

TRAILS OF  
**PLACENTIA**



10/9/2021

Trail Network Recommendations

---

## CONTENTS

<b>INTRODUCTION.....</b>	<b>1</b>
<b>WHAT IS A TOURISM/DESTINATION TRAIL? .....</b>	<b>3</b>
<b>TRAILS ASSESSED.....</b>	<b>4</b>
<b>KEY RECOMMENDATIONS.....</b>	<b>5</b>
<b>TRAIL USE CLASSIFICATION .....</b>	<b>7</b>
<b>ANNIE HEALEY TRAIL .....</b>	<b>9</b>
<b>BACKLANDS TRAIL .....</b>	<b>14</b>
<b>COMMAND CENTRE TO PLACENTIA TRAIL .....</b>	<b>18</b>
<b>THE PLACENTIA LOOP .....</b>	<b>22</b>
<b>PLACENTIA TO POINT VERD TRAIL .....</b>	<b>26</b>
<b>SUGARLOAF TRAIL .....</b>	<b>29</b>
<b>THE RAILBED ARGENTIA TO FOX HR ROAD.....</b>	<b>32</b>
<b>BUDGET SUMMARY .....</b>	<b>35</b>
<b>GENERAL GUIDELINES .....</b>	<b>36</b>
<b>NEXT STEPS.....</b>	<b>44</b>
<b>PREPARING FOR CONSTUCTION .....</b>	<b>45</b>
<b>ENVIRONMENTAL ASSESSMENT REGISTRATION .....</b>	<b>46</b>
<b>MAINTENANCE MANAGEMENT .....</b>	<b>47</b>
<b>DEVELOPING A SIGNAGE PLACE .....</b>	<b>48</b>
<b>DIGITAL MARKETING .....</b>	<b>50</b>
<b>DRAWINGS/ILLUSTRATIONS.....</b>	<b>56</b>

# Placentia

## TRAIL NETWORK RECOMMENDATIONS

### INTRODUCTION

Green Leaf Resources was asked to complete a detailed trail assessment, inventory and report on some key trails located in the Placentia area. Upon assessing these key trails, several key components were assessed and new areas of interest were identified.

It is encouraging to see several community members working together to develop a trail plan. Such a “big picture” or regional approach to trail development ensures a more consistent standard of quality and reduces development costs. Trail marketing, promotion and maintenance is also simplified and more effective.

**It's encouraging to see so many partners working together and taking a regional approach to trail development.**

This report includes specific recommendations for key trails and provides some general suggestions for establishing a trail network that connects key tourism assets. Trail maps and some basic construction guidelines are also provided as are general cost estimates for upgrading key trails.

Although there were many types of trail users identified by members of the trail group, it's important to remember that most Provincial and Federal trail funding programs are focused on promoting regional tourism. Community oriented trails fall under capital works projects; therefore the core of this report will focus on tourism oriented trail development.

### TRAIL TYPES

Based on consultation with community representatives and a thorough tour of all key areas in the region, three types of trails were identified:

**Tourism Trails:** These are trails that are developed for the visiting tourist. They are of a more rustic and natural design. Although they may not be the reason why a tourist visits the region, they may be the reason why they extend their stay in the area.

**Community Trails:** These are trails designed mainly for the benefit of local residents. They are usually shorter in length than tourism oriented trail but are of a higher standard of quality.

**Trail Linkages:** These are trails that connect public spaces and communities together. This includes sidewalks, crosswalks and road shoulders designed specifically for pedestrian access.

---

# What is a Tourism/Destination Trail?

A destination trail is a major tourism attraction that is an economic revenue generator. It is generally in a distinctive landscape and reflects a region's most distinguishing characteristics such as views, natural features, culture or heritage. Aside from the "wow" factor that a destination trail offers, it also has a high quality standard of design, amenities, and maintenance and has trained knowledgeable staff and volunteers supporting it.

The historical aspects of the region certainly can draw a crowd; however significant improvements are needed to develop, interpret, guide and market the assets in the area. Improved trail design, trail expansion and the addition of new amenities in the area would help keep visitors in the region for a longer period of time.

You will notice that this report aims to develop a coastal network of trails that allows for continuous hiking. Some may wonder why we are focusing on the Coastline and not on inland routes. This is solely based on what we know about the tourists visiting the Province. The 2016 exit survey stated that 51% of vacation visitors are couples with no children. They stayed on average 10.8 days in the Province. The survey went on to comment that:

"75% of all travel parties did some pleasure walking in/around communities while 60% went hiking/walking on trails. Visitors also marvel at the province's natural wonders, with whale watching, seabird watching, wildlife viewing and iceberg viewing remaining among the most popular outdoor activities that visitors engage in."

As the quote above confirms, most visitors want to see our spectacular coastline. Additionally, geological observation nearly doubled since the 2011 survey – again an activity that's predominantly done along the coast.

It's not to say that other inland trails don't have merit – they do; but generally speaking coastal hiking would be the main reason a visitor may choose to travel to a particular region. They may enjoy an inland hike while they are in an area but usually these hikes supplement their visit. In other words – inland hiking is rarely the reason why a visitor may choose to travel to a particular area.

64% of visitors coming off the Argentinia Ferry are here for vacation purposes. The goal of this trail network is to capture their attention and keep visitors in the region for at least part of their vacation.



# TRAILS ASSESSED

Initially the intent of this project was to assess a series of standalone trails scattered around the region. That being said, there was a lot of discussion about an integrated trail network. We want users to come to a region and stay there. To help achieve this we want to upgrade, market and promote trails that offer a unique visitor experience that can't be had anywhere else.

The table below outlines the key trails that we looked at:

Trail	Trail Type	Development Priority	Note
<b>Annie Healey Trail</b>	Tourism	High	Nice coastal views and links to historical assets.
<b>Command Centre to Placentia Trail</b>	Tourism	High	This is a new route we are suggesting. Great historical assets and linkages to Parks Canada and the Town of Placentia
<b>Backlands Trail</b>	Tourism/Community Trail	Moderate	Used mainly by locals this trail has some interest and serves as a link to establish a longer network.
<b>The Placentia Loop</b>	Tourism/Community Trail	Moderate	Used mainly by locals this trail has some interest and serves as a link to establish a longer network.
<b>Placentia to Point Verde Trail</b>	Tourism	Moderate	Has potential to provide additional coastal hiking and extend the network.
<b>Sugarloaf Trail</b>	Tourism	Moderate	A good standalone trail but needs major work.
<b>The Railbed</b>	ATV'ers	Low	Requires a standalone study.

# KEY RECOMMENDATIONS

Although a majority of this report provides specific direction for trail development in the region, we thought it would be beneficial to outline some key recommendations right at the outset. Based on the field assessment and discussions with community representatives the following recommendations would aid in the development of a trail network for the region.



**A trail network should really connect the tourism related assets together.**

## 1) DEVELOP A 24 KM HIKING TRAIL

**NETWORK.** As you will see in this report, we are suggesting the development of a continuous 24 km trail network that extends from Argentia (Annie Healey Trail) to Point Verde. This linear route connects the main historical assets, the coast, Castle Hill and the Town of Placentia together in one continuous path. If a success, there's plenty of room for expansion.

**2) SEEK OUT PARTNERSHIPS.** You already have great partnerships at the table; but there are some groups that should be involved especially if we will establish a long linear trail network that links all the major regional assets together. Parks Canada and the Town of Placentia are two major players that should be engaged.

**3) LINK YOUR TOURISM ASSETS TOGETHER** There is a lot of historical and natural assets in the region but they are scattered around. We would love to see a trail network that simplifies things and at the same time links the key assets together under one well signed and marketed trail system.

**4) SECURE LTO'S (LISCENCE TO OCCUPY).** Although you may already have LTO's for some trails, we are proposing several new routes in this report. Once a plan is in place, it's a good idea to secure these LTO's as soon as possible. Quite often this can take some time to secure.

**5) ASSESS HISTORICAL ASSETS.** You have so many historical assets in the region. Once you have identified which ones you will have as part of the trail network, they should be catalogued and inspected. For example, will we be encouraging users to go inside some of the WWII armories and the Command Centre? These assets should be inspected especially by an engineer to ensure they are structurally sound and safe for the public to visit.

**6) HAVE A SIGNAGE AND MARKETING PLAN.** Digital marketing and web promotion are a vital part of any effort to raise awareness and attract users. While word of mouth is certainly powerful, people expect to be able to review an area through the internet to identify if it is truly a place worth visiting. Having a professional and unified marketing experience across all mediums – physical and digital - helps to

achieve this goal. It generates enthusiasm for the product and can be a cost-effective way to reach a broad audience.

6) **DON'T REINVENT THE WHEEL.** Since you are just starting off with regional trail development, it would be good to visit regions that have already done this successfully. Walk their trails, take note on how they are built, observe their signage and marketing strategies and note the other amenities that have been developed to compliment the network. Hike Discovery, Damnable Trail and the East Coast Trail are some local networks worth visiting.



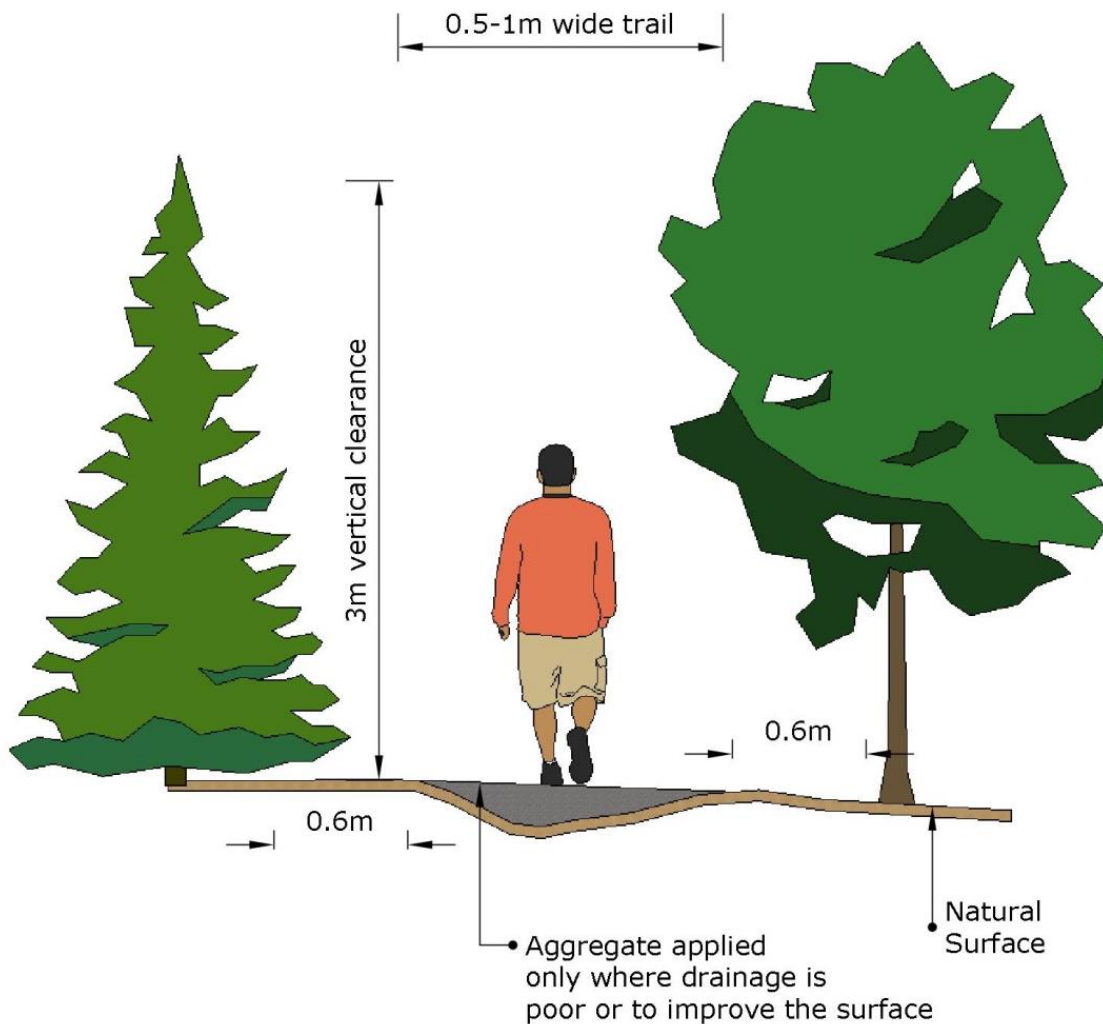
**This report suggests the development of a 24 km continuous trail that connects key tourism assets together.**

# Trail Use Classification

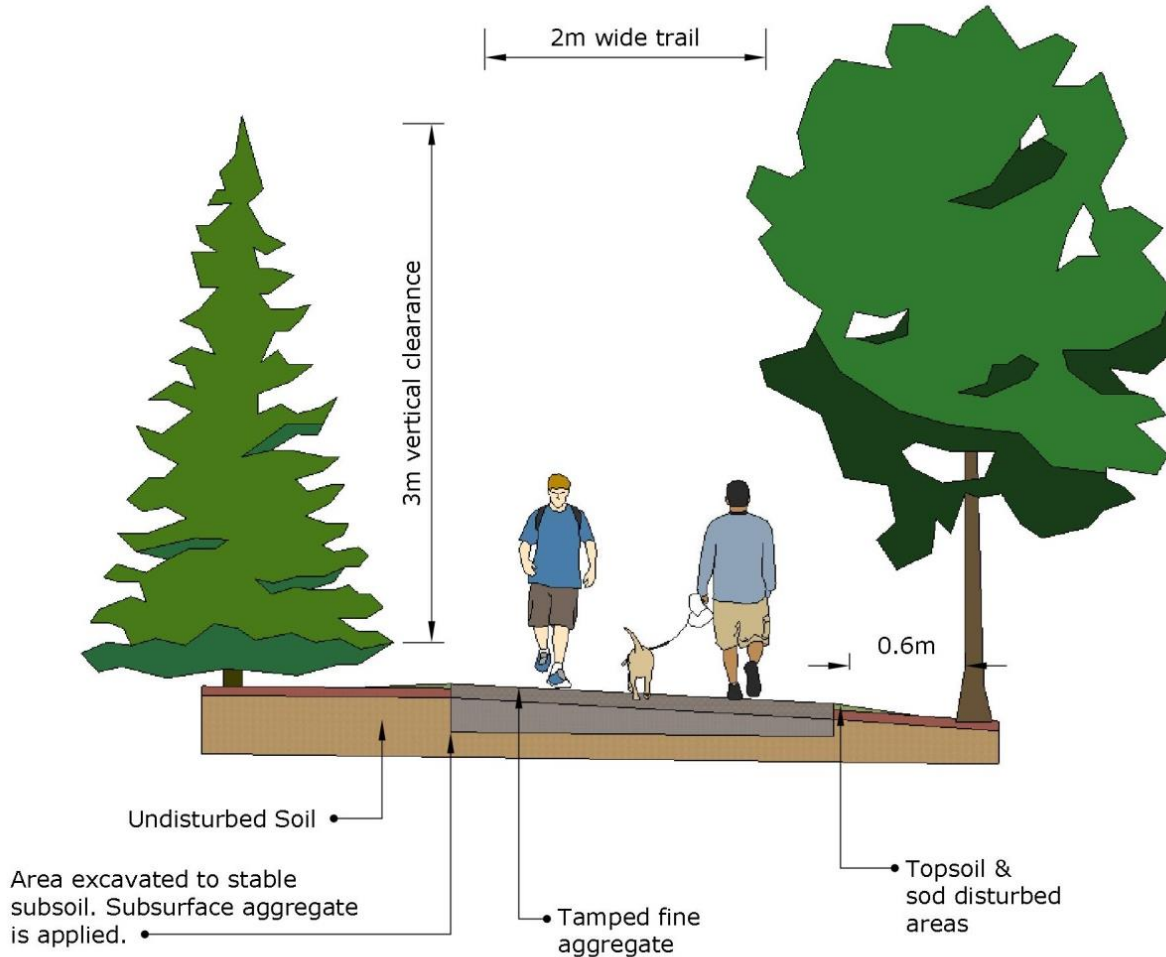
As already alluded to, most visitors love to hike in our Province. Aside from the economic revenue generated by trails, there are many community benefits as well (e.g., active living, health, social benefits) and trails can be designed to accommodate both local users and visitors.

For your region we would suggest either developing a “hiking” style trail or a “community walking trail”.

A hiking trail utilizes the natural walking surface where feasible but some surface work and aggregate is needed in poorly drained areas. Additionally, boardwalks may be installed in wetland areas or in areas that are frequently flooded. The route is typically about 0.5m -1m wide with rustic stream crossings and rugged steps along steep terrain. There will be some natural trip hazards but this is unavoidable unless additional surface work is completed. The goal is to construct a quality path that doesn't intrude unnecessarily on the landscape. Structures used should blend nicely with the surrounding land but also be durable. The trail design accommodates single file hiking with enough right-of-way width to allow users to pass by each other. Please keep in mind that if ATV use is a concern, shorten the width of the trail corridor to ensure ATV's cannot access it.



A community walking trail is built to a higher standard. It connects a communities public assets together through a “pedestrian only” corridor. It usually consists of a raised granular surface or boardwalk throughout the entire route and typically has no slopes exceeding 7%. The trail surface is wider (typically 1-3m wide) and allows for two-way pedestrian traffic. The surface is smooth with no trip hazards and it has high quality surface structures such as bridges or stairs.



When planning any future trail project, determine the user type (e.g., hiker, walker) and the purpose of the trail (e.g., tourism, community) and then construct your trail in harmony with the target audience.



# Annie Healey Trail

Ranging from 5.3 to 7.2 km (depending on the route chosen) this trail has good potential. Includes great historical assets and views. Allows for a half day hiking excursion.



1) Currently there is no identified parking space for this route. We would suggest one be constructed back near the first lookout (see map). This would tie all the features in this area together. Have a well-constructed parking lot complete with a trailhead sign. See the subheading entitled “Parking Lots” on page 42.

2) The lookout near the trail start needs some minor structural repairs. Cut back the vegetation and reinforce protruding nails.

3) The first 800m of trail follows an existing gravel road. There is an active quarry at around the 800m mark so ensure that there is sufficient warning signage for hikers and drivers accessing the quarry.



4) Just passed the 800m mark there is a section with poor drainage. Install a culvert and some ditching (on both sides of the trail) at this location. The same thing is needed just passed the 1km mark and at two locations just before the 1.5km mark. Water is the leading cause of trail deterioration so it's important to address all areas

**Keep water off the trail through the installation of drainage features like culverts and ditches.**

with poor drainage. You should also raise the trail surface at these locations using Class ‘A’.

5) Just before the 1.5km mark, a branch of trail will take you to the silver mine and then the beach. This will be an additional 1.1 km of trail but it is well worth the investment. The Silver Mine with its exposed mine shafts and equipment tell a wonderful story that merits interpretation. This is a key draw to the trail. The following outlines the key upgrades for this important piece of the trail:

- The shafts are worth seeing and it's very tempting to walk right to the edge or even climb down the shafts. Make sure vegetation is cut back and that all shafts are clearly visible. They should also be fenced or roped off (in a non-intrusive way). Warning signage and an interpretive panel would be appropriate at the main mine shaft.

- The route to the beach is overgrown and virtually non-existent. Cut back vegetation to create a 1.5m right-of-way. Select the best and most stable route located away from the eroding river bank.
- There are several steep sections along the route especially when descending down to the river. A combination of switchbacks, log edging and log steps are needed at several locations along the route (see the map).
- A switchback is basically an immediate change in direction of the trail as it winds up or down a steep slope. They are constructed in such a way that running water flows across the walk surface and isn't trapped along the route.
- A small footbridge is suggested over the brook.
- There are several wet sections along this route. The installation of about 85m of single file boardwalk are suggested (see included design).
- Some areas seem excavated by a machine creating a ditch-like trail. The walk surface should be higher than the surrounding grade so that water can flow off it. Some excavation in these areas may be needed.



**An example of a switchback. Several are needed near the silver mine.**

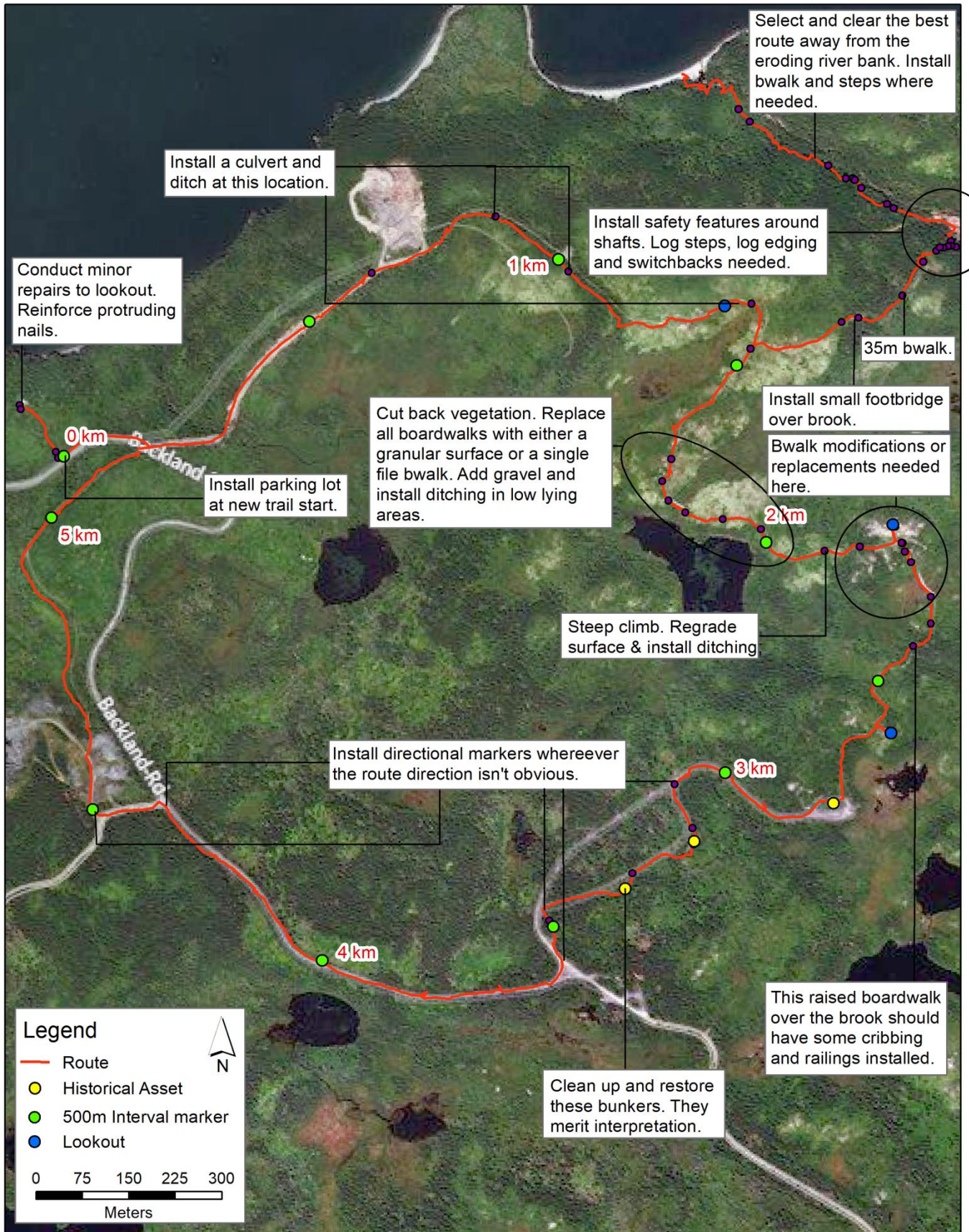


**Allow for safe access to the mine shafts.**

- 6) Back to the main route, there are some repairs needed between the 1.5 and 2km mark. Cut back vegetation at least 0.5m from either side of the trail surface. Add gravel and raise the surface of low lying areas. Some minor ditching may be needed at these locations. One old boardwalk could potentially be replaced by installing ditching, a culvert and by raising the walk surface. Another section of boardwalk should be replaced with 35m of single file boardwalk. If a boardwalk can be replaced with a raised granular surface – that is the preferred solution.
- 7) Just passed the 2.1 km mark, the existing boardwalks need modifications or replacement. Many of them are installed with a slope which is a major slip hazard. Keep boardwalks level and install steps instead of sloping a boardwalk. Modify the boardwalks here or simply replace some with a combination of log steps and single file boardwalk. The 52m boardwalk over the fen should be replaced with a single file boardwalk
- 8) Just before the 2.5km mark there is a raised boardwalk that passes over a small brook. Due to its height, we would suggest that you install some 6x6 cribbing on both ends and some safety rails.
- 9) Just before the 2.7km mark the route approaches its first WWII bunker. Directional signage is needed to safely direct users along the route in these areas.

