



Appendix 7.1.1A
Social 2013 Baseline Report



Blackwater Gold Project

2013 Baseline Report Social

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ACRONYMS

Abbreviations and Units of Measure	Definition
AADT	Average Annual Daily Traffic
AANDC	Aboriginal Affairs and Northern Development Canada
BC	British Columbia
BC MoTI	Ministry of Transportation and Infrastructure
Canfor	Canadian Forest Products
CN Rail	Canadian National Rail
CNC	College of New Caledonia
CRD	Cariboo Regional District
CRDEA	Cariboo Regional District Electoral Area
CWBi	Community Well-Being Index
EMBC	Emergency Management BC
EPP	Emergency Preparedness Plan
FASD	Foetal Alcohol Spectrum Disorder
FSR	Forest Service Roads
HSDA	Health Service Delivery Area
Hwy	Highway
ICBC	Insurance Corporation of British Columbia
ICMC	Cyanide Management Code
INAC	Indian and Northern Affairs Canada
IR	Indian Reserve
km	Kilometre
KP	Kilometre Point
LHA	Local Health Area
LSA	Local Study Area
MLS	Multiple Listing Service
NHS	National Household Survey
PhD	Doctorate (degree)
PNG	Pacific Northern Gas Limited
%	Percent
Project (the)	proposed Blackwater Gold Project
PYLL	potential years of life lost
RCMP	Royal Canadian Mounted Police
RDBN	Regional District of Bulkley-Nechako
RDEA	Regional District Electoral Area

Abbreviations and Units of Measure	Definition
RDFFG	Regional District of Fraser-Fort George
RDRDEA	Regional Disctric of Bulkley-Nechako Electoral Area
RSA	Regional Study Area
SA	Study Area
SC	Statistics Canada
SD	School District
SERSA	Socio-economic Regional Study Area
UNBC	University of Northern British Columbia
US	United States

EXECUTIVE SUMMARY

The assessment of baseline social conditions for the proposed Blackwater Gold Project (the Project) is based on a Socio-economic Regional Study Area (SERSA) that consists of two areas, a Local Study Area (LSA) and a Regional Study Area (RSA). The populations in these areas have different characteristics with regard to demographics, regional infrastructure and services, human health, and individual, community, and family well-being.

The Local Study Area (LSA) includes the communities nearest the proposed mine site and represent the closest directly accessible sources of labour, goods, and services for Project construction and operations. The LSA comprises the Regional District of Bulkley-Nechako - Electoral Areas (RDRDEA) D and F, the Village of Fraser Lake, the District of Vanderhoof, and eleven populated Indian reserves (Stony Creek 1, Laketown 3, Nautley (Fort Fraser) 1, Seaspunkut 4, Stellaquo 1, Kluskus 1, Tatelkus Lake 28, Sundayman's Meadow 3, Euchinico Creek 17, Trout Lake Alec 16, and Nazco 20). Aside from population counts, there is no other published census information for these reserves, and therefore they have not been included in this baseline; however, some socio-economic baseline information for these reserves is provided in Section 14 (Aboriginal Groups Background Information). In addition, although the Project will be developed within Cariboo Regional District Electoral Area (CRDEA) 1, the mine will have no direct access to communities within the Cariboo Regional District (CRD) region; thus, no social information for CRDEA 1 is included in this baseline report.

The economy of the area has historically been resource based with forestry playing a predominant role for many decades. The market for lumber, pulp and paper, and more recently value-added products is global and cyclical, with periods of growth and then decline. These circumstances when coupled with other cyclical global markets for mining metals/non-metals and agricultural products have contributed to the variations in the vitality of the regional economy. Communities that are more economically diversified feel these cycles less, because they are less dependent on the performance of any one sector. During these resource cycles, the regional population has remained relatively flat, though smaller communities that were more resource dependent would have experienced increased effects. The movement of workers from forestry to oil and gas has occurred, with people commuting to work in that sector but retaining their homes where they previously worked in the forestry sector. Socioeconomic problems such as drug and alcohol abuse, assault, etc., can increase during socioeconomic changes. This is not unique to the north, and is experienced in all resource dependent economies and communities.

In 2011, the population of the LSA was 12,043, an increase of 2.2% since 2001. The area demonstrates a higher-than-average (British Columbia (BC)) level of residential stability, with 60% of residents having lived at the same address for five years or more. Approximately 21% of the LSA population was Aboriginal and 2% was visible minorities in 2011. The LSA had the largest proportion of younger and older people in the SERSA; 33% of the population was aged 0 to 24 years and 26% was over the age of 55 years. In addition, 72% of the population was classified as "married-couple families."

Housing occupancy rates in the LSA were lower than in the rest of the province, with 82% of housing permanently occupied by usual residents. Most housing was single-family, detached homes (81%), of which 74% were built pre-1986 and an estimated 13% were in need of major repairs (roof, furnace, etc.). Sources indicate that the average price for a home in the LSA was \$165,000, well below the provincial average.

The urban centres are the regional service hubs in the LSA, providing services for those living within the communities and in catchment areas of surrounding rural lands. The LSA appears to have adequate regional services—such as education facilities, health care, and social services—to meet the current demand, although the Royal Canadian Mounted Police (RCMP), which patrols the area, has indicated that its resources are tight. Key urban centres in the LSA have developed and maintain Emergency Preparedness Plans (EPP) in partnership with the Regional District. The transportation network throughout the LSA is varied and well maintained.

The two main urban centres in the LSA, Fraser Lake and Vanderhoof, scored well on standardized Community Well-Being Indices, earning scores of 83 and 81, respectively, out of a possible 100.

The RSA is made up of the Fraser-Fort George RDEA C, Bulkley-Nechako RDEAs C and B, the City of Prince George, the Village of Burns Lake, the District of Fort St. James, and 12 Indian Reserves. The population in the RSA was 84,380 in 2011, a decrease of 1.1% since 2001. Residents of the RSA have slightly higher rates of residential mobility; only 58% have lived at the same address for five years or more, although 27% changed address but stayed within the same community. In the 2011 census, approximately 15% of the population was Aboriginal and 7% was represented by visible minorities. Most residents in the RSA were 25 to 54 years in age, and 64% were married couple families.

Similarly to the rest of BC, residents permanently occupied approximately 90% of housing in the RSA. Dwelling types were more varied than in the LSA, reflecting the nature of the larger urban centres within the RSA. Most (64%) of the housing was single-family detached units, approximately 20% were apartments, and, like the LSA, most residences were constructed before 1986 (76%), and approximately 9% were in need of major repairs. The average price for a home in the RSA was \$178,000, well below the BC average.

As in the LSA, the urban centres are regional service hubs, providing services for those living in the communities and in surrounding rural catchment areas. The regional services, including education and medical facilities and resources, within the RSA appear to be adequate to meet the current demand, although the RCMP who serve the area have indicated that more officers are needed to keep up with the number of files or their caseload. Key urban centres in the RSA have developed and maintain EPPs in partnership with the Regional Districts. The transportation network throughout the LSA is varied and well maintained. The three urban centres in the RSA—Fort St. James, Prince George, and Burns Lake—were assigned Community Well-Being Indices of 82, 82, and 74, respectively, out of a possible 100.

Other overall characteristics of the SERSA area are as follows:

- The population in the SERSA decreased by 0.7% from 2001 to 2011 but is expected to grow slowly but steadily through to 2036.
- The demand for temporary accommodation peaked in 2008 and decreased in 2010, but has increased recently, typically for temporary workers.
- The communication infrastructure is limited to the larger urban centres and communities along the highways throughout the study area. The RDBN is currently working to identify cellular and Internet coverage across the district.
- The physical community infrastructure is able to easily accommodate the existing population levels, and the region is rich with outdoor recreation opportunities.
- Education enrolment and attainment levels at the grades 4, 7, 10, and 12 levels across the SERSA are below the BC average.
- The number of criminal code offences across the SERSA peaked in 2005 and has since decreased; however, the caseload per RCMP officer is high. The most common offence is property crimes.
- The rates of “children needing protection” and “children in care” were above the BC average, as was the rate of youth hospitalized from motor vehicle accidents.

1.0 INTRODUCTION

This report describes the baseline social conditions in the area most likely to be affected by the proposed Blackwater Gold Project (the Project). The baseline characterization focuses on key social indicators related to population and demographics, household structure, community infrastructure and services, community well-being, and transportation.

The Project is located in the Central Interior of British Columbia (BC), in the northern part of the Cariboo Regional District Electoral Area (CRDEA) I of the Cariboo Regional District (CRD), approximately 110 kilometres (km) southwest of Vanderhoof. The Project involves the development of mining facilities and support infrastructure located within the proposed mine site. A transmission line will also be constructed to provide energy to the mine site.

1.1 Scope of Work

The construction and operations of the Project may influence the social characteristics of a number of local and regional communities, including neighbouring Aboriginal communities. To this end, social baseline information was gathered for potentially affected communities. The baseline social conditions for these communities were assessed and are described in this report.

1.2 Objectives

The objectives of this baseline report are to understand and document the social conditions in the Project study area. Documentation of baseline indicators helps to assess and evaluate the potential effects on local social conditions.

2.0 STUDY AREAS

The spatial boundaries for the assessment of social effects are shown in **Figure 2.1-1**. The Socioeconomic Regional Study Area (SERSA) consists of the urban and rural communities that are most likely to be affected by the Project. These areas could supply some of the labour force and goods and services required to construct and operate the mine. The boundary of the SERSA reflects the statistical reporting units used by Statistics Canada (SC) and the Government of BC.

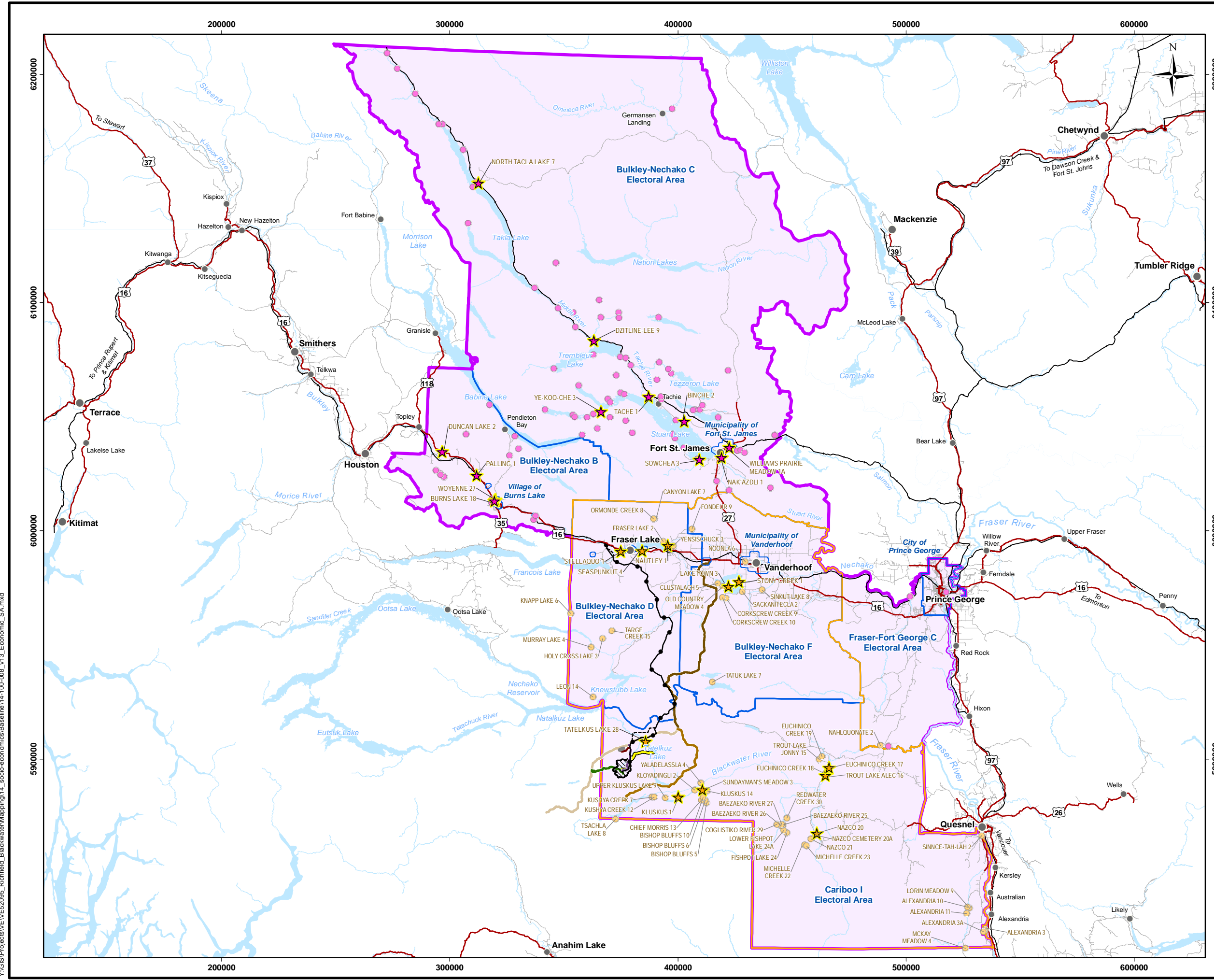
To effectively assess the extent of the potential social effects of the Project and to highlight the different social vulnerabilities and capabilities of the rural and urban communities, the overall SERSA has been identified as having two components: a Local Study Area (LSA) and a Regional Study Area (RSA). These two components of the SERSA are described below.

2.1 Local Study Area

The LSA incorporates census subdivisions (the urban communities, rural populations, and Indian reserves) located nearest the proposed mine site, which represent the closest directly-

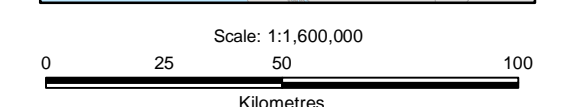
accessible potential sources of labour, goods and services needed for project construction and operation. These census subdivisions include:

- The District Municipality of Vanderhoof;
- The Village of Fraser Lake;
- Bulkley-Nechako RDEA D (Fraser Lake Rural);
- Bulkley-Nechako RDEA F (Vanderhoof Rural);
- Cariboo RDEA I to (Quesnel Rural);
- *Kluskus 1 reserve (Lhoosk'uz First Nation);
- *Tatelkus Lake 28 reserve (Lhoosk'uz First Nation);
- *Sundayman's Meadow 3 reserve (Lhoosk'uz First Nation);
- *Euchinico Creek 17 reserve (Nazko First Nation);
- *Trout Lake Alec 16 (Nazko First Nation);
- *Nazco 20 reserve (Nazko First Nation);
- Stony Creek 1 reserve (Saik'uz First Nation);
- *Laketown 3 reserve (Saik'uz First Nation);
- Nautley (Fort Fraser) 1 reserve (Nadleh Whuten Nation);
- *Seaspunkut 4 reserve (Nadleh Whuten Nation); and
- Stellaquo 1 reserve (Stellat'en First Nation).



- 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 2.1-1
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PROJECTION: UTM Zone 10	DATUM: NAD83	

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Beyond population counts, no census data are available for the eight reserves denoted with an asterisk in the preceding list because they are very small. Statistics Canada withholds census data for small communities where the data are not statistically valid and/or because of concerns about confidentiality.

While the Project would be situated in a remote part of Cariboo RDEA I, close to the six reserves denoted with an asterisk, which are associated with the Lhoosk'uz First Nation and the Nazko First Nation, there would be no direct road access from the project to these or other communities in Cariboo RDEA I. Consequently, information for these six reserves or Cariboo RDEA I has not been included in the social baseline report. Some socio-economic baseline information for these two First Nations is provided in Section 14 (Aboriginal Groups Background Information).

The social baseline information presented here was taken from the 2006 and 2011 censuses and is representative of 77% of the on-reserve population in the LSA.

2.1.1 Regional Study Area

The RSA (**Figure 2.1-1**) incorporates populated census subdivisions, including urban communities, rural populations, and Indian reserves located east, north, and west of the LSA, that represent the next closest potential sources of labour, goods, and services. These census subdivisions include:

- The City of Prince George;
- The District Municipality of Fort St. James;
- The Village of Burns Lake;
- Bulkley-Nechako RDEA C (Fort St James Rural);
- Bulkley-Nechako RDEA B (Burns Lake Rural);
- Fraser-Fort George RDEA C (Chilako River-Nechako);
- Nak'azdli (Necoslie) 1 reserve (Nak'azdli Nation);
- * Sowchea 3 reserve (Nak'azdli Nation);
- * William Prairie Meadow 1A reserve (Nak'azdli Nation);
- * North Takla Lake 7 reserve (Takla Lake First Nation);
- * Dzitline Lee 9 reserve (TI'azt'en First Nation);
- Tache 1 reserve (TI'azt'en First Nation);
- Binchie 2 (Pinchie 2) reserve (TI'azt'en First Nation);
- * Ye Koo Che 3 reserve (Yekooche Nation);
- Burns Lake 18 reserve (Burns Lake Nation);

- Woyenne 27 reserve (Lake Babine Nation);
- * Duncan Lake 2 reserve (Wet'suwet'en First Nation); and
- Palling 1 reserve (Wet'suwet'en First Nation).

Because of the challenge of differentiating Project effects among individual reserves in the RSA, the census data for all reserves have been combined. Aside from population counts, however, no census data are available for the six reserves denoted by an asterisk in the preceding list. As a result, the social baseline information presented here includes 2011 census data for 82% of the total on-reserve population in the RSA.

While other Aboriginal groups may have interests in lands that are situated in the SERSA, their home communities are outside the SERSA and have not been included in the assessment of social effects. Background information for each First Nation potentially affected by the Project is presented in Section 14 (Aboriginal Groups Background Information).

3.0 REGIONAL DEMOGRAPHICS

The potential demographic effects of the Project on communities in the SERSA will ultimately depend on the extent to which Project construction and employment result in people moving into the SERSA, either permanently or temporarily. Typically, the temporary population increase would occur during the construction phase, and workers would be housed in a construction camp at the mine site. During the operations phase, a site camp would continue to be provided, but some workers could decide to move to the SERSA. This could lead to an increase in population and possibly change the demographic composition of the region. This section of the report provides an overview of existing demographic conditions and trends within the region.

3.1 Information Sources and Methods

This baseline report draws information from a number of key sources. Current and historical population information was obtained from individual community profiles from the 2011 census (Statistics Canada, 2012) and the 2006 census (Statistics Canada, 2007a). Some of the results of the 2011 National Household Survey (NHS), which replaced the long form census, were also used, although the 2006 census is still the most comprehensive source of data for some indicators. Some data from the earlier 2001 census were also used for demonstrating trends. In some cases, census information was not available because of data suppression due to low population numbers.

A key feature of the 2006 census is that specific information was gathered on Aboriginal people living in communities off reserves. In the LSA, some 2006 census information was available for off-reserve Aboriginal residents in Vanderhoof, which accounts for 35% of the off-reserve Aboriginal population. In the RSA, 2006 census information for the off-reserve Aboriginal population was available for Burns Lake, Bulkley-Nechako RDA C, and Prince George, which collectively account for 96% of off-reserve Aboriginal residents. In this

assessment, the 2006 census information has been provided to differentiate the socio-economic conditions of Aboriginal people living on and off reserves. There is no 2011 census or NHS information for the off-reserve Aboriginal people living in the SERSA.

Social statistical information was also collected from BC Stats, Vital Statistics BC, and local municipalities. Recent community and regional reports from government agencies, community profiles produced by municipalities, and community and regional websites were all reviewed as well.

In some cases, statistical data are only reported for regional districts or administrative service delivery areas that represent areas and populations larger than the individual communities in the SERSA. In these instances, the baseline information is reported for those larger areas, and the communities lying within them are clearly indicated.

3.2 Current Population and Population Change

According to the census data, the population in the SERSA decreased slightly from 2001 to 2011, by 658 residents (0.7%), but the population of the LSA increased by approximately 263 residents (2.2%). This information is summarized in **Table 3.2-1**.

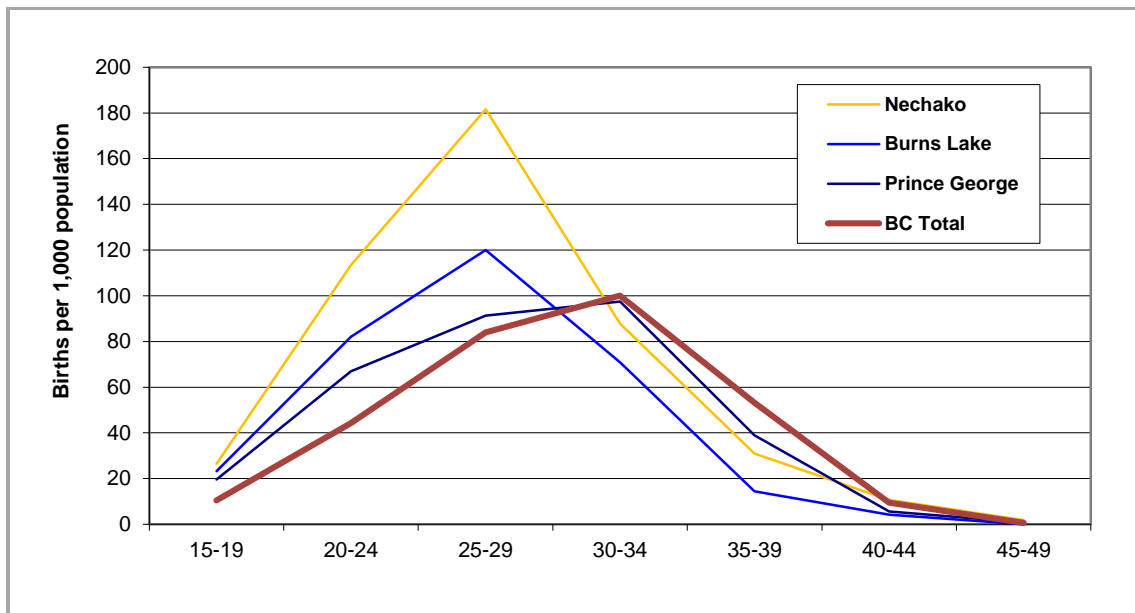
Table 3.2-1: Summary of Population in Baseline Study Area

Community	2001	2006	2011	% Change from 2001 to 2011
Local Study Area				
Vanderhoof	4,390	4,064	4,480	2.1
Fraser Lake	1,268	1,113	1,167	-8.0
Bulkley-Nechako "D"	1,715	1,665	1,734	1.1
Bulkley-Nechako "F"	3,384	3,137	3,702	9.4
Stony Creek 1 IR	413	384	332	-19.6
Laketown 3 IR	26	26	10	-61.5
Seaspunkt 4 IR	21	15	15	-28.5
Nautley 1IR	200	153	201	0.5
Stellaquo 1 IR	172	186	205	19.2
Kluskus1	52	32	39	-25.0
Sundayman's Meadow 3	0	0	5	-
Euchinico Creek 17	0	26	0	-
Trout Lake Alec 16	20	0	21	5.0
Nazco 20	119	117	132	10.9
Subtotal ¹	11,780	10,918	12,043	2.2
Regional Study Area				
Prince George	72,406	70,981	71,974	-0.6
Fort St. James	1,927	1,355	1,691	-12.2
Burns Lake	1,947	2,107	2,029	4.2
Fraser-Fort George "C"	3,178	3,217	3,434	8.1
Bulkley-Nechako "B"	2,277	2,154	2,102	-7.7
Bulkley-Nechako "C"	1,688	1,355	1,429	-15.3
Nek'azdli 1 IR	469	495	534	13.9
Williams Prairie Meadow 1A	23	19	10	-56.5
Sowchea 3	0	10	0	-
North Tacla Lake 7	140	121	183	30.7
North Tacla Lake 7a	40	10	0	-100
Dzitline Lee 9 IR	38	17	15	-60.5
Tache 1 IR	307	375	409	33.2
Binchie 2 IR	115	110	111	-3.5
Ye Koo Che 3 IR	71	93	88	23.9
Burns Lake 18 IR	35	57	55	57.1
Woyenne 27 IR	593	614	301	-49.2
Duncan Lake 2	23	10	10	-56.5
Palling 1 IR	24	75	5	-79.2
Subtotal	85,301	83,175	84,380	-1.1
Total Population	97,081	94,093	96,423	-0.7

Sources: ¹Tatelkus Lake #28 was confirmed to be populated during execution of the baseline studies between 2011 and 2013; Statistics Canada 2002, 2007a, 2012.

3.3 Natural Population Growth

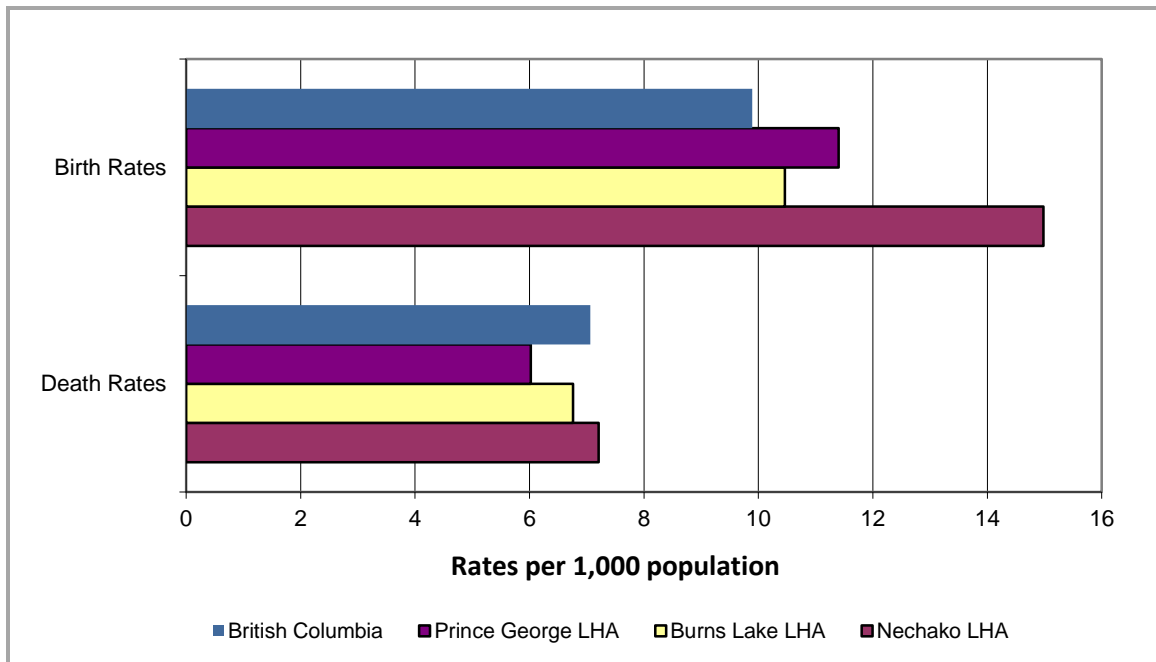
One factor affecting population change is the rate of natural growth, which is based on birth and death rates. Data on births and deaths in BC are available from BC Stats. These statistics are reported by Local Health Area (LHA) rather than by community. The Prince George, Nechako, and Burns Lake LHAs all fall within the SERSA; the Nechako LHA includes Vanderhoof, Fort St. James, and Fraser Lake. **Figure 3.3-1** shows the birth rates in the three LHAs in the SERSA and in BC as a whole in terms of the number of live births per 1,000 women in seven age groupings. Overall, birth rates among younger women are higher in the SERSA than in BC. Rates of teen pregnancy are at least double the provincial rate in all LHAs, and rates of live births among women aged 20 to 29 years are higher in the SERSA than the province overall. However, rates of live births for women aged 30 to 49 years are below the provincial average in all LHAs.



