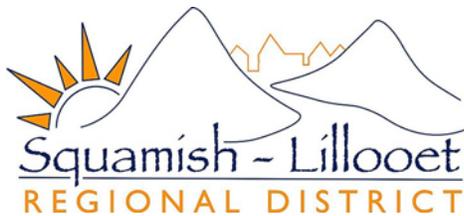


# Sea to Sky Trail Master Plan

**CONFIDENTIAL**  
**DRAFT 1C**

Prepared by:



AND



**3-1005 Alpha Lake Road  
Whistler, BC  
V0N 1B1**

**File #: 306/01/01**

**Date: March 27, 2006**



## **Sea to Sky Trail – Master Plan**

### **Foreword**

In pursuit of a vision of a family oriented recreation trail linking the communities in the corridor, the Sea to Sky Trail Steering Committee retained Cascade Environmental Resource Group Ltd. to prepare a trail Master Plan for the proposed Sea to Sky Trail. This document was prepared as part of the master planning exercise and is presented in three sections. The first section of the Master Plan covers the overall vision of the trail, its feel and style. It also examines the economic, social and health benefits this recreation feature would bring to the area, complete with an overview of similar successful multi-use trails.

The Second Section of the Master Plan examines the various methods available to tenure land over which the trail flows with ideas for successfully marketing the Sea to Sky Trail.

The Third Section of the Master Plan contains a technical evaluation of the various potential routes of the trail. The entire Sea to Sky Trail is divided into 17 Character Areas and each is examined and summarised based on preferred and alternate routes, section highlights, length, elevation gain/loss, physical and environmental obstacles as well as underlying land ownership and related concerns such as highway and railway crossings. Each section of the trail is also portrayed on an annotated map at either 1:25,000 or 1:30,000 scale.

The goal of this Master Plan is to help translate the exciting vision of the Sea to Sky Trail into a reality.

## Table of Contents

<b>SECTION 1 SEA TO SKY TRAIL - VISION .....</b>	<b>1</b>
1.1 Introduction.....	1
1.2 Sea to Sky Trail Overview .....	2
1.3 Sea to Sky Trail Highlights (south to north) .....	4
1.4 Biophysical Characteristics of the Sea to Sky Trail .....	5
1.4.1 Biogeoclimatic Setting.....	5
1.4.2 Climatic Setting.....	7
1.5 Environmental Mandate of the Sea to Sky Trail .....	8
1.6 Environmental Benefits of the Sea to Sky Trail .....	10
1.7 Socio-Economic Benefits of the Sea to Sky Trail .....	11
1.8 Socio-Community Benefits of the Sea to Sky Trail.....	13
1.8.1 Health Benefits of the Sea to Sky Trail .....	14
1.9 Multi-Use Trail Success Stories.....	15
1.9.1 Galloping Goose Trail .....	15
1.9.2 The Route Verte.....	15
1.9.3 The Bruce Trail .....	16
1.9.4 The Trans-Canada Trail.....	17
1.9.5 Kokopelli Trail, Colorado.....	17
1.9.6 Kettle Valley Rail Trail.....	17
<b>SECTION 2 LAND USE PLANNING AND MANAGEMENT OF THE SEA TO SKY TRAIL</b> <b>.....</b>	<b>18</b>
2.1 Introduction.....	18
2.2 Current Land Status of the Sea to Sky Trail .....	18
2.3 Available Methods of Trail Tenure Acquisition .....	18
2.3.1 Crown Land.....	18
2.3.2 Provincial Parks .....	20
2.3.3 Municipal Parks.....	22
2.3.4 BC Hydro .....	22
2.3.5 CN Rail.....	23
2.3.6 MOT .....	24
2.3.7 Private Lands .....	24
2.3.8 First Nation Lands.....	25
2.4 Signage .....	25

2.5 Parking and Staging Areas..... 26

2.6 Environmental Considerations in Design and Construction ..... 27

2.7 Trail Building Costs..... 28

2.8 Trail Development Schedule ..... 29

2.9 Management of the Sea to Sky Trail ..... 30

2.10 Trail Maintenance ..... 31

2.11 Risk Management..... 31

2.12 User conflict on Multi-use Trails ..... 32

2.13 Volunteers ..... 34

2.14 Marketing..... 35

    2.14.1 Mountain Bike Tourism Partnership Options ..... 36

2.15 Funding Opportunities ..... 37

**SECTION 3 DETAILED CHARACTER AREA DESCRIPTIONS..... 38**

Character Areas ..... 38

    Character Area #4 – Paradise Valley North to Chance Creek FSR Bridge ..... 39

    Character Area #10 – Green/Soo River confluence to Pemberton (south end)..... 48

## **SECTION 1 SEA TO SKY TRAIL - VISION**

### **1.1 Introduction**

The Sea to Sky Trail is the name of the dream, the dream of a multi-user mountain bike trail spanning the corridor. While this trail may eventually join our communities from Horseshoe Bay to Lillooet and beyond, Phase 1 of the Sea to Sky Trail is to start with kilometre 0 at the new waterfront development planned in Squamish, wind its way north for 190 kilometres through the communities of Whistler, Pemberton, Mount Currie & D'Arcy to end at Anderson Lake (see Map 1).

The Sea to Sky Trail concept was first conceived in the early '90's by trail visionaries Ross Kirkwood and Mike Manheim. In the early days of its inception the economic values of the Sea to Sky Trail were recognized and the project had the support of people like Robert Fine, Economic Development Coordinator with the Sea to Sky Enterprise Corporation. This popular community project has seen intermittent progress over the past 12 years and while much of the proposed trail exists on the ground, the Sea to Sky Trail is not officially recognized as an entity. By 2004 in an effort to remedy this lack of official status, the Sea to Sky Trail Steering Committee was struck by the Squamish – Lillooet Regional District (SLRD), including the Village of Pemberton, the Resort Municipality of Whistler (RMOW), SLRD, and the District of Squamish.

Stretching from D'Arcy to Horseshoe Bay, the Sea to Sky Corridor is a world renowned destination for recreation and eco-tourism. The Sea to Sky Trail's ecology covers a diverse range from the marine coastal environment of Howe Sound through the Whistler valley mountain pass to the interior Ponderosa Pine ecosystem of D'Arcy. In addition to the attraction of the area's biodiversity, physical beauty and aesthetic values, guests are drawn to corridor to take advantage of the wide range of outdoor recreational activities offered. Stretching from the ocean to the mountains, the Sea to Sky Corridor is a place people travel great distances to visit. The Sea to Sky region is a regional, provincial, national and international destination.

Recreation opportunities within the Sea to Sky Corridor include skiing and snowboarding, golf, mountaineering and rock climbing, horseback riding, snowmobiling and ATV'ing, dirt biking and 4X4'ing, kayaking and river rafting, nature viewing, hiking and biking. Many activities in the area, particularly hiking, nature viewing, mountain biking, and cross-country skiing take place on an ad hoc system of trail networks. One of the main objectives behind the concept of the Sea to Sky Trail was to provide a continuous trail parallel but separate from the highway linking the communities in the Corridor. The concept of developing a comprehensive, linked trail network that can be used by a range of recreational activities and integrated into a "point to point" trip is not new. For example, in Europe these point to point tours, like the "Route de Vin" or "Hüttenzauber", are visited by large numbers. The trails link towns and destinations and the experience includes the travel as well as the arrival at the communities. The multi-use trail in the Sea to Sky Trail context represents an additional attraction for visitors to the corridor. It is a conduit into the natural environment of the corridor providing experiential opportunities for a broad range of participants.

Designed to provide a “mellow”, alternate activity to the proliferating “extreme” options marketed in the corridor and as such primarily for use by families on mountain bikes, the trail will nevertheless be a multi-use trail. The Sea to Sky Trail Steering Committee envisions activities like hiking, trail running, snowshoeing, cross-country skiing, and mountain biking to occur throughout the length of the trail. In addition, certain sections may also be designed to accommodate horseback trail riding, ATV’ing, snowmobiling, and potentially dirt biking, depending on the desires of the communities through which it passes.

## **1.2 Sea to Sky Trail Overview**

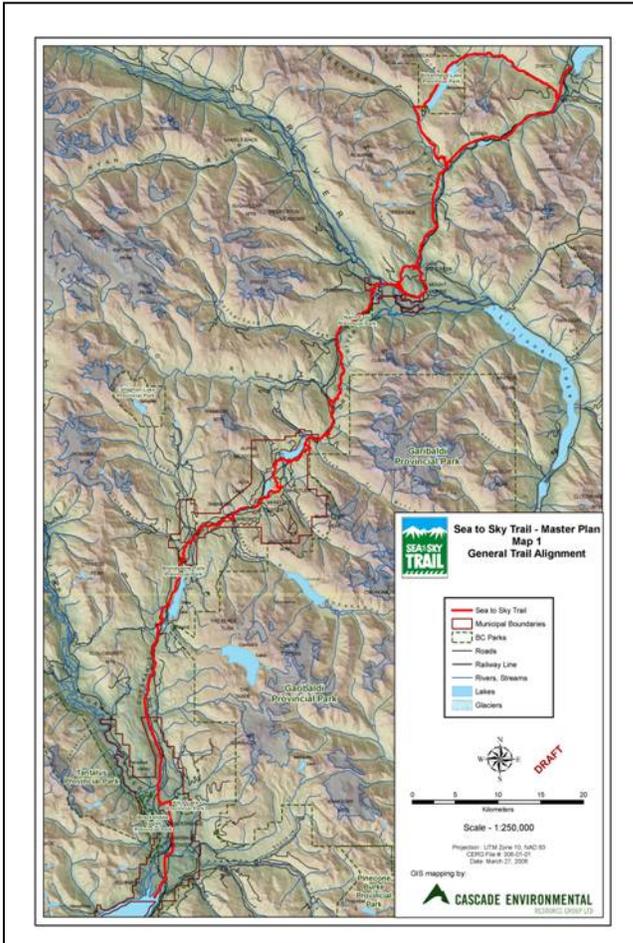
Early in the process the Sea to Sky Trail the Steering Committee needed to decide what type of trail the Sea to Sky Trail would be. In defining the “style” of the Trail the Committee identified the Tin Pants trail in Lost Lake Park and the RMOW Interpretive Forest Trails as being representative of the quality objectives sought in design.

Ultimately this is the design objective for the entire trail. However, there are a number of physical realities that will prevent that objective from becoming an immediate reality. As a result, this Master Plan focuses on getting as much of the open and operational as possible immediately. Next the Plan identifies a number of sections that can be opened up taking advantage of committed monies or other parallel initiatives. Finally, the Plan identifies unresolved obstacles and puts forward a number of potential routing solutions.

The desired attributes of the style for the Sea to Sky Trail include:

- 2 m wide (potentially thinner in the more remote locations),
- Plush, crush gravel surface,
- Gentle grade, less than 6%, for the most part (due to the mountainous nature of the region some portions of the trail will necessitate steeper routings
- Running from Squamish to D’Arcy with potential alternate route options available,
- Linking a variety of communities together (Squamish, Brandywine, Pinecrest Estates, Black Tusk Village, Whistler, Pemberton, Mt. Currie, D’Arcy),
- Easy multi-use trail – most portions suitable for bike with trailer or jogger with stroller,
- Looking to attract a wide demographic, keeping in mind the “mom” of the family as well as the retiring Baby Boomers with disposable income,
- Suitable for a variety of activities but with walking, hiking, mountain biking, and cross country skiing / snowshoeing as the focus groups (limited if any motorized).

Map1 General Trail Alignment



The above mentioned characteristics describe the desired trail style for the entire Sea to Sky Trail upon completion. The trail will be developed in sections over a period of years and it is likely that initially the Sea to Sky Trail will be a mix of 2 m wide plush, crushed gravel surface, paved Valley Trail, wide and gentle dirt surfaced singletrack (+/- 1 m), old roadbed in various states of repair (double track); and some road and highway sections. Existing sections that are currently functional and allow for safe passage, though they may not necessarily have the desired “feel” and “style” of the end product may be designated part of the Sea to Sky Trail route until the time comes for them to be upgraded. The goal is to have a functional trail in place at the earliest opportunity and work on improvements and extensions over the years. (see section Trail Development Schedule).

### **1.3 Sea to Sky Trail Highlights (south to north)**

The Sea to Sky Trail will offer outdoor recreationists and tourists a plethora of sights and features to visit along the route. Highlights along the trail, running south to north include:

- The Town of Squamish, with views of the Stawamus Chief and Mt. Garibaldi, Howe Sound and the Squamish estuary;
- The Town of Brackendale, with eagle viewing opportunities, and the Squamish River;
- Fergies Lodge, with fishing and salmon run viewing;
- The Cheekeye Fan and Paradise Valley, with the Cheakamus River;
- Starvation Lake, with the Cheakamus Canyon;
- Views of the Cheakamus River while climbing out of the canyon;
- Tunnel Rock at Highway #99, with views of the Tantalus range;
- The Civil Defence Zone, with Lucille Lake, Shadow Lake, Daisy Lake, and the dam;
- Brandywine Falls Provincial Park, and views of the Black Tusk;
- Access to Callaghan Lake Provincial Park (2010 Nordic Village – in progress);
- 2010 Athlete’s Village (in progress), and the Whistler Interpretive Forest Trails;
- Whistler Creekside, with Alpha, Nita, and Alta Lake;
- Whistler Village, with Whistler/Blackcomb Mountains;
- Lost Lake, with the Lost Lake Trails and Green Lake;
- The Green River, with Views of Wedge and Weart (Armchair) Mountains and ;
- Soo River, with Shadow Lake Interpretive Trails and the Rockslide;
- Rutherford Creek, with the Rutherford Kayak Park;
- Nairne Falls;
- One Mile Lake;
- Village of Pemberton;
- Mt. Currie village (First Nations), with views of Mt. Currie;
- The Birkenhead River, salmon runs and whitewater rafting;
- Owl Creek, Walkerville and the Fish Hatchery;
- Birkenhead Provincial Park;
- Birken, with Gates Lake and Buffalo Ranch;
- Devine;
- D’Arcy, on the southern shore of Anderson Lake;

## 1.4 Biophysical Characteristics of the Sea to Sky Trail

The Sea to Sky Trail is situated in the southern Coast Mountains physiographic region of British Columbia. Cascade Volcanic Chain which ends at Mount Meager to the north, that is part of a circumpacific hot belt or “ring of fire”. As a result, views along the trail include extinct volcanoes like the Black Tusk and Mt. Garibaldi as well as extensive alpine glaciers.

