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introduction and background

Setting the Scene

Squamish is approximately 65 kilometres north of Vancouver, a short one hour drive along the Sea-to-Sky Highway, and en route to the international ski resort of Whistler. Situated in a breathtaking location in the broader context of British Columbia's Lower Mainland, the town site is located where the north end of Howe Sound meets the flat, mountain valley bottom of the Squamish River and Estuary. It is surrounded by a powerful mountain setting, notably the large granite outcrop of the Stawamus Chief, popular with rock climbers, and Mount Garibaldi, a dormant volcanic peak and focus of the large, well-used Garibaldi Provincial Park. Numerous flood-control dikes, sloughs, rock outcroppings, and poplar-alder groves complete the landscape setting. The general sense of place that the setting offers is, as such, quite powerful and, at times, magical.

As primarily a resource-based community for most of its developed life, the traditional focus of the town's development has been on supporting industrial-type activities. For this reason, the Howe Sound and Mamquam Channel waterfronts are dominated by a container port, saw mill, and related water-oriented industrial activities. The downtown, as such, is effectively divorced from Howe Sound and little in the way of public amenities is currently located along the Channel or River. While the mountain slopes can be seen from the main shopping streets that form the heart of the downtown, a sense of detachment from the landscape setting remains. In general, existing town development, with few exceptions, has failed to capitalize on the highly evocative sense of place that the setting suggests. Development, if not properly located and designed, threatens to erode that sense of place further.

Squamish is, however, in a unique position to capitalize on its location, growth, and changing community lifestyles. With good reason, Squamish now promotes itself as the "Outdoor Recreation Capital of Canada". With major rock and boulder climbing, mountain trekking and mountain biking, wind surfing, and nearby cross-country and downhill skiing the town is becoming more and more attractive to individuals and families seeking an affordable, pleasant environment in which to lead active outdoor lives. The town is also proving, at the same time, to be increasingly attractive to the arts community. Taking careful advantage of these trends can only help to improve the Town's overall sense of place.

Smart Growth on the Ground in Squamish

Squamish is the second Smart Growth on the Ground (SGOG) partner community. SGOG is a partnership of the Design Centre for Sustainability at UBC, the Real Estate Institute of BC, and Smart Growth BC. This unique partnership seeks to transform smart growth and sustainable development into standard practice for British Columbia.

The SGOG team assists select partner communities with the preparation and implementation of neighbourhood plans that are smarter and more sustainable. The SGOG process is based on meaningful community input, an innovative charrette design process, and a foundation of research and innovation. Following the creation of a Neighbourhood Concept Plan, SGOG focuses on implementation – making the recommendations of the plan a reality "on the ground." SGOG is based upon eight guiding principles:

introduction and background

1. Each community is complete
2. Options to the car are emphasized
3. Work in harmony with natural systems
4. Buildings and infrastructure are greener, smarter, and cheaper
5. Housing meets the needs of the whole community
6. Jobs are close to home
7. The spirit of each community is honoured
8. Everyone has a voice

The SGOG process in Squamish was launched in September 2004, with the signing of a Memorandum of Understanding between the District of Squamish and the SGOG team. A public forum introduced the process and principles of Smart Growth on the Ground in October 2004. In November 2004, participants at small group workshops established priorities for design and research activities. Citizens were presented with background research and issues at a Learning Event in February 2005, and then discussed draft targets for the design process at group workshops. Throughout this process, research and meetings with a variety of experts, regulators, and stakeholders also took place, all of which culminates in this Design Brief.

The Design Brief

The Design Brief provides a detailed set of instructions used to guide the participants on the charrette team. These instructions have been crafted in response to input from the general Squamish community and stakeholder groups during the workshop phase described above, as well as through detailed research of best management practices for sustainable development, evaluation of existing policy at all levels of government, and through discussions with experts and organizations relevant to the future of Squamish. All of this input has assisted in the formation of goals, targets, and other design guidelines that are included herein.

The work of the charrette team will evolve into a detailed Concept Plan for the proposed study area. The nature of the instructions included in the Design Brief is to identify for the team *what* needs to be incorporated into the Concept Plan, as opposed to *how* to plan and design.

The current situation (2001)

Study area:

Downtown area: 200 ha (495 ac)

East Shore (of Howe Sound/Mamquam Blind Channel): 141ha (349 ac)

Estuary Conservation Area: 356 ha (879 ac)

Total area (approx): 697 ha

Population (total)

14,870 (approx. 15,390 in 2005)

Squamish Nation (within DoS)

355

Dwelling units

5150 d.u. in district

Squamish Nation (within DoS)

205

Ratio of housing types

	Squamish 2001
	%
Single-detached house	61
Semi-detached house	5
Rowhouse	12
Duplex apartment	5
5+ storey apt bldg	0
<5 storey apt bldg	12
Other attached	1
Movable dwelling	4
Secondary suite	n/a
Total Occupied Dwellings	100

Commercial floor area

700,000 ft² in district

(350,000 ft² in study area)

Office floor area

200,000 ft² in district

(150,000 ft² in study area)

Industrial areas

waterfront, BC Rail North Yards, business/industrial park

Green space (canopy cover)

8793 ha (21,728 ac)

The future situation (to be achieved by 2031)

Conservation area of estuary
356 ha (879 ac)

Population
33,100

Dwelling units and ratio of types

District of Squamish	2004	2005-2016	2017-2031
population	15,400	22,900	33,100
Residential – single family		780-1200	1050-1800
townhouse / attached		840-1380	1200-2025
apartment		540-840	750-1275
UNITS IN DEMAND		2160-3420	3000-5100
TOTAL UNITS IN DEMAND		5160-8520	
TOTAL UNITS	Approx. 5,500	7660-8920	10,660-14020
Study Area	2004	2005-2016	2017-2031
Residential – single family		0	0
Townhouse / attached		180-240	225-375
apartment		300-480	375-750
UNITS IN DEMAND		480-720	600-1125
TOTAL UNITS IN DEMAND		1080-1845	

Commercial floor area¹

District of Squamish	2004	2005-2016	2017-2031
Commercial	700,000 ft ²	300,000-400,000 ft ² (in addition to the possible WalMart and Home Depot)	400,000 ft ²
TOTAL DEMAND		700,000-800,000 ft²*	
TOTAL	700,000 ft ²	1,000,000-1,100,000 ft ² *	1,400,000-1,500,000 ft ² *
* in addition to proposed WalMart (86,029 ft ²) and Home Depot (75,000 ft ²)			
Study Area	2004	2005-2016	2017-2031
Commercial	350,000 ft ²	100,000 ft ²	130,000 ft ²
DEMAND		230,000 ft²	
TOTAL	350,000 ft ²	450,000 ft ²	580,000 ft ²

¹ Figures have been interpreted from work by economic consultant company Coriolis Consulting. In a new document approved by Squamish Council during the week of April 11-15, titled "The District of Squamish [Draft] Retail Strategy," by TREC International, commercial figures are presented that differ somewhat from those used here.

Office floor area

District of Squamish	2004	2005-2016	2017-2031
Office	200,000 ft ²	96,000-120,000 ft ²	135,000 ft ²
TOTAL DEMAND		231,000-255,000 ft ²	
TOTAL	200,000 ft ²	296,000-320,000 ft ²	431,000-455,000 ft ²

DOWNTOWN	2004	2005-2016	2017-2031
Office	150,000 ft ²	48,000-60,000 ft ²	75,000 ft ²
DEMAND		123,000-135,000 ft ²	
TOTAL	150,000 ft ²	198,000-210,000 ft ²	273,000-285,000 ft ²

Industrial areas

waterfront, BC Rail North Yards, business/industrial park, restricted industrial use in Cheekye fan area

Green space

maintain existing levels

Oceanfront Development

The Squamish Oceanfront Development Corporation is accepting of the waterfront Concept Plan in principle, subject to engineering and business studies that are forthcoming. The Concept Plan is considered a foundation for the work of the Board of Directors.