Source: BC Stats, 2012b.

Figure 3.3-1: Live Births per Thousand Women by Age Groups for Nechako, Burns Lake, and Prince George LHAs and BC to 2011

Figure 3.3-2 shows that the Nechako LHA had a significantly higher birth rate than the other LHAs and BC as a whole, with 14.98 live births per 1,000. Overall, the three LHAs had higher birth rates than the province (9.89 per 1,000). Death rates in the SERSA ranged from 7.21 per 1,000 in the Nechako LHA to 6.76 per 1,000 in the Burns Lake LHA and 6.02 per 1,000 in the Prince George LHA. Except for Nechako LHA, death rates for all LHAs were below the BC rate of 7.06 deaths per 1,000.



Source: BC Vital Statistics Agency, 2011.

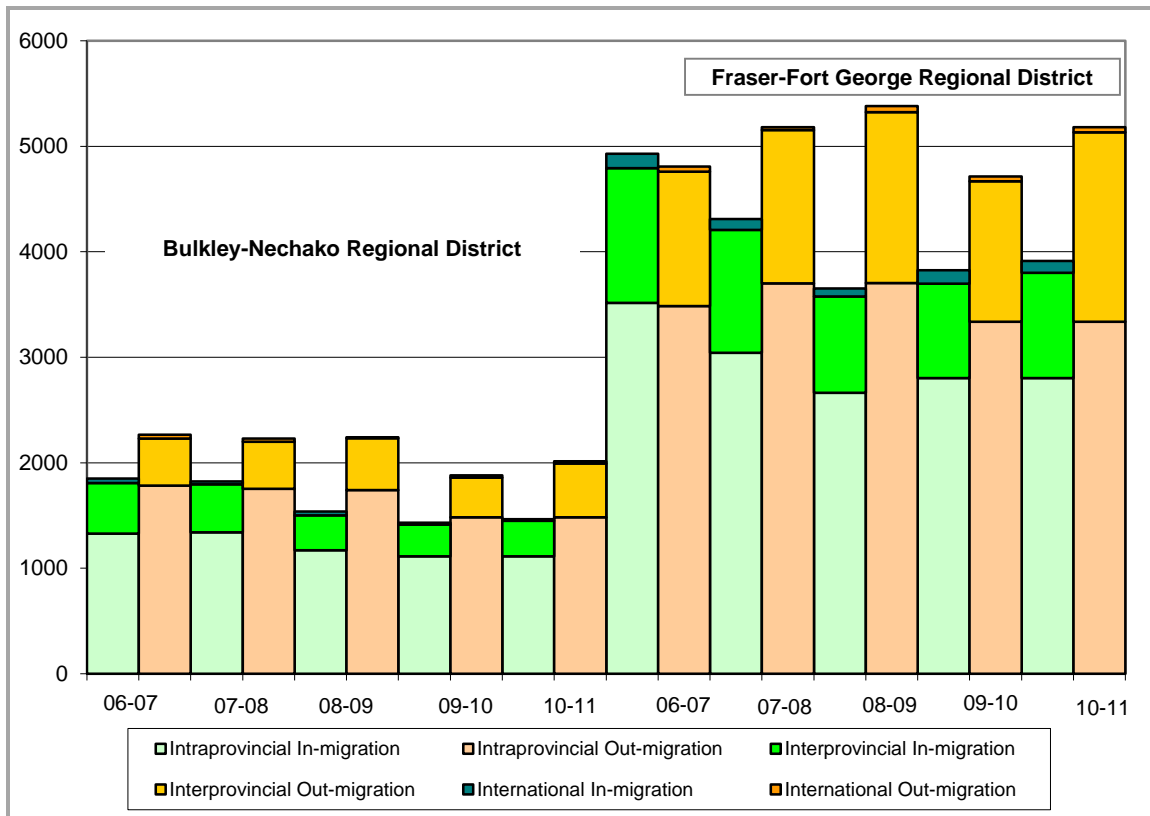
Figure 3.3-2: Birth and Death Rates in the Nechako, Prince George, and Burns Lake LHAs (2007 to 2011)

The higher birth and lower death rates for the SERSA are characteristic of a population that is younger than the provincial average. The exception is the slightly higher death rate in the Nechako LHA.

3.4 Population Mobility

Another factor affecting regional population growth is in- and out-migration. BC Stats (2011) has developed estimates of such population shifts for regional districts throughout the province. The estimates for the Regional District Bulkley-Nechako (RDBN) and Regional District Fraser-Fort George (RDFFG) are shown in **Figure 3.4-1**.

The area has experienced very little positive net migration. Between 2006 and 2011, rates of out-migration were higher than in-migration in both regional districts, with the exception of 2006 to 2007 in the RDFFG, which experienced a small positive increase. This district has the largest rate of international immigration, presumably because foreigners choose to settle in the largest urban centre, the City of Prince George, which is the regional hub for health, education, and other services.



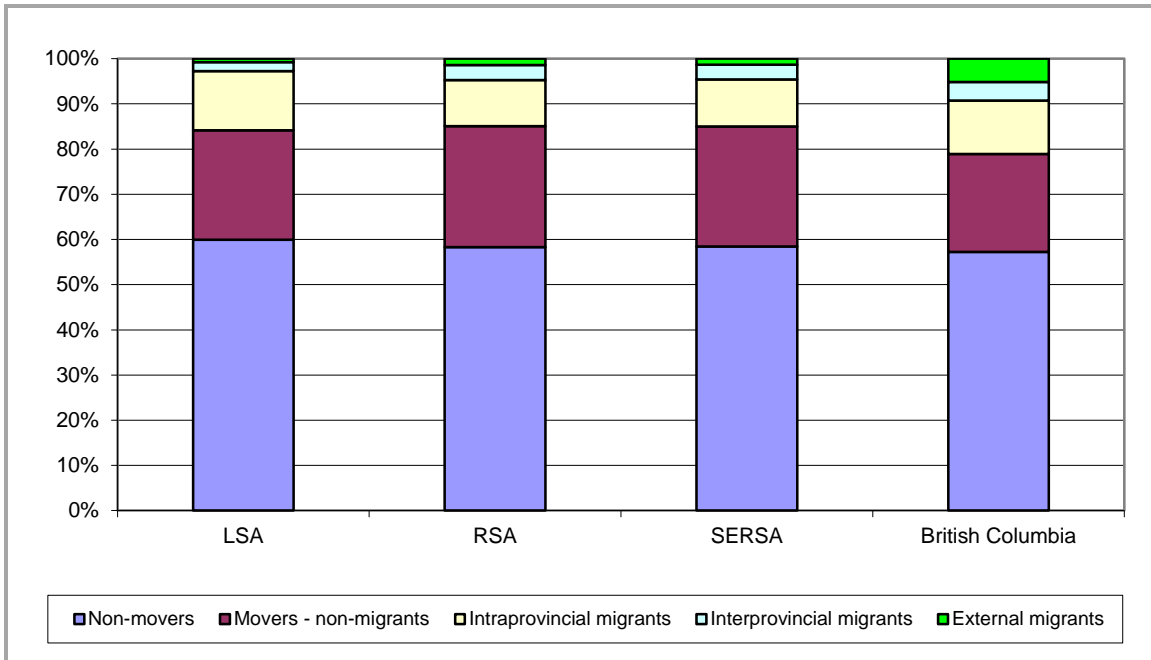
Source: BC Stats, 2012c.

Figure 3.4-1: Components of Regional Migration, 2006 to 2011

NHS data provide some additional insights into in-migration. Overall, 58% of people in the SERSA lived at the same address in 2011 as they did in 2006, and another 27% changed addresses within the same community. The other 15% of the population moved into the region from elsewhere, mostly from other parts of BC.

As shown in Figure 3.4-2, residents of the LSA were slightly less mobile than other residents of the SERSA; 60% were non-movers in the previous five years. In addition, the LSA had a greater proportion of intraprovincial in-migrants, while the RSA had a higher proportion of interprovincial in-migrants.

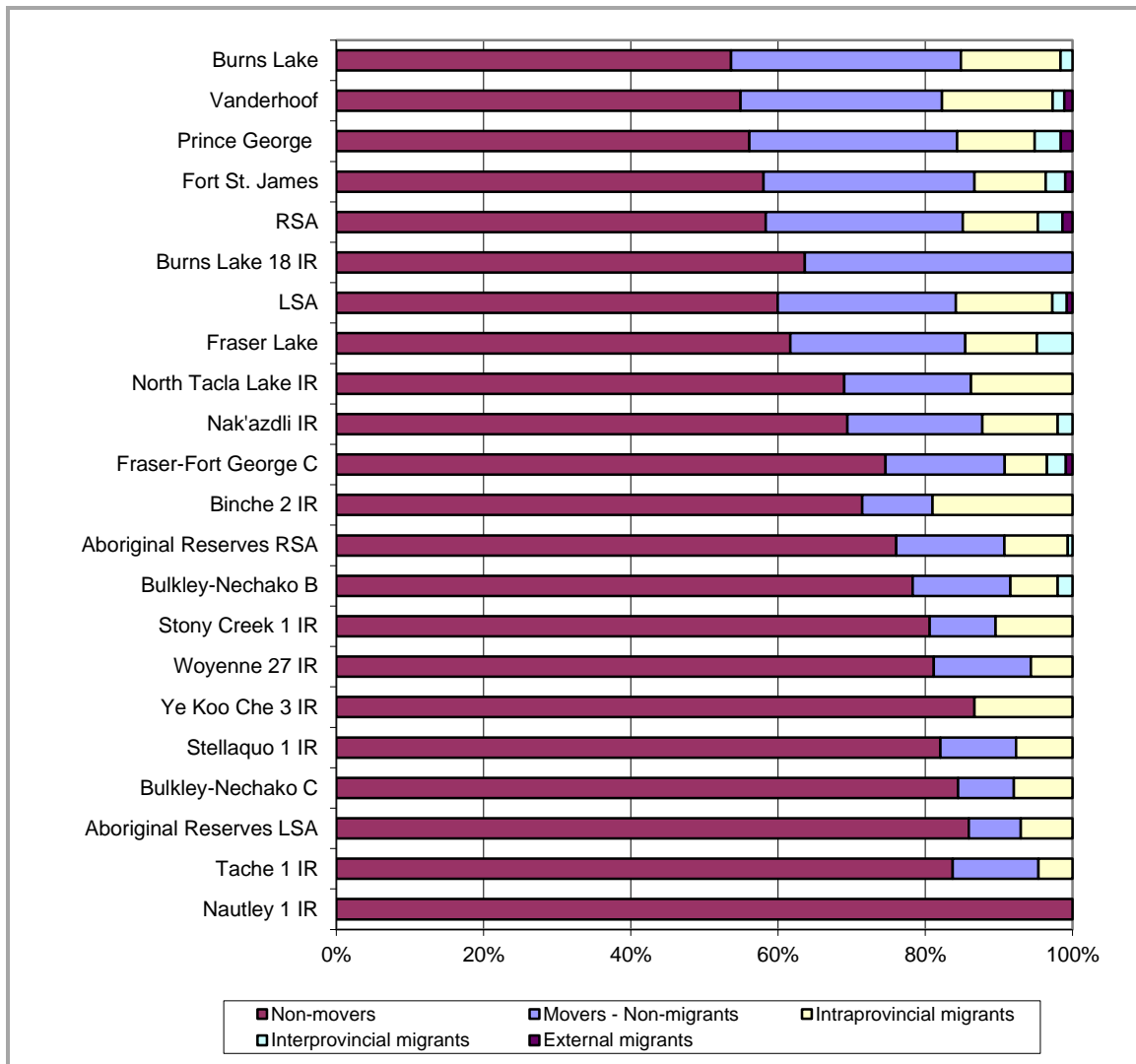
Overall, 90% of the population in the SERSA were Canadian-born in 2011. Of the 10% of the population that immigrated into Canada and the region, 71% came before 1991, 12% between 1991 and 2000, and 17% between 2001 and 2011.



Source: Statistics Canada, 2013

Figure 3.4-2: Mobility Status from 2006 to 2011

Figure 3.4-3, which focuses on individual communities, provides further insight into mobility/stability of residents within the SERSA. Residents of Burns Lake were the most mobile, with only 53% having lived at the same address for the five years prior to 2011. In contrast, 100% of residents of Nautley 1 Reserve had lived at the same address in 2006. Binche 2 Reserve had the highest percentage of people who moved in from other parts of BC between 2006 and 2011, and Fraser Lake had the highest percentage of residents who moved in from other provinces. Prince George had the highest percentage of people who in-migrated from other countries.



Source: Statistics Canada 2007a, 2007b.

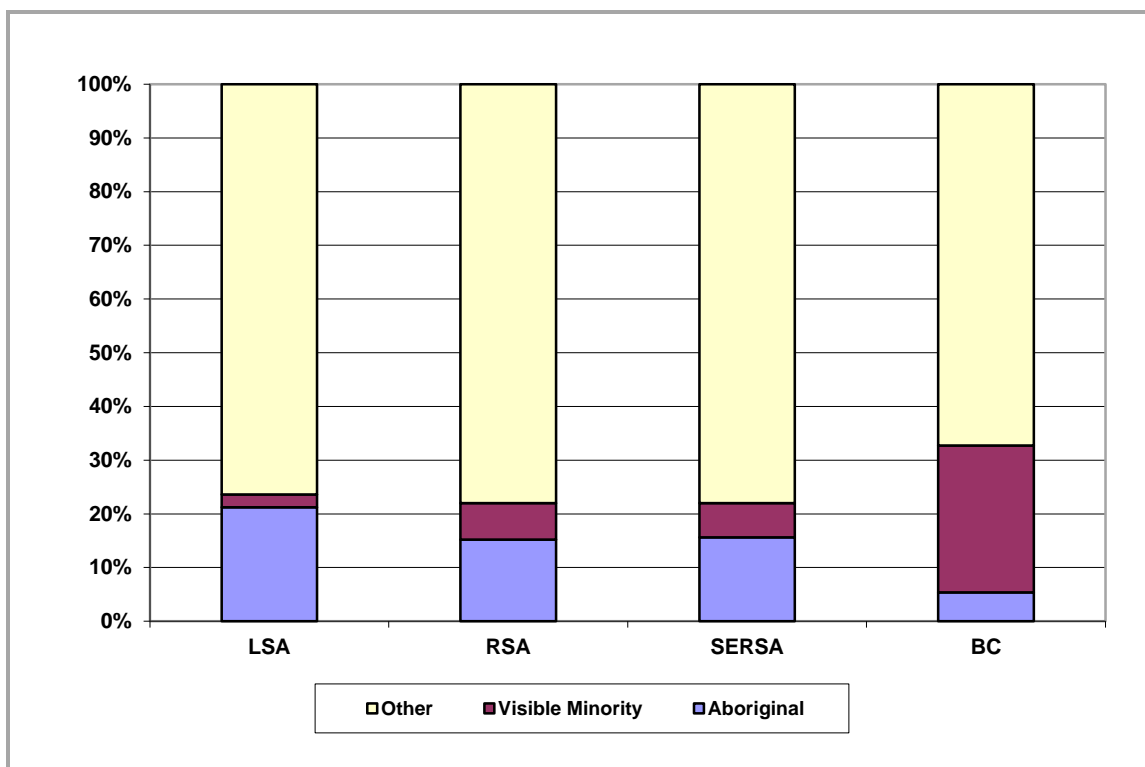
Figure 3.4-3: Mobility Status for Residents of Individual Communities from 2001 to 2006

3.5 Ethnicity

The 2011 NHS indicates that approximately 16% (13,970) of the SERSA population identified themselves as being Aboriginal. Of these people, 11,530 (83%) lived off reserve and 2,440 (17%) on reserve. The on-reserve Aboriginal people resided in 24 reserves that belong to 12 First Nations. The most populated reserves were Woyenne 27 (593), Nek'azdli 1 (469), Stony Creek 1 (413), Tache 1 (307), and Nautley 1 (200) (Table 3.2-1). Most of the off-reserve Aboriginal population, 79%, lived in Prince George (9,065), 6% (680) in Burns Lake, 4% (485) in Vanderhoof, and another 4% (445) in Fort St. James. The rest of the off-reserve Aboriginal population lived in rural areas throughout the SERSA. Of the total Aboriginal population, approximately 91% (12,645) lived in the RSA and the rest in the LSA (1,325).

Visible minorities accounted for approximately 6% of the SERSA population. Of these 5,765 people, 5,615 (97%) lived in the RSA, the majority in Prince George (5,115), and only 150 (3%) lived in the LSA.

The distribution of Aboriginal people and visible minorities within the SERSA is shown in **Figure 3.5-1**. The SERSA has a significantly higher concentration of Aboriginal people (16%) than the rest of the province (5%). Within the SERSA, the LSA has the highest concentration of Aboriginal people (21%), and the RSA has the greatest number of visible minorities, 36% of whom were Southeast Asian. The SERSA has significantly fewer visible minorities than the province as a whole (6% compared to 27%).

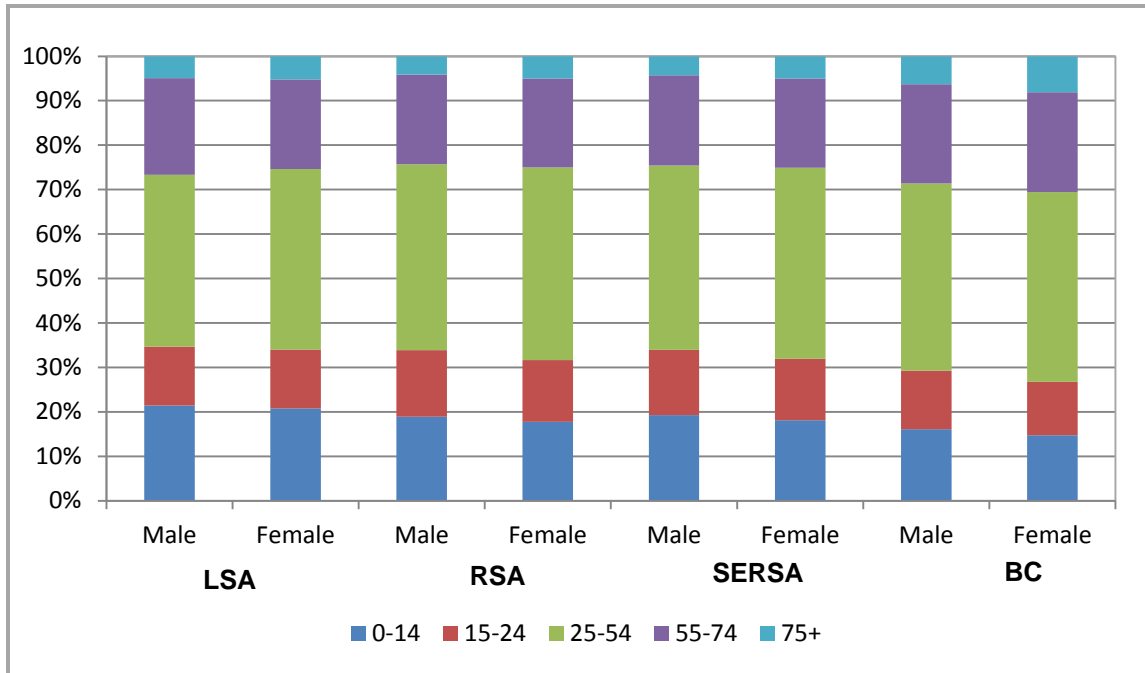


Source: Statistics Canada, 2013.

Figure 3.5-1: Ethnic Composition of the Population in the SERSA, 2011

3.6 Gender and Age

Figure 3.6-1 shows a breakdown of the population of the SERSA by age group and gender for 2011, the most recent census data available. Approximately 42% of the population was 25 to 54 years old, varying only slightly from 40% in the LSA to 43% in the RSA. The LSA had the largest proportion of younger residents, with approximately 34% under the age of 25, and also the largest concentration of those aged 55+ years, who accounted for approximately 26%. The provincial rates were 28% for those under the age of 25 and 29% for those over 55 years of age.

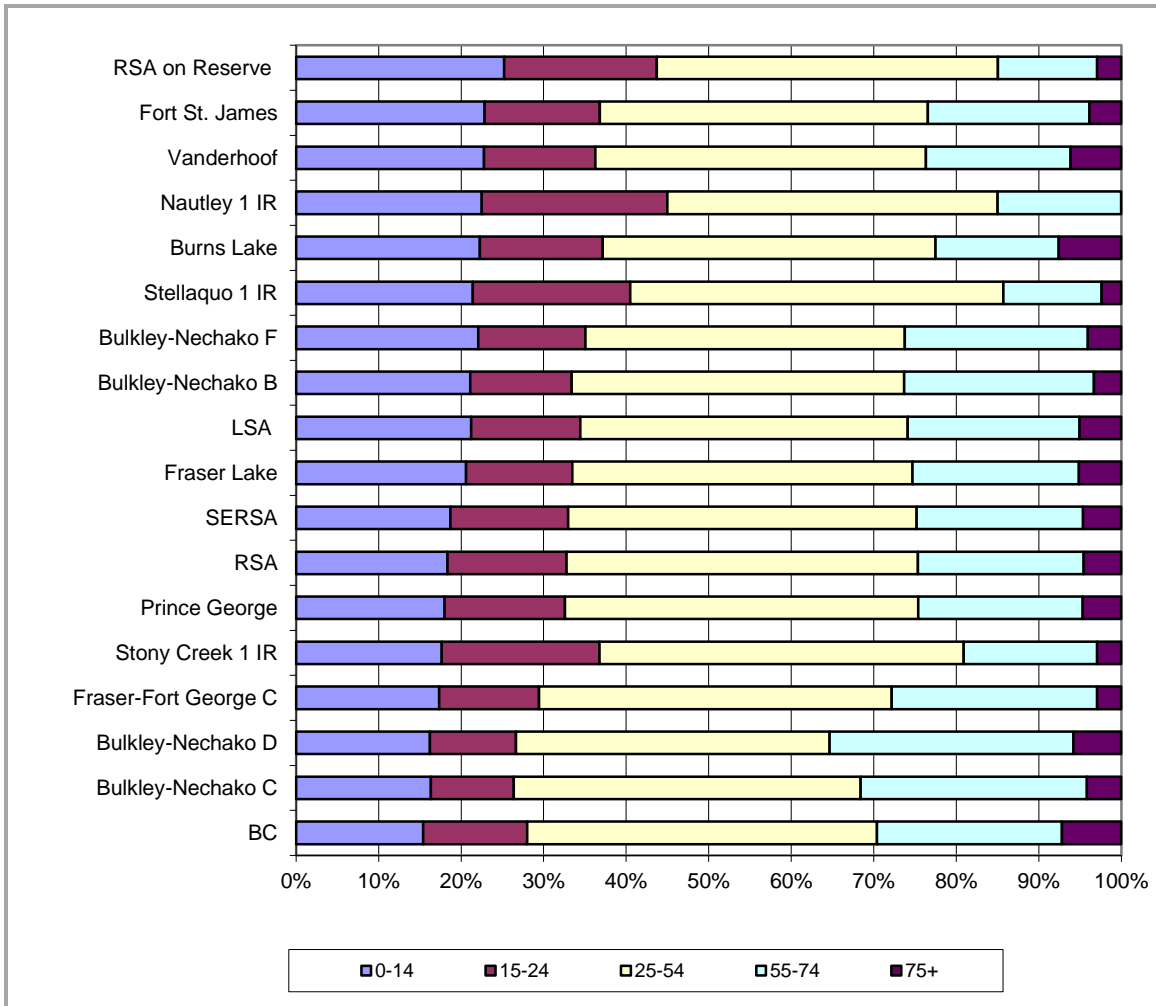


Source: Statistics Canada, 2012

Figure 3.6-1: Breakdown of Age Groups by Gender in the SERSA, 2011

The male to female ratio in the SERSA was 50.2% to 49.8%. The LSA had a slightly higher ratio—51.1% males to 48.9% females—while the RSA had an almost equal ratio of males to females of 50.1 to 49.9.

Figure 3.6-2 summarizes the age distribution of residents in all the individual communities within the SERSA, showing the communities with the youngest populations at the top of the graph and those with older populations at the bottom. The RSA on-reserve population and the communities of Vanderhoof and Fort St. James have the largest proportions of young people (aged 0 to 14 years), at 25.7%, 22.8%, and 22.8%, respectively. In contrast, the rural electoral districts of Bulkley-Nechako D and C have the largest proportions of SERSA residents aged 55+ years, at 35.2% and 31.9%, respectively. Compared to the provincial rates, the SERSA has larger numbers of people aged 0 to 4 years and 25 to 54 years, and fewer people aged 75+ years.



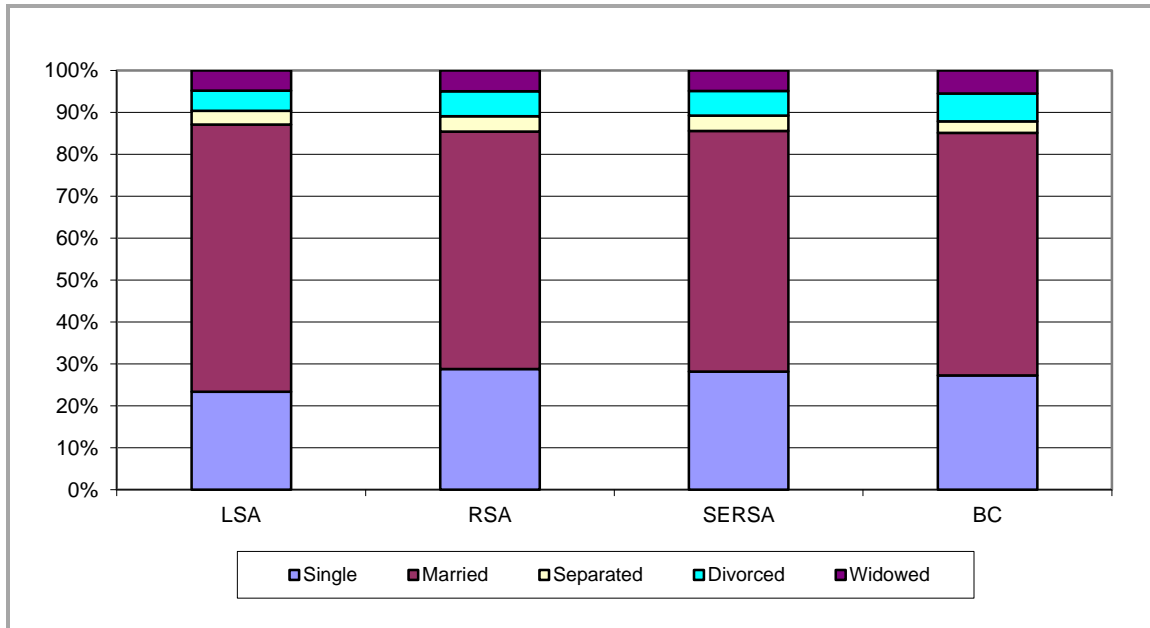
Source: Statistics Canada, 2012.

