

Bulkley Valley Cross Country Ski Club
Management Plan
2019 – 2021

Bulkley Valley Nordic Centre
www.bvnordic.ca

Table of Contents

Section 1	Background	5
1.1	Organization and Purpose	5
1.2	Priorities	5
1.3	Governance	5
1.4	Plan Area	6
1.5	Trail Network	7
Section 2	Goals and Strategies	8
2.1	Provide Great Cross-Country Skiing	8
2.2	Ensure We Can Sustain It	8
2.3	Keep it Safe	9
2.4	Take Care of the Environment	9
Section 3	Nordic Centre Operations	11
3.1	Trails	11
3.1.1	Annual Inspections	11
3.1.2	Mowing and Brushing	11
3.1.3	Trail Improvements	12
3.1.4	Trail Optimization	13
3.1.5	Maps and Signs	13
3.2	Lodge and Buildings	14
3.2.1	Lodge Maintenance	14
3.2.2	Lodge and Building Improvements	14
3.2.3	Machine Shed	15
3.3	Tracksetting	15
3.3.1	Tracksetting Equipment	15
3.3.2	Tracksetting Policy	16
3.4	Snow Plowing	16
	<i>Bulkley Valley Cross Country Ski Club</i>	2

3.5	Safety Measures at the Nordic Centre	17
3.5.1	First Aid Supplies	17
3.5.2	Emergency Action Plan	17
3.5.3	Safety Equipment on Trails	17
3.5.4	Maps and Signs	17
3.5.5	Work Bees and Trail Work	17
3.5.6	Machine Operators' Radio	17
3.5.7	Machine Operator Training	18
Section 4	Nordic Skills Development Program	19
4.1	Programs	19
4.1.1	Athlete Development Program	19
4.1.2	Biathlon	19
4.1.3	Masters	19
4.1.4	Schools	19
4.2	Organizational Structure	20
4.3	Safety	20
Section 5	Events and Communications	21
5.1	Competitions	21
5.2	Social Events	21
5.3	Communications	21
5.3.1	Website	21
5.3.2	Newsletters and Email	21
5.3.3	Social Media	21
5.3.4	Marketing Strategy	21
Section 6	Capital Project Priorities	23
6.1	Capital Plan for Essential Assets	23
6.1.1	Existing Buildings	23
6.1.2	Tracksetter	23
6.1.3	Trails	23
6.2	Priority New Projects	24
<i>Bulkley Valley Cross Country Ski Club</i>		3

6.2.1	New Machine Shed	24
6.2.2	Trail Improvements for 2020+	24
6.2.3	Skid-Steer	24
6.3	Other Projects Dependent on External Funding	25
6.3.1	Second PistenBully	25
6.3.2	Second Skandic Snowmobile	25
Section 7	Appendices	26
7.1	Trails	26
7.1.1	Existing Trails	26
7.1.2	Early Season Trails	27
7.1.3	Trail Improvement Cost Estimates	28
7.2	Equipment Options	30
7.2.1	Tracksetter	30
7.2.2	Mowing and Brushing Equipment	33
7.2.3	Snow Plowing Equipment	35
7.3	Possible Future Projects	37
7.3.1	Biathlon Target Roof	37
7.3.2	Ticket booth	37
7.3.3	LED lights	37
7.3.4	Day-Use Trail Cabin	37
7.4	History of BVCCSC 1920-Present	38

Section 1 Background

1.1 Organization and Purpose

The Bulkley Valley Cross Country Ski Club ("BVCCSC" or "the Club") is a not-for-profit society and is not designated as "member-funded society", meaning that the Club can accept public and outside funds to help support operations.

The society's constitution states that the purposes are to promote community participation in the healthy outdoors lifestyle of cross-country skiing in the Bulkley Valley that includes:

1. encouraging recreational cross-country skiing;
2. developing and maintaining the Nordic and biathlon facilities at the Bulkley Valley Nordic Centre;
3. offering and promoting cross-country skiing skill development programs for children, youths and adults;
4. offering and promoting athlete development programs for cross-country ski racing and biathlon; and
5. organizing and hosting cross-country ski and biathlon race events.

The Vision of the Club is to be a vibrant, welcoming community of members and visitors participating in and supporting cross-country skiing and biathlon in the Bulkley Valley.

1.2 Priorities

Club priorities during the term of this management plan are to:

- Nurture our volunteers
- Continue to foster skill development through existing programs
- Maintain or increase the Club's membership
- Maintain or improve our assets: trails, buildings, equipment and finances
- Ensure safety considerations are addressed in all operations

1.3 Governance

The Club's board of directors provides oversight and direction for the Club's programs. [Policies and procedures are available](#) on the Club's website bvnordic.ca.

Club operations are divided into programs as described in the following table. Each program has a responsible director, delegated decision-making and a program budget within the overall club budget.

PROGRAM	DECISION-MAKERS	FINANCIAL MANAGEMENT
Nordic Centre Develop, maintain & operate ski trails, lights, machines, buildings.	Nordic Centre Director with input from track setters, buildings manager and advice from the Board	Program budget with income primarily from user fees (day tickets and season passes). Capital projects supported by grants and donations.
Membership Member registration Communications Administration	Registration: Registrar & Membership dir. Communications: Communications director Administration: President & Secretary	Program budget with income from membership fees, grants, sponsorships and budget surpluses from events, projects & programs.
Events Competitions Clinics Fun events, Socials	Events Director plus Race Committee or Event coordinator	Program budget with event-specific incomes and expenses. The Events Director will strive to balance total income and expense across all events.
Nordic Skills Development Athlete Development Biathlon Rabbits Ski S'Kool Master's Drop-in	NSDP Committee: NSDP director, head coach & reps from each skills program Coach Mgt Committee supervises paid coach	Program and sub-program budgets with income from program fees, grants, sponsorships and fundraising. NSDP committee strives to balance total income & expense across skills programs.

1.4 Plan Area

The Bulkley Valley Nordic Centre is located west of Smithers on the Hudson Bay Mountain Road. The ski trails were located at this site because of its proximity to the town of Smithers, varied terrain that is well suited to skiing, and its elevation provides significantly more reliable and deeper snow than sites in the valley.

BVCCSC has a Partnership Agreement with the Province of British Columbia to maintain ski trails in the area. The agreement is administered by Recreation Sites and Trails BC (RSTBC). RSTBC has established the area as a recreation site.

BVCCSC holds Licence of Occupation 6408004 for 7.15 ha of Crown land where the lodge, staging area, parking lot, biathlon range, and associated buildings are located. Licence of Occupation 6408005 covers the lit trail system.

The Nordic Centre is within the Wetzin'kwa Community Forest. The Club and Wetzin'Kwa Community Forest Corporation have a [memorandum of understanding](#) which acknowledges each party's interests and sets out guiding principles for operations.

The Nordic Centre is within the traditional territory of the Cas Yex/Grizzly House within the Gitdumden (Wolf/Bear) Clan of the Wet'suwet'en Nation. BVCCSC relies on RSTBC for formal consultation related to Nordic Centre operations. BVCCSC has expressed interest in working directly with the Cas Yex house to ensure access to the trail system, to engage early regarding any new trail proposals, and to explore ways to incorporate Wet'suwet'en trail names and interpretive signs.

1.5 Trail Network

A map of the existing trails is attached to this plan. The trail network has evolved over time to reflect new users (dog trails) and to provide as much variety as possible. The trails have been modified and expanded in many separate projects over the past twenty years, often taking advantage of logging in the community forest.

Three new trails were completed in the summer of 2018 and will represent the completion of the previous strategic trail plan. With the new trails, the network contains a total of 52 km of trails of which 5 km is lit and 10 km is dog-friendly.

All trails have been built to allow a skate track plus classic tracks on both sides. Trails meet or exceed standards provided by RSTBC. Trails are also built to meet "Homologation" requirements set by the International Federation du Ski, so that they can be used to host major competitions.

Section 2 Goals and Strategies

2.1 Provide Great Cross-Country Skiing

- **Maintain and increase the community's participation in cross-country skiing**

Strategies:

- Continue to communicate to the community to encourage use of our facilities, our programs and events
- Accept that existing facilities and programs are generally the right offerings and apply any incremental efforts toward improved quality, availability and efficiency of these services.

