17.0 SOCIO-COMMUNITY AND ECONOMICS

17.1 INTRODUCTION

This chapter is based on the socio-community and economic impact assessment report prepared by CitySpaces Consulting Ltd. and Novacorp Consulting Inc. titled *Roberts Bank Socio-Community and Economic Impact Assessment* (2004). The study is contained in its entirety in **Technical Volume 11**. For the purpose of this report the distinction between socio-community and economic impacts is:

- Socio-community impacts affect community and resident services, facilities, life-style, land use and general well being including traffic, noise, air quality and visual amenity.
- Economic impacts are changes in economic activity in various sectors of the economy, can be measured in economic terms (i.e. dollars and employment) and arise positively or negatively, both directly and indirectly, from the project.

17.2 STUDY AREAS

The socio-community and economic impact analysis focused on four distinct geographical areas:

- Canada;
- Province of British Columbia;
- Greater Vancouver Regional District (GVRD); and
- the local area: Corporation of Delta (Delta) and the Tsawwassen First Nation (TFN).

The economic impact assessment has a very wide distribution pattern and adhered directly to the above geographic areas. The socio-community assessment, with a more limited geographic distribution pattern, was assessed in a more local (Delta and TFN) and regional context.

17.3 METHODOLOGY

A review and assessment of existing reports, data and resources was used to obtain baseline data for the study areas. In addition to these secondary sources interviews and discussions were held withl municipal staff from Delta, representatives from the TFN, local health and protective service personnel and representatives from TSI, the Deltaport operator. The baseline data was used, in part, to assess the possible socio-community and economic impacts of the Deltaport Third Berth Project on the study area (**Table 17.1**).

Table 17.1 Baseline data used for the socio-community and economic impact assessment.

Socio-community	Economic
Population and demographics	Internal VPA financial model
Land use	Employment conditions
Resource use (including the agricultural community)	Job creation opportunities
Health services (ambulance, hospital)	Wages and salaries paid
Emergency and protective services (police and fire)	Taxation regime
Social services	Economic development plans and trends
Schools	Labour force characteristics
Transportation (road, rail, marine)	Local and regional businesses capabilities
Recreation	Personal income characteristics
Visual, lighting, air quality and noise impacts	VPA transportation, engineering & economic reports

Both the socio-community assessment and the economic impact assessments identified and assessed only net, new (or incremental) impacts attributed to the Third Berth Project.

The evaluation addressed both the impacts expected to occur during the construction phase as well as the impacts expected to occur once the new berth becomes operational.

17.3.1 Socio-Community Impact Assessment Methodology

The impacts of the proposed development on the existing socio-economic conditions, identified during the baseline data collection exercise, were assessed using standardised criteria. The criteria are discussed further under section 17.6.1 Assessment Criteria, and in **Table 17.9**. The methodology for the socio-community assessment accounted only for direct impacts of the

Deltaport Third Berth Project. Flow-on development that results from activities external to the new terminal and secondary impacts are considered to be subject to their own reviews when these developments are proposed.

17.3.2 Economic Impact Assessment Methodology and Model

The economic impact assessment developed an economic model to describe the net impacts of the construction and operational phases of the Deltaport Third Berth Project, and to describe direct and secondary economic effects of the project using the model and multiplier estimates. The baseline information was sourced from the Delta Chamber of Commerce, Statistics Canada, B.C. Stats, Royal LePage and the Corporation of Delta.

Construction phase expenditures and their duration, and operational phase expenditures, prepared by the VPA were used in the assessment. The geographic distribution of these expenditures has been estimated based on a variety of previous reports and studies and on expert opinions of the authors on the ability and capability of businesses within the described geographic areas to supply the goods, services, equipment and labour required.

Secondary (indirect and induced) benefits associated with both the construction and the operational of the Project have been based on standard industry multipliers. These multipliers were compared, contrasted and adjusted as required based on detailed economic impact research and data prepared previously for VPA container terminal operations.

Overview of the Economic Model

The economic impact model was developed using a spreadsheet format. The model incorporates both development (construction and equipment acquisition) and operational considerations. It was prepared for a 20-year period once new terminal operations begin in 2008 so that the construction and the timing of its direct and secondary effects can be compared over a reasonable time frame. This enables relative benefits to be expressed in terms of current dollars through the use of net present value analysis.

The economic impact model assessed direct impacts for each geographic area, for the key business expenditure categories. Secondary benefits were estimated for British Columbia and Canada. The direct impact categories included: capital investment to construct and equip the

Deltaport Third Berth; operational expenditures on wages and salaries for new long term employees; expenditures on goods and services for ongoing business operations; and municipal taxes and charges as well as corporate and personal income taxes for the development and operational phases.

The analysis included several steps for each of the economic benefit generating categories. These were (1) total development and operational expenditures and their timing; (2) distribution of direct expenditures amongst the geographic areas described above; (3) annual calculation through 2027 of the direct economic impact in each geographic area under each category; (4) multiplier estimates to account for secondary economic impacts; (5) an annual calculation through 2027 of the total economic impact under each category; and (6) a calculation of the total impacts within the defined economic areas from development and operation and the secondary impacts in British Columbia and Canada.

17.4 EXISTING SOCIO–COMMUNITY ENVIRONMENT

17.4.1 Delta Overview

The Corporation of Delta (Delta) is a suburban municipality in the southwest corner of the Lower Mainland. Delta is bounded by the Strait of Georgia to the west, the Fraser River to the north, the municipality of Surrey to the east and the US Border to the south. Delta is approximately 36,433 ha. The majority of the population is largely concentrated within three residential areas (Ladner, North Delta & Tsawwassen), with the remainder spread through the rural farm land of Delta.

Ladner (population 21,367) is the closest residential neighbourhood to Deltaport; 3 km to the northeast. Ladner is the original farming and fishing village in Delta, and is Delta's administrative centre with the municipal hall, the Justice Building, Hospital, a skateboard park and a Leisure Centre. Tsawwassen (population 21,337), a residential community with a commercial core is east of Deltaport. North Delta (population 52,115) is the largest residential area in the municipality. It is approximately 15 km north east of Deltaport.

17.4.2 Corporation of Delta Demographics

In the 2001 census, the population of Delta was 97,208; in 2003 it was estimated to be 100,570 (**Table 17.2**).

Table 17.2 Corporation of Delta (census) data 1996 and 2001 (Corp. Delta 2004b).

	2001 Population	1996 Population	% Change
Tsawwassen	21,337	21,170	0.8
Ladner	21,367	21,085	1.3
North Delta	52,108	51,230	1.7
Rural Delta	2,396	2,430	-1.3
Total Delta	**97,208**	**95,915**	**1.3**

Around 28% of the population in Delta is aged 0-19, 17% between 20 and 34. Adults between the ages of 35-64 account for around 44% and seniors, those over 65 account for around 11% of the population. English is the dominant first language amongst Delta residents (88.2%); Punjabi (4.1%) and Chinese (2.1%) are the most common other first languages within the Corporation.

The 2001 census recorded the martial status of Delta residents over the age of 15 to be: 27% single; 59% either married or in common-law relationships; 9% separated or divorced and 5% widowed. There were 27,655 families in Delta, 54% of couples had children living at home. Couples head 88% of Delta’s families and 12% are single parent families.

17.4.3 Land Use Planning Context

Corporation of Delta Land Use Planning Context

Land use and new development within the Corporation of Delta is managed by the policies and directions set out by the Delta Official Community Plan (OCP). The OCP also works toward achieving the goals of the GVRD Livable Region Strategic Plan (LRSP). There are also provincial and federal regulations that impact land use decisions such as the provincial Agricultural Land Reserve and federal fisheries legislation.

The OCP was adopted in 1986, and includes goals, objectives and policies to shape growth and development of the municipality; it is currently under review. The OCP has four objectives:

improve the physical environment, increase diversity of community activities, improve access/movement within the community and encourage economic growth.

One of the policy areas developed from the key objectives seeks to focus residential growth within the three urban centres, while protecting farmland from development. Based on the existing land use designations and zoning it is projected that the municipality can support 39,428 housing units. If these projected units were built, Delta could reach a population of 106,420. Most of the new development is designated infill in North Delta and in Ladner (**Table 17.3**).

