Brae Island Regional Park

MANAGEMENT PLAN

November 2005

GVRD

Building A Sustainable Region
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03-01-BRA-03

Dear Park Supporter:

Re: Brae Island Regional Park Management Plan

The Brae Island Regional Park Management Plan (BRAMP) was adopted by the Greater Vancouver Regional District Board of Directors on November 25, 2005 and, on behalf of the GVRD, I am pleased to provide you with this document.

The BRAMP outlines the goals, objectives, policies, land-use guidelines, and partnership initiatives for this wonderful new addition to our Regional Park System. It also lays the groundwork for continuing to preserve large portions of the park within the context of a rapidly urbanizing area, while providing for a portion of the region's recreation requirements.

As in any worthwhile endeavor none of this could have happened without the untiring involvement of those members of the public who took an interest and made a commitment to participate in the park planning process. On behalf of the GVRD Parks Committee, I thank all those who participated in this effort and encourage you to stay engaged in the implementation and monitoring of the Plan. We trust that this will be a successful plan that provides for the careful protection of this distinctive natural environment while increasing regional recreation opportunities.

GVRD currently operates 21 parks, four reserves, two ecological conservancies and three greenways open to the public for the benefit of all residents. I hope you have an opportunity to enjoy all of them.

Yours truly,

Gayle Martin

Cllr. Gayle Martin, Chair
GVRD Parks Committee
WJM/IWD/lgd

ACKNOWLEDGEMENTS

During the process of creating the Brae Island Regional Park Management Plan, many outside organizations, agencies and individuals provided perspectives and expertise. We recognize the contribution of representatives from the Fort Langley Community Association, Fort Langley Business Improvement Association, Langley Heritage Society, Langley Field Naturalists, Fort Langley Canoe Club, BC Farm Machinery and Agriculture Museum, Langley Centennial Museum and National Exhibition Centre, Greater Langley Chamber of Commerce, Equitas Developments, Wesgroup, Kwantlen First Nation, Ministry of Water, Land and Air Protection, Department of Fisheries and Oceans, Agricultural Land Commission, Parks Canada, and especially, the Township of Langley.

Thanks also go to our consultants including: Phillips Farevaag Smallenberg Landscape Architects, Strix Environmental Consultants, Northwest Hydraulics Consulting, GP Rollo & Associates, Tumia Knott of Kwantlen First Nation and Doug Crapo.

Special thanks go out to: Board members from the Derby Reach/Brae Island Regional Park – Park Association; and Stan Duckworth, operator of Fort Camping. We also remember Don McTavish who saw the potential of creating a camping experience on Brae Island.

While many GVRD staff from its Head and East Area Offices assisted this planning process special mention should go to the planning and research staff, Will McKenna, Janice Jarvis and Heather Wornell.

Finally, we wish to thank all of those members of the public who regularly attended meetings and contributed their valuable time and insights to the Plan.

Wendy DaDalt
GVRD Parks Area Manager
East Area

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Introduction

The Brae Island Regional Park Management Plan (BRAMP) provides a long-term strategy for development, operation, and stewardship of the park. The plan works within the framework of the GVRD Sustainable Region Initiative (SRI) by addressing social, economic, and environmental opportunities and constraints; and supports achievement of GVRD's Regional Parks and Greenways Plan (RPGP). It accommodates future change by providing clear guiding principles, goals, objectives, and strategies that can be used to test alternatives and adapt management prescriptions.

Public Involvement

At various times throughout the planning process, research and proposals were vetted by the public, interest groups, camping industry leaders, park partners, agencies and First Nations. Wherever possible, comments were incorporated into the final plan. Public responses to these studies clearly called for public access to the park, especially the Bedford Channel waterfront, and the maintenance and enhancement of recreational camping. Participants and agencies asked that any development minimize damage to sensitive environmental areas and that park use and facilities be compatible with adjacent communities. Aside from this widespread public support, business leaders, including the Fort Langley Business Improvement Association and the Langley Chamber of Commerce, advised that the camping facilities are important to the local economy.

Planning

The park is unique in its proximity to numerous cultural and recreational resources, trails and green space. Significant features include the Fraser River, Fort Langley National Historic Site, Langley Centennial Museum and Exhibition Centre, BC Farm Machinery and Agriculture Museum, Village of Fort Langley, South Fraser Greenway, Kwantlen First Nation Reserve, potential Fraser River Blueway, and other regional parks. The park also has a number of significant constraints including its location in the Fraser River floodplain and Agricultural Land Reserve, shoreline erosion, existing zoning, its size and present infrastructure configuration, servicing challenges, and municipal and provincial regulatory restrictions.

Preparation of the BRAMP required weighing the pros and cons of internal and external conditions and determination of the most appropriate strategy for development of the park to provide compatible camping and day-use activities. Planning studies supported the public response for a mix of camping and day-use facilities in the park. Based on these, GVRD parks prepared a plan that builds upon existing use patterns, responds to both camping and day-use recreation demand, benefits the local economy and institutions, minimizes environmental and social impacts, and provides opportunities for education and interpretation of natural and cultural features.

The plan is heavily weighted toward providing individual RV/tent camping in the existing campground. If for unforeseen reasons this should prove impossible or unsound, then the plan is flexible enough to allow alternative development scenarios on the existing Fort Camping site.

Park Program

The park goal includes offering a range of river focused day-use and recreational camping opportunities. To accomplish this the existing campground (Fort Camping) will be reduced and reconfigured to accommodate day-use facilities and activities. Day-use facilities include parking, trails (4 kms), washrooms, open space, picnicking for groups and individuals, a perched beach, informal and formal canoe launch facilities, and concession and equipment rentals (bicycles, canoes, etc). These facilities will provide an attractive base for public on-site programs while complementing other recreational and cultural attractions in the area and enhancing the overall attractiveness of the site for campers.

Brae Island offers a unique opportunity in the regional parks system to provide overnight recreation experiences. The redeveloped RV/tent campground will be reduced in size from 225 sites to 140-180 sites, depending on final site constraints, preferred character, and financial analysis. In addition to the redeveloped RV/tent campground. The plan also provides a group camping area for 24 tents and 16 rustic walk-in yurt/campsites, resulting in a total park capacity of 180-215 campers.

The Plan Concept was selected after numerous campground configurations and financial projections were prepared. Options to develop a campground beyond the existing developed footprint were rejected for environmental, community, and land-use policy reasons. The smaller campground configuration will probably generate less net income than the present operation.

The park's sensitive riparian areas, contiguous gallery forest and archaeological potential are protected by minimizing development in these features, implementing invasive species and other resource management prescriptions, and applying best management practices to construction and operations. Visitors will be informed about environmental and cultural issues and their cooperation sought through education, monitoring and regulation.

GVRD Parks' Mission Statement

To protect and care for a legacy of diverse ecosystems and wildlife features which represent the region and provide outstanding opportunities for outdoor recreation, education and community participation.

Sustainable Region Initiative

The GVRD's Sustainable Region Initiative is an evolving and overarching approach to managing regional services, which guides the GVRD's overall corporate policies. It requires that all plans consider the long term social, economic and environmental implications of programs and facilities prior to adoption.

1.0 INTRODUCTION

1.1 Brae Island Regional Park and the GVRD Parks and Greenways

The Greater Vancouver Regional District (GVRD) is a working partnership of 21 municipalities and one electoral area. The GVRD delivers utility services, parklands and greenways (Parks) for the community and provides regional level planning policies and implementation strategies.

Brae Island Regional Park (BRARP) is one of 21 regional parks, four reserves, two ecological conservancy areas and three greenways managed by GVRD Parks (Figure 1.1.1). Regional parks are located close to the Lower Mainland's population, and, in general, are large natural parks that provide recreation and education opportunities and offer protection of unique and sensitive natural features.

GVRD's 2005 Regional Parks and Greenways Plan (RPGP) provides clear goals and objectives for all facets of GVRD's Parks planning, programs and operations. BRARP supports the goals of the RPGP by:

- Protecting and restoring important Fraser River riparian features that contribute to the region's biodiversity and Green Zone;
- Expanding outdoor recreation opportunities for residents in a growing region and for tourists with a focus on destination day-use and regional camping opportunities;
- Supporting regional greenways and tourism by providing staging facilities and amenities that support trail and water- based recreation; and
- Providing education and recreation programs with community partners and businesses to foster environmental stewardship, healthy lifestyles, broad community participation and cross cultural understanding.

1.2 Brae Island Regional Park Context

The GVRD acquired BRARP (68 ha) in 1995. It is located on a small island in the Fraser River located off the shores of Fort Langley in the Township of Langley (Figure 1.2.1). Glover Road divides the park into two portions with the larger western section (66 ha) bounded on the north by an unnamed channel separating Brae from McMillan Islands, on the south by Bedford Channel, and on the east by Glover Road. The smaller portion east of Glover Road is an "L" shaped 2 ha parcel which wraps around 1.5 ha of parkland owned by the Township of Langley (TOL).

Figure 1.1.1 GVRD Regional Parks and Greenways System

The park is small by regional park standards but unique in its central location in the Lower Mainland and proximity to a number of environmental, recreational, cultural and physical amenities.

Historic Village of Fort Langley

This a culturally rich part of the region, steeped in the history and ongoing activities of British Columbia's pre-contact (aboriginal) and post contact (European settlers) inhabitants. Fort Langley National Historic Site of Canada, The Langley Centennial Museum, BC Farm Machinery and Agriculture Museum, and a potential first Nation's Ecocultural Centre on McMillan Island all support the historic themes of the area. The village of Fort Langley acts as a hub for a strong artistic and business community and provides an opportunity for future blue waterway trail linkages with other recreation areas up and down the Fraser River. Its location near Fort Langley, unique recreation opportunities associated with the Fraser

River and Bedford Channel, existing campground, and picturesque island environment make BRARP a valued addition to the park system.

The park sits on the floodplain of the Fraser River, one of the most powerful and productive rivers in the world. The river's annual freshet will likely have an effect on seasonal operations in the park. The Bedford Channel provides opportunities for boating activities, particularly canoeing and rowing, that are limited in the region.

The park (Fig 1.2.2) is flat and subject to periodic inundation during the Fraser River freshet. It is primarily covered by riparian forest (80% - 54.5 ha), campground (17% - 11.5 ha) and open fields (3% - 2.0 ha). Glover Road provides access to the park, as well as a source of power, water and cable. The wastewater treatment system for the park consists of a large septic tank and field.

RV/tent camping and occasional canoe paddle events are the only activities in the park. Fort Camping is one of the few campgrounds, besides BC Parks sites, that caters exclusively to recreation campers in the Lower Mainland. The campground serves local residents and tourists from other parts of the province, Canada and international locations. The park also provides opportunities for connections to a number of existing and proposed regional and local recreation trail systems.

View of Bedford Channel from staging area

The campground, included in the purchase of the park, accommodated a estimated 94,000 campers in 2004. It was built, by a private operator, in 1985 for EXPO 86 as a mixed-use camping resort with accommodation for recreational vehicle users, tenters and group campers. Fort Camping plays a positive role in the local community.

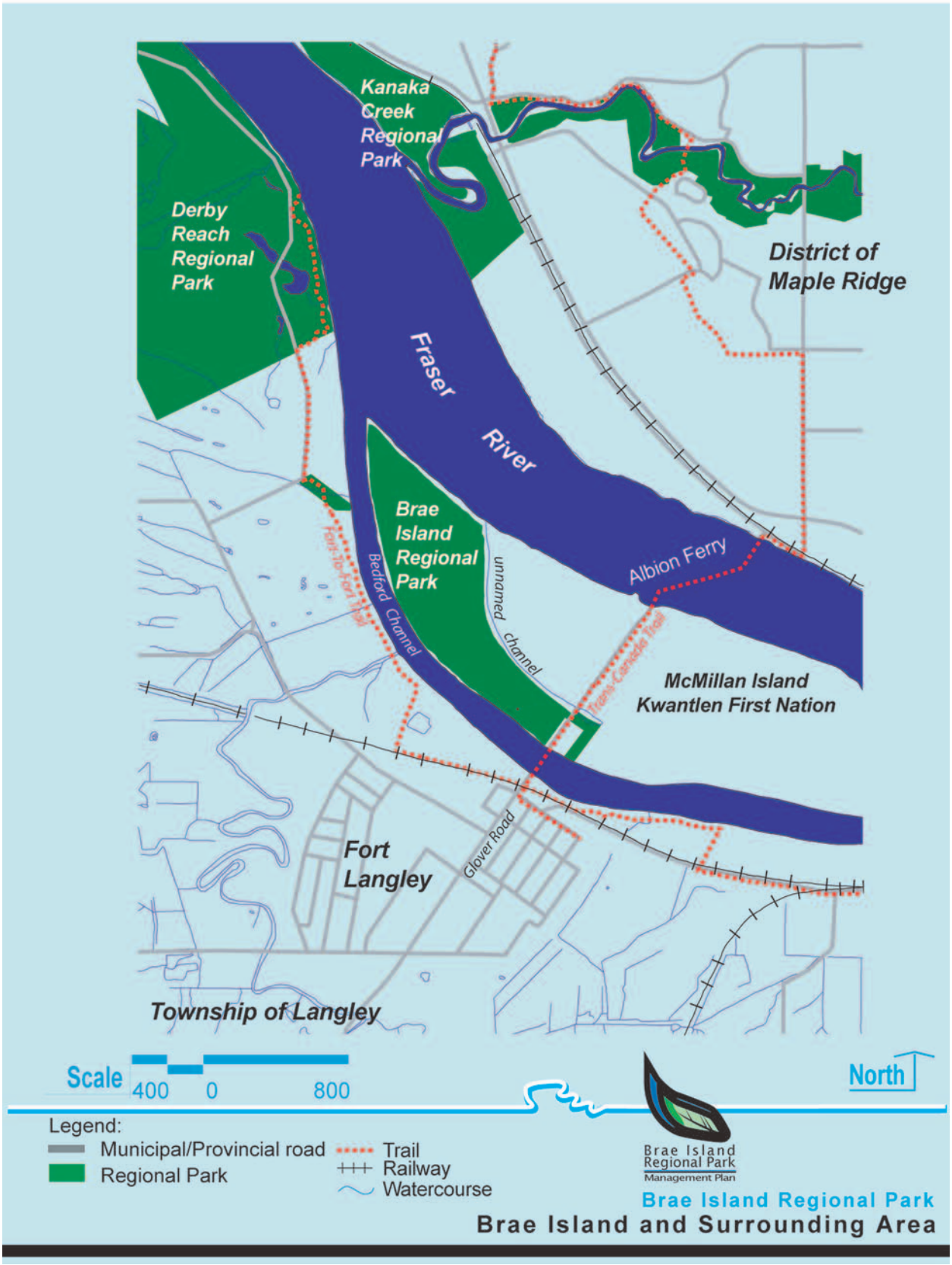


Figure 1.2.1 Brae Island Regional Park and Surrounding Area

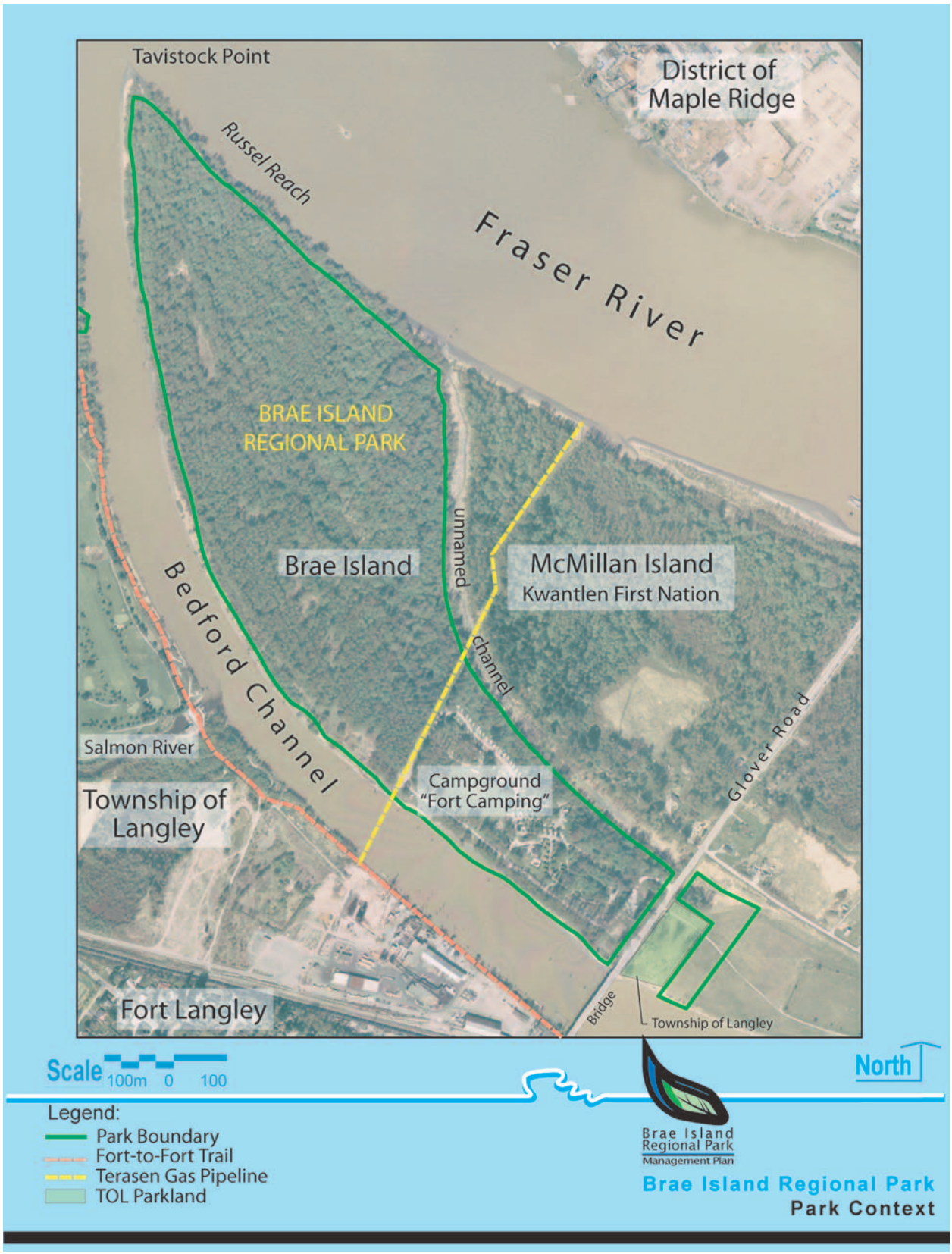


Figure 1.2.2 Park Context

Sustainable Development is:

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"

World Commission on Environment and Development, 1987

1.3 Purpose of the Management Plan

The Management Plan outlines the direction for the development and operation of the park over the next 20 years and guides ongoing management decisions. The Management Plan and planning process, which included public involvement, help to make the park's future predictable and to identify constraints and opportunities for various park uses. It provides a roadmap and estimate for park development priorities and describes the operating actions and community participation that will bring the plan to life.

