
15.0 LABOUR AND ECONOMY

Labour and Economy has been selected as a VEC because of its role as a determinant of socio-economic well-being. The assessment of the potential environmental effects on Labour and Economy is of importance within the Saint John Census Metropolitan Area (CMA), and more broadly within the Province of New Brunswick. It will be important to both mitigate potential adverse environmental effects and enhance the positive economic environmental effects of the Project.

Potential environmental effects on the economy are assessed according to the predicted changes in economic production (as measured by gross domestic product or GDP), employment and income. The resulting environmental effects on tax revenue to governments are also considered. Labour refers to the supply and demand of the direct skilled and non-skilled labour requirements of the Project, as well as the direct, indirect and induced creation of employment and income within the economy.

The income generated and expenditures by the Project can be expected to create substantial opportunities for business and industry in a number of sectors where there will be increased demand as a result of the Project. This is expected to occur directly as a result of Project expenditures and employment and indirectly due to expenditures and employment by suppliers to the Project, as well as through the induced environmental effects of workers and employees spending their incomes.

With respect to labour, the residual environmental effects are anticipated to be both positive and adverse. There is generally expected to be a residual adverse environmental effect on the supply and cost of labour, particularly during Construction, because there is predicted to be remaining shortages of labour within certain trades. This will require other projects to be increasingly proactive and innovative in attracting and retaining workers. The phasing of the pace and sequence of Construction over a longer duration (approximately six to eight years) will lessen the potential for residual adverse environmental effects on labour due to the Project, and extend the economic benefits and spin-offs to the region over a longer period than previously envisioned. The Project is predicted to result in the further positive development of labour force capabilities and incomes within the Saint John CMA and the Province of New Brunswick. The Project will attract and retain new workers to the region, which will contribute to the overall health of the local economy. The Proponent will participate, both associated with the Project and in partnership with the Benefits Blueprint Initiative, in the development of strategies to engage women, visible minorities and those living in poverty to participate in the economic benefits of the Project.

A Procurement and Supply Strategy will be implemented to maximize benefits to the Saint John CMA and provincial economies. A Labour Relations Strategy will help avoid or minimize adverse environmental effects on labour by focusing on the development and implementation of a number of initiatives to enhance the available workforce and increase retention rates in an increasingly competitive market. In particular, this will be important during Construction. Specific elements of the Labour Relations Strategy include:

- Promotion of construction trades and apprenticeship development;
- Productivity enhancement;
- Attraction and retention strategy for local and mobile construction workers; and

- Workforce expansion and diversification, including repatriation of workers to Atlantic Canada, a Temporary Foreign Workers Strategy, an Immigration Strategy, and a Workers in Transition Strategy.

15.1 Scope of Assessment

This section defines the scope of the EIA on Labour and Economy in consideration of the nature of the potential interactions.

15.1.1 Regulatory Setting

The Final Guidelines require that a prediction of the environmental effects on Labour and Economy within the Saint John CMA and the Province of New Brunswick be undertaken. This includes an assessment of the direct and indirect creation of employment in the area associated with Construction and Operation of the facility, and the provision of details regarding the availability and qualifications of the workforce required to construct and operate the facility.

The Final Guidelines also require an assessment of the environmental effects that the Project will have on industries, and how any aesthetic or potential visual environmental effects of the Project will affect the local or regional economy. Additionally, it is required that the environmental effects on existing tourism and recreational activities, as well as the recreational and commercial fishing industry be included.

15.1.2 Issues and Concerns Identified During Public and Stakeholder Engagement

In addition to public engagement activities conducted with the general public, focused stakeholder engagement was conducted from June 2007 through February 2008, with additional focused engagement subsequently as required to supplement the information collected. The comments received helped ensure that all substantive issues were considered in the evaluation of the potential environmental effects on Labour and Economy, and contributed to ongoing Project design and planning. The initial list of stakeholders for such engagement was identified based on past discussions with the Study Team, as well as the stakeholders' level of interest and mandate, and the potential for such stakeholders to provide information that would be useful to establish baseline conditions or to conduct the environmental effects assessment. In addition, stakeholders were asked to identify other individuals or organizations that should be contacted. In total, approximately ten interviews were completed either with individuals or in small groups, in addition to other workshops, general meetings, and three Open Houses (Chapter 4).

Table 15.1 contains a summary of comments received during stakeholder engagement specifically related to Labour and Economy. The comments confirmed the key issues for the assessment, and helped provide direction on specific stakeholder concerns.

Table 15.1 Summary of Comments Received During Public and Stakeholder Engagement on Labour and Economy

Key Issue	Comment
Saint John CMA and Communities	<ul style="list-style-type: none"> ▪ The host community (Red Head) needs to be addressed. ▪ Should consider the nine communities surrounding the Project.

Table 15.1 Summary of Comments Received During Public and Stakeholder Engagement on Labour and Economy

Key Issue	Comment
Population and Labour Force	<ul style="list-style-type: none"> ▪ Will guest workers be required and, if so, will the environmental effects be assessed? ▪ Has the disparity between local union capacity and demand been assessed? ▪ Need early identification of tradespersons that will be needed. ▪ Potential effects of phasing the pace and sequence of construction on the required labour force.
Business and Industry	<ul style="list-style-type: none"> ▪ Need to know the requirements for suppliers (<i>i.e.</i>, certification). ▪ Local and medium sized New Brunswick firms can participate in the Project. ▪ Ensure that local firms are included in the contracting phase. ▪ Potential positive spin-offs between suppliers, downstream users, and local business and industry. ▪ More job opportunities and an increased momentum for growth for the City of Saint John. ▪ Potential for positive interaction between the Project and the tourism industry. ▪ Increase in community revenue will bolster local economy.
Employment and Income	<ul style="list-style-type: none"> ▪ Income gap may increase. ▪ Inflation of labour costs for other businesses. ▪ Potential environmental effects to the Project of the recent economic downturn.
Training and Education	<ul style="list-style-type: none"> ▪ A trained workforce is needed, as is access to a variety of post secondary educational institutions. ▪ Provincial schools and colleges need to train tradespersons. ▪ Partner with the colleges to promote opportunities to educate individuals in the local community in order to make use of the local untapped workforce.
Poverty	<ul style="list-style-type: none"> ▪ Inflation can affect economically disadvantaged individuals; there needs to be measures put in place to control local cost of living. ▪ Saint John has the highest rate of lone parent poverty in Canada.

15.1.3 Selection of Environmental Effects

The Project will result in substantial expenditure in Saint John CMA and the Province of New Brunswick, and will create a large number of job and contracting opportunities during Construction (Section 3.2.4) and employment positions during Operation (Section 3.2.5). Substantive positive environmental effects are anticipated to occur on the local and provincial economies as measured by increased economic production, employment and incomes. Additional tax revenues to government can be expected. However, the high demand for labour directly and indirectly due to the Project may create adverse environmental effects on other businesses and industries in the form of labour shortages and wage inflation. Questions regarding the availability and qualifications of the workforce required for the Project arise, as well as the extent to which individuals and families within the Saint John CMA will benefit from the Project.

The assessment of potential environmental effects on Labour and Economy is, therefore, focused on an evaluation of two main environmental effects:

- Change in Economy; and
- Change in Labour.

Change in Economy includes consideration of:

- Direct, indirect and induced employment, income and value added (Gross Domestic Product, or GDP) within the Saint John CMA, the Province of New Brunswick, and Canada as a whole;
- The potential for local business and industry to be suppliers to the Project; and

- Business tax, personal income tax, sales tax, and property tax revenues to government.

Change in Labour includes consideration of:

- Availability of qualified labour, potentially resulting in wage inflation and shortages of labour for other local businesses and industries; and
- The potential for labour enhancement mechanisms (e.g., training and apprenticeship, workforce expansion and diversification) to contribute to the availability of qualified labour, and for engagement of women, visible minorities and those living in poverty to benefit from the Project.

The potential environmental effects of the Project on Commercial Fisheries are assessed in Chapter 14 and not considered in this Chapter. The potential environmental effects of the Project on the visual environment and recreational activities are considered in Chapter 17. The potential environmental effects of the Project on Land-Based Transportation are considered in Chapter 20, and on Atmospheric Environment in Chapter 7. The environmental effects assessment results as presented in these chapters, particularly with respect to potential environmental effects on local businesses and industries due to Project-related traffic, noise and air quality nuisance, are referenced as required when they may apply to the assessment of the potential environmental effects on Labour and Economy.

15.1.4 Selection of Measurable Parameters

Table 15.2 provides the measurable parameters that will be used for the assessment of each environmental effect, and the rationale for the selection of the measurable parameters.

Table 15.2 Measurable Parameters for Labour and Economy

Environmental Effect	Measurable Parameter	Rationale for Selection of the Measurable Parameter
Change in Economy	Gross Domestic Product (GDP)	Measures changes in the size of the economy (direct, indirect, and induced value-added) due to the Project, including wages and salaries.
	Employment and Sales	Measures changes to employment and sales due to changes in economic activity (direct, indirect, and induced).
	Government Tax Revenues	Measures changes to federal, provincial and municipal tax revenues due to changes in economic activity (direct, indirect, and induced).
Change in Labour	Unemployment Rate and Number of Unemployed	Measures changes to local and provincial unemployment due to changes in economic activity (direct, indirect, and induced), which is an indicator of the availability of labour.
	Employment by Occupations compared to Current Levels	Measures changes to employment by occupation due to changes in economic activity (direct, indirect, and induced), and when compared to current levels is an indicator of labour supply-demand balance.

It is noted that throughout this chapter, all references to monetary values shall be in Canadian dollars (C\$).

15.1.5 Temporal Boundaries

The temporal boundaries for the assessment of the potential environmental effects on Labour and Economy include Construction, Operation, and Decommissioning and Abandonment.

