

Appendix 7.1-A

Socio-economic Baseline Report

AJAX PROJECT

**Environmental Assessment Certificate Application / Environmental Impact Statement
for a Comprehensive Study**

AJAX PROJECT SOCIO-ECONOMIC BASELINE REPORT

Submitted to:

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ABBREVIATIONS

Term	Definition
AAC	Allowable Annual Cut
AADT	Annual average daily traffic
AANDC	Aboriginal Affairs and Northern Development Canada
AIB	Ashcroft Indian Band
ALC	Agricultural Land Commission
ALC	Alternate Level of Care
ALR	Agricultural Land Reserve
AME	Abacus Mining and Exploration Corp.
AOC	Afton Operating Corporation
ARCH	Affordable Recreation for Community Health
ATV	All-terrain Vehicle
BC	British Columbia
BC AMTA	British Columbia Aboriginal Mine Training Association
BC EAO	British Columbia Environmental Assessment Office
BSE	Bovine Spongiform Encephalopathy
CANSIM	Canadian Socio-economic Information and Management System
CEA Agency	Canadian Environmental Assessment Agency
CEGEP	Collège d'enseignement général et professionnel
CME	CME Consultants Ltd.
CMHC	Canada Mortgage and Housing Corporation
Cominco	Consolidated Mining and Smelting Company of Canada (Limited)
COPD	Chronic Obstructive Pulmonary Disease
CSD	Census Subdivision
CWB	Community Well-Being
dAIR	Draft Application Information Requirements
e.g.	Example
F/P/T	Federal/Provincial/Territorial
FIFA	<i>Fédération Internationale de Football Association</i>
FIPA	Foreign Investment Promotion and Protection Agreement
FLNRO	Forests, Lands, and Natural Resource Operations

Term	Definition
FNHA	First Nations Health Authority
GNR Rate	Global non-response rate
HQant	Housing Quantity
HQual	Housing Quality
HSDA	Health Service Delivery Area
HSP	High School Plus
HVC	Highland Valley Copper
IHA	Interior Health Authority
IHF	International Hockey Federation
INAC	Indian and Northern Affairs Canada
IP	Inpatient
IR	Indian Reserve
IRA	Indian Registry Administrator
IRS	Indian Registry System
KAM	KGHM Ajax Mining Inc.
KAS	Kamloops Astronomical Society
KFR	Kamloops Fire Rescue
KLRMP	Kamloops Land and Resource Management Plan
KPI	Key person interview
LFP	Labour Force Participation
LHA	Local Health Area
LNIB	Lower Nicola Indian Band
LSA	Local Study Area
MADT	Monthly average daily traffic
MNBC	Métis Nation British Columbia
n.d.	No date
NHS	National Household Survey
NOC	National Occupational Classification
PY	Person Year
PYLL	Potential Years of Life Lost
RCMP	Royal Canadian Mounted Police
RIH	Royal Inland Hospital
RSA	Regional Study Area

Term	Definition
SDC	Surgical Day Care
SIB	Skeetchestn Indian Band
SIDS	Sudden Infant Death Syndrome
SPF	Spruce-pine-fir
SSN	Stk'emlupsemc te Secwépemc Nation
TFR	Total Fertility Rate
TIA	Traffic Impact Assessment
TIB	Tk'emlúps Indian Band
TNRD	The Thompson-Nicola Regional District
TNRD-J	Thompson-Nicola Regional District J (Copper Desert Country)
TRU	Thompson Rivers University
TSA	Timber Supply Areas
TteS	Tk'emlúps te Secwépemc
USA	United States of America
VC	Valued Component
WGFN	Working Group First Nations
WHO	World Health Organization
WMA	Wildlife Management Area
WP/CIB	Whispering Pines/Clinton Indian Band

1.0 INTRODUCTION AND APPROACH

This report provides a detailed description of baseline socio-economic conditions intended to inform the environmental assessment for the proposed Ajax Project (the Project).

The report is current as of May 2015 and presents information gathered from a range of activities as outlined in Section 1.2.2. The baseline conditions are depicted using comparable data from different years to highlight changes over time.

1.1 THE PROJECT

KGHM Ajax Mining Inc. (KAM) proposes to develop the Ajax Project (Project), an open pit copper-gold mine at the historic Afton Mining Camp, south of the City of Kamloops, British Columbia (BC). The Project is located in the South-Central Interior of British Columbia, southeast of the junction of the Trans-Canada Highway No. 1 and the Coquihalla Highway (No. 5), within the Thompson Nicola Regional District (TNRD).

The Project lies in the traditional territory of the Secwépemc Nation. Within the Secwépemc Nation, the Tk'emlúps te Secwépemc (TteS) and the Skeetchestn Indian Band (SIB) are the Aboriginal groups in closest proximity to the Project. In a cooperative effort, the Tk'emlúps te Secwépemc and Skeetchestn Indian Bands have formed the Stk'emlupsemc te Secwépemc Nation (SSN), as a division of the greater Secwépemc Nation. The Ashcroft Indian Band (AIB) and Lower Nicola Indian Band (LNIB), whose members are part of the Nlaka'pamux Nation, also assert their Aboriginal rights to the Project area - an area of common interest with the SSN.

The Ajax property includes two historic pits: the Ajax West Pit, and the Ajax East Pit. Both pits were formerly mined in the 1980s and 1990s. As many as 25 rock types have been recognized in the Project area, some of which are "hybrid" units resulting from the intermixing of multiple rock types.

Key Project facilities include the Tailings Storage Facility (TSF), which is planned as a conventional tailings storage facility; water management ponds; Peterson Creek diversion, and the Tailings Embankments, which will be constructed using mine rock; and four mine rock storage facilities (MRSFs). The four MRSFs include:

- The South Mine Rock Storage Facility (SMRSF);
- East Mine Rock Storage Facility (EMRSF);
- West Mine Rock Storage Facility (WMRSF); and
- The In-Pit Mine Rock Storage Facility (IPMRSF).

Several facilities that will be part of the operation phase but not remain after project closure include the:

- Plant facilities and administration buildings;
- Reclamation stockpiles;
- Explosives facility;

- Truck stop and fuel storage;
- Power lines; and
- Access roads.

The mine plan for the Project predicts an operation based on a mill throughput of 65,000 tonnes of ore per day from the Ajax Pit with up to a 23 year mine life. The construction phase of the Project will be approximately two and a half years and following the 23 year operation the decommissioning and closure phase is expected to take up to 5 years. Over the mine life, the Project will produce approximately 140 million pounds of copper and 130,000 ounces of gold annually with the concentrate shipped by truck to the Port of Vancouver.

1.2 SOCIO-ECONOMIC CONTEXT

The proposed Project is located in the southern interior of British Columbia (BC) in the TNRD. The site is adjacent to the City of Kamloops (Kamloops) and facilities for the Project will be located within the census subdivision Thompson-Nicola Regional District J (Copper Desert Country) (TNRD-J). The socio-economic context considers numerous subjects as they relate to the Project and is organized into the following broad categories:

- Economic environment;
- Social environment; and
- Community health and well-being.

1.2.1 Historical Overview

The region surrounding the Project has a long history of human activity that contributes to the current baseline conditions. Kamloops derives its name from the Secwépemc word “Tk’emlúps”, which refers to the meeting of the North and South Thompson rivers. The area was first inhabited by approximately 3,000 members of the Shuswap tribe, part of the Interior Salish Nation. “Shuswap” is Secwépemc anglicized (AMEC FW 2015). Archaeology indicates that the area was used by Aboriginal people for hunting ungulates such as elk, moose, and deer. Until the mid-1800s, the area supported large elk herds, which SSN harvested for meat, hides, antlers, bones, and teeth (used for tools). There was a rainbow trout fishery on Jacko Lake prior to the arrival of Europeans in the twentieth century. Since the lake was typically ice-free by mid-April, it provided an early source of fish for people. Other fishing locations were common on the North, South, and Main Thompson rivers, where salmon fishing was practiced. Jacko Lake was also a preferred area for harvesting traditional medicinal plants, in addition to root plants and soapberries (Ignace 2014).

Fur trading in the area began in the early 1800s and changed throughout the first half of the century. The fur trade involved a number of different trading companies, with trading posts were located in various locations in what is now Kamloops (City of Kamloops n.d.), including the Thompson’s River Post, which became a Hudson’s Bay Company post. As the fur trade grew in the area that is now Kamloops, the Secwépemc and traders traded hides, fish, roots, nuts, and berries (AMEC FW 2015).

In the second half of the nineteenth century, gold exploration brought miners into the area from the United States and China. At about this time (i.e., the late 1850s), some Europeans who came through the area brought small pox, to which the Secwépemc had no immunity. It is estimated that this small pox outbreak reduced the Secwépemc population by two-thirds (AMEC FW 2015). This was likely the third small pox outbreak among the Secwépemc as there were two earlier outbreaks among the peoples of the Interior Plateau; the first occurred in 1778-1780 and the second occurred in 1801-1802 (Ignace 2014).

According to the Cultural Heritage Study (Ignace 2014), the second half of the nineteenth century, starting in about 1858 with the gold exploration mentioned above, marked a distinct change in the relationship between the Secwépemc and Europeans. After several years, Europeans who had originally come to the area during the gold rush were anxious to pre-empt Secwépemc and Nlaka'pamux territory. It was considered potential land for ranching and agriculture.

The governor at the time, James Douglas, sought to establish reserves to protect Aboriginal interests in land. The reserves were specifically intended to protect settlements, fishing locations, and graveyards. His intent, however, was never codified into law. The absence of legal codification meant that once the *Pre-emption Consolidation Act* was passed in 1861, European settlers could acquire land by living on the land and making improvements. The exception was land set aside for Indian reserves. As Douglas approached retirement, European settlers began pre-empting land that had supposedly been set aside for reserves (Ignace 2014).

British Columbia officially became part of Canada in 1871 and construction of the transcontinental railroad was completed in 1885, encouraging the growth of a small village on the shore of the Thompson River. The village grew rapidly and by 1893 the population had risen to approximately 500 and became incorporated as a city with public works. In the following years, there were a number of infrastructural developments, including bridges that connected villages on either side of the rivers. In the late 1800s and early 1900s, railroad workers had made up a large part of the workforce and there was a growing timber industry. The Canadian Northern Railway was completed in 1915 and the Kamloops airport was operational in 1939, adding to the transportation infrastructure. The vegetable and orchard farming industry grew in the early part of the 20th century, with most of the land used for this purpose located in the valley (City of Kamloops n.d.d.).

The City grew after the First World War until development slowed during the Depression and the Second World War. After this period, the City began to grow again, and much of the land that had formerly been used for farming in the valley was used for residential development. Oil and gas infrastructure and wood processing plants represented major contributors to the economy of Kamloops starting in the middle of the 20th century. The Afton Mine went into operation in 1977, providing further to the economy in the area. The Trans-Canada Highway was completed in 1962 and the Yellowhead Highway in 1970. Kamloops underwent jurisdictional changes in the late 1960s and early 1970s when North and South Kamloops and other outlying municipalities were amalgamated (City of Kamloops n.d.d.).

1.3 METHODS

1.3.1 Scope of Baseline Studies

1.3.1.1 Spatial Boundaries

Local Study Area

The Local Study Area (LSA) focuses on Kamloops, Savona, Knutsford, the TNRD-J, and two First Nation communities: the TteS reserve (Kamloops #1) and the SIB reserve (Skeetchestn IR) (see Figure 1-1). The TteS and SIB have joined together to form SSN. Characterization of the LSA was undertaken through careful consideration of potential pathways of effects from the Project to socio-economic indicators. For example:

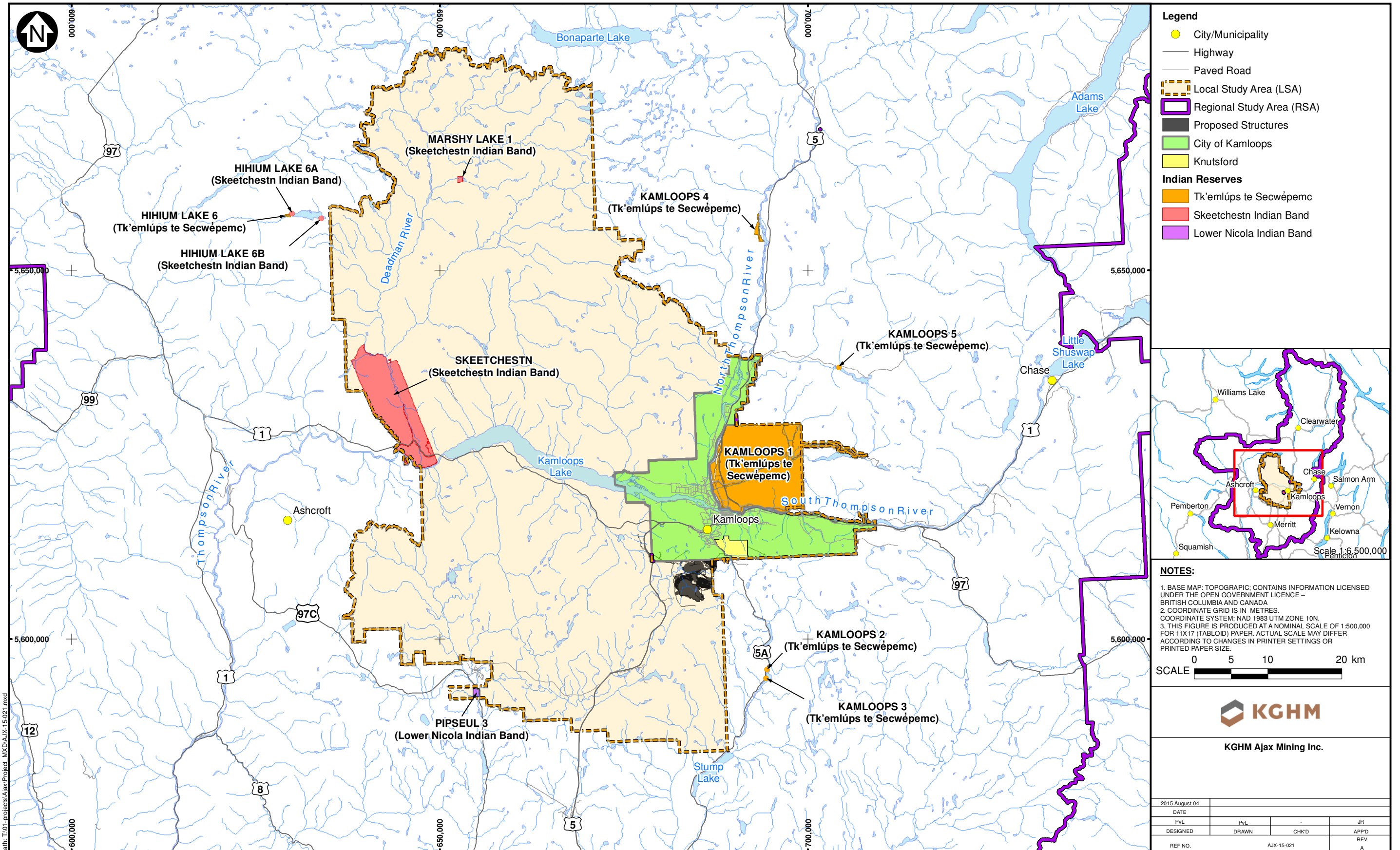
- On employment, the LSA represents the commuter shed, i.e., the communities from which employees are likely to be drawn given their proximity to the Project.
- With respect to community health, since biophysical effects of mining operations (e.g., effects on water) typically follow riparian corridors, the Peterson Creek and Cherry Creek watersheds were considered within the LSA. The airshed was also considered in light of Project emissions and community concerns regarding air quality.
- The TteS and SIB communities assert that the Project sits within their traditional territory and are also located in close proximity to the Project (per Section 11 Order).

Regional Study Area

The Regional Study Area (RSA) is defined by the boundaries of the TNRD (see Figure 1-1). The TNRD was chosen as the RSA since the Project is within its political, financial, and administrative jurisdiction. The TNRD also contains additional communities from which the Project is likely to draw its workforce. While there are numerous communities, including reserves located in the TNRD with the exception of three First Nations, these are not discussed individually. Data for three First Nations with their primary reserve parcels in the TNRD – the Lower Nicola Indian Band (LNIB), Ashcroft Indian Band (AIB), and Whispering Pines/Clinton Indian Band (WP/CIB) – are presented where available in the socio-economic baseline because they have been included by the BC Environmental Assessment Office (BC EAO) in the Section 11 Order or designated as a group of interest by the Canadian Environmental Assessment Agency (CEA Agency).

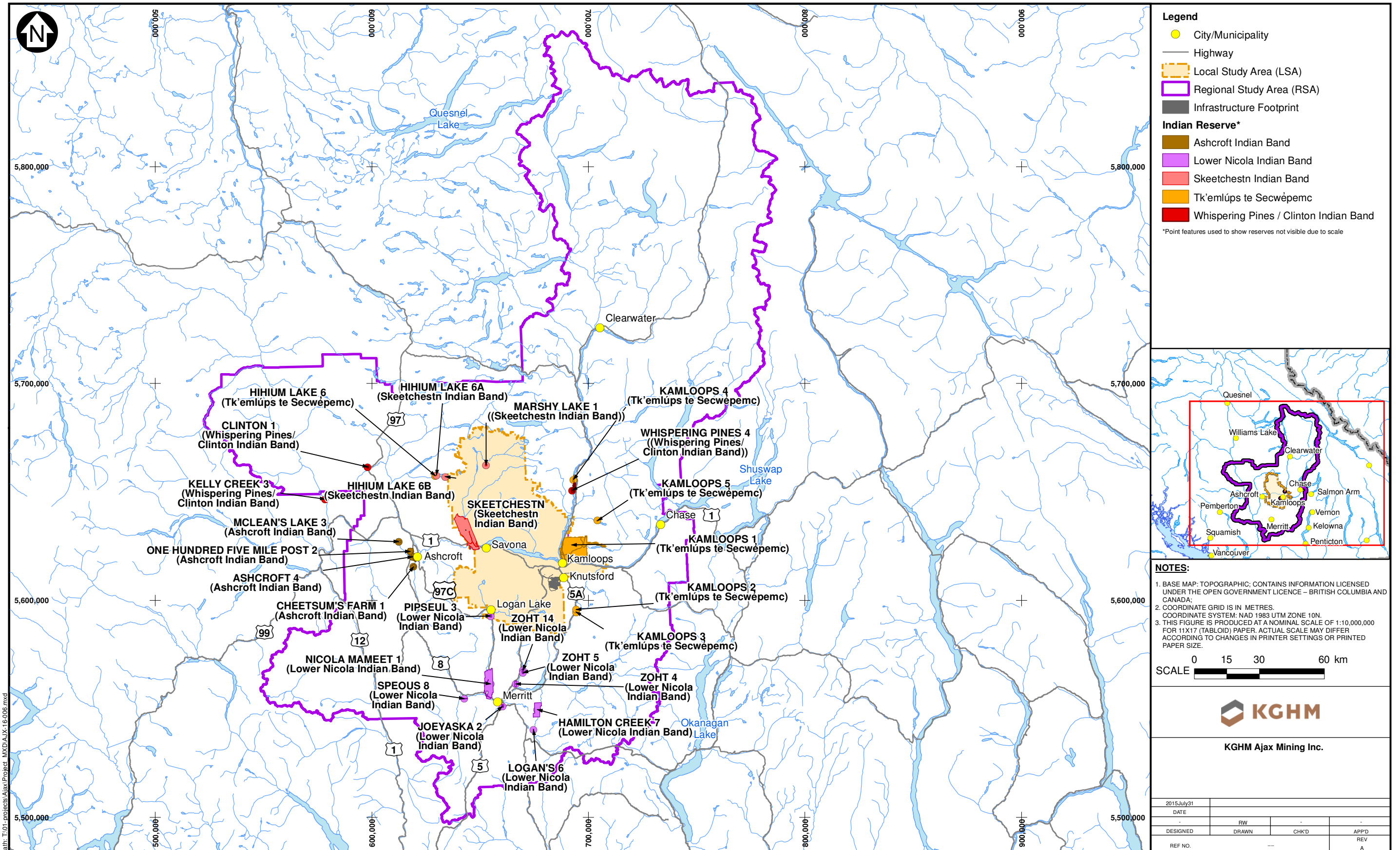
Where possible, baseline conditions for Métis residents of the RSA, including citizens of the Métis Nation BC (MNBC), will also be presented. Métis-specific data may not always be available since the Métis people are not often closely associated with a physical town, city, or village. They continue live throughout their traditional territory in a variety of locations that include the bush, incorporated municipalities, on reserves, and adjacent to reserves (MNBC 2015b).

Figure 1-1
Socio-economic Local Study Area



Path: T:\01-projects\Ajax\Project_MXD\AJX-15-021.mxd

Figure 1-2
Socio-economic Regional Study Area



Path: T:\01-projects\Ajax\Project_MXD\AJX-16-006.mxd

1.3.1.2 Temporal Boundaries

The socio-economic baseline conditions present a combination of the most recent data publically available, in addition to identifying trends over time. For Statistics Canada information, data are included from 2001, 2006, and 2011 for different indicators with a focus on 2011 data. Data from other secondary sources, key person interviews, public consultation, workshops, and informal conversations with stakeholders was considered up to May 2015, recognizing that additional perspectives may still be considered for the purposes of the effects assessment.

1.3.2 Research Approach

The following research methods were employed:

- Review of readily available literature include reports, databases, and other published materials;
- Review of public consultation materials (e.g., comments on the Application Information Requirements/Environmental Impact Statement Guidelines [AIR/EIS Guidelines]);
- Key Person Interviews (KPIs);
- Focus meetings;
- Workshops; and
- Informal conversations.

The literature review included use of Statistics Canada data,¹ BC Stats data and reporting, government policies and reports, regional planning documents, journals, other publications, and online information. Where appropriate, context and findings drawn from the literature were confirmed and validated through KPIs, focus meetings, and/or workshops.

Comments and concerns from the public were taken into consideration in drafting this document. These concerns were primarily taken from comments provided during open houses and community meetings led, on different occasions, by KAM, the BC EAO and the CEA Agency. Two rounds of BC EAO and CEA Agency-led consultation took place with respect to the original Ajax North configuration from June 8, 2011 to July 11, 2011 and from January 11, 2012 to March 27, 2012. An additional round of public consultation that considered the Ajax South configuration ended on December 18, 2014.

¹ Data from the 2011 Census of Canada are included in the tables for SSN and WGFNs. It should be noted that there was a shift in how the census was administered, with a National Household Survey replacing many of the questions previously covered in the census. One of the key differences has been a shift from a mandatory to an optional response requirement for citizens. Further to this, Statistics Canada's practices require that data be suppressed for reasons relating to small community size (less than 250 residents or 40 occupied dwellings), incomplete enumeration, and global non response rates to the survey (Statistics Canada's main data quality indicator). Given the small size of many of the communities being considered and these data quality issues, much of the 2011 data is not publically available.

Multiple rounds of KPIs and personal communications were undertaken between June 2011 and November 2012, with additional and follow-up interviews occurring in 2014 and 2015. An informed consent process was followed for interviews. Interviewees were informed prior to the interview that their comments would appear in summary form and that direct quotes would not be permitted without their expressed permission as the content of individual interviews is considered confidential. They were also advised that they could decline to answer any of the questions and end the interview at any time. As of November 2012, a total of 35 interviews had been conducted with municipal officials, industry representatives (mining, forestry, real-estate and agriculture), and representatives from educational institutions, government officials, recreation enthusiasts, land users, and ranchers. In 2014 and 2015, an additional 13 interviews were conducted by InterGroup Consultants.

In some cases, other informal conversations contributed to the research helping to identify relevant documents and potential interviewees.

Two meetings on special topics were held with groups of local professionals to gain further insights into selected topics identified as particularly important by KPI interviewees, and through other forums (e.g., Project Community Advisory Group). A property value focus meeting was held in Kamloops on September 19, 2012. A range of participants was invited including long-time, local real estate agents, developers, and representatives from the City and the TNRD planning departments. The second focus meeting, also on September 19, 2012, was held with various municipal representatives and undertaken to discuss topics of special interest, such as City image, Tournament Capital brand, retention of professionals, vision and perception of the City, and the role of tourism.

Between July 2014 and October 2014, InterGroup Consultants engaged with representatives from City of Kamloops and the TNRD through a workshop process that involved screening and agenda-setting meetings with both groups; an information collection process that included interviews and teleconferences to gather baseline information; and workshops to discuss preliminary findings and mitigation.

1.3.3 Limitations

It should be noted that there are issues of comparability between censuses, particularly with the transition to a National Household Survey (NHS) in 2011. For this reason, caution should be used in interpreting the data. Statistics Canada uses the global non-response rate as the main quality indicator for assessing data limitations for the NHS. The global non-response rate is a data quality indicator – the higher the rate of non-response, the higher the risk of data error. This data quality indicator combines household non-response and item non-response, and is weighted to take account of the initial sample and the subsample used in non-response follow-up and produced for various geographies. The global non-response rate helps assess the quality of the data and determines the extent to which results can be compared with counts from previous censuses. In 2006 and previous census years, Statistics Canada suppressed data with a global non-response rate greater than or equal to 25%. However, due to the higher rate of non-response for the 2011 NHS, the threshold for suppression was increased and only results with a global non-response rate greater than or equal to 50% were suppressed. This means that data that would have been suppressed under the previous global non-response rate threshold are available in standard Statistics Canada products for the 2011 NHS. Due to this shift in the non-response threshold, Statistics Canada recommends caution when comparing data sets from year to year.

In connection with the primary TteS reserve parcel Kamloops 1, data has been broken out where possible by Aboriginal identity. Statistics Canada (2014) defines “total Aboriginal identity population” as composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the *Indian Act* of Canada, and/or those who reported they were members of an Indian band or First Nation. Data was broken out because, likely due to on-reserve real estate development (e.g., the Sun Rivers Golf Resort Community, which is located on the Kamloops 1 reserve parcel) by the TteS, Census data for the reserve parcel includes a substantial number of individuals who do not self-identify as Aboriginal (see Table 4-2). Therefore, Statistics Canada data may not present an entirely accurate picture of life on-reserve for TteS members. For example, over 70% of the population does not self-identify as Aboriginal according to the 2011 Census and NHS (Statistics Canada 2013, 2014). The Statistics Canada population counts for Total Aboriginal Identity for the TteS reserve parcel are closer to population counts provided by Aboriginal Affairs and Northern Development Canada (AANDC) for on-reserve members (see Table 4-1 and Table 4-2), although they do not match exactly.

For all First Nations included in the baseline, information and data on all topics is presented when they are readily available. These data sources include:

- Cultural Heritage Study (Ignace 2014);
- Preliminary Mitigation Report (SSN 2014);
- Statistics Canada data;
- Websites for First Nations and MNBC;
- Public reports for the First Nations and MNBC;
- Information published by AANDC;
- Section 12 of the Project Application for an Environmental Assessment Certificate/Environmental Impact Statement for a Comprehensive Study (Application/EIS) drafted by AMEC Foster Wheeler (AMEC FW) (AMEC FW 2015); and
- Interviews and meetings, which were typically conducted by either AMEC FW or representatives from KAM.

If more information becomes available at a later date, it will be incorporated into the effects assessment during the Application/EIS review process.

2.0 ECONOMIC ENVIRONMENT

2.1 LABOUR FORCE, EMPLOYMENT AND EDUCATION

2.1.1 Labour Force Characteristics

Statistics Canada uses the following indicators to describe the labour force:

- **Potential Labour Force:** The number of people age 15 years and over on Census Day. It is often described as a percentage of the total population.
- **Active Labour Force:** The number of people in the potential labour force who were either employed or unemployed and looking for work in the week (Sunday to Saturday) prior to Census Day. Typically, Statistics Canada does not consider the following persons as part of the active labour force: full-time students, homemakers, retired workers, seasonal workers in an 'off-season' who are not looking for work, as well as individuals with disabilities or illnesses that preclude them from being able to work.
- **Participation Rate:** The labour force in the week prior to Census Day, expressed as a percentage of the potential labour force (i.e., population 15 years of age and over).
- **Employment Rate:** The number of persons employed in the week prior to Census Day, expressed as a percentage of the potential labour force (i.e., population 15 years and over).
- **Unemployment Rate:** The percentage of persons in the labour force that are not employed during the week prior to Census Day.

The following sections consider each of these indicators, where data is available, in relation to the communities in the Local Study Area (LSA) and highlighted First Nations in the Regional Study Area (RSA), compared to the study areas and the province as a whole.

2.1.1.1 Local Study Area

Table 2-1 shows labour force characteristics for the communities found in the LSA (including Kamloops, the Thompson-Nicola Regional District J (TNRD-J), and the persons who do and do not self-identify as Aboriginal living on the Kamloops 1 Reserve, and the SIB), the RSA, and BC. From 2001 to 2011, the total labour force in the LSA increased by 13.5% (compared to British Columbia at just over 14%). As with most of the indicators described in this report, this change primarily reflects the population of Kamloops as the city represents the largest proportion of the LSA population. Participation rates in the LSA for 2001, 2006, and 2011 were slightly higher than for the Province as a whole, but by less than 2%. Employment rates for the LSA increased between 2001 and 2011, but decreased between 2006 and 2011. Overall, the provincial employment rate decreased slightly between 2001 and 2011. Additionally, unemployment rates in the different census subdivisions of the LSA were higher in 2001, decreased in 2006, and then increased slightly again in 2011. That trend was also apparent on a province-wide scale. Compared to British Columbia, the 2001 unemployment rate for the LSA was about 2% higher, similar in 2006, and slightly higher in 2011.

Within the LSA, the Kamloops census subdivision consistently had the highest participation and employment rates, compared to the other census subdivisions in the LSA. No single geographic unit within the LSA could claim the lowest unemployment rate throughout the decade. The unemployment rate for self-identifying Aboriginal persons living on the TteS reserve increased between 2006 and 2011, which was a similar trend experienced in the Province as a whole. The on-reserve population of the Skeetchestn Indian Band (SIB) had a sizeable decrease in their unemployment rate (nearly six percentage points) between 2001 and 2011, with no data available for the community in 2006.

Table 2-1: Labour Force Participation and Employment Rates in the LSA, 2001, 2006, 2011

Labour Force Characteristics ^{1,2,3,4}	2001							
	Kamloops	TNRD-J	TteS Non-Ab ¹²	TteS Ab ¹³	SIB	LSA ¹⁴	RSA ¹⁵	BC
Total population 15 years and over by labour force activity	62,320	1,245	570	540	175	64,850	96,115	3,160,570
In the labour force ⁵	41,570	790	343	357	115	43,175	62,885	2,059,945
Employed ⁶	37,350	700	300	305	95	38,750	55,755	1,883,975
Unemployed ⁷	4,220	90	35	55	25	4,425	7,130	175,975
Not in the labour force ⁸	20,755	450	227	183	55	21,670	33,225	1,100,620
Participation rate ⁹	66.7 %	63.5%	60.2%	66.1%	65.7%	66.6%	65.4%	65.2%
Employment rate ¹⁰	59.9 %	56.2%	52.6%	56.0%	54.3%	59.7%	58.0%	59.6%
Unemployment rate ¹¹	10.2 %	11.4%	10.3%	15.3%	21.7%	10.3%	11.3%	8.5%
Labour Force Characteristics ^{1,2,3,4,16}	2006							
	Kamloops	TNRD-J	TteS Non-Ab ¹²	TteS Ab ¹³	SIB	LSA ¹⁴	RSA ¹⁵	BC
Total population 15 years and over by labour force activity	66,070	1,415	875	590	n/a	68,950	100,995	3,394,905
In the labour force ⁵	44,605	855	585	385	n/a	46,430	66,130	2,226,385
Employed ⁶	41,930	800	550	325	n/a	43,605	61,625	2,092,770
Unemployed ⁷	2,675	50	30	60	n/a	2,815	4,505	133,615
Not in the labour force ⁸	21,465	565	295	205	n/a	22,530	34,865	1,168,525
Participation rate ⁹	67.5 %	60.4%	66.9%	65.3%	n/a	67.3%	65.5%	65.6%
Employment rate ¹⁰	63.5 %	56.5%	62.9%	55.1%	n/a	63.3%	61.0%	61.6%
Unemployment rate ¹¹	6.0 %	5.8%	5.1%	15.6%	n/a	6.1%	6.8%	6.0%
Labour Force Characteristics ^{1,2,3,4}	2011							
	Kamloops	TNRD-J	TteS Non-Ab ¹²	TteS Ab ¹³	SIB	LSA ¹⁴	RSA ¹⁵	BC
Total population 15 years and over by labour force activity	70,385	1,320	1,660	565	205	74,135	106,330	3,646,840
In the labour force ⁵	46,740	780	1,010	365	125	49,020	67,415	2,354,245
Employed ⁶	42,795	725	945	275	105	44,845	60,960	2,171,465
Unemployed ⁷	3,945	50	70	85	20	4,170	6,455	182,775
Not in the labour force ⁸	23,645	540	640	205	80	25,110	38,915	1,292,595
Participation rate ⁹	66.4%	59.1%	60.8%	64.6%	61.0%	66.1%	63.4%	64.6%
Employment rate ¹⁰	60.8%	54.9%	56.9%	48.7%	51.2%	60.5%	57.3%	59.5%
Unemployment rate ¹¹	8.4%	6.4%	6.9%	23.3%	16.0%	8.5%	9.6%	7.8%

Source: Statistics Canada 2002, 2007 and 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Labour force characteristics for the 2001 and 2006 Census were derived from 20% sample data; labour force characteristics for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. "In the labour force" refers to persons who were either employed or unemployed during the week prior to the Census Day. Enumeration occurred May 15 for the 2001 Census and May 16th, for the 2006 Census. In the 2011 NHS, "labour force activity" was replaced by "labour force status", which refers to whether a person was employed, unemployed or not in the labour force during the week of Sunday, May 1st to Saturday, May 7th, 2011.
6. "Employed" refers to persons 15 years and over, excluding institutional residents who, during the week prior to Census Day: "a) did any work at all for pay or in self-employment or without pay in a family farm, business or professional practice; or, were absent from their jobs or business, with or without pay, for the entire week because of vacation, an illness, a labour dispute at their place of work, or any other reasons" (Statistics Canada 2010). The 1991 Census Dictionary defines employed as "did any work at all excluding housework or other maintenance or repairs around the home and volunteer work" (Statistics Canada 1992).
7. "Unemployed" refers to persons who, during the week prior to census day, were without paid work or without self-employment work and were available for work and either: a) had actively looked for paid work in the past four weeks; or b) were on temporary lay-off and expected to return to their job; or c) had definite arrangements to start a new job in four weeks or less." (Statistics Canada 2010).
8. "Not in the labour force" refers to persons who, in the week prior to Census Day, were neither employed nor unemployed. It includes students, homemakers, retired workers, seasonal workers in an 'off' season who were not looking for work, and persons who could not work because of a long-term illness or disability." (Statistics Canada 2010).
9. The "Participation Rate" refers to the number of people in the labour force in the week prior to Census Day, as a percentage of the population 15 years and over.
10. The "Employment Rate" refers to the number of people employed in the week prior to Census Day as a percentage of the total population 15 years and over.
11. The "Unemployment Rate" refers to the number of people unemployed in the week prior to Census Day expressed as a percentage of the labour force.
12. Data for TteS Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and TteS aboriginal identity population.
13. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
14. The LSA is the City of Kamloops, the TteS, the SIB, and the TNRD-J.
15. The RSA is the TNRD.
16. In 2006, full-time and part-time students were not differentiated, and all students, either in elementary or secondary school who were not "Employed", were classified as "Not available for work". Full-time and part-time students were differentiated in the 2001 Census year, and since 1991 "persons on lay-off or with a new job to start or who looked for full-time work in the past 4 weeks and were in full-time attendance at elementary or secondary school were considered unavailable for work, and therefore, not in the labour force." (Source: Statistics Canada Appendix E Comparability of labour force activity data with those of previous censuses (1971 to 2006) and with the Labour Force Survey).