1.4 The Planning Process

The Management Plan moves from the general (i.e., the mission statement of GVRD Parks) to specific actions. It describes existing conditions of the resources and facilities of the park, analyses their condition, and then provides strategies for development and operation of the park. The Plan addresses environmental, economic, and social criteria within the context of department resources and corporate policy and considers regional and local resource utilization and preservation.

The Plan follows the framework set out in the GVRD Sustainable Region Initiative (SRI) that works towards implementation of projects on a sustainable development basis. The SRI provides a framework, vision, and action plan for Greater Vancouver based on the concept of sustainability which embraces economic prosperity, community well-being, and environmental integrity.

To support the decision-making process a number of studies were undertaken including:

- Environmental review of the park's natural resources;
- Oral ethnographic study by Kwantlen First Nation;
- Economic feasibility studies for various campground sizes, configurations and business arrangements; and
- Joint studies with the Township of Langley to identity recreation opportunities and engineering constraints of the Bedford Channel.

Other information was gathered from:

- Informal interviews with parks' staff, campground operator, park partners;
- on-site visits;
- Interviews and /or meetings with staff from the Ministry of Water, Land, and Air Protection, Fraser River Action Plan, Canadian Wildlife Service, Fraser River Estuary Management Program, Township of Langley, Agricultural Land Commission, Geographic Information Society, Kwantlen First Nation, Langley Environmental Partnership Society, Langley ·

- Internet searches;
- Park Committee Reports and files (archives, correspondence);
- Consultations with landscape architects, biologists, campground management consultants and an economic advisor; Centennial Museum, and other agency representatives;
- Mapping sources (GVRD Parks, SFU Map Library; UBC Geographic Information Centre);
- Library searches (GVRD libraries, public library, SFU library); and
- Langley Centennial Museum and Archives.

In addition, other studies undertaken by a number of organizations (Parks Canada, Township of Langley, and private sector) to build and improve on the capability and attractiveness of their existing facilities in the Fort Langley area were reviewed and where appropriate, incorporated into the Plan.

Early in the process, guiding principles (see Figure 1.4.1) and goals were established to direct planning and provide a framework for assessing options.

Figure 1.4.1 Guiding Principles

Adopted by the GVRD Park Committee August 22, 2002

The Brae Island Regional Park Management Plan will:

1. Strive to be a model for development based on sustainability principles that balance social, environmental, and economic values.
2. Be consistent with GVRD Parks' mandate and mission.
3. Protect, enhance, and remediate sensitive natural and cultural features.
4. Recognize and encourage the valuable contributions made by community groups, park partners and volunteers.
5. Maintain ongoing public involvement in the planning, development and operation of the park.
6. Provide park access for a range of ages, physical mobility and income groups.
7. Develop and program Brae Island to emphasize its unique geographic location as an island in the Fraser River at historic Fort Langley.
8. Provide a unique package of day-use and overnight recreation and education/interpretive programs combined with commercial and tourist services, facilities and experiences.
9. Provide park visitors with basic services for "no fee" and enhanced services on a "fee for service" basis.

1.5 Summary of Public, Partner and Stakeholder Involvement

The planning process, carried out in consultation with the Derby Reach/Brae Island Park Partnership Association (DR/BIPA), focused on issues to be resolved and opportunities to be enhanced. Public involvement was achieved through:

- Campground visitor surveys from 2001-2004;
- Meetings with individuals, park partners and stakeholder groups;
- Public open houses with questionnaires; and
- Review of proposals with partners, including the DR/BIPA, Kwantlen First Nation, Township of Langley and other agencies.

Parks Partnership Program

As part of GVRD's Parks Partnership Program, Brae Island Regional Park benefits from the formal involvement of the Derby Reach/Brae Island Park Partnership Association (DR/BIPA). Members participate in planning activities for the park, represent the Park Association at special events, lead informational tours and conduct habitat restoration projects. The DR/BIPA is also represented at the Parks Forum, a vehicle for groups and individuals to share information and coordinate activities as stewards of our regional parks.

Public response to these studies indicated that public access to the park, especially the Bedford Channel waterfront, was a priority along with preservation of tenting (93%), RV camping (88%) and group camping (86%). Most agreed that a central guest facility for the campground is desirable (63%), with respondents also supporting activities such as a playground, turf areas, new pool, and canoe rentals. There was also widespread support for maintaining the campground in its present configuration with 60% disagreeing with the idea of converting the campground to open space. Local businesses, represented by the local Business Improvement Association and the Greater Langley Chamber of Commerce, were all highly supportive of maintaining or even enhancing the quality of the existing campground. Throughout the process, the public insisted that any development minimize damage to sensitive environmental areas, and that park use and facilities be compatible with adjacent communities. Appendix A - Table A provides an overview of the consultation activities.

1.6 Planning Considerations

The following fundamental considerations were incorporated into the Management Plan where relevant.

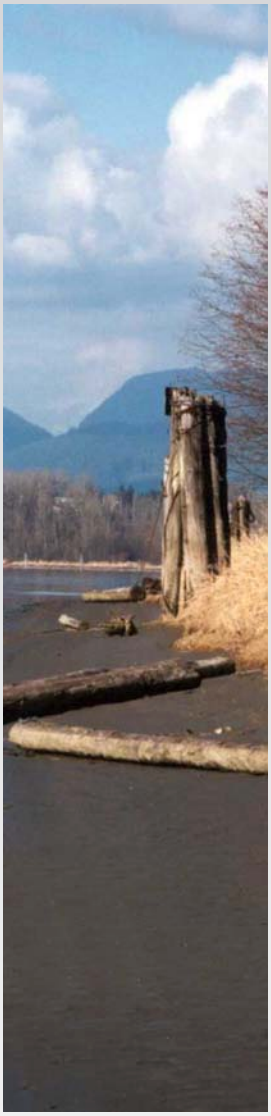
1.6.1 Regional Planning Context

The 1996 Livable Region Strategic Plan (LRSP) is GVRD's regional growth management strategy. It provides a vision for livability in the community and a framework for making regional land-use and transportation decisions. Municipalities like the Township of Langley utilize this higher level policy framework when planning and implementing their Official Community Plan (OCP), bylaws and development regulations. The LRSP has four fundamental strategies:

- Protect the Green Zone;
- Build complete communities;
- Achieve a compact metropolitan region; and
- Increase transportation choices.

1.6.2 Local Community

Growth of Fort Langley with a population of 2,505 is constrained by the Fraser River floodplain. However, proposed redevelopment of the former McDonald Cedar/Interfor mill site, located directly across Bedford Channel from the park, will permit the creation of a mixed residential/commercial centre supporting new residents and businesses over the next 10 years. Currently there are numerous initiatives to build upon Fort Langley's provincially significant cultural/ historic resources, including its local artisans. These studies seek ways to increase tourism and the small-retail economy of the area.



1.6.3 Natural and Cultural Resources of the Area

The Park program can take advantage of valuable regional, cultural, historic and natural resources in close proximity. However there are also a number of significant constraints including the park's location in the Fraser River floodplain, Bedford channel deposition and shoreline erosion, and protection of related features.

1.6.4 Sensitive Areas and Species-at-Risk

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) determines the federal status of plants and animals at risk throughout Canada. Species described as endangered, threatened, or of special concern are protected under the Species at Risk Act.

The British Columbia Conservation Data Centre (CDC) identifies as red-listed those ecological communities that are indigenous and considered extirpated, endangered or threatened in British Columbia. Blue-listed species are indigenous species of special concern.

Assembled biophysical data suggest that there are areas of Brae Island that are ecologically sensitive, primarily the riparian corridors along the banks of the Fraser River and unnamed channel. River islands like Brae often have distinct types of vegetation, usually with tall trees, growing in narrow corridors (galleries) along their banks. Gallery forests are important in terms of biodiversity because they occupy the best bottom land in BC's river valleys and generally have the most benign winter conditions. Migrating birds use this to their advantage by moving along river corridors into the interior of the province.

Several bird species-at-risk have been observed in the park such as great blue heron, green heron and western screech owls (Strix, 1999).

1.6.5 Transportation

The Park's location and ready accessibility influence its recreational potential.. Located in the north end of the rapidly growing Township of Langley, it is also easily accessible to residents from Surrey, Maple Ridge, and other GVRD communities. The road and bicycle trail systems in the area provide access to Derby Reach Regional Park and many tourist-oriented Fort Langley attractions. Glover Road provides north-south access to the village and park, while 88th Avenue provides east-west access. Presently, access to Maple Ridge is via the Albion Ferry with its terminal at Glover Road on McMillan Island. The new Golden Ears Bridge, crossing the Fraser River in the 200th Street corridor to the west, will be completed around 2009 and will take the place of the ferry service.

When the bridge is completed, traffic on Glover Road adjacent to the park will decrease substantially. Bicycle access to the west (Surrey) and north (Maple Ridge) will be enhanced by the addition of the new bridge improvements.

1.6.6 GVRD Parks' Campground Policy Framework

In June 2004, the GVRD Board approved a policy that outlines the guidelines for the provision of enhanced park services, including camping, to be provided in regional parks and greenways. The policy allows for plans to be prepared using private sector partners and services and creates the basis for determining which services will be basic—delivered without fees—and which will be enhanced services whose cost may be recovered by fee collection.

The draft Camping Context Statement prepared by and available from GVRD Parks, endorses GVRD's participation in the development of a balanced system of camping facilities for residents and visitors that range from rustic to recreational vehicle camping. The Statement guides GVRD in providing camping facilities that will increase the visiting public's appreciation and protection of the natural environment and cultural heritage. The Statement supports operation of camping facilities where they primarily serve as a basis for outdoor recreation and learning within the parks system. GVRD Parks will eventually evaluate each of its parks to assess their potential to accommodate specific types of camping facilities according to the park's goals, values, and resources.

2.0 PLANNING CONTEXT

2.1 Planning Considerations, Land Use and Zoning

Brae Island Regional Park is located in the Green Zone and, for the most part, within the Agricultural Land Reserve (ALR), with the exception of the lands east of Glover Road (2 ha). The site is poor for agricultural purposes with an agricultural soil capability of 5 (lowest). Prior to 1985, previous land uses included logging and animal pasture. West of the Terasen gas pipeline, the site is presently zoned RU4 (Rural Use—Floodplain). The area between Glover Road and the pipeline (11.8 ha), has been developed, on a land lease basis, as a 225-site campground (See Figure 2.1.1) Access to the site is from Glover Road. and zoning for this portion of the Park is C9 —Commercial Campground.

Existing Campground Facilities

GVRD's land, located on the east side of Glover Road is made up of mostly flat and level cleared land, located slightly below Glover Road's grade. The land between this "L" shaped parcel and Glover Road is currently undeveloped TOL parkland. Land east and north of the GVRD parcel is part of Kwantlen Reserve 6. The Kwantlen have expressed interest in acquiring GVRD's parcel and concern about any proposed alternative use.

2.2 Demographics

Two issues drive increasing visitor use of regional parks, population growth and increasing demand for outdoor recreation facilities, particularly trails.

Population

The population of the GVRD census area in 2004 was 2.1 million and 119,000 in the Langleys—Township of Langley (95,000), City of Langley (24,000). From 2001 to 2021, the GVRD and TOL are projected to grow to 2,700,000 and 166,000 respectively (1.3 and 2.2%/annum) and by 2031 GVRD/TOL

The Langleys are projected to see the second fastest growth rate in the GVRD, behind that of Ridge Meadows, at 72% over the next three decades. This rate is 28% greater than the GVRD as a whole during the same period.

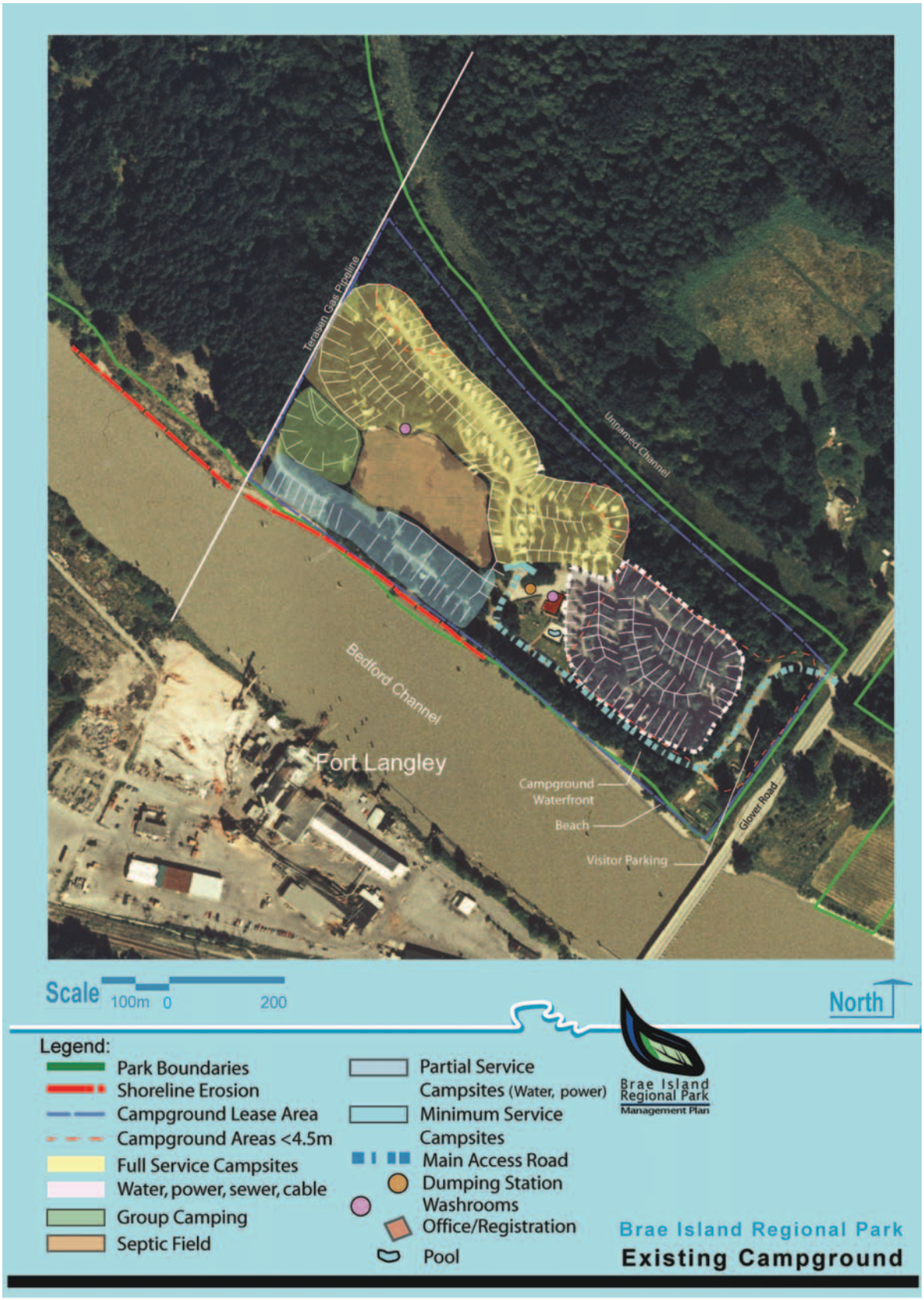


Figure 2.1.1 Existing Campground

The average median age of GVRD citizens reached an all-time high in 2001, at 37.4 years. The Langleys' median age at 36.9 is slightly younger than the regional average. According to the 1996 census data, the largest increase in age groups has been the 35-44 and 45-54 year group. These two groups combined represent 31% of the region's population and, by 2021, most of them will be 60-80 years old. In 1996, the over-65 population was 10% in the TOL, 15% in Langley City, and 11% in the region.

Since 1981, the number of seniors has increased by 66%, while the number of persons under 20 has risen only 38%. It is projected that in the next 25 years, the number of seniors will double, while the number of under-20s will rise by only 10%. In 1996, children under 14 represented 66% of the population in the TOL, 65% in Langley City and 58% in the region, with each family having 1.3/1.1/1.2 children in each area respectively.

The region is culturally diverse, with a majority of residents speaking English (60.2%) as their primary language. Visible minorities, representing 31 groups, are significantly under-represented in the Langleys at 5.5% as compared to 37% across the region. The aboriginal population in the Langleys at 1.3% is lower than the GVRD average of 1.9%.

Statistics indicate that the area will likely see accelerated expansion of its population base in the early years of the Plan's implementation. During this time, the community and the park will serve a younger population base. However, in later years, population growth in the community is expected to slow, with parks catering to an increasing number of aging residents. A rapidly aging community will be susceptible to age-related illness, resulting in a greater need to lead a more active and healthy lifestyle. Many of this generation's seniors will be financially capable, active and energetic, and looking for facilities to support a health-conscious lifestyle.

2.3 Recreation Use and Trends

To develop the 1993 GVRD Major Parks Plan, a Lower Mainland resident telephone survey was completed to determine regional recreation trends. Table 2.3.1 shows figures from this survey and the 1995 U.S. National Survey of Recreation and the Environment (NSRE). Thirteen of the activities identified in these studies are considered appropriate for the Park. Over 50% of GVRD respondents preferred activities (indicated by bold type) that are compatible with the park's recreation potential, including walking for pleasure, viewing natural scenery, going to the beach, picnicking, swimming in outdoor pool, cycling, and camping.