Present day landscapes and environmental conditions have been determined in large part by episodic glacial events of the Quaternary period. After the retreat of ice associated with the Fraser Glaciation approximately 11,000 years ago, emergent landscapes in this area were characterized by glacially scoured U-shaped valleys lined with glacial and fluvial sediment deposits. Since then weathering and related processes have continued to shape the natural environment and vegetation has re-established and adapted to these changing climatic and geomorphic conditions.

Within the Coast Mountain Range the Sea to Sky Trail follows a series of river valleys as it makes its way from D’Arcy to Squamish. The Trail follows Gates Creek upstream from D’Arcy to the Birkenhead River, which it follows downstream to the Village of Mount Currie. From that point the Trail moves into the Lillooet River Valley; following it upstream to Pemberton where the Trail meets the Green River Valley, following it upstream to Whistler. Whistler is located at a mountain pass and from this height of land the Trail travels down the Cheakamus River Valley to its confluence with the Squamish River in Brackendale.

### 1.4.1 Biogeoclimatic Setting

The Sea to Sky Trail traverses the Leeward Pacific Ranges, the Eastern Pacific Ranges and the Southern Pacific Ranges Ecoregion of the Coast and Mountains Ecoprovince.

Commonly occurring vegetation types and related environmental conditions in the area are described below using the Biogeoclimatic Ecosystem Classification (BEC) system. The BEC system is a hierarchical classification scheme widely used in B.C. to differentiate between ecosystems that vary because of differences in climate, topography, soil and vegetation. The Sea to Sky Trail traverses through four distinct valley bottom biogeoclimatic subzones, named for the dominant climax tree species (i.e. coastal western hemlock and interior Douglas-fir) best adapted to these areas (see Map 2) Geographic and climatic modifiers further distinguish several biogeoclimatic subzones and variants.

Climax forests in the Dry Maritime Coastal Western Hemlock (*CWHdm*) subzone are characterized by Douglas-fir, western redcedar, western hemlock, and to a lesser extent. The understorey is poorly developed with some falsebox, prince’s pine dull Oregon grape and queen’s cup. The moss layer is well developed. This subzone is found around the Sea to Sky Trail within the District of Squamish.

Climax forests in the Southern Dry Submaritime Coastal Western Hemlock Variant (*CWHds1*) subzone are characterized by Douglas-fir, western hemlock, and to a lesser extent western redcedar. The understorey is poorly developed with some falsebox, prince’s pine dull Oregon grape and queen’s cup. The moss layer is well developed. This subzone is found within the Cheakamus River Valley portion of the Sea to Sky Trail between the District of Squamish and the Resort Municipality of Whistler. It also

occupies the valley bottom of the Green River and the south side of the Lillooet Valley between the Soo Valley and Mount Currie.

Climax forests in the Southern Moist Submaritime Coastal Western Hemlock Variant (*CWHms1*) subzone are characterized by western hemlock, Douglas-fir, western redcedar, and amabilis fir. Understory species include Alaskan blueberry and a well developed moss layer. This subzone is found within, and just north of the Resort Municipality of Whistler.

Climax forests in the Wet Warm Interior Douglas-fir (*IDFww*) subzone are characterized by Douglas-fir with few western hemlock and western red cedar. Understory species include falsebox, saskatoon, tall and dull Oregon-grape, prince's pine, birch-leaved spirea, baldhip rose, beaked hazlenut and western trumpet honeysuckle. This subzone is found on the north side of the Lillooet Valley between Pemberton and D'Arcy.

Climax forests in the Moist Maritime Mountain Hemlock (*MHmm2*) subzone are characterized by western hemlock, mountain hemlock and amabilis fir, with subalpine fir occurring less commonly. Understory species include Alaskan blueberry, black huckleberry, oval-leaved blueberry, five-leaved bramble, white flowered rhododendron, and mosses.

Additional biogeoclimatic units distributed across an elevational gradient may be encountered on trail derivations. The following subzones are found within the viewsheds of the Sea to Sky Trail:

Climax forests in the Moist Warm Engelmann Spruce-Subalpine Fir (*ESSFmw*) subzone are characterized by subalpine fir, Engelmann spruce, and to a lesser extent, amabilis fir. Understory species include black huckleberry, white-flowered rhododendron, and less commonly, one-sided wintergreen, sitka valarian, and five-leaved bramble. Lodgepole pine is common in early seral stages, especially following fire. Slide alder commonly dominates avalanche paths. The *ESSFmwh* phase is characterized by the presence of mountain hemlock.

The Coastal Alpine Tundra (*ATc*) subzones, which occur above the treeline, remain unclassified primarily due to lack of forest cover. Vegetation consists of ground cover of heathers, sedges, and wild flowers, with occasional krummholtz occurring near exposed peaks.

The application areas generally comprise the *ATc* subzones in the upper elevations. Most of the valley bottom areas surrounding the areas are characterized by extensive past harvesting and silviculture extraction activities. Most of the remaining native forest cover in the application area is mature timber (<240 year of age). However, pockets of old growth forest do occur.

For additional information regarding biogeoclimatic subzones and the ecology along the Sea to Sky Trail, see:

<http://www.for.gov.bc.ca/hfd/library/documents/treebook/bigeo/bigeo.htm>

### **1.4.2 Climatic Setting**

As the Sea to Sky Trail traverses the three ecosections climatic variations are evident. Summaries for Pemberton (low elevation interior), Whistler (high elevation, mountain pass), and Squamish (sea level, coastal) are presented below:

In Pemberton the daily maximum temperatures occur in July (26.7 °C), with the daily minimum temperatures occurring in January (-8.3 °C). The mean annual total precipitation is 187 mm, with the heaviest precipitation occurring from October through March. May through August are the driest months. Rainfall can take place throughout the year. Precipitation as snow can occur in all but the summer months, but occurs more typically from November through early March (AES, 1981).

In Whistler summers are typically warm and dry and winters cool and moist with significant snowfall. The growing season is moderately short due to significant snowfall accumulation in the winter months. Mean annual snowfall for Whistler is 411 cm, falling from October to May while the mean annual rainfall precipitation is 850 mm. Mean annual precipitation for this zone is 1056 mm (Environment Canada, 2005).

The meteorological records from the Squamish Weather Station record an annual total precipitation of 2,367 mm, which mainly falls as rain (Canadian Climate Normals 1971 - 2000). The total precipitation peaks in the month of November, and is least in the month of August, with averages of 378.9 and 59.6 mm of precipitation, respectively. The mean annual temperature is 9.0°C at the Squamish Weather Station. August is the warmest month, with a mean daily maximum temperature of 24.5°C, and a mean daily temperature of 17.8°C. Conversely, January is the coolest month with a mean daily minimum temperature of -2.5°C, and a mean daily temperature of 0.2°C.

### 1.5 Environmental Mandate of the Sea to Sky Trail

The Sea to Sky Trail is intended to be a corridor wide sustainability initiative. *The Sea to Sky Trail will be constructed and operated in a manner that meets the needs of residents and guests of the corridor without reducing or compromising the capacity of the environment which it occupies to provide for future generations.* As such it will incorporate the principles of sustainability. The Natural Step, an initiative of the RMOW and a number of other communities and corporations, identifies four basic principles of sustainability that can provide guidance for the Sea to Sky Trail. "In a sustainable society, nature is not subject to systematically increasing:

1. concentrations of substances extracted from the earth's crust;
2. concentrations of substances produced by society;
3. degradation by physical means and, in that society
4. human needs are met worldwide" <http://www.naturalstep.org/learn/principles.php>

Further, the National Round Table on the Environment and Economy (NRTEE) has produced the following Objectives for Sustainable Development which were adopted by the Sea to Sky Trail Steering Committee:

"The natural world and its component life forms and the ability of that world to regenerate itself through its own evolution has basic value. Within and among human societies, fairness, equality, diversity and self-reliance are pervasive characteristics of development that is sustainable.

1. Stewardship. We must preserve the capacity of the biosphere to evolve by managing our social and economic activities for the benefit of present and future generations.
2. Shared Responsibility. Everyone shares the responsibility for a sustainable society. All sectors must work towards this common purpose, with each being accountable for its decisions and actions, in a spirit of partnership and open co-operation.
3. Prevention and Resilience. We must try to anticipate and prevent future problems by avoiding the negative environmental, economic, social and cultural impacts of policy, programs, decisions and development activities. Recognizing that there will always be environmental and other events which we cannot anticipate, we should also strive to increase social, economic and environmental resilience in the face of change.
4. Conservation. We must maintain and enhance essential ecological processes, biological diversity and life support systems of our environment and natural resources.
5. Energy and Resource Management. Overall, we must reduce the energy and resource content of growth, harvest renewable resources on a sustainable basis, and make wise and efficient use of our non-renewable resources.
6. Waste Management. We must first endeavour to reduce the production of waste, then re-use, recycle and recover waste by-products of our industrial and domestic activities.

7. Rehabilitation and Reclamation. Our future policies, programs and development must endeavour to rehabilitate and reclaim damaged environments.
8. Scientific and Technological Innovation. We must support education, and research and development of technologies, goods and services essential to maintaining environmental quality, social and cultural values and economic growth.
9. International Responsibility. We must think globally when we act locally. Global responsibility requires ecological interdependence among provinces and nations, and an obligation to accelerate the integration of environmental, social, cultural and economic goals. By working co-operatively within Canada and internationally, we can develop comprehensive and equitable solutions to problems.
10. Global Development. Canada should support methods that are consistent with the preceding objectives when assisting developing nations.”  
<http://www.iisd.org/sd/principle.asp?pid=39&display=1>

In keeping with the concept of sustainability the Sea to Sky Trail is not a short term project. The project has no date of completion and it is anticipated that when construction work is substantially completed the Sea to Sky Trail Steering Committee will evolve into a more volunteer based organization whose purpose is management and maintenance.

The ecological principals of sustainability will be embraced by the Sea to Sky Trail by its “Green Belt” approach. Whenever possible the trail will strive to maintain a green, vegetated buffer. A minimum width for this buffer was set at 3 m by the Steering Committee. However, by maximising buffer width opportunities and linking parkland with the Trail, it may be possible to incorporate wildlife dispersal corridors into the design. This may have real value within communities and this type of scheme is reflected in the RMOW Protected Area Network (PAN) initiative. In addition to linking existing parkland and green spaces with a green corridor, additional opportunities and values may be identified with proximity to the “sustainable parkland” of the Sea to Sky Trail.

To further achieve sustainability objectives the Sea to Sky Trail will incorporate a set of Best Management Practices (BMPs) for design and construction in order to optimize the environmental fit of the trail (MWLAP, 2004). To achieve this fit, the trail will be designed and constructed to take advantage of views, to provide visitors with opportunities to experience different habitats and diverse landscape features. This approach to trail building and design is described by Troy Scott Parker. In his recent book Natural Surface Trails by Design – Physical and Human Design Essentials of Sustainable, Enjoyable Trails, he describes a comprehensive system of trail design and evaluation (Parker, 2004). This system enables a trail builder to maximize a trail’s harmony with its natural surroundings while ensuring that important factors such as user safety, trail efficiency and playfulness, and construction concerns including trail compaction, erosion and displacement of material, and drainage patterns are built-in.

To incorporate the Principles of Sustainability in the execution of the project the development of the Sea to Sky Trail will proceed carefully and methodically using BMPs.

It will be developed in sections, referred to in the Master Plan as “Character Areas”. Upon completion of each of these Character Areas, the project will be evaluated under the principles of sustainability and the lessons learned from the experience will be applied to the development of the next Character Area. Although some of the trail will initially occupy old roadbed, be located under hydro lines, or on existing roads and the highway, the ultimate goal is to have a trail that has a wilderness feel whenever possible. However, that is not to say that a trail running through various urban and rural portions of the communities throughout its length will be considered in a negative light.

The community based trail sections will also serve the dual purpose of providing a commuter trail system. These sections have the potential to provide meaningful alternatives to cars as a means of getting around the communities.

The community based trail sections will also provide a cultural component to the trail experience that contributes to the overall diversity of the product. Both local and visiting trail users will appreciate the opportunities provided by the services available in the various communities along the route (restaurants, corner stores, bike shops, etc.).

In order to consider the Sea to Sky Trail in the context of sustainability, the three main components of sustainable development are discussed in terms of benefits to the stakeholder communities. The three components, often referred to as the three-legged stool, of sustainable development are as follows:

1. Environmental Values,
2. Socio-economic Values,
3. Socio-community Values and Health.

## **1.6 Environmental Benefits of the Sea to Sky Trail**

As a primarily non-motorized recreation amenity the Sea to Sky Trail has the potential to contribute or support a number of environmental benefits:

- Preservation - The presence of and use of the Sea to Sky Trail can be a preservation tool for areas containing significant environmental attributes (streamside riparian areas, ridgelines, viewpoints).
- Air Quality Protection - The vast majority of activities associated with the Sea to Sky Trail will be non-motorized contributing less exhaust and greenhouse gases.
- Education and Interaction – The Sea to Sky Trail will provide education/interpretive opportunities and exposure to the natural environment.
- Resource Management – The Sea to Sky Trail and its associated natural environment will be managed to minimize and avoid adverse impacts.
- Greenhouse Gas Reduction - The benefits of cleaner air due to fewer commuters and recreationists using fossil fuel vehicles will benefit the surrounding environment as well.

Although the Sea to Sky Trail design strives to take advantage of existing forest service roads and trails, as with any human development, it does present a potential risk of adverse impact arising from its development. This section discusses potential

environmental issues that will need to be addressed in order to maintain sustainability goals and objectives.

- Intrusion into riparian areas – This may be the case in areas where alternative routes are not available (i.e. between the highway and the Cheakamus River through the canyon). Care must be taken to minimize the removal of riparian vegetation. Due to the nature of trail building natural features such as large trees are retained as their presence increases the overall value to trail users.
- Loss of vegetation – There will be loss of vegetation in cases where vegetation exists immediately upon the proposed route of the Sea to Sky Trail, however, in locales where there is unavoidable disturbance a program of revegetation will be incorporated into the construction plan.
- Increased sedimentation - Erosion of trail materials and loss of vegetation may potentially occur. However, as noted in the trail building and maintenance section of this report, no other factor has the potential to damage trails more than a poorly designed drainage system. Care must be taken to follow the current standards of best practices for trail construction with regard to minimizing environmental degradation. Therefore, professional trail builders will be responsible for ensuring that best practices are followed for design and construction (IMBA, 2004).
- Disturbance of wildlife – Any time people venture into the backcountry there is a risk of wildlife disturbance. Impacts associated with wildlife encounters can be mitigated through interpretive signage and education of trail users. An example of this type of education program is well represented in the BC Bear Aware Program.
- Waste Management - Garbage bins should be located at staging areas, and signage should alert trail users to the “pack-in – back-out” / “leave no trace” philosophy.

