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Appendix 6.1A: Economic 2013 Baseline Report (AMEC E&I)

6 ASSESSMENT OF POTENTIAL ECONOMIC EFFECTS

6.1 Economic Baseline

This section presents the economic baseline information for the Local Study Area (LSA) and the Regional Study Area (RSA). The economic baseline includes information in the following sections about:

- Provincial economic activity;
- Employment;
- Regional economic diversity;
- Business capacity;
- Income;
- Education;
- Regional finances; and
- Municipal finances.

The economic effects assessment of the proposed Blackwater Gold Project (the Project) is based on a Socio-economic Regional Study Area (SERSA) that consists of two areas, LSA and RSA, as presented in **Figure 6.1.1-1** and described in **Section 4** Assessment Methodology. The LSA consists primarily of Bulkley-Nechako Regional District Electoral Areas (RDEA) D and F, the Village of Fraser Lake, the District of Vanderhoof, and eleven populated Indian reserves. The RSA comprises the Fraser-Fort George RDEA C, the Bulkley-Nechako RDEAs C and B, the City of Prince George, the Village of Burns Lake, the District of Fort St. James, and 12 populated Indian Reserves. **Table 6.1.1-1** lists Indian reserves presented in the LSA, and identifies whether they are populated or unpopulated. The economic baseline report provides further information related to the economic setting for the Project (**Appendix 6.1A**).

6.1.1 Provincial Economy

This section presents information about provincial economic activity, revenues for recent years, and applicable economic forecasts.

Between 2003 and 2008, the provincial economy and labour market experienced strong growth; however, the global economic downturn seriously affected the British Columbia (BC) economy during 2008 and 2009. Real Gross Domestic Product (GDP) increased by only 1.1% in 2008, and declined by 2.5% in 2009. The resource-based sectors were particularly affected by the downturn. During 2010 and 2011, the provincial GDP showed a considerable recovery, exceeding pre-recession rates of GDP growth.

The economic downturn also affected provincial employment. Total employment increased at a steady rate between 2003 and 2008, but declined by 2.1% in 2009, before increasing again in

2011 and 2012. The provincial unemployment rate increased from 4.6% in 2008 to 7.7% in 2009, remained high in 2010 and 2011, and dropped to 6.7% in 2012.

Table 6.1.1-1: Indian Reserves in the Socio-economic Local Study Area

Count	Indian Reserve	First Nation	Populated ⁽¹⁾	Unpopulated ⁽¹⁾
1	Alexandria #10	?Esdilagh First Nation		X
2	Alexandria #11	?Esdilagh First Nation		X
3	Alexandria #3	?Esdilagh First Nation		X
4	Alexandria #3a	?Esdilagh First Nation		X
5	Baezaeko River #25	Nazko		X
6	Baezaeko River #26	Nazko		X
7	Baezaeko River #27	Nazko		X
8	Bishop Bluffs #10	LDN		X
9	Bishop Bluffs #5	LDN		X
10	Bishop Bluffs #6	LDN		X
11	Canyon Lake #7	NWFN		X
12	Chief Morris #13	LDN		X
13	Clustalach #5	SFN		X
14	Coglistiko River #29	Nazko		X
15	Corkscrew Creek #10	SFN		X
16	Corkscrew Creek #9	SFN		X
17	Euchinico Creek #17	Nazko	X	
18	Euchinico Creek #18	Nazko		X
19	Euchinico Creek #19	Nazko		X
20	Fishpot Lake #24	Nazko		X
21	Fondeur #9	NWFN		X
22	Fraser Lake #2	NWFN		X
23	Holy Cross Lake #3	Cheslatta		X
24	Kloyadingli #2	LDN		X
25	Kluskus #1	LDN	X	
26	Kluskus #14	LDN		X
27	Knapp Lake #6	Cheslatta		X
28	Kushya Creek #12	LDN		X
29	Kushya Creek #7	LDN		X
30	Laketown #3	SFN	X	
31	Leon #14	Cheslatta		X
32	Lorin Meadow #9	?Esdilagh First Nation		X
33	Lower Fishpot Lake #24a	Nazko		X
34	Mckay Meadow #4	?Esdilagh First Nation		X
35	Michelle Creek #22	Nazko		X
36	Michelle Creek #23	Nazko		X
37	Murray Lake #4	Cheslatta		X
38	Nahlquonate #2	Nazko		X
39	Nautley #1	NWFN	X	

BLACKWATER GOLD PROJECT

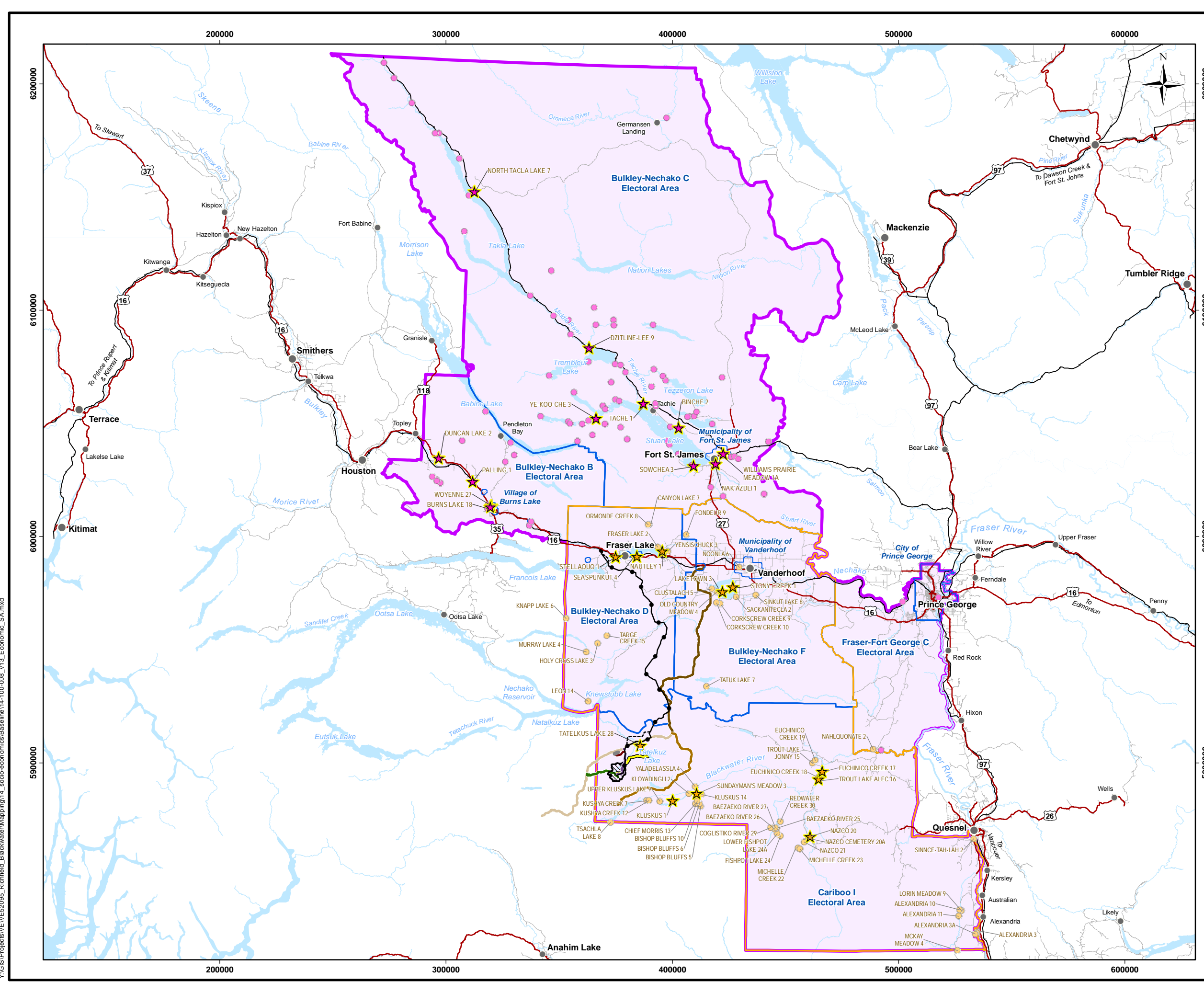
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 ENVIRONMENTAL ASSESSMENT CERTIFICATE /
 ENVIRONMENTAL IMPACT STATEMENT
 ASSESSMENT OF POTENTIAL ECONOMIC EFFECTS



Count	Indian Reserve	First Nation	Populated ⁽¹⁾	Unpopulated ⁽¹⁾
40	Nazco #20	Nazko	X	
41	Nazco #21	Nazko		X
42	Nazco Cemetery #20a	Nazko		X
43	Noonla #6	SFN		X
44	Old Country Meadow #4	SFN		X
45	Ormonde Creek #8	NWFN		X
46	Redwater Creek #30	Nazko		X
47	Sackanitecla #2	SFN		X
48	Seaspunkut #4	NWFN	X	
49	Sinkut Lake #8	SFN		X
50	Since-Tah-Lah #2	Lhtakoh Indian Band		X
51	Stellaquo #1	Stellat'en	X	
52	Stony Creek #1	SFN	X	
53	Sundayman's Meadow #3	LDN	X	
54	Targe Creek #15	Cheslatta		X
55	Tatelkus Lake #28 ⁽²⁾	LDN	X	
56	Tatuk Lake #7	SFN		X
57	Trout Lake Alec #16	Nazko	X	
58	Trout Lake Jonny #15	Nazko		X
59	Tsachla Lake #8	LDN		X
60	Upper Kluskus Lake #9	LDN		X
61	Yaladelassla #4	LDN		X
62	Yensischuck #3	NWFN		X

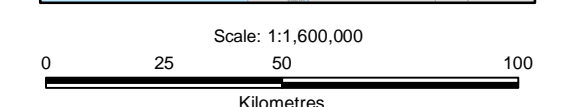
Note: ¹The Census suppresses data for those areas with incomplete enumerated Indian reserves or for data quality or confidentiality reasons. As a result, population data was not available for every Indian reserve.

²Tatelkus Lake #28⁽²⁾ was confirmed to be populated during execution of the baseline studies between 2011 and 2013



- Populated Place
- Highway
- Local road
- Railway
- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Electoral Boundaries
- Municipal Boundaries
- Project Components**
- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access Road
- Proposed Airstrip Extent
- Social and Economic**
- Local Study Area (LSA)
- Regional Study Area (RSA)
- Indian Reserves**
- Socio Economic LSA**
- ★ Populated
- Unpopulated
- Socio Economic RSA**
- ★ Populated
- Unpopulated

Note:
Data based on population counts from
Statistics Canada for the 2006 Census



Reference
Atlas of Canada
BC Government GeoBC Data Distribution

CLIENT: newgold™		
PROJECT: Blackwater Gold Project		
Economic, Social and Human Health Study Areas		
DATE: February, 2015	ANALYST: WR	Figure 6.1.1-1
JOB No: VE52242	QA/QC: MY	PDF FILE: 14-100-008_v13_Economic_SA.pdf
GIS FILE: 14-100-008_v13_Economic_SA.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52242_14_socio-economic\Baseline\14-100-008_v13_Economic_SA.mxd

Similar trends were observed in provincial government revenues. Government revenues increased steadily from 2004 to 2007, but decreased by 3.5% in 2008 and by 1.9% in 2009. Revenues increased to pre-recession levels in 2010 (increasing by 7.1%), and have continued to grow since then, but at lower rates (2.8% in 2011 and 0.5% in 2012).

According to the BC Ministry of Finance (BC MOFin 2013), six private-sector forecasters expect that BC will experience real GDP growth of 1.6% in 2013 and 2.4% in 2014. For budgeting purposes, the BC MOFin has assumed that provincial GDP will increase by 1.4% in 2013 and 2.2% in 2014, with revenues in 2013 increasing by 5.4% over the previous year. Provincial economic growth will result in increased employment. In the medium term, employment is forecast to grow at an annual rate of 1.7% through 2020 (BC Works, 2011).

6.1.2 Employment

This section provides a description of the employment and unemployment conditions in the LSA and the RSA using the most recent Canadian and provincial statistics for the various communities, regions and Indian Reserves (census subdivisions). The section includes assessment of the capacity of the local and regional workforce has the capacity to address proposed Project demands in the context of other approved or potential major projects that may be completing for labour. Where possible, information will be provided for off-reserve and on-reserve Aboriginal groups

The LSA consists primarily of Bulkley-Nechako Regional District Electoral Areas (RDEA) D and F, the Village of Fraser Lake, the District of Vanderhoof, and eleven populated Indian Reserves. According to the 2006 Census, 5,735 LSA residents were active in the labour force, representing 11% of the labour force in the SERSA. By 2011, this active labour force in the LSA consisted of 3,160 people, although this does not include residents of Bulkley-Nechako RDEAs D and F, for which data from the 2011 National Household Survey (NHS) were not published due to low response rates. Directly comparing 2006 and 2011 data for those communities included in both surveys suggests that the overall labour force in the LSA increased by approximately 3%.

In 2011, 65.6% of adults in the LSA were either working or looking for work, compared to 69.3% in 2006. In 2011, 11.9% of LSA residents were unemployed, which was higher than for the SERSA, where 10.3% of the labour force was unemployed. The majority of workers in the LSA (60.7%) had experience in non-basic (service) industries, particularly the “other services” industry (19.2%) and health care and social services industries (11.0%). The remaining 39.3% of the labour force had experience in basic industries, including agriculture and resource-based industries (14.9%), manufacturing (18.2%) and construction (6.2%). Approximately 85.0% of the labour force was employed full-time and worked 42.8 weeks per year.

The RSA comprises the Fraser-Fort George RDEA C, the Bulkley-Nechako RDEAs C and B, the City of Prince George, the Village of Burns Lake, the District of Fort St. James, and 12 populated Indian reserves (see **Table 6.1.1-1**). According to the 2006 Census, 47,175 RSA residents were active in the labour force, representing 89% of the labour force in the SERSA. By 2011, the active labour force in the RSA had decreased to 46,455 residents, with most of the reduction occurring

in Prince George. In 2011, 68.5% of adults were either working or looking for work and 10.2% were unemployed. The rate of unemployment in the RSA increased substantially since 2006, when it was 8.0% and above the provincial average of 7.8%. The majority of workers in the RSA (76.9%) had experience in non-basic (service) industries, particularly the “other services” industry (20.8%), business services (15.8%), and retail trade (12.4%). The other 23.1% of the labour force had experience in basic industries, especially manufacturing (9.3%). Approximately 79.6% of the labour force was employed full-time, and worked 43.6 weeks per year.

The importance of Prince George as the regional services centre is evident, with 79% of the city’s labour force employed in the various service industries. Other communities within the SERSA that have high percentages of the labour force with experience in service-based industries include Fraser-Fort George RDEA C (72%), Stony Creek 1 IR (68%), and Vanderhoof (67%). At the other extreme, some smaller communities have very small service sectors and are more heavily reliant on employment in the basic sectors.

With respect to construction experience, the 2006 census reported 2,990 SERSA residents with experience in the construction industry (around 7% of the labour force). Of them, 2,320 (78%) had occupations in the trades or as transportation and equipment operators or in related occupations. Residents of the LSA accounted for 10% of these workers, while the remainder were residents of the RSA. Since 2006, the number of SERSA residents with experience in the construction industry has increased substantially. According to the NHS there were 3,515 people with experience in the construction industry in 2011 and this number excludes residents of Bulkley-Nechako RDEAs D and F for which no information was available. This represents an increase of 1,195 workers (51% increase) since 2006, with much of the increase occurring in the RSA. Residents of the SERSA do have the capability to participate in the Project construction; more details are presented in **Section 6.2.3.3.1**. In that section it is forecast that residents of the SERSA will comprise 10% of the construction workforce.

Mining did not have a large presence in the SERSA. The SERSA had a reported 580 workers employed in the mining sector in 2006. Approximately 36% of these workers resided in the LSA, and 55% of these lived in Fraser Lake. By 2011, the number of SERSA residents with experience in the mining industry increased to 795 people (excluding residents of Bulkley-Nechako RDEAs D and F). This represents an increase of 215 workers (37% increase) compared to 2006, with nearly all of the increase occurring in the RSA, mostly in Prince George. Current and future residents of the SERSA have or will have the capacity to supply a portion of the Project operations workforce; more details are presented in **Section 6.2.3.3.1**. In that section it is forecast that residents of the SERSA will comprise 80% of the operations workforce.

6.1.3 Regional Economic Diversity

This section provides information about regional economic diversity in the SERSA.

In terms of dependency on income from various sources, all three local regions have been highly dependent on forestry, which accounts for 28% of income in the Prince George region, 37% in the Burns Lake region, and 42% in the Vanderhoof region. The public sector is also very important in

all three local regions, and accounts for 28% of income in the Prince George region, 26% in Burns Lake, and 20% in Vanderhoof.

While the SERSA and surrounding region are heavily reliant on forestry and, to a lesser extent, agriculture and mining, the service sector (non-basic employment) provides the majority of employment, with the public sector also being an important employment source. The reliance on forestry as the primary or basic industry has made communities vulnerable to the downturns in the forestry sector that have occurred in recent years. However, the economic base of the region is diversifying as a result of new mining related employment, especially with the Mt. Milligan and Endako Mine construction and operation.

Rural communities and smaller communities in the SERSA are the least diverse, with the lowest number of non-basic jobs per basic job. The larger urban centre of Prince George has the highest number of non-basic jobs per basic job. Aboriginal people living off reserve in the LSA and the RSA also have large numbers of non-basic jobs per basic job. For the majority of communities, the non-basic/basic employment ratios were higher in 2011 than in 2006 indicating that, over time, there has been a decrease in basic employment in the SERSA and/or increased employment in non-basic industries. This regional trend is consistent with the overall BC trend.

6.1.4 Business Capacity

This section describes the business capacity in the LSA and RSA and focuses on the number and capacity of businesses that could supply the goods and services needed for the proposed Project construction and operations.

In December 2012, there were 923 registered businesses in the LSA, with the majority (80%) located in Vanderhoof. Whereas, there were 6,282 registered businesses in the RSA, with 85% of these located in Prince George. **Table 6.1.4-1** shows the number of businesses by industry for the LSA, RSA, and SERSA. In the LSA, nearly one-third of all businesses (32%) were in the agriculture, forestry, fishing, and hunting industries, while such businesses accounted for only 9% of total businesses in the RSA. In contrast, 25% of businesses in the RSA provided various services to other businesses, compared to 18% of total businesses in the LSA. This is consistent with the observation that the economy of the LSA is heavily reliant on basic industries, while the RSA economy is more diversified and more reliant on non-basic service industries.

As reported in **Table 6.1.4-1**, there were 918 construction businesses in the SERSA (13% of total businesses). Of these, 814 companies (87%) were located in the RSA and 104 were located in the LSA. The majority of these companies (508 or 55%) were specialty trade contractors, 283 companies (31%) constructed buildings, and the remaining 127 companies (14%) were heavy and civil engineering construction companies. **Section 6.2.3.3.1** presents details of an economic model that estimates 96% of the construction labour, goods and services will be acquired in BC and of that 31% of the BC goods and services will be acquired from SERSA businesses. This is based on government factors describing economic activity in the SERSA; identification of the specific number of business that may participate is not possible.

Table 6.1.4-1: Number of Regional Businesses by Industry, December 2012

Industry	LSA		RSA		SERSA	
	No.	(%)	No.	(%)	No.	(%)
Agriculture, forestry, fishing, and hunting	297	32	547	9	844	12
Mining and oil and gas	1	0	34	1	35	0
Utilities	2	0	7	0	9	0
Construction	104	11	814	13	918	13
Manufacturing	31	3	198	3	229	3
Wholesale trade	20	2	233	4	253	4
Retail trade	72	8	570	9	642	9
Finance and real estate	76	8	896	14	972	13
Health care and social services	33	4	447	7	480	7
Education services	4	0	62	1	66	1
Business services	162	18	1540	25	1702	24
Other services	121	13	933	15	1054	15
Total	923	100	6281	100	7204	100

Note: LSA = Local Study Area; RSA = Regional Study Area; SERSA = Socio-economic Regional Study Area; No. = Number.

Source: SC, 2013

The mining industry reported 35 businesses in the SERSA (less than 1% of total businesses). Of these, seven companies were in the mining and quarrying business and another 25 companies provided support to the mining and oil and gas industries. Only one of the mining and quarrying businesses companies was located in the LSA. **Section 6.2.3.3.1** presents details of an economic model that estimates 66% of the operations labour, goods and services will be acquired in BC and of that 50% of the BC goods and services will be acquired from SERSA businesses. This is based on government factors describing economic activity in the SERSA; identification of the specific number of business that may participate is not possible.

