

Southwest Trail Assessment



Green Leaf Resources
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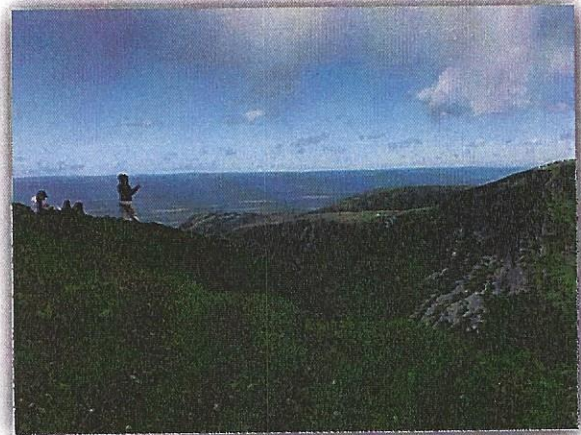
FINAL REPORT

Executive Summary

The Southwest Coast and the Codroy Valley is blessed with spectacular coastal views, inland plateaus and rugged valleys. From a hiking perspective, it doesn't get much better than this; but until now this region has been overlooked with most tourists passing right through- having no idea what their missing.

This report seeks to classify these trails and determine the necessary steps required to upgrade them to an acceptable standard. It also seeks to determine which trails have the most tourism appeal and which future developments should be pursued to expand the already unique hiking experience.

Although it may be tempting to develop trails as community walks, the goal of tourism oriented trail development is to identify the trails that have the most tourism appeal. It also includes assessing the region to determine if there are any potential new trails that should be pursued in favor of existing ones that lack that tourism hook.



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Southwest Coast – A Destination Hiking Experience?

A destination trail is a major tourism attraction that is an economic revenue generator. It is generally in a distinctive landscape and reflects a regions 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.

Although many of the trails assessed have that unique “wow” factor, they currently don’t meet the second criteria – high quality design, amenities or maintenance. That’s not to say that this cannot be achieved. The goal of this report is to help achieve that exact goal.

The table on the following page summarizes the destination trail potential of each trail. It also attempts to classify the difficulty level of each trail. The classification is based on the assumption that the necessary trail upgrades have been completed. Trails have been classified as one of the following:

Easy	Moderate	Hard
<ul style="list-style-type: none"> • Less than 10 km long • Majority of path is 0.5 to 1m wide • No long segments of slopes exceeding 10% • Stairs are provided for areas where slopes exceed 10% • Granular compacted surface • Some surface hazards but they can be avoided • No loose rock, exposed roots or other subtle trip hazards 	<ul style="list-style-type: none"> • About 10-15 km long • Path width varies from 0.3m to 1m • No surface slopes exceeding 15% • Stairs are provided for areas where slopes exceed 15% • Granular compacted surface with some natural surface areas • Some surface hazards such as protruding rocks or roots. 	<ul style="list-style-type: none"> • Over 15 km long but with steep grades and long climbs • Majority of path is less than 1m wide • Surface slopes exceed 15% • Very few stairs provided • Granular compacted surface only where needed • Surface hazards present requiring the hiker to watch their step • User needs to stay on the path and not veer off. Hazardous ledges or cliffs close to the walk edge.

Table 1: Destination trail potential and trail classification

Trail	Summary	Destination Trail Rating (out of 10)	Potential Destination Trail?	Class
Harbour le Cou to Rose Blanche	Great views of ocean and Town. Great heritage points of interest and appealing natural features	6	Yes	Easy
Searston Coastal Trail	Some appealing features and ocean views. Great little walk to extend visitor stay.	6	Yes	Easy
Cape Anguille	Heritage, coastal views, lookouts and valleys	7	Yes	Moderate
Starlite Trail	Incredible views, geology and landscape. Truly a unique trail.	9	Yes	Hard

As already noted upgrades are required to bring each trail to the Class level that is suggested in this table. The destination trail potential should also be considered when determining where to invest money. For example, the trail group should consider if upgrading all four trails is the best investment of funds or is their perhaps another undiscovered trail that has much greater tourism potential.

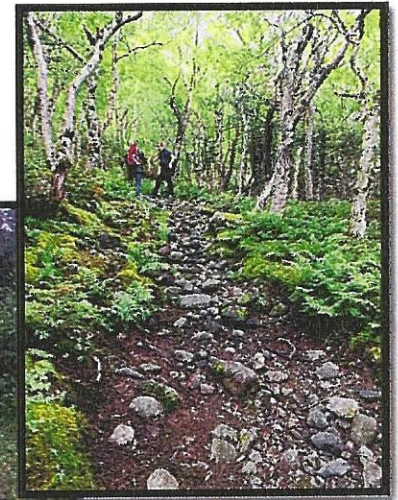
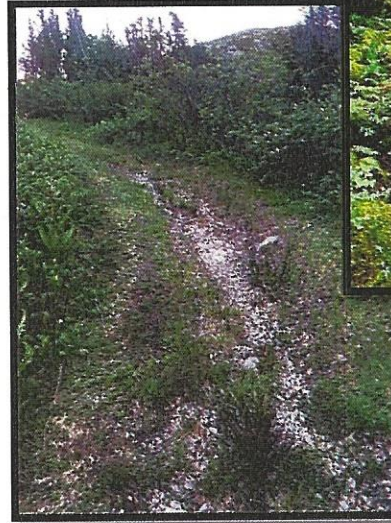
This creates a problem for planners in balancing the need to maintain infrastructure they already have while maximizing the tourism potential that the region offers. Ideally you should seek to do both – upgrade current trails that have tourism appeal while developing new ones that have the best potential.

This report will outline upgrades for every trail regardless of their tourism potential or class rating. The trail group can then determine where it's best to focus their attention. That being said, we feel that there is incredible tourism potential in trails throughout the region that have yet to be explored and discovered.

Challenges/Opportunities to Trail Development and Promotion

Before we make any recommendations for each trail it is important to outline some of the challenges faced with trail development on the Island. This is not an inclusive list but it will help with future planning.

- 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.



Current routes go straight up and down a slope which is exactly the same route water likes to travel.

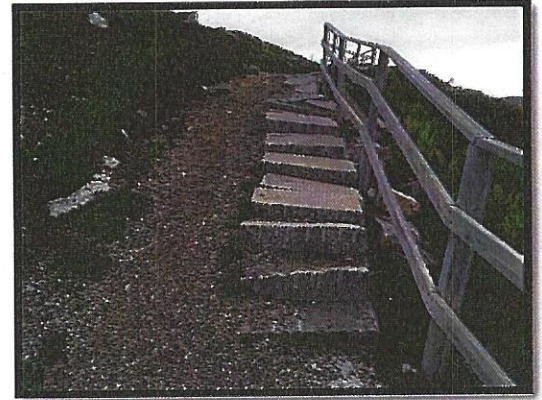
- 2) Trail Layout: Trail design needs to consider the best way to align the trail with the landscape. For example it's much better to follow the contours of a slope to ascend it rather than simply climb straight up a hill.
 - a. Unfortunately many of the established routes have sections where the trail 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. Unfortunately any abandoned sections will take a long time to rehabilitate.
- 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 for all existing trails. This report however goes well beyond established trail routes into uncharted territory. This may require new LTO applications. This should be looked at soon since these applications tend to take significant time.