Table 2.3.1 Outdoor Recreation Participation Rates

Outdoor Recreation Participation Rate (%)	GVRD*	NSRE**
	% Respondents	
Walking for pleasure	**92**	**87**
Viewing natural scenery	**90**	**70**
Going to the beach	**83**	
Driving for pleasure	77	60
Picnicking	**70**	**60**
Swimming in ocean, lake or river	61	
Swimming in outdoor pool	**53**	
Cycling	**52**	**41**
Visiting a nature centre/nature trail or zoo	**47**	**63**
Camping with car, RV or motor home	**46**	
Cycling on trails and back country	**30**	
Jogging/running	**31**	
Family gathering		**76**
Canoeing/kayaking	**24**	**11**
Bird watching	**20**	**15**

* *GVRD- Major Parks Plan 1993*

** *National (USA) Survey of Recreation and the Environment (1995-96)-5000 participants*

2.4 Recreation Vehicle Camping, Tenting and Tourism

Campgrounds

Canadian statistics indicate that 86% of campground visitors are Canadian travellers, 7% U.S. and 7% from other foreign sources. A recent (2002) survey of campground operators in the U.S. found that 46% of campgrounds consider themselves destination resorts, 53% seasonal sites and 72% tourism overnight locations. Their campgrounds on average have 175 sites. Services included water (96%), sewer (92%) electrical (96%), telephone (77%), and cable (73%). Sixty-nine percent of locations offered unserviced sites. A breakdown of customer travel indicated 22% of campers travelled to a campground less than 120 km away; 45% travelling 120-320 km, and 28% willing to travel more than 320 km. Operators reported that attractions or events are important contributors to their campgrounds' success (see Table 2.4.1). Attractions or facilities present at or near Fort Camping are indicated in bold.

Table 2.4.1 Popular Campground Attractions

Attraction or event	Operators reporting benefits (%)
Near beach, ocean, lake or river	**20%**
On property attractions	**18%**
Near highway	**11%**
Vacation destination	**10%**
Historic attractions	**5%**
Family tradition	**5%**

Canadian studies indicate that.the average mid-scale campground in Canada offers 184 overnight sites and has a seasonal occupancy rate of 65%. Thirty-two percent are considered economy, 55% mid-scale (i.e. Fort Camping), 8% upscale, and 4% luxury. In B.C., winter occupancy rates are reported at 27-35%, with July and August occupancy rates of 72%.

Most campgrounds rely on word of mouth for promotions since camper satisfaction is the best method to ensure success (60% of Canadian camping days are repeat visits). Advertising by brochure is the most popular promotional method, but the existing Fort Camping operator has astutely relied on web site promotion and camping magazine ads placed during strategic seasonal periods.

Income levels of campgrounds for similar camping facilities vary from 13-21% of net with number of campsites being a major contributor to income levels. Industry experts suggest that for financial viability, campgrounds should have at least 200 sites with 50% of revenues coming from non-camping fee sources. Other sources of revenue include packaged vacations, camp store, laundry, paid showers, wood sales, merchandise, recreation equipment rentals, and prepared food sales.

Recreational vehicle ownership is growing fastest in the 35-54 age group with a median age being 49. KOA statistics (a major campground operator in North America) indicate that the average nights camped during an average year vary by shelter type, with tenters camping nine nights per year and RV campers camping an average of 23 nights per year. In B.C., 60% of all RVs are owned by seniors, and the family market (with children) represents 25% of the total market. Of the total U.S. population, 7.5% of households own an RV. Many families work their way up from tents and tent trailers (early family stages) to fifth wheel and motor homes. The average U.S. owner uses their RV 19 days per year; however Fort Camping users indicated twice this level of use.

Recreation users have higher levels of education in the U.S.. KOA reports 88% of all RV owners have graduated from high school or better. Only 63% of the general U.S. population having a similar education level.

Tourism

There is a distinctive seasonal pattern in all tourism data with seasonality accounting for 75% of statistical variation. Third quarter (summer) tourism expenditures in Canada account for 43% of annual tourism expenditures, compared to only 17% in the first and fourth quarters. All tourism types have a peak in the third quarter and most successful tourism attractions and areas (Whistler, Vancouver) have in place strategic marketing initiatives that build on new seasonal products in less popular tourism periods. Canadian tourism represents 1.9% of Canada's GDP ($50 billion plus industry), with 70% of these expenditures being by Canadians. Tourism in the early part of the decade has been in decline (since 9/11) but is beginning to recover into 2005. Volumes of trips to Canada in 2003 by tourists is over 100 million with 86% of these being from Canada, 15% from U.S., and 3 % from other countries. Travellers to Canada find Ontario (43%) and B.C. (26%) are the most attractive provinces with Toronto and then Vancouver being the most attractive destinations for overnight visits.

Seasonality is a factor in tourism expenditures; however, other factors such as weather, consumer confidence, cross-border ease of travel, political, social or economic unrest, interest rates, and the value of a country's currency are all significant contributors as well.

Tourism market segments play an increasing role in attracting visitors to the province with heritage tourism enthusiasts being of particular interest to this park. Over 17% of American adults (34 million) are heritage tourism enthusiasts, with one in four claiming they have taken a leisure trip to Canada in the last two years. This represents a potential market of 8.4 million American adults. This group is especially attracted to First Nation attractions (28%), children's museums (28%), and western theme events (21%). Attracting these users poses opportunities, as well as challenges, for Canadian destinations, given the draw of other locations in the U.S. and world-wide. Shoulder season programs for a group like this could be one potential niche for Fort Camping.

2.5 Local Recreation Areas, Linkages and Greenways

There are several regional parks in the Fort Langley area, including Kanaka Creek, Derby Reach, and Glen Valley. Connectivity for walking and cycling is a major regional objective, and TOL has adopted a recreational and commuter bicycle strategy in its Official Community Plan. GVRD Parks supports these initiatives and, along with its partners, is also pursuing opportunities to expand a network of regional greenways and blueways to connect these and other parks.. All of these linkages will connect adjacent recreational and historic sites in the community, including Fort Langley Park, Marina Park, Fort Langley National Historic Site, Langley Centennial Museum, B.C. Farm Machinery and Agriculture Museum, local golf courses, and the Fort-to-Fort Trail.

The following facilities and plans were considered in preparation of the BRAMP:

- **Fraser Valley Sector Plan**: The recreational greenway plan for the Fraser Valley sector identifies the South Fraser Regional Greenway parallel to the Fraser River as well as north-south linkages from other population centres such as Langley and Aldergrove.

- **South Fraser Greenway:** The Fraser River's south shore has been identified as a regionally significant greenway corridor linking Fraser River recreation opportunities from Derby Reach to Glen Valley to Matsqui Trail to Sumas Mountain Regional Parks, with connections westward to Surrey, and north to Pitt Meadows/Maple Ridge.
- **Trans Canada Trail (TCT):** The TCT in this area encompasses the South Fraser Greenway east of Fort Langley and currently crosses on the Albion Ferry to the north shore of the Fraser. Once the Golden Ear's bridge is finished the TCT will likely continue west to Derby Reach Regional Park and along new trails to 201st Street and over the bridge.
- **Fort-to-Fort Trail:** A walking/cycling trail from Fort Langley to Derby Reach. It is desirable to create a loop from the end of this trail, back to Fort Langley along new trails and low traffic volume roads. This route will form a section of the TCT.
- **Surrey's Port Kells Greenway:** This greenway is an official spur of TCT and will connect from the Golden Ear's Bridge to Barnston Island, Surrey Bend, and Tynehead Regional Parks largely along roadways.
- **Blueways:** It is intended to investigate formal blueways on the Fraser River to replace the loss of the Albion Ferry.

2.6 Cultural Resources

2.6.1 Area History

Information regarding the history of use of Brae Island is limited. GVRD commissioned a study in 1995 that consulted historical directories and maps, and conducted historical title searches. As well, the Sto:lo-Coast Salish Historical Atlas (Carlson et.al., 2001) offers some information about the Kwantlen (Qw'ontle'en), located directly north and east of the Park. Archaeological evidence suggests that human activity in the area began 9,000 years ago with Coast Salish, or Sto:lo, peoples occupying these traditional territories. The smallpox epidemic of the 1780s greatly reduced the local First Nation population (Katzie and Kwantlen) and disrupted many of the traditional settlement patterns. Katzie people also occupied portions of the Fraser Valley around this location, especially north of the Fraser River.

In order to further understand the history of the island and First Nation occupants, GVRD Parks retained the services of the Kwantlen to prepare an ethnographic, oral historic account in 2002. The purpose was "to document the pre-contact historical and contemporary uses of the area now known as Brae Island by the Kwantlen people, past and present". As no written records are available, the report attempts to document recollections provided by living persons or third person accounts passed down to present generations.

The first inhabitants in the Fraser River lowlands were the Sto:lo people, part of the Coast Salish group. They were hunters, boat builders, fishers, gatherers, and loggers and made extensive use of the Fraser River and its tributaries. At the time of first contact with Europeans, it is estimated that there were 30,000 people living within Sto:lo territory (Carlson et al, 2001). Although the Kwantlen established winter villages,

family groups spent the majority of the year traveling within and beyond their traditional territory. Prior to the founding of Fort Langley in 1827, the Kwantlen band had well-established villages and fishing sites along the Fraser River in the vicinity of Derby Reach (Carlson, 1995b). In 1838, to gain control of the new fur trade and salmon industry, the Kwantlen moved their headquarters four kilometres upstream to be closer to Fort Langley. Today, within the Greater Vancouver Area, the Kwantlen First Nation is second to the Squamish Nation in terms of area, size, and number of reserves (six). Three of the reserves are located in the GVRD, and the others are located in the Fraser Valley Regional District.

With the limited research completed, there seems little documentation to indicate that there was residential use of Brae Island by First Nations. Instead, the area was likely used because of seasonally available resources and its proximity to local villages which supported cultural activities such as camping, hunting, and berry picking. This is not to say that more extensive uses of the land never occurred, but rather a review or screening of the preliminary information available did not provide any empirical evidence of habitation. As the Sto:lo Atlas notes, "remains of 'early Period' (10,000 to 5,500 years ago) occupations continue to be identified throughout S'olh Temexw and have also been located … near the town of Fort Langley." (Carlson et al, 2001). The Kwantlen consider Brae Island to be part of their traditional territory.

The origins of the name Brae Island, also known as Brew Island, are currently unknown. Neither Brae nor Brew was found in the B.C. Place Names Book (G.P. Akrigg et. al., 1997). The island's alleged role as a liquor depot during prohibition may have led to its nickname of Brew Island. Alternatively, the island could be named after Charles Brew, British Columbia's first police chief, appointed under James Douglas in 1858. Brae is also a Scottish word meaning hill, hillside, or high and sloping ground by a river.

2.6.2 Heritage, Archaeological and Cultural Features

There are no historic or culture structures on the island. Aerial photography from 1938 illustrates that a large portion of island is likely the result of depositions caused by the construction of the Jacob Haldi Bridge in the 1920's (Mr. Trattle personal Correspondence). The photos show that a significant portion of the island was located under the waters of the Bedford Channel prior to this period. Depositions caused by construction of the Haldi Bridge; periodic inundations during freshets; and applications of Bedford Channel dredgate during the latter part of the 20th century all contributed to the eventual formation of the rest of the island. It's possible that northern portions of the island, south of the unnamed channel, existed prior to the turn of the century but were likely too small, exposed, and undesirable for human habitation (see Figure 2.6.1). Instead, local First Nation villages are said to have been located at the mouth of the Salmon River and two other locations on McMillan Island. Brae Island, it would seem, provided native hunters and gathers with opportunities for hunting, shoreline fishing, canoe launching, and gathering.

The campground area was significantly altered during construction in 1985 in most locations, except where existing mature tree stands are found. Excavations for water, power, sewers, tanks and tile fields disturbed significant portions of the site's substrate. In 2001, a supervised installation of a water line to an approximate depth of 1.5m, from

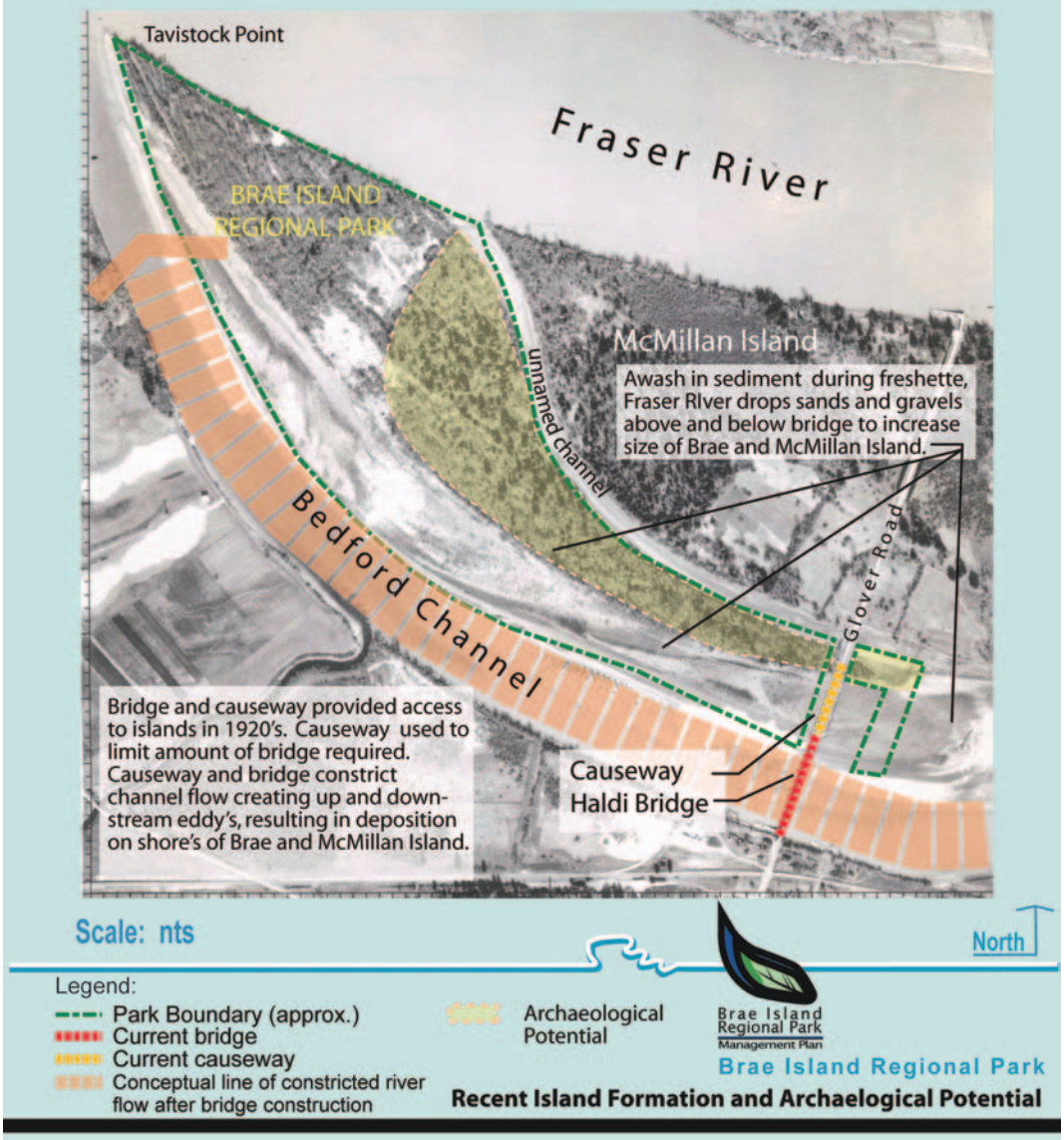


Figure 2.6.1 Recent Island Formation and Archaeological Potential

Glover Road to the campground office, found no artifacts. Figure 2.6.1 delineates sections of the park where there is some archaeological potential.

2.6.3 Economic

Township of Langley reported record economic activity in 2004, based on building permits issued in all sectors (i.e. industrial, commercial, residential). However, the Fort Langley area remains a high priority site for attracting increased economic diversity, especially through tourism.

2.6.4 Visual Quality

The south side of the island offers views of the Fort Langley waterfront, which is changing from industrial to residential and commercial, with a public waterfront trail and promenade, Salmon River lift station, Fort Langley Golf Course, and an angler's dock.

Log-booming dolphins (pilings for log storage) have been removed from the north shore of Bedford Channel, but remnant dolphins have been retained on the south shore as historic relics and components of the shoreline redevelopment. Panoramic views, from Tavistock Point, of the main channel of the Fraser River and the coastal mountain range north of District of Maple Ridge, provide attractive views. East and north of Tavistock Point, along the Fraser River, the views continue to be of interest but the terrain and nature of the site limit access to this area to one location.

2.7 Natural Resources

2.7.1 Environment, Geology and Soils

The majority of the island has a “grevell” type, coarse-textured sandy loam soil (see Figure 2.7.1), with well to rapid drainage characteristics. Two smaller areas of Fairfield (imperfect drainage, fluctuating groundwater table) and Page (poor to moderately poor drainage with a high groundwater table) soils are located on the north end of the island, closer to the main channel of the Fraser River (ARC Appraisals, 1995; Soil Map of Langley and Barnston Island, 1955). These latter two soil types are of a medium to moderately fine sandy loam composition. Initial examination of the soils along the river bank revealed a predominance of sandy material with no distinct layering. The only area where an obvious top layer of differentiated material was found was in the cleared area near the Terasen Gas right-of-way. This layer may be landscaping and fill materials used in association with the pipeline and campground. Observations also found more of a clay base on the north-western tip at Tavistock Point (Strix, 1999; DMR, 1977).

The edge conditions around the island vary significantly in relation to the adjacent water body. The Bedford Channel edge has sections with visible erosion and open sections where sand has recently been deposited.

The topography of the island is generally undulating to gently rolling. The island as a whole has a Class 5 soil capability (LRC classification system). In uncleared areas, the vegetation on these types of soils is mainly deciduous and includes black cottonwood, alder, willow, maple, and poplar, as well as variable shrub cover.