2.2 Ensure We Can Sustain It

- **Improve sustainability of volunteer efforts**

Strategies:

- Decrease maintenance requirements or make volunteer maintenance work easier through targeted improvements in trails, facilities and equipment.
- Expand programs or commitments only when an adequate volunteer base is available and confirmed.
- Support and retain volunteers and staff by providing job descriptions that ensure each job is clearly understood, has realistic expectations and supports a satisfying experience.
- Increase the volunteer base by positive and welcoming communications of volunteer opportunities.

- **Ensure long term financial sustainability of the Club's operations**

Strategies:

- Maintain or increase the membership base.
- Ensure programs are supportable by projected revenue.
- Maintain or reduce operating costs through optimization of equipment and assets.

- **Sustain infrastructure and equipment**

Strategies:

- Plan and budget for proactive maintenance and repairs to equipment and infrastructure.
- Establish and periodically update a long-term financial plan for major repairs and improvements of infrastructure and major equipment.

These three sustainability goals are interdependent, so all proposed actions need to be designed concurrently with all three goals in mind. If these sustainability goals are being realized, then new programs, facilities or trails may be considered. In the Appendix, section 7.3 lists some projects that have been under consideration but are not actively being planned.

2.3 Keep it Safe

- **Provide first aid supplies, emergency communications and signage**

Strategies:

- Section 3.5 *Safety Measures at the Nordic Centre* describes specific actions that have been established to ensure that supplies, communications and signage support safe operation and use of the Nordic Centre.

- **Ensure safe practices in skills training programs, events and work bees**

Strategies:

- Coaches and race officials will continue to be trained to ensure safe activities
- The Club will periodically offer safety-related training to paid and volunteer members.
- Hazardous activities like chain saw work will be restricted to those with appropriate qualifications.
- The board will maintain and periodically review and update safety-related [policies](#).

- **Ensure safe operation of the club's tracksetting and brushing machines**

Strategies:

- Require operators to have sufficient training and/or experience to be able to safely operate the tracksetting or brushing machines. (See section 3.5.7 *Machine Operator Training* for implementation details)

2.4 Take Care of the Environment

Club policies and plans are intended to minimize the impact of our trails and operations on the environment. Specific measures are:

- **Construct and maintain trails to maintain natural drainage patterns and avoid sedimentation of water sources**

Strategies:

- All stream crossings are built to the same standards as forest roads. Fish bearing streams are known from mapping made available by Wetzin'kwa Community Forest and open log culverts are used for crossing these.

- Annual inspection of trails is undertaken to ensure culverts are properly functioning.
- All trails are grass-seeded the year following construction to reduce potential for surface erosion.

- **Reduce potential for a fuel spill from tracksetting**

Strategy:

- A fuel tank was installed in 2018 with a proper fuel spill catch membrane underneath it. The Club maintains a supply of absorbent cloths on hand to catch minor spills if they occur.

- **Adapt to anticipated future climate**

Climate change in this area is expected to result in warmer winters and increased winter precipitation. There is expected to be significant variation from year to year including the possibility of more rain events in the fall, later onset of winter, and periodic fall droughts.

Strategies:

Climate adaptation strategies undertaken to date:

- Improve the base of trails to allow skiing on a shallow snowpack. This includes grading of trails and improving drainage.
- Implement low snow tracksetting using roller and Ginzu groomer, as standard operating procedures for early season skiing.

Climate adaptation strategies during the term of this management plan:

- Consider gravelling the surface of Broadway to create a network of trails (Broadway plus logging roads) that can be skied on very low snow depths (15 cm or less)
- Continually monitor emerging weather patterns and revise adaptation strategies. Options such as snowmaking (now being used in Prince George) remain available if needed.

Section 3 Nordic Centre Operations

3.1 Trails

Following the recent trail expansions, the Club now has over 52 km of maintained cross-country ski trails. Maintenance of this network is a high priority to ensure safety and environmental standards are met and trails are optimized for skiing.

3.1.1 Annual Inspections

All trails are inspected annually for three things:

- To determine if mowing is required.
- To inspect any culverts for seasonal maintenance, including potential cleaning; and
- To identify hazard trees for removal

3.1.2 Mowing and Brushing

BVCCSC has a 65 hp 4-wheel drive Ford tractor equipped with a 7-foot rotary mower. A group of 3 to 4 volunteers mow the trails, which usually takes 40 to 50 hours of mowing each year. A designated set of Early Season Trails (Appendix 7.1.2) are mowed annually and other trails are mowed every two years, or as needed. As the trails are mowed, windfall is removed to make start-up of the ski season easier. Each year, some effort is targeted at reducing the brush beside the trails to reduce brush leaning onto the trails when it snows.

The tractor is limited to accessing well-drained trails with no stumps. The recent trail improvements have increased the area that can be mowed with the tractor and made the trails much smoother and safer for mowing. However, significant portions of the Pine Creek trails cannot be mowed due to wet ground that the rubber-tired tractor cannot access. Also, even on trails that the tractor can mow, it does not have the capability to cut brush on the sides of the trails. In the past, the Pine Creek trails and the side brush had to be hand-brushed every second or third year. As the brush grows, the hand-brushing is increasingly difficult and skilled volunteer labour has been harder to recruit for brushing.

The current tractor has an expected lifespan of at least ten more years. The tractor's mower attachment probably requires replacement at a cost of \$5000 in two to three years.

Appendix 7.2.2 describes a machine trial conducted in 2018 and examines mowing and brushing equipment options. Purchasing a skid-steer machine was not the lowest-cost option but if external funding was available, a tracked skid-steer could replace the current tractor and:

- Replace hand brushing on Pine Creek with machine mowing, significantly reducing volunteer effort and improving trail quality;

- Mow side brush quickly during normal mowing operations; and
- Assist with snowplowing and other duties around the facility.

Potential Capital Project: Seek grants in 2019 or 2020 to replace the tractor with a tracked skid steer at a net cost of approximately \$60,000. If that is not accomplished, then a replacement mower attachment (\$5000) will be required within 2-3 years and periodic side-brushing will cost an average of \$1000/year.

3.1.3 Trail Improvements

BVCCSC has just completed a major two-year project to improve trails. The project had two primary goals: improve the surface so designated trails can be skied with less snow (target skiing with less than 20cm) and improve access for mowing. With the completion of that project, many of the trails are in good shape. However, targeted further improvements is desired over the coming five years. All trail works are undertaken under the authority of the Partnership Agreement with Recreation Sites and Trails BC and any work-specific authorizations. Logging is coordinated with Wetzin'Kwa Community Forest to ensure timber is removed and utilized.

The following trail improvements have been identified for the existing trail network (cost estimates listed in Appendix 7.1.3):

- a) **Grading and drainage:** minor grading is required on several trails to improve early season skiing and to facilitate mowing. Total cost of high, medium and low priority trails is \$39,000. Funding will be sought as available and trails can be completed over multiple years.
- b) **Bridges:** Replace log culverts with permanent bridges. There are two log culverts on Pine creek that were installed in 2015 and will need to be replaced before 2025. A new culvert on the Wetzinkwa extension will also need replacement. All should be replaced with permanent bridges that have a deck that is suitable for crossing with a tractor and that allow early season skiing. An inexpensive option is used truck beds that come in standard 20-foot lengths and are certified for 30 tones. A site design plan is required before final design is confirmed. Estimated budget is \$37,000. This is a lower priority but can be done when funding is available.
- c) **Gravel:** Surface Broadway and parts of staging area and Northern Lights with gravel. Approximately length of 1.5 km. A gravel trail does not get rutted up and early snowfall stays in place better than an unsurfaced trail. This means graveled trails are available on a lower snowpack and can be skied earlier in the season. These trails would connect to the gravelled logging roads making a good system for very early season skiing. Estimated cost \$24,000.
- d) **Gates:** The Club has 6 gates that prevent vehicle access to the trails and facilities to avoid damage to the trails and to reduce risk of vandalism or theft at the lodge and associated

buildings. Wetzin'kwa Community Forest has a key to the gates to allow periodic use for forest management purposes. The local trapper is also provided a key if needed. Two new gates are proposed to prevent rutting on the new Wetzin'kwa trail. The Club will apply to RSTBC for permission to operate these new gates in 2019. If funding can be secured, new gates will be installed. If funding is not available, then cables will be installed anchored to trees on either side of the trails.

Potential Capital Projects: Approximately \$13,000 of improvements is already funded or budgeted for 2019. Additional funding during 2019-2021 could allow trail works on high, medium and low priorities (\$30,000); priority gravelling (\$24,000); bridges (\$34,000); and/or new gates (\$9,000).

