE STANDARDS FOR BC TRAIL INFRASTRUCTURE

While planning and designing new active transportation infrastructure to promote walking and cycling is often seen as a top priority, ongoing rehabilitation and maintenance of existing infrastructure need to be an equally important focus. Several jurisdictions in BC are continually working to develop, improve, and maintain both recreational and active transportation trails as resources within our province. Active transportation infrastructure development is relatively new in the province and is growing in both popularity and political support.

Currently, there are no provincially consistent maintenance standards for commuter trails developed for local governments or non-profit organizations to follow. There are several examples and models in existence to inform a northern approach to the management of active transportation infrastructure including maintenance budgets. The supporting two provincial documents present valuable information and resources when considering maintenance standards and costs:

#### **BC Active Transportation Design Guide**

Active transportation is a key priority for the Government of British Columbia. The province developed the Active Transportation Design Guide as part of *CleanBC*, the provincial

government’s plan for achieving a ‘*prosperous, balanced, and sustainable future.*’ The *Active Transportation Design Guide* (The “Design Guide”) is a comprehensive set of planning and engineering guidelines offering recommendations for the planning, selection, design, implementation, and maintenance of active transportation facilities across the province.

The Design Guide is focused on daily active transportation needs and provides suggested guidance for local and regional governments for the maintenance of active transportation facilities. The Guide suggests that communities should develop programs for regularly scheduled maintenance to ensure that these facilities are safe and comfortable for all users at all times of the year. The Guide further suggests that at minimum, semi-annual maintenance should be conducted in the spring and fall to clean up debris and repair any damage that has occurred as a result of seasonal changes.

The Guide states that “*it is important for jurisdictions to consider active transportation facilities as assets and to appropriately manage them. Since many of these facilities, particularly bicycle facilities, are new, communities should:*

- *Track and update their inventory of assets;*
- *Schedule maintenance, repair and preservation activities;*
- *Develop maintenance standards (for items such as signage, pavement surface quality, pavement marking replacement timeframes, or snow clearance time);*
- *Inspect facilities and track them against maintenance targets; and*
- *Set and adjust maintenance budgets as necessary to meet maintenance targets (or adjust maintenance targets to match budgets).” (Pg. 43 BC Active Transportation Design Guide, 2019)”*

## **Ministry of Forest Recreation Manual, Chapter 10**

In 1997, the Forest Service adopted the trail classification system used by BC Parks at the time. Although this system is geared towards recreation trails, it continues to offer several relevant aspects for maintenance, summarized below:

- consistent standards and classifications across the province can lead to better cost estimates and maintenance plans;
- trail crews (often employed under contract) could become familiar with trail requirements anywhere in the province, whether in provincial forests or provincial parks; and
- users can gain a better understanding of the kind of experience they could expect, based on the trail type.

The Manual states that “*a monitoring and maintenance program helps ensure the safety of the trail user and the preservation of the trail environment. Trail maintenance responsibilities begin as soon as a trail is completed and open for public use. Trail monitoring and maintenance should reflect the level of use and the classification of each trail.*”

The Manual classified trails according to the recreation activity they will be used for, whether it be non-motorized or motorized. Maintenance levels are assigned to trails dependent on many factors, including:

- management objectives;

- volume and type of users;
- environmental impact;
- trail deterioration;
- purpose of the trail;
- existing trail standards;
- trail investment; and
- availability of funds. (*Recreation Manual, Chapter 10, 2001*)

The Manual suggests the following rules-of-thumb be considered for heavy use summer trails:

- repaired in the spring before the beginning of the heavy use season; and
- maintained at least once a month during the season.

The Manual proposes monitoring checklists (See: appendix C), and summer use trail maintenance guidelines (See: appendix D) that can be used as references when considering and developing maintenance standards for local transportation/commuter type trails such as the proposed Cycle 16 Telkwa-Smithers Pathway Project.

## REGIONAL DISTRICT APPROACHES TO TRAIL MAINTENANCE

To develop this report, research was conducted on Regional District trail approaches and maintenance standards in BC. To date, key findings from examining various districts include:

- The **Regional District of East Kootenay (RDEK)** operates several parks, trails and recreation facilities for the public to enjoy. In recent years the RDEK has been working with the Columbia Valley Greenways Trail Alliance (Greenways) on the development of the Markin-McPhail [Westside Legacy Trail](#) (WLT) a 25 km a multi-recreational, human-powered, paved trail that will help the communities of Invermere and Fairmont Hot Springs. Greenways has negotiated a handover agreement with the RDEK and will hand over the trail segments as they are complete, with the first four segments to be handed over in the fall of 2019.

Markin-MacPhail Westside Legacy Trail provides a non-winter use recreational trail from Invermere to Fairmount along the Westside of Lake Windermere. The operations and maintenance budget was increased to \$30,500. Costs are funded by the Columbia Valley Jurisdictions only, established by bylaw.

- The **Sunshine Coast Regional District (SCRD)** has over 1,600km of mapped recreational trails. This includes 71 km of Active Transportation Trails. The SCRCD holds management agreements with local trail societies for the maintenance, development and operations of recreational trails and holds agreements with MOTI for paved roadside trails in the district. The SCRCD Trail Network Plan specifies the maintenance of trails as such:
  - That unpaved pathways constructed separately from the road network are maintained through the SCRCD Community Parks function.
  - Paved pathways attached to the road network become the responsibility of the Ministry of Transportation for regular maintenance. SCRCD staff does supplementary sweeping and cleaning of the paths as required. (*Section 5, SCRCD Trail Network Plan*)

SCRD operates 17km of roadside active transportation corridor, along the highway roadside in the Roberts Creek area. Budget for the maintenance under a local service area function and bylaw is \$9,000 a year for this section of roadside trail, and this does not include contributions to capital replacement. Staff acknowledges this maintenance budget is extremely low, however, this budget is managed in cooperation with the local highway’s maintenance contractor, Capilano Highway Services. This cooperation and partnership allow the SCR D to leverage maintenance dollars for this local asset.