Businesses in the LSA tended to be smaller than in the RSA. In the LSA, 78% of businesses had less than 10 employees, compared to 71% of businesses in the RSA. The RSA had higher percentages of businesses with 10 employees or more, including seven businesses with more than 500 employees.

Interviews with representatives of the Chambers of Commerce for Vanderhoof and Fraser Lake confirmed high participation in the agriculture and forestry industries (Siemens, 2013; Lytle, 2013); while representatives from the RSA reported the communities were looking for opportunities for economic diversification (Freisen, 2013; Romeo, 2013; Wall, 2013). The perceived main limitation to future business growth reported was a potential shortage of labour force (Friesen, 2013).

6.1.5 Income

This section provides a description of income and earnings in the urban and rural communities and Indian Reserves in the LSA and RSA.

Families in the RSA reported an average median income of \$71,250 in 2005, which was higher than the median family income in BC (\$62,346) and the estimated average median family income for the SERSA (\$70,988). Median incomes for individuals within the RSA (\$25,622) were slightly higher than for BC (\$24,867) and the SERSA (\$25,371). Earnings accounted for 81.1% of total income, and transfer payments from the government accounted for approximately 10.1%. Compared to the BC average (75%), residents of the RSA are more reliant on earnings as a source of income. Approximately 13.9% of households in the RSA were considered low-income households, and this was higher than in the SERSA (13.7%) and lower than in BC (17.3%).

The lowest incomes were reported for people living on reserves. The median incomes for individuals (\$9,767) and families (\$31,062) living on reserves in the RSA were equal to 38% and 44% of the average median incomes reported for the entire RSA. For Aboriginal people in the RSA living off reserve, the individual median income (\$17,203) was 76% higher than for individuals living on reserve, but this income was only 67% of the average median income reported for the RSA.

Within the LSA, families reported an average median income of \$68,896 in 2005, which was higher than the median family income in BC (\$62,346) and lower than the estimated average median family income for the SERSA (\$70,988). Median incomes for individuals within the LSA (\$23,284) were lower than for BC (\$24,867) and the SERSA (\$25,371). Earnings accounted for 82.4% of total income and transfer payments from the government accounted for approximately 11.1%. Approximately 11.9% of households in the LSA were considered low-income households, and this was lower than in the SERSA (13.7%) or for BC (17.3%).

Average incomes have increased since the 2006 census. According to BC Taxation Statistics (BC Stats, 2011), the average per capita income in the SERSA increased from \$36,208 in 2005 to \$39,975 in 2009, which represents an increase of 7.6%. Vanderhoof is the only community that reported a sustained steady growth in average incomes, with a total increase of 7.6% over the four-year period. For all other communities, average incomes rose between 2005 and 2007 and then declined in 2008 and 2009. For the entire four-year period, average incomes increased in Prince George (by 8.9%), Burns Lake (by 5.5%), and the rural areas of the Bulkley-Nechako Regional District (BNRD) (by 1.6%) but decreased in Fraser Lake (by 9.2%), Fort St. James (by 3.4%), and the rural areas of Fraser-Fort George Regional District (FFGRD) (by 0.4%). Taxation data are not reported for Aboriginal communities.

6.1.6 Education

This section provides information about current educational qualification of residents in the LSA and RSA.

Adults in the SERSA had a relatively low level of educational attainment compared to BC residents as a whole. In 2006, 26.6% of adults in the SERSA had no certificate, diploma, or degree compared to 19.9% of adults in BC. By 2011, the percentage of adults in the SERSA with no certificate, diploma, or degree had decreased to 22.8%, but this was still higher than the provincial average (16.7%). However, a higher percentage of adults in the SERSA had an apprenticeship, trades

certificate, or diploma than did adults in BC. In 2006, 12.9% of adults in the SERSA had an apprenticeship, trades certificate, or diploma, which increased to 13.5% in 2011. In comparison, 10.9% of adults in BC had an apprenticeship, trades certificate, or diploma in 2006, which decreased to 10.6% in 2011.

Residents of Indian reserves in the SERSA had the lowest level of educational attainment, with approximately 60% of on-reserve residents not having completed high school. The highest level of education was found in Prince George, where 13.8% of the adult population had a university certificate, degree, or diploma. Other communities with high percentages of adults with a university certificate, degree, or diploma include the Bulkley-Nechako RDEA C (11.8%) and Vanderhoof (11.5%).

6.1.7 Regional Finances

This section provides information about regional government finances.

Three regional governments may be affected by the Project: the Cariboo Regional District (CRD), the BNRD, and the FFGRD. Each of the three regional governments is responsible for providing a range of services to regional residents, including water supply, sewer, fire protection, parks and recreation, solid waste management, economic development, libraries, and emergency 911 services.

Total expenditures were \$10.1 million in the BNRD, \$36.1 million in the FFGRD, and \$26.2 million in the CRD in 2011 (BC MCSCD 2012). Three expenditure items accounted for the majority of expenditures in the three regional districts: solid waste management and recycling; parks, recreation, and culture; and general government. For the FFGRD, the largest amount of annual expenditures was for debt payments (33% of total spending). For the BNRD, the largest expenditure was for waste management (28% of total spending). For the CRD, 26% was spent on parks, recreation, and culture.

Regional districts obtain the majority of their funding from four sources: requisitions, Municipal Finance Authority (MFA) Debt Payment, government transfers, and sales of services. Regional districts requisition a large portion of their annual budgets from the BC Ministry of Community, Sport and Cultural Development, and these requisitions are based on the approved five-year financial plans for each district. In 2011, requisitions by all three regional districts totalled \$43.3 million, and accounted for 55% of their total revenues of \$78.8 million. Requisitions accounted for 70% of revenues for the CRD, 66% of revenues for the BNRD, and 41% of revenues for the FFGRD. Transfers from all levels of government accounted for between 7.3% and 7.9% of revenues for the three regional districts. MFA debt payment accounted for 30% of revenues for the FFGRD, but less than 8% for the other regional districts.

6.1.8 Municipal Finances

This section provides information about municipal finances.

Taxation and grants are the primary contributors to municipal revenues for all the communities, accounting for between 42% (Fort St. James) and 68% (Fraser Lake) of total revenues. Revenues from sales of services accounted for approximately 15% of total revenues in Fort St. James and Fraser Lake, 23% of revenues in Vanderhoof, and approximately 27% in Prince George and Burns Lake. Government transfers represented an important source of revenue in Fort St. James (34%) and Burns Lake (29%) but only 14% of revenues for Prince George. While all communities reported some revenues from other sources, these amounts were only large in Fort St. James (9% of total revenues) and Prince George (7%).

The focus of municipal expenditures for all urban centres in the SERSA was transportation, waste, water, and general. The City of Prince George allocated the largest percentage of the operating budget (29%) to protective services. For other communities, expenditures for protective services accounted for 11% or less of the total. Other major expenditures included parks, recreation, and culture (10% to 17% of total spending), transportation and transit (11% to 24%), general government (12% to 31%), and amortization costs (15% to 28%).

The primary source of tax revenue was from residential houses; however, Fraser Lake also received a large portion of tax revenue from major industry. The rate of taxation tended to be similar in all urban centres. However, Fort St. James reported the highest taxation rates for major industry and utilities, and Burns Lake reported the highest rate for light industry businesses, while Fraser Lake reported the lowest tax rate on light industry businesses.

6.2 Economic Effects Assessment

6.2.1 Identification and Selection of Valued Components

This subsection presents the rationale and justification for candidate Valued Components (VC), selected VCs, and candidate VCs not selected as VCs for the Economic Condition.

The approach of selecting VCs is consistent with the Guideline for the Selection of Valued Components and Assessment of Potential Effects (BC EAO, September 9, 2013) and requirements under the final Environmental Impact Statement Guidelines (Agency, 2013) including the terminology and definitions for VCs and indicators. The purpose of this evaluation process is to select VCs that reflect the types of effects identified in the relevant legislation, revealed and identified through the issue scoping process, and to ensure effective, efficient, and focused analysis of potential effects from the proposed Blackwater Gold Project (the Project) (BC EAO, 2013).

Section 4.2 describes the methods used for determination of selected VCs. The process involves three steps:

- Identify Candidate VC;
- Evaluate Candidate VC; and
- Select Appropriate VCs.

The first step is the identification of the candidate VCs, which involves issue scoping. Issue scoping is done by identifying the interaction of the Project components or activities with the five pillars (Environmental, Economic, Social, Heritage, and Health), through consultation with stakeholder groups and by applying professional judgement taking into account environmental assessments conducted in the past on similar projects. Baseline characterization results provide the information to identify relevant candidate VCs representative of the five pillars.

The BC EAO established a Working Group (WG) consisting of provincial and federal regulatory agencies, Aboriginal groups, and identified stakeholder groups likely to be involved in, or affected by the Project. The WG's involvement in the pre-Application stage has focused primarily on reviewing the draft Application Information Requirements (dAIR) that includes information on the candidate VCs for the project. The public also provided comments on the dAIR. The comments from the WG and public on the candidate VCs have been incorporated into the issues scoping process. In addition, the Project-specific issues are generally indicative of local and regional values held by the public, First Nations, and other stakeholders. Issues tracking tables that document issues and concerns raised during the preparation of the AIR and Application are presented in **Appendix 3.1.3A** and **Appendix 3.1.3B** of Section 3. A summary of consultation is provided in **Appendix 3.1.3C**.

Table 6.2.1-1 includes the rationale for choosing each candidate VC as a result of the issue scoping, including details on the interactions between the candidate VC and Project activities.

The second step is the evaluation of the candidate VCs to selected VCs. The candidate VCs were examined to confirm if they would interact with Project components and activities, and if those interactions would result in an environmental effect. Key interactions were identified as those that had a greater potential to result in adverse effects of higher significance. The evaluation also used the VC attributes and key questions from the Guideline for the Selection of Valued Components and Assessment of Potential Effects, as presented in **Table 6.2.1-2**.

In the evaluation process, if all attributes and questions were confirmed and answered with "Yes," the candidate VC becomes a selected VC. If "No" was answered to one or more of the attributes or evaluation questions, the candidate VC was not considered as a selected VC, unless it was confirmed to be a component of concern. The outcome of the interactive process is a shorter list of VCs that appropriately reflects the concerns raised and the aspects of the broader environment that are of most value to society. This list allows the assessment to focus on key issues for decision-makers and to address key concerns. **Section 4, Table 4.3-2** (Project Component and Activity Interaction Matrix) shows the potential key and moderate interactions between Project activities and components of the selected VCs.

Table 6.2.1-1: Candidate Valued Component Rationale

Valued Component Candidates	Interaction with Project Activities	First Nations ⁽¹⁾	The Public and Other Stakeholders ⁽²⁾	EIS Guidelines
Provincial economy	Proposed Project is considered a Major Project and would generate revenue in the Province	Saik'uz First Nation; Ulkatcho First Nation; Lhoosk'uz Dene Nation	Lakes District Community Services; Regional District of Bulkley-Nechako; Village of Burns Lake; Village of Fraser Lake; District of Fort St. James; District of Vanderhoof; Village of Burns Lake interested in affect to government services	Section 7.1.1 Valued Components
Regional and local employment and businesses	Proposed Project is considered a Major Project and would generate employment in the region	Lhoosk'uz Dene Nation; Ulkatcho First Nation; Saik'uz First Nation	District of Vanderhoof, Vanderhoof and District Chamber of Commerce; Village of Fraser Lake; School District No. 91; Regional District of Bulkley-Nechako; Village of Burns Lake; Village of Fraser Lake; City of Prince George; House of Commons; Initiatives Prince George; Trapline representative	Section 9.1.2 Biophysical Environment – Human Environment
Regional and local government finance	Proposed Project's anticipated contribution to regional government finances	No comments noted to date	Lakes District Community Services; Regional District of Bulkley-Nechako; Village of Burns Lake; Village of Fraser Lake; District of Fort St. James; District of Vanderhoof; Village of Burns Lake	Section 9.1.2 Biophysical Environment – Human Environment
Contract and business opportunities	Proposed Project is considered a Major Project and would generate contract and business opportunities	Lhoosk'uz Dene Nation (LDN); Nadleh Whut'en First Nation (NWFN); Métis Nation of British Columbia (MNBC); Nazko First Nation (NFN); Saik'uz First Nation (SFN); Stellat'en First Nation (StFN); Tsilhqot'in National Government (TNG); Ulkatcho First Nation (UFN)	No comments noted to date	Section 9.1.2 Biophysical Environment – Human Environment
Labour income generated	Proposed Project is considered a Major Project and would generate employment in the region	Ulkatcho First Nation (UFN)	Village of Burns Lake; Initiatives Prince George	Section 9.1.2 Biophysical Environment – Human Environment
Labour force qualifications	Proposed Project is considered a Major Project and would generate employment in the region	TNG; Métis Nation of British Columbia (MNBC); Nadleh Whut'en First Nation (NWFN); Saik'uz First Nation (SFN); Stellat'en: StFN	Village of Burns Lake; Initiatives Prince George	Section 9.1.2 Biophysical Environment – Human Environment

Note: ⁽¹⁾ First Nation concerns are from comments in the tracking tables in reference to Version A through F of the dAIR.
⁽²⁾ "The Public and Other Stakeholders" are an exhaustive list of organizations. The full list will be proved in the Application.
 EIS = Environmental Impact Statement
 Refer to **Table 4.3-2** Project Component and Activity Interaction Matrix for Selected VCs

Table 6.2.1-2: Evaluation of Candidate Valued Components

Subject Area	Candidate VC	Attributes					Evaluation Key Questions				
		Relevant ⁽¹⁾	Comprehensive ⁽²⁾	Representative ⁽³⁾	Responsive ⁽⁴⁾	Concise ⁽⁵⁾	Measurable ⁽⁶⁾	Grouping ⁽⁷⁾	Ultimate Receptor ⁽⁸⁾	Component of Concern ⁽⁹⁾	Selected VC (Included or Excluded)
Economic	Provincial economy	Y – Applicable to the Economic Pillar	Y – VC needed to have full understanding of the Economic Pillar and Economic subject area	Y – VC is illustrative of the human environments to be possibly affected by the proposed project	Y – VC is responsive to the potential project effects	Y – Clear interaction with project activities and/or project component	Y – VC has measureable parameters	Y – The potential effects of the candidate VC cannot be effectively represented by another VC	Y – VC is an end point in the effects pathway	Y – VC is raised as a concern though the issues scoping process	Y – Provincial economy is a selected VC. Included
	Regional and local employment and businesses	Y – Applicable to the Economic Pillar	Y – VC needed to have full understanding of the Economic Pillar and Economic subject area	Y – VC is illustrative of the human environments to be possibly affected by the proposed project	Y – VC is responsive to the potential project effects	Y – Clear interaction with project activities and/or project component	Y – VC has measureable parameters	Y – The potential effects of the candidate VC cannot be effectively represented by another VC	Y – VC is an end point in the effects pathway	Y – VC is raised as a concern though the issues scoping process	Y – Regional and local employment and businesses is a selected VC. Included
	Regional and local government finance	Y – Applicable to the Economic Pillar	Y – VC needed to have full understanding of the Economic Pillar and Economic subject area	Y – VC is illustrative of the human environments to be possibly affected by the proposed project	Y – VC is responsive to the potential project effects	Y – Clear interaction with project activities and/or project component	Y – VC has measureable parameters	Y – The potential effects of the candidate VC cannot be effectively represented by another VC	Y – VC is an end point in the effects pathway	Y – VC is raised as a concern though the issues scoping process	Y – Regional and local government finance is a selected VC. Included
	Contract and business opportunities	Y – Applicable to the Economic Pillar	Y – VC needed to have full understanding of the Economic Pillar and Economic subject area	Y – VC is illustrative of the human environments to be possibly affected by the proposed project	Y – VC is responsive to the potential project effects	Y – Clear interaction with project activities and/or project component	Y – VC has measureable parameters	N – The potential effects of the candidate VC cannot be effectively represented by another VC	N – VC is not an end point in the effects pathway	Y – VC is raised as a concern though the issues scoping process	N – Contract and business opportunities is not a selected VC. Excluded
	Labour income generated	Y – Applicable to the Economic Pillar	Y – VC needed to have full understanding of the Economic Pillar and Economic subject area	Y – VC is illustrative of the human environments to be possibly affected by the proposed project	Y – VC is responsive to the potential project effects	Y – Clear interaction with project activities and/or project component	Y – VC has measureable parameters	N – The potential effects of the candidate VC cannot be effectively represented by another VC	N – VC is not an end point in the effects pathway	Y – VC is raised as a concern though the issues scoping process	N – Labour income generated is not a selected VC. Excluded
	Labour force qualifications	Y – Applicable to the Economic Pillar	Y – VC needed to have full understanding of the Economic Pillar and Economic subject area	Y – VC is illustrative of the human environments to be possibly affected by the proposed project	Y – VC is responsive to the potential project effects	Y – Clear interaction with project activities and/or project component	Y – VC has measureable parameters	N – The potential effects of the candidate VC cannot be effectively represented by another VC	N – VC is not an end point in the effects pathway	Y – VC is raised as a concern though the issues scoping process	N – Labour force qualifications is not a selected VC. Excluded

Note: (1) **Relevant** to one of the five pillars (environmental, economic, social, heritage and health) and clearly linked to the values reflected in the issues raised in respect to the project.

(2) **Comprehensive**, taken together, the VCs selected for an assessment should enable a full understanding of the important potential effects of the project.

(3) **Representative** of the important features of the natural and human environment likely to be affected by the project.

(4) **Responsive** to the potential effects of the project.

(5) **Concise**, so the nature of the project-VC interaction and the resulting effect pathway can be clearly articulated and understood, and overlapping or redundant analysis is avoided.

(6) **Measurable**, the potential effects of the project on the VC can be measured and monitored.

(7) The potential effects of the candidate VC cannot be effectively represented by another VC.

(8) **Ultimate Receptor**, the ultimate receptors are humans.

(9) **Component of Concern** includes issues and/or legislation raised by FNs, Federal or Provincial governments.

VC = Valued Component; Y = Yes.

Refer to **Table 4.3-2** Project Component and Activity Interaction Matrix for Selected VCs

The evaluation resulted in the following selected VCs for the Economic subject area:

- Provincial economy;
- Regional and local employment and businesses; and
- Regional and local government finance.

The evaluation process also resulted in several candidate VCs not chosen as selected VCs. The Economic Pillar candidate VCs were changed from Version A to Version E of the dAIR. BC EAO provided comments to the dAIR to focus the six candidate VCs on issues with potential adverse effect.

Indicators are identified as required to further focus the analysis of interactions between the Project and the selected VC. Indicators are aspects of the VC used to understand and evaluate the potential effect on the VC. They may comprise a species group, guild, or sub-population, or some other functional aspect, such as habitat, that is important to the integrity of the VC.

To be effective and useful, indicators must have attributes as described in the Guideline for the Selection of Valued Components and Assessment of Potential Effects (BC EAO, 2013b) and in **Section 4.2**. The rationale for the indicators proposed for the selected VCs is shown in **Table 6.2.1-3**.

Table 6.2.1-3: Selected Valued Components and Rationale of Indicators and/or Factor

Pillar	Valued Components	Indicators and/or Factors for Assessment	Rationale of Indicator and/or Factor ⁽¹⁾
Economic	Provincial economy	<ul style="list-style-type: none"> • Provincial economy activity (gross domestic product) • Provincial employment and labour income • Provincial government revenues 	<ul style="list-style-type: none"> • These indicators are used as common practice for provincial economic effects and provide useful information to government decision-makers on the size of the economic contribution of the Project to the provincial economy, and the Project's potential economic benefits and costs.
	Regional and local employment and businesses	<ul style="list-style-type: none"> • Direct employment of local and regional residents • Contract and business opportunities (Project purchasing from local contractors and businesses) • Changes in regional unemployment • Local and regional labour income and costs • Training and education 	<ul style="list-style-type: none"> • These indicators are used as measureable parameters because they capture potential effects of the Project on regional employment, local employment, and businesses.
	Regional and local government finance	<ul style="list-style-type: none"> • Municipal tax revenues • Costs to regional and local governments 	<ul style="list-style-type: none"> • These indicators are used as measureable parameters because they capture effects of costs to regional and local governments.

Note: Refer to **Table 4.3-2** Project Component and Activity Interaction Matrix for Selected VCs

6.2.2 Provincial Economy

6.2.2.1 Introduction

This subsection describes the approach and applicable regulatory framework for the assessment of the provincial economy VC.

Project construction, operations, and mine closure will require expenditures on labour, goods, and services, much of which will be procured from BC sources. This will result in increased activity within the provincial economy, as measured in terms of total economic output—i.e., gross domestic product (GDP)—employment, and government revenues.