3.1.4 Trail Optimization

In order to make tracksetting more efficient, and to make trails easier to find and follow, a series of minor changes have been completed to optimize the trail system. In general, these changes eliminated short “connector” trails which are, for their length, very time consuming to set.

- Create a “T” junction at Dahlies/Valleview;
- Remove a section of trail north-east of Goldeneye Lake and make a single exterior “Perimeter” trail.
- Remove two short “cut off” trails on the “Hilltop loop”.
- Shorten Valley View trail by approximately 1.0 km to end the trail at a viewpoint that is also proposed cabin location (see section 7.3.4 Possible Future Projects.) This reduces the length of “out and back” tracksetting

These changes combined with the creation of a new “Wetzin’Kwa extension” and “Down the Mountain” have substantially reduced the amount of trail where a tracksetter has to traverse the same trail twice; the overall impact is an increase in the efficiency of tracksetting. No further action is anticipated

3.1.5 Maps and Signs

As a safety measure (see section 3.1.5) and to make skiing our extensive trail network more enjoyable, we supply free maps in paper, online and georeferenced pdf formats. We also install signage at each junction with junction letter, trail names with difficulty ratings, “You are here” maps, and a directional P sign indicating the easiest route back to the parking lot. New signage welcomes and informs skiers at the turn-off and parking lots.

Renewal of our maps and signs has been generously supported by Recreation Sites and Trails, BC Rural Dividend Fund, club volunteers and Nordic Centre operational funds. During the term of this plan, the final phase of the maps and signs renewal project will, subject to funding:

- replace old junction and P signs (posted on trees) with metal signage on posts
- produce and print the new map as a brochure with info and suggested routes
- build an info/ticketing kiosk in the lower parking lot
- produce and post large trail maps in the info kiosk and the lodge

Potential Capital Project: Funding from outside sources will be sought to support the cost of this final phase of the maps and signs project (approximately \$7000)

The Club has invited Cas Yex clan of the Wet'suwet'en to provide some names for trails to increase people's knowledge of the Wet'suwet'en presence. Other interpretative options that will be considered if time and funds are available are:

- Find opportunities for more Wet'suwet'en information to be presented to skiers;
- Install an interpretative sign at the old homestead on Wetzin'kwa extension. This is located along the old Duthie Mine road and is an interesting part of the settler history of the region.

3.2 Lodge and Buildings

3.2.1 Lodge Maintenance

Regular maintenance occurs under the direction of a buildings manager. One or two annual work bees use volunteers to stock firewood, clean the lodge and do special projects. In addition, a roster of athletes and parents from the Athlete Development Program contribute to routine maintenance during the season (i.e. cleaning bathrooms, taking out garbage, shovelling the decks, etc.).

3.2.2 Lodge and Building Improvements

Major upgrades to the lodge were recently completed including a new cistern, furnace, chimney, and roofing. A new floor and ceiling were installed in 2017 and completed the final vision for the lodge. In 2018, a second woodshed was constructed which allows the Club to store 1.5 years of firewood, ensuring that firewood is always dry and burns efficiently.

In addition to the lodge, the Club has a Caretaker Cabin, a Wax Hut, a Biathlon Cabin, and a Timing Hut.

Over time, the lodge and other buildings assets will require repairs or upgrades. In order to handle these expenses, the Club strives to set aside money each year in an Infrastructure Restricted Fund (separate from the tracksetter reserve fund). At the end of fiscal 2018-2019, that fund is projected to be \$25,000. During the term of this plan, no major projects are planned for the lodge and buildings so the current fund is expected to be enough for unforeseen major repairs.

3.2.3 Machine Shed

The current machine shed was built in approximately 1995. It cannot be heated and does not have a concrete foundation. With a grant from Wetzin'kwa Community Forest in 2018, the ceiling beams were reinforced with LVL beams to address a concern with the structural integrity. The machine shed will need a new roof within the next ten years. It otherwise has a lifespan of at least 25 years if used for storage purposes.

The machine shed is too small for the current PistenBully. Building a new machine shed is a high priority for the next two years and will be the subject of grant applications. The proposed plan is to build a new shed of approximately 28 feet by 40 feet. The new machine shed would be dry, could be heated facilitating repairs and maintenance and would have a concrete floor which allows easier clean-up of any spills. The old machine shed would be maintained for storage of smaller equipment (tractor, Ginzu, etc).

Potential Capital Project: If external funding can be secured for the majority of the cost, build a new, single bay machine shed. Estimated cost \$70,000.

3.3 Tracksetting

3.3.1 Tracksetting Equipment

The primary machine for tracksetting is a 2004 PistenBully Edge with a groomer attached. It was purchased used in 2012 and as of the end of 2018 has 8350 hours. The snowmobile and Ginzu groomer serve as a backup to the PistenBully and can groom in conditions where the larger machine is less effective, such as early season low-snow conditions

Appendix 7.2.1 examines the question of replacing, retaining and/or supplementing the PistenBully. Based on that analysis, BVCCSC plans on adopting a Proactive Maintenance strategy and keeping the PistenBully Edge indefinitely (at least 10 years). This approach should be reviewed periodically to ensure enough lead time if a future replacement is deemed necessary. The initial shift to proactive maintenance will involve significant expense (up to \$20,000 for hydraulic pumps in 2019 and another \$15,000 to replace the belt in 2020 -2021) but then only regular maintenance is expected for the next 8-10 years. The analysis includes an option to buy a second PistenBully Edge as a backup, for snow clearing and as a ready source of parts.

Potential Capital Project: Depending on other priorities and if funding can be secured, pursue the purchase of a second used PistenBully Edge. (Cost: \$40,000 to \$65,000)

In addition to the PistenBully, the Club has small tracksetting equipment including:

- a Skidoo Skandic snowmobile that pulls a Ginzu Groomer. This was purchased in 2012.

- Three Skidoo “Twin Track” snowmobiles that can pull a single classic track setter or an 8-foot roller.

Potential Capital Project: If funding is available, the Club will consider replacing the twin track snowmobiles with a second Skandic snowmobile. This is a lower priority and will only be pursued when other higher priority projects are complete. Cost of a new Skandic is slightly under \$15,000.

3.3.2 Tracksetting Policy

The Club’s tracksetting policy sets out when and how tracks are to be set and the desired trail standards. To date, the policy was only partly documented and as a result, it has not been clear to members what standard they can expect and how that standard will vary with snow conditions.

Recently, the Club made changes to which trail segments are being groomed so that tracksetting will be optimized (e.g. reducing out and back sections). Tracksetters have also established tracksetting routes and priorities to ensure efficiency and to target heaviest use areas after snowfalls. The Club is also experimenting with how and when to effectively use the smaller Ginzu groomer. The goal of these actions is to maximize the amount of trail set within the existing budget. End-of-season analysis of operating costs will guide adjustments to the tracksetting policy and future budgeting.

In the next year, the tracksetting policy and standards will be documented to support tracksetter decisions and to communicate to members what they can expect and clarify how snow conditions and budgets might limit how and when trails are groomed.

3.4 Snow Plowing

BVCCSC has two parking lots and approximately 500 metres of road to maintain. In the past, these were plowed under contract, but contractors were not able to do the work as quickly as needed and it was expensive. More recently, the Club has plowed the parking lots with the PistenBully. The PistenBully is very effective and when used correctly does not sustain damage from the plowing, however plowing represents increased and therefore additional operating and maintenance costs. Also, the need to plow the parking area is usually after a large snowfall and there is competing need to groom trails.

The Club continues to explore equipment options that would have lower operating cost and allow the PistenBully to focus on trail grooming. Appendix 7.2.3 discusses some plowing options, including the possibility of obtaining a single machine that is capable of both brushing and plowing, (see Potential Capital Project in section 3.1.2 “Mowing and Brushing” above).

3.5 Safety Measures at the Nordic Centre

3.5.1 First Aid Supplies

There is a dedicated First Aid room in the lodge with a bed and First Aid equipment. For all major races, a dedicated safety officer is assigned. There is a rescue snowmobile that is always available to search for lost skiers or if necessary, to rescue a skier. A sled to tow behind the rescue sled is available in the first aid room.

3.5.2 Emergency Action Plan

An Emergency Action Plan and Emergency Contact Numbers are posted near the telephone on the first floor of the lodge.

3.5.3 Safety Equipment on Trails

Several major junctions have a sealed bucket that contains a blanket and basic survival supplies. Locations are marked on the trail maps. The buckets are placed on the trails early in the season and removed at the end of the season.