Relatively rapid changes in the island’s shape due to accretion were first noted and recorded as early as the 1870s. The sandbanks accreted to such an extent along McMillan Island that ships could no longer anchor within 400 yards of the wharf (Cherrington, 1992). These accretions may have accelerated as a consequence of the construction of the first Haldi Bridge in the 1920s.

A ridge (dike) extends from the entrance to the campground northwest along the unnamed channel. It is significantly higher than the rest of the campground area. When the campground was constructed in 1986, the campground builder moved some dredged material onto a low section of land just north of the Haldi Bridge to prevent flooding. Additional dredgate was added from Fraser River material raised and dumped on either side of the entrance driveway to Fort Camping when the new Haldi Bridge was built in the mid 1990s.

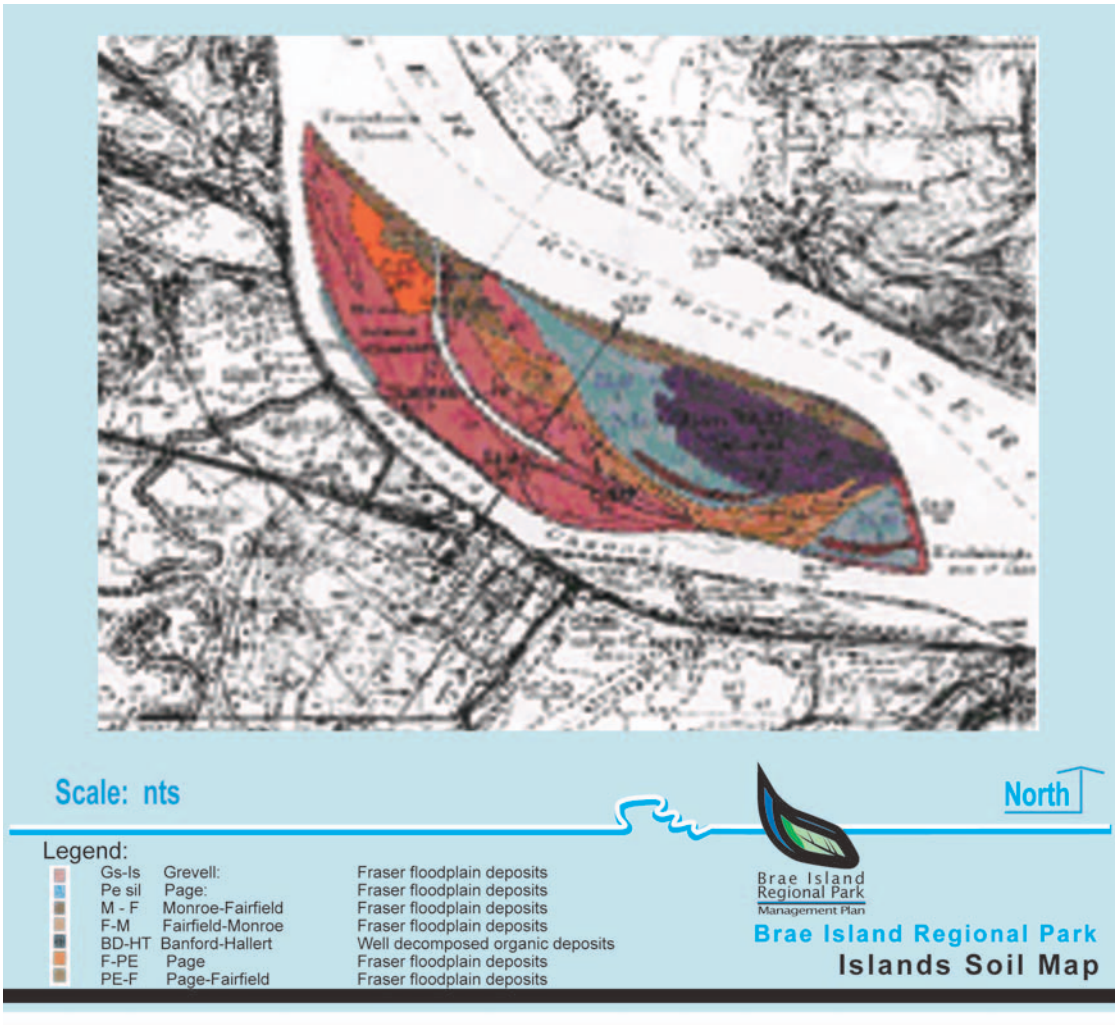


Figure 2.7.1: Soil Map of Brae and McMillan Islands (1955)

2.7.2 Hydrology

As part of the continuing land-use planning process, GVRD and TOL retained the services of Northwest Hydraulic Consultants to complete a Bedford Channel Hydraulic Study (2003). The study area stretched between West Creek (Glen Valley) and the Fort Langley Cairn (Derby Reach Regional Park). The report indicated that the area has gone through a number of significant changes in morphology over the past 140 years. The earliest maps clearly show Brae and McMillan islands separated by a channel, and the upstream end of McMillan Island located about 750m upstream of its present location. By the mid 1950s, the active channel width of Bedford Channel was reduced by 40m downstream and 70m upstream of the bridge. Since then, the channel width downstream of the bridge has remained fairly constant, although upstream of the bridge, the width increased by 15m in the mid 1980s.of dredging, a modest increase in the average channel bed level of several centimetres per year is expected. Aggradation at the upstream end of the Bedford Channel could further reduce flows, which in turn would promote more sediment deposition. Continued deposition may affect boat navigation during low flows, especially for larger vessels (Northwest Hydraulic Consultants, 2003).

Historic channel profiles indicate that the Bedford Channel degraded (eroded) by about 2m between 1950 and the mid-1980s as a result of dredging in the channel. Interestingly, between 1984 and 1991, the channel profile shows a net increase in aggradation (deposition) of +0.8 m. Dredging ceased in 1997, which has resulted in an observed net aggradation in the reach downstream of the bridge. In the absence of dredging, a modest increase in the average channel bed level of several centimetres per year is expected. Aggradation at the upstream end of the Bedford Channel could further reduce flows, which in turn would promote more sediment deposition. Continued deposition may affect boat navigation during low flows, especially for larger vessels (Northwest Hydraulic Consultants, 2003).

Although persistent large-scale erosion problems along the Bedford Channel have not been observed over the past 60 years, localized erosion due to wave action and natural river processes are commonly observed along sections of the bank comprised of unconsolidated floodplain deposits. Preliminary studies indicate that, depending upon levels of protection required, estimated costs for shoreline revetment range from $10,000-$500,000 (Northwest Hydraulic Consultants, 2003) along portions of the Bedford Channel. Costs could vary given that it has been observed that more persistent shoreline aggradation does occur after channel dredging. There is a channel dredging proposal pending approval in 2005. Channel change is continuing with current processes undermining large cottonwood trees along both the north and south banks of Bedford Channel downstream of the bridge and along the main channel of the Fraser River at the heritage site at Derby Reach. Local erosion at these sites is expected to continue.

Consultants also prepared flood hazard maps to show the extent and depth of inundation for floods with return periods ranging from two to 200 years. The five-year flood inundates several low-lying sections of McMillan Island, mainly along the north side of the islands and along the unnamed channel. Ground water welling and seepage, every five years, are noted in three Fort Camping locations. Generally these are locations where the finished grades are less than 4.5m (see Figure 2.1.1). Projections indicate that, with a ten-year flood, both the campground and the Kwantlen Reserve will be surrounded by water, with the ring dike maintaining access to the reserve. With existing grades, the park would be cut off from Glover Road for periods as long as one to six weeks. A 200-year flood would inundate all of McMillan Island, but several high, isolated areas on Brae Island should remain above flood levels (Northwest Hydraulic Consultants, 2003).

2.7.3 Vegetation

The Fraser River islands provide distinctive vegetation because of the floodplain's rich soils, abundant water, and warm microclimate. Brae Island as part of the floodplain is comprised of forest and understory, with a small portion of the site cleared to accommodate RV/tent camping and related uses (see Figure 2.7.2). Of the original forest cover, only individual and clumps of alder and cottonwood remain. Fraser River flooding, logging, and other human activities have significantly disturbed natural vegetation in the past.

The Terasen Gas pipeline separates Fort Camping from the less disturbed and modified portions of the island to the west. However, prior to 1985, this area experienced considerable human disturbances, including logging, and off-road vehicle use,. The forest is predominantly deciduous with small clearings along an old access road that runs east-west through the middle of the island. In these clearings there are small patches of moss, grass, weeds, and invasive species, such as broom and blackberry. Small trees, such as black cottonwood and red alder, and shrubs, such as common snowberry and red-osier dogwood, are also present (Strix, 1999). A stand of large conifers (Sitka spruce and western red cedar) is present in a narrow band running along to the unnamed channel.

The unnamed channel is approximately 38m wide from bank to bank. Six metres on each side are overgrown with shrubs, leaving the remaining 26m relatively open. The Terasen Gas pipeline (15.5m right-of-way) crosses the channel about half-way between Russell Reach to the northwest and Glover Road to the southeast. The north-western half of the channel bed consists of an open grassy area with a narrow creek flowing through it and floodplain benches on each side. East of the Terasen Gas pipeline crossing, the low grassy area yields to higher ground supporting animal trails, grass, shrubs, and small trees (mostly red alder and black cottonwood). This incised channel is well defined at the west end of the tidal channel and becomes less well defined as it moves southeast until reaching Glover Road where it all but disappears.

1) Riparian Forest - Campground Buffer Forest

The complex relationship between natural resources and natural disturbances is reflected in the vegetation structure found on Brae Island. The riparian edge along the Fraser River is both extremely favourable habitat for vegetation establishment and susceptible to disturbance from flooding. A sub-community of trees and shrubs (consisting of pacific willow, red alder, and cottonwood) that are tolerant to highly fluctuating water levels and flooding has developed in the edge zone. There are seven areas described by Strix (2002) within the west portion of Brae Island (west of the Terasen gas pipeline) that have the greatest present and potential ecological value. While these areas are addressed separately, for consideration here, they are not necessarily ecologically isolated as they may be dependent on other features such as surrounding trees, connecting water channels, and periodic inundation. Protecting individual features without protecting surrounding and contributing features (which are not always obvious or easily determined) may lead to the destruction of the feature for which preservation is intended.

This buffer area is variable in width and partially disturbed (trails and small campground-side clearings/intrusions). It contains some mature conifers and protects and shades the unnamed channel.

2) Forest along unnamed channel

The key attributes of this area include:

- floristic (species) and structural (vertical layers and openings) diversity;
- large black cottonwood, bigleaf maple, red alder and shrub layer, large Sitka spruce and western red cedar;
- source population of conifers;
- environmental legacy of mature forest elements;

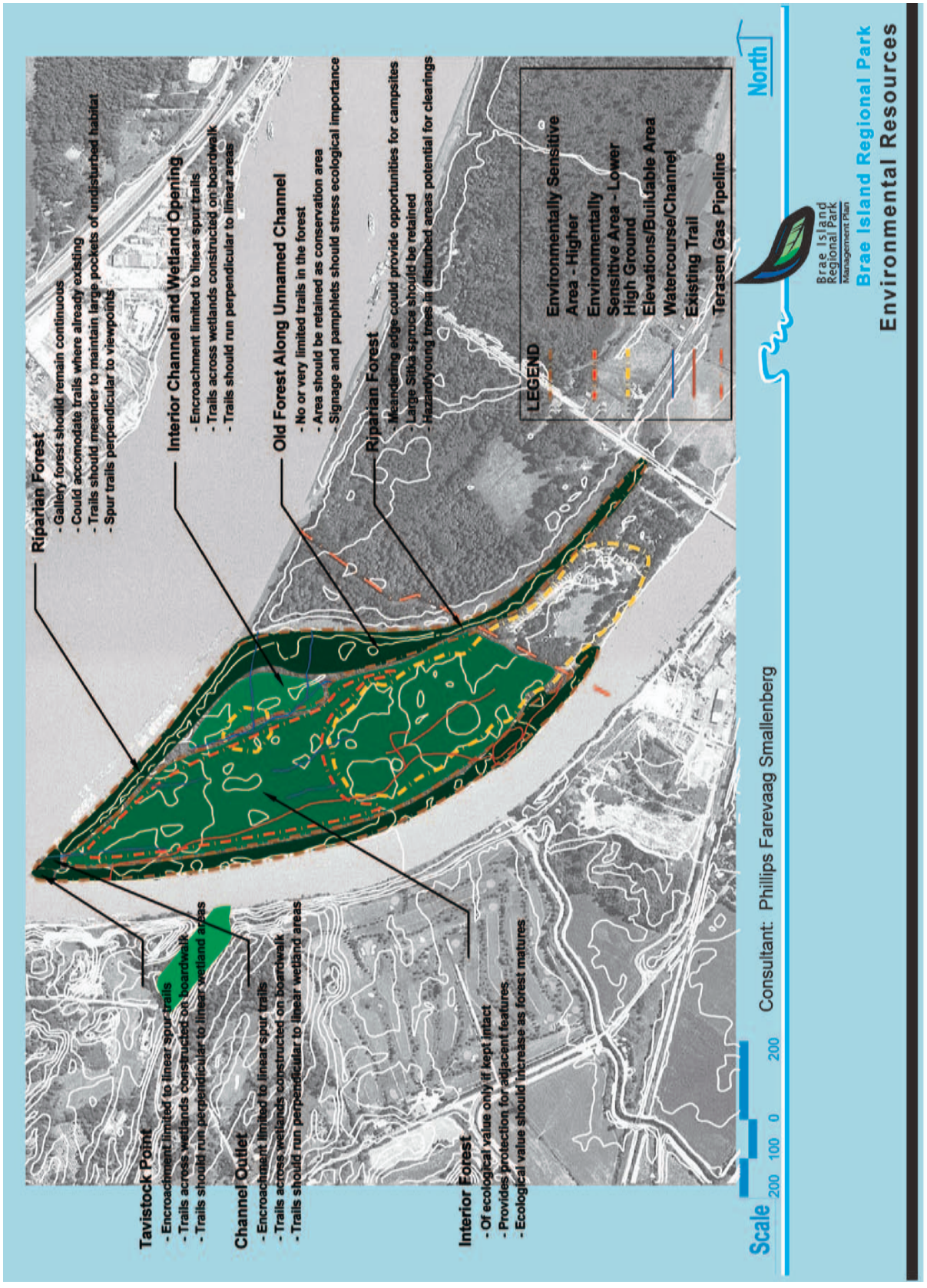


Figure 2.7.2 Environmental Resources

- salmonberry, beaked hazelnut, coastal red elderberry, common snowberry, vine maple;
- adjacent to channel with an important edge effect for plants and animals;
- red-tailed hawk's nest (recent use uncertain) and owl roosting sites; and
- excellent potential for raptors – hawks and bald eagles, as well as small songbirds.

3) Tavistock Point (including adjacent inland area)
This area is low, wet, and prone to flooding. Key attributes include:
- floristic (species) and structural (vertical layers and horizontal openings) diversity;
- large Pacific willow (abundant), red alder;
- salmonberry, snowberry, cascara, bitter cherry;
- semi-marsh/swamp conditions; and
- wetland plants.

4) Interior Channel and Wetland Opening
Located in the interior forest, aligned SSE-NNW between the unnamed channel (connected in high water) and Russel Reach (Fraser River) (not connected) is another channel. It features:
- an open area of predominantly native species: old Pacific willows, hardhack, Nootka rose; and
- excellent foraging opportunities for songbirds.

View of North Shore mountains from Tavistock Point

5) Channel Outlet (including surrounding wetland area)

Just east of Tavistock Point, a channel is aligned north-south and opens to and receives water from the Fraser River at Russel Reach during some seasonal high tide periods. The channel extends southward to a vegetated wetland/draw (grasses, willow, etc.) that intersects the present trail. It is very open in the first 50m (south from Russel Reach) and then becomes less distinctive and more heavily vegetated. There are opportunities for dabbling ducks, herons, songbirds, and wetland plants in this area during freshet.

Varied Thrush

6) Riparian Forest (Gallery Forest)

This area is predominantly second growth black cottonwood with a dense shrub layer. Key attributes include:

- floristic (mostly shrubs) and structural (shrub and tree layer, open space) diversity;
- dense shrub layer and distinctive edge effect;
- natural buffer for maintaining the insularity of interior portions of the island;
- excellent foraging opportunities for migrating songbirds; and
- foraging, resting, and nesting opportunities for birds.

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7) Interior Forest

There is an area of insular forested habitat in the north-central island. Some areas are highly disturbed with young forest that is not presently of great ecological significance. The area's greatest attribute is its size and potential. It is important for linking and maintaining the ecological function of adjacent features, including shoreline vegetation and associated wetlands. The small openings that appear along the old trail provide opportunities for native plants and animals, although the presences of non-native, invasive plants continues to incrementally diminish their long -term value.

8) Campground

Vegetation of note is limited to large 60-year-old individual alders in the east end of the campground and clumps of similar-aged alder and cottonwood at the existing group campsite. Very little understory is found on the site, and wildlife capability is limited to birds and small mammals such as voles, squirrels and racoons. The vegetative quality in this area is low given species type (red alder, cottonwood), age, and stand condition. A number of trees are removed each year due mortality or their hazardous condition. Vegetation along the Bedford Channel shoreline provides valuable erosion protection and aesthetic buffering of camping activities. Unfortunately, unstable shoreline conditions have resulted in many cottonwood, alder and conifers being undermined along the foreshore, especially during freshet.

9) Glover East Area

Vegetation is predominately isolated 60-year-old alder and veteran cottonwoods in open field locations. Grassed areas have been harvested for hay. Passerines use the fields for seed and insect feeding and raptors could potentially use this area for feeding on small animals such as voles and moles.

2.7.4 Wildlife

Forest ecosystems of the Fraser Basin are important for a variety of forest-dwelling birds and other wildlife. Forests adjacent to streams or wetlands support a rich diversity of wildlife and are important, even essential, to many wildlife populations.