- 10) These bunkers area a fantastic historical asset. They should be cleaned up and merit interpretation. Consider developing an outdoor exhibit at one of these bunkers and help visitors envision what the area was like when these bunkers were in use.
- 11) Aside from installing clear directional markers, there is very little work needed on this trail from the 3km mark back to the trail start.





Item	Quantity	Cost	Note
<b>102mm (4") rock</b>	About 2 loads	1,000	Used only in poorly drained areas or sections that need a significant rise in the walk elevation. Use only if needed and determined by supervisor.
<b>Class A aggregate</b>	About 5 Loads	1,500	Used to elevate the walk and improve drainage. Tamp this surface layer. Use where needed.
<b>Drainage Culverts</b>	8-10 in total	2,000	Use where needed to keep water off the walk surface.
<b>203mm (6-8") diameter larch logs (2.5m or 8' long)</b>	About 100 logs	2,500	Used for steps and edge retaining.
<b>25M 2.5m (4'-8') long Rebar</b>	About 800 ft.	1,300	Used to brace all logs. Various lengths depending on the feature constructed.
<b>Lumber</b>	100 pcs 6x6x10, 164 pcs 2x8x8, Misc Lumber	10,200	For boardwalks and structural work.
<b>Signage</b>	1 Trailheads, 2-4 interpretive panels and 15 direction/warning signs.	5,000	Doesn't include design fees. Seek professional oversight.
<b>Tamper, Mini Excavator, Other Equipment</b>	10 weeks	15,000	
<b>Labour</b>	10 weeks	30,000	
<b>Project Management and Oversight</b>	10 weeks	3,000	
<b>TOTAL</b>		<b>\$ 70,500.00</b>	(h.s.t. extra)

**General Costs to Upgrade Annie Healey Trail. Refer to Cost Estimate Notes on p41.**



# Backlands Trails

A series of linkages and paths that connect to asphalt roads of the WWII base. Although there are some interesting features scattered throughout, hikers may not enjoy hiking inland routes or simply hiking along a series of road shoulders. We would not suggest upgrading this trail as a high priority since the historical features of the area can be well represented along some of the other routes (refer to the new proposed route entitled “Command Centre to Placentia”). We will however make some notations on the routes we covered in the event you choose to do some upgrades in the future. We will also have a few notes on a few of the historical assets that merit some attention.



- 1) A linear route that connects the “Annie Healey Trail” to the newly proposed “Command Centre to Placentia Trail” could be considered but shouldn’t be the priority. The points to follow will cover that route (points 2 through 8).
- 2) Two wooden lookout structures (one near 750m mark and another just passed the 1.5 km mark) could use some structural repairs especially to the railings. Some railings are damaged and need replacement. One metal railing is below the standard 42 inches in height and could be a hazard.
- 3) Between the 0.5 km and 1.5 km mark there are several wet areas. Either raise the surface with granular or install single file boardwalk. Replace old boardwalks with the single file design suggested in this report. Cut back the vegetation in this area as well and replace old footbridges where needed.
- 4) Where possible, remove all boardwalks and replace them with a raised granular surface. This reduces maintenance costs.
- 5) Some vegetation removal and the removal of hazard (a tree at risk of falling over the trail) or blowdown trees are needed along the route.
- 6) The 63m boardwalk near the 2.3 km mark should be replaced with either a single file boardwalk or a floating boardwalk (see included designs).
- 7) The natural walking trail connects to a gravel road just before the 2.5 km mark. Aside from repairing a minor washout, very little work is needed here.
- 8) The route connects to the Pavilion at the 3.5 km mark. If you do decide to upgrade this trail perhaps the Pavilion area should be considered the start point. If so, a trailhead sign could direct people along the route towards the Annie Healey Trail or towards the Command Centre to Placentia Trail.



**Although hikers may not be interested in an inland route, this trail does connect the Annie Healey Trail and the Command Centre to Placentia Trail together.**

- 9) A short 500m path directly off Charter Avenue will take a user to perhaps the most pristine Bunker in the area. This route could be upgraded to a wheelchair accessible path allowing all users to access this historic area. An outdoor exhibit in this bunker could also be installed. A small parking lot with a trailhead sign could be installed at the trail start. This is not included in the cost estimates provided and is just an idea to consider.

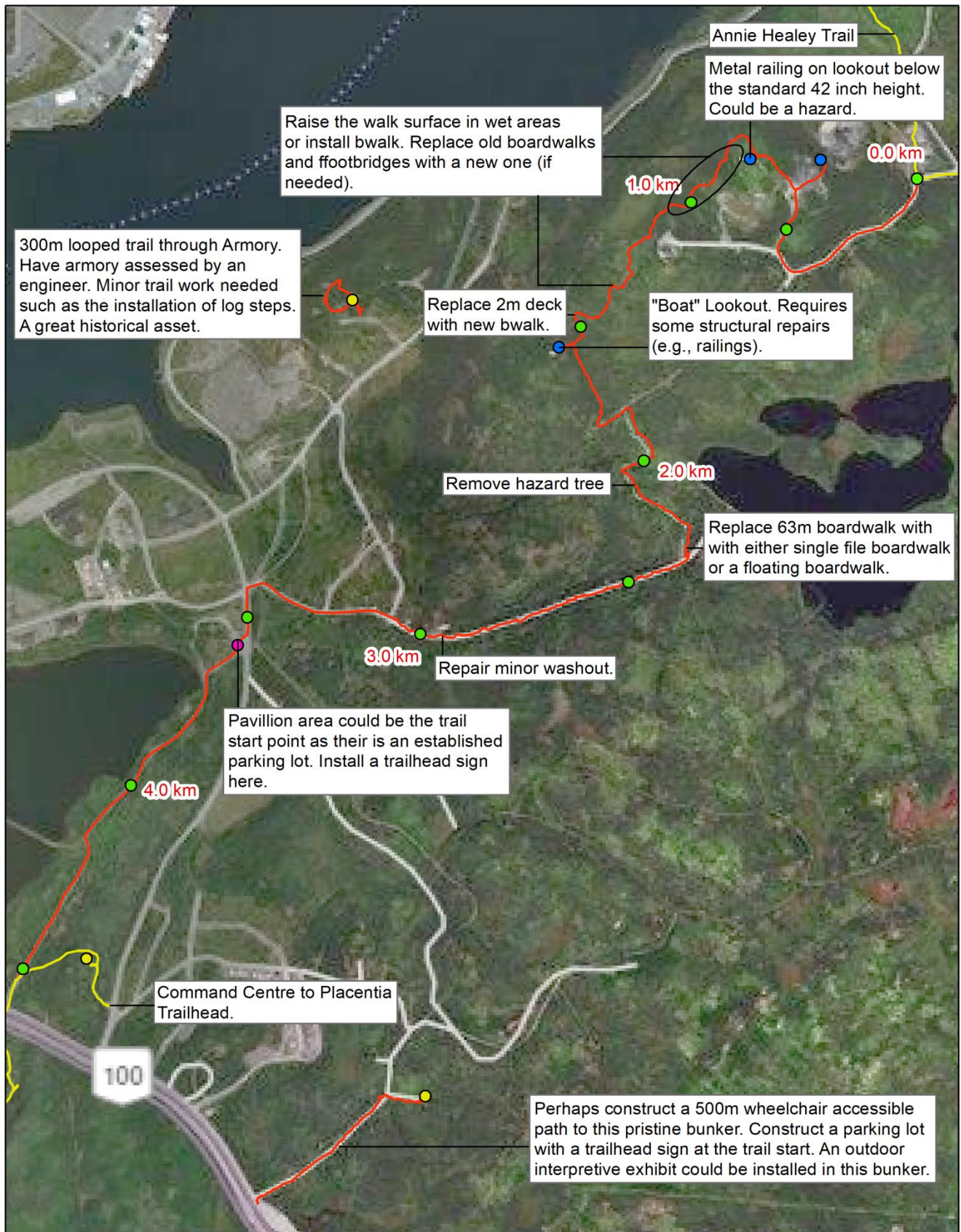


- 10) The Armory located just off Andrews Avenue is a very interesting historical feature. A 300m looped trail could be installed here. Very little surface work is needed aside from the installation of about 20 log steps near the parking area, the installation of a trailhead sign and some minor vegetation clearing. Going underground into the old Armory would be a great experience but some upgrades and some lighting would be needed to guide users safely through the historical space. The old manhole covers inside are particularly concerning and would need to be upgraded. This is not included in the cost estimates provided and is just an idea to consider.

**If we will encourage users to enter these armouries, they should be first assessed by a structural engineer.**

- 11) If we will be inviting visitors to go through these underground spaces they should be first assessed by an engineer to ensure they are structurally sound.





**Backlands**

Item	Quantity	Cost	Note
<b>102mm (4") rock</b>	About 1 load	400	Used only in poorly drained areas or sections that need a significant rise in the walk elevation. Use only if needed and determined by supervisor.
<b>Class A aggregate</b>	About 3 Loads	1,000	Used to elevate the walk and improve drainage. Tamp this surface layer. Use where needed.
<b>Drainage Culverts</b>	2-3 in total	800	Use where needed to keep water off the walk surface.
<b>Misc Lumber</b>	50 pcs 6x6x10, 100 pcs 2x8x8 and misc lumber for footbridges	9,000	Used for boardwalks, footbridges, railings and structural repairs.
<b>25M 2.5m (4'-8') long Rebar</b>	About 600 ft.	1,000	Used to brace lumber. Various lengths depending on the feature constructed.
<b>Signage</b>	1 Trailhead, 8-10 direction/warning signs.	2,000	Doesn't include design fees. Seek professional oversight.
<b>Tamper, Mini Excavator, Other Equipment</b>	8 weeks	12,000	
<b>Labour</b>	8 weeks	24,000	
<b>Project Management and Oversight</b>	30 weeks	2,000	
<b>TOTAL</b>		\$ 52,200.00	(h.s.t. extra)

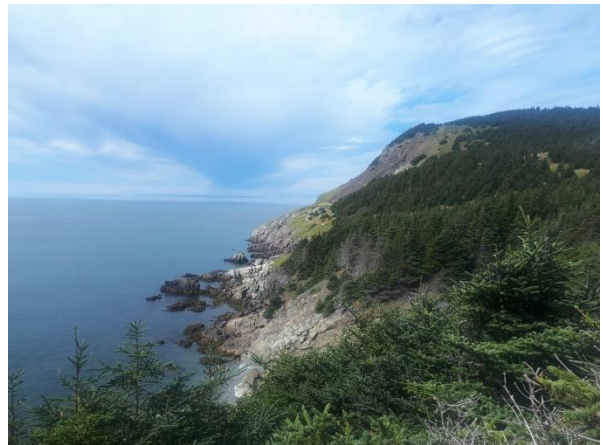
**General Costs to Upgrade the Backlands Trail Connection. Refer to Cost Estimate Notes on p41.**



# Command Centre to Placentia

This 7 kilometer trail would connect The Command Centre in Argentia to Castle Hill and then Placentia. The route showcases some of the key historical features in the region and offers great views along the coast.

- 1) We would suggest the small parking lot to the Command Centre be expanded and serve as the official trail start. Install trailhead sign at this location.
- 2) The first 120m of existing trail will take you to the Command Centre. This is a great historical asset that should be promoted. Consider offering a self-guided interpretive flashlight tour through this underground abandoned facility.
- 3) As you leave the Command Centre, construct a 230m segment of new trail to ascend the slope to an existing route below.
- 4) Just before the 500m mark, the trail would cross Charter Avenue. If possible and deemed safe, install a pedestrian crosswalk at this location. Some old wire fencing would also need to be cut out to allow for this passage.
- 5) The two intact WWII guns are located just past the 500m mark. A great outdoor exhibit that merits some interpretation and perhaps some upgrades in the area.
- 6) Although we didn't get the chance to look at the existing route from the guns to the 2km mark, it doesn't appear that this segment would require much work aside from cutting back vegetation and upgrading the walk surface where there are potholes or washouts.
- 7) The 2.5km mark to the 4.5 km mark is virtually unexplored ground but appears to provide fantastic coastal views and high vantage points. This segment should be scouted and the best route selected. See the notes on trail Scouting and Layout on page 42.
- 8) The route before and after the 5 km mark covers part of an older trail called "Freshwater Travelers Loop". This area already has a parking lot and trailhead which we could upgrade as part of this new proposed trail.
- 9) Cut back all vegetation along the coastal segment of Freshwater Travelers Loop. Some log steps and log edging will also be needed in some areas.



**This proposed route connects the visitor to historical assets and the coast.**

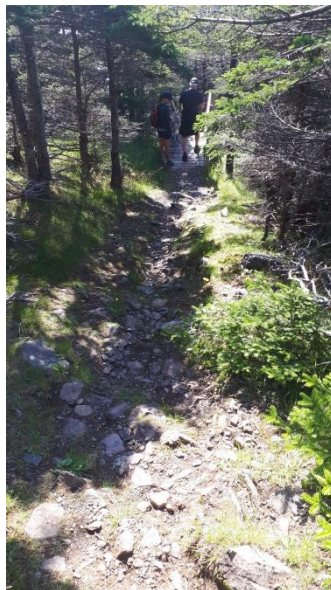
- 10) The 5.2 km mark to the 5.9 km mark is a new trail segment that will connect Freshwater to Castle Hill. This segment should be scouted and the best route selected. See the notes on trail Scouting and Layout on page 42.

The remaining points in this segment refer to trail upgrades to the Parks Canada routes on Castle Hill. The existing trail on Castle Hill that connects to Placentia would become part of this proposed route.

- 11) Many of the wooden elements such as staircases have rotten or very loose boards (e.g., the edge board of a step can become loose over time) that should be replaced. In some cases a staircase needs complete replacement.
- 12) The walk surface along this trail is quite worn. As a result the last step at the base of some staircases has a rise that is too high. Either the walk surface should be built up or an extra step should be installed. All rises in a staircase should be the same.
- 13) Washouts, and protruding roots and rocks are common. In some areas the trail should be resurfaced with aggregate. Re-establish the 2% cross slope so that water flows across the trail surface and not down the trail.
- 14) The trail connects to the Town of Placentia and some municipal boardwalk at around the 7 km mark.

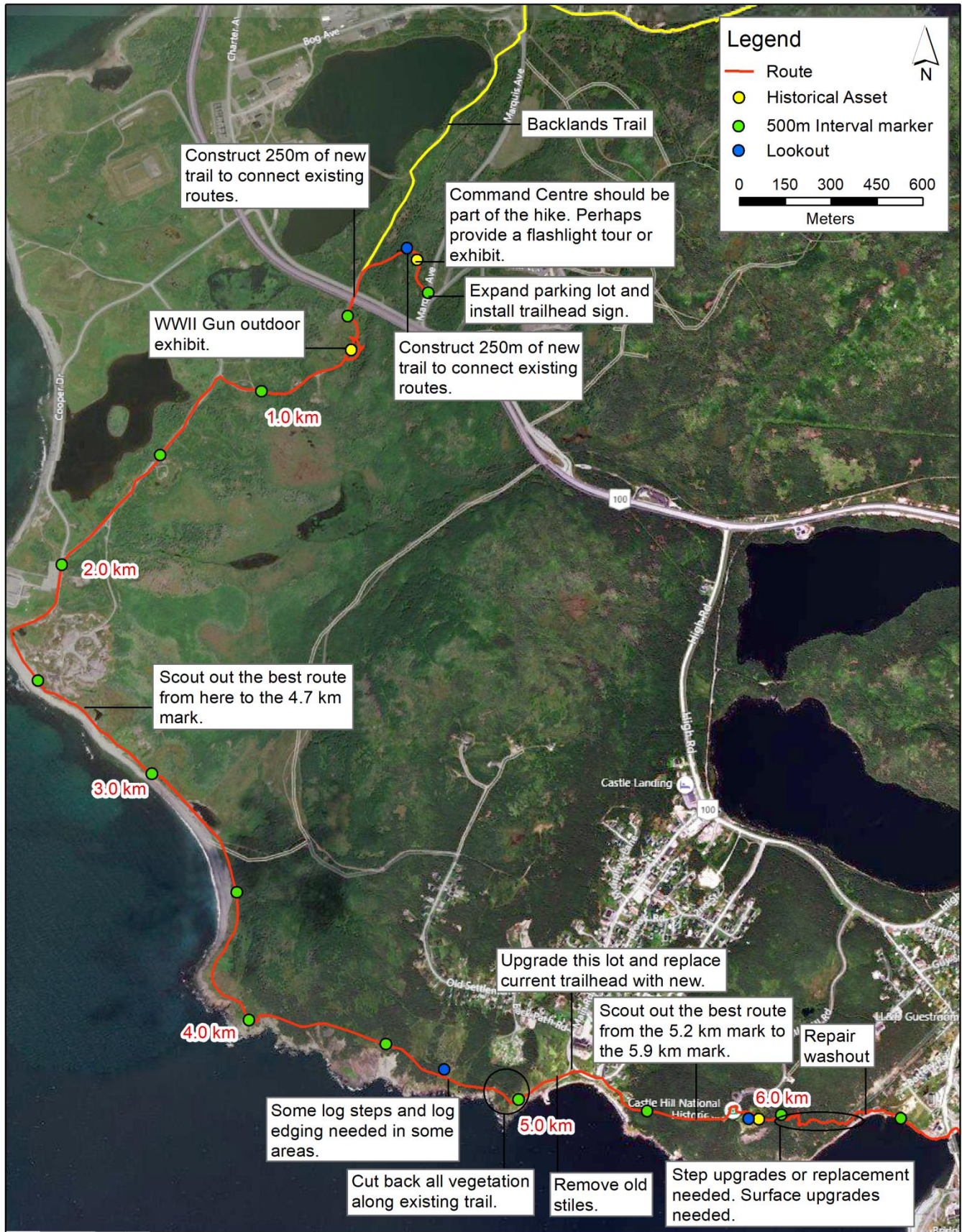


**This proposed route connects existing trails in Freshwater and Castle Hill.**



**Castle Hill Trail requires some upgrades.**  
**Left: Surface wear at base of stairs**  
**Middle: Worn surface has created a ditch like surface.**  
**Right: Loose step edge.**





Item	Quantity	Cost	Note
<b>102mm (4") rock</b>	About 2 loads	500	Used only in poorly drained areas or sections that need a significant rise in the walk elevation. Use only if needed and determined by supervisor.
<b>Class A aggregate</b>	About 10 Loads	3,000	Used to elevate the walk and improve drainage. Tamp this surface layer. Use where needed.
<b>Drainage Culverts</b>	About 10	3,000	Use where needed to keep water off the walk surface.
<b>203mm (6-8") diameter larch logs (2.5m or 8' long)</b>	About 150 logs	4,500	Used for steps and edge retaining.
<b>25M 2.5m (4'-8') long Rebar</b>	About 1000 ft.	2,000	Used to brace all logs. Various lengths depending on the feature constructed.
<b>Signage</b>	2 Trailheads, 20 directional	4,000	Doesn't include design fees. Seek professional oversight.
<b>Tamper, Mini Excavator, Other Equipment</b>	16 weeks	24,000	
<b>Labour</b>	16 weeks	48,000	
<b>Project Management and Oversight</b>	16 weeks	4,000	
<b>Parking lot, Crosswalk, Development</b>	Requires further assessment	15,000	
<b>TOTAL</b>		\$ 108,000.00	(h.s.t. extra)

**General Costs to Construct the Command Centre to Placentia Trail. Refer to Cost Estimate Notes on p41.**



# The Placentia Loop

A 6km loop around the Town of Placentia – This route may not be a destination route but it does connect the hiker to the key Town Assets and heritage areas. It would also serve as a trail connecting link as the hiker continues towards Point Verde.

- 1) This trail would begin near the beach at the end of the Command Centre to Placentia Trail. Install a parking lot and trailhead sign at this location.
- 2) Have a clearly defined connection and crosswalk on the Placentia Bridge. You may need to cut out a section of guardrail and install some log steps and signage to ensure a safe crossing. Select the best and most visible option.
- 3) Just as you pass the bridge a log staircase could connect the user to a new trail segment that connects to Orcan Drive. Being a trail connection in the Town, any new walk surfaces should be about 1.5m wide. Have a subsurface aggregated of blasted rock followed by a Tamped 'Class A' surface.
- 4) The route connects to a sidewalk on Orcan Drive at around the 400m mark and continues to follow Town streets up until the 2km mark. Have sufficient trail markers along this segment to direct users along the route and to outline the location of heritage sites along the way.
- 5) Near the graveyard there is a small walk segment that takes you to a lookout over the Town. Cut back the vegetation and upgrade the walk surface. Provide a safe lookout that doesn't take the user right to the edge. You may decide to have some warning signage encouraging users to stay on the designated route and stay away from the edge.
- 6) An old overgrown route of about 500m takes you from the graveyard to Blockhouse Road. Cut



May need a safe crosswalk here to allow a hiker to continue their hike from Castle Hill into Town. .