Potential environmental effects on Labour and Economy can occur anytime during these Project phases. However, it is expected that potential environmental effects arising from increased expenditures in the region as well as from demands on the labour force will be highest during Construction, when Project-related employment and expenditures will be greatest. Project

environmental effects are expected to be substantive but will diminish during Operation, as Project expenditures and permanent direct employment will be less. There will be an additional expenditure and requirement for labour during Decommissioning, followed by a cessation of activity in Decommissioning and Abandonment.

The temporal boundaries for the characterization of existing (baseline) conditions are the years 2001 to 2008, during which existing conditions information from external sources (e.g., Statistics Canada) was made available as well as covering the period when interviews with stakeholders were conducted (primarily between June 2007 and January 2008).

15.1.6 Spatial Boundaries

The spatial boundaries for the environmental effects assessment of Labour and Economy are:

- The Project Development Area (PDA);
- A Local Assessment Area (LAA); and
- A Regional Assessment Area (RAA).

The PDA is the physical area to be developed as part of the construction of the land-based components of the Project, including the Petroleum Refinery and Other Land-Based Infrastructure, as well as the areas to be developed for the Marine Terminal and Other Marine-Based Infrastructure (Figure 3.1).

The LAA and RAA are equivalent for the purposes of the environmental effects assessment on Labour and Economy. Both are defined at two scales:

- The Saint John CMA (encompassing the City of Saint John, Grand Bay-Westfield, Hampton, Rothesay, Quispamsis, St. Martins, and rural areas); and
- The Province of New Brunswick.

The area of and municipalities within the Saint John CMA are shown in Figure 15.1.

15.1.7 Administrative and Technical Boundaries

The Government of New Brunswick has primary responsibility for the management of economic development and the labour market throughout the Province of New Brunswick. In addition, the Government of Canada and the City of Saint John and other municipalities within the Saint John CMA have partial responsibility for employment and economic development strategies within their regions of operation.

The potential environmental effects on Labour and Economy are assessed using available statistical models, data and documents. A proprietary input-output economic model was used to estimate changes in GDP, employment and tax revenues to government based on available preliminary Project design information. Supplementary information was obtained through stakeholder interviews conducted primarily over an eight-month period from June 2007 to January 2008. The quality and extent of the available secondary information determined the technical boundaries for the assessment.

15.1.8 Residual Environmental Effects Rating Criteria

A significant adverse residual environmental effect on Economy is one that results in a decline in the value added to the economy, or one where adverse environmental effects on other local businesses or industrial activities are of such a magnitude and/or duration that the capacity of the economy to adjust to these changes in the long-term is exceeded. The residual environmental effects rating criteria are based on changes to current employment or income statistics, or a decline in economic activity as a result of the Project.

A significant adverse residual environmental effect on Labour is one that results in long-term adverse changes in employment and/or incomes in the Saint John area, or result in local or regional labour shortages that inhibits other economic development or the competitiveness of other businesses of such a magnitude and/or duration that the capacity of the economy to adjust to these changes in the long-term is exceeded. The residual environmental effects rating criteria are based on changes to current employment or income statistics, or a decline in economic activity as a result of the Project.

15.2 Existing Conditions

The following section summarizes the existing conditions with respect to Labour and Economy. The focus of the description is the Saint John CMA and the City of Saint John, although selected information is also provided for the Province of New Brunswick as a whole. Additional information can be found in Section 6.3.1 (Demographic Overview) and 6.3.2 (Economic Activity and Economic Engines). The information provided in this section is based primarily on Jacques Whitford (2008n).

15.2.1 Population

15.2.1.1 Saint John CMA

The Saint John CMA includes the City of Saint John, the Town of Quispamsis, the Town of Rothesay, the Town of Hampton, the Town of Grand Bay-Westfield, the Village of St. Martins, and nearby rural areas (Figure 15.1). Based on Census data, the population in 2006 was 122,389, which represents a 0.2% decrease from 2001. These trends are consistent with provincial-level population changes; however, they are contrary to national trends over the last 15 years, which saw the overall population of Canada increase. The population of the Saint John CMA accounts for 16.8% of New Brunswick's total population.

15.2.1.2 City of Saint John

In 2006, the population of the City of Saint John was 68,043, a 2.3% decrease from 2001. From 1986 to 2006, the population of the City decreased by approximately 11%. Of the three major cities in New Brunswick, only Saint John experienced a decrease in population during that period. The population of Fredericton increased by 11.9%, and that of Moncton increased by 13.5% (Table 15.3).

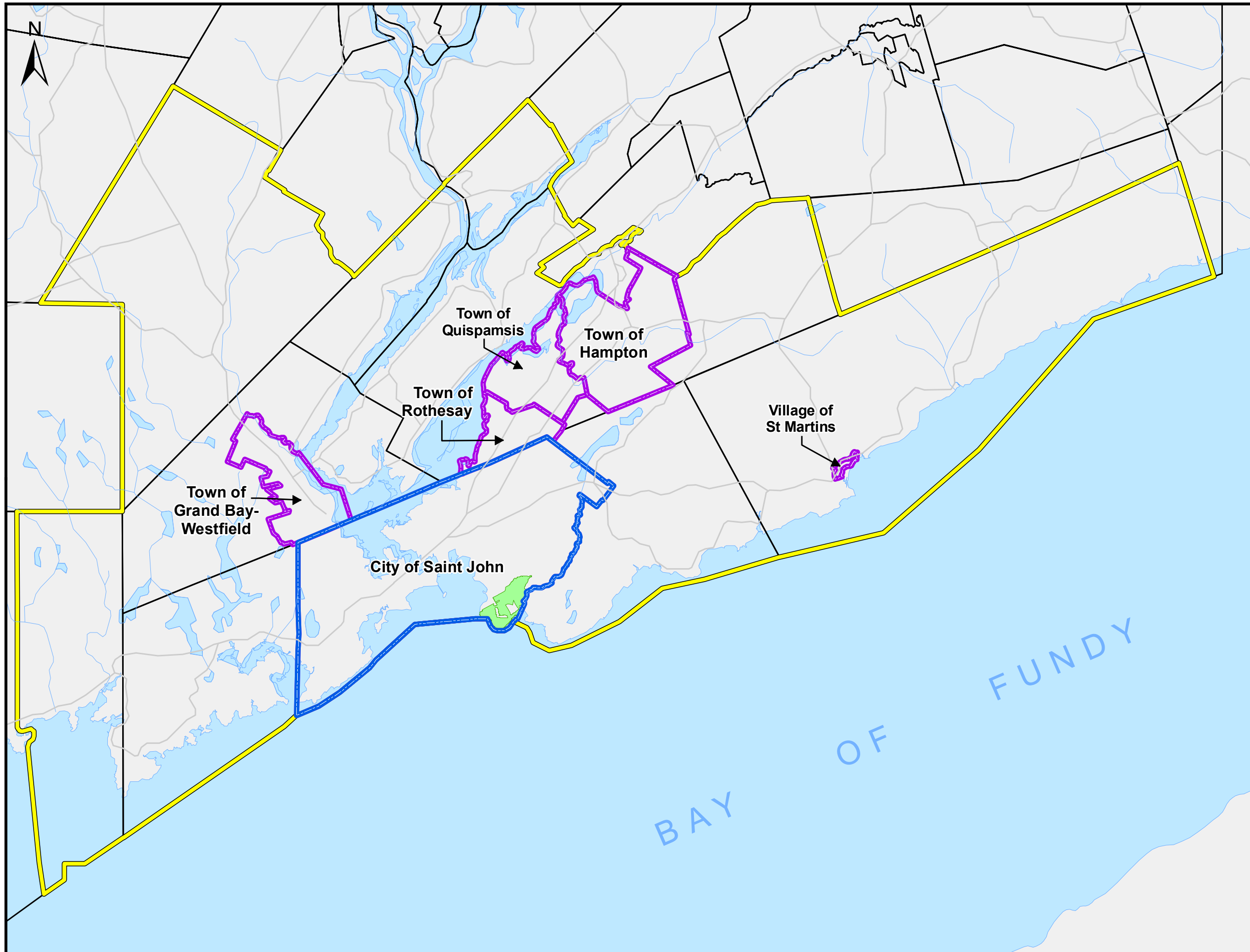










Figure 15.1

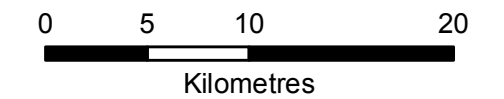
**Saint John
Census
Metropolitan Area**

Project Eider Rock

Map Features

-  City of Saint John
-  Municipal Areas
-  Saint John CMA
-  Census Subdivision
-  Roads
-  Watercourse
-  Project Development Area
(Refinery Facilities and
Infrastructure Approx. 1132 ha)
-  Waterbody

Data Source:
Service New Brunswick
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Map Parameters
Projection: NB Stereographic
Scale: 1:370,000
Date: August 8, 2008
Project No.: 1013263.



Table 15.3 Population Counts of New Brunswick's Three Major Cities, 1986-2006

Location	1986		1991		1996		2001		2006	
	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change	Pop.	% Change
Saint John	76,381	-5.1	74,969	-1.8	72,494	-3.3	69,661	-3.9	68,043	-2.3
Fredericton	44,352	1.4	46,466	4.5	46,507	0	47,580	2.3	50,535	5.8
Moncton	55,468	1.3	56,823	2.4	59,313	4.2	61,046	2.8	64,128	4.8

Source: Statistics Canada, Census data for 1986, 1991, 1996, 2001, and 2006.

Pop. = population.

15.2.2 The Economy

15.2.2.1 The New Brunswick Economy

The economy of New Brunswick is heavily influenced by energy, natural resource, and manufacturing industries. Tourism and communication technology industries also make substantial contributions to the provincial economy. Between 1998 and 2006, the top three industrial sectors in New Brunswick were finance, insurance, and real estate; manufacturing; and public administration (Hardy Stevenson and Associates 2008). New Brunswick's urban areas have modern, service-based economies dominated by the health care, educational, retail, finance and insurance sectors. These sectors are equally distributed in all three principal urban centres, Saint John, Fredericton, and Moncton. Major heavy industrial and port facilities are located in Saint John, with other heavy industries sparsely distributed in other parts of New Brunswick and other smaller port facilities in northern New Brunswick. The local economy of Fredericton is dominated by government services, universities, and the military. Moncton has developed as a commercial, retail, transportation, and distribution centre with important rail and air terminal facilities. Rural New Brunswick is best known for forestry, mining, mixed farming and fishing as the primary economic drivers of these areas.