2.1.1.2 Regional Study Area

Table 2-2 describes the labour force characteristics of the RSA from 2001 to 2011. With respect to the RSA, the labour force increased by approximately 9% between 2001 and 2011, with growth slowing between 2006 and 2011. Participation rates for the RSA for 2001, 2006, and 2011 were comparable but slightly lower than the rates for BC. Employment rates were between 0.6 and 2.2 percentage points lower than those for BC. Unemployment rates were slightly higher than provincial rates in all three census years.

Within the RSA, the WP/CIB had a participation rate 9% to 20% higher than either the Ashcroft Indian Band (AIB) or Lower Nicola Indian Band (LNIB) in 2006 and 2011. Likewise, the WP/CIB had the highest employment rates from 2006 to 2011 and the lowest unemployment rates during those years, at 0%. In 2001, however, the WP/CIB had the highest unemployment rate at 40%. Caution should be taken when interpreting these data; the small size of community may result in large fluctuations despite small absolute changes. For the WP/CIB, from 2001 to 2011 the Census figures show that there were 45 people over 15 years of age, with 25-30 of those people actively participating in the work force. The AIB, also had an unemployment rate of zero in 2006, and also has a very low on-reserve population. Like the province, the RSA as a whole had an unemployment rate decrease between 2001 and 2006, then a slight increase again in 2011.

Table 2-2: Labour Force Participation and Employment Rates in the RSA, 2001, 2006, 2011

Labour Force Characteristics ^{1,2,3,4}	2001				
	LNIB ¹²	AIB ¹³	WP/CIB	RSA ¹⁴	BC
Total population 15 years and over by labour force activity	330	55	45	96,115	3,160,570
In the labour force ⁵	200	35	25	62,885	2,059,945
Employed ⁶	130	25	25	55,755	1,883,975
Unemployed ⁷	65	10	10	7,130	175,975
Not in the labour force ⁸	130	20	15	33,225	1,100,620
Participation rate ⁹	60.6%	63.6%	55.6%	65.4 %	65.2 %
Employment rate ¹⁰	39.4%	45.5%	55.6%	58.0 %	59.6 %
Unemployment rate ¹¹	32.5%	28.6%	40.0%	11.3 %	8.5 %
Labour Force Characteristics ^{1,2,3,4,15}	2006				
	LNIB ¹²	AIB ¹³	WP/CIB	RSA ¹⁴	BC
Total population 15 years and over by labour force activity	330	45	45	100,995	3,394,905
In the labour force ⁵	190	25	30	66,130	2,226,385
Employed ⁶	160	20	25	61,625	2,092,770
Unemployed ⁷	30	-	0	4,505	133,615
Not in the labour force ⁸	140	20	15	34,865	1,168,525
Participation rate ⁹	57.6%	55.6%	66.7%	65.5%	65.6%
Employment rate ¹⁰	48.5%	44.4%	55.6%	61.0%	61.6%
Unemployment rate ¹¹	15.8%	0.0%	0.0%	6.8%	6.0%
Labour Force Characteristics ^{1,2,3,4}	2011				
	LNIB ¹²	AIB ¹³	WP/CIB	RSA ¹⁴	BC
Total population 15 years and over by labour force activity	450	65	45	106,330	3,646,840
In the labour force ⁵	230	30	30	67,415	2,354,245
Employed ⁶	170	10	25	60,960	2,171,465
Unemployed ⁷	60	10	0	6,455	182,775
Not in the labour force ⁸	225	35	10	38,915	1,292,595
Participation rate ⁹	51.1%	46.2%	66.7%	63.4%	64.6%
Employment rate ¹⁰	37.8%	15.4%	55.6%	57.3%	59.5%
Unemployment rate ¹¹	13.3%	33.3%	0.0%	9.6%	7.8%

Source: Statistics Canada 2002, 2007 and 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. Labour force characteristics for the 2001 and 2006 Census were derived from 20% sample data; labour force characteristics for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. "In the labour force" refers to persons who were either employed or unemployed during the week prior to the Census Day. Enumeration occurred May 15 for the 2001 Census and May 16th, for the 2006 Census. In the 2011 NHS, "labour force activity" was replaced by "labour force status", which refers to whether a person was employed, unemployed or not in the labour force during the week of Sunday, May 1st to Saturday, May 7th, 2011.
6. "Employed" refers to persons 15 years and over, excluding institutional residents who, during the week prior to Census Day: "a) did any work at all for pay or in self-employment or without pay in a family farm, business or professional practice; or, were absent from their jobs or business, with or without pay, for the entire week because of vacation, an illness, a labour dispute at their place of work, or any other reasons" (Statistics Canada 2010). The 1991 Census Dictionary defines employed as "did any work at all excluding housework or other maintenance or repairs around the home and volunteer work" (Statistics Canada 1992).
7. "Unemployed" refers to persons who, during the week prior to census day, were without paid work or without self-employment work and were available for work and either: a) had actively looked for paid work in the past four weeks; or b) were on temporary lay-off and expected to return to their job; or c) had definite arrangements to start a new job in four weeks or less." (Statistics Canada 2010).
8. "Not in the labour force" refers to persons who, in the week prior to Census Day, were neither employed nor unemployed. It includes students, homemakers, retired workers, seasonal workers in an 'off' season who were not looking for work, and persons who could not work because of a long-term illness or disability." (Statistics Canada 2010).
9. The "Participation Rate" refers to the number of people in the labour force in the week prior to Census Day, as a percentage of the population 15 years and over.
10. The "Employment Rate" refers to the number of people employed in the week prior to Census Day as a percentage of the total population 15 years and over.
11. The "Unemployment Rate" refers to the number of people unemployed in the week prior to Census Day expressed as a percentage of the labour force.
12. Includes data for Nicola Mameet 1 Indian Reserve and Joeyaska 2 Indian Reserve. Data for Hamilton Lake 7 Indian Reserve and Zoht 4 Indian Reserve were suppressed.
13. Includes data for Ashcroft 4 Indian Reserve. Data for 105 Mile Post 2 Indian Reserve were suppressed.
14. The RSA is the TNRD.
15. In 2006, full-time and part-time students were not differentiated, and all students, either in elementary or secondary school who were not "Employed", were classified as "Not available for work". Full-time and part-time students were differentiated in the 2001 Census year, and since 1991 "persons on lay-off or with a new job to start or who looked for full-time work in the past 4 weeks and were in full-time attendance at elementary or secondary school were considered unavailable for work, and therefore, not in the labour force." (Source: Statistics Canada Appendix E Comparability of labour force activity data with those of previous censuses (1971 to 2006) and with the Labour Force Survey).

2.1.2 Employment

The following sections describe employment by key occupational industries for the LSA and RSA (Table 2-3 and Table 2-5) and the distribution of the labour force in the LSA and RSA across occupation classifications (Table 2-4 and Table 2-6).

2.1.2.1 Local Study Area

Table 2-3 provides a summary of labour force distribution for communities in the LSA in 2011. Within the LSA, retail trade, in addition to health care and social services, make up just over a quarter of the occupations. Other notable classifications include accommodation and food services, education, and construction. The occupational trends in the LSA were reflective of the occupational trends within Kamloops and the RSA, as well as in the province as whole, with the highest levels of employment being in the retail and health and social service sectors. One slight difference is that the province had a higher percentage of people employed in the professional, scientific, and technical services sector (as compared to the LSA and RSA).

With the exception of construction work, jobs in the LSA communities tended to be distributed across multiple sectors with no single sector dominating. A large percentage of self-identifying Aboriginal persons on the TteS reserve and SIB members on-reserve were employed in the public administration field, at 28% and 46%, respectively. The non-self-identifying Aboriginal population living on the TteS reserve was mostly employed in the health care and social services field, construction field, or the professional, scientific, and technical services sector.

Overall, employment in the mining and oil and gas extraction sector was relatively small for most communities in the LSA. In Kamloops, 3% of the labour force over 15 years old was employed in this sector. For Stk'emlupsemc of the Secwépemc Nation (SSN) communities, 3% of self-identifying Aboriginal persons on the TteS reserve and 8% of Skeetchestn Indian Band (SIB) members on-reserve were employed in mining and oil and gas extraction. In this regard, the SIB were an exception. A higher proportion of the population in the TNRD-J was employed in mining and oil and gas extraction at 6%. Once the populations are averaged, however, about 3% of the population in the LSA works in the mining and oil and gas extraction industry. The rate is higher in the RSA, in which 4% of the population worked in the mining and oil and gas extraction industry.

Stk'emlupsemc te Secwépemc Nation, which comprises the TteS and SIB, has signed a joint participation agreement with NewGold Inc. for its New Afton Project, a copper mine located 10 km away from Kamloops. It is estimated that 25% of the NewGold employees (i.e., over 100 employees) could be SSN members at some point. Training and contracting opportunities have already been provided to its members through this agreement (AMEC FW 2015). During the key person interview (KPI) program, several interviewees suggested that while the mining industry could potentially supply opportunities for employment of SSN and other communities, the population of skilled and interested individuals was largely already engaged in those jobs.

Table 2-3: Labour Force Distribution for LSA, 2011

Labour Force Distribution ^{1,2,3,4}	Kamloops	TNRD-J	TteS Non-Ab ⁶	TteS Ab ⁷	SIB	LSA ⁸	RSA ⁹	BC
Total labour force 15 years and over by industry ⁵	46,740	780	1,010	365	125	49,020	67,415	2,354,250
Industry - Not applicable	2%	0%	2%	5%	8%	2%	2%	2%
All industries	98%	97%	98%	93%	96%	98%	98%	98%
Agriculture, forestry, fishing and hunting	2%	19%	2%	3%	8%	2%	5%	3%
Mining and oil and gas extraction	3%	6%	2%	3%	8%	3%	4%	1%
Utilities	0%	0%	0%	0%	0%	0%	0%	1%
Construction	7%	17%	14%	13%	8%	8%	8%	8%
Manufacturing	5%	7%	3%	0%	0%	5%	5%	6%
Wholesale trade	4%	11%	5%	0%	0%	4%	3%	4%
Retail trade	14%	3%	9%	7%	8%	13%	12%	12%
Transportation and warehousing	6%	3%	9%	3%	0%	6%	6%	5%
Information and cultural industries	2%	0%	3%	0%	0%	2%	1%	3%
Finance and insurance	3%	0%	3%	0%	0%	3%	2%	4%
Real estate and rental and leasing	2%	0%	3%	3%	0%	2%	2%	2%
Professional, scientific and technical services	6%	5%	12%	0%	8%	6%	5%	8%
Management of companies and enterprises	0%	0%	0%	0%	0%	0%	0%	0%
Administrative and support, waste management and remediation services	4%	3%	4%	7%	0%	4%	4%	4%
Educational services	8%	3%	3%	6%	8%	8%	7%	7%
Health care and social assistance	13%	7%	12%	9%	0%	13%	12%	11%
Arts, entertainment and recreation	3%	0%	2%	3%	0%	3%	3%	2%
Accommodation and food services	9%	5%	3%	7%	0%	9%	8%	8%
Other services (except public administration)	4%	1%	5%	4%	0%	4%	4%	5%
Public administration	7%	6%	9%	28%	46%	7%	7%	6%

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Labour force distribution data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Refers to the experienced labour force population: includes persons who were employed and persons who were unemployed who worked for pay or in self-employment since January 1, 2010 (2011 NHS).
6. Data for TteS Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and TteS aboriginal identity population.
7. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
8. The LSA is the City of Kamloops, the TteS, the SIB, and the TNRD-J.
9. The RSA is the TNRD, which Statistics Canada refers to as Thompson-Nicola.

Table 2-4 shows the distribution of occupational classifications for the LSA in 2011. Among the employed, the distribution of occupations in the LSA, RSA, and the Province were close (within two to four percentage points) for all classifications. In the LSA, RSA, and the Province, sales and service occupations were the most common, with approximately a quarter of the residents in each of those locations reporting that they worked in a sales or service occupation. The second and third most commonly reported classifications were trades, transport and equipment operators and related occupations and business, finance and administration occupations. Occupations in art, culture, recreation and sport were the least commonly reported, at about 2-3% of the working populations of the LSA, RSA, and the Province.

Occupational distributions in Kamloops tended to reflect distributions in the RSA and BC, while the other census subdivisions differed from the RSA and the Province to a greater extent. Looking at the percentage distributions of the occupation classifications within each census subdivision of the LSA, more residents were employed in trades, as transport equipment operators and related occupations than were employed in sales and service occupations. Approximately a quarter of SIB members on-reserve and a quarter of persons self-identifying as Aboriginal on the TteS reserve classified their occupation as being a trade, transport equipment operation, or a related occupation, as did 28% of TNRD-J residents. Overall, more residents in the LSA as a whole were employed in sales and service occupations due to the relative size of the population of Kamloops compared to the other census subdivisions. A quarter of Kamloops residents, or just under 12,000 people in total, were employed in sales and service occupations. The census subdivision with the lowest percentage of residents working in a sales or service occupation was the TNRD-J, at 13%.

Primary industries are those that harvest raw material from nature. They include not only mining and oil and gas extraction, but also agriculture, logging and forestry, fishing, and trapping (Statistics Canada 2006c). The TNRD-J and SIB also had higher percentages of residents working in occupations unique to primary industry, at 11% and 13%, respectively. Kamloops and TteS members more closely reflected the proportion of the LSA as a whole at 3% each. In the RSA, 5% of the population was employed in occupations unique to primary industry, which is higher than in the Province as a whole and the LSA.

Table 2-4: Occupation Classification Distributions for the LSA, 2011

Occupation Classification ^{1,2,3,4,5}	Kamloops	TNRD-J	TteS Non-Ab ⁸	TteS Ab ⁹	SIB	LSA ¹⁰	RSA ¹¹	BC
Total labour force 15 years and over by occupation	46,740	775	1,015	360	125	49,015	67,410	2,354,245
Occupation - Not applicable ⁶	2%	0%	3%	6%	0%	2%	2%	2%
All occupations ⁷	98%	97%	97%	96%	96%	98%	98%	98%
Management occupations	10%	17%	18%	10%	13%	10%	11%	11%
Business, finance and administration occupations	14%	11%	14%	17%	13%	14%	13%	16%
Natural and applied sciences and related occupations	5%	5%	7%	0%	13%	5%	5%	7%
Health occupations	8%	5%	6%	3%	0%	8%	7%	6%
Occupations in social science, education, government service and religion	12%	9%	10%	14%	8%	12%	12%	12%
Occupations in art, culture, recreation and sport	2%	0%	3%	3%	0%	2%	2%	3%
Sales and service occupations	25%	13%	20%	22%	13%	25%	23%	24%
Trades, transport and equipment operators and related occupations	17%	28%	20%	25%	21%	17%	19%	15%
Occupations unique to primary industry	3%	11%	1%	7%	13%	3%	5%	3%
Occupations unique to processing, manufacturing and utilities	3%	3%	0%	0%	0%	2%	3%	3%

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada uses the National Occupational Classification (NOC) for Statistics. Occupations are based on the type of job the person holds and the description of his or her duties; it considers the kind of work done by persons aged 15 and over.
2. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TIB as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area, AIB as Ashcroft 4 Indian Reserve, LNIB as Nicola Mameet 1 Indian Reserve and WP/CIB as Whispering Pines 4 Indian Reserve.
3. Occupation classification data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
4. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.

5. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
6. Refers to Unemployed persons 15 years and over who have never worked for pay or in self-employment or who had last worked prior to January 1, 2010 (2011 NHS).
7. Refers to the experienced labour force population: includes persons who were employed and persons who were unemployed who worked for pay or in self-employment since January 1, 2010 (2011 NHS).
8. Data for TteS Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and TteS aboriginal identity population.
9. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
10. The LSA is the City of Kamloops, TIB, SIB, and the TNRD-J.
11. The RSA is the TNRD.



2.1.2.2 Regional Study Area

Table 2-5 provides a summary of the labour force distribution for select communities in the RSA in 2011. The RSA, like the Province, had the highest proportion of jobs in the retail trade and the health and social services sectors, as nearly a quarter of the population was employed in those industries. In the RSA and in the province, the other industries with the most jobs included accommodation and food services, education, and construction.

The populations of the RSA communities, particularly the AIB and the Whispering Pines/Clinton Indian Band (WP/CIB), were employed in a narrow range of industries, which reflects their small on-reserve population. Close to half (43%) of the on-reserve members of WP/CIB were employed in public administration, and just under 30% were employed in professional, scientific and technical services. On-reserve AIB members were most likely (40%) to work in accommodation and food services. Over a quarter (28%) of LNIB members on the Nicola Mameet 1 and Joeyaska 2 reserves found employment in agriculture, forestry, fishing and hunting, while nearly a fifth of them (19%) were employed in public administration. It should be noted that, according to Statistics Canada (2013), no LNIB, AIB, or WP/CIB members on-reserve were employed in mining and oil and gas extraction.

Table 2-5: Labour Force Distribution for RSA, 2011

Labour Force Distribution ^{1,2,3,4}	LNIB ⁵	AIB ⁶	WP/CIB	RSA ⁷	BC
Total labour force 15 years and over by industry ⁸	235	30	30	67,415	2,354,250
Industry - Not applicable	6%	0%	0%	2%	2%
All industries	91%	83%	100%	98%	98%
Agriculture, forestry, fishing and hunting	28%	0%	0%	5%	3%
Mining and oil and gas extraction	0%	0%	0%	4%	1%
Utilities	0%	0%	0%	0%	1%
Construction	12%	0%	0%	8%	8%
Manufacturing	0%	0%	0%	5%	6%
Wholesale trade	0%	0%	0%	3%	4%
Retail trade	5%	0%	0%	12%	12%
Transportation and warehousing	5%	0%	0%	6%	5%
Information and cultural industries	0%	0%	0%	1%	3%
Finance and insurance	0%	0%	0%	2%	4%
Real estate and rental and leasing	0%	0%	0%	2%	2%
Professional, scientific and technical services	0%	0%	29%	5%	8%
Management of companies and enterprises	0%	0%	0%	0%	0%

Labour Force Distribution ^{1,2,3,4}	LNIB ⁵	AIB ⁶	WP/CIB	RSA ⁷	BC
Administrative and support, waste management and remediation services	0%	0%	0%	4%	4%
Educational services	7%	0%	0%	7%	7%
Health care and social assistance	5%	0%	0%	12%	11%
Arts, entertainment and recreation	0%	0%	0%	3%	2%
Accommodation and food services	5%	40%	0%	8%	8%
Other services (except public administration)	5%	0%	0%	4%	5%
Public administration	19%	0%	43%	7%	6%

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. Labour force distribution data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Includes data for Nicola Mameet 1 Indian Reserve and Joeyaska 2 Indian Reserve. Data for Hamilton Lake 7 Indian Reserve and Zoht 4 Indian Reserve were suppressed.
6. Includes data for Ashcroft 4 Indian Reserve. Data for 105 Mile Post 2 Indian Reserve were suppressed.
7. The RSA is the TNRD.
8. Refers to the experienced labour force population: includes persons who were employed and persons who were unemployed who worked for pay or in self-employment since January 1, 2010 (2011 NHS).

Table 2-6 shows the occupation classification distributions for the RSA in 2011. As noted above, the RSA had occupation classification distributions similar to the province, with the greatest proportion of residents working in sales and service occupations or trades, transport and equipment operation and related occupations. The AIB reflected that same trend, however, percentages for AIB members on the Ashcroft 4 reserve in the sales and service category and the trades, transport equipment operation and related occupations category were considerably higher than for the RSA and the province, at 40% each, amongst AIB members. The other two census subdivisions included in Table 2-6 had more varied classification distributions, which were not reflective of the provincial or overall trends in the RSA. The LNIB for instance, reported 21% of members on the Nicola Mameet 1 and Joeyaska 2 reserves working in occupations unique to primary industry, while the WP/CIB had even 33% distributions of residents working at occupations in social science, education, government service and religion, business, finance and administration occupations, management occupations, and trades, transport and equipment operators and related occupations. It should be noted that the occupation distribution for WP/CIB equals more than 100% due to rounding.

Table 2-6: Occupation Classification Distributions for the RSA, 2011

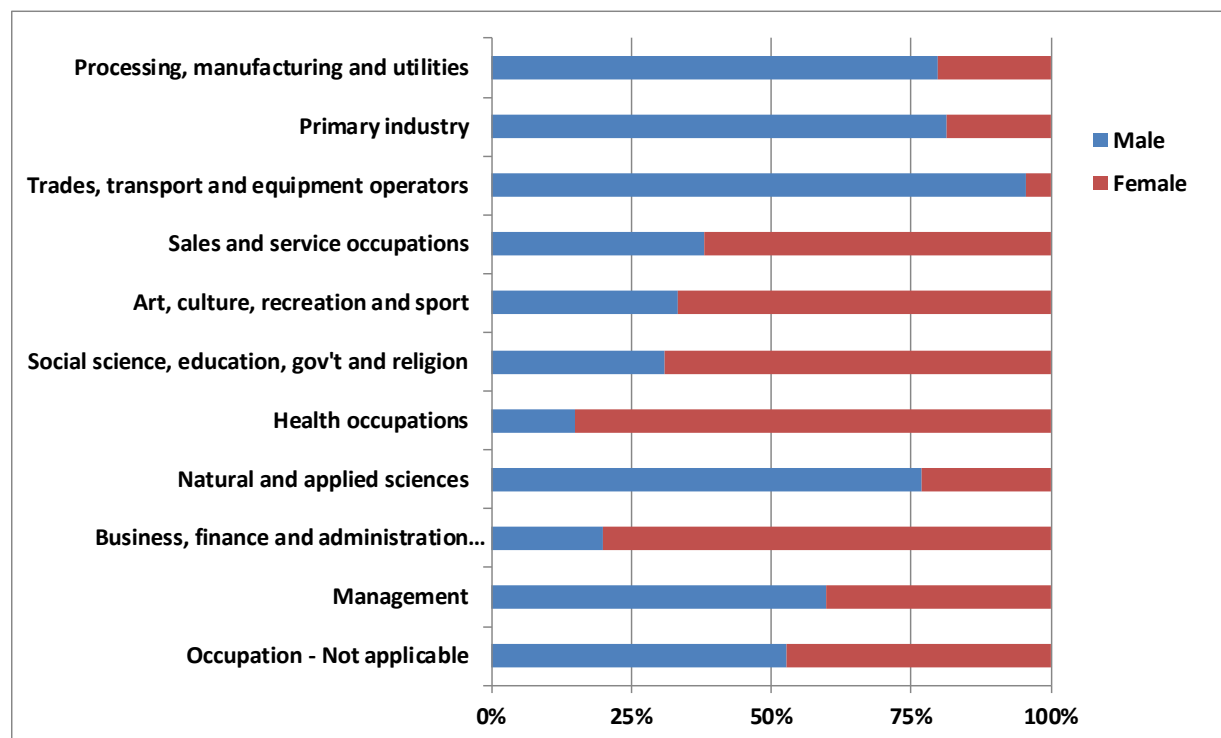
Occupation Classification ^{1,2,3,4,5}	LNIB ⁸	AIB ⁹	WP/CIB	RSA ¹⁰	BC
Total labour force 15 years and over by occupation	235	30	30	67,410	2,354,245
Occupation - Not applicable ⁶	9%	33%	0%	2%	2%
All occupations ⁷	91%	83%	100%	98%	98%
Management occupations	7%	0%	33%	11%	11%
Business, finance and administration occupations	9%	0%	33%	13%	16%
Natural and applied sciences and related occupations	5%	0%	0%	5%	7%
Health occupations	0%	0%	0%	7%	6%
Occupations in social science, education, government service and religion	14%	0%	33%	12%	12%
Occupations in art, culture, recreation and sport	0%	0%	0%	2%	3%
Sales and service occupations	16%	40%	0%	23%	24%
Trades, transport and equipment operators and related occupations	19%	40%	33%	19%	15%
Occupations unique to primary industry	21%	0%	0%	5%	3%
Occupations unique to processing, manufacturing and utilities	5%	0%	0%	3%	3%

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada uses the National Occupational Classification (NOC) for Statistics. Occupations are based on the type of job the person holds and the description of his or her duties; it considers the kind of work done by persons aged 15 and over.
2. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
3. Occupation classification data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
4. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
5. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
6. Refers to Unemployed persons 15 years and over who have never worked for pay or in self-employment or who had last worked prior to January 1, 2010 (2011 NHS).
7. Refers to the experienced labour force population: includes persons who were employed and persons who were unemployed who worked for pay or in self-employment since January 1, 2010 (2011 NHS).
8. Includes data for Nicola Mameet 1 Indian Reserve and Joeyaska 2 Indian Reserve. Data for Hamilton Lake 7 Indian Reserve and Zoht 4 Indian Reserve were suppressed
9. Includes data for Ashcroft 4 Indian Reserve. Data for 105 Mile Post 2 Indian Reserve were suppressed.
10. The RSA is the TNRD.

Figure 2-1 provides a graphic representation of occupational distributions by gender for the RSA. In certain sectors (including health occupations; business, finance, and administration; and social science, education, government and religion) workers were more likely to be female. Males were more likely to be employed in trades, transport and equipment operators; processing, manufacturing and utilities; natural and applied sciences; and primary industry. These trends as related to primary industry mirror the traditional underrepresentation of women in the mining workforce (Mining Industry Human Resources Council 2011).



Source: Statistics Canada 2013.

Figure 2-1: Occupational Distribution in the RSA by Gender, 2011

2.1.3 Education

2.1.3.1 Educational Attainment

Table 2-7 shows educational attainment rates in the LSA for 2011. Overall, the highest level of educational attainment for most LSA, RSA and provincial residents was a high school certificate or equivalent, at 30% for the LSA and the RSA, and 28% for the Province. The RSA was comparable to the LSA in most categories, although the percentage of population in the “less than high school certificate” category was three percentage points higher in the RSA compared to the LSA and the Province. The RSA and LSA exhibited high levels of attainment in the less than high school certificate, high school, and trades categories. The percentage of population with university degrees for the LSA and RSA was lower than for BC as a whole, where 22% of the population had earned university degrees.

Educational attainment rates among Kamloops residents were nearly the same as rates in the LSA, due to the large population of Kamloops as compared to the other census subdivisions in the LSA. Of the LSA

communities, the TNRD-J had the most residents with a trades certificate or diploma, at 18%. Both SSN communities had a higher percentage of members with less than a high school certificate than the LSA and RSA, while individuals who self-identified as Aboriginal on the TteS reserve had a higher proportion of members with a high school certificate or equivalent than SIB on-reserve members. While results from the 2011 Census of Canada (Statistics Canada 2013) suggest that no one who self-identifies as Aboriginal on the TteS reserve has a university degree, this is likely inaccurate. One potential reason is the likely over-reporting of "university certificate or diploma below the bachelor's level." Statistics Canada (2013) cautions users that "university certificate or diploma below the bachelor's level" was likely over-reported and included bachelor's degrees (see footnote 9 for Table 2-7).

Table 2-7: Educational Attainment Rates in the LSA, 2011

Level of Education^{1,2,3,4,5}	Kamloops	TNRD-J	TteS Non-Ab¹⁰	TteS Ab¹¹	SIB	LSA¹²	RSA¹³	BC
Total population 15 and over by highest certificate, diploma, or degree ⁶	70,390	1,315	2,110	115	205	74,135	106,330	3,646,840
Less than high school certificate	17%	20%	16%	30%	41%	17%	20%	17%
High school certificate or equivalent ⁷	30%	29%	32%	43%	20%	30%	30%	28%
Trades certificate or diploma	13%	18%	16%	9%	12%	14%	14%	11%
Postsecondary non-university certificate or diploma ⁸	17%	14%	16%	17%	20%	17%	16%	17%
University certificate or diploma below the bachelor's level ⁹	6%	8%	6%	9%	5%	6%	6%	6%
University degree	16%	11%	14%	0%	5%	16%	14%	22%

Source: Statistics Canada 2013.

Notes:

1. Educational Attainment' refers to the 'Highest certificate, diploma or degree' category found in the Census Community Profile. 'Highest certificate, diploma or degree' refers to the highest certificate, diploma or degree the individual has completed based primarily on time spent 'in-class.' For high school graduates, a university education is considered to be a higher level of education than a college diploma, while a college education is considered to be a higher level of education than a trade. Although some trades requirements may take as long or longer to complete than a given college or university program, the majority of time acquiring trade certification may be on-the-job, as opposed to being in a classroom.
2. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
3. Level of education data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.

4. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
5. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
6. "Highest certificate, diploma or degree" refers to the highest certificate, diploma or degree the individual has completed based primarily on time spent in-class. For high school graduates, a university education is considered to be a higher level of education than a college diploma, while a college education is considered to be a higher level of education than a trade. Although some trades requirements may take as long or longer to complete than a given college or university program, the majority of time acquiring trade certification may on-the-job, as opposed to being in a classroom.
7. 'High school certificate or equivalent' includes persons who have graduated from a secondary school or equivalent. Excludes persons with a postsecondary certificate, diploma or degree.
8. 'Postsecondary non-university certificate or diploma' includes non-degree-granting institutions such as community colleges, CEGEPs, private business colleges and technical institutes.
9. Comparisons with other data sources suggest that the category 'University certificate or diploma below the bachelor's level' was over-reported in the 2011 NHS. This category likely includes some responses that are actually college certificates or diplomas, bachelor's degrees or other types of education (e.g., University transfer programs, bachelor's programs completed in other countries, incomplete bachelor's programs, and non-university professional designations). Statistics Canada recommends users interpret the results for the 'University certificate or diploma below the bachelor's level' category with caution.
10. Data for TteS Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and TteS aboriginal identity population.
11. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
12. The LSA is the City of Kamloops, the TteS, the SIB, and the TNRD-J.
13. The RSA is the TNRD.

Table 2-8 shows educational attainment in the RSA for 2011. Overall, educational attainment levels in the RSA were similar to provincial levels, with the exception of the rate of residents with a university degree, which was 8 percentage points lower for RSA residents, at 14%, compared to the provincial rate at 22%. Within RSA communities, over a third (38%) of WP/CIB members on-reserve had a postsecondary non-university certificate or diploma, and a quarter of those members had a high school certificate or equivalent. Nearly half of AIB members (46%) living on the Ashcroft 4 reserve had less than a high school certificate, while close to a quarter had a high school certificate or equivalent. Lower Nicola Indian Band members on the Nicola Mameet 1 and Joeyaska 2 reserves had a range of educational attainment rates across all categories, from 7% with a university degree, to 39% with less than a high school certificate, which is likely reflective of their comparatively larger population than the AIB and WP/CIB.

Table 2-8: Educational Attainment Rates in the RSA, 2011

Level of Education ^{1,2,3,4,5}	LNIB ¹⁰	AIB ¹¹	WP/CIB	RSA ¹²	BC
Total population 15 and over by highest certificate, diploma, or degree ⁶	450	65	40	106,330	3,646,840
Less than high school certificate	39%	46%	25%	20%	17%
High school certificate or equivalent ⁷	28%	23%	25%	30%	28%
Trades certificate or diploma	9%	15%	0%	14%	11%
Postsecondary non-university certificate or diploma ⁸	14%	0%	38%	16%	17%
University certificate or diploma below the bachelor's level ⁹	4%	0%	0%	6%	6%
University degree	7%	0%	0%	14%	22%

Source: Statistics Canada 2013.

Notes:

1. 'Educational Attainment' refers to the 'Highest certificate, diploma or degree' category found in the Census Community Profile. 'Highest certificate, diploma or degree' refers to the highest certificate, diploma or degree the individual has completed based primarily on time spent 'in-class.' For high school graduates, a university education is considered to be a higher level of education than a college diploma, while a college education is considered to be a higher level of education than a trade. Although some trades requirements may take as long or longer to complete than a given college or university program, the majority of time acquiring trade certification may be on-the-job, as opposed to being in a classroom.
2. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zohat 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
3. Level of education data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
4. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
5. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
6. "Highest certificate, diploma or degree" refers to the highest certificate, diploma or degree the individual has completed based primarily on time spent "in-class." For high school graduates, a university education is considered to be a higher level of education than a college diploma, while a college education is considered to be a higher level of education than a trade.

