



Village of Port Clements

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# Golden Spruce Trail Extension

Feasibility Study

LEES  
+  
ASSOCIATES

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Feasibility Study

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*Cover photo: Views across the Yakoun River. Photo: Patrick Beech*

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# INTRODUCTION

The Village of Port Clements (the Village) is exploring the potential to connect the Village’s existing Sunset Park Trail to the existing Golden Spruce Trail in Yaaguun Gandlaay via a proposed new trail parallel to the resource road carrying on from the end of Bayview Drive along the Yakoun River (see fig. 1). The Village is also exploring the potential to extend the Golden Spruce Trail south along the Yakoun to a sandbar known as the Old Swimming Hole. The trail extensions would provide recreation opportunities for locals and visitors, help connect the area’s existing tourism amenities, and create opportunities for cultural and natural heritage interpretation.

The Village hired LEES+Associates to conduct this feasibility study examining the potential for the trail extensions. The study was conducted during Summer-Fall 2022, and involved discussions with landowners, land managers, and rights holders on opportunities and limitations regarding the proposed trail, as well as ground truthing of the proposed alignments. This report outlines the approvals and partnerships that would be required to proceed, the constructability of the proposed route, and the costs of construction.



Figure 1 Ground Truthing the Golden Spruce Trail Expansion. Photo: Ivy Smith.