The energy sector in New Brunswick is strong and continues to grow. This places Saint John in a solid position of achieving its goal of becoming the energy hub of the Maritime area. Six large companies active in the oil, gas, and energy sector have recently announced plans to invest a combined total of over \$12 billion in construction activities over the next decade. Such projects include the Canaport LNG terminal, Point Lepreau refurbishment, and the Emera Brunswick Pipeline.

15.2.2.2 The Economy of the Saint John CMA

Saint John is the oldest incorporated city in Canada, and the largest urban centre in New Brunswick. Historically, the economy of the area was based around the industrial sector, with an emphasis on manufacturing. Evidence of this was in the oil refining, paper mill, and shipbuilding industries on the eastern side of the City. However, shipbuilding operations ceased in 2002, and since 1996, the bulk of employment in the Saint John CMA is in the service sector, which is consistent with provincial and national trends (Greater Saint John Community Foundation 2007).

The information and communication technologies sector is growing rapidly in Saint John CMA, with over 50 companies operating in the area. Tourism generates over \$200 million annually and consists of the cruise ship industry, conventions, sporting events, and local attractions. The health sciences sector includes the Saint John Regional Hospital, the University of New Brunswick, Saint John and the New Brunswick Community College which provide training, research as well as health care services. The Port of Saint John is Atlantic Canada's largest port and handles an average of 25 million metric

tonnes of cargo annually. The Port is essential to New Brunswick's natural resources sector such as petroleum, potash, forestry and aquaculture industries and to its import and export trade.

15.2.3 Labour Force

In 2001, the labour force participation rate (*i.e.*, the ratio of those that are eligible to work or be employed, to the overall working age population) in the Saint John CMA was 69.3% for males and 57.1% for females (Statistics Canada 2001). The total participation rate was 62.9%. In New Brunswick as a whole, the male participation rate was 69.2% and the female participation rate was 57.3%, while the total participation rate was 63.1% (Statistics Canada 2001). Over one-fifth of the Saint John CMA labour force was experienced in the business sector (Statistics Canada 2001); furthermore, over 40% of the labour force accounted for the health, education, and business sectors combined.

The unemployment rate in the Saint John CMA was 9.2% in 2001, which was substantially lower than the provincial rate of 12.5% at that time (Statistics Canada 2001). In more recent years, unemployment in the Saint John CMA has continued to fall dramatically, reaching 4.8% in February 2008 (Statistics Canada, CANSIM Catalogue Table 71-001-XIE).

15.2.4 Employment and Income

15.2.4.1 Saint John CMA

According to Census 2001 data, median family income in the Saint John CMA was \$50,163 (Table 15.4). This was higher than the provincial median family income, but approximately \$5,000 less than the national value. Similarly, the Saint John CMA had a higher median individual income (\$20,284) than the province (\$18,257); however, it was lower than that of Canada (\$22,120). The percentage of income accounted for by government transfers was 14.4%, which was lower than the provincial rate, but higher than the national rate.

Table 15.4 Incomes and Incomes by Source, 2001, Comparing the Saint John CMA, New Brunswick and Canada

	Saint John CMA	New Brunswick	Canada
Median Family Income	\$50,163	\$45,558	\$55,016
Median total income of persons 15 years of age and over	\$20,284	\$18,257	\$22,120
Earnings as % of income	74.5	72	77.1
Government transfers as % of income	14.4	17	12
Other money as % of income	11.1	10.7	11.3

Source: Census 2001 (Statistics Canada 2001)

15.2.4.2 Poverty

The current level of poverty within the City of Saint John is of particular concern. In 2001, the poverty rate (the percentage of the population that lives below the poverty line) was 24.5% in Saint John, much higher than the provincial average of 15.7% and the national average of 16.2%. In contrast, the incidence of poverty is considerably lower in the municipalities surrounding the City of Saint John: Grand Bay-Westfield (8.0%), Rothesay (9.7%), and Quispamsis (6.2%). Additionally, trends show that the gap between the rich and poor is widening. The earnings of census families in the lowest 10% rose 11.9%, from \$16,800 to \$18,000, while the earnings of census families in the highest 10% experienced an increase of 13.8%, from \$109,000 to \$124,000 (Hatfield and Grotenhuis 2007). Within the City of Saint John, a number of census areas have 40% or more of its residents living below the poverty line

(Vibrant Communities Saint John 2005). Within these vulnerable neighbourhoods, there are also a higher proportion of lone parent families compared to the City of Saint John as a whole.

15.3 Potential Project-VEC Interactions

The potential environmental effects on Labour and Economy are identified in Table 15.5. These environmental effects due to Project-related employment and expenditures can be expected to be greatest during Construction, but will also occur throughout Operation, and Decommissioning and Abandonment. In the assessment, no distinction is made between Project activities and physical works associated with the Petroleum Refinery and Other Land-based Infrastructure, and with the Marine Terminal and Other Marine-based Infrastructure. Rather, the potential environmental effects of Project-related employment and expenditure on Labour and Economy will be evaluated jointly for all Project activities and physical works.

Table 15.5 Potential Project Environmental Effects to Labour and Economy

Project Activities and Physical Works	Potential Environmental Effects	
	Change in Economy	Change in Labour
Construction		
Site and Right-of-Way Preparation	0	0
Physical Construction and Equipment Installation	0	0
Construction of Linear Facilities and Watercourse Crossings (Including Wetlands)	0	0
Commissioning	0	0
Road Transportation	0	0
Employment and Expenditure	2	2
Operation		
Operation and Maintenance of Refinery Processes and Equipment	0	0
Emissions Control and Management of Effluents and Wastes	0	0
Water Supply and Use	0	0
Linear Facilities Presence and Operation	0	0
Right-of-Way and Infrastructure Maintenance	0	0
Road and Rail Transportation	0	0
Employment and Expenditure	2	2
Decommissioning and Abandonment		
Removal of Facilities and Site Reclamation	2	2
Project-Related Environmental Effects		
Notes: Project-Related Environmental Effects were ranked as follows:		
0 No interaction, or no substantive interaction contemplated.		
1 Interaction will occur. However, based on past experience and professional judgment, the interaction would not result in a significant environmental effect, even without mitigation, or the interaction would clearly not be significant due to application of codified practices.		
2 Interaction may, even with codified mitigation, result in a potentially significant environmental effect and/or is important to regulatory and/or public interest. Potential environmental effects are considered further and in more detail in the EIA.		

15.3.1 Change in Economy

Because of direct and indirect expenditures associated with the Project during all phases, there are expected to be changes in economic production felt locally within the Saint John CMA, as well as across the Province of New Brunswick and Canada. The change in economic production will be reflected in GDP, employment, income and government tax revenues (business tax, personal income tax, sales tax, and property tax). The income generated and expenditures by the Project can be expected to create opportunities for business and industry in a number of sectors where there will be

increased demand as a result of the Project. Examples of areas where business opportunities may be created due to the Project include communications, community accommodation and related services, construction, logistics, medical and safety, office and administration, and remote site services.

The potential for visual or aesthetic environmental effects of the Project to affect existing local business and industry is not considered further in the assessment. This is because the businesses closest to the Project (with the exception of Canaport Limited and Canaport LNG) are located in McAllister and Grandview Industrial Parks, adjacent to the existing Saint John refinery. These local businesses are currently within an existing industrial setting. The Project will be developed in a similar industrial setting as the existing Canaport Limited and Canaport LNG facilities, and therefore will not result in significant adverse visual or aesthetic environmental effects.

Other businesses within the Saint John CMA are also not expected to be substantially adversely affected due to visual or aesthetic environmental effects of the Project, although the Project will be visible from a number of vantage points across the area (Section 3.5.5). This includes consideration of existing tourism activities. The Project is predicted to be visible from cruise ships entering and leaving Saint John Harbour; however, the view is within the context of an existing industrial setting including Canaport Limited and Canaport LNG. It is also expected that the viewing of an industrial complex will be perceived by many visitors to be a positive attribute of Saint John (S. Elliott, personal communication, July 5, 2007). For this reason, the residual visual or aesthetic environmental effects of the Project on business and industry during all phases of the Project, including cumulative environmental effects, are rated not significant. There is a high level of confidence in these predictions.

Potential environmental effects on local businesses and industries due to Project-related traffic, noise and air quality are also not considered further given the types and locations of businesses involved and the predicted areas of influence of Project-related noise and air emissions. The residual environmental effects of the Project on Atmospheric Environment (Chapter 7) and Land-Based Transportation (Chapter 20) during all phases of the Project were rated not significant; thus the associated residual environmental effects on local business and industry during all phases of the Project, including cumulative environmental effects, are also rated not significant. There is a high level of confidence in these predictions.

15.3.2 Change in Labour

Employment and income (direct, indirect and induced) will be generated as a result of the activities and physical works of the Project, to the Saint John CMA and the Province of New Brunswick. The Project-related demand for labour may place strains on or exceed the available supply of labour within the Saint John CMA and the Province of New Brunswick. Competition for labour is expected to result in wage inflation and local or provincial shortages of skilled labour, thereby potentially inhibiting other economic development and affecting the competitiveness of other businesses. Although potentially tempered by more challenging economic conditions recently observed globally, this may be evident during Construction when the Project's demand for labour is greatest, although supply-demand constraints may also occur during Operation and Decommissioning and Abandonment. With Decommissioning and Abandonment, there will be a loss of Project-related employment, but this is not contemplated to occur for several decades or more.