Although some trades requirements may take as long or longer to complete than a given college or university program, the majority of time acquiring trade certification may on-the-job, as opposed to being in a classroom.

7. 'High school certificate or equivalent' includes persons who have graduated from a secondary school or equivalent. Excludes persons with a postsecondary certificate, diploma or degree.
8. 'Postsecondary non-university certificate or diploma' includes non-degree-granting institutions such as community colleges, CEGEPs, private business colleges and technical institutes.
9. Comparisons with other data sources suggest that the category 'University certificate or diploma below the bachelor's level' was over-reported in the 2011 NHS. This category likely includes some responses that are actually college certificates or diplomas, bachelor's degrees or other types of education (e.g., University transfer programs, bachelor's programs completed in other countries, incomplete bachelor's programs, and non-university professional designations). Statistics Canada recommends users interpret the results for the 'University certificate or diploma below the bachelor's level' category with caution.
10. Includes data for Nicola Mameet 1 Indian Reserve and Joeyaska 2 Indian Reserve. Data for Hamilton Lake 7 Indian Reserve and Zoht 4 Indian Reserve were suppressed.
11. Includes data for Ashcroft 4 Indian Reserve. Data for 105 Mile Post 2 Indian Reserve were suppressed.
12. The RSA is the TNRD.

2.2 INCOME

2.2.1 Personal Income

2.2.1.1 Local Study Area

Table 2-9 shows that the proportion of the population in each income category in the LSA, and the RSA was similar to the provincial average. Personal income categories in Kamloops had similar distributions as the LSA, RSA, and the Province. Income disparity is evident in Kamloops, the LSA, RSA, and the Province, as all those geographic units show the greatest proportions of the population in the "\$60,000 or over" category, or the "\$10,000 - \$19,999" and the "under \$10,000" categories. Notably, TNRD-J residents had an average income that was higher than the provincial average, or the respective averages of the two study areas. A quarter of all TNRD-J residents were earning over \$60,000 per year in 2011, with 15% earning under \$10,000. Average income data for non-Aboriginal residents on the TteS reserve is not available; however, over a quarter of them (27%) were earning more than \$60,000 per year. Roughly half of SIB members on-reserve and persons who self-identify as Aboriginal living on the TteS reserve were earning less than \$20,000 per year in 2011.

Table 2-9: Personal Income for the LSA, 2011

Personal Income^{1,2,3,4,5}	Kamloops	TNRD -J	TteS Non-Ab⁶	TteS Ab⁷	SIB	LSA⁸	RSA⁹	BC
Total number of individuals with income over 15 years of age	70,385	1,320	1,655	565	205	74,130	106,330	3,646,835
Under \$10,000	16%	15%	14%	33%	27%	16%	16%	18%
\$10,000 - \$19,999	18%	14%	12%	19%	20%	18%	18%	18%
\$20,000 - \$29,999	12%	19%	11%	12%	12%	12%	13%	13%
\$30,000 - \$39,999	13%	11%	9%	12%	17%	13%	13%	11%
\$40,000 - \$49,999	10%	5%	10%	5%	10%	9%	9%	9%
\$50,000 - \$59,999	8%	9%	10%	4%	0%	8%	7%	7%
\$60,000 and over	19%	25%	27%	11%	5%	19%	18%	19%
Average income	\$39,286	\$41,857	N/A	\$25,210	\$23,857	\$39,433	\$37,876	\$39,415

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Unlike 2006 census, in the 2011 NHS, family income data were not reported by income categories.
6. Data for TteS Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and Ttes aboriginal identity population.
7. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
8. The LSA is the City of Kamloops, the TteS, the SIB, and the TNRD-J.
9. The RSA is the TNRD.

2.2.1.2 Regional Study Area

Table 2-10 presents personal income data for the RSA. Personal income data for the AIB and WP/CIB were not available for 2011. Personal income distribution for LNIB members living on the Nicola Mameet 1 reserve differed from the RSA and BC, with a higher percentage of members with a personal income of less than \$10,000 (36%) and between \$10,000 and \$19,999 (25%). A smaller percentage of LNIB members had a personal income of over \$60,000 (4%) than residents of the RSA (18%) and the Province (19%).

Table 2-10: Personal Income for the RSA, 2011

Personal Income ^{2,3,4}	LNIB ⁵	AIB ⁶	WP/CIB ⁶	RSA ⁷	BC
Total number of individuals with income over 15 years of age	420	x	x	106,330	3,646,835
Under \$10,000	36%	x	x	16%	18%
\$10,000 - \$19,999	25%	x	x	18%	18%
\$20,000 - \$29,999	10%	x	x	13%	13%
\$30,000 - \$39,999	5%	x	x	13%	11%
\$40,000 - \$49,999	8%	x	x	9%	9%
\$50,000 - \$59,999	2%	x	x	7%	7%
\$60,000 and over	4%	x	x	18%	19%
Average income	\$18,972	x	x	\$37,876	\$39,415

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Includes data for Nicola Mameet 1 Indian Reserve. Data for Joeyaska 2 Indian Reserve, Hamilton Lake 7 Indian Reserve, and Zoht 4 Indian Reserve were unavailable.
6. Income data for the AIB and WP/CIB were unavailable.
7. The RSA is the TNRD.

2.2.2 Family Income

2.2.2.1 Local Study Area

As illustrated in Table 2-11, average family income in the LSA and the RSA was slightly lower than the provincial average of \$91,967. The median income for the LSA was higher than either the median income for the RSA or the Province. Family income statistics for Kamloops were nearly identical to the statistics for

the LSA, with Kamloops also having a higher median family income than either the province or the RSA. Data for the primary TteS reserve parcel (Kamloops 1) for family income are not available broken out by Aboriginal identity, therefore, data for the entire population living on-reserve is presented. The median and average family income for the population living on the TteS reserve is higher than in the other communities in the LSA, the RSA, and BC. The TNRD-J and SIB population on-reserve had median family incomes and average family incomes that were lower than the same statistics for the LSA and the Province, although the TNRD-J average family income was higher than the RSA average family income.

Table 2-11: Family Income for the LSA, 2011

Family Income^{1,2,3,4,5}	Kamloops	TNRD-J	TteS⁶	SIB	LSA⁷	RSA⁸	BC
Total number of families with income	24,260	500	830	70	25,660	37,315	1,205,255
Median family income	\$77,718	\$66,608	\$83,598	\$47,034	\$77,608	\$72,154	\$75,797
Average family income	\$89,103	\$85,402	\$95,566	\$52,016	\$89,139	\$84,242	\$91,967

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Unlike 2006 census, in the 2011 NHS, family income data were not reported by income categories.
6. Family Income data broken out for TteS Non-Ab and Ttes Ab were not available.
7. The LSA is the City of Kamloops, the TteS, the SIB, and the TNRD-J.
8. The RSA is the TNRD.

2.2.2.2 Regional Study Area

As illustrated in Table 2-12, data on family income were not available for the AIB and WP/CIB. Lower Nicola Indian Band members on the Nicola Mameet 1 reserve had average family incomes and median family incomes less than half of the RSA and provincial averages and medians.

Table 2-12: Family Income for the RSA, 2011

Family Income ^{1,2,3,4,5}	LNIB ⁶	AIB ⁷	WP/CIB ⁷	RSA ⁸	BC
Total number of families with income	150	x	x	37,315	1,205,255
Median family income	\$29,875	x	x	\$72,154	\$75,797
Average family income	\$41,171	x	x	\$84,242	\$91,967

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Unlike 2006 census, in the 2011 NHS, family income data were not reported by income categories.
6. Includes data for Nicola Mameet 1 Indian Reserve. Data for Joeyaska 2 Indian Reserve, Hamilton Lake 7 Indian Reserve, and Zoht 4 Indian Reserve were unavailable.
7. Income data for the AIB and WP/CIB were unavailable.
8. The RSA is the TNRD.

2.2.3 Household Income

2.2.3.1 Local Study Area

As shown in Table 2-13 the average household income in the LSA was \$75,581, which was lower than the average household income in the Province as whole (at \$77,378), but higher than the average household income for the RSA (at \$71,861). Overall, the LSA had very similar household income distributions as the RSA and the province. In all three geographic units, roughly a quarter of the households had an income over \$100,000, which was also the income category with the highest percentages of households for all three locations. In the absence of an average household income figure for the non-Aboriginal population living on the TteS reserve, the TNRD-J had the highest average household income of all the census subdivisions in the LSA at \$81,890, with 29% of households earning \$100,000 or more per year, and 0% earning less than \$10,000 per year. Forty-two percent of TteS non-Aboriginal households had an income of \$100,000 or more. Kamloops had an average household income very close to the LSA, with the same percentage distributions in all the other income categories. The self-identifying Aboriginal population living on the TteS reserve had almost even distributions across all household income categories. The lowest household incomes were on the SIB reserve, with 40% earning less than \$20,000 per year.

Table 2-13: Household Income for the LSA, 2011

Household Income ^{1,2,3,4}	Kamloops	TNRD-J	TteS Non-Ab ⁵	TteS Ab ⁶	SIB	LSA	RSA ⁷	BC
Total number of households with income	35,025	650	785	340	100	36,900	53,375	1,764,630
Under \$10,000	4%	0%	6%	13%	20%	4%	4%	5%
\$10,000 - \$19,999	9%	2%	5%	13%	20%	9%	9%	9%
\$20,000 - \$29,999	8%	5%	6%	12%	10%	8%	9%	9%
\$30,000 - \$39,999	11%	18%	7%	13%	20%	11%	12%	9%
\$40,000 - \$49,999	8%	5%	6%	13%	15%	8%	9%	9%
\$50,000 - \$59,999	8%	15%	8%	7%	0%	8%	8%	8%
\$60,000 - \$79,999	15%	16%	12%	9%	20%	15%	15%	14%
\$80,000 - \$99,999	11%	7%	7%	12%	10%	11%	11%	11%
\$100,000 and over	26%	29%	42%	12%	0%	26%	24%	25%
Average household income	\$75,357	\$81,890	N/A	\$48,298	\$43,661	\$75,581	\$71,861	\$77,378

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Data for Ttes Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and Ttes aboriginal identity population. Average household income data for TteS Non-Ab are not available.

6. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation
7. The RSA is the TNRD.

2.2.3.2 Regional Study Area

As shown in Table 2-14, households on the LNIB reserve, Nicola Mameet 1, had average household incomes roughly half the RSA and provincial average household incomes, and the largest percentages of households residing in the under \$10,000 to \$29,999 income categories. Conversely, the RSA and the Province had the largest concentrations of households in the \$60,000 to \$100,000 and over categories. Statistics Canada data for the AIB and WP/CIB for 2011 were suppressed.

Table 2-14: Household Income for the RSA, 2011

Household Income ^{1,2,3,4}	LNIB ⁵	AIB ⁶	WP/CIB ⁶	RSA ⁷	BC
Total number of households with income	195	x	x	53,375	1,764,630
Under \$10,000	26%	x	x	4%	5%
\$10,000 - \$19,999	13%	x	x	9%	9%
\$20,000 - \$29,999	18%	x	x	9%	9%
\$30,000 - \$39,999	10%	x	x	12%	9%
\$40,000 - \$49,999	10%	x	x	9%	9%
\$50,000 - \$59,999	5%	x	x	8%	8%
\$60,000 - \$79,999	5%	x	x	15%	14%
\$80,000 - \$99,999	0%	x	x	11%	11%
\$100,000 and over	8%	x	x	24%	25%
Average household income	\$36,051	x	x	\$71,861	\$77,378

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Includes data for Nicola Mameet 1 Indian Reserve. Data for Joeyaska 2 Indian Reserve, Hamilton Lake 7 Indian Reserve, and Zoht 4 Indian Reserve were unavailable.
6. Income data for the AIB and WP/CIB were unavailable.
7. The RSA is the TNRD.

2.2.4 Income Composition

Table 2-15 illustrates the composition of income in the LSA in 2011. In the LSA, 73.9% of all income came from employment, 12.4% from government transfer payments, and the remaining 13.7% from other sources. The LSA, RSA and Kamloops were very close (between one and two percentage points) in terms of composition of income metrics and average income. The median income of LSA residents was slightly higher than the median income of RSA and provincial residents. The LSA and Kamloops were nearly identical in terms of the composition of income. The percentage of income from employment was comparable between Kamloops, the on-reserve SIB members, and the Aboriginal identity population of the TteS reserve, with the SIB being the highest, at 77%. The TNRD-J population had the lowest percentage of employment income at about 64%. The TNRD-J had the highest percentage of income from “other” sources at 19.8%, while the SIB had the lowest at 1.5%. Of the census subdivisions in the LSA, the City of Kamloops had the highest median income at \$31,380, although the residents of the TNRD-J had the highest average income of all the geographical units described in Table 2-15, at \$41,857.

Table 2-15: Composition of Income for the LSA, 2011

Composition of Income ^{1,2,3,4,5}	Kamloops	TNRD -J	TteS Non-Ab ⁷	TteS Ab ⁸	SIB	LSA ⁹	RSA ¹⁰	BC
Persons 15 years and over with earnings	70,385	1,320	1,655	565	205	74,130	106,330	3,646,835
Composition of total income	100	100	100	100	100	100	100	100
Employment income% ⁶	74.2%	63.5%	N/A	70.7%	77%	73.9%	71.4%	73.7%
Government transfer payments	12.3%	16.9%	N/A	19.6%	16.5%	12.4%	14.0%	11.7%
Other	13.4%	19.8%	N/A	9.7%	1.5%	13.7%	14.6%	14.7%
Average income	\$39,286	\$41,857	N/A	\$25,210	\$23,857	\$39,433	\$37,876	\$39,415
Median Income	\$31,380	\$30,048	N/A	\$16,806	\$19,724	\$31,367	\$29,408	\$28,765

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.

5. Statistics Canada refers to “sources of income of a population group or a geographic area” as “the relative share of each income source or group of sources, expressed as a percentage of the aggregate total income of that group or area.” Three groups of sources are used to determine total income: employment income, including wages, salaries, and income from farm and non-farm self-employment; government transfer payments, including all transfers or payments received from any level of government and recorded as a separate income source; and other income, including investment income, retirement pension income, and other money income. Percentages may not add to 100% due to rounding.
6. Earnings or employment income refers to total income received by persons 15 years and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income.
7. Data for Ttes Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and Ttes aboriginal identity population.
8. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
9. The LSA is comprised of City of Kamloops, TteS, SIB, and the TNRD-J, which Statistics Canada refers to as Kamloops City, Kamloops 1 IR, Skeetchestn IR, and the Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area, respectively.
10. The RSA is comprised of the TNRD, which Statistics Canada refers to as Thompson-Nicola.

As shown in Table 2-16 for the RSA, 71.4% of all income came from employment, 14% from government transfer payments, and the remaining 14.6% from other sources. The RSA had comparable composition of income metrics to the province, with the exception of the percentage of government transfer payments, which was 14% in the RSA as opposed to 11.7% in the Province. The average income in the province was slightly higher than in the RSA. The 2011 income data were not available for the AIB or WP/CIB. The LNIB members living on the Nicola Mameet 1 reserve had over twice the percentage of government transfer payments as did the RSA and province, at 30.3%, and an average income of less than half the provincial average or the RSA average, at \$18,972.

Table 2-16: Composition of Income for RSA, 2011

Composition of Income^{1,2,3,4,5}	LNIB⁷	AIB⁸	WP/CIB⁸	RSA⁹	BC
Persons 15 years and over with earnings	420	x	x	106,330	3,646,835
Composition of total income	100	X	X	100	100
Employment income% ⁶	67.3%	x	x	71.4%	73.7%
Government transfer payments	30.3%	x	x	14.0%	11.7%
Other	3.6%	x	x	14.6%	14.7%
Average income	\$18,972	x	x	\$37,876	\$39,415
Median Income	\$14,390	x	x	\$29,408	\$28,765

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as

Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.

2. Income data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2011 NHS, GNR rate greater than or equal to 50% were suppressed.
5. Statistics Canada refers to “sources of income of a population group or a geographic area” as “the relative share of each income source or group of sources, expressed as a percentage of the aggregate total income of that group or area.” Three groups of sources are used to determine total income: employment income, including wages, salaries, and income from farm and non-farm self-employment; government transfer payments, including all transfers or payments received from any level of government and recorded as a separate income source; and other income, including investment income, retirement pension income, and other money income. Percentages may not add to 100% due to rounding.
6. Earnings or employment income refers to total income received by persons 15 years and over during calendar year 2005 as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income.
7. Includes data for Nicola Mameet 1 Indian Reserve. Data for Joeyaska 2 Indian Reserve, Hamilton Lake 7 Indian Reserve, and Zoh 4 Indian Reserve were unavailable.
8. Income data for the AIB and WP/CIB were unavailable.
9. The RSA is the TNRD.

2.3 BUSINESS

2.3.1 Overview of Regional Economy

Much of the economy of the RSA is largely based on government services, including health care and education. Other key contributors include mining, forestry, agriculture, retail, and manufacturing. Kamloops recently experienced an economic decline as a result of the nation-wide economic downturn, with the effects most notable in the forestry industry. The mountain pine beetle has also played a role in the downturn of the forestry industry within the Kamloops Timber Supply Area. Tourism has become an increasingly important aspect of the regional economy, notably in Kamloops and the outlying areas. Despite the increasing importance of tourism, it accounted for less than 7% of after tax income for residents of the RSA as of 2006 (Horne 2009). Mining has historically been an important sector within the RSA and continues to be so. At the provincial level, high prices for mineral metals have brought about resurgence in the mining sector, and new mines being built near Kamloops are contributing to this (Schrier 2011). Mining is seen by City officials as an important sector in the economy of Kamloops, which contributes to the diversity of the economy (Ajax KPI Program 2011-2012); however, there are concerns that the development of the Project will transform the City back into a “dirty mining town.” In the Thompson Okanagan Development Region (excluding the Kelowna Census Metropolitan Area), in which the RSA is located, the number of individuals employed in the mining and oil and gas extraction sector has grown at a faster rate than all industries between 1997 and 2013 (Venture Kamloops 2014).

Although there has been some downturn in the economy in Kamloops, it has been less pronounced than in many other parts of the Province. Kamloops generally has a relatively stable economy when compared to other major population centres in the Province. This is seen as a function of its economic diversity and decreased reliance on any one sector (City of Kamloops and Intergroup Consultants 2012).

2.3.2 Business Sectors

The public and industrial sectors are important business sectors in Kamloops, and they provide large amounts of employment. The major employers in the City of Kamloops are the Interior Health Authority, School District no. 73, Highland Valley Copper Mine (HVC), New Gold Inc., and Thompson Rivers University (Venture Kamloops 2014). Table 2-17 shows a more extensive list of the largest employers in Kamloops. Primary industry, primarily large mines (HVC, New Gold Inc.) are among the largest employers in the LSA, although other employers in this sector, such as Domtar pulp mill are reducing their workforce.

Table 2-17: Major Employers in Kamloops, 2014

Major Employers	Number of Employees (Approximate)
Interior Health Authority	3,398
School District no. 73	1,636
Highland Valley Copper Mine	1,380
New Gold Inc.	1,273
Thompson Rivers University	1,165
City of Kamloops	750
Northern Trailer (Horizon North)	632
BC Lottery Corporation	440
CN Rail	378
Domtar	316
Arrow Transport	270

Source: Adapted from Venture Kamloops 2015.

The RSA as a whole depends to a greater degree on the agriculture and forestry sectors, as a large percentage of the land is rural. In 2006, total gross farm receipts for the RSA amounted to \$87 million (Statistics Canada 2006b). The agricultural sector in the RSA is focused primarily on cattle production and also includes tree fruit, horses, and field crop production (Statistics Canada 2006b). Forestry in the region is divided into areas called Timber Supply Areas (TSA). The majority of the region is included in the Kamloops TSA, but the Merritt and 100 Mile House TSAs also are partly within the RSA. Forestry in the Kamloops TSA has been in decline in recent years. In 2007, it was estimated that the Weyerhaeuser sawmill and the Domtar pulp mill had a combined total investment (made up of direct and indirect employment and municipal taxes and fees) of \$352.7 million (SPH Consultancy 2007). However, since then, Weyerhaeuser was forced to shut down its sawmill in 2008 and sell the associated timber harvesting licence. Domtar closed down one of its pulp lines in 2013 (Klassen 2014).

2.3.3 Business Formations and Bankruptcies

An important metric for describing business is the rate of business formations and bankruptcies. In Kamloops, the number of new business formations has fluctuated between about 300 and 600 per year

between 1990 and 2011. The number of formations has decreased on average from a high of over 600 in 2006 to just over 450 in 2011.

The number of bankruptcies can be directly or inversely related to the number of formations. For example, from 2001 to 2006 formations were increasing from just over 300 to over 600 per year while bankruptcies were decreasing from 52 to 21 per year (Table 2-18). However, from 2006 to 2009 while formations were decreasing from around 600 down to around 450, bankruptcies continued to decrease from 21 to 17 per year.

The 2009 bankruptcy and 2011 business formation data suggest that Kamloops has a good climate for business development.

Table 2-18: Business Bankruptcies in Kamloops, 1995-2009

Year	Business Bankruptcies	Kamloops Average
1995	40	40
1996	52	46
1997	42	44.67
1998	38	43
1999	48	44
2000	51	45.17
2001	52	46.14
2002	52	46.88
2003	42	46.33
2004	35	45.2
2005	28	43.64
2006	21	41.75
2007	20	40.08
2008	15	38.29
2009	17	36.87

Source: Venture Kamloops 2011.

2.3.4 Economic Trends and Prospects

The RSA has been experiencing economic change in recent years that has primarily involved a weakening forestry sector and a growing tourism sector. The unstable lumber markets have resulted in closures and output reductions of mills in the Kamloops area. In addition to the 2008 Weyerhaeuser shutdown, there was a shutdown of Ainsworth Lumber's Savona and Lillooet mills in 2009. Another important sector with potential for further growth is mining. Current plans for expansion of mining in the region could have implications for the economy of the region. This will be discussed in detail in Section 2.3.4.1 below.

2.3.4.1 Trends in the Mining Sector

After commodity peaked in 2011, the mining sector in British Columbia has been on the decline in recent years as several important mineral and metal prices (gold, silver, copper, lead, zinc, and coal) have either declined or remained steady. Metallurgical coal and copper, which generate the most revenue in BC's mining sector both produced lower gross mining revenues as their prices dipped (PricewaterhouseCoopers 2013).

Despite the recent decline, gross provincial revenues for the mining sector have been trending upward from \$4,584 million in 2004 to \$8,537 million in 2013, an increase of over 180%. The number of employees in the mining sector has been rising steadily from about 6,000 in 2003 to over 10,000 in 2013 (PricewaterhouseCoopers 2011, 2013). The increase in the workforce has been accompanied by a decrease in the average wage between 2011 and 2013 (PricewaterhouseCoopers 2013). The dip in commodity prices has meant that some operations have temporarily laid off staff or deferred restarting operations. Many mining operations maintain that the future outlook for industrial metals is bright for several reasons: the United States of America's gradual economic recovery, the demands for metals by emerging markets such as India and Brazil, and reduced but still strong economic growth in China (PricewaterhouseCoopers 2013).

There are a number of active and proposed mines in the vicinity of the Project.

Active Mines

Highland Valley Copper (HVC): Highland Valley Copper is located near Logan Lake and is approximately 50 km by highway from Kamloops. Highland Valley Copper was scheduled to close in 2009, but the life of the mine has been extended several times and is currently expected to continue operations until 2027 (Teck Resources Limited 2013). Teck Resources Limited announced in September 2011 that it would spend approximately \$475 million on a mill modernization project at HVC. The upgrade will help to extend the life of the mine by increasing the throughput rate by approximately 10% and the recovery rate by about 2%. Construction on the mill upgrades were expected to be complete by the end of 2013 (Teck Resources Limited 2011) and the mill optimization was commissioned in 2014 (Teck Resources Limited 2014).

Table 2-17 shows that in 2013, HVC was the third largest employer in the Kamloops area with over 1,300 employees, although it is located in Logan Lake, which is approximately 60 km from Kamloops. The number of employees has risen to approximately 1,380 from 800 in the past five years. At present, approximately 240 jobs are staffed professional positions and the remainder are labour positions. About half of the HVC workforce lives in Kamloops and commutes to work (Ajax KPI Program 2011-2012; Dechert *pers. comm.* 2014).

In addition to the 1,380 employees, HVC occasionally hires contract workers who can temporarily employ 100-150 people. The expansion and mill modernization project, which lasted approximately 18 months, added between 500 and 700 contractors to regular positions, bringing total employment to above 2,000 employees during the construction phase. Most of the workforce was local (Dechert, *pers. comm.* 2014). Competition from other employers such as mines, mining supply companies, and oil sands development companies has decreased the size of the available labour force and increased the demand in the LSA. Highland Valley Copper has reported difficulties in hiring for technical positions with higher education and experience requirements at their mine, and has been forced to search for employees across Canada and even internationally. Demand for skilled workers with education and experience has grown notably in the

past three to four years. Due to trends in current development this increase in demand is expected to continue, although increased competition was seen as a positive development (Ajax KPI Program 2011-2012; Dechert *pers. comm.* 2014).

In 2006, HVC submitted a project description to the BC EAO for the construction of a copper refinery on the HVC mine site. The project was issued a section 10(1)(c) order in July of 2006, but no further progress has been made to date (BC EAO 2006).

New Afton Mine: The New Afton Mine is approximately 10 km west of the Ajax Project, and is primarily an underground operation. The mine completed development and began commercial production on July 31, 2012. For a variety of factors, including an existing *Mines Act* permit, the development of a brownfield site, and the disturbance of less than 750 ha of land not previously permitted for disturbance and an area of land less than 50% of the land that was previously permitted for disturbance, the Project was not reviewable under the *Environmental Assessment Act* (Schmitt et al. 2008). Interviews during the KPI program stated that there were currently 490 workers at the mine, with 190 in mine operations, 65 in mill operations, 120 in maintenance, and 115 in administration in 2012. Seventy-five to eighty percent of the operation's workforce is local (Ajax KPI Program 2011-2012). Since those interviews, there have been layoffs at the site.

Copper Mountain: Copper Mountain is a copper, gold, and silver mine located approximately 170 km from Kamloops. It employs approximately 500 people (Venture Kamloops 2013). Production started in the summer of 2011 and is expected to operate for 17 years (Copper Mountain Mining Corporation n.d.).

Mount Polley: Mount Polley is an open-pit copper and gold mine located approximately 350 km from Kamloops by car. It is owned by Imperial Metals. Due to the tailings dam breach, the mine had suspended operations but has received permit amendments that allow a modified operation plan (Imperial Metals 2015a).

Gibraltar: Gibraltar is a copper and molybdenum mine located about 330 km from Kamloops. It is scheduled to operate for approximately 27 years and currently employs about 620 people (Venture Kamloops 2013). The current mine opened in 1972 and closed in 1998. Taseko acquired the property in 1999 and resumed operations in 2004, when prices for copper and molybdenum increased (Taseko Mines Limited 2014a).

Proposed Mines

Harper Creek: Yellowhead Mining Inc. has submitted an Application for an Environmental Assessment Certificate/Environmental Impact Statement to develop the Harper Creek Copper-gold-silver Project near Vavenby, British Columbia (CEA Agency 2015a; BC EAO 2015). The mine would be located approximately 150 km north of Kamloops by road and have an annual production of up to 70,000 tonnes of ore with an expected life span of 28 years (BC EAO and CEA Agency 2015). The mine is expected to have approximately 600 positions during construction and peak operation employment of 466 positions (ERM Consultants Canada Ltd. 2015b).

New Prosperity Gold-copper Mine: The New Prosperity mine is a proposed copper and gold mine located 300 km from Kamloops. It would have a lifespan of 20 years and require a substantial workforce for construction and operation (Taseko Mines Limited 2011). The federal government did not authorize the

project to proceed in February 2014 because the likely significant adverse environment effects could not be mitigated or justified in the circumstances (CEA Agency 2014). Taseko, the proponent for the New Prosperity Gold-copper Mine Project, has applied for a judicial review (Taseko Mines Limited 2014b).

Huldron Silver Inc.: The Huldron silver mine would be located about 210 km from Kamloops and would employ 15 people (Venture Kamloops 2013).

Ruddock Creek: Ruddock Creek is a potential zinc/lead underground development that is located 155 km northwest of Kamloops. Imperial Metals holds 50% interest in the Ruddock Creek Joint Venture, along with Mitsui Mining and Smelting Co. Ltd, which holds 30% interest and Itochu Corporation, which holds 20% interest. A project description was submitted to the Provincial and Federal governments and the BC EAO issued a Section 11 order in October 2014 (Imperial Metals 2015b).

Recent Mine Closures

Craigmont Mine: Recently, Craigmont Mine Ltd., which is located near Merritt in the RSA, began a permanent shutdown of its operations. Local news sources reported that the mine employed approximately 30 employees, most of which were able to find work at other mines (Mining boom 2012).

Mining Exploration

Discovery Corp: Discovery-Corp Enterprises Inc. is a company focused primarily on exploration of gold and silver-containing properties. The company owns properties in the United States and Canada. The company owns the Galaxy property, which is comprised of nine claims, two Crown-granted claims, and seven mineral claims. The Galaxy property is located approximately 4 km northwest of the former Ajax mine site, and is accessed by a dirt road that connects with the Lac Le Jeune Highway. The claims and the subsurface rights of the Crown-granted claims are owned 100% by the company. The company has actively been exploring and conducting data compilation and modelling of the property (CME Consultants Inc. 2009; Discovery-Corp Enterprises Inc. 2011). Discovery Corp is undertaking drilling for potential copper and gold ore bodies approximately 5 km from Kamloops.

Cache Creek (Hunter Dickinson): The Cache Creek drilling site is located about 83 km from Kamloops. The site contains potential copper and gold ore bodies (Venture Kamloops 2013).

Cicada Ventures: Cicada Ventures Ltd has conducted exploration activities for the Iron Mask Property, which is located within three kilometers of the Ajax mineral deposits and five kilometres south of Kamloops (Sookchoff 2009).

Gold Mask Ventures: Gold Mask Ventures Ltd. has two exploration projects that it completely owns in Kamloops, the GM Mineral Claims and the Red Lake Mineral Claims. The Red Lake Mineral Claims are located north of Kamloops Lake along the Carabine Creek. The GM Mineral Property is located south of Kamloops and borders planned Project infrastructure (Lodmell 2014).

Stk'emplupsemc te Secwépemc Nation and Copper and Gold

Copper

The Cultural Heritage Study (Ignace 2014) discusses archaeological, ethnographic, and linguistic evidence of Secwépemc use of copper. There are several pre-1846 archaeological sites, which are predominantly burials that contain evidence of copper artifacts. Some of these sites also contain pre-contact burials. Among the evidence of copper discovered in these burials were copper staining of human remains, which is a common indication that copper artifacts did not preserve, copper beads, and copper earrings. In addition to the burial sites, copper artifacts have also been found in non-burial sites, such as the Jack Sam Bay Village Site, which is believed to be a prehistoric and historic village site.

Ethnographers (e.g., James Teit) have also noted the use of copper by the Secwépemc. He noted that copper tube beads were common as were copper earrings. While Teit assumes that most of the copper used was European-made, other ethnographers note that there were some copper deposits that were mined by the Secwépemc. Among these were Copper Creek, which is located on the north shore of Kamloops Lake (Ignace 2014).

Gold

The Secwépemc were involved in mining for gold before the 1858 Fraser Canyon goldrush (Ignace 2014). Governor Douglas and Commander Richard Mayne, whom the Royal Navy sent to explore the Interior in 1859, both realized that before the gold rush, Secwépemc and Nlaka'pamux people were the primary gold source for the HBC (Ignace 2014). According to Ignace (2014), maps from the beginning of the 1858 gold rush confirm early Aboriginal involvement in gold mining as some maps show "Indian Diggings" on the north shore of Kamloops and Shuswap lakes. Hudson's Bay Company journals and accounts also show trading for gold dust by Aboriginal persons who likely engaged in placer mining. Gold panning continued into the twentieth century.

2.3.4.2 Trends in the Forestry Sector

Since 2005, over 22 sawmills have closed in the British Columbia Interior, but much of the impact has been masked by poor North American markets and low prices. The mountain pine beetle is largely responsible for declining timber harvests, which could result in a smaller British Columbia forestry industry in the future. In the last ten years, there has been a salvage operation has been underway, but the low quality of the remaining timber is not favoured by many sawmilling and plywood operations (Working Forest Staff 2012).

Over the past several years, the allowable annual cut (AAC) throughout the region has been increased to allow the forest industry to harvest dead trees before the wood loses its commercial value. British Columbia government projections show that after the timber killed by pine beetles has been logged off, a major shortage of harvestable trees is likely to occur, starting within two years and lasting for as long as 50 years. In some regions, the amount of harvestable trees could potentially fall by 75%, resulting in the closures of mills and the loss of up to 12,000 forestry industry jobs (Hume 2012).

As illustrated in Table 2-19, between 2005 and 2013, the value of British Columbia's exports of softwood lumber has decreased by \$961 billion, although the value of exports has been rebounding since 2009. The

primary reason for this decrease is because the value of softwood lumber exports to the United States fell, while the value of exports to China have grown. The value of exports of softwood lumber to the United States, although growing, has not rebounded to 2005 levels (BC Stats 2014a).

Table 2-19: British Columbia Origin Exports of Softwood Lumber to China, the United States, and All Countries, 2005-2013 (all values in \$000,000)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
China	54	65	99	177	315	668	1,080	1,065	1,390
United States	4,805	4,323	3,377	2,194	1,543	1,790	1,598	2,001	2,558
All Countries	6,272	5,849	4,773	3,606	2,749	3,558	3,833	4,204	5,311

Source: BC Stats 2014a.