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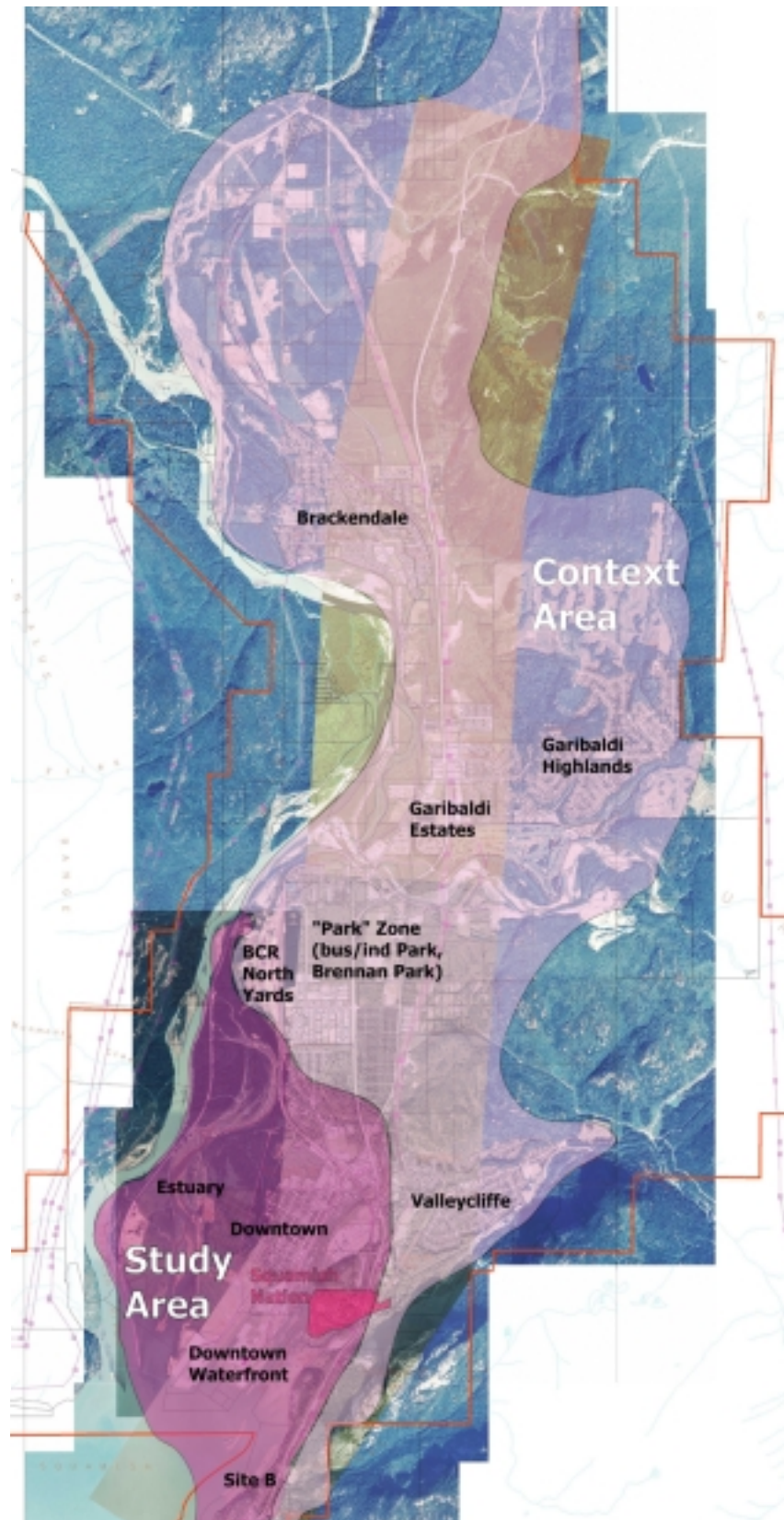
study area map

The "Study Area" is the primary area of focus for the charrette team. It is the area that will receive the most detailed attention to planning and design.

The "Study Area" consists of Downtown, the Estuary, Squamish Oceanfront Development Corporation ("Nexen") lands, Squamish Nation Band Lands, Site B, the Highway 99 corridor in the downtown area, and the Adventure Centre.

The Context Area will be considered for its influence and impact on the study area and vice versa. The context area will receive more general attention to planning and design.

The Context Area consists of the Highway 99 corridor, and of residential areas, commercial, industrial and civic areas, green space and currently undeveloped areas that are not captured in the study area.



The following pages contain design instructions for use by participants on the charrette team. The work of the charrette team will evolve into a detailed Concept Plan for the proposed study area. The nature of the instructions included in the Design Brief is to identify for the team *what* needs to be incorporated into the Concept Plan, as opposed to *how* to plan and design. The range of information provided is described below:

What is a principle?

- Principles provide a set of guiding rules that can be used as a basis for design;
- Provide a generalized framework according to which urban sustainability concepts can be organized;
- Smart Growth on the Ground has identified eight guiding principles that provide the fundamentals from which flow more detailed goals and targets for the District of Squamish.

What is a goal?

- Goals elaborate on principles, and are broad statements that define a desired condition to be achieved;
- Goals relate the principles to the specifics of a given community or situation;
- Each principle has a range of goals;
- The goals included herein have been identified through an extensive community and stakeholder engagement process.

What is a target?

- Targets provide a way of measuring progress towards (or away from) a goal;
- Identify specifically what needs to be achieved (without specifying how to achieve it) by establishing the desired level of performance;
- Provide a way of defining and measuring needs and expectations;
- Allow us to evaluate alternative designs and approaches. The design that best meets the target may be considered the preferred option;
- Help us collectively understand what we want to have achieved by a particular point in the future (i.e. 2031), and will be achieved over a period of time;
- The targets given to the design team reflect the integration of community and stakeholder input, best practice research and expertise, existing policy, and information from regulatory agencies;
- Additional information to support the targets is included in the Supporting Technical Documentation.

What other factors should the Concept Plan include or consider for each principle?

- 'Other factors' includes a range of additional information, including design guidelines, case studies and other criteria that will contribute to achievement of the goals and targets;
- Design guidelines suggest strategies that can be used to achieve the specified target;
- Case studies provide examples of places where applicable strategies or metrics have been applied;
- References are made to other documentation that will provide additional guidance in terms of achieving the goals and targets (i.e. Foundation Research Bulletins).

How do we define Principle 1?

Smart Growth on the Ground communities allow residents to live, shop, play and in some cases learn or work in the same local area. Compact, complete communities use land and infrastructure more efficiently, while providing more living choices for residents and local employees.

How does Principle 1 relate to Squamish?

Squamish is characterized by several distinct, primarily residential neighbourhoods (communities), serviced by district-wide civic infrastructure and programs. As the Study Area Map indicates, these neighbourhoods include Valleycliffe, the Downtown core, Garibaldi Estates and Highlands, Brackendale, and others.

The commercial core of the District has traditionally been the downtown area, although recent growth has expanded business and industrial activities to other neighbourhoods stretching along the highway corridor. As Squamish continues to grow, taking into consideration Principle 1 raises issues around how to accommodate growth within these neighbourhoods in a way that allows for efficient and affordable infrastructure to be provided and for the constraints of the local land base to be addressed. It also raises considerations about how to ensure the enhancement of the downtown core as a vibrant and central part of the District.

Another aspect of the District that Principle 1 relates to is the current need for many residents to leave the area to work, shop, and learn.

What are some priority goals for Squamish for Principle 1?

- Increase the vibrancy of the downtown area
- Increase the density of activities (including public entertainment, arts and culture, and business activities) within the existing developed areas
- Enhance the presence of educational opportunities
- Reduce the need to travel outside of the District

What targets should the Concept Plan achieve for Principle 1?

1. Provide 12 ha (30 ac) cumulative footprint for a post-secondary institution in the study area
2. 100% of *study area* residents are within 5-minute walk (along sidewalks, pedestrian paths, trails) of basic services, and 100% of context area residents are within a 15-minute walk of basic services
3. 90% of study area zoned for mixed use development

What other factors should the Concept Plan include or consider for Principle 1?

Outdoor cafes	<ul style="list-style-type: none"> • Not to interfere with safe vehicle and pedestrian movements • Not to exceed the width of the parent business • Not to use more than one parallel parking stall or three angled parking stalls as part of its area • 1.5 m of sidewalk remains unimpeded • Should be wheelchair accessible unless otherwise approved
Capilano College expansion	<ul style="list-style-type: none"> • 5000 student campus by 2025 • urban campus to locate within existing downtown pattern, requiring less than 14 ha (34ac). Potential for non-campus uses at grade. • A lot of services will not be provided by College (i.e. parking, school supplies, etc. For example, reference Emily Carr on Granville Island, where many of the basic services for students are provided by local merchants rather than the institution) • Reference Lynnmore Capilano College campus: 14,200 students enrolled; 14 Buildings; 34 acres; 460,497 ft² of building space <p><u>Space used for non-college / community activities and events:</u></p> <ul style="list-style-type: none"> • Sportsplex - 1,700 spectator seat Main gym, and 2,500 ft² multipurpose room; Theatre seats 370; Individual classrooms; Parking Lots (total of 1517 spaces on campus); Grounds (total of 34 acres, including buildings)
Primary and secondary schools	<ul style="list-style-type: none"> • Increase of 150% of school aged children by 2031 is projected • Link to parks with greenways • Incorporate space that can be shared with the community at large, such as play fields and parking
Community Amenities	<ul style="list-style-type: none"> • Space for dance lessons • Theatre for community uses • Urban recreational amenities (e.g. basketball courts, children’s play areas) in the study area • Additional satellite recreation facilities (1 per 8000-10,000 population) in the study area • Civic plaza, incorporated with municipal offices • Additional park space required in the study area (may require acquisition policy) • Space that is accessed by the public for free
Parks	<ul style="list-style-type: none"> • Minimum park space ratio is 1-1.4 ha/ 1000 population • Green space network to link neighbourhoods with each other and with downtown
Eco-industrial networks	<ul style="list-style-type: none"> • EIN supports urban infill / densification, which in turn supports more transit and shared commuting (see Foundation Research Bulletin #7)
5 minute walk - connectivity	<p>(Approximately 450 m on a relatively flat surface)</p> <ul style="list-style-type: none"> • Create a centre of connected 5-minute walk neighbourhoods. Neighbourhoods based on this would range in size from between 16 ha (40 ac) to about 30 ha (75 ac). Let the Centre define the community. Design every neighbourhood around social spaces. • Build on developed land first—infill unused spaces and retrofit • Create short blocks—90 m by 180 m as a maximum size is highly efficient and cost-effective because they may be adapted to residential, commercial and institutional use. Retrofit large blocks to increase pedestrian and bicycle connectivity to surrounding blocks.