Site specific environmental concerns are described in the individual character areas in Section 2 of the Master Plan.

### **1.7 Socio-Economic Benefits of the Sea to Sky Trail**

In addition to ecological conditions, sustainability also requires adherence to a set of socio-economic conditions in order to be successful. This section outlines the socio-economic benefits that the Sea to Sky Trail will accrue, thereby contributing to the sustainability objectives of the project.

Economic benefits are generated from the presence of a multi-use trail in close proximity to a community. The list below summarizes the identified economic advantages the Sea to Sky Trail will bring to both adjacent landowners and the local business community. These include:

- Attraction of New Residents - Hikers, cyclists, and general outdoor enthusiasts are drawn to the Sea to Sky region for the active lifestyle opportunities that exist here and the presence of the Sea to Sky Trail will add to those recreation

- opportunities. This will stimulate opportunities for growth and an expanded tax base.
- Retention of Existing Residents – Diversity of recreation opportunities including trail networks add to the livability of communities and provides another amenity, thereby encouraging long term residency.
  - New Business Development (indirect) - As the entire region becomes increasingly popular as a place to live due to the lifestyle opportunities available, new business' will develop and put down roots in the area thereby attracting employees (see first bullet).
  - Full and Part-time Job Creation (direct) - Development and operation of businesses which cater to trail users (restaurants, bars, hotels, bed and breakfasts, grocery stores, gas stations, campgrounds, outdoor equipment retailers and rentals). Potential for new business development through entrepreneurs capitalising on the presence of the Sea to Sky Trail can be expected.
  - Direct Increase in Property Value - Properties located near trails and greenways; indirect in crease in value due the preservation of the natural environment. "Walking and biking paths" ranked third among 39 features identified by homebuyers as crucial factors in their home purchasing decisions, according to a 1994 study by American Lives, a research firm serving the real estate industry (1995, NBPC Technical Brief, TAS #2)
  - Currency Circulation in the Community - The greater the recreational potential within and around a resident's neighbourhood, the greater the chance that the resident will stay in their local community rather than travel to more distant locations with the result that they spend their money locally.
  - Good Value for Amenity - Compared to the cost of development of other recreational facilities trails are relatively inexpensive and appeal to a wide range of users.
  - Tourism Appeal - In addition to the many existing outdoor recreational opportunities found throughout the region, the Sea to Sky Trail will provide an affordable, and easily accessible alternative that can be enjoyed by individuals, families, and groups. Due to its style and target audience the Sea to Sky Trail should not be viewed as competing with existing facilities, in fact it should complement them and help sell the entire region as a place offering possibilities for everyone.
  - Baby Boomer Friendly - The baby-boomers will soon be retiring and many are still active, travel savvy and financially secure and are looking for opportunities that suit their age and lifestyle. The Sea to Sky Trail is a recreational opportunity that can be enjoyed by this relatively wealthy demographic sector.

While the economic impact of recreation and recreation tourism on an annual basis is difficult to obtain without detailed surveys (NSMES, 2005), examples of surveys conducted are outlined below to give a broad indication of economic development elsewhere.

- With the Welsh Mountain Bike Initiative, the Coed y Brenin Forest was underutilized, from a tourist perspective. Four years after establishing a mountain bike trail network, annual visitors increased from 14,000 to 150,000. Most visitors spent two days riding at the facility, spending approximately \$30,000,000 per year (NSMES, 2005).
- In Moab, Utah, a study by Fix and Loomis (1996) found that the Slickrock Trail alone brought in an average of US \$8.5 million per year.
- Closer to home, Dr. Brian White (Capilano College, Presenter, NSMES, 2005) estimated that the economic impact of mountain biking to the Vancouver's North Shore is \$20,000,000 per year, which is accomplished with little support from hotel/tourism groups.

### **1.8 Socio-Community Benefits of the Sea to Sky Trail**

The Sea to Sky Standing Committee's expressed intent is that the project is a free standing, independent entity that should benefit all communities. A variety of socio-community benefits are anticipated from the presence of multi-use trails either through or in close proximity to communities. The list below summarizes the social advantages that the presence of the Sea to Sky Trail will bring to the associated communities. These include:

- **Social Opportunities for all Residents** – Cycling, hiking, riding, and x-country skiing are all social activities. Local community riding clubs such as Squamish Off Road Cycling Association (SORCA) and Whistler Off Road Cycling Association (WORCA) and Pemberton Off Road Cycling Association (PORCA) host numerous social events throughout the year. The annual Sea to Sky Trail Ride is a popular mountain bike ride that attracts upwards of 200 riders every year from around the Lower Mainland and further abroad.
- **Positive Outlet for Youth** – Outdoor activities such as mountain biking, hiking and snowshoeing are positive social and recreational activities for both local and visiting youth. These activities can also provide a competitive venue and local high-school mountain bikers have become some of the best in the province.
- **Positive Outlet for Adults** - There is no age restriction to using this trail. All of the benefits mentioned above for youth apply to adults of all ages.
- **Community Spirit** – Residents of the region take pride in their mountain biking and hiking pursuits and the existing trail networks which support these activities. The proposed Sea to Sky trail would be an additional recreational feature for local communities to enjoy and showcase.
- **Community Involvement** – Trail development and volunteer days provide opportunities for the community to get involved and participate in the development and maintenance of this new recreational resource and as a result participants develop a deeper connection to their community
- **Community Interaction** – General trail use, special events, and volunteer development/maintenance days provide an opportunity to interact with people of varying backgrounds and experiences.

- Increased Backcountry Access Opportunities - The Sea to Sky Trail would offer a recreational opportunity accessible to people of all income levels. It does not cost anything to use the trail.
- Increased Diversity of Recreational Opportunity - Walking/hiking, cycling, x-country skiing / snowshoeing are all relatively inexpensive, unorganized activities providing accessible recreation opportunities
- Enhanced Community Image - A by-product of trails include improved self-image and social relationships, reduced crime, livelier community atmosphere, and healthy and wholesome entertainment for youth (and older generations)
- Public/Private Partnership Opportunities - Provides opportunities to build partnerships among private companies, landowners, neighbouring municipalities, local government and recreational/nature/environmental advocacy groups
- Increased Environmental Awareness - Provides trail users with the opportunity to develop an increased awareness and appreciation of the environment
- Diversification of the Tourism Product - Acts as an additional draw for tourists seeking outdoor and nature based activities (a pleasant, relaxed and inexpensive alternative to many activities currently offered in the Sea to Sky region).
- Educational Opportunities - Provides educational opportunities due to interpretive signage along the trails (historical, ecological, geological, cultural)
- Enhanced Commuting Opportunities - Developed trail system both within and between adjacent communities can offer an alternative route for commuting to work. This results in a reduction of traffic congestion at peak times. (Valley trail is in place in Whistler but Squamish, Pemberton, Mt. Currie, etc... can benefit from the presence of a safe, multi-use trail.

### 1.8.1 Health Benefits of the Sea to Sky Trail

As a primarily non-motorized multi-use venue, the Sea to Sky Trail will meet sustainability objectives by promoting primarily non-motorized recreation activities in pursuit of physical and mental wellness.

There are a variety of health benefits that are potentially derived from the presence and use of a multi-use trail in close proximity to communities. The list below summarizes the health benefits that could be derived by individual trail users and the community. The Go for Green program has identified a number of attributes associated with activities that take place on network trails and could lead to improved health ([http://www.trailsCanada.com/english/03\\_builders\\_e/03\\_builders\\_e.cfm](http://www.trailsCanada.com/english/03_builders_e/03_builders_e.cfm)). These attributes include:

- Broad Spectrum Activities - Mountain biking, trail running, hiking, snowshoeing and x-country skiing are sports that combine skill, fitness and outdoor exploration providing an all-body workout. These activities require varying levels of concentration, sharpening mental skills and providing natural stress relief.
- Healthy Youth Development - Offers increasingly inactive youth an exciting and rewarding alternative to video games and computers.
- Family Activities - A trail upon which entire families can do activities together that are rewarding and good exercise.

- Activity for a Lifetime - The fountain of youth for adult riders providing a tremendous opportunity to achieve a high-level of fitness and act like a kid again. 25% of SORCA members are over 40 while 66% are over the age of 30.
- Physical Fitness - The majority of Canadians view environmental quality and fitness as the most important factors influencing their personal health. 85% of Canadians walk for leisure and recreational reasons. 44% of Canadians participate in cycling; cycling is the most popular physical activity for teenagers (Go for Green, Trail Monitor #2).
- Popular Fitness - Improved cycling and walking facilities mean greater numbers of participants and an increase level of fitness within the community. Trails offer affordable, accessible, and unscheduled recreational opportunities for those of all economic and cultural backgrounds as well as across all age groups.
- Health and Fitness Related Socio-economics - In addition to health benefits associated with physical activity, a more active population yields economic benefits by reducing the costs of medical care and sick leave, absenteeism in the workplace, health insurance claims, and maintaining the independence of older adults reducing the cost of institutionalized care (Go for Green, Trail Monitor #2)

## 1.9 Multi-Use Trail Success Stories

In order to create a Master Plan for success the Sea to Sky Trail Steering Committee looked to the experiences of other successful trails and trail organizations. There are a number of existing examples of long multi-use trails, linking communities and offering free recreational opportunities for users of all ages. Examples of similar, successful ventures can be found at the provincial, national, and international level. The following section describes examples of successful multi-use trails, similar in concept to the proposed Sea to Sky Trail. All of these similar trails bring economic, social, and health benefits to both individuals and communities located along, or in close proximity to their respective multi-use trail alignment.

### 1.9.1 Galloping Goose Trail

The Galloping Goose Trail is a 55 km long multi-use trail running from downtown Victoria to Sooke on Vancouver Island, BC. The trail is part of the western portion of the Trans Canada Trail (see below). Hiking, cycling, jogging, and strolling can take place at any point along the trail, while in-line skating and horseback riding are limited to certain sections. The trail is aligned on the bed of a former railway line and passes through urban, rural, and wilderness environments. It is estimated that the trail sees upwards of 4,000 users a day during the summer months and an average of 2,000 users per day year round. The Galloping Goose Regional Trail is managed by the Capital Regional District Parks Department. Land acquisition for the trail is effected through the Capital Regional District (CRD) Parks Land Acquisition Fund – a ten year fund that generates approximately \$1,650,000 per year for the purchase of land for regional parks and trails. CRD Park's major partner in Land Acquisition is The Land Conservancy of British Columbia. <http://www.gallopinggoosetrail.com/>

### 1.9.2 The Route Verte

The Route Verte is a concept that was developed in the late 1980's by members of Velo Quebec as they planned the future of cycling within the province. The vision was a

series of cycling routes and greenways, totalling approximately 4,000 km, which would link together all regions of the province. In 1995, the Quebec Government announced that they would join with Velo Quebec in helping plan, construct, and finance the proposed provincial cycling network. The original concept has since been developed in cooperation with Velo Quebec, Ministère des Transports, the Quebec government, and various regional and corporate partners and sponsors. In the year 2002, The Route Verte exceeded 3000 km.

The trail alignment and/or construction typically falls into one of the three general categories outlined below:

- The construction of bikeways using public rights-of ways (usually on abandoned railway lines, hydroelectric access routes)
- The improvement of street and road safety (development of bicycling lanes in urban areas and the paving of shoulders in rural areas)
- The designation of certain streets and roads with little traffic (< 2000 vehicles a day) as cycling routes, complete with signage identifying the road as a “shared” resource between cyclists and motorists

Based on models developed in Switzerland and Germany, the “Cyclists Welcome!” (“Bienvenue Cyclistes!”) campaign is sponsored by Vélo Québec and utilizes a certification mark identifying and publicizing accommodations that cater to bicycle tourists. The 2005 campaign was organized in collaboration with the Fédération des Agricotours du Québec and features certified bed and breakfasts (Gîtes et Auberges du Passant) that are bicycle-friendly and are located near the Route Verte in the Laurentians, Montérégie, Eastern Townships and Saguenay--Lac-St-Jean. tourism regions.

Certified “**Cyclists Welcome!**” establishments are committed to offering the following services:

- A covered and locked space where bicycles can be stored at night;
- Facilities where cyclists can wash and dry their clothing and equipment;
- A pump and tools for making minor repairs;
- High-carb meals with larger-than-average portions of fruits and vegetables;
- Information on local bicycle repair and rental outlets and regional tourist information offices.

<http://www.routeverte.com/ang/index.lasso>

### 1.9.3 The Bruce Trail

The Bruce Trail is the oldest marked hiking trail in Canada, extending approximately 800 km through southwestern Ontario from Tobemory to Queenston. The trail receives 400,000 annual visitors seeking hiking, skiing and wildlife/nature viewing experiences. In a recent survey, 70.3% of users said that the trail was their primary reason for visiting the area.

#### **1.9.4 The Trans-Canada Trail**

The Trans Canada Trail (TCT) is a partially complete concept that will see a multi-use trail running from Newfoundland to British Columbia, linking various communities, parks, rural and wilderness areas. The concept originated in 1992, during Canada's 125<sup>th</sup> anniversary celebrations. It will be the longest trail in the world – a multi-use trail accommodating five potential activities: walking, cycling, horseback riding, cross-country skiing and snowmobiling (where possible/desired). The BC section of the TCT runs along the southern portion of the province from Victoria to the shared border with Alberta. The development of the trail within BC is overseen by Trails BC, a volunteer-directed non-profit organization funded through donations and sponsorships (Trails BC website, [www.bctrail.ca](http://www.bctrail.ca))

Results of an in-depth economic impact analysis of the Trans Canada Trail undertaken in Ontario indicate that the province will derive significant and real economic gain from the completed trail. The analysis notes that “the cost of constructing the currently undeveloped sections of the Trail could be recovered in just four years worth of total tax revenue from all three levels of government from the non-local users’ non-durable expenditures alone” (PWC, 2004).

Opportunities may exist in the future to develop a connection between the Trans Canada Trail and the Sea to Sky Trail should either eventually bridge the gap between Squamish and Horseshoe Bay.