Table 17.3. Project Population and Dwelling Unit Llimitations for Delta (Corp. Delta 1986).

Delta Area	2001 Population	OCP Population Projections	2001 Dwelling Units	OCP Dwelling Units
Tsawwassen	21,337	23,672	8,475	9,466
Ladner	21,367	25,500	7,860	8,865
North Delta	52,108	53,994	16,215	19,897
Rural Farm	2,396	3,260	903	1,200
Total Delta	**97,208**	**106,381**	**33,453**	**39,428**

The OCP identifies Roberts Bank as one of 11 industrial areas within the municipality. It also recognizes that local industry provides tax revenue and an employment base that can ease commuting time, cost and traffic congestion for local workers. The plan has some specific priorities and policies for industrial lands (section 17.6.2).

Within Ladner, North Delta and Tsawwassen specific local area plans have been prepared; the local area plans recognise seven main land uses: residential, institutional, commercial, industrial, agricultural, open space and fishing.

Delta has approximately 1,456 ha (3,600 acres) zoned for industrial uses. Currently around one third (485 ha) is vacant. The developed industrial lands provide approximately 19 million sq. ft. of industrial space. Currently 612,605 sq. ft. of the built space is vacant. The largest industrial area in Delta, and the GVRD, is Annacis Island. More than 10,000 people work on the island. Tilbury Industrial Park is the second major industrial zone in Delta and is the location for 300 manufacturing, industrial, high technology and distribution companies. Roberts Bank plays a significant role in the industrial make up for Delta. At 115 hectares (285 acres) of terminal space (50 ha Westshore Terminal and 65 ha Deltaport Container Terminal), the Roberts Bank port facility represents approximately eight percent of the industrial land. It also contributes $6 million to the local property tax base. There are other smaller clusters of industrial activity in Delta.

Agriculture is a major land use and contributor to the Delta economy. In 2001, there were 196 farms in Delta, which account for 7% of all farms in the GVRD, and close to 1,000 Delta residents were employed in primary agriculture. Approximately one quarter of Delta's farms are small, mixed use operations that engage in crop, and in some cases livestock production. There are also large operators that specialize in field crops and vegetable production; the average farm size in Delta is among the highest in the Lower Mainland. The growth of greenhouse operations has been significant over the last 10-15 years and Delta now has about 25% of the total greenhouse floor area in the province.

Parks and open space account for 2,546 ha (15%) of Delta's land. This includes both municipal and regional parks. A significant portion of the open space in Delta is at Burns Bog. There is a joint Province of BC, GVRD and Corporation of Delta initiative to manage this natural area.

Delta is situated near the Fraser River and Roberts Bank, both historically important fishing grounds. Early First Nations and European settlements harvested shellfish and fished the Fraser River and nearby Roberts Bank. The Fraser River today remains an important fishing resource for First Nations, commercial and recreational fishers.

17.4.4 Tsawwassen First Nation (TFN) Overview

The TFN reserve is located between Highway 17 (with some lands south of Highway 17), the Strait of Georgia, 27B Avenue and 48th Street/English Bluff Road. The reserve is not included in the Corporation of Delta land use plans. The reserve is 290 ha, of which approximately 98 ha is designated environmentally sensitive foreshore, 72 ha developed for housing (16 ha of which is market, non-member housing), community facilities and businesses, and 120 ha are undeveloped. In 1999 there were 62 community-housing units on the reserve. In 2001, there were 174 people living on the reserve, 155 were Tsawwassen First Nation members and 19 were non-members. 114 TFN members were not living on the reserve. Of the total 2001 population on the reserve 80 (46%) were under 19 years old, 36 (21%) were between 20 and 34, 51 (29%) were between 35 and 64 and seven (4%) were over 65.

As part of the Treaty Negotiation Process with the provincial and federal governments, the TFN outlined a vision to create a sustainable community located around the existing village. Among other things they sought sufficient land for economic development, safe and secure access to the Fraser River and to other marine waters and access to lands throughout their Territory for traditional use and cultural uses/purposes. An agreement in principle between the TFN, the Government of Canada and the Province of British Columbia has been signed and identifies the TFN lands to include the existing reserve, approximately 365 ha of provincial Crown lands which are generally contiguous with the existing reserve, plus Fraser River and Boundary Bay parcels. Negotiations to reach a Final Agreement are underway.

17.4.5 Greater Vancouver Regional District

The GVRD Livable Region Strategic Plan is the region's growth strategy. The goal of the LRSP is to maintain regional liveability and protect the environment; it is used as the framework for making regional land use and transportation choices. The LRSP has four main objectives: protect the green zone, build complete communities, achieve a compact metropolitan region and increase transportation choice.

17.4.6 Transportation and Traffic

Delta has four of the Lower Mainland's major roadways: Highways 17, 91 and 99, and Nordell Way. Traffic congestion can occur at times on some of these and other roads, in particular Highway 99 through the Massey Tunnel, River Road and Highway 17 between Ladner and the Highway 99 Junction are susceptible.

Roberts Bank is connected to the regional rail network via the Port Subdivision, which runs from Langley to the Deltaport terminal. The line is owned by BC Rail Port Sub Ltd. and intersects with the Burlington Northern Santa Fe line, which runs north south along the western boundary of North Delta (see **Chapter 2** *Project Description*). BC Rail has a central dispatch centre for the Port Subdivision. The integrated and computerized system provides real-time monitoring of track status, switching and train movement. The dispatch centre monitors trains from BC Rail, CN, CP Rail, BNSF and Southern Rail and provides immediate operational and emergency communication.

Boundary Bay Airport is located in Delta and serves light aircraft and as a flight-training centre. The Vancouver International Airport (YVR) is located 20 km northwest of Deltaport. YVR is a large air transportation and cargo terminal serviced by major international carriers.

In 2003, 365 ships (730 ship movements) were served by Deltaport. In the same year, the coal terminal operated by Westshore Terminals served 190 ships (380 movements). Deltaport, the container terminal, has been open since June 1997 and since that date the number of ships using the terminal has increased, but during the same period the number of ships using Westshore Terminals has decreased (230 in 1997 to 190 in 2003). During the six years of Deltaport operations there have been no ship collisions.

17.4.7 Health, Emergency and Protective Services

Delta Hospital is located approximately 5 km from Deltaport and provides day surgery, endoscopy, hospice care, rehabilitation and recuperation, 24-hour emergency and residential long term care services. Major trauma cases are transferred to Royal Columbia Hospital (New Westminster), Vancouver General Hospital or Lions Gate Hospital (North Vancouver). Deltaport operators utilise the emergency ward of Delta Hospital approximately 15 – 20 times a year. Of those incidents, approximately 8 – 10 required ambulance services.

The Delta Police Department serves the communities of Ladner, Tsawwassen and North Delta. The main station is located in Ladner, with community policing operations in Tsawwassen, Ladner and North Delta. There are 143 police officers and 31 civilian personnel; an average of 737 residents per officer. Since 2004, the RCMP took over responsibility for policing at the Port, including the terminals at Roberts Bank. RCMP police officers have been designated to oversee policing and emergency preparedness including a Marine Secirity (MARSEC) level 2 or 3 security situation. The Deltaport terminal operator has not requested Delta police services, but one of the shipping lines using Deltaport does use local police services under a private agreement.

Security services for Roberts Bank are a shared responsibility between the Vancouver Port Authority and the terminal operators. If the VPA determines a need for increased security, Delta police may be contracted to provide extra officers for the period of heightened security. The International Ship and Port Facility Code was implemented as the security standard for the Port. New Marine Transportation Security Regulations (MTSR) on July 1, 2004 designed to strengthen security requirements for vessels, marine facilities and ports, and to be compliant with the International Maritime Organization Code, also came into effect in 2004. All Vancouver port terminals, including Deltaport, are in compliance with the code.