There is no specific legislative requirement for considering the effects of the proposed Blackwater Project (the Project) on the provincial economy. However, it is common practice for provincial economic effects to be included in the assessment of project effects. Assessment of this valued component (VC) provides useful information to government decision makers on the size of the proposed Project's (the Project) economic contribution to the provincial economy, and the proposed Project's potential economic benefits and costs. This VC was included in the Application Information Requirements (AIR) for the proposed Project.

Although the Project is in the Cariboo Regional District (CRD), the spatial boundaries for assessing Project effects on the provincial economy and government revenues are the boundaries of the Province of BC. For this provincial-scale VC, it is not necessary to define a local study area/regional study area (LSA/RSA). The temporal boundaries for the analysis coincide with the three phases of the Project: construction, operation, and closure. Key and moderate interactions between project components and activities and this VC are presented in **Table 4.3-2** (Project Components and Activity Interaction Matrix for Selected VCs) in **Section 4**. This VC interacts with the project as a whole and the mine is selected as the representative component for the whole project.

6.2.2.2 Valued Component Baseline

This subsection provides baseline information on the VC and the source of the information; identifies past, present or future projects/activities that may impact the VC; and describes traditional ecological or community knowledge, where available.

Government of BC provincial financial information and economic projections incorporate information on past, present, and anticipated future economic activity in BC; details of the assumptions in those Government reports can be accessed in the references cited in this subsection. Relevant community-knowledge information, gathered during the engagement and consultation process for this Project, was also incorporated when available. Because this VC is at the provincial level, very little community knowledge was available. Traditional knowledge is not applicable to this VC. **Table 6.2.2-1** summarizes provincial economic activity, measured in terms of GDP, total employment, and government revenues.

The provincial economy and labour market experienced several years of strong growth between 2003 and 2008; however, the global economic downturn, which started in 2008, seriously affected the BC economy during 2008 and 2009. Real GDP (net of inflation) increased by only 1.1% in 2008, and declined by 2.5% in 2009. The resource-based sectors were hit particularly hard by the recession. During 2010 and 2011, the provincial GDP showed a considerable recovery, exceeding pre-recession rates of GDP growth.

Table 6.2.2-1: Economic Output (GDP), Government Revenues, and Total Employment in British Columbia (2007 to 2012)

Year	GDP at Market Prices		GDP at Constant Prices (\$ 2007)		Government Revenues		Total Employment	
	(\$ '000s)	Change (%)	(\$ '000s)	Change (%)	(\$ '000s)	Change (%)	(\$ '000s)	Change (%)
2007	196,996		196,996				2,223	3.5
2008	203,820	3.5	199,228	1.1	38,711	-3.5	2,266	2.0
2009	195,670	-4.0	194,334	-2.5	37,980	-1.9	2,218	-2.1
2010	208,295	6.5	200,550	3.2	40,685	7.1	2,257	1.7
2011	217,719	4.5	206,180	2.8	41,832	2.8	2,275	0.8
2012					42,055	0.5	2,313	1.7

Note: 2012 information on GDP and 2007 information for government revenues are not available. Government revenue estimates are for fiscal years, not calendar years; GDP = Gross Domestic Product; n/a = not applicable; BC MOFin = BC Ministry of Finance; % = percent; SC = Statistics Canada.

Sources: SC, 2012; BC Stats, 2012; BC MOFin, 2013a; BC Stats, 2013a.

The economic downturn also affected provincial employment. Total employment increased at a steady rate between 2003 and 2008, but declined by 2.1% in 2009, before increasing again in 2011 and 2012. The provincial unemployment rate increased from 4.6% in 2008 to 7.7% in 2009, remained high in 2010 and 2011, and dropped to 6.7% in 2012 (BC Stats, 2013a).

Similar trends were observed in provincial government revenues. Government revenues increased steadily from 2004 to 2007, but decreased by 3.5% in 2008 and by 1.9% in 2009. Revenues increased to pre-recession levels in 2010 (increasing by 7.1%), and have continued to grow since then, but at lower rates (2.8% in 2011, and 0.5% in 2012).

According to the BC Ministry of Finance (BC MOFin) (2013b), six private-sector forecasters expect that BC will experience real GDP growth of 1.6% in 2013 and 2.4% in 2014. For budgeting purposes, the BC MOF has assumed that provincial GDP will increase by 1.4% in 2013 and 2.2% in 2014, with revenues in 2013 increasing by 5.4% over the previous year.

Provincial economic growth will result in increased employment. In the medium term, employment is forecast to grow at an annual rate of 1.7% through 2020 (BC Works, 2011). The provincial unemployment rate is predicted to decrease to 6.5% in 2015, and then gradually decline to 5.2% by 2020.

6.2.2.3 Potential Effects of the Proposed Project and Proposed Mitigation

This subsection identifies and analyses potential adverse effects resulting from the Project's construction, operations, closure and post-closure phases; identifies and describes any potential adverse effects from other known past, present, certain and reasonably foreseeable future project or activities in the Project area; and describes measures to mitigate the potential adverse effects identified above.

The BC Input/Output Model (BC IOM) was used to assess the provincial economic effects of the proposed Project. Project expenditure and employment information, based largely on the cost and employment information contained in the Preliminary Economic Assessment Report (PEA) (AMEC, 2012), were used as inputs to the model¹. The BC IOM estimated Project effects on provincial GDP, total employment, household income, and government revenue, and considered three types of economic effects:

- Direct effects: these are associated with employment, expenditures, and payments to governments directly by the proponent and industries directly supplying goods and services used by the Project;
- Indirect effects: these are associated with all industries in the supply chain that are ultimately supplying the goods and services used by the industries that will directly supply the proposed Project. The BC IOM identifies two types of indirect effects: one measure shows the effects of direct purchases from supplier industries, and the other shows the effects on the supply chain for those supplier industries; and
- Induced effects: these are effects arising from households re-spending additional income derived directly or indirectly from the Project.

The BC IOM provides an important feature, providing a range of estimates that demonstrate potential Project effects in the context of different assumptions about future levels of provincial economic activity. The “no social safety net” (or “migration,” or “long-run”) scenario assumes that the provincial economy is fully employed, so every new job is filled by someone who moves into the province from elsewhere. The “with social safety net” (also referred to as “no migration,” or “short-run”) scenario assumes new jobs are filled by people who are currently unemployed and receiving assistance, or living on their savings. Based on current and expected employment in BC, the “with social safety net” scenario was used to assess the Project's effects.

Like all input/output models, the BC IOM has some inherent limitations. One is that it is based on 2008 data; therefore, it assumes that the technology of producing goods and services, input

¹ The BC IOM was run in the summer of 2013 using cost estimates from the PEA. These estimates are based on Inferred Mineral Resources that are considered speculative geologically and therefore, cannot be categorized as Mineral Reserves. Project cost estimates were subsequently updated in the Blackwater Feasibility Study (FS) dated 12 December 2013, which are based on Proven and Probable Mineral Reserves. There are not significant changes in Project costs estimates contained in the PEA and the FS and hence Project impacts presented in this section are generally valid. Construction and operation cost estimates vary approximately 8% between the PEA and the FS, whereas closure cost estimates vary 15% between the two reports. These variations are within the expected accuracy of the PEA cost estimates and the accepted marginal error of the BC IOM.

patterns, and relative prices have remained unchanged. Another limitation is that changes in the province’s industrial structure and linkages since 2008 will not be reflected in the modelling results. A further weakness arises because input/output models are static: dynamic changes over time are not explicitly represented. In other words, Project expenditures and the associated economic effects are not calculated over the life of the Project and discounted back to current values. Although such models estimate the effects on major economic variables, they do not calculate the amount of time required to propagate all effects. The model estimates aggregate provincial-level impacts. It is not designed to predict how changes in employment or income will be distributed among different sectors of society, or between different regions of the province. Finally, it should be noted that the BC IOM helps with describing some effects (such as employment demand), but not others (such as pressure on housing, infrastructure, or services).

6.2.2.3.1 Potential Project Effects

6.2.2.3.1.1 Construction

Construction of the Project is expected to cost \$1.814 billion, including \$346 million in contingencies. This estimate is considered accurate to ±25%. As shown in **Figure 6.2.2-1**, construction of the processing plant would account for 30% of total construction costs. Overburden clearing (mining) would account for another 11% of costs. Other major cost items include on-site infrastructure (10%) and indirect costs (12%). Engineering, procurement, and construction management (EPCM) would account for 6% of construction costs. Contingencies would account for 19% of total capital costs.

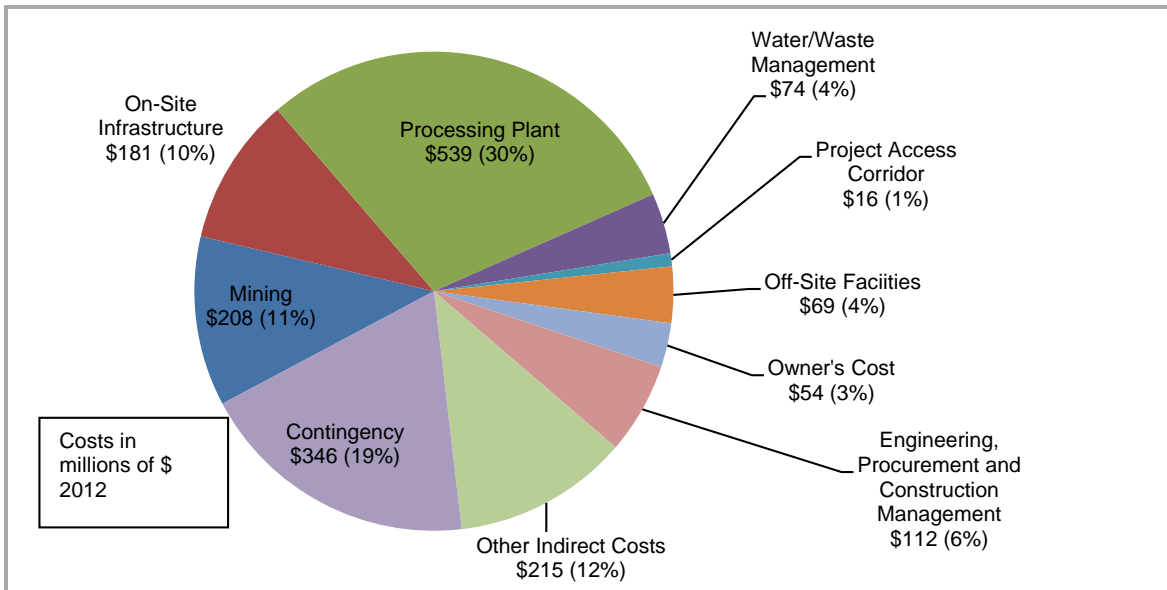


Figure 6.2.2-1: Capital Cost Summary

Construction will be completed over a period of about 25 months (i.e., years -2 and -1), starting immediately following receipt of the required permits. Approximately 40% of construction activities will be completed in the first year, with the other 60% in the second year.

At peak, as many as 1,500 workers may be at the work site. Total construction labour will comprise 1.2 million hours of direct labour, and another 4.7 million hours of contract labour (AMEC, 2012). This represents the equivalent of about 2,436 person-years (PYs)—the equivalent of one person working full time for one year. The on-site construction workforce will work 10-hour shifts, seven days a week. There would be an on-site work camp with the capacity to accommodate 1,500 workers. Workers will be transported to the site by air or by bus, to and from Vanderhoof.

Total spending on labour will amount to \$420.8 million, with 70% of the labour coming from various locations in BC. Overall, total purchases of construction labour, goods, and services in BC will amount to \$1,294 million; this represents 88% of total Project costs (excluding contingencies). The other 12%, consisting largely of mechanical equipment, structural steel, and some construction management, will be imported from outside BC.

Estimated effects of Project construction on the BC economy are summarized in **Table 6.2.2-2**. This table shows that, during the entire Project construction phase, provincial GDP will directly increase by \$312 million, which includes \$296 million in household income, as well as some tax revenues and retained profits. The Project will also directly provide 2,436 PYs of employment for BC residents. Average income for people directly employed on the Project (including benefits) will be about \$121,390 per PY.

Table 6.2.2-2: Total Estimated Effects of Project Construction on the British Columbia Economy (Year -2 to Year -1)

Economic Indicator		Direct	Other Indirect	Induced	Total
GDP at factor cost (\$ millions 2012)	Project expenditure	312			937
	Supplier industry effects	297	168	160	
Employment (PY)	Project expenditure	2,436			9,663
	Supplier industry effects	3,262	2,157	1,807	
Household income (\$ millions 2012)	Project expenditure	296			708
	Supplier industry effects	202	119	92	

Note: PY = person-year. Direct effects from supplier industries are actually indirect economic effects.

Source: BC IOM customized simulation. Assumes social safety net in place.

Project construction would directly involve purchasing goods and services worth \$998 million from various BC businesses. As shown in **Table 6.2.2-2**, these purchases would indirectly generate an additional \$465 million in provincial GDP, which includes \$297 million for supplier industries, and another \$168 million for businesses providing goods and services used by the supplier industries. Indirect employment would amount to 5,419 PYs, of which 3,262 PYs would be in the supplier industries. The indirect household income would amount to \$321 million, or about \$59,195 per PY.

The results of the BC IOM predict consumer spending by households earning incomes directly and indirectly from the Project to be about \$256 million. This induced spending would generate additional GDP (\$160 million), employment (1,807 PYs), and household income (\$92 million). Average income for workers in industries affected by induced expenditures would amount to about \$50,375 per PY.

In total, construction of the Project would involve directly purchasing labour, goods, and services worth \$1,294 million. This would result in \$937 million in direct, indirect, and induced GDP (value-added) for the BC economy. Direct, indirect, and induced employment would amount to 9,663 PYs, or about 4,830 PYs for each year of construction, and provide \$708 million in additional household income in BC.

Estimated effects of Project construction on tax revenues are summarized in **Table 6.2.2-3**. Taxes relating to Project expenditures would include \$52 million in income taxes paid on workers' earnings, \$28 million in net commodity taxes (principally provincial sales tax) and \$2 million in corporate income taxes, resulting in overall taxes of \$83 million. Industries directly supplying goods and services purchased during construction would generate \$51 million in tax revenue effects. Tax revenues attributable to other indirect and induced Project effects will be \$26 million and \$21 million, respectively. Total tax revenues associated with construction would amount to \$181 million over the two-year construction period.

Table 6.2.2-3: Total Estimated Effects of Project Construction on Government Revenues (Year -2 to Year -1)

Economic Indicator		Direct	Other Indirect	Induced	Total
Tax revenue (\$ millions 2012)	Project expenditure	83			181
	Supplier industry effects	51	26	21	
Allocation by level of Government (\$ millions 2012)	Federal	66	13	7	86
	Provincial	64	10	8	82
	Local	3	3	6	13

Note: Assumes social safety net in place. Total may not add due to rounding. Direct effects from supplier industries are actually indirect economic effects.

Source: BC IOM customized simulation.

Table 6.2.2-3 also shows how total tax payments will be distributed between the federal, provincial, and local (municipal and regional) governments. Federal taxes would account for 47% of the total, with personal taxes accounting for 81% of this amount. Provincial taxes would account for 45% of the total, with personal income taxes accounting for 34% of this amount. Corporate income taxes would account for 19% of federal tax revenues, and 8% of provincial tax revenues. Taxes on products (sales tax) will account for more than half of the BC tax revenues (58%), but only 1% of federal tax revenues. The balance of taxes (\$13 million) would accrue to local (municipal and regional) governments in the form of business and other taxes paid to local governments throughout BC.

6.2.2.3.1.2 Operations

Mine operations is scheduled to extend for approximately 17 years (i.e., years +1 to +17), starting once the plant site is constructed, commissioned, and ready for ore processing. Operations will involve two types of expenditures. One consists of spending on the normal labour, goods, and services needed to operate the mine and processing facility. The second consists of spending on capital items that need replacement over the life of the mine, and is termed “sustaining capital.”

Total operating costs over the life of mine (LOM) will be \$5,334 million, or about \$313.8 million per year. The majority of annual operating costs (52%) will be associated with milling and ore processing, while mining activities will account for 42% of costs. The balance of the costs (6%) will be associated with general and administrative (G&A) functions, and plant services.

As shown in **Table 6.2.2-4**, expenditures on labour over the operating LOM would amount to \$970 million, or 18% of total annual operating costs. Purchases of power and fuel would cost \$1,116 million, or 21% of operating costs. Other major operating costs would include chemicals and explosives (26% of operating costs), tires, parts, and consumables (13%), and grinding media and liners (12%).

Table 6.2.2-4: Summary of LOM and Annual Operating Costs

	LOM (\$ millions)	British Columbia		
		Percent	LOM (\$ millions)	Annual (\$ millions)
Labour	970	80	776	45.6
Power and fuel	1,116	100	1,116	65.6
Chemicals and explosives	1,363	31	421	24.8
Grinding media and liners	662	80	530	31.2
Maintenance	236	20	47	2.8
Refining	81	100	81	4.8
Camp and catering	68	100	68	4.0
Tires, parts, and consumables	719	51	365	21.5
Other operating expenses	119	90	107	6.3
Total Expenditures	5,334	66	3,511	206.5

Note: Cost in millions of 2012

Table 6.2.2-4 also shows that about 66% of operations-related spending would occur in BC. The majority of the chemicals and maintenance services will be imported into the province, as would half of the tires, parts, and consumables required for Project operations. Total spending in BC over the LOM would be \$3,511 million, or about \$206.5 million per year. Eighty percent of operational workers are expected to be residents of BC.

On average, the mine will employ about 495 people annually. Of these, 72% will be employed in mining operations, 21% in processing, and 7% in G&A positions. About 10% would be mine managers and superintendents. Operations would be year-round. The mine will operate on two

12-hour shifts, seven days a week, 355 days per year. Two shifts of 120 workers each would be on site at any given time. Workers would be bussed to and from the mine to Vanderhoof, and charter aircraft will transport any non-regional workers back to designated locations in BC (e.g., Vancouver and Kamloops).

Sustaining capital costs will amount to \$572 million over the LOM. Construction activities, particularly those related to waste and water structures, will make up 38% of total costs, with purchases of mining equipment accounting for 62%. It is assumed that all of these purchases will be made in BC. On average, sustaining capital expenditures will amount to about \$33.6 million per year. However, actual spending will vary greatly from year to year, ranging from \$133.8 million in the third year of operations to less than \$20 million in each of the 10 operating years after that.

Estimated annual effects of Project operations on the BC economy, including both normal operations and sustaining capital purchases, are summarized in **Table 6.2.2-5**. These effects also include spending on royalties (\$3.6 million per year) and pre-tax profits of \$211.2 million per year.

Table 6.2.2-5: Estimated Annual Effects of Project Operations on the BC Economy

Economic Indicator		Direct	Other Indirect	Induced	Total
GDP at factor cost (\$ millions 2012)	Project expenditure	258			335
	Supplier industry effects	42	17	18	
Employment (Jobs)	Project expenditure	396			1,130
	Supplier industry effects	348	186	200	
Household income (\$ millions 2012)	Project expenditure	43			85
	Supplier industry effects	22	10	10	

Note: Assumes social safety net in place; PY = person-year. Direct effects from supplier industries are actually indirect economic effects.

Source: BC IOM customized simulation.

The BCIOM estimates that, in combination, Project purchases during operations, royalties, and pre-tax profits will amount to \$444 million per year, and this will directly generate \$258 million in GDP, create 396 jobs for provincial residents, and household income of \$43 million. Another \$59 million in GDP, 534 PYs of employment, and \$32 million in household income will be generated in those industries that would indirectly benefit from the proposed Project. Consumer spending by the workers directly and indirectly employed by the Project will generate additional GDP (\$18 million), employment (200 jobs), and household income (\$10 million) in the form of induced economic effects.

In total, it is estimated that mine operations would create about \$335 million per year in GDP in BC. The Project would also annually provide approximately 1,130 jobs and \$85 million in household income in the province.

Estimated effects of Project operations on tax revenues are summarized in **Table 6.2.2-6**. Federal and provincial tax revenues will total \$54 million per year. This includes personal income taxes (\$11 million), corporate income taxes (\$33 million), and commodity taxes paid on goods and

services (\$10 million). Another \$4 million in annual taxes would be collected by local governments; this includes property taxes and business taxes.

Table 6.2.2-6: Estimated Annual Effects of Project Operations on Provincial Tax Revenues

Economic Indicator		Direct	Other Indirect	Induced	Total
Tax revenue (\$ millions 2012)	Project expenditure	45			59
	Supplier industry effects	7	4	3	
Allocation by level of government (\$ millions 2012)	Federal	31	1	1	33
	Provincial	19	1	1	21
	Local	2	1	1	4

Note: Assumes social safety net in place. Total may not add due to rounding. Direct effects from supplier industries are actually indirect economic effects.