- 5) Marketing and Promotion: Trail signage, maps and promotional materials are clearly lacking for this area and are a key piece of any trail plan. 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

Stairs, Boardwalks and Lookouts

- a. 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.
- b. 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.
- c. Some new segments of trail will require a boardwalk. Consider the more rugged design outlined in this report.
- d. Avoid the construction of wooden lookouts as they require maintenance and eventual replacement. Leave lookout areas natural.



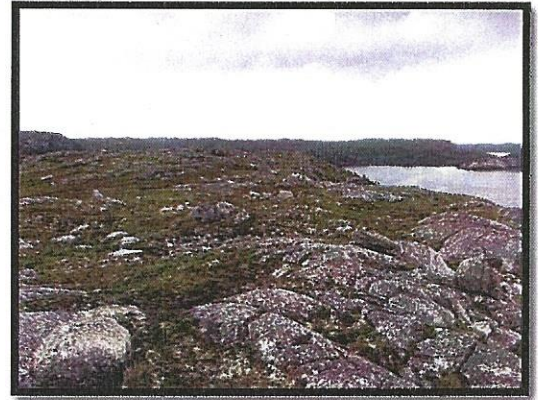
Existing staircases require repairs.

Bridges

- a. Where possible consider the installation of large culverts instead of bridges.
- d. 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

- a. 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.
- b. 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 could be constructed over hazardous sections of bedrock.
- c. Ensure that the trail route is well defined along these stretches of bedrock. Use trail markers to keep users from wandering off the path.
- d. In some cases the walk surface should be elevated above the bedrock with aggregate and edge retaining.
- e. In areas where water runoff flows across bedrock, drainage channels should be constructed to re-direct the water. Wet bedrock is slippery and algae develops on it to make it even more slippery.



Bedrock trail surface should suffice in some areas. The rocks lining the edge interfere with drainage. Use signage to define the route.

Railings

- a. 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.
- b. 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.
- c. 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

- a. 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).



- b. 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.
- c. 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.
- d. 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.
- e. On a natural surface, remove trip hazards to a reasonable degree.

Trail Clearing and Grubbing

- a. 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.
- b. Follow proper pruning techniques when limbing branches and ensure that brush is completely removed from the walk right-of-way.
- c. 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

- a. Depending on the trail, varying surfaces are suggested. When the natural walk surface is pleasant, dry,



Water gets trapped on these surfaces. Raise the surface above the surrounding landscape.



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.

- b. 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.
- c. When using aggregate choose stone that matches the surrounding landscape. Avoid using stone that is clearly different from the natural stone on site.
- d. 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.
- e. When improving a walk surface, grub out all organic material first so that you start with a stable foundation.
- f. 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.

- a. The trail surface should be elevated above the surrounding surface. If not, water will be trapped on the trail.
- b. The natural trail surface will deteriorate over time especially if the route is frequently used. In these cases a granular surface may be needed.
- c. Water should flow off the trail so have a 2% cross slope.
- d. 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.
- e. Culverts are required on all the trails. Refer to the detail in this report for proper installation.

ATV's and Traditional Hunting

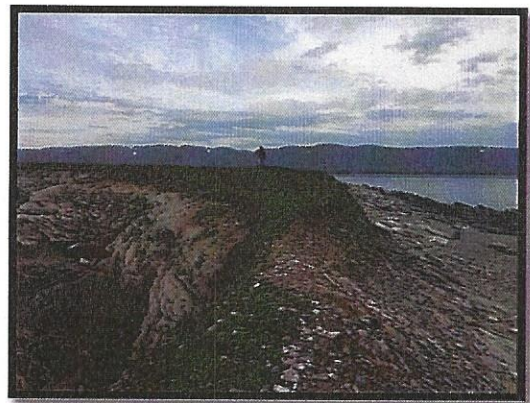
- a. ATV use can permanently scar a landscape and effort should be made to ensure ATV do not access a tourism oriented trail.
- b. For existing trail segments that are shared with ATV's, the trail construction requirements should be altered (trail width, surface, sight lines). Signage would also warn both user types of any safety concerns.
- c. 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.



ATV's can scar sensitive landscapes for long periods of time.

Hazardous Coastline

- a. 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.
- b. Warning signage should be installed in areas where the coastline 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.
- c. 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.
- d. Almost every year there are avoidable accidents along coastal trails. While this report was being written, a hiker fell over 100ft off a popular hiking trail in St. John's. Inform users of the risks and ensure that they stick to designated paths only.
- e. 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 changes regularly, you should inspect areas near the edge regularly.



In some case the trail is too close to the eroding coastline and can become easily undermined.

Trail Amenities

- a. 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.
- b. As current amenities get damaged or deteriorate, replace them with a new amenity of the approved style.
- c. 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

- a. 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.
- b. When trail retaining, steps or other structures are required, favor local stone over wooden structures.
- c. 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:

- a. The trail map provided.
- b. The information provided under the heading for each trail in this report.
- c. The information under this section entitled "Common Deficiencies and Upgrades Required on Most Trails".

Cost Estimates

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

- a. These are order of magnitude cost estimates of +/-20% and do not include h.s.t.
- b. Estimates do not include any expenses incurred for planning and administration of projects – it's simply an estimate for actual trail upgrades only.
- c. 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.



- d. 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.
- e. 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.
- f. 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.
- g. Trail managers will determine what equipment will be required to construct or upgrade each trail. Equipment costs are just a general estimate.
- h. Costs are based on the assumption that extensive effort is made to ensure the best route is developed. This reduces construction material costs significantly. In fact, the average price per kilometer is between \$8,000 and \$10,000.

Construction Materials and Equipment

- a. 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.
- b. 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.
- c. 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.
- d. 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.

Even though we have provided upgrading recommendations and prices for every trail we inspected, we aren't suggesting that every trail be upgraded at the same time. This report will suggest an initial pilot project to undertake. Once completed it will be up to the Trail Group to determine what other trails they want to upgrade or if they should pursue new trail construction opportunities.



Starlite Trail



This is an exhilarating 17km route that really defines what a destination trail is all about. Incredible views, remarkable landscape and challenging terrain this trail would rival any other in the Province. It is quite possibly the most exciting inland hike we have ever experienced on the island.

Classification: Hard

Development Priority: This is a high priority for development as a destination trail. Further extension of the 17km is feasible and needs to be explored further.

Notations and Upgrades

- 1) Just an initial thought on the current trail name. We would suggest a change of the name to better reflect the terrain and the hiking experience that it offers. Something more catchy and edgy should be proposed.
- 2) The included map is a general suggestion of the over-all trail route. It was virtually impossible to assess the entire landscape during one visit as there was such an expanse of space to explore. When constructing the trail, the route we provided outlines the general corridor but the builder should use discretion so that the best possible route is constructed. The trail should take the visitor to the two gorges noted on the map. The final route should be dry and stable requiring the minimal amount of built structures.
- 3) Any trail over 10km in length will require an Environmental Assessment Registration. This registration would be submitted to the Environmental Assessment Division and they will determine if a full blown Environmental Assessment is required. Typically an Environmental Assessment Registration is sufficient and there is no need for a full blown assessment.

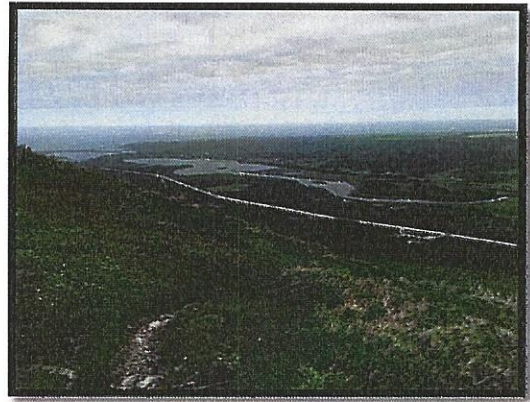
4) The first two kilometers of this route follow an existing path to the first major lookout with a panoramic view. It would be nice to have a well-constructed path to this area so that all trail users can access this fantastic location. From the 2nd kilometer onward the trail can be more rustic in nature for the long distance hiker.