The degree to which labour competition will occur, particularly during Construction, will depend on a number of factors, including: the specific skill-set required by the Project and the skill-set available within the Saint John CMA and the Province of New Brunswick; the availability of skilled labour from

other areas; and the supplier development, procurement and employment and training initiatives that support the Project. Deleterious competition for labour may be further exacerbated by the high numbers of retiring workers over the next ten years (CSC 2007). The age profile for the construction workforce in Atlantic Canada is older than in other regions (CSC 2008), and it is anticipated that a key challenge the Atlantic region will face with the expected increase in regional investment is the availability of skilled workers (APEC 2008).

Related to the question of labour availability is the potential for workforce expansion initiatives, such as training and apprenticeship programs, to add to the supply. Engagement of individuals currently under-represented in the industry, including women and visible minorities, and of those living in poverty to benefit from economic development is also important to the region. With approximately 25% of the population of the City of Saint John living in near poverty conditions, many believe that income disparities will continue to stress the social fabric of the city.

15.4 Environmental Effects Assessment

Residual environmental effects of the Project, including the Petroleum Refinery and Other Land-Based Infrastructure and the Marine Terminal and Other Marine-Based Infrastructure, on Labour and Economy are summarized in Table 15.6.

Table 15.6 Summary of Residual Project Environmental Effects on Labour and Economy

Potential Residual Environmental Effects	Proposed Mitigation/Compensation Measures	Residual Environmental Effects Characteristics						Significance	Prediction Confidence	Likelihood	Cumulative Environmental Effects?	Recommended Follow-up and Monitoring
		Direction	Magnitude	Geographic Extent	Duration and Frequency	Reversibility	Ecological/ Socio-economic Context					
Change in Economy												
Construction	<ul style="list-style-type: none"> Procurement and Supply Strategy. Phasing of the pace and sequence of Construction over a longer duration (approximately 6-8 years) (extending the economic benefits over a longer period of time). 	P	H	R	MT/C	R	N/A	N	H	H	Y	<ul style="list-style-type: none"> Monitoring of expenditures on suppliers by type and location of supplier.
Operation		P	H	R	LT/C	R	N/A	N	H	H	Y	
Decommissioning and Abandonment		P	H	R	LT/C	R	N/A	N	H	H	Y	
Residual Environmental Effects for all Phases								N	H	H	Y	
Change in Labour												
Construction	<ul style="list-style-type: none"> Phasing of the pace and sequence of Construction over a longer duration (approximately 6-8 years) (reducing competition for skilled labour). Procurement and Supply Strategy. Labour Relations Strategy (Workforce Expansion and Diversification, Productivity Enhancement, Attraction and Retention). Post-closure Employment Strategy 	A/P	H	R	MT/O	R	N/A	N	M	M	Y	<ul style="list-style-type: none"> Monitoring of the number of workers by trade/occupation and location of permanent residence.
Operation		A/P	M	R	LT/R	R	N/A	N	M	M	Y	
Decommissioning and Abandonment		A/P	M	R	LT/O	R	N/A	N	M	M	Y	
Residual Environmental Effects for all Phases								N	M	M	Y	

Table 15.6 Summary of Residual Project Environmental Effects on Labour and Economy

Potential Residual Environmental Effects	Proposed Mitigation/Compensation Measures	Residual Environmental Effects Characteristics						Significance	Prediction Confidence	Likelihood	Cumulative Environmental Effects?	Recommended Follow-up and Monitoring
		Direction	Magnitude	Geographic Extent	Duration and Frequency	Reversibility	Ecological/ Socio-economic Context					
Combined Residual Environmental Effects												
Construction	Same as above.							N	H	H	Y	Same as above.
Operation								N	H	H	Y	
Decommissioning and Abandonment								N	H	H	Y	
Combined Residual Environmental Effects								N	H	H	Y	
KEY Direction: P Positive A Adverse Magnitude: L Low: Environmental effects limited to specific businesses and trades directly required by the Project. M Moderate: Environmental effects felt by businesses and labour directly and indirectly related to Project. H High: Environmental effects felt broadly by business and labour throughout the economy.		Geographic Extent: S Site-specific: Within the PDA L Local: Within the Saint John CMA R Regional: Within New Brunswick Duration: ST Short term: Less than 1 year MT Medium term: 1 to 5 years LT Long term: Greater than 5 years P Permanent Frequency: O Occurs once. S Occurs sporadically at irregular intervals. R Occurs on a regular basis and at regular intervals. C Continuous.				Reversibility: R Reversible I Irreversible Ecological Context: U Undisturbed: Area relatively or not adversely affected by human activity. D Developed: Area has been substantially previously disturbed by human development or human development is still present. N/A Not Applicable Significance: S Significant N Not Significant			Prediction Confidence: Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation L Low level of confidence M Moderate level of confidence H High level of confidence Likelihood: Based on professional judgment L Low probability of occurrence M Medium probability of occurrence H High probability of occurrence Cumulative Environmental Effects? Y Potential for environmental effect to interact with other past, present or foreseeable projects or activities in RAA. N Environmental effect will not or is not likely to interact with other past, present or foreseeable projects or activities in RAA.			



15.4.1 Assessment of Project-Related Environmental Effects

15.4.1.1 Change in Economy

During Construction, Operation and Decommissioning, Project expenditures are expected to result in an increase in economic production locally within the Saint John CMA, as well as across the Province of New Brunswick and, more broadly, Canada. This change will be reflected as an increase in GDP, employment, income and business sales. Government tax revenues, from business and personal income taxes, sales taxes and property taxes, are also predicted to increase. The increase in economic production is an important determinant of overall well-being and provides a foundation for future economic investments.

The income generated and expenditures by the Project can be expected to create opportunities for business and industry in a number of sectors where there will be increased demand as a result of the Project. This is expected to occur directly as a result of Project expenditures and employment and indirectly due to expenditures and employment by suppliers to the Project, as well as through the induced environmental effects of workers and employees spending their incomes. A Procurement and Supply Strategy will be important to enhance the positive environmental effects to the Saint John CMA and provincial economies.

15.4.1.1.1 Existing Conditions for Change in Economy

For the Province of New Brunswick, total GDP is approximately \$26.4 billion and GDP per capita is approximately \$35,200; however, real GDP grew by 2.3 percent in 2007 and is expected to grow by 2 to 2.7 percent in 2008. The growth is believed to be largely due to a buffer of capital investment against the current export challenges facing the province (BMO 2008; Moreira 2008).

Recent statistics on employment by industry for the Saint John CMA, the Province of New Brunswick and Canada are shown in Table 15.7. For both the Province of New Brunswick and the Saint John CMA, employment is most concentrated within manufacturing, trades and health care.

Table 15.7 Percentage of Primary, Secondary and Service Sector Employment in Saint John CMA, New Brunswick, and Canada

Industry	Saint John CMA % of Total	New Brunswick % of Total	Canada % of Total
Primary			
Agriculture	1.8	1.7	2.1
Forestry, Fishing, Mining	1.8	2.8	2
Secondary			
Utilities	1.1	0.9	0.7
Construction	6.5	5.9	6.5
Manufacturing	11.3	10.4	12.8
Service			
Trades	15.2	16	16
Transportation	5.2	5.6	4.9
Finance, Insurance	4.5	4.6	6.3
Scientific, Technical	4.8	4.1	6.6
Business, Support	7.7	6.1	4.2
Education	7.6	7.7	7
Health Care	12.4	12.7	10.8

Table 15.7 Percentage of Primary, Secondary and Service Sector Employment in Saint John CMA, New Brunswick, and Canada

Industry	Saint John CMA % of Total	New Brunswick % of Total	Canada % of Total
Information	4	3.3	4.5
Accommodation	6.8	7	6.2
Other	4.8	5	4.3
Public Administration	4.4	6.1	5.1

Source: Hardy Stevenson and Associates (2008)

The median family income for the Province of New Brunswick in 2001 was approximately \$45,600 (Statistics Canada 2001), and the median individual income was approximately \$18,300. The median family income in the Saint John CMA was approximately \$50,200, and the median individual income is approximately \$20,300.

Property taxes and corporate income and capital taxes account for a good portion of revenue to the Province of New Brunswick (Table 15.8).

Table 15.8 Revenues to the Government of New Brunswick from Selected Sources

Source	Revenue Estimates (\$ millions)		
	2006/2007	2007/2008	2008/2009 Estimate
Corporate Income Tax	\$217.6	\$267.0	\$183.0
Provincial Real Property Tax	\$353.2	\$364.0	\$382.9
Real Property Transfer Tax	\$6.0	\$6.4	\$6.4
Large Corporation Capital Tax	\$34.7	\$31.2	\$14.0
Financial Corporation Capital Tax	\$6.5	\$7.0	\$7.0
Total (select sources)	\$518.0	\$675.6	\$593.3

Source: GNB (2007b), GNB (2008)

The principal source of revenue for the City of Saint John is property tax, which accounts for approximately 75% of total revenue. Additional revenue from provincial operating grants represents approximately 17% of revenue, with the balance 8% of revenue resulting from user fees, permit charges and other sources (City of Saint John 2007a). For the 2008 year, the property tax rate is set at \$1.795 (per \$100 of assessment) resulting in tax revenues of approximately \$90 million. Total expenditures under the 2008 City of Saint John operating budget have been projected at approximately \$119 million, representing a 6.4% increase over the 2007 operating budget of approximately \$112 million (City of Saint John 2007b).

15.4.1.1.2 Project Environmental Effects Mechanisms for Change in Economy

As described in Section 3.2.4, total direct construction costs of the Project were initially estimated at \$4.9 billion (2007 dollars). This includes approximately \$1.5 billion to be spent on labour, \$2.8 billion on materials, and \$0.6 billion on operated equipment (Table 3.4). More recent (August 2008) estimates have placed these costs at approximately \$6.3 billion (2007 dollars), and these estimates will further evolve as engineering design unfolds. To introduce conservatism in the environmental effects assessment, the initial estimates in Section 3.2.4 have been carried in this EIA/EA. Any further refinements to the estimates will likely be greater than this amount, thereby further enhancing the economic benefits of the Project.