Delta Fire and Emergency Services provide response for fires, motor vehicle accidents, medical emergency services, rescue and safety, public service calls, emergency measures and planning, fire prevention and public education, fire investigation and community support to Delta. There are six fire halls in the municipality with 145 full-time staff and 12 volunteers. A minimum of 25 emergency personnel are on duty at all times. Deltaport is served by Fire Hall No. 1, the largest and best equipped of all Delta's halls with a minimum of eight staff on duty. There were two calls from Deltaport to the Fire Department in 2003 and three up to the end of October 2004.

The Delta Fire Department responds to those HAZMAT incidences that can be handled by standard issued protected turnout clothing and breathing apparatus. For incidents requiring a more comprehensive response, Delta has a Mutual Aid Agreement with the Surrey (20 minute response time) and Vancouver (35-45 minute response time) Fire Departments which have full HAZMAT response capability. TSI, the terminal operator at Deltaport, does not rely on the Delta Fire Department for HAZMAT incidents as it contracts clean up services from a private contractor. There were three HAZMAT incidents at Deltaport in 2003 that related to a leaking valve outlet on a tank.

The Corporation of Delta has also committed to establish a local HAZMAT team and has applied for a provincial grant. This grant will be put towards refitting a fire respose/rescue vehicle. Delta has also approached a number of local businesses to obtain funding for this initiative.

Ambulance services are provided by the B.C. Ambulance Services. This is a regionally dispatched service with no service boundaries. The Ladner ambulance station has three ambulances; back up is available from Richmond, Delta or White Rock. BC Ambulance Services also has two helicopters at the South Terminal Vancouver International Airport. The ambulance service was called to Deltaport ten times in 2003, and eight times so far in 2004.

17.4.8 Community and Social Services, and Facilities

Within the municipality of Delta, there are 26 elementary and 7 secondary schools. Total enrolment is approximately 17,220 students; there is surplus capacity for 2,355 students. Delta Secondary and Ladner Elementary schools, both located in Ladner, serve students who live in the immediate area of the Project.

There are a wide range of community services provided in Delta for mental health, abused women and children, child development, youth, elderly, hospice and immigrants. There is a public library located in each of Ladner, North Delta and Tsawwassen. Delta provides a wide range of sports and recreation facilities, including playgrounds, ball diamonds, tennis courts, skateboard park, lacrosse boxes, ice arenas, curling rinks, indoor swimming pools, boat launches, seniors activity centres and major indoor recreation centres. The majority of the neighbourhood parks are located either within or adjacent to the urban areas. There are currently no parks within close proximity of Deltaport. There are also 546 ha (1,350 acres) of regional parks within Delta. The major ones include Boundary Bay Regional Park (89 ha), Deas Island Regional Park (121 ha) and the Delta Nature Reserve (60 ha) and Burns Bog (1000 ha).

17.4.9 Tsawwassen First Nation Community Facilities and Services

The health, emergency, protective services, community facilities and services identified above are available to the TFN. In addition the TFN have additional services for its members. These community services include an elder’s centre, youth centre, longhouse, recreational centre, pre-school, community garden and skate board park. The TFN health and social services programs include home and community care, nursing services, social assistance, mobile early childhood development, community policing, community health, outreach counselling and family support and justice.

17.5 EXISTING ECONOMIC ENVIRONMENT

17.5.1 Labour Force

The Delta labour force in 1991 was approximately 50,400, of which 21% were in the goods producing sectors and 78% in service sectors. By 2001 the Delta labour force was 52,800, with 17% in goods production and 82% in service. Delta's relatively small goods production labour force declined, while in the GVRD it grew. Overall, the Delta labour force increased by under 5% between 1991 and 2001, while that of the GVRD grew by over 12% in the same period (**Table 17.4**).

Table 17.4 Labour Force Distribution by Industry, 1991 and 2001

<table>
<tr><th colspan="2" rowspan="2"></th><th colspan="3">1991</th><th colspan="3">2001</th></tr>
<tr><th>Delta</th><th>GVRD</th><th>BC</th><th>Delta</th><th>GVRD</th><th>BC</th></tr>
<tr><td rowspan="7">Goods Producing</td><td>Agriculture</td><td>1.6%</td><td>1.2%</td><td>2.4%</td><td rowspan="3">1.9%</td><td rowspan="3">1.4%</td><td rowspan="3">5.1%</td></tr>
<tr><td>Fishing and Trapping</td><td>0.7%</td><td>0.3%</td><td>0.6%</td></tr>
<tr><td>Logging and Forestry Industries</td><td>0.5%</td><td>0.4%</td><td>2.2%</td></tr>
<tr><td>Mining</td><td>0.3%</td><td>0.3%</td><td>1.1%</td><td>0.2%</td><td>0.3%</td><td>1.1%</td></tr>
<tr><td>Manufacturing Industries</td><td>12.1%</td><td>10.9%</td><td>11.1%</td><td>10.2%</td><td>12.5%</td><td>13.4%</td></tr>
<tr><td>Construction</td><td>6.2%</td><td>7.1%</td><td>7.4%</td><td>4.8%</td><td>8.6%</td><td>9.6%</td></tr>
<tr><td>Total Goods Producing</td><td>21.4%</td><td>20.2%</td><td>24.8%</td><td>17.1%</td><td>22.8%</td><td>29.2%</td></tr>
<tr><td rowspan="12">Service Producing</td><td>Transportation & Storage</td><td>7.7%</td><td>5.3%</td><td>5.1%</td><td>9.4%</td><td>8.8%</td><td>7.9%</td></tr>
<tr><td>Wholesale Trade</td><td>6.9%</td><td>5.9%</td><td>4.6%</td><td>6.4%</td><td>6.9%</td><td>5.2%</td></tr>
<tr><td>Retail Trade</td><td>12.5%</td><td>12.6%</td><td>12.8%</td><td>11.1%</td><td>10.0%</td><td>9.7%</td></tr>
<tr><td>Finance, Insurance, & Real Estate</td><td>7.3%</td><td>7.5%</td><td>5.7%</td><td>6.8%</td><td>6.4%</td><td>4.8%</td></tr>
<tr><td>Business, Personal, & Other Services</td><td>14.1%</td><td>16.1%</td><td>13.2%</td><td rowspan="4">36.6%</td><td rowspan="4">33.6%</td><td rowspan="4">27.3%</td></tr>
<tr><td>Communications and Utilities</td><td>3.6%</td><td>3.6%</td><td>3.0%</td></tr>
<tr><td>Education</td><td>6.1%</td><td>6.2%</td><td>6.4%</td></tr>
<tr><td>Health Care</td><td>7.8%</td><td>8.5%</td><td>8.5%</td></tr>
<tr><td>Public Administration</td><td>6.0%</td><td>5.0%</td><td>6.5%</td><td>5.4%</td><td>4.0%</td><td>5.3%</td></tr>
<tr><td>Accommodation & Food Services</td><td>6.1%</td><td>7.5%</td><td>8.0%</td><td>5.9%</td><td>6.8%</td><td>8.6%</td></tr>
<tr><td>Total Service Producing</td><td>78.1%</td><td>78.2%</td><td>73.8%</td><td>81.6%</td><td>76.5%</td><td>68.8%</td></tr>
<tr><td>Other</td><td>0.5%</td><td>1.6%</td><td>1.4%</td><td>1.3%</td><td>0.7%</td><td>2.0%</td></tr>
<tr><td colspan="2">Total Labour Force</td><td>100.0</td><td>100.0%</td><td>100.0%</td><td>100.0%</td><td>100.0%</td><td>100.0%</td></tr>
</table>

Sales and services represent the largest occupational group for Delta (Daystar 2004) and the GVRD, while business, finance and administrative is the second largest in both jurisdictions. This is followed by trades, transport and equipment operators. Collectively the largest three occupational groups make up 60% of the labour force in Delta and 56% in the GVRD.

The labour force for both men and women in Delta is much more likely to travel to outside municipalities for work than other communities in the region (**Table 17.5**). Delta workers are almost twice as likely as Richmond workers to be working outside their community of residence.

Table 17.5 Place of Residence Relative to Work by Gender in Delta and Richmond 2001.