5) Replace all boardwalks along the first kilometer with a raised granular trail surface. Install a few culverts where needed.

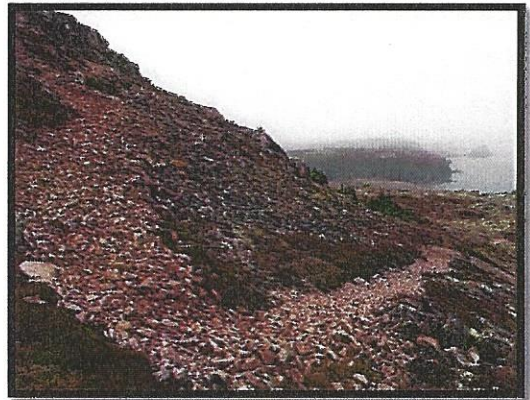
6) The current route along the first kilometer has

become the main channel for water run-off so significant upgrades and re-routes of some segments will be needed.

- 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 sections 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.
- 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.
- When improving a walk surface, grub out all organic material first so that you start with a stable foundation. In some sections you may be able to use a mini-excavator for this which will certainly speed up the construction process. In other cases, grubbing with hand tools will be necessary.
- The key to restoring this first kilometer of trail is to control the flow of water through the construction of ditching, the installation of culverts and trail surface upgrades. The



A steep section of trail requiring switchbacks (see point 7).



Example of a switchback where the trail direction changes while ascending a slope. This helps ensure a stable trail with good drainage.

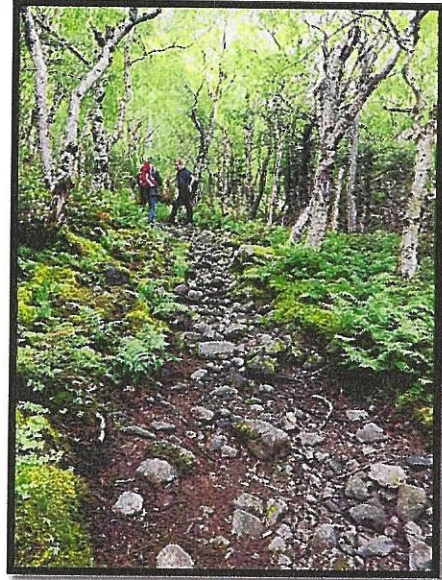
goal is to determine where the water is coming from and how we can re-direct it away from or under the walk surface.

7) Some steep sections of the trail (within the first two kilometers) have grades exceeding 15%. In these areas, consider the installation of a switchback or perhaps even a series of switchbacks. The current route follows the “fall line” which is a straight line down a slope (the same route water would take). Instead, cut along the side of the slope gradually ascending it and making sharp (almost 180 degree) turns until you reach the top. This requires more construction effort, but the trail will last significantly longer.

8) Switchbacks are especially needed between the 1.5 and 2 km mark. Plan this ascent carefully and ensure you adequately address water issues along this steep slope. The installation of a series of log steps may be needed in this area. Follow the design included in this report.

9) From the 2km point onward we are dealing with new trail construction. The included map has outlined the general route right-of-way but the final route for the walk surface should be flagged in the field. When selecting the final route for the walk surface keep these points in mind:

- 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.
- We want to pick the driest route possible and the layout of the route should be designed in such a way that water isn't directed or trapped on the trail surface
- 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. Flag the entire route and ensure any changes in direction are identified in the field. We only want to disturb the 0.3m trail surface and leave the surrounding landscape untouched.
- Although we want visitors to enjoy the amazing views along the cliff ledges, ensure that the trail doesn't go too close to the cliff edge and it is clearly identifiable. The cliff ledges may be unstable and undermined so ensure that the trail is located a safe

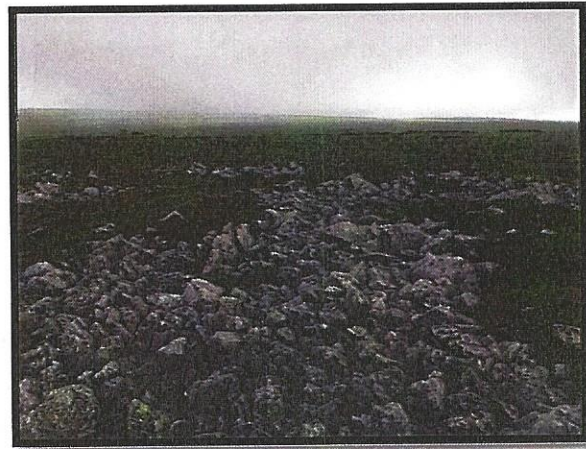


This segment follows the fall line of the slope which is the same route water follows. Reconstruction or even re-routing is needed.

distance from all cliff ledges. Warning signage that explains the risk and encourages users to stay on the clearly defined path is required.

- 10) We are recommending a rugged 0.3m single file footpath with only minimal infrastructure. In areas where drainage is fair, the natural walking surface will suffice. That being said, some sections should be grubbed and graded so that water will flow off the surface. Grubbing tools, shovels and some hard labour will be needed to create a stable but natural walking surface.

- 11) In other instances (such as between the 3.5 and 5.5 km mark) we want to leave the natural surface untouched. All that's required are some trail markers to clearly help the hiker follow the right path. In fact several kilometers of trail merely require the trail markers, especially in the highland and plateau areas. Only minor clearing of ground vegetation may be needed along some of these segments.



- 12) In harmony with the previous point, it is easy to get disoriented in the plateau areas since the landscape is so vast. The presence of heavy fog and extreme cliff

Use stone found near the area to improve the surface. Also note how fog can easily cause one to lose sight of the trail direction and where the cliff ledges are.

drops and ledges pose a threat that many visitors may be unfamiliar with; therefore it's very important that every section of the trail route be clearly visible and identifiable. Adequate and specific warning signage is also required.

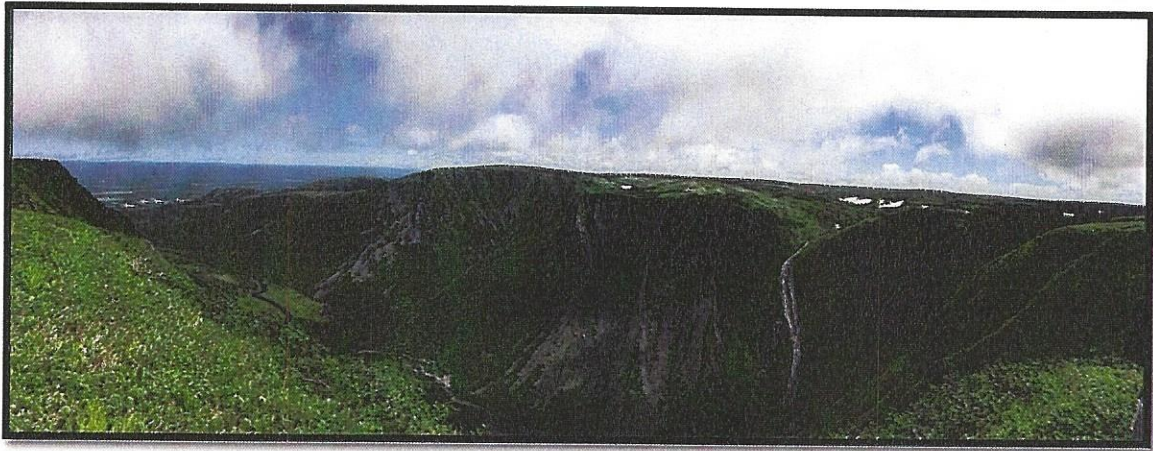
- 13) In areas where the drainage is very poor we would suggest using a single file boardwalk (see included details) or the installation of stepping stones using rock that



First major gorge. The trail follows the plateau seen in the top left. Little trail work is needed along that stretch of trail. Simply follow the marked path.

can be found on site. Ensure the stones are stable and flat. If both of these options are insufficient, we will need to “fly in” (using a helicopter) some aggregate.