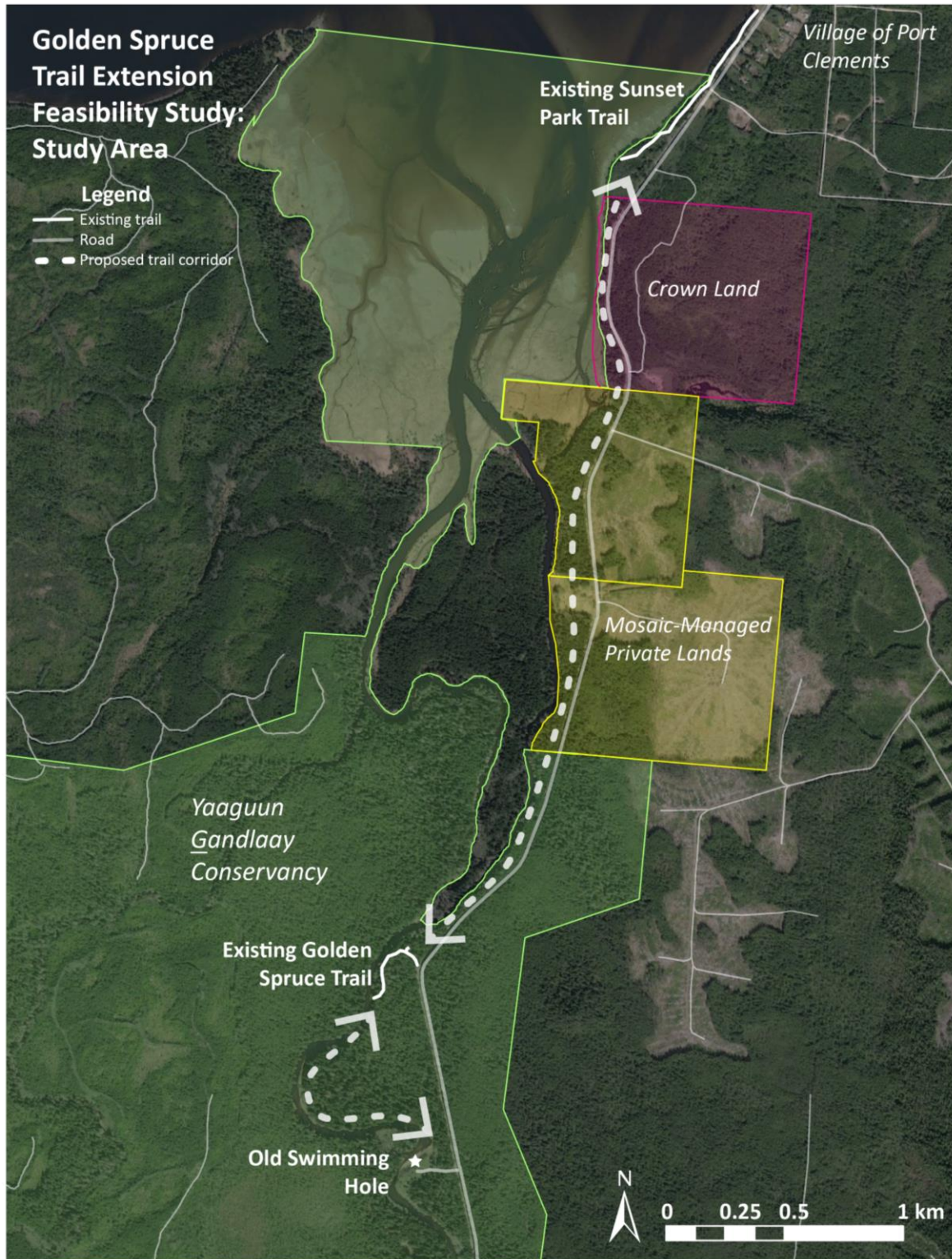


Figure 2 Golden Spruce Trail Expansion Study Area

# METHODOLOGY

This report is based on our findings from three methods of inquiry:

1. A desktop review of maps and planning documents, such as the Yaaguun Gandlaay Management Plan.
2. Virtual meetings with rights holders, land managers, and stakeholders, including:
  - Council of Haida Nation
  - BC Parks
  - Recreation Sites and Trails BC
  - North Coast Regional District
  - Village of Port Clements
  - Mosaic Forest Management
3. A ground truthing exercise conducted September 15-17, 2022, during which LEES and Village staff walked the proposed alignments. LEES took GPS tracks of the most promising alignments and recorded the location of probable stream crossings and boardwalks.

# PARTNERSHIPS AND REGULATIONS

The proposed trail extensions traverse lands owned by the Village of Port Clements, Provincial Crown Land, privately held land, and the Yaaguun Gandlaay Conservancy. To construct and maintain the trail extensions would require several layers of approval and partnerships. The following sections outline the jurisdictional landscape as it affects the proposed trails.

## HAIDA NATION

Haida Gwaii is the homeland of the Haida Nation, to which the Nation has never ceded claim. Reconciliation between the Council of the Haida Nation (CHN) and the Province of British Columbia (the Province) is guided by a series of agreements, including the GayGahlda “Changing Tide” framework agreement. A key component of GayGahlda with respect to the trail extensions is that lands on Haida Gwaii be co-managed by Haida Nation, as represented by the Council of Haida Nation (CHN), and the Province. This includes protected areas, such as Yaaguun Gandlaay, and “Crown Land,” such as the parcel of land directly south of Sunset Park, but does not include municipal or privately owned lands. Co-managed forests on Haida Gwaii are governed by the Haida Gwaii Land Use Objectives Order (HGLUOO), which established legal objectives for ecosystem-based management (EBM) of Haida Gwaii forests. The objectives were developed by CHN and the Province to protect cultural, aquatic, biodiversity, and wildlife values.

## ARCHAEOLOGY

The CHN referred the proposed trail extension alignments put forward in this study to their Stewardship Director for review. CHN staff were able to draw on previously completed cultural features inventory to comment on the proposed routing. Using the inventory, CHN staff identified several protected values within and adjacent to the study area, including Class 1 Haida Traditional Heritage Features, black bear dens, culturally modified trees (CMTs), cultural plants, traditional trails, and marbled murrelet nesting habitat. Any development in the area would need to respect the offsets on protected features specified in HGLUOO objectives.