3.5.4 Maps and Signs

To assist with navigating our extensive trail network and to reduce the risk of lost skiers, we supply free maps in paper, online and georeferenced pdf formats. We also install signage at each junction with junction letter, trail names with difficulty ratings, “You are here” maps, and a directional P sign indicating the easiest route back to the parking lot.

Section 3.1.5 describes the recent and ongoing renewal of our maps and signs.

3.5.5 Work Bees and Trail Work

Volunteer participation at work bees will be documented and will indicate any relevant training or safety-related certification. Volunteers will be assigned tasks appropriate to their training and abilities.

Chain saw work for the club (e.g. firewood or clearing windfall) can only be done if the person is qualified to use the saw safely (trained and/or equivalent experience) and uses personal protective equipment. Tree falling should only be done by qualified fallers. Chainsaw safety training will be offered periodically.

3.5.6 Machine Operators’ Radio

Operators of the tracksetter or brushing tractor often work alone. They are responsible to assign a check in person (usually their partner) before leaving. They carry a radio that can telephone out from all areas on the trails, which is used in an emergency or if there is a breakdown.

3.5.7 Machine Operator Training

Operators of the Club's tracksetting or brushing machines will be required to have sufficient training and/or experience to operate safely and proficiently.

- The head tracksetter will determine who can operate the tracksetting machine and what training and experience they need.
- The Trail Coordinator will determine who can operate the brushing machine(s) and what training and experience they need.
- The Club will obtain training services if needed to ensure safe and proficient operation of tracksetting and brushing machines.

Section 4 Nordic Skills Development Program

4.1 Programs

The Nordic Skills Development Program provides skills training from qualified coaches for:

- Rabbits
- Extended Rabbits
- Track Attack
- Junior Development
- Biathlon
- Masters
- Schools

4.1.1 Athlete Development Program

The Athlete Development Program includes three tiers that are designed to follow the Long-Term Athlete Development Model. In 2018/19 these programs include approximately 130 athletes. The programs are described at:

Rabbits: <http://www.bvnordic.ca/skills-development/rabbits/>

Track Attack: <http://www.bvnordic.ca/skills-development/track-attack/>

Junior Development: <http://www.bvnordic.ca/skills-development/athlete-development-program/>

4.1.2 Biathlon

The Club has a biathlon program for youth (ages 8 and up) as well as masters. The biathlon range has 16 targets and a dedicated biathlon warming cabin. In 2018/19 there were seven athletes in Biathlon. The program is described at:

<http://www.bvnordic.ca/skills-development/biathlon/>

4.1.3 Masters

For adults, BVCCSC offers drop-in sessions for all skill levels. Participants and coaches meet at the lodge after the sessions for hot apple cider and tasty appies.

Private lessons for adults can be arranged with local CANSI instructors.

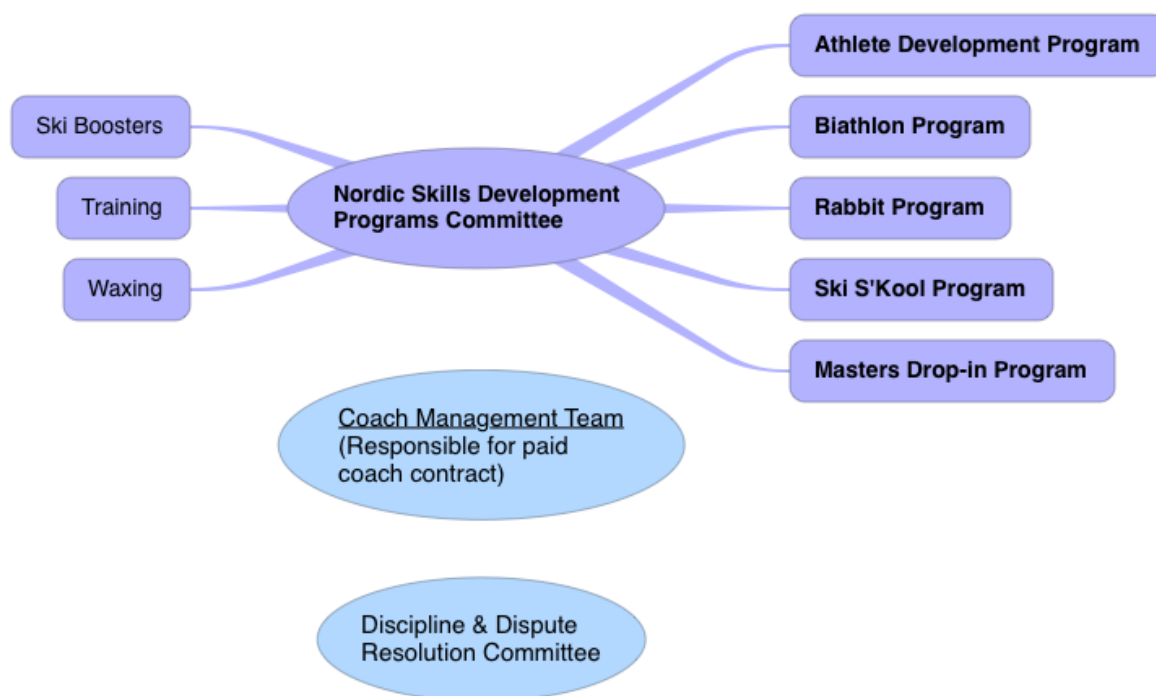
4.1.4 Schools

The Ski S'kool program includes students from 6 different schools in the region and in a typical year will see over 1800 skier days. The program is described at

<http://www.bvnordic.ca/skills-development/ski-skool/>

4.2 Organizational Structure

Governance of the Nordic Skills Development Program is briefly described in section 1.3 of this management plan. Further information about the programs is available on the bvnordic.ca website on the [Ski Programs pages](#).



4.3 Safety

Safety is a key part of the training for coaches and race officials.

All coaches and parents of children in the Athlete Development Program receive an annual safety orientation at the beginning of each year.

Section 5 Events and Communications

5.1 Competitions

BVCCSC regularly hosts local and regional cross-country ski races and biathlon competitions; up to 5 in a year. The Nordic Centre is capable of hosting provincial and national-level races (1999 Junior Nationals, 2006 Canada Games Trials, 2007 Western Canadian Championships).

No provincial or national competitions are being pursued at this time. During the term of this plan, the Club will typically host 2 to 3 local and regional competitions at the BV Nordic Centre.

5.2 Social Events

The Nordic Centre plays a significant role in the recreational and social life of Smithers, Telkwa and the surrounding Bulkley Valley. BVCCSC strives to provide a variety of events through the long ski season, catering to skiers of all ages and abilities. Events are well-organized, safe, friendly and inclusive. Planned events are posted on the bvnordic.ca website.

5.3 Communications

The club uses several methods of communicating about our club, facilities and activities. In addition to sending information out, we provide opportunities for feedback from members and other users.

5.3.1 Website

BVCCSC maintains a website at www.bvnordic.ca. The site describes Club programs, trails and facilities, as well as various policies. An automated weather station provides updates on current weather at the Nordic center. Trail updates are posted on the website as soon as possible when tracksetters are finished for the day.

5.3.2 Newsletters and Email

The Club provides periodic newsletters by email to members to keep them apprised of news in the Club. Usually newsletters are twice or three times per season.

5.3.3 Social Media

BVCCSC uses social media (primarily Facebook) to update members on events and stories.

5.3.4 Marketing Strategy

The current communication tools have been adopted primarily to improve communications to current club users. With the quality of the trails and facilities, there are opportunities to also

market the Nordic centre as a destination for out of town skiers. Recently, Tourism Smithers added the Nordic Centre to their Ski and Stay Smithers website <http://skiandstay.ca/>. There may also be opportunities to expand the use of the facility by local people who are looking for healthy outdoor opportunities but are not familiar with cross-country skiing.

The club would like to develop a marketing strategy that seeks to expand the reach of our communications both locally and as a skiing destination. There are likely funding sources available to do marketing work. The Club's first step will be to find a project lead who has a vision and a passion to drive this initiative. Within the next two years, the Club will then work with the project lead to expand its communications.

Section 6 Capital Project Priorities

6.1 Capital Plan for Essential Assets

6.1.1 Existing Buildings

In recent years, the Club received grants and direct support that enabled the renovation and upgrade of buildings and trails. Ongoing maintenance and incremental improvements will continue but no major repairs or upgrades are planned for existing buildings for the next five to ten years. The Club has an Infrastructure Restricted Fund which is intended to be enough to address unforeseen major expenses in the Nordic Centre's infrastructure.