- 14) Between the 5.5 and 6 km mark the trail will take the hiker to the first of two main gorges. It would be nice to take the user down into the mouth of the gorge but this will require the installation of several segments of steps and a few footbridges. This is a valley area, so the ensure you have adequate drainage structures installed to create a durable trail.

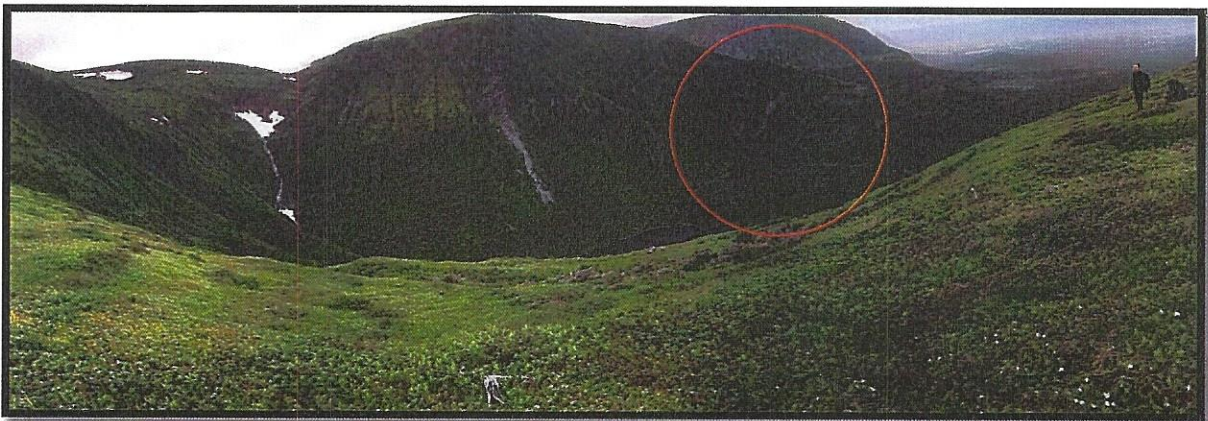


Second gorge located at the 9km mark.

- 15) Once you leave the first gorge and end up on the plateau area, very little trail surface construction is needed right up to the 9km mark. Apply the points #11 and #12 to this section of trail. Where drainage is poor, install some single file boardwalks along this stretch.
- 16) The second major gorge is located at the 9km mark. The trail then heads westward along the high ground. There are large segments of wetland/boggy areas along this plateau so stay on higher ground from the 9 – 11 km mark. As with other segments, only have basic surface structures where needed and ensure the route is well marked (see points 11 and 12).
- 17) The first of two major stream crossings is located just past the 11.5 km mark. During spring runoff and following heavy rain events we suspect that the water flow here may get quite extreme. A further analysis of this area should be completed to determine adequate bridge design and the best possible crossing location. Seek the assistance of a structural engineer to determine final bridge design. The sample design we have included in this report is just a general design that shouldn't be constructed without engineer review. That being said, during our trail assessment, the stream was easily crossed by foot but we suspect that won't be possible at all times. A 10-12ft bridge (from abutment to abutment) may be sufficient.



- 18) Very little trail work is required from the first bridge up to the 13.5 km mark (apply points 11 and 12). Depending on the final location of the first bridge, some steps and switchbacks may be needed to get to the crest of the next plateau at the 12 km mark.
- 19) Just past the 13km mark, the trail will veer down the edge of the plateau and head towards the pond. The vegetation here is thick and almost impossible to pass through. It also made it very difficult to assess the surface conditions. That being said, we feel it is feasible to follow a route similar to the one outlined in the map. Use the stone in the area to help with the installation of stone steps. Switchbacks will also need to be installed as you descend the steep slope.
- 20) Close to the 14.5 km mark is our second major stream crossing. It will be slightly longer than the first one at about 4m from abutment to abutment (refer to point 17).
- 21) Around the 14.5 km mark the trail connects to an existing path. Drainage is poor along several sections requiring re-grading of the surface and the installation of some drainage features (e.g., ditches) and single file boardwalks.
- 22) The route reconnects to the existing trail at around the 16km mark.



The trail follows the ridge shown in the background. The circled area outlines the challenging descent towards the ponds.



Cost to Upgrade/Construct Starlite Trail

Item	Quantity	Cost	Note
102mm (4") rock	About 2 loads	800	Used only in poorly drained areas or sections that need a significant rise in the walk elevation. Use only within the first 1km of trail.
Class A aggregate	About 5 Loads	2,000	Used to elevate the walk and improve drainage. Tamp this surface layer. Use where needed.
Drainage Culverts	10 total (150 mm x 1.5m size)	2,000	Use where needed to keep water off the walk surface.
Lumber & Misc Materials	2x6x8, 2x6x12, 6x6x8, 2x6x10, 4x4x8, 2x4x8, 2x8x10	15,000	For footbridges and boardwalk only where needed. Also for 2 major bridge crossings.
20M Rebar	1,200ft	1,500	For bracing footbridges, decking
203mm (6-8") diameter larch logs (2.5m or 8' long)	About 110 logs	2,750	For log steps only where needed
Trail Markers	200	2,500	Needs to be well designed
Signage	1 Trailheads, 2-4 interpretive panels and 8 direction/warning signs.	6,000	Seek professional oversight.
Tamper/ATV, Drill, Other Equipment	30 weeks	7,000	
Labour	30 weeks	120,000	
Project Management and Oversight	30 weeks	7,000	
Helicopter Rental	Two Trips at \$2,000/hr	10,000	
TOTAL		\$ 176,550.00	(h.s.t. extra)

Notes:

- 1) Refer to cost estimate notes on page 11.
- 2) See included details for built structures.

Developing a Signage/Guidance System

A clear and well-designed signage system is a critical and often under-valued aspect of any trail network. Since many of the trails in the region were constructed independently, signage along these trails are inconsistent and lack the information and direction visiting tourists are looking for. 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 (bikers, 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:** Signage needs to guide visitors to the trailhead and to trail information. Road signage strategically located along the main roads should be installed. Right when visitors get off the Ferry , road signage should guide them to the region.

Guidance along a trail is also needed. Trail markers should be installed along the route to direct users to trail links off the main route. They should also be installed to reassure users that they are on the right path. Users will rely on these trail markers so ensure they are of the same style and design for every trail. They should also be detailed explaining how far they have travelled and how much further they have to go.