	Delta	Richmond	GVRD
Males			
In municipality of residence	**23%**	53%	38%
In different municipality	**77%**	47%	62%
Females			
In municipality of residence	**30%**	59%	46%
In different municipality	**70%**	41%	54%
Total (Combined Male and Female)			
In municipality of residence	**26%**	56%	42%
In different municipality	**74%**	44%	58%

The labour force in Delta is growing at a much slower pace than is generally observed in the GVRD. While this is partially a result of slower population growth in Delta than observed in GVRD, it does not explain the entire discrepancy. Between 1991 and 2001, the population of Delta increased by 10 percent while the labour force grew by only half this rate at five percent.

It is likely Delta will continue to lag the regional labour force growth over the next several years, particularly if the overall aging trend continues, and the number of retiring workers accelerates. Delta has also seen a noticeable drop in its percentage share of goods producing sectors, particularly in the manufacturing and construction sectors, and it is possible that the Delta labour force will continue running counter to the GVRD trend.

17.5.2 Personal Income

Personal income levels in Delta have consistently been the highest amongst the four areas, and significantly higher than those in Richmond. Delta also has more individuals earning $50,000 or more, and fewer earning less than $10,000 (**Table 17.6**).

Table 17.6 Percentage of Population by Individual Income Group 2000

	$10,000 or less	$10,000-$20,000	$20,000 -$50,000	$50,000 or more
Delta	**22.3%**	**19.3%**	**36.7%**	**21.7%**
Richmond	33.3%	19.8%	32.4%	14.6%
GVRD	26.4%	20.9%	34.8%	17.8%
BC	25.3%	22.3%	35.4%	17.0%

(Daystar 2004)

During 1990 and 2000 employment income was the most common source of personal income, although in all areas this has declined over the past decade. Delta continues to have a higher share of personal income derived from employment than Richmond, GVRD or BC (**Table 17.7**). Pension income increased sharply regionally and provincially between 1990 and 2000. A more dramatic increase occurred in Delta over this period which saw a proportionate increase in pension income of 50%. Income from investment sources has declined for all areas.

Table 17.7 Source of Personal Income 1990 and 2000

	Employment		Pension		Investment		Self-Employ		Other	
	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000
Delta	**74.8%**	**72.1%**	**6.6%**	**9.9%**	**9.5%**	**7.8%**	**3.9%**	**4.3%**	**5.2%**	**5.9%**
Richmond	71.5%	69.9%	6.8%	8.8%	12.0%	10.6%	4.6%	6.7%	5.1%	4.0%
GVRD	67.1%	67.9%	7.7%	9.2%	14.2%	10.8%	5.5%	5.6%	5.5%	6.5%
BC	66.9%	66.1%	9.2%	11.9%	12.5%	9.7%	5.2%	5.0%	6.2%	7.3%

(BC Stats 2004)

The implications are difficult to determine given the many factors at play. A jump in pension income without a corresponding increase in the 65 plus age group in the community suggests that a significant number of residents in Delta may be choosing to retire prior to 65. If this trend continues, it is possible that the growth in individuals with pension income will continue over the next decade. This change would result in a relative decline in average incomes, but it should not result in an overall drop in the local standard of living. Rather, it creates a shift in proportion of workers versus retired. At the same time the goods producing labour force in Delta has been in slow decline. This portion of the labour force has traditionally earned better wages than the service labour force, which could also put future downward pressure on local personal income, eventually impacting the local standard of living. At the same time Delta has maintained a higher percentage of workers in the management and trades occupations than generally observed in the GVRD. These occupations typically have higher income than other occupations and have historically captured higher percentage wage increases during economic expansion.

17.5.3 Economic Development – Building Permits and Housing Starts

Building permit trends offer an insight into overall development activities within Delta and neighbouring areas; an increase over historical levels generally indicates accelerated development, while decreases indicate a local contraction (**Table 17.8**). For Delta, building permits generally remained constant over the period, traditionally averaging between two and three percent of total GVRD building permit value. Only in 1993 and 1999 did Delta significantly exceed three percent of the total regional activity.

Table 17.8 Total building permits ($1,000), 1993-2002

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Corporation of Delta	$115,681	$122,202	$102,624	$94,588	$107,465	$84,527	$110,347	$96,092	$91,048	$81,829
City of Richmond	$357,461	$402,036	$274,339	$332,978	$281,822	$239,587	$150,622	$169,507	$173,800	$335,578
Delta % of GVRD	3.3%	3.0%	2.9%	2.3%	2.9%	2.6%	3.7%	3.1%	2.7%	2.0%

(Daystar 2004)

Another important indicator of economic growth in Delta is the number of housing starts. Housing starts are a portion of the total value of building permits, but they also indicate population growth and economic cycles. Housing starts in Delta have been hovering near twenty-year lows over the last seven years, but in Richmond during the same period housing starts rose, after a slump between 1997 and 2001. Historically Delta's housing starts are between a half to one-third of those in Richmond. However, in 2003 Delta had its biggest difference in seventeen years experiencing only 8 % of the housing starts in Richmond.

Delta has not participated in the economic development experienced by neighbouring Richmond or the larger GVRD in recent years. However, it is anticipated that the region will experience on-going strong population growth over the next two decades. The economy of the Lower Mainland will show continued strength, and this growth can eventually be expected in Delta, translating into new demand for land, and construction activity. However, the shortage of available industrial land in Delta, which is close to the marine terminal and rail accessible, will continue to limit industrial growth spin-off opportunities from the Deltaport Third Berth Project.

17.5.4 Economic Development – Incorporations and Bankruptcies

Incorporation activity in Delta has fluctuated over the years, usually peaking when provincial and local economic conditions have been most favourable, and declining during recessions. Conversely, bankruptcies tend to be at their highest during the most difficult economic times. There has been no noticeable difference between those for Delta and the B.C. average.

17.5.5 Local Industrial Base

Manufacturing contributes to the income of Delta residents; in 2001, there were 5,400 manufacturing workers living in Delta, 10 % of the labour force. Manufacturing as a percentage of the total labour force in the GVRD was 9.2 %. The average personal income of manufacturing workers in Delta was $52,577. Many of these workers who live in Delta likely travel to their employment in municipalities outside of Delta. The number of manufacturing workers in 2001 is a reduction from 1991 when Delta had 5,800 manufacturing workers, 20 % of the labour force. The change is characteristic of national and North American trends that show job creation coming from service sectors rather than goods-producing industries like manufacturing.

The largest 25 manufacturers in Delta employ more people than comprise the total Delta manufacturing labour force. This indicates that these firms employ many residents of neighbouring municipalities and, therefore, that Delta is a net provider of high-paying manufacturing jobs to other areas of the Lower Mainland.

Construction activity in the industrial sector is also an important indicator of the area's base and potential. Delta accounted for 17% of all industrial permits between 1996 and 2002, and maintained a consistent record of development. Expenditures ranged from $14 million in 1998 to $34 million in 1999. Delta's industrial real estate sector had an occupancy rate of 97%; this is similar to the greater Vancouver region, which was 98%.

In general, the region has a tight industrial market. New construction is attributable to lack of available space. Delta has managed to maintain a reasonable industrial base because of strategic competitive strengths. Most distribution warehouses in the Vancouver region can locate anywhere within the GVRD as long as they have good truck, port and railway inter-modal yard access. This puts most GVRD communities on a relatively even competitive footing. For Delta to capitalize on industrial opportunities associated with the Deltaport Third Berth Project, available industrial land in close proximity to both Deltaport and the road and rail networks is of primary importance.

17.6 SOCIO–COMMUNITY IMPACT ASSESSMENT

17.6.1 Assessment Criteria

The impact assessments used the criteria in **Table 17.9** to assess the significance of any effects.