Figure 3.6-2: Age Distribution by Community, 2011

3.7 Household Structure

3.7.1 Marital Family and Status

In 2011, 57.4% of the adult population (aged 15+ years) in the SERSA were married, including couples living common-law; 28.2% were single (never legally married); 3.6% were separated; 5.8% were divorced; and 4.9% were widowed. The SERSA marital status rates were comparable to the provincial rates. **Figure 3.7-1** summarizes the marital status of adults in the study area and in BC. Within the SERSA, the LSA had a higher proportion of married adults and a lower proportion of singles than the RSA and BC as a whole.



Source: Statistics Canada, 2012

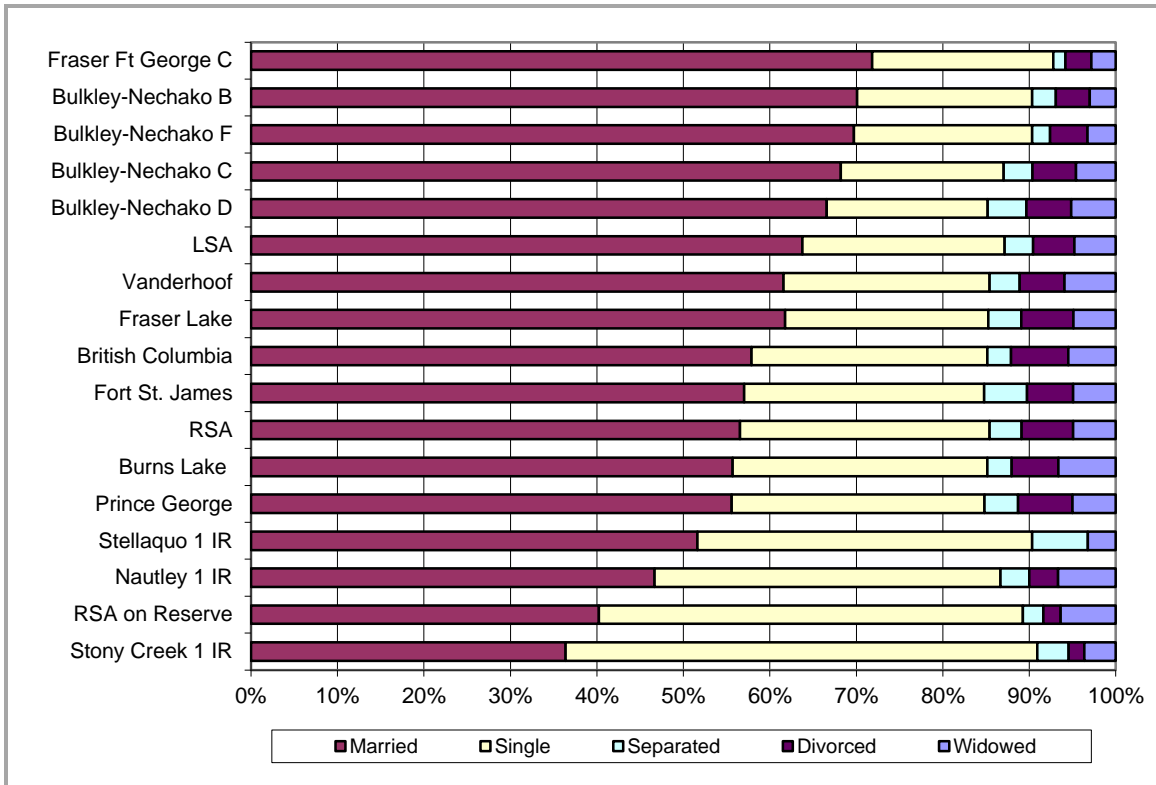
Figure 3.7-1: Marital Status of SERSA Population, 2011

The considerable variability among communities in terms of marital status in 2011 is shown in **Figure 3.7-2**. Within the SERSA, Fraser-Fort George RDEA C had the highest proportion of married people (72%), Stony Creek the largest proportion of single people (56%), Stellaquo 1 IR had the largest concentration of separated people (6%), Prince George the greatest portion of divorced adults (6%), and Burns Lake the largest concentration of widowers (7%).

“Families” refers to married couples and couples living common-law, with or without children, and lone parents with children. **Figure 3.7-3** shows the family structure within different parts of the SERSA. Overall, 65% of families consisted of married couples (with and without children), 16% were common-law couples, and 19% were lone-parent families. The LSA had the highest percentage of married couple families (72%) and the lowest percentage of single-parent families (14%). The RSA had the highest percentage of lone-parent families (19%).

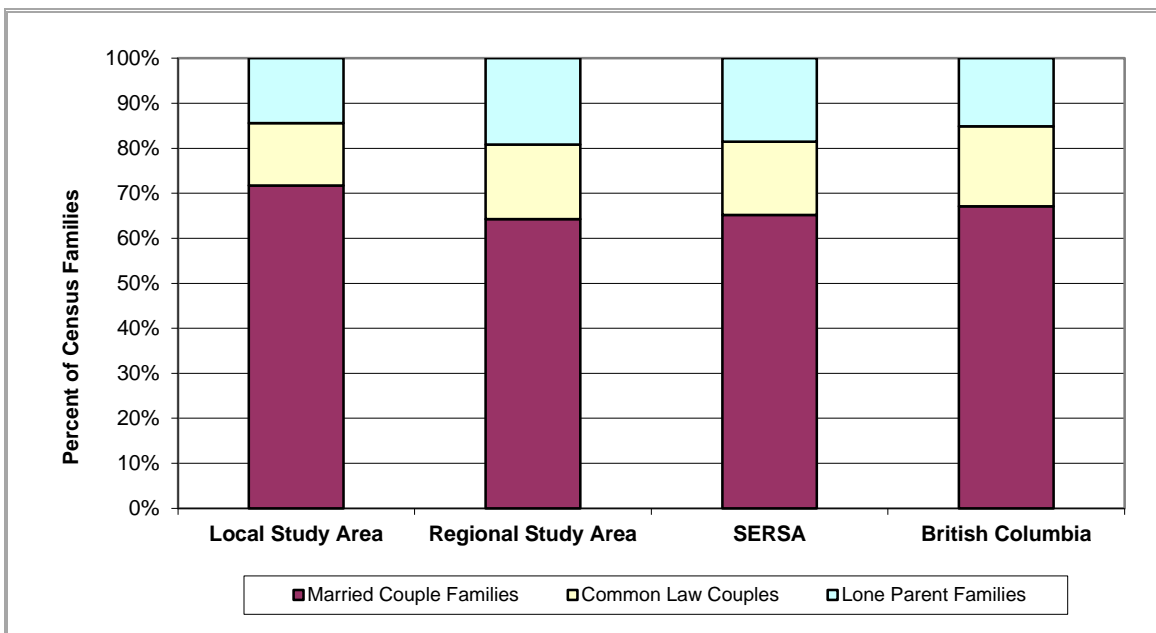
Average family size (number of people in a family) varied little within the SERSA, ranging from 3.0 persons per family in the LSA to 2.8 in the RSA. This was on par with the BC average of 2.8 people per family.

The structure of families in individual communities within the SERSA showed some variation (**Figure 3.7-4**).



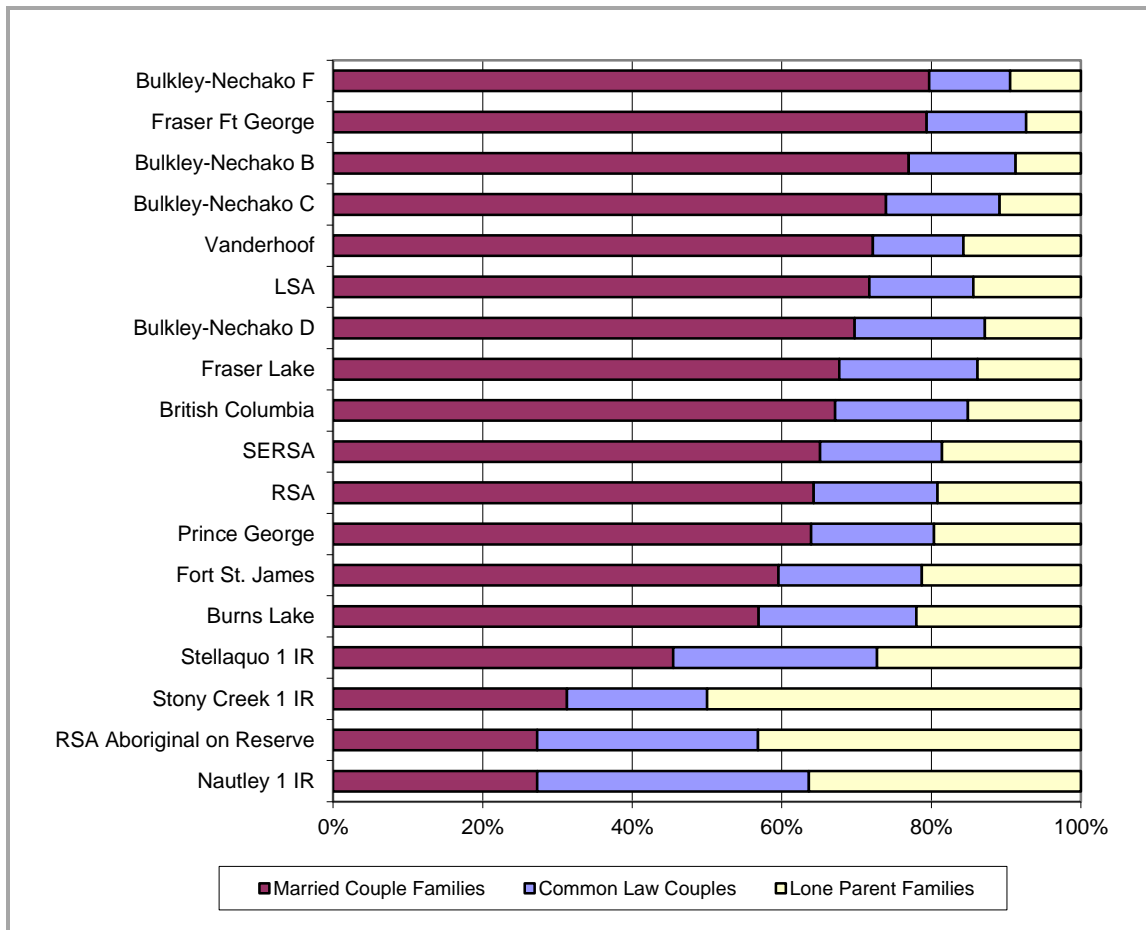
Source: Statistics Canada, 2012.

Figure 3.7-2: Marital Status of Individual Communities within SERSA, 2011



Source: Statistics Canada, 2012.

Figure 3.7-3: Family Structure in SERSA, 2011



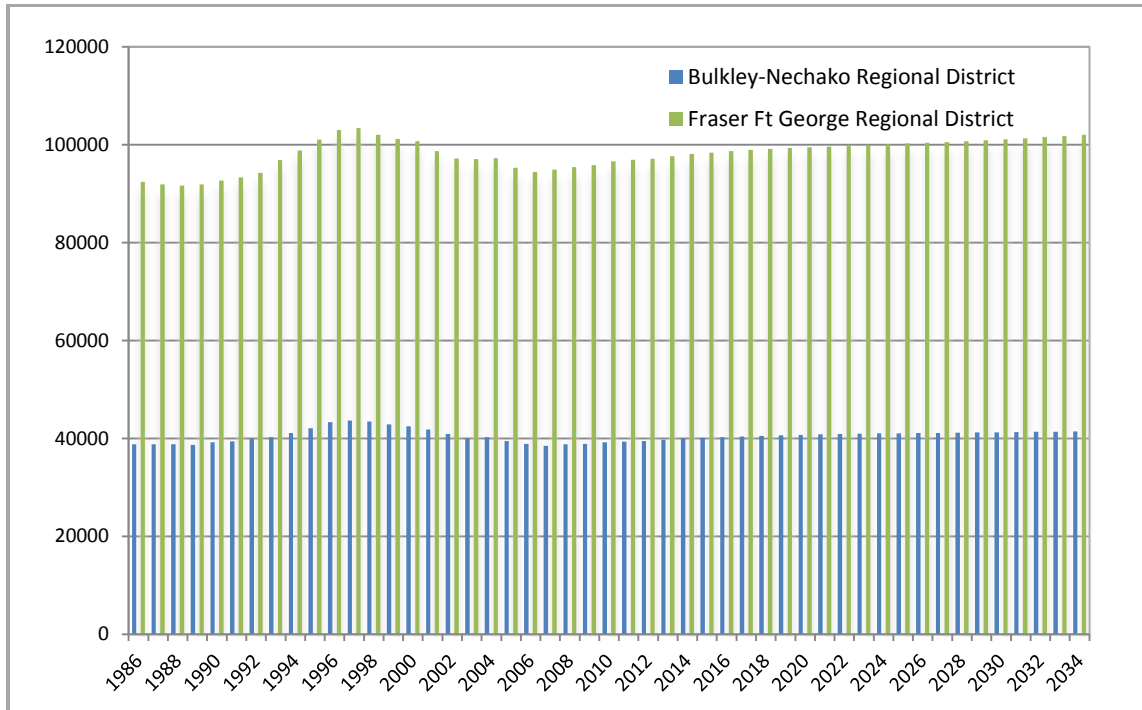
Source: Statistics Canada, 2012.

Figure 3.7-4: Family Structure in Individual Communities within SERSA, 2011

The rural areas of Bulkley-Nechako F had the highest percentage of married couple families (80%), compared to Fraser-Fort George (79%) and Bulkley-Nechako B (78%). Nautley 1 IR had the highest percentage of common-law couples (36%) and Stony Creek 1 IR the greatest proportion of lone parents (47%).

3.7.2 Future Population Growth

Although population projections are not available for individual communities, they are available for each of the two regional districts in the SERSA (BC Stats, 2012). The LSA falls within the RDBN and the RSA within the RDIFFG. The population projections are based on past trends such as birth rates, deaths, and migration by age. The resulting estimates for the relevant regional districts are provided in **Figure 3.7-5**. The figure shows that after growth from 1986 to 1996, the population of the regional districts declined until 2006 but has gradually increased since then and is forecast to continue to grow at a slow but steady pace.



Source: BC Stats, 2012d.

Figure 3.7-5: Population Projection for SERSA, 2006 to 2036

The regional population increased by 2.21% between 2006 and 2011 across the SERSA and is forecast to increase 1.96% between 2011 and 2016, 1.11% between 2016 and 2021, 0.72% between 2021 and 2026, 0.82% between 2026 and 2031, and 1.03% between 2031 and 2036, for a total population of approximately 144,082 by 2036. This 2036 estimate represents a 5.83% increase over the 2011 population.

3.8 Summary

Overall, the SERSA reported a small but positive population growth from 2001 to 2011. Birth rates across the SERSA, and specifically in the Nechako LHA, were above the provincial average, as was teen pregnancy. Death rates across the SERSA were on par with or below the BC average. The in- and out-migrations rates in the LSA and RSA were similar; however, the RSA reported a slightly higher rate of residential mobility, specifically in Prince George, from 2001 to 2006. This was also a notable trend among the off-reserve Aboriginal population. The RSA had a higher concentration of visible minorities, while the LSA had a slightly larger portion of Aboriginal residents. Both the LSA and RSA report similar age populations, with Vanderhoof, Fort St. James, and the RSA on-reserve populations reporting the largest proportion of residents aged 0 to 14 years, while Burns Lake and Vanderhoof reported the highest concentration of people aged 75+ years. Most SERSA residents were married. Population projections by BC Stats anticipate slow, sustained growth for the region, with the RSA growing slightly faster than the LSA.

4.0 REGIONAL INFRASTRUCTURE

The potential social effects of the Project on communities in the study region will ultimately depend on the extent to which proposed activities and Project-related population growth result in increased demands on regional infrastructure. This section of the report provides an overview of the capabilities and capacities of existing infrastructure in the SERSA as a whole.

4.1 Information Sources and Methods

Baseline information was obtained from a number of key sources. Information related to housing was taken from the 2006 and 2011 censuses (Statistics Canada 2007a, 2012; BC Stats, 2009a). The status of other regional infrastructure was based on a review of recent community and regional reports from government agencies, community profiles produced by municipalities, and community and regional websites.

4.2 Housing

4.2.1 Numbers and Types of Available Housing

The 2011 census reported 42,505 private dwelling units in the SERSA, approximately 6% more than in 2006. Of these, 38,421 (90.4%) were considered to be permanently occupied, suggesting that the rest were being used as temporary or seasonal residences, or were vacant. Within the SERSA, the 2011 occupancy rate was lower in the LSA (85.5%) than in the RSA (91.1%), although it increased slightly compared to 2006 (82.4%). More detailed information on housing in the SERSA is available from the 2006 Census and is provided in **Table 4.2-1**. Compared to the rest BC:

- The occupancy rate in the SERSA was about the same, although lower in the LSA;
- A lower percentage of housing in the SERSA was rented, especially in the LSA;
- The housing in the SERSA was older, especially in the RSA;
- A higher percentage of housing was in need of major repair, especially in the LSA; and
- The average value of housing in the SERSA was approximately 58% lower, particularly in the LSA.

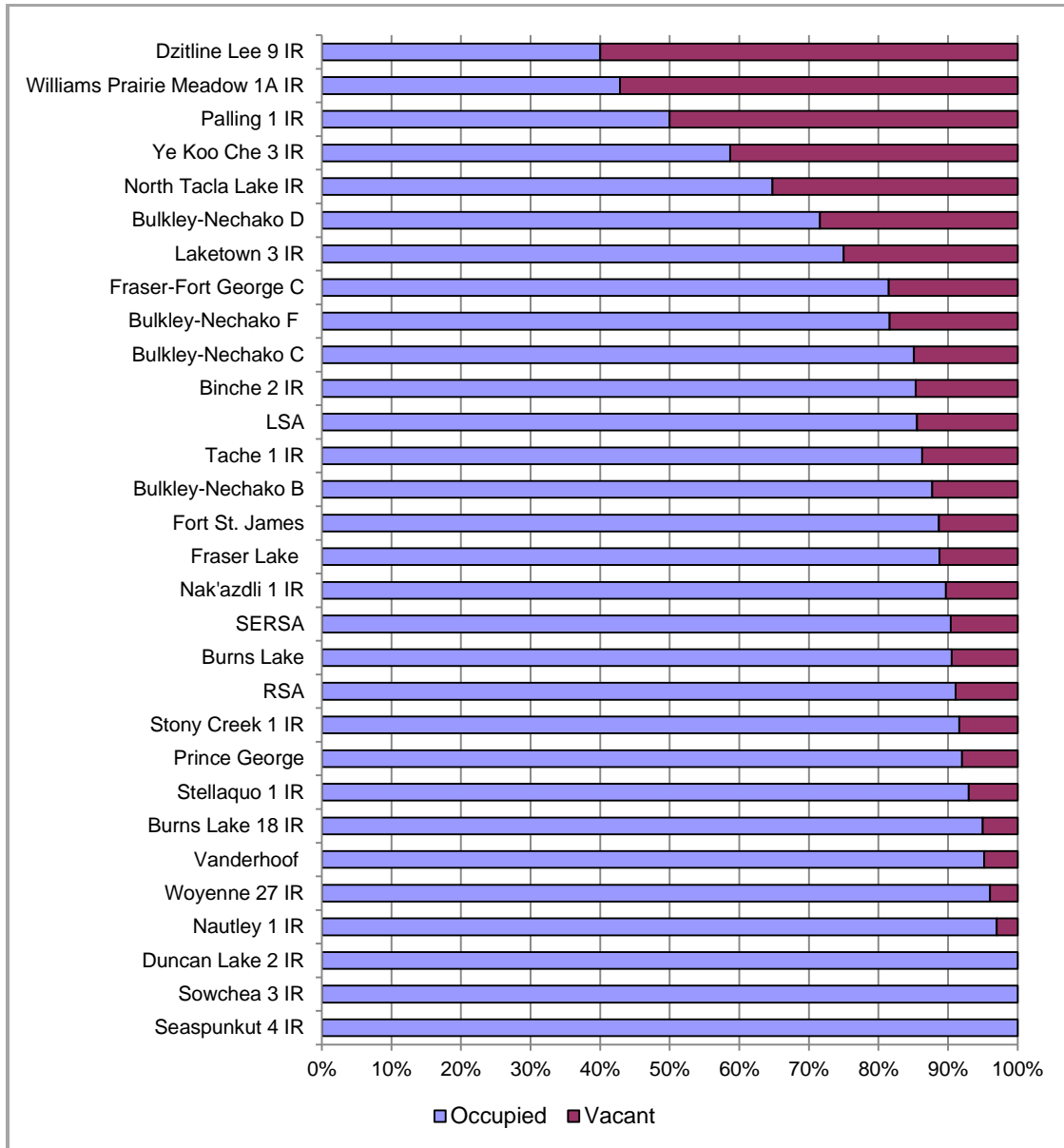
Table 4.2-1: Housing Characteristics in the SERSA, 2011 and 2006

Population Segment	LSA	RSA	SERSA	BC
2011 Census				
Total Private Dwellings (Count)	5,347	37,158	42,505	1,945,365
Occupied Dwellings	4,574	33,847	38,421	1,764,637
Occupancy Rate (%)	85.5	91.1	90.4	90.7
2006 Census				
Total Private Dwellings (Count)	5,039	35,102	40,141	1,788,474
Occupied Dwellings	4,152	32,598	36,750	1,642,715
Occupancy Rate (%)	82.4	92.9	91.6	91.9
Percent Rented (%)	19.8	28.3	27.4	30.1
Constructed Before 1986 (%)	74.2	76.0	75.8	61.9
Needs Major Repair (%)	12.6	8.6	9.0	7.4
Average Number of Rooms	6.6	7.2	7.1	6.4
Average Value (\$)	164,981	178,227	176,735	418,703

Source: Statistics Canada 2007a, 2012

Figure 4.2-1 shows the 2011 occupancy rates for all communities in the SERSA, presented from lowest to highest.

Among non-Aboriginal communities, the lowest occupancy rates were recorded in the Bulkley-Nechako RDEA D (72%), Fraser-Fort George RDEA D (81%), and Bulkley-Nechako RDEA F (82%). This may reflect generally lower permanent occupancy rates in rural areas. The highest occupancy rates were in the urban communities of Vanderhoof (95%) and Prince George (92%), and in Burns Lake (91%). Among Aboriginal Indian reserves, occupancy rates varied significantly from as little as 40% in Dzitline Lee 9 IR to 100% in Seaspunkut 4, Sowchea 3, and Duncan Lake 2.



Source: Statistics, Canada 2012

Figure 4.2-1: Characteristics of Occupied Dwellings by Community, 2011

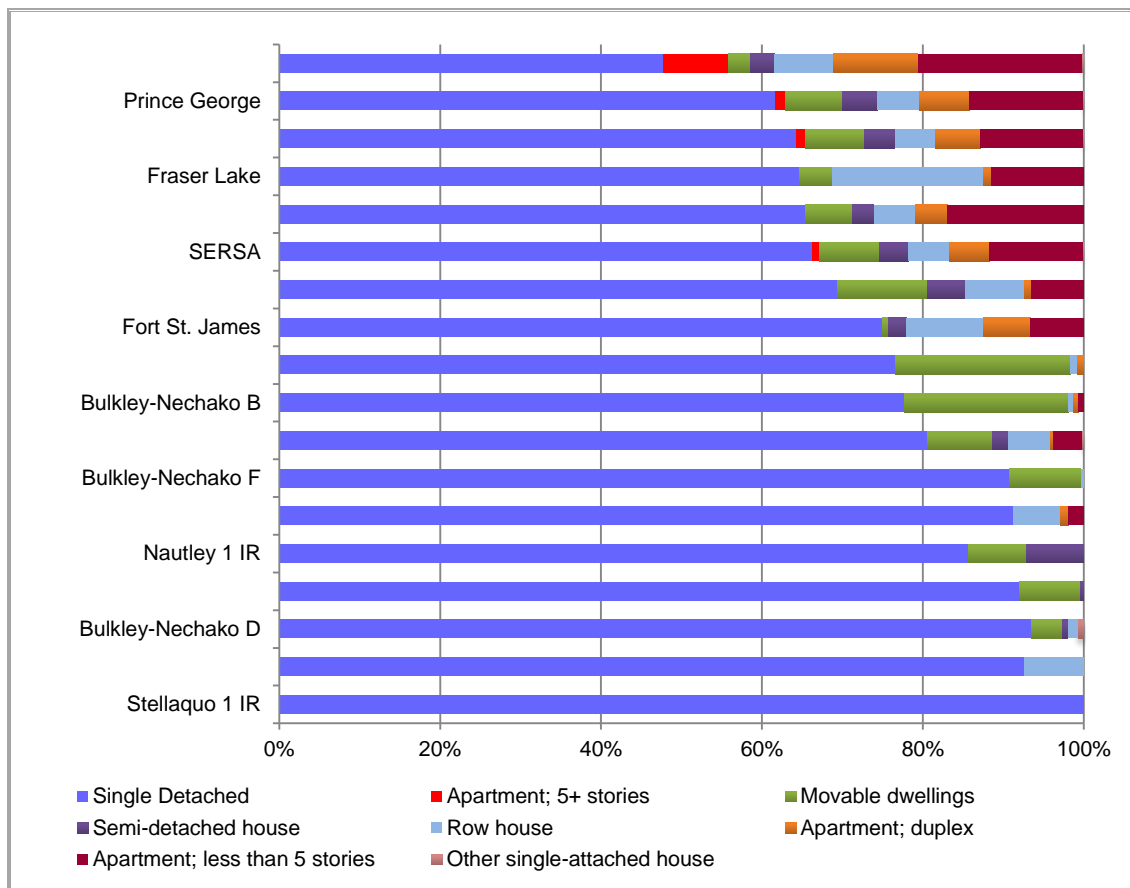
Within the SERSA, 66% of occupied dwellings were single-family houses, and the rest consisted of various types of multi-family housing, including apartments (18%), movable dwellings (7%), row houses (5%), semi-detached houses (4%), and various other types (0.1%). Table 4.2-2 shows that the SERSA overall had a much higher percentage of single detached houses and a much lower percentage of apartments than the rest of BC, although the larger urban population centres of the RSA had the highest percentages of apartments and the lowest percentages of single detached houses.