How do we define Principle 2?

Smart Growth on the Ground communities reduce the emphasis on automobiles, and provide for other transportation choices. Compact neighbourhoods with an interconnected street network are convenient for walking and cycling, enhance visual interest, and can provide sufficient residential density and a mix of uses to provide a sustainable ridership base for transit. Transportation choices reduce congestion and pollution and allow residents who cannot drive (such as children, seniors, and people with disabilities) to access daily services and activities on their own.

How does Principle 2 relate to Squamish?

The geographical layout of Squamish is linear, in response to the constraints of the natural boundaries created by mountains and the ocean, and in relationship to the highway that cuts through it. This linear layout has resulted in a fairly dispersed development pattern, where the distances to commercial centres and community amenities often require vehicular use.

Squamish is characterized by two contradictory transportation needs: the needs for internal mobility (that is, movement within the different neighbourhoods of the district wherein secondary routes of travel are desirable), and the needs for external mobility (that is, movement outside of the district wherein a rapid movement down a major artery or highway is desirable). While for some people the reduced speed of the highway through the district is a hassle, for people the highway has created a barrier between the two sides of the municipality, wherein traversing it is challenging for vehicles and pedestrians alike. The issue of highway design is intrinsic to Squamish's future, and the resolution of the sometimes competing needs in the face of concepts of smarter, more sustainable design is an important aspect of ensuring the livability and viability of both the study and context areas.

Another source of sometimes contradictory mobility needs is reflected in the difference between recreation and transportation. While for some people a trail is a source of recreation, for others it is a necessary mechanism for commuting from one point to another. While a dense trail network has been developing to assist pedestrians in their travels, it does not yet traverse the length of the district, and does not support all mobility needs and types.

What are some priority goals for Squamish for Principle 2?

- Improve the road and trail connectivity between different neighbourhoods and amenities within the District
- Connect the transport nodes (including trail systems, and the linkage of local and external systems)
- Improve access to transit stops, transit frequency and hours of service, and number of direct transit routes (within and also outside the community)
- Differentiate between recreation and transport
- Develop a functional classification of roads that fosters neighbourhood-scale development
- Provide small-scale pedestrian connections around key points / amenities

What targets should the Concept Plan achieve for Principle 2?

4. Connect one end of valley to the other through a trail network (provide contiguous bike lanes / trail throughout District, connecting downtown with other neighbourhoods)
5. 100% of dwelling units are within 5-minute walk of either a neighbourhood connector trail or a corridor trail
6. 80% residential and commercial units in study area are within 200 m of transit stop
7. 2 to 1 ratio of roads to designated bike route
8. Slow traffic to 50 km/h on neighbourhood collector and secondary arterials and to 60 km/h on highway within town and 80 km/h at town fringes

principle 2

options to the car are emphasized

What other factors should the Concept Plan include or consider?

Parking	Parking strategies	Standard	Compact
	<ul style="list-style-type: none"> Surface lots not to be located in front of buildings (put at sides and rear only) Include on-street parking to help fulfill parking requirements Use shared parking (see Foundation Research Bulletin #5)	On-street Width: 2.6m (8.5 ft) Length: 6.7m (22 ft)	Width: 2.3m (7.6 ft) Length: 5.5m (18 ft)
	<u>Total Number of disabled off-street spaces required:</u> # of parking spaces in lot # required 1-50 1 51-100 2 101+ 2 (plus one for every 50 spaces over 100)	Off-street <u>For a 90° stall</u> Width: 2.7 m (9ft) Length: 6.0 m (20ft) Aisle width: 1-way 7.3 m (24 ft) 2-way 7.3 m (24 ft)	<u>For a 90° stall</u> Width: 2.29m (7.5ft) Length: 4.88m (16ft)
		<u>For a 45° stall</u> Width: 2.7 m (9ft) Length: 6.0 m (20ft) Aisle width: 1-way 3.6 m (12 ft) 2-way 7.3 m (24 ft)	<u>For a 45° stall</u> Width: 2.29m (7.5ft) Length: 6.0m (20ft)
Airport	<ul style="list-style-type: none"> Is currently a general aviation airport with a 2400-foot runway located 8 km from downtown Used for charter services, private aircraft, flying clubs and other commercial activities 		
Multi-modal Transit station (2 options)	<ol style="list-style-type: none"> Downtown Transit Terminal: emphasis on arriving and departing from downtown destinations. Facility includes connections between heavy passenger rail, regional transit bus, and light rail. Includes parking. Requires downtown employment centres. Facility is tightly knit into pedestrian and transit-oriented urban fabric. Consider proximity to passenger ferry. Approx. 1.2 ha (3 ac) Transit District with Rail Station: facility includes limited parking, regional transit bus, and possibly Heavy Passenger Rail. Rail and bus may be located in separate facilities. Tour busses may be located adjacent. Consider proximity to passenger ferry location. Approx. 0.8-1.2 ha (2-3 ac) 		
Passenger ferry	Facilities required for passenger ferry (proposed for 2010 Olympics). Typical sizes for ferries: Pedestrian ferry with capacity for 400 people is approx 35 m (112 ft) long		
Trail widths and materials	<ul style="list-style-type: none"> Primary/Corridor: Wide, paved, 2 way trail, suitable and accessible for all users, that accommodates linear connectivity through the urban community. Width: minimum 3.0 m; preferred 4.0 m. Area/Collector: A medium width, 2 way trail that connects local neighbourhood trails and links them to the corridor trail. This includes all public accessible dykes paths. Horseback riding on designated trails only. Width: min. 2.0 m; preferred 3.0 m. Neighbourhood: Narrow to medium width trails that enable pedestrian/cyclist links to various parts of a neighbourhood. Designated "Nature Trails" would also be included in this classification, or a higher classification if considered a high usage trail. Width: minimum 1.5 m; preferred 2.0 m. Specified use trail/area: Narrow paths, usually with natural ground materials, minimal maintenance and minimal clearing. Maintenance and development by an "authorized" user group. Examples; single or double track mountain bike trails, horseback riding only trails, trials riding only area. Width: n/a. Designated on-street cycling: Designated paved bike lanes "on shoulder grade" with paved roadways. Commuter routes are planned and developed by the District of Squamish and are designed to comply with Ministry of Transportation (MoT) Bikeway Standards. Width: minimum is shared 4.0m roadway; preferred is 1.5 m (one way). 		
Road Classification and Traffic Calming	<ul style="list-style-type: none"> Develop a road classification system and apply to each neighbourhood area A lot of connectivity between alternate / parallel / frontage roads and study area Corner bulges at neighbourhood collectors and secondary arterials (either two or four per intersection) Traffic circles instead of traffic signal in residential neighbourhoods 		
Eco-industrial networks	<ul style="list-style-type: none"> Support alternative fuel (H2; biofuel) pilot projects (e.g. municipal bus fleet). (see Foundation Research Bulletin #7)		
5 minute walk - connectivity	(Approximately 450m on a relatively flat surface) <ul style="list-style-type: none"> Commercial street sidewalk widths - minimum of 3 m to a maximum of 6 m Create a connected sidewalk network. Sidewalks are the essential connective element between blocks. Design blocks to encourage flow, with an emphasis on people. Open cul-de-sacs to foot and bicycle traffic. Any public mid-block path must be min. 6 m wide. Non-auto connectivity across the Highway 		
Highway Design	<ul style="list-style-type: none"> Consider narrowing lane width Integrate roads with trails Character enhancement (including "gateways") Lowering design speed (see document: District of Squamish Highway Upgrade Opportunities)		
"couplet": two one-way streets set approx one block apart, each functioning like an arterial, but each street is two lanes and has slower speed limits	Consider using a "couplet" design through commercial/town centre area. <ul style="list-style-type: none"> Because the streets are narrower, pedestrian crossings are shorter and the street is pedestrian-scaled. The length of the couplets would be short, in proportion to the size of the centre. As a result, the center becomes a mixed-use retail cluster. Couplets make it possible to create a grid of pedestrian-scale streets in the commercial center. 		
Mamquam X-ing	Consider connectivity between downtown and areas east of the Mamquam Blind Channel		

How do we define Principle 3?