The sidewalk route along Orcan Drive is quite pleasant. May want to direct users to heritage sites along the way.



Develop a 3m wide raised aggregate path along this floodplain area.

back all intruding vegetation here and upgrade the walk surface. A series of log steps (Approx 80) may be needed throughout this segment. Consider slight re-routes and switchbacks to reduce the need for steps.

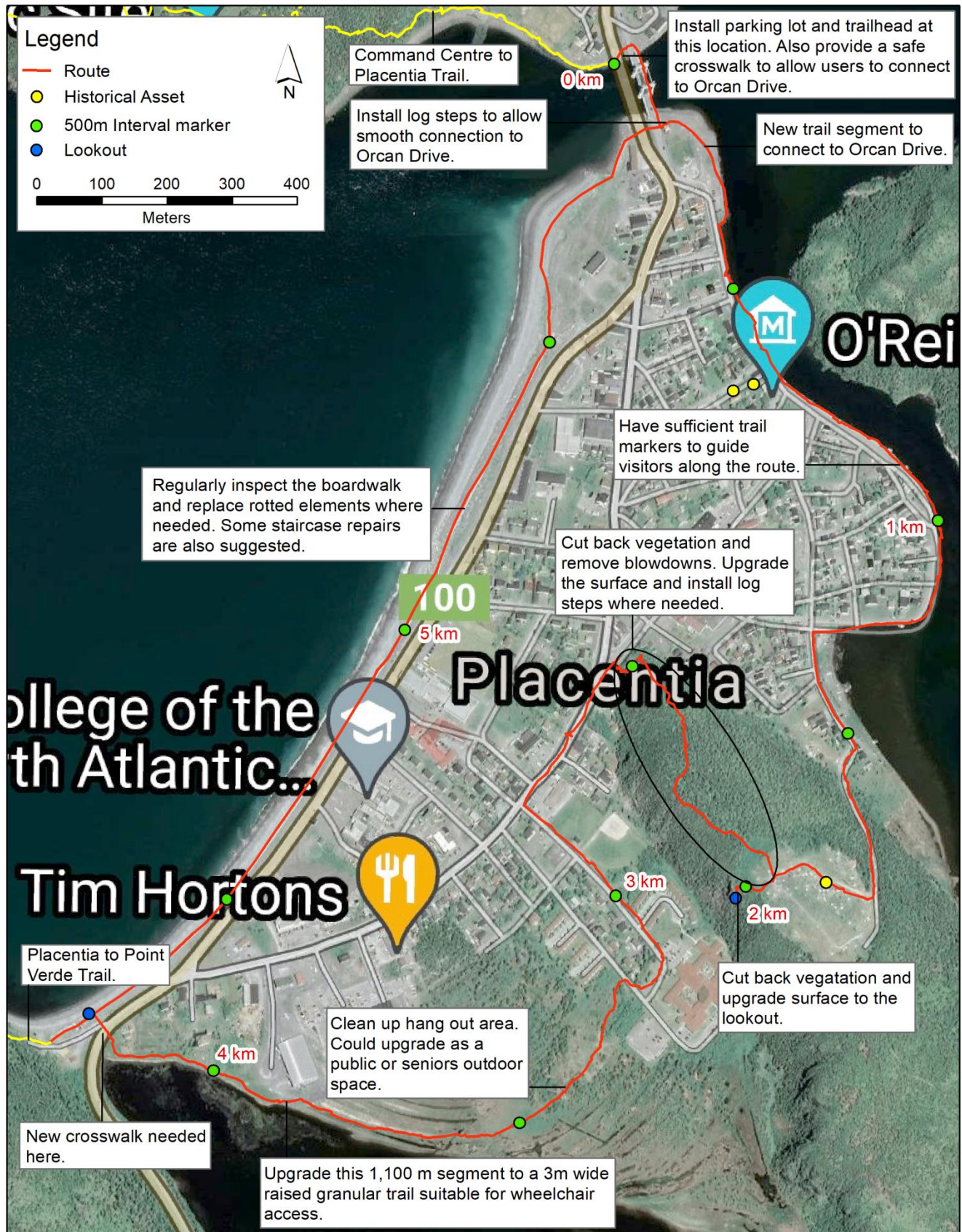
- 7) The route follows Town road shoulders from the 2.5 km mark to the 3.1 km mark.
- 8) New trail is suggested from the 3.1 km mark to the 4.2 km mark. This will complete the loop and connect to the coastal town boardwalk. We would suggest that this section be upgraded to a 3m wide walking surface that can accommodate the nearby seniors home and other users. The entire segment is in a floodplane area so we would need to construct an elevated walk surface that has several culverts. The walking surface should consist of several layers:
  - The base layer should be blasted rock that allows for the flow of water. 4" stone should suffice.
  - The next layer should be Class A gravel at about 6" thick. This layer should be tamped.
  - The final layer consists of finer aggregate (usually referred to as quarter minus gravel) This should be your final surface. Once tamped, this layer will harden and be suitable for some wheelchairs.
- 9) There is a local hangout area at around the 3.4 km mark. This site should be cleaned up and could perhaps be upgraded as a public space (e.g, gazebo, benches, fire pit).
- 10) A new crosswalk is needed (for crossing Beach Road) in order to connect this route to the coastal boardwalk.
- 11) The coastal boardwalk completes this loop and is a great Town asset. Due to its age, it should have a thorough inspection and this practice should continue on a regular basis. We did notice some loose or rotted boards along the boardwalk that should be replaced. The staircases also should have some repairs. We noted some step edge boards are loose or have slanted which could contribute to a slip and fall. Additionally, all railings on the staircases should have a mid-rail. This was missing on several staircases.



#### Placentia Coastal Boardwalk

**Left: Identify and repair rotted sections of boardwalk.**  
**Middle: Add decking to gap.**  
**Right: Mid-rail needed.**





Item	Quantity	Cost	Note
<b>102mm (4") rock</b>	About 100 loads	25,000	Used only in poorly drained areas or sections that need a significant rise in the walk elevation. Use only if needed and determined by supervisor.
<b>Class A aggregate</b>	About 80 Loads	8,000	Used to elevate the walk and improve drainage. Tamp this surface layer. Use where needed.
<b>Quarter Minus</b>	About 30 Loads	5,000	The final surface layer. Tamp this layer.
<b>Drainage Culverts</b>	About 10	3,000	Use where needed to keep water off the walk surface.
<b>203mm (6-8") diameter larch logs (2.5m or 8' long)</b>	About 100 logs	3,000	Used for steps and edge retaining.
<b>25M 2.5m (4'-8') long Rebar</b>	About 1000 ft.	2,000	Used to brace all logs. Various lengths depending on the feature constructed.
<b>Signage</b>	1 Trailheads, 20 directional	3,000	Doesn't include design fees. Seek professional oversight.
<b>Lumber</b>	Various sizes	5,000	For boardwalk repairs ect...
<b>Tamper, Mini Excavator, Other Equipment</b>	20 weeks	30,000	
<b>Labour</b>	20 weeks	60,000	
<b>Project Management and Oversight</b>	20 weeks	5,000	
<b>Parking lot, Crosswalk, Development</b>	Requires further assessment	15,000	
<b>TOTAL</b>		<b>\$ 164,000.00</b>	(h.s.t. extra)

**General Costs to Construct the Placentia Loop Trail. Refer to Cost Estimate Notes on p41.**



# Placentia to Point Verde Trail

With the right re-routing, this would be a great coastal trail that extends the network from the Annie Healey Trail to Point Verde. Starting at the Annie Healey Trail and ending at Point Verde the entire network would be about 24 Kilometers with more opportunities to expand.

- 1) The existing route travels in wooded areas and has very little to offer. However, the coastline is very appealing and we would suggest veering away from the established path and develop a new coastal trail along the coast.
- 2) We would suggest following the existing route for the first 300m or so before veering off towards the coast. Clear back the vegetation in this area. This segment is infested with a highly invasive plant known as Japanese Knotweed. This plant is almost impossible to eradicate so your vegetation clearing rotation will need to be more frequent in this area.
- 3) The remaining route requires more scouting. For more information on how to do this effectively please refer to page 42.
- 4) Another reason to avoid the inland route is it passes through an old dump site. Stay close to the coast where possible.
- 5) There is a steep descent where the route joins the beach. Select the best option and install log steps and log edging where needed.
- 6) The route ends at the 3.5km mark. Install a new parking lot and trailhead sign at this location.

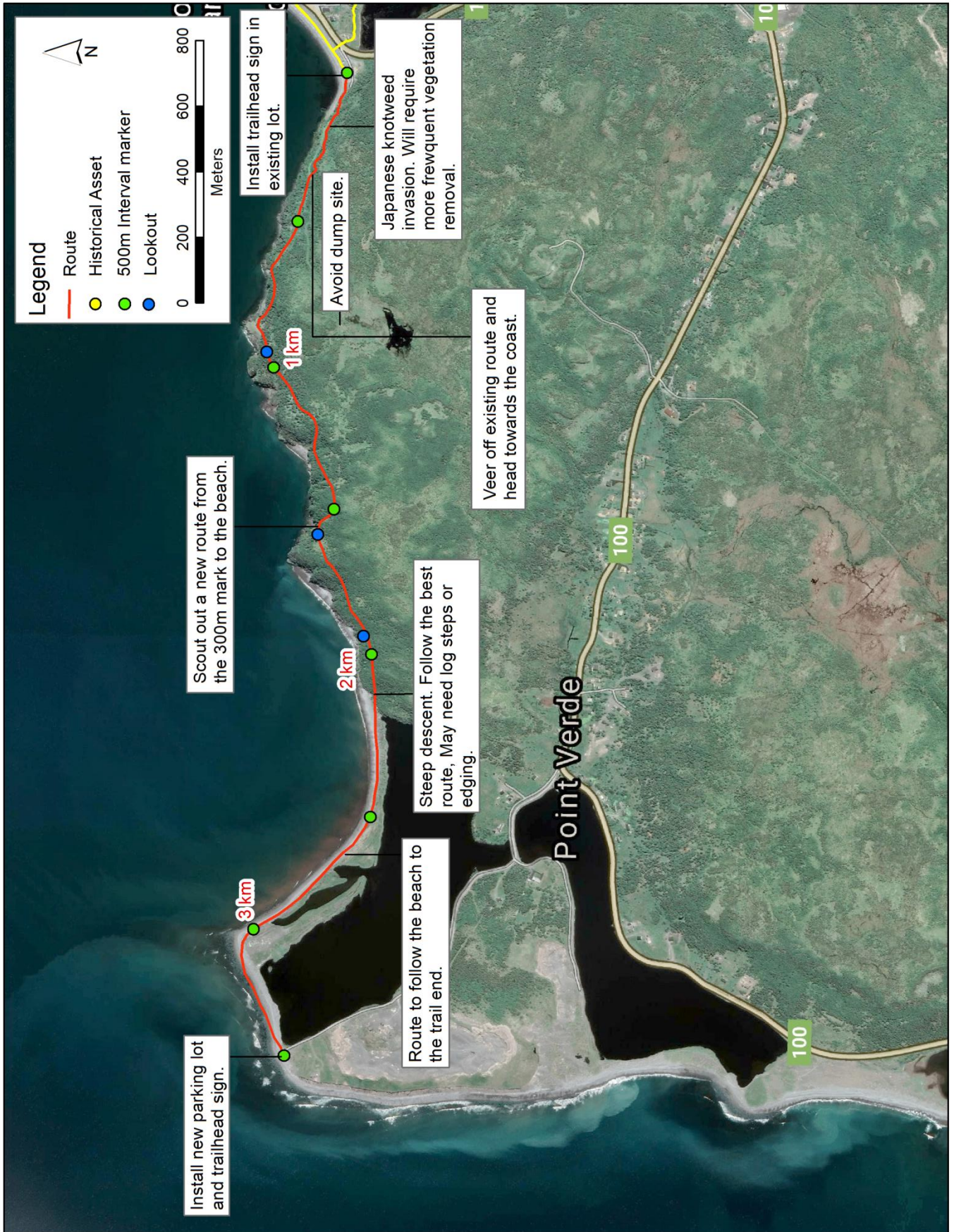


**A new route along the coast will reveal fantastic views.**



**Looking back towards Placentia.**







Item	Quantity	Cost	Note
102mm (4") rock	About 1 loads	300	Used only in poorly drained areas or sections that need a significant rise in the walk elevation. Use only if needed and determined by supervisor.
Class A aggregate	About 10 Loads	2,500	Used to elevate the walk and improve drainage. Tamp this surface layer. Use where needed.
Drainage Culverts	About 10	3,000	Use where needed to keep water off the walk surface.
203mm (6-8") diameter larch logs (2.5m or 8' long)	About 200 logs	6,000	Used for steps and edge retaining.
25M 2.5m (4'-8') long Rebar	About 2000 ft.	4,000	Used to brace all logs. Various lengths depending on the feature constructed.
Signage	2 Trailheads, 10 directional	3,500	Doesn't include design fees. Seek professional oversight.
Lumber	Various sizes. To be determined after field scouting.	10,000	For boardwalk s ect...
Tamper, Mini Excavator, Other Equipment	12 weeks	18,000	
Labour	12 weeks	36,000	
Project Management and Oversight	12 weeks	2,800	
Parking lot, Crosswalk, Development	Requires further assessment	10,000	
<b>TOTAL</b>		<b>\$ 96,100.00</b>	(h.s.t. extra)

**General Costs to Construct the Placentia to Point Verde Trail. Refer to Cost Estimate Notes on p41.**

# Surgarloaf Trail

The end of this route provides a spectacular view of the surrounding area of Ship Harbour. Although the view is enjoyable, the route to the destination is very unpleasant and needs to be upgraded.

- 1) There is a good parking lot for this trail. Install a trailhead sign at this location.
- 2) A vast majority of the route passes through low lying wetland areas. The surface is full of peat and standing water. We would suggest that time be spent re-routing these areas and selecting a new route on higher ground.
- 3) In areas where wetlands can't be avoided, we would suggest you install single file boardwalk.
- 4) Some log steps may be needed in a few sections such as the approach to the lookout.
- 5) If re-routing onto bedrock, keep the hard natural surface; however if the bedrock is on a grade it should be avoided since it can easily cause a slip and fall.
- 6) If possible apply aggregate to the new walk surface to create a raised trail. This is only a footpath so we really only need a 0.3m wide trail.
- 7) Some minor structural modifications to the lookout are suggested. For example the railings should really have a mid-rail installed.



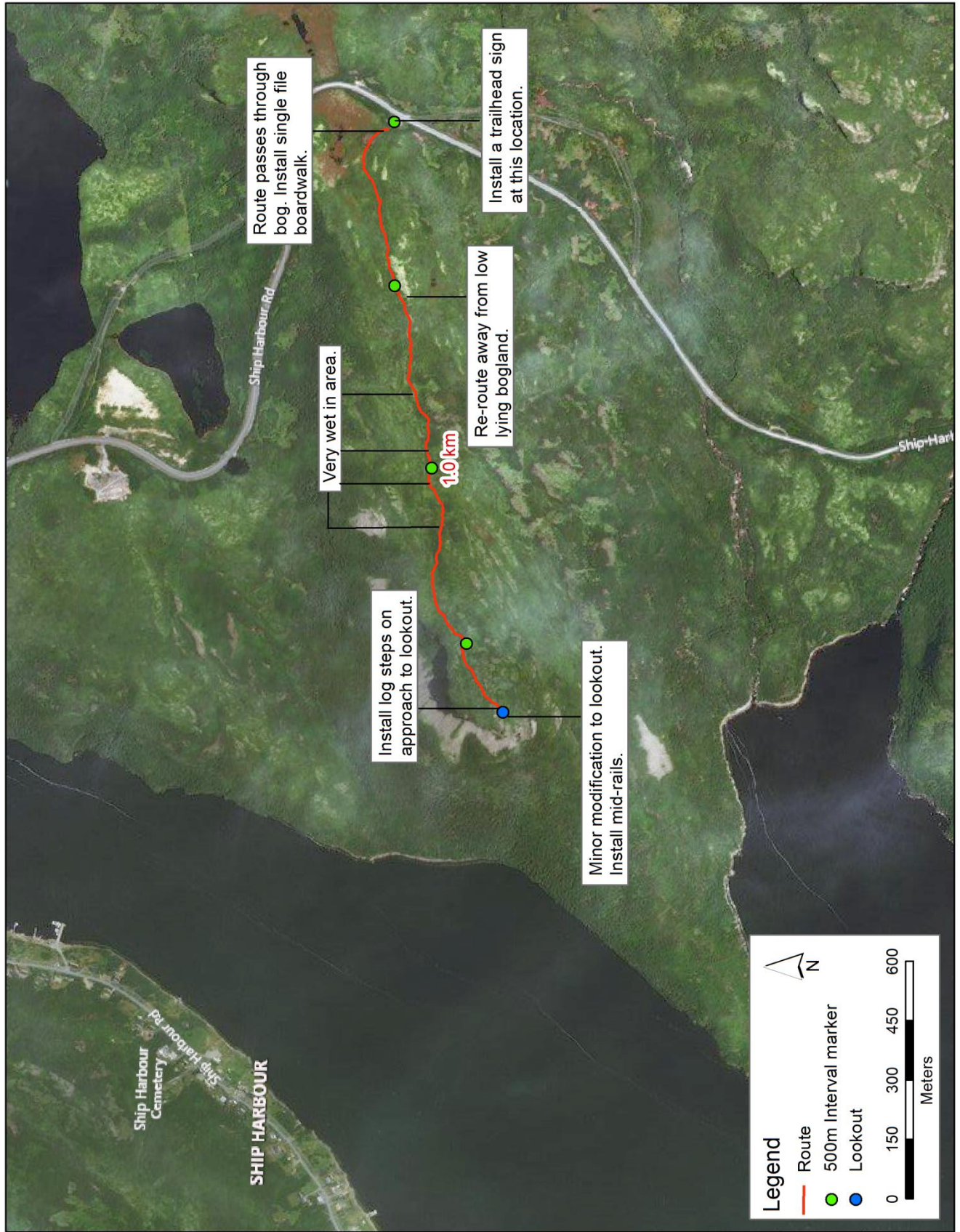
**The view at the end is well worth the hike in but significant improvements to the route are needed.**



**The walk to the lookout is not pleasant. Re-route away from wetland areas.**



**The trail passes through the wetland in the background. It should be here on the higher ground.**





Item	Quantity	Cost	Note
102mm (4") rock	About 1 load	300	Used only in poorly drained areas or sections that need a significant rise in the walk elevation. Use only if needed and determined by supervisor.
Class A aggregate	About 5 Loads	1,250	Used to elevate the walk and improve drainage. Tamp this surface layer. Use where needed.
Drainage Culverts	About 10	3,000	Use where needed to keep water off the walk surface.
203mm (6-8") diameter larch logs (2.5m or 8' long)	About 50 logs	1,500	Used for steps and edge retaining.
25M 2.5m (4'-8') long Rebar	About 500 ft.	1,000	Used to brace all logs. Various lengths depending on the feature constructed.
Signage	1 Trailheads, 2 directional	1,200	Doesn't include design fees. Seek professional oversight.
Lumber, Misc Materials	2x8x8, 6x6x8, 2x4x8	10,000	For boardwalks and lookout repairs ect...
Tamper, Mini Excavator, Other Equipment	10 weeks	15,000	
Labour	10 weeks	30,000	
Project Management and Oversight	10 weeks	2,000	
<b>TOTAL</b>		<b>\$ 65,250.00</b>	(h.s.t. extra)

**General Costs to Construct the Sugarloaf Trail. Refer to Cost Estimate Notes on p41.**

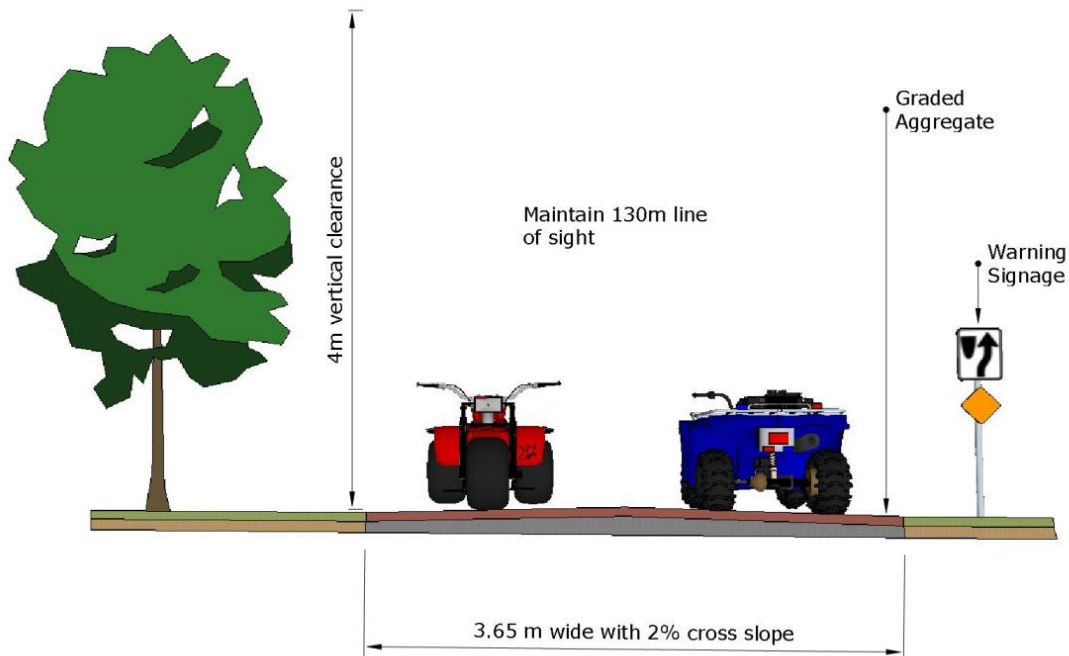
# The Railbed Argentia to Fox Hr Road

We did inspect this initial segment of the railbed from Argentia to Fox Harbour Road. From a tourism hiking perspective, this is not a trail that should be upgraded or promoted; however we realize that Argentia is a gateway for ATV'ers visiting from other Provinces. With that in mind we have a few suggestions to consider to help accommodate these visitors.



View from this section of the railbed.

- 1) There is 11 km of existing railbed from Argentia to Fox Harbour Road. To connect from the ferry to where the railbed starts we would suggest that visitors be directed along Charter Avenue.
- 2) You could install an ATV visitor's kiosk on Charter Avenue right where ATV'ers exit the ferry. This would provide detailed trail information and guide users along Charter Avenue to where the railbed begins. Directional markers along



The current railbed doesn't measure up to the typical details we would expect to have on a properly developed ATV trail.