- The **Capital Regional District (CRD)** has created a long-term maintenance program to address one of the longest commuter trails in BC (Galloping Goose). A specific process for regional staff has been created and could inform an approach in the North.

**Appendix B** summarizes the research of other regional district approaches to trail management, maintenance, and budgeting for active transportation infrastructure. This research, paired with current regional initiatives provides strong evidence that regional districts in BC are exploring the increased interest and demand for the development of active transportation trails as assets in regional communities.

In 2018, the Peace River Regional District, in partnership with the City of Fort St. John, City of Dawson Creek, and Village of Pouce Coupe, undertook a comparative study as part of a community process exploring commuter trail connections between the communities of Fort St. John to Charlie Lake and Dawson Creek to Pouce Coupe. The study examined eight regional trails in BC to inform the regional district's approach to trail development. This study provides an excellent baseline to compare the different practices and strategies to regional trail development. Below is a summary table of regional district trail maintenance approaches from the study:

**TABLE 1: REGIONAL DISTRICT’S ROLE IN TRAIL MAINTENANCE**

<b>Regional District</b>	<b>Trails</b>	<b>Responsibilities</b>	<b>Partnership</b>	<b>Funding</b>
Capital Regional District (CRD)	Galloping Goose trail (60km) Lockside Regional Trail (29 km) E&N Trail (17km)	CRD operations crews maintain regional trails. Regional Trails Management Plan Oct 2016. Regional Parks Strategic Plan 2012-2021	Have operations and maintenance agreements with municipalities to define roles and responsibilities of CRD and municipality. Agreements with the municipalities and the province permit the CRD to establish and operate a regional trail within the corridor and set out roles and responsibility for maintenance of the trail.	CRD Regional Parks are funded through property taxes, fees, rental income, donations and grants.
Cariboo Regional District (CRD)	Low Mobility Trails Network (22 accessible trails throughout the region, varying from 350 m to 7 km in length)	Find and enter into agreements with community partners to maintain recreation type trails. (Recreational trails only, no commuter or active transportation trails)	Only pursue projects where there are already established community partners willing to commit to maintenance.	

Central Okanagan Regional District (CORD)	Mission Creek Greenway Trail (16.5 km)	CORD staff maintain trails.	CORD has an operational agreement with the City of Kelowna (1562 hours/year; 1 full-time staff) for maintenance including garbage removal, washroom cleaning, snow removal, and inspections.	Regional Parks Program is funded by taxation. Two electoral area parks programs fund themselves through their own taxation.
Cowichan Valley Regional District (CVRD)	Cowichan Valley Trail (Primary 140 km trail, 75 km trail connections)	CVRD hires a parks maintenance contractor to maintain the trail.	Province maintains trails within Cowichan River Provincial Park; municipalities manage trails linking to CVRD trails.	Use CVRD tax revenue (in 2018, budgeted \$145,000 to maintain 88 km of the Cowichan Valley Trail).
Regional District of East Kootenay (RDEK)	Westside Legacy Trail (WLT) (25 km – currently under construction)	RDEK park staff will operate the WLT as a regional park (annual inspections and cleanup).		RDEK budgets approximately \$40,000/year from tax revenue for WLT maintenance (including contribution to reserve for future repaving when necessary).
Sunshine Coast Regional District (SCRD)	Suncoaster Trail: Phase 1 (37 km complete) and Phase 2 (60 km – in planning phase)	SCRD does not have resources to maintain 35 km of backcountry trail.	SCRD cannot participate in volunteer maintenance programs under the Forest and Range Practices Act Section 57. Some trail users perform minimal maintenance, although there is no formal agreement in place.	Minimal maintenance funding comes from SCR D's regional trails budget.

Table information source: PRRD Comparison Study Summary- see appendix A

Based on research to date, a number of maintenance funding models are being implemented in BC. Three approaches are summarized below:

- **Establish Regional Parks Function or local service area** – Many regional districts across BC have established regional parks functions that allow for the collection and use of taxes for regional parks and trails to support capital and maintenance costs.
- **Municipal Partners** - Where trail routes and trailheads originate within municipal boundaries, funding arrangements could be determined with municipalities. Establishing shared customized service arrangements
- **Donations & Fundraising** - Given the involvement of Cycle 16, continued fundraising efforts could help to support maintenance costs moving into the future. In the Bulkley Valley, corporate sponsorship could also be potentially accessed through the resource sector.

## 2. MAINTENANCE COST ESTIMATE

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To aid the RDBN in assessing the feasibility of this project, a preliminary annual maintenance cost estimate has been developed. The estimates have been developed by Dan Boissevain, who brings his extensive experience and knowledge developing estimates on road and trail development projects in the Bulkley Valley. Dan was the Area Manager for LB Paving Ltd. since 2003, and for Canyon Contracting Company and Boreal Pacific Enterprises (Divisions of LB Paving Ltd.) since 2011. Dan was responsible for the administration and oversight of all three divisions, including the financial performance of the companies, oversight for all contract administration and estimation, job site reporting and costing and annual budget preparation and presentation. Previously, Dan held the position of Estimator at LB Paving Ltd. beginning in 2000.

The initial cost estimates presented in this report are based on the following assumptions:

- Typical trail maintenance within similar settings;
- Inflation calculated at 3% per year, compounding based on last maintenance frequency;
- factors will affect final costs of maintenance including varying inflation rates, price of gas, labour costs, severe weather;
- Costs are high relative to the type of walking and cycling traffic being proposed;
- No trail amenities or fixtures such as garbage cans, lighting, benches, bike racks, etc. will be provided;
- The pathway is used only in the summer months and snow plowing is not conducted and
- The Regional District will incur additional costs for administration of maintenance contracts as well as liability insurance on an annual basis.
- The cost estimates provided are based on Phase 1 – Bulkley Bridge to Babine Lake Rd 3.514km. Phase 2 is excluded from these costs and will include 7.03 km from the end of Laidlaw Frontage to Midway Service in Telkwa.