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:

- a) Don't do it independently. Seek professional assistance especially when it comes to the design of the signs.
- b) 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.
- c) Manufacture quality signs. Many groups produce signs that deteriorate quickly over time. Consult with professionals to ensure you manufacture signs that will last.
- d) 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.
- e) There is an advantage to developing tourism oriented signage for all tourism assets (e.g., museums, beaches) not just for trails.
- f) Take ownership of all trail promotional items and ensure that the branding is consistent.

General Recommendations

- 1) We would suggest that you focus on the trails with the most tourism potential first. Starlight Trail and Cape Anguille can create a powerful draw to the region and should be developed immediately. That's not to say the others shouldn't be developed as they all have merit.
- 2) Form a trail group consisting of interested community partners. Plan the project as a regional group and avoid independent trail upgrading projects. Explore all partnership opportunities with the group taking the oversight and lead with the initiative.
- 3) Complete the necessary upgrades suggested:
 - a. In an ideal world only one well trained trail construction crew would be hired.
 - b. Right at the start host a trail construction workshop for the hired crew. Orientation and on the job training with a professional trail planner and regular supervision is suggested.
 - c. A consistent and quality trail crew is needed for this to be successful. A four person trail crew should include a skilled carpenter, a machine operator (if using heavy equipment) and labourers with experience in construction and stone work.
 - d. Follow the suggestions and guidelines in this report when upgrading these trails. The general detail sheets provided are merely guides and not engineered stamped drawings.
- 4) Develop a trail branding, sign design and interpretive plan. This is a major upfront cost but once developed it can be applied to all trail development from this point forward. Once this brand is established, design and manufacture the required on and off-site signage for upgraded trails.
- 5) Establish a maintenance plan early in the process. Have staff dedicated to trail inspection, monitoring and maintenance.
- 6) Once the top two trails are constructed, focus on expanding the trail network.



Next Steps

- 1) Before any trail upgrading takes place ensure 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) Form a trail group or at least consult with all interested parties who are interested in the establishment of trails. Seek partnerships with the community to aid in trail upgrading, maintenance and promotion.
- 3) Explore future trail development opportunities. This will help you determine where to focus your attention next. Perhaps there are undiscovered future trails that are a more worthwhile investment. Seek professional assistance with this step to ensure future routes are well laid out and planned.
- 4) 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.
- 5) 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 10km in length.
 - c. Federal Department of Fisheries and Oceans: Any workings that may affect fish habitat 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.
- 6) Develop a maintenance plan for all trails that you intend to promote.

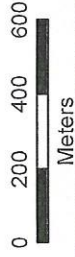
- 7) Have trail upgrading plans reviewed by a local engineer if one is available and willing to offer an in kind service. Suggestions in this report are merely guides and they should not be implemented without professional direction and review.
- 8) Prepare a trail signage brand that will be applied to all on and off-site signage. Also work on other promotional items and a strategy to market the trails.
- 9) Secure a construction team and upgrade the trails based on their priority. Seek professional oversight for crew orientation and periodic checkups.
- 10) 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.



Starlight Trail



● Key Lookout Areas



Replace boardwalk with a raised granular surface. Install a few culverts.

Reconstruct surface to improve drainage and re-direct the water. Install culverts and ditching where needed.

Steep climb exceeding 15%. Reconstruct route. Install switchbacks and log steps where needed.

Construct a 0.3m wide natural surface. Allow for adequate drainage.

Poor drainage in this area. Install single file boardwalks or stepping stones.

Existing route. Reconstruct surface to improve drainage and re-direct the water. Install culverts and ditching where needed.

3m stream crossing. Install footbridge with 6x6 abutments filled with local rock found nearby.

Steep descent exceeding 15%. Install switchbacks and log or stone steps where needed.

Minimal trail construction here. Ensure trail is clearly marked and located a safe distance from cliff ledges. Only minor removal of ground vegetation and the installation on trail markers is required for several long stretches of trail.

Depending on bridge location, some switchbacks and steps may be needed to get to the crest of the next plateau.

Minimal trail construction here. Ensure trail is clearly marked and located a safe distance from cliff ledges. Only minor removal of ground vegetation and the installation on trail markers is required for several long stretches of trail. Some boardwalk may be needed in poorly drained areas.

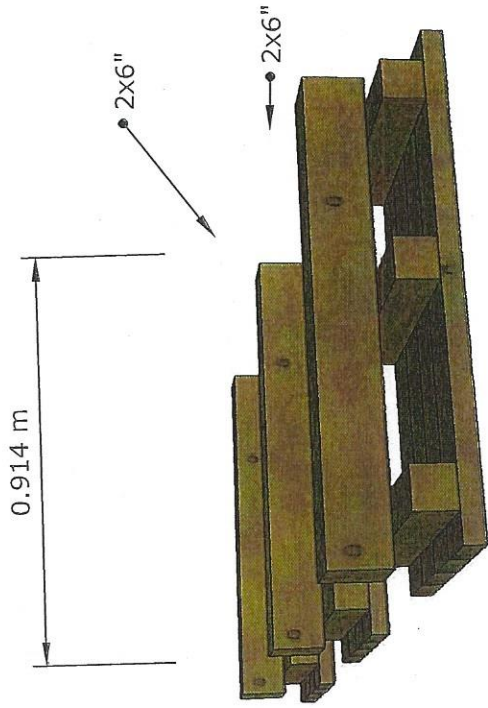
Minimal trail construction here. Ensure trail is clearly marked and located a safe distance from cliff ledges. Only minor removal of ground vegetation and the installation on trail markers is required for several long stretches of trail.

Install a series of log steps and several footbridges at this location. Grab and shape a stable natural trail surface that allows water to easily flow off it.

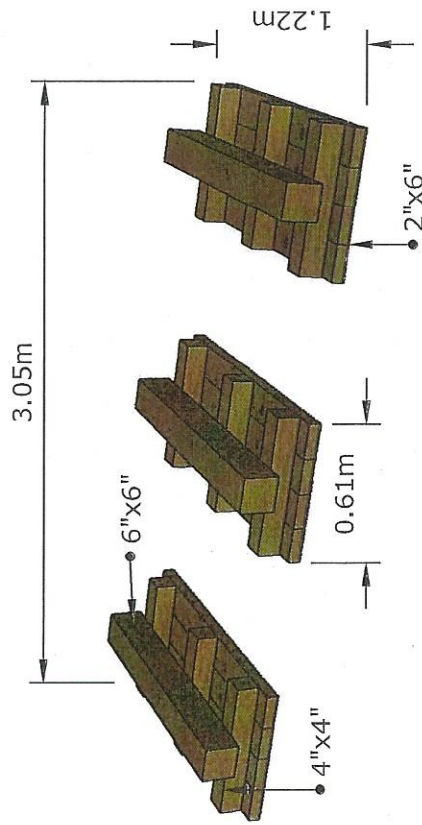
Avoid wet areas and try to stick to the higher ground. Only minor removal of ground vegetation and the installation on trail markers is required for several long stretches of trail. Some boardwalk may be needed in poorly drained areas.

2m stream crossing. Install footbridge with 6x6 abutments filled with local rock found nearby.