- 3) It is clear that ATV users and pedestrians should not occupy the same space due to noise, user satisfaction and obvious safety concerns. Multi-use trails typically have one primary user and a few other secondary users. In this case, cyclists would be considered a secondary user.
- 4) The current Railbed is too narrow and the sight lines are too short to accommodate a variety of different uses. Similar use conflicts in other communities have resulted in very serious accidents. Vegetation overgrowth has limited the trail with to around 7' which is much too narrow.
- 5) The Railbed has some deficiencies (e.g., potholes, washouts, poor drainage, clogged or damaged culverts) that require repairs. Some of these repairs are significant and can really only be addressed through trail reconstruction or at the very least, trail resurfacing.
- 6) Although the Province owns the main Railbed right of way, they are not in a position to properly maintain it or address user conflicts. If upgrading and promoting ATV use on the railbed, the first step would be to obtain a Licence to Occupy for the segment of railbed you intend to repair and promote.



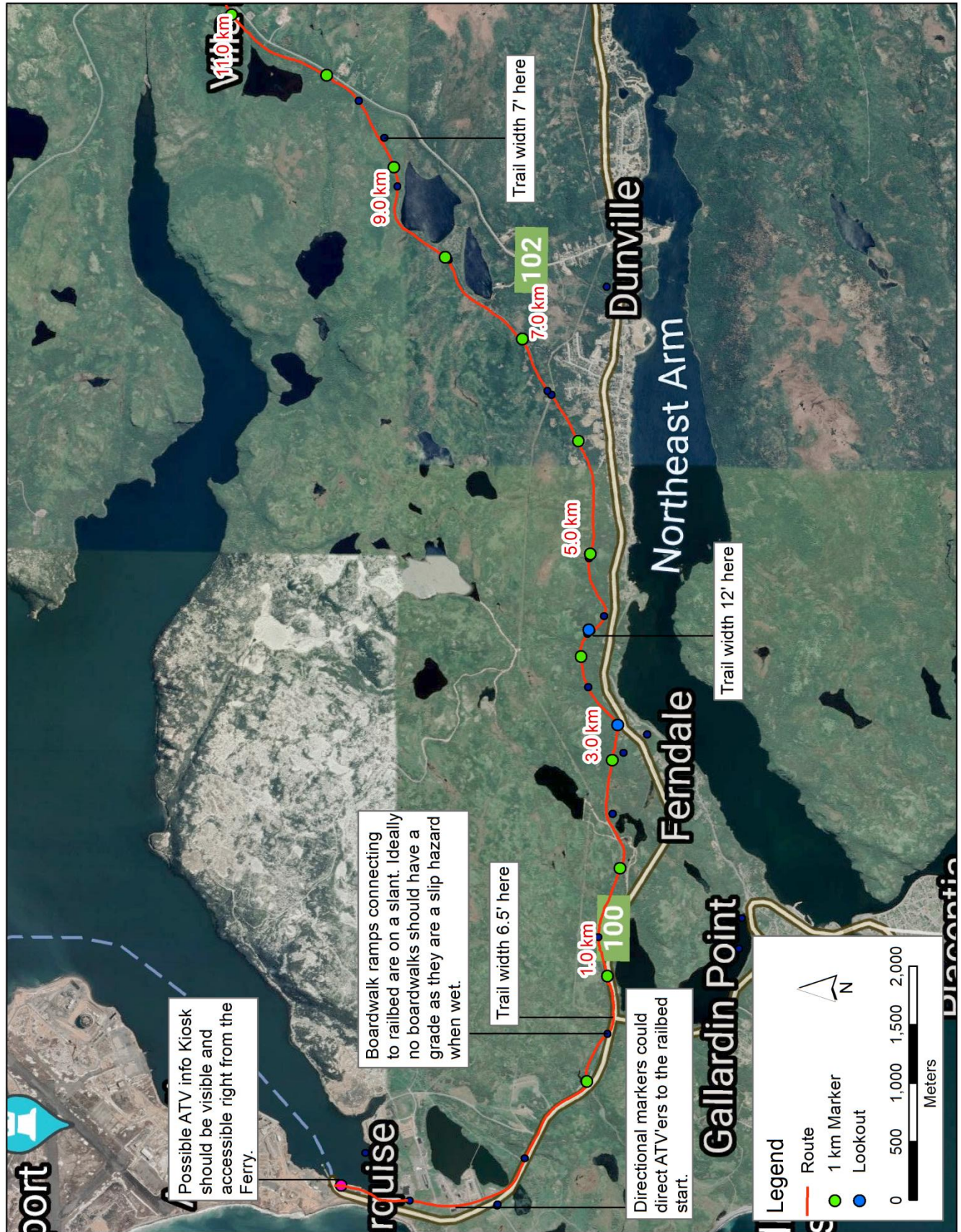
**The railbed requires significant repairs throughout.**

**Top Left: Large Potholes throughout**

**Top Right: Wear down of the surface creating a ditch-like effect.**

**Bottom: Several routes around a brook and washout area.**





# Budget Summary

Trail	Trail Type	Development Priority	Development Cost
<b>Annie Healey Trail</b>	Tourism	High	70,500.00
<b>Command Centre to Placentia Trail</b>	Tourism	High	108,000.00
<b>Backlands Trail</b>	Tourism/Community Trail	Moderate	52,200.00
<b>The Placentia Loop</b>	Tourism/Community Trail	Moderate	164,000.00
<b>Placentia to Point Verde Trail</b>	Tourism	Moderate	96,100.00
<b>Sugarloaf Trail</b>	Tourism	Moderate	65,250.00
<b>The Railbed</b>	ATV'ers	Low	n/a
<b>TOTAL</b>			556,050.00



# General Guidelines

## CHALLENGES/OPPORTUNITIES TO TRAIL DEVELOPMENT AND PROMOTION

- 1) Existing Trails: All trails we inspected were either proposed new ones, or were existing trails developed in the past. As a result, trail construction methods, design, quality and trail materials used vary depending upon the trail. A quality trail network needs to be consistent no matter what trail the user is on. This means that significant funds will need to be invested in order to create a quality network that is consistent. This is especially important for trail signage.
- 2) Trail Layout: Trail design needs to consider the best way to align the trail with the landscape. For example it's much better to follow the contours of a slope to ascend it rather than simply climb straight up a hill.
  - a. Some established routes have sections where the trail route is poor. This results in a wet surface with accelerated erosion. In a lot of cases the walk surface is now the main route for water runoff.
  - b. In some instances it may be more appropriate to re-route segments of trail and close off poor sections.
- 3) New Trails: We see great potential for new trails that have yet to be fully explored. Ideally these opportunities should be examined to the fullest extent possible.
- 4) Trail Ownership: It is assumed that you have LTO's (License to Occupy) for all existing trails; however we realize this is not always the case. New LTO applications will no doubt be required. This should be looked at soon since these applications tend to take significant time. We also encountered lots of evidence of private land ownership (fences, stakes, flagging). No trail development should take place without an approved LTO and/or a written letter of understanding between the Town and a private land owner.
- 5) Marketing and Promotion: Trail signage, maps and promotional materials have been developed in the past and they served a great purpose. That being said, there is a great opportunity to develop, brand and market the trails in the region in a consistent, exciting and attractive way.

## COMMON DEFICIENCIES & UPGRADES ON MOST TRAILS IN THE PROVINCE

### Stairs, Boardwalks and Lookouts

- 1) Many trip and fall accidents occur on staircases. Many trail staircases across the Province are too steep, have inadequate tread widths, have loose/unleveled or deteriorated steps, inconsistent rises from each step to the next and inadequate safety rails. Consider installing rugged and durable staircases similar to what is suggested in this report.

- 2) In many cases across the Province, some boardwalks seem unnecessary and should be removed and replaced with an aggregate surface and log or stone edging (where required). Wooden structures should be used only where necessary. An aggregate surface is more durable, requires less frequent maintenance, and eliminates potential trip and fall injuries from rotted, loose or damaged decking. Unless otherwise indicated, instead of repairing damaged boardwalks, replace them with an aggregate surface.
- 3) Some new segments of trail will require a boardwalk. Consider the more rugged design outlined in this report.
- 4) Avoid the construction of wooden lookouts as they require maintenance and eventual replacement. Leave lookout areas natural.

### Bridges

- 1) Where possible consider the installation of large culverts instead of bridges.
- 2) In other cases, bridges require replacement. Follow a consistent bridge design for all new bridges. If installing a new bridge, seek the appropriate government approvals. A sample bridge design is provided in this report but each crossing will require its own unique design and ideally this design would be reviewed and stamped by an engineer.

### Bedrock

- 1) Many segments of trail travel over bedrock. If the bedrock is safe to travel across (to a reasonable degree) it may be used as the walk surface although severely sloped or treacherous bedrock should be avoided. In some cases aggregate may be needed to eliminate ruts, holes or cracks in the bedrock that are hazardous.
- 2) If the bedrock surface has a steep grade, steps may be required. They can be carved into the bedrock or cement forms can be poured. Alternatively, a staircase or log ladder could be constructed over hazardous sections of bedrock. Ideally bedrock with steep grades should be avoided.
- 3) Ensure that the trail route is well defined along these stretches of bedrock. Use trail markers to keep users from wandering off the path.
- 4) In some cases the walk surface should be elevated above the bedrock with aggregate and edge retaining.
- 5) In areas where water runoff flows across bedrock, drainage channels should be constructed to re-direct the water. Wet bedrock is slippery and algae develop on it to make it even more slippery.

### Railings

- 1) Any elevated boardwalk or bridge exceeding 3 feet in height or an elevated boardwalk that passes by a hazardous area (e.g., deep water or other hazards) should have a safety rail on both sides.
- 2) When a safety rail is present a trail user will rely on it. It is important they are sturdy and at least 42 inches in height. Each railing should include a mid-rail about half way up the railing.

- 3) Railings can also be installed in areas where there is a steep climb or to protect or block users from a particular hazard.

#### Trip Hazards

- 1) A trip hazard is generally an immediate rise/fall in the walk surface and can include protruding rocks, stumps, raised decking and a poor transition where two walk surfaces meet (e.g., where granular meets a boardwalk decking).
- 2) On a granular trail or any decking (boardwalk or lookout) no trip hazards are expected. The user is not watching every step like you would on more rugged terrain. Therefore no trip hazards should be present on a smooth granular trail surface (e.g., Route around the Seniors Home).
- 3) In many cases, trip hazards (rocks, bedrock) cannot be avoided since the landscape is so rugged. In these cases take reasonable steps to eliminate hazards. This may include raising the walk surface with aggregate and stone retaining in order to bury a trip hazard. In other instances the installation of steps would be an appropriate solution. That being said, it's impossible to eliminate trips hazards entirely.
- 4) There should be a smooth transition where two surfaces meet. The natural or granular path should be level with the decking of bridges, lookouts or boardwalks.
- 5) On a natural surface, remove trip hazards to a reasonable degree.

#### Trail Clearing and Grubbing

- 1) In many cases, very little vegetation removal is required. Be selective when deciding how much to clear. Maintain a 2.5 m vertical clearance and a 1.5 m horizontal clearance. Allow for 0.5 m of clearance on either side of the walk surface.
- 2) Follow proper pruning techniques when limbing branches and ensure that brush is completely removed from the walk right-of-way.
- 3) If a granular surface is desired, grub away organic material and stumps from the walk surface area so it is prepared for subsurface aggregate. Apply typical cut and fill excavation techniques to create a relatively level surface.

#### Trail Surfaces

- 1) Depending on the trail, varying surfaces are suggested. When the natural walk surface is pleasant, dry, and water can easily drain off it then it should be preserved. In some cases however, stone and aggregate is needed to improve the walk surface.
- 2) Using varying sizes of aggregate raise the walk surface to eliminate a trip hazard or slippery surface, to improve surface drainage, to define the trail route, or to raise the trail surface above the surrounding landscape. Some existing trail segments have been used so much it has created a ditch like effect. This traps water on the walk surface and deteriorates it even more. As a result the walk surface actually becomes the main channel for water runoff which results in a very poor walking experience not to mention the damage to the landscape.

- 3) When using aggregate choose stone that matches the surrounding landscape. Avoid using stone that is clearly different from the natural stone on site. Sometimes natural aggregate can be found along a route. Make use of those “free and easily accessible” materials whenever you can.
- 4) A subsurface of 4” stone is suggested for areas where drainage is poor followed by a tamped class ‘A’ surface. For areas where drainage is good, the 4” subsurface may not be required.
- 5) When improving a walk surface, grub out all organic material first so that you start with a stable foundation. Some choose to lay down filter fabric (geotextile fabric) before spreading the aggregate. This keeps the gravel in place and reduces the amount required.
- 6) When raising the walk surface to “bury” a trip hazard, the new surface should be 3-5” above the hazard.

### Drainage

Poor drainage is the single leading cause of trail deterioration. The goal is to get water off the walk surface as quickly as possible.

- 1) The trail surface should be elevated above the surrounding surface. If not, water will be trapped on the trail.
- 2) The natural trail surface will deteriorate over time especially if the route is frequently used. In these cases a granular surface may be needed.
- 3) Water should flow off the trail so have a 2% cross slope.
- 4) A combination of drainage features is needed in areas so that water can flow away from the trail. Install ditches in areas of poor drainage or in areas where runoff should be directed away from the route or through a culvert.
- 5) Culverts are required on all the trails. Refer to the detail in this report for proper installation.

### ATV's and Traditional Hunting

- 1) ATV use can permanently scar a landscape and effort should be made to ensure ATV's do not access a tourism oriented trail.
- 2) For existing trail segments that are shared with ATV's, the trail construction requirements should be altered (trail width, surface, sight lines). Signage would also warn both user types of any safety concerns.
- 3) Although some hikers may find it interesting to come across a hunter along the trail, others may be concerned about this. It is our recommendation that no hunting be permitted anywhere near a hiking trail. Signage, public consultation and enforcement are suggested to implement this suggestion.

### Hazardous Coastline and Cliff Ledges

- 1) Sometimes the trail goes too close to the coastline edge. Though the landscape appears stable in these areas, it in fact could be completely undermined. Be aware of this hazard and re-route segments of trail where this is a concern. Ensure new segments are constructed a safe distance from eroding coastline.

## Placentia

---

- 2) Warning signage should be installed in areas where the coastline or cliff ledge is hazardous. Users should be informed of the specific risk of going off the trail and encouraged to stay on the designated path. Warning signage needs to be specific.
- 3) In some cases, rails, chain link fencing or other features could be installed to keep users on the trail or to block off access to a dangerous section.
- 4) Almost every year there are avoidable accidents along coastal trails. Inform users of the risks and ensure that they stick to designated paths only.
- 5) There is no set rule on safe distances from cliffs. Some trails in Newfoundland (e.g., Signal Hill Trail) go right to the edge of some stable cliffs. The key is knowing the condition of the coastline and keeping a reasonable distance away from questionable areas. Since the coastline and cliff ledges changes regularly, you should inspect areas near the edge regularly.

## Trail Amenities

- 1) There are so many different styles of benches, garbage bins, picnic tables and other features across the trails in this Province. Users expect to see consistency along a network. Choose specific styles of amenities and install them on each tourism orientated trail.
- 2) As current amenities get damaged or deteriorate, replace them with a new amenity of the approved style.
- 3) Garbage bins and outhouses are major maintenance burdens and in most cases are not necessary - especially if you adopt a "pack in / pack out" policy.

## Use of Local Materials

- 1) In many cases, natural stone is simply lying along the trail edge. This is a much more durable product to use and is free. Take advantage of it wherever possible.
- 2) Favor local stone over wooden structures.
- 3) When using stone, try to match your materials with the natural stone color found at that particular trail.

## Maps

A map outlining general recommendations for upgrading each trail is provided. Trail upgrades are to be completed in conjunction with:

- 1) The trail map provided.
- 2) The information provided under the heading for each trail in this report.
- 3) The information under this section entitled "Common Deficiencies and Upgrades Required on Most Trails in the Province".



---

### Cost Estimates

Under each trail section in this report general cost estimates are provided. The following notations apply to these cost estimates:

- 1) These are order of magnitude cost estimates of +/-20% and do not include h.s.t. The estimates are merely a guide and final budgets for each trail should be determined once funding becomes available.
- 2) Estimates do not include any expenses incurred for planning and administration of projects – it's simply an estimate for actual trail upgrades only.
- 3) Depending on the type of labour arrangement, there may be additional expenses incurred for workers health and safety insurance, employment insurance and other associated labour costs.
- 4) If a supplier of larch cannot be secured, other types of lumber can be used. This should be discussed with a trail planner to ensure appropriate lumber is purchased.
- 5) If one is available in your community, it is always nice to consult with an engineer to design and build any structures (e.g., bridges, staircases, retaining structures). The details in this report are general guides.
- 6) The prices do not include professional fees such as an engineer. These fees should be minimal. Seek a local engineer willing to offer an “in-kind” service.
- 7) Trail managers will determine what equipment will be required to construct or upgrade each trail. Equipment costs are just a general estimate.
- 8) Costs are based on the assumption that extensive effort is made to ensure the best route is developed. This reduces construction material costs significantly.

### Construction Materials and Equipment

- 1) Select appropriate building materials. We recommend using debarked larch logs as they are a very durable wood that blends nicely with the landscape. If at all possible avoid the use of spruce and especially fir as they have a short shelf life. Pressure treated lumber is another option but it doesn't blend well with the landscape so a considerable effort should be made to purchase larch logs before exploring other alternatives. Consult with your local saw mill.
- 2) An aggregate surface is the most durable one and is needed in areas where drainage is poor. It can be challenging to transport aggregate to remote areas so come up with creative ways to transport these essential materials. Make good use of any natural aggregate that can be found near the trail.
- 3) Geotextile fabric has been used on many trail projects. Consider using this fabric in areas with poor drainage or in areas with a thick organic layer. This is an extra and optional material that is not included in the cost estimates.
- 4) All too often a trail project starts without collecting the needed materials and equipment first. With good planning, the needed materials and equipment should be collected and secured well before a

project starts. Don't fall into the trap of leaving this up to the crew during the first week of work. This could result in weeks of lost time or at the very least reduced productivity.

#### New Trail Routes – Trail Scouting and Layout

- 1) In some cases a new trail segment should be constructed to improve the trail route. In other cases a trail group may desire to construct a new trail from scratch. If so, consider some of the points under this subheading.
- 2) When securing an LTO (License to Occupy for each trail) discuss with Crown Lands the maximum possible trail corridor width that can be secured. This protects the trail but also gives trail "scouters" more flexibility when finalizing the route during construction.
- 3) A secured "buffer" around the trail also protects it from clear cutting, unwanted trail use and protects trail aesthetics. If you can secure 25m from either side of the proposed trail route that would be great – 50m would be better. 100m would be even better but is unlikely.
- 4) In many cases we certainly have a clear route to follow, but for other segments of trail have a trail scouter work ahead of the construction crew to identify the best possible route within the land secured through the License to Occupy.
- 5) In advance of clearing the right-of-way, have a trail planner or "scouter" flag the final route. This means establishing an initial flag line and relocating and tying new flags as you make decisions about the route layout during construction. Flags should be tied close together so that turns and other changes to the direction of the route can be easily identified.
- 6) Here is a key point: be patient when flagging the final path. Select the best possible trail surface that minimizes erosion and saturation. A poorly selected route can be a massive maintenance burden for years to come. Soils, slope and drainage are the main factors to consider when finalizing the route.
- 7) Although the preliminary route we have identified takes these factors into consideration, it would still be advantageous for a crew member or foreman to walk in advance of the construction crew and flag the final route.
- 8) It is reasonable to expect to spend several days in the field finalizing each kilometer of trail. Although this may seem like a long process it's an important one. We need a trail route that will withstand thousands of walkers for years to come.
- 9) Avoid areas with organic soils. This is a common problem along trails throughout Newfoundland. These soils retain water and can easily create a trench like trail where water cannot escape. If these areas cannot be avoided, aggregate or other surface materials will be required to improve the surface. Keep this as minimal as possible.
- 10) To reduce erosion, keep trail grades below 15% if at all possible. 10% or less is the most sustainable and should be the average grade of the whole trail. If descending a steep slope do not follow the "fall line" which is a straight line down a slope (the same route water would take). Instead, cut along the side of a slope. This requires more construction effort, but the trail will last significantly longer.
- 11) IMBA (International Mountain Bicycling Association) suggests that when cutting along the side of a slope, the trail grade should not exceed half the grade of the side slope.

- 12) If you have no other choice than to follow the fall line of a slope (this should be a rare occurrence), stairs or other surface structures may be needed.
- 13) Avoid flat areas. Although easy to construct a trail on a flat area, it's a collection zone for water. The trail surface should always be higher than the surrounding area. If the trail has to go through a flat surface, elevate the trail using aggregate.
- 14) Changes in grade are a good idea as it prevents water from flowing down a surface and causing accelerated erosion. So mix up the route to create frequent points where water can drain off.

#### Parking Lots

- 1) Parking lots serve as the gateway for each trail. They should be attractive and safe.
- 2) For each trail, notes on parking have been provided. Most lots should have enough space for 3-5 vehicles.
- 3) Each parking space should be about 9ft wide and 20ft long.
- 4) Ensure lots are large enough that users don't have to back out onto any Town street.
- 5) Have a clearly defined entrance and exit for each lot.
- 6) Ensure the lot is graded with Class A and is free of potholes and ruts. Ditching may be required around the entrance /exit or around the perimeter. Ensure the lot is graded so that water will flow off it.
- 7) Ensure a clear line of sight is maintained for exiting each lot. The driver should be able to see down the road in either direction. Ensure lots aren't located on a turn in the road or in an area where visibility is blocked when exiting.
- 8) In most cases a trailhead map should be located on the parking lot.