Forestry in the Kamloops Timber Supply Area

In British Columbia, the forestry sector operates within geographical divisions called timber supply areas (TSAs). The RSA overlaps primarily with the Kamloops TSA and, to a lesser extent, with the 100 Mile House and the Merritt TSAs (BC Ministry of Forests and Range 2007). The Kamloops TSA covers approximately 2.77 million hectares in south central BC and is administered by the Headwaters and Kamloops forest districts and spans several communities, including Ashcroft, Barriere, Chase, Clearwater, Kamloops, Logan Lake, and Vavenby. Effective June 1, 2008, the total AAC was set at 4.0 million cubic metres. The previous AAC was 4.35 million cubic metres. Roughly 1.67 million cubic metres of that AAC were from temporary increases introduced in 2004 to help manage the mountain pine beetle and to salvage fire-damaged timber. The mountain pine beetle has attacked a cumulative total of about 30 million cubic metres of lodgepole pine in the Kamloops TSA. Ponderosa pine was also affected. Since the last AAC determination, most of the fire-damaged timber in the Kamloops TSA has been harvested. The new AAC has provisions in place to focus harvesting in mountain pine beetle-damaged stands, while protecting non-pine timber for the future (Chief Forester's Office, Ministry of Forests and Range 2008). The AAC will need to be updated in the next few years since AACs must be updated every 10 years (FLNRO 2014).

Timber harvesting in the Kamloops TSA increased by about 50% between 2009 and 2011 as a result of the forestry industry coming out of an economic downturn, the mountain pine beetle infestation slowing, and the industry undergoing salvage operations by harvesting affected trees before they lost their value. In 2012, the industry began to harvest more greenwood because the majority of the trees affected by the mountain pine beetle had already been harvested. In 2012, it was anticipated that the forestry industry would experience a downward economic trend in the subsequent five years (Sommer et al., *pers. comm.* 2012). As of 2014, BC's forestry sector was expected to remain an important growth driver for the Province through 2018 (Central 1).

Between 1997 and 2011, direct employment by the forestry industry in the Kamloops TSA has fluctuated between 1,455 person years in 2009 and 3,570 in 2004.² Over the period of 1997-2011, direct employment in person years decreased by 19.8%. Person years of employment by the industry is expected to decrease during the period 2012-2016 by 219 person years (12.2%) compared to 2011, and then decrease a further 432 person years (27.5%) during the period 2017-2097, before increasing by 255 person years (19.7%) after 2098 (Table 2-20).

Table 2-20: Kamloops Timber Supply Area

Year	Timber Volume (m ³) ^{1,2}	Timber Value (\$) ³	Price per unit (\$/m ³) ⁴	Direct Employment (PY) ^{5,6,7,8,9}
1997	2,365,865.00	n/a	n/a	2,234
1998	2,408,322.00	n/a	n/a	2,234
1999	2,755,418.00	n/a	n/a	2,234
2000	2,929,284.00	n/a	n/a	2,234
2001	2,640,888.80	59,619,782.51	22.58	2,245
2002	3,091,285.74	65,248,150.21	21.11	2,628
2003	2,984,930.36	50,686,259.60	16.98	2,537
2004	3,998,871.45	72,984,520.89	18.25	3,399
2005	3,988,361.96	76,965,062.92	19.30	3,390
2006	4,163,242.09	66,971,185.50	16.09	3,570
2007	3,283,864.62	46,041,548.47	14.02	2,791
2008	2,194,995.67	20,036,867.30	9.13	1,866
2009	1,712,029.37	11,105,115.30	6.49	1,455
2010	2,472,070.48	14,640,764.77	5.92	2,101
2011	2,859,059.83	13,071,661.27	4.57	1,791
2012-2016	2,510,000.00	n/a	n/a	1,572
2017-2097	1,820,000.00	n/a	n/a	1,140
2098+	2,180,000.00	n/a	n/a	1,365

Source: BC Ministry of Forests 2001; BC Ministry of Forests and Range 2008; BC Ministry of Forests, Lands and Natural Resource Operations 2012; S. Davis *pers. comm.* 2012; Pierce Lefebvre Consulting 2009.

² A person year (PY) is defined as a full-time job that lasts at least 180 days per year; the number of person years correlates closely with the number of full-time job equivalents. Part-time jobs were converted to equivalent full-time person-years of employment. Additional explanation on how this was calculated is in the footnotes to Table 2-20.

Notes:

1. Timber volume totals are actual from 1997 to 2011 and estimated from 2012 to 2098).
2. Timber volumes for periods 2012-2017, 2017-2097, and 2098+ represent predicted allowable annual cuts (AAC) during those periods.
3. Timber values reported are actual from 2001 to 2011.
4. Price per unit calculated by InterGroup Consultants by dividing Timber Value by Timber Volume.
5. Person year (PY) of employment refers to a unit of measurement for employment. A PY is defined as a full-time job that lasts at least 180 days per year; the number of person years correlates closely with the number of full-time job equivalents. Part-time jobs were converted to equivalent full-time person-years of employment.
6. Person year data for the period 1997-2000 is the average over that time period; year-by-year data was unavailable.
7. Person year calculations for 2001-2010 are based on a direct PY coefficient of 0.85 taken from the 2001 Kamloops Timber Supply Area Analysis report (BC Ministry of Forests 2001), and calculated from data in the 2008 Kamloops TSA AAC determination (BC Ministry of Forests and Range 2008).
8. Indirect and induced PY were also included in the 2001 Kamloops TSA Analysis Report (BC Ministry of Forests 2001), but have been excluded from this analysis due to the fact that indirect and induced multipliers generated for 2001 have limited applicability today.
9. Person years for 2011 and beyond are projections calculated by InterGroup, using coefficients from the Central Cariboo Region (Pierce Lefebvre Consulting 2009). The Central Cariboo Region coefficients were used because they were calculated in 2009 and, thus, better reflect the current industry standard of efficiency. The Central Cariboo Region is composed of the Quesnel and Williams Lake TSAs, and is adjacent to the Kamloops TSA on the northwest side. This region contains geography and harvesting and processing techniques sufficiently similar to the Kamloops TSA that employment coefficients calculated for this region are useful in making employment projections in the Kamloops TSA.

The footprint of the proposed mine would not fall on an area where there are currently any forestry activities, but there are some forested areas that would be affected by the Project. These forested areas can be found on the east and west sides of the Coquihalla Highway, including the location of the proposed tailings storage facility, as well as along Lac Le Jeune Road. Although there is some harvestable timber at these locations, the general area of the project footprint is not a productive area in terms of forestry. However, the area is part of the timber harvesting land base and, in the absence of the proposed mine, would have been harvested at some point in the future (Sommer et al., *pers. comm.* 2012).

The proposed mine would not impact forestry licensees' potential plans in a material way. Many licensees are allowed to cut in the proposed project area because each licence applies over a broad area that includes the project footprint (Ajax KPI Program 2011-2012).

Domtar's Kamloops Mill

The Kamloops Mill was built by Weyerhaeuser in 1965, adjacent to the Thompson River in Kamloops. The mill manufactures kraft pulp. The mill produces the raw materials used in the making of paper, tissue, fibre cement, and plastic molding products (Ajax KPI Program 2011-2012).

Domtar has made investments in the mill over the last couple of years in the range of \$120 million to improve its competitiveness. As a result of these improvements, the mill is now a renewable energy exporter. The mill produces electricity from sawmill residue material it received from about 20 regional sawmills, including mills in Merritt, Vernon, and Kelowna (Adams *pers. comm.* 2012). In 2009, the mill was anticipated to produce about 200 gigawatt-hours per year, which is enough to power about 18,300 homes (Young 2009). In 2011, the mill generated 504 gigawatt-hours, 210 gigawatt-hours of which were sold to BC Hydro (Ajax KPI Program 2011-2012).

In 2014, the Kamloops Mill directly employed 316 people (Venture Kamloops 2015), in addition to a number of contractor employees in the construction and service technologies industries. Contractor employment peaks during the annual maintenance shutdown. Employment has been stable over the last five to ten years, and is anticipated to be stable in the next five years. The mill hires 20-25 people per year, mostly due to retirements and a small number of employees quitting. About 75% of new hires already live in Kamloops, with the remainder coming from outside the region or Province. During the key person interview program it was suggested that there is a shortage of young people in Kamloops that have interest in the forestry industry, in addition to a shortage of engineers (Ajax KPI Program 2011-2012).

Mill Closures and Re-openings in the Kamloops Area

Tolko Industries' operations remain operational, with some changes occurring in the previous couple of years. For instance, 30 employees at the Heffley Creek operation were affected by a decrease from four shifts to three shifts effective October 30, 2011 (Tolko Industries 2011). In addition, temporary closures occurred at the White Valley and Armstrong operations in 2011 (ForestTalk 2011).

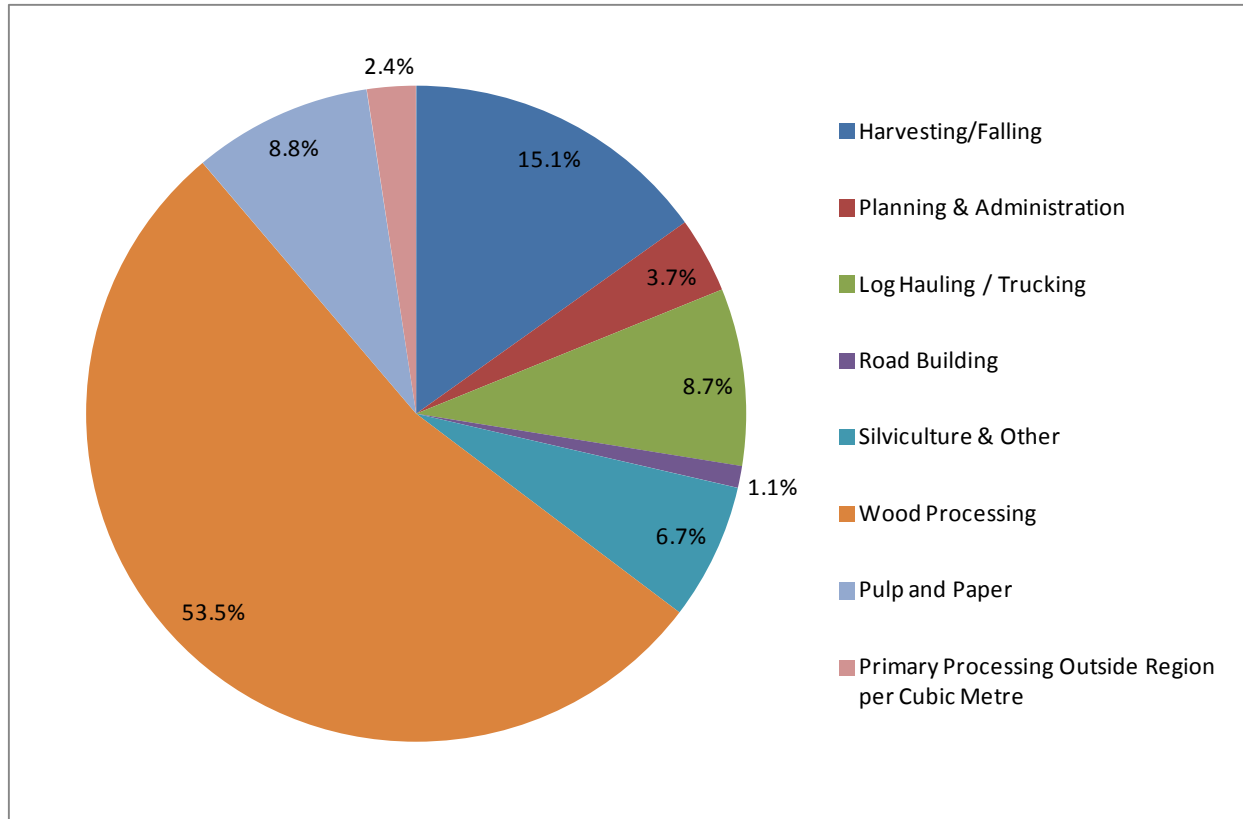
In September 2011, the Canfor Vavenby sawmill re-opened, creating 96 jobs at the mill and a further 30 jobs in logging and trucking. The restart follows a \$24 million capital investment in the mill, including a new canter line, upgraded optimization software, a new grade optimizer in the planer, and an upgraded planer feed system. According to Canfor, at full production, Vavenby will produce 240 million board feet of SPF (spruce-pine-fir) per year (McNeill 2011).

In December 2009, Aspen Planers Ltd. purchased two lumber operations from Ainsworth Lumber. These facilities were non-operational at the time of purchase (O'Connor 2009). Aspen Planers reopened the specialty mill at Savona in April 2011; at the time, the mill employed 80 workers (BC Ministry of Forests, Lands and Natural Resource Operations 2011). The Lillooet veneer plant reopened in May 2011, as well (Thur 2011). The Lillooet plant employed 35-40 people in February 2012 (ForestTalk 2012).

In October 2009, Paragon Wood Products reopened its Lumby sawmill. The mill had been closed for one year. The company shifted focus from cedar to pine and fir dimensional lumber and from the American/Canadian markets to the Asian market (ForestTalk 2009).

Forestry Sector Employment

Forestry has been an important regional economic activity, which has implications for direct and indirect employment related to the Project. Recent changes in the forestry sector have led to the reduction of available employment, but some of skills used in the forestry sector may be transferable to work in the mining industry (Ajax KPI Program 2011-2012). Figure 2-2 demonstrates the skills associated with the forestry industry including the distribution of employment per volume of harvest using the 2009 Central Cariboo Region employment coefficients. Although the activities related to forestry and mining can be divergent, there is an overlap in the fundamental skill sets needed to do many activities in both sectors. Many forestry workers would require a limited amount of additional education to be eligible for relatively high-paying mining jobs (Ajax KPI Program 2011-2012).



Source: Pierce Lefebvre Consulting 2009.

Figure 2-2: Distribution of Kamloops Employment per Volume of Harvest using 2009 Central Cariboo Region Coefficients

The following list explains how different jobs in the forestry industry may be transferable to mining or other heavy industry:

- Harvesting and falling involves primarily large machine operation. The technicians operating these machines are highly skilled operators who possess a wide base of knowledge related to heavy machinery. Although the operation licences that they hold would not necessarily allow them to operate specialized mining machines, it would be possible for them to take the appropriate courses that would allow them to do so. Often, the machine operators are skilled heavy duty mechanics as well, which are typically in high demand in the mining industry.
- Labourers and road builders from the forestry industry would have a very high degree of transferability to certain components of construction associated with mining.
- Forest industry workers involved in log hauling and transportation have skill sets and licences that would give them a competitive advantage in obtaining similar jobs in the mining industry. They would be required to obtain certain licences and safety courses specific to mining-related transportation.

- Forest technicians have many skills that are transferable to engineering. They are often involved in the planning and construction of logging roads and have good knowledge of hydrology and geology. Forest technicians could have opportunities to transfer their skill set into mining jobs.
- Wood processing jobs within the forestry sector are similar to jobs in ore processing in the mining sector. Saw mills require electricians, kiln operators, millwrights, machine operators, heavy duty mechanics, safety officers, administrators, and managers. Many of these jobs are also required in the mining sector. The degree of transferability to mining is high, although attaining a job in the sector would require the acquisition of certain licences and certifications.

The forestry jobs that have low transferability to the mining sector are focused on silviculture, forest stand management, disease and pest management, and other ecological considerations (Ajax KPI Program 2011-2012).

2.3.4.3 Trends in the Agriculture Sector

Agriculture, ranching specifically is an important economic driver in the LSA and RSA. Cattle ranching is the primary agricultural activity in proximity to the Project. Within the RSA, cattle ranching and horse keeping accounted for most of the agricultural activity. In total, farms in the LSA had just over 8,300 cattle and calves and 280 horses and ponies, as well as a variety of other livestock (Statistics Canada 2006b). Within the LSA, the total area farmed within the City of Kamloops in 2006 was 22,148 hectares. Eighty percent of that area was used as unmanaged pasture for livestock with the remainder being used for managed pasture, crops, and a small percentage of summer fallow. The annual gross farm receipts totalled over \$9.2 million. Annual cash wages paid were over \$2.2 million (Ministry of Agriculture n.d.).

The most far-reaching agricultural economic event was the market fluctuation caused by the worldwide epidemic of Bovine Spongiform Encephalopathy (BSE). Although there have been only 19 documented cases of cattle mortality resulting from BSE in Canada from 1993 to 2011 (Centers for Disease Control and Prevention 2012), the epidemic has had major consequences for cattle producers throughout Canada. The discovery of BSE in one cow in Alberta in 2003 led to a ban on Canadian cattle and beef imports in more than 40 countries including top importers of Canadian beef such as the United States, Mexico, South Korea, Australia, and Japan (Mitura and Di Piétro 2004; Mad Cow in Canada 2006). The government of British Columbia has provided support programs for cattle producers to assist in attaining the required level of BSE surveillance.

Additional information on ranching activities in the LSA can be found in Section 3.2.4.

2.3.4.4 Trends in Tourism Sector

Tourism has become an increasingly important component of the LSA economy. The tourism market is both domestic and international. The international market is structured around the fact that the City of Kamloops has traditionally been an overnight stop-over for tourists travelling and experiencing the Rocky Mountains via either Thomas Cook Travel, Brewster Buslines or the Rocky Mountaineer rail line. The local market consists of opportunities related to fishing, biking, hiking, snowshoeing, skiing and various other outdoor opportunities (Ajax KPI Program 2011-2012).

Tourist traffic in Kamloops amounts to approximately 90-95,000 people per year staying in hotel rooms in the City (does not include Sun Peaks but does include corporate travel). This produces an estimated \$55 million in revenue through accommodations (Ajax KPI Program 2011-2012).

Some tourism marketing focuses on the significance of ranching and grasslands. The Western Heritage Agritourism program provides opportunities to see working cowboys moving across the range. Driving experiences down Goose Lake Road the Long Lake road have also been noted as valuable tourism opportunities. Tourism Kamloops also works with the TteS to bring international bus tours to their reserve to engage in a cultural sharing program (Ajax KPI Program 2011-2012).

With the establishment of various hotel chains and the renovations and expansions to existing facilities, Kamloops has become well positioned to accommodate the tourism industry. As of have 2014, provincial hotel tax revenues for the Kamloops area approximated \$900,000 per year (Venture Kamloops 2014).

Notable tourism-related events and activities that have helped to shape the local economy include the following:

- Development of Sun Peaks Resort – located 50km northeast of Kamloops, the resort generates 340,000 skier visits per year. It also operates a bike park and golf course, all supported by 7,000 tourist beds. Resort employment approximates 500 people year-round and 1,000 during the winter.
- Designation of Kamloops as “The Tournament Capital of Canada”. The City of Kamloops prides itself on being a prime location for tournaments and events and has invested upwards of \$60 million in facility upgrades over the last ten years (Venture Kamloops 2014). The Tournament Capital campaign contributes an estimated \$12 million per year to the local economy.

2.3.5 Aboriginal Businesses

The First Nations in the LSA and RSA, along with citizens of the Métis Nation British Columbia (MNBC) own a variety of businesses, which are affected by the business trends described above.

2.3.5.1 The Tk’emlúps te Secwépemc

In addition to joint participation/revenue sharing agreements such as the one entered into with NewGold Inc., the TteS is involved in a variety of businesses in a range of sectors, including agriculture, tourism, leasing, real estate, and retail. A partial list of their business interests includes the following:

- Since 1999, the TteS has owned the Spiyu7ullucw Ranch, (previously the Harper Ranch). The purchase added 20,000 acres of fee simple land and crown leases, which can be used for resource development and economic opportunities (TteS 2015a). The 500-acre site is an historical agricultural site with freehold land pastures. The ranch has irrigated alfalfa hay and a calf/cow operation. (AMEC FW 2015).
- The TteS is involved in real estate, both leasing and development. The Band developed and currently operates the Mount Paul Industrial Park, which currently has 350 tenants (TteS 2015b). In connection with real estate development, the Sun Rivers Gold Resort Community is located on

reserve land. The development has 2,000 residential homes a variety of amenities, including an 18-hole golf course (AMEC FW 2015).

- Tk'emlúps Petro Canada gas station and Tk'emlúps Car Wash are owned and operated by the TteS (TteS 2015b).
- The Band also has a Forestry Consultation and Contribution Revenue Sharing Agreement with the Province. The term is for three years. It is used to enhance the social, cultural and economic well-being of the community (TteS 2014).

2.3.5.2 The Skeetchestn Indian Band

The SIB owns and operates Big Sky Station, which is located 22 km east of Cache Creek on the Trans-Canada Highway. It features a Husky Gas Bar, convenience store, tourist information, restaurant and catering, lottery, and a gift shop that also sells clothing (SIB n.d.a.).

2.3.5.3 The Lower Nicola Indian Band

The LNIB engages directly in a variety of businesses and economic initiatives, including an irrigation system, cattle ranching, logging/forestry products, and small business. The businesses owned by LNIB are:

- LNIB Holdings Ltd.;
- Shulus Forest Enterprises Inc.;
- Shulus Cattle Co.;
- LNIB Construction Ltd.;
- LNIB Real Estate Developments Ltd.; and
- LNIB Energy Ltd. (LNIB 2014).

The LNIB also has equity investment in Spayum Developments Ltd. and Nicola Valley Services Administration lands and building (LNIB 2014).

2.3.5.4 The Ashcroft Indian Band

The AIB has a number of economic agreements with Kinder Morgan, Tolko, West Fraser, Waste Tech, and Highland Valley Copper. The Band also owns the Ni'alapxm Eagle Motorplex and the Ashcroft Travel Centre, a gas station/truck stop. The Band is also involved in ranching (AIB *pers. comm.* 2014).

2.3.5.5 The Whispering Pines/Clinton Indian Band

The WP/CIB owns Wildland Protection Services, which provides wildlife hazard assessments, wildfire hazard abatement services, and wildfire protection training and education services (WP/CIB 2015b).

2.3.5.6 Métis Nation BC

According to AMEC FW (2015), the MNBC website identifies 68 Métis businesses; however, it was not possible to identify how many are in the vicinity of the Project. This list is also not exhaustive since the business owner is responsible for submitting information to the MNBC. The BC Hydro Aboriginal Business Directory identifies 30 businesses that have a Métis affiliation in the Southern Interior –Thompson Okanagan region.

2.4 PROPERTY VALUES

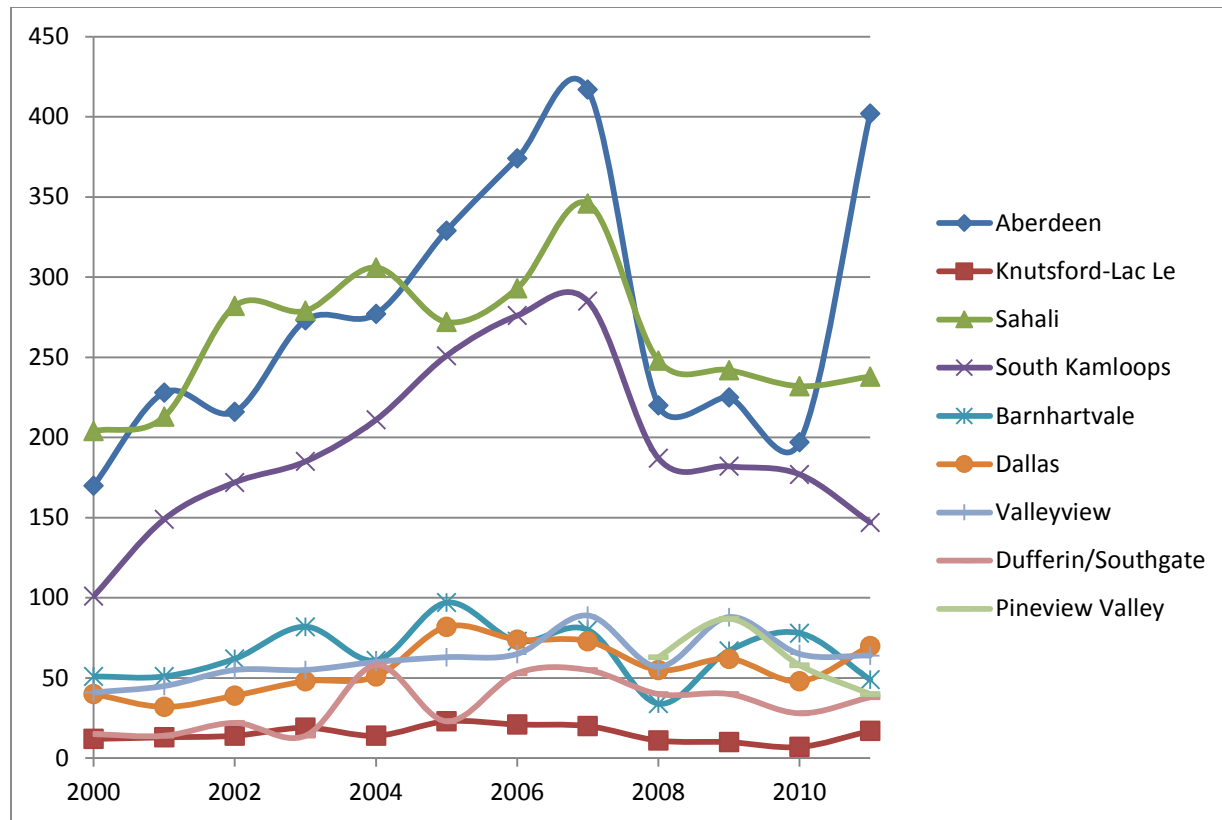
2.4.1 Residential Real Estate

2.4.1.1 Home Ownership

Kamloops is situated in a valley and has a variety of different neighbourhoods at different elevations. Residents and home owners buy into neighbourhoods depending on the features they want in a property. Homes in Westsyde, Brocklehurst, Dallas, and Valleyview tend to have flat yards and be a few degrees hotter, which allows for more gardening options and driveways that are easier to access. Lots in Aberdeen, Rose Hill, Dufferin, and Batchelor Heights tend to have steeper yards and are prized for their views. There are long-term residents in every sector of the city who prefer that sector for specific reasons, and often choose another house in the same sector if they are upgrading or downsizing. The North End is also sometimes the choice neighbourhood for a starter home because prices there are lower overall (Ajax KPI Program 2011-2012). For more information on the characteristics of the dwelling structures available in Kamloops, see the Section 3.1.1.

The southwest sector of the City, which includes Aberdeen, has been expanding since the 1980s, and is the sector identified in the Official Community Plan as having the most growth potential, as well as having been the recipient of the most municipal spending on infrastructure (City of Kamloops 2004). Aberdeen has a mix of high end and starter housing, as well as a mobile home park and numerous condominium complexes.

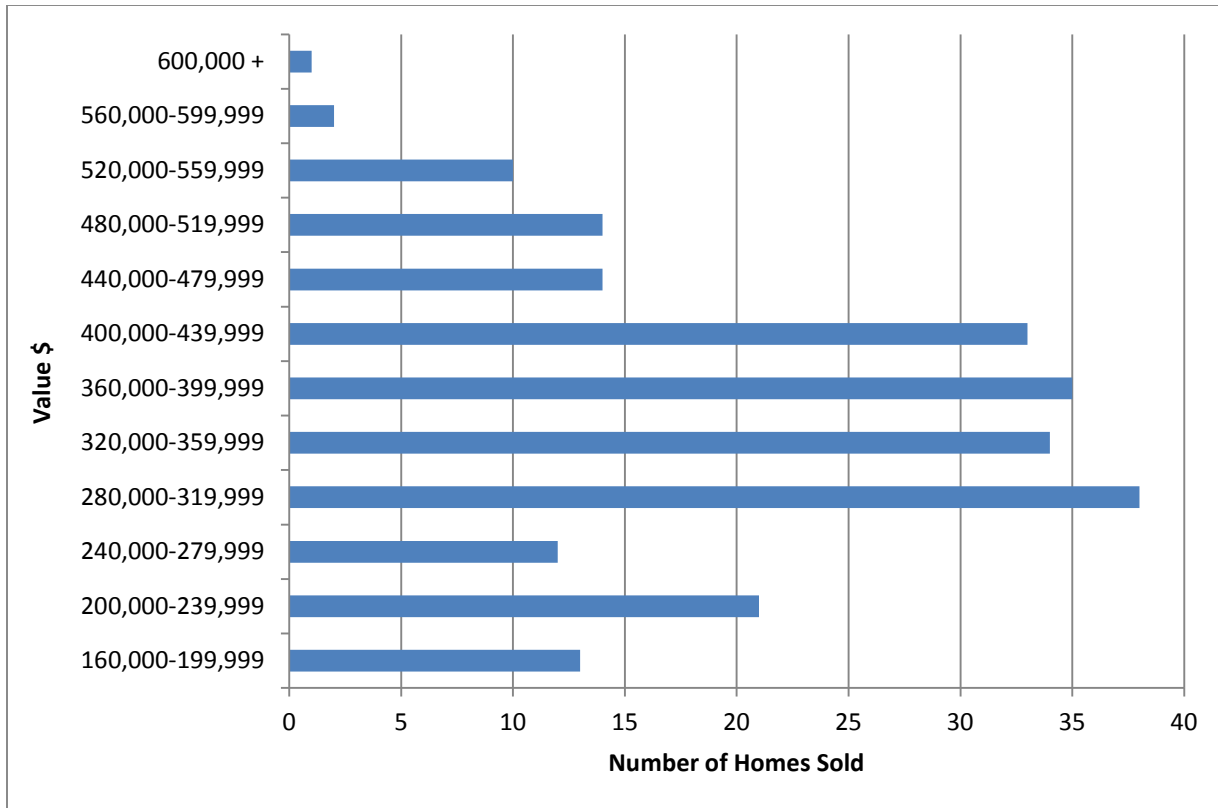
Between 2000 and 2011, Aberdeen saw the largest increase in home sales compared to other neighbourhoods in the city, with a peak in 2007. After a slowdown in sales between 2008 and 2010, home sales in Aberdeen had recovered to near 2007 levels in 2011. Sahali and South Kamloops also had a high volume of houses sold between 2001 and 2007, with a decline in 2008, as shown in Figure 2-3. Sahali and South Kamloops had not recovered from the slump in home sales during the economic downturn as well as Aberdeen has.



Source: Kamloops and District Real Estate District 2012.

Figure 2-3: Number of Houses Sold in Kamloops Neighbourhoods, 2000-2011

House prices in Aberdeen range in value from \$160,000 to over \$600,000. The bulk of the housing sold between January 2011 and January 2012 in Aberdeen was priced in a range between \$280,000 and \$439,000, as shown in Figure 2-4 below. Less than five homes in the neighbourhood sold for \$560,000 or more in that time period.



Source: Kamloops and District Real Estate District 2012.

Figure 2-4: House Prices in Aberdeen, January 2011 – January 2012

Local real estate experts interviewed in the KPI program noted that the housing market in Kamloops has been able to accommodate the influx of workers from New Gold. It is not known which neighbourhoods the New Gold employees prefer.

Residential Real Estate Development on the Tk’emlúps te Secwépemc Reserve

Designated residential areas on the TteS reserve include:

- Paul Lake;
- Sun River;
- G & M Trailer Court;
- Silver Sage Trailer Court;
- George Campbell Way (subdivision); and
- Sage Meadows (AMEC FW 2015).

The Sun Rivers Golf Resort Community is a real estate development providing an 18 hole championship golf course, walking trails, a village centre, and 2,000 residential homes. It was the first geothermal community in Canada and was recognized as a finalist for the international award for Best Development.

Future development opportunities include a 200-room Resort hotel, additional land parcels for townhomes, single family lots or for the adult community, and development of tourist accommodations such as golf cottages (AMEC FW 2015). The TteS has been developing the Sun Rivers Golf Resort on-reserve. The development is located 5 minutes from downtown Kamloops. The types of housing available include estate lots, adult living, apartments, and townhomes. There are approximately 2,000 homes in the development (Sun Rivers n.d.). The majority of residents are non-Aboriginal persons (D. Aird, *pers. comm.* 2015). For more information on the characteristics of the dwelling structures available, the TteS reserve, and residential property development targeting on-reserve TteS members see the Section 3.1.1.

Statistics Canada information on the characteristics of the dwelling structures on the SIB reserve are described in Section 3.1.1.

Rental Housing

Compared to the Province as a whole, Kamloops had a slightly higher availability and vacancy rate for rental housing. Vacancy and availability rates are found through the annual Canada Mortgage and Housing Corporation survey conducted in April 2011 and April 2012. “Availability” is defined as a vacant property ready for rental a property where the tenant gave notice of departure, or was given notice to leave by the landlord, and where a new tenant has not yet signed a lease for the property. The “vacancy” rate reports only those units that are vacant at the time of the survey and ready for rental. As shown in Table 2-21, in April 2014, Kamloops had a higher availability rate than Kelowna and Nanaimo. Kelowna was chosen as a comparison community due its proximity to Kamloops, while Nanaimo was chosen because focus group participants felt that it was a comparable community in terms of housing (City of Kamloops and InterGroup Consultants 2012). Kamloops had a lower vacancy rate than Nanaimo, but a higher rate than Kelowna in April 2014 (Table 2-21).

Table 2-21: Vacancy and Availability Rates (%) of Privately Owned Apartments in Kamloops, Kelowna, Nanaimo and British Columbia, April 2012-2014

Area	Availability Rate April 2012	Vacancy Rate April 2012	Availability Rate April 2013	Vacancy Rate April 2013	Availability Rate April 2014	Vacancy Rate April 2014
Kamloops	6.1	4.2	5.8	3.4	8.4	5.1
Kelowna	6.2	5.2	5.8	4.8	3.1	1.5
Nanaimo	8.8	7.0	10.2	8.3	7.9	5.3
British Columbia	4.7	3.4	4.4	3.5	3.6	2.4

Source: Canada Mortgage and Housing Corporation, Rental Market Statistics 2014.