Strix (1999) reported that only Douglas squirrels and Eastern cottontails were observed during their study. However, there were signs of Black-tailed deer and beaver around the unnamed channel. Residents in the area reported coyotes on the island, but no signs or resting spots were observed. There were no formal searches for amphibians or reptiles; however, portions of the unnamed channel are believed to be likely habitat.

Migratory bird habitat in the Fraser Basin is considered to be internationally significant, and this precious resource has been declining steadily under the pressures of urban, agricultural, and forest harvesting expansion. The Fraser lowlands and estuary, spanning from Hope to the mouth of the Fraser, are recognized as a vital area for over-wintering and migrating waterfowl and shorebirds. Given the mountainous terrain of B.C., only 2.3% of the 27,000 km coastline provides suitable habitat for these migrating and wintering wetland birds (Dovetail Consulting, 1997). Most of this area is concentrated in southwestern B.C., including the Fraser River estuary, where over 70% of the original wetlands have disappeared. The remaining marsh, mudflats, adjacent uplands, and agricultural land support Canada's highest densities of shorebirds, waterfowl, and raptors in winter. With its strategic location on the Pacific Flyway, an estimated 1.4 million birds migrate through the Fraser estuary each year.

Great Blue Heron

Numerous over-wintering birds were recorded during the Strix study (1999). Species most frequently observed within the forested west portion included downy woodpecker, hairy woodpecker, winter wren, black-capped chickadee, and American robin. Golden–crowned kinglets were observed on one occasion and v,aried thrushes were heard and seen infrequently.

Common species observed within the forest clearings and forest edge were black-capped chickadee, Steller's jay, and common bushtits. Birds observed within the tidal channel and along the forest edges included great blue heron, bald eagle, Bewick's wren, black-capped chickadee, Stellar's jay, spotted towhee, and song sparrow.

The island's shoreline provides ideal habitat for a number of water-associated and wading birds. Canada geese were observed along Russel Reach near the unnamed channel, and along sandy Tavistock Point. Mallards and common merganser were also observed. Spotted sandpiper, belted kingfisher, and green heron were observed along Bedford Channel (Strix 1999).

The few conifers on site, especially the western red cedar, may provide good roosting sites for barred owls, great horned owls, and western screech-owls. A red-tailed hawk was observed flying over Bedford Channel and a large nest was observed in a large black cottonwood about 60m south of the unnamed channel (Strix 1999).

2.7.5 Fish Habitat

The foreshore habitat of the Fraser River has been mapped up to Kanaka Creek's confluence, less than 1 km downstream of Brae Island, by the Fraser River Estuary Management Program (FREMP). The shoreline on both sides of the Fraser River, immediately downstream of Brae Island, has been red-coded. Red-coded habitats include productive and diverse habitat features that support critical fish and wildlife functions on-site. They also include areas where habitat compensation has been previously constructed to offset habitat losses (FREMP, 1994).

The presence of numerous fish species has been documented in the mainstem of the Fraser River and associated drainages. From Yale to the Pacific Ocean, forty-six species of fish have been documented (McPhail and Carveth, 1994).

Chum Salmon

Strix (1999) found that portions of the island's foreshore are well vegetated with overhanging trees and shrubs providing shade and protection to fish along both the channel and Fraser River shores during high flows. Trees that have sloughed into the river provide additional refuge for fish. Three chum carcasses were observed on the grass floodplain of the unnamed channel. The presence of these carcasses may indicate chum spawning in the tidal channel. Along Bedford Channel, undercut banks and exposed root systems may provide some protection and shade to fish when submerged during high water levels.

2.7.6 Species-at-Risk

Western Screech Owl

At the time of their study, Strix (1999) reported that no red or blue-listed plant species were found on Brae Island and the Conservation Data Centre had no records for the area (CDC-2 1999). The absence of records for this site "may reflect the lack of inventory work in the area, rather than a true absence of taxa or plant communities of concern". Background studies (Strix 1999) provided a complete listing of all plants observed during field work.

Great blue herons (CDC - Blue-listed; COSEWIC - special concern) were observed in the unnamed channel and along Bedford Channel. Green herons (CDC – blue-listed) have been observed in Bedford Channel. Strix (1999) indicated that the conifers on the island provide good roosting sites for western screech-owls (COSEWIC – special concern), but none were actually observed. White sturgeon (CDC – red-listed; COSEWIC – special concern) are present in the Fraser River and may be present near Brae Island (Strix, 1999).

2.8 Existing Use of Park

2.8.1 Park Wide

The area between Glover Road and the gas pipeline (11.8 ha) is operated as a commercial campground under contract. The majority of this land is cleared except along the unnamed channel and small portions of the Bedford Channel. The balance of the site and west of the gas pipeline (54.0 ha) is young alder and cottonwood forest. Public access to these areas is limited to the occasional walker or angler. Group access for canoe, rowing, and kayak clubs special events requires special permission. It is estimated that some 3,000 users used the site for such activities in 2003.

2.8.2 Camping

User Survey Definitions	Description
Destination Resort	Numerous self-contained activities
Campground	Mostly accomodation oriented
Overnight Campground	1 night stays, passing through
Seasonal Stays	30-120 day stay with fixed address
Resident Stays	Stays>120 days and no fixed address

The existing campground is a very popular, moderately sized (225 sites) recreation destination for locals and tourists. Fort Camping is relatively unique in the GVRD as it is one of the few that does not rely on revenues from resident stay campers. This location is especially attractive to families during the summer months and to Canadian “Snowbirds” in shoulder seasons (fall and spring) periods.

The facility is open year-round with an estimated 94,000 campers visiting the site in 2004. Annual occupancy rates (using survey data and other sources) vary over the year with attendance in spring and summer (March to August) at a rate of 46% and fall and winter (September to March) at 25%. Average length of stays is 9 and 4 days respectively. The campground is often 100% full on peak summer weekends (June, July and August) with weekday attendance steadily improving. Shoulder season (spring and fall months) occupancy rates are considerably lower but also continue to improve.

Many Lower Mainland RV campgrounds are said to rely to varying degrees on resident stays. The TOL has a 30-day occupancy limit through bylaw, while other adjacent communities vary significantly in their policy. Surrey has a 181-day stay policy, and Abbotsford has no restriction. It may be desirable to seek more flexibility for the park to improve the viability of a bona fide public recreational service.

The campground currently has 107 full-service sites (electric, water, sewer, cable), 47 partially-serviced sites (water and electrical), 89 limited-service sites (water close by), and 12 tent sites in a group camping area. The facility has been open for almost 20 years, with its infrastructure deteriorating because of age and level of use. After assessing the infrastructure in 2000 when operators changed, GVRD made improvements including connecting to the municipal water system, replacing the playground, and minor upgrades of washrooms, laundry facilities, pool, electrical system, and campsites. The new operator upgraded signage and the grounds and provided new services such as a camp store, food concession, and recreational programming. Improvements were aimed at attracting customers, raising campground ratings, managing risk, and were either for long-term benefit or had a short payback period.

With these improvements, the campground's acceptability rating was maintained or raised. For example, Woodall's (campground rating agency) rating went from "average" to an "above average" for both facilities and recreational opportunities. Today, GVRD camper surveys generally rank the facility very high but with some qualifications including dust from roads, pad sizes, and electrical system failures. Revenues have increased with higher levels of service and programming in the last few years; however, operating costs have also risen due to aging infrastructure, breakdowns, repairs, and higher levels of use. Current camping trends also indicate a need to reconfigure RV sites and overall services.

Existing Users

Three sets of questionnaires were administered (Sept. 2001, Sept. 2003, and summer 2004) to camping patrons (total 324) with an interviewee response rate of 96% and a self-administered response rate of 24%.

Both the first and last surveys had a high response rate providing valuable insights into the campground users' motivations and interests. The 2001 survey indicated that 40% of campers were from the Langleys and Surrey, 41% from other Lower Mainland locations, 8% from other B.C. locations, 5% from Canadian locations, and 3% from outside of Canada. The average age of respondent varied from 38 years old for tenters to 53 for RV owners. In 2004, 70% of families had children under 13 with an average of two children per family (party size of three used for statistical analysis). Sixty-two percent of families had children from 13-19, and 20% of families surveyed had a member 55 plus years old. Forty-six percent of users had a college or university education with 30% having a secondary education background. Sixty-three percent of campers were female with only a small percentage (20%) of respondents willing to report income levels. Of these, 40% of campers reported incomes from $25-50,000, 38% from $50-80,000, and 17% above.

The surveys indicated that almost half the users (48%) were looking for a *destination resort*; 38% were seeking a *campground*; and only a small percentage of users looking for an *overnight campground* (6%). Twenty percent of campers were looking for a *seasonal* facility and a very small minority, 2%, was looking for a *resident stay* facility. Most campers, when asked about Fort Camping's designation, indicated that they saw it as either a destination resort (77%) or campground (15%).

Recreational vehicle users made up 74% of patrons with trailers, truck campers, fifth wheel, and Class C campers being preferred units. Class A campers made up only 6.5% of units. The latter statistic is below industry standard and may be due to the small site sizes. From 14-26% of campers were tenters, depending upon season and year. Average age and length of RV unit was eight years and 26 feet, with 12 % of users having slide-outs (2). The average camper at this park is likely to use their RV equipment five weeks per year. Most users were likely to visit from mid-May until early October with July, August, and September being the most popular months. Campers are willing to visit the campground any day of the week; however, most (85-90%) prefer to visit Friday to Monday. Visitors to Fort Camping often come because of its proximity to home and accessibility to family and friends. Many are looking for a family-orientated campground with supporting children's activities and programs.

When asked what they look for in a campground, patrons listed water (73%), electrical (70%), sewers (42%), extra parking (30%), cable (19%), and pull throughs (15%). Respondents were then asked what they specifically like, or would like to see, at Fort Camping. Responses included wood-burning campfires (86%), a larger pool (80%), children's activity area (66%), supervised children's area (58%), more bathrooms (56%), picnic area (53%), rentals (49%), cafe (47%), club house (43%), and adult activities (25%). Recommendations for maintenance improvements were also solicited and included more frequent maintenance, less dust, improved bathrooms, and elimination of site obstructions. Many of these concerns represent notice to the operator, but may also be attributed to the condition and age of the existing facility and need for renovations or redevelopment. Users were also asked what activities and programs they are likely to use while at the campground. Walking, swimming, and special events lead the list (57%, 54%, and 41%) with children's play areas, campfires, and biking next (38%, 23%, and 19%). Hiking, movies, and canoeing were all of interest to some 9% of users. Use of the camp store was identified by 63% of respondents. The majority of users indicated an interest in participating in operator-organized tour packages including visits to historic sites, wineries, specific events, and attractions.

In the 2003 survey, campers were asked to indicate their average percentage of out-of-pocket daily expenses within 15 kms of the campground and the dollar expenditures likely in an average day (Table 2.8.1). Using these figures, it is estimated that $650,000 was spent locally and $160,000 regionally by campground users in 2004, based on the following breakdown: grocery store (86%), store (52%), dining (39%), antiques/crafts (30%), attractions (15%), gas (14%), medical (14%), and training (6%).

Table 2.8.1 Average Expenditures by Day and Percent Local

Camping Equipment	Expenditures within 15 kms	Average Daily Expenditures*	Range** of Daily Expenditures
RV	80%	$27.50	$20-225
Tent	90%	$8.50	$5-40

* *After subtracting campsite cost*
** *Before subtracting campsite cost*

Campground revenues for services provided could add a further $500,000 to total community economic benefits.

In conclusion, the existing campground is highly favoured by campers. Most families valued the programs, setting, and amenities offered. The swimming pool, is also an important attraction on the site. Based on responses provided, it is apparent that there are two distinct user groups using the park:

1. A family-centred group who prefer destination amenities in peak season periods with structured programs for children. Food services were found to be important to this group.

2. Adult users looking for a quiet, well-maintained facility with ambience, close to shopping and some attractions. They are likely to find this type of experience in summer peak weekdays and shoulder season weekends.

2.8.3 Site Services

Potable Water

Brae and McMillan islands receive potable water from a 200mm municipal line paralleling Glover Road. The line is constricted to 150mm crossing the bridge. A 100mm potable service was brought into the campground in 2001 to improve water quality and availability. This service is adequate for any future anticipated park development given existing standards.

Wastewater

Currently, wastewater treatment facilities are provided under the terms of Permit No. PE-7239 issued under the provisions of the Waste Management Act (April 1987) by the Ministry of Environment and Parks. The maximum rate of effluent that may be discharged is 70 cubic metres per day, with a minimum storage tank capacity of 140 cubic metres and two ground disposal fields providing 3,200 lm of disposal pipe. A standby area, equal to the size of the existing disposal areas, is required if the system should fail in the future. Three lift stations discharge to the septic tank located in the centre of the campground.

Electrical

Adequate power is available from B.C. Hydro from power lines along Glover Road. The power distribution system in the campground is adequate; however, maintenance costs continue to escalate due to changing user preferences and aging equipment.

Site Drainage

Most of the campground is well drained due to the island's porous sandy soils and positive site drainage. The area of the campground located east of the campground office, drains into a catch basin with a self-draining flutter valve preventing backflow from Bedford Channel. During periodic freshets, where water levels exceed the outfall elevation, water backs up, usually resulting in upwelling (flooding) over 2.5 ha of the

campground. This typically occurs every 5 years for periods from 1-3 weeks with 200-300 mm of surface water noted.

2.9 Existing Park Programs

2.9.1 Fort Camping Visitor Services – Education and Interpretation

Since 2001, the campground operator has provided a range of family oriented recreation and educational programming throughout the peak season and during weekends in the shoulder season. These programs are popular and widely used by campers.

2.9.2 GVRD Parks Visitor Services – Education and Interpretation

GVRD Parks has provided environmental education programs and interpretive experiences for schools, community groups, and the general public since the early 1970s. Given that Fort Camping is operated under contract, GVRD staff does not deliver programs at Brae Island, but do include contractor's staff in in-service training sessions wherever possible. Fort Camping is also advertised in the park systems brochure and through GVRD web page links.

2.9.3 Partnerships and Community Development

GVRD Parks launched the Park Partnership Program in 1998 to engage community partners in information collection, sharing community ideas and wishes, and helping to deliver services in the park. The DR/BIPA was established in 1997 and cooperates with GVRD Parks in promoting region-wide appreciation, understanding, and enjoyment of Derby Reach and Brae Island Regional Parks while preserving and enhancing their natural and historic features. DR/BIPA is not a registered society; however, the Association is organized with a constitution and by-laws and has an ongoing working relationship with GVRD Parks.

The DR/BIPA has had a significant role in assisting with development of park management plans. Members have also led informational tours on the area's history and significant habitats, initiated habitat restoration projects, and used various media to inform the public about stewardship topics. GVRD Parks is committed to encouraging and supporting community involvement.

Brae Island Regional Park Goal

Brae Island Regional Park will offer a range of river focused day-use and recreation camping opportunities while protecting the park's natural and cultural distinctiveness. The park will celebrate the meeting of many cultures, by providing complementary activities, events and programs, with others, in historic Fort Langley.

3.0 PARK PLANNING AND DEVELOPMENT

3.1 Introduction

The present level of site utilization for recreation purposes is small given the overall potential of the park. Balancing expansion of recreation opportunities without compromising the environmental and social values of the site and community are key considerations. The Management Plan recognizes that the park's natural resources contribute to regional biodiversity and local populations and viewing opportunities. The plan respects these concerns and attempts to maintain as much of the riparian and forested areas as possible while introducing new recreational experiences. . It is premature to consider development on Glover East lands, therefore the area has been designated as a "Special Study Area" which will allow further studies as the plan progresses.

View West of Bedford Trail at Glover Waterfront Staging Area

3.1.1 Plan Goal, Objectives and Strategies

Objectives, strategies, and actions identified in Appendix B-Table A describe in detail issues that need to be addressed to meet the terms of the Guiding Principles. Table 3.1.1 provides, based on relevant categories, program highlights to achieve the objectives of the park's Management Plan and the GVRD's Regional Parks and Greenways Plan. The actions identified in both will be carried out as part of the plans implementation process.

Table 3.1.1 Management Plan Program Highlights

Sustainable region initiative (SRI)	• Operate and manage the park considering social, environmental and economic criteria. • Use adaptive management and feed monitoring data into the decision-making process. • Apply SRI lens when assessing proposals.
Sensitive habitat and species at risk	• Prepare follow-up studies for Species at Risk in the park. • Limit access and activity nodes to areas damaged by previous use or less sensitive environments. • Design and use practices that avoid potential conflicts between sensitive or unique environmental recreational and cultural features. • Where conflict is unavoidable, remediate or enhance on-site or elsewhere in the park. • Discourage informal shoreline access in areas sensitive to impacts.
Stewardship	• Work with all levels of government, partners, corporations, groups and individuals to protect sensitive shoreline habitat. • Use best management practices when developing and operating park facilities. • Assist in educating public and others regarding the park's sensitivity. • Undertake necessary studies and implementation strategies for invasive species and mosquito control, shoreline erosion control, and vegetation management. • Work with park partners and others to control invasive species.
Mosquitoes and west nile virus	• Follow GVRD corporate policies with respect to integrated pest management.
Recreation	• Provide a beach-use area on the Bedford Channel with walking and cycling opportunities through a network of trails. • Develop RV/tent camping, group and rustic camping opportunities. • Deliver, with private operator, recreation programs for campers that are fun and educational, such as canoe/ kayak skill development and events. • Provide equipment rentals such as bicycles and canoes. • Connect visitors with related ecotourism and cultural programs within the community and region. • Work with local attractions, groups and businesses to deliver programs utilizing the park.
Interpretation and education	• Promote awareness and appreciation of the park's natural and cultural features and resource management activities through hands-on interpretive and educational programs with interpretive materials.