# Next Steps

- 1) Before any trail upgrading takes place check property ownership for all routes. Obtain a license to occupy for routes owned by the Crown. Don't upgrade or promote a trail without confirming property ownership and ensuring that the trail is covered under Town insurance. If any segment of the trail passes through private land, have a signed access agreement with the land owner.
- 2) Seek partnerships that will aid in trail planning, upgrading, maintenance and promotion.
- 3) Determine the level of upgrading and promotion to be completed and work on securing the required funds. Don't take on too much at once. Start with one or two trails.
- 4) Secure permits and approvals from the appropriate regulatory agencies. This may include but is not limited to:
  - a. Provincial Department of Environment and Conservation: Any works or undertakings within 15m of a body of water require approval from this department. This application will have to outline the walk route and identify details related to all proposed stream crossings.
  - b. Provincial Environmental Assessment Division: The Department of Municipal Affairs and Environment may determine that an environmental assessment be completed for this project. If so an initial environmental assessment application will be required. The division would then determine if this project has triggered a full blown environmental assessment. No need to apply to this department unless directed to from Crown Lands or Municipal Affairs. All that being said, an Environmental Assessment Registration will be required for any trail exceeding 10 km in length. Two trails that connect would be considered as one (from their perspective) so you will most likely need to complete this process.
  - c. Federal Department of Fisheries and Oceans: Any workings that may affect fish habitat could require an application to this department (e.g., bridge construction).
  - d. Any signs to be installed along Provincially maintained roads requires approval from the Province.
- 5) Develop a maintenance plan for all trails that you intend to promote.
- 6) Have trail upgrading plans reviewed by a local engineer if one is available and willing to offer an in kind service. Suggestions in this report are merely guides and they should not be implemented without professional direction and review.
- 7) Prepare a trail signage brand that will be applied to all on and off-site signage. Also work on other promotional items and a strategy to market the trails.
- 8) Secure a construction team and upgrade the trails based on their priority. Seek professional oversight for crew orientation and periodic checkups.
- 9) Develop marketing and promotional items including trail maps and a website. Make sure they are designed in harmony with your established brand. Only advertise the trails that are upgraded, regularly maintained and that have the signage installed.

---

# Preparing For Construction

- 1) We suggest a four person crew with a lead hand, a carpenter and two laborers. You need to select a good lead hand that has a good understanding of the report contents and the suggested construction methods.
- 2) All too often trail structures that need to be built (boardwalks, bridges, rails ect...) are constructed based on the carpenters personal experience and knowledge. We would suggest the construction drawings in this report be followed closely as they are time tested structures that we know work well in the Province. Avoid making "new" styles or designing structures "on the spot". Try to stay close to the principals of trail construction highlighted in this document.
- 3) Have a clear construction plan in advance of hiring a crew. In the past we have seen weeks of time lost because no advance planning was in place.
- 4) Have all materials and equipment lined up, ordered and delivered before the crew starts work. Don't leave this up to the lead hand.
- 5) Some basic equipment includes an ATV and trailer (or side by side with a dump), a mini-excavator that can be rented on an "as needed" basis, a truck, chainsaw, brush saw, polaski or similar grubbing tool, shovels, rakes, pruning shears, drill set, generator, mallet and other basic hand tools.
- 6) Source local materials (logs, aggregate) before the trail crew starts. Have some delivered to selected drop off locations.
- 7) Adequate safety gear (PPE, fire extinguisher, first aid kit ect...) should be available at all work sites. Additionally, adequate safety training should be provided before any construction begins.
- 8) We would highly recommend a trail building orientation session with an experienced trail builder or planner. The crew should be taught basic trail building principals and techniques. This orientation could cover everything from selecting the best trail route to the construction of trail features. Safety orientation is also essential.

# Environmental Assessment Registration

Any trail exceeding 10km in length will require an Environmental Assessment Registration. This is not a full blown Environmental Assessment but an initial application that will be submitted to the department to determine if a detailed Environmental Assessment is needed. To date I have never encountered a trail project that triggers a full assessment so it is very likely that the registration is all that is required. Here are some key items this registration should include:

- 1) Proponent information
- 2) A project description
- 3) A geographical description of the trail including a map of the route on a 1:50,000 NTS Map Sheet. Also include a map showing the trail location on the island.
- 4) A physical description of the route including its' total distance, trail width, total distance of new trail vs. total distance of existing, surface structures (e.g., stairs, bridges) and a description of the vegetation and wildlife habitat.
- 5) Details on the project undertaking such as start and end dates, the construction procedure and identification of any potential environmental hazards.
- 6) Indication of any known archeological sites along the route.
- 7) A list of occupations required, funding sources and a project schedule should also be included. Keep in mind the schedule should take into consideration environmental factors. For example no cutting should be done during nesting seasons.
- 8) Include detailed route maps perhaps with aerial photography as the background layer. Have increment markers on the route every 500m.
- 9) Include detailed drawings and sketches of any structures that you plan to build.

It should be noted that the assessment process can be quite lengthy so the registration should be submitted early. Expect delays in processing and keep in contact with your MHA to help move the process along. The following link has much more information and a guide to help you:

[https://www.mae.gov.nl.ca/env\\_assessment/#guide](https://www.mae.gov.nl.ca/env_assessment/#guide)



---

# Maintenance Management

Even before trail construction begins it is good to think about trail maintenance. Don't build or upgrade any route without first determining if you have the resources to maintain it and how maintenance will be managed. Here are some basic suggestions to help plan for maintenance.

- 1) Have a complete detailed asset inventory of all trail structures and amenities. Ideally this is all mapped out digitally.
- 2) Complete regular trail inspections of all these structures and amenities to ensure they are in good repair. Document all inspections and note any necessary repairs. A good paper trail of regular inspections and repairs will not only ensure the quality of the network, but could help protect the Town from a liability suit. We would suggest at least three scheduled inspections and unscheduled inspections following a major storm or flooding event.
- 3) Have scheduled maintenance activities completed on a regular frequency. For example, annual trimming of vegetation could be scheduled for the entire route about once a year. Another example is weekly (or twice a week) garbage collection. Although you may want to have a "pack in pack out" policy, some bins at key parking lots may be necessary.
- 4) Complete an annual maintenance budget and ensure you have appropriate staff dedicated to the regular maintenance of the route. In your annual maintenance budget, you may want to set aside some funds each year for asset replacement. By so doing, you will have adequate funds available when structures are past their life and need replacement.
- 5) Ensure you have the entire network covered under your Town insurance.

# Developing a Signage Plan

The following is just a few general comments on your existing signage and recommendations for new signs:

- 1) Most trails didn't have any signage while others had some basic signs. We would suggest that the trails in the region all be branded under one trail network name and all signs be designed in harmony with that brand. That way all the signs have the same look and feel across the region.
- 2) Every trail that would be part of the network requires a trailhead sign. While each trailhead sign should focus on that particular walk segment, they should also inform visitors of the other trails in the region for those considering multiple hikes.
- 3) As a user travels along a trail, they will need direction especially where there are forks along the route or if there are offshoot paths leading to a lookout. Directional signs and trail markers along the route should be installed at the appropriate locations.
- 4) Within each community trail directional signs may be needed to direct visitors to the trailhead.
- 5) We would also suggest a trail Kiosk with a map of the whole network be installed and located by the Visitors Information Centre. This area should be well landscaped and visible from the highway. This would be the official starting point for any desiring to hike the trails in the region.
- 6) Highway signage is critical for directing visitors to the trails in the region.

Signage needs to serve at least four main purposes:

- 1) **Inform:** Trailhead signage is critical and should be detailed. Include a trail map that clearly shows the route, the distances and the features to look out for along the trail. Trailhead signage should also include warnings of expected risks (be specific) and hiker courtesy's or trail rules. Identify acceptable trail use (non-motorized, hikers) and unacceptable uses (hunting, ATV's). The trail map should show a north arrow and scale. Trail difficulty and safety information is also important. Include trail group contact and emergency contact information.
- 2) **Warn:** Often times trail users will post "Use at Own Risk" signage with the assumption that this will protect them from liability suits. That however is not true. These signs are too vague. For example is dangerous wildlife the risk? Or is coastal erosion or high cliffs the risk? Can users be exposed to rugged sections of trail which would warrant advanced warning? Is the landscape treacherous enough that users should be warned to stay on the designated path and not venture off it? Have specific warnings posted on your trailhead sign and along the trail where the actual risks are. Give advanced warning and on-site warning and be detailed so trail users can make an informed choice.
- 3) **Identify:** Appropriate identification of interesting trail features can add to the user's experience. Is there a cultural or historical feature that merits interpretation or identification? Identifying or labelling some natural features can also help users pinpoint their location on the trail. Avoid unnecessary signage – you don't need a sign for everything.
- 4) **Guide:** Highway and road signage needs to guide visitors to the trailhead and to trail information. Road signage strategically located along the T.C.H is a must.

---

Guidance along a trail is also needed. Trail directional markers direct users to trail links off the main route. They are also installed to reassure users that they are on the right path. Users will rely on these trail markers so it's important they are of the same style and design for every trail.

Clearly there is a lot of work to developing a signage plan. Done properly, this can heighten user satisfaction. Done poorly, and trail users become frustrated. Here are a few extra tips when developing your signs:

- Don't do it independently. Seek professional assistance especially when it comes to the design of the signs.
- Have a brand. Use consistent sign fonts, colors, layouts and design. This brand should carry out into all promotional items such as a website, guide book or trail maps.
- Manufacture quality signs. Many groups produce signs that deteriorate quickly over time. Consult with professionals to ensure you manufacture signs that will last.
- Simplify your signage. Avoid elaborate designs and too much text. In addition avoid posting a bunch of signs on the posts of trailhead signage. This detracts from the look. Consolidate all those signs into one effective trailhead sign.
- There is an advantage to developing tourism oriented signage for all tourism assets (e.g., museums, beaches) not just for trails.
- Take ownership of all trail promotional items and ensure that the branding is consistent.



# Digital Marketing

As already mentioned having a professional and unified marketing experience across all mediums – physical and digital - helps generate enthusiasm for the product and can be a cost-effective way to reach a broad audience.

Currently there is no site dedicated to trail promotion in the region. The Town of Placentia's website and Trip Advisor allude to the region's attractions and trails but they don't contain detailed up-to-date content.

Once the trail system is built, you can then build a cohesive and consistent promotional effort to attract users to the trail system. This does not mean that cross promotion and collaboration cannot be achieved with other interested parties; however, the new trail network would be best suited by being able to:

- Effectively unify its marketing campaigns across all media (i.e. Web, Social Media, Print etc.).
- Quickly and easily update a website with new content.
- Integrate with social media.
- Partner with regional stakeholders to cross promote the region without interfering with unique branding efforts.
- If desired, sell branded goods and receive donation requests through a simple online marketplace.
- Register the network with the Province of Newfoundland & Labrador to become a recognized group and be promoted as a part of the provincial tourism strategy including the Provincial Tourism Guide.

Achieving these goals is a multi-faceted approach that should be considered in phases each with a clearly defined stakeholder to usher the process forward. A modest budget would be required for the early stages of work. The website development costs are variable, and it would be beneficial to contact and request quotes from several reputable web development organizations. Suggestions for possible consideration can be provided. Non-profit discounts should be applied for and requested where applicable.

## Phase 1 – Approximate Budget - \$500.00:

1. Immediately identify and register a domain name (i.e. hikeplacentia ect....)
  - a. Consider registering more than one domain to protect the brand.
  - b. Registrars such as godaddy.com, hover.com, canspace.ca are reputable options for registering domain names.
2. Immediately identify and setup key social media accounts.
  - a. Instagram – excellent for visuals and connecting with influencers and hikers.
  - b. Twitter – excellent for quickly disseminating information, promotional materials and connecting with trail users one on one.
3. Register the trail system with the Province of Newfoundland & Labrador.
4. Identify the personnel that will manage these assets and be responsible for promoting the brand ethos through these channels in a professional and engaging manner.

---

## Phase 2 – Approximate Budget - \$5,000-\$7,000:

1. Identify the key goals for the new trail website.
  - a. What content will be hosted? How frequently will it be updated? (i.e. maps, photos, trail descriptions, donations etc.).
    - i. Website ‘freshness’ is a key factor in higher ranking search results (see *Search Engine Optimization (SEO)* below).
  - b. Review similar websites to identify style ideas and possible layout idea for content. Please see some websites for review below.
    - i. These would form a ‘Wish List’ of core features for the site.
  - c. Contact a few of the Trail Associations that manage websites that contain content and rough designs that are promising. This can be helpful in determining the advantages and disadvantages of a Content Management System (CMS) and web design firm. This will save a great deal of time and frustration down the road.
    - i. What limitations have they experienced with ongoing content generation and updating?
    - ii. What do they like about their current website?
    - iii. What would they change if they were setting up a new site?
    - iv. What challenges did they experience after launch that weren’t apparent in the planning stages? Etc.
2. Once key objectives and content have been identified, identify the web design companies that may be in the best position to meet your needs.
  - a. Give some consideration to design firms that have been used by other trail associations successfully as they will have less of a ‘learning’ curve in achieving the design goals for the website.
  - b. Request a demonstration of their Content Management System (CMS). If they do not utilize a CMS it would be best to consider other options. Not having the ability to adjust and add content to the site easily would be very limiting and potentially not cost effective in the long run.
3. Request for Quote.
4. Begin development and add content.
5. Plan a marketing ‘push’ to promote the new website through social media and local partnerships.

## Phase 3:

1. Go-live.
2. Future content and maintenance.
3. Cross promotion with other like sites and trail associations.
4. Continued promotion through social media.

## SOCIAL MEDIA

Social media is a cost-effective way to promote your trail system and raise awareness about the unique features of your trail system. To be effective, it is important to plan how social media accounts would be used and who would be responsible to maintain and provide content for these accounts.

Given the scale of social media and the potential reach, consideration must be given to proper social media 'etiquette' and how these accounts would be used to interact with potential users of the trail system. It goes without saying that caution should be given to content that is posted and that accounts should be monitored regularly to limit any potential for brand damage.

Using a visual social media platform like Instagram is an excellent way to promote the trail system. Encourage hikers of the trail to tag the Trail System with hashtags. Consideration should be given to incentivizing these tags to help get users on board with posting and tagging their photos and experiences on the trail. Short 'pithy' tags are best as they are easily remembered and more likely to be used by users of the platform.

Twitter is a very useful tool in conveying the latest information on the trail status and new offers or sights that hiker can see and experience. Twitter can convey information in almost 'real-time' which can help to build excitement and draw followers in the area to the trail system. Partnering with other tourism providers in the area can be beneficial as your follower base can be targeted for special programs and discounts at vendors in the area or for limited time offers.

Regardless of the platform(s) used, these accounts should be regularly monitored and maintained to truly be effective. Rather than signing up for many social networks at once, concentrate on one or two that are deemed most appropriate for your short-term brand goals and focus on growing your follower base on those platforms. Once you have a reasonable following and are comfortable with the platform, then consider adding another platform if appropriate. The advantage is that you can leverage the users on one platform to another by cross promoting the 'new' social media profile. By staging this rollout, you will be more likely to keep content fresh and relevant to your follower base.

## SEARCH ENGINE OPTIMIZATION (SEO)

Search engine optimization can be an intimidating part of managing an online presence. While the process can be quite complex, there are relatively simple things that an organization can do to improve their ranking and search results. It should be noted that this is an ongoing process and not an instant result or 'overnight' solution. It is a commitment to the continued generation of content for the site that yields the best results.

Simply put, modern search engines automatically review a website and index information about it to provide their users with the best options when those users are searching for content. Each search engine has their own proprietary algorithm that they use to 'crawl' and index websites. While there is no 'magic bullet', making sure that your website is updated regularly with fresh, compelling content and adding relevant keywords to articles and imagery all work together to improve a website ranking for given search terms.

An excellent resource to review is Google's guide for webmasters which is helpful in gaining an understanding of what is helpful and what is not in this area. The sections for *Optimize your content* and *Optimize your images* can serve as an excellent starting resource. The guide can be found through the following link:

<https://support.google.com/webmasters/answer/7451184?hl=en>

When generating content for a website, make sure to use terms and keywords in the content that end users would be searching for. These terms should be used in a natural way and not needlessly repeated as this type of content is considered 'spammy' by search engines and would be penalized.



---

As an example, here is a potential plan for website content over the course of a few weeks:

### Week 1:

1. Create a blog post about a significant historical section of the trail. Limit the content to just that particular subject and save potential 'extras' for future content. Avoid the tendency to give all the info at once or lengthy posts. If a post is lengthy, break it up and do a 'Part 1' and 'Part 2' over the course of a few days. Extra info can become future content for the site.
2. A few days later, post some current images from a section of the trail as a brief update. Tag the images with relevant keywords.
  - a. i.e. HikePlacentia, Newfoundland Hiking Trail, Hiking, Hiking Trail, Scenic Hiking, 'Name of the region'.
  - b. Make sure to feature image(s) on social media as well.
3. At the end of the week, feature a hiker's story about their use of the trail and share on the website and social media.

### Week 2:

1. Create a blog post featuring a community or business in the trail region. If they have a website, ensure that the post is linked on their site and/or your website is featured on their website as well. Try to include some 'human' content – perhaps a historical or familial connection to the region – something that is unique that hikers will experience.
2. Promote a natural feature or scenic trail on the main page of the website. A 'trail-of-the-month', if you will. Encourage hikers to tag or share this on their personal social media. Perhaps include an incentive or contest for those that do so.

### Week 3:

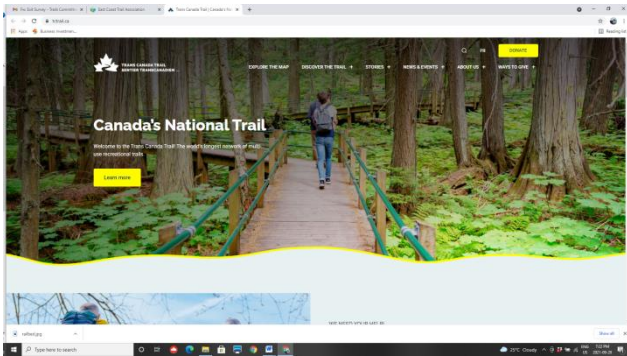
1. Promote any local activities or community events in the area.
2. Post a special mention of a hiker that has completed the entire network.
3. Locate and share a post from a 'sister' trail group – perhaps from one of the options in the addendum below – that provides relevant content to a trail user. Perhaps this could be related to trail safety or the proper preparation for a trail season. Always provide full credit and link back to the source website.

Content for the site should be planned and delivered over the course of weeks or months. The key is relevance and while the example was over the course of a few weeks, this could be delivered over the course of a hiking season. Content should be delivered even during off-seasons to keep the website up-to-date and fresh. Potential topics during this time period could be related to the upcoming hiking season, what a potential user can do to stay in hiking form during the off months, or interesting content related to trail maintenance and what it takes to run a trail system. All these options will serve to drive traffic and promote repeat visits to the website.

Some caution in this area is warranted. There are many agencies and consultancies that 'provide SEO services' for a fee. The quality of these services can vary significantly, and many are what amount to a money grab or use underhanded techniques to improve a search result. Carefully evaluate any SEO optimization services if it

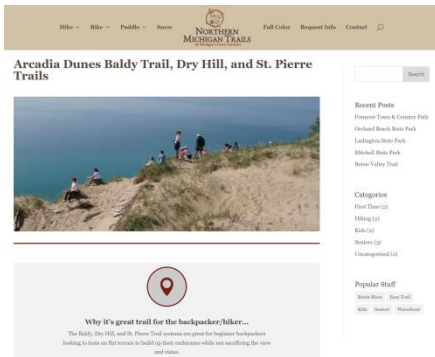
## Placentia

is decided to use one. Make sure to contact other organizations that they have performed this service for and evaluate if the results promised are worth the potential investment. Incorrect SEO practices can harm more than benefit.



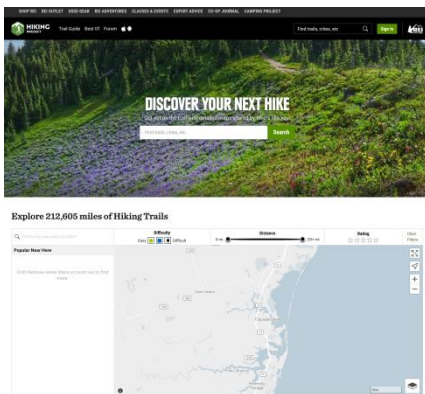
<https://tctrail.ca/>

- Excellent interactive map
- Up-to-date content
- Easy to navigate
- Trail Partnerships
- Videos from users



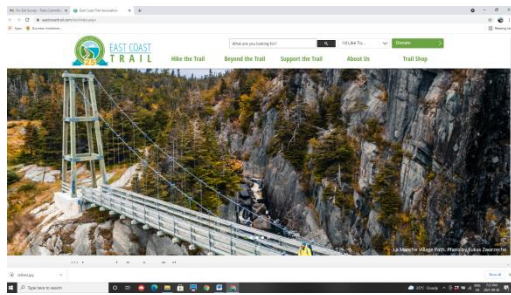
<http://northernmichigantrails.org/hike/view-all-hiking-trails/>

- Excellent trail catalog
- Trail descriptions and map availability



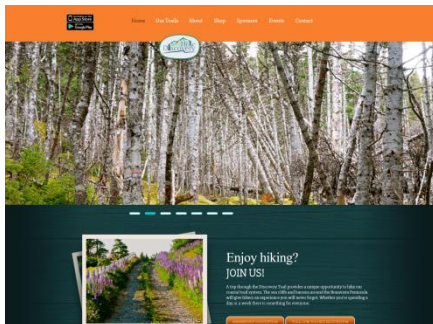
<https://www.hikingproject.com/>

- Nice design
- Interactive maps
- User rating system



<https://www.eastcoasttrail.com/en/index.aspx>

- Events and Things to do section
- Social media integration
- Online shop



<http://www.hikediscovery.com/index.html>

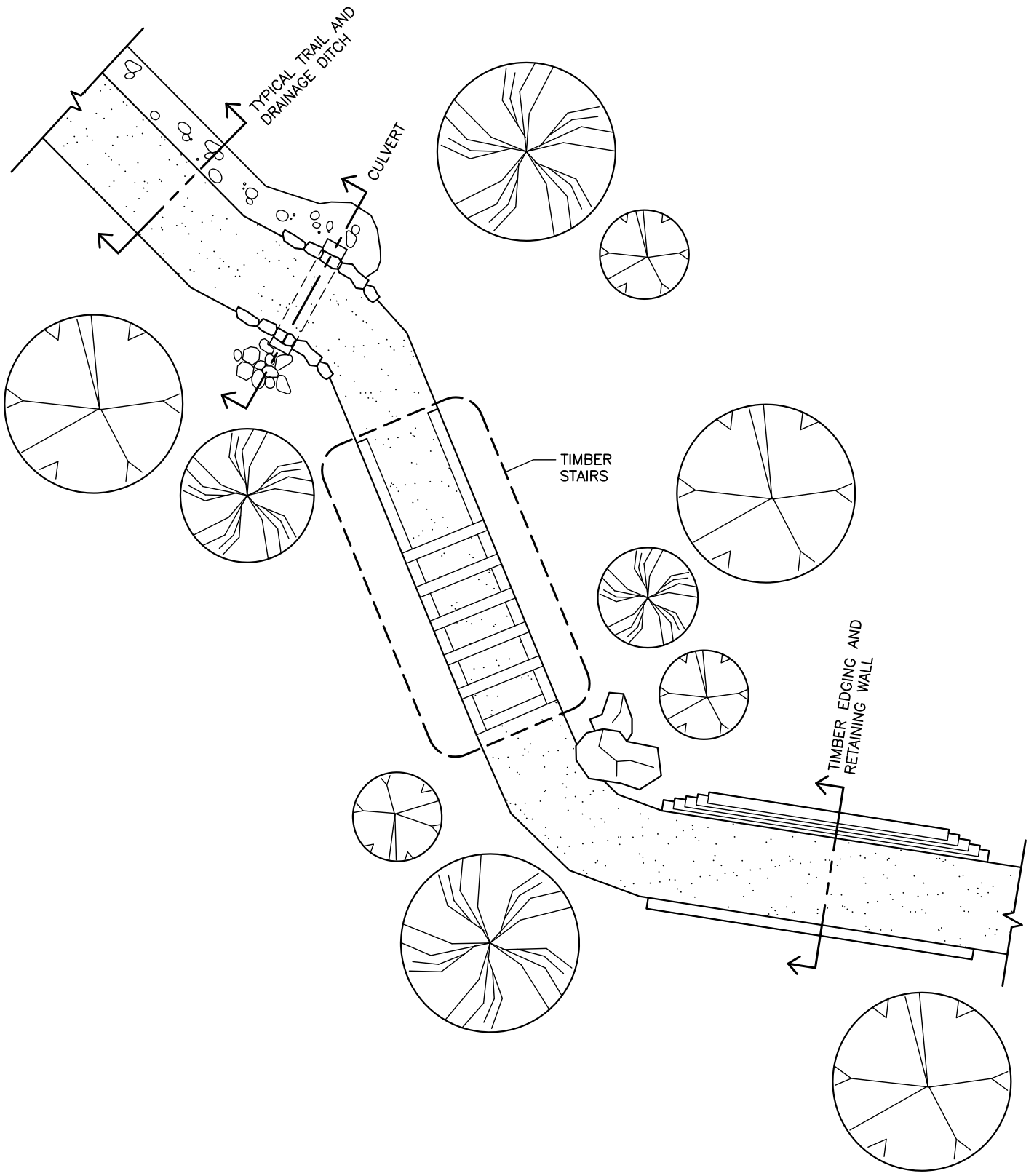
- Online shop
- Sponsors/Partnerships
- Events section