Table 17.9 Socio-Community Impact Assessment Criteria

Attribute	Descriptor	Definition
Aerial Extent	Site Local Regional	Effect restricted to the Deltaport Third Berth footprint Effect restricted to the Corporation of Delta and/or TFN Effect restricted to the GVRD
Direction	Positive Neutral Negative	Net beneficial effect No net change Adverse effect
Magnitude	Low Moderate High	Effects occur within the immediate vicinity of the project. Effects occur in certain areas of the municipality. Effects extend throughout municipality
Duration	Short-term Medium-term Long-term	Effects occur for <1 year to end of construction Effects occur for up to 10 years Effects extend for life of Delta Third Berth Project (100+ years)
Frequency	Once Sporadic Continuous	Occurs only once Occurs on occasion and at irregular intervals Occurs on a regular basis at regular intervals
Confidence	Low Moderate High	Direct supporting or related information is lacking, best professional judgment cannot be made without evidence. Direct supporting information is lacking but conclusions can be made on related evidence and professional judgment. Based on reliable site-specific or regional data, well-documented cause-effect relationship.
Reversibility	Yes or No	Can impact be reversed upon completion of construction or at the end of the project's life cycle?
Significance	Insignificant or Significant	Based on the analysis and best professional judgment, is the effect on the socio-economic component of concern significant?

17.6.2 Construction Impacts

Population and Demographics

The Deltaport Third Berth project is expected to generate approximately 640 person years of employment during the construction period between August 2005 and April 2008. At peak it is expected that there will be a maximum of 100 workers on-site. The jobs and workers will vary over the 3-year (33 month) period, and not all workers will be needed the whole time. Some are expected to come from Delta and TFN, but most will come from within the GVRD. Given that some of the jobs may last the extent of construction some of the workers may choose to relocate to Delta.

Delta has a range of housing available, and the OCP indicates capacity for population growth and new housing development. The majority of this growth is expected in North Delta, which is a modest commute to Deltaport. The TFN have community land to accommodate increases in their population generated by new construction jobs. There is not expected to be a shortage of accommodation due to the project as most workers will commute from elsewhere in the GVRD.

Land Use Planning Context

The Project respects many of Delta's OCP polices, especially those for providing additional employment for Delta residents, encouraging new industry in existing industrial areas and transport policies respecting the existing Roberts Bank and Fraser River access.

Construction is not expected to interfere with the land use plans in place for the existing reserve.

The Project construction has either neutral or positive impact on the four main objectives of the GVRD's Liveable Region Strategic Plan to:

- Protect the Green Zone (neutral);
- Build Complete Communities (neutral);
- Achieve a Compact Metropolitan Region (positive); and,
- Increase Transportation Choices (neutral).

Land Use

Construction will have either neutral or minimal impact on the existing land use designations or the use of the land. Construction will take place on the causeway and on existing road and rail rights-of-way. Some minor increase in office space rental may occur if space is required for contracted companies involved during construction, if so this would generally be regarded as positive.

Noise, Visual and Air Quality Impacts on Land Use

With the exception of night time lighting during dredging operations and one viewpoint on the B.C. Ferries causeway, there are no predicted construction effects on noise, visual amenity and air quality.

Construction noise levels expected from both night time and day time construction activities would have no significant impact at residential receiver locations in terms of annoyance and would not exceed external noise thresholds at any of the four residential receiver locations considered in this assessment (**Chapter 14** *Noise*). Although construction may proceed based on a 24 hour schedule, the VPA will ensure noise during construction meets acceptable levels outlined in the applicable Delta Community Bylaw and Standards. A Noise Management Plan will be developed for the construction of the Deltaport Third Berth Project and will include machinery noise control measures and operator awareness and training.

Air quality during construction is expected to be either below ambient conditions, or within the relevant standards (**Chapter 13** *Air Quality*).

Night time lighting impacts during construction of the terminal are expected to have a low impact since only low level, portable floodlighting will be used. However, lighting during dredging in the berth, terminal and shipping channel areas will have a slightly higher impact with lights on moving dredges for 24 hours per day over 9 months (**Chapter 16** *Lighting*).

The visual impact of the expansion is low to moderate. The visual impact from the North Dyke Viewpoint, the TFN Band Office and Fred Gingell Park are considered low. From the B.C. Ferries causeway the visual impact is considered moderate (**Chapter 15** *Visual*).

Transportation

During construction two road transportation issues will impact on the community. One will be impacts on local traffic movement from the railway construction adjacent to Deltaport Way, and the second is the impact on both local and area road networks by additional truck and worker traffic travelling to and from the construction site.

Construction vehicles and workers travelling to the site will generate additional traffic. However, the estimated maximum number of workers on-site at any one time is 100, which should have negligible impact. Traffic generated by construction workers will likely peak at pre-determined times depending on shifts. Truck and service vehicle traffic will likely take place throughout the day and may have certain peaks depending on the type of work taking place.

While local traffic travels through this area to reach schools, parks and other community facilities and services, none of these facilities are physically in close proximity to the construction sites and should not be directly affected.

The construction of additional rail sidings is expected to take place during a four month period, and is expected to have a very low impact on rail traffic.

Marine

Both Deltaport and Westshore Terminals will remain open during construction. Marine safety measures will ensure safe coming and going of ships during the period of construction.

Hospital/Medical Services

For heavy construction projects of this scale the Worker Compensation Board (WCB) estimates an average 12% injury rate per 100 person years of employment. Average construction labour will be 173 person years per year on the site during 32 months of construction (August 2005 to April 2008). Using the WCB injury estimates for heavy construction projects at 12% injury rate per 100 person years, 21 construction related claims per year are expected. While all of these injuries involve a loss of time from work, many will not require hospital care; for example 44% of injuries are related to back and other types of strains, 20% of accident claims are due to overexertion. Inferring from this there will be low impact of approximately 10-12 calls on local hospital and medical services during the construction period. This is a temporary impact during the approximately three-year construction period. The contractor will be required to have first aid services available on-site and this will help to reduce the use of the local community hospital and medical services.

Police and Fire Protection Services

New security measures implemented by the VPA at Roberts Bank as a result of the Marine Transportation Security Regulations, and the additional security personnel to enforce these regulations are expected to handle all incidents that may arise. There is potential for a low and temporary impact on local security during construction.

There is potential for a temporary impact on local fire protection services during the approximately three-year construction period. However, the contractor will be required to maintain a level of fire prevention measures on-site and this will reduce impacts.

Community and Social Services and Facilities

The temporary construction workforce is not anticipated to utilize the community and social services for either Delta or TFN during the construction period.

17.6.3 Operational Impacts

Population and Demographics

The Deltaport Third Berth project is expected to require an average of 356 FTE workers during full operation. This employment will be phased in over five years. Some of these workers are expected to live locally in Delta, or on the TFN reserve, but primarily they will live in the overall Greater Vancouver Regional District. Some new workers not presently living in the local area may choose to do so, and there is capacity in the area to accommodate this.

Land Use Planning Context

The implications of the operation of the Deltaport Third Berth on land use and land use planning do not differ from those recognised for construction (see Section 17.6.2).

Noise

Noise in communities adjacent to Roberts Bank is expected to increase proportional to the increase of three trains per day serving Deltaport. Noise for communities located close to the port is predicted to come from rail cars, train whistles and idling locomotives. Noise for communities farther from the terminal (Panorama Ridge) will be from longer trains that take more time to pass by. Predicted noise level increases due to future operations of the Third Berth are very small (1 to 2 dBA).

Visual and Lighting Impacts

Visual impacts during operation are similar to those during construction, low to moderate depending on location. The visual impacts include three additional gantry cranes as vertical features, one additional ship, additional container stacks and other terminal equipment. The visual impact from the North Dyke Viewpoint, the TFN Band Office and Fred Gingell Park are considered low, but from the BC Ferries causeway the visual impact is considered moderate.

Night time lighting should not increase the overall lighting levels as viewed from all locations except the TFN reserve. However, as the lighting will be extended over a larger area, there will be a perception that the overall brightness of the facility is greater. The effect that facility lighting has on the local residential areas in the selected viewpoints has more to do with light trespass, brightness and nuisance glare than light contribution.

Air Quality and Human Health

In operation all maximum predicted air contaminant emission concentrations are predicted to be below ambient criteria. Human health risk estimates were low, signifying an absence of potential acute or chronic health risks in the local study area during Deltaport Third Berth operations.