Based on the review of a cultural features map<sup>1</sup> with CHN staff, the trail’s proposed routing could be possible; however, given the area’s high archaeological value, an Archeological Impact Assessment (AIA) would need to be carried out prior to construction. CHN and the Province’s Heritage Conservation Branch must be engaged to develop the scope of the AIA. Additionally, any work requiring excavation of 30 cm or greater would require a cultural monitor. Given the area’s high ecological value, environmental monitoring may also be required.

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<sup>1</sup> The Village was provided a referrals map in October 2022. The map is not included in this report.

## **RIPARIAN AREAS**

All the proposed trails are wholly or partially within the riparian zone of the Yakoun River. The riparian zone, which is generally classified as 30 m from the top of bank, is protected by the Provincial Riparian Areas Regulation. Trail construction within the riparian zone would require Provincial authorization. Additionally, because the Yakoun is salmon-bearing, Department of Fisheries and Oceans would need to be consulted, and there is the potential for work-exclusion windows.

## **CROWN LAND**

In addition to the considerations described above, approval for the Crown Land trail segments would require Section 57 authorization from Recreation Sites and Trails BC (RSTBC). RSTBC would review proposed work jointly with CHN through the Solutions Table. Before authorizing any construction, RSTBC would seek a partnership agreement requiring a maintenance commitment from the Village.

Yaaguun Gandlaay The Yaaguun Gandlaay Management Plan provides direction for the area, which is both a Haida Heritage Site and a BC Parks Conservancy. The Management Plan provides a vision for the area and outlines goals and objectives to guide the stewardship of cultural and natural heritage. Hiking trails are classified as an appropriate land use in all Yaaguun Gandlaay management zones, which supports the potential development on trails in the area. Early discussions with BC Parks staff indicated support for the concept.

If the Village moves forward with the trail projects, further cooperation with CHN and BC Parks is needed. Proposals for work in the Conservancy would require a briefing note to the Solutions Table, which includes representatives from CHN and the Province. The Solutions Table would undertake a desktop and field review before making recommendations.

## **MOSAIC-MANAGED PRIVATE LANDS**

The proposed Sunset Trail to Golden Spruce Trail extension would travel through two parcels of land that are owned by Island Timberlands and managed by Mosaic Forest Management (Mosaic). LEES+Associates and the Village held several meetings with Mosaic to discuss the feasibility of a trail through their lands. Mosaic shared that they have no short-term plans to harvest the parcels, and that they have a variety of partnership agreements in place for trails on Vancouver Island. At the time of writing, Mosaic was developing a more formal response to the Golden Spruce Trail Extension project that is still pending.

During the engagement phase of the study, two models to enable trail development on Mosaic lands were discussed. The first option is establishing a public right-of-way through Section 42 of the Transportation Act. This would provide long-term security for the trail, and was the approach suggested by Mosaic's legal team. However, this is not the standard approach to developing recreation trails on private land, as it transfers control of the land from the private owner to the Province. The second option would be a written partnership agreement between Mosaic and the Village that gives the Village license to develop and maintain a trail on Mosaic's lands. This option is more typical for recreational trails on private land in BC, as it preserves ownership rights for the private owner while providing clarity around both parties' responsibilities. The Outdoor Recreation



Council of BC has published a guide on this topic that includes a license agreement template.<sup>2</sup> With either agreement, the responsibilities of each party, including maintenance, should be clearly described. The Village should seek qualified legal advice before entering into any agreement.

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<sup>2</sup> Outdoor Recreation Council of BC. 2022. "Best Practices for Developing Public Trails on Private Lands." [https://static1.squarespace.com/static/6169b9b7f9862761042c7c05/t/6328a919683d3e6af9b124b8/1663609129412/220919\\_ORCBC\\_Best+practices+for+developing+public+trails+on+private+land.pdf](https://static1.squarespace.com/static/6169b9b7f9862761042c7c05/t/6328a919683d3e6af9b124b8/1663609129412/220919_ORCBC_Best+practices+for+developing+public+trails+on+private+land.pdf)

# PROPOSED TRAILS

## PROPOSED ALIGNMENTS

Three trails were explored in this study: a trail linking the Village's Sunset Trail to the Conservancy's Golden Spruce Trail, a trail linking the Golden Spruce Trail to a sandbar know as the Old Swimming Hole, and a spur off the later trail labeled Old Growth Connector, which was identified as an opportunity during the ground truthing exercise.