Smart Growth on the Ground communities respect, maintain, and restore the natural functioning of the landscape. Communities can be more environmentally friendly, energy efficient, and cost effective, by respecting natural ecosystems - particularly agricultural land and stream systems and their associated aquatic habitat.

How does Principle 3 relate to Squamish?

The natural areas of Squamish are many, though the value of each has not been fully identified. Squamish is fortunate to have these natural areas, and must now negotiate urban growth in a way that preserves as many of these areas as possible. The conservation of important ecological features (streams, soils, forests and drainage patterns) is a key first step in developing with a smaller impact. For example, there are a number of wetlands that are important to the overall health of the watershed. Identifying where these are and integrating them within development plans is crucial to achieving harmony between human and natural systems.

At the same time, where land has been cleared for past development, the challenge is to reintroduce ecological functioning wherever possible. This includes ensuring the connectivity between fragmented green spaces is resurrected, and the restoration and connection of important bodies of water (in particular, lost, partially buried, or unhealthy streams).

This approach to development not only has important ramifications for the healthy functioning of the ecosystem, it also impacts on the natural aesthetic of the community. For example, limiting development on steep slopes not only is safe from geological hazards and hydrological functioning perspectives, it helps to preserve important viewsapes that may greatly affect the perceived spirit of a place.

What are some priority goals for Squamish for Principle 3?

- Provide connectivity between green spaces
- Provide functioning tidal channels and stream corridors
- Preserve the natural condition of habitats for terrestrial and aquatic species
- Maintain functioning wetlands, especially those that feed into rewatered streams and tidal channels
- Provide a barrier to slow the progression of wildfire
- Preserve the environmental and aesthetic characteristics of view corridors
- Allow for natural hydrological functioning of the landscape

What targets should the Concept Plan achieve for Principle 3?

9. Be able to circumnavigate Squamish in clear ocean channels (includes rewatering Loggers Lane Creek, Finch Creek, Wilson Slough & Creek, and Business Park ditch to Dentville Woods)
10. 100% of highway corridor (including ditches) are maintained in a natural condition
11. 95% of riparian corridors have 30 m minimum setback
12. Effective impervious area of 60% in study area, 40% in residential areas of context area, 10% in district overall
13. 100% existing wetlands preserved

principle 3

work in harmony with natural systems

What other factors should the Concept Plan include or consider?

View preservation	<ul style="list-style-type: none"> Use streets to frame views. Such views include landmarks, downtown, mountains, the waterfront.
Habitat patch size and connectivity	<ul style="list-style-type: none"> 10 ha minimum habitat patch size if patch is more than 2 km from another patch, or if it is not connected by a corridor of 50m minimum width.
Trees	<ul style="list-style-type: none"> Plant native trees, such as: Douglas Fir, Western Hemlock, Western Red Cedar, Spruce, Garry Oak, Bigleaf Maple, Arbutus, Lodgepole Pine, Trembling Aspen, Alder, Willow, Cottonwood, Balsam poplar, Birch and Dogwood Consider native species that are more fire resistant
Corridors	<ul style="list-style-type: none"> Use green corridors to link downtown to neighbourhood nodes, and local parks to regional parks Link greenways, bikeways and walking trails to create a network Design streets and streams as one system; understand the watershed, direct the flow to absorb and clean water 50 m to 100 m wide to facilitate species movement Sides of meadows managed as meadows Adequate passage for large animals around town, including connectivity from water to mountain
Riparian setback	<ul style="list-style-type: none"> 30 m wide minimum for forested riparian setbacks, with mature trees (>30 years) and a mixed age understory Use raised boardwalks and pervious gravel paths to limit impact Density credit may be required for all otherwise buildable land located within the recommended buffer Such buffers can reduce size and number of stormwater detention basins needed on development sites
Rainwater management	<ul style="list-style-type: none"> 30 m wide minimum for forested riparian setbacks, with mature trees (>30 years) and mixed age understory Absorbent landscapes (raised planters, rain gardens, other planted areas with soils between 300 mm and 450 mm) Rain barrels or cisterns to capture roof runoff (for use in irrigation/car washing, etc) Swales that collect run-off from parking Green roofs Create urban gardens—have small gardens along street corridors; use traffic circles, bulges and boulevards Line street with trees that reach a mature height of at least 15 metres, planted a maximum 10 metres apart (consider interface with overhead power lines)
Trails	<ul style="list-style-type: none"> Raised boardwalks and gazebo lookouts in wildlife management areas Estuary to have a raised walkway system
Eco-industrial networks	<ul style="list-style-type: none"> Co-ordinated efforts to xeriscape can reduce initial costs to businesses, and reduce water consumption Recover heat from hot wastewater streams; use "clean" wastewater to displace non-potable uses Fit development to the land — development to incorporate sites' ecological features, natural landscaping, shared facilities, and massing to minimize footprint. <p>(see Foundation Research Bulletin #7)</p>

principle 4

buildings and infrastructure are greener, smarter, and cheaper

How do we define Principle 4?

In much of today's development, environmental damage stems from the basic components of infrastructure needed by a household or business. Moreover, the ability of municipalities to pay for the mounting costs of aging infrastructure is no longer a given. Smart Growth on the Ground communities optimize the economic, social and ecological impact of buildings and infrastructure, in particular through integrating the different systems such that they are all multifunctional – the systems are layered. Innovative development standards, such as "green" infrastructure and buildings or natural drainage systems, can result in lower impact solutions that cost municipalities, residents, and businesses much less over the long term.

How does Principle 4 relate to Squamish?

With high growth pressure, strong environmental values, a limited land base, and the exposure that future events will bring, Squamish is in a position to take a leadership role among growing and transitioning communities by demonstrating how a 'greener' approach to buildings and infrastructure costs less and provides more over the long-term.

What are some priority goals for Squamish for Principle 4?

- Incorporate alternative technologies for buildings and infrastructure
- Provide incentives for green buildings and infrastructure
- Facilitate the use of energy from clean and renewable sources
- Reduce the land area used for roads and parking surfaces

What targets should the Concept Plan achieve for Principle 4?

14. 40% overall canopy coverage (15% core central business districts / 25% fringe business areas and urban residential / 50% suburban residential)
15. Energy supplied through distributed energy source
16. LEED™ Gold rating (or equivalent) for all public buildings

principle 4

buildings and infrastructure are greener, smarter, and cheaper

What other factors should the Concept Plan include or consider?

Trees	<ul style="list-style-type: none"> • Tree canopy cover to cover (at maturity) 40% of each lot and 60% of residential roadways • Shade trees along streets should be planted in strips at least four feet wide, located between the pavement or curb and the sidewalk or footpath system • For parking lots, plant at a density of approximately 1 tree per 5 stalls and have a minimum mature height of at least 15 metres in order to shade a minimum of 50% of the surface lot
Building standards	<ul style="list-style-type: none"> • Minimum requirement of LEED Gold for all new civic buildings over 500m² • Minimum design standard of LEED Silver for private buildings • Buildings must show a minimum 30% improvement in energy consumption
Streets	<ul style="list-style-type: none"> • Use crushed stone for parking strips (reduces cost and water infiltration) • Retrofit catch basins in urban areas to encourage infiltration where gravel verges and swales are not feasible • Line with street trees (shade and evapo-transpiration) • Design streets to enhance natural features—cross streams at a 90° angle; use a bridge rather than a culvert; have streets flex around natural features • Fit streets to the slope. Follow the view: "steep streets on steep slopes" to reduce excessive cutting into the terrain. • Minimize the width of the street platform to reduce cut and fill. Design roads that allow slopes to lie between 5-7% or less allowing for ease of movement by any mode of transportation
Stormwater Management	<ul style="list-style-type: none"> • Allow stormwater to infiltrate the ground as close to where it falls as possible • Allow stormwater to drain to rain gardens, swales, greenways, bio-retention filter strips, and other natural surface drainage and filtration mechanisms • Direct roof drains to infiltration areas rather than into the municipal system • Reduce impervious surfaces to a minimum
Floodplain construction	<p>Downtown – FCL 2.6 m above grade</p> <p>Please refer to Foundation Research Bulletin #3 for more information</p>
Distributed Energy	<p>Please refer to Foundation Research Bulletin #8 for more information</p> <p>Market forces are beginning to favour smaller scale, fuel flexible energy systems – developed and used close to their point of use. Thus, the future of energy production will probably involve local community and individual household generation -- distributed energy systems.</p> <p>Distributed energy generation refers to the production of electricity that is located in close proximity to the market, either as on-site generation at an end user's site, generation that is installed at a utility distribution feeder/substation, or generation that is installed in close proximity to several users. This equipment could be installed on the "customer side" of the meter or the "utility" side. It can be grid connected and operated in parallel to the system, or operated independently. DG encompasses a wide range of technologies, including turbines, reciprocating engines, renewables and storage systems, which are available today, as well as advanced or emerging technologies, like fuel cells, microturbines and other systems now on the drawing board. (/www.distributed-generation.com/dpca/publications/Rulemaking.html)</p>
Eco-industrial networks	<ul style="list-style-type: none"> • Wastewater cascading reduces discharge volumes. Distributed eco-WWTPs in neighbourhoods, commercial centres, business parks. • Decentralized waste water treatment reduces pumping costs • Potential for microhydro

principle 5 housing meets the needs of the whole community

How do we define Principle 5?