#### **1.9.5 Kokopelli Trail, Colorado**

This is a 140 mile epic trail ride that was developed by the Bureau of Land Management in the United States. The trail links the town of Fruita, Colorado with Moab, Utah. Both Fruita and Moab are currently single track mountain biking destinations. However, for the town of Fruita, the Kokopelli Trail came first. Prior to the establishment of the Kokopelli trail the town of Fruita was in an economic downturn following the closure of the oil refinery. Since the establishment of the trail the region has become a popular tourist destination with mountain bikers who are there to either begin or finish the original epic, or to enjoy the incredible single track trails that have subsequently developed.

#### **1.9.6 Kettle Valley Rail Trail**

The Kettle Valley Rail Trail is a 455 km trail located in south-eastern British Columbia and extends from the western limits of Grand Forks to the eastern limits of Brodie. The trail travels through a mix of small towns, rural, and wilderness areas. As the name suggests it is based upon an old rail bed. The trail forms a portion of what will be the Trans-Canada Trail. In September 2003 a wildfire burned 12 wooden trestle bridges and damaged 2 steel ones along the trail. Due to their significant historic and tourist values a \$13.5 million partnership was formed between the provincial and federal governments to rebuild the trestles – an indication of the value the trail brings to the region.

## **SECTION 2 LAND USE PLANNING AND MANAGEMENT OF THE SEA TO SKY TRAIL**

### **2.1 Introduction**

The Sea to Sky Trail in its current condition comprises a series of independent, linked trails ranging from legally permitted and tenured through to illegal trails on Crown land and illegal trails in trespass on private land. It is the primary goal of the SLRD to make the Sea to Sky Trail a comprehensive, legal trail that extends from D'Arcy to Squamish. This Section identifies and addresses land use and management issues associated with the Sea to Sky Trail.

### **2.2 Current Land Status of the Sea to Sky Trail**

The proposed Sea to Sky Trail route passes through the full range of land ownership both private and Crown. Where the trail is located on Crown lands, the lands fall under the jurisdiction of the Crown, BC Parks, BC Hydro and community municipal parks. Private lands include ownership by corporations like CN Rail, through which it passes, and private lands – both commercial and residential. In pursuit of the primary goal of creating a comprehensive and legal trail program of Crown land tenures, and acquisition of right of way agreements will be pursued.

### **2.3 Available Methods of Trail Tenure Acquisition**

Securing tenure for the entire route may be the most difficult challenge ahead for Sea to Sky Trail planners. Many other similar trails are situated upon old railway beds (rails to trails program) and as such the task of acquiring the lands has been a less complicated process. This section describes the various options available for either acquiring or obtaining permission to utilise lands held by different owners.

#### **2.3.1 Crown Land**

Building the Sea to Sky Trail on untenured Crown lands was never a viable option. Not only is the construction of the trail unlawful, but so is the maintenance of unauthorized trails. There is liability issues associated with playing a stewardship role for a trail system that occupies Crown land in trespass. It is difficult to secure outside funding for unauthorized trails, difficult to build partnerships with other organizations, and virtually impossible secure provincial government financial support. There are two available legal options for securing tenure over Crown land that apply to recreational features such as the proposed Sea to Sky Trail. One is via either Free Crown Grants or Nominal Rent Tenures. The other option is through application for Authorization under Section 57 of the Forest and Range Practices Act. Both of these options are discussed in detail below.

##### **2.3.1.1 Free Crown Grants or Nominal Rent Tenures**

The provincial government has historically provided Crown land to municipal governments and community organizations to support public purposes (LWBC, 2004) through Free Crown Grants and Nominal Rent Tenures. Note that only the municipality would be eligible for a Free Crown Grant, while either the municipality or a community organization (such as The Sea to Sky Trail Committee) could be eligible for a Nominal

Rent Tenure. Since April 2004, all new Free Crown Grant and Nominal Rent Tenure applications (where the land values is greater than \$100,000, or the NRT is for greater than 30 years) must be sponsored by a provincial ministry (such as the newly created Ministry of Tourism, Sports and the Arts). Applications for Free Crown Grants or Nominal Rate Tenures will be considered where the land will be used for a broad public purpose, where a clear public benefit to the community-at-large is identified, where there are no reasonable alternatives to a FCG/NRT, or where the applicant meets the goals of a sponsor ministry under the categories of:

- Health,
- Education,
- Public Safety,
- New community infrastructure,
- Transportation (i.e. bicycle/foot paths), and
- Facilities oriented to recreation.

Each sponsor ministry will use six standard selection criteria to determine whether or not they will sponsor an application and to prioritize applications against the ministry's available budget. These are in order of priority:

- Proposal meets regional, local or First Nations community priorities,
- Generates local or regional economic benefits,
- Contribution to community health, safety or education,
- Supports sustainable infrastructure development,
- Contribution to environmental quality, and
- Other support (\$ or in kind) contingent on access to Crown land.

The establishment of a sustainable multi-use trail for both recreation and tourism potential clearly meets the objectives of the selection criteria, and therefore, the use of Free Crown Grants and/or Nominal Rate tenures to secure the lands for the Sea to Sky Trail should be explored.

### **2.3.1.2 Authorization under Section 57 of the Forest and Range Practices Act.**

Free Crown Grants and Nominal Rent Tenures for Crown Lands within District and municipal boundaries have been previously discussed to secure the trail networks; however, an alternative for Crown Land is to authorize and protect the Sea to Sky Trail route under Sections 56 through 58 of the *Forest and Range Practices Act (FRPA)* administered by the Ministry of Forests and Range.

Section 56 of the *FRPA* stipulates that “the minister may order the establishment of Crown Land as an interpretive forest site, a recreation site or a recreation trail except Crown Land that is subject to another enactment and is being administered by another minister, branch or agency of government, is in a timber supply area, or is subject to a tree farm licence, a woodlot licence, a community forest agreement or a timber licence.

Section 57 of the *FRPA* stipulates that “unless authorized in writing by the minister (MOFR) or under another enactment, a person must not construct, rehabilitate or maintain a trail or other recreation facility on Crown Land”. The minister may also impose conditions (such as trail standards) in any authorizations.

Section 58 of the *FRPA* stipulates that “If the minister determines that it is necessary to protect a recreation or range resource or to manage public recreation use on Crown

land, he or she by order may restrict or prohibit a non-recreational use of any of the following”:

- a resource management zone,
- a landscape unit,
- a sensitive area, or
- a recreation site or recreation trail.

Note that a recreation site or recreation trail is defined as those established under Section 56 of the *FRPA*.

The Ministry of Forests and Range has a process whereby an individual or group can apply for authorization for an existing or new trail or recreational facility under Section 57 of the *FRPA*. The applicant needs to state the purpose of the works, and provide a description of the work, location, dates, expected use, standards that will be followed, and demonstrate a capacity and commitment to provide maintenance over the long term. The applicant may also request what actions or assistance is requested from the District Manager, these include, among others:

- Consent to proceed with the proposal (i.e. trail construction or maintenance),
- Inclusion of the trail or recreation facility in the Forest Services recreational inventory (the inventory is consulted when harvesting activity is proposed),
- Creation of a trail or recreation facility as a map notation (again this notation would be referred to in any harvesting plans),
- Establishment of the trail or recreation facility as a Forest Service trail or site (as per Section 56 of the *FRPA*, which would allow protection under Section 58 of the *FRPA*),
- Establishment of the trail or recreation facility as a “Resource Feature” (again, additional protection under Section 28 of the *FRPA*),
- Cooperative management of the trail or recreation facility, and/or
- Inclusion of the trail or recreation facility as a managed facility on maps and the Forest Service website.

It is likely that there would be a variety of trail types; inventoried trail, Forest Service Trail, or Resource Feature. In addition, it is likely that there would be some sort of recreation use agreement, between MOFR and the Sea to Sky Trail Committee or the SLRD or some other agency, to cooperatively manage the trail network that falls within MOFR’s jurisdictions.

### **2.3.2 Provincial Parks**

The current proposed alignment of the Sea to Sky Trail falls within the boundary of four BC Provincial Parks. Running south to north they are: Stewamus Chief, Brandywine, Nairn Falls, and Birkenhead Lake.

#### **2.3.2.1 Stewamus Chief Provincial Park**

One of the potential alternate routings of the Sea to Sky Trail runs along the western margin of the SCPP alongside the alignment of Highway #99. According to the current master plan, due to the international importance of the area as a rock climbing location

and the high regional use of the park as a hiking destination, the focus of the park is to provide recreation opportunities. Hiking, but not biking, is currently listed as a commonly occurring activity within the park boundaries. Development of a multi-use trail along the western edge of the park should not be in conflict with the current park master plan and in fact should help the Park obtain its primary objective of providing recreational opportunities.

### **2.3.2.2 Brandywine Provincial Park**

The trail currently enters the park at the north end along a Hydro road on the east side of Brandywine Creek and is identified as an existing Nordic Ski and Hiking Trail in the BPP Master Plan. At the present time the trail does not exist south of the parking lot and main entrance to the park but the proposed future alignment will carry the trail through the park to the east of the Highway #99 alignment.

One of the three identified general objectives in the master plan of BFPP is to provide recreation opportunities for day use recreation and overnight use along Highway #99. Both hiking and Nordic skiing are identified in the master plan as recreational opportunities currently being pursued within the park, however there is no mention of biking. It should be noted that both the Cheakamus Challenge course and the Sea to Sky Trail ride offered by Great Explorations use the existing trail located in the northern portion of the park.

The concept of creating one of the primary staging areas for the Sea to Sky Trail at the current parking area of Brandywine Provincial Park has been discussed with BC Parks and they are keen to explore this possibility as it would help promote visitation within the park itself.

### **2.3.2.3 Nairn Falls Provincial Park**

At the present time one of the proposed alternate Sea to Sky Trail alignments brings a route through NFPP. This alternate route has the trail running between the railway and the Green River in the south end of the park. Site visits along that portion of the proposed alternate route indicate that there is very limited land and that it would be a very expensive option to pursue. However, as noted earlier, should the CN Rail route between Squamish and Pemberton ever decide that it is not economically viable, this portion of the railway would be ideal for the alignment of the Sea to Sky Trail. If other strategies develop which enable a route of the Sea to Sky to pass through the park it would act as both an ideal staging area as well as a breathtaking viewpoint along the trail.

### **2.3.2.4 Birkenhead Lake Provincial Park**

One of the proposed alternate routes has the Sea to Sky Trail running along the general alignment of the Birkenhead FSR and then over to the Birkenhead PP campground along the north side of Birkenhead Lake along existing trails and old roadbeds. The alternative loop then returns to the Pemberton Portage Road along the Blackwater Lake Road. This loop takes the trail through BLPP, running in a west-east direction.

The current park management plan indicates that BC Parks will not actively pursue a significant increase or shift in recreational activities but will focus on maintaining existing recreational experiences similar to current levels. The potential route is outside of the area zoned "Wilderness Conservation" and occupies areas zoned intensive recreation and natural environment. The park has identified an objective to provide recreational

cycling opportunities within certain areas of the park and acknowledges the existing presence of the “Sea to Sky Trail” as one of these recreational cycling opportunities.

Initial meetings with BC Parks has indicated that they would welcome the construction of or improvements and maintenance to portions of the Sea to Sky Trail within their boundaries as they are currently illustrated at this time. BC Parks views the presence of the Sea to Sky Trail as an opportunity to both increase park visitation and showcase the provinces natural beauty as well as meet recreational objectives as outlined in existing management plans.

### **2.3.3 Municipal Parks**

The inclusion of the Sea to Sky Trail within Municipal Parks is a conforming use, providing that the trails meet the park’s mandate, and the trails are built and maintained to an appropriate standard. For example, a large portion of the routing of the Sea to Sky Trail through the RMOW is along trails that form part of the Valley Trail system and are under the jurisdiction of the Parks Department. The presence of individuals from the various municipal recreation and parks departments on the Sea to Sky Trail Committee is evidence that these departments are behind the concept of the trail.

### **2.3.4 BC Hydro**

BC Hydro has historically been a supporter of trails throughout the Sea to Sky corridor and as significant portions of the Sea to Sky Trail route pass through and along lands administered by BC Hydro it is key that this support is maintained. Recognition of the trail as a sanctioned recreation feature and open dialogue maintained between the Sea to Sky Trail Committee and BC Hydro with regards to hydro line and access road maintenance schedules.

BC Hydro currently either owns (fee simple) or hold leases over crown land for their operations and hydro ROWs. Initial discussions with BC Hydro (pers. comm. Kim Proudlove – October 24, 2005) indicate that that the methodology for obtaining a licence of occupation for a public recreation trail would differ depending on the type involved (own or lease). For lands owned by BC Hydro the steps involved in obtaining a licence of occupation would be in the form of a map and covering letter outlying the trail alignment and proposed uses (preferably with site specific information such as tower numbers where applicable). As BC Hydro has recently been through many similar requests with the Trans Canada Trail the process is fairly straightforward, provided the trail poses no obstruction to BC Hydro operations. As portions of the trail on BC Hydro land are applied for and developed over time, they can be added under the same licence of occupation as an amendment (ie. not a new application for each portion). The licence of occupation term can be for up to 60 years. For leased lands, BC Hydro would be passed a referral from either MoF or LWBC and providing that there would be no obstruction to BC Hydro operations no objections would be raised.

Letters and plans requesting licence of occupation on BC Hydro lands can be sent to:

BC Hydro  
12430 88<sup>th</sup> Ave.,  
Surrey  
V3W 3Y1  
Attention: Allison Baguley

**2.3.5 CN Rail**

Despite attempts to avoid, there exist a number of crossings of the CN Rail line running from Vancouver to Lillooet along the route of the Sea to Sky Trail. Dialogue must be opened up between the Sea to Sky Steering Committee and CN Rail with regard to opportunities for establishing legal crossings. Line of site distances, perpendicular crossings, appropriate signage, and other best management procedures must be followed in order to ensure the safety of trail users and avoid any disruption of CN Rail operations.

**Rails to Trails:**

Should CN Rail ever decide that the line from Vancouver to Lillooet is no longer economically viable; the Sea to Sky Trail Committee should ensure that they are given the first opportunity to acquire the lands for a “rails to trails” system. There are numerous examples of rails to trails that exist in Canada, the Kettle Valley Rail Trail and the Galloping Goose trail are two which have been discussed in the previous section of this report

**Rails with Trails:**

Rails with trails (RWT) are another concept that is being actively explored in North America, though primarily in the US. This is the concept of locating a trail within the right of way of an active rail-line.

Advocates of RWTs view them as a safer, better alternatives than bike lanes along roadways and a cost-effective maximized-use of existing infrastructure. The existence of a legitimate trail route alongside tracks will also likely result in a reduction of illegal crossings, trespassing, vandalism, and dumping. A number of successful RWT exist and should provide some level of comfort for rail companies that have reservations about incorporating a trail within their right of way (Robinson, 2004).