All three trails are located within the unique Coastal Temperate Rainforest. Western hemlock, western red cedar, and Sitka spruce are abundant along the proposed trail alignments. The understorey is relatively open with moss blanketing the forest floor, though and understory vegetation such as sword ferns, salal, and huckleberry is present. Various species of mushroom and lichen can be found throughout the forest floor and growing on tree bark. Large, downed trees are numerous along the proposed trail alignment, some of which are serving as nurse logs for new growth.

The proposed trails originate at Masset Inlet and follows the Yakoun River. The proposed trail alignment is located within a floodplain that is influenced by the tides as well as overland drainage patterns.

The three proposed trail segments are described in further detail below and shown in figure 3.

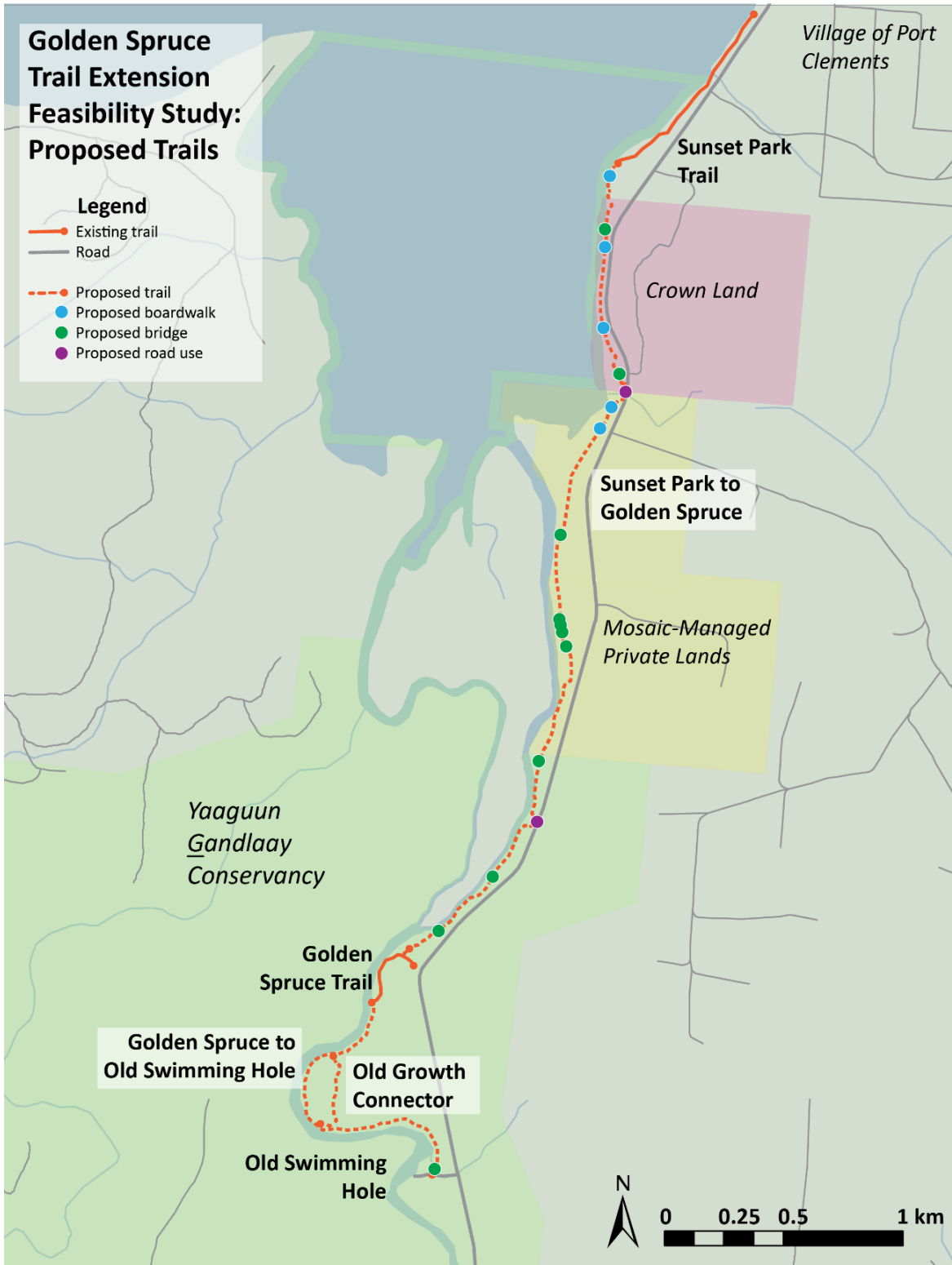


Figure 3 Proposed Trails



## SUNSET TRAIL TO GOLDEN SPRUCE TRAIL

- Length: 3.8 km
- **Description:** This segment runs from the end of the Sunset Trail at the viewing tower to the connection with the Golden Spruce Trail. The main feature along this trail is the expansive estuary views at the beginning of the journey. There are also some interesting burnt trees and a few nurse logs that would create points of interest for those travelling along the trail. In some sections, there is only a narrow strip of land between the road and the water. Nearby to this segment is a seasonal fishing camp with cabins – consideration should be made to avoid directing foot traffic to the cabins via trail signage. Due to several larger wet areas along this segment, sections of boardwalk would be required. There is also potential for boardwalks and lookouts to bring people safely towards the estuary and mudflats for expansive views and the opportunity to see wildlife. This segment’s proximity to the road has benefits and drawbacks. One benefit is that in case of emergency or being lost, people can always rely on the road to become oriented or to find help. The other is that the road’s bridges could be used by the trail for the two major creek crossings, which would otherwise require significant structures. The drawbacks are that dust from the road accumulates on adjacent vegetation, and traffic noise may hinder the forest experience.
- **Forest:** This segment is mostly forested with some pockets of open areas including the open field at the historic farm property.
- **Slope:** This segment is relatively flat in the direction of travel. There are some areas where the forest floor is hummocky. There is a prominent cross slope (sloping from the road towards the water) in some areas of this proposed trail segment.
- **Rivers, Creeks, Drainage:** There are several wet areas and several streams to cross along this segment.
- **Phasing:** This segment could be considered in Phase 2, after the Golden Spruce to Swimming Hole section has been completed.

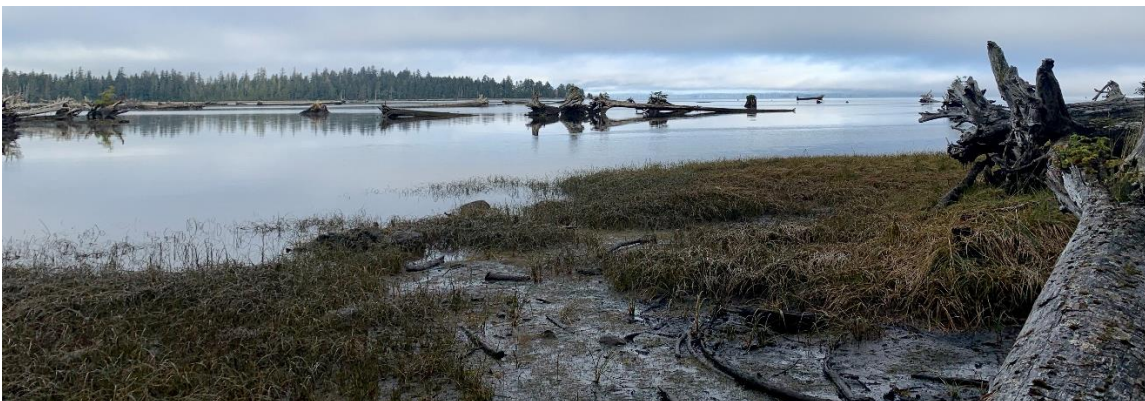


Figure 4 Estuary Views. Photo: Ivy Smith.