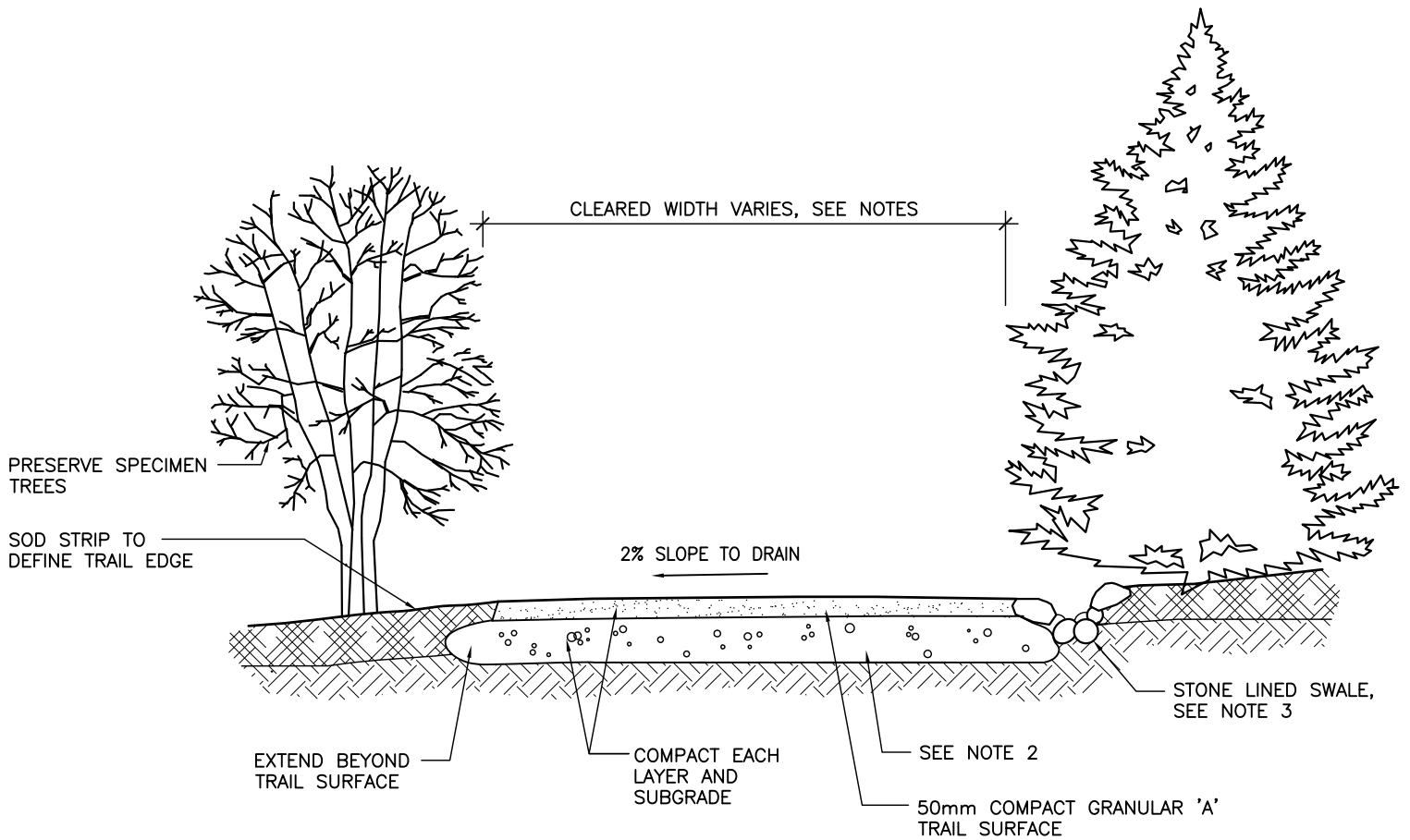
<https://www.vancouvertrails.com/>

- Featured stories/content
- Excellent trail summary pages
- Interactive regional map
- Community section





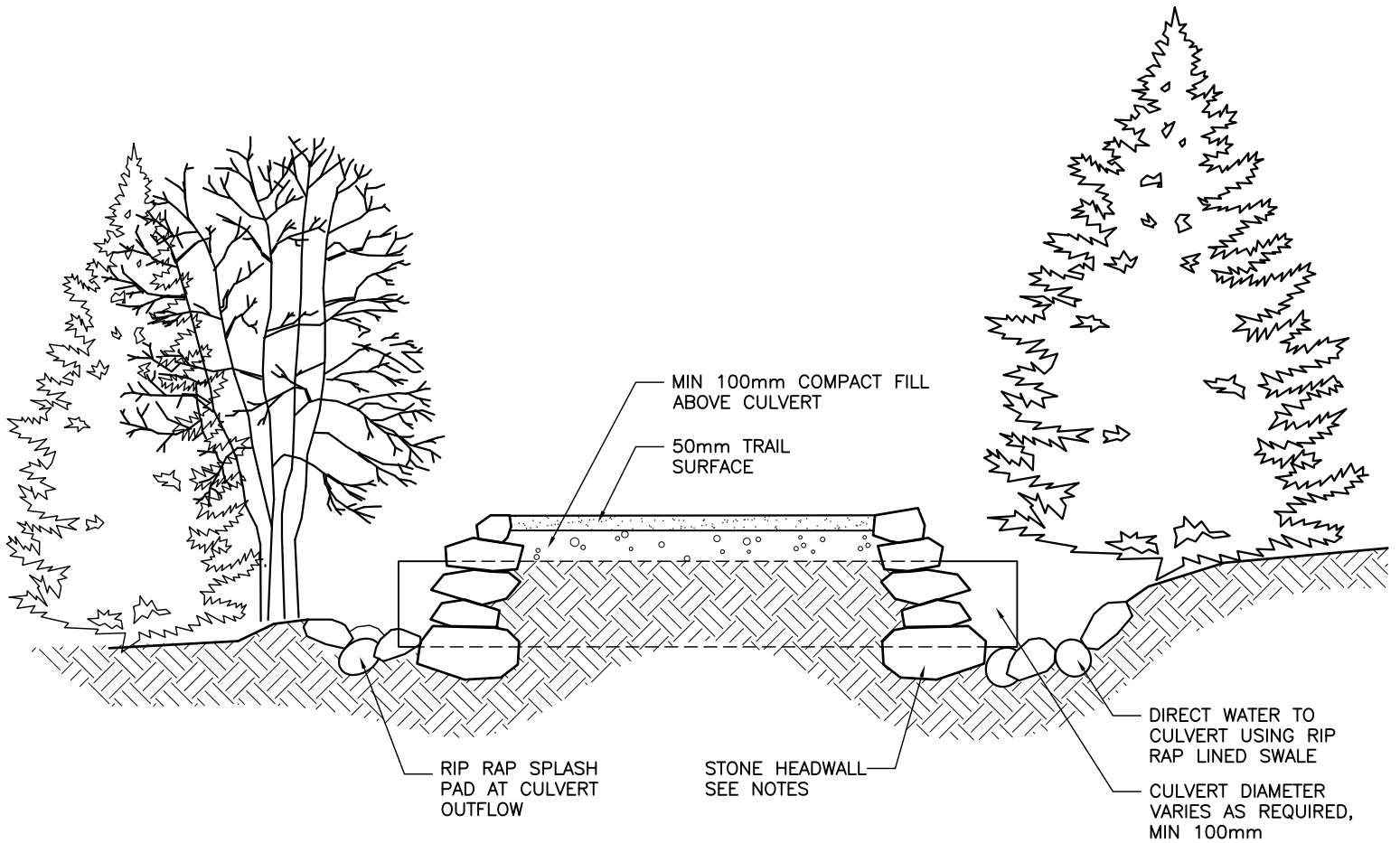
Typical Trail Features



## Typical Trail Construction

### NOTES:

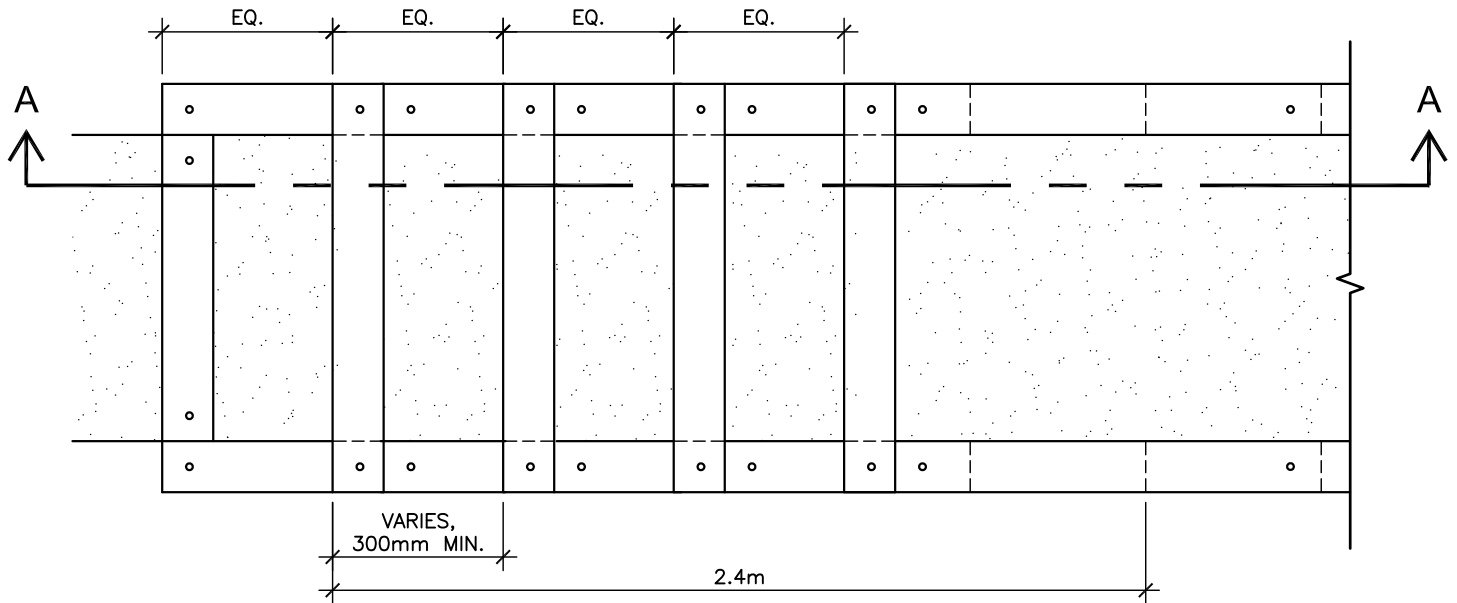
1. ENSURE POSITIVE DRAINAGE FROM TRAIL. MAINTAIN 1-2% CROSS SLOPE ALONG TRAIL.
2. WHERE REQUIRED IN WET AREAS PLACE 100mm OF FILL TO ELEVATE TRAIL SURFACE AND TO FACILITATE DRAINAGE
3. WHERE REQUIRED TO DIRECT WATER, USE A STONE LINED DITCH ADJACENT TO TRAIL. TOP OF DITCH TO BE TWICE AS WIDE AS BASE. PLACE STONES BY HAND. SEE CULVERT DETAILS
4. TRAIL SURFACE MAY VARY IN WIDTH FROM 0.3m TO 1.5m. CART STYLE PATHS ARE ALSO AN OPTION.
5. VERTICAL AND HORIZONTAL CLEARANCE OF VEGETATION SHOULD BE APPROXIMATELY 2.5m WIDE x 2.5m HIGH FOR CART STYLE PATHS AND 2.5m HIGH x 1.5m WIDE FOR FOOTPATHS.
6. DEFINE TRAIL EDGE USING TOPSOIL AND SOD OR SUITABLE SEED MIX



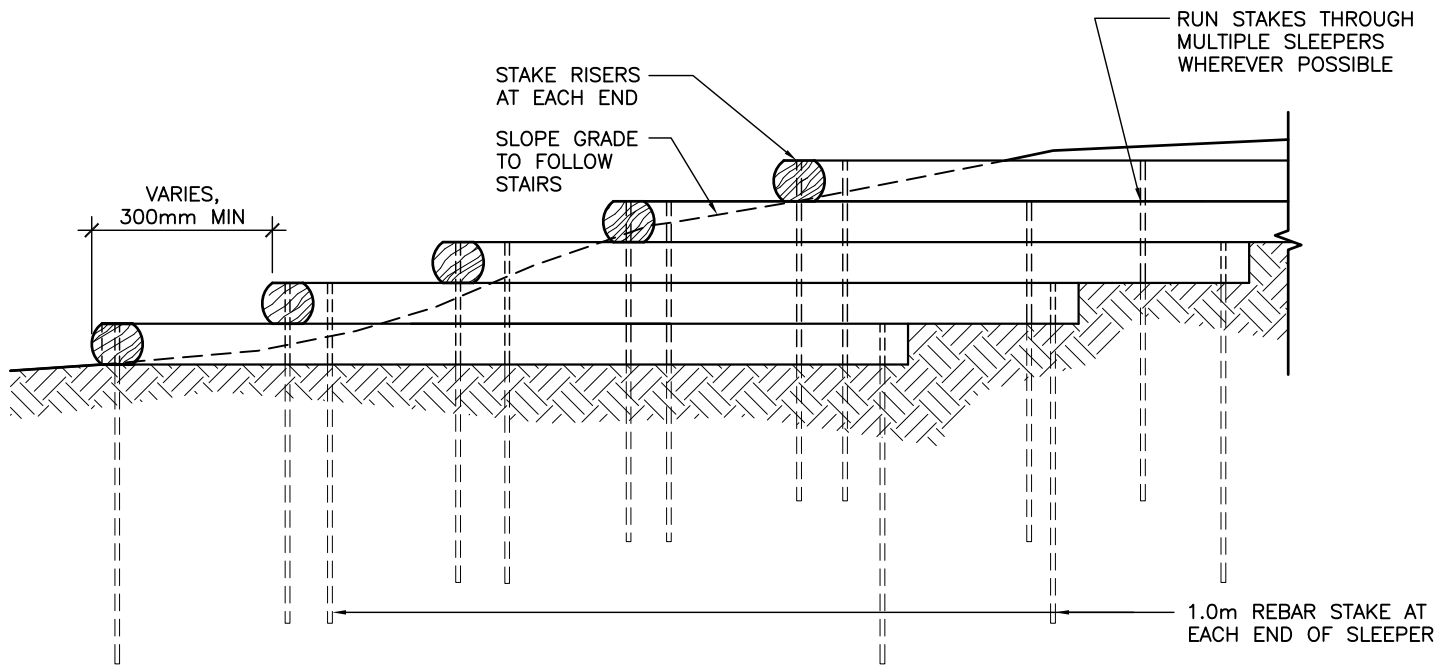
## Section Through Culvert

1. AT CULVERT OUTFLOW CONSTRUCT A STONE PAD APPROXIMATELY 1.0m x 1.0m TO PREVENT EROSION
2. USE ANGULAR OR FLAT STONES FOR HEADWALL AND WHEREVER POSSIBLE CHOSE STONES THAT FIT TIGHTLY TOGETHER. USE STONES A MIN. OF 300mm LONG.
3. EXTEND CULVERT 100–200mm BEYOND HEADWALL.
4. ENSURE ADEQUATE SLOPE IN CULVERT TO MAINTAIN FLOW.





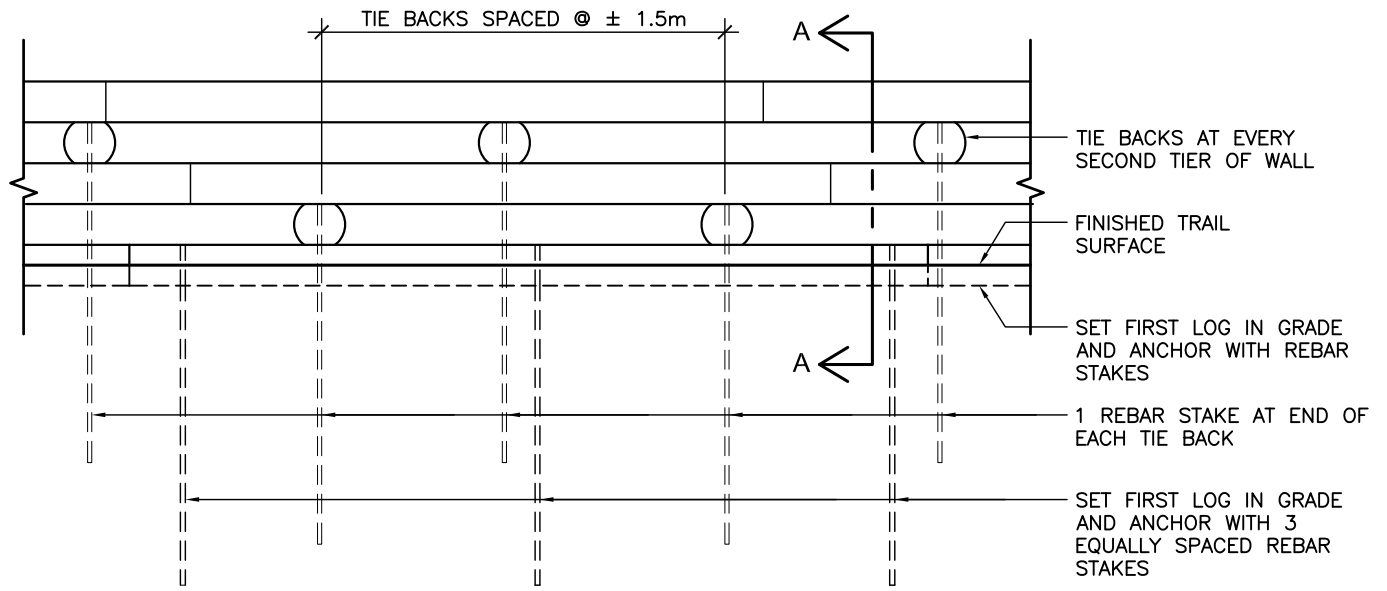
Stair Plan View



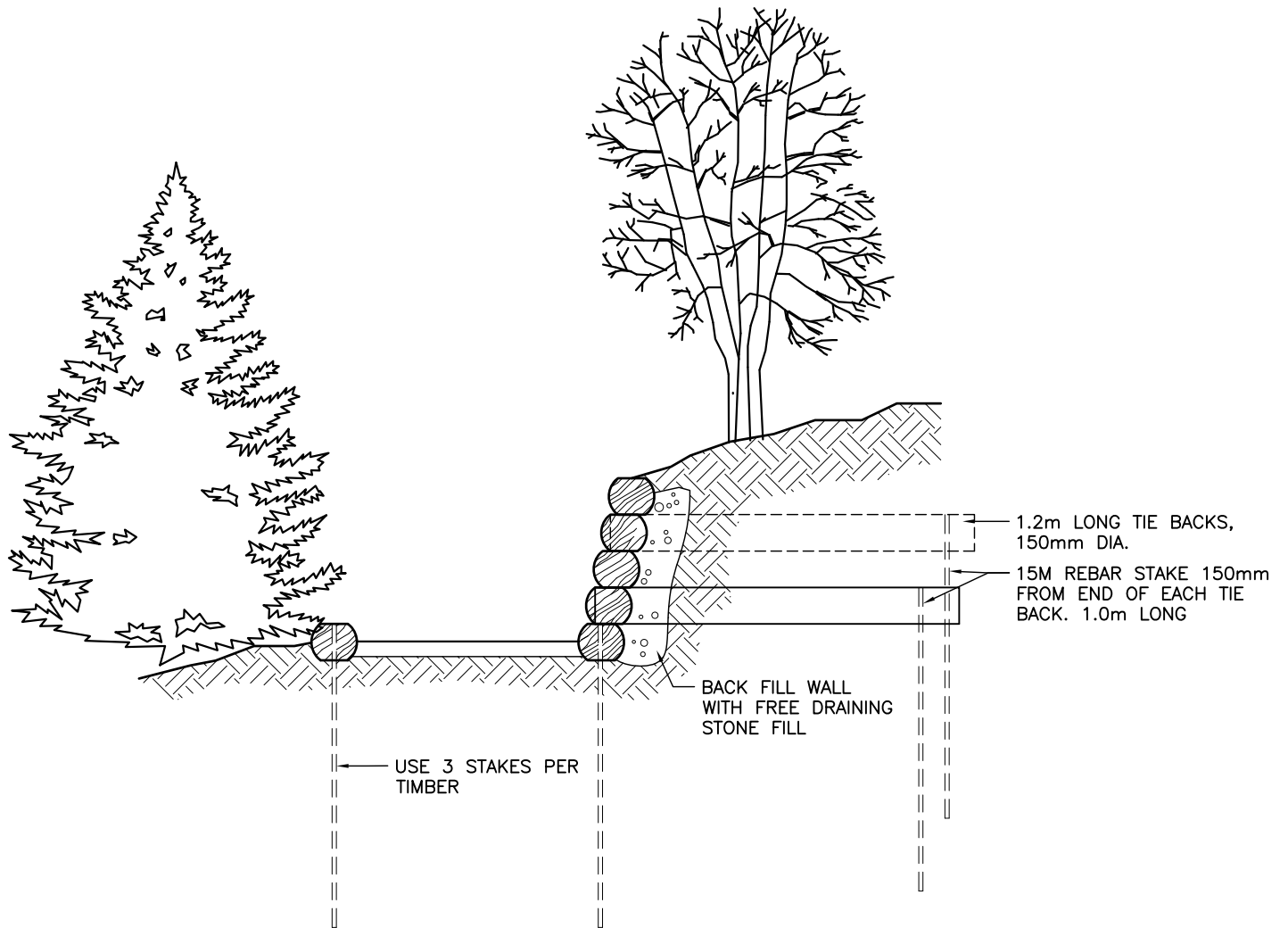
Section 'A'