Table 4.2-2: Occupied Dwellings Types in the SERSA, 2011

Dwellings by Structural Type	LSA	RSA	SERSA	BC
Occupied Dwellings	4,560	33,830	38,390	1,764,635
Single Detached Houses (%)	80.7	64.3	66.2	47.7
Semi-detached Houses (%)	2.0	3.8	3.6	3.0
Row Houses (%)	5.3	5.1	5.1	7.4
Apartments (%)	4.1	19.5	17.7	39.1
Movable Dwellings (%)	8.0	7.4	7.4	2.7
Other Housing (%)	0.1	0.1	0.1	0.2

Source: Statistics Canada 2012

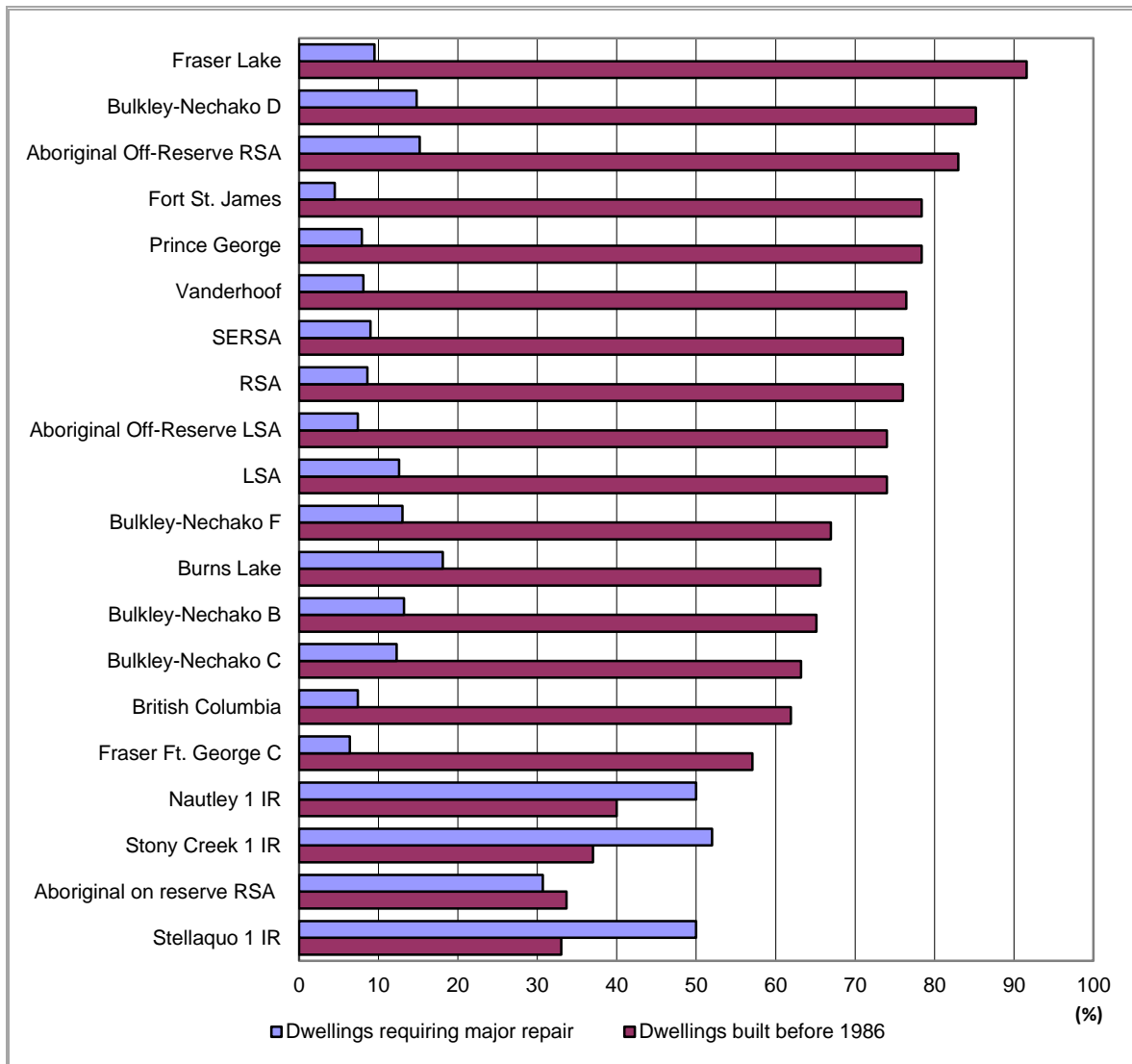
Figure 4.2-2 also shows that most housing in the various communities within the SERSA consisted of single detached houses, with the urban centres of Vanderhoof, Fort St. James, and Prince George having the broadest mix of housing, of which only 62% to 76% consisted of single-family dwellings. Housing in rural areas, on reserves, and in unincorporated communities consisted primarily of single-family homes.



Source: Statistics Canada, 2012

Figure 4.2-2: Characteristics of Occupied Dwellings by Community, 2011

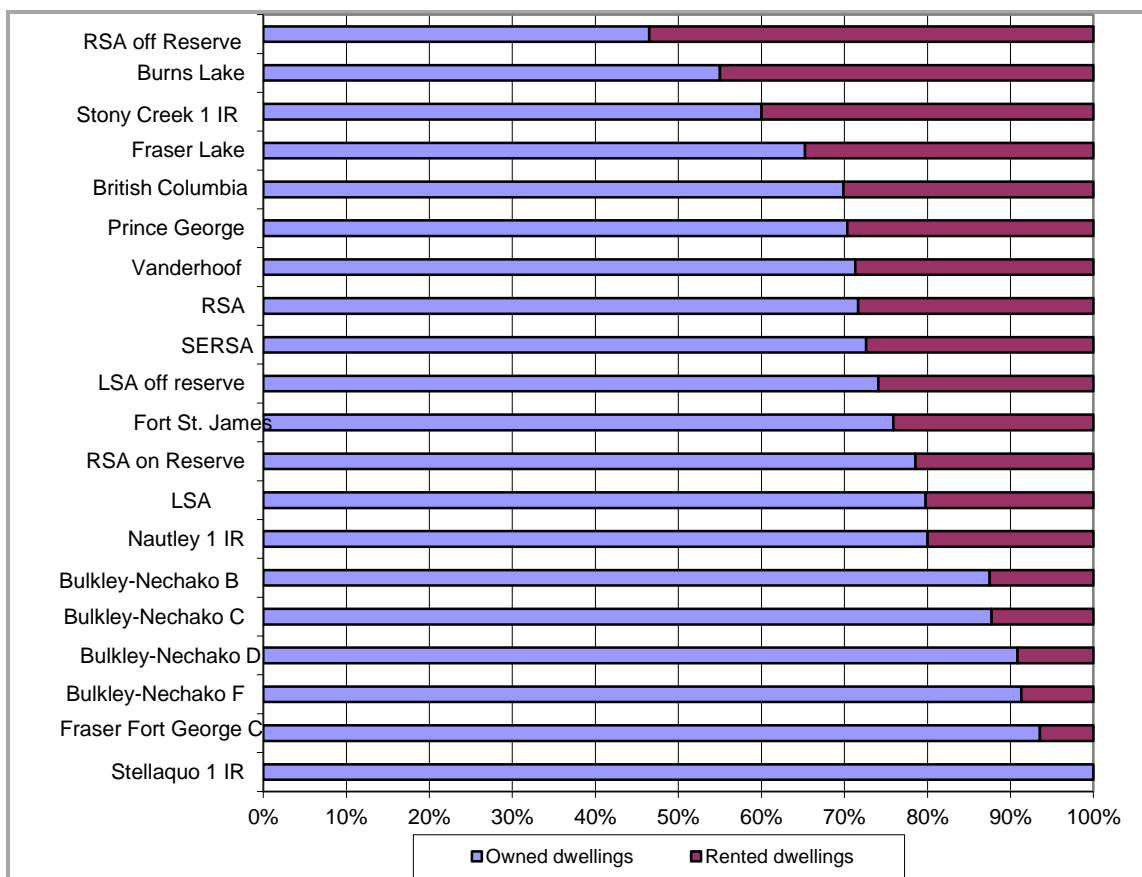
The 2006 census reported that more than three quarters of the housing stock in the SERSA was at least 20 years old. Approximately 76% of all dwellings were constructed before 1986, and approximately 7% were in need of major repair. In the RSA, approximately 76% of housing was built before 1986 and 9% required major repairs. In the LSA, approximately 74% of housing was built before 1986 and 13% was in need of major repair. As shown in **Figure 4.2-3**, Fraser Lake had the oldest housing, with 92% having been constructed before 1986, but with only about 10% in need of repair.



Source: Statistics Canada 2007a, 2007b

Figure 4.2-3: Age and Condition of Occupied Private Dwellings, 2006

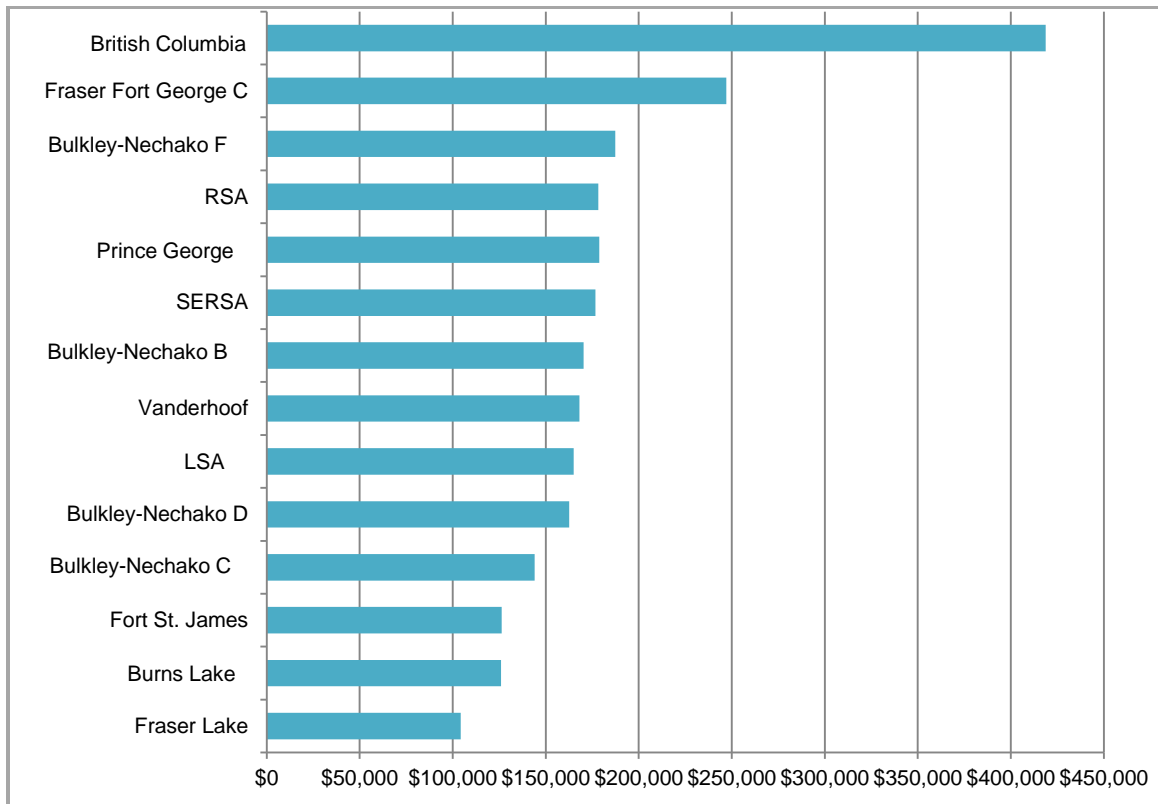
In 2006, approximately 73% of the dwellings in the SERSA were owned and the remaining 27% were rented. The LSA reported 74% ownership and 26% rental, and the RSA reported a mix of 72% ownership and 28% rental. **Figure 4.2-4** shows the mix of owned and rented dwellings for rural areas and for all communities in the SERSA. The highest percentages of rented dwellings were found among the RSA off-reserve population, at 54%, followed by Burns Lake at 45% and Stony Creek 1 at 40%. The locations with the highest proportion of owned dwellings were Stellaquo 1 (100%) and the rural areas of Fraser-Fort George C (94%). On-reserve housing does not fall within the usual classification system used for the census, and caution is needed when interpreting the number of rental versus privately owned dwellings on reserve (Wright, 1993).



Source: Statistics Canada, 2007a, 2007b

Figure 4.2-4: Dwelling Characteristics by Tenure, 2006

Overall, the average reported value of housing in the SERSA as per the 2006 census was \$176,735, ranging from \$164,981 in the LSA to \$178,227 in the RSA (**Figure 4.2-5**). Average housing values varied by as much as \$140,000 between communities. Housing prices were lowest in Fraser Lake (\$104,288) and highest in the Fraser-Fort George RDEA C (\$247,049). These costs were all well under the provincial average (\$418,703). No information was available for the cost of homes on reserves.

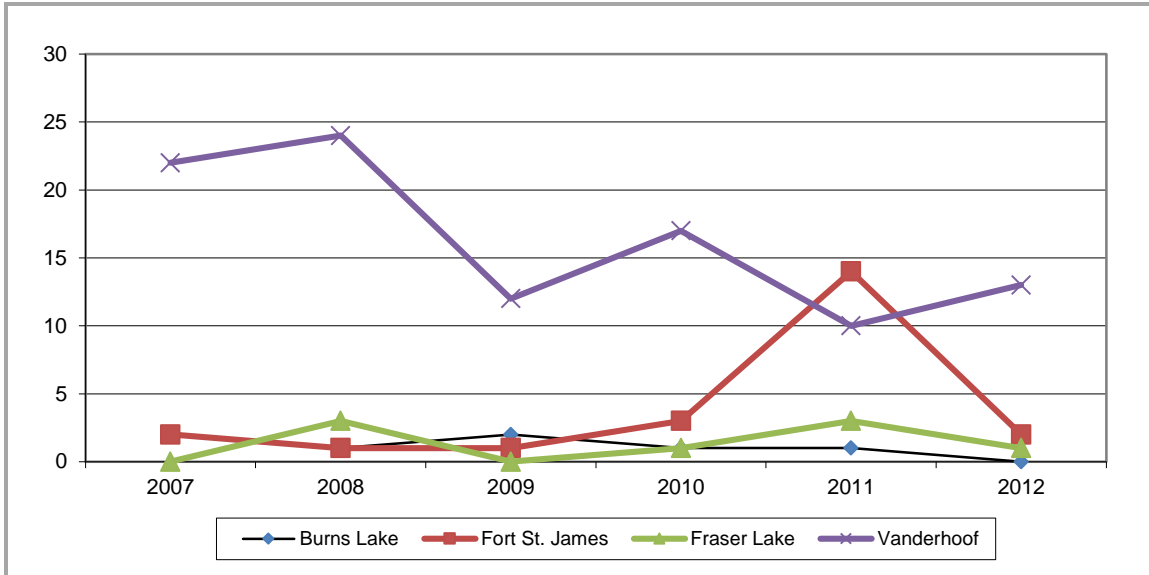


Source: Statistics Canada, 2007a

Figure 4.2-5: Estimated Value of Dwellings in Communities in the SERSA, 2005

Interviews with key residents in each community in the SERSA indicated that average housing values have increased noticeably in some communities since 2006. Based on a scan of the residential multiple listing system (MLS), a single-family, four-bedroom, two-bathroom home constructed in the mid- to late-70s varies in price from \$105,000 (Burns Lake) to \$245,000 in Vanderhoof. The same house in Fraser Lake, Fort St. James, and Prince George would cost \$179,900 to \$195,000 (realtors.ca, 2012). These costs are all higher than those reported in the 2006 census (**Figure 4.2-5**).

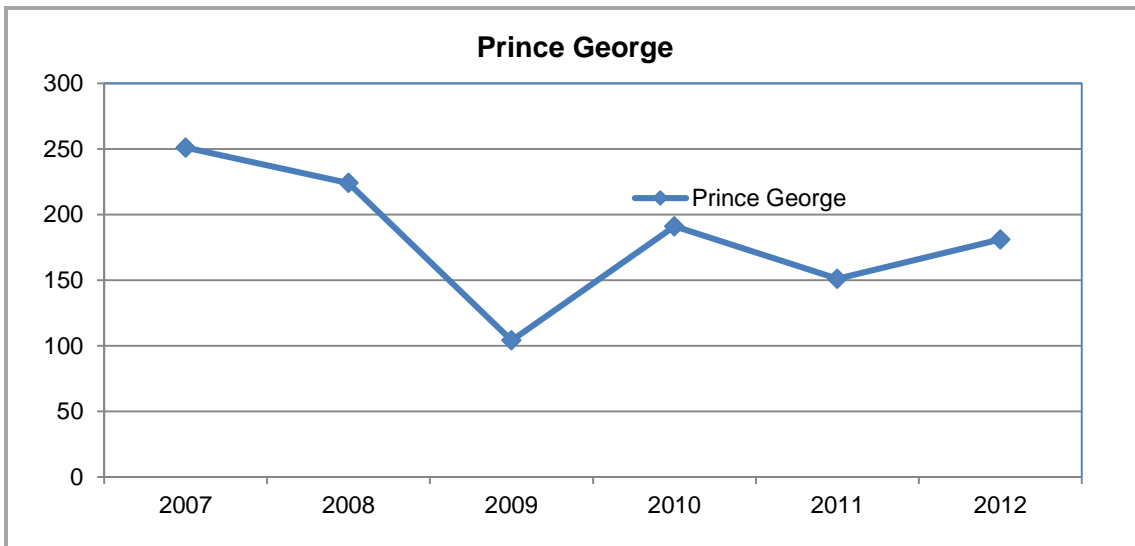
Economic growth in a community can also be assessed by tracking residential construction (**Figure 4.2-6**). BC Stats reports the number of new home building permits purchased from 2007 to 2011. There was very little proposed residential construction in the communities of Burns Lake and Fraser Lake, when only zero to three permits were issued annually. Fort St. James reported a significant increase in new home building permits in 2011 (likely associated with the Mount Milligan copper/gold mine project), up from three in 2010 to 14 in 2011, and Vanderhoof has experienced a steady decline, from 22 permits in 2007 to 10 in 2011. It is important to note that the purchase of a building permit does not always lead to an actual build and that this relationship is not normally tracked.



Source: BC Stats, 2013

Figure 4.2-6: Building Permits, 2007 to 2012

Because the community of Prince George is significantly larger than the four aforementioned communities, its statistics are presented separately in **Figure 4.2-7**. The number of housing permits issued in the city has fluctuated substantially between 2007 and 2012. Residential building permits dropped from 250 in 2007 to 104 in 2009, then increased to 191 in 2010 before dropping again to 161 in 2011. The latest available data for Prince George indicate that 181 building permits were issued from January to November 2012.



Source: BC Stats, 2013

Figure 4.2-7: Building Permits for Prince George, 2007 to 2011

4.2.2 Temporary Accommodations

BC Stats reports temporary accommodation statistics by entire regional districts rather than by community. In some cases, when valid statistical information is limited, data for regional districts are aggregated and reported at a development region level. The SERSA falls within the RDBN and the RDFFG. Considering the small amount of temporary accommodation and revenue generated in the RDBN and the adjacent Regional District of Kitimat-Stikine (RDKS), BC Stats has compiled statistics data at a development region level (Nechako Development Region) that includes the Stikine. Statistics for the RDFFG were reported independently.

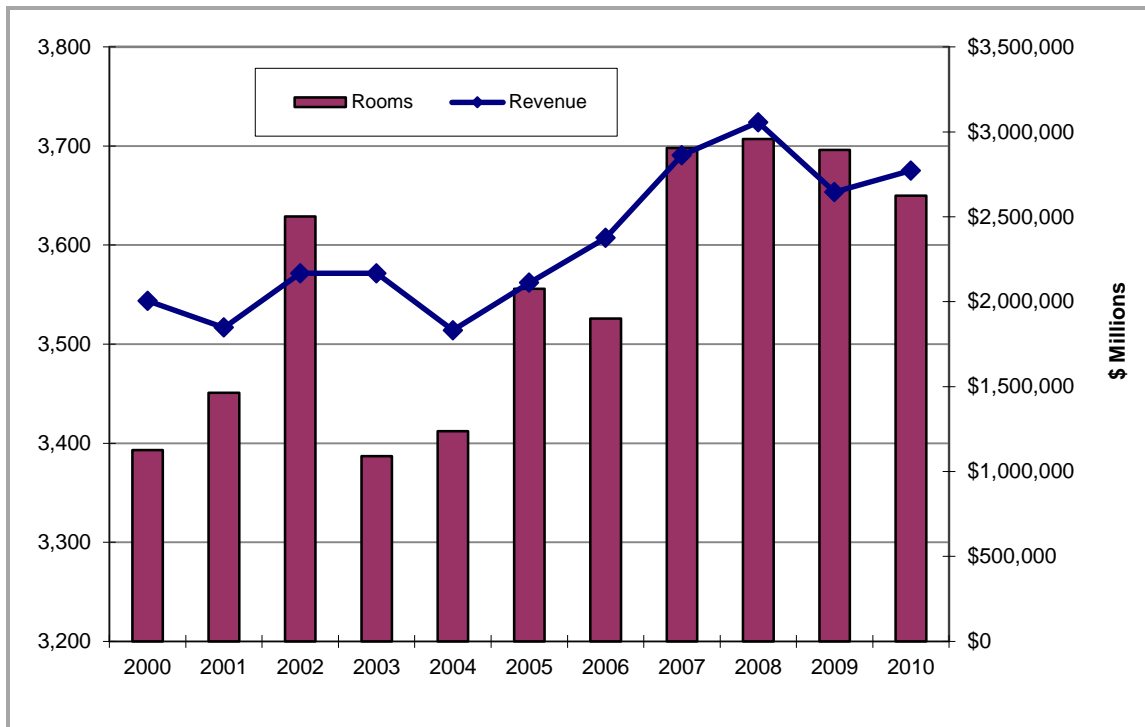
The most current temporary accommodation statistics indicate that a total of 3,650 temporary accommodation rooms were available in the combined Nechako Development Region and RDFFG, which together generated a total revenue of \$2,772,000 in 2010 (BC Stats, 2012f). As shown in **Figure 4.2-8**, the amount of temporary accommodation available in these two areas has fluctuated somewhat over recent years, with the number of rooms increasing from 3,393 in 2000 to 3,650 in 2010, peaking in 2008.

The strength of the Canadian dollar, high fuel prices, and stricter travel regulations are resulting in fewer people vacationing abroad and more local travel. Visitors from western Canada and the Pacific Northwest states in the United States (US) are increasingly choosing to visit the SERSA to sample the region's eco-tourism (Bough, 2012). In addition, logging activity resulting from increased demand in over-seas markets and in an attempt to temper the mountain pine beetle epidemic (BC Stats, 2012e), together with mining activity (Mount Milligan) in the area, have led to greater demand for short-term accommodations for workers (Colombo, 2012).

The demand for temporary accommodations appears to ease during the spring breakup months and then to resume once road bans are lifted, suggesting that most rooms are occupied by workers staying in the communities on a short-term basis (Colombo, 2013).

Interviews with key informants in the SERSA (Lytel, 2013; Romeo, 2013; Wall, 2013; Siemens, 2013; Friesen, 2013) indicate that a total of 46 temporary accommodation units, including hotels, motels, lodges, and/or inns, have a total of 2,395 rooms available in the SERSA, as follows:

- Fraser Lake has 2 units and 59 rooms;
- Fort St. James has 4 units and 150 rooms;
- Burns Lake has 5 units and 169 rooms;
- Vanderhoof has 5 units and 117 rooms; and
- Prince George has 30 units and approximately 2,000 rooms.



Source: BC Stats, 2012f

Figure 4.2-8: Tourism Room Capacity and Revenue in Nechako Development Region and RDFFG, 2000 to 2010

As per the Major Project Inventory, which can be found in the Economic Baseline Report, additional temporary accommodation will soon be available in Prince George. This includes a 150-unit hotel under construction with a 2013 end date and two proposed developments, a new 156-unit hotel and a 75-unit expansion.

4.3 Communications

All urban communities in the SERSA have telephone, Internet, and cellular telephone services, and community-based newspapers are available in most of the centres. **Table 4.3-1** shows the available avenues of communication in the region.

A review of major cellular providers' coverage maps shows that the primary highways and larger communities have coverage, including Highways 16 and 27 and the communities along them, but the Aboriginal communities in the northern part of the RSA do not. The RDBN is at present working to identify where Internet and cellular coverage is available and to expand it beyond the highways and urban centres (Regional District of Bulkley-Nechako, 2013).

Table 4.3-1: Communications Infrastructure in the SERSA

Community	Telephone	Cellular Telephone	Internet	Local Newspapers
Burns Lake	TELUS	Rogers, TELUS, Bell	TELUS, Shaw, Lakescom	Lakes District News (weekly) LDFC (weekly)
Fraser Lake ⁽¹⁾	TELUS, Yourlink	Telus, Rogers, Bell	TELUS, Yourlink	Omineca Express (weekly)
Fort St. James	TELUS, Yourlink	TELUS, Rogers, Bell	TELUS, Yourlink, Borealis	Caledonia Courier (weekly)
Vanderhoof	TELUS, Yourlink	TELUS, Rogers, Bell	TELUS, Yourlink	Vanderhoof Omineca Express (weekly) The Northern Light (monthly)
Prince George	TELUS, Shaw	TELUS, Bell, Rogers,	TELUS, Shaw	The Prince George Citizen (daily) Prince George (twice weekly)

Note: LDFC = Lakes District Free Classifieds Weekly. ⁽¹⁾Fraser Lake does not have a community-specific publication

Source: Media in British Columbia, 2012; BC Cable, 2012; Bogh, 2012; Carlson, 2012; Wall, 2012; Bell, 2012

4.4 Electricity

BC Hydro provides and distributes electricity to customers throughout the SERSA. Interviews with BC Hydro representatives confirm that the company has had no difficulties serving baseline load growth in the greater area of Prince George, Fort St. James, Vanderhoof, Burns Lake, and Fraser Lake. In terms of potential service expansion, the ability to serve new loads would depend on the size, type, and location of the load (St. Onge, 2013).