Tourism	• Provide staging facilities and information in support of the Trans Canada Trail. • Work with the Chamber of Commerce, Fort Langley BIA, Parks Canada, Langley Centennial Museum and others to promote the area's qualities and camping attractiveness and communicate messages promoting responsible Park use of by visitors.
Community development	• Engage community partners in shared decision-making. • Consult with and seek advice on programming and park planning decisions. • Work with the Derby Reach/Brae Island Park Association in collecting information, identifying community ideas and wishes, and delivering servicesin the park. Promote appreciation, understanding and enjoyment of Regional Parks while preserving and enhancing their natural and historic features along with park partners.
Special Study Area (Glover East)	• The Special Study Area lands will remain undeveloped until Kwantlen First Nation (KFN), TOL and GVRD land-use and program proposals, such as the KFN Cultural Centre evolve further.
Community and regional linkages	• Work with TOL to coordinate efforts with development of community trails and the South Fraser Greenway including north-south and east-west linkages to Surrey, Abbotsford, Ridge Meadows and South Langley. • Explore future Blueways potential up, down and across the Fraser River (i.e. Derby Reach, Port Haney, Surrey Bend, Glen Valley).
Dog management	• No suitable land and the sensitive nature of soils, hydrology, wildlife and plants make this a poor park for off-leash use. • Enforce leash restriction and limit dog on-leash access where environmental or seasonal conditions require.
Local municipality	• Consult with the TOL to determine potential for changes to the 30 day Length-of-Stay Bylaw.
Health and wellness	• Promote health and wellness providing outdoor recreation facilities, equipment rental and programs. • Partner with community partners to promote active living programs in the park. • Work with local rowing clubs to offer water-based canoeing and rowing training opportunities.

View South to Fort Langley from Glover Waterfront Staging Area

3.2 Park Plan

The Management Plan provides for day-use, RV/tent camping, rustic, and group camping facilities.

Day-Use Facilities

The need for day-use facilities was determined based on recreation trends, population projections, and increasing user needs. Day use facilities will be provided in the Glover Waterfront area with continuous access along Bedford Channel to Tavistock Point. Facilities will include:

- A smaller Fort Camping to accommodate day use along the waterfront and a public staging area adjacent to Glover Road;
- A public accessible waterfront trail (wheelchair accessible) with periodic viewpoints along the Bedford Channel and Fraser River; and
- Staging areas for public parking at Glover Road and facilities such as perched beach, picnicking, group picnicking, event space, open space, parking, and washrooms in public areas.

Camping Facilities

GVRD's Campground Policy Framework, site history, and financial forecasts were used to guide decisions around camping services. The following points supported the desirability of maintaining a campground:

- Zoning, location, and accessibility are unique in the GVRD;
- There is a shortage of similar facilities in the Lower Mainland (dedicated family recreation camping with waterfront access);

- The site provides a rare opportunity to deliver skill development, educational and interpretive programs through local artisans, historic/cultural attractions, and local events; and
- Local residents, businesses, and the Chamber of Commerce are overwhelmingly supportive of retaining the existing campground operation based on positive recreation, economic, and social (employment) benefits.

Camping facilities and programs to be provided at Brae Island Regional Park include:

- A smaller, redeveloped Fort Camping, to accommodate a variety of camping types including RV, tent, rustic and group camping;
- Provision for minimum levels of camping services on individual Fort Camping sites. Services to include water and power with the potential of providing sewer and cable based on favourable supporting market and financial analysis;
- Delivery of education and interpretive programs by the campground operator with support from GVRD; and
- Coordinate and partner with local attractions, businesses and community groups to provide enhanced levels of programs and services.

View of South Shore of Park at Fort Camping, Westbound on Fort-to-Fort Trail

3.2.1 Planning Units and Environmental Sensitivity

To facilitate planning and environmental objectives, a total of six planning units were designated within the park (Figure 3.2.1): North Brae, Mid Brae, Forest Buffer, Campground, Glover Waterfront and Glover East. Environmental sensitivity analysis of these areas was undertaken, and a summary of their characteristics prepared in Appendix B-Table B. Included in this table are recommendations for each planning unit based on accommodating the recreation facilities described elsewhere. Environmental studies indicated that:

- The plan should concentrate new uses in already damaged areas;
- Environmentally sensitive areas should be maintained and where impacted mitigating measures should be undertaken; and
- Habitat enhancement programs should be provided where feasible.

3.2.2 Concept

Most of the park will be maintained in its natural state with trails and viewpoints (Figure 3.2.2). A northwesterly trail will parallel the Bedford waterfront until reaching Mid Brae where a day-use area will be provided with picnic tables, picnic shelter, washrooms, and open space. Continuing toward Tavistock Point, the main trail (pedestrian/cyclists/ wheelchairs) will wind its way through forests and open grassed areas creating a loop with small intersecting nature trail options. Informal uses like canoe launching, sunbathing, and picnicking adjacent to Glover Road and at the Mid-Brae waterfront may also be accommodated. No equestrian or off-leash dog facilities are provided.

Fort Camping will shrink from 11.8 ha to 8.0 ha and contain 140-175 camp sites. Rustic and group camping will be accommodated in the Mid-Brae area with a maximum capacity of 40 tents and yurts. Fort Camping will provide a mix of campsites types and sizes, with varying levels of service based on campers' needs and overall affordability. Provision for the maximum number of camping sites throughout the park is based on relocating the wastewater treatment facilities for the entire park to the Mid-Brae area. Educational, interpretive, and recreational programs will be provided to increase the attractiveness of the site during shoulder season.

3.2.3 Facilities

Facility details for the park are provided below. Figure 3.2.3 presents a schematic representation of a plan for the RV/tent camping facility and a conceptual layout for day-use and rustic and group camping facilities.

North Brae
A continuous public pedestrian/cycling trail will be provided along the shoreline. A treed buffer along the Fraser River, unnamed channel and forested edge of Bedford Channel will be retained to protect environmental and visual resources. Direct access to the waterfront in these areas will be encouraged at designated viewpoint locations.

Mid Brae
Mid Brae will provide two small group camp areas and a small rustic walk-in tent or yurt camping area. Camping capacity will be 12 tents/unit (25 visitors) in each group camping area and up to 16 walk-in tent or yurt campers, for a total of 40 tent sites. Parking for up to 20 cars will encourage walk-in users, cyclists, public transit users, or car pooling. This area will have open space and washroom facilities and access to recreation amenities in the campground. Also provided,is a small shoreline day-use area with picnic tables, perched beach, washroom, and picnic shelter that will be reservable by groups associated with the campground.

Figure 3.2.1 Planning Units

Figure 3.2.2 Park Concept Plan

Fort Camping- Potential Site Amenities

- *Concession*
- *Camp store*
- *Washrooms*
- *Showers*
- *Laundry*
- *Pool(s)*
- *Playground*
- *Sani-dump*
- *Indoor programming space*
- *Recreation equipment rentals*
- *Light grill with seating with outdoor patio*
- *Recreation equipment rentals*
- *Individual fire pits or alternative*

Maintenance of the existing trees between the group camping area and the Mid Brae day-use area will assist in minimizing visual impacts to Fort-to-Fort Trail users. The service building, yard, and wastewater treatment facility (tanks, tile field) will be located in this unit.

Campground

Fort Camping, in its smaller configuration, will be redeveloped with a series of primary and secondary roads providing access to both pull-through and back-in campsites. Accommodation for 140-175 individual RV campers and tenters has been provided based on the provision of adequate sized pads, table, parking pad, privacy screening, and water and electricity for each site (Figure 3.2.4). Besides these individual camp site services, a redeveloped Fort Camping will:

- Provide on-site amenities for campers;
- Provide road and servicing access to the Terasen Gas pipeline and Mid Brae area;
- Maintain security through strategic fencing and planting;
- Relocate existing wastewater facilities to the Mid Brae area;
- Potentially provide sewer and cable for up to 90% of sites;
- Raise flood prone areas of the campground using acceptable dredgate, off-site fill, or borrow obtained from the Mid Brae area;
- Provide sani-dump services to campers; and
- Offer innovative education, interpretive, and recreational skill development programming.

Glover Waterfront

Glover Waterfront will provide a day-use staging area for up to 50 cars, with open space, washroom, perched beach, trail, informal canoe launch, and picnic tables.

Glover East

Glover East lands, considered a Special Study Area, will remain undeveloped until Kwantlen First Nation, Township of Langley and GVRD land-use and program proposals, such as the KFN Cultural Centre evolve further. Future uses may include parking, washrooms, open/event space, group picnic area, and non-motorized boat launch facilities.

Figure 3.2.3 Glover Waterfront Plan and Campground Area Schematic

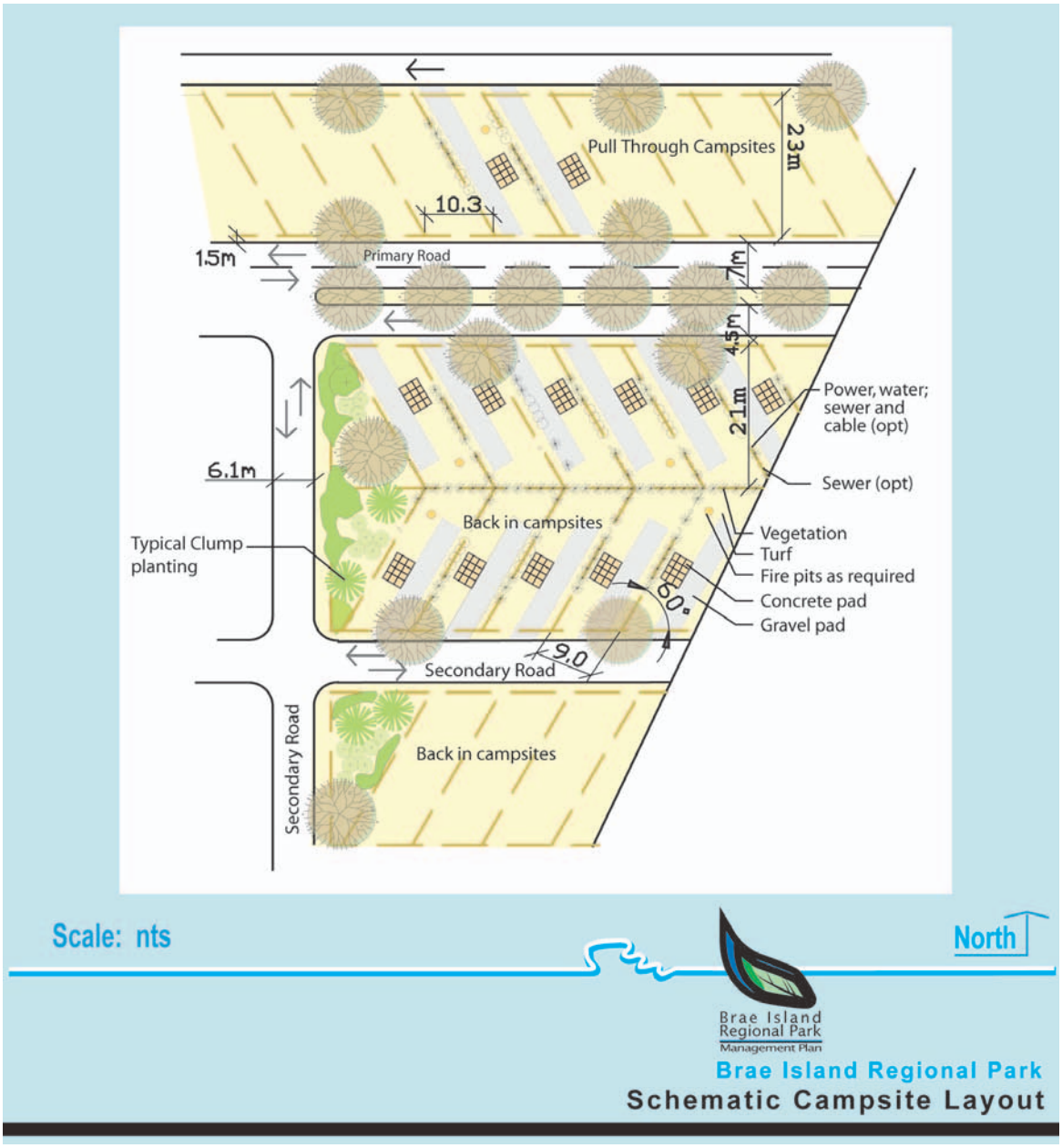
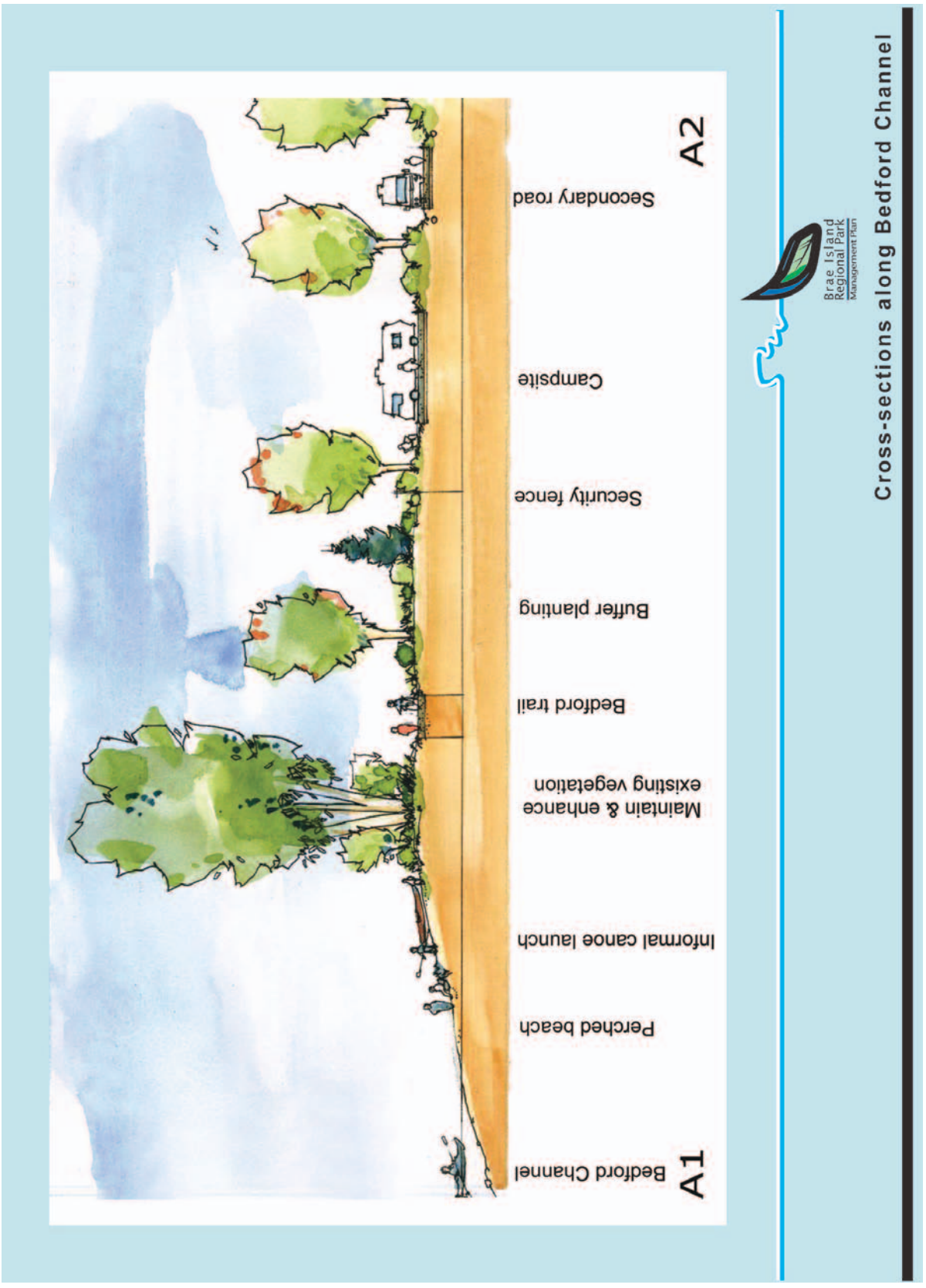


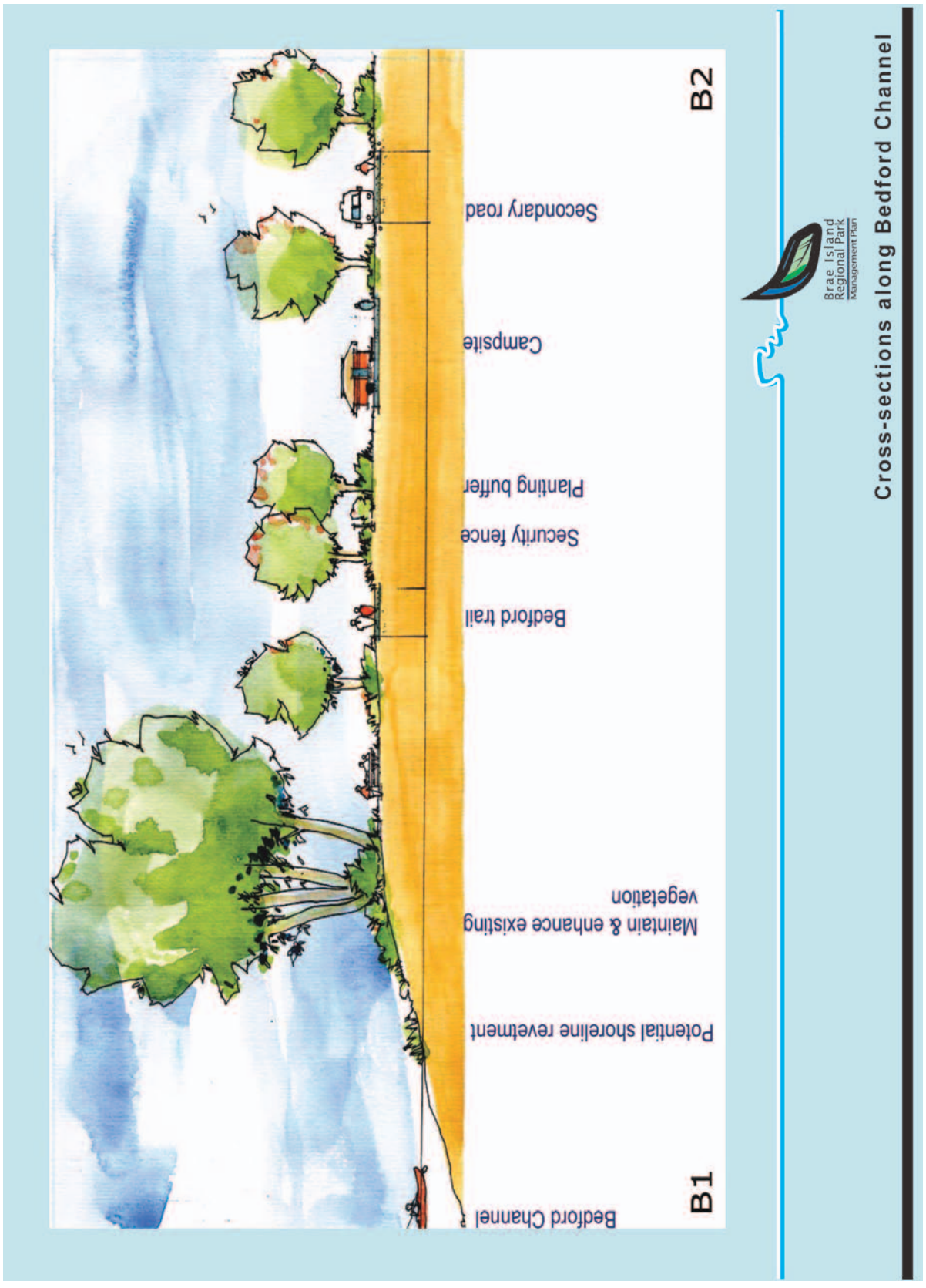
Figure 3.2.4 Schematic Campsite Layout

3.2.4 Park-wide Site Services and Emergency Preparedness

Potable water for the entire park will be provided by extending the existing 100mm, municipally supplied, potable water line to the rear of the site. This service will be adequate for fire protection and domestic water requirements for the foreseeable future. Three fire hydrants will be connected to this service for fire protection. Future structures will be equipped with sprinklers, if required. Provision will be made for fire truck access and safety exit procedures. Exit designs at Glover will be reviewed for safety considerations in the detailed design stages of the project. An emergency procedures manual with an emergency evacuation plan will be provided during the early stages of plan implementation.