As of April 2014, Kamloops had a total of 3,181 privately owned apartments in the City, and an availability rate of 8.4% (Table 2-22).

Table 2-22: Number of Privately Owned Apartments by Size of Structure in Kamloops, April 2014

Category of structure by number of dwelling units	3-5	6-19	20-49	50-199	200+	Total
Number of structures	15	43	52	17	-	127
Number of dwelling units in structure	59	458	1,595	1,069	-	3,181

Source: Canada Mortgage and Housing Corporation, Rental Market Statistics 2014.

In terms of costs to rent apartments, Kamloops had more expensive bachelor apartments for rent than either Kelowna or Nanaimo, but was less expensive than Kelowna and more expensive than Nanaimo for apartments of all other sizes (Table 2-23).

Table 2-23: Average Rental Cost per Month of Privately Owned Apartment Structures of Three Units or More in Kamloops, Kelowna and Nanaimo, April 2014

Location	Bachelor	1 Bedroom	2 Bedrooms	3+ Bedrooms
Kamloops	\$618	\$714	\$844	\$1,041
Kelowna	\$592	\$759	\$947	\$1,121
Nanaimo	\$556	\$664	\$791	\$947

Source: Canada Mortgage and Housing Corporation, Rental Market Statistics 2014.

There are also rental properties and rent-to-own properties available on the Kamloops 1 reserve for TteS members (TteS 2014).

2.4.2 Commercial Real Estate

There are numerous commercial districts of various sizes in the different neighbourhoods of Kamloops. Some of the larger commercial districts include the City Centre, the North Shore Town Centre, the Tranquille Commercial District, the Southwest Sector Commercial Area, and the Southeast Area Commercial District (City of Kamloops 2004). The Southwest Sector Commercial Area has undergone rapid expansion in the last 15 years, with the addition of numerous new retail businesses and restaurants on McGill Road, Notre Dame, Summit Drive, Hillside Drive, and new hotels on Rogers Way and Hugh Allan Drive and neighbouring streets.

Commercially designated lands on the primary TteS reserve parcel include:

- Mount Paul Industrial subdivision;
- Halston;
- Chief Louis Way;
- Chief Louis Centre; and

- Seven Mile (AMEC FW 2015).

The corporate arm of the TteS, the Kamloops Indian Band Development Corporation (KIBDC), is currently working with Urban Systems Ltd. to develop a master plan for the Mount Paul Centre, which will include building design guidelines, landscaping, and streetscape guidelines for the area (TteS 2014).

The LNIB and AIB also have lands designated for commercial purposes (AMEC FW 2015).

2.4.3 Industrial Real Estate

Kamloops has several major industrial areas (Table 2-24), a number of which, such as the Iron Mask and Old City Yard sites were underutilized when the City of Kamloops took inventory of the areas (City of Kamloops 2011). The Iron Mask East and West Industrial Parks are located at the junction of Hwy 5 and Hwy 1 at the southwest entrance to the City, and are the closest industrial parks to the proposed Project site. The Campbell Creek, Mission Flats, Domtar Lands and Iron Mask Industrial Parks are the largest in size. The Domtar Lands site had no parcels in use in 2010.

In addition to the municipal industrial areas presented below, the TteS operates the Mt. Paul Industrial Park on Kamloops IR #1, offering leases to commercial and industrial businesses for up to 50 years. The site can currently accommodate 350 tenants (TteS 2015b).

Table 2-24: Industrial Areas, City of Kamloops, 2010

Industrial Areas	Total Area	Number of Parcels	Number of Vacant Parcels
Ord Road	14.34 ha	24	4
Tranquille Road	30.92 ha	5	3
Airport	46.5 ha	2	0
Mission Flats	174.09 ha	11	8
Old City Yard	13.27 ha	27	14
McGill Road	72.49 ha	39	6
Southgate	41.7 ha	77	2
Iron Mask East	94.3 ha	21	5
Iron Mask West (expansion area included)	73.78 ha	14	10
Bowers	10.58 ha	30	9
Campbell Creek East	111.18 ha	29	6
Campbell Creek West	74.61 ha	33	15
Kelly Douglas	18.09 ha	13	1
Tolko	44.8 ha	7	2
Domtar Lands	697.8 ha	9	9

Source: Adapted from City of Kamloops 2011.

There is not much industrial land in the southwest sector of the City with the exception of the Iron Mask Industrial Park. Part of the City's recommendation in the 2010-2015 Industrial Land Review was that heavy industries that could potentially impact air quality should be located outside of the valley. The Iron Mask site was recommended as a location for such industries (City of Kamloops 2011).

Industrial designated lands on the TteS reserve include:

- Leased land on Reserve #1 (Mount Paul Industrial Subdivision);
- Seven Mile;
- Chief Louis Way; and
- Sewage Treatment Plant (AMEC FW 2015).

The Band developed and currently operates the Mount Paul Industrial Park, which has space for up to 350 tenants (TteS 2015b).

The LNIB and AIB also have lands designated for industrial purposes (AMEC FW 2015).

2.4.4 Agricultural Real Estate

The Project is located in the Agricultural Land Reserve, a provincial zone in which agriculture is recognized as the priority use. In this zone, farming is encouraged and non-agricultural uses are controlled. Cattle ranching is the primary agricultural activity in proximity to the Project. In British Columbia as a whole farmland value was relatively stable from 2009 to 2012, varying from -0.7% to 0.2%. In 2013 there was a notable increase of 3% (Farm Credit Canada 2014). The demand for agricultural real estate outside of the Peace River region and the lower mainland saw low demand (Farm Credit Canada 2014). June 2015 statistics for the Kamloops and District Real Estate Association indicate that no farm properties were sold, although there were 25 active listings (Kamloops and District Real Estate Association 2015).

2.5 ECONOMIC DIVERSIFICATION

Economic diversification refers to the "spreading of economic activity across a relatively wide range of industries/sectors in order to mitigate the effects of a sudden downturn in any one" (Canada West Foundation 2011). The economy of the RSA is discussed in greater detail in Section 2.1.1, which outlines employment by sector for the LSA and RSA. Section 2.3 provides an overview of the regional economy, including primary business sectors and trends in the RSA. This section discusses measurements of economic diversification for the LSA and RSA, which can be measured using the following indicators discussed below:

- Income dependency; and
- Regional economic diversification (Diversity Index).

2.5.1 Income Dependency

The income dependency ratio estimates the extent to which specific industries directly and indirectly generate income for particular regions. Horne's (2009) estimates assume that income flow within a community can be classified as basic or non-basic depending on its source. Rather than comparing simple percentage breakdowns of income by sector for each community (e.g., forestry, mining), this approach takes into account non-basic or induced employment income.

Basic income represents income that comes into the community from outside, either through employment or non-employment income. Basic employment income is derived from wages and salaries (in addition to income from self-employment) from:

- Jobs producing goods and services that are exported elsewhere;
- Jobs producing goods and services for the tourist sector ("outside" money being spent within the community); and
- Jobs in the public sector (e.g., health care workers, teachers) paid by senior governments rather than local residents.

As such, jobs considered to generate basic employment include the following: forestry and associated manufacturing; mining and associated manufacturing (including oil and gas); fishing and trapping and associated manufacturing; agriculture and food and beverage manufacturing; tourism; high technology; public sector; construction; film production and sound recording; and other, which takes into account activities that do not fit conveniently into the other categories.

Basic non-employment income flowing into the community includes transfer payments from senior governments (e.g., income assistance payments, Old Age Security, Guaranteed Income Supplements, Canada Pension Plan, Employment Insurance benefits, Federal Child Tax benefits and other non-employment income, including investment income [e.g., dividends and interest], retirement pensions, superannuation, annuities, and alimony).

Non-basic income is employment income derived from jobs in the community that provide goods and services to individuals who live in the community. This would include retail trade, local transportation, and other services (e.g., financial services, personal services).

Table 2-25 provides a summary of percent income dependency calculations for the Kamloops Local Area as defined by Horne (2009).

Table 2-25: Income Dependencies (After-Tax Incomes) for Kamloops Local Area (1991, 1996, 2001 and 2006)

	1991	1996	2001	2006
Forestry and Associated Manufacturing	10%	11%	10%	9%
Mining and Associated Manufacturing, including Oil and Gas	7%	7%	6%	6%
Fishing and Trapping and Associated Manufacturing	0%	0%	0%	0%
Agriculture and Food and Beverage Manufacturing	2%	2%	2%	1%
Tourism	2%	6%	6%	6%
Public Sector	21%	27%	29%	27%
Other ¹	23%	21%	16%	19%
Transfer payments	15%	16%	18%	16%
Other Non-employment Income	20%	10%	13%	16%

Source: Horne 2009.

Notes:

1. Other consists of a roll-up of high technology, construction, and Film Production and Sound Recording.

In each census year, incomes associated with the public sector represent the largest percentage of contribution to after-tax incomes. Mining and associated manufacturing, including oil and gas, were relatively minor contributors within the context of percentage income dependency at 6% or 7%, ranking above only fishing and trapping and agriculture and food and beverage manufacturing. In the latter two census years, percentage income dependency tied to mining and associated activities was at a similar level as tourism.

Other notable findings for the Kamloops Local Area per Horne’s study (2009) include:

- The public sector is the most dominant income source. For comparison purposes, the Fort St. John Local Area is most dependent on mining and associated manufacturing (e.g., oil and gas). Conversely, the Squamish Local Area is most dependent on tourism.
- Dependence on forestry and wood processing is at 11% of income for the Kamloops Local Area in 2006. Corresponding figures for 1996 and 2001 were 11% and 10%, respectively, indicating that from an income dependency perspective, circumstances have remained relatively static. For

comparison purposes, the Quesnel, Burns Lake, and Vanderhoof local areas are heavily dependent on forestry and wood processing at between 34% and 46% of income in these communities.

- Dependence on mining and associated manufacturing is relatively low (under 10% of income) in comparison to areas like Fort St. John (33% to 44% of income), Fernie, and Kitimat-Terrace (22% to 32% of income).
- Kamloops' dependence on income associated with tourism is under 7% while that for the Squamish Local Area is between 21% and 30%. The Golden and Invermere local areas is between 14% and 20% (Horne 2009).

The income dependency data for the Kamloops Local Area indicates that the relative weighting between income job categories and the underlying economic diversity it reflects has remained constant during most, if not all, of the 1991 to 2006 period.

2.5.2 Diversity Index

The diversity of local economies can be quantified using a local area's economic dependencies data (i.e., income dependency percentages) to construct a diversity index. The resulting value measures the extent to which a community is dependent on specific sectors, if at all. A value of zero means that the local economy is completely dependent on one sector. A value of 100 denotes equal dependence on all sectors (i.e., economic diversity).

In BC, diversity indices are typically between 50 and 80. The diversity index for the Kamloops Local Area as defined by Horne (2009) was 74, which was within the top ten ranked areas in the Province out of more than 60. In 1996 and 2001, the corresponding figures were 75, 74, and 72 for 1991, 1996, and 2001, respectively. For comparison, the Invermere Local Area ranked highest at 79, while the Stewart Local Area ranked lowest at 51, indicating a relatively low level of economic diversity (Horne 2009).

2.5.3 Interest by Aboriginal Groups in Economic Diversification

The TteS is currently involved in a range of economic activities and is interested in pursuing new business opportunities (TteS 2015a).

The LNIB has an economy that largely reflects the regional economy, which has traditionally hosted forestry, mining, and ranching activities. Mining is no longer as important an economic driver in the region, but members are still employed in ranching and are now also involved in the retail and service sectors (LNIB 2014).

Economic activities have been limited to date, therefore the AIB is working on developing opportunities themselves. They plan to be in talks with All Nations Trust to discuss establishing a contracting arm to use for large economic projects in the area (AIB *pers. comm.* 2014).

According to its website, the WP/CIB is interested in opportunities to diversify its economic base and has potential for growth because of its location, natural attributes, and exposure to high traffic volumes (WP/CIB 2015c). For example, there is strong community support for developing tourism (WP/CIB 2015d).

3.0 SOCIAL ENVIRONMENT

3.1 INFRASTRUCTURE, PUBLIC FACILITIES AND SERVICES

3.1.1 Housing

3.1.1.1 Local Study Area

Table 3-1 shows Housing Structure Characteristics for the Local Study Area (LSA) in 2011. In the LSA, 74.2% of occupied private dwellings were owned, while the remaining 25.6% were rented. Local Study Area rental and ownership rates were similar to the Regional Study Area (RSA). The provincial rental rate was higher than the same rate in the LSA or the RSA at nearly 30%, while the ownership rate was lower, at 70%. Similar rates of repair – both regular repair and major repairs – were required in the LSA, RSA, and the province. The RSA had the greatest percentage of single detached houses, at 62%, and lowest number of apartments or duplexes at 5%. The Province had a greater percentage of apartments or detached duplexes at over 10%, and a lower percentage of single detached houses at about 48%. The dwelling types are in keeping with the fact that the RSA is predominantly rural, compared to the LSA, which is comprised largely of Kamloops, and the Province, which includes metropolitan Vancouver and Victoria. Houses in the RSA tended to be older than those in the LSA or the Province, with only 10.5% constructed in the past decade, while 14% of LSA dwellings were built within ten years of the census, and nearly 17% of dwellings in the province were built in the past decade.

The two First Nations communities in the LSA had higher percentages of homes requiring major repairs than the LSA and BC at 24.6% for the self-identifying Aboriginal population on the Tk'emlúps te Secwépemc (TteS) reserve and 26.8% for the Skeetchestn Indian Band (SIB), while 6.4% and 7.2% of occupied private dwellings in the LSA and BC, respectively, required major repairs.

Table 3-1: Housing Structure Characteristics for the LSA, 2011

Housing Structure Characteristics^{1,2,3,4}	Kamloops	TNRD-J	TteS Non-Ab¹⁰	TteS Ab^{10, 11}	SIB	LSA¹²	RSA¹³	BC
Total number of occupied private dwellings ⁵	35,025	650	780	345	105	36,905	53,375	1,764,630
Average number of rooms per dwelling	6.9	6.6	N/A	6.3	6.1	6.6	6.8	6.2
Owned	25,810 (73.7%)	595 (91.4%)	640 (82.1%)	265 (76.8%)	85 (81%)	27,395 (74.2%)	40,695 (76.2%)	1,234,710 (70%)
Rented	9,210 (26.3%)	55 (8.5%)	145 (18.6%)	40 (11.6%)	10 (9.5%)	9,460 (25.6%)	12,355 (23.1%)	525,000 (29.8%)
Band housing ⁶	0	0	0	35 (10.1%)	0	35	325 (0.6%)	4,925 (0.28%)
Only regular maintenance or minor repairs needed	32,850 (93.8%)	595 (91.5%)	760 (97.4%)	260 (75.4%)	75 (71.4%)	34,540 (93.6%)	49,180 (92.1%)	1,636,870 (92.8%)
Major repairs	2,170 (6.2%)	55 (8.5%)	20 (2.6%)	85 (24.6%)	30 (28.6%)	2,360 (6.4%)	4,195 (7.9%)	127,760 (7.2%)
Total number of occupied private dwellings by structural type of dwelling - 100% Data ⁷	35,020	655	N/A	N/A	105	36,920	53,370	1,764,635
Single-detached house	19,715 (56.3%)	500 (76.3%)	N/A	N/A	85 (80.9%)	20,925 (56.7%)	33,070 (61.9%)	842,120 (47.7%)
Semi-detached house	2,570	15	N/A	N/A	0	2,630	3,095	52,825
Row house	2,990	20	N/A	N/A	0	3,060	3,570	130,365

Housing Structure Characteristics ^{1,2,3,4}	Kamloops	TNRD-J	TteS Non-Ab ¹⁰	TteS Ab ^{10, 11}	SIB	LSA ¹²	RSA ¹³	BC
Apartment, detached duplex	2,495 (7.1%)	10 (1.5%)	N/A	N/A	0	2,505 (6.8%)	2,715 (5%)	184,355 (10.4%)
Apartment, building that has five or more storeys	675	0	N/A	N/A	0	675	680	143,970
Apartment, building that has fewer than five storeys	5,530	0	N/A	N/A	0	5,630	6,610	361,150
Other single-attached house	45	0	N/A	N/A	0	45	125	2885
Movable dwelling ⁸	1005	105	N/A	N/A	10	1,440	3505	46960
Number of private dwellings built during the decade preceding each census year ⁹	4,395 (12.5%)	100 (15.3%)	540	80	0	5,115 (13.9%)	7,150 (10.5%)	292,075 (16.6%)

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. 'Total number of occupied private dwellings', information on home rentals, home ownership, band housing and construction period, is based on a 20% sample for Census years 1991, 2001 and 2006, and a 30% sample for Census year 2011. Information on dwelling structures, (i.e. single detached house, semi-detached house, row house, moveable dwelling and apartment building size) is derived from 100% data for all Census years. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. A private dwelling is an enclosed shelter, protecting the permanent occupant(s) from the elements, with a source of heat or power. The 1991 Census dictionary also stipulates that the dwelling have as source of water. The private dwelling must have its own private entrance or a shared entrance connected directly to the outside or from a common hall, lobby, vestibule or stairway, which does not pass through the occupants' living quarters (Statistics Canada 1992).
6. "For historical and statutory reasons, shelter occupancy on Indian reserves does not lend itself to the usual classification by standard tenure categories [i.e., "owned" and "rented"]. Therefore, in 1991, a special category, "Band Housing", [was] created for [the] 1991 Census" (Statistics Canada 1992).

7. Changes to the 'structural type of dwelling' variable have been made across the Census years. The 2006 Census question was re-worded from 'apartment or flat in a detached duplex' to 'apartment or flat in a duplex', so as to include duplexes attached to other buildings or dwellings. In the 2001 Census, duplexes or flats attached to other buildings or dwellings were classified as 'apartment in a building that has fewer than five storeys.'
8. Moveable dwellings include mobile homes and other movable dwellings such as houseboats and railroad cars.
9. Number of houses built in the last ten years includes: data up to May 10, 2011 for 2011 data set.
10. Data for TteS Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and Ttes aboriginal identity population. Occupied private dwellings by structural type of dwelling for Aboriginal population were not available.
11. Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
12. The LSA is the City of Kamloops, TteS, SIB, and the TNRD-J.
13. The RSA is the TNRD.



For residential property development aimed at TteS members, the TteS is currently moving towards extending the current on-reserve residential subdivision by at least 42 services lots. The Band has received funding to complete some preliminary work, including surveys and a feasibility study. There are plans to apply for additional funding to extend community infrastructure such as roads (TteS 2014). The TteS has a growing wait list for rental units and new homes, but is moving forward on plans to build new single family dwellings through the Canada Mortgage and Housing Corporation (CHMC) program (TteS 2014). The TteS have also recently constructed two additional trailer parks on the primary reserve parcel (D. Aird, *pers. comm.* 2015).

The TteS has had success using the First Nations Market Housing Fund. Evidence of that success is the completion of five new projects in the past 20 months (TteS 2014). The First Nation Market Housing Fund is a national fund to support financing arrangements for housing on-reserve and settlement lands. This fund also has a Capacity Development Program that helps First Nations communities develop capacity to support the administration of market-based housing programs (First Nations Market Housing Fund 2015). The Band plans to continue working on development market housing strategies (TteS 2014).

Additional information about on-reserve housing for the SIB was not readily available as of May 2015.

3.1.1.2 Regional Study Area

Housing structure characteristics among highlighted census subdivisions in the RSA were highly varied, and differed greatly from RSA and the Province, likely due to the small data sets for Ashcroft Indian Band (AIB) and Whispering Pines/Clinton Indian Band (WP/CIB), and the fact that all broken out census subdivisions in the RSA are Indian Reserves. On-reserve housing for the Lower Nicola Indian Band (LNIB), for instance, was 50% privately owned, about 37% rented, and close to 12% band-owned, compared to on-reserve housing for the AIB, which was 100% band-owned. Provincially, about 0.3% of housing is band-owned. All three census subdivisions had high percentages of homes in need of major repairs, in particular those for the WP/CIB. More homes in the three census subdivisions were single detached, compared to homes in the RSA or the Province, with 100% of AIB homes being single detached houses. The LNIB had the highest percentage of dwellings built within the past decade at nearly 20%, while the WP/CIB and the AIB did not have any houses built within the past decade.

As of July 2014, there are currently about 256 homes across four LNIB reserves. Most housing is located in one of three housing developments on the Nicola Mameet 1 Reserve. The subdivisions are Shulus Subdivision, Springs Subdivision, and Rocky Pines Subdivision (LNIB 2014).

The Housing Department for the LNIB manages all housing-related programs, including property management, planning and constructing new homes, and maintaining current housing stock. In addition to these programs, the Housing Department also administers Canadian Mortgage and Housing Corporation projects, and maintains relationships with First Nations Market Housing Fund, and AANDC. The LNIB is currently working with First Nations Market Housing Fund to encourage private home ownership on reserve (LNIB 2014).

While most AIB houses require some level of repair, last year, the AIB replaced the roofs of about five to six houses, purchased appliances for houses, repaired the electrical and plumbing in houses, and helped

cover the cost of firewood for members. There are currently a dozen available housing lots on reserve. (AIB *pers. comm.* 2014).

Table 3-2: Housing Structure Characteristics for the RSA, 2011

Housing Structure Characteristics ^{1,2,3,4}	LNIB ¹⁰	AIB ¹¹	WP/CIB	RSA ¹²	BC
Total number of occupied private dwellings ⁵	215	30	20	53,375	1,764,630
Average number of rooms per dwelling	6.7	5.7	7.0	6.8	6.2
Owned	110 (51%)	0	0	40,695 (76.2%)	1,234,710 (70%)
Rented	80 (37.2%)	0	10 (50%)	12,355 (23.1%)	525,000 (29.8%)
Band housing ⁶	25 (11.6%)	30 (100%)	0	325 (0.6%)	4,925 (0.28%)
Only regular maintenance or minor repairs needed	165 (76.7%)	20 (66.6%)	0	49,180 (92.1%)	1,636,870 (92.8%)
Major repairs	50 (23.2%)	10 (33.3%)	10 (50%)	4,195 (7.9%)	127,760 (7.2%)
Total number of occupied private dwellings by structural type of dwelling - 100% Data ⁷	215	25	20	53,370	1,764,635
Single-detached house	185 (86%)	25 (100%)	15 (75%)	33,070 (61.9%)	842,120 (47.7%)
Semi-detached house	10 (4.7%)	0	5 (25%)	3,095	52,825
Row house	0	0	0	3,570	130,365
Apartment, detached duplex	0	0	0	2,715 (5%)	184,355 (10.4%)
Apartment, building that has five or more storeys	0	0	0	680	143,970

Housing Structure Characteristics ^{1,2,3,4}	LNIB ¹⁰	AIB ¹¹	WP/CIB	RSA ¹²	BC
Apartment, building that has fewer than five storeys	20 (9.3%)	0	0	6,610	361,150
Other single-attached house	0	0	0	125	2885
Movable dwelling ⁸	0	0	0	3505	46960
Number of private dwellings built during the decade preceding each census year ⁹	40 (18.6%)	0	0	7,150 (10.5%)	292,075 (16.6%)

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. 'Total number of occupied private dwellings', information on home rental, home ownership, band housing and construction period, is based on a 20% sample for Census years 1991, 2001 and 2006, and a 30% sample for Census year 2011. Information on dwelling structures, (i.e. single detached house, semi-detached house, row house, moveable dwelling and apartment building size) is derived from 100% data for all Census years. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. A private dwelling is an enclosed shelter, protecting the permanent occupant(s) from the elements, with a source of heat or power. The 1991 Census dictionary also stipulates that the dwelling have as source of water. The private dwelling must have its own private entrance or a shared entrance connected directly to the outside or from a common hall, lobby, vestibule or stairway, which does not pass through the occupants' living quarters (Statistics Canada 1992).
6. "For historical and statutory reasons, shelter occupancy on Indian reserves does not lend itself to the usual classification by standard tenure categories [i.e., "owned" and "rented"]. Therefore, in 1991, a special category, "Band Housing", [was] created for [the] 1991 Census" (Statistics Canada 1992).
7. Changes to the 'structural type of dwelling' variable have been made across the Census years. The 2006 Census question was re-worded from 'apartment or flat in a detached duplex' to 'apartment or flat in a duplex', so as to include duplexes attached to other buildings or dwellings. In the 2001 Census, duplexes or flats attached to other buildings or dwellings were classified as 'apartment in a building that has fewer than five storeys.'
8. Moveable dwellings include mobile homes and other movable dwellings such as houseboats and railroad cars.
9. Number of houses built in the last ten years includes: data up to May 10, 2011 for 2011 data set.
10. Includes data for Nicola Mameet 1 Indian Reserve and Joeyaska 2 Indian Reserve. Data for Hamilton Lake 7 Indian Reserve and Zoht 4 Indian Reserve were suppressed.
11. Includes data for Ashcroft 4 Indian Reserve. Data for 105 Mile Post 2 Indian Reserve were suppressed.
12. The RSA is the TNRD.

3.1.2 Temporary Accommodations

Most of the hotels, motels, and other temporary accommodations such as hostels and bed and breakfasts in the RSA are concentrated in Kamloops. Most of the surrounding towns and villages such as Chase, Ashcroft, Merritt, Lillooet, Barriere, and Clearwater also have a small number of temporary accommodations. There are also many camp and RV sites in the Kamloops area and around the surrounding lakes and rivers. Tourism Kamloops states that there are approximately 3,000 hotel and motel rooms in Kamloops (City of Kamloops 2015b).

According to the Tourism Kamloops site (2015c), there are at least 300 sites in campgrounds and RV parks of various categories (e.g., full hook-up, water and electricity), excluding provincial parks in the area and sites in other communities in the Thompson-Nicola Regional District (TNRD).

3.1.3 Transportation Infrastructure

The Yellowhead Highway (No. 5 Highway) is the primary north-south route in the RSA and the Trans-Canada Highway is the primary east-west route. Many of the larger communities in the RSA are either on or in close proximity of one of these highways.

Kamloops is a major hub for shipping and is located on the Trans-Canada Highway. The major transportation routes through Kamloops include the Trans-Canada running east-west, Provincial Highway No. 5 running north-south (Yellowhead Highway), and the Princeton-Kamloops Highway (No. 5a Highway) running south out of Kamloops. The portion of the Yellowhead Highway that runs south of Kamloops is known as The Coquihalla Highway.

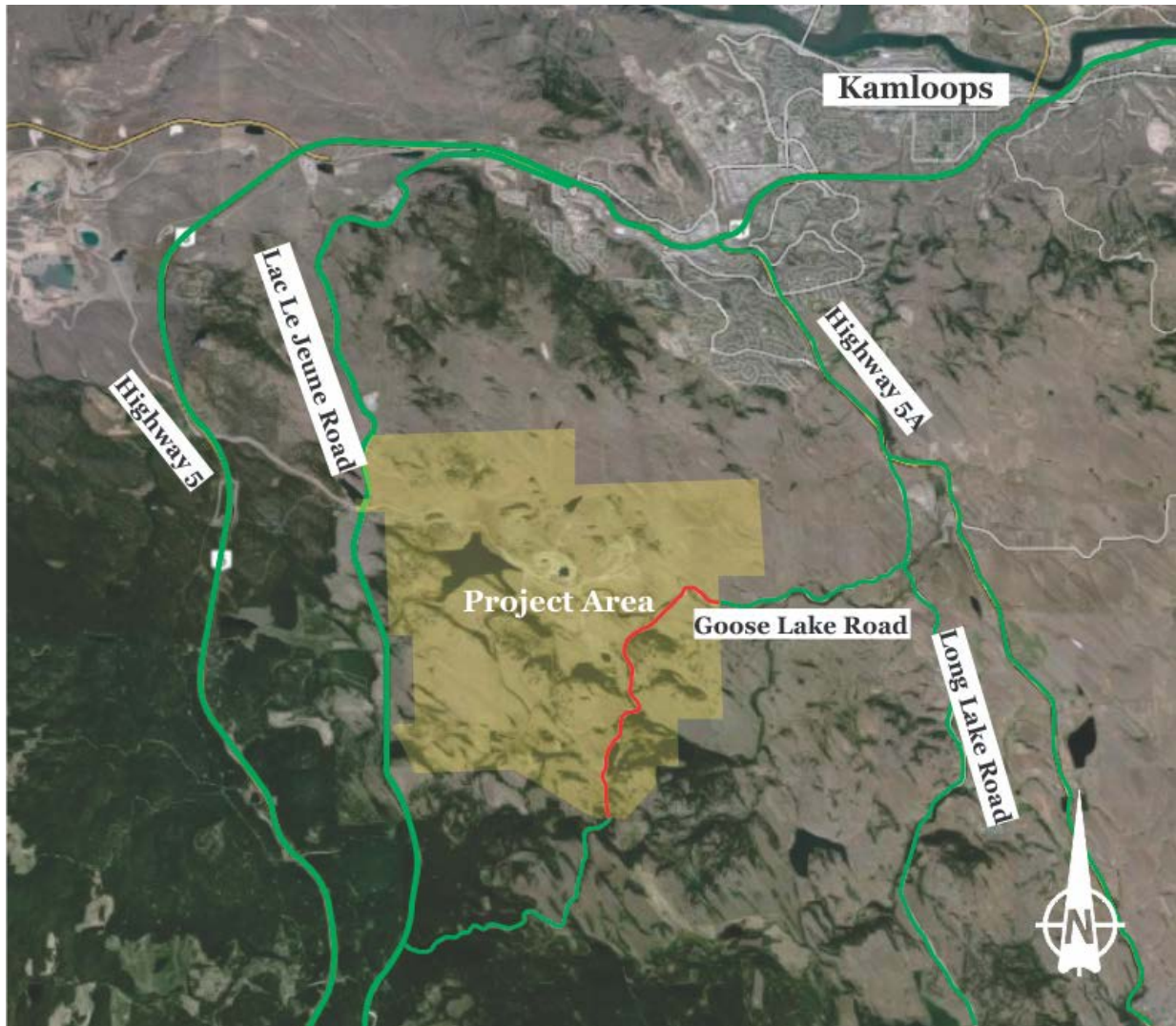
There are several roads to the south of Kamloops that are in the vicinity of the proposed development site. These include the portion of the Yellowhead Highway south of Kamloops, which is known as the Coquihalla Highway; Lac Le Jeune Road, which heads south to Lac Le Jeune; Long Lake Road; Goose Lake Road, which connects the two previous roads; the Princeton-Kamloops Highway, which heads further south (Figure 3-1).

Additional details on the primary roads in the vicinity of the Project include:

- Highway 5 is a provincial highway what is operated and maintained by MoTI. It is part of the National Highway System and part of the principal trans-provincial route. It carries approximately 10,000 vehicles per day in rural sections and up to 46,000 vehicles per day in Kamloops (Opus International 2015).
- Lac Le Jeune Road is a rural arterial two-lane paved public road with no shoulder lines. The road is used primarily by passenger vehicles, and commercial vehicles are limited to the north of road, which is where there is currently industrial development. According to Opus International (2015), average daily traffic in the vicinity of Inks Lake Road is about 825 vehicles per day.
- Goose Lake Road is a rural two-lane road connecting Highway 5a and Lac Le Jeune Road. It is primarily used for recreation and to access agricultural properties. According to a traffic count, the

average daily traffic in the mid-section of Goose Lake Road ranges from 37 vehicles per day on weekdays and 58 vehicles per day on weekends (Opus International 2015).

- Inks Lake Road is a forestry road that is not maintained. It has informal public access (Opus International 2015).
- Jacko Lake Road provides access to Jacko Lake and the boat ramp on the lake from Inks Lake Road and Lac Le Jeune Road via an easement on private property. The road is open from April to October (Opus International 2015).



Source: Opus International 2015.

Figure 3-1: Transportation Infrastructure near the Project

The BC Ministry of Transportation operates permanent and short-term traffic data collection stations throughout the Province. Data from four permanent traffic count stations closest to the potential development site are discussed in this section. Site numbers P21-3NS and C. P-21-3NS are near Ironmask on Route 5, just south of Route 1, which is west of Kamloops. The traffic data show high seasonality with

heavier volumes occurring in the summer months. The general trend shows a decline from summer to winter, and an increase from winter back into summer. The monthly average daily traffic (MADT) ranged from a low of under 6,000 vehicles in January to a high of over 13,000 in August 2010. There were generally greater volumes of traffic on weekends as opposed to week days in the summer months.

Permanent traffic count sites P21-2EW and P-21-4EW are both located on Route 1/97, just west of Route 5 at Afton, which is west of Kamloops. The former is located after the exit to Cache Creek and the latter is located before that exit. The same trend of low winter traffic and high summer traffic is observed at these two locations. The MADT for P-21-2EW ranged from about 4,500 in December to a high of about 6,500 in July and August of 2010. There are no counts for January, February, or March. At P-21-4EW, the MADT ranged from approximately 11,400 in December to a high of over 18,900 in August 2010. P-21-7EW is located on the eastern side of Kamloops. The site is on Route 1, just before the exit to Route 97. The MADT for this site ranged from a January low of about 8,200 to a July high of about 15,500 (BC Ministry of Transportation and Infrastructure n.d.).

Kamloops has a public transit system that connects the City with a network of bus routes. Kamloops has published a Bicycle Master Plan, Intersection Safety Master Plan, Pedestrian Master Plan, Transit Business Plan, and a Transit Plan to deal with other traffic issues (City of Kamloops 2002, 2010a; City of Kamloops and BC Transit 2007; G.D. Hamilton Associated Consulting Ltd. 2005). Traffic volumes in Kamloops are recorded at 98 locations as part of monitoring program implemented by the Traffic Centre, which is responsible for traffic engineering (City of Kamloops 2010b).