Research indicates that rail companies have two major reservations when considering the adoption of a RWT. The first is the concern that by allowing a trail within their ROW will put them in a position of owing a “higher duty of care” to trail users than they desire, in effect accepting additional responsibility at no perceived benefit to the company. Injuries and accidents occurring on rail property involving trail users may result in legal suits against the rail company, regardless of whether railroad operations were directly involved or not. The second reservation on the part of rail companies stems from the perception that by legitimizing a trail within their right of way their future opportunities for expansion are compromised.

There are sections of the Sea to Sky Trail route where RWT may make the most sense from the trail developer’s perspective. For example the ability to incorporate the trail within the CN Rail ROW alongside Narin Falls Provincial Park would eliminate the need to identify a potential trail alignment on the opposite side of the highway, a route requiring a tremendous gain and loss of elevation over a short distance. The inclusion of RWT sections along the Sea to Sky Trail would have to be carefully designed to alleviate safety concerns and to ensure that CN Rail experiences no disruption to current and future operations.

Two examples of successful RWTs in Canada are discussed below:

After approximately 2 years of negotiations, the City of Laval, Quebec has located 10km of trail adjacent to an active railway line. The land is now jointly owned by the City, Hydro-Quebec and CP Rail and a five foot high chain link fence separates the rail from the trail. Early planning documents identifying the railway corridor as a potential cycling route as well as the fact that new residents moving into the area were made aware of the potential for the greenway meant that there was no opposition when trail construction began (Robinson, 2004).

The Laurel Trail, a 5 km section of the Trans Canada Trail running through a densely populated neighbourhood in the City of Waterloo. Ownership of the corridor has changed hands from CN Rail to the Region of Waterloo. There are currently no passenger trains using the tracks but slow moving freight trains (< 20km/hr) are present, two or three times a day. Along this rail with trail there is no barricade in place, despite the fact that in some location the track and the trail are within one meter of one another. Since its establishment as a formalized trail route in 1990 there has never been an incident reported (pers com. Karen Anderson, Landscape Architect for Recreation and Leisure, City of Waterloo, January 2006).

### **2.3.6 Ministry of Transportation**

Sections of the trail fall within the road ROW and are under the jurisdiction of the Ministry of Transportation. This is especially significant in the early stages when large portions of the proposed Sea to Sky Trail exist on paper only and roads are being used in the interim. It is quite likely that portions of the Sea to Sky Trail will remain indefinitely along roads that have low traffic volume (such as parts of Paradise Valley Road). This is similar to portions of the Route Verte in Quebec and is both logical and economical. Portions of the Trail occurring along sections of roadway that experience high traffic volume and where the maximum speed limit is 80 km/h or above must be developed in such a way as to separate trail users from motorists for safety reasons. Dialogue should be initiated between the Sea to Sky Trail Committee and MOT for options in these locales. Initial conversations concerning the alignment of the Sea to Sky Trail through "The Canyon" have taken place and are expected to continue between MoT and proponents of the Sea to Sky Trail.

### **2.3.7 Private Lands**

With the incorporation of the Sea to Sky Trail routing into Official Community Plans, the various municipalities and the SLRD are indicating to prospective developers the region's desire to establish a viable multi-use trail running through the Sea to Sky corridor. Any development proposal needs to reflect the intent of the OCP, through retention of existing trails, relocation of established trails (in consultation with the Sea to Sky Trail Committee), and development of new trails and infrastructure to support those trails. Once a preferred alignment has been agreed upon by the Sea to Sky Trail Committee then a digital layer representing this alignment can be incorporated into the spatial databases of the individual districts and municipalities along the route.

It is recommended that the various districts and municipalities advise prospective developers to consult with the Sea to Sky Trail Committee to incorporate the existing or proposed routing of the multi-use trail into their development plans. The identified routing could then be preserved via park dedication, easement or other suitable mechanism. Portions of the Sea to Sky Trail that are lost to development will have to be

suitably relocated elsewhere; possible funding for the costs of relocating the trails would be the allocation of moneys from Development Cost Charges (DCC's).

In Park City, Utah, for example, the city has adopted a "City Trails Master Plan". Under their bylaws, there is a requirement for developers to provide/construct trails that are delineated within the City Trails Master Plan, and to provide an easement for such trails. There is also a bonding requirement if the trails are not constructed in the early stages of development. Park City's requirements are stipulated within their Title 15 - Land Management Code – Chapter 7.3 Requirements for Improvements, Reservations and Design, and reads as follows:

**15-7.3-8. SIDEWALKS, HIKING TRAILS, BIKE PATHS, AND HORSE TRAILS.**

5) Hiking trails, bike paths, and horse trails shall be provided by the Developer in accordance with the City Trails Master Plan and where otherwise necessary as determined by the Planning Commission. Trails should connect traffic generators such as schools, recreation facilities, commercial Areas, parks, and other significant natural features. Such trails shall be built to City specifications and easements shall be dedicated for such trails. The trails shall be constructed at the time of road construction, unless the Planning Commission determines otherwise, in which case cash deposits shall be required pursuant to Section 15-7.2 of this Code.

In instances where the proposed/existing trail crosses private land and the land owner is not applying for development permits or rezoning, the options are:

- Benevolent acceptance of the trail on the part of an altruistic landowner
- Other opportunities are limited if the landowner is not sympathetic

**2.3.8 First Nation Lands**

In order for the Sea to Sky Trail to be a success, a working partnership will have to be developed between the Sea to Sky Trail Standing Committee and all the communities in the corridor, including the various First Nations whose lands the proposed trail passes through. The Squamish, Lil'wat, and N'Quatqua Nations all have lands through which both the preferred and alternate route passes. In addition to reserves and other land holdings, the entire Sea to Sky Trail passes through the traditional use areas of the above named First Nations.

See Section 3 (Character Area Maps and Descriptions) for Reserve names and numbers through which the route passes.

**2.4 Signage**

It is important to develop a comprehensive consistent signage system for the Sea to Sky Trail. Signs should be placed at main trailheads, trail intersections and at other key locations. The Sea to Sky Trail Committee has hired a professional firm to aid in the development of a comprehensive signage system. This section deals with some basic trail signage philosophy.

Sign types would include:

- Trailhead kiosks complete with maps,
- Directional signs,
- Warning and safety signs,

- Regulatory signs (incorporating Trail User Code of Conduct, Permissible modes of transportation on sections of the trail (non-motorized, no horses etc...))
- Educational signs – there will be many opportunities along the Sea to Sky Trail route for interpretive signage – cultural (Pemberton trail, First Nations), environmental (flora and fauna interpretation), and historical (natural landforms)

It is very important that official sections of the Sea to Sky Trail be clearly and consistently marked so that trail users feel confident that they are “on the right path”. This is especially true where the trail enters towns and villages and the potential for making wrong turns is high. It is also important that the trail markers be easily visible and identifiable but also in harmony with the wilderness setting of some portions of the route (not taking away from the natural feel of the location).

## **2.5 Parking and Staging Areas**

It will be necessary to locate parking and staging areas along the Sea to Sky Trail route. While the various towns and communities located along the route will offer and act as parking/staging areas for the trail, points need to be located along the more remote sections. These areas will serve as parking, pick-up/drop-off, meeting, and kiosk/trail information locations. The vision of the Sea to Sky Trail is that of a family oriented multi-use trail and as such there should ideally be staging facilities located every 10 km (approximately) enabling frequent opportunities for trail users to disembark, replenish supplies, and gather information.

Ideally staging locations will possess the following attributes:

- Evenly/well spaced between other staging areas (approximately 10-15km apart)
- Natural beginning or finishing areas (start or finish of character area sections)
- Safe location for turning on/off highway – good line of sight
- Existing cleared areas that can hold up to # of vehicles and provide future expansion opportunities
- Locations for trailhead kiosks (maps, code of conduct, trail descriptions etc...)

In addition to the information kiosks mentioned above, the following list represents other facilities that should be considered for inclusion at official Sea to Sky Trail staging areas:

- Drinks/Snacks (machines or manned kiosk)
- Pay/Emergency phones
- Picnic Tables
- Washroom Facilities
- Potable water source
- Emergency Shelter / Lean-to (built from scrap lumber?)
- Garbage/Recycling bins (scheduling garbage pick-up will have to be organized as well as ensuring that the bins are Bear proof and do not cause habituation of wildlife)

The following locations have been identified as potential staging areas along the route (note that staging locations within the major communities of Squamish, Whistler,

Pemberton, and SLRD Area C have been omitted pending discussions with the individual planning departments)

Squamish – Whistler Section

- Stawamus Chief Parking Area
- Waterfront location in downtown Squamish
- End of Paradise Valley Road
- Junction of Highway #99 and Chance Creek FSR
- Brandywine Provincial Park parking area

Whistler – Pemberton Section

- Junction of Highway #99 and Wedgemount Lake Access
- Rutherford Creek area

Pemberton – D’Arcy

- Birkenhead FSR – Pemberton Portage Rd. junction
- Blackwater Campground
- Blackwater FSR – Pemberton Portage Rd. junction

Existing transit providers should be approached to determine the options/viability of enabling buses to transport multiple bikes. Opportunities may exist for entrepreneurs to establish a Sea to Sky Trail shuttle service, or this may be something that the various communities subsidize for the snow-free season.

Should the passenger rail service resume along the CN Rail track, this is another transit option that should be examined for its potential to deliver cyclists and hikers to various staging areas along the Sea to Sky Trail.

## **2.6 Environmental Considerations in Design and Construction**

Consideration of Valued Ecosystem Components (VECs) will be required to meet sustainability objectives and regulatory requirements. VECs that may be encountered during layouts and construction of the trail system include:

- Watercourses and associated wetlands and riparian areas
- Wildlife dens, nests and wildlife habitat trees
- Cliffs and talus slopes
- Old growth forests

Each of these VECs will require special attention to ensure protection and mitigate adverse impacts. The following provides a brief discussion for each of these VEC and ways of addressing them.

### **Watercourses and associated wetlands and riparian areas**

Efforts should be made to avoid watercourses, wetland and to respect riparian setbacks when designing trails. However, over the 160 km length of the Sea to Sky Trail stream crossings will be required. Freespan bridges are the method of crossing preferred by MOE and DFO and as a result freespan bridges constitute a BMP for stream crossings. Culverts may be used in certain conditions for ephemeral streams or for streams that are not fish bearing. Notification to MOE under Part 7, Section 44 of the Water Act Regulation is a basic requirement for all crossings and in certain circumstances approvals may be required under Section 9 of the Water Act and Section 35(2) of the Federal Fisheries Act. Riparian setbacks are typically 30 m from watercourses.

**Wildlife dens, nests and wildlife habitat trees**

Wildlife dens, nests and wildlife habitat trees should be identified and avoided at the design level of the project. Any of these VECs identified during construction should be avoided as a BMP.

**Cliffs and Talus Slopes**

Cliffs and talus slopes can be habitat for a range of specialized wildlife species and as a result should be avoided whenever possible for the same reason that occupied dens and nest are protected under the Wildlife Act and the Federal Migratory Birds Convention Act.

**Old Growth Forests**

While avoidance of old growth forests may not be avoidable or desirable for the Sea to Sky Trail, careful planning and layout should be incorporated into design and construction. Old growth forests are sensitive to changes in their environment and may not respond well to soil or groundwater disturbance. Further, old growth forests of the region are known to host rare or endangered species protected under the Federal Species at Risk Act; specifically Spotted Owl and Northern Goshawk.

**2.7 Trail Building Costs**

The cost of developing a trail the length and desired treatment of the Sea to Sky Trail will be a significant amount. There are a variety of factors that influence the actual on the ground cost of trail development. These include: point of access, location of materials, existing substrate, forest or land cover type, existing and desired grade, existing condition of trail (if applicable), and fluctuations in machine and labour costs.

It is likely that the majority of the trail will be built using machines. Trail Solutions – IMBA's Guide to Building Sweet Singletrack states that a three person crew with a walk-behind earth mover is capable of building five to ten times the trail in a single day that a group of three using only hand tools are.

Randy Symons, Parks and Trails Maintenance Supervisor for the RMOW, has a great deal of experience with building trails in this region and to a standard very similar to that desired for the Sea to Sky Trail. He estimates that as a general figure the cost is approximately \$30/m for machine built trail to the desired standard when starting from scratch. He also notes that building trail through mature and old growth forests is more difficult and expensive than through young forest and cut-blocks.

Boyd McTavish, an experienced local trail builder who creates both hand and machine built trails offered the following estimates of trail building costs. Machine built trail to the Sea to Sky Trail standard from scratch through forested landscapes would be approximately \$40/m. It would cost approximately \$15/m to upgrade existing singletrack (if at an acceptable grade) to Sea to Sky Trail standard.

It is interesting to note that a donation of \$40 is what is required to build 1m of the Trans Canada Trail.

Both local trail builders cautioned that prices can fluctuate depending on the variables listed above – especially the proximity to supplies, materials, and labour force. If it takes a work crew 1.5 hours to reach the work site and be underway, and the same again at the end of the work day, costs per meter of trail built will increase substantially. Equipment storage and starting points for the more remote sections of the trail have yet to be determined.

Estimated costing for individual character areas is included in Section 3 of this report.

Costing has been estimated at the following rates. Increases in the estimates provided by trail builders are to account for the remoteness of many sections of the trail as well as increased length of trail required in steep terrain:

- \$60/m for new trail development in steep/difficult terrain
- \$40/m for new trail development (including areas where existing trail has not been built at appropriate grade for the Sea to Sky Trail)
- \$20/m for upgrading existing singletrack to Sea to Sky Trail standard where existing trail is at an acceptable grade
- \$10/m for minor upgrades/erosion control on existing rough roads
- \$0/m for use of existing roadways

It should be noted that detailed ground investigations and routing of each character area by an experienced trail builder will provide a more accurate cost estimate than those provided in this report.

Some character areas and certain proposed routings will have sections and features requiring more expensive trail building. Some of these will be unavoidable, such as portions of the route through the Canyon prior to descending into Paradise Valley where the trail is pinched between the highway and river (Character Area 4). Others will be optional but may be selected due to the aesthetic benefit derived by Sea to Sky Trail users. An example of this would be the proposed routing through the boulder field located between Highway #99 and Green River north of Whistler (Character Area #9). Features and routings requiring more expensive trail building techniques will be discussed in Section 3 in the character area detail in which they occur.