During Operation, direct annual expenditures of the refinery have not been determined and are proprietary, but are substantive and are similar to those associated with the operation of the existing Saint John refinery and other large industrial facilities. During Decommissioning and Abandonment,

there is expected to be similar types of expenditures to those occurring during Construction (although likely at a lesser scale), although specifics have yet to be defined. With Decommissioning and Abandonment, there will be a loss of Project-related employment and expenditures, requiring adjustments by the local economy.

Project expenditures will generate new economic production directly as a result of the supplies and services purchased by the Project, as well as indirectly as a result of the additional purchases of suppliers required to meet the demands of the Project. An additional induced economic environmental effect will occur as those directly and indirectly employed by the Project spend their incomes. The environmental effects are anticipated to occur within the Saint John CMA and the Province of New Brunswick, as well as more broadly across Canada. The additional economic activity will result in additional revenues to governments directly through an increase in property and business taxes paid by the Project, as well as an increase in sales tax and income taxes paid by individuals directly and indirectly employed by the Project.

15.4.1.1.3 Mitigation for Change in Economy

A Procurement and Supply Strategy will be implemented to maximize benefits to the Saint John CMA and provincial economies. The following may be elements of the strategy:

- A contracting and compensation plan to help ensure alignment of suppliers with the Project's objectives;
- Labour management initiatives, including the management of labour availability and productivity, and the sharing of risks among the Proponent and suppliers;
- A plan for the further development of a safe, productive and competitive supply of local contractors as long-term suppliers to the Project; and
- Development of the Approved Contractors List to help ensure that suppliers meet Irving Oil safety and quality standards, including initiatives to assist local contractors to become pre-qualified as suppliers.

In order to help leverage the expected economic expansion throughout southwestern New Brunswick, there are a number of programs identified by the Benefits Blueprint Initiative (Hardy Stevenson and Associates 2008). Initiatives include a Supply Chain Development Program, a Business Productivity Enhancement Program, and an Industrial Land Development Strategy, among others. If implemented, these programs will further optimize the economic benefits of the Project.

With respect to mitigation of potential adverse environmental effects associated with the loss of Project-related employment and expenditures during Abandonment, there is expected to be broad-based economic development of the region over the long-term. It is important to realize that the Saint John CMA economy is not expected to be critically dependent on the Project for its economic health, particularly in the long-term, as regional development advances.

15.4.1.1.4 Characterization of Residual Project Environmental Effects for Change in Economy

To support the environmental effects assessment of the Project, a separate economic input-output model was developed and run to estimate direct, indirect and induced environmental effects of the Project on the economy during Construction and Operation. The results provide a more detailed estimation of the Project's environmental effects on the economy.

During Construction, Project expenditures (Section 3.2.4) represents a direct increase in industry sales of approximately \$4.9 billion, which translates to a direct addition to the Saint John CMA economy (GDP) of approximately \$1.6 billion (with GDP consisting of indirect taxes, wages and salaries, income and other operating surpluses). The total direct, indirect and induced economic environmental effect on GDP to the Saint John CMA economy is estimated to be approximately \$2.4 billion. To the New Brunswick economy, the total direct, indirect and induced economic environmental effect on GDP is estimated to be approximately \$2.7 billion, and to the Canadian economy approximately \$4.1 billion.

During the Construction period, the Project will directly provide approximately 11,700 person-years of full-time equivalent employment, consisting of approximately 10,100 trades person-years and 1,600 person-years for professional employees. This will be supplemented by employment in firms that supply goods and services to the Project and by the associated employment generated in the services sector. Within New Brunswick, total direct, indirect and induced employment is estimated to be approximately 26,600 person-years, and within Canada approximately 45,900 person-years.

During Operation, total annual Project expenditures will be extensive and similar to those associated with the operation of the existing Saint John refinery. The direct addition to the New Brunswick economy is estimated to be approximately \$172 million per year in GDP. The total direct, indirect and induced economic environmental effect to the Saint John CMA economy is estimated to be approximately \$224 million annually. To the New Brunswick economy, the total economic environmental effect during Operation is estimated to be approximately \$234 million per year, and to the Canadian economy approximately \$342 million annually.

During Operation, the Project will directly provide approximately 1,000 full-time equivalent permanent positions, consisting of operations staff, engineers, and commercial supply chain and project execution professionals. This will be supplemented by employment in firms that supply goods and services to the Project and by the associated employment generated in the services sector. Within New Brunswick, total direct, indirect and induced employment are estimated to be approximately 1,780, and within Canada total approximately 3,180. The Government of Canada and the Province of New Brunswick will also increase its revenue from business tax, personal income tax, sales tax and property taxes paid as a result of the direct, indirect and induced economic activity. Similarly, the City of Saint John will realize an increase in revenues, principally from property taxes.

With the investment expenditure and the employment during Construction, the federal, provincial and municipal governments in Canada can expect to receive approximately an additional \$922 million in total revenues. This includes approximately \$610 million in revenue to all levels of government due to Project-related economic activity within New Brunswick alone, over half of that (about \$340 million) directly due to the Project itself. Total direct, indirect and induced tax revenues to the Government of New Brunswick are estimated to be approximately \$220 million over Construction, and total tax revenues to all municipalities within the Province of New Brunswick are estimated to be approximately \$17 million.

During Operation, the federal, provincial and municipal governments in Canada can expect to receive approximately an additional \$71 million annually in revenues. This includes approximately \$46 million in revenue to all levels of government due to Project-related economic activity within New Brunswick alone, with about \$30 million annually directly due to the Project itself. Total direct, indirect and induced tax revenues to the Government of New Brunswick are estimated to be approximately \$17 million annually, and total tax revenues to all municipalities within the Province of New Brunswick are

estimated to be approximately \$1.6 million annually, not including the property taxes paid directly by the Project.

A precise estimate of total property taxes to be paid by the Project is difficult because the actual amount will depend on the assessment of the market value of the property and capital improvements. As an indicator, the existing Irving Oil refinery pays approximately \$4.5 million per year in property taxes, which is split between the City of Saint John and the Province of New Brunswick. Thus, a reasonable estimate of property taxes paid by the Project after Construction is complete is approximately \$4 to 5 million per year, which represents about 3 to 4% of the operating budget of the City of Saint John.

While the environmental effects of the Project on the economy are predicted to be strongly positive, it should be noted that during the change from phase to phase, particularly moving from Construction to Operation, it can take local economies time to adjust after a busy Construction period and reduce economic activity to match routine Operation conditions. The magnitude of the adjustment required, however, can be offset by broader increases in regional economic activity associated with other projects realized due to a favourable investment climate and economic synergies.

Given the long time period involved until Decommissioning and Abandonment, and that specific design engineering for this phase of the Project has yet to be conducted, it is not possible to reasonably estimate the environmental effects of that phase of the Project on the economy. Nonetheless, substantial expenditure will undoubtedly be involved during Decommissioning and Abandonment.

Overall, it is predicted that the residual environmental effect of the Project on the economy will be felt broadly among business and industry, most prominently within the Saint John CMA but also throughout New Brunswick and Canada. With the proposed Procurement and Supply Strategy to enhance positive environmental effects and with phasing the pace and sequence of Construction to prolong the economic benefits to the Saint John region over a longer period of time, the effect of Change in the Economy on Labour and Economy, during all phases of the Project, is rated as highly positive with no significant adverse residual environmental effects. This prediction has a high level of confidence and is highly likely to occur.

15.4.1.2 Change in Labour

During Construction, Operation and Decommissioning and Abandonment, the Project will require a substantial number of temporary and permanent workers. Based on the existing labour market conditions within the Saint John CMA and more broadly within the Province of New Brunswick, the demand for labour by the Project is expected to be greater than what will be available locally. Without mitigation, the strong competition for trade labour can be expected to create local and provincial shortages and wage inflation. This environmental effect may potentially occur in other sectors due to labour moving to the trades as more lucrative employment.

To mitigate the potential adverse environmental effects of a change in labour, and enhance the positive environmental effects of the Project, a Labour Relations Strategy will be implemented. The various components include Workforce Expansion and Diversification, Productivity Enhancement and Attraction and Retention strategies. In addition, Construction will be phased over a longer duration (approximately six to eight years), thereby reducing the potential for competition for labour and reducing the potential for shortages of skilled workers to occur.

The residual environmental effect of Change in Labour is anticipated to be both positive and adverse, though mitigation is planned to minimize any adverse environmental effects. There is expected to be a residual adverse environmental effect of a Change in Labour, particularly during Construction, because there is predicted to be remaining restrictions on the availability of labour within certain trades. This will require other projects to be increasingly proactive and innovative in recruiting and retaining workers. The effective implementation of the proposed Labour Relations Strategy is predicted to result in the further positive development of labour force capabilities and incomes within the Saint John CMA and the Province of New Brunswick. The Project will attract and retain new workers to the region, which will contribute to the overall health of the local economy. Development of an Alternative Labour Force Strategy will engage women, visible minorities and those living in poverty to share in the economic benefits of the Project, where feasible. The Proponent is an active participant in the Benefits Blueprint Initiative and will continue to work with its partners in this to optimize social benefits as a result of major projects in New Brunswick, including Project Eider Rock.

15.4.1.2.1 Existing Conditions for Change in Labour

The Construction Sector Council (2008) reported that major building projects in New Brunswick will drive up construction employment by 35% to meet the construction peak in 2013. Labour needs coupled with New Brunswick's older-than-average age profile have produced tight labour markets.

At a provincial level, the labour force in January 2008 was reported to be 397,900, a nine percent increase from 365,040 in 2001. The unemployment rate in New Brunswick increased from January 2007 by 0.3 percent to 8.2 percent in January 2008 (Statistics Canada 2008a). This is, however, a 4.3 percent decrease from the 2001 unemployment rate of 12.5 percent.