### COSTS

The estimated annual maintenance and replacement budget would be as follows:

**Average annual maintenance cost per year = \$8,034**  
**Capital replacement reserve fund, annual contribution (20 yr replacement) = \$24,976**  
**Total Annual Cost = \$33,011**

All costs are based off rates established from actual comparative work done in the Smithers area during recent construction seasons. Estimates have been referenced with footnotes to help the reader understand the quoted price.

**TABLE 2: PHASE 1 ANNUAL MAINTENANCE COST SUMMARY**

DESCRIPTION	ONE YEAR	TWO YEAR	THREE YEAR	FOUR YEAR	FIVE YEAR	SIX YEAR	SEVEN YEAR	EIGHT YEAR	NINE YEAR	TEN YEAR
<b>SHOULDER MAINTENANCE</b>										
SHOULDER MOWING <sup>1</sup>	\$1,170	\$1,205	\$1,241	\$1,278	\$1,317	\$1,356	\$1,397	\$1,439	\$1,482	\$1,527
SHOULDER GRADING AND COMPACTING <sup>2</sup>		\$2,920		\$3,066		\$3,219		\$3,380		\$3,549
<b>HARD SURFACE MAINTENANCE</b>										
SWEEPING (assume twice per year)	\$1,739	\$1,791	\$1,845	\$1,900	\$1,957	\$2,016	\$2,076	\$2,139	\$2,203	\$2,269
CRACKSEALING <sup>3</sup>					\$890		\$ 935		\$981	
ASPHALT PATCHING & REPAIRS <sup>4</sup>					\$2,850		\$2,993		\$3,142	
<b>SIGNS &amp; LINES</b>										
LINE PAINTING AND MARKING					\$3,600					\$3,960
SIGN CLEANING AND MAINTENANCE	\$ 482	\$496	\$511	\$527	\$542	\$559	\$576	\$604	\$622	\$641
SIGN REPLACEMENT (avg 4 signs every 5 years)					\$2,350					\$2,585
Access Restriction Bollard re-painting					\$482					\$530
<b>TOTAL</b>	<b>\$3,391</b>	<b>\$6,412</b>	<b>\$3,597</b>	<b>\$6,771</b>	<b>\$ 13,988</b>	<b>\$7,150</b>	<b>\$ 7,976</b>	<b>\$7,562</b>	<b>\$8,430</b>	<b>\$15,061</b>
<b>\$ per KM</b>	<b>\$965</b>	<b>\$1,824</b>	<b>\$1,023</b>	<b>\$1,926</b>	<b>\$3,980</b>	<b>\$2,034</b>	<b>\$2,269</b>	<b>\$2,152</b>	<b>\$ 2,399</b>	<b>\$4,286</b>

<sup>1</sup> Shoulder mowing three times per season.

<sup>2</sup> Assume grading once every 2 years (mostly weed control) Done in conjunction with annual sweeping

<sup>3</sup> 1st crack sealing done at 5 years, every 2nd year thereafter.

<sup>4</sup> No patching for the first four years. Patching after four years based on an average total area of 30m<sup>2</sup> per year in 5 separate locations every 2nd year.

<b>TABLE 3: HARD SURFACE MAINTENANCE &amp; CAPITAL REPLACEMENT COSTS</b>			
<b>SWEEPING</b> (assume twice per year)	<b>\$/Hr</b>	<b>Hrs</b>	<b>Total</b>
BOBCAT C/W BROOM	\$58	4	\$232
Hired WATER TRUCK	\$110	3	\$330
Crew Truck & Trailer (mob/demob)	\$38	1	\$38
Operator	\$45	6	\$270
<b>TOTAL PER YEAR</b>			<b>\$ 1,739</b>
<b>COST PER KM</b>			<b>\$247</b>
<b>CRACKSEALING</b>			
	<b>\$/Hr</b>	<b>Hrs</b>	<b>Total</b>
Assume 100 L.M. per year at \$8.90 per L.M. <sup>1</sup>			\$ 890
<b>TOTAL PER YEAR APPLICABLE</b>			<b>\$ 890</b>
<b>ASPHALT PATCHING &amp; REPAIRS</b>			
	<b>\$/Hr</b>	<b>Hrs</b>	<b>Total</b>
30m <sup>2</sup> at \$95.00/m <sup>2</sup>			\$ 2,850
<b>TOTAL PER YEAR APPLICABLE</b>			<b>\$ 2,850</b>
<b>ASPHALT REPLACEMENT AT 20 YEARS</b>			<b>Total</b>
2019 price to pulverize, grade, compact and pave at 65mm in Smithers was \$39.00/m <sup>2</sup> assume 50% increase in 20 years.			\$499,533
<b>ANNUAL RESERVE CONTRIBUTION<sup>3</sup> (20 year replacement)</b>			<b>\$24,977</b>

<sup>1</sup> 2019 actual price for crack sealing in Smithers at Park Place strata development. Small quantity price was \$7.42/m from 640 metres. Add 20% for future price increase = \$8.90/m.

<sup>2</sup> This is very aggressive amount of patching relative to the type of traffic and three season usage.

<sup>3</sup> Capital reserve annual replacement cost contribution, based on a 20-year replacement.