Source: BC IOM customized simulation.

About 57% of tax revenues associated with Project operations will accrue to the federal government, with corporate taxes accounting for 69% of this. Another 36% of tax revenues would go to the BC government, with 48% of these coming from corporate taxes, and 38% coming from sales tax. The balance (7%) will consist of local government (municipal and regional) taxes in the form of business and other taxes paid to local governments throughout BC, as well as property taxes collected by the Province of BC on behalf of regional districts (see **Section 6.2.4**).

In addition to tax revenues, the BC government would also receive royalty payments. As mentioned above, these will be about \$3.6 million during a typical production year.

6.2.2.3.1.3 Closure

Various closure activities, occurring during the operating life of the Project and beyond, will cost \$101 million. Activities during closure will include construction, operation, and monitoring of water and waste-management structures, and revegetation and reclamation activities. **Table 6.2.2-7** shows the costs of closure for five different time intervals, with all closure activities being completed 50 years after operation commences. The table shows that 20% of closure costs would occur during Project operations (to year +17), with 47% of costs occurring in the five years after operation ceases. Pumping costs will account for 25% of closure costs, while construction of water and waste-management facilities would account for another 21%.

Table 6.2.2-7: Summary of Closure Costs (Year +1 to Year +50)

	Expenditure by Component (\$M 2012)					Total
	Year 1 to Year 17	Year 18 to Year 22	Year 23 to Year 27	Year 28 to Year 37	Year 38 to Year 50	
Pumping Costs	1.3	6.4	6.4	11.5	0.0	25.5
Construction (water-related structures)	8.5	8.7	0.0	3.6	0.0	20.8
Earth moving/grading	1.1	17.3	0.0	0.1	0.0	18.5
Demolition/Deconstruction	0.5	10.2	0.0	1.7	0.0	12.4
Revegetation	0.6	2.3	0.4	1.2	0.0	4.5
Employment and severance	8.3	0.0	0.0	0.0	0.0	8.3
Monitoring	0.0	0.6	1.0	2.0	2.4	6.0
Other	0.4	1.4	0.8	1.6	1.4	5.6
Total Expenditures	20.6	46.8	8.5	21.7	3.8	101.5

Note: Employment and severance is for Project operations workers who would no longer be directly employed when operations cease.

Estimates of provincial economic effects are based on the assumption that all labour, goods, and services required for closure will be acquired from provincial sources. It is estimated that direct labour would amount to 363 PYs, and cost \$28 million, with purchases of goods and services produced in BC amounting to \$73 million. The resulting economic effects are summarized in **Table 6.2.2-8**.

Table 6.2.2-8: Total Estimated Effects of Project Closure on the British Columbia Economy (Year +1 to Year +50)

Economic Indicator		Direct	Other Indirect	Induced	Total
GDP at factor cost (\$ millions 2012)	Project expenditure	28			70
	Supplier industry effects	20	12	10	
Employment (PY)	Project expenditure	363			958
	Supplier industry effects	334	145	116	

Note: Assumes social safety net in place; PY = person-year. Direct effects from supplier industries are actually indirect economic effects.

Source: BC IOM customized simulation.

Economic effects associated with Project closure are expected to generate about \$70 million in economic activity in BC over 50 years, create 958 PYs of employment, and generate \$58 million in labour income.

Project expenditures on decommissioning and closing the mine would also generate some provincial and federal tax revenues. **Table 6.2.2-9** shows that tax revenues will total \$13 million over the 50-year period. Of this, tax revenues collected by the federal government would amount to about \$6 million, with similar tax revenues being collected by the provincial government.

Table 6.2.2-9: Estimated Effects of Project Closure on Government Revenues (Year +1 to Year +50)

Economic Indicator		Direct	Other Indirect	Induced	Total
Tax revenue (\$ millions 2012)	Project expenditure	7			13
	Supplier industry effects	3	2	1	
Allocation by level of government (\$ millions 2012)	Federal	5	1	0	6
	Provincial	5	1	1	7
	Local	0	0	1	1

Note: Assumes social safety net in place. Total may not add due to rounding. Direct effects from supplier industries are actually indirect economic effects.

Source: Adapted from BC IOM customized simulation.

6.2.2.3.1.4 Summary

The Project's combined impact, including construction, operation, and closure phases, is summarized in **Table 6.2.2-10**. Overall, the Project will generate \$6.7 billion in provincial GDP, create 29,837 PYs of employment, and provide household income of \$2.2 billion.

Table 6.2.2-10: Summary of Cumulative Project Effects on the British Columbia Economy (Year -2 to Year +50)

Economic Indicator		Direct	Other Indirect	Induced	Total
GDP at factor cost (\$ million 2012)	Project expenditure	4,729			6,706
	Supplier industry effects	1,034	472	471	
Employment (PY)	Project expenditure	9,531			29,837
	Supplier industry effects	9,521	5,457	5,329	
Household income (\$ million 2012)	Project expenditure	1,059			2,218
	Supplier industry effects	585	305	270	

Note: Assumes social safety net in place; PY = person-year. Direct effects from supplier industries are actually indirect economic effects.

Source: Adapted from BC IOM customized simulation.

These impacts will not be distributed evenly over time. **Figure 6.2.2-2** shows that GDP effects will peak during construction, remain relatively constant during the Project operating life, and then decline in year +17 and beyond as the mine closes. On average, the Project effects on economic activity in BC will be about \$335 million per year over 20 years, of which direct effects will amount to \$236 million.

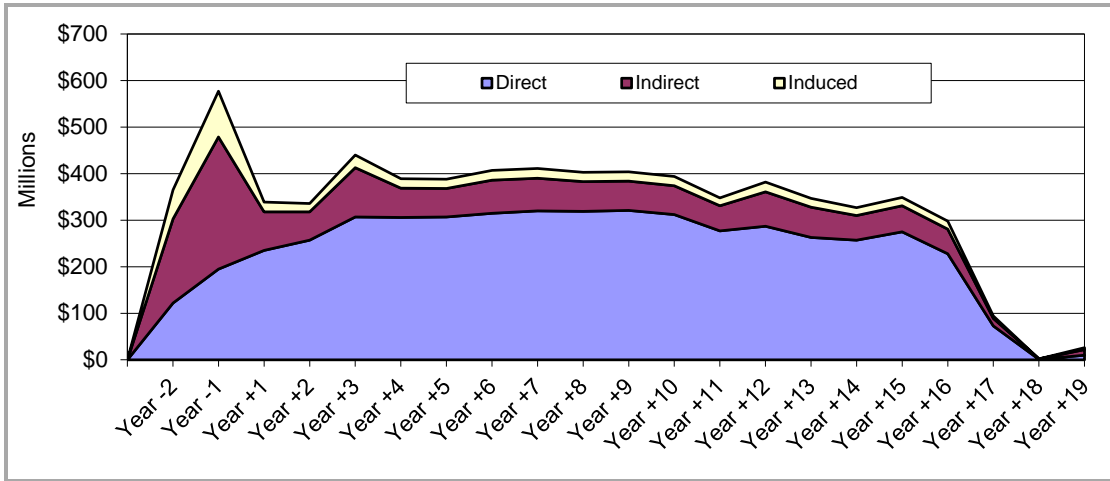


Figure 6.2.2-2: Project Effects on Provincial GDP over the Life of the Project

Similarly, the Project, over its entire life, will create nearly 30,000 PYs of employment for BC residents. This is equivalent to an average of 1,492 full-time jobs over a 20-year period. Direct Project employment will account for the equivalent of 477 full-time jobs.

Total tax revenues over the life of the Project will amount to \$1.2 billion. Of this, \$656 million will accrue to the federal government, and \$83 million will go to local governments. Total revenues for BC will be \$511 million, which includes the \$450 million in taxes shown in **Table 6.2.2-11**, plus about \$61 million in royalties.

Table 6.2.2-11: Summary of Total Project Effects on Government Revenues (Year -2 to Year +50)

Economic Indicator		Direct	Other Indirect	Induced	Total
Tax revenue (\$ million 2012)	Project expenditure	860			1,197
	Supplier industry effects	174	96	73	
Allocation by level of government (\$ million 2012)	Federal	601	31	24	656
	Provincial	394	28	26	450
	Local	37	20	24	83

Note: Assumes social safety net in place. Total may not add due to rounding. Direct effects from supplier industries are actually indirect economic effects.

Source: Adapted from BC IOM customized simulation.

On an annualized basis, this amounts to \$59 million in tax revenues for all levels of government. For BC, the annualized revenues would be \$22 million in taxes, and nearly \$4 million in royalties.

There are no adverse effects predicted due to impacts of past, present or future projects/activities in the Project area because the economic impacts of the Project are positive and because the assessment is done at a provincial level.

6.2.2.3.2 Mitigation Measures

The overall Project effects of construction and operation on the provincial economy and government revenues are all positive, and do not require mitigation. Opportunities exist for enhancing these benefits, through increasing the percentage of direct employment, and procurement of Project goods and services from provincial sources. However, such opportunities may be limited by the lack of BC suppliers for some of the specific types of machinery and parts required at the mine.

Negative effects of mine closure on economic activity, employment, and government revenue are unavoidable. Mitigating these effects occurs at a regional level, and not at a provincial level. Specific regional-level mitigation measures are discussed elsewhere.

6.2.2.4 Residual Effects and their Significance

This subsection:

- Identifies and describes any residual effects after mitigation;
- Where residual adverse effects have been identified, provides an assessment of the significance of those residual effects considering magnitude, geographic extent, duration, reversibility, frequency;
- Assesses the likelihood of the effect;
- Assesses the significance of the residual effects; and
- Discusses the level of confidence and risk in the determination of significance and likelihood of the residual effect.

Each Project phase – construction, operations, closure – is discussed separately.

6.2.2.4.1 Construction

In the context of the entire BC economy, the effects related to Project construction on GDP will be very small. Assuming that Project construction will start in 2017 (year-2) and assuming average GDP growth of 2% per year for the next few years, GDP in BC in 2017 will be \$245 billion, of which the Project will have contributed \$375 million, or 0.2%. Similarly, in 2018, the peak year of construction (year-1), Project-related GDP will also account for 0.2% of total provincial economic output. In terms of the Project's contribution to provincial GDP growth, it will account for 8% of provincial GDP growth in 2017, and an additional 4% of provincial GDP growth in 2018. These percentages will be slightly smaller if GDP growth exceeds 2% per year. These results indicate that the Project will represent a small but important component of provincial economic growth in 2017 and 2018.

Employment forecasts for the BC economy suggest that total employment will increase by 1.7% per year between 2010 and 2020. While Project-related employment will be relatively small in the provincial context (0.02% of total provincial employment), construction jobs created will account

for 9% of the additional 42,000 jobs that will be created between 2016 and 2017, and 5% of the additional 43,000 jobs that will be created between 2017 and 2018. Thus, the Project will be a small, but important component of provincial employment growth in 2017 and 2018.

Project impacts on government revenues during construction will be similar. Compared to overall BC government revenues, which have been rising at an average rate of 2.8% over the last five years, tax revenues during construction will be small: 0.07% of total revenues in 2017. However, Project-related tax payments will account for 2.5% of incremental government revenues in 2017, and 1.1% in 2018.

6.2.2.4.2 Operation

Project effects during the operational phase of the Project will be smaller than during the construction phase. As shown in **Figure 6.2.2-2**, annual GDP effects during operations (\$335 million per year) are lower than the effects during construction. Similar effects will occur for employment and government revenues. Thus, Project effects will account for very small percentages of annual BC GDP, employment, and government revenues during the operations phase.

6.2.2.4.3 Closure

While Project expenditures during closure will generate economic activity within BC, these effects will not offset the loss of operating employment and income, so there will be a net negative effect on the provincial economy. However, in relative terms, the net loss of economic activity associated with mine closure will be quite small.

6.2.2.4.4 Significance of Residual Project Effects

Significance of the residual effects on the provincial economy and government revenues during the three phases of the Project is summarized in **Table 6.2.2-12**.

For construction and operation, Project effects are considered positive at a provincial level, with GDP and employment effects accounting for a relatively large portion of provincial economic growth in 2017 and 2018. Net Project effects during closure are adverse, but not significant (negligible).

Categorization of significance for Project closure has been made with a high degree of confidence despite the $\pm 25\%$ confidence in the Project cost data, because the process of estimating economic impacts at a provincial level is well known and understood, and Project effects, compared to the size of the provincial economy, will be relatively small.

Table 6.2.2-12: Significance of Residual Project Effects on the Provincial Economy and Government Revenues

Categories for Significance Determination	Stage of Development/Rating		
	Construction	Operation	Closure
Context ¹	Neutral	Neutral	Neutral
Magnitude	Low	Low	Low
Geographic Extent	Provincial	Provincial	Provincial
Duration	Short-term	Long-term	Short-term
Frequency	Continuous	Continuous	Continuous
Reversibility	Yes	Yes	Yes
Likelihood Determination	High	High	High
Level of Confidence For Likelihood	High	High	High
Significance Determination	n/a	n/a	Not significant (negligible)
Level of Confidence For Significance	n/a	n/a	High

Note: ¹Method for the consideration of context is discussed in Section 4, Assessment Methodology.
²Effects under construction and operation are “positive”.
³n/a = not applicable

6.2.2.5 Cumulative Effects

This subsection describes the determination of the need for assessing cumulative effects and assessing potential cumulative effects.

The assessment of residual Project effects on the provincial economy has been undertaken in the context of potential future changes in provincial GDP, employment, and revenues, which includes use of official BC economic modeling and projections. The only adverse effect (closure) is negligible, and thus, is not carried forward for assessment. Therefore, no additional cumulative effects assessment is required.

6.2.2.6 Limitations

This subsection presents assumptions and limitations relative to the assessment of Project effects and the assessment of cumulative effects.

The main limitations of the effects assessment of the Project on the provincial economy and government revenues are the reliability of the BC IOM and the level of accuracy of the Project expenditure information entered into the model. According to BC Stats (2013b), estimates provided by the BC IOM model are accurate to no better than $\pm 10\%$. The capital and annual operating expenditure estimates are accurate to $\pm 25\%$.

6.2.2.7 Conclusion

This subsection provides a conclusion regarding the significance of residual effects and cumulative effects.

Construction and operation of the Project will have a positive effect on the provincial economy and government revenues, although closure will ultimately have a negative but not significant (negligible) effect. The overall benefits during construction, when large amounts of capital are being spent in a short time, will be substantial: the Project could account for 8% of provincial GDP growth in 2017, and an additional 4% of provincial GDP growth in 2018. While the annual impacts of operation will be smaller, the resulting effects on GDP, employment, and revenues will be sustained over the life of the Project.

The assessment of residual Project effects on the provincial economy has been undertaken in the context of potential future changes in provincial GDP, employment, and revenues and no additional cumulative effects assessment were identified.

6.2.3 Regional and Local Employment and Businesses

6.2.3.1 Introduction

This subsection describes the approach and applicable regulatory framework for the assessment of the VC – Regional and Local Employment and Business.

Constructing and operating the mine will generate employment and opportunities for businesses and workers in nearby communities and the surrounding region, but these will cease when the mine closes.

There is no specific legislative requirement for consideration of effects of the Project on the regional and local employment and businesses. However, it is common practice for employment and businesses to be included in the assessment of project effects in order to demonstrate the potential economic benefits of the Project as well as identify requirements for labour from outside the region. These will, in turn, provide a basis for assessing some of the potential social effects (see **Section 7**) of the proposed Project. This VC was included in the AIR/EIS Guidelines for the Project.

Key and moderate interactions between project components and activities and this VC are presented in **Table 4.3-2** (Project Components and Activity Interaction Matrix for Selected VCs) in **Section 4**. This VC interacts with the project as a whole and the mine is selected as the representative component for the whole project.

6.2.3.2 Valued Component Baseline

This subsection provides detailed baseline information on the VC and the source of the information; identifies past, present or future projects/activities that may impact the VC; and describes traditional ecological or community knowledge, where available.

Baseline information was taken from the 2006 and 2011 Census, as well as the 2011 National Household Survey (NHS), recent community and regional reports from government agencies, community profiles produced by municipalities, community and regional websites, and various economic and social profiles of communities and regions in central BC. In addition, primary

information (community knowledge) was gathered via phone and in-person interviews with representatives from Economic Development Offices and Chambers of Commerce in the SERSA. Traditional knowledge is not relevant to this VC.

Table 6.2.3-1 shows that in 2011 there were an estimated 52,355 people active in the regional labour force. This number is an estimate only, as 2011 data from the NHS for two of the rural areas in the LSA (Bulkley–Nechako Regional District [BNRD] Electoral Areas [BN RDEA] F&D) were not publicly released, and were instead estimated based on data for the other communities in the LSA. Within the SERSA, 89% of the labour force lived in the RSA, and 11% lived in the LSA. Between 2006 and 2011, the labour force in the RSA decreased by 2%, while for the labour force in the LSA growth estimates are 3%. In 2011, workers in Prince George accounted for 76% of the labour force in the SERSA, and 86% of the workforce in the RSA. In the LSA, workers in Vanderhoof accounted for 38% of the labour force.

Table 6.2.3-1: Labour Force in the LSA and RSA, 2006 and 2011

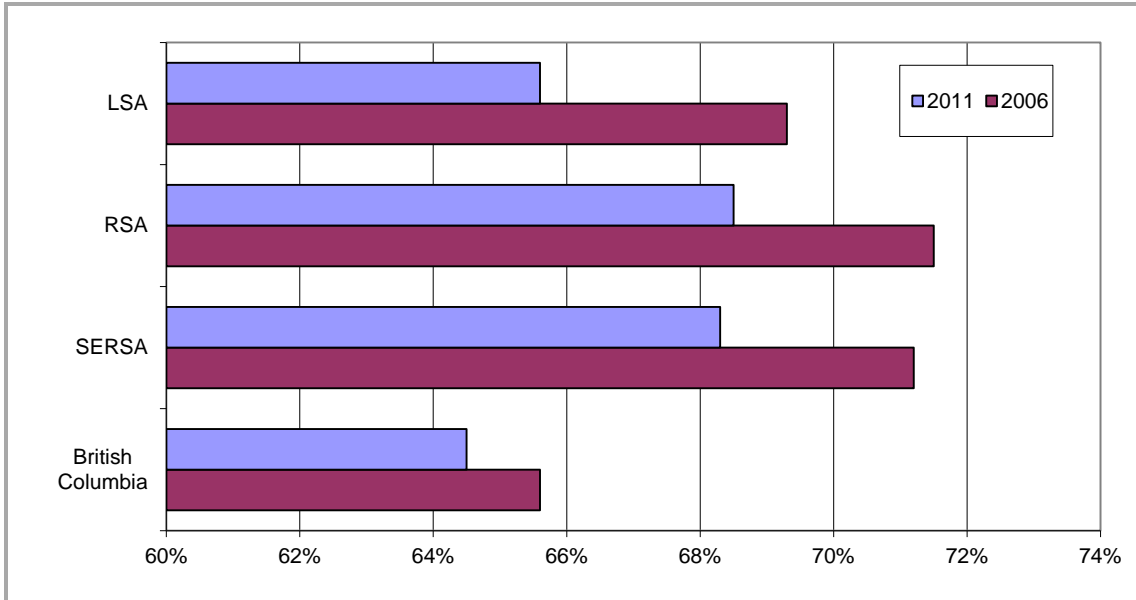
Population Segment	2006		2011		Change	
	Count	%	Count	%	Count	%
LSA	5,735	11	5,900^E	11	165^E	+3^E
Vanderhoof	2,170	4	2,265	4.2	95	+4
Fraser Lake	600	1	585	0.1	-15	-3
Rural (BN RDEAs F&D)	2,660	5	n/a	n/a	n/a	n/a
Reserves	225	1	310	0	85	+38
RSA	47,175	89	46,455	89	-720	-2
Prince George	40,870	77	39,960	76	-910	-2
Fort St. James	760	1	845	2	85	+7
Burns Lake	1,010	2	995	2	-15	-1
Rural - BN RDEAs B&C and FFG RDEA C	3,795	7	4,020	8	225	+6
Reserves	635	1	600	1	-35	-6
SERSA	52,910	100	52,355^E	100	-555	-1^E
BC	2,226,380		2,354,245		127,865	+6

Note: ^E Estimate calculated using growth rates for those communities within the LSA for which both 2006 and 2011 data are available. Active workforce as of Census Day in 2006 and 2011.
 BC = British Columbia; % = percent; RSA = Regional Study Area; LSA = Local Study Area;
 SERSA = Socio-economic Regional Study Area; n/a = not applicable;
 FFG RDEA Fraser–Fort George Regional District Electoral Areas.