Smart Growth on the Ground communities incorporate a variety of housing in the same neighbourhood and even on the same street. A mix of housing types (both owned and for rent) allows residents to live in a community throughout their life, and recognizes the increase in non-traditional households such as empty nesters, single parent families, and childless couples. A range of housing also allows lower income residents (such as seniors on fixed income or recent university graduates) equal access to community amenities and local employment opportunities.

How does Principle 5 relate to Squamish?

The population pressure facing Squamish requires the careful planning of where and how people live. A limited land base, combined with the need for people to access services, work and learning opportunities closer to their homes, requires strategies for housing that increase existing densities. Housing types for increased density can vary greatly, and must be tailored in both type and tenure to the specific context in which they are located. Squamish's need for an increase in affordable housing stock must be addressed.

What are some priority goals for Squamish for Principle 5?

- Provide a range of housing types and tenures
- Ensure the safety of residential areas (including from natural hazards)
- Facilitate the affordability of housing
- Optimize the amount of greenspace on each building parcel
- Ensure the accessibility of transit and services

What targets should the Concept Plan achieve for Principle 5?

17. Residential densities:

- ≤ 34 dwellings per hectare (14 dwellings per acre)
- 34 – 70 dph (14 – 28 dpa)
- 70 – 115 dph (28 – 42 dpa)
- 115 dph (42 dpa)

18. Housing mix ratio: Determine viability of ratio provided in Assumptions

19. Incorporate residential growth into potentially developable areas as identified in Multi-Hazard Risk Analysis map (refer to Foundation Research Bulletin #6)

principle 5 housing meets the needs of the whole community

What other factors should the Concept Plan include or consider?

Affordable housing	<p><u>Basic design strategies to achieve affordable housing:</u></p> <ul style="list-style-type: none"> • Alternative building forms: semi-detached, duplex, triplex, quattroplex, townhouse, stacked townhouse, walk-up apartments • Smaller lot sizes: zero lot line, zipper lot, wide / shallow lot • Building incrementally: Construct a liveable, unfinished house which owners can complete as their budget affords • Density development: Increase density by smaller lots, compact building forms and shared parking • Use prefabricated / modular / manufactured housing construction <p><u>Indirect approaches</u> Build secondary suites, coach houses and housing above retail</p> <ul style="list-style-type: none"> • Design walkable communities which save money required to own a car • Design energy efficient homes <p>(see Foundation Research Bulletin #1)</p>
Lot size	<ul style="list-style-type: none"> • Consider allowing smaller lots (Squamish smallest lot is 690m²; Kitsilano (Vancouver) smallest lot is 335m²)
Green space	<ul style="list-style-type: none"> • 15 -20% of the developable portion of new development sites (large tracts) to public open / green space • Green space to be a minimum of 5 m in width with larger nodes (with tree stands, play areas, etc. having a minimum width of approx. 30 m), and connected to network • Locate parks and public spaces within a three-minute walk of each home
Social space	<ul style="list-style-type: none"> • Provide semi-private open space for each home—examples include the front porch, balcony and patio, rooftop garden, courtyard • Layer living spaces on each lot to accommodate living and working needs —the basement suite, the carriage house, the attic • Design homes around a courtyard for increased social interaction and environmental stewardship • Locate driveways at rear of buildings to preserve street orientation of housing— can use partial lanes at end of block for driveway access
Safety	<ul style="list-style-type: none"> • To increase safety and provide a friendly face orient front doors to the street, using tight setbacks. Create a “porch street”. A good porch has a clear depth of at least 1.8 m and is raised a minimum of 0.5 m off the ground. Vegetation or fence should be a maximum 1 m height in front. For residences, setbacks should be between 3 and 5 m.
Densities	Please see Squamish Cases for additional information
Eco-industrial networks	<ul style="list-style-type: none"> • New developments to include renewable energy facilities; mixed use neighborhoods to share distributed green energy infrastructure (see Foundation Research Bulletin #7) • Transportation and other connections between business/industrial park and Squamish Terminals

How do we define Principle 6?

Smart Growth on the Ground communities foster sustainable economic growth. Local economic growth allows many residents to find employment close to home and supports local businesses, while making the best use of existing infrastructure.

How does Principle 6 relate to Squamish?

Many Squamish residents commute outside of their community for work. With the closing of resource-based jobs, and the increase in tourism-based jobs in Whistler and the surrounding region, Squamish residents distribute their time and money outside of their own community through the act of commuting to work. Opportunities exist in Squamish for growth in job sectors that can locate in-town, including professional, technical, and tourism jobs.

What are some priority goals for Squamish for Principle 6?

- Provide a diversity of employment opportunities
- Provide commercial spaces that are affordable to small-scale business operations
- Foster the growth of value-added industry; marine-based activities; green technology; and arts / culture activities as economic generators
- Enhance the presence and viability of hospitality accommodation within the downtown area
- Improve the pedestrian and transit accessibility of employment opportunities

What targets should the Concept Plan achieve for Principle 6?

20. Incorporate hospitality accommodations into study area that have capacity for mid-size conventions

21. 1.25 jobs per dwelling unit

principle 6

good jobs are close to home

What other factors should the Concept Plan include or consider?