<b>TABLE 4: SHOULDER MAINTENANCE COST</b>	
<b>SHOULDER MOWING<sup>1</sup></b>	<b>TOTAL</b>
self-propelled mower with operator for 7 km at 4 hrs per mow + 1 hr mobilization x three time per year	\$762
Labourer with gas powered weedwhacker for inaccessible spots. 3 hrs plus 1 hr mob X twice per year	\$ 408
<b>TOTAL PER YEAR</b>	<b>\$1,170</b>
<b>SHOULDER GRADING AND COMPACTING (EVERY TWO YEARS)</b>	
	<b>TOTAL</b>
Grader c/w operator	\$1,320
Water truck c/w operator	\$440
Self-propelled drum compactor c/w operator	\$760
Single axle dump truck for spotting/spreading additional crushed gravel	\$340
4 m <sup>3</sup> of additional crushed gravel	\$60
<b>TOTAL PER YEAR</b>	<b>\$2,920</b>

<sup>1</sup> Assume shoulders are 1metre wide both sides of compacted crushed gravel, another 1 metre of grass seeded surface both sides.

**TABLE 5: SIGN & LINE MAINTENANCE COST**

TABLE 5: SIGN & LINE MAINTENANCE COST	
<b>LINE PAINTING AND MARKING</b>	<b>TOTAL</b>
Repaint lines & graphics once every 5 years <sup>1</sup>	\$3,600
<b>TOTAL EVERY FIVE YEARS</b>	<b>\$3,600</b>
<b>ACCESS RESTRICTION<sup>2</sup></b>	<b>TOTAL</b>
re-paint access restriction bollards 1 X every 5 years <sup>3</sup>	\$1,064
<b>TOTAL EVERY FIVE YEARS</b>	<b>\$1,064</b>
<b>SIGN CLEANING AND MAINTENANCE</b>	<b>TOTAL</b>
1 Labourer for 12 hours x once/year	\$432
supplies	\$ 50
<b>TOTAL PER YEAR</b>	<b>\$ 482</b>
<b>SIGN REPLACEMENT (avg 4 signs every 5 years)<sup>4</sup></b>	<b>TOTAL</b>
<b>Assumed signs along Phase 1 Section:</b> Beginning of trail at bridge, one each side of Par 3 D/way (Stop), one on uphill side of Par 3 D/Way (Stop Ahead), 2 each side of Hugg Farm Cattle Crossing (cattle x'ing ahead & yield), 1 each side of Hugg/Hincliffe D/Way (Yeild), 2 each side of Weme Road (x'ing ahead & yield), 1 each side of Goat Farm D/Way (Yeild), 2 each side of Laidlaw Road (x'ing ahead & stop), End of Trail at Laidlaw Frntg/Babine Lk Rd, Misc unknown.	25
Cost per sign (avg) including pre-cast base c/w socket, post, sign & bolts & installation <sup>2</sup>	\$588
<b>TOTAL EVERY 5 YEARS (4 signs)</b>	<b>\$2,350</b>

<sup>1</sup>Budget Quote from Yellowhead Line Painting 2018/08/08 Centre line and 12 Bicycle symbols including mobilization and all supplies #3,000. Add 20% for future cost increases = \$3,600.

<sup>2</sup> Labour at 24 hours x \$36 = \$864 supplies \$200

<sup>3</sup> 3 x 3' x 200mm dia per access point; Start of trail, Par 3 D/way, Par 3 Owner's D/way, Hug D/way (both sides), Weme Rd (both sides), Goat Farm D/way (both sides), one side of Laidlaw Frontage Rd (30 Bollards total).

<sup>4</sup> Quote from LB Paving Smithers, BC. 2010 price was \$390 per sign installed for MOTI specification signs. Add 25% for cost increase and \$100 for custom sign to MOTI Specifications = \$590.

## 3. APPENDICES

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### APPENDIX A REFERENCES

McElhanney Consulting Services Ltd. [October 2018] **Phase 1 Preliminary Design Report. Telkwa-Smithers Pathway Project.**

Ministry of Transportation and Infrastructure. [2019] **British Columbia Active Transportation Design Guide.** Retrieved from: <https://www2.gov.bc.ca/gov/content/transportation/funding-engagement-permits/funding-grants/cycling-infrastructure-funding/active-transportation-design-guide>

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Statistics Canada. [Table 18-10-0256-01 Consumer Price Index \(CPI\) statistics, measures of core inflation and other related statistics - Bank of Canada definitions](#)

Ontario. 2014. Ontario Traffic Manual - Book 18 – Cycling Facilities (Chapter 8 MAINTENANCE STRATEGIES FOR BICYCLE FACILITIES) Retrieved from: [http://www.raqsbc.mto.gov.on.ca/techpubs/eps.nsf/0/825810eb3ddd203385257d4a0063d934/\\$FILE/Ontario%20Traffic%20Manual%20-%20Book%2018.pdf](http://www.raqsbc.mto.gov.on.ca/techpubs/eps.nsf/0/825810eb3ddd203385257d4a0063d934/$FILE/Ontario%20Traffic%20Manual%20-%20Book%2018.pdf)

Alta Planning + Design. 2011. *Capital Regional District Pedestrian and Cycling Master Plan Design Guidelines.* Capital Region District. Retrieved from <https://www.crd.bc.ca/project/regional-transportation/pedestrian-cycling-master-plan>

### APPENDIX B CURRENT BC APPROACHES

#### Regional District of East Kootenay (RDEK)

The Regional District of East Kootenay (RDEK) operates a number of parks, trails and recreation facilities for the public to enjoy. In recent years the RDEK has been working with the Columbia Valley Greenways Trail Alliance (Greenways), a trails advocacy group made up of seven local trail and stewardship groups. The group has been working on the development of the Markin-McPhail [Westside Legacy Trail](#) (WLT) a 25 km a multi-recreational, human-powered, paved trail that will the communities of Invermere and Fairmont Hot Springs.

The trail construction has been spilt into 6 segments, with segments 1-3 constructed in 2017, segment 4 in 2018, segment 5 in 2019 and segment 6 is currently under construction. Greenways has worked with the RDEK throughout the design and funding of the project and have operated under a construction agreement, managing all administration and construction of the trail. Greenways has negotiated a handover agreement with the RDEK and will hand over the trail segments as they are complete, with the first four segments to be handed over in the fall of 2019.