Transportation Infrastructure for First Nations

The populated First Nation reserve parcels discussed in the baseline are accessible by road:

- The primary reserve parcel for TteS is north of the Thompson River and east of the North Thompson River and is accessible by Highway 5.
- The reserve for the SIB is located on Deadman Vidette Road, which heads north-south off the Trans-Canada Highway on the north shore of the Thompson River.
- The primary reserve parcel for LNIB, Nicola Mameet 1, is bisected by Highways 8 and 97C (LNIB 2014).
- The main reserve for WP/CIB is accessible by local roads and air (WP/CIB 2015a). It located north of the City of Kamloops and west of Highway 5.

3.1.4 Oil and Gas Infrastructure

3.1.4.1 Trans Mountain Pipeline

The Trans Mountain Pipeline System has been in operation since 1953 and is now operated by Kinder Morgan. The system is 1,150 km in length with a current capacity of 48,000 cubic metres per day (300,000 barrels per day). The system transports crude and refined oil products to the west coast. Refined oil products from the Edmonton terminal are piped to Kamloops for local distribution. Additionally, Kamloops

receives products from northeast British Columbia en route to the west coast. The Kamloops terminal has two storage units with a total holding capacity of 23,000 cubic metres (Kinder Morgan 2012).

Kinder Morgan has reported increasing demands for oil delivery through the Trans Mountain Pipeline, which have exceeded the supply rate of the system for several months in a row. Beginning late in 2011 and continuing into the spring of 2012, the Trans Mountain Pipeline has been overbooked by as much as nearly 70%, rendering the system unable to meet demand ("Trans Mountain" 2012). Due to the inability of the Trans Mountain Pipeline's current capacity to meet the demand, Kinder Morgan filed an application with the National Energy Board for the Trans Mountain Expansion Project in December 2013 and the National Energy Board issued a revised hearing schedule in August 2014, with the Board expected to issue its recommendations to the Federal Cabinet in January 2016 (Kinder Morgan n.d.).

3.1.5 Utilities and Communications

3.1.5.1 Water and Waste Water

City of Kamloops

The majority of water supplied to Kamloops is taken from the South Thompson River. The Campbell Creek subdivision is the only area supplied by wells. The water is pumped from the intake structure to a water treatment plant called the Kamloops Centre for Water Quality, after which it is distributed throughout the City by means of booster stations (Firlotte n.d.). The TNRD operates 11 water systems that serve various communities in the region. The water systems include pump stations, treatment, and distribution systems.

Wastewater disposal in Kamloops is described in the Sustainable Kamloops Plan Information Package on Wastewater. Ninety-five percent of the population of the City of Kamloops, as well as part of the TteS, is served by the community wastewater disposal system. This system includes collection pipes, pump stations, and a wastewater treatment facility. After treatment, the water is drained into the Thompson River and spray irrigated onto a local farm and other lands (City of Kamloops 2010f). The community wastewater disposal system operates under a BC Ministry of Environment permit. The remainder of the City and outlying area that are not served by the community system disposes waste water through means of on-site systems such as septic tanks and disposal fields. An upgrade of the sewage treatment plant was completed in September 2014. The expansion allows for incoming wastewater flows of up to 54,000 m³/day, which is expected to accommodate population growth in Kamloops to 2031 (Venture Kamloops n.d.).

The Tk'emlúps te Secwépemc

The TteS water treatment plant was built in 1998 and went into operation in 1999. It draws its water from the South Thompson River (Bennett n.d.). The water treatment plant continues to provide high-quality water to the community and its staff are engaged in expanding their knowledge base and keeping current with developments in the field through continued course enrolment (TteS 2014). The water treatment plant also provides water to the Sun Rivers development and the Mt. Paul Industrial Park (AMEC FW 2015).

The City of Kamloops wastewater system also provides service to parts of the TteS reserve, Kamloops 1. (Venture Kamloops 2013).

The Skeetchetsn Indian Band

Information on the water and wastewater systems and treatment facilities for the SIB reserve are not publicly available.

The Lower Nicola Indian Band

The community has a domestic water system, wastewater system, and a hydroelectric dam at the northwest corner of the Nicola Mameet 1 reserve parcel (LNIB 2014).

The Ashcroft Indian Band

The community draws its water from wells and has septic fields for wastewater disposal (AIB *pers. comm.* 2014). The AIB has negotiated a deal with the Village of Ashcroft to supply water to homes on-reserve, which will require a 3 km pipe. The AIB is responsible for construction of the pipeline. This system is expected to replace the current well water system (AMEC FW 2015).

The Whispering Pines/Clinton Indian Band

The community draws its water from a reservoir, two community wells, and five private wells. For sewage disposal, the community uses septic tanks (WP/CIB 2015a).

The Thompson-Nicola Regional District

The TNRD operates two sewer systems, one in Pritchard and one in Paul Lake. The TNRD sewer systems consist of collection pipes, pump stations, and disposal systems. Areas in the TNRD not served by sewer systems use on-site disposal systems.

3.1.5.2 Solid Waste Management

City of Kamloops

Kamloops offers garbage collection service and operates two landfills that dispose of solid waste. The two landfills are the Mission Flats Landfill, which is located west of the City Centre, and the Barnhartville Landfill, which is located east of the City Centre. Residents of Kamloops also use the Heffley Creek Eco-Depot, which is operated by the TNRD. The Mission Flats Landfill accepts residential and commercial waste, the Barnhartville Landfill accepts residential waste, and neither of the City-operated landfills accepts industrial waste. The City is currently in the process of updating the design and operation plans for both landfills, which is expected to delay their closure dates. The Mission Flats Landfill is expected to operate until at least 2053, while the Barnhartville Landfill is expected to operate beyond 2020 (Farrow, *pers. comm.* 2015). Industrial, commercial, and industrial waste disposal occurs at the Owl Road landfill, which is privately owned (City of Kamloops 2010h).

The City has two recycling depots and offers associated recycling collection services. There is also a private recycling company in Kamloops with three recycling depots. In addition to these forms of solid waste, the City also has developed a system for dealing with compostable yard waste and has three yard waste depot

locations. Waste diversion programs are doing well in Kamloops as landfill material has decreased over the last three years, while diversion rates have remained the same; however, yard waste tonnage has increased. The City is hoping to implement a residential organic waste collection program and commercial recycling (Farrow, *pers. comm.* 2015).

The Tk'emlúps te Secwépemc

According to the 2009-2010 Annual Report (TteS 2010), the TteS had drawn up a 12-month closure plan for its landfill and was undertaking planning related to waste diversion and alternative waste disposal.

The Planning and Engineering Department offers garbage and recycling collection services (TteS 2014).

The Skeetchestn Indian Band

The SIB was working with the TNRD on the closure of its landfill and has an agreement to use the Savona Transfer Station (TNRD 2015).

The Thompson-Nicola Regional District

The TNRD instated a “pay-as-you-throw” solid waste disposal plan in 2008 that has been applied to the five landfills and 27 transfer stations operated by the District. The government of the TNRD is currently planning to build eco-depots, which will compost biological solid wastes.

3.1.5.3 Electricity

Energy in Kamloops and the surrounding area is distributed by BC Hydro, which supplies power and Fortis BC, which supplies natural gas. BC Hydro supplies power to the TNRD, and Fortis BC supplies natural gas to certain areas within the TNRD but does not cover the entire region. BC Hydro supplies power to the AIB reserve parcel (AIB *pers. comm.* 2014).

3.1.5.4 Communications

All modern forms of communication including telephone, cell phone, fax, and internet are available throughout the RSA in various forms. More rural areas of the region may have poor cell phone or internet availability but these services are available in some form throughout the region. There are also a number of newspapers printed in the region.

All houses on the AIB reserve have high-speed internet. Telus provides both landline and cellular phone services (AIB *pers. comm.* 2014).

3.1.6 Emergency Services

3.1.6.1 Law Enforcement

There are nine RCMP detachments in the RSA, including Ashcroft, Barriere, Chase, Clearwater, Clinton, Kamloops (City, Traffic Service, and T'kemlups Rural branches), Logan Lake, Lytton, and Merritt. The boundaries of the RSA and the boundaries of the RCMP detachment jurisdictions do not overlap in all cases

and there are thus small portions of land near the edge of the RSA boundary that are in the jurisdiction of other detachments such as in the southeast corner, where one sliver of the RSA is in the jurisdiction of the Kelowna RCMP detachment and another is in the jurisdiction of North Okanagan.

Kamloops City Detachment

The largest detachment is in Kamloops with 118 regular members and a support staff of 60 civilians (RCMP 2011; RCMP 2014). The Kamloops detachment of the RCMP provides law enforcement services for the municipality, along with the services it is provincially and federally mandated to provide (Learned, *pers comm.* 2015). It faces the same issues regarding recruiting resources as other law enforcement agencies at the municipal and provincial levels, i.e., the pool of interested and qualified candidates for openings is smaller than the number of officers who will be retiring in the near term. Any positions left vacant because of retirements will need to be filled while additional positions created to address new mandates must also be filled. The current staffing shortage is not expected to improve for the next three years. The detachment is also at capacity in terms of physical space. The building it currently occupies is at capacity, although the City has purchased a new building on the North Shore, which is expected to come online in the next year. Some of the non-essential units could be moved to this location (Learned *pers comm.* 2015).

Call volumes for the City Detachment have seen an increase and are expected to continue to rise. Although call volumes are increasing likely due to population growth, the rates of certain crimes such as violent crime and some categories of property crimes have decreased. There is one area where the detachment has seen an increase in police calls – dealing with individuals with mental health issues. To help, Kamloops has an officer teamed with a mental health case worker who work with offenders with chronic mental health issues (Learned, *pers. comm.* 2015).

Tk'emlups Rural Detachment

The Tk'emlups Rural Detachment polices a large stretch of land, including the TteS, SIB, and WP/CIB reserve parcels, Savona, and Logan Lake. There has been some increase in calls as the population has grown. In addition to the Sun Rivers subdivision, which is located on the TteS reserve, there are also two new trailer parks on-reserve. Currently, the level of staffing is sufficient to meet the needs of the communities. The detachment is staffed by eight provincial members and four First Nations policing officers (D. Aird, *pers. comm.* 2015).

Aboriginal Justice Initiatives

The TteS has an Aboriginal Justice Worker who provides justice-related services to Aboriginal people in the Secwépemc territory, administers the Community Corrections Program for Aboriginal offenders, and supports any TteS justice initiatives (TteS 2014).

Members may also access the Cknúcwentn First Nations Court, which is a provincial sentencing court in Kamloops. It offers an alternative to traditional court processes to participants. Cknúcwentn First Nations Court has been operating since 2013 (TteS 2014).

Ashcroft RCMP Detachment

Among the communities in the RSA, the Ashcroft RCMP Detachment provides services to the AIB (AIB, *pers. comm.* 2014).

Merritt RCMP Detachment

Among the communities in the RSA, the Merritt RCMP Detachment provides police services to the LNIB. The detachment also services the Upper Nicola Indian Band, Coldwater Indian Band, Shackan Indian Band, and Nooaitch Indian Band. The detachment has a four-officer team that works directly with the five First Nations it serves. The detachment has a good working relationship with the current Chief of the LNIB and the Social Services Department (R. Aird, *pers. comm.*, 2015).

The call rate for the detachment has been decreasing over the past seven years. Calls are usually related to drugs, alcohol, and domestic abuse, although the issues of drugs and alcohol are limited. The detachment is currently working on establishing a First Nations court for the area similar to the Cknúcwentn First Nations Court in Kamloops. Overall, the detachment is well resourced (R. Aird, *pers. comm.*, 2015).

3.1.6.2 Fire Protection and Emergency Services

Kamloops Fire Rescue (KFR) services Kamloops with seven fire stations located throughout the City, four of which are staffed and operated by full-time professional fire fighters, one of that is staffed partly by professionals and partly by auxiliary crew, and two of which are staffed by auxiliary crews. There are a minimum of 20 firefighters on-shift at all times. The newest station is located in the Aberdeen neighbourhood. The KFR is organized into four shifts, each with its own assistant chief. Each station has a captain and one station has a lieutenant as well. All shifts and stations work through the Deputy Fire Chief of Suppression operations, who reports to the Fire Chief. The KFR partners with 28 fire departments located within communities throughout the RSA to operate the 911 support facility that provides fire 911 support to the entire RSA. Call volumes have been increasing over the years. Through mid-December 2014, the dispatch centre had responded to over 7,000 incidents: nearly 5,000 medical calls; over 900 fire emergencies, including commercial fire-related responses (i.e., when a fire alarm is activated); close to 600 motor vehicle incidents; over 110 emergency rescue calls; over 60 dangerous goods calls; and 600 miscellaneous calls, which include public service calls, calls about downed power lines, and carbon monoxide responses (McLean *pers. comm.* 2014; City of Kamloops 2010g).

The primary concerns expressed regarding expanding the fire service, if needed, were based on geography. Response time could be a concern depending on the area where the call is located, especially as call volumes have been increasing. Currently, the KFR is able to meet the needs of the community (McLean *pers. comm.* 2014).

The KFR also has its own training facility, which it uses to train its professional and auxiliary staff along with members of outside fire-fighting services, its own service centre for equipment maintenance, and a full-time fire prevention branch that focuses on fire investigations and code compliance (McLean *pers. comm.* 2014).

The British Columbia Ambulance Service provides ambulatory and medical 911 services to Kamloops and the entire RSA. Most of the TRND is in the Kamloops Dispatch Area, which covers the majority of the Province, but the southwest corner of the RSA is in the Cache Creek Dispatch Area.

There is also a volunteer organization called Kamloops Search and Rescue that provides emergency services with staff trained to Provincial Emergency Program standards. The group is sponsored by Kamloops through the Kamloops Emergency Plan and routinely assists the RCMP with search and rescue operations (Kamloops Search and Rescue n.d.).

3.1.6.3 Emergency Plans

The City of Kamloops has an emergency plan that was written in 2001 and is currently being updated (Sutherland, *pers. comm.* 2015). The plan is closely linked to the British Columbia Emergency Response Management System. It includes hazard, risk and vulnerability assessment; pandemic planning; emergency program training and exercises; and plans for setting up emergency operation centres. Kamloops also has an Emergency Operation Centre, which open to respond to a variety of incidents, including floods, interface fires, hazardous material incidents, and police actions. The centre would open to support first responders (e.g., police and fire) if they were overwhelmed by a large-scale event or an event was complex enough to require additional resources. In 2007, Kamloops had a capacity of 98 shelter beds (Social Planning and Research Council of British Columbia 2009).

3.1.6.4 Public Safety Organizations

The City and a group of organizations and individuals form City of Kamloops Community Safety, which works to improve safety in the community. Two Crime Prevention Coordinators and a number of volunteers work with the RCMP to develop and deliver crime prevention and general awareness programs to residents of the City (City of Kamloops n.d.i.). The City's Official Community Plan includes design guidelines to encourage safe developments and buildings (City of Kamloops 2004; Social Planning and Research Council of British Columbia 2009).

3.1.7 Education Facilities and Services

3.1.7.1 Schools in Kamloops and the Thompson-Nicola Regional District

The majority of the RSA is in the jurisdiction of British Columbia Public School District no. 73. The southern-most part of the RSA is in School District no. 58, and the western-most part is in School District no. 74, but these represent a small fraction of the total number of schools in the RSA. The highest concentration of educational facilities is in and around Kamloops. There are 23 elementary schools and 8 secondary schools in Kamloops, including one distance learning program (Board of Education of School District No. 73 2012; Ajax KPI Program 2011-2012, 2014-2015). While there are three to four elementary schools in Kamloops at capacity and two secondary schools near capacity, the school district is not a critical stage regarding capacity. According to the KPI Program, there is unused space in the district, in addition to a range of techniques that could alleviate potential stress on capacity. These techniques include recovering space (e.g., converting computer rooms to classrooms as technology now allows for more mobile computing), bussing, and adding portables.

In terms of enrolment, the schools in Kamloops are under capacity as there are approximately 7,000 FTE students enrolled in the elementary schools and 6,500 FTE students in secondary schools, which has been a steady decline since a peak in 1997. Overall, the schools in Kamloops are in good physical shape, although many of the buildings are aging and were not designed to meet current demands for electricity brought about by the use of computers. The school district is able to maintain the school buildings. With enrolment decreasing, there are no concerns regarding capacity as space is available should there be an influx of students. In addition, attracting staff to Kamloops is generally not an issue (Ajax KPI Program 2011-2012, 2014-2015).

3.1.7.2 First Nations Schools

The Tk'emlúps te Secwépemc

The TteS runs the Sk'elep School of Excellence, which offers grades K through 7 (Kamloops Indian Band Department of Education 2015). Members also attend schools in School District no. 73 (School District no. 73 2012b).

The TteS Education Department has a series of strategic goals for 2014/15, which include a series of goals related to language revitalization, including encouraging members to obtain Early Childhood Education Certificate and language proficiency certificate and creating more opportunities for Secwépemc language use (TteS 2014).

The Skeetchestn Indian Band

The Skeetchestn Community School offers grades K through 12 (SIB n.d.b.). Members also attend schools in School District no. 73 (School District no. 73 2012b).

The Lower Nicola Indian Band

The on-reserve Band School has a full gymnasium, large playing field, library, and a computer lab. A Head Start program and grades K3 to 7 are offered on-reserve. Enrolment in June 2014 was approximately 70 students. The school follows provincial curriculum and offers Scw'exmc curriculum through grade 7. The school also offers language training and field trips for gathering traditional food. The LNIB also has an agreement with School District no. 58 and students in grade 8 through 12 attend Merritt Secondary School. There is an Aboriginal support worker there to help with the transition to public schools (LNIB 2014).

The Education Department also offers a school start-up allowance, career fairs, tutoring, and post-secondary funding (LNIB 2014).

The Ashcroft Indian Band

Ashcroft Indian Band members attend school at either the elementary or high school in the Village of Ashcroft (AMEC FW 2015).

The AIB spends about \$120,000 annually to support members working towards post-secondary certifications and degrees, and many high school graduates go on to pursue further training and education. Thompson Rivers University (TRU) is popular among AIB members (AIB *pers. comm.* 2014).

The Whispering Pines/Clinton Indian Band

A complete picture of school available on-reserve for WP/CIB is not readily available publicly, although members also attend schools in School District no. 73 (School District no. 73 2012b).

3.1.7.3 Post-secondary Education

The largest institution for higher education in Kamloops is Thompson Rivers University. Thompson Rivers University was founded in 1970 as a community college that delivered two-year academic university transfer programs. As the college developed, the first bachelor's degrees were awarded in 1998 and the college was named a fully-fledged university in 2004. The University now offers a wide variety of academic degrees but maintains many trades-oriented programs as well. The trades school at TRU regularly attracts students from as far away as Newfoundland and Labrador. Program numbers and funding are re-adjusted every couple of years based on local, regional, and provincial demand for graduates of different trades programs (Ajax KPI Program 2011-2012).

There are nine universities in British Columbia that offer educational programs that are closely associated with mining such as geology, metallurgical engineering, mineral engineering, geomatics engineering, petroleum engineering, environmental and earth sciences, and mining operations. TRU is located in Kamloops and offers degrees in engineering, geology, and environmental sciences. In addition to these courses of study, TRU offers education in many trades that would be applicable to the mining industry such as electrical, heavy duty mechanics, welding, and carpentry.

In addition to TRU, there are also community colleges in Kamloops. Thompson Career College offers health care-related courses and certifications and the Sprott-Shaw Community College offers courses in business and health care as well.

Future Considerations

According to the 2010-2011 update of an economic impact study conducted by TRU faculty, the total annual economic impact of international students on the Kamloops economy is \$87.8 million, which represents a growth of 214% from 2005. The study calculated that approximately \$49.6 million of the total impact came from direct expenditures (TRU 2011). In addition, TRU is the fifth largest employer in Kamloops with over 1,100 employees (Table 2-17).

3.1.8 Health Facilities and Services

The Interior Health Authority (IHA) is responsible for administering health care services in the RSA, which includes the Kamloops and North Thompson Local Health Authorities (LHAs), and the Thompson Cariboo Shuswap Health Service Delivery Area (HAS). The boundaries of the two LHAs roughly coincide with the boundaries of the RSA. Kamloops is located in the Kamloops LHA (Figure 3-2).

In the LSA, Kamloops has a tertiary level hospital and a Health Centre. The LHA also offers public health, mental health, primary health care, and community care services (IHA 2010a, 2010b). The primary medical facility within the RSA is the Royal Inland Hospital located in Kamloops. The Royal Inland Hospital is a tertiary referral hospital and it offers a wide variety of services including high-level specialty medical care

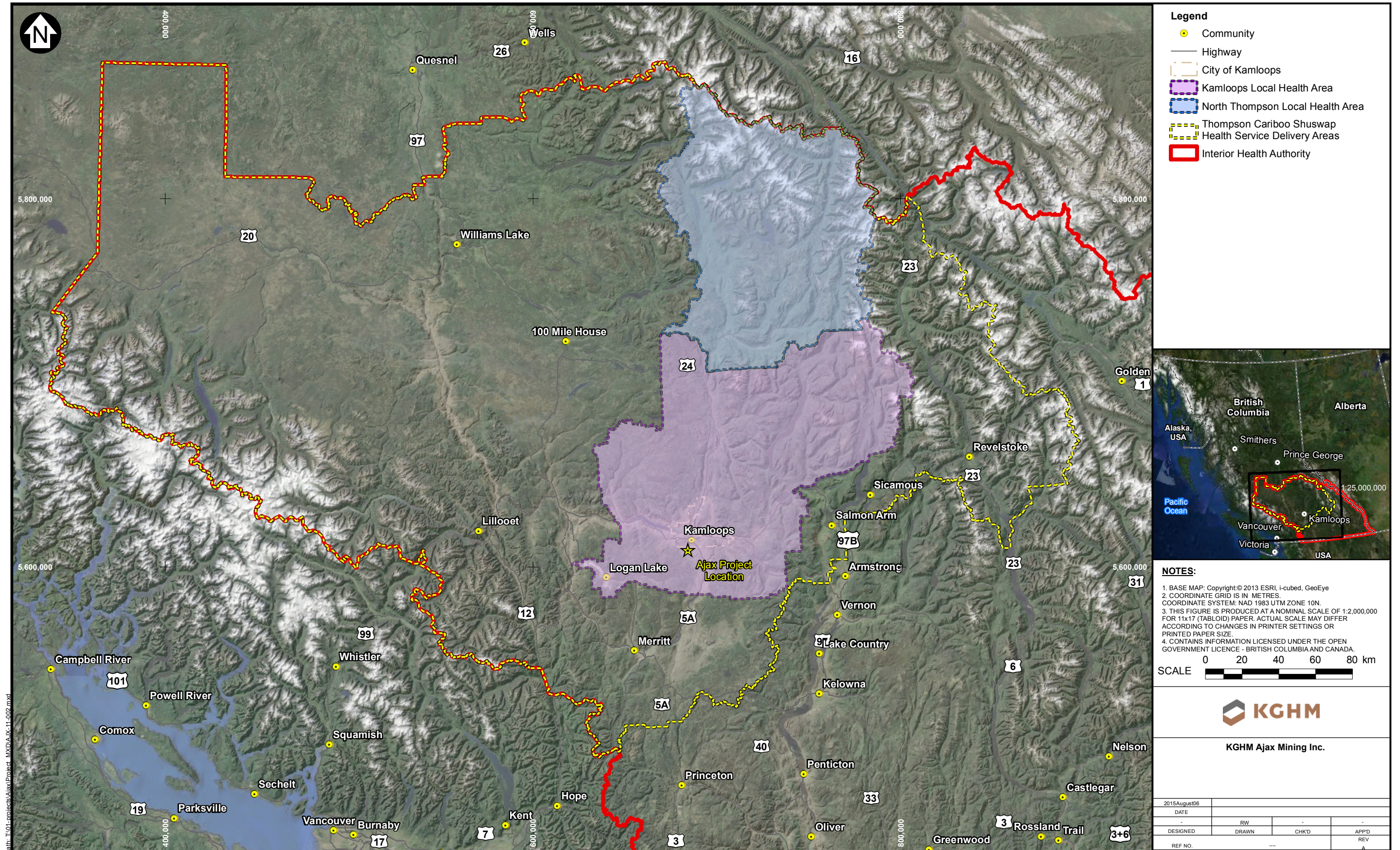
such as nuclear medicine, general surgery, neural surgery, tertiary services for patients with multiple systems failure, and advanced diagnostic systems (IHA 2011a). There are 216 beds in the facility (IHA 2013d). The capacity of the RIH is discussed in Section 4.2.1, Health Service Delivery.

There are Community Health Centres in Merritt, Lytton, Blue River (urgent care hospital), Logan Lake, Chase, Kamloops, and Barriere. Community Health Centres offer a variety of services that vary somewhat but generally include basic laboratory and radiology, urgent care, outpatient ambulatory care, community services pertaining to public health, long-term residential care, and doctor's offices. The Health Centres located in Chase, Logan Lake, and Kamloops are Primary Health Care Centres, which offer a greater variety of services and a higher level of care.

In the RSA, there are hospitals in Ashcroft, Clearwater, and Kamloops. Hospitals are divided into Community, Regional, and Referral hospital categories depending on the level of care and array of services that they provide. Community hospitals generally provide 24-hour emergency services with an on-staff physician, laboratory and radiology, acute care beds, outpatient ambulatory care, low-risk obstetrical care, doctor's offices, and in some cases core physician specialties such as internal medicine and general surgery. Regional hospitals offer those services and also provide a variety of core physician specialties and subspecialties.

For information on healthcare facilities and programming available on-reserve for TteS, SIB, LNIB, AIB, and WP/CIB members, see Section 4.2.2.1.

Figure 3-2
Health Authority Boundaries



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3.1.9 Social Services

There are several British Columbia ministries that offer social services to residents of Kamloops, the TNRD, and on-reserve for SSN communities. The Ministry of Children and Family Development offers a variety of services and programs ranging from child adoption and protection to aboriginal child services to development and mental health programs. The Ministry of Social Development offers a variety of services and programs including employment assistance, income assistance, and assistance for disabled persons. The Ministry of Aboriginal Relations and Reconciliation offers services and programs pertaining to economic and social development of First Nations in addition to dealing with political relationships between the Province and First Nations through treaties, final agreements, consultation, and reconciliation.

3.1.9.1 City of Kamloops

There is a broad base of social services available in Kamloops, similar to the variety that could be found in a major metropolitan centre. In addition, most provincial social service agencies have local offices in Kamloops. Most non-profits in the community are operating at capacity, but the organizations in Kamloops have demonstrated that they have the ability to adapt to new social issues and work well together to avoid duplication of services (Mazzotta, *pers. comm.* 2015).

Social service providers in Kamloops include:

- Interior Community Services is a multi-service organization that offers numerous programs across 32 communities (Interior Community Services 2015). In Kamloops, they offer residential services, housing, prenatal services, and good food organizations, which include community gardens and kitchens (Ajax KPI Program 2011-2012, 2014-15).
- ASK Wellness Society provides a range of services targeting marginalized and at-risk members of the community. These programs include a variety of supported, semi-supported, and non-supported housing units; medical supports, including harm reduction supplies; adult and youth STD and harm reduction education; assisting sex-trade workers in exiting and maintaining their exit; and community integration for adults with developmental disabilities and mental illness (ASK Wellness Society 2012).
- Phoenix Centre is the popular name for the Kamloops Society for Alcohol and Drug Services, which serves up to 10,000 people annually in withdrawal management programs. The Centre provides continued support and programs after the detoxification portion of treatment is completed (Phoenix Centre 2015).
- Interior Indian Friendship Society provides programs and services for urban Aboriginal persons in and around Kamloops (Interior Indian Friendship Society 2011a). Among the programs and services provided are an Elders' Program that is aimed at delivering social and recreational activities to Elders; Healthy Beginnings, which targets families with children six years old and younger, expectant mothers and fathers who live off-reserve; and family counselling.

3.1.9.2 The Tk'emlúps te Secwépemc

Among the social services provided to TteS members are:

- A drug and alcohol counsellor who can provide members with individual counselling, referrals, and help coordinating health and social assistance benefits;
- Elders are alerted to potential programs they may be eligible for upon turning 60. Other Elder-related programs include the distribution of Elders Heat and Seed Allowances and an Elders Retreat;
- The Home Visitor service provides transportation to members to medical appointments, the food bank, and other essential services; and
- In Home Support helps connect TteS families with resources and assists them as they work with Secwépemc Child and Family Services (TteS 2014).

3.1.9.3 The Lower Nicola Indian Band

The LNIB offers a range of wellness and social development programs. These programs include but are not limited to:

- Community nutrition;
- Alcohol and drug abuse counselling;
- Good Food Bag;
- Community Soup Kitchen Parents and Babes;
- Brighter Futures;
- Sober Living Group;
- Income assistance;
- House care; and
- Elders' programs (LNIB 2014).

The five Nicola Bands have also come together to establish the Scw'exmx Child and Family Services Society to facilitate opportunities for children, families, and communities. The Society delivers the following programs: child protection, guardianship, resources, and community engagement, feel the beat, family preservation, youth and family support, and kinship care (LNIB 2014).

3.1.9.4 The Ashcroft Indian Band

The AIB renovated its community centre with funding provided by Aboriginal Affairs and Northern Development Canada (AANDC). The centre currently has the capacity to serve as a centre for social, health, and fitness in the community (AMEC FW 2015).

3.1.10 Recreation Facilities and Services

3.1.10.1 Local Study Area

City of Kamloops

Urban Recreational Spaces

Kamloops residents have the option of pursuing a wide variety of recreational activities. The recreational opportunities are so numerous and varied that the City regularly attracts new residents on the basis of the lifestyle that one can live in Kamloops (Ajax KPI Program 2011-2012).

In the last decade, the City has branded itself as the “Tournament Capital” and has built numerous sporting facilities, which attract athletes of various skill levels. The economic impact of hosting tournaments in the City was \$11 million in 2011. With numerous facilities built and goals realized, the recent emphasis in City planning has been towards developing parks, trails, and bike routes that enable informal, individual recreation (Ajax KPI Program 2011-2012).

An example of the activities available include numerous leagues and clubs for baseball, softball, soccer, swimming, tennis, rugby, and various other sports.

Municipal Sports Facilities

Kamloops has five ice rinks, including the Interior Savings Centre, where the Kamloops Blazers, the City's Western Hockey League team plays, and the MacArthur Island Sports and Events Centre, which has an Olympic arena and a curling rink. City rinks offer public skating in addition to ice time for minor hockey, figure skating and other ice sport clubs in the City. The Interior Savings Centre is also a forum for concerts, shows and conventions, as it seats 5,150 and has meeting rooms and media centres available.

The Tournament Capital Centre is another large sports facility in the City. It has an Olympic size pool, a track and field centre, and a gymnastics centre. Indoor swimming pools are also located at the Canada Games Aquatic Centre, the Westsyde Community Pool, the Brocklehurst Pool, the McDonald Park Pool, and the Kamloops YMCA/YWCA. There are outdoor swimming pools in the City as well.

As part of Kamloops' focus on promoting, attracting, and hosting tournaments, the City has invested in multi-sport outdoor venues. Hillside Stadium at the Tournament Capital Centre has a FIFA-certified astro turf field for soccer, lacrosse, field hockey, and football, as well as a track and field centre with jumping and throwing areas, two grass fields and a 400 metre, eight-lane outdoor track. The venue seats 1,800 in bleachers and has a public address system and a media booth. The MacArthur Island Sports Fields can accommodate all ages and league levels with 12 baseball diamonds and 9 soccer fields, plus one mini field.

Norbrock Stadium at MacArthur Island is a baseball field with seating for 1,000. Exhibition Park has four full-size baseball diamonds, two of which have seating, lighting, and media capacity. Exhibition Park also has a soccer field and three tennis courts. The Tournament Capital Ranch, recently opened in June 2011, has 12 additional slo-pitch fields and two internationally certified rugby fields.

Municipal Parks

There are a variety of parks in Kamloops offering different types of activities (see Figure 3-3 and Figure 3-4). Two of the largest open space parks are Kenna Cartwright Park (approximately 800 hectares) located in southwest Kamloops at Mt. Dufferin, and Petersen Creek Park (423 hectares). Peterson Creek Nature Park is located less than 500 metres from City Centre, south of the RIH between Columbia Street and Highway 5a. The Park extends southward roughly 1.75 km from the Trans-Canada Highway at the eastern edge of Sahali. The Park is comprised of 423 hectares of conserved space with over 30 km of trails, which are primarily used for hiking and other day use activities, such as picnicking. Park trail maps are available from the City of Kamloops Parks, Recreation, and Cultural Services Department. Both parks offer easy walking trails and more challenging hiking trails in undeveloped terrain. Hikers at Petersen Creek Park can walk into Bridal Veil Falls, and hikers at Kenna Cartwright Park will find a view of the Thompson Valley and Kamloops Lake.

Kenna Cartwright Park was voted in an online poll as the most popular park in the City (Catherine Berris Associates Inc. 2012). The park is popular for runners, hikers, mountain bikers and dog walkers. A mountain pine beetle infestation in 2007 killed many of the trees, leaving the park denuded. The blight was upsetting too many of the City's residents and the park was recently featured in a photography exhibit by a local artist (Ajax KPI program 2011-2012). Among the groups who use the park are the Ridge Runners Group, Outdoors Club, and Dirty Feet Group. Usage of the park has been increasing, and the City has been trying to find the balance between preserving Kenna Cartwright Park as a nature park and the growing pressure from the public to use the park (Andersen et al., *pers. comm.*, 2014).

Petersen Creek Park is also popular and can serve as a transportation corridor to the downtown for people living in Sahali. Residents are known to commute to work on a mountain bike or on foot, and the travel time can be faster than driving (Ajax KPI program 2011-2012).

The Kamloops Bike Ranch, a city park, offers 26 hectares of gullies, bluffs, and grasslands for mountain biking. The Kamloops Bike Ranch is situated between the Valleyview and Juniper Ridge neighbourhoods. According to municipal representatives, the City has developed the bike ranch as far as possible. The bike ranch is now managed by the crew of the Kamloops Performance Cycling Centre, with the City providing funding (Andersen et al., *pers comm.* 2014; Kamloops Bike Riders Association n.d.). Usage of the bike ranch has been increasing, especially as the Kamloops Bike Riders Association and taken over stewardship and promotion of the ranch (Andersen et al., *pers comm.* 2014).