## GOLDEN SPRUCE TO OLD SWIMMING HOLE

- Length: 1.4 km
- **Description:** This segment follows an existing unmaintained trail from the Golden Spruce viewing bench to the old swimming hole. The proposed alignment could roughly follow the existing trail, with slight rerouting required in a few sections that are located close to the waters edge and may be at risk of eroding. This segment offers views across the river and there are a few locations that would be suitable for a bench or resting area.
- **Forest:** This segment contains large trees throughout and a relatively open understory (especially within proximity to the estuary/river).
- **Slope:** This segment is relatively flat in the direction of travel. There are some steep drops towards on the shore of Yakoun River.
- **Rivers, Creeks, Drainage:** This segment generally follows the Yakoun River edge which should be considered for drainage patterns as well as trail features. There are a few sandy beaches and only one stream crossing required for this trail segment.
- **Phasing:** This segment could be built in Phase 1 since there is an existing trail and fewer water features to contend with.



Figure 5 Unmaintained Trail Signage. Photo: Ivy Smith.

## OLD GROWTH CONNECTOR

- Length: 0.4 km
- **Description:** This segment branches off from the Golden Spruce to Old Swimming Hole segment to provide a looping trail opportunity to view large trees set in a mossy forest floor. This would also be an alternative trail option to reach the Old Swimming Hole. The main features along this segment are the massive spruce and cedar trees as well as some interesting nurse logs and downed trees. The mossy forest floor opens up in this area and is scenic at all scales.
- **Forest:** This segment has large spruce and cedar trees, as well as some interesting nurse logs which could make for attractive trail features and opportunities for learning.
- **Slope:** This segment is relatively flat in the direction of travel.
- **Rivers, Creeks, Drainage:** This trail segment leads inland, with no stream crossings. Natural drainage patterns towards the Yakoun River should be considered.
- **Phasing:** This segment could be added in a later phase once the Golden Spruce to Old Swimming Hole section is complete.



Figure 6 Large cedar tree. Photo: Patrick Beech.



## **TRAIL CONSTRUCTION, AMENITIES, AND ACCESSIBILITY**

### **TRAIL CONSTRUCTABILITY**

Proximity of the proposed trail alignment to the road (Bayview Drive/Portman Forest Service Road), especially in the Sunset to Golden Spruce section, would allow for reasonable access to the trail building site for personnel and machinery. Accessing both sides of the stream crossings during construction of the bridges will require planning on the part of the contractor but should also be feasible. Trail construction and planning should be carried out according to BC Parks or Rec Sites and Trails BC trail standards and built to match the existing Sunset Park trail in terms of materiality, width, and drainage infrastructure. Additional construction considerations include:

- Due to the wet nature of the soils, geotextile should be used under gravel surfacing to improve stability and drainage.
- In wet sections of trail, coarse ballast such as broken stone may be required under the standard trail structure.
- The trail should be topped with a gravel that contains fines to ensure adequate compaction can be achieved.
- Grades should be kept below 5% where possible to ensure accessibility and if necessary, could be between 5-8% for shorter sections.
- For accessibility, boardwalks and bridges should provide edging for safety and limit gaps between boards.
- Trails should be flagged out prior to construction and field fit according to terrain and local conditions.