Markin-MacPhail Westside Legacy Trail provides a non-winter use recreational trail from Invermere to Fairmount along the Westside of Lake Windermere. The operations and maintenance budget are increased to \$30, 500 (*see the RDEK 5-year financial plan for Parks and Recreation as it relates to the Westside Legacy Trail below*) with the anticipated operation of the first four segments of the trail being handed over in the fall of 2019. Costs are funded by the Columbia Valley Jurisdictions only, established by bylaw. (See Report from 2015 -Westside Legacy Trail Proposal – Discussion to provide liability coverage and maintenance of trail- attached at the end of this appendix)

[RDEK Adopted Financial Plan for 2019-2023](#)

	2018 BUDGET	2018 ACTUAL	2019 BUDGET	2020 BUDGET	2021 BUDGET	2022 BUDGET	2023 BUDGET
<b>Markin MacPhail Westside Legacy Trail</b>							
Salaries & Benefits	5,466	5,101	12,626	12,877	13,200	13,528	13,867
Administration & Overhead	496	502	1,150	1,420	1,540	1,610	1,730
Operations & Maintenance	15,000		30,500	30,500	30,500	30,500	30,500
Shared Overhead	1,345	518	1,988	1,672	1,715	1,757	1,802
<b>Total Markin MacPhail Westside Legacy Trail</b>	<b>22,307</b>	<b>6,121</b>	<b>46,264</b>	<b>46,469</b>	<b>46,955</b>	<b>47,395</b>	<b>47,899</b>

The trail crosses numerous pieces of private land, contains 4 outhouses needing continual maintenance. Currently the Greenways sweeps the trail with a bob-cat in the spring and the amenities seem bomb proof. There has been no level of service for maintenance established by the society or the RDEK. The society has received funding for summer students to work as ambassadors for the trail, maintaining the outhouses, talking with tourists, posting to social media, and more. It is unclear if this program will continue as the RDEK takes over the trail.

Greenways reports no challenges with maintenance so far, other than the outhouses and the need to clean them. There are challenges with wildlife on the trail and communicating this hazard to the public. Greenways expressed that they did experience construction challenges that included unexpected engineering costs during construction, higher than budgeted surveying costs, private land owners having high expectations and new ideas for amenities during construction. Greenways recommends any trail construction invest in good root barrier technologies to ensure that the pavement will last and minimize future maintenance costs.

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## Sunshine Coast Regional District (SCRD)

Regional District has over 1,600km of mapped recreational trails. This includes 71 km of Active Transportation Trails. The SCRD holds management agreements with local trail societies for the maintenance, development and operations of recreational trails and holds agreements with MOTI for paved road side trails in the district. All trails are maintained to provincial trail standards.

The RD has had a parks function for approximately 30years and has two relevant planning documents pertaining to trails, Parks and Recreation Master Plan 2013 and Trail Network Plan 2007. The Trail Network Plan outlines general maintenance of paved and unpaved trails as follows:

“Unpaved pathways constructed separately from the road network are to be maintained through the SCRD Community Parks function, as has been the regular practice of the Parks Division. These trails are regularly monitored and cleared when necessary. Paved pathways attached to the road network become the responsibility of the Ministry of Transportation for regular maintenance. SCRD staff does supplementary sweeping and cleaning of the paths as required.” (*Section 5, SCRD Trail Network Plan*)

SCRD operates 17km of road side active transportation corridor, along the highway roadside in the Roberts Creek area. Budget for the maintenance under a local service area function and bylaw is \$9,000 a year for this section of roadside trail, this does not include contributions to capital replacement. Staff acknowledge this maintenance budget is extremely low, however this budget is managed in cooperation with the local highway’s maintenance contractor, Capilano Highway Services. This cooperation and partnership allow the SCRD to leverage maintenance dollars for this local asset. Of the \$9,000 maintenance budget, half of the budget goes to season brushing- budget for operational crew, and other half goes to signage, hand rail and accessibility improvements, while the MOTI contractors conduct surface maintenance.

In conversation with staff, they recommend that maintenance budgets consider 5% of original construction cost on a 5-year reciprocal asset investment. Meaning that if trail construction is 1 million, 5%- being \$50,000 is budgeted over 5 years for maintenance.

The SCRD sets aside park land contribution and cash in leu of parkland through the subdivision process. This money is managed for capital parks and recreation infrastructure replacement.

The SCRD is in the process of establishing servicing levels for trail maintenance. This work is being presented to the Regional Board by the end of this fiscal year (2019) and will be a foundational tool to lead the parks and recreation function through the transition of recreational and active transportation maintenance necessary. The parks department is very keen to share their experience to help see recreation and active transportation be implemented through the province.

*Contact:*

Kevin Clarkson, Parks  
604-885-6802 [Kevin.clarkson@scrd.ca](mailto:Kevin.clarkson@scrd.ca)

*Resources:*

Jennifer Wilson Consultants Ltd. [2014] Sunshine Coast Regional District - Parks and Recreation Master Plan. Retrieved from:

<https://www.scrd.ca/files/File/Community/Parks/Parks%20and%20Recreation%20Master%20Plan/FINAL-%20Master%20Plan%20ADOPTED%20BY%20BOARD%202014-JAN-23.pdf>

Sunshine Coast Regional District. [2007] Trail Network Plan. Retrieved from:

<http://www.scrd.ca/files/File/Community/Parks/TNPRReport.pdf>

### **Peace River Regional District (PRRD)**

The PRRD, in partnership with the City of Fort St. John, City of Dawson Creek, and Village of Pouce Coupe, is exploring [two potential trail connections](#) between communities in the region Fort St. John to Charlie Lake and Dawson Creek to Pouce Coupe. The study has [engaged the community](#), outlined an [options development summary](#) and created a [comparator study](#) of how other regional districts and trail alliances in BC have approached regional trail development. The PRRD is working closely with the municipalities to further these community connection trails.