## 2.8 Trail Development Schedule

The development of a multi-use trail the length and scope of the Sea to Sky Trail does not happen over the course of a single trail building season. It is likely that the trail development process will be ongoing for up to a decade. One of the key questions to answer when approaching a project of this scale is *where do we start?*

In order to answer this question a set of goals were developed to aid in the decision making process.

- Establish a safe functional route at the earliest possible date.
- Develop the higher traffic corridors first (Squamish to Whistler, Whistler to Pemberton)
- Develop non-existent portions of the trail before updating functional sections of the route currently along low traffic volume roadways.
- Take advantage of low-hanging fruit (low cost, low effort connections)

The SLRD Board has already indicated that they would like to see these two portions of the trail developed first:

1. Pemberton – Mt. Currie commuter route along Highway 99, providing a much needed off-road link for pedestrians and cyclists in this growing community.
2. the portion that rises from the end of Paradise Valley and eventually merges with the Sea to Sky Highway in the canyon, continuing northward to the Chance Creek Forest Service Road. Development of this section will almost complete the route between Whistler and Squamish.

The Parks and Recreation department of the RMOW is began developing a portion of the route linking Function Junction and Brandywine Park during the 2006 trail building season.

## **2.9 Management of the Sea to Sky Trail**

A project of this scale will require management on an ongoing basis. At this time it is envisioned that the Sea to Sky Trail Steering Committee will act as the guiding body behind the project, reporting to the Squamish-Lillooet Regional District Board of Directors. The Steering Committee will be composed of the following:

Staff members from :  
Village of Pemberton  
Resort Municipality of Whistler  
District of Squamish  
SLRD  
Area First Nations  
Ministry of Tourism, Sport and the Arts  
One elected representative from the SLRD Board  
Optional: BC Parks representative

As the project moves forward and the vision becomes a reality positions may need to be created to handle the following tasks:

- trail maintenance
- liaising with local trails organizations
- organization and maintenance of land acquisition database
- trail development
- Fundraising and marketing

## 2.10 Trail Maintenance

The organization of efficient inspection and maintenance of the trail will be an ongoing job once sections of the trail are officially opened. Regular trail inspections will have to be carried out and a maintenance budget and person(s) established, in compliance with Ministry of Tourism, Sport and the Arts guidelines with regard to trails in the Sea to Sky Corridor. It is important that maintenance costs be factored into the overall cost of developing the Sea to Sky Trail. For both safety and marketing reasons, developed portions of the Sea to Sky Trail must be kept up to the standard expected by users. Ensuring that small repairs are made in a timely manner will avoid having to deal with larger, more costly repairs down the road should the trail be allowed to deteriorate.

A system should be developed that enables trail user's comments and observations on the state of the trail to reach the Sea to Sky Trail maintenance crew. One method to allow for trail user feedback is the inclusion of a digital trail maintenance form on the Sea to Sky Trail website. This interactive feature will allow trail users to enter information on sections that require repair remotely from their home computer. Information such as; approximate location, nature of incident (wind thrown trees, gulleys caused by erosion, etc.), and date encountered. The establishment and publication of a 1-800 number to report any trail repair issues is another manner via which the Sea to Sky Trail Committee can tap into the public's knowledge of the trail's state of repair.

Once the functional portions of the trail have been established, an annual Sea to Sky Trail Maintenance Day could be advertised and a volunteer work force organized at the beginning of each season to note major repair work required and to perform moderate levels of trail maintenance such as brush clearing (see Volunteers, Section 2.13).

## 2.11 Risk Management

Risk management and liability is a common issue/concern for all government agencies, landowners and land managers. To paraphrase the provincial *Occupier Liability Act*, a land manager/owner must make reasonable provisions to make facilities reasonably safe. The act also states that "an occupier has no duty of care to a person in respect of risks willingly assumed by that person other than a duty not to create a danger with intent to do harm to the person or damage to the person's property, or act with reckless disregard to the safety of the person or the integrity of the person's property". The landowner manager, therefore, needs to ensure that their lands are reasonably safe, and they are not acting in "reckless disregard to the safety". (Note that the above should not be regarded as legal advice.)

As discussed previously, the desired nature of the proposed Sea to Sky Trail is that of a wide multi-use trail with a mellow gradient that accommodates recreationists of all ages and athletic ability. It is very important that the both the perceived and real risk associated with trail use on the Sea to Sky Trail be minimized.

The International Mountain Bicycling Association (IMBA) has developed a strategy for managing risk associated with free riding. Although the Sea to Sky Trail is far removed from what is considered "free riding" certain elements of their strategy apply to all trails and are listed below:

- Follow best practices used for trail construction and maintenance:

- Ensure knowledge of trends in trail maintenance,
- Provide adequate falls zones, and
- Follow construction guidelines, and best environmental practices.
- Adopt a risk management strategy that includes:
  - Designating a risk management coordinator,
  - Regular inspection of trails
  - Up to date, visible, effective and consistent signage system,
  - Adoption of education signage, including a code of conduct for trail users,
  - Adoption of trail standards, with a consistent trail rating system, with consistent trail conditions over time,
  - Documentation of inspection and trail maintenance activities,
  - Understanding local liability laws, and related case law, and
  - Build partnerships and develop communication amongst various user groups to accommodate diverse needs (including safety) and alleviate concerns

In addition to the above, due to the length and nature of the Sea to Sky Trail and the fact that it crosses through urban areas, along roadways, and over railway tracks, the following should be incorporated into the Risk Management Strategy:

- Ensure that all road and railway crossings are well marked with explanatory signage.
- Ensure that signage at the trailheads alerts users to the remoteness and length of the various sections
- When the trail travels along roadways ensure that signage indicates the proper manner of travel (bike with traffic, walk against traffic etc...)
- Ensure that adequate barriers and fencing exist where appropriate (i.e.. high speed/volume motorized traffic zones; steep drop-offs)

## 2.12 User conflict on Multi-use Trails

*“Trails are a living laboratory for democracy” Jeff Ciabotti (vice president of trail development for the Rails-to-Trails Conservancy, USA)*

One of the concerns identified when envisioning a multi-use trail is that of conflict amongst the various potential user groups. Different people use trails for different purposes and this will be the case on the Sea to Sky Trail. A runner out for her daily training; a group taking a social walk to a view point; mountain bikers in the process of completing a long section of the trail; commuting cyclists on their way to work; a group of equestrian riders out for ride; these are different users that have a different objective in mind as they use the same pathway. Through advance planning, sound trail design, and open-dialogue amongst different user groups, user conflict can be minimized.

Multi-use trail conflict can come in different forms. There is perceived conflict when one user's recreational experience is diminished due to noise, trail degradation, and/or the presence of another user group. There is also real conflict when actual accidents or close calls occur between individual or groups using differing travel modes. Surveys conducted amongst multi-use trail users and interviews with multi-use trail managers have identified hikers/cyclists, equestrian/mountain bikers, and x-country skiers/snowmobilers as the most common conflicting user groups. Motorized/non-motorized users; over-crowding; and trail design and degradation were identified by manager's as key causes of trail-use conflicts.

Some of the recommendations for controlling conflict amongst different user groups include: appropriate trail design and maintenance; education of trail users; educational signage; involvement of the various user groups in decision-making process; involving various user groups in trail maintenance days.

Solid trail design and maintenance has been identified as one of the primary means to minimize user group conflict. Scott Linnenburger, IMBA's Trail Solutions Coordinator states that "In looking at different trail systems across the country, it is evident that in 85% of cases, an actual accident or potential accident could have been prevented with better trail design". With proper planning and building technique this can be achieved from the beginning. Good trail design and maintenance incorporates the following techniques: providing adequate width for safe passing amongst various user-groups; the elimination or minimization of blind corner situations; solid trail construction resulting in a trail that is well drained and able to withstand heavy usage by all of the supported user groups as trail popularity grows into the future; and a system in place for efficient notification and response to required trail maintenance.

Trail user education has been identified as the other primary means to alleviate various user-conflicts. Signs and pamphlets that emphasize the importance of mutual respect among various trail users is one of the ways to get the message across (see Section 2.4). Education of various user-groups by user-group organizations on proper trail use and etiquette is another method. This one has the advantage of direction coming from like users and may be better received amongst the groups. Building partnerships amongst the various user groups and involving the various user groups in the planning process is also a good way to mitigate against potential user-conflicts from the outset.

The vision of the Sea to Sky Trail is a multi-use trail, with the primary usage being that of mountain biking. The Sea to Sky Trail Standing Committee needs to determine, in consultation with various trail user groups, if and where the use of equestrian and motorized vehicles is appropriate along the proposed routing. It is understood that portions of the Sea to Sky trail, primarily in the Pemberton to D'Arcy corridor, may see motorized vehicle use in the form of ATVs and motorbikes in the summer and snowmobiles in the winter. If the Sea to Sky Trail Committee determines that motorized use is appropriate along certain sections, then careful consideration must be given to the design of these portions of the route in order to ensure that all users have a pleasant/safe experience. The implementation of speed controlling measures will likely be required.

Existing recreational trails and facilities in the vicinity of the Sea to Sky Trail should alleviate some of the user conflict experienced in other locations where the trail in

question is one of the only recreational features. Squamish, Whistler, and Pemberton all have extensive existing mountain bike trail networks offering everything from beginner x-country to advanced freeriding trails. Mountain bikers seeking their adrenaline fix will not likely be found on the Sea to Sky Trail. It is expected that many mountain bikers will use the Sea to Sky Trail but as an epic x-country ride on mellow terrain.

## **2.13 Volunteers**

Creating and maintaining a multi-use trail the magnitude of the proposed Sea to Sky trail is going to take a lot of time, money, and labour. As discussed in the proceeding section, funding opportunities are available and these funds should be sought after as much as possible. The overall management of the trail will likely be the responsibility of the Sea to Sky Trail Committee and they will oversee the hiring of professional trail builders and the determination of the order in which trail sections are developed as well as the management and allocation of trail development funds and materials. One of the best resources available is free, and in the case of many trail networks is the primary reason behind their existence. This resource is the time and labour of volunteers. This is a resource that must not be overlooked as it may be the link between dream and reality in terms of seeing the Sea to Sky Trail vision come to fruition.

Potential sources of volunteer labour for trail building include:

- Local biking, hiking, equestrian, x-country ski clubs
- Active senior citizens and retirees
- Local environmental groups (creation of greenways, planting and habitat restoration along trail sections)
- Community groups (Rotary Club, Lion's Club, etc...)
- Local high-school/college students (especially those enrolled in outdoor recreation programs)

In IMBA's Trail Solutions book the author's outline some key points to both having productive trail building days as well as keeping volunteers happy and (hopefully) coming back again. These points include:

Ensuring productive trail days:

- Be organized (have tools, location, the day's objective and strategies to achieve it ready to go)
- Be prepared for any kind of turnout (have a variety of work plans ready to go depending on the number of volunteers who show up)
- Be safe (ensure that the volunteers know how to use the tools properly)
- Ensure that crew leaders are experienced in proper trail construction

Keeping volunteers happy and coming back for more:

- Set reasonable goals and outline the day's (evening's) objective at the beginning
- Look to local business to provide small gifts for volunteers
- Ensure that crew leaders don't work the volunteers too hard
- Provide refreshments and snacks
- Provide encouragement and make the trail building event fun

- Keep records of volunteer's names, phone numbers, e-mail so they can be contacted for upcoming trail development days
- Keep records of volunteer time invested, numbers of volunteers, and before and after photographs of work done

## **2.14 Marketing**

In many ways the Sea to Sky Trail is fortunate, as far as marketing is concerned, in that the Sea to Sky corridor is already a magnet for outdoor enthusiasts of all types. The entire corridor boasts internationally known locales for various sports and outdoor activities. These include: the North Shore of Vancouver for free ride mountain biking; the Stawamus Chief and Howe Sound in Squamish for rock climbing and windsurfing respectively; Whistler/Blackcomb mountain in Whistler for both skiing/snowboarding in the winter and downhill mountain biking in the summer; white-water kayaking opportunities throughout the area; cross-country mountain biking trails throughout the entire region, especially in the vicinity of Squamish, Whistler, and Pemberton; world class golf courses throughout the region; five Provincial Parks for hiking and/or backcountry camping opportunities; and the list goes on. The entire area is already heavily marketed and the upcoming 2010 Olympic and Paralympic Games will only add to the corridor's international reputation.

Many of the above mentioned activities are seen as being on the "extreme" end of the spectrum as far as outdoor recreation is concerned (golf being the exception). What the Sea to Sky Trail has to offer is a different option. An option for an activity that members of an entire family can enjoy together: a trail upon which healthy and active retirees can enjoy the outdoors; and a trail upon which a young family can share an all day biking outing despite the fact that they are pulling a trailer; a trail that, for the strong of lung and legs, will offer a 150 km epic weekend cross country ride past scenic vistas. It is this different option that the marketing of the Sea to Sky Trail should focus on. It is not in competition with existing tourist opportunities in the corridor, it complements them and adds another dimension to the current offerings. More importantly, it can draw a demographic for which the existing extreme outdoor recreation opportunities are not an attraction.

Concepts for successfully marketing the Sea to Sky Trail and the associated communities as a recreational travel destination were adopted from IMBA's "Bringing Mountain Biker's to your Area" (IMBA, 2004) and are presented herein:

- Ensure that local business and community leaders are aware of the positive economic impact that trail users have on the area and their business and that business that set themselves up to be "biker/hiker friendly" will benefit from their presence
- Design, produce, and post accurate signage to ensure visitors do not get lost and have bad experiences (a signage program is currently under development),
- Help local bike/hiking shops situate themselves to best handle visitor questions regarding where to ride, stay, eat etc... (perhaps a "Sea to Sky Trail for the First Time User" pamphlet)
- Lodging geared towards cyclists/hikers – secure bike storage and in close proximity to trailheads (no need for vehicles)

- Photograph local trails professionally for advertising in magazines and on the internet (pictures of people enjoying the trail with a beautiful natural backdrop will draw people to the destination),
- Promote the other local activities that would be attractive to visiting trail-users (the Sea to Sky corridor offers numerous world class locations/activities: mountain climbing, wind surfing, backcountry camping, Provincial Parks, whitewater kayaking, golfing etc.)
- Local business should work on developing package deals catering to trail users (lodging, rentals, restaurants, camping etc...)
- Woo the media – get the media involved (free visits and bike tours, national, international journalists, outdoor, travel, and bicycling magazine editors and writers – articles in magazines and newspapers and on websites with photographs of area will build profile of the towns as a trail destination).
- Website development and internet presence
  - Mapping browser complete with photos of trail to attract and educate riders coming from far away,
  - Setup to be top 10 site when searching common key words for biking/hiking in BC (mountain biking, BC, Squamish, Whistler, trails, Test of Metal, Cheakamus Challenge etc.)
  - Hyperlink to other common mountain biking, hiking or associated web pages (NSMB, Test of Metal, Cheakamus Challenge, District of Squamish, Resort Municipality of Whistler, Village of Pemberton, SORCA, WORCA, Pemberton Valley Trail Society, local bike shops, etc.).