6.1.2 Tracksetter

The Club has a Tracksetter Restricted Fund which was intended for the eventual replacement of the PistenBully. The objective of the fund was to save \$15,000 each year towards a total of \$150,000 by 2022. Major repairs and insufficient operating surplus prevented consistent buildup of the restricted fund. As of the end of the 2017-2018 season, there was only \$59,000 in the fund and more major repairs are expected in the near future. The difficulty of saving for the major capital expense of a replacement machine has overshadowed what is otherwise a fiscally healthy operation at the Nordic Centre.

The need for an alternative approach is addressed by the discussion in Appendix 7.2.1 and the approach established in 3.3.1 above: Adopt a Proactive Maintenance strategy and keep the PistenBully Edge indefinitely (at least 10 years). Proactive maintenance will require up to \$20,000 for additional maintenance in Fiscal Year 2019 and \$15,000 extra in Fiscal 2020 or 2021. The Club can allocate some of its tracksetter restricted fund for those additional costs and then retain enough in the restricted fund to address unforeseeable major repairs. No capital purchase is required in this approach. (The option to obtain a second PistenBully Edge is presented below as an incremental opportunity subject to external funding.)

6.1.3 Trails

As described in section 3.1.3 above, 2018 saw major trail additions and improvements. Further work associated with that project (grading, culverts, etc.) is already funded (~ \$13,000) and planned for summer of 2019. The trail improvements plan in Appendix 7.1.3 identifies about \$9,000 of additional trail work that is high priority.

The maps and signs project of 2017 and 2018 resulted in the installation of new trail signs and maps. Section 3.1.5 above estimates \$7000 will be required for the final phase of this map and sign renewal project.

The Nordic Centre's budget for FY 2019 will include some funding for the above trail and sign work but external funding will be required to complete all of this priority work in 2019. Seeking \$15,000 to support the above trail and sign improvements is a priority for the Club.

6.2 Priority New Projects

6.2.1 New Machine Shed

Section 3.2.3 describes the need for a new machine shed and an estimated cost of \$70,000 based on initial rough plans. Further design work and cost estimates are still needed. It will be a priority during 2019 to confirm a project leader, construction method and a funding strategy. Several funding sources will likely be required with initial application(s) in 2019. The target for full funding and construction will be the summer/fall of 2020.

6.2.2 Trail Improvements for 2020+

In addition to the high priority trail improvements addressed in 6.1.3 above, further trail improvements, bridges, gravelling and gates are planned for 2020 -2022, (up to \$88,000 as described in section 3.1.3 above). The Club will seek multi-year support from Recreation, Sites and Trails BC capital funding and/or other sources.

6.2.3 Skid-Steer

Section 3.1.2 makes a case for obtaining a tracked skid-steer to replace the tractor subject to funding support. The Club will pursue grant applications if those applications do not conflict with the above priorities (Machine Shed and Trail Improvements). It will be important to determine whether there is external funding for a skid-steer before the current mower attachment needs replacing (i.e. 2-3 years).

6.3 Other Projects Dependent on External Funding

The following potential projects are deemed worthwhile, but the Club will only proceed with funding applications if they are not in conflict with the above priorities. Other potential projects such as those in Appendix 7.3 *Possible Future Projects* can be moved to this category during the term of this management plan if a project champion obtains support from the Board of Directors.

6.3.1 Second PistenBully

Potential capital project from section 3.3.1 *Tracksetting Equipment*: Depending on other priorities and if funding can be secured, pursue the purchase of a second used PistenBully Edge. Cost: \$40,000 to \$65,000

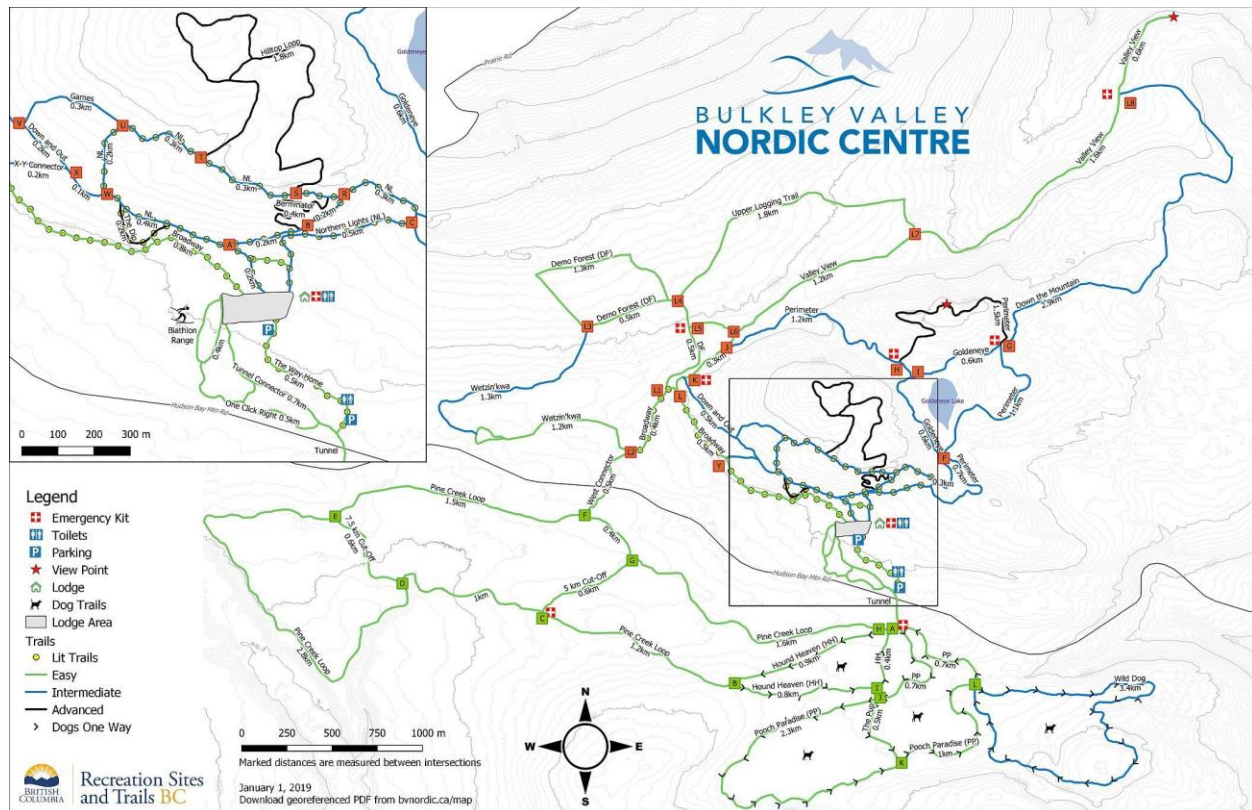
6.3.2 Second Skandic Snowmobile

Potential capital project from section 3.3.1 *Tracksetting Equipment*: If funding is available, the Club will consider replacing the twin track snowmobiles with a second Skandic snowmobile. Cost of a new Skandic is slightly under \$15,000.