*Contact:*

[Bryna Casey](#), Parks and Rural Recreation Coordinator  
250-784-4841 [bryna.casey@prrd.bc.ca](mailto:bryna.casey@prrd.bc.ca)

### **City of Terrace**

City of Terrace operates the Grand Trunk Trail (length- 3 km). This trail is intent to be a commuter trail and will expand to Kitsumkalum in the coming years.

*Contact:*

Director of Leisure Services – Carmen Didier [cdidier@terrace.ca](mailto:cdidier@terrace.ca)  
250-615-3000

Will consider request for maintenance costs and capital replacement inquiry

### **Cariboo Regional District (CRD)**

The Cariboo Regional District (CRD) does not operate a regional recreation, there are local service areas established to build and maintain recreation facilities.

The CRD does not operate or maintain any trails within the region, and does not have any active transportation, commuter trails. The CRD owns the 108 Mile park and trail property and have a management agreement with the 108 Green Belt Commission. The CRD appoints a commission of volunteers and have a budget \$14,500 for maintenance and trail development. CRD staff work with the commission to identify maintenance and upgrade needs for the trail. There is no capital reserve, however in recent years there have been some select logging, for fuel management, this income will be held in reserve and used for future asset management.

In 2008, the CRD commissioned a region-wide study, to create a wheelchair accessible trails network in the Cariboo Chilcotin to increase outdoor wilderness recreation opportunities for people of all mobility levels. Through funding, 22 wheelchair accessible trails have been completed with the hopes to continue this initiative. The CRD works with partners including local community groups, to research and choose additional sites for the development of wheelchair accessible trails. Trail development as a recreational resource is a priority as the Regional District considers how to design a regional recreation function that includes trails.

*Contact:*

Darren Campbell, Manager of Community Services  
250-395-3838 [dcampbell@cariboord.ca](mailto:dcampbell@cariboord.ca)

### **Capital Regional District (CRD)**

As a key part of the Regional Transportation Plan, the Pedestrian and Cycling Master Plan (PCMP) envisions the Capital Region as a truly livable and environmentally sustainable community, where walking and cycling are key components of an innovative and integrated transportation system.

The PCMP focuses on a framework for long-term management of public in both rural and urban communities. The plan identified a series of infrastructure investments and supportive programming to aid in achieving a regional mode share of 15% each for pedestrians and cyclists - with 25% in densely populated areas - by 2038.

The CRD maintains and operates a number of trails in the region including three major commuter trails: Galloping Goose trail (60km); Lockside Regional Trail (29 km); E&N Trail (17km).

In 2016 the Capital Regional District adopted a Regional Trails Management Plan. The Trail Management Plan outlines the following items: trail use and safety, trail planning and development, signs, enforcement, adjacent land use environment and partnering opportunities. It further outlines management goals of each trail, development guidelines, development concepts, priority actions and maintenance approaches. Trail maintenance found in the management plan include the following 6 points:

1. The CRD will conduct a formal annual maintenance inspection of each trail to ID possible hazards and maintenance requirements. Requirements will be prioritised for action, subject to the existing maintenance budget and staff resources.
2. The Public is encouraged to notify the CRD regarding maintenance and public safety issues on the trails. New maintenance needs identified throughout the year will be assessed and added to the maintenance list as appropriate.
3. Trail maintenance is conducted during regular CRD work hours.
4. Extraordinary maintenance requirements, such as tree blow down removal or ice management are assessed following significant weather events.
5. The CRD will develop an assessment and replacement strategy for significant trail structures and facilities through an asset management program. A key focus will be trail trestles and bridges

6. The CRD will work with municipalities and adjacent businesses, as needed regarding municipal infrastructure and garbage along the trails.

*Contact:*

Todd Shannon, Trail supervisor  
250-360-3000 tshannon@crd.bc.ca

*Resources:*

Capital Regional District [2016] Regional Trails Management Plan. Retrieved from:  
<https://www.crd.bc.ca/project/past-capital-projects-and-initiatives/regional-trails-management-plan>

### **Squamish Lillooet Regional District (SLRD)**

Squamish Lillooet Regional District operates a number of recreational trails including the [Valley Loop Routing](#) non paved trail between Portage Road and Mount Currie/Miller Creek. Management of trails located on Crown land within the Sea to Sky Corridor (including Pemberton and Area C) is reinforced through the Sea to Sky Recreational Trail Service Establishment Bylaw No. 1006, 2007 (responsibility for the management and maintenance of the trails) and Pemberton Valley Recreational Trails Service Bylaw 1035,2006 (established a service area for the purpose of providing a recreational trails service). Therefore, it should be recognized that locally, the SLRD has the management responsibility of the area trails and is the manager and administrator of the Master Plan.

In addition, the Squamish Lillooet Regional District manages the Sea to Sky Trail guided by the Sea to Sky Trail Strategy. The Sea to Sky Trail links Squamish at the northern end of Howe Sound and D'Arcy. The trail has a trail steering committee struck by the regional district.