4.5 Natural Gas

Natural gas supply in Prince George is provided by Fortis BC. No issues have been encountered in meeting demand, and the system has sufficient capacity to meet the needs of the communities (Schoberg, 2013).

The natural gas provider in the communities of Burns Lake, Fraser Lake, Vanderhoof, and Fort St. James is Pacific Northern Gas Limited (PNG). At present this facility is significantly under-used and has excess capacity (Sears, 2013).

4.6 Water, Sewage, and Waste Disposal

The community of Fraser Lake draws water from Fraser Lake, while Burns Lake, Fort St. James, and Vanderhoof rely on wells for potable water. Vanderhoof extensively upgraded the community's artesian well in 2006, whereas Fraser Lake, Burns Lake, and Fort St. James are utilizing the original systems and maintaining them as needed. Of these communities, only Vanderhoof operates a sewage treatment facility, and the rest rely on lagoons/ponds for liquid waste.

Curbside waste pickup is available in Burns Lake, Fraser Lake, and the downtown region of Vanderhoof, but not in Fort St. James. None of the communities has recycling pickup, but all are moving towards developing and implementing recycling and waste reduction programs by 2014; a number of transfer stations are currently in operation. **Table 4.6-1** provides an overview of services available in each community.

Information on water supply and sewage disposal services on reserves can be found in the Aboriginal Background Section.

Rural residents are responsible for their own water supply and liquid waste management. The most common water source for those in outlying areas is wells, though some may rely on surface water. The type of sewage system used depends on the soil composition. Clay-based soils dictate the need for a lagoon, while permeable soils require a subsurface infiltration system with a sewage tank and a drainage field (Tone, 2012).

Table 4.6-1: Overview of Available Water and Sewage Treatment Services in SERSA

	Burns Lake	Fraser Lake	Fort St. James	Vanderhoof	Prince George
Water	3 deep wells. Currently utilizing approximately 30% of available capacity.	Fraser Lake is the source. Water pulled from the lake is treated at a treatment facility. Current usage is an estimated 50% of available capacity.	Artesian well system. Usage fluctuates seasonally, but is estimated to be running at 40-50% of available capacity.	Artesian well system. Current demand is about 25% of the available capacity.	10 wells draw from underground aquifers. The wells service various parts of the city. Water production is currently running at 60% of available capacity.
Liquid Wastes	6 open ponds lagoon system. Using an estimated 50% of available capacity.	3 open ponds lagoon system. Capacity fluctuates with the season; winter months at 50% and can increase to 80% during the spring/summer months.	Lagoon and treatment facility is able to meet demand and is currently running at an estimated 50% of available capacity.	Sewage treatment facility currently operating at approximately 50% capacity.	Wastewater Treatment Centre currently operating at an estimated 60% of available capacity.
Solid Waste and Waste Management	Weekly curbside pickup. Transported weekly to regional landfill. Goals to implement recycling program by 2014.	Weekly curbside pickup. Transported to regional landfill. No curbside recycling but drop-off at a disposal site is available.	No curbside pickup. Residents drop off garbage at one of two collection sites. Recycling limited to businesses that accept recyclables and drop-off depots.	Curbside pickup available in the downtown area only. Residents can take waste to one of three collection sites in the District. The community has a transfer station. Recycling is available at drop-off depots, businesses that accept recyclables and at the transfer station.	Curbside pickup for city residents. Recyclables can be dropped off at various recycling stations throughout the city.

Source: Martin, 2013; Hilman, 2013; Hand, 2012; Carver, 2013; McIntosh, 2013; Claughton, 2013; EOCP, 2012; Prince George, 2012b.

4.7 Recreational and Leisure Infrastructure and Activities

A variety of recreation opportunities are available within the communities in the SERSA, ranging from outdoor activities to curling rinks to museums and public libraries. Larger communities typically offer residents a greater variety of recreation facilities, and Prince George has the most extensive range. All communities have at least one public library. New recreation centres have been proposed for both Burns Lake and Prince George (Worthing and Oland, 2012). **Table 4.7-1** is an overview of some of the recreational infrastructure and opportunities available in each community in the SERSA.

Table 4.7-1: Recreational Infrastructure and Opportunities in SERSA

Community	Recreation
Burns Lake	Recreation trails, bike park, ice skating, curling, golf, tennis, skiing, skateboard park, Burns Lake Museum, Burns Lake Library, recreation trails, boating, fishing
Fraser Lake	Recreation trails, golfing, ice skating, curling, boating and fishing, kayaking, soccer, Fraser Lake Public Library
Fort St. James	Recreation trails, ice skating, curling, tennis, bicycle park, baseball diamonds, soccer fields, Fort St. James Historical Site, Fort St. James Library, kayaking, boating, fishing
Vanderhoof	Recreation trails, curling rink, running track, bike park, cross-country skiing, shooting range, baseball diamonds, motocross track, bowling (5- and 10-pin), golfing, Vanderhoof Public Library
Prince George	Recreation trails, aquatic centres, recreation centres, golf courses, disc golf courses, ski hills, cross-country skiing, tennis courts, sports fields, Prince George Forestry and Rail Museum, public libraries

Source: Village of Burns Lake, 2012; Village of Fraser Lake, 2012; Fort St. James District, 2012; District of Vanderhoof, 2012; City of Prince George, 2012

4.8 Summary

Housing in the region is affordable and priced well below the provincial average. The available housing in urban centres and rural areas consists mostly of well-maintained single-family homes that are at least 24 years old. Housing on the reserves is typically newer but in need of major repairs. No significant residential construction has been completed in the region over the last five years; however, the communities of Vanderhoof and Prince George reported an increase in residential building permits in 2012 over 2011.

The 2010 data indicate fluctuations in the number of temporary accommodation units available since 2000, but both numbers and associated revenues are on the upswing, at least partially in response to the demands for short-term accommodation associated with the increase in resource-based activity in the area.

Based on fieldwork and interviews with community staff, the communication and physical infrastructure in the region is readily able to meet the needs of residents, and recreational opportunities are many and varied throughout the area.

5.0 REGIONAL SERVICES

The potential effects of the Project on regional services within the SERSA are dependent upon Project-related population growth and activities and the existing capacity of regional services. The following sections outline current service delivery and capacity.

5.1 Information Sources and Methods

Key sources of baseline information sources consulted in development of this report include the BC Ministry of Education, Northern Health, BC Ministry of Public Safety and Solicitor General, and civic and municipal websites. Additional information was collected from interviews with key informants in the communities.

5.2 Educational Facilities

This section presents an overview of the educational facilities and opportunities in the SERSA. It covers the number and types of facilities, school enrolment and attendance in the region, academic achievement, and information on available opportunities for advanced education.

5.2.1 School Districts

The SERSA is situated in the Nechako Lakes (#91) and Prince George (#57) school districts (SD). Approximately 6.2 km of the RSA overlaps into the Bulkley-Valley School District (#54), but because this overlap is into a strictly rural area, away from highways and urban centres, the Bulkley Valley School data are not included here. Sixteen public schools in Nechako Lakes SD and 31 public schools in the Prince George SD fall within the SERSA, distributed as shown in **Table 5.2-1**. Both SDs also offer distance education courses and programs.

Table 5.2-1: Elementary and Secondary Schools in SERSA

School District	Community	Elementary (k-7)	Elementary/Secondary	Secondary
SD #91: Nechako Lakes	Fort St. James	2	-	1
	Burns Lake ⁽¹⁾	2	1	1
	Vanderhoof ⁽²⁾	5 ⁽¹⁾	-	1
	Fort Fraser	1	-	-
	Fraser Lake	1	1	-
SD #57: Prince George	Prince George	26	-	5

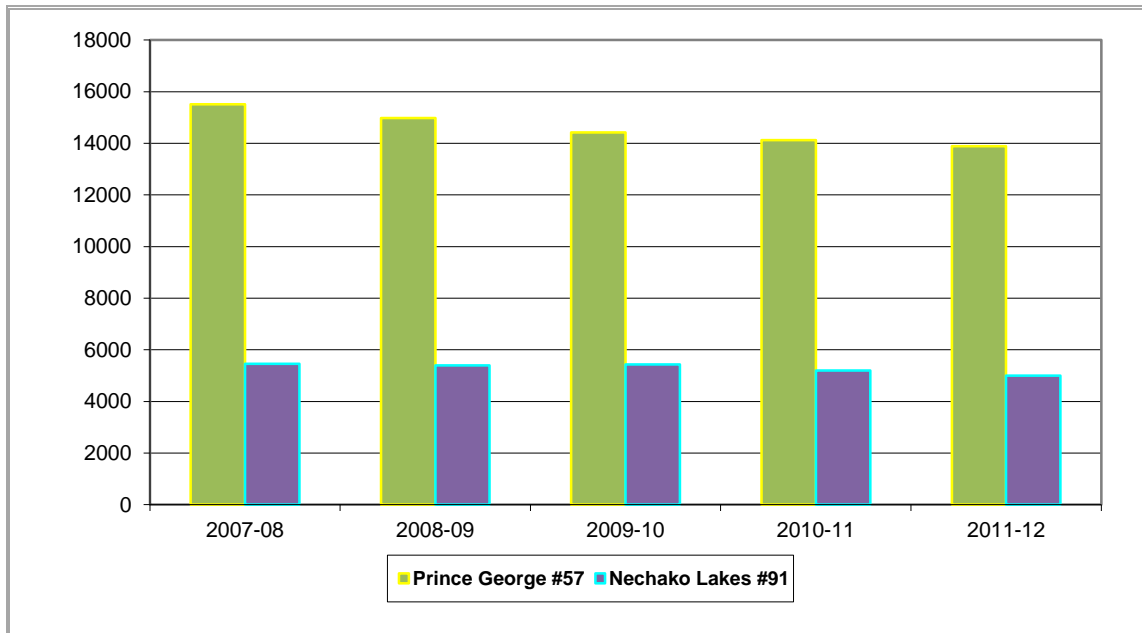
Note: ⁽¹⁾Lake Babine operates a k-2 school; SD = School District. ⁽²⁾Includes a Christian Private School

Source: SD 57, 2012; SD 91, 2012; Marks, 2012

5.2.2 School Enrolment

The number of children attending school in the SERSA has been declining in recent years as the population has aged and decreased, resulting in fewer children of school age. Between 2007 to 08 and 2011 to 12, enrolment in the public schools decreased by 8% in the Nechako

Lakes SD and by 11% in the Prince George SD (**Figure 5.2-1**). Typically, enrolment rates are higher in elementary schools than in secondary schools (Marks, 2012). As the economy in the region improves, the number of families with school-age children moving into the region is expected to increase (Marks, 2012).



Source: BC MoEd, 2012.

Figure 5.2-1: School Enrolment in SERSA, 2007 to 2012

5.2.3 Advanced Education

Post-secondary education is provided throughout the SERSA by a number of education institutions, including the College of New Caledonia (CNC), the University of Northern British Columbia (UNBC), and several community and private colleges.

Within the SERSA, CNC has campuses in Fort St. James, Fraser Lake, Vanderhoof, Burns Lake, and Prince George (CNC, 2012). Courses offered at the Learning Centre campuses (Fort St. James and Fraser Lake) are grouped into four categories:

- Continuing Education: first aid, fire training, etc.;
- Programs and Trades: business and office administration certificates, trades foundation classes, professional cook;
- University and College Credit Courses: introductory English, social work, psychology, criminology; and
- Online Courses: foetal alcohol spectrum disorder (FASD) program, registered professional forester.

The regional CNC campuses (Vanderhoof and Burns Lake) offer a broader variety of programs and courses that fall into five categories:

- Online: FASD advanced diploma, teacher replacement training citation, some university and college credit courses, personal interest courses;
- University Transfer Programs: outreach advocacy support worker program, Aboriginal early childhood education certificate;
- Trades and Technical: carpentry foundation and levels 1 to 3, heavy equipment operators, mining industry certificate;
- Upgrading and Employment Readiness: adult education, employment preparation program; and
- Work Related / Personal Interest: first aid, etc.

The largest CNC centre is in Prince George, with two campuses and one technology centre. The Prince George campus offers the broadest variety of educational opportunities, ranging from university transfer courses in the arts and sciences to complete trade programs (e.g., welding, cooking, carpentry); certificates (e.g., Community Support Worker Certificate, Health Care Assistant Certificate); citations (e.g., Community Mental Health Citation, Nursing Unit Clerk Citation); and diplomas (e.g., Natural Resources Environmental Technician diploma, Human Resources advanced diploma).

Interviews with CNC representatives indicated that community education programs offered at Vanderhoof, Fort St. James, Fraser Lake, and Burns Lake are driven by the demands of the current local labour market. This means that the academic calendar and curricula vary depending on the needs of local employers and employees. Education programs typically run for 5 to 12 months and are mainly contracted by local employers. CNC representatives noted that the community learning centres have the use of additional physical spaces to accommodate large classes. In addition, a number of courses are offered online and do not require a minimum enrolment to be offered. The Prince George campus has a fixed academic calendar (Wishart, 2013).

The District of Vanderhoof along with the Regional District of Bulkley-Nechako and various industry representatives are working with the College of New Caledonia and the Government of BC to develop long range education programs and the replacement facilities necessary in Vanderhoof to respond to future employment demands in the region.

Students in the SERSA who are interested in pursuing undergraduate, graduate, and doctorate (PhD) degrees can do so at the University of Northern BC (UNBC, 2012). Undergraduate programs include Arts, Fine Arts, Commerce, Education, Science, Applied Science, Health Sciences, Planning, Science in Nursing, and Social Work. Students can continue to secure a graduate degree in all of these fields, and PhD studies are offered in Natural Resources and Environmental Studies, Psychology, and Health Science. UNBC also offers a number of

diplomas and certificates with a First Nations focus, including Aboriginal Health Sciences, First Nation Language, and Aboriginal Community Resource Planning.

Other educational facilities include private colleges such as Sprott-Shaw (Sprott-Shaw, 2012) and the Academy of Learning (Academy of Learning, 2012). Sprott-Shaw has a campus in Prince George and offers certificates in Health Care Assistant and Practical Nursing as well as a variety of office administration programs. The Academy of Learning offers extensive office, clerical, and administrative programs. Equipment and truck-driving training are available through private training centres like Fox Professional Driving Training Centres (FoxPro, 2013) and E&R Professional Driving Training Centre (E&R, 2013).

5.3 Health Services and Facilities

Three LHAs within the SERSA—Burns Lake, Nechako, and Prince George—comprise the Northern Interior Health Services Delivery Area.

The Burns Lake LHA operates: the Lakes District Hospital and Health Centre; and The Pines, a long-term care facility which are in the SERSA. The Lakes District Hospital and Health Centre has 13 acute care beds and another 6 beds for overflow. Hospital services include an emergency room, acute care treatment, palliative care, mental health and addiction services, and medical and x-ray imaging (Hunter, 2012). A new hospital is being constructed that will double the capacity of the emergency room by 2014. The Health Centre operates near and at times is at capacity. The Pines long-term care facility is adjacent to the Lakes District Hospital and Health Centre.

Within the Nechako LHA, which includes the SERSA communities of Vanderhoof, Fraser Lake, and Fort St. James, there are two hospitals, a community health centre, a long-term care facility, and health unit offering public health and mental health and addictions services (Note: These services are provided out of the Vanderhoof Health Unit).

The Stuart Lake Hospital in Fort St. James has a total of 16 beds (including treatment beds). It offers emergency and acute care service, assisted living, home care nursing, and palliative care. Recently, the region experienced difficulties staffing the hospital when the last remaining doctor retired. As a result, those seeking emergency medical attention were directed to Vanderhoof or Prince George. As of January 2013, these issues were resolved when five doctors commenced working at the hospital (Columbo, 2013). The hospital's infrastructure is adequate; however, the addition of newer medical equipment would facilitate diagnosing patients who are unable to travel for treatment (Edge, 2012).

The Fraser Lake Community Health Centre delivers flu vaccines and provides laboratory and medical imaging services, long-term care, case management services, and post-natal mother and child care. The Health Centre has a total of four treatment beds, which are used for patient stabilization prior to transport as well as for out-patient care (Pacheco, 2012). The facility is not in need of repair; however, some upgraded equipment and improvements to the sidewalks around the hospital are required, but there are currently no plans to make these upgrades

(Pacheco, 2012). The Community Health Centre operates near and at times is at capacity to meet the medical demands of the community.

The St. John Hospital, located in Vanderhoof, provides emergency treatment, labour and delivery care, some surgery (minor general and orthopaedic surgery), physiotherapy, and x-ray and ultrasound imaging. The hospital has a total of 25 beds (excluding maternity beds) and is a teaching hospital for UNBC, with a specialized focus on urology, orthopaedics, and otolaryngology. Some upgrades are planned at the hospital, including an expanded emergency room and improved air delivery system. Work is expected to start in 2013 and be complete in 2014. The hospital is busy and at times operates near or at capacity.. Community Mental Health and Addiction services provides multi-disciplinary care for adults (18+) with mental illness and for those residents aged 12+ years with substance addictions (Hughes, 2012). Stuart Nechako Manor, the long-term care facility, is adjacent to St. John Hospital.

The Prince George LHA operates 10 health care facilities and offers a range of services from acute care to assisted living. The University Hospital of Northern BC, the largest hospital in the North, is both a full-service regional hospital and a teaching facility. It offers a total of 34 medical services, including a psychiatric in-patient unit, emergency room, intensive care unit, general and specialized surgery, laboratory, x-ray and medical imaging, and renal and oncology treatment. More than 100 medical specialists and family physicians have privileges at UHNBC. The hospital has 197 beds and has undergone a number of recent upgrades, including an in-patient tower (opened in 2003) that includes the ICU and medical/surgical inpatient units (Collins, 2013). The hospital is busy, noticeably so during influenza season, and serves the the Prince George community and the surrounding area. At present, there are no immediate plans to modify the existing physical infrastructure, although equipment is upgraded regularly (Collins, 2013). Co-located with the hospital are mental health and addictions services and a residential care facility called Jubilee Lodge (Northern Health, 2012a). UHNBC is also adjacent to the newly opened BC Cancer Agency for the North (BC Cancer, 2013).

The Northern Health Centre for Healthy Living supports a number of preventative health initiatives, including smoking cessation and diabetes prevention. The Family Resource Centre provides a variety of services for families, ranging from a community kitchen to parenting and baby wellness courses. Adults suffering from severe and/or persistent mental illness are provided treatment and accommodations at Iris House. The Prince George Rainbow Adult Day Care facility offers an adult day program that facilitates adults living at home with self-care services, respite, and meals/transportation (Northern Health, 2012c). **Table 5.3-1** is a summary of the main health facilities in the SERSA.

Table 5.3-1: Main Health Centres by Community

Community	Name of Health Care Facility	Doctors (Total ⁴)		No. of Beds	Services
		No.	Type of Doctor		
Vanderhoof	St. John Hospital	14	Oncology, Obstetrics, General Surgery, Family	25 (excludes 3 maternity beds)	Emergency Room, General Surgery (limited surgical program), Lab, X-ray (Note: Also a health unit offers public health and mental health and addictions services)
Fort St. James	Stuart Lake Hospital	5	Family	16 (including treatment beds)	Emergency Room, Lab, x-ray, mental health and addiction services
Fraser Lake ⁽¹⁾	Fraser Lake Community Health Centre	3	Oncology, Cardiology, Dermatology	4 (treatment beds)	Emergency Room, mental health and addiction services, Lab
Burns Lake	Lakes District Hospital and Health Centre	4	Family	13 beds (surge capacity to 19), new facility ⁽⁵⁾ with 16 beds	Emergency Room, Lab, x-ray, mental health (no beds)
Prince George	University Hospital of Northern BC	100+ ⁽³⁾	⁽²⁾ Oncology, Cardiology, Plastics, Gynecology/Obstetrics, Pediatrics, Psychiatry	197	Emergency Room, Intensive Care Unit, Critical Care, Lab, x-ray, surgery, rehab, mental health and addiction services

Note: ⁽¹⁾Specialists will visit the community regularly. ⁽²⁾The University Hospital is a full-services hospital. These are only a few of the types of medicine practiced at the hospital. ⁽³⁾As the University Hospital is a teaching hospital it is prone to fluctuating numbers of Doctors/Instructors. ⁽⁴⁾The number of doctors is the number of doctors offering services but does not imply full-time equivalent. ⁽⁵⁾The Emergency Department has four treatment areas, of which one is a trauma room. The new facility will have five treatment areas and one trauma area.

Source: Pacheco, 2012; Edge, 2012; Hughes, 2012; Hunter, 2012; Collins, 2013; Oke, 2014.

There are publications raising concern about the potential for proposed economic developments to further strain the existing capacity of the health care services in the area (Shandro et al, 2009, 2012, Shandro 2014, Northern Health 2013). As part of the public outreach, the Proponent with Dr. Janis Shandro from the University of Victoria/University of British Columbia, hosted a Regional Health Forum with 33 front-line health and social service practitioners from across the region; focus was on identifying action to sustain healthy communities, particularly as it relates to resource projects in the region. The mining company can proactively address a number of the concerns by: working with the closest community(ies)

to develop a community plan that addresses the phases of the mine construction, operations and closure; engaging with health care providers in the provision of health care for the camp and seeing if there are potential benefits that could accrue to the community(ies); providing health and wellbeing contact information for workers to be able to access on their time off in their own communities; and overall coordinated service delivery.

There are significant differences between the level of health and wellbeing care that is provided in large construction or operations camps and that in smaller camps involved in small exploration initiatives or timber harvesting. Health and safety requirements increase depending on the type of work being conducted, the location of the work and the number of people residing at the camp. Any large camp, whether it be for the construction or operations of a mining project, or construction of a pipeline, dam or oil and gas facility or large-scale drilling program not only is required, but regulated to provide health and wellbeing care at an appropriate standard. Larger camps address health and wellbeing concerns of the resident workforce while in camp, and minimize any potential for additional strain on the health care system in the region. Examples of health and wellbeing care that can be provided at camps include:

- Management of chronic conditions such as diabetes, where sugar levels and medications are monitored by in-camp medical personnel;
- Management of medications, with large camps being able to provide services where drug care is monitored and addressed;
- The ability of the physicians, paramedics, nurse practitioners, or other health care providers to be able to access telemedical conferencing and referral services that are arranged and supported by the company providing the health and wellbeing care in the camp facility; and
- The ability to triage and stabilize accident victims and coordinate with the local health authority for the medevac.

Large camps need to be able to provide services such as these to ensure that the workforce is protected to the appropriate degree and to meet regulations. Besides this regulatory requirement, there is the business requirement to recruit enough quality workers required for the project, and proponents and their projects and related camps are essentially competing against each other in a very competitive market to recruit and retain these skilled workers. A final, and important concern, is to ensure that the company is not creating additional burden to the existing health and wellbeing services provided in the region, which are typically operating close to or at capacity. Creating additional burden to the health care services does not serve the surrounding communities, and can create ill will against the company. Existing large construction and operation camps (Rio Tinto, Mt. Milligan) are meeting health and wellbeing care requirements and not creating additional strain on the existing health and wellbeing services provided in the area. The larger camps anticipated for the region (Blackwater and for the proposed pipelines) are being designed to be self-servicing for health

care and as such will not create any additional or cumulative demand on the existing health care provision in the region.

While in some other areas of the north, there have been people arriving in the area to either seek work or accompany those working at a site, creating a 'shadow population', this has occurred where the job site is close by. The Project is remotely located and only accessible by either a long drive on a FSR or by flying into the site. The remote Project location does not support workers living at alternate locations to the camp that the proponent will provide and all workers are anticipated to be housed in the camp, as such, there will be no anticipated 'shadow population'. The Blackwater camp is essentially a 'fly-in, fly-out' operation, and as such, removed from the local communities and the services and infrastructure they provide for their residents. Following best practices, the Proponent will consult with Northern Health regarding the anticipated numbers of camp residents and discuss the provision of health and wellbeing care in the camp. The approach taken to the provision of health and wellbeing care will be incorporated into the Occupational Health and Safety Plan (**Section 12.2.1.18.4.15** of the Application). There is the potential for the establishment of a camp to house the employees of contractors hired to clear the right-of-way for the transmission line and install the transmission line. Any camp that would be established is expected to be short-term, small in scale, and would need to comply with prevailing regulatory requirements including provision of medical and health services.

5.4 Protection Services and Facilities

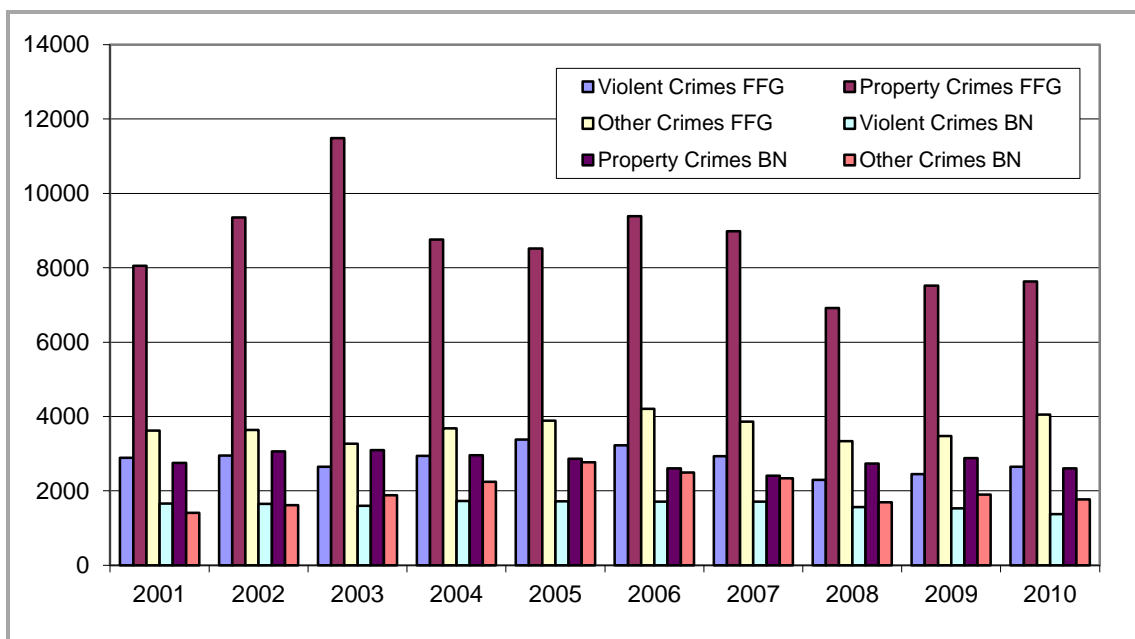
The range of protection services available in the SERSA includes law enforcement, fire protection, ambulance and 911 emergency services, emergency preparedness planning, search and rescue, and correctional services.