Sources: SC, 2007; SC, 2013a.

One factor affecting the size of the labour force is the labour force participation rate, which represents the percentage of the population aged 15 years and older who were working or actively seeking work. **Figure 6.2.3-1** shows that in 2011 the labour force participation rate for the SERSA (68.3%) was higher than the overall BC rate (64.5%) and was also higher than the SERSA rate in

2006. The labour force participation rate in the LSA (65.6%) was lower than in the RSA (68.5%) for both 2006 and 2011.



Note: Percentage of the workforce employed or seeking work as of Census Day in 2006.
 RSA = Regional Study Area; LSA = Local Study Area; % = percent; SERSA = Socio-economic Regional Study Area.

Source: SC, 2007, 2013a.

Figure 6.2.3-1: Labour Force Participation Rates in the SERSA, 2006

In 2011, there were estimated to be 5,405 unemployed workers in the SERSA (**Table 6.2.3-2**). Of these, most (88%, or 4,760) lived in the RSA. Within the SERSA, the largest number of unemployed workers was found in Prince George (73% of the total). Overall, the rate of unemployment in the SERSA was estimated to be 10.3% in 2011: higher than the BC average (7.8%), and higher than in the SERSA in 2006 (8.1%).

Between 2006 and 2011, unemployment rates increased throughout the SERSA. The smallest rate increases occurred in Fraser Lake and Burns Lake, although Burns Lake had the SERSA's highest rate of unemployment in 2011, while Fraser Lake had the lowest unemployment rate (7.7%). Unemployment rates on reserves in the SERSA were substantially higher than in other communities in both 2006 and 2011.

Table 6.2.3-2: Numbers of Unemployed Workers and Unemployment Rates in the SERSA and BC, 2006 and 2011

Population Segment	2006		2011		Change
	Workers	%	Workers	%	Workers
LSA	515	9.0	645^E	10.9^E	130^E
Vanderhoof	145	6.7	225	9.9	95
Fraser Lake	40	6.7	45	7.7	5
Rural (BN RDEAs F&D)	235	9.6	NA	NA	NA
Reserves	95	35.2	105	42.4	10
RSA	3,775	8.0	4,760	10.2	985
Prince George	3,110	7.6	3,945	9.9	835
Fort St. James	60	7.9	90	11.0	30
Burns Lake	115	11.4	120	12.0	5
Rural: BN RDEAs B&C and FFG RDEA C	305	7.9	375	9.4	70
Reserves	185	29.1	230	34.1	45
SERSA	4,290	6.0	5,405^E	10.3^E	1,115^E
BC	133,615		182,775	7.8	27,865

Note: ^E Estimate calculated using growth rates for those communities within the LSA for which both 2006 and 2011 data are available.

BC = British Columbia; % = percent; RSA = Regional Study Area; LSA = Local Study Area; SERSA = Socio-economic Regional Study Area.

Source: SC, 2007, 2013a.

In terms of the potential regional labour force for the Project, **Table 6.2.3-3** shows the number of workers in the SERSA who have experience in the construction industry, or mining, quarrying, and oil and gas extraction industries. It also shows the number of workers who have experience in the trades, as transport or equipment operators, or in natural resources, agriculture, or related production occupations.

Table 6.2.3-3: Labour Force Experience in the LSA, RSA, and SERSA (2011)

Population Segment	By industry				By Occupation			
	Mining, Quarrying, and Oil and Gas Extraction		Construction		Trades, Transport and Equipment Operators, and Related		Natural Resources, Agriculture, and Related Production	
	Count	% of Labour Force	Count	% of Labour Force	Count	% of Labour Force	Count	% of Labour Force
LSA	165	5.2	180	5.7	625	19.7	210	6.6
RSA	630	1.4	3,335	7.2	8,935	19.2	1,505	3.2
SERSA	795	1.6	3,515	7.1	9,560	19.3	1,715	3.5
BC	25,450	1.1	181,510	7.7	337,140	14.3	60,295	2.6

Note: Counts and percentages are based on reported NHS data. No adjustments have been made for missing data for the rural population in the LSA.

BC = British Columbia; LSA = Local Study Area; % = percent; RSA = Regional Study Area; SERSA = Socio-economic Regional Study Area.

Source: SC, 2013a

Table 6.2.3-4 shows that, as of 2011, about 3,515 residents of the SERSA were experienced in the construction industry, with the vast majority of these living in the RSA (3,335 people, or 95%). There were relatively few workers with construction experience in the LSA (180 residents, or 5%). Information from the 2006 Census (SC, 2008) indicates that, of people with experience in the construction industry:

- People with occupations in the construction trades accounted for 36%;
- Trades helpers accounted for 18%;
- Power operators and electrical trades accounted for 11%;
- Heavy equipment operators accounted for 10%;
- Machinists accounted for 8%;
- Transportation equipment operators accounted for 4%; and
- The remainder (13%) consisted of supervisors and other occupations.

Table 6.2.3-4: Diversity and Forest Vulnerability for LERs

LER	2006 Diversity Index	2006 Forest Vulnerability Index
Prince George	66	46
Burns Lake	60	73
Vanderhoof	59	86

Source: Horne, 2009

As of December 2012, 918 construction businesses were reported in the SERSA (SC, 2013b). Of these, 814 companies (87%) were in the RSA, and 104 were in the LSA. The majority of these companies (508, or 55%) were specialty trade contractors, 283 companies (31%) constructed buildings, and the remaining 127 companies (14%) were heavy and civil engineering construction companies.

Of the 795 regional workers experienced in mining, quarrying, and oil and gas extraction industries, only 165 of these resided in the LSA, with 130 of them residents of Fraser Lake. The majority of the people in this industry (79%) were residents of the RSA, with most of them (87%) living in Prince George.

Information from the 2006 Census (SC, 2008) indicates that, of people with experience in the mining industry:

- 35% were in occupations related to primary industry (miners);
- 35% were in occupations involving trades or as transport and equipment operators;
- 10% were in occupations related to natural and applied sciences;
- 6% were in occupations related to processing, manufacturing, and utilities; and
- The remainder (145) were employed in management, administration, and sales.

As of December 2012, there were seven mining and quarrying businesses in the SERSA, and another 25 companies providing support to the mining, and oil and gas industries (SC, 2013b). Only one of the mining and quarrying businesses was in the LSA; all other companies were in the RSA. Eighty-four percent of these mining and mining-related companies provided information on company size, based on the number of employees. Most of these companies were very small: 50% had 1 to 4 employees, and 21% had 5 to 9 employees. Three mining-related companies in the RSA reported having more than 49 employees.

The diversity of the LSA and RSA economies can be measured in several ways. BC Stats (Horne, 2009) calculates a Diversity Index (DI) for local economic regions (LER), which are smaller than RDs. The Burns Lake and Vanderhoof LERs are in the BNRD, and the Prince George LER is in the CRD. The communities of Fraser Lake and Fort St. James are included in the Vanderhoof LER. The DI reflects the extent to which LERs are dependent on income from one or more sectors; DI scores range from zero (total dependence on a single sector) to 100 (equal dependence on all sectors). **Table 6.2.3-4** shows that the DI scores for two of the three LERs are similar; the 2006 Burns Lake and Vanderhoof LERs had DIs of 60 and 59, respectively, while the Prince George LER had a higher DI of 66, indicating that the Prince George LER is more diverse than the Burns Lake or Vanderhoof LERs.

BC Stats also provides a Forest Vulnerability Index (FVI) that indicates the vulnerability of each LER to potential downturns in the forestry sector. LERs with a high dependence on income from the forestry sector and low economic diversity are considered to be the most vulnerable (FVI = 100). **Table 6.2.3-4** shows that all three LERs may be vulnerable to a decline in the forest industry, with the Vanderhoof LER being the most susceptible.

Income dependency is another measure of economic diversity, which estimates the extent to which specific industries directly and indirectly generate incomes for particular LERs (Horne, 2009).

Table 6.2.3-5 shows all three LERs have been highly dependent on forestry, which accounts for 28% of income in the Prince George LER, 37% in the Burns Lake LER, and 42% in the Vanderhoof LER. The public sector is also very important in all three LERs, and accounts for 28% of income in the Prince George LER, 26% in the Burns Lake LER, and 20% in the Vanderhoof LER.

In both 2006 and 2011, residents of the SERSA reported median earnings and household income that were higher than those for BC. **Table 6.2.3-6** shows that median earnings in the SERSA were about 6% higher than for BC in both years. Median household earnings in the region were 12% higher than BC in 2006, but the difference dropped to 5% in 2011. Within the SERSA, median earnings in the LSA were higher than in the RSA (largely due to higher earnings in Fraser Lake), but median household incomes were higher in the RSA.

Table 6.2.3-5: Income Dependencies (%) of LERs, 2006

Economic Activity	Prince George (%)	Burns Lake (%)	Vanderhoof (%)
Forestry	28	37	42
Mining and mineral processing	2	3	8
Fishing	0	0	0
Agriculture	1	3	3
Tourism	4	3	3
High technology	1	0	0
Public sector	28	26	20
Construction	7	3	3
Other employment income	7	2	1
Government transfers	12	14	12
Other non-employment income	10	9	7

Note: Income dependencies are based on after-tax income, 2006; % = percent.

Source: Horne, 2009

Table 6.2.3-6: Median Earnings and Household Income in the SERSA and BC, 2006 and 2011

Population Segment	2006		2011		Change	
	Median Earnings	Household Income	Median Earnings	Household Income	Median Earnings (%)	Household Income (%)
LSA	29,926	57,019	56,318 ^E	61,837 ^E	+88 ^E	+8 ^E
Vanderhoof	31,715	59,603	55,896	63,520	+76	+7
Fraser Lake	46,930	61,208	59,003	68,948	+26	+13
Rural: BN RDEAs F&D	25,490	56,627	n/a	n/a	n/a	n/a
Reserves	9,824	17,856	37,979	16,095	+287	-10
RSA	27,194	59,197	54,760	63,742	+101	+8
Prince George	29,110	59,051	51,872	63,653	+78	+8
Fort St. James	35,938	67,671	52,022	55,625	+45	-18
Burns Lake	23,436	39,621	56,222	53,615	+140	+35
Rural: (BN RDEAs B&C and FFG RDEA C)	32,431	70,286	55,498	74,511	+71	+6
Reserves	18,758	31,062	15,170	30,595	-19	-2
SERSA	27,473	58,957	52,302 ^E	63,620 ^E	+90 ^E	+8
BC	25,722	52,709	49,143	60,333	+91	+14

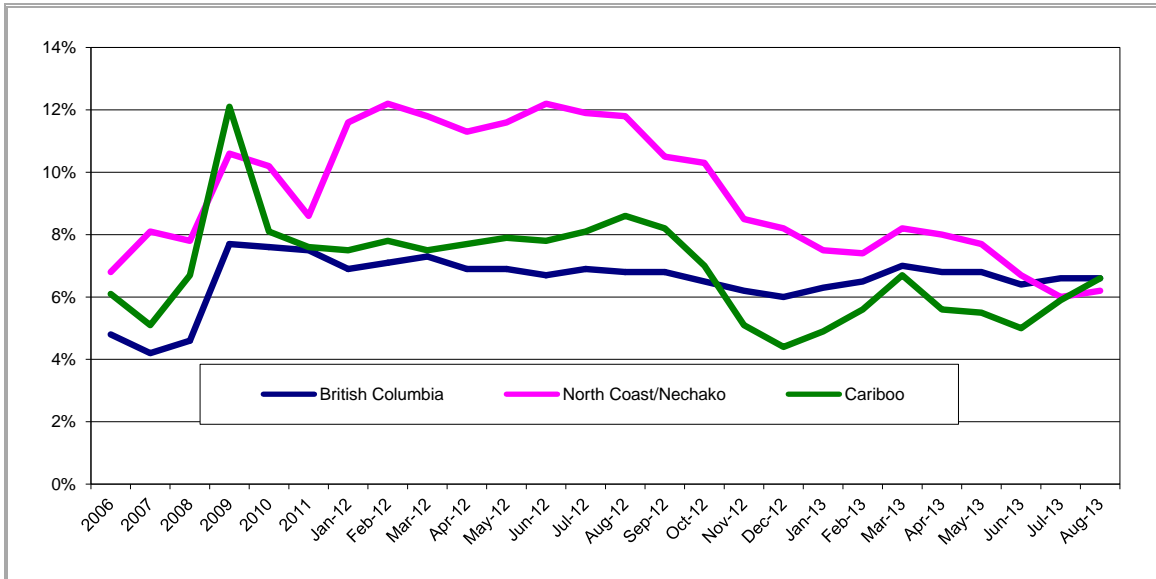
Note: ^E Estimate calculated using growth rates for those communities within the LSA for which both 2006 and 2011 data are available.

BC = British Columbia; % = percent; RSA = Regional Study Area; LSA = Local Study Area; SERSA = Socio-economic Regional Study Area; n/a = not applicable.

Source: SC, 2007, 2013a.

There have been some changes in the regional economy in recent years. The SERSA is in the North Coast & Nechako Development Region (NC&NDR), which includes communities west of the

SERSA, and the Cariboo Development Region (CDR). In 2006, the unemployment rate was 6.8% in the NC&NDR, and 6.1% in the CDR; these rates were each higher than the provincial average of 4.8% (BC Stats, 2011). Unemployment rates in both regions and the province increased noticeably in 2009 (**Figure 6.2.3-2**). In the two development regions, unemployment rates decreased in 2010 and 2011. However, the rate of unemployment rose again in the NC&NDR during early 2012, before dropping during late 2012 and early 2013 to levels that are currently below the provincial average. Some of this decline related to people leaving the region to find work elsewhere. Unemployment rates in the CDR remained relatively constant from 2010 to mid-2012, but dropped rapidly during the last six months of 2012, such that the regional rates have actually been below the provincial unemployment rate since November 2012, but have begun to increase in recent months.

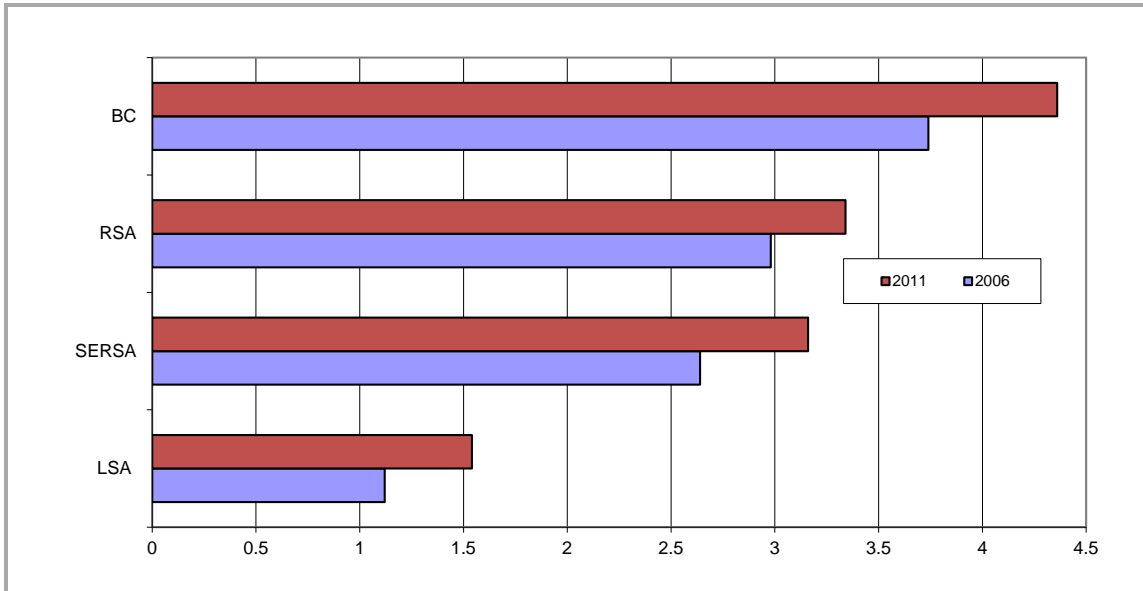


Note: Monthly rates are three-month moving averages and are not seasonally adjusted
 % = percent.

Source: BC Stats, 2013a

Figure 6.2.3-2: Annual and Monthly Unemployment Rates in the SERSA, 2006 to 2013

Changes in economic diversity since 2006, as measured using DI, FVI, and income dependencies, are not yet available. However, economic diversity can also be measured in terms of the ratio of workers in non-basic industries (including the retail and wholesale trade, business, and other services industries) to the number of workers in basic industries, such as agriculture, forestry, mining, manufacturing, and construction. Non-basic/basic employment ratios can be estimated using employment data for 2006 and 2011, and the results are shown in **Figure 6.2.3-3**.



Note: BC = British Columbia

Source: Calculated using data from SC, 2007 and 2013a.

Figure 6.2.3-3: Non-Basic/Basic Employment Ratios for the LSA, RSA, and SERSA, 2006 and 2011

For the LSA and RSA, the non-basic/basic employment ratios were higher in 2011 than in 2006, indicating that there has been a decrease in basic employment in the SERSA over time, and/or increased employment in non-basic industries. This regional trend appears consistent with the overall BC trend. However, the ratio increased in the LSA and the RSA between 2006 and 2011 because those economies lost more basic jobs than non-basic jobs, while for BC the number of non-basic jobs increased at a faster rate than that of basic jobs. Thus, both the LSA and the RSA may currently have an oversupply of non-basic jobs that may not be supportable without additional development of new basic jobs to offset the losses that have occurred since 2006.

The baseline information presented above reflects changes in regional economic activity between 2006 and 2013. Future employment, income, and business activity in the SERSA will be influenced by other major projects that will be competing for labour, goods, and services. A list of these major projects is published by the BC Ministry of Jobs, Tourism and Skills Training (BC MJTST) (2013). A summary of the major projects in the study area that have been proposed, are on hold, or have started is presented in **Table 6.2.3-7**. It shows nine projects with a combined value of \$2.17 billion under construction. The largest of these is the Mt. Milligan gold/copper mine being constructed northeast of Fort St. James. These nine projects are expected to be completed by the end of 2013. Another five projects valued at \$613 million are on hold. Many of these projects have been on the major projects list for some time, and there is no information as to if or when these projects will proceed.