Section 7 Appendices

7.1 Trails

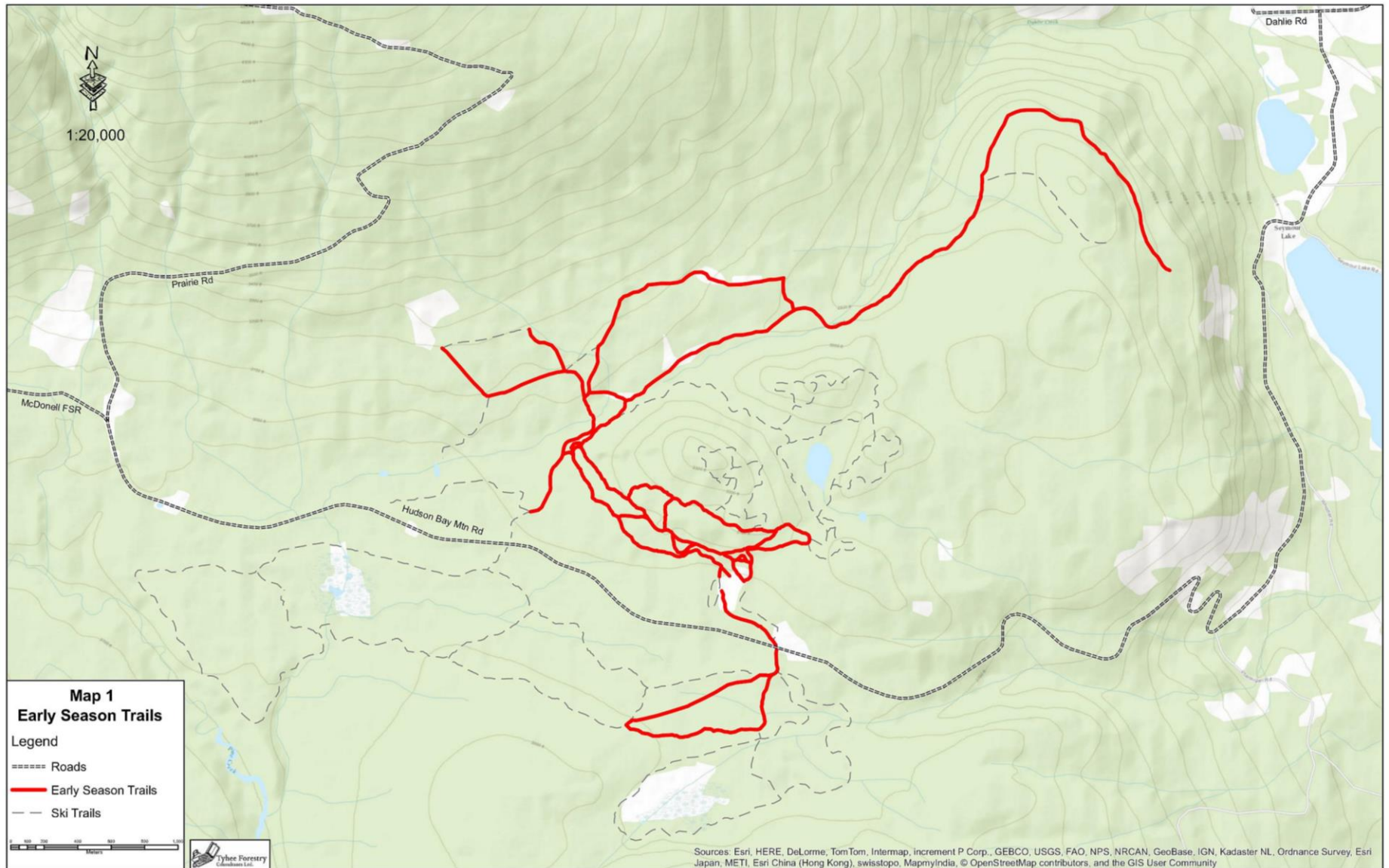
7.1.1 Existing Trails



Higher resolution, georeferenced PDF version can be downloaded from

<http://www.bvnordic.ca/map>

7.1.2 Early Season Trails



7.1.3 Trail Improvement Cost Estimates

2019Feb04

BV Cross Country Ski Club

Four year trail plan. 2019 to 2022

Detailed Cost Estimates

funded by club in 2019

Category	Trail Name	Action	Equipment	Units	Unit cost	Total	comments	Proposed year
Planned 2019	Minor fixes; tunnel connector, Broadway, Northern Lights	Misc grading and fix wet spots	small hoe; 1/2 day	0.5	\$ 880	\$ 440	Northern lights; 2 hours. Tunnel connector 1 hours. Broadway fix one hole. 1 hours.	2019
	1.5 k	grading at bottom end. Culvert at Northern Lights junction	small hoe 1/2 day	0.5	\$ 880	\$ 440	300 mm x 12 m culvert at northern lights	2019
	Goldeneye	culvert and grading	small hoe 1/2 day	0.5	\$ 880	\$ 440	one culvert at beginning, minor grading first 500 m	
	Fuhrs	ditch, grading and two culverts	Small hoe	1	\$ 880	\$ 880	450 mm x 12 m (on corner at upper logging road)	2019
	Perimeter: H to J	Minor wet spots; ditching	small hoe; 0.5 day	0.5	\$ 880	\$ 440	two culverts; 300 mm x 9m. This would allow early ski from lodge around perimeter/goldeneye	2019
	Wetzinkwa	grading	Small hoe; 2 days	2	\$ 880	\$ 1,760		2019
	Upper logging road	Culvert at entrance to Demo forest	small hoe	0.5	\$ 880	\$ 440	600 mm culvert x 9 m.	2019
		Grading at Bobs boogie	small hoe 1/2 day	0.5	\$ 880	\$ 440		2019
		remove trees over the trail	faller 1 day	1	\$ 550	\$ 550	8 to 10 trees at Bobs. 3 to 4 trees at Goldeneye. 4-5 trees on perimeter. Trees are intercepting snow over trail	2019
	Wetzinkwa	culverts and moving slash piles	large hoe	2.5	\$ 1,120	\$ 2,800	one additional culvert on old wetzinkwa (300 x 9)	2019
	Wild Dog	culvert installation	large hoe; 1.5 days	2	\$ 1,120	\$ 2,240	2 300 mm long culverts. 1 450. 2 long 450 (on angle; 10 m)	2019
	Upper logging road	move logs at Bobs boogie	large hoe 1/2 day	0.5	\$ 1,140	\$ 570		2019
	Mob and Demob	lowbed 2019	6 hours per machine	12	\$ 120	\$ 1,440		2019
	Total 2019 funded by club					\$ 12,880		
High Priority	The Pup	Culverts and grading; 3 culverts	Large Hoe; 2 days	2	\$ 1,120	\$ 2,240	1 600 mm or treated culvert. 2 450 mm. Plus 300 m at connector to pup	2019
	Wild Dog	Grading	small hoe; 2 days	2	\$ 880	\$ 1,760		2019
	Pooch Paradise; at L	Fill over culvert	Large hoe; 1/2 day	0.5	\$ 1,120	\$ 560	use fabric; 30 to 40 meters; 450 m x 10 m	2019
	Pooch Paradise K to L	Culverts and grading; 4 culverts	Large hoe 1 day	1	\$ 1,120	\$ 1,120	4 300mmx9m. Minor grading.	2019
	Pooch Paradise A to J	Grading and culverts	large hoe 1 day	1	\$ 1,120	\$ 1,120	allow early access to pooch; could be moved to 2020	2019
	Hound Heaven	2 culverts to fill wet spots	large hoe for 1 day	1	\$ 1,120	\$ 1,120	2 450 mm	2019
	all	grass seed misc				\$ 750		
	Subtotal High Priority trails					\$ 8,670		
Medium Priority	Perimeter; C to H	Grading	small hoe; 1 day	1.5	\$ 880	\$ 1,320		2020
	Pooch Paradise J to K	Culverts and grading; 3 to 4 culverts	Large hoe; 2 days	2	\$ 1,120	\$ 2,240	4 300 mm. 9 m 2 or 3 450 m x 8m. Lots of loonshit to deal with. Corduroy required.	2020
	5 km cutoff	Culverts and grading; 3 culverts	Large hoe; 1.5 days	1	\$ 1,120	\$ 1,120	3 300 mm x 9m	2020
	Demo Forest Trail	grading and two small culverts. Remove overhead trees	Small hoe	2	\$ 880	\$ 1,760		2020
		remove overhead trees	faller 1 day	1	\$ 550	\$ 550	about 20 trees to remove. Could forward some to road and use for firewood.	2020
		Log culverts;	2 made from treated poles and 4x4	2	\$ 1,800	\$ 3,600		2020
	Valleyview	grading	small hoe to fill and grade ruts	1.5	\$ 880	\$ 1,320	near down the mountain and to lookout	2020
	all	grass seed misc				\$ 750		2020
	Mob and demob			6	\$ 120	\$ 720		
	Subtotal medium priority trails					\$ 13,380		
lower priority	Pine Creek 10 km G to H	Culverts and grading; 3 to 5 culverts	large hoe; 2 days	2	\$ 1,120	\$ 2,240	check for culverts	2020
	Pine Creek 10 km D at E	Grading and swayles and raise trail in spots	Large hoe; 3 days	3	\$ 1,120	\$ 3,360	major wet area on north side may not be feasible	2020
	Pine Creek 10 km B to C	Grading and leveling trail; fix wet spots	Large hoe; 2 days	2	\$ 1,120	\$ 2,240	fix sideslope west of 2.5 k junction. Major section of loonshit.	2020
	Subtotal all trail improvements					\$ 29,890		