Large-scale retail	<p>Option 1: Divide large-scale retail into multiple smaller buildings, with mitigating siting and design requirements (total combined ft² not to exceed limit of typical large single building development)</p> <p>Option 2: Multi-story retail approach, with mitigating siting and design requirements (total building ft² not to exceed limit of typical large single story building development)</p> <p>Option 3: Multi-story mixed use approach, with mitigating siting and design requirements (storey / storeys above ground are non-retail uses)</p>																																																																																																																												
Small-scale retail	Layer public and commercial space into each block and accommodate many parcel types within a block -- for example small businesses and live/work units or commercial units in the same block or even building.																																																																																																																												
Employment Diversity	<p>Focus on increasing participation of the following sectors:</p> <ul style="list-style-type: none"> • Green technology (Information and cultural industries) • Professional, scientific and technical services • Educational services • Value-added industry (construction) • Arts, entertainment and recreation <p style="text-align: center;">LABOUR FORCE BY INDUSTRY, 2001</p> <table border="1"> <thead> <tr> <th rowspan="2">Industry</th> <th colspan="2">Squamish</th> <th>GVRD</th> <th>BC</th> </tr> <tr> <th>#</th> <th>%</th> <th>%</th> <th>%</th> </tr> </thead> <tbody> <tr><td>Accommodation and food services</td><td>1,310</td><td>16.6%</td><td>7.8%</td><td>8.3%</td></tr> <tr><td>Retail trade</td><td>780</td><td>9.9%</td><td>11.1%</td><td>11.6%</td></tr> <tr><td>Transportation and warehousing</td><td>705</td><td>8.9%</td><td>6.3%</td><td>5.7%</td></tr> <tr><td>Construction</td><td>690</td><td>8.8%</td><td>5.1%</td><td>5.9%</td></tr> <tr><td>Manufacturing</td><td>645</td><td>8.2%</td><td>9.4%</td><td>9.6%</td></tr> <tr><td>Health care and social assistance</td><td>630</td><td>8.0%</td><td>9.5%</td><td>9.9%</td></tr> <tr><td>Educational services</td><td>425</td><td>5.4%</td><td>7.1%</td><td>6.9%</td></tr> <tr><td>Public administration</td><td>380</td><td>4.8%</td><td>4.3%</td><td>5.6%</td></tr> <tr><td>Other services (except public administration)</td><td>370</td><td>4.7%</td><td>4.9%</td><td>4.9%</td></tr> <tr><td>Professional, scientific and technical services</td><td>345</td><td>4.4%</td><td>8.7%</td><td>6.8%</td></tr> <tr><td>Agriculture, forestry, fishing and hunting</td><td>340</td><td>4.3%</td><td>1.3%</td><td>3.9%</td></tr> <tr><td>Administrative and support, waste management and remediation services</td><td>305</td><td>3.9%</td><td>4.3%</td><td>4.0%</td></tr> <tr><td>Arts, entertainment and recreation</td><td>255</td><td>3.2%</td><td>2.3%</td><td>2.3%</td></tr> <tr><td>Finance and insurance</td><td>210</td><td>2.7%</td><td>5.2%</td><td>4.0%</td></tr> <tr><td>Information and cultural industries</td><td>180</td><td>2.3%</td><td>4.2%</td><td>3.1%</td></tr> <tr><td>Wholesale trade</td><td>130</td><td>1.6%</td><td>5.3%</td><td>4.1%</td></tr> <tr><td>Real estate and rental and leasing</td><td>95</td><td>1.2%</td><td>2.4%</td><td>2.1%</td></tr> <tr><td>Utilities</td><td>40</td><td>0.5%</td><td>0.6%</td><td>0.6%</td></tr> <tr><td>Mining and oil and gas extraction</td><td>35</td><td>0.4%</td><td>0.2%</td><td>0.7%</td></tr> <tr><td>Management of companies and enterprises</td><td>10</td><td>0.1%</td><td>0.1%</td><td>0.1%</td></tr> <tr><td>Total Experienced Labour Force*</td><td>7,880</td><td>100.0%</td><td>100.0%</td><td>100.0%</td></tr> <tr><td>Inexperienced Labour Force**</td><td>70</td><td></td><td></td><td></td></tr> <tr><td>Total Labour Force</td><td>7,950</td><td></td><td></td><td></td></tr> </tbody> </table>	Industry	Squamish		GVRD	BC	#	%	%	%	Accommodation and food services	1,310	16.6%	7.8%	8.3%	Retail trade	780	9.9%	11.1%	11.6%	Transportation and warehousing	705	8.9%	6.3%	5.7%	Construction	690	8.8%	5.1%	5.9%	Manufacturing	645	8.2%	9.4%	9.6%	Health care and social assistance	630	8.0%	9.5%	9.9%	Educational services	425	5.4%	7.1%	6.9%	Public administration	380	4.8%	4.3%	5.6%	Other services (except public administration)	370	4.7%	4.9%	4.9%	Professional, scientific and technical services	345	4.4%	8.7%	6.8%	Agriculture, forestry, fishing and hunting	340	4.3%	1.3%	3.9%	Administrative and support, waste management and remediation services	305	3.9%	4.3%	4.0%	Arts, entertainment and recreation	255	3.2%	2.3%	2.3%	Finance and insurance	210	2.7%	5.2%	4.0%	Information and cultural industries	180	2.3%	4.2%	3.1%	Wholesale trade	130	1.6%	5.3%	4.1%	Real estate and rental and leasing	95	1.2%	2.4%	2.1%	Utilities	40	0.5%	0.6%	0.6%	Mining and oil and gas extraction	35	0.4%	0.2%	0.7%	Management of companies and enterprises	10	0.1%	0.1%	0.1%	Total Experienced Labour Force*	7,880	100.0%	100.0%	100.0%	Inexperienced Labour Force**	70				Total Labour Force	7,950			
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District of Squamish	<ul style="list-style-type: none"> • Requires office facilities to house additional staff (FTE) –quantity unconfirmed • Incorporate with new civic plaza and municipal 'hub' 																																																																																																																												
Centres of Excellence	<ul style="list-style-type: none"> • Centre for Tourism Excellence • Centre of Excellence for Alternative Energy 																																																																																																																												
Hotel and conference centre	<ul style="list-style-type: none"> • Mid-size hotel and conference centre with capacity for 500-1000 in largest meeting room, and approx. 400-450 guest rooms. Approx. footprint of 2000-5500 m² (22,000-60,000 ft²) 																																																																																																																												
Eco-industrial networks	<ul style="list-style-type: none"> • District participation in B.C.'s Hydrogen Highway; or Fleet Challenge B.C. (biofuels), attracts related sustainable transportation industry • Opportunities for micro-wastewater treatment plants; marketability of fertilizer / plant products of a solar aquatics facility • Attract bio-fuel co-generation facility; fuel cell refueling station (H2 Highway) • New micro-utility businesses in Squamish (e.g. Alternative Energy Initiative) • Joint green marketing initiatives; attract "scavenger / decomposers" (e.g. recycling; re-manufacture; rental & repair firms) • EIN helps to identify infill and redevelopment opportunities (e.g. business incubator for small wood products manufacturers) <p>(see Foundation Research Bulletin #7)</p>																																																																																																																												

How do we define Principle 7?

Smart Growth on the Ground communities are animated, diverse, and have a strong local identity. The cultural heritage of the community is celebrated in functional and meaningful ways. Vibrant neighbourhood and town centres are focal points for community interaction, allow residents to find work, shopping, and other activities close to home, and provide a population base to support local businesses and transit.

How does Principle 7 relate to Squamish?

The name Squamish means, "Mother of the Wind", in Coast Salish, and is testimony to the winds, which rise from the north before noon and blow steadily until dusk. Before the white man came to the Squamish Valley, the Squohomish tribes inhabited the area. These tribes lived in North Vancouver and came to the Squamish Valley to hunt and fish. The first contact with the tribes had with the white man was in 1792 when Captain Vancouver came to Squamish to trade with the Indians near the residential area of Brackendale, (where the original Squamish Nations Reserve was first located).

www.squamishchamber.com/dyn.Squamish_History.php

The District of Squamish has an ancient and layered history, extending from the Coast Salish tribes that first inhabited the land, through mining exploration, farming activities, and the more recent past of a flourishing timber industry. Throughout this history, the natural backdrop for the community has represented a defining characteristic for its inhabitants and their activities. Now touted as the 'Outdoor Recreation Capital of Canada', Squamish is a municipality of active people, a source of tourism and growth pressures. Honouring the spirit of the community's past and its sense of place now and in the future is an important aspect of defining a clear identity and a "made in Squamish" aesthetic for the downtown, which in turn is seen as an important key to reinvigorating the downtown.

Fundamental to honouring the spirit of the community is the full integration, spiritually, aesthetically, and practically, of the Squamish Nation into the development of the study area. This can occur not only through paying heed to sacred sites, as well as to key wildlife and marine life areas, but also through allowing greater opportunities for dialogue.

What are some priority goals for Squamish for Principle 7?

- Integrate First Nations history, culture, and interests into development
- Foster the development of Squamish as a community of active people
- Incorporate public art that addresses contextual issues and values
- Protect natural and recreational areas
- Provide public access to land and water
- Ensure design cohesion of buildings and infrastructure, in an aesthetic unique to Squamish
- Protect and enhance the natural visual amenities

What targets should the Concept Plan achieve for Principle 7?

22. 30 m natural buffer for development along highway and major access routes (including retaining existing trees)
23. Public accessibility of waterfront
24. Design guidelines ("form-based code") for buildings in study area
25. Identify and increase number of "great good places"

What other factors should the Concept Plan include or consider?