Difficulties in finding and retaining workers due to a local labour shortage have resulted in an hourly wage growth in New Brunswick. The growth of the oil and gas industry in Western Canada has resulted in many Atlantic Canadian workers leaving Atlantic Canada to find prosperity out west. In response to the shortage of available workers, wage rates in Atlantic Canada are increasing. In the construction industry, weekly wages are up 10% in New Brunswick in 2008. Furthermore, while project developers are forced to absorb higher labour costs, they are also facing the added expense stemming from delayed construction timetables due to understaffing (APEC 2008).

The total experienced labour force in the Saint John CMA increased from approximately 60,300 in 2001 (Table 15.9) to 65,600 in January 2007 to 69,800 in January 2008. The participation rate increased from 63.4 percent to 67 percent from January 2007 to 2008, and the unemployment rate decreased from 5.0 percent to 3.9 percent. These figures reflect substantial changes from the 2001 Census where the Saint John CMA had a participation rate of 62.9 percent, and employment rate of 57.1 percent and an unemployment rate of 9.2 percent (Statistics Canada 2001, 2008c).

Table 15.9 Experienced Labour Force by Occupation (2001) for Saint John CMA and New Brunswick

Occupation	Saint John (CMA)	New Brunswick
	Total	Total
Total Experienced Labour Force	60,290	365,040
Management occupations	5,660	30,770
Business, finance and administration occupations	11,600	60,860
Natural and applied sciences and related occupations	3,580	17,965
Health occupations	3,870	20,185
Social science, education, government service and religion	3,865	24,560

Table 15.9 Experienced Labour Force by Occupation (2001) for Saint John CMA and New Brunswick

Occupation	Saint John (CMA)	New Brunswick
	Total	Total
Art, culture, recreation and sport	1,325	6,865
Sales and service occupations	17,260	95,795
Trades, transport and related occupations	10,010	61,300
Occupations unique to primary industry	1,070	20,845
Occupations unique to processing, manufacturing and utilities	2,060	25,890

The construction industry trades experienced a 25 percent increase in employment between 2001 and 2006, with an 11 percent increase in 2006 alone. It is anticipated that, not including the labour requirements of the Project, from the present until 2010 unemployment levels will be reduced to record lows for many construction trades to the point where, for many trades, the individuals required in the labour force will not be available (CSC 2007; 2008). Demographic trends play a major role in determining the availability of a labour force as the required additions to the workforce to replace retiring workers are predicted to far exceed any possible modest drop in jobs in the construction industry (CSC 2007).

15.4.1.2.2 Project Environmental Effects Mechanisms for Change in Labour

During Construction, initial forecasts for direct Project employment averaged approximately 2,000 over five years, peaking at approximately 5,000 in 2013 to 2014 and resulting in a total of over 11,700 person-years of employment (trades and professional positions). Permanent direct employment during Operation is estimated to be approximately 1,000, with an additional 1,500 to 2,000 required during refinery upgrade periods. During Decommissioning and Abandonment, there is expected to be similar labour requirements, although specifics have yet to be determined. With the phasing of the pace and sequence of Construction activities over a six to eight year period, the annual average and peak demands for labour would be considerably less than these initial forecasts. However, to adopt a conservative approach for the environmental effects assessment, the initial forecasts identified above have been carried forward in the EIA/EA, to assess the outer envelope of trades and labour requirements in the EIA/EA. The phasing of the pace and sequence of Construction over a longer period serves as further mitigation to further reduce the potential for adverse environmental effects of the Project on a Change in Labour.

During Construction, the trades that will be required include: boilermakers, carpenters, electricians, labourers, millwrights, pipefitters, instrumentation technicians, iron metal fabricators, steel workers, welders, and others. The additional skilled workers that will be required include truck drivers, loggers, heavy equipment operators, crane operators, marine captains, tug operators, barge operators, industrial drivers, industrial drillers, concrete pourers and spreaders, and excavator operators.

During Operation, the workers required will include engineers, technologists, environmental specialists, maintenance workers, welders, boilermakers, operators, drivers, security personnel, safety specialists, and others.

It is clear, based on the existing labour market conditions within the Saint John CMA and more broadly within the Province of New Brunswick, that the demand for labour by the Project will likely be greater than what will be available locally. Without mitigation, the strong competition for trade labour can be expected to create local and provincial shortages and wage inflation. This environmental effect may potentially occur in other sectors, such as the service sector, due to labour moving to the trades as

more lucrative employment. This has the potential to have an adverse environmental effect on existing businesses and inhibit economic development as it becomes more difficult to attract and retain employees.

The environmental effects will begin during Construction and become the most pronounced at the peak of Construction, when the demand for labour is at its highest. The change in labour will be experienced throughout the province, although mostly concentrated in the Saint John CMA where the unemployment rate is already extremely low. Nationally, there are currently shortages of particular concern that include project managers and supervisors, as well as boilermakers, crane operators, heavy equipment operators, insulators, ironworkers, millwrights, and pipefitters and welders.

Once the Project is operational, the demand for labour will decrease to a level that will be much more stable in the long-term and the main challenge to avoiding adverse environmental effects on the labour force will be the aging workforce and number of people in these occupations entering retirement. Upon Abandonment, there will be a loss of employment associated with the Project, with the challenge being the transition of these workers into new jobs or occupations.

In practice, an economy cannot sustain substantial gaps between labour supply and demand over a long period. The economic adjustment mechanisms that typically occur are wage inflation, a shift to becoming more capital intensive, increasing labour productivity and slower economic growth (Conference Board of Canada 2007). Challenges of meeting the demand for skilled labour within the Province of New Brunswick is compounded by the projections of labour shortages in most other provinces in Canada.

15.4.1.2.3 Mitigation for Change in Labour

The proposed mitigation of adverse environmental effects on labour focuses on the development and implementation of a number of initiatives to enhance the available workforce and increase retention rates in an increasingly competitive market. In particular, this will be important during Construction. As further mitigation for these environmental effects, and in response to a growing need for labour in the area and a likely shortage of skilled trades people to carry out the Construction of the Project, the Proponent has decided to phase the pace and sequence of Construction activities over a longer duration than originally planned (approximately six to eight years), to extend the time over which labour is required and reduce the annual demand. Also, Irving Oil has developed a Labour Relations Strategy through dialogue with regulatory authorities, trade unions, education institutions, and local business leaders. Specific elements of the Labour Relations Strategy include the following:

- Labour force expansion, involving an immediate investment in young workers by working with the trades to develop apprentice training and recruitment, apprentice mentoring, and minimum apprentice ratio standards;
- Productivity enhancement, with programs focusing on reducing the environmental effects of issues that inhibit productivity, such as supervisory skills enhancement and training, supervisor mentoring and evaluation, craft pre-employment skills assessment, site and working conditions standards, and drug and alcohol testing, among others;
- Attraction and retention, with programs aimed at achieving a reputation as a project of choice including site facility standards, Workplace Respect Policy, an incentive program, performance management program, worker engagement program, repatriation of workers to Atlantic Canada and a Mobile Construction Workforce Strategy; and

- Labour force diversification, with programs designed to increase representation of women and visible minorities in the construction workforce, a Temporary Foreign Workers Strategy, an Immigration Strategy, and a Workers in Transition Strategy.

The Workers in Transition Strategy will target workers from industrial sectors in economic downturn, such as the forestry industry, that may have skills similar to the requirements of the building trades. The workforce diversification strategy will focus on the development of the labour force in segments of society currently under-represented in the construction trades, such as women and visible minorities. The Proponent will liaise with key stakeholders, including Aboriginal groups, immigrant communities, government organizations, community groups and NGOs, and building trades unions and contractors to identify opportunities for partnerships and to develop the strategy. Key to the successful development of an alternative labour force will be the workplace respect policy that, as a basis, will focus on cultural awareness, conflict identification, de-escalation and resolution, and investigation practices designed to eliminate harassment, bullying and violence in the workplace.

In order to further enhance the positive environmental effects of the Project, and as part of the development of a diversified labour force, engagement of those living in poverty will be considered through existing social networks in Saint John. This will be intended to facilitate the potential for any marginalized segment of society (Urban Core Support Network 2004) to participate in the likely opportunities created by the Project.

The Benefits Blueprint Initiative (Hardy Stevenson and Associates 2008) identified a number of programs that could help leverage the expected economic expansion throughout south western New Brunswick. Irving Oil is an active participant in this initiative led by the business community in Saint John. Identified strategies include a Workforce Expansion Initiative, an Energy Skills Centre of Excellence, and a Construction Skills Training Program, among others. If implemented, these programs will further optimize the economic benefits of the Project.

In December 2008, the Government of New Brunswick announced the commitment of \$44 million for NBCC Saint John and \$35 million for a new college in Edmundston to expand current post-secondary education programs. The intent is to have the expanded programs operating in two years time. For NBCC Saint John, it is estimated that there will be approximately 600 new seats available. This investment will help address the current limits to training capacity and further mitigate any adverse environmental effects on labour.

Upon Abandonment, a Post-closure Employment Strategy will be developed and implemented to help ease the transition of workers into new positions. This is expected to include initiatives to:

- Ensure that workers use and learn skills which will be transferable to other, similar occupations, and ensure that workers are aware of the planned life of the project;
- Establish a program for workers at a time close to the end of the Project that will help to understand the available options and opportunities; and
- Make job openings in other areas of Irving Oil available to these workers.

15.4.1.2.4 Characterization of Residual Project Environmental Effects for Change in Labour

During Construction, of the estimated 11,700 person-years of direct employment required, 1,000 to 1,500 positions are expected to be filled by local workers (residents of the Saint John CMA and nearby communities). The shortfall of an average of 1,000 to 1,500 construction workers is anticipated to be filled by workers coming from outside the region, although this will be mitigated by phasing the pace

and sequence of Construction to a longer duration than previously planned, thus reducing average and peak labour demands during a particular year—for conservatism, this has not been specifically accounted for in the assessment below, but would provide further mitigation against adverse environmental effects. Particularly during the peak of Construction, non-local construction workers will be predominantly made up of individuals from the existing mobile construction workforce and recruited foreign nationals. Based on the results of input-output modeling, the total direct, indirect and induced reduction in unemployment within New Brunswick is estimated to be approximately 24,000 person-years full-time equivalent, or an average of about 3,000 per year during Construction. Canada-wide, this will mean a total reduction in unemployment of approximately 40,000 person-years, or an average of about 5,000 per year.