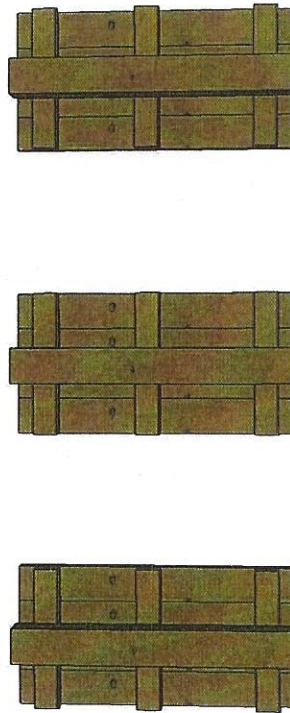
Boardwalk Stringers and Decking



Boardwalk Footings

Notes:

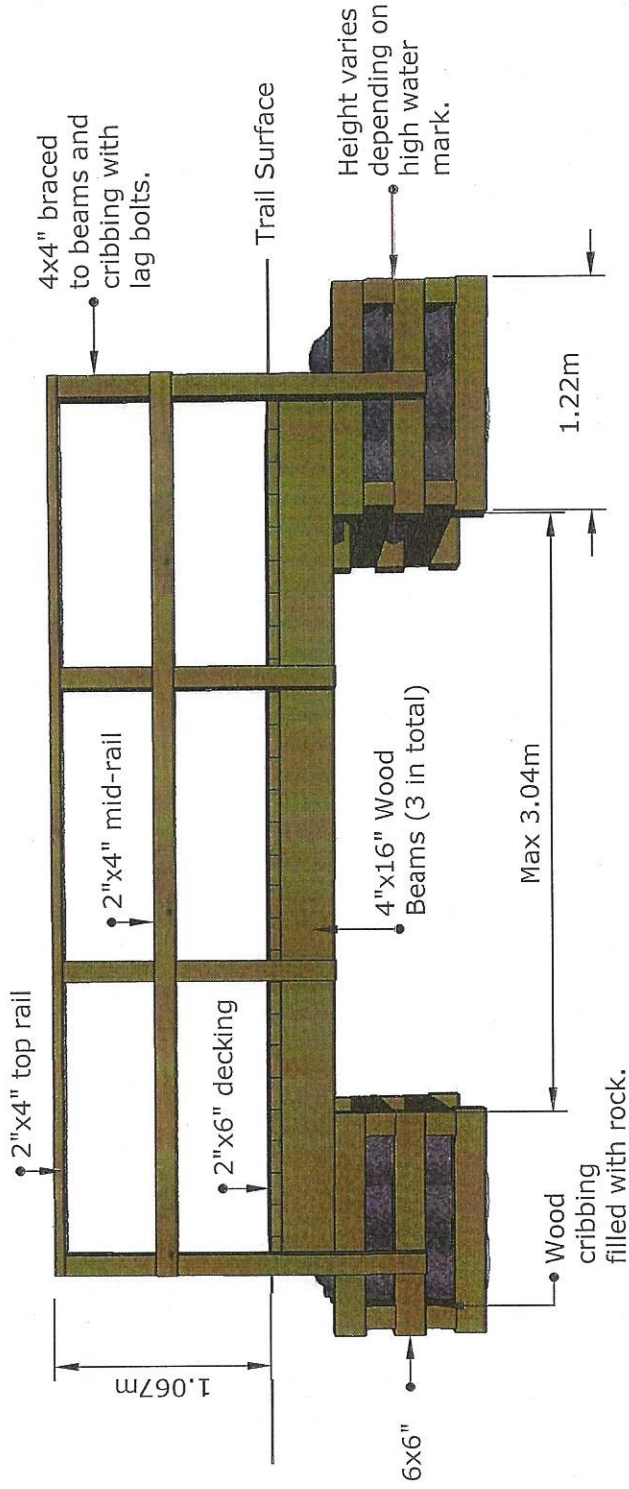
- 1) Don't use pressure treated wood if in environmentally sensitive areas.
- 2) Fasten all boards using wood screws.
- 3) Filter fabric and aggregate could also be applied under the footings in very poorly drained sites.
- 4) Adjust dimensions based on desired boardwalk width.



Plan View

FLOATING BOARDWALK

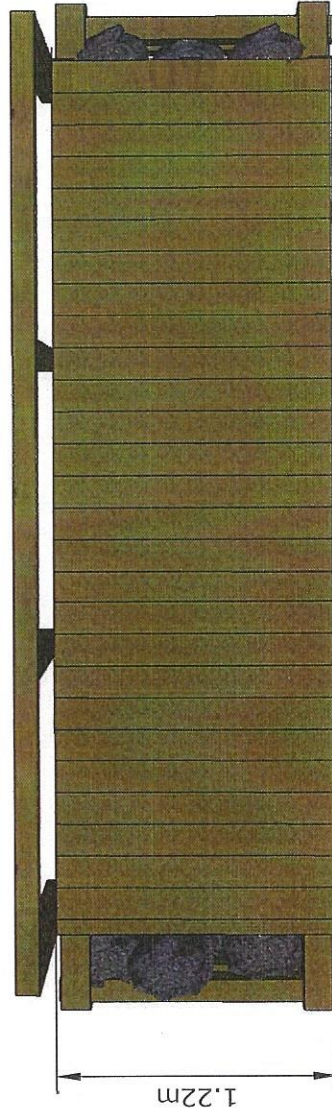
BRIDGE



Notes:

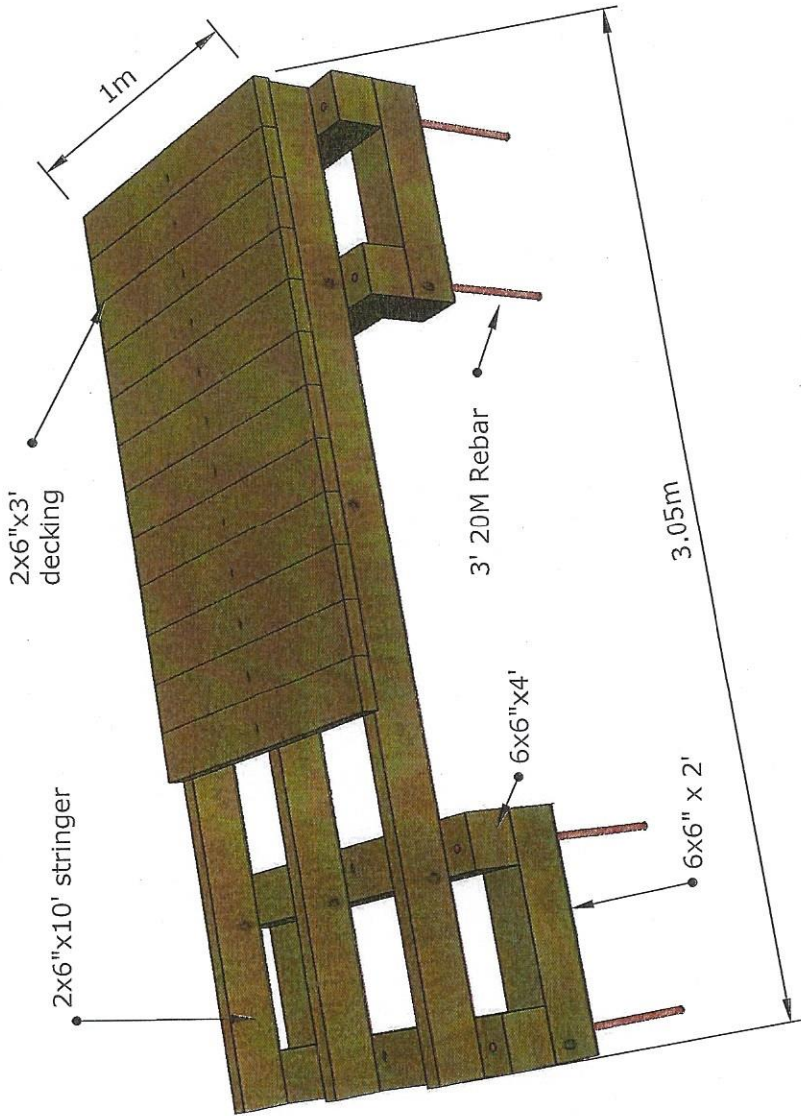
- 1) Don't use pressure treated wood if in environmentally sensitive areas.
- 2) Use heavy duty lag bolts and hardware sufficient for the size of the structure.
- 3) Consult with an engineer to confirm the design. This is just a guide.
- 4) Confirm bridge dimensions at each site.
- 5) Ensure abutments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

Bridge Side View



Bridge Plan View

Footbridge for a 1m Stream Crossing



Notes:

Secure all boards using wood screws.