Sense of place	<ul style="list-style-type: none"> Design the community as a series of small rooms within the larger “valley room” Enhance the experience of valley <i>light</i> and <i>wind</i> in the design of buildings, places and events Fortify the presence of the estuary within the town and define its edges Enhance the dyke and water management experience and increase public access, understanding, and participation of such important structures within Squamish Program downtown to be a civic and spiritual <i>heart</i> of the community with spaces for everyone Design at least 15 special details within the town that informs its uniqueness (see Foundation Research Bulletin #4) 																																																										
Great good places	<ul style="list-style-type: none"> Great, good places are gathering places where informal public life occurs beyond the realm of home and work Some characteristics: accessible to the general public with no formal criteria of membership or inclusion; conversation is the main activity; are open for long hours; are located in local proximity to one’s residence; the mood is convivial and playful. 																																																										
Urban agriculture	<table border="1"> <thead> <tr> <th>SYSTEM</th> <th>SYSTEM ELEMENT</th> <th>RATIOS PER 1000 POP.</th> <th>SIZES (TYP. OR MIN.)</th> </tr> </thead> <tbody> <tr> <td rowspan="10">PRODUCTION</td> <td>edible landscaping</td> <td></td> <td>linear (within right-of-ways)</td> </tr> <tr> <td>community gardens</td> <td></td> <td>100-500 sq m (1,000-5,400 sq ft)</td> </tr> <tr> <td>community garden plot</td> <td>6.5 (Montreal)-22.2 (Berlin)</td> <td>2-9 sq m (20-100 sq ft)</td> </tr> <tr> <td>allotment gardens</td> <td></td> <td>5 ha (12.5 acres)</td> </tr> <tr> <td>allotment garden plot</td> <td></td> <td>18 sq m (200 sq ft)</td> </tr> <tr> <td>community greenhouse</td> <td></td> <td>4.88x7.32 m (16x24 ft)</td> </tr> <tr> <td>aquaponics</td> <td></td> <td>1,860 sq m (20,000 sq ft)</td> </tr> <tr> <td>hydroponics</td> <td></td> <td>930 sq m (10,000 sq ft)</td> </tr> <tr> <td>microfarm / market garden</td> <td></td> <td>0.5 ha (1.25 acres)</td> </tr> <tr> <td>agricultural eco-park</td> <td></td> <td>4 ha (10 acres)</td> </tr> <tr> <td rowspan="5">DISTRIBUTION</td> <td>grocery store</td> <td></td> <td>1,225 sq m (13,000 sq ft) small 2,250 sq m (24,000 sq ft) medium</td> </tr> <tr> <td>outdoor/covered marketplace</td> <td></td> <td>370-750 sq m (4,000-8,000 sqft)</td> </tr> <tr> <td>marketplace vendor stalls</td> <td></td> <td>3x3 m (10x10 ft)</td> </tr> <tr> <td>clubs/food banks/etc</td> <td></td> <td>46-93 sq m (500-1,000 sq ft)</td> </tr> <tr> <td>cafeteria</td> <td></td> <td>93-372 sq m (1,000-4,000 sq ft)</td> </tr> <tr> <td rowspan="2">RECOVERY</td> <td>solar aquatic waste treatment</td> <td>1,500 sqm (16,000 sqft)</td> <td>200-1000 sq m (2,500-10,500 sq ft) [a 730 sq m (7,800 sq ft) system can serve up to 2000 homes]</td> </tr> <tr> <td>in vessel composting</td> <td>1,300 sqm (14,300 sqft)</td> <td>a 2 ha (5 acres) site serves 15,000 people</td> </tr> </tbody> </table> <p>(see Foundation Research Bulletin #2)</p>	SYSTEM	SYSTEM ELEMENT	RATIOS PER 1000 POP.	SIZES (TYP. OR MIN.)	PRODUCTION	edible landscaping		linear (within right-of-ways)	community gardens		100-500 sq m (1,000-5,400 sq ft)	community garden plot	6.5 (Montreal)-22.2 (Berlin)	2-9 sq m (20-100 sq ft)	allotment gardens		5 ha (12.5 acres)	allotment garden plot		18 sq m (200 sq ft)	community greenhouse		4.88x7.32 m (16x24 ft)	aquaponics		1,860 sq m (20,000 sq ft)	hydroponics		930 sq m (10,000 sq ft)	microfarm / market garden		0.5 ha (1.25 acres)	agricultural eco-park		4 ha (10 acres)	DISTRIBUTION	grocery store		1,225 sq m (13,000 sq ft) small 2,250 sq m (24,000 sq ft) medium	outdoor/covered marketplace		370-750 sq m (4,000-8,000 sqft)	marketplace vendor stalls		3x3 m (10x10 ft)	clubs/food banks/etc		46-93 sq m (500-1,000 sq ft)	cafeteria		93-372 sq m (1,000-4,000 sq ft)	RECOVERY	solar aquatic waste treatment	1,500 sqm (16,000 sqft)	200-1000 sq m (2,500-10,500 sq ft) [a 730 sq m (7,800 sq ft) system can serve up to 2000 homes]	in vessel composting	1,300 sqm (14,300 sqft)	a 2 ha (5 acres) site serves 15,000 people
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	aquaponics		1,860 sq m (20,000 sq ft)																																																								
	hydroponics		930 sq m (10,000 sq ft)																																																								
	microfarm / market garden		0.5 ha (1.25 acres)																																																								
	agricultural eco-park		4 ha (10 acres)																																																								
DISTRIBUTION	grocery store		1,225 sq m (13,000 sq ft) small 2,250 sq m (24,000 sq ft) medium																																																								
	outdoor/covered marketplace		370-750 sq m (4,000-8,000 sqft)																																																								
	marketplace vendor stalls		3x3 m (10x10 ft)																																																								
	clubs/food banks/etc		46-93 sq m (500-1,000 sq ft)																																																								
	cafeteria		93-372 sq m (1,000-4,000 sq ft)																																																								
RECOVERY	solar aquatic waste treatment	1,500 sqm (16,000 sqft)	200-1000 sq m (2,500-10,500 sq ft) [a 730 sq m (7,800 sq ft) system can serve up to 2000 homes]																																																								
	in vessel composting	1,300 sqm (14,300 sqft)	a 2 ha (5 acres) site serves 15,000 people																																																								
Visual Amenities	<ul style="list-style-type: none"> Allow natural features to shape the block—wrapped block around the green space; pierced block by the green space; and modified block pattern responding to the green space. Avoid having a wall of backyard fences around the natural feature. Maintain highway corridor in its natural state 																																																										

How do we define Principle 8?

Smart Growth on the Ground communities belong to those who live, work, and play there. Meaningful participation includes an early and ongoing role for community members by engaging them in planning, design and development processes. This ensures that new development is accepted by existing stakeholders and responds to local needs.

How does Principle 8 relate to Squamish?

The people of Squamish are a vocal and engaged group, bringing exciting ideas and feedback to the planning process. However, community participation across the entire community spectrum can be challenging to achieve. Squamish must ensure that its many voices are encouraged to speak. Places and spaces, both formal and informal, for community members to socialize, engage, plan, and celebrate will help this to happen.

What are some priority goals for Squamish for Principle 8?

- Provide a variety of spaces for community gathering
- Provide communal / shared meeting spaces for community groups, organizations, families
- Cross-cultural workshops, to "educate each other to create an atmosphere of understanding, respect and tolerance"²
- Communications network for emergency situations³

What targets should the Concept Plan achieve for Principle 8?

26. 50% educational facility's area available for other uses
27. Incorporate "world class" cultural centre
28. Maintain existing ratio of meeting / gathering spaces to population

² [Interim Report](#), Squamish Nation – District of Squamish: Community to Community Leadership Forums.

³ Ibid.

What other factors should the Concept Plan include or consider?

Cultural centre	<p>Approx 2000 m² (21,500 ft²). Program to include:</p> <ul style="list-style-type: none"> • Reception hall • Exhibition / gallery area • Theatre / cinema • Library • Classrooms / studios • Restaurant / kitchen • Offices • Utility rooms <p>(see compiled case studies on cultural centres for additional info)</p>
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Sense of place	<p><u>Ways to increase sense of place in Squamish</u></p> <ul style="list-style-type: none"> • Define spaces and routes for festivals and events • Provide more community art, theatre and entertainment spaces and special places for honouring and acknowledging special community members • Design at least 15 special details within the town that informs its uniqueness <p>(see Foundation Research Bulletin #4)</p>
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mapping resources

MAP THEME	SCALE
<i>BASE MAPS</i>	
Regional Area Base	1:10,000 (showing the project area in a regional context)
Project Area Base	1:5000 (showing the project area [study area and context area])
Study Area Base	1:2000 (showing the study area)
Specific Areas Base	1:500 (Cleveland Avenue intersection; others to be determined)
<i>LAND USE</i>	(current land uses, based on zoning)
Project Area Land Uses	1:5000
Study Area Land Uses	1:2000
<i>BIOPHYSICAL</i>	(canopy cover, streams, trails, etc.)
Project Area Biophysical	1:5000
Study Area Biophysical	1:2000
<i>RISK FROM HAZARDS</i>	(aggregate risk from hazard, overlaid with "developable areas")
Regional Area Hazards	1:10,000
Project Area Hazards	1:5000
Study Area Hazards	1:2000
<i>OCP AND SWDCP</i>	(Official Community Plan, and Squamish Downtown Waterfront Concept Plan)
Regional Area OCP and SWDCP	1:10,000
Project Area OCP and SWDCP	1:5000
Study Area OCP and SWDCP	1:2000
<i>WATER SERVICING PLAN</i>	(not aligned)
Project Area Water Servicing Plan	1:5000
Study Area Water Servicing Plan	1:2000

mapping resources

<i>SEWER/SANITARY SERVICING PLAN</i>	(not aligned)
Project Area Sewer/Sanitary Servicing Plan	1:5000
Study Area Sewer/Sanitary Servicing Plan	1:2000
<i>CONTOURS/ ELEVATIONS</i>	(not 100% accurate/aligned)
Project Area Contours/Elevations	1:5000
Study Area Contours/Elevations	1:2000
<i>AERIAL OBLIQUE VIEWS</i>	

Basic Services – The provision of everyday services and retail establishments (such as small grocery stores, banks, post offices, etc.) in an area that allow residents to satisfy their daily needs.

Biofuels – Solid, gaseous or liquid fuel derived from biological sources such as dry organic matter, combustible plant oils or metabolic byproducts. Examples of biofuels include alcohol from fermented sugar (ethanol and methanol), bio diesel from vegetable oil and wood, and methane from decomposing organic matter. Biofuels are considered carbon neutral, since they contain carbon that was recently extracted by growing plants from atmospheric carbon dioxide. When burned, this carbon is returned to the earth's atmosphere.

Catch basins – A below-ground chamber usually built into the curb line of a street that admits surface water into the storm sewer and prevents clogging by collecting sediment and debris.

Cisterns – A receptacle designed to capture and store rainwater.