*Contact:*

Allison MacDonald, Parks and Trails Coordinator  
6048946371 ext243 [amacdonald@slrd.bc.ca](mailto:amacdonald@slrd.bc.ca)

*Resources:*

Cascade Environmental Resource Group Ltd. [2006] Sea to Sky Trail Master Plan. Retrieved from: [https://www.slrd.bc.ca/sites/default/files/pdfs/parks-trails/070213-Master\\_Plan1D.pdf](https://www.slrd.bc.ca/sites/default/files/pdfs/parks-trails/070213-Master_Plan1D.pdf)

Ministry of Tourism, Sport and the Arts [2008] Sea to Sky Trail Strategy. Retrieved from: <http://www.sitesandtrailsbc.ca/documents/sea-to-sky-trail-strategy.pdf>

Catalyst Community and Resort Planning [2009] PEMBERTON AND AREA C SERVICE AREA TRAILS MASTER PLAN. Retrieved from: <https://www.slrd.bc.ca/sites/default/files/reports/1004-Trails%20Master%20Plan%20Mar%202011%20Final.pdf>

## **Powell River Regional District (PRRD)**

Powell River Regional District Trails Plan. Dec 2016 [http://www.powellriverrd.bc.ca/wp-content/uploads/PRRD-Regional-Trails-Plan\\_-FINAL\\_web.pdf](http://www.powellriverrd.bc.ca/wp-content/uploads/PRRD-Regional-Trails-Plan_-FINAL_web.pdf)

*Contact:*

Regan Keil and the PRRD parks operations division  
**operations@qathet.ca**

**North Star Rails to Trails Kimberly to Cranbrook** (26km paved trail)  
maintained by the Cities of Cranbrook and Kimberley

### **Hazelton**

Eagle Down Trail 7 km, unpaved trail connecting communities of Hazelton, Hagwilget, Gitanmaax, Two Mile, and New Hazelton.

### **List of interview questions for RD and municipal staff that maintain commuter trails:**

Does your Regional District own or maintain any trail/linear parks?

No - How are regional trails/ linear parks in your regional district managed?

Yes - How did the RD come to a decision to assume long-term costs of maintenance of the trail you manage (referendum?)

Are your maintenance costs based on a specific level of service? Do you have a maintenance standard and inspection standard for the trail?

What is your budget for annual maintenance? Do you have a breakdown of this budget? (If paved have you had to re-pave? Or re-surface? What time line for replacement do you estimate?)

How is maintenance of the trail conducted? Contracted? Staff? Do you contract out annual trail maintenance? If so, are you willing to share a sample contract or contract schedule for review by Cycle 16 and the RDBN?

Do you experience challenges with maintenance?

What asset management principles/considerations are there with regards to the trail? Do you budget replacement cost in every budget cycle? How has that actually worked out?

Do you know of any other commuter trail in BC?

# Regional District of East Kootenay (RDEK) Report from 2015 -Westside Legacy Trail Proposal



**Environmental Services!**  
File: Q 126 000

**To:** Lee Ann Crane, CAO  
**From:** Kevin Paterson, Environmental Services Manager  
**Date:** February 23, 2015  
**Subject:** Westside Legacy Trail Proposal – Discussion to provide liability coverage and maintenance of trail  
**cc:** Chris Bosman, Recreation & Control Services Supervisor

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## Background

At the January 9, 2015 RDEK Meeting the Board adopted the following resolution:

**That the request from the Columbia Valley Greenways Trail Alliance regarding the proposed Westside Legacy trail be referred to staff for further research and preparation of a report outlining options to address the request.**

## Discussion

In the presentation from the Columbia Greenways Trail Alliance, a request was made to determine if the RDEK would be open to assuming stewardship of the trail by undertaking annual operations and maintenance of the trail and accepting liability.

Proposals for new parks or trails should meet the following criteria as outlined in the RDEK Regional Parks Plan;

### 5.1 General

- (a) New proposals must meet Regional Park System Goals or be of exceptional individual merit.
- (b) Where an OCP is in effect, proposals should reflect the objectives and policies of that plan.
- (c) Where a rural land use bylaw or zoning bylaw is in effect, regional parks will be zoned accordingly.
- (d) Be an existing park or trail owned or administered by a member municipality that complements Regional Parks System Goals.

### 5.2 Trails

- (a) Connect via a linear corridor two or more municipalities, rural communities, resorts or areas of significant natural or cultural interest.
- (b) Tenure for the trail route must be held by the RDEK either through direct ownership, crown land tenure, right of way easement, or by private permit.

### Financial Administration.

Two options exist for service funding of the proposed trail amenity:

1. Regional Park – The Regional Parks Plan states that any future parks/trails would be created as electoral area parks; however, this provision could be amended by the Board.

.../2

With the consent of 2/3 of the Regional Park service participants, the service establishment bylaw could be amended to apportioned the costs of the West Side Legacy Trail to only Electoral Areas F and G, Invermere, Radium, Jumbo and Canal Flats or any combination of those. Under this scenario the costs could be shared sub-regionally. This would assume that the trail would be under the ownership of the RDEK and identified in the Parks Plan.

2. Electoral Area Park – The Westside Legacy Trail could be established as an Electoral Area F Park, with Area F alone being responsible for funding. If other jurisdictions would like to contribute, (e.g. Area G, Radium, Invermere and or Canal Flats), separate contribution agreements would need to be established with each of the jurisdictions.

The following table outlines potential cost allocations under two options;

Total Annual O&M budget	\$29,000.00
Annual insurance premiums	\$500.00
Re-pave and crack sealing reserve	\$15,000.00
Capital replacement reserve (signage, outhouses, bridges)	\$3,600.00
<b>Total</b>	<b>\$48,100.00</b>

	Cost Shared Sub-Regionally	Area F Park
Budget	\$48,100	\$48,100
Tax Rate	1.1¢ / \$1,000	1.9¢ / \$1,000
Tax on \$350K property	\$3.86	\$6.72

Depending on the desire of the Board, these annual funding levels appear to be adequate in response to providing regular maintenance and staff requirements. It is presumed that each year small upgrades would be required on the trail in order to enhance the amenity. (\*Note, this does not provide any provision for winter maintenance.)

Of particular note some bridge structures would need to be installed and areas of erosion addressed on an infrequent basis in future years.

Annual maintenance required would involve clearing downed trees, sweeping of trail surface, brushing trail edges, and repairing seasonal damage at an estimated cost of \$20,000/year. Additional RDEK staff expenses associated with annual inspections, contract management, community liaison, regular garbage collection during the peak season, and capital project management estimate the addition of \$9,000 annually to the budget.