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Table 6.2.3-7: List of Major Projects Proposed, On Hold, or Under Construction, 2013

Location	Name	Description	Value (\$ million)	Start Date	End Date
Projects Under Construction					
Fort St. James/ Mackenzie Region	Mt. Milligan Mine	Construction is underway on a copper/gold mine 150 km northwest of Prince George, with an ore production rate of 60,000 t/d and an expected mine life extended to 22 years. The project has received federal approval and certification under the BC <i>Environmental Assessment Act</i> .	1,265	Summer 2010	Fall 2013
Prince George	Boundary Road Connector	A 6.6 km, 2-lane connector road from Highway 97 South to Highway 16 East. The project will receive \$7.5 million each from the federal and provincial governments, and \$6.5 million each from the City of Prince George and the Prince George Airport developers.	28	June 2010	Summer 2013
Prince George	Western Coal Expansion	Walter Energy Inc.; expanding existing capacity from 3.2 to 10 Mt/y. Expansion would allow for increased production at the Willow Creek Mine.	230	Summer 2011	2013
Prince George	Prince George Pulp Plant Upgrades	Feed water treatment system upgrades to Prince George Pulp, including boiler feed water system (completed in late 2012) and the addition of a precipitator to the exhaust system, with completion expected late 2013. Project will receive funds under the federal Pulp and Paper Green Transformation Program.	30	August 2011	Late 2013
Prince George	PGP Bio Energy Project	Canfor Pulp/Canfor Corporation; bioenergy project at the Canfor Pulp Mill to produce power, charcoal, and bio-oil from mountain pine beetle-affected wood and logging waste.	50	September 2009	?
Prince George	Prince George RCMP Municipal Attachment	RCMP/City of Prince George; a new 64,000 ft ² RCMP headquarters.	39	Fall 2011	September 2013
Prince George	Prince George Field Building	BC Hydro; renovation and expansion of an existing field building.	47	August 2011	Late 2013
Prince George to Cache Creek	Cariboo Connector–Highway 97 Improvements	BC Ministry of Transportation and Infrastructure; 4-lane highway improvements spanning 460 km from Prince George to Cache Creek.	440	Summer 2005	Summer 2017
Burns Lake	Cheslatta Green Energy Project	Pristine Power Inc./Cheslatta Forest Products; 10 MW power plant that will convert wood residue into electricity for 9,500 homes.	46	?	?
Burns Lake	Lakes District Hospital Replacement	The existing facility will be replaced by a new 16-bed hospital that will provide emergency and acute care and include a laboratory and diagnostic imaging.	55	Summer 2013	Fall 2015
Burns Lake	Babine Forest Products Mill Replacement	Hampton Affiliates have proposed rebuilding the Babine Mill that was destroyed by fire in January 2012.	100	Spring 2013	Early 2014
Fort St. James	Fort Green Energy Project	Western Bioenergy Inc.; 40 MW biomass energy project.	120	?	?
Fraser Lake	Fraser Lake Sawmill Biomass Project	West Fraser Mills Ltd.; 12 MW plant to convert mill waste into energy.	20	?	?
Vanderhoof	Nulki Hills Wind Project	Innergex Wind Energy Inc., Phase 1: a wind power project involving 70 wind turbines.	45	?	?
Prince George	Northwood Green Power Generation Project	Canfor Pulp Limited Partnership; a new bioenergy powered thermal generator would be developed in response for BC Hydro's call for power.	100	?	?
Prince George	Prince George Global Logistics Park	Proposed 1,700 acre industrial park near the Prince George Airport. Phase 1 of the project is ready for development, with 19 serviced lots.	382	?	?
Prince George	Coast Hotel Expansion	Coast Hotels and Resorts Inc.; 75-room expansion to the existing property.	15	?	?
Prince George	Lakeland Mills Sawmill Replacement	Replacement of Lakeland Mills sawmill that was destroyed by fire in April 2012. The sawmill will integrate with the existing planer mill and energy system operating in partnership with the City of Prince George.	15	Spring 2014	?
Prince George	Lorraine-Jayjay Copper Mine	Exploration and feasibility reviews underway for a potential copper mine 280 km northwest of Prince George. The property covers 28,000 ha, and has the potential to mine 100 Mt to 200 Mt of ore.	100	?	?
Prince George	Alterna Biocarbon Manufacturing Facility	Biocarbon Production Facility, with the capacity to convert 110,000 t/y of green wood residues into 25,000 t/y of biocarbon.	15	Spring 2013	Fall 2014
Prince George	Hart North Industrial Site	Development of 3,000 ha industrial site.	Unknown	?	?
Prince George	Wood Innovation and Design Centre	BC Ministry of Transportation and Infrastructure proposed development of a research and academic centre. The site and three preferred builders have been identified to respond to the Request for Proposal.	?	Spring 2013	Fall 2014
Prince George	Hotel Development	156-room hotel development will include 35 condominium units and a 5,500 ft ² conference centre. The 12-storey project is at 1355 10 th Avenue.	40	Fall 2013	Summer 2014
Projects on Hold					
Burns Lake	Ditni Yoh Green Energy Project	Western Bioenergy Inc.; 35 MW power plant using wood residue.	140	?	?
Prince George	Giscome Quarry and Lime Project	Graymont Western Canada Inc.; lime processing facility and mine near Prince George, with an annual production of 600,000 t/y for 25 years.	130	?	?
Prince George	Groundhog Coal Fields	West Hawk Development Corp./Anglo Pacific Group; a joint venture known as Discovery Creek Development Company.	200	?	?
Prince George	Performing Arts Centre	City of Prince George; 800-seat environmentally friendly theatre.	43	?	?
Prince George	Mount George Wind Park	Fred Olson Renewables Ltd.; 300 MW wind farm 38 km southeast of Prince George.	100	?	?

Note: BC = British Columbia; ha = hectare; km = kilometre; Mt = million tonnes; MW = megawatt; RCMP = Royal Canadian Mounted Police; ft² = square feet; t/d = tonnes per day; t/y = tonnes per year.

Source: BC Ministry of Jobs, Tourism and Skills Training, 2013.

Fifteen major projects have been proposed in the SERSA. Cost information is available for 13 of these projects, and their combined estimated total cost is \$1.05 billion. The largest of these proposed projects include the Global Logistics Park in Prince George (\$382 million), the Fort Green Energy Project near Fort St. James (\$120 million), the Northwood Green Power Generation Project at Prince George (\$100 million), and the Lorraine-Jayjay Copper Mine near Prince George (\$100 million). Two large projects proposed in the Vanderhoof region, the Chu molybdenum mine (\$1,040 million) and the Kenney Dam Cold Water Release Facility (\$275 million), were either recently dropped as a major project, or were considered unlikely to be constructed in the foreseeable future. Twenty-nine major projects valued at approximately \$2.33 billion have been proposed, are on hold, or are currently under construction in the SERSA at the present time.

It should be noted that this list does not include various major linear energy projects, such as the Northern Gateway Pipeline Project, the Spirit Pipeline–TMX North Project, or the Kitimat–Summit Lake Pipeline Looping Project, which would involve pipeline construction activities through parts of the SERSA.

6.2.3.3 Potential Effects of the Proposed Project and Proposed Mitigation

This subsection identifies and analyses potential adverse effects resulting from the Project's construction, operations, closure and post-closure phases; identifies and describes any potential adverse effects from other known past, present, certain and reasonably foreseeable future project or activities in the proposed Project area; and describes measures to mitigate the potential adverse effects identified.

The assessment of potential effects was done by comparing project requirements for labour during construction and operation (by skill) with available regional and local labour force.

The assessment estimates the extent to which project employment (direct) would affect employment rates in the LSA and RSA, considers competing demand for the local labour pool in the LSA and RSA, and estimates the extent to which economic diversity would change. Economic diversity will be assessed by examining income dependency on economic sectors such as forestry or mining. In addition, it identifies opportunities for increasing local and regional participation in the project workforce and regional indirect employment that would occur from local and regional purchases of goods and services.

The assessment also identifies opportunities for increasing participation by local and regional businesses using results from the BC IOM to estimate average and total earnings by the project workforce during construction and operations, and compares this with the most recent historical information to assess effects. In addition, it assesses effects on the local economy from competing demands for the same services provided by contractors and businesses.

The assessment discusses project commitments to training and education and describes the extent to which training and education will enhance labour force capability in the LSA and RSA.

The direct effects of the Project have been estimated based on Project information on employment requirements, and expectations for employment of local and regional residents in the context of other current and reasonably anticipated projects and activities in the Project area. Project effects on local and regional businesses have been estimated in terms of indirect economic impacts, based on the amount of Project-related purchases of goods and services, and impact estimates from the BC IOM. Potential induced effects have been estimated using regional impact ratios that BC Stats developed for LERs based on 2006 census information. The analysis has been completed for the construction, operations and closure phases; there are no effects in the post-closure phase. The impact ratios pertinent to the construction and mining industries in the SERSA are summarized in **Table 6.2.3-8**. For example, the ratios indicate that, for every one new direct job in the construction industry in the Prince George LER, there will be 1.3 direct and indirect jobs, and 1.44 direct, indirect, and induced jobs.

Table 6.2.3-8: Regional Impact Ratios (Multipliers) Used to Estimate Project Effects

LER	Activity	Direct and Indirect Employment per Direct Employment	Direct, Induced, and Indirect Employment per Direct Employment
Prince George	Construction impact ratio	1.30	1.44
	Mining impact ratio	1.39	1.60
Vanderhoof	Construction impact ratio	1.23	1.28
	Mining impact ratio	1.29	1.54
Burns Lake	Construction impact ratio	1.21	1.26
	Mining impact ratio	1.28	1.38

Note: Assumes social safety net in place.

Source: Horne, 2009

6.2.3.3.1 Potential Project Effects

6.2.3.3.1.1 Construction

As noted in **Section 6.2.2.3**, total purchases of construction labour, goods, and services from sources in BC will amount to \$1,294 million over the two-year construction period. This includes 70% of labour and 96% of goods and services. Of this, it is estimated that \$398 million will be spent to obtain labour, goods, and services from sources within the SERSA; this represents 31% of Project spending in BC. This amount includes \$59 million in labour costs and \$337 million on goods and services. The types of goods and services to be acquired from regional suppliers are shown in **Figure 6.2.3-4**.

It is estimated that residents of the SERSA will provide 20% of the BC portion of total labour; this amounts to 485 PYs. This would be equivalent to 195 jobs over the two years of construction, with an extra 95 jobs in the second year. Based on the results of the BCIOM, purchases of goods and services from regional businesses will result in 1,945 PYs of indirect employment. Consumer spending by people directly and indirectly employed by the Project will generate 140 PYs of induced employment in the SERSA.

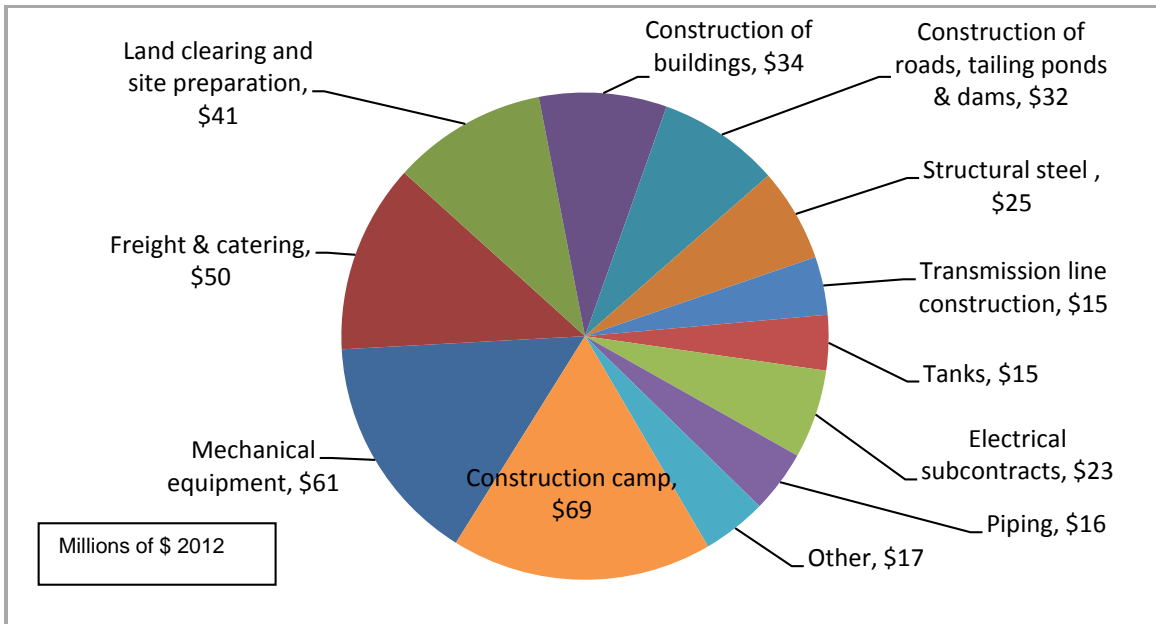


Figure 6.2.3-4: Project Purchases of Goods and Services from Suppliers in the SERSA during Construction

Of the 485 PYs of work for SERSA residents, it is assumed that 10% will be done by residents of the LSA, and the other 90% will be done by residents of the RSA. These percentages reflect the labour force information, including experience by industry and occupation, (and implicitly, the level of training and education) in **Table 6.2.3-3**, which shows that 95% of the construction labour force in the SERSA consists of residents of the RSA; they also reflect the Project’s commitments to local hiring. Based on this assumption, there would be 50 PYs of construction work for residents of the LSA, and 435 PYs for residents of the RSA. During the second year of Project construction, the Project would be employing 17% of the LSA construction labour force and 8% of the RSA construction labour force. It is expected that most LSA residents directly employed on Project construction would be residents of Vanderhoof, while most workers from the RSA would be residents of Prince George.

In light of the demands of other projects that might be undergoing construction at the same time, it would not be unrealistic expect that 5% to 8% of the SERSA construction labour force may be employed on the Project. Construction projects typically involve numerous tradespeople working sequentially and for short time periods, such that 50 PYs of construction could translate into up to 200 different people working for three months. The regional labour force is large enough that it should be capable of providing 485 PYs of construction effort over a two-year period.

Regional labour shortages and wage inflation are unlikely during the construction period, because the Project will rely heavily on workers from outside BC (30% of the labour requirements), and from other parts of BC (56% of the labour requirements). Regional residents are expected to account for 14% of the total Project labour requirements during construction, and the regional

labour force is large enough to meet this additional demand of the Project and the demands of other major projects for construction labour.

It is also assumed that, of the goods and services to be purchased from businesses in the SERSA, 10% of purchases (\$34 million) will be from businesses in the LSA, and 90% (\$305 million) from businesses in the RSA.

Based on these assumptions, the resulting employment and household income effects resulting from Project construction are summarized in **Table 6.2.3-9**.

Table 6.2.3-9: Estimated Regional Employment and Income Effects Associated with Project Construction

		LSA	RSA	SERSA
Employment (PYs)	Direct	50	435	485
	Indirect ⁽¹⁾	195	1,750	1,945
	Induced ⁽²⁾	10	130	140
	Total	255	2,315	2,570
Household Income ³ (\$ millions)	Direct	6.1	52.8	58.9
	Indirect ⁽¹⁾	11.5	103.6	115.1
	Induced ⁽²⁾	0.5	6.6	7.1
	Total	18.1	163.0	181.1

Note: (1) Calculated using the estimates from the BCIOM customized simulation.
 (2) Induced effects were calculated by using the impact ratios for construction shown in **Table 6.2.3-8**, and assumes social safety net is in place.
 (3) Indirect and induced household income estimated using the average annual wage information from the BCIOM customized simulation.
 PY = person-year.

It shows that, over the two years of construction, the Project would generate 2,570 PYs of employment for SERSA residents, and \$181.1 million in household income. The majority of these effects (76%) would come from indirect effects associated with purchases of goods and services from regional businesses. Employment of part of the regional construction labour force and heavy reliance on workers from outside the region will not affect the economic diversity of the LSA or the RSA.

6.2.3.3.1.2 Operations

The annual cost of operating the Project is projected to be \$296.5 million, of which \$195.2 million (66%) will be spent on labour, goods, and services from BC sources. This includes \$43.1 million per year for labour and \$152.0 million for goods and services. It is estimated that 80% of direct labour from BC will consist of residents of the SERSA, and that 50% of the goods and services purchased from BC sources will be from businesses in the SERSA. This would represent annual expenditures of about \$109.8 million on labour, goods, and services from the SERSA.

During the operational period, the Project will also spend \$572 million over 17 years on replacement equipment and other capital items (sustaining capital). This represents an average of

about \$33.6 million per year, although purchases would not be equally distributed over the operations period. While all of these sustaining capital purchases would be made from BC sources, it is estimated that 17% of total purchases would be from sources in the SERSA. This represents average spending of about \$5.7 million per year.

Overall, Project operations will result in average spending of \$115.5 million per year in the SERSA, including operating costs and spending on sustaining capital. Of this, \$34.8 million would be spent on labour, while the other \$80.7 million would be spent to purchase goods and services from businesses in the SERSA. **Figure 6.2.3-5** shows the types of goods and services that would be purchased from suppliers in the SERSA during operation.

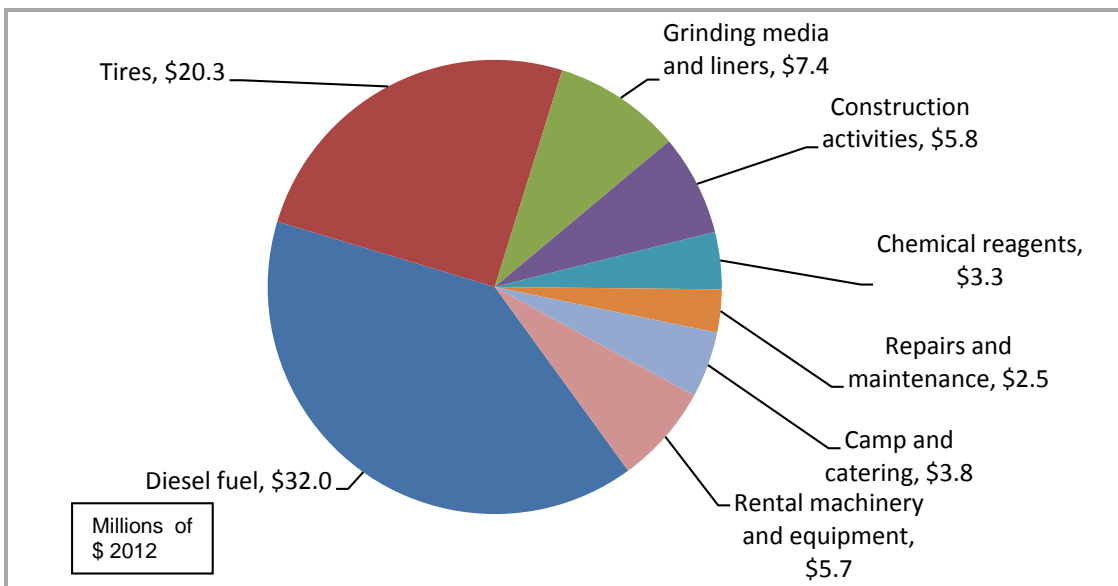


Figure 6.2.3-5: Project Purchases of Goods and Services from Suppliers in the SERSA during Operations

Residents of the SERSA are anticipated to provide 80% of the BC portion of total labour; this amounts to 320 jobs over the life of the Project. Based on the results of the BCIOM, purchases of goods and services from regional businesses will generate 222 indirect jobs, of which 200 jobs can be attributed to operations, and 22 jobs related to sustaining capital purchases. Consumer spending by people directly and indirectly employed by the Project will generate 83 PYs of induced employment in the SERSA.

Within the SERSA, it is estimated that 10% of the operations workforce (30 positions) will be residents of the LSA, and the other 90% (290 positions) will be residents of the RSA. According to **Table 6.2.3-3**, 795 workers in the SERSA have experience in the mining industry, and 21% of these (165) are residents of the LSA. However, the Endako mine currently has 250 employees and, of these, 130 people live in Fraser Lake. For this analysis, it is assumed that Project workers would have to be drawn from the labour force that is not currently employed at the Endako mine. This essentially means that there are 545 people in the SERSA who have experience in the mining

industry and who may be available to work at the proposed Project; this number includes 35 residents of the LSA (6% of the total).

It may be challenging to hire 30 existing residents of the LSA to operate the Project, given that there are only 35 residents with mining experience who are not currently working at the Endako mine. In addition, with the Mt. Milligan mine commencing operations, there will be competition for the available workforce. However, the Proponent is committed to developing and hiring local and regional residents, including aboriginal workers, and to encouraging workers (especially management) to relocate to the region. As noted in **Table 6.2.3-2**, there were 645 unemployed workers in the LSA in 2011, including 225 people in Vanderhoof and 105 on reserves. The Proponent has committed to training people who do not currently have the skills required for mine operations, and it is reasonable to conclude that it will be possible to train and hire 30 LSA residents to work at the mine. Hiring 30 workers who would otherwise be unemployed would reduce the LSA unemployment rate by 0.5 percent.

There will be a similar challenge to hire 290 of the 510 residents of the RSA who have experience in the mining industry and are not working at the Endako or Mt. Milligan mines. However, as of 2011, 3,775 workers in the RSA were unemployed, 3,110 of them residents of Prince George. This suggests that, with appropriate training and recruitment, it should be possible to hire 290 RSA residents to operate the Project. If all of these workers would otherwise have been unemployed, creating 290 mining jobs for RSA residents could lower the RSA unemployment rate by 0.6 percent.

While Project operations will provide employment for 320 existing residents of the SERSA, there will also be some employment of residents of other parts of BC (75 positions), and people currently living outside BC (100 positions). Although the SERSA has some residents with experience in mine management and administration (about 55 people in 2006), it is expected that most of the mine management team and many of the technical specialists (mining engineers, metallurgists, etc.) will be hired from outside the SERSA. However, as part of its recruitment approach, the Proponent will encourage its management team and others to relocate to the region, and will provide relocation incentives. As a result, it is expected that as many as 100 workers currently living outside the SERSA will choose to relocate to the SERSA, while the other 75 will commute. It is likely that most Project workers who chose to relocate to the SERSA will choose to live in Prince George, which has a wider range of services and facilities than do other communities. It is assumed that 80% of them will choose to live in Prince George, while the other 20% will choose to live in and around Vanderhoof.

Project operation will not cause regional labour shortages or wage inflation. Although there are currently insufficient workers in the SERSA with the mining-related skills needed by the Project and other mining operations, this situation will be addressed through importation of many workers and by training and recruiting regional residents who are currently unemployed.

As with Project construction, it is assumed that 10% of the purchases of goods and services from businesses in the SERSA will be from businesses in the LSA (\$7.0 million per year); and 90% from

businesses in the RSA (\$68.0 million per year). Based on information from the BCIOM, this will translate into 222 indirect jobs, with 22 in the LSA and 200 in the RSA.