Riverside Park, located downtown on the south shore of the Thompson River near the Interior Savings Centre, is a destination for residents of all ages. Riverside Park has a beach, a water park for children, tennis courts and lawn bowling, and two gardens. There is a band shell in the park as well, which hosts various concerts. It is a popular gathering place for residents to swim, picnic, as well as participate in and attend events.

Municipal Parks, Green Spaces and Trails Planning

In 2012, the City issued the Draft Parks Master Plan. Information on residents' values and concerns were collected through an online poll, and the plan was subject to a public commentary period. The top findings in the poll included interest in dog-related activities, an aging population, a growing population in the southwest sector, an interest in urban agriculture and alternative transportation, and an interest in mountain biking opportunities (Catherine Berris Associates Inc. 2012). Long boarding has also emerged as an interest among city residents, primarily teenage boys. The sport involves boarding down hills on an elongated skateboard. (Ajax KPI program 2011-2012). Longboard Park opened in fall 2014 and is located at the top of Pacific Way near the elementary school (Tourism Kamloops 2015b).

Parks planning is linked to numerous other planning endeavours, including transportation planning, trails planning, and urban gardening. Residents of Kamloops value the connectivity that the trail system provides and the City continues to plan links between parks, trails and natural corridors. Planning is a challenging endeavour as the topography is varied from arid, flat river valley to steep, treed ravines, to highland grasslands. Parks are sited to protect natural features of the local environment, such as silt cliffs, grasslands, forests, rivers, and wetlands.

Urban gardening is a growing interest in the City. There are 18 community gardens in Kamloops (Kamloops Food Policy Council 2012), and there are currently no available plots (see Food Security and Community Gardening). The concept of public produce is also becoming popular. Public produce is the planting of edible plants in parks and other public spaces which is available for public consumption. They could be indigenous plants as well, like berries (Ajax KPI Program 2011-2012).

Figure 3-3
Kamloops City Parks and Recreational Facilities

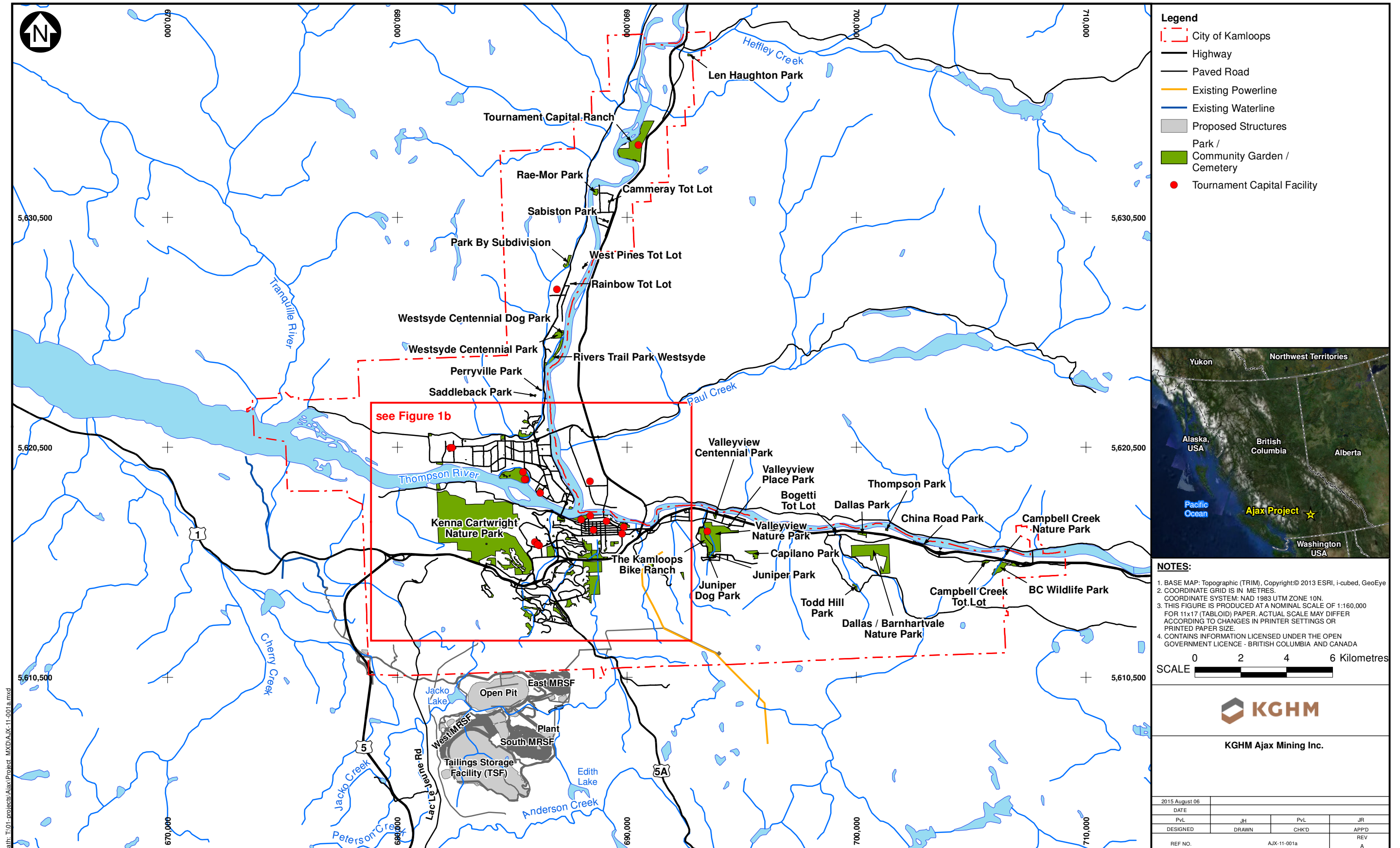
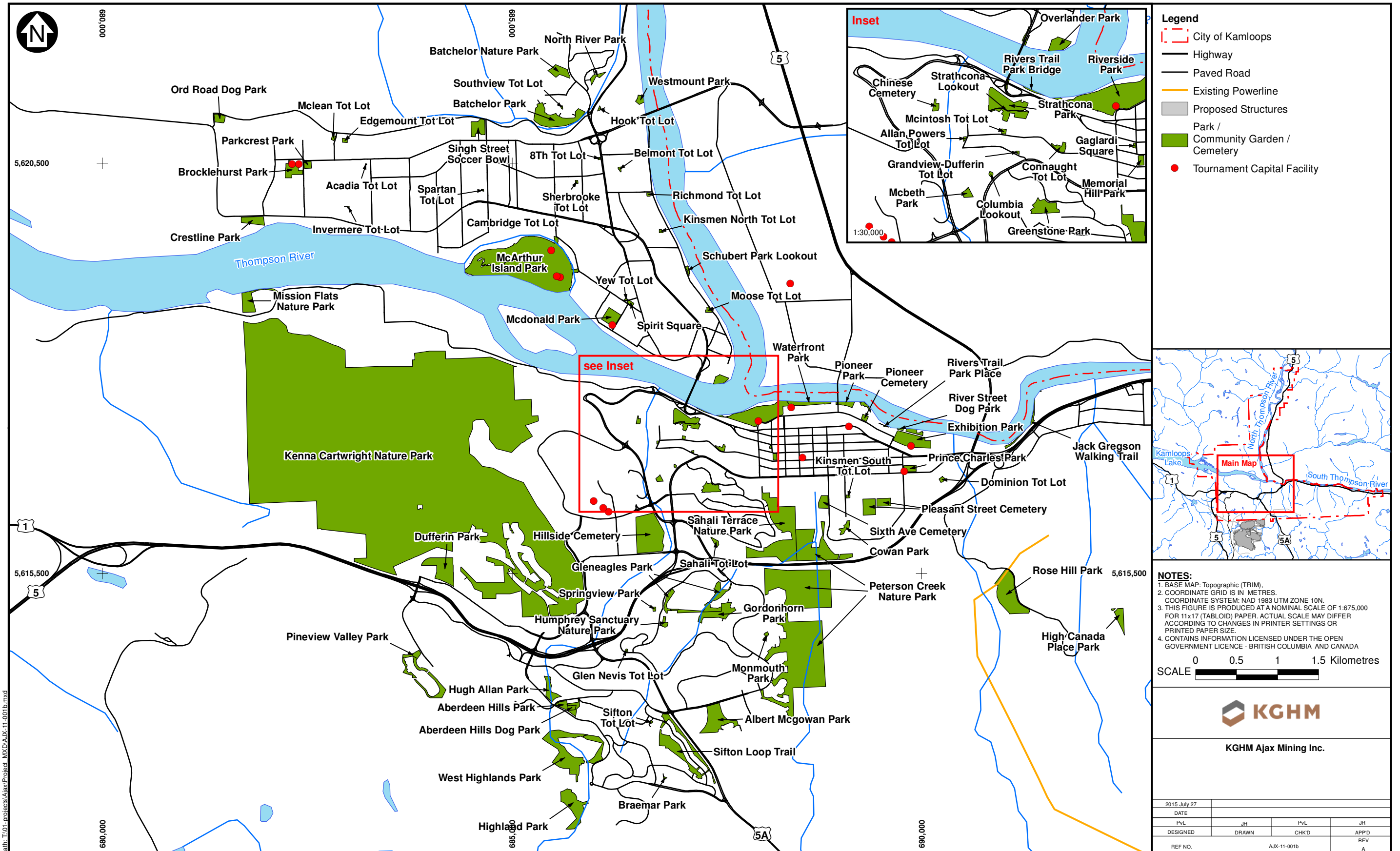


Figure 3-4
Kamloops City Parks and Recreational Facilities Detail



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Recreation Promotion

Kamloops supports a number of organizations and activities aimed at promoting recreation. Affordable Recreation for Community Health (ARCH) is a subsidy program for residents with limited incomes to participate in a variety of recreational activities (City of Kamloops n.d.e.).

School Division 73 also has See It, Try It, Do It Afternoons that help students gain exposure and experience in activities to which they may not have previously had access. The municipality also has a program called Affordable Recreation for Community Health in place to encourage lower-income residents to access the recreation and fitness opportunities in the City (City of Kamloops n.d.a).

Golf

Kamloops is well known for its golf courses and golfing is the number one tourist draw in the area (Ajax KPI Program 2011-2012). There are 13 golf courses in the City and area, including the Tobiano, Sun Rivers, The Dunes, Rivershore Golf Links, Kamloops Golf and Country Club, and Eagle Point.

Municipal Arts and Culture

Kamloops has numerous art galleries, theatres, museums, historic sites, and other venues for residents and visitors to learn from and experience arts and heritage (Tourism Kamloops 2012). The City developed a strategy for arts, culture and heritage.

The Kamloops Cultural Strategic Plan 2003 is a collaboration between the Kamloops Arts Commission and the Kamloops Heritage Commission. The Cultural Strategic Plan notes "It is our mission to enrich the lives of Kamloops citizens through cultural experience, expression and participation and to support the growth and development of our arts and heritage sector as a vital part of our community's economic, educational and social fabric" (Jantzen and Associates 2003). The Plan has a ten-year planning horizon and identifies five key strategy areas and supporting recommendations. The strategies are 1) a focus on commemorating and preserving heritage, which includes developing policy on heritage interpretation and promoting heritage walks and events; 2) cultural preservation and development, which includes encouraging businesses to display works of local artists, outdoor theatre, coordination with First Nations, support for youth arts and public arts programs; 3) marketing cultural tourism and economic development, which includes working with Venture Kamloops to revitalize the downtown; and 4) Improve cultural infrastructure, which includes constructing a Kamloops Arts and Heritage Centre with:

- 1,000 seat performance facility able to accommodate theatre, music and dance;
- Community art gallery and studio space;
- Arts and crafts, potter's and weaver's space;
- Arts education and programming space;
- Storage;
- Box office;

- Rehearsal space;
- Shared office space for arts organizations, including resident arts;
- Heritage companies; and
- Shared board room (Jantzen and Associates 2003).

The proposed Arts and Heritage Centre has not been constructed as of 2014. The idea of the centre was mentioned in key person interviews as a feature that many residents would like to see built; however, the fifth strategy outlined in the Cultural Strategic Plan is building a learning community through culture and education, which includes promoting linkages between the educational institutions in the City, and the cultural and heritage institutions (Jantzen and Associates 2003).

Art Galleries

The Kamloops Art Gallery, situated on Victoria Street in the same building that houses TNRD offices and the main branch of the TNRD library, is the premier art gallery in the City. The Kamloops Art Gallery has a comprehensive permanent collection and curates and tours exhibitions, in addition to showcasing local and regional artists. Other galleries in Kamloops include:

- Arnica;
- The Art of Collaboration Studio & Gallery;
- The Hampton Gallery;
- Kamloops Arts Council Main Gallery;
- Kamloops Arts Council Extension Gallery;
- Kamloops Arts Council Wilson House Gallery;
- The Kamloops Courthouse Gallery;
- The Art We Are Gallery;
- The Bunkhouse Art Gallery; and
- Rivers Gallery.

Theatre and Symphony

The Western Canada Theatre Company stages numerous plays throughout the year at the Sagebrush Theatre and the Pavilion Theatre, which are the two main theatres in the City. The Western Canada Theatre Company has partnered with the TteS on an award-winning production and the Kamloops Symphony on the production of a Broadway musical (Tourism Kamloops 2012). Project X Theatre Productions is another local theatre company. Project X has staged numerous outdoor plays and plays in unusual spaces with a

mandate that includes “exploring non-traditional venues and forms of theatre” (Project X Theatre Productions 2012).

The Kamloops Symphony performs orchestral music in the City with performances from September through May.

Heritage Sites and Museums

The Kamloops Museum and Archives is open weekdays with admission by donation. The museum has permanent collections on display and also produces and curates exhibitions on topics of local cultural and historical significance.

The Tk'emlúps te Secwépemc

The TteS has a Youth, Sports, and Recreation Team, which provides a variety of services. It coordinates the First Nations Snowboard Team, organizes day camps for TteS youth, arranges fitness classes for members, and liaises with organizations to ensure that members have access to regional events and clubs (TteS 2015d).

Arts and Culture

The Secwépemc Museum and Heritage Park features an archaeological site where a 2,000-year old Secwépemc winter village site was uncovered. Outdoor exhibits include four reconstructed winter pit houses and a summer village, as well as traditional fishing, hunting and gathering implements and materials. There is also an ethno botanical garden on the grounds of the heritage site. The Museum houses and presents oral histories, historical photographs, and artifacts of the Secwépemc people (Secwépemc Cultural Education Society 2007).

The Kamloopa Powwow occurs at the TteS Powwow grounds and is one of the largest powwows in western Canada (Tourism Kamloops 2015c).

3.1.10.2 Regional Study Area

The Lower Nicola Indian Band

The Shulus Arena, which is BC's only First Nation band-owned and operated arena is located on-reserve. The Band also offers hockey and lacrosse programs during the winter (LNIB 2014).

Recreation services primarily target children and youth and is organized out of the Health Office. The LNIB offers a full range of summer recreation programs for children and youth. The community also offers a Summer Day Camp that focuses on Scw'exmc culture. A member of the Merritt RCMP detachment organizes an overnight canoe trip for youth 12 years' of age and up and the Scw'exmx Child and Family Services organizes recreation programs during the summer (LNIB 2014).

The Shulus Arbor is also located in the community. It is a multi-purpose, outdoor event space that was built in 1996/97. It houses events such as weddings and powwows. The building currently requires repairs (LNIB 2014).

The community also has a hall, Shulus Hall. It was built in 1962 and hosts events from community workshops to family events. It is in need of upgrades and repair (LNIB 2014).

The Ashcroft Indian Band

The AIB covers half the costs associated with recreation, including fees and equipment and will cover hotel rooms for members participating in sporting tournaments (AIB *pers. comm.* 2014).

The Whispering Pines/Clinton Indian Band

The WP/CIB Sports and Recreation Centre is on approximately 200 acres of land and has a range of facilities, which include rodeo grounds, 4x4 race track, and motor-cross track, which is maintained in partnership with the Greater Kamloops Motor Cross Association. The site also has camping and RV grounds. In the future, there are plans to add an additional playground, stables, a Tipi Village, and multi-purpose rink (WP/CIB 2015e).

3.1.11 Municipal, Aboriginal, and Regional Government

3.1.11.1 Municipal Government

The City of Kamloops has a mayor, eight councillors, and five school trustees. Officials are chosen through public election and elected officials serve a four-year term. The most recent elections were held in 2014.

Table 3-3: Elected Officials for City of Kamloops

Name	Position
Peter Milobar	Mayor
Donovan Cavers	Councillor
Dieter Dudy	Councillor
Ken Christian	Councillor
Tina Lange	Councillor
Arjun Singh	Councillor
Marg Spina	Councillor
Pat Wallace	Councillor
Denis Walsh	Councillor
Joan Cowden	School Trustee
Kathleen Karpuk	School Trustee
Joe Small	School Trustee
Gerald Kenyon Watson	School Trustee
Meghan Wade	School Trustee

Source: City of Kamloops 2014.

3.1.11.2 Aboriginal Government

Stk'emplupsemc te Secwépemc Nation

According to the Cultural Heritage Study (Ignace 2014), the current governance structure of the TteS and SIB, which together comprise SSN, which divides nations into bands, is alien to the traditional governance structure of the Secwépemc Nation. The Memorial to Sir Wilfrid Laurier from 1910 stresses the Aboriginal concept of nationhood, which entailed recognized external boundaries and common land tenure. Through collective land tenure, rights to resources were not limited to local communities or bands as First Nations are administratively organized through the *Indian Act* (1867), rather, all members of the nation (by blood or descent) had access to resources. Local chiefs acted as resource stewards, along with appointed resource stewards called *yucwmíñma* (ES) or *yucwmíñmen* (WS) over areas where they lived and tended to hunt, fish, gather plants, and trap.

Currently, in accordance with the political divisions recognized by the federal government, the TteS has a Chief and seven councillors, while the SIB has a Chief and five councillors. Both Chief and Councils are presented below in Table 3-4 and Table 3-5. The TteS Chief and Council serves three-year terms. The last election was in November 2012 (Shuswap Nation Tribal Council 2015a). The SIB Chief and Council serves two-year terms. The last election was in December 2014 (Shuswap Nation Tribal Council 2015b).

Table 3-4: Chief and Council for the Tk'emlúps te Secwépemc

Title	Name
Chief	Shane Gottfriedson
Councillor	Rosanne Casmir
Councillor	Katy Gottfriedson
Councillor	Ed Jensen
Councillor	Jeanette Jules
Councillor	Richard Jules
Councillor	Colleen Mosterd-McLean
Councillor	Fred Seymor

Source: Shuswap Nation Tribal Council 2015a.

Table 3-5: Chief and Council for the Skeetchestn Indian Band

Title	Name
Chief	Ron Ignace
Councillor	Terry Deneault
Councillor	Darrel Draney
Councillor	Eddy Jules
Councillor	Marshall Gonzales
Councillor	Gabe Jules

Source: Shuswap Nation Tribal Council 2015b.

The Lower Nicola Indian Band

The LNIB adopted a Custom Election Policy in the 1980s. Under the election policy, members elect Chief and Council (one councillor for every 100 members but no less than two and no more than seven councillors) for three-year terms (LNIB 2014).

Table 3-6: Chief and Council for the Lower Nicola Indian Band

Title	Name
Chief	Aaron Sam
Councillor	Robert Sterling, Jr.
Councillor	Arthur Dick
Councillor	Clyde Sam
Councillor	Molly Toodlican
Councillor	Nicholas Peterson
Councillor	Harold Joe
Councillor	Clarence Basil, Jr.

Source: LNIB 2015.

The Ashcroft Indian Band

Chief and Council for the AIB serve two-year terms. The most recent election was in November 2014 (AANDC 2015a). The current leadership for AIB is:

- Greg Blain – Chief;
- Earl Blain – Councillor; and
- Dennis Pittman Councillor (British Columbia Assembly of First Nations 2014).

The Whispering Pines/Clinton Indian Band

Chief and Council for the WP/CIB serve two-year terms. The most recent election was in February 2014 (AANDC 2015b). The current leadership for the WP/CIB is:

- Mike LeBourdais – Chief;
- Ed LeBourdais – Councillor; and
- Jack Bones – Councillor (Shuswap Nation Tribal Council 2015c).

Métis Nation BC

Métis Nation BC is governed by the following bodies: Board of Directors, Regional Governance Council, Métis Women of BC, Métis Youth of BC, Métis Veterans of BC, and BC Métis Assembly of Natural Resources (MNBC 2015a). Métis Nation BC is recognized by the provincial and federal governments as the official governing organization for Métis people in BC. As such it represents the interests of approximately 70,000 Métis in the Province, over 10,000 of whom are registered citizens with MNBC (MNBC 2015a). Table 3-7 presents the members of the current Board of Directors and their portfolios.

Table 3-7: Board of Directors for Métis Nation British Columbia

Name	Title
Bruce Dumont	President Minister of Natural Resources National Minister of Health National Minister of Culture, Heritage, and Language
Annette Maurice	Vice President Minister of Health Minister of Justice
Clara Morin-Dal Col	Provincial Chair for Métis Women BC Minister of Métis Women Minister for Employment and Training (ASETS)
Kate Elliott	Provincial Chair of Métis Youth BC Minister of Youth Minister of Sport
Lissa Smith, BSW	Regional Director – Vancouver Island and Powell River Minister of Veterans Métis Rights Panel
Glen Ohs	Regional Director – Lower Mainland Mainland Minister of Economic Development

Name	Title
Daniel Pitman	Regional Director – Thompson and Okanagan Minister of Children and Families Senate Liaison
Brenda Nome	Regional Director – North Central Minister of Culture, Heritage, and Language Minister of Elders
Marilynn Taylor	Regional Director – Kootenays Minister of Citizenship and Central Registry
Susie Hooper	Regional Director – Northwest Minister of Education
Vacant	Interim Regional Director – Northeast

Source: MNBC 2015c.

3.1.11.3 Regional Government

The TNRD incorporates 11 municipalities including Ashcroft, Barriere, Cache Creek, Chase, Clearwater, Clinton, Kamloops, Logan Lake, Lytton, Merritt, and Sun Peaks. The TNRD is divided into ten electoral areas with a total of 25 board members including the chair representing entire electoral areas in some cases, and specific towns or villages within electoral areas in others (Thompson Nicola Regional District 2010).

Table 3-8: Board of Directors for the Thompson-Nicola Regional District

Name	Area	Name	Area
P.A.J. (John) Ranta (Chair)	Cache Creek	Jesosa Lightfoot	Lytton (Mayor)
Jack Jeyes	Ashcroft (Mayor)	Neil Menard	Merritt (Mayor)
Virginia Smith	Barriere (Mayor)	Al Raine	Sun Peaks (Mayor)
Rick Berrigan	Chase (Mayor)	Carol Schaffer	Area A (Wells Gray Country)
John Harwood	Clearwater (Mayor)	Willow Macdonald (Vice Chair)	Area B (Thompson Headwaters)
Jim Rivett	Clinton (Mayor)	S. (Sally) Watson	Area E (Bonaparte Plateau)
Peter Milobar	Kamloops (Mayor)	Steven Rice	Area I (Blue Sky Country)
Ken Christian	Kamloops	R.H. (Ronaye) Elliott	Area J (Copper Desert Country)
Tina Lange	Kamloops	Ken Gillis	Area L (Grasslands)

Name	Area	Name	Area
Arjun Singh	Kamloops	Randy Murray	Area M (Beautiful Nicola Valley – North)
Marg Spina	Kamloops	H.S. (Herb) Graham	Area N (Beautiful Nicola Valley – South)
P.A. (Patricia) Wallace	Kamloops	Bill Kershaw	Area A (Lower North Thompson)
Robin Smith	Logan Lake (Mayor)	Mel Rothenburger	Area P (Rivers and the Peaks)

Source: TNRD n.d.

3.2 LAND AND RESOURCE USE

3.2.1 Land Use Planning

The City of Kamloops and the TNRD have undertaken extensive planning processes over the past few decades. In general, the City of Kamloops planning documents are focused on municipal growth including infrastructure upgrades required for various population thresholds, while the TNRD plans are geared towards overall land and resource use in the region. Numerous municipal and regional plans were reviewed to determine whether there was any potential overlap between each plan and Project activities. In addition to this, the Province's Kamloops Land and Resource Management Plan and *Agricultural Land Commission Act* and associated Agricultural Land Reserve were reviewed. The Kamloops Land and Resource Management Plan outlines a framework to provide for land and resources use that accommodates multiple interests in the area; it acts as a guidance document for other planning initiatives in the area. The Agricultural Land Reserve is a zone intended to promote farming in certain areas of the Province. The following section begins by describing the Kamloops Land and Resources Management Plan and Agricultural Land Reserve, followed by key plans developed by the TNRD and plans developed by the City of Kamloops. The plans discussed below include ones that may not necessarily overlap spatially with Project infrastructure and activities. They are intended to give a more comprehensive overview of planning in Kamloops and the TNRD.

3.2.1.1 Kamloops Land and Resource Management Plan

The Kamloops Land and Resource Management Plan (KLRMP) is a sub-regional land use plan covering 2.2 million hectares of south-central British Columbia. It is the result of a two-year shared decision-making process that involved roughly 40 public and government representatives (BC Ministry of Forests, Lands and Natural Resource Operations 1995).

The Land and Resource Management Plan lays out six goals that provided the framework within which the plan was developed. The goals are as follows:

- A balanced use of the land and resources that respects and accommodates all interests;
- Protection and security of the land and resources for future generations;
- Sustainable resource management practices that recognize the biological and physical limitations of the land and resources, and provide the highest and best values from these resources;
- Compatibility with natural watershed processes and respect for the intrinsic value of nature;
- Social and economic stability and vitality of local communities; and
- Communication, education, and awareness of all values, including those of Aboriginal peoples (BC Ministry of Forests, Lands and Natural Resource Operations 1995).

Resource management zones and divisions within the KLRMP area represent distinct resource values or areas where specific resource management strategies will be applied. Objectives for each resource management zone identify primary uses or values for the zone, while management strategies provide broad strategic direction for achieving the intended objectives. All local level plans are to take strategic direction from the KLRMP and may in turn provide valuable feedback to the monitoring and amendment process. It designates six Resource Management Zone categories: General Resource Management, Settlement, Protection, Special Resource Management – Community Watersheds, Special Resource Management – Habitat/Wildlife Management Areas, Special Resource Management – Recreation and Tourism, and Enhanced Resource Development. The KLRMP provides specific objectives, strategies, and indicators for each Resource Management Zone (BC Ministry of Forests, Lands and Natural Resource Operations 1995).

The Project is located in a General Resource Management Zone, as is 62% of the land in the KLRMP area. The General Resource Management Zone is governed by objectives and strategies related to land management; water management, including riparian management areas; ecosystem management; grasslands management; inland fisheries; anadromous fisheries; tourism; recreation, agriculture; range; minerals; wildlife; timber, visually sensitive areas; heritage trails; cultural and heritage sites; and traditional land use. Within all resource management zones, excluding the Protection Resource Management Zones, mineral exploration and mine development is allowed BC Ministry of Forests, Lands and Natural Resource Operations 1995.

The KLRMP is a government approved higher level plan that is to be implemented by all relevant government agencies through agency-specific management activities, local level plans, resource development permits, and land dispositions. All local level plans are to include a section that describes the linkages to the Kamloops Land and Resource Management Plan. This is to include an explanation of how the local level plan meets the objectives and implements the strategies outlined in the Kamloops Land and Resource Management Plan. Conversely, the KLRMP recognizes that the resource management zone objectives and strategies in the plan may be amended based on future feedback from local level plans (BC Ministry of Forests, Lands and Natural Resource Operations 1995).

The Kamloops Interagency Management Committee is to prepare an annual monitoring report on plan implementation that describes how the objectives and strategies outlined in the Kamloops Land and Resource Management Plan are being met through agency-specific resource management activities, local level planning, and resource development plans or permits (BC Ministry of Forests, Lands and Natural Resource Operations 1995).

First Nation Involvement

The TteS, SIB, and WP/CIB did not participate in development of the development of the KLRMP, although the Shuswap Nation Tribal Council, to which all three belong, had representatives participate as guest or observers. The LNIB and AIB were invited to participate but declined. The KLRMP includes a Secwépemc statement of interest that includes a Secwépemc Nation Map of Intent, a position statement on the KLRMP, and a range of specific interest statements (e.g., self-government, environmental protection, and economic development) (AMEC FW 2015).

3.2.1.2 Agricultural Land Reserve

The Provincial Agricultural Land Commission is an independent provincial agency responsible for administering British Columbia's agricultural land use zone. The purposes of the Agricultural Land Commission are to preserve agricultural land, to encourage farming in collaboration with other communities of interest, and to encourage all levels of government to enable and accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws, and policies (Agricultural Land Commission n.d.a).

The Project is located in the Agricultural Land Reserve, a provincial zone in which agriculture is recognized as the priority use. In this zone, farming is encouraged and non-agricultural uses are controlled. The Agricultural Land Reserve comprises those lands within British Columbia that have the potential for agricultural production. The Agricultural Land Reserve takes precedence over, but does not replace other legislation and bylaws that may apply to land. Local and regional governments are expected to plan in accordance with the provincial policy of preserving agricultural land. The *Agricultural Land Commission Act* sets out the legislative framework for establishing and administering the agricultural land preservation program (Agricultural Land Commission n.d.b). Non-farm uses of ALR land must be approved by applying to the Agricultural Land Commission (*Agricultural Land Commission Act*, SBC 2002, c. 36).

3.2.2 Municipal and Regional District Land Use Planning

3.2.2.1 Thompson-Nicola Regional District Plans

The TNRD is a local government authority that exists to maintain certain local government service needs that neither municipalities nor the Provincial government are well-suited to address. Every regional district is made of municipalities and unincorporated areas. Municipalities and unincorporated areas work together to enable the TNRD to fulfill its primary purposes, which are to:

- Provide community planning, solid waste management, water and sewer, 911, fire protection, and regulatory services in the region;

- Manage administrative functions, such as borrowing from the Municipal Finance Authority and raising capital funds for hospital facilities; and
- Provide the political and administrative framework for municipalities and unincorporated areas to collaborate in the provision of services (TNRD 2010a).

The TNRD had a population of about 122,286 in 2006 and has a land area of approximately 45,279 km² (TNRD 2010a). Since the plans were originally developed, Statistics Canada has conducted another Census. The current population of the TNRD is 128,473 (Statistics Canada 2013).

The following is a list of planning documents produced by the TNRD that are presented in this section:

- Fringe Area Policy Paper;
- Regional Growth Strategy;
- South Thompson Settlement Strategy;
- Kamloops South Official Community Plan;
- Cherry Creek-Savona Official Community Plan;
- Zoning Bylaw;
- Lakeshore Development Guidelines;
- Coquihalla Highway Corridor Special Planning Study; and
- FireSmart Manual.

Fringe Area Policy Paper

The Project is located in an area that is considered within the fringe area within the TNRD. In 1980, the Regional District established a planning committee that identified as a priority the creation of fringe areas around each of the incorporated municipalities in the Regional District. It was determined that a common philosophy and approach should be adopted for all fringe areas in the Regional District to ensure the policies governing fringe areas would be applied uniformly. It was also noted that the variety of conditions that exist adjacent to municipalities would require policies that were flexible and responsive to local needs. As such, the Fringe Areas Policy Paper was produced to provide an initial step toward the possible preparation of plans for each fringe area (TNRD 1984).

According to the Fringe Area Policy Paper, land on the edge of municipalities often is subject to intense development pressures. These pressures arise due to a number of reasons:

- Proximity to the urban centre;
- Availability of relatively inexpensive, undeveloped land; and
- Opportunity for a rural lifestyle (TNRD 1984).

As such, the functions of a fringe area development plan are as follows:

- Limit urban sprawl in the fringe area and give consideration to development only when it is of mutual benefit to the TNRD and the municipality;
- Reduce fragmentation of land to avoid issues with municipal and/or agricultural expansion;
- Direct industrial and commercial development to locate either within the corporate limits of the urban municipality or in an area totally removed from it;
- Minimize land use conflicts between residential, commercial, or industrial and existing resource based land uses (either agricultural or forestry) located in the fringe area; and
- Preservation of agricultural land against irreversible urban development in the fringe area (TNRD 1984).

The Fringe Area Policy Paper also sets out several principles for land use decisions within the fringe areas of urban municipalities in the TNRD. This includes guidance with respect to rezoning, development permits, agriculture, grazing, forestry, residential development, commercial development, and municipalities. Although the principles identified in the policy have not been updated in several decades, the Fringe Area Policy Paper is still referred to in various planning processes, and consideration given to its guidance. More recent planning processes provide clearer guidance on overall approaches to land use and development.

Regional Growth Strategy

The TNRD developed its Regional Growth Strategy in response to the provincial *Growth Strategies Amendment Act* (1995), which provided regional districts and their member municipalities with an opportunity to cooperatively manage regional growth. Among the issues considered were fringe area management; local government and servicing; water quality; resource and environmental protection, including protecting and enhancing water quantity; economic diversification; transportation; subdivision approval; and intergovernmental collaboration (TNRD 2000).

The Regional Growth Strategy is not a land use plan, but a cooperative strategy for achieving sustainable development in the region, including the area in which the Project is located. Although various land and resource management plans exist in the region, the Regional Growth Strategy is concerned with the region's landscape and economy, which transcend jurisdictional boundaries. The Regional Growth Strategy also provides a forum for consultation and coordination with the land and resource management plans. Specifically, the Regional Growth Strategy provides a framework for the following:

- Taking action on development and settlement issues;
- Coordinating efficient use of land, public facilities, services, finances, and other resources;
- Encouraging a variety of economic opportunities, land use choices, and quality of life attributes in an affordable and efficient manner; and

- Ensuring the environment and natural amenities are protected and conserved as the region continues to develop (TNRD 2000).