NOTES:

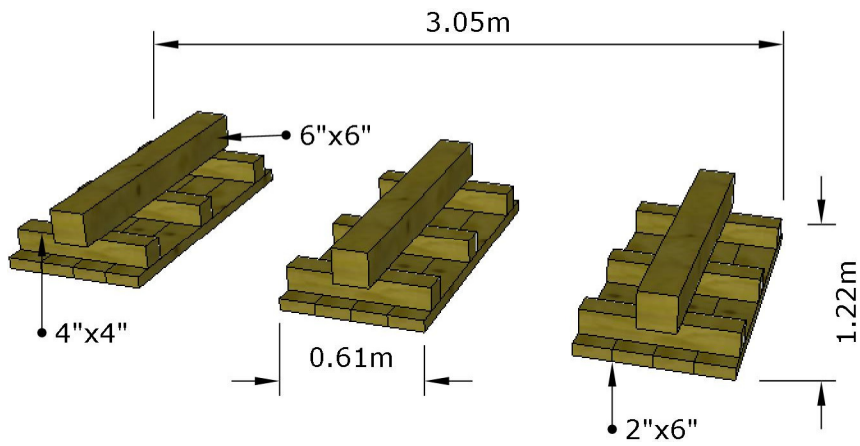
1. ALL STAIR TREADS ARE TO BE OF EQUAL DEPTH, MINIMUM 300mm.
2. EACH SLEEPER MUST BE STAKED WITH REBAR AT EACH END AND HAVE 1 INTERMEDIATE STAKE LOCATED APPROXIMATELY AT MID SLEEPER. ALTER LOCATION OF INTERMEDIATE STAKE AS REQUIRED TO AVOID OTHER STAKES.
3. BACKFILL AND COMPACT FILL BETWEEN SLEEPERS PRIOR TO CONSTRUCTING NEXT STEP
4. USE 20M REBAR FOR STAKES
5. FINISH EACH STEP WITH GRANULAR MATERIAL



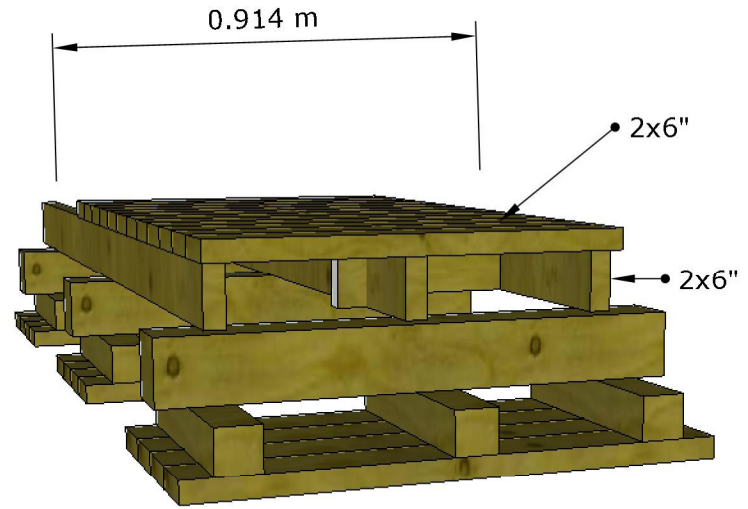
## Retaining Wall Elevation



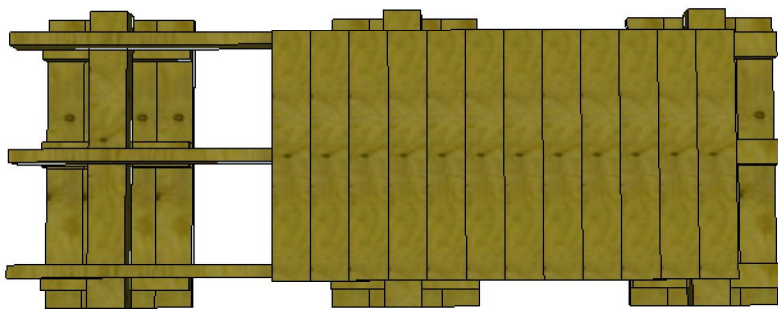
## Section 'A'



**Boardwalk Footings**



**Boardwalk Stringers and Decking**



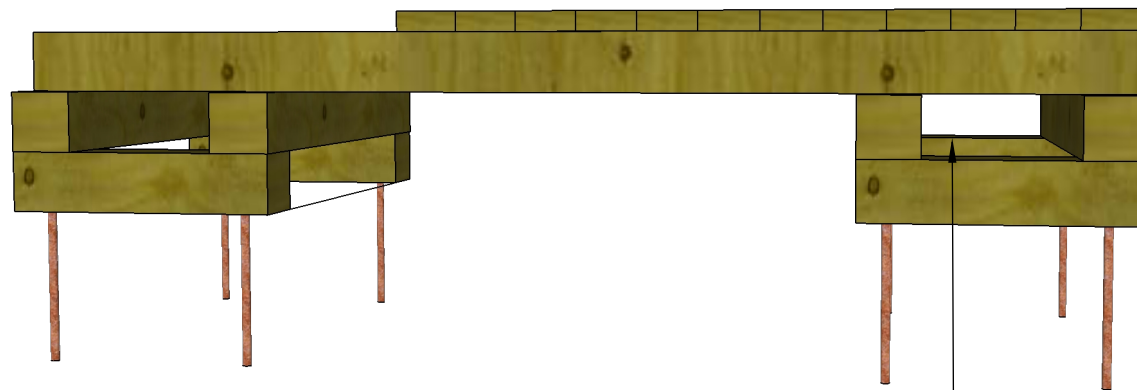
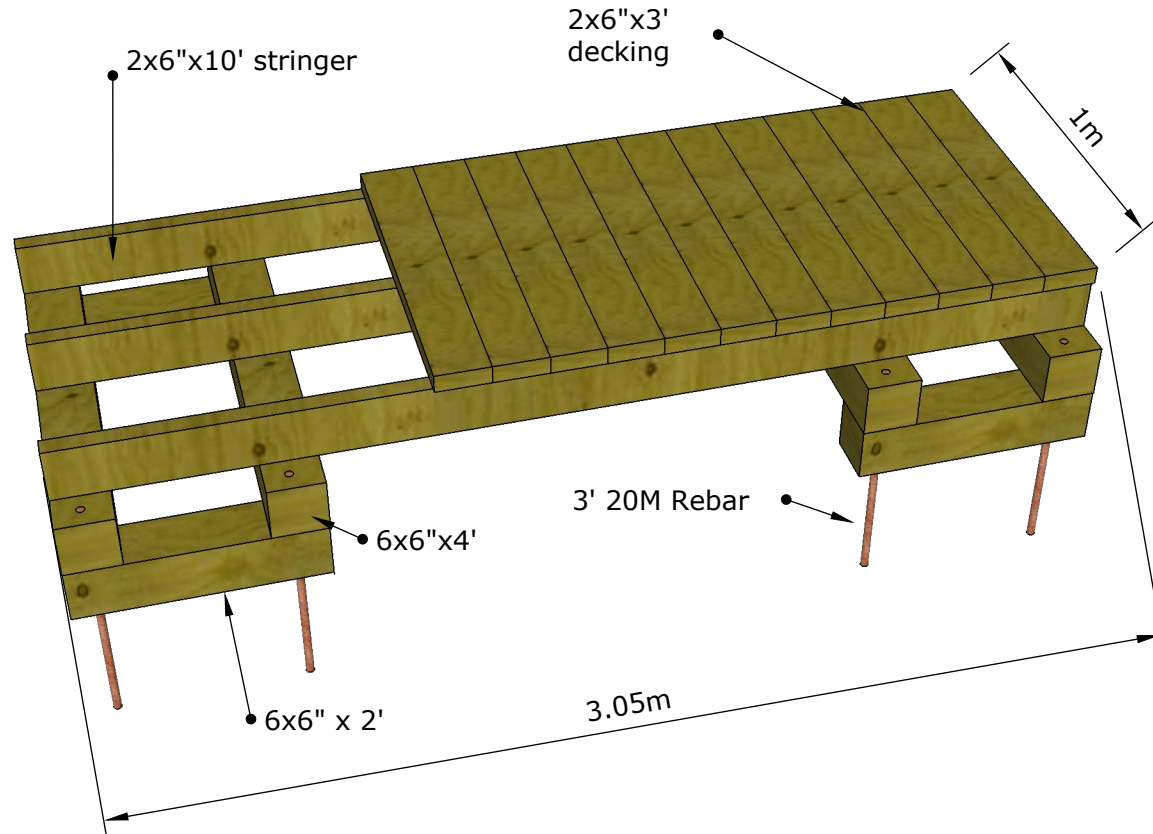
**Plan View**

Notes:

- 1) Don't use pressure treated wood if in environmentally sensitive areas.
- 2) Fasten all boards using wood screws.
- 3) Filter fabric and aggregate could also be applied under the footings in very poorly drained sites.
- 4) Adjust dimensions based on desired boardwalk width.

**FLOATING BOARDWALK**

## **Footbridge for a 1m Stream Crossing**



Fill cribbing with  
8" diameter rocks

### Notes:

Secure all boards using wood screws.

Cribbing to be braced with rebar on all four corners.

Fill cribbing and surroundings with large 8" diameter rock (average).

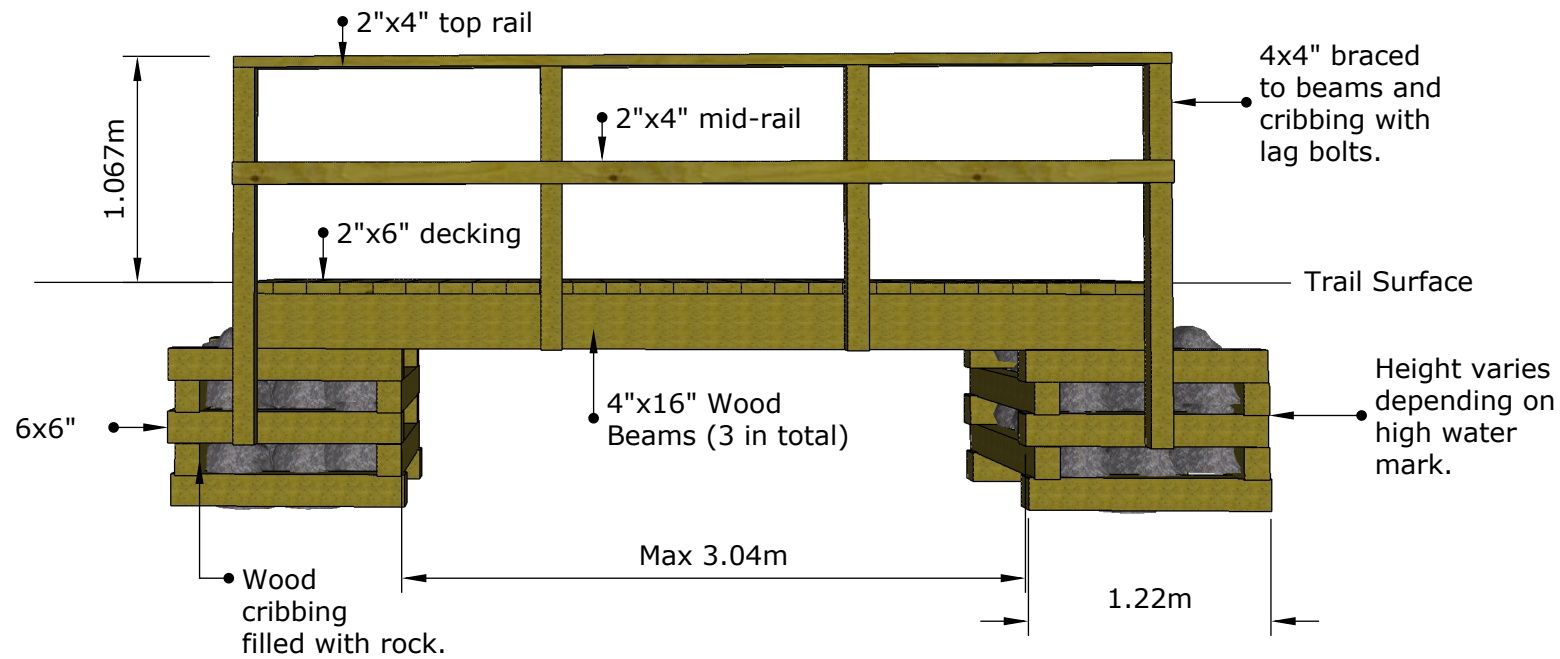
Final trail surface should be level with bridge decking and graded away from the bridge.

Cribbing height will vary depending on the stream bank depth, water flow and surrounding grades.

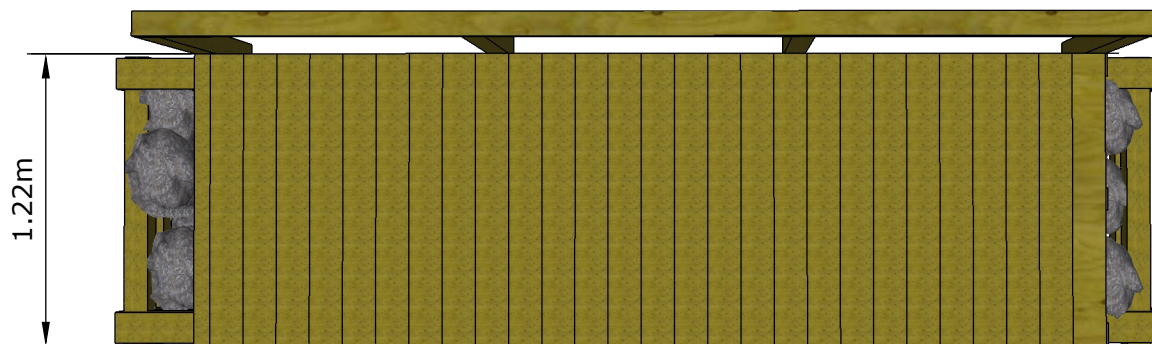
Ensure crossing approvals are obtained prior to construction.



# **BRIDGE**



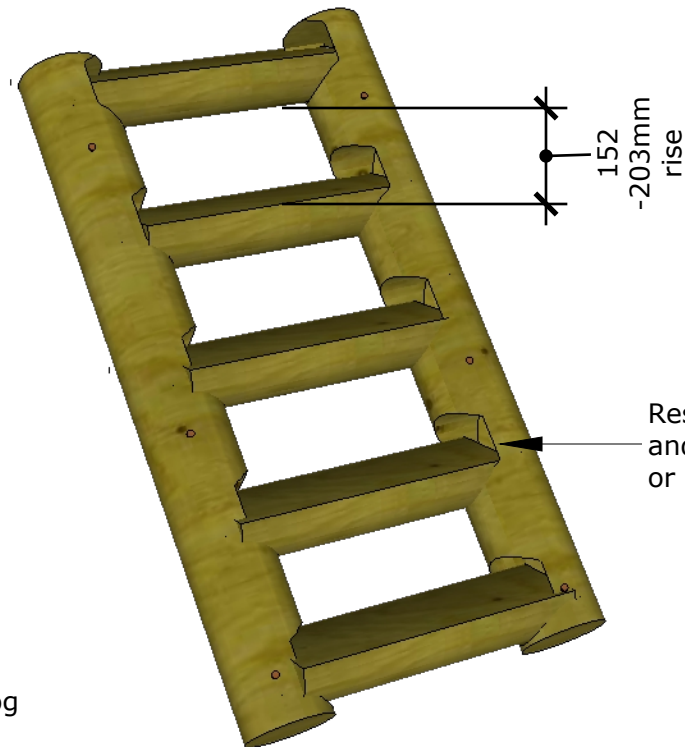
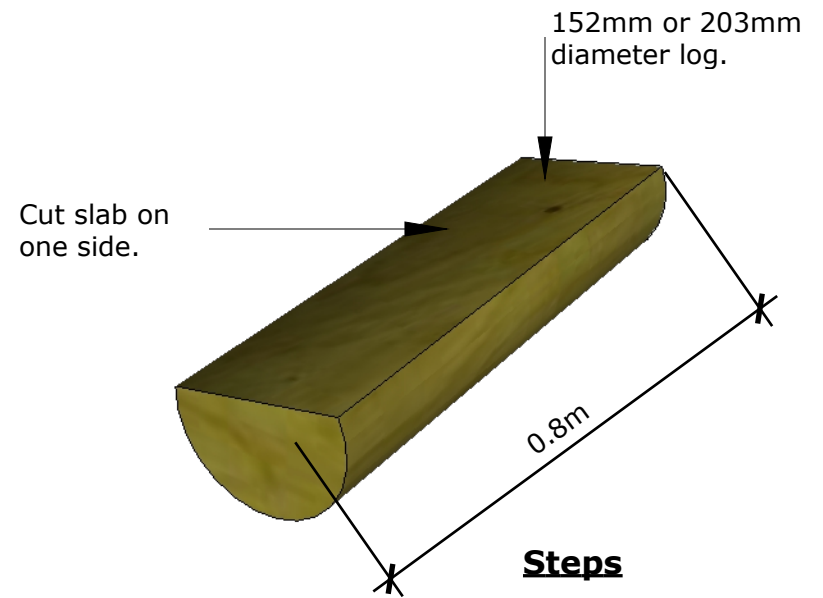
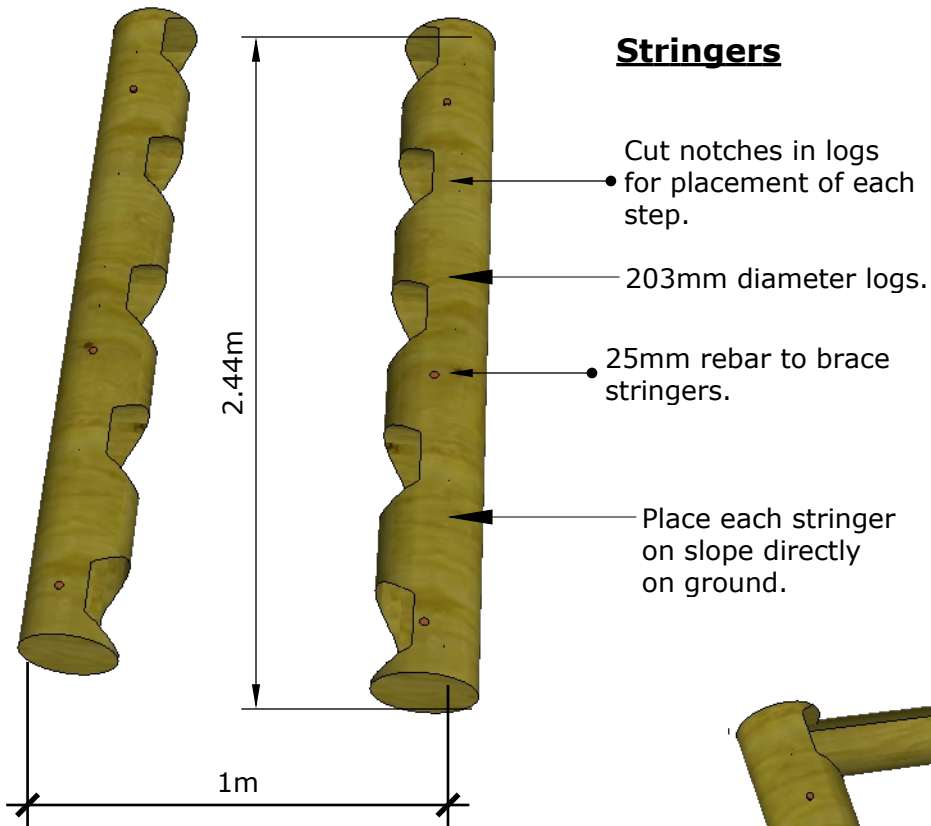
**Bridge Side View**



**Bridge Plan View**

Notes:

- 1) Don't use pressure treated wood if in environmentally sensitive areas.
- 2) Use heavy duty lag bolts and hardware sufficient for the size of the structure.
- 3) Consult with an engineer to confirm the design. This is just a guide.
- 4) Confirm bridge dimensions at each site.
- 5) Ensure abutments are out of the water and well above the high water mark.

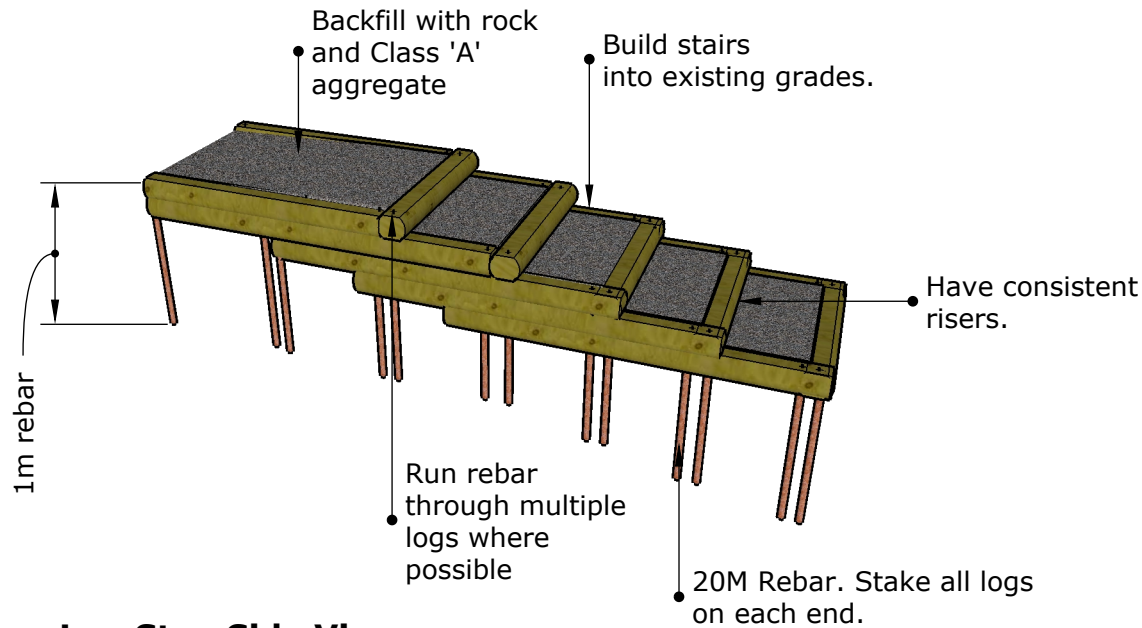


**Notes:**

- 1) All risers should be of equal depth.
- 2) Stringers should be staked with rebar.
- 3) Brace log steps with nail spikes.
- 4) Use debarked logs. Larch is preferred. Avoid fir.
- 5) Length will vary depending on the site.
- 6) Only use where needed to ascend steep grades. Log steps are preferred over log ladders.