5.4.1 Law Enforcement

The RCMP operates in two regional policing areas within the SERSA, the Bulkley-Nechako Region and the Fraser-Fort George Region. The Bulkley-Nechako is served by RCMP detachments in Burns Lake, Fort St. James, Fraser Lake, and Vanderhoof, which collectively have a total of 36 RCMP officers plus another 12 officers based in Prince George who patrol the highways and provide community policing in the First Nation communities (MacDonald, 2012; Foster, 2012; Thalhofer, 2012; Keays, 2012). In the Fraser-Fort George Region, 188 RCMP officers are responsible for Prince George and the surrounding area (Stubbs, 2012).

In 2010, the average caseload per RCMP member was 90 in the Bulkley-Nechako Region and 92 in the Fraser-Fort George Region. The Bulkley-Nechako Region reported a decrease of 9% in criminal code offences compared to the previous year, while the Fraser-Fort George Region reported a 7% increase. All key informants indicated that the current physical infrastructure was adequate (a new detachment in Prince George was under construction during the time this report was written), but caseloads per officer are high, and the RCMP detachment staff are challenged to meet the demand at current personnel levels (Keays, 2012; Foster, 2012; Thalhofer, 2012).

The most current data for crime statistics and trends are for the period from 2001 to 2010, during which the number of Criminal Code offenses within the SERSA has fluctuated. In the Bulkley-Nechako Region, the number of offenses peaked in 2005 and has since been decreasing (**Figure 5.4-1**). The number of violent and property crimes has been relatively consistent over this period and as of 2010 was slightly lower than in 2001. There had been a steady increase in the number of “other crime” offences, including graffiti, disturbing the peace, and refusing to leave a premises (Keays, 2012). In the Fraser-Fort George Region, total Criminal Code offences peaked in 2003, reflecting a decrease in violent and property crimes from 2001 but an increase in the number of “other crimes.” The RCMP is focusing efforts on crime reduction in this region, targeting larger-scale criminal activity (Stubbs, 2012).



Source: BC Ministry of Justice, 2011

Figure 5.4-1: Criminal Code Offenses in the SERSA, 2001 to 2010

5.4.2 Fire Protection and Emergency Services

The Bulkley-Nechako Region has a total of 10 fire and emergency rescue departments, four of which are within the SERSA. Costs are shared between the municipalities and the regional district. Located in Burns Lake, Vanderhoof, Fort St. James, and Fraser Lake (**Table 5.4-1**), these fire departments/emergency services are volunteer-based and also serve the surrounding rural regions. Most call-outs for the fire departments are for residential and commercial fires, followed by motor vehicle accidents. With the exception of the Vanderhoof fire department, all firefighters in the region are trained as First Responders, enabling them to provide basic medical emergency care. The Vanderhoof personnel are not so trained because of the high capability of existing hospital and ambulance staff (Pacheco, 2012).

Table 5.4-1: Fire Protection and Emergency Services in SERSA

Community	No. of Firefighters	First Responders?	Average No. of Calls per year
Burns Lake	30, including 1 Fire Chief	Yes	90 ⁽¹⁾
Fraser Lake	20, including 1 Fire Chief	Yes	200
Fort St James	40, including 1 Fire Chief	Yes	175
Vanderhoof	36, including 1 Fire Chief	No	200
Prince George	75, including 16 Captains, 4 Assistant Chiefs, 2 Deputy Chiefs, 1 Training Officer, 1 Fire Chief	Yes	5,000

Note: ⁽¹⁾The fire protection boundary for the Burns Lake Fire Hall does not extend beyond the village

Source: McBride, 2012; Balding, 2012; Pacheco, 2012; Bennett, 2012; Iverson, 2012

The RDFFG maintains 13 rural volunteer fire departments and three rescue agencies. None of these fire departments are in the Fraser-Fort George RDEA C, which, depending on the location of the emergency, would be serviced by the Red Rock/Stoner or Hixon fire halls.

The City of Prince George, which lies within Fraser-Fort George RDEA C, has four fire halls staffed by 75 full-time firefighters. Rural areas are serviced by volunteer fire departments (McBride, 2012). Depending on the size and nature of the emergency, one or more of the Prince George fire halls would provide support to the rural fire departments (Iverson, 2012). All facilities are considered adequate to meet current needs.

5.4.3 Emergency Plans

Plans and programs for emergency preparedness, mitigation, response, and recovery in the RDFFG are laid out in the Emergency Response and Recovery Plan established in 2006, which addresses the specific needs of approximately 50 communities. Should an emergency arise that the plan does not address, or if available resources are inadequate, the regional district will engage its Emergency Operations Centre, which is part of a provincial and federal emergency response network (Regional District of Fraser-Fort George, 2012).

The RDBN administers an Emergency Preparedness Plan based on the model created by the BC Emergency Response Management System. The plan coordinates the multiple rescue agencies involved in an emergency event and ensures that emergency respondents receive the most current training and knowledge. Communities within the Bulkley-Nechako Region have developed community-specific Emergency Preparedness Plans that follow the provincial program but are tailored to suit the needs of the community (**Table 5.4-2**), with regular input from a variety of stakeholders and groups. The RDBN will engage the Emergency Operations Centre in an emergency event that occurs in the rural area that exceeds the capacity of First Responding agencies.

Table 5.4-2: Emergency Preparedness Plans in SERSA

Community	Stakeholders/Groups	No. of Annual Meetings
Burns Lake	Village staff, First Nation Groups, RCMP, Paramedics, Fire Department	3
Fraser Lake	PNG Gas, Rio Tinto Alcan, BC Hydro, RDEA Area Director D, RCMP, Paramedics, Fire Department	2
Fort St. James	RCMP, Fire Department, Paramedics, Northern Health, Ministry of Transportation, Nak'azdli Band	4
Vanderhoof	RCMP, Hospital staff, District of Vanderhoof staff, Paramedics, local business owners	2
Prince George	Emergency Management BC (EMBC), RCMP, Northern Health, City staff, Paramedics	1 to 2

Source: Remple, 2012; Balding, 2012; Bennett, 2012; Pacheco, 2012; Iverson, 2012.

Representatives of the various communities within the SERSA meet regularly with a number of stakeholder and emergency responders to conduct table-top exercises in community-specific emergency planning. Typical topics are as follows:

- The Village of Burns Lake is concerned with the number of corners and twists along Main Street, which also happens to be Highway 16, a major provincial haul route. The road can be dangerous during the winter months, and an out-of-control truck could result in significant damage to the business properties that line the highway.
- The Village of Fraser Lake recently reviewed its fire and evacuation procedures in the event of a major fire at a neighbouring mill—a lesson learned from an explosion and fire at Burns Lake.
- Fort St. James is at risk of severe weather and emergencies ranging from flooding to forest fires; the community is quite isolated and has only one major route in and out. Its vulnerability and how to best respond to emergency events were discussed at the last planning meeting in Fort St. James.
- The District of Vanderhoof is very close to a busy CN Rail line. Therefore, the community recently reviewed its plans for responding to a derailment and is in the process of developing an evacuation plan.
- The City of Prince George recently reviewed the potential for ice jams and the subsequent flooding that could result.

5.4.4 Social Services and Facilities

The Government of BC provides child, family, and other social services to protect children, prevent abuse, and respond to the needs of BC residents through the Ministry of Children and Family Development, the Ministry of Health, and the Ministry of Social Development and Social Innovation. These ministries have local offices throughout the SERSA. Additional resources are available through the Prince George and District Elizabeth Fry Society in Prince George and Burns Lake (Prince George and District Elizabeth Fry Society, 2012). The Nechako Valley Community Service Society provides a full range of services to residents of Vanderhoof, Fraser Lake, and Fort St. James. Services include, but are not limited to, counselling, outreach, and residential programs (NVCSS, 2013). The local RCMP detachments also offer educational programs to prevent substance abuse and violence, often partnering with community-based health service and non-profit organizations, such as the Omineca Safe Home Society in Vanderhoof (Keays, 2012). Although resources are limited, everyone who seeks help receives it (Powers, 2012).

5.5 Summary

The SERSA has a range of educational, health, protection services, and social services for local residents. The available education and health services appear to be capable of meeting the current needs of the communities, while protection services, specifically law enforcement, are operating at or near capacity, and social services could benefit from additional resources to better support those in need.

The schools are currently operating at less than capacity levels and meet existing needs; as such, infrastructure is not a limiting factor. It is anticipated that a significant number of teachers will be retiring within the next decade and will have to be replaced by either qualified resident teachers who do not currently work full-time, or by new hires. A full range of post-secondary education options, from advanced university studies to private colleges, is available for SERSA residents.

Health care services are available throughout the communities in the SERSA. The smaller centres offer basic health care delivery. Infrastructure in Burns Lake and Vanderhoof is currently being upgraded. All health centres are able to meet current demand, though at times the capacity is strained.

The RCMP is responsible for policing in the region, with detachments located in all urban centres in the SERSA. Caseloads per RCMP members across both regional policing areas are high, but after peaking in 2005, crimes rates have been steadily decreasing. Both volunteer and career firefighters provide fire protection services in the various communities. The current physical infrastructure is adequate to meet demand. All communities in the SERSA have current and specifically tailored Emergency Preparedness Programs in place.

Social services are provided by the provincial government, non-profit organizations, and local health authorities across the SERSA, supported by the RCMP. Social services staff are busy, with full caseloads; however, this is common across the province.

6.0 INDIVIDUAL, COMMUNITY, AND FAMILY WELL-BEING

The Project will provide employment opportunities for residents of the SERSA and may result in some new workers moving into the region. The potential change in regional demographics and new Project-related income may affect the well-being of individuals, families, and communities. This section of the report describes some of the current measures in place to assist and support regional well-being objectives in the SERSA.

6.1 Information Sources and Methods

Statistics on individual, community, and family well-being are not available for individual communities but are reported for each of the three LHAs in the region. Well-being indicators specifically relating to Aboriginal people were not available.

Most of the information on family and community well-being is based on published information provided by BC Stats (BC Stats, 2012a) for a number of key indicators, including human economic hardship, children at risk, youth at risk, crime, health, and education concerns. Well-being conditions in the three LHAs are compared to conditions in all of BC using the social and economic indices developed by BC Stats.

6.2 Well-Being Indicators

6.2.1 Economic Hardship

Data on four indicators of economic hardship in the LHAs are presented in **Table 6.2-1**; these include:

- Average family income;
- Income share of the poorest households;
- Dependency on government transfer payments; and
- Percentage of the population receiving income assistance.

The indicators suggest that families in the Burns Lake and Nechako LHAs have incomes approximately 17% and 6% lower on average than the provincial average, while families in the Prince George LHA have slightly higher average incomes. Families in the Nechako and particularly Burns Lake LHAs derive more of their annual income from government sources than the provincial average. In terms of the percentage of the population receiving income assistance, the Burns Lake LHA is the only region in the SERSA lower than the BC average.

Table 6.2-1: Indicators of Economic Hardship in SERSA by Health Service Delivery Areas, British Columbia

Location	Avg. Family Income ⁽¹⁾		Income Share of Poorest Households (Bottom Half) ⁽¹⁾⁽³⁾ (%)	Dependent on Government Transfer Payments ⁽²⁾ (%)	Population Receiving Income Assistance ⁽²⁾		
	All Families (\$)	Lone-Parent Families ⁽⁴⁾ (\$)			Total (0+) (%)	Children (0 to 14 Years) (%)	Youth (15 to 24 Years) (%)
BC	67,675	43,491	20.7	9.6	1.9	1.9	2.1
Nechako LHA	63,519	28,210	20.5	10.0	3.0	2.9	3.6
Burns Lake LHA	56,037	32,143	21.9	12.1	1.4	1.7	1.1
Prince George LHA	69,441	39,010	23.0	8.7	3.3	3.3	4.0

Note: ⁽¹⁾Figures are for 2005. ⁽²⁾As of September 2011, includes the disabled, but excludes Aboriginal persons on reserves. ⁽³⁾The proportion of each LHA's total household income that accrues to households earning less than the median income. ⁽⁴⁾Refers specifically to female lone parents.

Source: British Columbia Statistics, 2012g.
(<http://www.bcstats.gov.bc.ca/StatisticsBySubject/SocialStatistics/SocioEconomicProfilesIndices/SocioEconomicIndices/LHARports.aspx>)

BC Stats has developed a composite index for economic hardship and has ranked each of the 77 LHAs from worst (1) to best (77). As of 2012, the Nechako LHA was ranked 13th, Prince George 16th, and Burns Lake 44th (BC Stats, 2012g).

6.2.2 Alcohol Consumption

An indicator of possible alcohol abuse is the volume of alcohol consumed per capita. Available information (BC Stats, 2012a) shows that in 2011, the BC average was 104 L per capita. Residents aged 19+ years consumed an average of 163 L of alcohol per capita in the Nechako LHA, 119 L per capita in the Prince George LHA, and 99 L per capita in Burns Lake, the lowest consumption rate in the SERSA and below the BC average.

6.2.3 Children at Risk

Data on five indicators of children at risk are provided in **Table 6.2-2**; these include:

- Infant mortality rates;
- Children in need of protection rates;
- Children in care to the number taken into custody by child care authorities as a percentage of the population, aged 0 to 18 years;
- Child literacy to the number of children with below-standard reading ability (Grade 4 and Grade 7); and
- The number of children being supported through income assistance.

The BC average for infant mortality rate is 3.7/1,000. The Nechako and Burns Lake LHAs reported rates of infant mortality of 7.3 and 7.1, respectively, per 1,000 people, which are significantly higher than the BC average. The Prince George LHA reported an infant mortality rate of 3.4/1,000, which is lower than the BC average.

Table 6.2-2: Children at Risk Indicators

Location	Infant Mortality Rate ¹ (Rate/1,000)	Children in Need of Protection ² (Rate/1,000)	Children in Care ² (Rate/1,000)	Below Standard Reading (Grades 4 and 7) ³ (%)	Receiving Income Assistance ⁴	
					Children Aged 0 to 14 Years (%)	Children Aged 0 to 18 Years in Single Parent Family (%)
BC	3.7	6.8	9.1	20.2	3.5	3.0
Nechako LHA	7.3	24.7	19.3	28.0	5.3	4.6
Burns Lake LHA	7.1	19.5	32.8	37.9	3.1	2.3
Prince George LHA	3.4	14.5	17.0	26.4	6.2	5.6

Note: ⁽¹⁾Per 1,000 live births (average 2007 to 2011). ⁽²⁾Rate/1,000 population aged 0 to 18 years as of December 2011. ⁽³⁾Percentage of children as of 2008 to 2011. ⁽⁴⁾Percent of children aged <14 years receiving income assistance in September 2011.

Source: British Columbia Statistics, 2012a

For all of the SERSA LHAs, rates for the number of children in need of protection were significantly higher than the BC provincial average of 6.8 per 1,000. The Nechako LHA was the highest (24.7/1,000), followed by Burns Lake (19.5/1,000) and Prince George (14.5/1,000).

The BC average for the rate for the number of children in care is 9.1 per 1,000. The Burns Lake LHA was the highest (32.8/1,000), followed by Nechako (19.3/1,000) and Prince George (17.0/1,000).

The BC average percentage of children falling below reading standards for Grades 4 and 7 is 20.2%. All three SERSA LHSs had higher rates, with Burns Lake being the highest at 37.9%, followed by Nechako at 28% and Prince George at 26.4%.

The BC average percentage of children aged 0 to 14 years receiving income assistance is 3.5%. The Prince George and Nechako LHAs had higher rates of 6.2% and 5.3%, respectively, while Burns Lake, at 3.1%, was below the BC average.

The BC average for children aged 0 to 18 years in a single-parent family receiving income assistance is 3%. The Prince George and Nechako LHAs had higher rates of 5.6% and 4.6%, respectively, while Burns Lake, at 2.3%, was below the BC average.

BC Stats has developed a composite index for children at risk based on the factors identified above, and has ranked each of the 77 LHAs from worst (1) to best (77). For 2012, the Nechako LHA was ranked 12th, Burns Lake 13th, and Prince George 27th (BC Stats, 2012g).

One of the most common crimes committed in the Bulkley-Nechako region is spousal assault. When children are observed to be present during domestic violence call-outs, the RCMP notifies the Ministry of Children and Family Development, which may then take the children into care (MacDonald, 2012).

6.2.4 Youth at Risk

The status of youth at risk in the region is summarized according to five indicators (Table 6.2-3); these include:

- 15 to 24 year-olds receiving income assistance;
- 15 to 24 year-olds receiving income assistance who are employable;
- Youth aged 18 years who did not graduate;
- Rates of serious crime committed by juveniles aged 12 to 17 years; and
- Rates of 15 to 24 year-olds hospitalized because of motor vehicle accidents.

Table 6.2-3: Indicators of Youth at Risk in SERSA

Location	15 to 24 Year Olds Receiving Income Assistance		15 to 24 Year Olds Receiving Income Assistance who are Employable ⁽¹⁾	Age 18 Years who did not Graduate ⁽²⁾	Serious Crime Rates by Juveniles Aged 12 to 17 Years ⁽³⁾ (Rate/1,000)	Hospitalized Motor Vehicle Accident Rates Aged 15 to 24 Years ⁽⁴⁾ (Rate/1,000)
	Total ⁽¹⁾ (%)	For More than 1 Year ⁽¹⁾ (%)				
British Columbia	2.1	0.9	0.9	27.9	3.8	1.2
Nechako LHA	3.6	1.7	1.7	23.7	11.8	3.1
Burns Lake LHA	1.1	N/A	N/A	46.4	6.3	4.9
Prince George LHA	4.0	1.9	1.9	31.2	3.6	1.9

Note: ⁽¹⁾Income assistance as of September 2011. ⁽²⁾2008 to 2011. ⁽³⁾2008 to 2010 average. ⁽⁴⁾2010 to 2011

Source: British Columbia Statistics, 2012a

The BC average for 15 to 24 year-olds receiving income assistance was 2.1% (0.9% for those receiving assistance for more than a year). The percentage of youth receiving income assistance was higher in the Prince George LHA (4.0%, and 1.9 % for more than a year), followed by Nechako (3.6%, and 1.7% for more than a year). In the Burns Lake LHA, the rate was 1.1%, below the provincial average (no data for those receiving assistance for more than a year).

The BC average for 15 to 24 year-olds receiving income assistance and who were employable was 0.9%, lower than the figures for both the Prince George LHA (1.9%) and the Nechako LHA (1.7%); data for Burns Lake LHA are not available.

The BC average for youth aged 18 years who did not graduate is 27.9%. Only the Nechako LHA came lower than this, at 23.7%, with the Burns Lake LHA and Prince George LHA recording higher levels of 46.4% and 31.2%, respectively.

The BC average rate for serious crimes by juveniles aged 12 to 17 years was 3.8%. Only the Prince George LHA came in lower, at 3.6%, while Nechako LHA was more than three times the provincial rate, at 11.8%, and Burns Lake LHA approached twice the provincial level, at 6.3%.

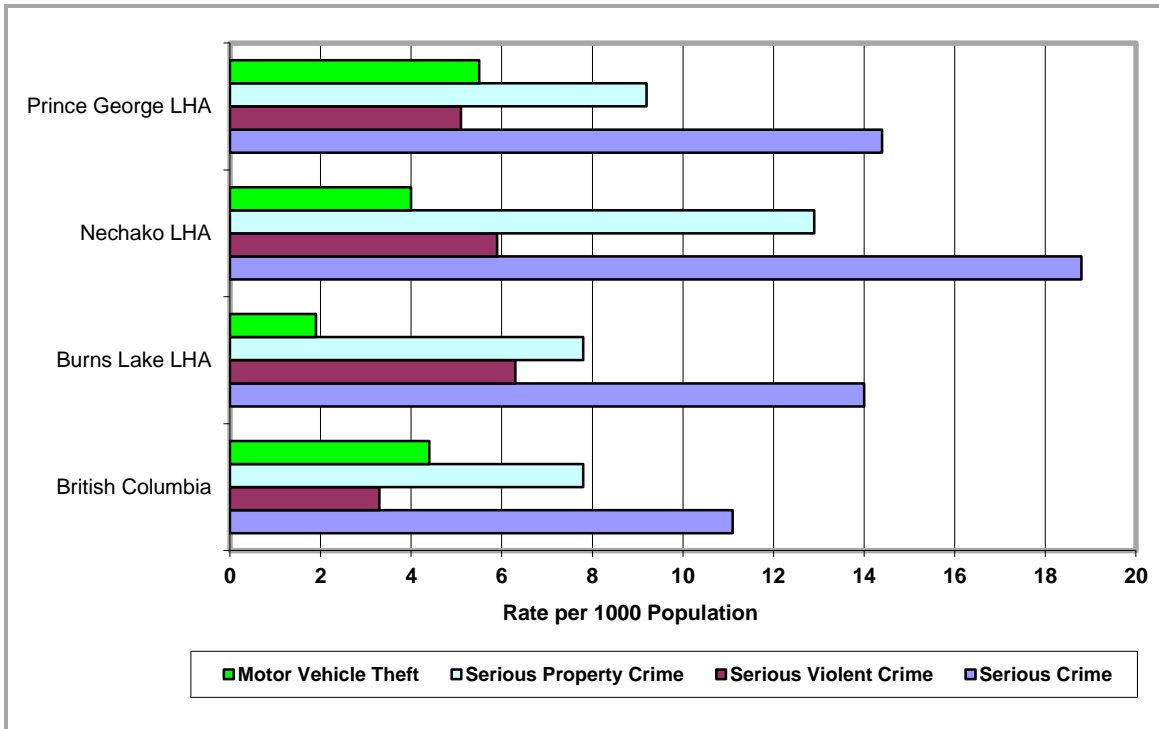
The BC average for those aged 15 to 24 years hospitalized because of motor vehicle accidents was 1.2%. All the SERSA LHAs reported higher rates than the provincial average, with Burns Lake LHA more than four times higher, at 4.9%, Nechako LHA more than two-and-a-half times higher, at 3.1%, and Prince George at 1.9%.

BC Stats has developed a composite index for youth at risk based on the crime rate, the number of youth aged 18 years who did not graduate, and the number of youths on income assistance, and has ranked each of the 77 LHAs from worst (1) to best (77). For 2012, the Prince George LHA was rated 12th, Nechako 15th, and Burns Lake 36th (BC Stats, 2012g).

6.2.5 Crime

Figure 6.2-1 shows four crime rate categories for the three LHAs in the SERSA from 2008 to 2010, expressed in terms of the number of reported crimes per 1,000 people:

- The number of motor vehicle thefts in the province averaged 4.4/1,000, while Prince George reported 5.5/1,000 and both Nechako and Burns Lake LHAs reported lower rates of 4.0/1,000 and 1.9/1,000, respectively.
- At a rate of 12.9/1,000, serious property crime was most prevalent in the Nechako LHA. The provincial average and the rate for Burns Lake were the same, at 7.8/1,000, and the rate for Prince George was 9.2/1,000.
- The rates of serious violent crime in the SERSA were all above the BC rate of 3.3; Burns Lake LHA reported the highest number of instances, at 6.3/1,000, followed by Nechako LHA at 5.9/1,000 and the Prince George LHA at 5.1/1,000.
- The total rates of serious crime for the region were again above the BC average. Compared to the provincial rate of 11.1/1,000, the Nechako LHA had the highest rates of serious crime, at 18.8/1,000, followed by the Prince George LHA at 14.4/1,000 and Burns Lake at 14.0/1,000.



Source: BC Stats, 2012g

Figure 6.2-1: Adult Crime Rates in SERSA, 2008 to 2010

BC Stats also reports rates of serious drug crimes. The average rate of non-cannabis drug offences for all of BC was 193.6 per 100,000 for the period of record, compared to 187.6 in Burns Lake, 233.7 in Nechako, and 242.1 in Prince George.

BC Stats has developed a composite index describing crime in each LHA and ranking them from 1 (worst) to 77 (best) (BC Stats, 2012g). This index includes rates of serious violent and property crimes and the number of serious crimes attended by each police officer. According to this index, the Nechako LHA was ranked 4th, the Prince George LHA 12th, and the Burns Lake LHA 24th. The local RCMP is working to reduce these crime trends by coordinating with community-based committees to identify key issues and potential mitigation measures (Tahalhofer, 2012).

6.2.6 Education Concerns

Levels of academic achievement in the SERSA are shown in **Table 6.2-4**. Students in all three LHAs scored below provincial averages in most core subjects (mathematics, science, and English skills) at the Grade 4, 7, 10 and 12 levels; however, this finding may be partially attributed to the number of students who did not participate in the foundational skills assessment test (Marks, 2012). Students in the Prince George LHA performed better than their cohorts in Nechako and Burns Lake in core subjects in primary and secondary grades. All three LHAs reported non-graduation rates above the provincial average. It is important to

note that students who complete their studies via distance education tend to have lower graduation rates (Marks, 2012).

Table 6.2-4: Academic Achievement of Students in Grades 4, 7, 10, and 12

Academic Standard	Prince George LHA	Nechako LHA	Burns Lake LHA	British Columbia	
<i>Percentage of Students below Standard (2009/10 to 2011/12)</i>					
Grade 4	Reading	26.0	32.3	42.6	18.9
	Writing	22.8	26.0	39.0	14.6
	Math	33.6	38.2	49.4	21.6
Grade 7	Reading	28.1	29.9	37.2	22.0
	Writing	23.9	21.9	28.3	13.8
	Math	38.5	38.3	44.8	25.9
<i>Non-Completion Rates: Percent Who Did Not Write or Pass the Exam (2009/10 to 2011/12)</i>					
Grade 10	English	20.7	27.5	32.5	17.0
	Math	N/A	N/A	N/A	N/A
	Science	23.0	29.4	36.1	17.8
Grade 12	English	42.9	50.9	50.9	35.8
	Math	N/A	N/A	N/A	N/A
	Chemistry	N/A	N/A	N/A	N/A
<i>Percent of 18 Years Olds Who Did Not Graduate (2009/10 to 2011/12)</i>					
Did Not Graduate	30.4	30.1	29.6	26.2	

Note: N/A = data not available

Source: BC Stats, 2012a

According to the BC Stats composite index of education that ranks LHAs from worst (1) to best (77) based on educational performance, the Burns Lake LHA was ranked 7th, the Nechako LHA 10th, and the Prince George LHA 26th.

6.2.7 The Socio-Economic Well-Being Indices

BC Stats has derived an overall socio-economic index for each LHA that represents a combination of six sub-indices—economic hardship, crime, health problems, education concerns, children at risk, and youth at risk—and ranks them from 1 (lowest/worst) to 77 (highest/best). For 2011, Nechako was ranked 10th, Burns Lake 16th, and Prince George 17th.