Transportation

Impacts on the road network that will affect the community during the operational phase of the Deltaport Third Berth Project will primarily be from increased truck traffic on the major routes (Deltaport Way, Highways 17 and 99, River Road and intersections on these routes); increased worker and supply traffic travelling to and from the expanded terminal; and closure of the intersection at 57B Street and Deltaport Way. The proposed improvements to Highway 17 will maintain the existing level of service and will not result in any deterioration. Vehicles currently using 57B Street for north south connectivity would be required to detour via Arthur Drive. This would add approximately 1.1 km to a trip between the intersections of 34B Avenue/57B Street and 28 Avenue/56 Street. This extra trip length would add approximately 1 minute to the travel time. A proposed access road available for farm vehicles between 57B Street and 64th Street is under review. This is expected to reduce some of the impact of the proposed closure of 57B Street.

Increased rail traffic associated with the operation of the Deltaport Third Berth will have some impact to the community, will increase wait times marginally at level crossings with local roads, and will result in additional noise from longer and more trains.

Marine

Ship traffic associated with the Third Berth expansion is predicted to increase by 38 ships per year (76 movements per year); this takes into consideration that the size of individual container ships will increase. The navigational impact of the additional ship traffic is low.

Hospital/Medical Services

The terminal operator will continue to provide a proportional increase of first aid service as the work force and number of ships increase. At full operation of the Deltaport Third Berth, the estimated average annual FTE employment at Deltaport is expected to increase by approximately 35%. This is likely to translate into an increase use of the hospital emergency ward in Delta by 5-

7 visits per year. This is considered a low incremental increase and within the existing capacity of the hospital. Deltaport Third Berth is predicted to increase ambulance use by 2-3 calls per year. This is a very low impact on the existing services.

Police and Fire Protection Services

TSI records no callouts to Delta police to Deltaport and in combination with the increased security measures discussed earlier, it is expected that there will be none to minimal use of Delta police services during the operations of the Third Berth.

Given the present low usage of the Delta Fire Department it is likely that the expansion will have a very low impact. The Delta Fire Department services were used 2 times in 2003 and 3 times by the end of October 2004.

Community and Social Services and Facilities

The additional work force employed at the Third Berth is not expected to utilize the community and social services of either Delta or TFN during or after work shifts. Those Deltaport workers living in either Delta or the TFN will be within the planned service levels of each community.

17.7 ECONOMIC IMPACT ASSESSMENT

The assessment of economic impacts associated with the Deltaport Third Berth Project is based on the following:

- a 20-year evaluation period is used once the Third Berth becomes operational (i.e. 2008 to 2027) to effectively describe ongoing economic benefits of the project by application of 'net present value analysis'; and,
- all economic projections and calculations are prepared in 2004 Canadian dollars, and all 'net present values' have been calculated using a discount rate of 6% per annum.

Business activity projections account for existing and known expansions of container terminal capacities and limitations in Greater Vancouver, as well as world market trends and competition from other ports on North America's west coast.

17.7.1 Direct Economic Impact of Construction

During terminal development significant capital will be invested in the creation of land and the new berth and the operator will also invest in the construction of buildings, the container yard and equipment purchases. Capital expenditures, including related off-site road and rail infrastructure, are estimated at $272 million, with a net present value in 2004 of $235 million. This expenditure will directly benefit local and regional economies.

The direct economic impacts take into account an assessment of the distribution of capital expended which accrues to suppliers and/or contractors within each of the geographic areas described earlier. This was accomplished by estimating the capability and size of the economic base within each area and the capabilities of labour and contractors to capture these expenditures.

New capital investment will result directly in positive economic impacts within each of the geographic areas due to contracts concluded and purchases made for labour, goods and services as well as the associated taxes paid and corporate profits realized (**Table 17.10**).

Table 17.10 Construction Phase - Summary and Distribution of Direct Economic Impacts[(1)]

Impact Category	Delta	GVRD (Net)	BC (Net)	Canada (Net)	Foreign (Net)	TOTAL
New employment (person-years)	60	599	43	43	177	922
Wages/salaries/benefits earned	$3,243	$32,368	$2,330	$2,296	$9,559	$49,796
Goods and services purchased	$9,783	$85,523	$6,159	$5,623	$21,030	$128,118
Value sub-total (excluding taxes)	**$13,026**	**$117,891**	**$8,489**	**$7,919**	**$30,589**	**$177,914**
Regional proportion (excl taxes)	**9.9%**	**90.1%**	**---**	**---**	**----**	**100%**
Corporate income taxes received	$0	$0	$10,846	$22,021	N/A	$32,867
Personal income taxes received	$0	$0	$3,610	$8,839	N/A	$12,449
Income tax sub-total	**$0**	**$0**	**$14,456**	**$30,860**	**N/A**	**$45,316**
Total direct economic impacts	**$13,026**	**$117,891**	**$22,945**	**$38,779**	**$30,589**	**$223,230**

(1) All dollar estimates reflect economic impacts over the construction period and are shown as the Present Value of these benefits in 2004$ x $1,000 using a discount rate of 6% per annum.

Construction expenditures have a significant labour component. Estimated new job creation over the three to four-year construction period is 60 person-years in Delta, 599 person-years elsewhere in the GVRD, 43 person-years elsewhere in British Columbia and 43 person-years elsewhere in Canada. The estimated present value of new wages, salaries and benefits earned over the construction period is $3 million in Delta, $32 million elsewhere in the GVRD, $2 million elsewhere in British Columbia and $2 million elsewhere in Canada.

Expenditures on goods and services during construction will directly generate business income. The estimated present value of new goods and services sold over the three to four-year construction period is $10 million in Delta, $86 million elsewhere in the GVRD, $6 million elsewhere in British Columbia and $6 million elsewhere in Canada.

Personal income taxes will be generated from the direct employment created and the associated wages and salaries earned during construction. Corporate taxes will also be generated from business income earned during construction. The estimated present value of new corporate and personal income taxes realized by the provincial and federal governments over the construction period is $15 million by the provincial government and $31 million by the federal government.

The estimated present value of income lost in the commercial fishery over the construction period is negligible or zero.

The total direct impact economic value of the construction of the Project, expressed as the present value of new wages and salaries and business income earned as well as income taxes paid over the three to four-year construction period is: $13 million in Delta, $118 million elsewhere in the GVRD, $23 million elsewhere in British Columbia and $39 million elsewhere in Canada. This equates to $154 million for all of BC and $193 million for all of Canada.

New Opportunities associated with Construction

Employment and business opportunities are expected for the Lower Mainland during construction. Delta and the Tsawwassen First Nation are well placed to take advantage of a number of opportunities because of the proximity of the local labour force and local businesses.

The local commercial fishery is expected to realize some negative impact on the Dungeness crab population during the construction phase. However, these effects are temporary and are able to be mitigated. The economic impact on the fishery will be marginal to non-existent.

Summary of Direct Economic Impact of Construction

Construction of the Deltaport Third Berth will generate significant economic benefits locally and regionally ($154 million in B.C.) and nationally ($193 million in Canada) over the construction period. The relative significance of these economic benefits is high. The project will also provide many business opportunities locally and regionally, as well as across the country.

17.7.2 Direct Economic Impact of New Terminal Operations

New marine terminal operations associated with the Deltaport Third Berth Project will generate new employment, purchases of new goods and services and new taxation on an ongoing basis. These represent the 'direct economic impacts' of new terminal operations on the economy and will accrue, at substantial levels, to all geographic areas included in the analysis.

The ongoing business operations associated with the Deltaport Third Berth Project will directly generate economic benefits through: employment creation and the resulting expenditures on wages, salaries and benefits; purchases of goods and services for operations; and the payment of property and income taxes.

The expanded facility is expected to increase its container import/export business substantially as a direct result of the Third Berth Project. This will generate a wide variety of employment and business opportunities, the majority of which will occur locally and regionally.

The distribution of terminal operational impacts was assessed to determine direct economic impacts in the geographic areas. This was accomplished by estimating the capability of labour to fill the jobs created and the ability of suppliers to fulfil the purchase requirements for Berth Three operations. The geographical distribution used for operational expenses, and the resultant distribution of direct economic impacts that will accrue accruing during operations, are weighted averages of the estimates developed for each expense category for each area (**Table 17.11**).