Cross-section “A” (see figure 3.2.3)



Cross-section “B” (see figure 3.2.3)

Plans call for relocation of the existing waste water disposal field to a location west of the Terasen gas pipeline. It is anticipated that a similar tile field configuration will be utilized with new technology being incorporated where economically feasible. The existing disposal field will be decommissioned and converted to campsites.

Site drainage is not anticipated to be a problem given the porosity of the existing soils. Positive drainage will be created and, where necessary, flow directed to existing drainage courses and water bodies. Curbs and traditional catch basins for the site will be discouraged for practical and environmental reasons. Rainwater management will be provided by utilizing the site's natural characteristics and drainage qualities and by minimizing impervious services.

Potable water and sewer services will be provided to day-use facilities as the need and funds become available.

3.3 Park Programming

3.3.1 Natural Resource Management Program

A natural resource management program will include:

- Further studies to locate, identify, and develop best management practices for species-at-risk on the site;
- Preparation of a vegetation management plan that includes hazard and wildlife tree management, habitat restoration, and invasive species control;
- Development of erosion control plans to reduce the impact of foot traffic and cyclists accessing the beach and to protect and/or restore the eroding shoreline caused by Fraser River freshet and boating traffic; and
- A field management program to maintain open fields and limit encroachment from invasive species.

3.3.2 Operations and Maintenance

In addition to the operation of Fort Camping, other park operating and maintenance programs include:

- Routine Maintenance and Operations
  - Patrol; minor maintenance; managing the beach recreation areas; litter and garbage collection; minor trail repairs; brushing of trail corridors; repairs and staining of benches; dust suppression of the parking area and entrance road; harrowing and dressing beach sand; railings and other furniture associated with view points; sign maintenance and upgrading; grass cutting; and debris removal from the shoreline, where accessible.
- Annual Facility Maintenance
  - Service of potable water and wastewater treatment facilities; trail maintenance and brushing; repairs and staining of benches\tables, railings and other furniture; grading of parking and roads.

- Management of Natural Assets
    - Annual erosion monitoring inspections; flood management; mowing/ cutting of small meadows to maintain open space and diversity; control of invasive species and care for species at risk.
    - In Forest Buffer area, provide hazard tree and tree health care management.
    - In Glover East, annual cutting/mulching of the fields to maintain an open meadow environment.

View of Campground Amenities and Program Space

3.3.3 Visitor Services – Education, Interpretation and Recreation

GVRD Parks staff plan and deliver hands-on experiential interpretive programs, special events and stewardship education programs for residents and visitors within regional parks. New day-use facilities at Brae Island will provide public access to the park, resulting in an opportunity to deliver programming based on available staffing, partner support, and other community resources.

It is anticipated that Fort Camping will continue to operate under a contract that will include delivery of programming for campers. GVRD will provide in-service training opportunities for the contractor's staff and will promote networking and collaborative events/activities with community partners, as appropriate.

Day-use visitors and campers will also be informed about park resources and facilities, natural and cultural heritage features, management issues, and safety through interpretive and informational materials such as signs, kiosks, and brochures. Information on local and regional cultural events, recreation and tourism opportunities, greenway connections, and other visitor attractions will be shared through printed materials and existing web links.

3.4 Facility Development Costs

3.4.1 Facility Capital Costs

The Management Plan proposes a series of capital projects phased over 10 years, with most funds spent in the first three years.

Order-of-magnitude cost estimates by Park Management Unit are provided in Table 3.4.1. All forecasts are in 2005 dollars but, given the impacts of the 2010 Olympics and regional growth, it is possible that accelerated construction costs may be encountered even in the near term. The maximum total cost is based on varying levels of servicing and numbers of campsites developed in Fort Camping. Park-wide budget forecasts for some signage, trails, and sewage system redevelopment are provided.

Order-of-magnitude costs and project priorities may change as part of ongoing departmental priority setting. To meet public expectations and assist in attracting camping visitors to the park, the majority of day-use facilities will be built at the same time as Fort Camping is redeveloped. The redevelopment of Fort Camping will require the majority of the park budget at $3.075 million with a minimum of two phases. Day-use, group, and rustic camping facilities are estimated to cost an additional $1.025 million. Stewardship studies, budgeted at the department level, are expected to require a further $70,000. Depending on study outcomes, additional funds may be required. Where recommendations could result in significant differences in existing management policies or impacts, additional consultation may be undertaken. Directional and interpretive sign programs are estimated at $85,000 in early phases.

Implementation of the Management Plan will begin with the selection of a private operator for the campground and completion of cost/benefit evaluations to determine final campground services. Redevelopment will begin with removal of the waterfront area from the campground boundaries and revamping of the eastern portion of Fort Camping. These changes will require a new entry road and modifications to the existing registration/office building and area. Partial construction of the Glover Waterfront and Mid Brae day-use area and southern leg of the Bedford trail along Bedford Channel to Tavistock Point will also be completed at this time. Other facilities and programs will be developed as funds become available.

Net operating revenues, or costs from the camping operation, can only be credibly forecast once the operator has been selected and final camping program and services determined. It is anticipated that the campground operation will be self-funding but facility development and replacement may be tax-funded.

Table 3.4.1 Capital Cost Estimates

	Phase 1	Cost	Phase 2	Cost	Phase 3	Cost	Future Items or External Funding
Park Wide (Camping and Day-Use Services)	• Signage • Bedford Trail and Viewpoints • Sewage system relocation & upgrade	40,000 190,000 225,000	• Signage • Fraser River Trail and Viewpoint	45,000 100,000			•Interpretive Exhibits
Glover Waterfront	• Decommission existing campsites (125) and road. Relocate - power supply, cable, telephone, main entry road, and dumping station. Fill and grade • Provide day use parking (40), washroom, tables, fencing, perched beach, and buffer planting	410,000	• Additional buffer planting and picnic tables	55,000			
Campground	• Rebuild 110 campsites (leaving 80 to be redeveloped in Phase 2). Provide fill and grade, new entry road, roads/parking, water, sewer, electrical, landscaping, playground upgrade, registration area renovations, light grill; pool/deck; and utilities washrooms/ showers/ laundry	2,500,000	• Decommission 80 remaining camp sites and provide 65 new sites	650,000			• Canoe and Bicycle Rental Facility
Glover East					Day-use area with open space, tables, parking (60 cars), non-motorized boat launch, group picnic shelter	300,000	
Mid Brae	• Day-use area, picnic tables, perched beach • 2 Group camping areas with 1 new shelter and 1 existing shelter relocated and 1 privy • 8 rustic campsites • Parking for Group and Rustic Camping (16 cars) • Service Yard Fencing	120,000 200,000 15,000	• 1 privy • Additional parking (15 cars) • Service Facility	20,000 20,000 185,000			• 1 day-use shelter • 1 privy upgrade to washroom • 4 additional rustic campsites and 4 yurts
	Sub-total	**$3,700,000**		**$1,075,000**		**300,000**	
	Total						**$5,075,000**

3.4.2 GVRD Staffing and Operating Expenses

Operations - Operations and Maintenance Cost Projections

From an operating perspective, mixing day-use with camping will be a challenge, but it is believed that with proper security measures and programs the operation of both uses will be compatible.

Current annual operating costs for the park, including taxes for the campground, are largely balanced by Fort Camping's rent payments. The park has no staff; however, supervisory staff provide administrative services. Operations and maintenance of the day-use areas are expected to begin in 2008 (Phase I). The initial operating budget is estimated to be $54,000 per annum growing to $75,000 by 2009, based on additional facilities and higher levels of park use.

3.5 Plan - Sustainability Assessment

Numerous positive benefits, such as revegetation programs, offset negative impacts of the Management Plan. Day-use facilities and camping will contribute to the health and wellness of a growing urban population. Tourism will be supported, as will air quality and energy conservation objectives, by minimizing the need to travel long distances to go camping. The park is expected to continue to make a significant contribution to the local economy with increased levels of employment and economic spin-offs to local and regional business.

Impacts to the community will be roughly the same as today, although there will be some increase in traffic because of day-use park traffic and possible increased levels of camper attendance. Offsetting this impact will be the removal of Albion Ferry traffic on Glover Road. Peak summer traffic flows should be similar to those found today.

Concerns about scale of development and habitat loss have been addressed by reducing the size of the campground; maintaining staging areas along Glover Road; optimizing trail locations; and utilizing, wherever possible, damaged sites for more intense recreation use. Damage to existing natural treed areas has been limited to less than 4.0 ha (7.5%) of the park's natural wooded areas, or 6% of the park overall. Most of the existing mature alder/poplar trees will have to be removed from the Fort Camping site but will be remediated through tree and shrub replacement.

To minimize environmental impacts the Plan strives to:

- Minimize fill requirements;
- Minimize trail and viewpoint impacts, with a 20-50m setback, along the Channel and River shorelines;
- Limit access to the foreshore to trail ends, and avoid sections of trail that run parallel to the foreshore within 20 m of the bank;
- Provide staging area public access to the park at Glover Road to minimize impacts to the park;
- Utilize raised boardwalks for sections of trail that cross over wetland;
- Wherever feasible, protect the values of the gallery forest;
- Discourage access to the Forest Buffer area so that it functions as a refuge for wildlife;

- Encourage health and wellness;
- Provide campground standards for the operator that are efficient and effective while maintaining the quality and character of the site (see Appendix D - RV/ tent Camping Guidelines); and
- Investigate applicability of energy management techniques, grey water usage, recycling of waste, and use of recycled construction materials for park programs.

Social impacts are considered minimal, and, for the most part, development of the campground will be positive from a recreational, transportation and economic perspective. GVRD will work with partners to optimize the project's social benefits and with TOL staff to ensure that on- and off-site construction activity impacts are considered during implementation. To ensure protection of potential archaeological resources, a qualified archeological consultant will be retained where significant excavations (deeper than 300mm) occur in the zone indicated in Figure 2.6.1 and the locale has not been previously disturbed by servicing or building excavation.

There are financial risks in operating a larger campground that must be recognized and managed, including:

- GVRD's and the Operator's financial resources;
- Economic health of travel and camping industry;
- Servicing and development approval requirements;
- Shoreline foreshore erosion;
- Bedford Channel sedimentation;
- Flood plain impacts;
- TOL's Long-term 30-day Stays Bylaw; and
- Mosquito nuisance and risks associated with West Nile Virus (WNV).

Should further investigations or experience redirect actions, the plan is flexible enough to allow modification or conversion of the campground to other park uses. A review of the Management Plan and further public and agency consultation would be undertaken if this were to arise.

Conclusion

Given the factors addressed in the plan, the anticipated impacts and recommended mitigation measures, it is concluded that the impacts and risks associated with the implementation of the Management Plan are acceptable. Monitoring and adaptive management will assist in limiting, or mitigating further impacts.

4.0 IMPLEMENTATION, MONITORING AND ADAPTIVE MANAGEMENT

This Management Plan provides a transparent framework for how GVRD Parks will consider decisions about Brae Island Regional Park. The objectives of implementing and monitoring the management plan are to:

- Achieve the park goal and follow the management framework, and
- Bring about the proposed developments of facilities and programs.

Follow-up studies, including environmental and cultural impact assessments, may be required to determine the impacts of specific facilities. Implementation of the Plan and projects will remain adaptable to take into account changes in community needs, visitor use, environmental sensitivities, or the availability of human and financial resources to GVRD or its partners.

Implementation Plan

GVRD Parks will monitor the impact of facilities and programs in and outside of the park that impact the park's resources, and, where necessary, adapt policies and procedures to accommodate change and to minimize park or recreation user impacts. Consultation with the park partners (DR/BIPA) or agencies (TOL, DFO, WALP) and First Nations, will be ongoing. However, where GVRD Parks feels it necessary, public consultation opportunities will be provided for review of detailed plans prior to project implementation. Criteria for public consultation will be based on size, scope and impact of the specific project and level of variance from the Management Plan.

Monitoring, Evaluation, and Reporting

A critical element of the Management Plan is collecting scientific data to help inform decisions. Several of the plan's strategies involve monitoring recreation users and park resources and operations. Therefore, an ongoing challenge in implementing the Management Plan is to develop and improve systems and practices for collecting and reporting information by GVRD Parks, partners and other agencies. Ideally, indicators that reflect these uses and conditions will be collected in standardized ways and reported periodically. Using this information, trends can be assessed and used to adapt the implementation of the plan and to liaise with others to consider the best interests of the park.

Appendix A Table A Public Involvement

Public consultation events and dates.

Event	Date
Derby Reach/Brae Island Park Partnership Association Directors	Numerous Meetings
Stakeholders' Tour of Site	January 26, 2002
Stakeholders' Meeting 1	January 29, 2002
Stakeholders' Meeting 2	November 20, 2002
Stakeholders' Meeting 3	September 20, 2004
Public Open House 1	March 4, 2002
Public Open House 2	November 28, 2002
Public Open House 3	September 20, 2004
Fort Langley Community Association	January 14, 2003
Kwantlen First Nation 1	February 14, 2002
Kwantlen First Nation 2	October 13, 2004
Kwantlen First Nation 3	October 20, 2004
Kwantlen First Nation 4	March 16, 2005
Kwantlen First Nation 5	March 30, 2005
Kwantlen First Nation 6	November 09, 2005
Township of Langley Council Briefing	June 9, 2003
Langley Agricultural Advisory Committee Briefing	June 19, 2003
Associated Business Workshop	May 29, 2001
Fort Camping Camper Questionnaire 2001	September 2001
Fort Camping Camper Questionnaire 2003	September 2003
Fort Camping Camper Questionnaire 2004	September 2004

Appendix B – Table A Guiding Principles, Objectives, Strategies, Tasks, Descriptions and Actions

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
1. Will strive to be a model for development based on sustainability principles that balance social, environmental, and economic values.	Be a model of applied sustainability principles	Use sustainability criteria to guide economic, environmental, and social components for development and operation of park.	• Identify management and planning techniques that support strategies and monitor for compliance on ongoing basis. • Use Adaptive Management Procedures to reflect dynamic changes in park and conditions. • Consider economic opportunities related to park programs, especially those that may complement local tourism strategies. • Identify methods and determine feasibility of incorporating alternative systems for sewage treatment, water conservation, graywater use, recycling, material reuse, and energy management. • Advocate use of public transit, private buses, blueways, bikeways, and pedestrian walkways for travel to the park.
		Provide a model for campground development and operations	• Build on local community character by preparing development plans based on local historic, cultural, or natural history themes. • Prepare appropriate guidelines for redevelopment and operation of the campground based on SRI principles.
	Use best operating practices	Ensure that park users and assets are protected.	• Prepare an Emergency Preparedness, Shoreline Protection, and Vegetation Management plan. • Identify hazards with appropriate signage and fencing.

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
		Protect park resources	• Encourage regulatory compliance through education, information, and enforcement. • Conduct a "BRARP Bedford Channel Shoreline Protection Strategy Study". Review existing information and prepare recommendations for shoreline protection strategies. • Use construction and maintenance practices that avoid or mitigate conflicts between sensitive or unique environmental and cultural features.
2. Be consistent with GVRD Park's mandate and mission.	Monitor and confirm on an ongoing basis policy compliance	Obtain GVRD Park Committee and Board adoption of new policy.	• Conduct periodic review of plan against current GVRD direction and department principles and values
3. Protect, enhance, and remediate sensitive natural and cultural features.	Identify sensitive features and promote the preservation and enhancement of natural resources in the park to minimize negative impacts on water quality, forest, and riparian habitat.	Monitor and respond to factors that may impact the stability of the park's natural shoreline and sensitive portions of woodlot areas. Apply an adaptive management model to monitor use impacts and change and adjust management approach to maintain acceptable results. Minimize impacts to the Fraser River Floodplain.	• Implement appropriate monitoring techniques. • Conduct necessary archaeological resource assessments in areas where construction activities are likely to modify or disturb potentially significant archaeological features and artifacts. • Conduct a "Species at Risk" study with recommendations and implementation plan. • Provide fill as required to protect park resources and viable operations. • Favour practices that minimize and reduce the need for engineered works in flood control and rainwater management programs.