Category	Trail Name	Action	Equipment	Units	Unit cost	Total	comments	Proposed year
gravel Trails	Gravel	Broadway, Fuhrs	Hoe; loading at pit	4	\$ 1,120	\$ 4,480		2020
			spread cat	4	\$ 920	\$ 3,680		2020
			trucks (3)	12	\$ 920	\$ 11,040		2020
			roller packer	3	\$ 880	\$ 2,640		2020
			low bed; 6 trips	18	\$ 120	\$ 2,160		2020
						\$ 24,000		
Bridges	Design	three bridges; certified design	forester; 5 days	5	\$ 500	\$ 2,500		2021
	Installation	Wetzinkwa	Hoe installation	2	\$ 1,120	\$ 2,240	Need to transport blocks to site??	2022
			purchase 2 20 foot beds	2	\$ 3,500	\$ 7,000		2022
			concrete blocks	8	\$ 200	\$ 1,600		2022
	Installation	Pine creek	Hoe move and and install	3	\$ 1,120	\$ 3,360		2022
			purchase 4 20 foot beds	4	\$ 3,500	\$ 14,000		2022
			concrete blocks	16	\$ 200	\$ 3,200		2022
	Subtotal Bridges				\$ 33,900			
Gates	Gates	Wetzinkwa	two metal gates in each end	2	\$ 4,000	\$ 8,000		2020
		Bobs, Fuhrs	Cable with sign	2	\$ 150	\$ 300		2019
		signs; all gates	4 existing, 6 new	10	\$ 25	\$ 250		2019
		Subtotal Gates				\$ 8,550		
Day use cabin	Construction	Site prep	hoe	1	\$ 1,120	\$ 1,120		2021
		foundation	concrete			\$ 600		2021
		building	cabin			\$ 20,000		2021
		outhouse				\$ 3,000		2021
		Subtotal Cabin				\$ 24,720		
	Total				\$ 121,060			
	Cost of High and Medium priority trails, and Gates				\$ 30,600			

Sources for Cost Estimates

Item	Source	Description	Rate	Day rate	with Taxes
Gravel	Vihar Construction: telephone quote	Road Crush; 10 yards per load. 2 lo	\$ 12.82		
		Transport. Truck and pup	\$ 160.00		
		Total per trip	\$ 416.40		
		With taxes	\$ 462.20		
Excavator	Blue Book 2016/17	Class 4 2016-2013	143.25	\$ 1,146	\$ 1,203
Dozer (small cat)	Blue Book 2016/17	Class 2 2016-2012	\$ 112.05	\$ 896	\$ 941
Lowbed	Blue Book 2016/17	5 axle with trailer	\$ 110.85	\$ 887	\$ 931
Grader	Blue Book 2016/17	Class 4	\$ 119.10	\$ 953	\$ 1,000
Roller compactor	Blue Book 2016/17	self propelled class 4	\$ 85.25	\$ 682	\$ 716

7.2 Equipment Options

7.2.1 Tracksetter

The primary machine for tracksetting is a 2004 PistenBully Edge with a groomer attached. It was purchased used in 2012 and as of late 2018 has 8350 hours. The Club also has snowmobiles with grooming and tracksetting attachments but given the size of the trail system and the periodic deep snowfalls, the PistenBully remains essential to tracksetting at Nordic Centre.

In April 2018, an analysis of tracksetter costs and replacement options led to the following board decision: “given the information and analysis that we have at this time, the Club is not in a position to consider buying a second PistenBully because we have insufficient funds.”

In late January 2019, the Nordic Centre director and senior tracksetting staff had an informal discussion with Jason Shumaker, the professional snow cat mechanic who does the major repairs on our PistenBully. The following assessment is based on information and advice from that discussion.

What machine is best for us?

- A brand-new machine like a PB400 would be expensive (\$400,000 with attachments), uses more fuel and requires more expensive/more frequent maintenance by specially trained, non-local, mechanics.
- A second hand PB400 would still have costly operating costs but also have the risk of a shortened engine life because it would likely come from a ski hill and there would be a high likelihood of over-revving on convex slopes.
- A PB300 is a good machine but is longer than our Edge and is not suited to tight turns.
- A smaller machine would not be able to handle our periodic large snowfalls.

Conclusion: The PB Edge we have is well-suited to our trails and snow conditions, is less complex than the newer machines and we have gained experience that allows us to do a lot of our own maintenance. The Edge can be maintained to last indefinitely (like Beaver bush planes and many helicopters).

What major repairs should we expect in the next few years?

- The Final Drives were replaced recently (about 2 years ago) and should be good for awhile.
- The left-hand Track Pump was replaced with a rebuilt pump recently and should be good for 4000 hrs.

- The track pumps receive similar wear and since the left-hand pump already failed, we should expect to have problems soon with the right-hand Track Pump (\$6500). The Tiller Pump (\$6000) and Auxiliary Pump (\$2500) are also at their expected end-of-life. (Costs are rough estimates of rebuilt pumps.) If a Track Pump fails while out on a trail, the tracksetter is stuck there until repaired and repair costs will likely increase by a third.
- The splitter box is in good shape and we now have some minor parts that allow simple repairs if needed.
- The track belts will probably start causing problems (initially breaking track bars) within 2-3 years. When we replace the belts, we should consider getting a better belt (12mm OEM for about \$15,000).
- The engine should be good for awhile (PB engines typically last 6,000 to 18,000 hours), especially if we do a valve set every 2-3 years.

Conclusion: Overall, our Edge is in good shape but until the three hydraulic pumps are rebuilt, there is a high risk of breakdown. After the pumps and belt are replaced, we should be good for the next 4000 hours (8-10 years), although surprises are always possible.

What are our options? (assuming we stay with the Edge)

1. **Repair When Broken.** In the next 1-2 years, expect \$20,000+ repairs with a high risk of significant downtime mid-season. In the next 2-4 years expect another \$20,000 repairs and downtime.
2. **Proactive Maintenance.** Plan to replace parts before end-of-expected-life. Initially, the maintenance plan should include:
 - March 2019: Replace with rebuilt pumps the RH Track pump, Tiller pump and Auxiliary pump. Possible drive hoses and valve set. ~\$17,000+
 - 2021: Belt replacement ~\$15,000 and valve set
 - 2024 valve set and any parts with significant wear.

Proactive maintenance should result in less downtime than option 1 but some downtime is still likely.

3. **Proactive Maintenance and Second Machine.** In addition to being proactive with repairing/replacing major parts before failure, we could buy a second, used Edge.
 - It should be possible to buy a second-hand Edge PB for \$40,000 to \$65,000. The market is decent now but eventually they will be harder to find.
 - The second machine would not need to be in as good a shape as our current Edge and would not necessarily have to receive the same level of proactive maintenance.

- The second machine would need to be used at least occasionally, but its primary roles could be limited: e.g. a backup machine to Edge 1, snow clearing, and a ready source of parts.

Conclusion: Given the above information, the preferred approach is to plan on keeping the PistenBully Edge and adopt a Proactive Maintenance strategy. Depending on other priorities and if funding can be secured, consider purchasing a used PB Edge as a backup and source of parts.

7.2.2 Mowing and Brushing Equipment

BVCCSC has a 65 hp 4-wheel drive Ford tractor equipped with a 7-foot rotary mower. The tractor is limited to accessing well-drained trails with no stumps. The recent trail improvements have increased the area that can be mowed with the tractor and made the trails much smoother and safer for mowing. However, significant portions of the Pine Creek trails cannot be mowed due to wet ground that the rubber-tired tractor cannot access. Also, even on trails that the tractor can mow, it does not have the capability to cut brush on the sides of the trails. In the past, the Pine Creek trails and the side brush had to be hand-brushed every second or third year.

The current tractor has an expected lifespan of at least ten more years. The tractor's mower attachment probably requires replacement at a cost of \$5000 in two to three years.

The Club needs to decide how it will address side brush (alder, willow) that the current tractor cannot mow, as well as mowing wet areas where the current tractor cannot access. Machine trials were conducted in 2018:

- A tracked excavator (hoe) with a brush-cutting attachment was very effective at reaching far off the trail to cut brush. However, it was not deemed to be an optimal approach as it was significantly more expensive than the skid-steer and it would not be able to efficiently cut brush on the trail surface.
- A tracked skid-steer machine with a front mounted mower was able to mow significantly wider than the current tractor. Even on steep ditches, it was able to mow alder. The trial confirmed that a tracked skid steer would achieve following objectives:
 - Replace hand brushing on Pine Creek with machine mowing, significantly reducing volunteer effort and improving trail quality;
 - Mow side brush quickly during normal trail mowing operations.