Table 17.11 New Terminal Operations - Summary and Distribution of Direct Economic Impacts[1]

Impact Category	Delta	GVRD (net)	B.C. (net)	Canada (net)	Total
New employment (avg FTE/yr)	46	306	4	0	**356**
Wages/salaries/benefits earned	$30,341	$200,717	$2,334	$0	**$233,392**
Goods and services purchased	$8,162	$60,841	$2,226	$2,968	**$74,197**
Value sub-total (excluding taxes)	**$38,503**	**$261,558**	**$4,560**	**$2,968**	**$307,589**
Regional proportion (excl taxes)	**12.8%**	**87.2%**	**---**	**---**	**100%**
Personal/Corporate income taxes received	$0	$0	$26,403	$61,044	**$87,447**
Property and other taxes received	$13,566	$7,748	$1,749	$0	**$23,063**
Taxes paid sub-total	**$13,566**	**$7,748**	**$28,152**	**$61,044**	**$110,510**
Total Direct Economic Impacts	**$52,069**	**$269,306**	**$32,712**	**$64,012**	**$418,099**

(1) All dollar estimates reflect economic impacts over the 20-year evaluation period and are shown as the Present Value of these benefits in 2004$ x $1,000 using a discount rate of 6% per annum. Employment estimates are provided in average Full-Time Equivalents (FTEs) annually over the period.

The operational phase expenses have a significant labour component, and net, new wages and salaries paid from operations are expected to generate substantial employment opportunities locally and regionally. These, in turn, will generate considerable new economic benefits for Delta, TFN and the GVRD. The positions created will continue indefinitely, and this analysis accounts for employment generated through 2027.

Estimated new annual job creation over the 20-year study period is 46 person-years per annum in Delta, 306 person-years per annum elsewhere in the GVRD and 4 person-years per annum elsewhere in British Columbia. The estimated present values of new wages, salaries and benefits earned as a result of these jobs over the 20-year study period are $30 million in Delta, $201 million elsewhere in the GVRD and $2 million elsewhere in British Columbia.

Expenditures on goods and services from Third Berth Project operations will also generate substantial economic impacts (benefits) locally, regionally and nationally. The estimated present value of new goods and services sold over the 20-year study period is $8 million in Delta, $61 million elsewhere in the GVRD, $2 million elsewhere in British Columbia and $3 million elsewhere in Canada.

Personal income taxes will be generated from employment and the associated wages and salaries earned during new terminal operations. Corporate taxes will also be generated as a result of the new business income earned by suppliers to the terminal operator, and by the terminal operator itself. New property (and property based) tax revenue will accrue locally, regionally and provincially. All of these taxes represent economic impacts (benefits) generated directly by the Deltaport Third Berth Project.

Personal and corporate income taxes will accrue to the provincial and federal governments. The estimated present values of new corporate and personal income taxes realized over the 20-year study period are $26 million by the provincial government and $61 million by the federal government. There are also local and other property taxes associated with the project, the present values of which, at year 2004 costs, are estimated to total $14 million in Delta, $8 million elsewhere in the GVRD and $2 million elsewhere in British Columbia.

The total present value of direct economic impact from new terminal operations (including new wages and salaries, business income earned and taxes paid) over the 20-year study period is estimated to be $52 million in Delta, $269 million elsewhere in the GVRD, $33 million elsewhere in British Columbia and $64 million elsewhere in Canada.

Summary of Direct Economic Impact of New Terminal Operations

The new terminal operations of the Deltaport Third Berth Project will generate significant economic benefits locally and regionally for an indefinite time in the future. The relative significance of these economic impacts from ongoing operations is very high.

17.7.3 Direct Economic Impact from Business Activities Outside the Marine Terminal

When the Deltaport Third Berth Project is operational it will directly generate new economic activity within the container industry supply chain. Expanded container throughput will result in new direct economic benefits from an increase in non-Deltaport container business operations that would not otherwise occur. Because of the very existence of Third Berth, Vancouver is expected to capture a larger share of the west coast container market, which it would not otherwise be capable of accomplishing due to capacity constraints. Net new economic activity will be generated away from the container terminal itself as this new container traffic moves through Deltaport, the regional container handling network and the national supply chain.

New, direct economic impacts expected to be generated in the Canadian container industry supply chain external to Deltaport Third Berth operations, but due to the increased container throughput from the project, are considerable. They include:

- chandlering;
- Canada Customs & OGA;
- rail operations;
- Transport Canada inspection;
- tugs;
- harbour pilots;
- warehouses & container freight service operations;
- customs brokers;
- shipping agents;
- freight forwarders; and
- trucking.

Summary of Direct Economic Impacts Outside the Marine Terminal

The distribution of ex-terminal economic activity was assessed to determine the direct economic impacts by jurisdiction. Ex-terminal impacts will be realized across the Canadian supply chain and logistics network; a wider impact area than realized from the construction and terminal operations economic benefits described earlier. These estimates have been based on previous studies (InterVistas 2003), the capability and size of the economic and labour base within each area, and the characteristics of the container industry supply chain regionally and nationally.

Table 17.12 New Business Activity Outside the Marine Terminal - Summary and Distribution of Direct Economic Impacts[1]

Impact category	Delta	GVRD (net)	B.C. (net)	Canada (net)	Total
New Employment (Avg FTE/yr)	21	1,200	155	565	**1,942**
Wages/Salaries/Benefits Earned	$11,028	$619,550	$80,201	$291,730	**$1,002,508**
Business Income (Excl Wages & Salaries)	$9,977	$560,545	$72,562	$263,946	**$907,031**
Corporate & Personal Income Taxes	$0	$0	$119,943	$273,899	**$393,842**
Total Direct Economic Impact Value	**$21,005**	**$1,180,095**	**$272,706**	**$829,575**	**$2,303,381**

(1) All dollar estimates reflect economic impacts over the 20-year evaluation period and are shown as the Net Present Value of these benefits in 2004$ x 1,000 using a discount rate of 6% per annum. Employment estimates are provided in average Full-Time Equivalents (FTEs) annually over the period.

Except in Delta, where the industrial base is limited, the direct economic impact from new business activity generated in the supply chain is expected to significantly exceed that from construction and new terminal operations which were described earlier.

The estimated new average, annual job creation over the 20-year study period is 21 person-years per annum in Delta, 1,200 person-years per annum elsewhere in the GVRD, 155 person-years per annum elsewhere in British Columbia and 565 person-years annually elsewhere in Canada.

The estimated present values of new wages, salaries and benefits earned over the 20-year study period are $11 million in Delta, $620 million elsewhere in the GVRD, $80 million elsewhere in British Columbia and $292 million elsewhere in Canada.

The estimated present values of new business income earned (excluding wages, salaries, benefits and taxes) over the 20-year study period are $10 million in Delta, $561 million elsewhere in the GVRD, $73 million elsewhere in British Columbia and $264 million elsewhere in Canada.

The estimated present values of new corporate and personal income taxes realized by the provincial and federal governments over the 20-year study period are $120 million by the provincial government and $274 million by the federal government.

The estimated present values of new wages and salaries, business income and taxes over the 20-year study period are $21 million in Delta, $1,180 million elsewhere in the GVRD, $273 million elsewhere in British Columbia and $830 million elsewhere in Canada.

New Container Industry Business Opportunities

During Third Berth operations, employment and business opportunities are expected in the study areas. Because of the proximity of Delta and the TFN, it is expected that numerous container business opportunities might be capitalized on locally. Several of these new business opportunity areas are: export consolidators; importer agents; freight forwarders; third party logistics providers; container distribution centres; general and specialized warehousing contractors; off-dock container servicing, repair, leasing and storage companies; inter-modal yard operators; cold storage centres; and trucking service centres.

17.7.4 Overall Direct Economic Impact Summary

The overall direct economic benefits expected to occur from the Deltaport Third Berth Project are summarised in **Table 7.13**. These figures include impacts from construction, new terminal operations and new business activity outside the Third Berth terminal itself.