Another measure of assessing socio-economic well-being in Canadian communities is the community well-being index (CWBi) developed by Aboriginal Affairs and Northern Development Canada (AANDC). The CWBi combines indicators of income, education, labour force activity, and housing conditions into a single well-being score that ranges from 0 (lowest) to 100 (highest). A detailed description of the method and data used to calculate the index are available on the AANDC website (aandc-aadnc.gc.ca, 2012). The current score is constructed from 2006 census data, which is the most comprehensive information available. No index was calculated for First Nation communities with less than 65 inhabitants because of limited data availability.

A summary of the CWBi for communities in the SERSA is provided in **Table 6.2-5**. The highest score was Fraser Fort George RDEA C (84) and the lowest was Stony Creek (50).

Table 6.2-5: Community Well-Being Index in SERSA

Community	Income Score	Education Score	Housing Score	Labour Force Activity Score	Community Well-Being Score
Major Communities					
Prince George	88	58	95	87	82
Fraser Lake	100	52	95	86	83
Vanderhoof	84	53	95	89	81
Fort St. James	88	57	98	86	82
Burns Lake	77	49	86	84	74
Rural Areas					
Bulkley-Nechako C	89	52	90	87	79
Bulkley-Nechako D	83	54	91	81	77
Bulkley-Nechako F	84	49	92	88	78
Bulkley-Nechako B	83	54	94	87	79
Fraser Fort George C	93	59	96	88	84
Reserves					
Stony Creek 1	48	25	67	61	50
Laketown 3	N/A	N/A	N/A	N/A	N/A
Seaspunkut 4	N/A	N/A	N/A	N/A	N/A
Nautley 1	N/A	N/A	N/A	N/A	57
Stellaquo 1	N/A	N/A	N/A	N/A	62

Note: N/A = data not available

Source: AANDC, 2010

6.3 Summary

The overall assessment of well-being indicators shows that social conditions in the SERSA are variable. Income rates are below the provincial level. Alcohol consumption is above the provincial average, except for the Burns Lake LHA, where annual consumption is below the provincial rate. The number of children and youth at risk is high across the region. Crime rates in the Nechako and Prince George LHAs are above the provincial average.

In terms of the overall socio-economic index developed by BC Stats for 2011, the Nechako, Burns Lake, and Prince George LHAs were ranked 10th, 16th, and 17th of the 77 LHAs in BC. This suggests that socio-economic conditions in the study area LHAs are below the provincial average. The CWBi developed by AANDC using 2006 census data provides additional insight into well-being within the SERSA communities. It shows some variation among the communities; overall well-being was the lowest in Stony Creek and the highest in the Fraser Fort George RDEA C.

7.0 HUMAN HEALTH

Construction and operation of the Project may result in activities that could potentially affect human health in the SERSA. This section of the report provides an overview of some indicators of human health in the SERSA.

7.1 Information Sources and Methods

Statistics on the general state of human health are not available for individual communities but are reported for each of the three LHAs in the region. Most of the information is based on published information provided by BC Stats (2012g) related to infant mortality, average life expectancy, and potential years of life lost (PYLL), which measures the average number of years lost when a person dies from various causes before a specified age (75 years) for a population of 1,000. Health indicators specifically relating to Aboriginal people were not available.

7.2 Indicators of Human Health Conditions

7.2.1 Infant Mortality

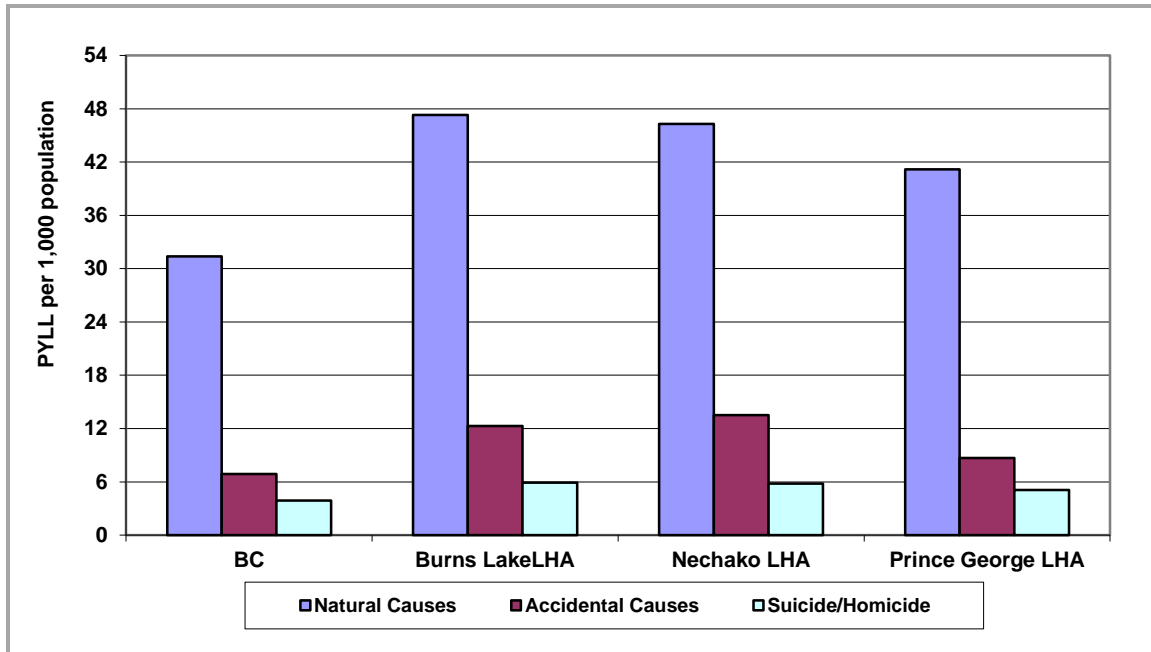
Infant mortality was addressed in **Section 6.2.3** as a component of an index for children at risk, but is addressed again here in the context of human health. The average infant mortality rate for 2007 to 2011 varied among the three LHAs and the province. Compared to the provincial average of 3.7 deaths per 1,000 live births, rates were significantly higher for the Burns Lake and Nechako LHAs, at 7.1 and 7.3 deaths per 1,000 live births, respectively, while the rate for the Prince George LHA was slightly lower, at 3.4 deaths per 1,000.

7.2.2 Life Expectancy

Statistics on physical health conditions are available for the Burns Lake, Nechako, and Prince George LHAs. The statistics show that average life expectancy at birth (2007 to 2011 average) was 79.2 in Burns Lake, 78.0 in Nechako, and 79.3 in Prince George. These rates are all below the provincial average of 82.0 years (BC Stats, 2012g).

7.2.3 Person Years of Life Lost

Figure 7.2-1 examines the health of regional residents in terms of the age-standardized PYLL from natural and accidental causes, as well as from suicide and homicide, before the specified age of 75 for a population of 1,000.



Note: Age-standardized rate is the rate per 1,000 population adjusted to a standard population, PYLL to age 75, 2006 to 2010 average

Source: BC Stats, 2012g

Figure 7.2-1: Rate of Potential Years of Life Lost from Natural and Accidental Causes, Suicide, and Homicide in SERSA and BC, 2006 to 2010

In the SERSA, PYLL rates for deaths from natural causes ranged from 47.3 years for the Burns Lake LHA to 41.2 years for the Prince George LHA, compared to the provincial average of 31.4. The PYLL for suicide/homicide was the highest for the Burns Lake LHA (5.9 years), above the provincial average of 3.9 years. All three LHAs reported higher levels of PYLL due to death from accidental causes than the BC average of 6.9 years: 12.3 years for Burns Lake, 13.5 years for the Nechako LHA, and 8.7 years for the Prince George LHA.

7.2.4 Composite Human Health Indicator

BC Stats has developed a composite indicator describing health problems in each LHA and ranking them from 1 (worst) to 77 (best) (BC Stats, 2012). This indicator includes life expectancy at birth and PYLL for death from natural causes, accidents, and suicide/homicide. Nechako was ranked 17th, Burns Lake 19th, and Prince George 35th.

7.3 Summary

Residents of the SERSA have lower life expectancy rates than the provincial average, higher-than-average infant mortality rates, and higher PYLL due to natural causes, accidents, and suicides/homicides.

8.0 TRANSPORTATION

The transportation network in the interior of BC consists primarily of highways and gravel-surfaced roads, as well as rail and air transportation infrastructure. The construction and operation of the Project will place additional demands on the transportation network in the SERSA as goods, services, and workers travel to and from the Project site. This section of the report provides an overview of the current transportation network in the SERSA.

8.1 Information Sources and Methods

Information sources used in the following sections include the Ministry of Transportation and Infrastructure (BC MoTI) website, Insurance Corporation of British Columbia (ICBC) website, community websites, BC Transit, the operators of railway services, and the Prince George Airport (YXS).

8.2 Highways and Roads

Highway 16 is the primary east-west highway and trucking route to and through the SERSA, while Highways 27 and 97 provide north-south access. Highway 16, also known as the Yellowhead Highway, is the second-busiest east-west highway and truck route in Western Canada after Highway 1 (TransCanada Highway). It extends from Prince Rupert east through BC, Alberta, and Saskatchewan to an intersection with Highway 1 near Portage La Prairie, Manitoba. Within the SERSA, Highway 16 passes through Prince George, Vanderhoof, Fraser Lake, and Burns Lake.

Highway 27 runs north from a junction at Highway 16 to the District Municipality of Fort St James, a distance of approximately 54 km. Highway 27 intersects Highway 16 about 8 km west of Vanderhoof. Highway 97 runs north-south and intersects Highway 16 at Prince George, from where it proceeds south along the eastern edge of the SERSA and beyond to Quesnel and Cache Creek, where it intersects Highway 1.

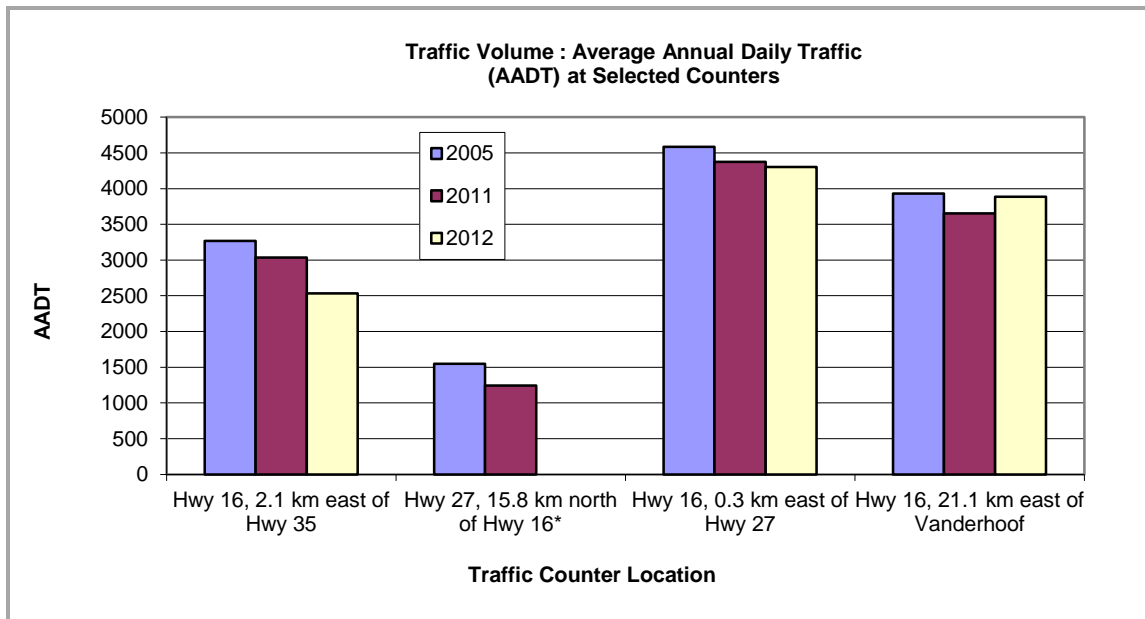
Within the SERSA, Highways 16, 27, and 97 are largely two-way undivided highways with the exception of a limited number of short, four-lane sections of Highway 16 and occasional passing lanes on some of the hills traversed by Highway 16. The posted speed limit is 100 km/h on Highways 16 and 97, and 90 km/h on Highway 27 except within and near the urban centres of Prince George, Vanderhoof, Fraser Lake, Burns Lake, and Fort St James, where the posted speed is reduced to 50 km/h.

The design capacity of the road system, which refers to the maximum traffic volume that can be accommodated on these primary highways, is generally 1,500 vehicles per hour per lane, but can range from 1,200 to 1,800 vehicles per hour per lane at different locations depending on road geometry, terrain, and other factors (Wong, pers. comm., 2012).

Highway 16 provides linkages to the Port of Prince Rupert and to Alberta and other eastern provinces. Highway 97 provides a southern linkage to the TransCanada Highway, which in

turn provides access to Vancouver and the eastern provinces as well as linkages to and from the US.

Figure 8.2-1 shows average annual daily traffic (AADT) volumes at four traffic counter locations in the SERSA, including three along Highway 16 between Prince George and Burns Lake and one on Highway 27. The data indicate that traffic volumes have decreased at all locations since 2005. On Highway 27, the AADT was 1,243 in 2011 compared to 1,549 in 2005—a decrease of 306 vehicles per day (-20%). On Highway 16, the greatest decrease (23%) in AADT from 2005 to 2012 was just east of the Highway 27 intersection, whereas the smallest decrease (1%) was east of Vanderhoof. In 2012, AADT on Highway 16 was highest at the counter location just east of the Highway 27 intersection (4,304 vehicles), followed by the one 21 km east of Vanderhoof (3,888 vehicles), and lowest at the one just east of Burns Lake (2,532 vehicles).



Note: 46-011EW: Hwy 16, 2.1 km east of Hwy 35, east of Burns Lake
45-004EW: Hwy 16, 0.3 km east of Hwy 27, west of Vanderhoof
45-009EW: Hwy 16, 21.1 km east of Burrard Ave., east of Vanderhoof
45-003NS: Hwy 27, 15.8 km north of Hwy 16, west of Vanderhoof
*Data for 2012 were unavailable from the Hwy 27 traffic counter

Source: British Columbia Ministry of Transportation and Infrastructure, 2013

Figure 8.2-1: Traffic Volumes at Four Locations in SERSA in 2005, 2011, and 2012

Motor vehicle accident data compiled by ICBC for Highways 16 and 27 during the five-year period from 2007 through 2011 are presented in **Table 8.2-1**. The reliability and accuracy of this information is not precise in that incident locations were often unavailable or vague. The data, however, provide useful insight on the volume and type of motor vehicle accidents occurring on these highways from 2007 to 2011.

During the period of record, an annual average of 381 motor vehicle accidents was recorded on Highway 16 between Prince George and Burns Lake. Over the complete five-year period, a total of 1,907 collisions resulting in casualties (fatality or injury) or property damages (no fatalities or injuries) were reported on this stretch of Highway 16. Of these, 723 (38%) resulted in personal fatality or injury and 1,184 (62%) in only property damage.

During the same five-year period, an annual average of 12 motor vehicle accidents was recorded on Highway 27 between Highway 16 and Fort St. James, for a total of 60 collisions. Forty-five of the 60 collisions resulted in property damage and only 15 (25%) in personal injury or fatality.

Table 8.2-1: Motor Vehicle Accident Data for Highways 16 and 27 (2007 to 2011)

Year	Type of Collision		Total
	Casualty/Fatality	Property Damage Only	
Motor Vehicle Collisions: Highway 16, Prince George to Burns Lake (2007 to 2011)			
2007	167	244	411
2008	162	212	374
2009	140	254	294
2010	119	240	359
2011	135	234	369
Total	723	1184	1,907
Motor Vehicle Collisions: Highway 27, to Fort St. James (2007 to 2011)			
2007	2	14	16
2008	1	10	11
2009	4	10	14
2010	4	3	7
2011	4	8	12
Total	15	45	60

Passenger vehicles were involved in 65% of the collisions recorded on Highway 16 and in 55% of those recorded on Highway 27 during the five-year period. Commercial vehicles were involved in 30% of collisions on Highway 16 and in 34% of those on Highway 27. Of accidents related to commercial vehicles, more than two-thirds involved light trucks (pickups, crewcabs, vans), whereas tractor trailers, flat-decks, and logging trucks accounted for less than 10% (ICBC, 2013).

Dangerous goods can be transported on all highways in BC, including Highways 16, 27, and 97 within the SERSA and local forest service roads, provided that the dangerous goods and the vehicles transporting them are in compliance with the applicable international, federal, and provincial guidelines, acts, and regulations. These include but are not limited to the International Cyanide Management Code (ICMC) (ICMI, 2012); Environment Canada's Environmental Code of Practice for Metal Mines (EC, 2009); *Canadian Transportation of*

Dangerous Goods Act and Regulations; and *BC Transportation of Dangerous Goods Act* and Regulations. It is anticipated that materials transported to the mine site will fall under several dangerous goods classifications, possibly including reagents such as cyanide, fuel and lubricants, explosives, and blasting agents.

Dangerous goods in transport via road or rail may be subject to inspection and must have appropriate shipping documentation to accompany the load, prepared by the consignor and carried by the carrier, with a dangerous goods marker/placard displayed on the load container. In order to transport dangerous goods, the consignor must have an emergency response assistance plan in the event of a release that could endanger the public and/or environment. In addition, a security plan must be in place to prevent the dangerous material from being stolen or otherwise interfered with during handling and transport.

The City of Prince George Highways *Bylaw 8065* regulates the use of highways within the city boundaries. Under Section 4 of *Bylaw 8065*, any person who, without a permit or written approval from the City of Prince George, operates any vehicle transporting dangerous goods on any highway on which the movement of dangerous goods is restricted by the City, commits an offence.

The City of Prince George Transport of Dangerous Goods *Bylaw 8192* restricts the transport of dangerous goods on certain highways in the City in order to reduce the risk to public health and safety, the natural environment, and public works. Designated dangerous goods routes are listed in Schedule A and shown in Schedule B of the bylaw.

Figure 8.2-2 shows the locations of the dangerous goods routes in Prince George. Under Section 2 of *Bylaw 8192*, carriers of dangerous goods may depart and return to a designated dangerous goods route using the closest and most direct route possible:

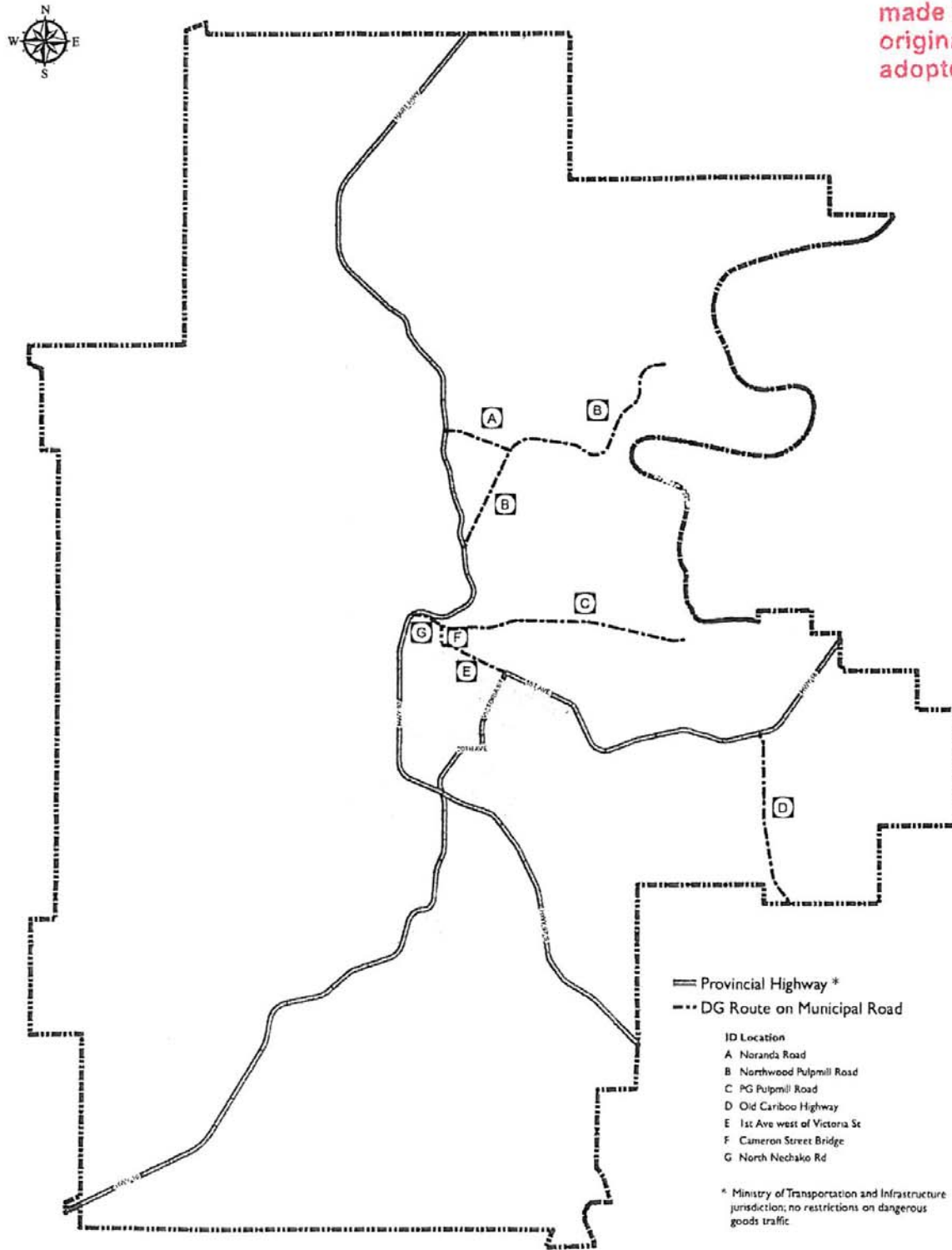
- For the purpose of picking up or delivering dangerous good to a destination indicated on a bill of lading for those dangerous goods; and
- For the purpose of accessing a permitted vehicle storage location; or to obtain emergency repairs or service to the road vehicle carrying dangerous goods at the vehicle repair shop nearest to the place where the carriers determines that such emergency repairs or service is necessary.

There are no limitations on the transport of dangerous goods within the boundaries of the District of Vanderhoof.

CPG Transport of Dangerous Goods Bylaw No. 8192, 2009

Schedule "B" Prince George Dangerous Goods Routes Map

"an exact copy
made from the
original council
adopted bylaw"



Doc#120096_v1

Figure 8.2-2 Prince George Dangerous Goods Routes

8.3 Local Roads

Road access from Highway 16 to the mine site is possible via six forest service roads (FSRs) intersecting with five locations along Highway 16 (**Figure 8.3-1**). These include:

- From Lejac on Highway 16 and Holy Cross FSR, 500 Road, sections of Kluskus FSR and Kluskus-Ootsa FSR, and the mine access road;
- From Engen on Highway 16 and sections of Kluskus FSR, 500 Road, Kenney Dam FSR, Kluskus-Ootsa FSR, and the mine access road;
- From Engen on Highway 16 and Kluskus FSR, Kluskus-Ootsa FSR, and the mine access road;
- From Vanderhoof on Highway 16 and a section of Kenney Dam Road, the Sinkut Mtn. FSR, 600 and 6100 Roads, a section of Kluskus FSR, Kluskus-Ootsa FSR, and the mine access road;
- From Bednesti on Highway 16 and Bobtail FSR, the 400, 600, and 6100 Roads, section of Kluskus FSR, the Kluskus-Ootsa FSR, and the mine access road; and
- From Vanway on Highway 16 and Blackwater Highway, Pelican FSR, 100, 60,0 and 6100 Roads, a section of Kluskus FSR and Kluskus-Ootsa FSR, and the mine access road.

Each of these routes has been evaluated as a potential haul road for goods (including dangerous goods), services, and the workforce during the construction, operations, decommissioning, and closure phases of the mine. The route evaluation took into consideration road length from Prince George to the mine site; design capacity of the roads; condition and width of the road surfaces and bridge structures; seasonal weight restrictions; suitability for transporting 100% legal highway loads over 12 months per year; and cost for road and structure upgrades and maintenance. Results of the evaluation indicate that the best route from a least-cost perspective to transport goods and workers is the one from Engen, starting adjacent to Canadian Forest Products Plateau Division Sawmill, and following the Kluskus FSR, a section of Kluskus-Ootsa FSR, and the mine access road. Via this route, the distance from Engen to the mine site is 149.7 km, and the distance from Prince George to Engen on Highway 16 and to the mine site is 267 km.

The estimated driving time from Vanderhoof to the mine site using this route is approximately 2.5 hours, assuming a speed of 55 to 63 km/h on Kluskus FSR and 90 km/h on Highway 16. Driving time from Prince George to the mine site is estimated at 3.5 hours.

Figure 8.3-1 shows the preferred FSR route from Engen to the mine site.

Table 8.3-1 presents traffic volume estimates for 2012 and 2013 on the Kluskus FSR. In 2012, the number of AADT (return trips) on the FSR between Engen and Kilometre Point (KP) 99.5, excluding the Kluskus-Ootsa FSR and the mine access road, was estimated at 42, which has

been extrapolated to an estimated 15,330 return vehicle trips throughout the year (Allnorth, 2012). Eighty-nine percent of the 2012 traffic on the Kluskus FSR was Canadian Forest Products (Canfor) vehicles. Of the remaining 11% of traffic, the Project (New Gold) accounted for an estimated 4%.