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
	Provide facilities that minimize degradation of sensitive aquatic and terrestrial habitat.	Plan facilities based on park and local communities' natural and cultural resources and the conserva-tion objectives of the park.	• Continue to protect Riparian Forest areas from campground encroachment. • In cases where natural habitat has been disturbed, remediate as required. • Encourage use in trail and recreation node areas.
	Manage facilities and activities that minimize degradation of sensitive aquatic and terrestrial habitat.	Manage using ongoing monitoring techniques for facilities, programs, and activities.	• Identify and support efforts to continually improve environmental management (Adaptive Management) of the site.
	Develop tools and processes for assessing and mitigating long term impacts to the park and its environs.	Establish monitoring systems to track the long term health of the park based on levels of use, recognized parameters, and programs.	• Develop criteria, monitoring process, and methods for evaluating projects in the park which have the potential to negatively impact its environs. • Monitor flooding and inundation of park;, developments, and operations with review of procedures ongoing. • Provide measures and make periodic recommendations to minimize impacts to works, natural systems, and operations based on review outputs.
	Provide programs and procedures that support maintaining park biodiversity.	Prepare plans, policies, and implementation strategies that are supportive of biodiversity objectives.	• Prepare a comprehensive "Vegetation Management Plan" that addresses long term park program needs (biodiversity, invasive species, bio-engineering, campground aesthetics and functionality). Emphasis should be placed on using native plants in naturalized areas. • Hazard tree removal along Bedford shoreline should consider slope stability impactsand replacement tree requirements.

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
			Emphasize use of native species for replanting in riparian areas. • Use, among others, non-invasive plants that support biodiversity objectives in developed areas of park.
	Encourage recreational activities that minimize degradation of sensitive aquatic and terrestrial habitat.	Control and monitor access to riparian and sensitive forested areas	• Allow and accommodate passive uses in natural areas. • Trails paralleling shoreline to maintain a 30-50m buffer depending upon sensitivity of habitat with the exception of strategically located viewpoints and access areas indicated. • Provide a series of loop trails in Park. • Provide for recreation use of shoreline in designated areas.
4. Recognize and encourage the valuable contributions made by community groups, park partners, and volunteers.	Facilitate programs by others that further the plan's goal and objectives.	Assist partners in the development of complementary programs that support the management plan and local community involvement through the DR/BIPA.	• Seek community partners in developing parts of the park trail system. • Support partners in the development and maintenance of facilities that provide opportunities for education and stewardship programming. • Work cooperatively with TOL in areas of common interest identified in the Management Plan including transportation, planning, fire, length of stay, etc.
5. Maintain ongoing public involvement in the planning, development, and operation of the park.	Respond to public needs and interest.	Meet and provide input to others to promote the interests of the park, region, and local community.	• Work cooperatively with TOL in areas of common interest identified in the Management Plan including transportation, planning, fire, length of stay, etc. • Maintain and promote effective communication and working relationships with the Park Partners, Township of Langley, Kwantlen First Nation, other agencies, interest groups, and individual stakeholders.

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
			• Work with Kwantlen First Nation to identify pre-and post-contact cultural use areas within the park.
		Meet with and promote input from others throughout planning and implementation processes.	• Utilize local abilities, skills and facilities that support the park's planning, management and programs.
6. Provide park access for a range of ages, physical mobility, and income groups.	In cooperation with other levels of government, groups or individuals, provide trails that link the park activity nodes and connect to community and regional networks.	Provide a "window" to the Fraser River by supporting the South Fraser Greenway corridor and potentially link to other cultural, park, or historic attractions in area. Promote Blueway connections up, down, and across the Fraser River.	• Promote connections to local attractions and facilities in area. • Provide Fraser River viewpoints for pedestrians and cyclists.
7. Develop and program Brae Island to emphasize its unique geographic location as an island in the Fraser River at historic Fort Langley.	Provide information opportunities on sustainability, natural and cultural history, education, and interpretation for groups and individuals.	Deliver programs and distribute informative, high quality, self-use media and interpretive signage along Bedford Channel.	• In the park's programs, signage, and communication materials, emphasize area's unique waterways, geological and historic importance, beauty, fish habitat, and other natural and cultural features. • Encourage stewardship through education and interpretive programs. • Sustain and enhance regional greenways, including the Trans-Canada Trail, with the park as a stopover in a wider regional trail network.
	Provide facilities that are flexible and support others' programs and events.	Work with local groups to facilitate historic, cultural, and local artistic events and programs.	• Support camping activities with programs supplied by other groups.

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
8. Provide a unique package of day-use and overnight recreation and education/ interpretive programs with commercial and tourist services, facilities, and experiences.	Provide a mix of quality outdoor activities and facilities to attract users from across the region, and complement features and services provided in nearby public recreation, natural, and historical areas.	Attract regional users. Make provisions for Enhanced Services in the park including: camping, group camping, tenting/ yurts, recreation equipment rentals (non-motorized boat, bicycles, and accessories), food concession, or other complementary uses.	• Explore viable business options and delivery systems.
		Provide day-use facilities.	• Provide staging area along east portions of Bedford Channel. • Undertake “Special Studies” in Glover east lands to establish viability of day-use facilities on GVRD and/or TOL lands. • Provide shared-use trails in the park for walking and cycling. Monitor and, if appropriate, introduce separated trail system in future. • All trails to be wheelchair accessible. • Provide opportunities for passive recreation such as picnicking, walking, resting, contemplation, beach activities (i.e. perched beach), wildlife viewing, and interpretive programs. • Accommodate limited non-motorized water sport activities such as canoeing, kayaking, and rowing. • Exclude motorized water craft landing or docking in the park.

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
		Provide recreation camping, group camping, and yurt and/or walk-in camping.	• Provide a camping model that illustrates sustainable development principles and exhibits the transferability of these initiatives to other public and private sites throughout the region. • Optimize camping benefits and minimize impacts to park's natural areas and environmental processes. • Promote a mix of camper types based on: type of camping equipment, ability to pay, user needs, seasonal interest; and recreation camping trends. • Use day-use areas of the park to support camper education programs. • Provide camping mixes that support camping during the summer season using programs that are attractive to families and children. In shoulder season, adapt the campground program and promotions to support attracting snow birds, coast visitors, nature appreciation enthusiasts, and adult learners. • Create conditions that support longer term camping stays in the campground. • Provide camping that is in compliance with TOL's applicable campground bylaw. Work with TOL to identify concerns related to length of stay provisions given realities of recreation camping market.
9. Provide a package of day-use and overnight	To promote hands-on experiential interpretation	Enhance visitor awareness, appreciation, and understanding of	• Develop and deliver programs as staffing and partner support permits.

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
recreation, education/ interpretative programs, and commercial tourist services and experi-ences.	and educational programs and activities in collaboration with community partners.	the natural and cultural attributes of Brae Island and the surrounding region.	• Develop and deliver programs as staffing and partner support permits. • Highlight the unique nature of Brae as an island in the Fraser River, richness of local cultural heritage; opportunities provided by Derby Reach, Kanaka Creek, Village of Fort Langley, and surrounding region. • Expand and support partnership activities, events, and joint promotion. • Protect park natural and cultural resources through providing visitors with an awareness of their impact on the park environment and their personal responsibility to minimize negative impact. • Provide messages that help support park operations and that minimize resource management and enforcement problems. • Promote environmental education use of facilities and services. • Encourage use of open spaces and waterfront access for collaborative special events and community activities.
	To assist in providing contractor's staff with training and networking opportunities	Provide customized in-service training and inform Fort Camping about GVRD and other training opportunities.	• Develop and deliver 1 to 3 training sessions per year outlining program planning processes, safety considerations, program delivery, and promotional techniques. • Inform contract staff about Interpretive Skills Workshop, Super Saturday, and Interpretation Canada courses (Manning Park).

Guiding Principle	Objective	Strategy	Tasks, Descriptions & Actions
			• Share printed materials and lesson plans that can be adapted for Fort Camping use. • Promote contacts with Langley Community Heritage Network, Langley Centennial Museum, Fort Langley National Historic Site, Farm Machinery Museum, Kwantlen First Nation, etc.
	To inform visitors and residents about park facilities, features, services, rules, and regulations	Develop and produce high quality non-personal media	• Develop and produce information-orientation signs and kiosks. • Develop interpretive signs on local stories; use in day-use areas, on trails, and at viewpoints. • Print a park brochure and promote Brae Island and Fort Camping through GVRD web services. • Produce signs on park regulations,resource management, safety, etc.
10. Provide park visitors with basic services for “no fee” and enhanced services on a “fee for service” basis.	Provide additional resources for the park through fees for value-added services, grants, revenue generating projects, donations, and fundraising with park partners and the Pacific Parklands Foundation, and by supporting volunteerism.	facilities in a manner that provides an attractive camping service and generates revenues that are supportive of maintaining the park and campground.	• Apply fees to group and public registration programs and reservable facilities where appropriate. • Apply fees for services that are complimentary to the operation of the campground.

Appendix B Table B Environmental Analysis and Recommendations

Planning Unit	Environ-mental Area	Analysis and Recommendations
North Brae	Bedford Channel Riparian	• The shoreline strip or "gallery forest" should remain continuous, but can accommodate small openings and trails. Some openings already exist, such as the small shoreline grass area just north of where the trail currently terminates at Bedford Channel. • Trails within this forest strip should not remain equidistant to the shore, but should meander inland, creating large pockets of insular shoreline forest that are not subjected to human disturbance. Spur trails to viewpoints, running perpendicular to main trail, and the shore could be considered. • A buffer area of 30-50m should be used as a guide with limited trail construction and access.
	Interior Forest	• This represents an area whose primary value is in its whole as part of the Fraser Valley gallery forest. Some portions are highly disturbed and contain very young mono-cultural stands of red alder. However, it provides a large contiguous area of forest with different features such as forest types a and age classes. Its ecological value should increase as it matures. This area provides protection to adjacent features as well. • Trails cutting across wet depressions and wet areas would ideally be constructed of boardwalk so as not to change hydrological characteristics nor damage substrate and plants. In addition, trails (bridges or boardwalks) should not run along the linear wetlands but should traverse these channels in a perpendicular or semi-perpendicular manner. This would allow for an interesting (possibly meandering) course and an opportunity for users to view the features without greatly fragmenting and disrupting ecological processes and diminishing "ecological value".
Mid Brae	Bedford Channel Riparian	• Where not already damaged, this area is sensitive to camping and day use activities. Day-use activities and group camping could be permitted in areas already damaged and within clearings along the shoreline. Mitigating shoreline protection measures may be required to protect the channel bank in this area
	Interior Fores	• This area is progressively more sensitive as one moves from east to west. Vegetation cutting and removal, on the east side of this area, could be permitted to accommodate potential roads, waste water treatment facilities, camping, borrow areas, and trails.

Planning Unit	Environ-mental Area	Analysis and Recommendations
Forest Buffer	Old Forest Along Unnamed Channel	• This area is highly sensitive and no accessformal or informal should be permitted. A buffer area of 50m is generally provided and at the old growth area, this buffer extends to 75m from the unnamed channel's top of bank. Educational signage and literature should be provided that stress the importance of this site as a conservation area.
	Riparian Forest Along Fraser River and Bedford Channel	• Maintenance of this unit as an undisturbed contiguous forest is important. Veteran specimens should be retained unless found to be hazardous. Tree edge should be maintained in this area and no expansion of the campground is allowed into this area. Trails and access to the area should be limited to viewpoints and their access to protect fisheries resources. An active invasive species removal program should be provided.
Campground		• Many of the large trees in the campground will be removed to accommodate campground re-development. Given the quality and type of vegetation found in the area, maintenance of this vegetation is not an overriding consideration. However, mitigation measures to be incorporated into the campground development will include rehabilitation planting. Planting should be native, non- invasive species to provide shade, bird edge treatments, and camper privacy internally and externally. • Most of the campground is located on higher ground, however, 1.73 ha of the campground and 0.68 ha Glover Waterfront is at or below an acceptable grade of 4.5m. To avoid upwelling during relatively frequent 5 year flood events, filling (maximum 18,000 cubic metres) of these areas is required. This figure could be less if suitable excavated materials are found when constructing park facilities. Impacts to the floodplain are believed to be acceptable given the quantities, elevation, and net benefits. Ten year or greater flood events may occur periodically, in which case some of the lower areas of the campground may be inundated and deposition could occur. Necessary clean up operations may be required with the disposal of silt, clays, and debris. An acceptable disposal site should be delineated in the Mid-Brae area for rare occurrences such as this. If this proves unacceptable for environmental or practical reasons, depositions will be taken to approve external land fill sites.

Planning Unit	Environ-mental Area	Analysis and Recommendations
Glover Waterfront		• Maintenance of some of the remnant trees along the shoreline would be desirable for shading, visual relief, and protection of the shoreline from erosion. Introduction of the public is likely to lead to increased mortality of existing veteran trees in this location. A strategy to deal with shoreline protection should be undertaken. Anticipation of this requires preparation of a vegetation management plan as part of the shoreline protection plan, including vegetative succession planning. • Trees removed as a result of hazardous condition or because of recreation opportunity requirements should be replaced with caliper material using native or non-invasive species suited to the site and based on the vegetation management plan. • Use of vegetative bioengineering techniques for s shoreline protection is desirable where possible. Perched and grass beach areas should be a maximum of 350 lm or less than 15% of the park's shoreline. No environmental impact is expected with these treatments since they are located in shoreline areas that are primarily bare, grass, or scrub vegetation. Sand materials should be applied initially and maintained from on-site borrow areas, existing substrate, or imported materials depending upon quality, environmental impacts, and cost. • Upland run-off should be captured in this zone and directed to environmentally acceptable outfall points using gravity fed drainage principles or surface water pumping stations to prevent further shoreline erosion. Use of the site's substrate for run-off is a desirable rainwater management strategy given the existing sandy soil conditions.
Glover East		• Almost the entire area is grass and hayfields that will require maintenance to avoid encroachment by invasive or successive species. • Long-term development of the area for recreation uses is not expected to significantly impact the area, but an appropriate vegetative management plan should eventually be initiated that supports edge bird and small mammal habitat potential.

Appendix C RV/tent Camping Guidelines

The following draft standards have been provided to indicate standards that may be considered when detailed plans and operation programs are prepared in the early stages of Fort Camping's plan preparation.

1. The campground developer and operator support the park management plan by using sustainable development and operation practices:
    a. Use sustainable development and operations practices as an example for other operations in the area,
    b. Respect the park's lands and natural and cultural environment
    c. Provide a safe and secure environment for campers.
2. A double sewage dump station should be located near the entrance control station.
3. Provide fencing strategically around the perimeter of the campground with self-locking gates that allow access to the park at controlled locations.
4. Stay within the bounds of the RV/tent campground area.
5. Have at least two bathroom/shower and toilet structures,
6. Provide an appropriate maintenance complex that is buffered from campers and park users.
7. Recreation amenities should be located outside of any camp loop.
8. Minimize quantities of roads and service lengths.
9. Don't mix family campsites and seasonal campsites on the same camp loop.
10. Don't move traffic from one camp loop into another and another.
11. Name camp loops based on an overall theme.
12. Main roads should be asphalt; consider porous variety.
13. Make provisions for environmentally acceptable dust control on gravel roads.
14. Use GVRD guidelines for pesticide and herbicide use in public landscaped areas.
15. Campfire rings may be permitted with further review. Other alternative methods may be proposed.
16. Provide facilities based on minimum standards to be established including: washrooms, showers with hot water (fee based), laundry facilities, camp store, coffee area with outdoor patio access, sunning area, playground, and games court.

17. Recreation facilities to consider on site include swimming pool.

18. Recreation and education programs will be integral to the campground's theme and concepts. Programs will appeal to users based on seasonality and interests and should utilize local as well as regional instructors.

19. Provide a portable classroom for indoor events.

20. Avoid long loops that are visually uninteresting and do not provide a feeling of belonging to a group.

21. Provide campsites that allow appropriate parties of up to 15 to gather for special events.

22. Design the campground to sensitively interface with the other parklands surrounding it. Plans will consider the visual impact of the site on public areas and buffer accordingly.

23. Design based on a historic theme that is supportive of the Fort Langley or Fraser Rivers history. Buildings, site furnishings, vegetation, literature, and staff uniforms should support the concept.

24. Avoid overuse areas in plans. An ongoing turf management program is required that considers soil, use, dust, and climatic conditions. Hardening of campsite should be selectively used or with innovative measures that use porous paving surfaces.

25. Avoid excessive use of irrigation systems and use for practical applications. If irrigation systems are used in selective heavy use turf areas, then provide a system that broadcasts selectively (avoiding hard surfaces) or use drip irrigation system. Use electronic controllers with precipitation monitors and use water conservation practices at all times.

26. Provide positive drainage throughout and adequate drainage for main roads and other high use areas. Avoid drainage patterns that allow standing water over longer periods.

27. If required, provide local fill from site or adjacent legitimate areas to provide positive drainage and flood modification.

28. Minimize hard surface landscapes and use non-invasive plants in landscape schemes.

29. Campsites should be of varying sizes, configurations, and orientations to accommodate a range of user types and interests.

30. Provide up to 175 sites for a range of users including Class A, B, C, soft tops, and trailers. Provide on-site services that may include water, sewer, power, cable, and telephone. Wireless services should be considered.

31. Provide 2 sites with handicap accessible deck and ramp facilities for access to trailer.

32. Provide a mix of back-in and pull-through campsites as market and plan dictates.

33. Provide 10% of the sites for tenters with water and electrical only and sites that have more visual interest and configurations.

34. Single lane roads should be 4.5m wide with a clearing limit of 7.0m (1.5m grass shoulders each side) and an overhead clearance of at least 5.0m.

35. Double roads would have a width of 6.5m with a clearing limit of 9.0m and a minimum of 5.0m height clearance.

36. Provide recreation facilities for all ages and gender, especially children.

37. A maximum of 2 permanent residences will be allowed on the site (Operator and Caretaker).

38. Provide a booking system that adequately tracks guest visitations and shall provide these records to GVRD upon request.

39. Recycling boxes should be available for plastics, paper, and metal.

40. May provide yurts, but will be considered a camping unit. Cabins will not be allowed.

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