**LOG LADDER**

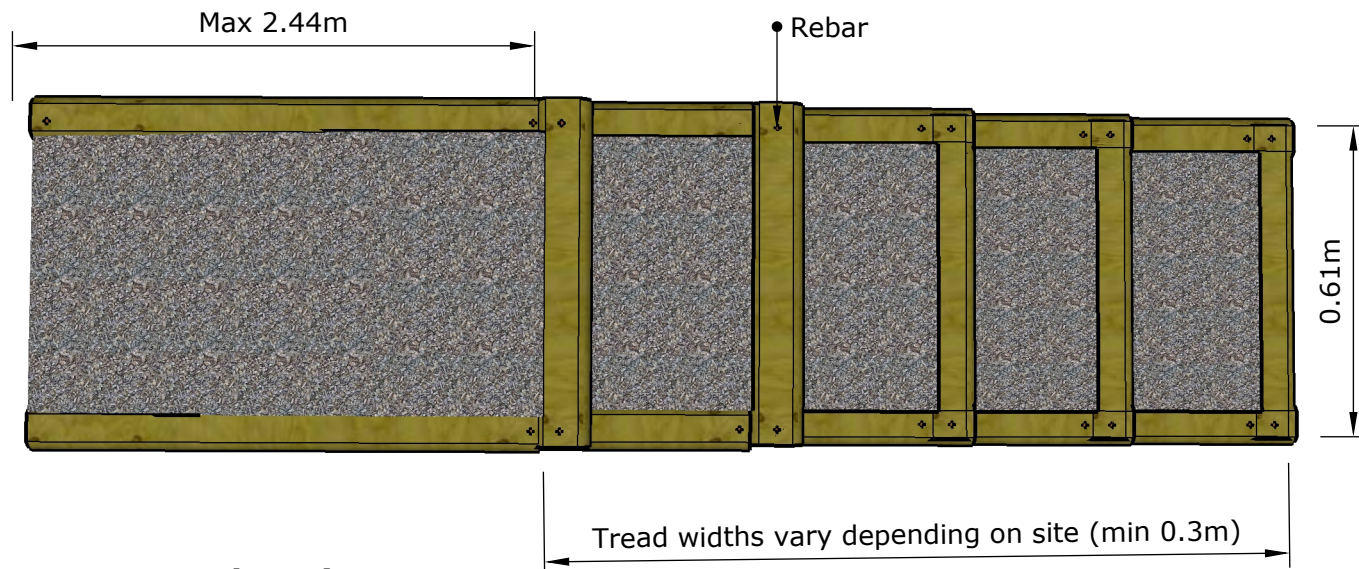
## **LOG STEPS FILLED WITH GRANULAR**



**Log Step Side View**

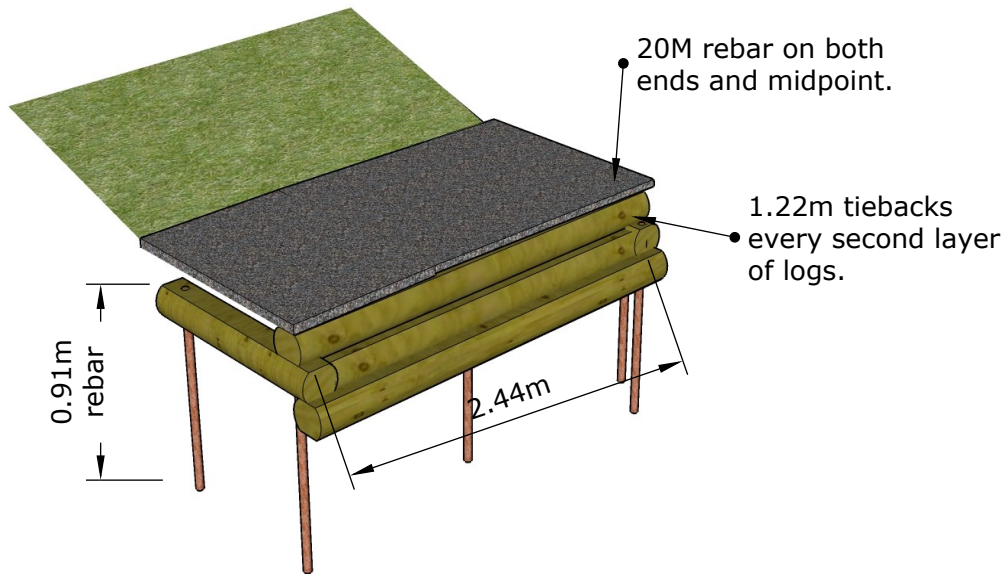
Notes:

- 1) All stair risers should be of equal depth.
- 2) Tread width should vary depending on the site (minimum 0.3m)
- 3) Logs to be staked at each end with a mid stake for longer logs.
- 4) Use debarked logs with slabs cut on opposing sides. Larch is preferred. Avoid using fir.
- 5) Backfill each step with rock and topped with Class 'A'.
- 6) Start at bottom step and fill it before moving on to the next.

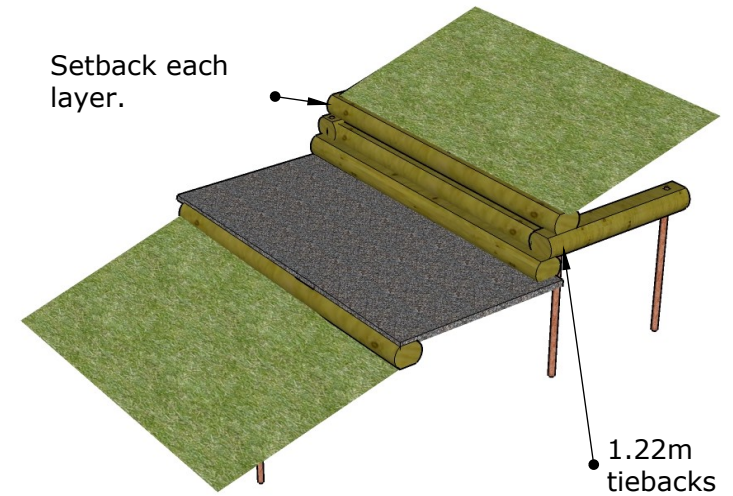


**Log Step Plan View**



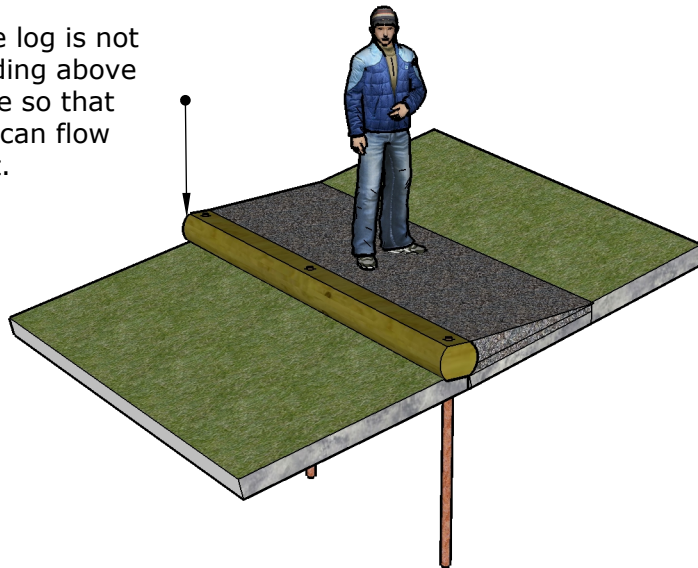


**Retaining on Side Slope**



**Retaining -Cutting Into Slope**

Ensure log is not extending above surface so that water can flow over it.



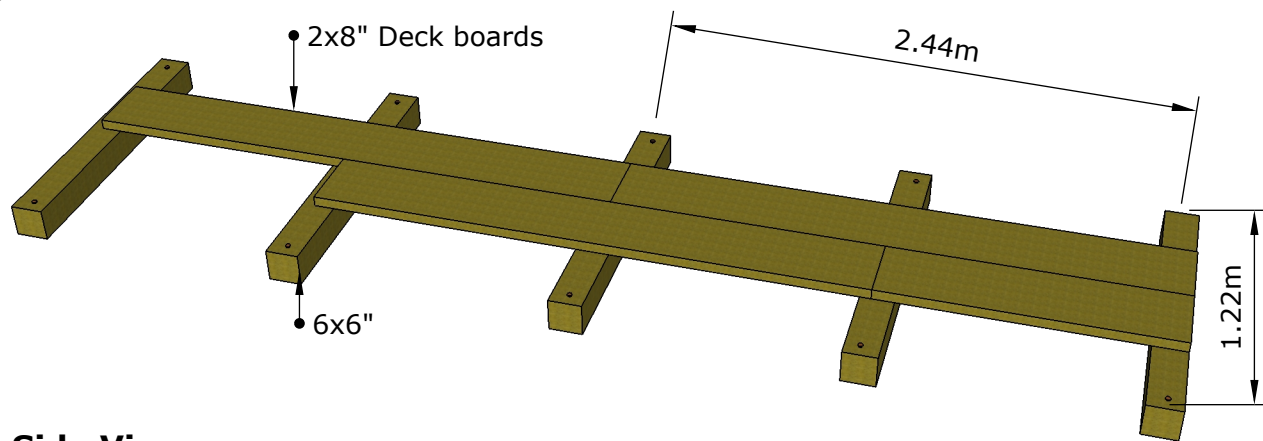
**Single Log Edge Retaining**

### **LOG EDGE RETAINING**

Notes:

- 1) All logs should be of similar size.
- 2) Logs should not trap water on surface.
- 3) Logs to be staked at each end with a mid stake for longer logs.
- 4) Use debarked logs with slabs cut on opposing sides. Larch is preferred. Avoid using fir.
- 5) Backfill each layer with rock.
- 6) Filter fabric may be needed to retain backfill material.

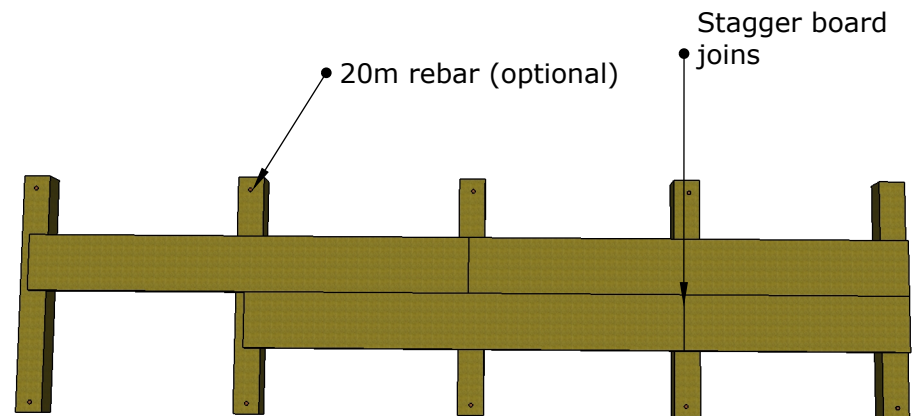




**Side View**

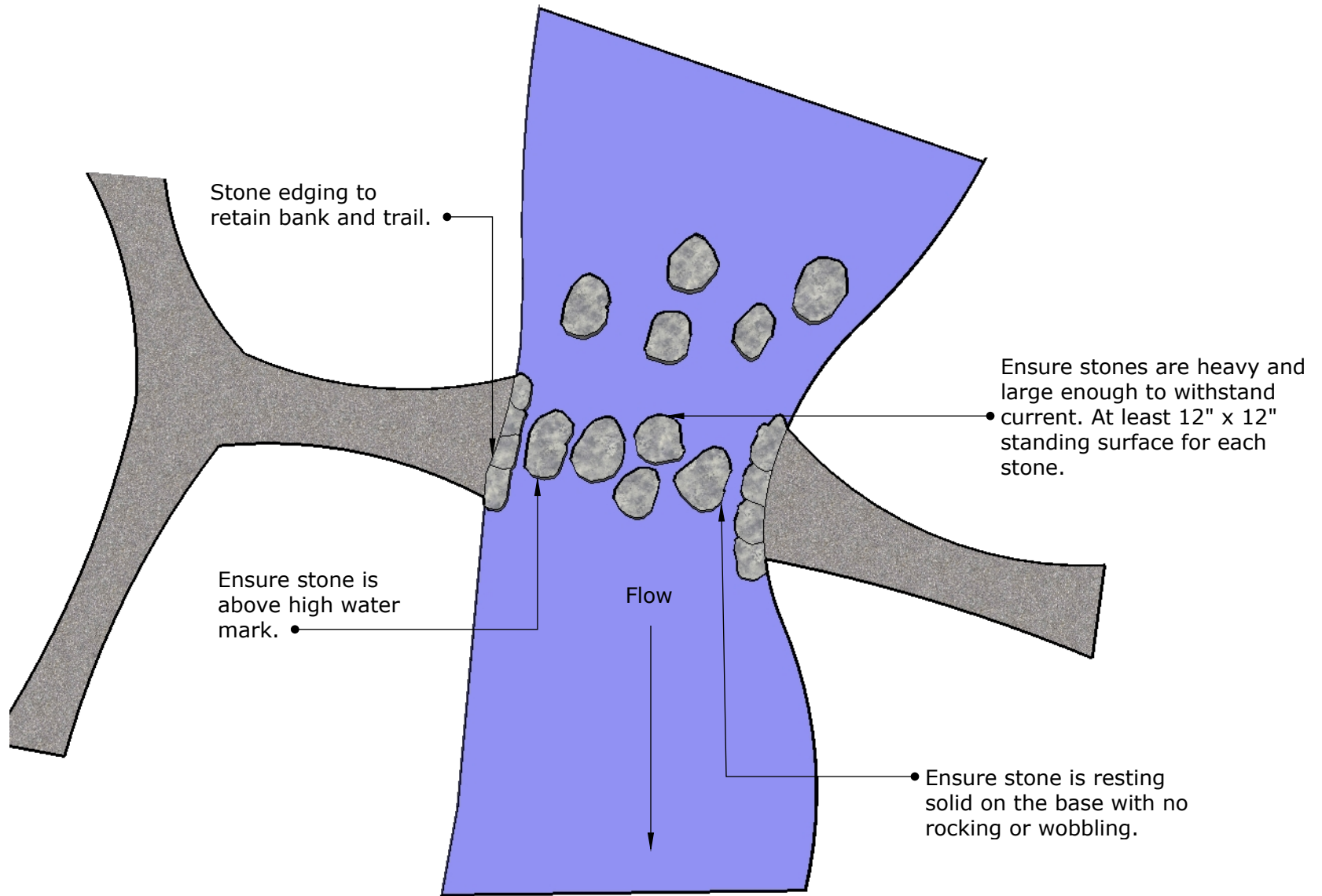
Notes:

- 1) Don't use pressure treated wood if in environmentally sensitive areas.
- 2) Fasten all boards using wood screws.
- 3) Filter fabric and aggregate could also be applied under the footings in very poorly drained sites.
- 4) Adjust dimensions based on desired boardwalk width.
- 5) Never build with a grade. If on a slope create steps from one section of boardwalk to the next.



**Plan View**

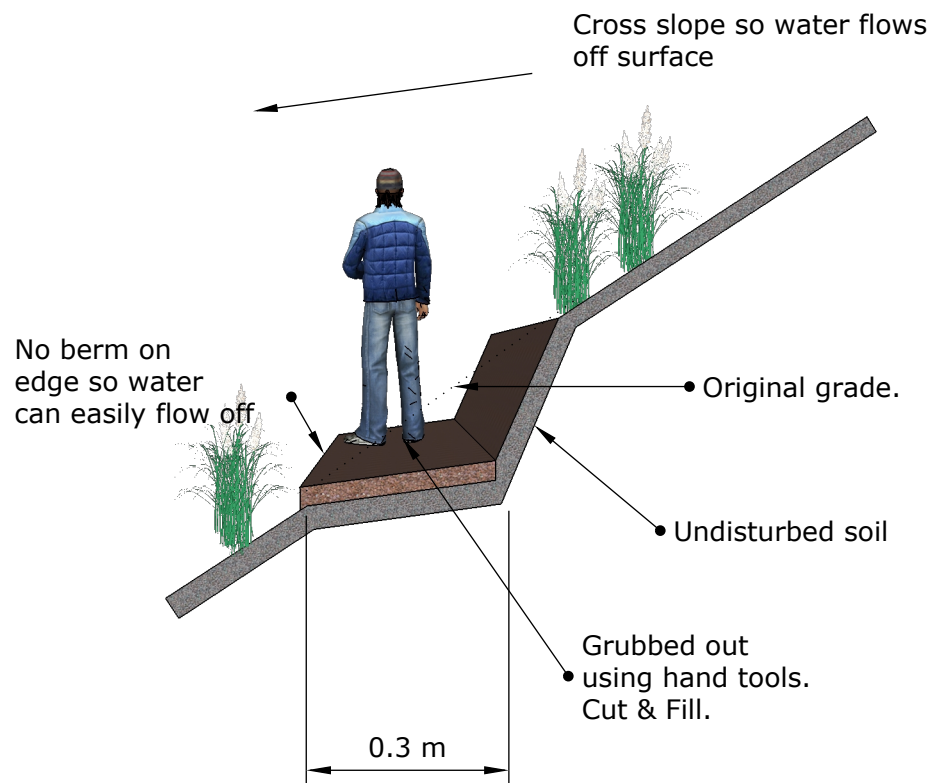
**SINGLE FILE BOARDWALK**



Notes:

- 1) Ensure each stone is placed at a "natural stride" distance apart.
- 2) Use only for short stream crossings that are shallow and have a slow flow.

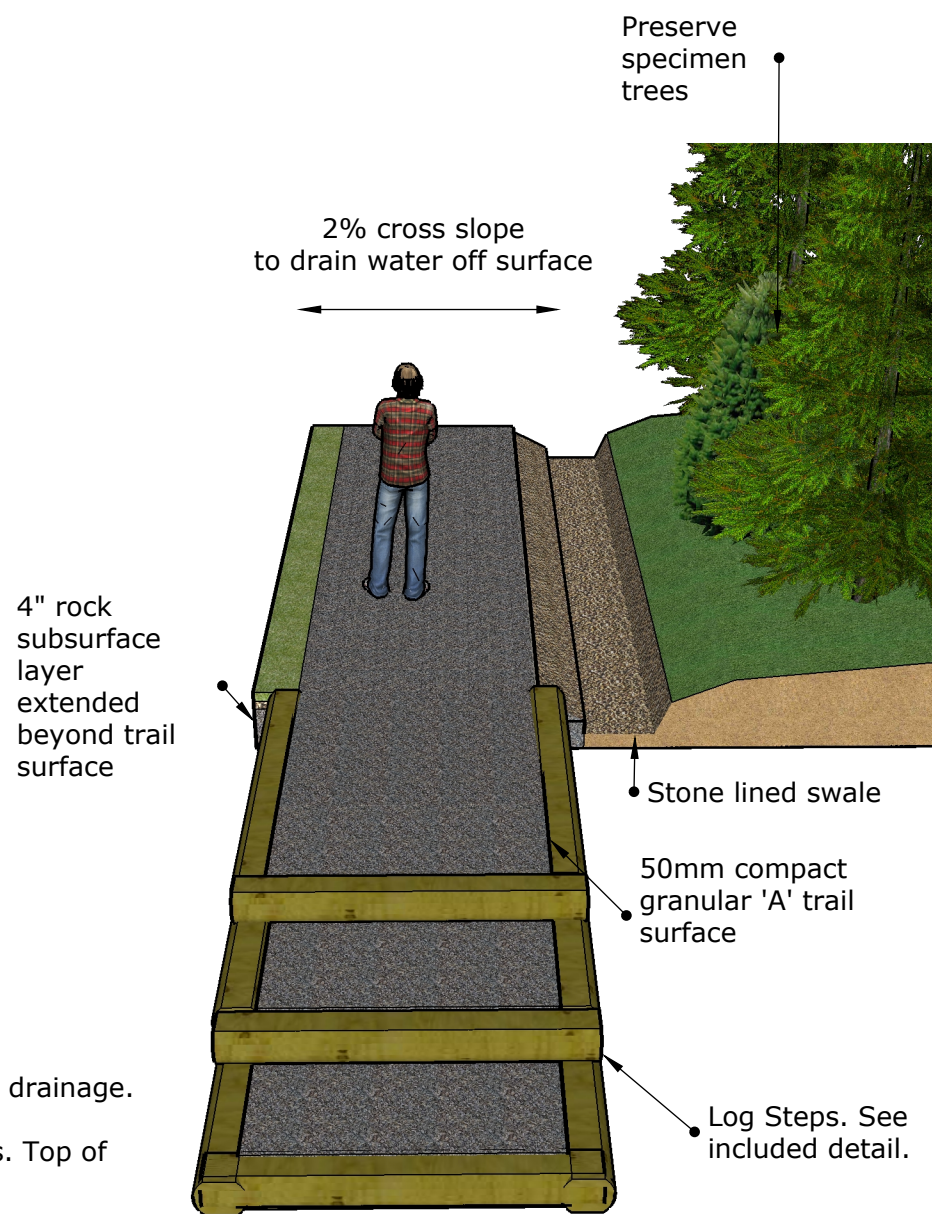
**STEPPING STONE CROSSING**



### **Natural Walking Surface Cutting into a Slope**

Notes:

- 1) Maintain positive drainage with a 1-2% cross slope.
- 2) In poor drainage areas, elevate the surface to encourage good drainage.
- 3) Where required to direct water, install a ditch lined with stones. Top of ditch to be twice as wide as the base.
- 4) Maintain a 2.5 m vertical clearance of vegetation regardless of the trail width. For 0.3m wide footpaths, maintain a 1m wide horizontal clearance of vegetation.



### **Raised Granular Walking Surface**