During Operation, it is estimated that approximately 250 or 25% of the required workers will likely come from within the existing Saint John CMA population (Hardy Stevenson and Associates 2008). This leaves a requirement for the recruitment of approximately 750 new workers, increasing by about an additional 1,500 to 2,000 on a temporary basis during refurbishment periods. The total direct, indirect and induced reduction in unemployment within New Brunswick is estimated to be approximately 1,600 during Operation. Canada-wide, this will mean a total reduction in unemployment of approximately 2,900.

A labour supply analysis conducted by the Construction Sector Council (CSC 2008) gives an indication of how the Project may affect the labour market. The analysis indicates that, without mitigation, the labour shortage will become a key challenge for projects requiring the specified trades. During Construction, for many trades, CSC (2008) predicts that based on current conditions, qualified workers across the region will not be available in local or adjacent markets to meet demand, and that projects or production may be delayed or deferred. Intense demand competition will require recruiting to reach to remote markets.

The residual environmental effect of Change in Labour is anticipated to be both positive and adverse. The effective implementation of the proposed Labour Relations Strategy is predicted to result in the further positive development of labour force capabilities and incomes within the Saint John CMA and the Province of New Brunswick through Labour Force Expansion and Productivity Enhancement. The Project will attract and retain new workers to the region, which will contribute to the overall health of the local economy. Development of a Labour Force Diversification Strategy can be expected to engage women, visible minorities and those living in poverty to share in the economic benefits of the Project.

However, there is also expected to be a residual adverse environmental effect of a Change in Labour, particularly during Construction. This is because, despite mitigation, there is predicted to be remaining restrictions on the availability of labour within certain trades. Other businesses may find it difficult to find the required skilled labour in a timely and cost-effective manner. This will require more expensive and complex labour sourcing strategies. Operation should see a better balance of the labour supply and demand; however, demographics (*i.e.*, an aging and retiring workforce) will continue to create challenges to meeting labour demands in specific occupations. Phasing the pace and sequence of Construction to a 6-8 year period could potentially reduce this environmental effect.

The labour requirement for Decommissioning and Abandonment is not currently known; however, any additional labour required for this phase of the Project can be expected to create similar labour environmental effects as those during Operation, although the long time period until Decommissioning and Abandonment could allow for the necessary labour market adjustments.

Overall, residual environmental effects of the Project on labour are predicted to be moderate in magnitude and occur most prominently within the Saint John CMA, but also throughout New Brunswick. The adverse residual environmental effect of Change in Labour on Labour and Economy during all phases of the Project is rated not significant. The prediction has a moderate level of confidence, and is assessed as having a medium probability of occurrence.

15.5 Assessment of Cumulative Environmental Effects

Residual cumulative environmental effects of the Project on the Labour and Economy VEC are summarized in Table 15.10. Current infrastructure, recreation, forestry and agricultural land use projects and activities, as well as planned residential development, are predicted to not act cumulatively with the Project because they do not involve substantial employment and expenditures. Other projects that may interact cumulatively with the Project include other existing and planned industrial land uses and infrastructure projects (e.g., Point Lepreau II, Potash Corporation expansion of mining operations, development of the Coast Guard site in Saint John), as well as projected increases in industrial activity associated with the Port of Saint John. In total, all proposed large-scale investment projects will result in a combined total of approximately \$12.8 to \$18.5 billion in construction over the next ten years (Hardy Stevenson and Associates 2008).

Table 15.10 Potential Cumulative Environmental Effects of the Project to the Labour and Economy

Other Projects and Activities With Potential for Cumulative Environmental Effects	Potential Cumulative Environmental Effects	
	Change in Economy	Change in Labour
Industrial Land Use	2	2
Infrastructure Land Use	0	0
Forestry and Agricultural Land Use	0	0
Recreational Land Use	0	0
Planned or Future Industrial/Energy Projects	2	2
Planned Infrastructure Projects	2	2
Planned Residential Development	0	0
Planned Marine Use	2	2

Cumulative Environmental Effects
Notes: Cumulative environmental effects were ranked as follows:
0 Project environmental effects do not act cumulatively with those of other projects and activities.
1 Project environmental effects act cumulatively with those of other projects and activities, but are unlikely to result in significant cumulative environmental effects or Project environmental effects act cumulatively with existing significant levels of cumulative environmental effects but will not measurably change the state of the VEC.
2 Project environmental effects act cumulatively with those of other projects and activities, and may result in significant cumulative environmental effects or Project environmental effects act cumulatively with existing significant levels of cumulative environmental effects and may measurably change the state of the VEC.

Residual cumulative environmental effects of the Project on Labour and Economy are assessed in Table 15.11.

Table 15.11 Summary of Residual Cumulative Environmental Effects of the Project on Labour and Economy

Cumulative Environmental Effects	Case	Other Projects, Activities and Actions	Proposed Mitigation and Compensation Measures	Residual Cumulative Environmental Effects Characteristics						Significance	Prediction Confidence	Likelihood	Proposed Follow-up and Monitoring Programs
				Direction	Magnitude	Geographic Extent	Duration and Frequency	Reversibility	Ecological/ Socio-economic Context				
Change in Economy	Cumulative Environmental Effects with Project (Future Case)	<ul style="list-style-type: none"> Other existing and planned industrial land uses and infrastructure projects (e.g., Lepreau II, Potash Corporation expansion of mining operations), as well as projected increases in regional industrial activity. 	<ul style="list-style-type: none"> Procurement and Supply Strategy. Phasing of the pace and sequence of Construction over a longer duration (approximately 6-8 years) (extending the economic benefits over a longer period of time). 	P	H	R	LT/C	R	N/A	N	H	H	None.
	Project Contribution to Cumulative Environmental Effects			P	H	R	LT/C	R	N/A	N	H	H	None.
Change in Labour	Cumulative Environmental Effects with Project (Future Case)	<ul style="list-style-type: none"> Other existing and planned industrial land uses and infrastructure projects (e.g., Lepreau II, Potash Corporation expansion of mining operations), as well as projected increases in regional industrial activity. 	<ul style="list-style-type: none"> Phasing of the pace and sequence of Construction over a longer duration (approximately 6-8 years) (reducing the competition for labour) Procurement and Supply Strategy. Labour Relations Strategy (Labour Force Regeneration, Productivity Enhancement, Attraction and Retention, Development of Alternative Labour Force). 	P/A	H	R	LT/C	R	N/A	N	M	H	None.
	Project Contribution to Cumulative Environmental Effects			P/A	M	R	LT/C	R	N/A	N	M	H	None.

Table 15.11 Summary of Residual Cumulative Environmental Effects of the Project on Labour and Economy

Cumulative Environmental Effects	Case	Other Projects, Activities and Actions	Proposed Mitigation and Compensation Measures	Residual Cumulative Environmental Effects Characteristics						Significance	Prediction Confidence	Likelihood	Proposed Follow-up and Monitoring Programs
				Direction	Magnitude	Geographic Extent	Duration and Frequency	Reversibility	Ecological/ Socio-economic Context				
Combined Cumulative Environmental Effects	Cumulative Environmental Effects with Project (Future Case)	<ul style="list-style-type: none"> Other existing and planned industrial land uses and infrastructure projects (e.g., Point Lepreau II, Potash Corporation expansion of mining operations), as well as projected increases in regional industrial activity. 	<ul style="list-style-type: none"> Same as above. 	P	H	R	LT/C	R	N/A	N	H	H	None.
	Project Contribution to Cumulative Environmental Effects			P	H	R	LT/C	R	N/A	N	H	H	

Table 15.11 Summary of Residual Cumulative Environmental Effects of the Project on Labour and Economy

Cumulative Environmental Effects	Case	Other Projects, Activities and Actions	Proposed Mitigation and Compensation Measures	Residual Cumulative Environmental Effects Characteristics						Significance	Prediction Confidence	Likelihood	Proposed Follow-up and Monitoring Programs
				Direction	Magnitude	Geographic Extent	Duration and Frequency	Reversibility	Ecological/ Socio-economic Context				
<p>KEY</p> <p>Direction: P Positive A Adverse</p> <p>Magnitude: L Low: Environmental effects limited to specific businesses and trades directly required by the Project. M Moderate: Environmental effects felt by businesses and labour directly and indirectly related to Project. H High: Environmental effects felt broadly by business and labour throughout the economy.</p> <p>Geographic Extent: S Site-specific: Within the PDA L Local: Within the Saint John CMA R Regional: Within New Brunswick</p> <p>Duration: ST Short term: Less than 1 year MT Medium term: 1 to 5 years LT Long term: Greater than 5 years P Permanent</p> <p>Frequency: O Occurs once. S Occurs sporadically at irregular intervals. R Occurs on a regular basis and at regular intervals. C Continuous.</p> <p>Reversibility: R Reversible I Irreversible</p> <p>Ecological/ Socio-economic Context: U Undisturbed: Area relatively or not adversely affected by human activity. D Developed: Area has been substantially previously disturbed by human development or human development is still present. N/A Not Applicable</p> <p>Significance: S Significant N Not Significant</p> <p>Prediction Confidence: Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation L Low level of confidence M Moderate level of confidence H High level of confidence</p> <p>Likelihood: Based on professional judgment L Low probability of occurrence M Medium probability of occurrence H High probability of occurrence</p> <p>Other Projects, Activities, and Actions List of specific projects and activities that would contribute to the cumulative environmental effects.</p>													



15.5.1 Change in Economy

15.5.1.1 Project Cumulative Environmental Effect Mechanisms for Change in Economy

Certain projects involve substantial construction or operation expenditures that potentially overlap with the Project and, thus, have the potential to result in a cumulative change to the economy. These projects are those which also generate increased employment and income, revenue from business income, personal income and property tax, and create opportunities for similar businesses as those for the Project. This will lead to change in value added (GDP) in the local and provincial economy.