Table 17.13 Summary and Distribution of Overall Direct Economic Impacts[1]

Impact category	Delta	GVRD (Net)	BC (Net)	Canada (net)	Total
New Employment (Avg FTE/yr)	127	2,105	202	608	**3,042**
Wages/Salaries/Benefits Earned	$44,612	$852,635	$84,865	$294,026	**$1,276,138**
Business Income (Excl Wages & Salaries)	$27,922	$706,909	$80,947	$272,537	**$1,088,315**
Property and Income Taxes Received	$13,566	$7,748	$162,551	$365,803	**$549,668**
Total direct economic impacts	**$86,100**	**$1,567,292**	**$328,363**	**$932,366**	**$2,914,121**

[1] All dollar estimates reflect economic impacts over the 20-year evaluation period and are shown as the Present Value of these benefits in 2004$ x $1,000 using a discount rate of 6% per annum. Employment estimates are provided in average Full-Time Equivalents (FTEs) annually over the period.

17.7.5 Total Economic Impact (Direct + Secondary) from the Third Berth Project

The total economic impact from the Deltaport Third Berth Project is calculated by summing the overall direct economic impacts (Section 17.7.4) and the secondary economic impacts. Secondary impacts are changes in economic activity from subsequent rounds of re-spending in the economy. They include indirect effects (changes in sales, income or employment within the economy in backward-linked industries supplying goods and services) and induced effects (increased sales within a geographic area from household spending of the income earned by employees in new or expanded businesses). Secondary impacts are calculated from the direct impacts using multipliers specific to the location, the project and the economic situation. Secondary economic impacts will occur in each geographic area and will continue indefinitely, as long as the new container berth remains in operation.

The total economic impact of the Project, including direct (construction, terminal operations and ex-terminal business activity) and secondary impacts, on the British Columbia economy is $178 million from wages and salaries and $1.7 billion from other business income and taxes. The total impact in all of Canada (including British Columbia) is $2.8 billion from wages and salaries and $3.5 billion from other business income and taxes.

Table 17.14 Total (direct + secondary) Economic Impacts[(1)]

Impact Category	British Columbia (Gross)	Canada (Gross)
Total new employment (FTE / yr)	4,406	6,692
Total wages/salaries/benefits earned	$177,762	$2,807,504
Total Economic Impact Value	$1,749,375	$3,488,904

(1) All dollar estimates reflect economic impacts over the 20-year evaluation period and are shown as the Net Present Value of these benefits in 2004$ x 1,000 using a discount rate of 6% per annum. Employment estimates are provided in average Full-Time Equivalents (FTEs) annually over the period.

17.8 MITIGATION

Many of the mitigation strategies in response to socio-community impacts are already included in existing operations, or have been identified elsewhere. These include those in **Chapter 13** *Air Quality*, **Chapter 14** *Noise*, **Chapter 15** *Visual*, **Chapter 16** *Lighting.* In addition, information provided in **Chapter 2** *Project Description* was used to discuss navigational and road and rail effects.

Recommendations as a result of this socio-community and economic impact assessment include:

During Construction

- A traffic management plan be prepared prior to construction. It should be discussed with Delta, TFN and the MoT, and be designed to minimize construction traffic impacts. The aim is to ensure trucks adhere to designated routes throughout Delta.
- A traffic management plan be prepared for the proposed closure of the south leg of 57B Street grade crossing at Deltaport Way. This should include the involvement of Delta, and input from stakeholders such as the TFN, the Delta Farmers Institute and local residents potentially impacted by the closure.

During Operations

- The VPA, terminal operators and terminal road and rail service providers should continue to work with local communities and other affected stakeholders to resolve road and rail related issues as they arise.

17.9 CONCLUSION

Key socio-community impacts and mitigation recommendations discussed here have been prepared by others in support of the BCEAA and CEAA process. Similarly, key economic impacts, costs and mitigation measures (construction costs, fisheries, traffic and transportation improvement costs) are incorporated into the economic impact analysis. While this report highlights and makes use of the most important findings, conclusions and inputs from these other studies, it is important to recognize that the separate reports in these areas provide in-depth analysis and results which are directly relevant and should be reviewed, as required, to provide the back-up detail and understanding required.

All of the socio-community and economic impacts of the Deltaport Third Berth Project have been assessed for the nature, extent and significance of their impacts (**Table 17.15**).

There are no significant adverse effects from the construction or operation of the Deltaport Third Berth Project on socio-community factors. Generally all the potential effects assessed were either negative or neutral, with low to moderate magnitude. The confidence of these assessments is regarded to be high.

All the economic impacts as a result of the Deltaport Third Berth Project are positive, and result from the generation of new business income, employment and taxes from the construction and operation of the new facility. These economic benefits are considerable and the level of confidence placed on the accuracy of the economic assessment is high.

As a result of this assessment there are no residual (negative) socio-community and economic effects remaining after the implementation of the recommended mitigation measures.

Table 17.15 Significance of Net Socio-Community & Economic Impacts (Construction)

	Arial Extent	Direction	Magnitude	Duration	Frequency	Confidence	Reversibility	Significance
Construction								
Population	Site	Neutral	Low	Short	N/A	High	Yes	Not Sign[1]
Land use planning	Local	Neutral	Low	Short	N/A	High	Yes	Not Sign
Land uses	Local	Neutral	Low	Short	N/A	High	Yes	Not Sign
Transp. and traffic	Regional	Negative	Moderate	Short	Continuous	High	Yes	Not Sign
Hospital/ medical	Local	Negative	Low	Short	Sporadic	High	Yes	Not Sign
Police/security	Local	Neutral	Low	Short	Sporadic	High	Yes	Not Sign
Fire	Local	Neutral	Low	Short	Sporadic	High	Yes	Not Sign
Community facilities	Local	Neutral	Low	Short	N/A	High	Yes	Not Sign
Air	Local	Negative	Low	Short	Continuous	High	Yes	Not Sign
Noise	Local	Negative	Low	Short	Continuous	High	Yes	Not Sign
Visual	Local	Negative	Low	Short	Continuous	High	Yes	Not Sign
Lighting	Local	Negative	Low	Short	Continuous	High	Yes	Not Sign
Wages & salaries, direct	Loc./Reg	Positive	High	Short	Once	High	No	Moderate
Employment, direct	Loc./Reg	Positive	High	Short	Once	High	No	Moderate
Business income, direct	Loc./Reg	Positive	Moderate	Short	Once	High	No	Moderate
Tax base	Loc/Reg	Positive	Moderate	Ongoing	Ongoing	High	No	Moderate

Note 1.Not sign. = not significant

Table 17.15 (continued) Significance of Net Socio-Community & Economic Impacts (Operation)

Operation								
Population	Site	Neutral	Low	Long	N/A	High	No	Not Sign[1]
Land use planning	Local	Neutral	Low	Long	N/A	High	No	Not Sign
Land uses	Local	Neutral	Low	Long	Continuous	High	No	Not Sign
Transp. and traffic	Regional	Negative	Moderate	Long	Continuous	High	No	Not Sign
Hospital/ medical	Local	Neutral	Low	Long	Continuous	High	No	Not Sign
Police/security	Local	Neutral	Low	Long	Continuous	High	No	Not Sign
Fire	Local	Neutral	Low	Long	Continuous	High	No	Not Sign
Air	Local	Negative	Low	Long	Continuous	High	Yes	Not Sign
Noise	Regional	Negative	Low	Long	Continuous	High	Yes	Not Sign
Visual	Local	Negative	Low	Long	Continuous	High	Yes	Not Sign
Lighting	Local	Negative	Low	Long	Continuous	High	Yes	Not Sign
Community facilities	Local	Neutral	Low	Long	N/A	High	No	Not Sign
Wages & salaries, direct	Loc./Reg Prov/Nat	Positive	High	Ongoing	Ongoing	High	No	Considerable
Employment, direct	Loc./Reg Prov/Nat	Positive	High	Ongoing	Ongoing	High	No	Considerable
Business income, direct	Loc./Reg Prov/Nat	Positive	High	Ongoing	Ongoing	High	No	Considerable
Tax base	Loc/Reg	Positive	Moderate	Ongoing	Ongoing	High	No	Considerable

Note 1.Not sign. = not significant