An additional consideration is that a skid steer could also assist with snowplowing and other duties around the facility.

The results of the skid-steer trial plus experience with the current tractor leads to the following three options.

Option 1. Side mower for existing tractor

Replace existing rear mower in 2 to 3 years. The existing mower is nearing the end of its life. It does a good job of brushing on the main surface of trails. The tractor can be fitted with a side arm mower that can brush off the main trail including ditches and sidehills. It appears that used side mowers are very difficult to locate so a new one is proposed here.

Cost: Replacement rear mower (new) \$5,000. New Side Brusher (Tigercat or similar) \$25,000.
Total \$29,000

Pros and cons

- Current tractor has another 10 to 15 years of service life
- Flexible option to allow brushing as needed.
- Cannot brush trails on soft areas of Pine Creek due to limits of the current tractor.
- Less expensive purchase than other options.
- Would address 90% or more of brushing needs

Option 2. Tracked skid-steer machine with front mounted rotary mower

A brush mower would be front mounted dual rotary mower. These are commonly used for farm work and roadside brushing. They are very effective at mowing stems up to 3 inches diameter and relatively easy to maintain. Because the skid steer would be on tracks, it could mow all of the trails, including wet areas on Pine Creek. It could also mow a wider trail than the current tractor, which essentially addresses much of the “side brush”. The front mounted mower can also mow about 6 feet off the trail, upslope or downslope on ditches.

Cost: Machine (used)\$50,000. Mower \$10,000. Snowblade up to \$10,000. Total \$70,000.
Trade in value of existing tractor \$12,000 to \$14,000. Net cost \$58,000.

Pros and cons

- Addresses the majority of brush issues (estimate 95%).
- Most expensive up-front cost
- Maintains a single machine for multiple purposes which means less annual maintenance
- These machines are common and easy to have serviced locally.
- Reduces pressure on volunteers for hand brushing Pine Creek trails
- Multi-purpose machine has other benefits, including trail grading or repairs and ice sanding as needed.
- Although fairly simple to operate, proficiency takes training and experience.

Option 3. Status quo with contracted side brushing

Retain the tractor and replace the mower attachment in two to three years. Occasionally contract out side brushing. Estimated cost is \$5,000 for a replacement mower attachment in two years plus \$3000 to \$4,000 every three or four years (assume \$1,000 per year). Continue to hand brush Pine Creek trails.

Pros and cons

- Least expensive up-front costs

- Increased operating costs for periodic brushing.
- Continued use of volunteers for hand brushing.

7.2.3 Snow Plowing Equipment

Although the PistenBully is capable of plowing the two parking lots and roads after all snowfalls, it is worth considering options that could be lower cost to operate and could allow the PistenBully to focus on tracksetting trails. Two options have been selected for consideration. Given the large area (parking lot is more than 1 hectare) and occasional heavy snowfalls, a pickup truck or the current tractor would not be feasible.

Option 1. Dedicated plow

Either a used front-end loader (i.e. Caterpillar 966) or a medium or large grapple skidder could be equipped with a snow plow blade. A machine towards the end of their service life but still reasonably reliable could be purchased at a reasonable cost.

Cost; \$30 to \$40,000

Pros and Cons:

- Very efficient at plowing
- A wheeled machine of this size may be slightly faster than the PistenBully.
- In deep snow conditions, it may not be able to dispose of snow as well as the PB as it cannot plow “over” large piles.
- A loader or skidder does not replace the tractor/mower so the additional machine represents additional maintenance
- Due to age of a machine at this price, significant maintenance would be expected
- Too large to store in tractor shed so would be stored outside.

Option 2: Used skid-steer loader.

A used skid-steer loader with low hours (up to 2500 hours), between 65 and 75 hp can be outfitted to plow snow and brush trails. A two-speed drive allows plowing up to 12 km/hr. A tracked machine is more expensive but due to low ground pressure would allow use on all trails without rutting (even on soft ground on Pine Creek) and would allow the plow to push snow over edges of roads. A plow of up to 9 feet wide with a “u” blade can efficiently plow the parking lot.

Cost: Machine (used) \$50,000. Mower \$10,000. Snowblade up to \$10,000. Total \$70,000.
Trade in value of existing tractor \$10,000 to \$14,000. Net cost \$60,000.

Pros and Cons

- Machines are easy and inexpensive to service
- Versatile machine with multiple uses including trail grading/repairs and ice sanding.
- Relatively low fuel costs
- May be slower than PistenBully at plowing.
- Service life of more than 5,000 hours means a life of at least 15 years.
- Can be stored in existing tractor shed.
- Although fairly simple to operate, proficiency takes training and experience.

7.3 Possible Future Projects

The following projects have been under consideration for some time but currently are not deemed to be priority projects for the Club. The status of these projects can be revisited if a project leader and potential funding is identified.

7.3.1 Biathlon Target Roof

A roof installed over the biathlon targets would significantly reduce volunteer effort required for shovelling snow and reduces problems with frozen targets sticking. The biathlon group has started some fundraising and pursue funding sources if there are adequate volunteers to take it on. Total cost would be between \$35,000 and \$45,000.

7.3.2 Ticket booth

In the past, the Club had a ticket booth in the lower parking lot. On weekends and holidays, volunteers on ticket booth duty would interact with everyone entering the lower parking lot. The ticket booth facilitated volunteers to act as an ambassador to the club and facilitated easier ticket checking and increased ticket sales. Unfortunately, the wood ticket booth was destroyed by vandals in two consecutive years, so the decision was made to move the ticket booth to the office of the main lodge. A preliminary assessment noted that a modified seacan could be purchased and outfitted for \$8,000 to \$10,000. It would be largely fire-proof and could be moved behind the gate during off season.

7.3.3 LED lights

The Club maintains 5 km of lit trails which are on throughout the season till 9:30 pm each day. Each year several light bulbs burn out and require a special lift truck to replace, due to the height of the light poles. Electricity bills for the Club are one of its largest costs after tracksetting and insurance. Replacing the existing lights with LED lights would reduce electricity costs and reduce the work required for annual maintenance as they do not wear out nearly as quickly as the current lights. Analysis of current costs, potential savings and funding options has not been done yet. No action is proposed at this time.

7.3.4 Day-Use Trail Cabin

A day-use trail cabin approximately 16 feet x 16 feet has been proposed for a location at the end of Valleyview trail, where it would serve as a destination for longer ski outings. The views from this location are spectacular. An outhouse would also be needed. Estimated cost, using volunteer labour, would be \$25,000. Approval application, design and fundraising will only be pursued only after other priority projects are completed.

7.4 History of BVCCSC 1920-Present

Cross-country skiing in the Bulkley Valley has roots back to the 1920s. By 1970, there were clubs based in Telkwa, Driftwood and Smithers. By the late 70s they amalgamated to form the Bulkley Valley Cross Country Ski Club. Gary and Liz Murdoch initialized a "Jack Rabbit" ski program at Tyhee Lake. Then Gary Murdoch and Esther Bain established a racing program. The Club decided that the Smithers Community Forest provided a perfect opportunity to develop a more challenging array of trails with more dependable snow conditions, and in the early 1980s club members developed ski trails along Pine Creek.

On February 16, 1984 the Club incorporated as a not for profit society. In 2017, the Club transitioned to BC's new Societies Act and elected to not be designated as "member-funded society". This allows the Club to continue supplementing member fees with public and outside funds to support our operations.

In the early 1990s, the Club commenced the more complex Chris Dahlie trail network. The biathlon range was built in time for the BC Winter Games in 1994. A new day lodge was constructed during 1993-1994, assisted by a significant donation from relatives of the Buchfink family who were tragically killed in 1994 in a helicopter crash. In 1996, electrical power was generously extended to the BV Nordic Centre by BC Hydro and its employees at a nominal cost to the society for materials. In 1997, lighting was installed on the 2.5 km loop and parking lot and then in 2005 extended to the Perimeter Trail for a total of 5 km of lit track. In 2004, a caretaker cabin was constructed. The Gary Murdoch waxing hut and toilets for the lodge were built in 2008. In 2012, a new Biathlon cabin was built. The cross-country ski trail network has now expanded to 52 km of which 5 km is lit and 10 km is dog-friendly.