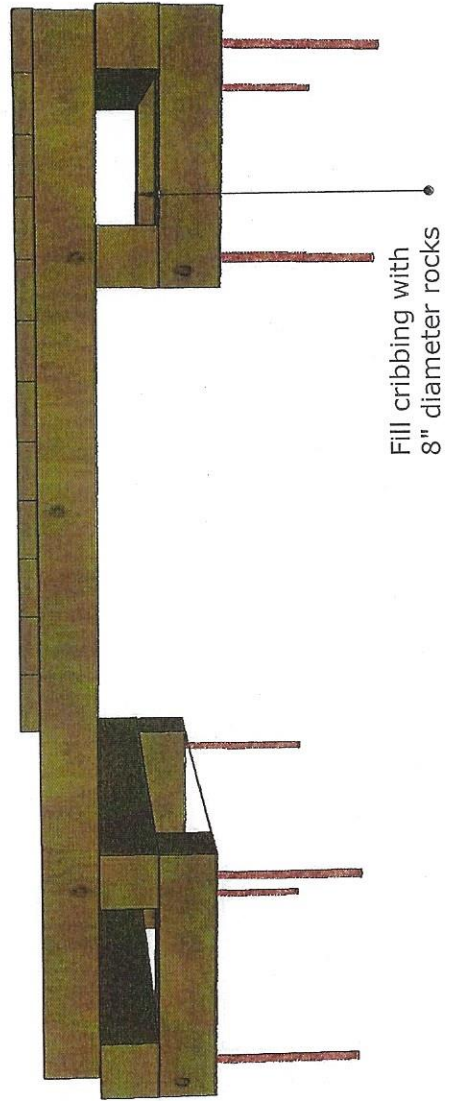
Cribbing to be braced with rebar on all four corners.

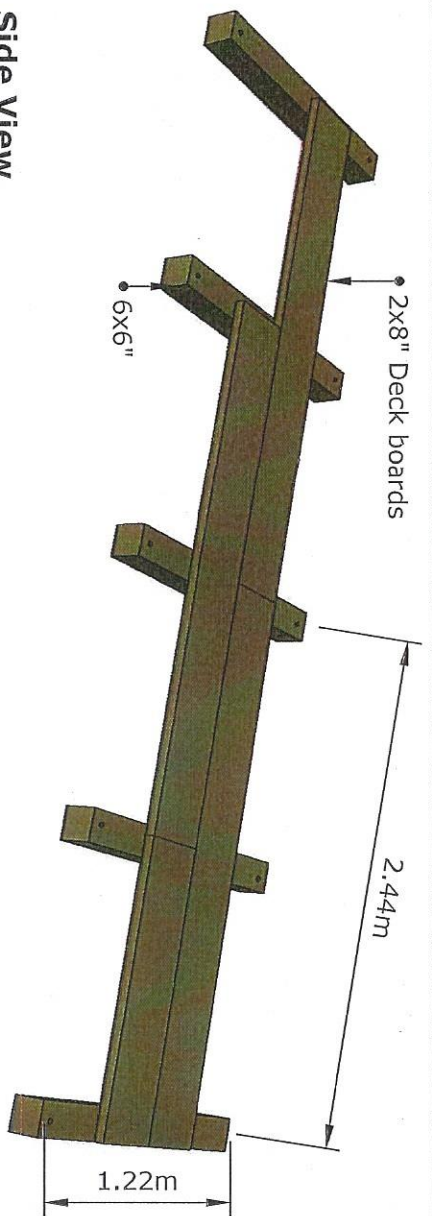
Fill cribbing and surroundings with large 8" diameter rock (average).

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.

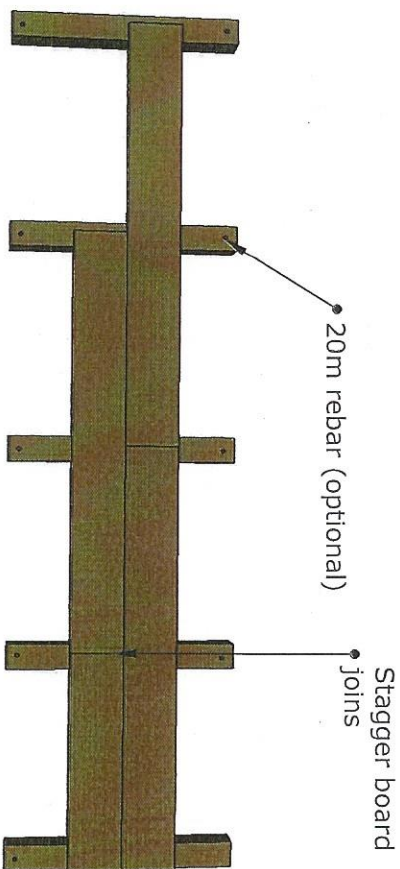




Side View

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.