Based on these assumptions, the annual employment and household income effects resulting from Project operation are summarized in **Table 6.2.3-10**. The household income estimates take into account that Project workers who choose to relocate to the SERSA will be senior management and technical specialists (average income of \$140,420 per year), while existing residents of the SERSA will tend to have lower paying jobs (\$101,140 per year). Indirect and induced household incomes are calculated using the average annual wage information from the BCIOM.

Table 6.2.3-10: Estimated Annual Regional Employment and Income Effects Associated with Project Operation

		LSA	RSA	SERSA	
Employment (Jobs)	Direct	Existing Residents	30	290	320
		New Residents	20	80	100
		Total	50	370	420
	Indirect ⁽¹⁾	22	200	222	
	Induced ⁽²⁾	14	86	100	
	Total	86	656	742	
Household Income ⁽³⁾ (\$ millions)	Direct	Existing Residents	3.0	29.3	32.4
		New Residents	2.8	11.2	14.0
		Total	5.8	40.6	46.4
	Indirect ⁽¹⁾	1.3	11.6	12.9	
	Induced ⁽²⁾	0.7	4.4	5.1	
	Total	7.8	56.5	64.3	

Note: ⁽¹⁾ Calculated using the estimates from the BC IOM customized simulation.
⁽²⁾ Induced effects were calculated by using the impact ratios for the mining industry shown in **Table 6.2.3-8**, and assumes social safety net is in place.
⁽³⁾ Indirect and induced household income estimated using the average annual wage information from the BC IOM customized simulation.

Table 6.2.3-10 shows that the Project will generate 742 jobs for SERSA residents, and \$64.3 million in household income during the operations phase. The majority of employment effects (57%) will come from direct employment at the mine, with another 30% of employment resulting from Project purchases of goods and services from regional businesses.

Direct and indirect Project employment will diversify the regional economy. Based on 2011 data on employment, direct Project employment in the LSA (50 jobs) would more than offset the loss of basic jobs (45 jobs) that has occurred since 2006. In the RSA, direct Project employment (370 jobs) would offset only 29% of the basic jobs lost between 2006 and 2011 (1,260 jobs). While the total employment impacts associated with the Project would actually reduce the non-basic/basic employment ratio from 1.54 to 1.51 in the LSA, and from 3.34 to 3.22 in the RSA, this is seen as beneficial, as the new basic jobs will help to support current non-basic employment. In addition, creating mining jobs will help diversify basic employment in the LSA. As of 2011, the mining industry accounted for 14% of basic employment in the LSA, and this would increase to

18% with the Project. In the RSA, the mining portion of basic employment would rise from 6% to 9%. These changes would, for both the LSA and RSA, make their economies less dependent on the forestry sector, which accounts for a large portion of basic jobs in both harvesting and manufacturing, and also decrease their vulnerability to changes in the forest industry.

6.2.3.3.1.3 Closure

Project closure will cost \$101 million, with 20% occurring during Project operations, 47% in the five years after operation ceases, and the remaining 33% over the following 27 years (the “post-closure” period). While all of the labour, goods, and services required for closure will be acquired from provincial sources, it is estimated that 55% of closure costs will involve regional labour, goods, and services purchased from regional businesses. This represents a total cost of \$55.8 million. **Figure 6.2.3-6** shows the types of goods and services expected to be provided by businesses in the SERSA.

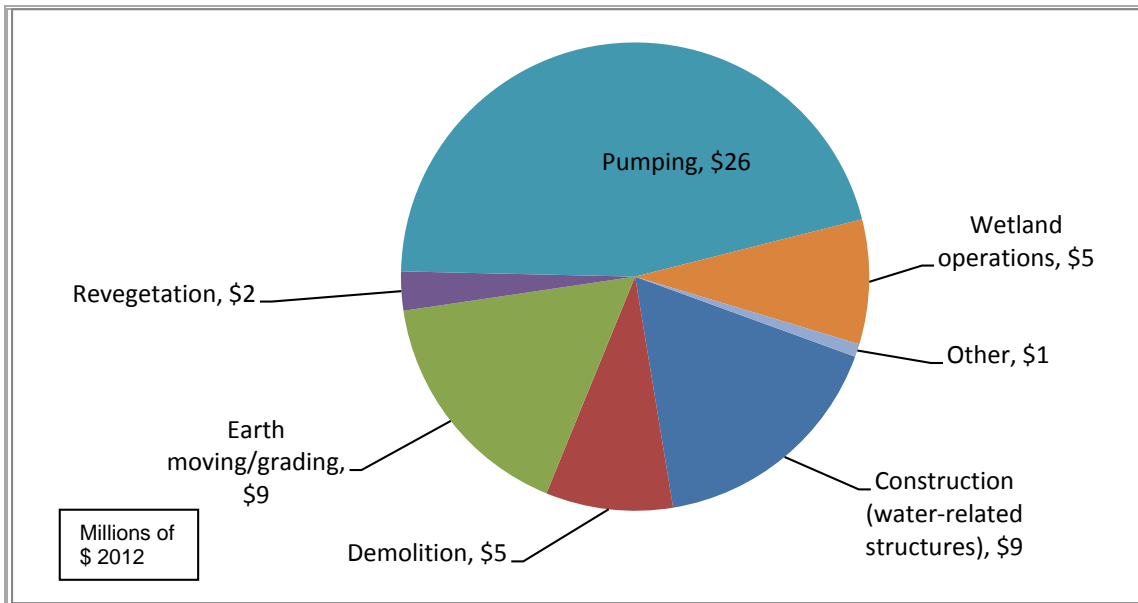


Figure 6.2.3-6: Project Purchases of Goods and Services from Suppliers in the SERSA during Closure

Closure would result in average regional expenditures of \$5.1 million per year during the five years after operations cease, dropping to \$0.7 million per year during the post-closure period. Of these amounts, an average of \$1.4 million per year would be spent on labour for the five years after operations cease, dropping to \$0.2 million per year during the post-closure period. Spending on goods and services from businesses in the SERSA would average \$3.7 million per year for the five years after operations cease, decreasing to \$0.5 million per year post-closure. It is estimated that 90% of the labour, goods, and services required for closure activities will be procured from the RSA, with the other 10% coming from the LSA.

The annual economic impacts of Project closure are shown in **Table 6.2.3-11**. It shows that closure activities would provide an average of 46.6 PYs of direct, indirect, and induced employment for SERSA residents in each of the five years after operations, and 6.3 PYs of employment per year during the post-closure period. The annual household income effects for SERSA residents would average \$2.8 million per year immediately after Project operations cease, and \$0.4 million per year during post-closure.

Table 6.2.3-11: Estimated Annual Regional Employment and Income Effects Associated with Project Closure

Annual Effects		Five Years Post Operations			Post-Closure		
		LSA	RSA	SERSA	LSA	RSA	SERSA
Employment (PYs)	Direct	1.8	16.1	17.9	0.2	2.2	2.4
	Indirect ⁽¹⁾	2.4	22.0	24.4	0.3	3.0	3.3
	Induced ⁽²⁾	0.2	4.1	4.3	0.0	0.6	0.6
	Total	4.4	42.2	46.6	0.6	5.7	6.3
Household Income ⁽³⁾ (\$ millions)	Direct	0.1	1.2	1.4	0.0	0.2	0.2
	Indirect ⁽¹⁾	0.1	1.1	1.2	0.0	0.1	0.2
	Induced ⁽²⁾	0.0	0.2	0.3	0.0	0.0	0.0
	Total	0.3	2.6	2.8	0.0	0.4	0.4

Note: ⁽¹⁾ Calculated using the estimates from the BCIOM customized simulation.
⁽²⁾ Induced effects were calculated by using the impact ratios for construction shown in **Table 6.2.3-8**, and assumes social safety net is in place.
⁽³⁾ Indirect and induced household income estimated using the average annual wage information from the BCIOM customized simulation.
 PY = person-year.

Despite having some employment and income effects during closure, loss of operational employment would result in a large net decrease in local and regional employment. The overall magnitude of these net negative effects is difficult to predict, because the size of the losses will depend on what percentage of the workforce would retire, and how many workers would be able to find employment at other jobs in the region.

6.2.3.3.1.4 Summary

The annualized effects of the Project on employment in the LSA and RSA over the life of the Project are shown in **Figure 6.2.3-7** and **Figure 6.2.3-8**. **Figure 6.2.3-7** differentiates the employment effects by direct, indirect, and induced effects, and also shows new direct employment in the region that would occur as a result of Project workers moving into the SERSA. **Figure 6.2.3-8** shows total Project employment effects in the LSA and the RSA.

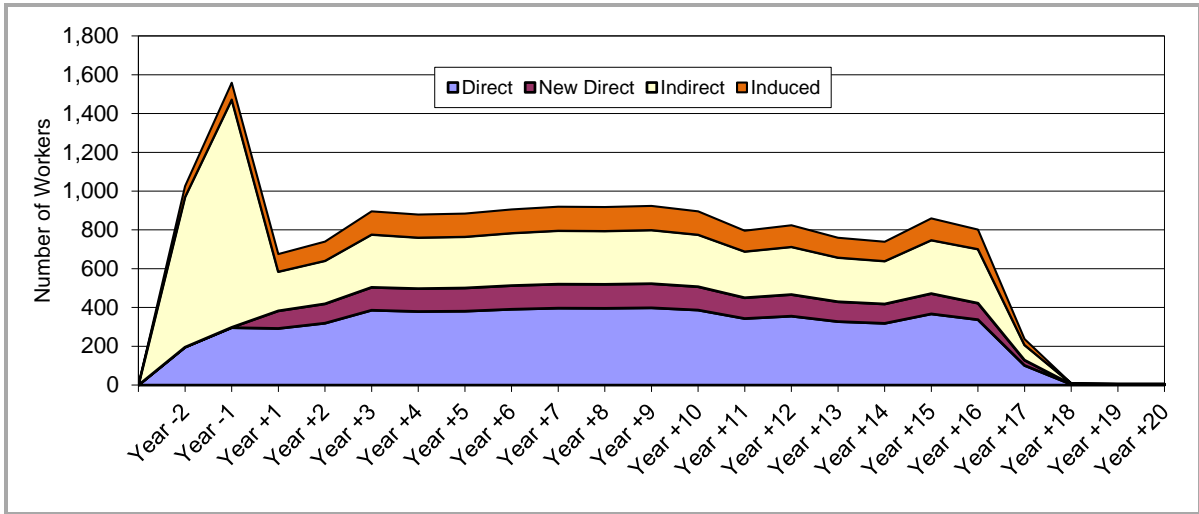


Figure 6.2.3-7: Project Effects on Employment in the SERSA over the Life of the Project

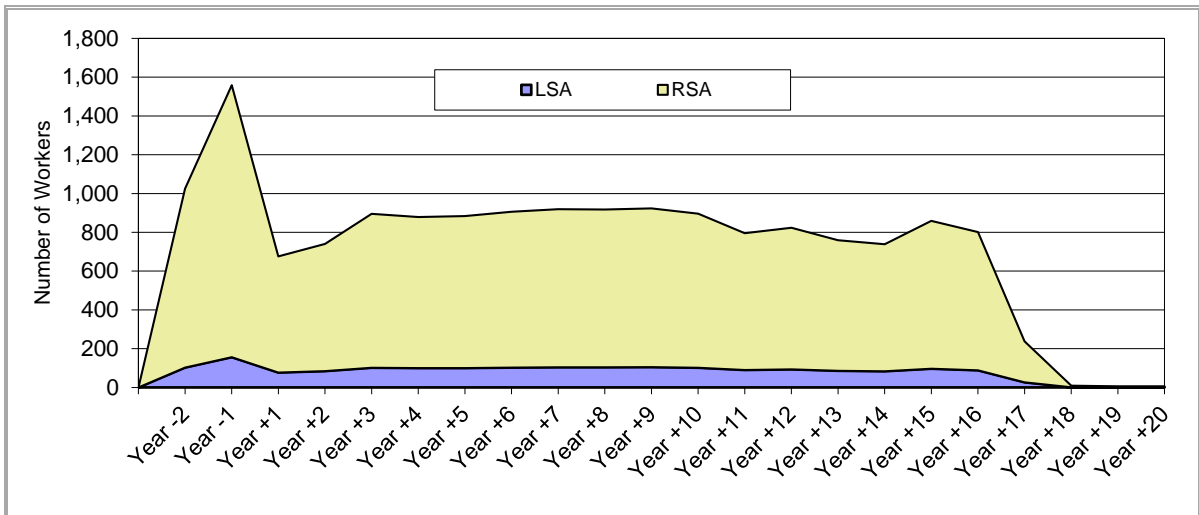


Figure 6.2.3-8: Project Effects on Employment in the LSA and RSA over the Life of the Project

Both figures show the same general pattern, with high levels of employment during Project construction, moderate levels of employment during operation, and a net reduction during closure and post-closure. In terms of direct employment, the number of existing SERSA residents hired to work on the Project will gradually increase during the construction and operation phases, reaching a peak of nearly 400 in year +7, and fluctuating slightly as the number of workers needed for surface mining activities varies from year to year. With the addition of Project workers who relocate to the region, the total number of SERSA residents employed on the Project will exceed 500 for the period from year +3 through year +10. For the LSA, 100 or more residents will be directly or indirectly employed by the Project during this same period (including induced effects), compared to nearly 800 or more residents of the RSA. When operational jobs cease when the Project closes,

there would be a net decrease in employment. The extent to which this will result in increased unemployment rates at that time will depend on what percentage of the Project workforce may decide to retire and on available employment opportunities at other projects in the SERSA.

6.2.3.3.2 Mitigation Measures

The overall net effects of Project construction and operations on regional and local employment and businesses are positive and do not require mitigation. While Project construction and operation will occur at a time when several other large projects are also underway, possibly resulting in competition for available labour, there are large numbers of unemployed residents of the SERSA who could be trained for long-term Project work. As a result, the Project is not expected to cause regional labour shortages or wage inflation.

While mitigation is not required, the Proponent will enhance local and regional benefits by identifying opportunities to increase direct employment from the SERSA and procurement of Project goods and services acquired from regional suppliers. Some of the general employment and procurement policies that can be used to enhance Project effects in the region are listed in **Table 6.2.3-12**.

Table 6.2.3-12: General Hiring and Procurement Policies Used to Mitigate and Enhance Project Effects on Regional Employment and Income

Action	Policy
Use of contractors	Construction contractors would be encouraged to hire regional residents to the extent practical.
	The Proponent would request that its contractors comply with the proponent’s policies related to recruitment, training, safety, procurement, and environmental responsibility.
Recruitment and training	The Proponent would seek to recruit employees from the communities within the SERSA to the extent practical.
	The Proponent is committed to hire qualified Aboriginal employees during both construction and operations by working closely with Aboriginal communities to provide training and establish conditions at the operation that support a multicultural workforce.
Procurement policy	The Proponent would use local and regional suppliers when these suppliers can provide products and services at competitive prices and timeframes.
	The Proponent would work with local Aboriginal groups to increase the participation of Aboriginal owned businesses in providing goods and services to the proposed Project.

Note: SERSA = Socio-economic Regional Study Area

In terms of direct Project employment, the Proponent has committed to a human resources strategy that attempts to maximize the number of workers from communities in the SERSA, and encourages other workers to relocate to the region. Key elements of the human resources strategy include:

Developing locally: this means training local people who do not have the skills required. Some ideas being considered:

- Working with training institutions such as the College of New Caledonia and BC Aboriginal Mine Training Association to provide training programs;
- Partnering with local contractors to provide New Gold apprenticeship programs;
- Sourcing and training under-represented groups; and
- Offering scholarships as an incentive to high school graduation.

Hiring locally: this means hiring local people who already have the skills to work in mining by:

- Advertising all positions locally, in addition to the Proponent's usual advertising sites (New Gold website, InfoMine, MABC Job Board, Facebook, LinkedIn, and Twitter);
- Advertising jobs on New Gold's intranet to attract internal candidates; and
- Asking existing employees if they are aware of suitable candidates.

Relocation to the region: this means supplementing local hiring to provide skills that are not available locally, or where the local talent pool has been exhausted.

While mine closure will offer some employment and business opportunities for residents of the SERSA, the overall effect of closure will be negative and unavoidable. Given that mine closure will occur some 20 years in the future, it is not possible at this time to establish a list of specific mitigative actions that will ultimately prove to be effective. However, in recognition of this problem, the mining industry and various governments around the world have accepted the concept of "planning for closure" (Australian and New Zealand Minerals and Energy Council, 2000; International Institute for Environment and Development, 2002), and have developed some objectives and principles to guide this process. One of the key principles is communication and consultation with stakeholders to ensure that the interests of all potentially affected parties are considered in mine closure plans. Another key principle is establishing a set of indicators that can be used to assess the successful completion of the closure process. A third principle is that closure planning requires regular and critical review to ensure that the plan reflects changing circumstances.

Given the potential significance of mine closure, the Proponent will commit to working with the affected communities and government agencies to develop a mine closure plan that includes a strategy for buffering the effects of eventually losing 400 to 500 mining jobs. The commitment to prepare and regularly update closure plans, which take into account the sustainability of host

communities, is a specific part of the Proponent's Health, Safety, Environmental, and Corporate Social Responsibility Policy (New Gold, 2013). Elements of the plan could include such things as continuing to offer skills upgrading to workers to provide them with the capacity to find other non-mining jobs after mine closure, assisting in the development of new economic development opportunities, and working with other regional employers to find new jobs for mine employees. However, given the dynamic nature of the regional economy, and that mine closure would occur 20 years from now, it is premature to commit to more specific mitigative actions at this time.

6.2.3.4 Residual Effects and their Significance

This subsection:

- Identifies and describes any residual effects after mitigation;
- Where residual adverse effects have been identified, provides an assessment of the significance of those residual effects considering magnitude, geographic extent, duration, reversibility, frequency;
- Assesses the likelihood of the effect;
- Assesses the significance of the residual effects; and
- Discusses the level of confidence and risk in the determination of significance and likelihood of the residual effect.

Each Project phase – construction, operations, closure – is discussed separately.

6.2.3.4.1 Construction

In the context of the SERSA, Project effects on employment and household income will be positive but relatively small. While the Project would employ 17% of the LSA construction labour force and 8% of the RSA construction labour force during the second (peak) year of construction, total Project-related employment in that year would equal 1,545 PYs, which represents about 2.9% of the existing labour force in the SERSA. However, the direct Project workforce in that year (290 regional residents) could make this Project the largest employer outside Prince George, depending on what other major construction projects are underway at the same time. Given that the Project would be drawing largely on labour from outside the SERSA (86% coming from outside of the region), and the size of the regional construction labour force, it is unlikely that Project employment will have any effect on the regional unemployment rate and, if there were any such effects, they would be of very short duration. Similarly, use of the existing regional workforce would not result in any changes to the diversity of the regional economy.

6.2.3.4.2 Operation

Net Project effects during operations would also be positive and relatively small. The 420 new direct jobs created by the Project would be equivalent to 0.8% of the current SERSA labour force. Use of unemployed workers would reduce unemployment rates by 0.5% in the LSA and by 0.6%

in the RSA. However, these new jobs would at least partially offset the loss of basic jobs in the LSA and RSA that occurred between 2006 and 2011, and will help maintain and enhance economic diversity and decrease dependency on the forestry sector.

6.2.3.4.3 Closure

Despite Project employment during closure, there would still be a net loss of employment and income when the Project ceases operations. The long-term loss of 420 direct operation jobs will likely result in increased unemployment and a loss of economic diversity, but the extent of these effects is difficult to predict. The magnitude of these effects will be at least partially mitigated by the implementation of a mine closure plan that will better position workers to be able to find work on other projects in the SERSA.

6.2.3.4.4 Significance of Residual Project Effects

The significance of the residual effects on the local and regional economy during the three phases of the Project is summarized in **Table 6.2.3-13**. For both construction and operation, Project effects are considered positive, with direct, indirect, and induced employment involving 1.4% of the SERSA labour force. The net loss of employment following mine closure is considered adverse, but not significant (minor).

Table 6.2.3-13: Significance of Residual Project Effects, Local and Regional Employment and Businesses

Categories for Significance Determination	Stage of Development/Rating		
	Construction	Operation	Closure
Context ¹	Neutral	Neutral	Neutral
Magnitude	Low	Low	Low
Geographic Extent	Regional	Regional	Regional
Duration	Short-Term	Long-Term	Long-Term
Frequency	Continuous	Continuous	Continuous
Reversibility	Yes	Yes	Yes
Likelihood Determination	High	Moderate	Moderate
Statement of level of Confidence for Likelihood	High	High	High
Significance Determination	n/a	n/a	Not significant (minor)
Statement of level of Confidence for Significance	n/a	n/a	Moderate

Note: ¹Method for the consideration of context is discussed in Section 4, Assessment Methodology.

²Effects under construction and operation are “positive”.