#### **2.14.1 Mountain Bike Tourism Partnership Options**

There exists a great opportunity for co-operative marketing of the entire Sea to Sky region as a mountain biking destination. The major communities can all legitimately boast of having some of the best singletrack networks in the world. The Sea to Sky Trail can serve as the backbone route, a cross country mountain bike trail linking a series of world-class singletrack networks together – an idea that will get any avid mountain biker salivating. There is great potential for the region as a whole to market itself as a world class mountain biking destination – a destination that offers the opportunity to bike from D’Arcy to Squamish with the option of stopping in the main communities and exploring their singletrack networks, without having to use a vehicle (after reaching your starting point). It would be both practical and economical for the communities throughout the Sea to Sky region to develop a marketing strategy in cooperation with one another that highlights the region’s mountain biking opportunities.

It should be noted that at the current time there exist concerns around the legitimacy of a number of the singletrack trails located throughout the Sea to Sky region. A large percentage of the existing networks have been built illegally without the landowner or land steward’s knowledge or permission. At the same time the various communities are marketing themselves as world-class outdoor recreation destinations, with these “dubious” trail networks being promoted as one of the key features. Efforts are currently being undertaken on the part of the Ministry of Tourism, Sport and the Arts to open dialogue amongst the various user groups on the trails, local and provincial governments, and other stakeholders. The Squamish-Lillooet Regional District has indicated its willingness to take on authority for trails throughout the Sea to Sky corridor.

## 2.15 Funding Opportunities

While the Whistler-Blackcomb Foundation grant of \$300,000 is an enormous contribution, it is expected the trail will cost \$3 to 3½ million to complete. Trail of the “Tin Pants” quality (in Whistler’s Lost Lake trail system) costs about \$20,000 per kilometer on average. Phase 1 is approximately 150 kilometers in length. Funding opportunities large and small will be pursued.

Sources for funding need to be explored.

- Federal Government (Tourism Canada, Sports Canada),
- Province of British Columbia (Ministry of Tourism, Sports and the Arts, Ministry of Forests and Range – could provide materials, engineering services, standard drawings, co-sign insurance, etc),
- District of Squamish, The Resort Municipality of Whistler, Village of Pemberton, Squamish-Lillooet Regional District
- Tourism Industry – Bicycle Companies, Outdoor Gear Companies
- Local industry/businesses throughout the Sea to Sky Corridor – especially the larger national/provincial companies like banks, large chain restaurants
- User groups
- Community Foundations (CFOW)
- CR companies that will take advantage of the Sea to Sky Trail system

Website development and internet presence

- Mapping browser complete with photos of trail to attract and educate riders coming from far away,
- Setup to be top 10 site when searching common key words for biking.hiking in BC (mountain biking, BC, Squamish, Whistler, trails, Test of Metal, Cheakamus Challenge etc.)
- Hyperlink to other common mountain biking, hiking or associated web pages (NSMB, Test of Metal, Cheakamus Challenge, District of Squamish, Resort Municipality of Whistler, Village of Pemberton, SORCA, WORCA, Pemberton Valley Trail Society, local bike shops, etc.).

## SECTION 3 DETAILED CHARACTER AREA DESCRIPTIONS

This section of the Master Plan contains a technical evaluation of the various potential routes of the trail.

### Character Areas

The Sea to Sky Trail is divided into 17 Character Areas (see Map 3). Individual character areas are examined and summarised based on preferred and alternate routes, section highlights, length, elevation gain/loss, physical and environmental obstacles as well as underlying land ownership and related concerns such as highway and railway crossings. Each section of the trail is also portrayed on an annotated map at either 1:25,000 or 1:30,000 scale.

Sea to Sky Trail - Character Areas

CA-1	Squamish South
CA-2	Squamish North
CA-3	Paradise Valley
CA-4	Paradise Valley North to Chance Creek FSR Bridge
CA-5	Chance Creek FSR Bridge to Brandywine Provincial Park
CA-6	Brandywine Povincial Park to Function Junction
CA-7	Whistler South
CA-8	Whistler North
CA-9	Wedgemount to Soo/Green River Confluence
CA-10	Soo/Green River Confluence to Pemberton
CA-11	Pemberton to Owl Creek
CA-12	Owl Creek to Birkenhead FSR
CA-13	Birkenhead FSR to Gates Lake
CA-14	Gates Lake to Blackwater Lake Rd.
CA-15	Birkenhead Lake Provincial Park West
CA-16	Birkenhead Lake Provincial Park East
CA-17	Blackwater Lake Road to D'Arcy

**Finalization of the 13 character areas will be done with planning department staff and in consultation with First Nations.**

## Character Area #4 – Paradise Valley North to Chance Creek FSR Bridge

### Description of preferred routing (south to north):

This portion of the proposed S2S Trail begins as the trail crosses under the power lines and leaves them to the west at the northern end of Paradise Valley Road. The trail at this time is a rough road, with coarse cobble. The trail crosses the railway tracks, leaving them to the west, and climbs towards Starvation Lake. The trail passes on the western shore of Starvation Lake while still along a rough BC Hydro access road and then begins to climb up out of the canyon towards the Sea to Sky Highway. As the trail climbs views down the valley and of the Cheakamus river below begin to appear. The trail also offers a unique perspective of the CN Rail line running through the canyon. The trail for this portion is a mix of rough cobbled access road and rocky singletrack. This portion of the trail is part of the annual Cheakamus Challenge mountain bike race. The trail eventually emerges from the canyon on the western side of the highway. It will be a challenge to maintain the desired grade of the Sea to Sky trail for this portion rising from the valley bottom to the Sea to Sky highway. From this point until the pull-out/parking area at the Chance Creek FSR junction the trail runs along the west side of the highway, at times immediately adjacent to it, at times closer to the Cheakamus river, and at times the trail is non-existent. The preferred routing option will have the Sea to Sky Trail route staying on the western side of the highway, using available land between the highway and the Cheakamus River or canyon for trail development whenever possible. It should be noted that the majority of this section of the Sea to Sky Trail is within the Barrier Civil Defence Zone (BCDZ).<sup>\*</sup> There are some pinch points along this section that will require working closely with MOT to ensure a safe and pleasant experience for trail users. The Doris Burma Memorial Trail, portions of which were destroyed during the flood event in October 2003, will be the basis for the routing of this section of the trail on available lands between the highway and the Cheakamus River. Scenic parts of the trail will run through open forest and along the riverbank. This section of the trail ends at the pull-out/parking area at the Chance Creek FSR junction on the east side of the bridge.

<sup>\*</sup> Please note that it is illegal to camp or overnight within the BCDZ.

### Alternate Routings:

#### AR4.1

Potential alternate routing has been identified across highway 99 at the north end of the "Doris Burma Memorial Trail". At the present time this is a rolling combination of single-track and double track. The south end of the trail is winding, gentle single track that eventually turns into old double track as it approaches Deadman's Lake. The trail ends just across highway #99 from the Chance Creek FSR. **Potential difficulties with this routing are the requirement of two additional crossing of highway #99 over a short distance.**

**Length: 8.87 km** (approx.)

**Elevation Gain/Loss: 240m**

North end of Paradise Valley: 100m asl

Chance Creek FSR/Staging Area: 340m asl

This canyon section of the trail experiences the greatest gain/loss in elevation over the shortest distance of the entire Sea to Sky Trail route.

**Land Ownership:**

**BC Hydro ROW** – much of this section of trail falls within land held by BC Hydro

**CN Rail ROW** – 1 crossing (in the south end prior to starting to climb out of the canyon)

**Surveyed Crown Land** – various portions along the trail

**Highway 99 ROW** – between the point where the trail drops into the canyon towards Paradise Valley and Chance Creek FSR junction large portions of the route fall within the MoT ROW.

**Private Land** – no private land was identified along this section

**BC Parks -**

**Ecology and Natural Features:**

Biogeoclimatic Zones: CWH ds1

Rivers: Cheakamus River

Lakes: Starvation Lake

Other Features: Cheakamus River Canyon

**Character Area Highlights:**

- H4.1 Starvation Lake
- H4.2 Views of the Cheakamus river valley while descending into /climbing out of the canyon
- H4.3 Challenging terrain on the steepest elevation gain/loss of the entire Sea to Sky Trail route
- H4.4 Views of the Tantalus Mountain Range
- H4.5 Scenic ride through forest alongside Cheakamus River

**Potential Difficulties:**

- D4.1 CN Rail crossing which is along a curved portion of the track; potential line of sight issue
- D4.2 Maintaining a desired trail grade on the portion of trail from valley bottom up to the highway
- D4.3 Portions of trail rising from valley bottom need major repair
- D4.4 Development of portions of the route pinched between the western edge of the Sea to Sky highway and the Cheakamus River/Canyon may be costly and require joint venture with the Ministry of Transportation
- D4.5 Encroachment into riparian areas (environmental issue)
- D4.6 Establishment of staging area at Chance Creek FSR because of location within the Garibaldi Civil Defence Zone

**General Costing Estimates of Preferred Route Development\***

<b>Character Area 4 - Preferred Routing</b>			
<b>Existing Condition</b>	<b>Length (m)</b>	<b>Cost/m to upgrade</b>	<b>Total</b>
Road - Good Condition	0	\$0.00	\$0.00
Rough Road - Condition OK	1717	\$0.00	\$0.00
Rough Road - Minor Upgrades	256	\$10.00	\$2,560.00
Upgrade Existing Single Track - Gentle Terrain	1986	\$20.00	\$39,720.00
Upgrade Existing Single Track - Difficult/Steep Terrain	2098	\$60.00	\$125,880.00
None	2808	\$40.00	\$112,320.00
None - Difficult/Steep Terrain	0	\$60.00	\$0.00
<b>Total</b>	<b>8865</b>		<b>\$280,480.00</b>

\*Note that the general costing estimates of the preferred routing are to develop the route to a "functional" level, using existing roadbeds and roads with minimal traffic when possible. Existing Conditions described as Road – Good Condition, Rough Road – Condition OK, and Rough Road – Minor Upgrades are sections that do not meet the desired Sea to Sky Trail Standard but will function over the initial period of the Sea to Sky Trail's development and will enable the trail to be used long before its completion.

**Character Area #5 –Chance Creek FSR Bridge to Brandywine Provincial Park****Description of preferred routing (south to north):**

This portion of the Sea to Sky Trail commences at the cleared pull-out/parking area located on the east side of the Chance Creek FSR Bridge. Opportunities for improving/expanding this parking area to serve as a staging area for the Sea to Sky Trail should be pursued. The trail leaves the parking lot and crosses the bridge over the Cheakamus River and then over the railway tracks and onto a BC Hydro access road. It should be noted that the southern half of this section of the Sea to Sky Trail is within the Barrier Civil Defence Zone (BCDZ).\* The trail currently follows a rough BC Hydro access road to the east of Lucille Lake and then cuts back under the hydro lines and continues on, leaving the hydro lines and staying to the west side of Shadow Lake (this lake, as well as Daisy Lake, was formed as a result of the construction of the Daisy Lake Dam). The trail curves around the north end of Shadow Lake, crosses over a couple of minor bridges, crosses over the railway tracks and then turns north under the power lines again, emerging at the entrance/exit of Pinecrest Estates onto Highway #99.

Construction of a new trail following a similar route to the one described but through the forest and away from access roads is possible and should be considered, however the route will function initially using the existing access roads. Ongoing planning for the Sea to Sky Highway upgrades indicate that the portion of Highway #99 between Pinecrest Estates and Brew Creek FSR will likely be routed closer to Daisy Lake. If this occurs then the Sea to Sky Trail can utilise the former highway route in front of Pinecrest Estates and Black Tusk Village, as traffic along here would be minimal. Once the highway merges back with its original alignment near Brew Creek FSR a route will have to be determined along the west side of the highway and eventually into Brandywine Park. Finding and developing a route on Crown / BC Hydro land from the vicinity of Brew Creek FSR to the southern boundary of Brandywine Provincial Park appears to be feasible, although the terrain is steep and bluffy.

BC Parks has indicated a desire to both accommodate and aid in the development of a multi-use trail through the southern portion of the park (pers. comm. John Tisdale, August 31, 2005). A highway overpass is proposed to be built over the CN Rail line near where the current crossing occurs. Ideally the trail route will flow under the highway and alongside the tracks, crossing the tracks at a safe point further north before the rail line veers to the west and out of Brandywine Provincial Park. Discussion with MOT is required on this matter. **If this proves to be possible, the Sea to Sky Trail will be able to run from Squamish to Whistler without ever having to directly cross the Sea to Sky highway.** This section of the trail ends at the Brandywine Provincial Park parking area which will serve as an ideal staging area.

\* Please note that it is illegal to camp or overnight within the BCDZ.

**Alternate Routings:**

**AR5.1**

An alternate route was examined along the western side of Daisy Lake. Due to both the basalt substrate and the potential highway re-alignment, the preferred routing described above seems both logical and less expensive.

**AR5.2**

An alternate route was also examined to the east of Daisy Lake. However, the privately owned Sea to Sky Retreat Centre is located in a key area and have indicated that the presence of a multi-use trail running through their property poses potential conflict with the desired conditions of their operations. Positive aspects of this route are that it offers incredible views of the Daisy Lake and the mountains to the south, as well as being well removed from the highway. Negative aspects are that Brandywine Park would be missed as would the villages of Pinecrest and Black Tusk. This option should be retained as a future possibility should the situation with the retreat change.