Table 8.3-1: Traffic Volumes on Kluskus FSR 2012 and 2013

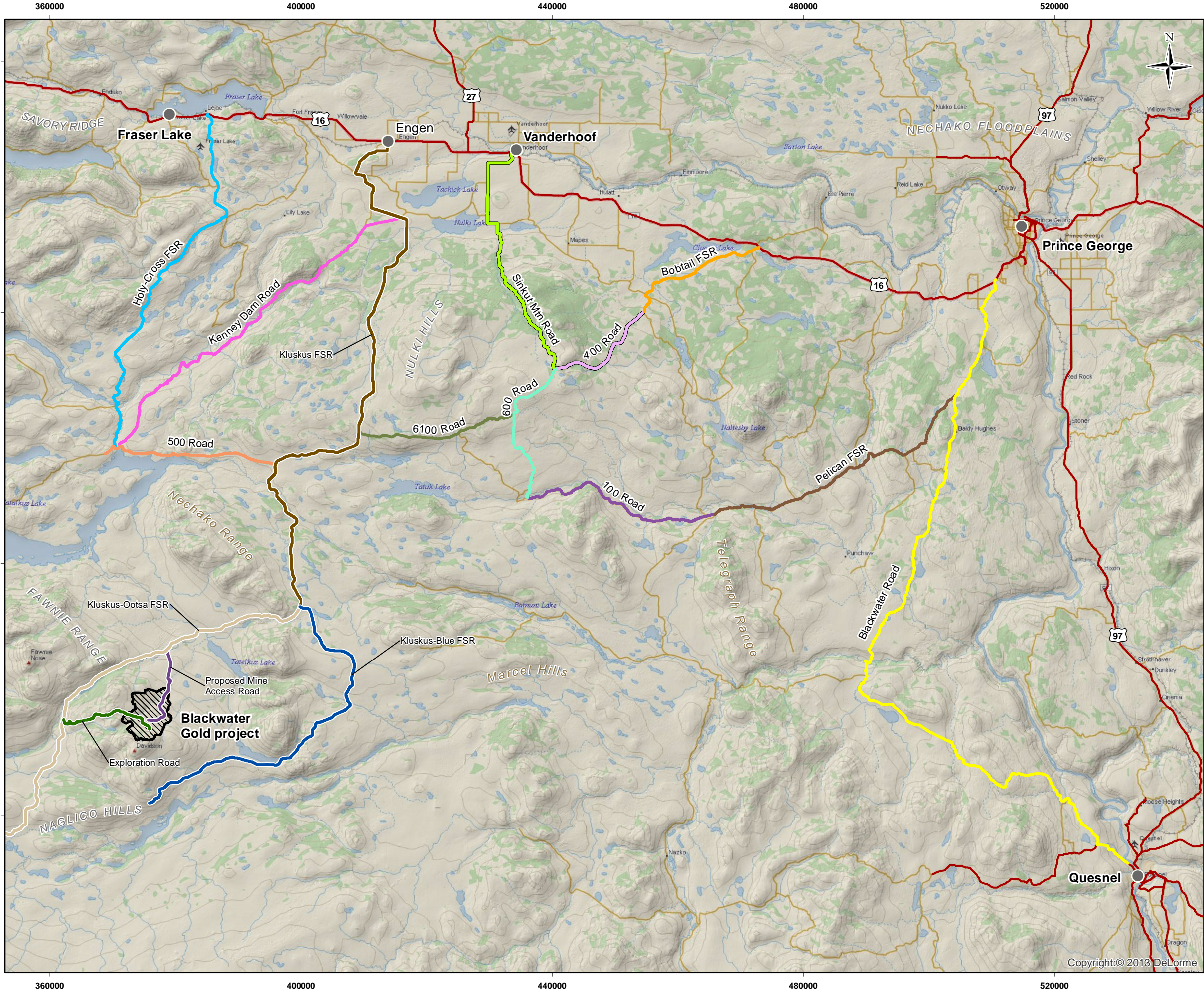
Traffic Source	2012 Traffic Estimates		2013 Traffic Estimates	
	AADT	AAT	AADT	AAT
Canadian Forest Products, Plateau ⁽¹⁾	37	13,650	21	6,250
BC Timber Sales ⁽²⁾	Nil	Nil	Nil	Nil
L&M Timber Sales ⁽³⁾	Nil	Nil	Nil	Nil
Blackwater Project ⁽⁴⁾	2	570	3	1,040
Other Industrial Users	1	250	1	290
Pickups and other private road users	2	570	4	1,460

Note: ⁽¹⁾Update provided by Canfor, July 2013; ⁽²⁾Updated by MFLNRO, July 2013; ⁽³⁾Update by L&M Timber Sales, July 2013; ⁽⁴⁾Update provided by New Gold, July 2013. Assumes 15% increase in other industrial users due to increase in mineral exploration over last 5 years. Estimates based on discussion with other road users and government agencies.

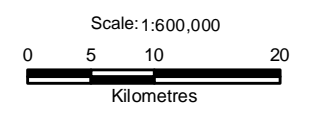
Source: Allnorth, 2012; Canfor; L&M Timber; BC Timber Sales; New Gold.

The 2013 AADT estimate for this segment of the Kluskus FSR is 29 return vehicle trips per day or a total of about 9,040 vehicles over the course of the year. Canfor accounts for 78% of the vehicles and New Gold for about 11%. Although pickups and other private road users (government and public vehicles) account for a daily average of four return trips throughout the year, or 14% of the total traffic on the road, the traffic volume is thought to be greater during the summer and fall months when many local and regional residents are camping, fishing, and hunting in the area (Sewell, pers. comm., 2013).

As the primary user of the Kluskus FSR, Canfor is responsible for maintenance, upkeep, and snow removal along the road. Other industrial users, including New Gold, have entered into individual road management agreements with Canfor whereby they agree to pay part of the cost of ongoing road maintenance based on the projected volume of their industrial traffic month to month throughout the year. The road management agreements are in effect for one year but are renewable annually.



- Legend**
- Populated Place
 - 16 Highway
 - Kluskus FSR
 - Kluskus-Blue FSR
 - Kluskus-Ootsa FSR
 - Exploration Road
- Project Components**
- Proposed Mine Access Road
 - Proposed Mine Site
- Main Route Selection**
- 100 Road
 - 400 Road
 - 500 Road
 - 600 Road
 - 6100 Road
 - Blackwater Road
 - Bobtail FSR
 - Holy-Cross FSR
 - Kenney Dam Road
 - Pelican FSR
 - Sinkut Mtn Road



Reference
BC Government GeoBC Data Distribution

CLIENT:

PROJECT: Blackwater Gold Project

North Haul Routes

DATE: March, 2013	ANALYST: MY	Figure 8.3-1
JOB No: VE52420	QA/QC: WR	PDF FILE: 14-100-023_north_haul_route_v3.pdf
GIS FILE: 14-100-023_north_haul_route_v3.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\14-100-023_north_haul_route_v3.mxd

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8.4 Bus Services

In the SERSA, public bus transportation service is only available in City of Prince George. The bus operation is a shared cost between Prince George and BC Transit (BC Transit, 2012). The Prince George City Council makes decisions about fares, levels of services, and routes based on information provided by BC Transit. Buses run seven days per week over 21 routes covering the major neighbourhoods and downtown region of Prince George. A HandyDart managed by the Carefree Society is available for physically disabled residents in the area.

Commercial bus service is available through Greyhound, which stops in Burns Lake, Fraser Lake, Vanderhoof, Fort St. James, and Prince George (Greyhound, 2013). Only Fort St. James does not have regularly scheduled service, and passenger tickets must be purchased online from Greyhound.

8.5 Commercial Trucking Carriers

Communities in the SERSA are well served by local, regional, and national commercial trucking carriers. The level of service is generally proportional to the size of the community. Prince George has the largest number and mix of commercial trucking and freight carriers, while Fraser Lake, Burns Lake, and Fort St James have the fewest.

8.6 Rail Access

Passenger rail service is available from VIA Rail in the SERSA communities of Prince George, Vanderhoof, Burns Lake, and Fraser Lake (VIA Rail, 2012). Freight rail service to and through the SERSA is provided by Canadian National Rail (CN Rail). An average of 14 to 16 trains per day travel east and west between Prince George and Prince Rupert. CN freight trains make regular stops at the staging yard in Prince George and at sidings in Vanderhoof, Fort St. James, Fraser Lake, and Burns Lake, based on customer demand or deliveries to these locations (CN Rail, 2012). CN also operates freight service from Prince George to Cache Creek on a spur line that runs south adjacent to Highway 97. From Cache Creek freight can be transferred to the CP Rail network that runs west to Vancouver or east to Calgary, Regina, and Winnipeg and beyond.

Intermodal transload facilities potentially suitable for project use, including rail sidings and adjacent lands for offloading and transloading equipment and materials from rail cars onto trucks for transport to the mine site, have been identified at Engen, 21 km west of Vanderhoof, and at Prince George. The Engen transload site has two sidings, each capable of handling two-direction train movements and up to 10 rail cars. One of the sidings is adjacent to 2 ha of semi-prepared land that could be upgraded to suit offloading operations. The truck route from the Engen rail siding/transload site to the mine site would follow Engen Road, turning west on Highway 16 to Bearhead Road, then south onto Keith Road, and then along the Kluskus FSR.

From the potential transload site at Prince George, trucks would travel west on Highway 16 to Engen and then follow the truck route described above to access the mine site. Seasonal

(spring) axle weight restrictions on trucks using the Engen and Keith roads need to be considered when assessing these routes.

8.7 Air Access

The Prince George Airport (YXS) is the only commercial airport in the SERSA and is considered a regional hub for air traffic. It is open 365 days per year and offers daily direct flights to Vancouver, Kamloops, Kelowna, Smithers, Terrace, and Fort St. John via West Jet, Air Canada (Express), and Central Mountain Air. The airport has the third-longest runway in Canada and is able to accommodate all sizes of commercial, passenger, and large cargo planes (Green, 2012). Ridership numbers increased from 2010 to 2011 (402,000 to 420,000 passengers), and YXS is anticipating a further 3% increase over the next five years (Green, 2012). The airport facilities have recently been updated, and there are no future plans to expand.

The communities of Vanderhoof (CAU4), Fort St James (CYJM), Fraser Lake (CBZ9), and Burns Lake (CYPZ) operate registered aerodromes with runways that are used for air emergency medical transportation and for small private jets and single-engine charter aircraft carrying passengers and cargo. Maintained by the communities, all the runways feature paved landing and taxiing surfaces.

Current air travel to the proposed Blackwater mine site is by helicopter, although there is a turf/gravel air strip at Tsacha Lake (CAE4), about 17 km to the south. Airstrips at other locations south of Highway 16, adjacent to the FSR network, include Tsetzi Lake (Pan Phillips) (CBT3), Tatelkuz Lake, Laidman Lake Lodge, and Moose Lake Lodge, which also has a water landing area. These local airstrips are used by charter flights from Horizon Jets, Guardian Aerospace, and other private jets and small single-engine charter services.

New Gold is investigating the need for and location of an airstrip proximal to the proposed mine site to transport non-regional contractors and workers during Project construction.

8.8 Summary

Table 8.8-1 summarizes the transportation infrastructure and services available in the SERSA.

Table 8.8-1: Existing Transportation Infrastructure in SERSA

Transportation	Burns Lake	Fraser Lake	Fort St. James	Vanderhoof	Prince George
Roads					
Highway	Highway 16	Highway 16	Highway 27	Highways 16 and 27	Highways 97 and 16
Road Surface	Paved	Paved	Paved	Paved	Paved
Kluskus FSR and Mine Access Road	Gravel roads starting at Engen on Highway 16				
Bus	Greyhound	Greyhound	Greyhound	Greyhound	City bus service, Greyhound
Commercial Trucking	Local and regional carriers	Local and regional carriers	Local and regional carriers	Local and regional carriers	Local, regional, and national carriers
Rail	CN Rail, VIA Rail	CN Rail, VIA Rail	CN Rail	CN Rail, VIA Rail	CN Rail, VIA Rail
Air ⁽¹⁾	No commercial services	No commercial services	No commercial services	No commercial services	Commercial airline services
Runway length	1,524 m	1,200 m	1,219 m	1,524 m	3,490 m
Runway surface	Paved	Paved	Paved	Paved	Paved
Owner	Village of Burns Lake	Village of Fraser Lake	District of Fort St. James	District of Vanderhoof	Leased by the City from the Government of Canada until 2063
Weather and communication type	All weather, radio triggered lighting	All weather, instrument approach	All weather, instrument approach	All weather, instrument approach	All weather, instrument approach

Source: Martin, 2012; Carver, 2012; Green, 2012; Hillman, 2012; Hand, 2012.

Note: ⁽¹⁾Private airstrips in LSA at Tsacha Lake, Tsetzi Lake, Tatalkuz Lake, Laidman Lake Lodge, and Moose Lake Lodge.

9.0 COMMUNITY SUMMARIES

9.1 Introduction

Based on the preceding analysis, it is apparent that the communities within the SERSA differ from each other in one or more aspect. **Table 9.1-1** and the following sections provide a brief description of the individual communities.

Table 9.1-1: Social Indicators of Communities in SERSA

	Community	Population Characteristic				Demographic Mobility	CWB Index ⁽²⁾
		Population 2011	Change from 2006 (%)	Aged 15+ (%)	Aboriginal Composition ⁽¹⁾ (%)	Same Address for 5+ Years ⁽¹⁾ (%)	
LSA	Vanderhoof	4,480	10.2	77.2	11.1	54.8	81
	Fraser Lake	1,167	4.9	79.4	8.9	61.7	83
	Stony Creek 1	332	-13.5	84.8	97.2	80.6	50
	Laketown 3	10	-61.5	n/a	n/a	n/a	n/a
	Seaspunkt 4	15	0	n/a	n/a	n/a	n/a
	Nautley (Fort Fraser 4)	201	31.4	77.5	95.0	94.7	57
	Stellaquo (Stella) 1	205	10.2	80.5	95.2	82.1	62
	Bulkley-Nechako F	3,702	18	77.7	n/a	n/a	78
	Bulkley-Nechako D	1,734	4.1	83.3	n/a	n/a	77
	Kluskus1	39	21.9	n/a	n/a	n/a	n/a
	Sundayman's Meadow 3	5	100	n/a	n/a	n/a	n/a
	Euchinico Creek 17	0	-100	n/a	n/a	n/a	n/a
	Trout Lake Alex 16	21	100	n/a	n/a	n/a	n/a
	Nazco 20	132	12.8	n/a	n/a	n/a	n/a
	Subtotal	11,846	10.1	78.8	21.2	59.8	-
RSA	Prince George	71,974	1.4	82.0	12.8	56.1	82
	Fort St. James	1,691	24.8	76.9	27.3	58.0	82
	Burns Lake	2,029	-3.7	78.3	34.4	53.3	74
	Indian Reserves ⁽³⁾	1,721	14.2	76.1	99.1	76.0	-
	Fraser to Ft. George C	3,434	6.7	82.5	6.3	74.6	84
	Bulkley-Nechako B	2,102	-2.4	79.3	15.0	77.9	79
	Bulkley-Nechako C	1,429	5.5	84.6	15.3	82.3	79
	Subtotal	84,380	1.5	81.7	15.2	58.3	-
SERSA	96,226	2.4	81.3	15.6	58.4	-	

Note: ⁽¹⁾Based on 2011 NHS; ⁽²⁾Based on Census 2006; ⁽³⁾Aggregated data for the populated reserves that fall within the RSA; n/a = not applicable

Source: Statistics Canada, 2007a, 2012, 2013

9.2 Local Study Area

9.2.1 Fraser Lake

The Village of Fraser Lake, on the Yellowhead Corridor, had a reported population of 1,167 in 2011, an increase of 4.9% from 2006. Population mobility is low, with most residents having lived at the same residence for five years or more. Most residents are aged 25 to 54 years and are married-couple families. The community has a mix of dwelling types but mostly single,

detached houses, and the highest concentration in the SERSA of homes built before 1986. Approximately 35% of dwellings are rented, and housing is the most affordable in the region.

The community has all modern communication amenities (cell phone, Internet), and current physical infrastructure is adequate. Residents have access to a variety of recreation opportunities both indoors and out. The community is fully serviced from a regional services perspective. It has an adequate number of K-12 schools, a health centre, an RCMP detachment, and a fire hall, and residents can access commercial bus and rail service directly in the community.

The Village of Fraser Lake scored 83 out of a possible 100 on the CWBi.

9.2.2 Vanderhoof

The District of Vanderhoof is located on the Yellowhead Corridor and is the most eastern and largest of all urban centres in the LSA. The community reported a positive rate of growth of 10.2% from 2006 to 2011 and had a population of 4,480 based on the latest census. Vanderhoof residents have the highest rates of residential mobility in the LSA, including a large concentration of residents who relocated to the community from elsewhere in the province. Almost half of residents are aged 25 to 54 years, and more than a quarter are youth aged 0 to 14 years. Most adults are married couples.

The bulk of the available housing is single detached homes; the balance is a mix of multi-family style residences. Like most communities in the LSA, most dwellings were constructed before 1986, but homes appear to be well maintained, with less than 10% requiring major repairs. Approximately three-quarters of housing are privately owned, and the rest is classified as rental properties. Housing in Vanderhoof is among the most expensive in the LSA.

The community is supported by full regional services, having multiple schools, a health centre, an RCMP detachment, and a fire hall. Residents have access to commercial passenger service through VIA Rail and Greyhound. Traffic volumes in and around the community have decreased since 2004.

The District of Vanderhoof scored 81 out of a possible 100 on the CWB Index.

9.2.3 Stony Creek 1

The Stony Creek 1 Indian Reserve is southwest of Vanderhoof. The community reported a population decrease of 13.5% from 2006 to 2011, to 332 according to the latest census. Residents are generally older than residents in the rest of the LSA, and only 15% of the population was aged 0 to 14 years. The community has low demographic mobility, with most residents having lived at the same address for more than five years.

The Stony Creek 1 Indian Reserve scored 50 out of a possible 100 on the CWB Index, the lowest score among the SERSA communities.

9.2.4 Seaspunkt 4

The Seaspunkt 4 Indian Reserve is east of Fraser Lake and had a reported population of 15 in both 2006 and 2011. No other data are available.

9.2.5 Nautley 1

The Nautley 1 Indian Reserve is west of Vanderhoof. The community grew by 31.4% between 2006 and 2011, to a population of 201, according to the latest census. The community has a relatively large population aged 0 to 14 years (21.5%). Demographic mobility is low, with most residents living at the same address for more than five years.

The Nautley 1 Indian Reserve scored 57 out of a possible 100 on the CWB Index.

9.2.6 Stellaquo 1

The Stellaquo 1 Indian Reserve neighbours the community of Fraser Lake to the west. The community grew by 10.2%, to 205 residents, from 2006 to 2011. As with other Aboriginal communities in the region, Stellaquo has a large percentage of residents aged 0 to 14 years (19.5%) and low demographic mobility, with most residents having lived at the same address for more than five years.

The Stellaquo 1 Indian Reserve scored 62 out of a possible 100 on the CWB Index.

9.2.7 Laketown 3

The Laketown 3 Indian Reserve is southwest of Vanderhoof and the Stony Creek 1 reserve. The amount of data available for the reserve is limited to a reported population count 10, down 63% from the 2006 census.

9.2.8 Kluskus 1

The Kluskus 1 Indian Reserve belongs to the Lhoosk'uz First Nation. The reported population in 2011 was 39, a decrease of 22% from 2006. No other data are available.

9.2.9 Sandyman's Meadow 3

The Sandyman's Meadow 3 Indian Reserve belongs to the Lhoosk'uz First Nation. The community grew from 0 residents in 2006 to 5 residents in 2011. No other data are available.

9.2.10 Euchinico Creek 17

The Euchinico Creek 17 Indian Reserve belongs to the Nazko First Nation. The population decrease is reported to have decreased from 25 to 0 residents between 2006 and 2011. No other data are available.

9.2.11 Trout Lake Alex 16

The Trout Lake Alex 16 Indian Reserve belongs to the Nazko First Nation. The reported population was 21 in 2011, an increase of 100% from the 2006 census. No other data are available.

9.2.12 Nazco 20

The Nazco 20 Indian Reserve belongs to the Nazko First Nation. The community grew by 12.8% to a total population of 132 from 2006 to 2011. No other data are available.

9.2.13 Bulkley-Nechako RDEA D

The Bulkley-Nechako RDEA D is located in the southwest section of the LSA and contains the Village of Fraser Lake. Between 2006 and 2011, the population of the RDEA increased by 3.1%, to 1,734. The demographic mobility of residents in the area is on par with the LSA average. The population is generally older than the rest of the LSA, with approximately 83% or residents over the age of 14 years.

Most housing in the community consists of detached dwellings, privately owned and built pre-1986. Approximately 15% of homes require major repair. Housing prices in the region are well below the provincial average but about average for the SERSA.

Residents must travel to an urban centre to access most regional services, including schools, care centres, recreation facilities, and commercial transportation.

The Bulkley-Nechako RDEA D scored 77 out of possible 100 on the CWB Index, the lowest of all rural areas.

9.2.14 Bulkley-Nechako RDEA F

The Bulkley-Nechako RDEA F is located centrally in the LSA and contains the District of Vanderhoof. The population of the RDEA has increased significantly by 18% from 2006 to 2011, to 3,702. The region has average mobility rates; most residents have lived at the same address for five years or more. Most of the population falls in the 25 to 54 years old grouping, but almost 25% were aged 0 to 14 years at the time of the 2011 census.

Housing is mostly privately owned, single-family detached dwellings built before 1986. The percentage of houses requiring major repair is on par with the regional average. House pricing is at the high end of the scale for the region but still well below the provincial average.

Residents are required to travel to an urban centre to access most regional services, including schools, care centres, recreation facilities, and commercial transportation.

The Bulkley-Nechako RDEA F scored 78 out of possible 100 on the CWB Index, among the lowest of the rural regions in the LSA.

9.3 Regional Study Area

9.3.1 Prince George

The City of Prince George is the most eastern and largest centre in the RSA. The latest census reported a population of 71,974, an increase of 1.4% over 2006. The City has the greatest mobility rate among residents of all communities in the SERSA, with just over half of the population having lived at the same address for five or more years. More than 82% of the population is over the age of 14 years and are primarily aged 25 to 54 years.

The City has the greatest mix of dwelling types, although most residences are detached, privately owned, single-family homes. Like most communities in the SERSA, the housing stock was largely produced before 1986 but is generally well maintained, with less than 10% requiring major repairs. Housing prices are well below the provincial average. Most recently, the number of residential buildings permits has decreased but is still well above the five-year low in 2009.

The community is fully serviced with multiple schools and post-secondary institutions, several health centres, two RCMP detachments, and four fire halls. Residents have access to commercial passenger service through VIA Rail, Greyhound, and one of the three airlines that operate out of the Prince George Airport. Most recent traffic volume counts indicate that the number of vehicles coming into the City on Highway 16 is down since 2005.

The City of Prince George scored 82 out of a possible 100 on the CWB Index.

9.3.2 Fraser-Fort George RDEA C

The Fraser-Fort George RDEA C is centrally located in the SERSA. The population in the area has demonstrated steady, sustained growth of approximately 7% since 2006, to 3,434 at the time of the 2011 census. Like most communities in the SERSA, the population has low mobility rates, with most residents having lived at the same address for five years or more. Most residents are 14+ years of age, and the area reports the lowest concentration of those aged 24 years and younger in the RSA.

The available housing is primarily single-family, detached homes, mostly built before 1986, but the area has the largest proportion of newer dwellings built after 1986. The percentage of dwellings requiring major repair falls below the provincial rate. The area also reports the highest rates of owned versus rented housing and has the most expensive housing in the entire SERSA.

Residents are required to travel to an urban centre to access most regional services, including schools, care centres, recreation facilities, and commercial transportation.

The Fraser-Fort George RDEA C scored 84 out of a possible 100 on the CWB Index, the highest in the SERSA.

9.3.3 Fort St. James

The District of Fort St. James is located on a spur of the Yellowhead Corridor, also known as Highway 27, and is the most northern urban centre in the RSA. The 2011 census indicates that the community is growing once again, to a reported a population of 1,691, an increase of 25% from 2006. Approximately three-quarters of the population is over the age of 14 years. The community reports low residential mobility rates, as most people have lived at the same address for five years or longer.

The available housing consists primarily of privately owned, single-family homes built before 1986. The homes are well maintained, with few requiring major repairs, and housing is considered affordable.

The community has all modern communication amenities (cell phone, Internet), and current physical infrastructure is adequate. Residents have access to a variety of indoor and outdoor recreational opportunities. The community is fully serviced with multiple schools, a health centre, an RCMP detachment, a fire hall, and commercial bus services. Traffic volume counts on Highway 27 have increased since 2008, suggesting that the community is growing and prospering.

The District of Fort St. James scored 82 out of a possible 100 on the CWB Index.

9.3.4 Burns Lake

The Village of Burns Lake is located on the Yellowhead Corridor, at the west end of the SERSA. In the 2011 census, the community had a population of 2,029, a decrease of 3.7% from 2006. A large proportion of village residents had resided in the same municipality in the past five years but at different addresses. Most of the population are aged 25 to 54 years, and approximately 22% of residents are under 14 years of age.

Homes are mostly single-family dwellings, typically constructed before 1986, and approximately 20% are in need of major repairs. Just over half of the dwellings are privately owned, and the rest are rented. Recently, there has been very little new residential construction in the region.

The community is fully serviced with multiple schools, a health centre, an RCMP detachment, a fire hall, and access to commercial passenger rail and bus service. Traffic volume counts decreased significantly from 2005 to 2011.

The Village of Burns Lake scored 74 out of a possible 100 on the CWB Index, the lowest of all urban centres in the SERSA.

9.3.5 Bulkley-Nechako RDEA B

The Bulkley-Nechako RDEA B is the most western RDEA and includes the community of Burns Lake. The population of the RDEA decreased by approximately 2% from 2006 to 2011. Residents of the region report low levels of mobility, as most residents have been at the same address for five years or more. Most residents are aged 25 to 54 years, and 21% of residents are aged 0 to 14 years.

Housing in the region is predominantly privately owned and composed of single-family dwellings built before 1986. Approximately 15% of the homes require major repairs. Houses in the Electoral Area are priced well below the provincial average but are among the most expensive in the LSA.

Residents must travel to an urban centre to access most regional services, including schools, care centres, recreation facilities, and commercial transportation.

The Bulkley-Nechako RDEA B scored 79 out of a possible 100 on the CWB Index.

9.3.6 Bulkley-Nechako RDEA C

The Bulkley-Nechako RDEA C is the most northern RDEA and includes the District of Fort St. James. The population of the RDEA increased from 1,355 to 1,429 in 2011, an increase of approximately 6% over 2006. The region reports low mobility rates, as most residents have lived at the same address for five years or more. Most of the population is aged 25 to 54 years, and approximately 15% are aged 0 to 14 years.

House are primarily privately owned, single-family homes built before 1986, and approximately 12% are in need of repair. Housing in the Electoral Area is among the most affordable in the rural parts of the SERSA.

Residents must travel to an urban centre to access most regional services, including schools, care centres, recreation facilities, and commercial transportation.

The Bulkley-Nechako RDEA C scored 79 out of a possible 100 on the CWB Index.

9.3.7 Indian Reserves

The Indian Reserves in the RSA are located in RDBN RDEA C and B and include the following:

- Nak'azdli 1;
- Sowchea 3;
- William Prairie Meadow 1A;
- North Tacla Lake 7;

- Dzitline Lee 9;
- Tache 1;
- Binchie 2;
- Ye Koo Che 3;
- Burns Lake 18;
- Woyenne 27;
- Duncan Lake 2; and
- Palling 1.

The total population of the reserves in the RSA increased to 1,721, 14.2% between 2006 and 2011. As with most Aboriginal communities, the population tends to be younger; 24% of the reserve population was between the ages of 0 to 14 years when the 2011 Census was taken. Collectively, demographic mobility on the reserves is low, and most people have lived at the same address for more than five years. Education attainment levels were low; approximately 66% of residents over the age of 15 years had not completed high school.

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