### **AMENITIES**

Several amenities should be installed to support trail users, including:

- A trail kiosk with a trail map and important trail information at major trail heads (ie. Sunset Park Campground, Golden Spruce Trail and Old Swimming Hole).
- Interpretive to highlight key features or phenomenon along the trail (e.g., cultural heritage, estuary ecosystems, nurse logs, burned logs, etc.)
- Directions signage as well as prohibitive signage located at key locations and intersections where travellers may be confused along the trail (e.g., When the trail uses the road for stream crossings, or when the trail intersects with other, informal, trails).

Parking and washrooms exist at the Sunset Park campground and Golden Spruce Trail head. A formalized parking area and washroom could be provided in the future at the Old Swimming Hole location to provide access to the trail from the south end.

# COST ESTIMATE

## Golden Spruce Class 'D' Cost Estimate



Based on: Feasibility Study Alignment

Date: 10-Nov-22

Item	DESCRIPTION	UNIT	UNIT PRICE	APRX QTY	EXTENDED AMOUNT
<b>1.0</b>	<b>Sunset to Golden Spruce Trail</b>				
1.1	Trail Surface (1.5 m wide crushed gravel, including site prep)	lm	\$ 150.00	3,820	\$ 573,000.00
1.2	Drainage/culverts (allow for culvert every 15 m)	ea	\$ 100.00	255	\$ 25,466.67
1.3	Signage (blend rate for trailhead, directional, interpretation)	ea	\$ 600.00	12	\$ 7,200.00
1.4	Stream crossings/bridges (clearspan)	lm	\$ 4,000.00	54	\$ 216,000.00
1.5	Boardwalk	lm	\$ 200.00	84	\$ 16,800.00
1.6	Archeological/Biological Monitoring	day	\$ 500.00	153	\$ 76,400.00
1.7	Archeological Impact Assessment	day	\$ 30,000.00	1	\$ 30,000.00
1.8	Hazard Tree Assessment + Removal	day	\$ 750.00	8	\$ 6,000.00
Sub-Total =					\$ 950,866.67
<b>2.0</b>	<b>Golden Spruce to Old Swimming Hole</b>				
2.1	Trail Surface (1.5 m wide crushed gravel, including site prep)	lm	\$ 120.00	1,400	\$ 168,000.00
2.2	Drainage/culverts	ea	\$ 100.00	93	\$ 9,333.33
2.3	Signage	ea	\$ 600.00	6	\$ 3,600.00
2.4	Stream crossings/bridges	lm	\$ 4,000.00	0	\$ -
2.5	Boardwalk	lm	\$ 200.00	0	\$ -
2.6	Archeological/Biological Monitoring	day	\$ 500.00	56	\$ 28,000.00
2.7	Archeological Impact Assessment	ea	\$ 10,000.00	1	\$ 10,000.00
2.8	Hazard Tree Assessment + Removal	day	\$ 750.00	3	\$ 2,250.00
Sub-Total =					\$ 221,183.33
<b>3.0</b>	<b>Old Growth Connector</b>				
3.1	Trail Surface (1.5 m wide crushed gravel, including site prep)	lm	\$ 150.00	410	\$ 61,500.00
3.2	Drainage/culverts	ea	\$ 100.00	27	\$ 2,733.33
3.3	Signage	ea	\$ 600.00	4	\$ 2,400.00
3.4	Stream crossings/bridges	lm	\$ 4,000.00	10	\$ 40,000.00
3.5	Boardwalk	lm	\$ 200.00	0	\$ -
3.6	Archeological/Biological Monitoring	day	\$ 500.00	16	\$ 8,200.00
3.7	Archeological Impact Assessment	ea	\$ 5,000.00	1	\$ 5,000.00
3.8	Hazard Tree Assessment + Removal	day	\$ 750.00	2	\$ 1,500.00
Sub-Total =					\$ 121,333.33
Sub-Total =					\$ 1,293,383.33
Contingency Allowance (30%) =					\$ 388,015.00
Total =					\$ 1,681,398.33