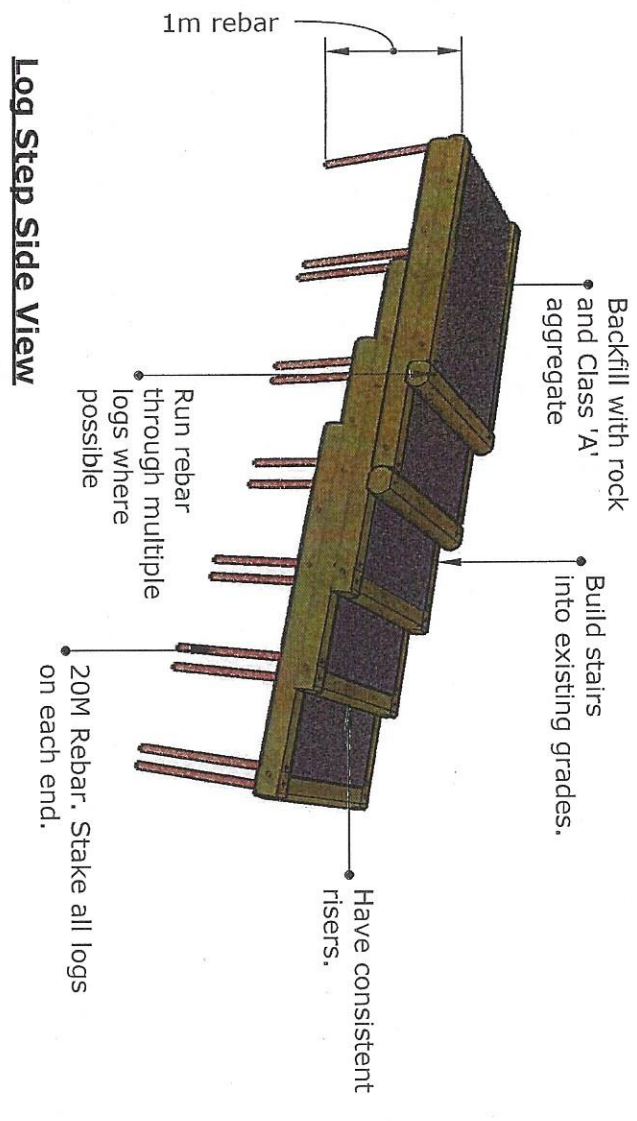
Plan View

SINGLE FILE BOARDWALK

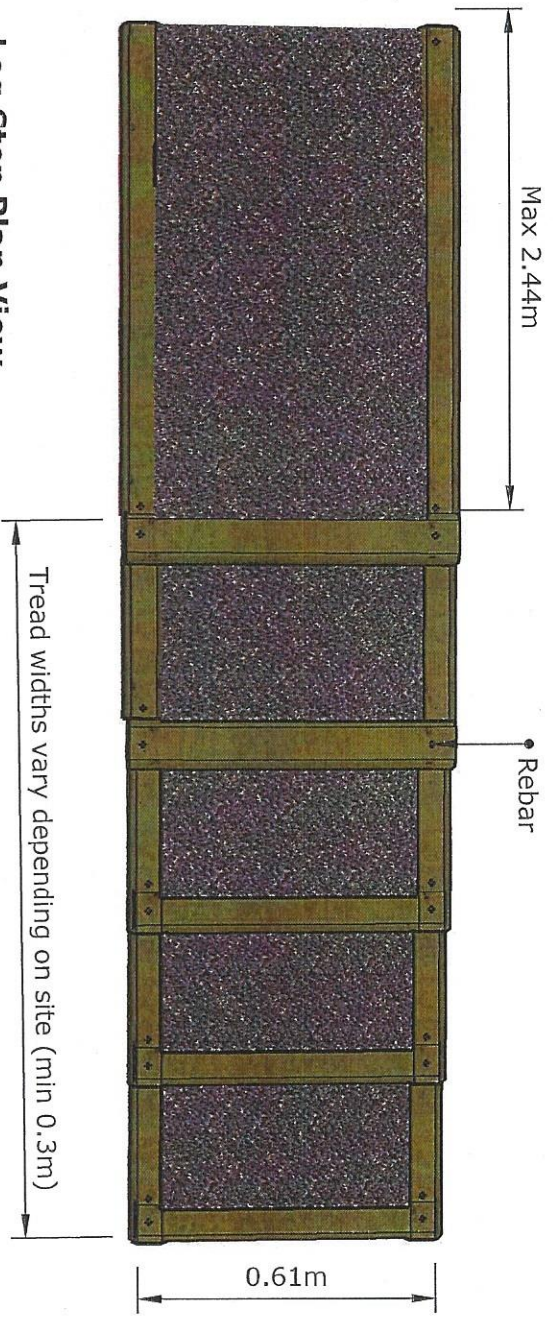
LOG STEPS FILLED WITH GRANULAR

Notes:

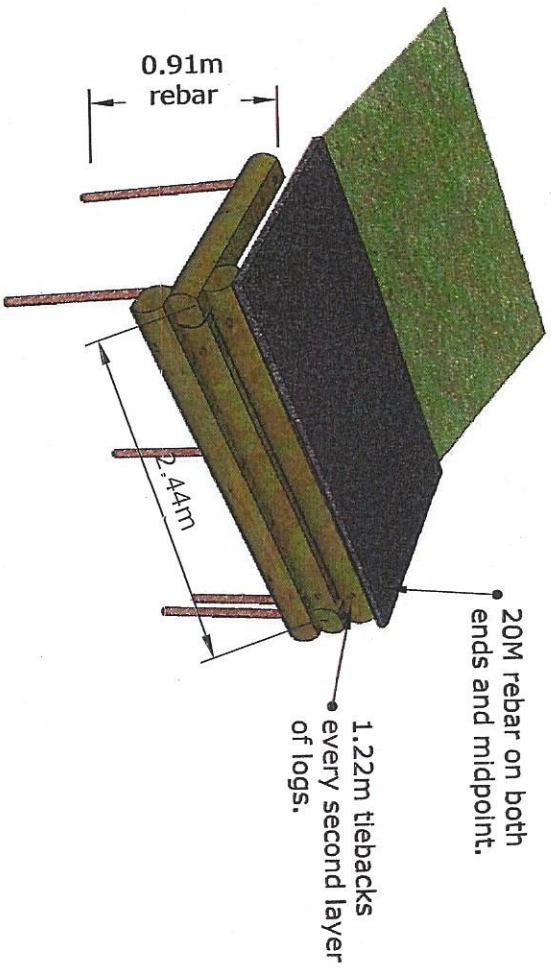
- 1) All stair risers should be of equal depth.
- 2) Tread width should vary depending on the site (minimum 0.3m)
- 3) Logs to be staked at each end with a mid stake for longer logs.
- 4) Use debarked logs with slabs cut on opposing sides. Larch is preferred. Avoid using fir.
- 5) Backfill each step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



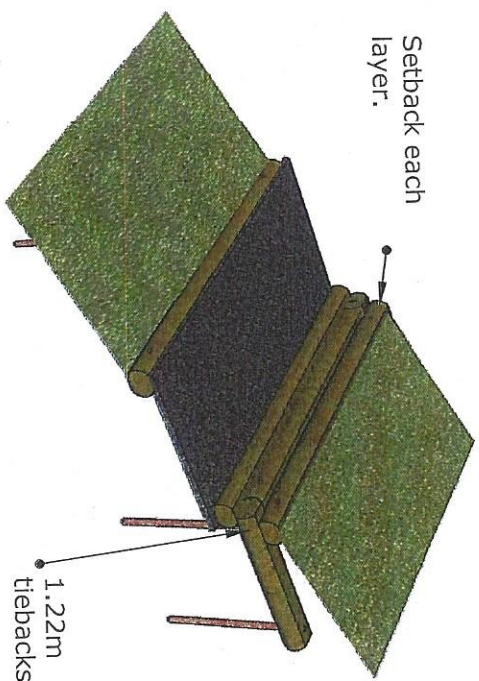
Log Step Side View



Log Step Plan View

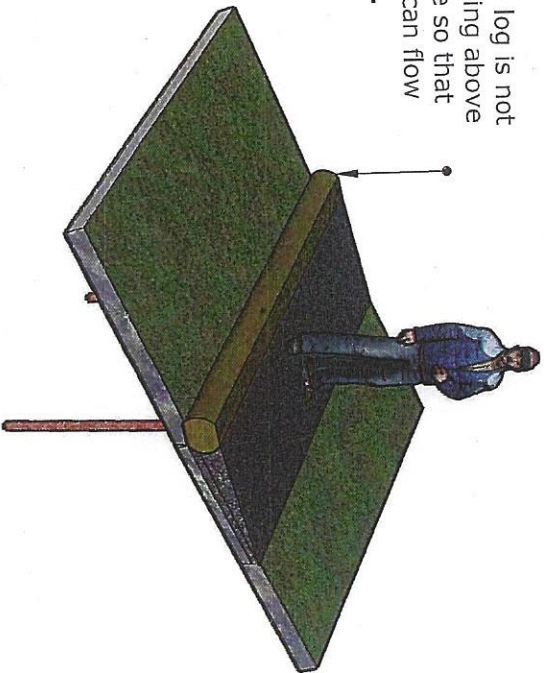


Retaining on Side Slope



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.