Clean energy – The production of energy from a source that does not result in the release of pollutants that contribute to poor air quality, photochemical smog, acid rain or global climate change. Clean energy is different from green energy – which is the production of clean energy from renewable sources. Although green energy is clean, not all sources of clean energy are green. For example, large scale hydroelectric dams provide clean energy, however because they obstruct rivers for aquatic life and result in lower water quality they are not considered green. Nuclear energy is also considered to be a clean source of energy, however due to the hazards of storing nuclear waste it cannot be considered green.

Co-generation – Is the production of electrical energy and another form of useful energy, such as heat or steam, from the same fuel source. Also known as combined heat and power or CHP, cogeneration is very efficient since it captures and uses energy that would otherwise be wasted.

Context area – area encompassing the Highway 99 corridor from Site B to the Cheekye River, including Residential, Industrial, Commercial, Civic, Green and Undeveloped areas. This area is considered the context which informs decisions made for the study area.

Corner bulges – Are curb extensions placed at intersections that reduces the roadway curb-to-curb width. Also known as nubs, bulb outs, knuckles, intersection narrowing, neckdowns and safe crosses, corner bulges are a traffic calming measure designed to slow down traffic and reduce short-cutting. Corner bulges can be landscaped to provide interest to the streetscape.

Distributed energy – Also referred to as “distributed generation”, distributed energy is an alternative to the centrally located, high-capacity power plants. Distributed energy systems involve many low-to-mid capacity power generation facilities throughout a district. This reduces energy loss along transmission lines, reduces the potential for blackouts while increasing the resiliency of the overall energy system.

Eco-Industrial Networks – Collaborative networks created between businesses, governments and communities to more efficiently and effectively use resources such as energy, water, and materials (see Foundation Research Bulletin #7).

Ecological functioning – The role and processes that a species, population or community plays in the interrelation between living and/or non-living components of an ecosystem. This includes nutrient and water cycling, energy flow, and gene flow. Ecological functioning also refers to the natural services provided by the ecosystem. For example, the ecological functioning of a wetland ecosystem includes the protection of recharge areas and potable water supplies, detention of floodwaters, slowing erosion and sedimentation, noise attenuation, sequestration of contaminants, water purification, and wildlife refuge. A functional ecosystem contains sufficient composition of species and biodiversity to respond to disturbance and changing environmental conditions.

Eco-WWTP – *Ecological Waste Water Treatment Plant* (see Solar Aquatics)

EIN – *Eco-Industrial Networking*

Evapotranspiration – The loss of moisture to the atmosphere through evaporation from the soil and transpiration by plants.

FCL – *Flood Construction Levels* are usually a referenced elevation above a natural boundary that are used to keep living spaces and storage areas above flood levels (see Foundation Research Bulletin #3).

Fleet Challenge BC – Managed by the Fraser Basin Council, Fleet Challenge BC is a project that aims to reduce the energy use, greenhouse gas emissions and other emission from Canada's fleets.

GHG – *Greenhouse gases* are gases such as water vapour, carbon dioxide, nitrous oxide, methane and chlorofluorocarbons (CFCs) that trap heat in the atmosphere. The rise in greenhouse gas emissions – most notably carbon dioxide emissions from burning fossil fuels – is believed to be the cause of rising atmospheric temperatures or global climate change.

Gravel verges – The edge of a road that is constructed using gravel and is used for parking. Gravel verges replace curbs and gutters to allow more rainwater to infiltrate into the soil, while reducing the amount of paving required.

Green Energy – Energy produced from clean, renewable energy resources (also known as green power). Although green energy is clean by nature, not all clean energy sources are green.

Green infrastructure – The underlying ecological processes of an area, or the natural infrastructure. It is comprised of ditches, creeks, wetlands, parks, green space, greenways, trees, green roofs, gardens, aquifers and watersheds that supply drinking water. Green infrastructure maintains infiltration rates to predevelopment conditions, maintains stream health, and contributes to the creation of walkable neighbourhoods. Green infrastructure is cheaper to build and maintain, and is resilient to fluctuating weather conditions.

Green roofs – Vegetated spaces on the roof of a human-made structure, either below, at or above grade. Green roofs are comprised of several layers including a waterproof and root repellent membrane, a drainage system, filter cloth, a lightweight growing medium and plants that sit on top of the building's roof structure. There are many benefits associated with green roofs which include:

- Extending the life of the roof membrane by reducing exposure to sunlight
- Stormwater management
- Reduce summer temperatures and compact the urban heat island effect through evapotranspiration
- Reduce winter heating cost through increased insulation
- Provide much needed greenspace in urban areas
- Provide a substrate for growing fruit and vegetables as part of an urban agriculture system

(for more information see www.greenroofs.ca)

Greenways – A linear, natural corridor that connects natural areas in a network, developed for wildlife and non-vehicular public use.

Hydrogen highway – A large-scale demonstration program intended to catalyze the commercialization of hydrogen and fuel cell technologies. The Hydrogen Highway will run from the Vancouver Airport to Whistler and consist of seven nodes, each with hydrogen fuelling infrastructure and transportation applications. Created by a partnership between NRC Institute for Fuel Cell Innovation (NRC-IFCI), BC Hydro, Methanex Corporation with funding from the Government of Canada and the Province of BC, it will be finished in time for the 2010 Winter Olympics.

H₂ – Hydrogen Highway

LEED™ - Leadership in Energy and Environmental Design is a voluntary green building rating tool designed by the US Green Building Council (USGBC) to create a metric to define and measure "green buildings". Buildings are awarded points if they meet the prerequisites, and the requirements outlined in each credit. Credits are divided in six categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation in design. Based on the total number of points earned, buildings are recognized as LEED Certified, Silver, Gold or Platinum. LEED has been adapted for use in Canada by the Canadian Green Building Council. (For more information on LEED see www.usgbc.org/leed and on LEED Canada see http://www.cagbc.org/building_rating_systems/leed_rating_system.php)

Microhydro – Also known as small-scale hydroelectric, microhydro is the production of electricity from running water. Unlike large scale hydro dam projects, microhydro does not significantly interfere with river flows and is considered a clean and green source of energy. Electricity is produced by diverting a portion of the water in a stream to drive a turbine, before the energy is returned to the stream. Since water flows day and night, microhydro systems can provide a reliable energy source and reduces the need for battery storage. (For more information visit <http://www.energyalternatives.ca/content/Categories/MicroHydroInfo.asp> and <http://www.bcsea.org/sustainableenergy/>)

Micro-wastewater treatment plants – A decentralized wastewater treatment plant on a building or neighbourhood scale.

Mixed Use – The combination of residential, commercial, retail, and/or office uses in a single development, building, or zoning district.

OCP – “Official Community Plan” is a policy document that contains objectives used to guide planning and land use in a set area such as a municipality. An OCP establishes how a community will grow.

Project area – consisting of the “context area” plus the “study area.”

Renewable energy – Energy obtained from sources that can not be depleted, such as wind, geothermal, photovoltaic, wood, waste, and solar thermal energy.

Solar aquatics – Also known as biological wastewater treatment systems, ecological wastewater treatment systems or Living Machines™, a solar aquatic system is a wastewater treatment system based on the natural water purification process of wetlands. Wastewater is circulated inside a greenhouse through a series of aerated tanks that contain plant communities and microorganisms. With this process, sunlight, oxygen, bacteria, algae, plants, snails and fish treat effluent to secondary and tertiary standards. The resulting water can be used for irrigation, groundwater recharge or can be recirculated and used to flush toilets. Solar aquatic systems are attractive, adaptable to changing effluent quality, and provide high-quality water at a low cost. For these reasons they can be found throughout the world.

For more information see <http://www.oceanarks.org/natural/>, <http://www.ecological-engineering.com/>, and <http://www.dharmalivingsystems.com/livingmachines/index.php>. For an in depth look at a solar aquatic system in use at Oberlin College, including a virtual tour and performance data, visit http://www.oberlin.edu/ajlc/systems_lm_1.html

Study area – primary area of focus in the charrette event, consisting of the Downtown, Site B, Estuary, and Squamish Nation lands.

Swales – Open, vegetated drainage channels that are used in place of curbs or paved gutters to treat and/or infiltrate stormwater.

Traffic circles – A circular island located in the centre of a road intersection. Used as a traffic calming device, traffic circles work by forcing motorists to reduce their speed as they move around the island. Traffic circles can add interest to the streetscape through landscaping or the incorporation of fountains or statues.

Tree canopy coverage – Measures how much of a site is covered by a tree canopy (usually presented as a percentage). Tree canopy coverage also measures the amount of natural shade available at a site.

Value-added businesses – A business that enhances the value of a product or service. For example, furniture making is value-added business for wood products, and organic farming is a value-added business that provides a product to a niche market.

Xeriscape – A type of landscaping that uses native, drought-tolerant plants to minimize irrigation requirements.