Base Case

The cumulative environmental effects will occur as a result of the employment and income created by other projects, as well as the expenditures for materials and potential increases in property taxes and business and personal income taxes. As these have been identified as the environmental effects mechanisms for the Project, any past and present projects under construction, operation or refurbishment will result in cumulative environmental effects with a change to the economy. Depending on the scale, these other projects will create cumulative environmental effects in the Saint John CMA, as well as more broadly to the Province of New Brunswick. In particular, this includes locally the Potash Corporation expansion of mining operations. Existing marine uses that also represent substantial employment expenditures within the Saint John CMA include the shipping activities of the Port of Saint John.

Project Case

Employment and expenditure activities associated with Construction and Operation have the potential to act cumulatively on the economy within the Saint John CMA and, more broadly, the Province of New Brunswick. Total direct construction costs of the Project are estimated at \$4.9 billion (2007 dollars). This includes approximately \$1.5 billion spending on labour, \$2.8 billion on materials, and \$0.6 billion on operated equipment (Section 3.2). During Operation, direct annual expenditures of the refinery have not been determined and are proprietary, but are substantive and are similar to those associated with the operation of the existing Saint John refinery and other large industrial facilities.

Project expenditures will generate new economic production directly and indirectly as a result of the supplies and services purchased by the Project. An additional induced economic environmental effect will occur as those directly and indirectly employed by the Project spend their incomes. The cumulative environmental effects are anticipated to primarily occur within the Saint John CMA and the Province of New Brunswick. The additional economic activity will result in additional revenues to governments through an increase in property taxes and business and personal income taxes.

Future Case

Foreseeable future projects that may act cumulatively on the economy include other planned industrial land uses and infrastructure projects (e.g., Point Lepreau II, development of the Coast Guard site in Saint John). Given current unknowns in the design and implementation schedule of these projects, the specific nature and timing of the additional change in the economy is somewhat uncertain, and could occur during Construction and/or Operation. Overall, a cumulative increase in economic production, income and employment generated with future projects will enhance the economic environmental effects that will already be evident as a result of the Project. These projects also have the potential to

further increase economic growth for the region, as a more broad-based economic development for the Saint John CMA and the Province of New Brunswick is realized.

15.5.1.2 Mitigation of Cumulative Environmental Effect for Change in Economy

Mitigation of cumulative environmental effects for changes in the economy is as previously identified for mitigation of environmental effects (Section 15.4.1). In brief, a Procurement and Supply Strategy will be implemented with the following elements:

- Phasing of the pace and sequence of Construction over a longer duration (approximately 6-8 years) (thereby extending the economic benefits of the Project to the region over a longer period of time);
- A contracting and compensation plan to help ensure alignment of suppliers with the Project's objectives;
- Labour management initiatives, including the management of labour availability and productivity, and the sharing of risks among the Proponent and suppliers;
- A plan for the further development of a safe, productive and competitive supply of local contractors as long-term suppliers to the Project; and
- Development of the Approved Contractors List to help ensure that suppliers meet Irving Oil safety and quality standards, including initiatives to assist local contractors to become pre-qualified as suppliers.

15.5.1.3 Characterization of Residual Cumulative Environmental Effects for Change in Economy

Overall, the predicted residual cumulative environmental effects on economy are strongly positive. This will be reflected in an increase in economic production (value added, or GDP), employment and incomes, as well as an increase in revenues to municipal and provincial governments through business and personal income taxes and property taxes. Cumulatively, there can be expected to be broad-based economic growth within the Saint John CMA and the Province of New Brunswick. This environmental effect is predicted to occur over the long-term. The number of construction and refurbishments projects will create further economic stability and continuity.

With the proposed mitigation, the environmental effect of Change in Economy on Labour and Economy of all past, present and reasonably foreseeable projects/actions, in combination with the environmental effect of the Project, is rated as highly positive with no significant adverse residual cumulative environmental effects.

With the proposed mitigation, the Project contribution to cumulative environmental effects of Change in Labour on Labour and Economy is also rated as highly positive with no significant adverse residual cumulative environmental effects. This prediction has a high level of confidence.

15.5.2 Change in Labour

15.5.2.1 Project Cumulative Environmental Effect Mechanisms for Change in Labour

Certain projects which begin construction or operation that correspond to the phases of the Project have the potential to result in a cumulative Change in Labour. These projects would be those which also generate increased employment and income and, thus, increase the demand for labour. This may have a cumulative environmental effect resulting in an increase in the competition for labour, particularly for skilled trades positions, which may result in wage inflation and inhibit economic

development as it becomes more difficult for businesses to attract and retain employees. Potential positive cumulative environmental effects include a robust, broad-based development of employment and income throughout the Saint John CMA and the Province of New Brunswick.

Base Case

The cumulative environmental effects will occur as a result of the employment created by other projects. As these have been identified as the effects mechanisms for the Project, any past and present projects under construction, operation or refurbishment have the potential to result in cumulative environmental effects with a Change in Labour. Depending on the scale, these other projects will create cumulative environmental effects in the Saint John CMA, as well as more broadly to the Province of New Brunswick. In particular, this includes locally the Potash Corporation expansion of mining operations. Existing marine uses that also represent substantial employment expenditures within the Saint John CMA include the shipping activities of the Port of Saint John.

Project Case

During Construction, initial forecasts for direct Project employment average approximately 2,000 over five years, peaking at approximately 5,000 in 2013 to 2014 and resulting in a total of approximately 11,700 person-years of employment. Permanent direct employment during Operation is estimated to be approximately 1,000, with an additional 1,500 to 2,000 required during refinery upgrade periods. The phasing of the pace and sequence of Construction over a 6-8 year period (rather than 4-5 years as previously planned), although not accounted for directly in this EIA, will provide further mitigation for the Project to cause adverse environmental effects from a Change in Labour.

Based on the existing labour market conditions within the Saint John CMA and more broadly within the Province of New Brunswick, the demand for labour by the Project will likely be greater than what will be available locally. Strong competition for trade labour can be expected to create local and provincial shortages and wage inflation. This has the potential to have an adverse cumulative environmental effect on existing businesses as it becomes more difficult to attract and retain employees.

Future Case

Foreseeable future projects that may act cumulatively on labour include other planned industrial land uses and infrastructure projects (e.g., Point Lepreau II, development of the Coast Guard site in Saint John). Given current unknowns in the design and implementation schedule of these projects, the specific nature and timing of the additional change in labour is somewhat uncertain, and could occur during Construction and/or Operation. Overall, a cumulative increase in employment generated with future projects will enhance the environmental effects that will already be evident as a result of the Project.

15.5.2.2 Mitigation of Cumulative Environmental Effect for Change in Labour

Mitigation of cumulative environmental effects for Change in Labour is as previously identified for mitigation of environmental effects (Sections 15.4.1). This includes the phasing of the pace and sequence of Construction over a longer duration (approximately eight years), to extend the time over which labour is required and reduce the annual demand. Also, mitigation is focused on the development of a Labour Relations Strategy with the following elements:

- Labour force expansion;
- Productivity enhancement;

- Attraction and retention programs; and
- Development of a diversified labour force.

15.5.2.3 Characterization of Residual Cumulative Environmental Effects for Change in Labour

Considering all major current and foreseeable future projects throughout the Province of New Brunswick, Hardy Stevenson and Associates (2008) estimate that new direct, indirect and induced provincial employment will peak at approximately 33,200 in 2012. Within the Saint John CMA, Hardy Stevenson and Associates (2008) further estimate that direct construction-related employment will peak at approximately 8,300 in the year 2014.

The specific demand for labour by other future projects is not yet known; however, it is evident that these projects will act cumulatively in increasing employment and income. It also becomes evident that the Project is expected to be a large contributor to the labour demand, likely greater than any other planned project in the region (with Point Lepreau II being close, at an estimated 4,000 during peak of construction, if it proceeds). Thus, the Project will play a large and important role in the cumulative Change in Labour.

Overall, the predicted cumulative Change in Labour is anticipated to be both positive and adverse. The effective implementation of the proposed Labour Relations Strategy by the Project is predicted to result in the further positive development of labour force capabilities and incomes within the Saint John CMA and the Province of New Brunswick. Cumulatively, all projects will contribute to the attraction and retention of new workers to the region, which will contribute to the overall health of the local economy.

However, there is also expected to be a residual adverse cumulative environmental effect of a Change in Labour. This is because there is predicted to be remaining restrictions on the availability of labour within certain trades. Cumulatively, other businesses are expected to find it more difficult to find the required skilled labour in a timely and cost-effective manner. This will require more expensive and complex labour sourcing strategies. In addition, the realities of an aging and retiring workforce will continue to create challenges to meeting labour demands. Mitigation has been proposed to minimize adverse environmental effects, including promoting and supporting training programs, such as apprenticeship for trades people, and a workforce expansion and diversification strategy. Phasing of the pace and sequence of Construction over a longer duration (approximately 6-8 years) than previously planned, thereby reducing the competition for labour, will further mitigate adverse environmental effects of a Change in Labour.

With the proposed mitigation, the environmental effects of Change in Labour on Labour and Economy of all past, present and reasonably foreseeable projects/actions, in combination with the environmental effects of the Project, are both positive and adverse. However, the adverse residual cumulative environmental effects are rated not significant.

With the proposed mitigation, the Project contribution to adverse cumulative environmental effects of Change in Labour on Labour and Economy is rated not significant. This prediction has a moderate level of confidence, with uncertainties primarily due to the unknown extent to which the schedule of other projects will change and/or other projects will implement mitigation to reduce adverse environmental effects on labour.

15.6 Follow-up and Monitoring

As part of the assessment of potential environmental effects on Labour and Economy, Project employment and procurement will be monitored to confirm predictions and inform adaptive management. This will include documentation of the realized number of workers by trade/occupation and location of permanent residence, as well as expenditures on suppliers by type and location of supplier.