³n/a = not applicable

The categorization of significance for Project closure has been made with a moderate degree of confidence. Project closure will occur in the more distant future, and there is a higher probability

that economic conditions in the LSA and RSA could be different from the present. Depending on changing economic conditions, the magnitude of Project effects during closure could be less than or greater than currently expected, but is still unlikely to be significant at a regional level.

6.2.3.5 Cumulative Effects

The subsection discusses the need for assessing cumulative effects.

The assessment of residual Project effects on local and regional employment and businesses has been undertaken in the context of past and existing conditions as well as reasonably foreseeable future changes in economic activities in the region and thus, is inherently cumulative. A cumulative effects assessment is required only if there are adverse residual project-specific effects. For this VC, that would only apply to the closure phase (a cessation of positive effects) and this is far in the future when then-existing baseline conditions and other project demands are unknown. Therefore, no additional cumulative effects assessment is practical.

6.2.3.6 Limitations

This subsection presents assumptions and limitations relative to the assessment of Project effects and the assessment of cumulative effects.

The main limitations of the effects assessment of the Project on local and regional employment and businesses relates to uncertainty about the exact percentage of labour, goods, and services that will be obtained from within the SERSA. This assessment reflects the current understanding of both existing labour and business conditions in the SERSA and what other major projects could be under development at the same time. However, regional economic conditions can be quite dynamic, and conditions can change rapidly.

6.2.3.7 Conclusion

This subsection will provide a conclusion regarding the significance of residual effects and cumulative effects.

Overall, Project construction and operations will have net positive effects on local and regional employment and businesses in the LSA and RSA. During the two years of construction, the Project will provide 485 PYs of employment for SERSA residents, and will purchase \$339 million in goods and services from local and regional businesses. During operations, the Project will provide opportunities for long-term employment. On an annual basis, the Project will employ 420 current and new residents of the SERSA, and will spend \$75 million to purchase goods and services from local and regional businesses. Project employment will reduce unemployment rates in the LSA and RSA and increase economic diversity and resilience. Project effects during both construction and operation are considered positive therefore, significance is not rated. While mine closure will provide some employment and business opportunities in the region, the net loss of jobs will be adverse. Through development and ongoing updates of a mine closure plan, the effects will be not significant (minor).

Estimates of potential employment associated with purchases of goods and services from businesses in the SERSA (indirect Project effects) were partly reliant on the results of the BCIOM. According to BC Stats (2013b), the model estimates provided by the BCIOM are accurate to no better than $\pm 10\%$. The capital and annual operating expenditure estimates are accurate to $\pm 25\%$.

6.2.4 Regional and Local Government Finance

6.2.4.1 Introduction

This subsection will describe the approach and applicable regulatory framework for the assessment of the VC.

The Project will contribute to regional and local government finances through payment of property taxes. This section quantifies the extent of Project contributions to regional and local governments in the context of any potential costs that the Project may impose on those same governments.

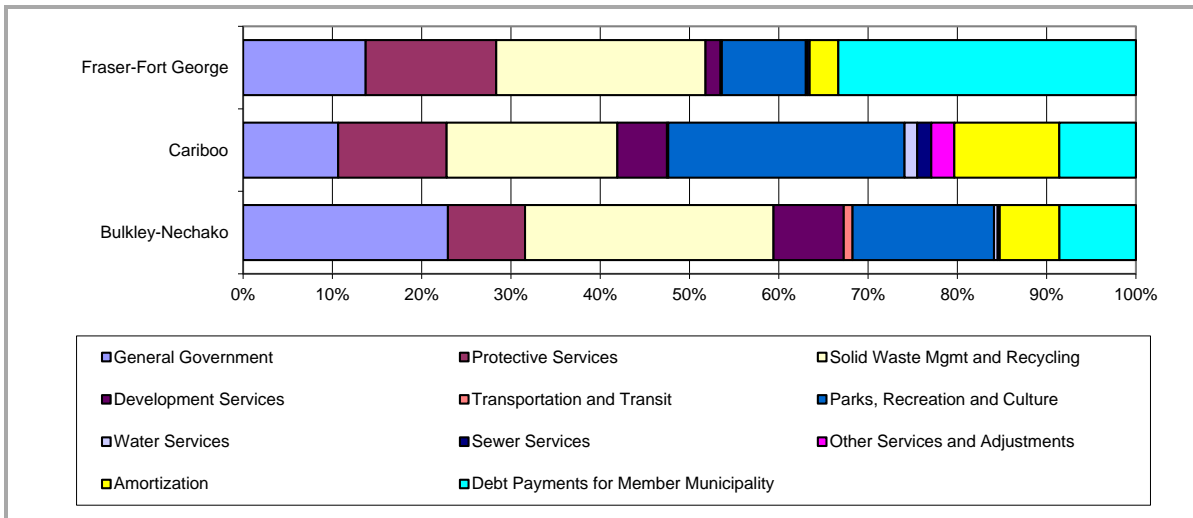
Key and moderate interactions between project components and activities and this VC are presented in **Table 4.3-2** (Project Components and Activity Interaction Matrix for Selected VCs) in **Section 4**. This VC interacts with the project as a whole and the mine is selected as the representative component for the whole project.

6.2.4.2 Valued Component Baseline

This subsection provides baseline information on the VC and the source of the information; identifies past, present or future projects/activities that may impact the VC; and describes traditional ecological or community knowledge, where available.

Baseline information on regional government revenues and expenditures, assessment base, and tax rates was obtained from the BC Ministry of Community, Sport and Cultural Development (BC MCSCD). The most recent information on revenues and expenditures is for 2011. These data implicitly include the implications for government revenue from all past and existing development/project in the study areas. Community knowledge information gathered during the engagement and consultation process for this Project was also incorporated when relevant. Community information about Regional and Community Infrastructure is presented in **Section 7.2.3** and information about Regional and Local Services are presented in **Section 7.2.4** and integrated into this discussion about Regional and Local Government Finance. Traditional knowledge is not relevant to this valued component.

Three regional governments may be affected by the Project. They include the CRD, the BNRD, and the Fraser-Fort George Regional District (FFGRD). Each of the three regional governments is responsible for providing a range of services to regional residents, including water supply, sewer, fire protection, parks and recreation, solid waste management, economic development, libraries, and emergency 911 services. The expenditures for the BNRD, FFGRD, and CRD for 2011 are provided in **Figure 6.2.4-1**.



Note: % = percent.

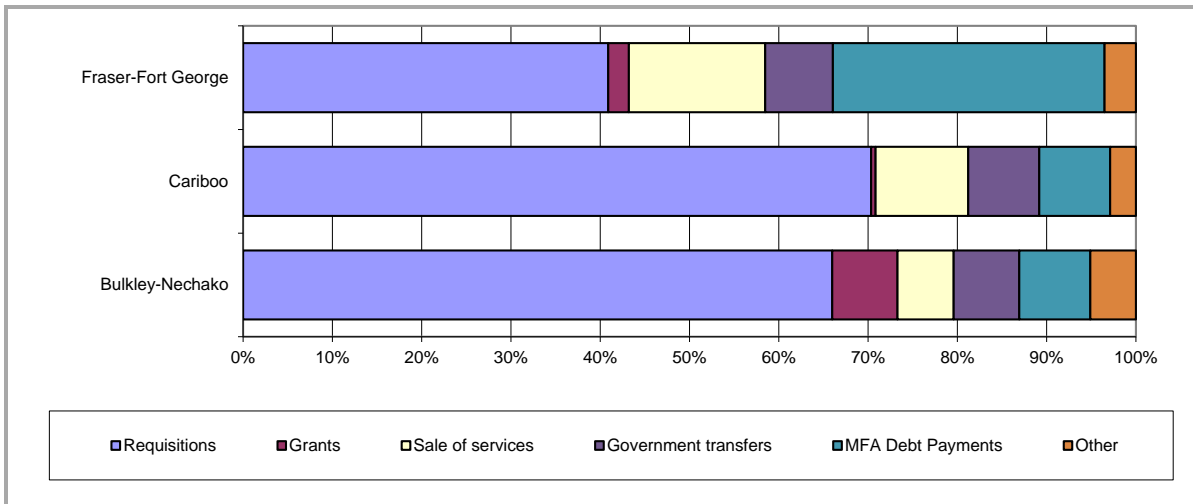
Source: BC Ministry of Community, Sport and Cultural Development, 2012.

Figure 6.2.4-1: Expenditures for the BNRD, FFGRD, and CRD, 2011

Total expenditures were \$10.1 million in the BNRD, \$36.1 million in the FFGRD, and \$26.2 million in the CRD. Three expenditure items accounted for the majority of expenditures in the three RDs: solid waste management and recycling; parks, recreation, and culture; and general government. For the FFGRD, the largest amount of annual expenditures was for debt payments (33% of total spending). For the BNRD, the largest expenditure was for waste management (28% of total spending). For the CRD, 26% was spent on parks, recreation, and culture.

Regional districts obtain the majority of their funding from four sources. For the CRD and the BNRD, the majority of funding comes from electoral area and local government requisitions. Unlike local governments, RDs do not levy and collect property taxes directly from residents. Instead, RDs requisition a large portion of their annual budgets from the BC MCSCD (2012), and these requisitions are based on the approved five-year financial plans for each district. Requisitions are based on the cost of the services to be provided by the regional district as per their approved five-year financial plans, including costs shared with municipalities within the region, and are used to determine the appropriate rural tax rates. Rural property taxes are collected on behalf of the RDs by the BC Surveyor of Taxes. In 2011, requisitions by all three RDs totalled \$43.3 million, and accounted for 55% of their total revenues of \$78.8 million. Requisitions accounted for 70% of revenues for the CRD, 66% of revenues for the BNRD, and 41% of revenues for the FFGRD.

Regional districts can also charge fees for the services they provide. **Figure 6.2.4-2** shows that sales of services accounted for between 6% (BNRD) and 15% (FFGRD) of total revenues. Payments from the Municipal Finance Authority (MFA), which was established to provide short- and long-term funding and other financial services for communities and public institutions (MFA, 2013), accounted for 30% of revenues for the FFGRD, but less than 8% for the other RDs. Transfers from all levels of government accounted for between 7.3% and 7.9% of revenues for the three RDs.



Note: % = percent.

Source: BC MCSCD, 2012.

Figure 6.2.4-2: Revenues for the BNRD, FFGRD, and CRD, 2011

6.2.4.3 Potential Effects of the Proposed Project and Proposed Mitigation

This subsection:

- Identifies and analyses potential adverse effects resulting from the proposed Project's construction, operations, closure and post-closure phases;
- Identifies and describes any potential adverse effects from other known past, present, certain and reasonably foreseeable future project or activities in the proposed Project area; and
- Describes measures to mitigate the potential adverse effects identified above.

The assessment uses information on project payments of municipal taxes to identify the extent to which the proposed Project would affect municipal government finances as well as potential costs to regional and local governments.

6.2.4.3.1 Potential Project Effects

Based on a percentage of on-site capital improvements and the mining lease tax, the Proponent estimates that the taxes payable to the BC Surveyor of Taxes would be about \$2.3 million per year throughout the Project operations phase; there are no equivalent taxes payable during Project construction. As noted above, these payments would not be earmarked to a specific regional district, and could be shared among RDs and the communities that share services with the RDs. However, payments of \$2.3 million would represent 5.3% of the total value of requisitions for the three RDs for 2011, and 2.9% of their total revenues.

The Project is anticipated to have no adverse effects on local or municipal government finances, either directly or indirectly. As noted in the Project Description, the Project will be self-contained, with its own accommodations, water and sewage facilities, and a road and electrical transmission line to the site to be constructed as part of the Project. In addition, while some wastes generated by the Project may be sent to regional landfills, the payment of tippage fees will result in no net costs to the RDs. Thus the Project will have no direct demands on (or costs for) regional or local government infrastructure. As discussed in **Section 7.2.3** (Regional and Community Infrastructure and Services), the demands of workers and their families who choose to relocate to the SERSA will be relatively small, and can be accommodated by existing infrastructure, which is currently underutilized. Thus, there would be no indirect demands on (or costs for) regional or local government infrastructure. Similarly, **Section 7.2.4** (Regional and Local Services) concluded that there is capacity in education, health care, social and enforcement services to accommodate the population growth that would be associated with Project operations. Thus, there would be no indirect demands on (or costs for) regional or local government services.

Mine closure will result in a decrease in regional and local government revenues that cannot be avoided and cannot be mitigated.

6.2.4.3.2 Mitigation Measures

The overall net effects of Project construction and operations on local and regional government revenues are positive and do not require mitigation. There are no opportunities for enhancement of these benefits, because BC government agencies determine the assessment base and the rates of taxation. However, there may be opportunities for the Proponent to work with regional and local governments to ensure that the Project does not result in any net costs to them. The Proponent intends to continue to operate its Community Liaison Committee for the duration of the Project and will identify and address any issues and develop mitigation recommendations related to service provision, housing, and health and social services that might result in costs to local and regional government. The negative effects on regional and local government revenues that would result from mine closure are unavoidable and cannot be mitigated.

6.2.4.4 Residual Effects and their Significance

This subsection:

- Identifies and describes any residual effects after mitigation;
- Where residual adverse effects have been identified, provides an assessment of the significance of those residual effects considering magnitude, geographic extent, duration, reversibility, frequency;
- Assesses the likelihood of the effect;
- Assesses the significance of the residual effects; and
- Discusses the level of confidence and risk in the determination of significance and likelihood of the residual effect.

The significance of the residual effects on regional and local government finances during the three phases of the Project is summarized in **Table 6.2.4-1**. For the construction phase, Project effects are considered neutral, because there will be no revenues for local or regional governments until the Project has been constructed, and there will be no demands on either infrastructure or services. Operational effects will be positive. Net Project effects during closure will be adverse, but not significant (negligible).

Table 6.2.4-1: Significance of Residual Project Effects on Regional and Local Government Finances

Categories for Significance Determination	Stage of Development/Rating		
	Construction	Operation	Closure
Context ¹	Neutral	Neutral	Neutral
Magnitude	Low	Low	Low
Geographic Extent	Regional	Regional	Regional
Duration	Short-Term	Long-Term	Short-Term
Frequency	Continuous	Continuous	Continuous
Reversibility	Yes	Yes	Yes
Likelihood Determination	High	High	High
Statement of Level of Confidence for Likelihood	High	High	High
Significance Determination	n/a	n/a	Not significant (negligible)
Statement of Level of Confidence for Significance	n/a	n/a	High

Note: ¹Method for the consideration of context is discussed in Section 4, Assessment Methodology.
²Effects under operation are “positive”.
³n/a = not applicable

The categorization of significance for Project closure has been made with a high degree of confidence because regional district budgets are approved based on five-year plans that are funded from a variety of sources, and the loss of Project-related municipal revenues may be offset by revenues from other sources, including municipal tax revenues from other projects that may be developed in the future.

6.2.4.5 Cumulative Effects

This section determines the need for assessing cumulative effects.

The significance of the effects of mine closure on local and regional government finances will partially depend on economic conditions at that time, and whether other projects will be undertaken that might offset Project-related effects. However, adverse Project effects will be buffered by the nature of regional district financing. As noted above, RDs are only partially funded through requisitions from the BC Surveyor of Taxes, and these requisitions are paid based on pooled taxes collected from industrial developments in all rural areas of BC. Thus, the system for financing regional governments

was developed to deal with the ever-changing nature of industrial development in rural BC, and is essentially a cumulative effects management mechanism. Besides, the adverse residual effect is negligible and does not need to be carried forward.

6.2.4.6 Limitations

This subsection presents the assumptions and limitations relative to the Project effects and the assessment of cumulative effects.

While there is still some uncertainty about the exact amount of annual taxes to be paid to the BC Surveyor of Taxes, the net effect of the Project on regional and local government finances will be positive.

6.2.4.7 Conclusion

This subsection provides a conclusion regarding the significance of residual effects.

Overall, Project construction and operations will have net positive effects on regional and local finances. During operations, the Project would pay annual taxes of \$2.3 million per year to the BC Surveyor of Taxes, with these funds being used to support the activities of the three RDs in the SERSA, as well as other RDs in BC. As the Project will be developing its own infrastructure, and there is sufficient capacity in regional infrastructure and services to accommodate the incremental demands of Project-related population increase, there will be no adverse effects on regional or local government finances during construction and operation. When the Project closes, the payment of annual taxes will cease. The loss of tax revenues is considered adverse but not significant because RDs are only partially funded through requisitions from the BC Surveyor of Taxes.

6.3 Summary of Assessment of Economic Effects

This section of the Application presents a summary of the assessment of economic effects.

The VCs assessed for Economic Effects include Provincial Economy and Government Revenues, Regional and Local Employment and Businesses, and Regional and Local Government Finance. **Table 6.3-1** presents the summary of the assessment for each economic VC including the potential effects, key mitigation measures and the evaluation of significance of the each assessment.

Table 6.3-1: Summary of Assessment of Potential Economic Effects

Valued Components (Identify Phase of Project) ⁽¹⁾	Potential Effects	Key Mitigation Measures	Evaluation of Significance of Residual Effects (Summary Statement)
Provincial Economy (C, O, CL)	<ul style="list-style-type: none"> Direct effects: these are associated with employment, expenditures, and payments to governments directly by the proponent and industries directly supplying goods and services used by the Project. Indirect effects: these are associated with all industries in the supply chain that are ultimately supplying the goods and services used by the industries that will directly supply the proposed Project. Induced effects: these are effects arising from households re-spending additional income derived directly or indirectly from the Project. 	<ul style="list-style-type: none"> The overall Project effects of construction and operation on the provincial economy and government revenues are all positive, and do not require mitigation. Opportunities exist for enhancing these benefits, through increasing the percentage of direct employment, and procurement of Project goods and services from provincial sources. However, such opportunities may be limited by the lack of BC suppliers for some of the specific types of machinery and parts required at the mine. Negative effects of mine closure on economic activity, employment, and government revenue are unavoidable. Mitigating these effects occurs at a regional level, and not at a provincial level. 	<ul style="list-style-type: none"> For construction and operation, Project effects are considered positive at a provincial level, with GDP and employment effects accounting for a relatively large portion of provincial economic growth. Net Project effects during closure are adverse, but not significant (negligible). Categorization of significance for Project closure has been made with a high degree of confidence despite the ±25% confidence in the Project cost data, because the process of estimating economic impacts at a provincial level is well known and understood, and Project effects, compared to the size of the provincial economy, will be relatively small.
Regional and Local Employment and Businesses (C, O, CL)	<ul style="list-style-type: none"> The direct effects of the Project have been estimated based on Project information on employment requirements, and expectations for employment of local and regional residents in the context of other current and reasonably anticipated projects and activities in the Project area. Project effects on local and regional businesses have been estimated in terms of indirect economic impacts, based on the amount of Project-related purchases of goods and services, and impact estimates from the BC IOM. Potential induced effects have been estimated using regional impact ratios that BC Stats developed for LERs based on 2006 census information. 	<ul style="list-style-type: none"> The overall net effects of Project construction and operations on regional and local employment and businesses are positive and do not require mitigation. While mitigation is not required, there are opportunities for enhancement of local and regional benefits through increasing the percentage of direct employment and procurement of Project goods and services acquired from regional suppliers. 	<ul style="list-style-type: none"> For both construction and operation, Project effects are considered positive, with direct, indirect, and induced employment involving 1.4% of the SERSA labour force. Project effects during both construction and operation are considered positive; therefore, significance is not rated. The net loss of employment following mine closure is considered adverse, but Not Significant (minor). The categorization of significance for Project closure has been made with a moderate degree of confidence. Depending on changing economic conditions, the magnitude of Project effects during closure could be less than or greater than currently expected, but is still unlikely to be significant at a regional level.
Regional and Local Government Finance (C, O, CL)	<ul style="list-style-type: none"> The Project is anticipated to have no adverse effects on local or municipal government finances, either directly or indirectly. 	<ul style="list-style-type: none"> The overall net effects of Project construction and operations on local and regional government revenues are neutral and positive and do not require mitigation. The negative effects on regional and local government revenues that would result from mine closure are unavoidable and cannot be mitigated. 	<ul style="list-style-type: none"> For the construction phase, Project effects are considered neutral, because there will be no revenues for local or regional governments until the Project has been constructed, and there will be no demands on either infrastructure or services. Operational effects will be positive. Net Project effects during closure will be adverse, but not significant (negligible). The categorization of significance for Project closure has been made with a high degree of confidence because regional district budgets are approved based on five-year plans that are funded from a variety of sources, and the loss of Project-related municipal revenues may be offset by revenues from other sources, including municipal tax revenues from other projects that may be developed in the future.

Note: ⁽¹⁾ Project phase: C = construction; CL = closure; O = operations; PC = post-closure.