With respect to the issue of assuming liabilities for the Westside Legacy Trail, it is important to note that there are no more potential liability risks associated with the RDEK holding licenses of occupation for the Westside Legacy Trail as part of the park services provided by this organization than is the case with any other public amenity operated by local government.

## **APPENDIX C TRAIL MAINTENANCE CHECKLIST**

*Excerpt from Recreation Manual Chapter 10 Recreation Trail Management Trail Monitoring, section 10.5.3 Trail Monitoring page 91*

Potential safety hazards should be addressed immediately. If a situation is unsafe, a notice should be posted or the trail closed until the hazard has been repaired. The public should be informed accordingly at the trail head and appropriate information offices:

- River/creek crossings
- Slides/washouts
- Hazard trees

### **VEGETATION MAINTENANCE**

- Windfall removal
- Brush clearing, including removal of hazardous branches
- Hazard tree removal
- Slope revegetation
- Viewpoint maintenance
- Close off unwanted trails and shortcuts, and restore vegetation

### **DRAINAGE MAINTENANCE**

- Cleaning and repairing structures:
- Culverts
- Cross drains
- Waterbars
- Grade dips
- Drainage ditches

### **STRUCTURE MAINTENANCE**

- Bridge repair
- Cribbing & retaining wall repair
- Steps and stair repair
- Barrier Deck board replacement
- Boardwalk repair and handrail repair
- Shelter repair

### **TREAD MAINTENANCE**

- Draining/hardening of mud holes and boggy areas
- Washout repair
- Slump repair
- Grubbing rocks, roots, stumps
- Turnpike section repair
- Surface repair and removal of loose rocks
- Surface replenishment (similar or minimal maintenance material)

## INSTALLING ADDITIONAL DRAINAGE STRUCTURES

- Waterbars
- Cross drains
- Culverts
- Grade dips
- Drainage ditches

## SIGN MAINTENANCE

- Sign repair
- Sign replacement
- Cairn repair
- Barricade or closure device repair
- Trail marker replacement or additions

## APPENDIX D SUMMER USE TRAIL MAINTENANCE

*Excerpt from Recreation Manual Chapter 10 Recreation Trail Management Trail Monitoring, section 10.5.4 page 94*

### Required Maintenance Activities BEFORE Heavy Use Season

The following maintenance activities are normally required on trails before the heavy summer use season begins.

#### **Clear windfalls, dangerous trees, and slides**

These clearing repairs are made for user safety reasons and to prevent detouring off developed trails.

- Any slide debris or slumping of mud or soil onto the trail forces users to the outside edge, which is often on fill and the weakest part of the trail. Once the slide debris is removed, repair the trail tread to the original specifications.
- If a tree has fallen over a trail and cannot be easily removed, cut a gap to allow passage. In the case of wilderness or primitive routes, consider leaving the tree if it does not represent a major impediment, but chop a step into it if necessary.

#### **Drainage repair**

No factor in trail maintenance is more important than PROPER DRAINAGE.

Maintenance inspections should look for existing and potential drainage problems. Often minor, temporary works done early in the season can prevent major washouts from occurring later.

Permanent follow-up work should be done as soon as possible. Potential problem areas should either be treated, or monitored to gauge the rate of trail deterioration.

- Repair erosion-damaged elements promptly to prevent further damage. Check for effects of erosion after spring run-off.
- Repair any wash-outs.
- Check and repair waterbars, ditches, culverts and dips, and construct additional drainage features if needed.

### **Remove new plant growth**

- Trail brushing should be done annually, and is best done in the spring and early summer when new growth is soft.
- Selectively clear new or existing vegetation for viewpoints or vistas where appropriate - if this is not done for significant vista areas, spur trails will develop as users seek out the views.

### **Level or restore the trail tread**

Remove loose rocks and debris from the tread surface.

- This is done, as necessary, to restore the tread to its original grades and slopes for safety and effective drainage.
- Use local materials to fill ruts, low spots or holes. Imported materials may be needed to correct soggy or muddy sections. Re-surface and fill approaches at the ends of bridges, boardwalks or corduroy sections.

### **Check and repair all structures**

This work should be performed after spring runoff and after severe storms during the summer season.

- Check for signs of rot and decay, and remove debris from around bridge supports. Secure loose side rails or curb logs and re-spike all loose decking. Ensure any structural repairs and replacements meet the original construction requirements.
- Remove loose rocks from stream fords to help ensure a safe crossing.

### **Check, repair, or replace signs and markers**

Again, this should be done prior to the heavy-use season.

- Remove any vegetation that obscures signs.
- Provide additional signs or trail markers where there is any confusion about trail route.
- Paint sign posts, rails, etc. as required.

### **Check parking lot**

Re-grade the trail head parking lot, if necessary.

### **Required Maintenance Activities DURING Heavy Use Season**

These may be weekly or monthly tasks, as use and conditions warrant.

#### **Maintain trailhead structures**

This includes servicing such items as toilets and waste containers. Restock information supplies - where trailhead kiosks are stocked with route or safety brochures, these should be restocked as required. Remove windfall or other debris on the trail. Other conditions - correct other hazardous conditions or problems as the need arises.

#### **Drainage repair**

Once again, no factor in trail maintenance is more important than PROPER DRAINAGE.

- Monitor and repair any erosion damage promptly to prevent further damage. Potential problem areas should either be treated, or monitored to gauge the rate of trail deterioration.

- Permanent follow-up work should be done on any temporary repairs as soon as possible.
- Check and repair water bars, ditches, culverts and dips, and construct additional drainage features if needed.

### **Labour and equipment for maintenance**

The most commonly required tools for trail maintenance (two-person crews) include:

- pointed shovel;
- double-bit axe;
- bow saw (and/or chain saw);
- brush axe;
- pruning shears;
- trenching tool;
- pruning saw;
- hammer; and
- brush mower.