**NOTES:**

- 1) The above costs do not include GST

## FUNDING OPPORTUNITIES

There are a variety of funding opportunities that the Village could explore for future phases of this project. The primary target would be recreation infrastructure grants, such as the Northern Development Recreation Infrastructure Program or BC Community Recreation Program. The Sunset Trail to Golden Spruce Trail segment, because it would connect existing amenities, could qualify for active transportation grants, such as the BC Active Transportation Infrastructure Grants Program and Government of Canada Active Transportation Fund. Partners and stakeholders may also be willing to provide assistance through funding or in-kind contributions.

## MAINTENANCE AND INSPECTIONS

Trail development should include a commitment to maintenance and annual inspections from the Village and/or partners. An annual springtime inspection should include an assessment of:

- Trail tread, including surfacing and drainage
- Vegetation/deadfall in the trail corridor
- Danger trees
- Culverts
- Bridges
- Boardwalks
- Signage

Maintenance costs will vary year to year, influenced by the severity and sequencing of weather events. As constructed features reach the end of their lifespan, they will require more resources to maintain. Maintenance costs per km of proposed trail should be similar to those for the nearby existing trails such as Sunset Trail and the Golden Spruce Trail. If existing maintenance costs are unknown, a starting point for budget planning purposes would be 5% of the total capital costs over the first five years the trail is open.<sup>3</sup>

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<sup>3</sup> Sunshine Coast Regional District staff quoted in: Dan Boissevain and Liliana Dragowska Planning and Community Engagement Services, *Maintenance Cost Estimate Report: Phase 1: Telkwa-Smithers Pathway Project* (Cycle 16 Trail Society, 2019).



# CONCLUSION

After consulting with land managers and right’s holders, and reviewing the proposed alignments in-person, our conclusion is that the proposed trails are possible, but there are complicating factors that should be considered before the Village proceeds with development. The table below lays out key factors that affect the ease of execution of the proposed trails.

Helping Forces	Hindering Forces
<ul style="list-style-type: none"> <li>▪ The proposed trails could result in a high-quality recreation experience that provides both residents and visitors with access to estuary and old growth forest ecosystems.</li> <li>▪ Preliminary archeological work has been conducted in the area, ensuring that the area’s archeological value is known.</li> <li>▪ Direct access from the road at multiple locations makes construction significantly faster and more feasible than a nature trail of this length without similar road access.</li> <li>▪ Ther is an opportunity to share costs with partner organizations.</li> <li>▪ The proposed trails have both recreation and transportation value, which creates an opportunity for both recreation and active transportation grant funding.</li> <li>▪ Deadfall cedar is available on site and could be used for boardwalk construction.</li> <li>▪ All land managers and right’s holders in the proposed corridor participated in the study and expressed support for the project.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Village of Port Clements owns only a small portion of the site and would need to partner with several landowners/land managers/rights holders to develop any of the trails.</li> <li>▪ The site is a significant archeological area that is home to many known Haida Traditional Heritage Features with high potential for new findings. An updated AIA will be required, in addition to archeological monitoring during construction.</li> <li>▪ The proposed alignment is in a floodplain that is known to experience flooding most years. Flooding has potential to damage the trail surface, drainage infrastructure, boardwalks, and bridges. It may be a challenge to have bridges engineered to withstand flooding.</li> <li>▪ Much of the proposed terrain is flat or undulating and wet. Positive drainage will not be feasible through most of the trail, and the Sunset Park to Golden Spruce trail in particular would require frequent culverts.</li> <li>▪ The proposed alignment is in the riparian zone of the Yakoun River, which is protected by Provincial Riparian Areas Regulation. Construction activities in the riparian zone would require Provincial and Federal authorization.</li> <li>▪ The existing Golden Spruce to Old Swimming Hole trail has segments located on unstable and eroding riverbank that would require rerouting and geotechnical assessment.</li> </ul>