**Length: 10.47 km** (approx.)

**Elevation Gain/Loss: 140m**

Chance Creek FSR/Staging Area: 340m asl

Brandywine Provincial Park – Parking Area: 480m asl

**Land Ownership:**

**BC Hydro ROW:** DL 2663; DL 3112; DL 2666; DL 5627 (ref pl 2310); DL 2668 (part east of DL 5627 (ref pl 2310); DL 5626 (ref pl 4249) portion leading into BPP

**CN Rail ROW:** DL 2945 (3 crossing through this DL)

**Surveyed Crown Land:**

**LWBC:** DL1012;

**Private:** DL 3457 (ref pl 16824) property along Brew Creek Road

**BC Parks:** Brandywine Provincial Park

**Ecology and Natural Features:**

Biogeoclimatic Zones: CWH ds1 – Coastal Western Hemlock dry-submaritime

Rivers: Cheakamus River

Lakes: Lucille, Retta, Daisy Lake (man-made), Shadow Lake (man-made)

Other Features: Brandywine Falls

**Character Area Highlights:**

- H5.1 Trail passes by Lucille, Shadow, Retta, and Daisy Lakes
- H5.2 Entire route is removed from Sea to Sky Highway
- H5.3 Trail passes via Pinecrest Estates and Black Tusk Village
- H5.4 Trail passes through Brandywine Provincial Park
- H5.5 Views of Black Tusk

**Potential Difficulties:**

- D5.1 Establishment of staging area at Chance Creek FSR because of location within the Garibaldi Civil Defence Zone
- D5.2 multiple CN Rail crossings: one on an existing road just after the Chance Creek FSR bridge over the Cheakamus River; one on an existing road north of Shadow Lake; one to be determined within Brandywine Provincial Park boundaries
- D5.3 obtaining extra width on planned overpass to allow for Sea to Sky Trail alignment alongside the CN Rail ROW

**General Costing Estimates of Preferred Route Development\***

<b>Character Area 5 - Preferred Routing</b>			
<b>Existing Condition</b>	<b>Length (m)</b>	<b>Cost/m to upgrade</b>	<b>Total</b>
Road - Good Condition	1825	\$0.00	\$0.00
Rough Road - Condition OK	5092	\$0.00	\$0.00
Rough Road - Minor Upgrades	0	\$10.00	\$0.00
Upgrade Existing Single Track - Gentle Terrain	0	\$20.00	\$0.00
Upgrade Existing Single Track - Difficult/Steep Terrain	0	\$60.00	\$0.00
None	0	\$40.00	\$0.00
None - Difficult/Steep Terrain	3548	\$60.00	\$212,880.00
<b>Total</b>	<b>8640</b>		<b>\$212,880.00</b>

\*Note that the general costing estimates of the preferred routing are to develop the route to a "functional" level, using existing roadbeds and roads with minimal traffic when possible. Existing Conditions described as Road – Good Condition, Rough Road – Condition OK, and Rough Road – Minor Upgrades are sections that do not meet the desired Sea to Sky Trail Standard but will function over the initial period of the Sea to Sky Trail's development and will enable the trail to be used long before its completion.

**Character Area #9 – Wedgemount to Green/Soo River confluence****Description of preferred routing (south to north):**

This section of the Sea to Sky Trail starts at the existing cleared/parking area on the east side of Green River. This parking area is currently used by recreationists as a staging area for kayaking as well as accessing local mountain bike trails including Comfortably Numb and Thrill Me, Kill Me. The route will travel through the new subdivision currently being developed on DL 2247 crossing back to the west side of the Green River on the new proposed bridge. The route then crosses the CN Rail tracks and continues north in between Hwy. 99 and the railway ROW winding its way through the forest. Crossing the tracks under hydro lines the route connects onto an existing gravel pit access road. The proposed route runs east through the gravel pit and then heads north on the west side of the Green River, following an existing roadbed to the east of the large treed knoll. Elevation remains fairly constant as the route follows the general contour through a large unique boulder field – the result of an old landslide from the mountains across the river. This portion of the route brings many challenges as it will take a lot of creative route finding and trail building to build a suitable trail. However, the incredible surreal landscape as well as the proximity to the Green River make this alignment worth investigating further. Beyond the boulder field the route continues north till it meets up with an old forest service road which it joins and continues along the west side of the Green River. This portion of the Sea to Sky Trail continues along past the stock car track finishes at the parking area by the green river motocross track.

**Alternate Routings:****AR9.1**

An alternate route that partially exists would see the Sea to Sky Trail continuing north instead of turning south-east on the gravel pit access road after crossing the tracks. This route crosses Highway #99 and travels north between the highway and the Soo River along an existing route through the Shadow Lake interpretive forest and via the Boy Scout cabin. The route stays at a steady elevation until the small knoll, a local climbing area, located across from the access to the rock quarry used for the Rutherford project. Here a new route will have to be established around the knoll, likely on the highway side, until it joins an old roadbed underneath the hydro lines between the highway and the Soo River. The route then heads north on Hwy. 99 for approximately 750m before turning north off the highway and under the hydro lines. Space is very limited here and accommodation of the Sea to Sky Trail on the west side of the highway may be difficult.

After diverging from Highway #99 and heading under the hydro lines, the proposed alternate route weaves downhill gradually as it follows the east side of the Soo River and eventually joins back up with the preferred proposed route at Highway #99 and the parking area at the Green River motocross track.

*This alternate routing requires two additional highway crossings, however, should the development of the Sea to Sky Trail through the large boulder field portion of the preferred route prove to be unviable this is a functional alternative.*

**Length: 12.08 km** (approx.)

**Elevation Gain/Loss: 240m**

Wedgemount Staging Area - 600m asl

Green/Soo confluence – 360m asl

**Land Ownership:**

**BC Hydro ROW** – DL 5621 REF PL 4247; FR S1/2 DL 3235

**CN Rail ROW** – crossing within DL 4366 REF PL 3394

**Surveyed Crown Land** –

**Highway 99 ROW** –

**Private Land** – DL 2247; DL 1239; N1/2 DL 3235

**LWBC:** through REM DL 3364 along existing road

**BC Parks -**

**Ecology and Natural Features:**

Biogeoclimatic Zones: CWH ms1, CWH ds1

Rockslide

Rivers: Green River, Soo River

**Section Highlights:**

- H9.1 Access to Wedgemount Lake Hiking Trail
- H9.2 Views along Green River
- H9.3 Views of Wedge and Weart (Armchair) Mountains
- H9.4 Large old landslide boulder field (surreal landscape)
- H9.5 Stock car and motocross tracks
- H9.6 Shadow Lake Interpretive Trails (alternate route)
- H9.7 Views along Soo River (alternate route)

**Potential Difficulties:**

- D9.1 CN Rail crossing on an existing road south of the active gravel extraction area
- D9.2 Active gravel extraction area
- D9.3 Large old landslide boulder field – difficult/expensive trail building

**General Costing Estimates of Preferred Route Development\***

<b>Character Area 9 - Preferred Routing</b>			
<b>Existing Condition</b>	<b>Length (m)</b>	<b>Cost/m to upgrade</b>	<b>Total</b>
Road - Good Condition	0	\$0.00	\$0.00
Rough Road - Condition OK	27	\$0.00	\$0.00
Rough Road - Minor Upgrades	4719	\$10.00	\$47,190.00
Upgrade Existing Single Track - Gentle Terrain	0	\$20.00	\$0.00
Upgrade Existing Single Track - Difficult/Steep Terrain	0	\$60.00	\$0.00
None* (portion within DL 2247 may be provided by developer)	4974	\$40.00	\$198,960.00
None - Difficult/Steep Terrain	2355	\$60.00	\$141,300.00
<b>Total</b>	<b>12075</b>		<b>\$387,450.00</b>

\*Note that the general costing estimates of the preferred routing are to develop the route to a “functional” level, using existing roadbeds and roads with minimal traffic when possible. Existing Conditions described as Road – Good Condition, Rough Road – Condition OK, and Rough Road – Minor Upgrades are sections that do not meet the desired Sea to Sky Trail Standard but will function over the initial period of the Sea to Sky Trail’s development and will enable the trail to be used long before its completion.

**Character Area #10 – Green/Soo River confluence to Pemberton (south end)****Description of preferred routing (south to north):**

## Preferred Route Existing

The existing preferred route travels north from the parking area around the Green River Motocross/stock car tracks. The route runs adjacent to Highway #99 on the east side and follows across the bridge over the Soo River. The preferred route then heads northward along the western side of the Green River often within the hydro ROW. Portions of the route prior to crossing the bridge over Rutherford Creek run along existing BC Hydro access roads.

The proposed route crosses the highway on the Pemberton side of the Rutherford Creek Bridge and shortly thereafter crosses over the CN Rail tracks. The route then contours along in a north-easterly direction keeping the highway and the railway to the east. The route then links up with an existing road and runs beneath the Pemberton Valley Wildlife Association's tenure (firing range and potential future biathlon training area). The route will then contour along keeping to the west of the highway and railway before descending into the village of Pemberton. *Original Sea to Sky Trail plans indicate that there may be an old trailbed along portions of this segment of the trail but existence and suitability for Sea to Sky Trail are yet to be confirmed.*

**Alternate Routings:**

## AR10.1

At the present time one of the proposed alternate Sea to Sky Trail alignments brings a route through Nairn Falls Provincial Park. This alternate route has the trail running between the railway and the Green River in the south end of the park. Site visits along that portion of the proposed alternate route indicate that there is very limited land and that it would be a very expensive option to pursue. However, as noted earlier, should the CN Rail route between Squamish and Pemberton ever decide that it is not economically viable, this portion of the railway would be ideal for the alignment of the Sea to Sky Trail. If other strategies develop which enable a route of the Sea to Sky to pass through the park it would act as both an ideal staging area as well as a breathtaking viewpoint along the trail.

The alternate route then leaves Nairn Falls Provincial Park at the north end and would arrive into Pemberton on the east side of the highway after first ascending out of the park and the descending into the village via One Mile Lake. Portions of this final section of the route are moderate/difficult singletrack trail (Lumpy's Epic) winding through the forest sections and a trail surface of dirt, roots, and rocks.

**Length: 10.19 km** (approx.)

**Elevation Gain/Loss:** 160m

Pemberton Village – 200m asl

Green/Soo Confluence – 360m asl

**Land Ownership:**

**BC Hydro ROW** –

**CN Rail ROW** – crossing DL 4148

**Surveyed Crown Land** – PT DL 1549; PT DL 4096

**Highway 99 ROW** –bridge over the Soo River, bridge over Rutherford Creek

**Private Land** –

**LWBC** – DL 5546; REM DL 1549

**BC Parks** – REM DL 4095; REM DL 4096; REM DL 1559; REM DL 239

**Ecology and Natural Features:**

Biogeoclimatic Zones = CWH ds1

Rivers:Soo River, Green River, Rutherford Creek

Lakes:One Mile Lake

Other: Nairn Falls

**Section Highlights:**

- H10.1 Confluence of the Green and Soo Rivers
- H10.2 Confluence of Rutherford Creek and Green River
- H10.3 Whitewater Kayaking Course
- H10.4 Nairn Falls Provincial Park
- H10.5 One Mile Lake
- H10.6 Village of Pemberton

**Potential Difficulties:**

- D10.1 CN Rail crossing located at
- D10.2 Routing the trail (south of) the Pemberton Valley Wildlife Association's firing range and potential future biathlon training area
- D10.3 Determining trail alignment through steep terrain while maintaining desired Sea to Sky Trail gradient

**General Costing Estimates of Preferred Route Development\***

<b>Character Area 10 - Preferred Routing</b>			
<b>Existing Condition</b>	<b>Length (m)</b>	<b>Cost/m to upgrade</b>	<b>Total</b>
Road - Good Condition	0	\$0.00	\$0.00
Rough Road - Condition OK	672	\$0.00	\$0.00
Rough Road - Minor Upgrades	967	\$10.00	\$9,670.00
Upgrade Existing Single Track - Gentle Terrain	0	\$20.00	\$0.00
Upgrade Existing Single Track - Difficult/Steep Terrain	0	\$60.00	\$0.00
None	5088	\$40.00	\$203,520.00
None - Difficult/Steep Terrain	3464	\$60.00	\$207,840.00
<b>Total</b>	<b>10191</b>		<b>\$421,030.00</b>

\*Note that the general costing estimates of the preferred routing are to develop the route to a "functional" level, using existing roadbeds and roads with minimal traffic when possible. Existing Conditions described as Road – Good Condition, Rough Road – Condition OK, and Rough Road – Minor Upgrades are sections that do not meet the desired Sea to Sky Trail Standard but will function over the initial period of the Sea to Sky Trail's development and will enable the trail to be used long before its completion.

Bibliography

Dolesh, R. J. 2004. **Tough terrain: the conflicts associated with multi-use trails.** National Recreation and Park Association.

Gambill, P. 1998. **How agencies manage multi-use trails.** Multi-Use Trail Management Policy: User-Group Conflict and Resource Impact Issues. American Trails Action Article.

Go-for-Green. 1999. Trail Monitor #1. **Economic Benefits of Trails.** Ottawa, Ontario. [www.goforgreen.ca](http://www.goforgreen.ca).

Go-for-Green. 1999. Trail Monitor #2. **The Social, Health and Heritage Benefits of Trails.** Ottawa, Ontario. [www.goforgreen.ca](http://www.goforgreen.ca).

Go-for-Green. 1999. Trail Monitor #3. **Risk Management and Liability for Trails.** Ottawa, Ontario. [www.goforgreen.ca](http://www.goforgreen.ca).

Go-for-Green. 1999. Trail Monitor #4. **Trails and the Environment.** Ottawa, Ontario. [www.goforgreen.ca](http://www.goforgreen.ca).

Green, D. 2003. **Travel Patterns of Destination Mountain Bikers.** IMBA.

IMBA. 1995. **Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors – A Resource Book.** 4<sup>th</sup> Ed., Revised. Rivers, Trails and Conservation Assistance. National Park Service

IMBA. Year? **Freeriding and Risk Management: 15 Steps to Success**

IMBA. Year? **Mountain Biking Tourism Success Stories**

IMBA. Year? **15 Tips from IMBA on Developing Mountain Biking Tourism**

IMBA. Year? **The Economic Benefits of Mountain Biking and of its Meccas: An Application of the Travel Cost Method to Mountain Biking in Moab, Utah**

IMBA. Year? **Destination Mountain Biking: Positioning Your Community for Mountain Bike Tourism.**

IMBA. 2004. IMBA's Guide to Building Sweet Singletrack. IMBA, Colorado, USA

Parker, T.S. 2004. Natural Surface Trails by Design – Physical and Human Design Essentials of Sustainable, Enjoyable Trails. Natureshape, Colorado, USA

NBPC. 1995. **The Economic and Social Benefits of Off-Road Bicycle and Pedestrian Facilities.** NBPC Technical Brief, Technical Assistance Series, Number 2. National Bicycle and Pedestrian Clearinghouse.

PWC. 2004. Economic Impact Analysis: Trans Canada Trail in Ontario. PriceWaterhouseCoopers; Tourism Advisory services.