The vision of the Regional Growth Strategy is as follows:

- To create a balance among goals relating to human settlement, economic development, and environmental conservation, such that development actions do not significantly limit the options of future generations (TNRD 2000).

The goals of the Regional Growth Strategy are as follows:

- Promote and encourage economic development;
- Protect and enhance the environment;
- Protect and maintain access to the resource base;
- Preserve the rural and wilderness character of the region;
- Ensure adequate and appropriate services are provided;
- Maintain mobility throughout the region;
- Establish and maintain equity among the urban and rural centres;
- Ensure adequate range of housing opportunities are available;
- Promote regional collaboration on common issues; and
- Promote cooperative planning with First Nations (TNRD 2000).

Specific growth management policies are presented under the topics of human settlement, transportation and energy, economic development, environmental protection, open space and cultural heritage, and cooperation and process. In terms of human development, the containment of urban and rural sprawl by building on the existing network of regional centres, the promotion of policies related to infill and intensification, and the provision of adequate levels of services are encouraged. With respect to economic development, the Regional Growth Strategy supports the broadening of the economic base through diversification and expansion, while supporting and encouraging existing resource industries and supporting new economic development opportunities. On environmental protection, the Regional Growth Strategy recommends the protection and enhancement of the quality and quantity of the water in the region's lakes, rivers, streams, and ground water sources, as well as the development and adoption of policies that contribute to the reduction or prevention of air pollution (TNRD 2000).

South Thompson Settlement Strategy

The Project is located within an area included in the South Thompson Settlement Strategy. The purpose of the South Thompson Settlement Strategy is to strike a balance between anticipated settlement pressures and the many other important values in the South Thompson Valley. Specifically, the mandate of the South

Thompson Settlement Strategy is to undertake a review of the South Thompson valley in collaboration with various stakeholders that addresses the following factors:

- Protecting the unique character and significance of the valley;
- Accommodating potential urban growth within the City of Kamloops and the Village of Chase;
- Integrating highway, utility corridor, and settlement planning;
- Identifying appropriate range and location of settlement opportunities
- Balancing environmental stewardship with economic activity;
- Establishing appropriate levels of servicing;
- Identifying and protecting sensitive lands and resource values; and
- Protecting and enhancing water quality and quantity (TNRD 2011c).

Although the Project falls outside of settlement areas designated for specific uses as identified by the strategy policies on water supply, sewage treatment/disposal, road access, buffering from resource lands, visual quality protection of the environment and safeguarding from natural hazards apply to these areas.

Kamloops South Official Community Plan

The Kamloops South Official Community Plan serves as a basis for decisions and actions related to the use and development of all lands within the Kamloops South Official Community Plan Area. The Plan covers the southern border of the City of Kamloops boundary and extends south past all Project facilities. The Kamloops South Official Community Plan provides a framework of objectives and policies for a number of topics. Select topics, as well as objectives and relevant policies, are set out below (TNRD 2011b).

Form and Character of Existing and Future Land Use

Form and character of existing and future land use objectives designate and direct the pattern of land use to promote orderly growth, provide opportunity for a variety of residential lifestyles and land uses, sustain the existing resource base, and to preserve the natural environmental characteristics of the area included under the plan (TNRD 2011b).

Specific policies relating to the Project include the following:

- Industrial development will not be encouraged within the area covered by the plan, except resource-related development under special circumstances;
- Transportation networks shall be recognized and development that will impact these networks will be encouraged to develop in accordance with the Plan objective and inter-governmental policies of the affected agencies having jurisdiction; and

- Agriculture, forestry, recreation, fisheries, waterfowl, wildlife, sand/gravel resources, mineral resources, archaeological, and water resource land uses will be recognized and development that will impact these uses will be encouraged to develop in accordance with the respective Plan objectives, policies, and the inter-governmental policies of the affected agencies having jurisdiction (TNRD 2011b).

Industrial Development

The objective for industrial development is to protect the rural nature of the Plan Area from encroachment by incompatible industrial uses. Industrial development within the area covered by the plan will be discouraged except if it is related to the agricultural, forestry, or sand and gravel/mineral resources is of a temporary nature, or no other suitable location exists for a site specific industry (TNRD 2011b).

Sand/Gravel Resources and Mineral Resources

The objective for sand/gravel resources and mineral resources is to identify and preserve sand/gravel resources and mineral resources for future development. The extraction and on-site processing of sand/gravel resources or minerals resources is encouraged to be located on lands designated for forestry-grazing, agricultural, or rural resource use within the area covered by the plan provided suitable noise and dust controls are employed. The appropriate provincial agency having authority is encouraged to work cooperatively with the Regional District in this regard, recognizing that with respect to sand/gravel and mineral development that the Regional District does not have jurisdiction over extraction (TNRD 2011b).

Agriculture

The objective for agriculture is to preserve agricultural land to ensure present and future food production. This includes encouraging continued use and preservation of lands designated for agricultural purposes, particularly where there is existing or potential range and pasture land (TNRD 2011b).

Transportation

The objective for transportation is to ensure an effective transportation system, which will provide safe and efficient movement to and within the Plan Area (TNRD 2011c). A specific policy relating to the Project relates to development within 800 metres of the Coquihalla Highway and Highway 5A, which should be subject to the appropriate provisions of the Highway Act (TNRD 2011b).

Water Resources

The objective for water resources is to recognize the importance of water resources and the need to protect and improve the quality or quantity of these resources for future generations. Policies for water resources provide direction with respect to use of existing water licences, support for groundwater use and protection, guidelines for development near streams and lakes (including discouraging development along the foreshore), and discouraging activities requiring changes to the natural system of watercourses (TNRD 2011b).

Fisheries, Waterfowl and Wildlife

The objective for fisheries, waterfowl and wildlife is to protect and enhance fisheries, waterfowl, and wildlife habitat resources within the area covered by the plan. Development that will have a detrimental impact on fish and waterfowl habitats such as stream, wetlands, lakes, or on key upland wildlife habitat areas as determined by the Provincial agency having authority will be discouraged (TNRD 2011b).

Environmental Constraints

The objective for environmental constraints is to recognize and respect the development constraints imposed by environmental factors and to ensure that developments in hazard areas are avoided or that adequate precautions are taken if development is unavoidable. For example, development should recognize floodplains, streamside or embankments subject to erosion, areas susceptible to subsidence or unstable soils, or steep slopes (i.e., in excess of 30%) (TNRD 2011b).

Recreation

The objective for recreation is to provide recreational opportunities while minimizing recreational resource land use conflicts and preserving the rural and environmental quality of the area. Generally speaking, development should encourage the retention of unimpeded public access to water based recreational areas, provide for continued opportunities in recreational lands and existing park sites, and overall cooperation with recreationists, provincial agencies, and property owners should be promoted (TNRD 2011b).

Greenhouse Gas Emission Reduction

In 2007, the Provincial government passed the *Greenhouse Gas Reduction Targets Act* that committed British Columbia to reduce greenhouse gas emissions by 33% below 2007 levels by 2020 and 80% below 2007 levels by 2050. Toward this end, the Province enacted the *Local Government (Green Communities) Statutes Amendment Act*, which requires Official Community Plans to include targets for the reduction of greenhouse gas emissions and policies and actions to support the reduction targets (TNRD 2011b).

Recognizing the challenges of reducing greenhouse gas emissions in rural communities, the TNRD set the following community-wide greenhouse gas reduction targets:

- 10% reduction from 2007 levels by 2020; and
- 33% reduction from 2007 levels by 2050 (TNRD 2011b).

The actions to support the reduction targets include guidelines for new construction of buildings, and retrofitting of existing buildings, encouraging recycling, in addition to encouraging land uses such as the preservation of agricultural lands and encouraging tree planting where appropriate.

Heritage Conservation

The objective under this topic is to encourage and facilitate the identification, protection, and conservation of archaeological and heritage resources. Development should not excavate, alter or destroy any of the

archaeological resources identified by a 1974 archaeological survey of the area (updated in 1978), and new sites discovered are covered in the Heritage Conservation Act.

Cherry Creek-Savona Official Community Plan

The Cherry Creek-Savona Community Plan serves as a basis for decisions and actions related to the use and development of all lands within the Cherry Creek-Savona Community Plan Area, which extends westward to the mouth of Kamloops Lake from the west edge of the City of Kamloops boundary. It is located in the TNRD-J and includes the communities of Cherry Creek, Savona, and Tobiano. The Cherry Creek-Savona Official Community Plan provides a framework of objectives and policies for a number of topics. Select topics, as well as objectives and relevant policies, are set out below (TNRD 2011a).

Form and Character of Existing and Future Land Use

The objective for form and character of existing and future land use is to designate and direct the pattern of land use to promote orderly growth, provide opportunity for a variety of residential lifestyles and land uses, sustain the existing resource base, and to preserve the natural environmental characteristics of the Plan Area. Land uses that will be recognized include transportation, water resources, fisheries, waterfowl, and wildlife, recreation and heritage conservation. When development will have an impact on these land uses, it will be encouraged to develop in accordance with the respective Plan objectives, policies, and intergovernmental policies of the affected agency having jurisdiction (TNRD 2011a).

Water Resources

The objective for water resources is to recognize the importance of water resources and the need to protect and improve the quality or quantity of these resources for future generations. Policies with respect to water resources include guidelines for use of groundwater and limiting development that will result in increased surface water use (TNRD 2011a).

Environmental Constraints

The objective for environmental constraints is to recognize and respect the development constraints imposed by environmental factors and to ensure that developments in hazard areas are avoided or that adequate precautions are taken if development is unavoidable. For example development should recognize hazardous conditions could be present in areas such as floodplains, streamside or embankments subject to erosion, areas susceptible to subsidence or unstable soils, or steep slopes (i.e., in excess of 30%) (TNRD 2011a).

Recreation

The objective for recreation is to provide recreational opportunities while minimizing recreational resource land use conflicts and preserving the rural and environmental quality of the area. Generally speaking, development should encourage the retention of unimpeded public access to water based recreational areas should be in cooperation with appropriate provincial agencies who promote appropriate recreational use of Crown lands within and adjacent to other land uses, and be cooperative provincial agencies and interest groups in a coordinated effort to increase public awareness with respect subjects such as ATV use,

watershed management, stock grazing practices, noxious weed control, and factors causing soil erosion, in order to reduce the impacts of recreational activities in rural areas (TNRD 2011a).

Zoning Bylaw No. 2400

The purpose of the TNRD Zoning Bylaw (No. 2400) is to guide the development and growth of the Electoral Areas of the TNRD. Specifically, the Zoning Bylaw No. 2400 ensures that the various uses of the land are developed with consideration of the following:

- The promotion of health, safety, convenience, and welfare of the public;
- The prevention of the overcrowding of land and preservation of the amenities peculiar to any zone;
- The securing of adequate light, air, and access;
- The value of the land and the nature of its present and prospective use and occupancy;
- The character of each zone, the character of the buildings already erected, and the peculiar suitability of the zone for particular uses; and
- The conservation of property values (TNRD 2012).

The Project falls in an area zoned AF-1. This zone permits activities associated with a broad range of agricultural, forestry, recreational, and resource uses. It is also expected to preserve land from premature or inappropriate development.

Lakeshore Development Guidelines

The Lakeshore Development Guidelines were developed in response to current and anticipated lakeside residential and commercial development and are intended to improve the TNRD's ability to handle the growing development pressure on lakes in the district. The purpose of the Lakeshore Development Guidelines is to ensure lake resources in the TNRD will be available for the use and enjoyment of future generations. The Project overlaps with lakes included in the guidelines. Jacko Lake is classified as a "critical" and "special use" lake, while Goose Lake is classified as a "special use" lake (see below for more detail) (TNRD 2004).

The guiding principles of the Lakeshore Development Guidelines include the following:

- Protect the environmental quality of lakes;
- Retain access to resources;
- Promote collaborative approaches;
- Develop and implement clear and appropriate regulations;
- Protect lake users and development from hazardous conditions;

- Preserve cultural and heritage values;
- Maintain and, where possible, enhance public access;
- Promote sustainable lake management practices through stewardship and awareness programs;
- Ensure consistency with other planning documents;
- Encourage economic development and diversification; and
- Consideration of area of influence (the Lakeshore Development Guidelines applies to all lakeside area within one kilometre of lake shoreline) (TNRD 2004).

Policies and guidelines for lakeshore site development include consideration of wildlife habitat, fish habitat, wetlands, erosion and sedimentation, scenic values, and vegetation. Particular attention is paid to maintaining natural features, such as shorelines, vegetation along shorelines, wetlands, rock outcrops, waterfalls, and streams. Specific construction requirements include a 30 metre buffer zone between the high water lake boundary and residences, a 15 metre buffer zone around streams, and septic fields set back at least 100 metres from any lake. Other broad construction topics found in this document include hazard protection, infrastructure (sewer, water, and stormwater management systems), and land use (heritage sites, agriculture, forestry, utilities, and recreation) (TNRD 2004).

The Lakeshore Development Guidelines assert that development should not jeopardize public access to lakes. Development should consider all existing public land and water based recreation activities so that development minimizes its impact on those activities (TNRD 2004).

Lake Classification

Lakes in the TNRD have been classified based on the Lakes Study Policy Statement. Critical Lakes are defined as lakes that “are not suitable for further development because of their natural or cultural eutrophic status (characterized by severe algae blooms, extensive rooted aquatics, rapidly deteriorating water quality, and potential winter fish kill); their small size or shallow depth; potential health safety problems; strongly perceived feelings of overcrowding expressed by the lake or shoreline users; or inadequate lake surface for the number of users” (TNRD 2004). Jacko Lake is classified as a Critical Lake and a Special Case Lake. It is classified as a Critical Lake due to concerns related to water quality. Special Case Lakes are placed into this category for one or more of the following reasons: irrigation use; Ducks Unlimited project sites; native cultural sites; Coquihalla corridor proximity and potential recreational use; and heritage trails in the vicinity. Jacko Lake was identified as having irrigation or agricultural uses and as being a native cultural site (TNRD 2004).

There are numerous other lakes that would be considered in and around the project area, including Inks Lake, Wallender Lake, Nelson Lake, Makao Lake, and Lockie Lake; however, these lakes were not classified (TNRD 2004).

Coquihalla Highway Corridor Special Planning Study

The purpose of the Coquihalla Highway Corridor Special Planning Study is to assess the potential impact of the highway on the TNRD. The Project is located off the Coquihalla Highway and infrastructure will eventually be visible from it. The study identifies the considerations or criteria to be utilized in evaluating applications to amend the existing zoning in the area and thereby provides necessary land use direction to the general public, area residents, prospective developers, elected officials, and other agencies having statutory approval authority (TNRD 1987).

The main objective of the development opportunities and strategy within the highway corridor outlined in this document is to recognize and protect the unique, scenic, and environmental quality of the corridor through appropriate locational and developmental design criteria (TNRD 1987).

Specific policies relevant to the proposed project include the following:

- Recognize the important recreational land uses and activities within the plan area where the conflict with the agricultural or resource value of the area has been satisfactorily minimized.
- Development may be considered where the appropriate Federal and Provincial management authorities have indicated that the development would not have a detrimental impact on critical or sensitive wildlife, waterfowl, and fishery habitats.
- A development utilizing groundwater may be required to demonstrate that the use of such groundwater will not interfere with, intercept, or otherwise detrimentally affect surface or groundwater sources utilized by adjacent agricultural operations or existing developments.
- Industrial development within the study area will be encouraged only where it is related to the agricultural, forestry, and mineral/aggregate resources of the area. In such cases, the impact of the use on adjacent land uses should be minimized by means deemed necessary by the Regional District in cooperation with the appropriate provincial and/or Federal agencies.
- Support the sequential use of land wherein the extraction and processing of mineral resources is followed by reclamation for agriculture or other resource use (e.g., recreational) (TNRD 1987).

Firesmart Manual

The purpose of the Firesmart Manual is to protect against loss, damage, or injury due to wildfire. Two important factors can help to reduce the risks associated with wildfires: site preparation and building construction (Government of British Columbia 2003).

In terms of site preparation to minimize fire risks, the manual makes recommendations in terms of priority zones around buildings, buffers around buildings in which trees and shrubs be thinned and pruned, and other precautions regarding slopes. On building construction, the manual makes recommendations regarding the use of materials that are more fire resistant (e.g., types of shingles, types of windows, etc.) (Government of British Columbia 2003).

3.2.2.2 City of Kamloops Plans

Kamloops Official Community Plan (KAMPLAN)

The purpose of the KAMPLAN is to provide objectives and policies that guide decisions on planning and land use management within the area covered by the plan. The KAMPLAN was prepared through community consultation as well as direction from an Advisory Planning Committee, a Technical Committee, and frequent meetings with major stakeholders in the community, including neighbourhood associations, the Business Improvement Associations, and the Thompson Rivers University (City of Kamloops 2004).

The community of Kamloops, as presented in the KAMPLAN, is to continue to provide the best quality of life for all residents through the following goals:

- Building strong and diverse neighbourhoods;
- Providing a variety of housing types;
- Encouraging healthy and active lifestyles;
- Supporting cultural and athletic pursuits;
- Diversifying economic and education opportunities; and
- Maintaining sustainable environmental stewardship (City of Kamloops 2004).

Community Growth Management

Kamloops' growth management approach emphasizes infill and the intensification of land use to make better use of existing infrastructure and to reduce the environmental and financial costs associated with growth. According to the KAMPLAN, Kamloops will pursue a long-term goal of a more compact, efficient, and sustainable community (City of Kamloops 2004).

Starting with a base population of 80,000 (2001), land use scenarios were analyzed at the 100,000 and 120,000 population horizons. It is anticipated that the population may reach 100,000 by the year 2021 and 120,000 by 2036. There is currently sufficient land designated for development to accommodate a population of 100,000, and there are a number of proposed development parcels that could accommodate a population in excess of 120,000 (City of Kamloops 2004).

The result of the evaluation of a wide variety of land use scenarios showed that equivalent long-term growth in all sectors of Kamloops could lead to considerable long-term costs for road network improvements. Therefore, TravelSmart (City of Kamloops 1999) suggested the need for growth limitations in Batchelor Heights and Juniper (northwest and southeast areas) and managed growth in the central core (downtown/Tranquille) and southwest area (Aberdeen, Mt. Dufferin, and Sahali) (City of Kamloops 2004).

Growth to a population level of 100,000 could be supported because sufficient land is already zoned and the major infrastructure is available. Growth to a population level of 120,000 in Kamloops would require considerable investment in new infrastructure. While Special Development Areas have been identified in all

sectors of the City to accommodate population growth, the distribution of growth will impact the costs to the community. For growth to 120,000 road costs were roughly three times higher than all other servicing costs combined and were therefore considered the most critical factor in the growth strategy.

In all growth scenarios, population increases are anticipated to be the highest in the southwest area of Kamloops, which is the area closest to the Project. For example, under the growth scenario to 100,000 (anticipated by 2021), over a third of growth would be expected in the southwest area of the City. Similarly, with a growth scenario to 120,000, the southwest area could anticipate population increase of almost 60% increase in population by 2036.

The KAMPLAN presents these guiding principles for population growth:

- Infill, intensification, mixed use, and redevelopment will be encouraged, particularly within the town centre and neighbourhood centres.
- Existing zoning commitments for development will be honoured and services will be upgraded on a planned and phased basis to meet demands.
- The TravelSmart (City of Kamloops 1999) recommended growth distribution will be used as the general guideline for considering levels of development within the Special Development Areas.
- TravelSmart (City of Kamloops 1999) results will be monitored to determine the success of land use adjustments, travel demand management techniques, and network improvements on travel behaviour, with a major review as the population nears the 100,000 level.
- Where development proposals are proposed that do not reflect the City's planned phasing, all required infrastructure improvements, including major off-site upgrades, will be the responsibility of the developer (City of Kamloops 2004).

Community Growth Policies

The City of Kamloops intends to discourage intensification or expansion of rural or peripheral areas, peripheral expansion requiring upgrading of existing service infrastructure, and urban expansion in the Agricultural Land Reserve. However, the City of Kamloops recognizes that the Agricultural Land Commission (ALC) gave "approval in principle" (e.g., subject to servicing, roads and buffers) in 1983 for approximately 300 ha of land south of Aberdeen Drive. This area is on the rural side of the growth management boundary and these lands are not anticipated to be required for urban growth during the timeline of this plan (i.e., not before 2036 or 120,000 population) (City of Kamloops 2004).

The City of Kamloops will also prohibit or restrict development in designated hazard land areas, depending on the degree of risk associated with the hazard and the ability to mitigate any potential impacts (City of Kamloops 2004).

Special Development Areas

Special Development Areas are lands proposed to be developed at some future date in order to accommodate population growth between the 100,000 and 120,000 population horizons and to

accommodate development that requires specialized design and sensitive integration considerations (City of Kamloops 2004).

Under the KAMPLAN, goals pertaining to the Special Development Areas are “[t]o reserve sufficient lands to accommodate growth to the year 2036 or a population horizon of 120,000 ... [and] ... [t]o ensure appropriate design and sensitive integration considerations are made when introducing new development into existing neighbourhoods” (City of Kamloops 2004).

Both the Highlands West and Taylor Property Special Development Areas are further south than Aberdeen and therefore, closer to the proposed mine site. Highlands West is a logical extension of the existing Aberdeen Hills neighbourhood and is projected to accommodate about 1,200 residential units or 3000 people. TravelSmart (1999) allocates a population of over 7,000 people to these lands by the 120,000 population horizon. The Agricultural Land Commission excluded part of these lands from the ALR in 1983 (City of Kamloops 2004).

Municipal Infrastructure

The KAMPLAN outlines the following general servicing policies:

- The City will favour infill over peripheral development and will pursue strategies designed to encourage maximum utilization of existing service systems prior to expansion.
- The City will use development cost charges to offset costs arising from new growth and the need to expand City services and infrastructure.
- The City will require developers within Special Development Areas to demonstrate cost-effectiveness prior to approving any extensions or upgrading to the road, water, sanitary sewer, or storm drainage system. Extension and improvement costs will be borne by the developer.

The City is committed to becoming an environmentally sustainable community through various initiatives. The following section sets out the relevant goals and policies of the City of Kamloops with respect to the natural environment, urban environment, and environmentally sensitive areas.

Natural Environment

The City of Kamloops has established these goals with respect to the natural environment:

- To protect and enhance the quality of the natural environment; and
- To protect and enhance fish and wildlife habitats in balance with flood protection and recreation access to riverbank and open space areas (City of Kamloops 2004).

The City of Kamloops has established these policies with respect to the natural environment:

- The City will continue its efforts to improve air quality;
- The City will continue to participate in the Partners for Climate Protection program to reduce greenhouse gas produced locally;³ and
- The City will identify important natural areas that require protection or preservation (City of Kamloops 2004).

Urban Environment

The City of Kamloops has established this goal with respect to the urban environment:

- To develop and maintain an aesthetically appealing and environmentally sensitive urban environment to enhance the quality of life for residents and visitors alike (City of Kamloops 2004).

The City of Kamloops has established this policy with respect to the urban environment:

- The City will support the designation and preservation of the community's natural and cultural heritage (City of Kamloops 2004).

Environmentally Sensitive Areas

The City of Kamloops has established these goals with respect to Environmentally Sensitive Areas (Figure 3-5):

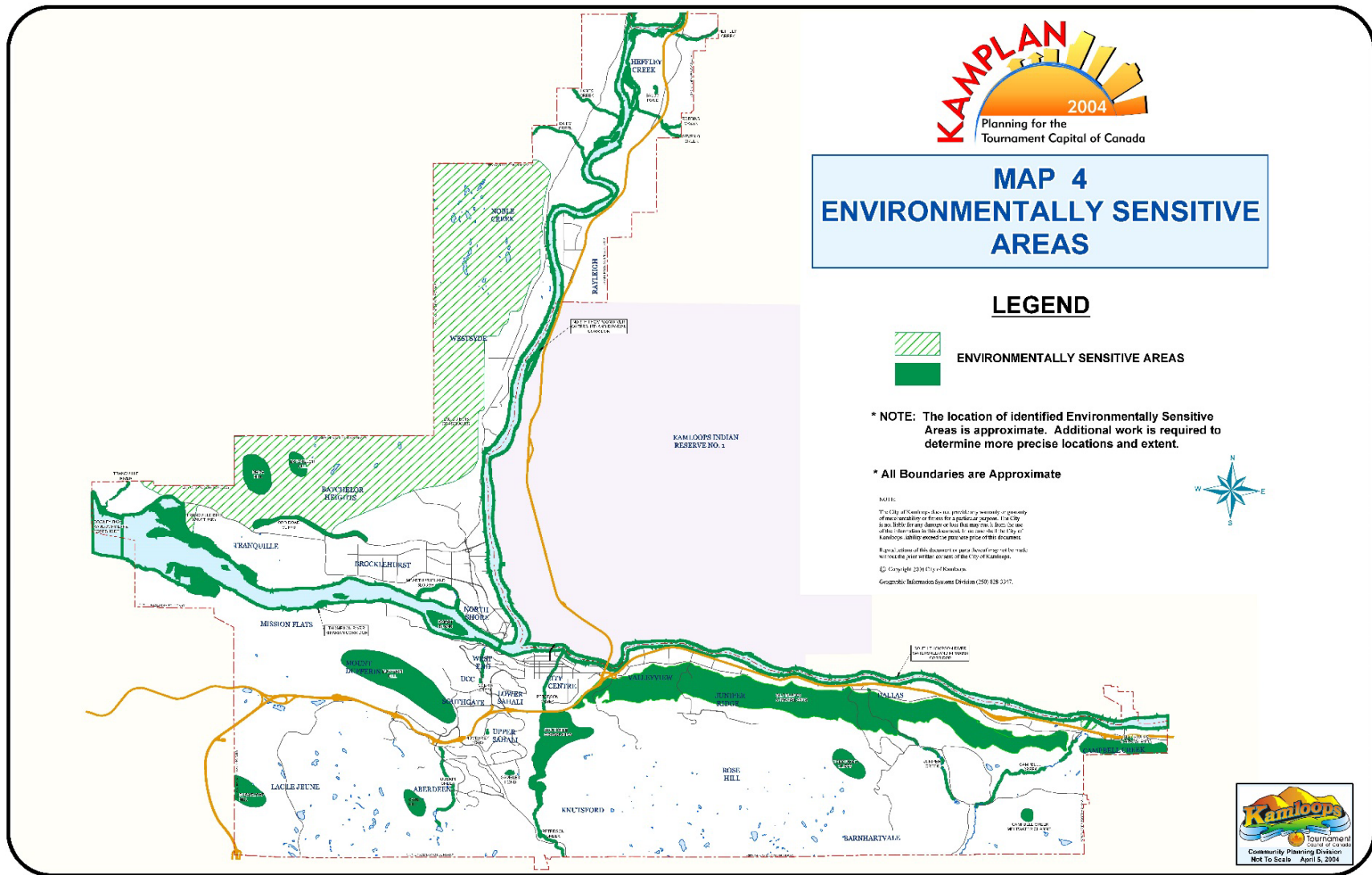
- To preserve and protect environmentally sensitive and unique natural areas; and
- To protect and enhance fish and wildlife habitats in balance with urban development and human use and enjoyment of open space (City of Kamloops 2004).

The City of Kamloops has established this policy with respect to Environmentally Sensitive Areas:

- The City will endeavour to preserve and protect Environmentally Sensitive Areas, particularly those that are under pressure for development within the term of this Plan (City of Kamloops 2004).

Environmentally sensitive areas close to the southern municipal boundary (i.e., the municipal boundary closest to the Project) include Sugarloaf Mountain, Coal Hill, and Peterson Creek (Figure 3-5).

³ Although GHG reduction targets are not presented in the KAMPLAN, the Information Package on Greenhouse Gas Emissions (City of Kamloops 2010i) lists the following community-wide targets: reduce GHG emissions by 40% below 2007 levels by 2020; reduce residential-based GHG emissions to 0.9 tonnes/capita by 2020; reduce transportation-related GHG emissions by 2.4 tonnes/capita by 2020; and increase alternative transportation to 30% of all trips. The same document lists the following corporate targets: achieve carbon neutrality by 2012, reduce absolute GHG emissions from corporate operations to 4,600 tonnes by 2020, and invest 100% of carbon offsets through local initiatives in partnership with other public and private sector entities.



Source: City of Kamloops 2004.

Figure 3-5: Environmentally Sensitive Areas in the KAMPLAN

Aberdeen Area Plan

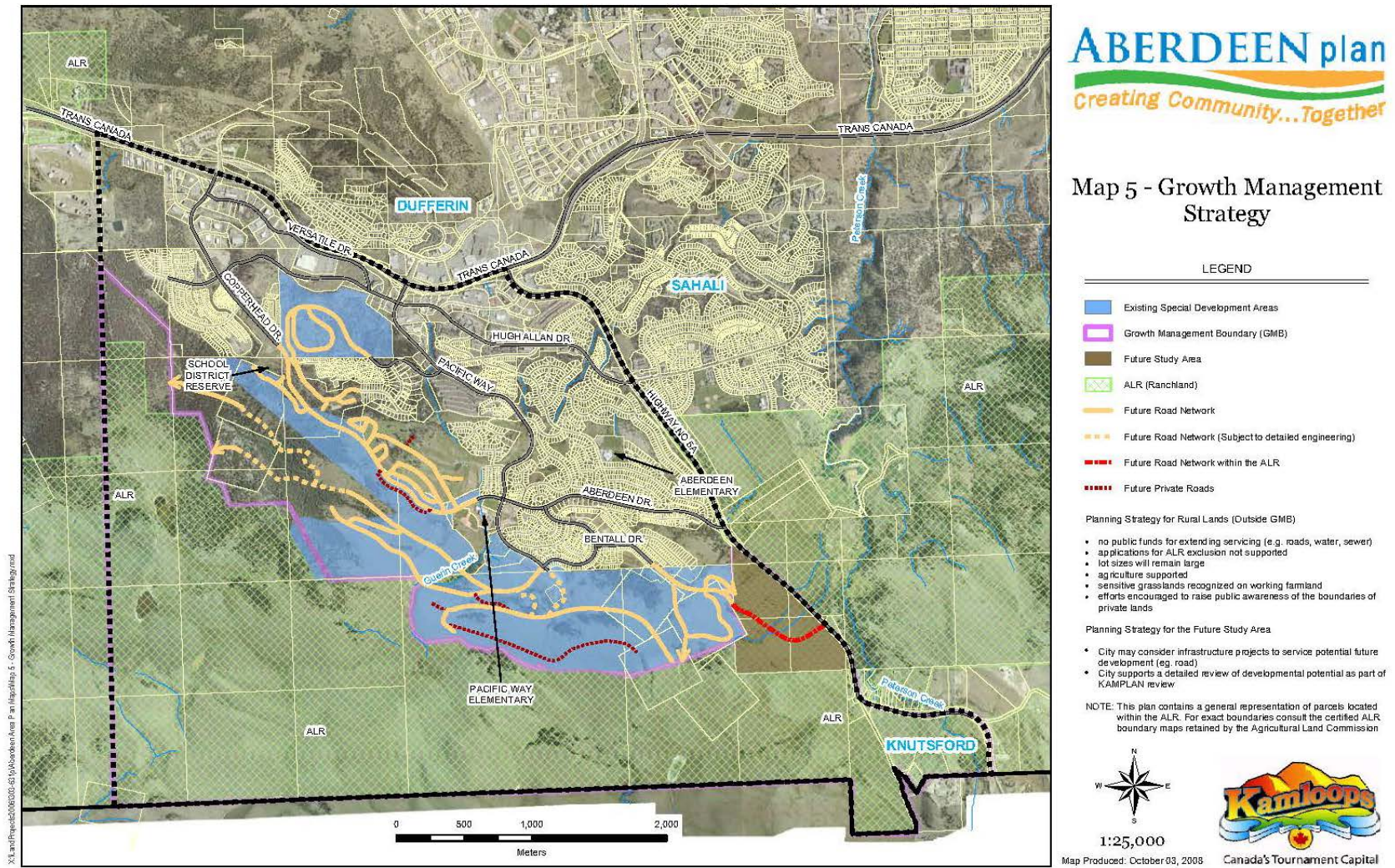
The purpose of the Aberdeen Area Plan is to plan the growth of the Aberdeen neighbourhood, which is north of the Project, such that it is capable of accommodating the population growth projected by the KAMPLAN. It is anticipated that there will be a demand for approximately 3,900 new residential units. The Aberdeen Area Plan supports maintaining the status quo in existing areas and focuses on providing policy direction for the remaining undeveloped lands, which are mostly either designated as Special Development Areas or within the Agricultural Land Reserve (True Consulting Group 2008).

A core objective of the Aberdeen Area Plan is to ensure consistency with KAMPLAN, while building upon the unique characteristics and opportunities of the Aberdeen neighbourhood. First, the Aberdeen Area Plan highlights the necessity to develop Special Development Areas in Aberdeen to accommodate the future Kamloops' population. Second, neighbourhood commercial services should be available to service smaller local markets with a high standard of development. Third, neighbourhoods must have a high level of servicing, provided in a cost effective and efficient manner. Finally, a broad range and choice of housing types and locations to meet the needs of various age groups, family types, lifestyles, and incomes should be provided. Suitable housing opportunities and convenient community services for residents having special housing requirements should also be provided.

Plan Policies

The Aberdeen Area Plan sustainability and growth policies relevant to the Project include the following:

- Protect environmentally sensitive areas and preserve agricultural lands;
- Manage sensitive environmental conditions, including hazardous conditions, sensitive water courses, grasslands, and areas subject to wildlife conditions; and
- Establish a Growth Management Boundary with clear direction on the future of lands on both the rural and urban sides of the boundary.

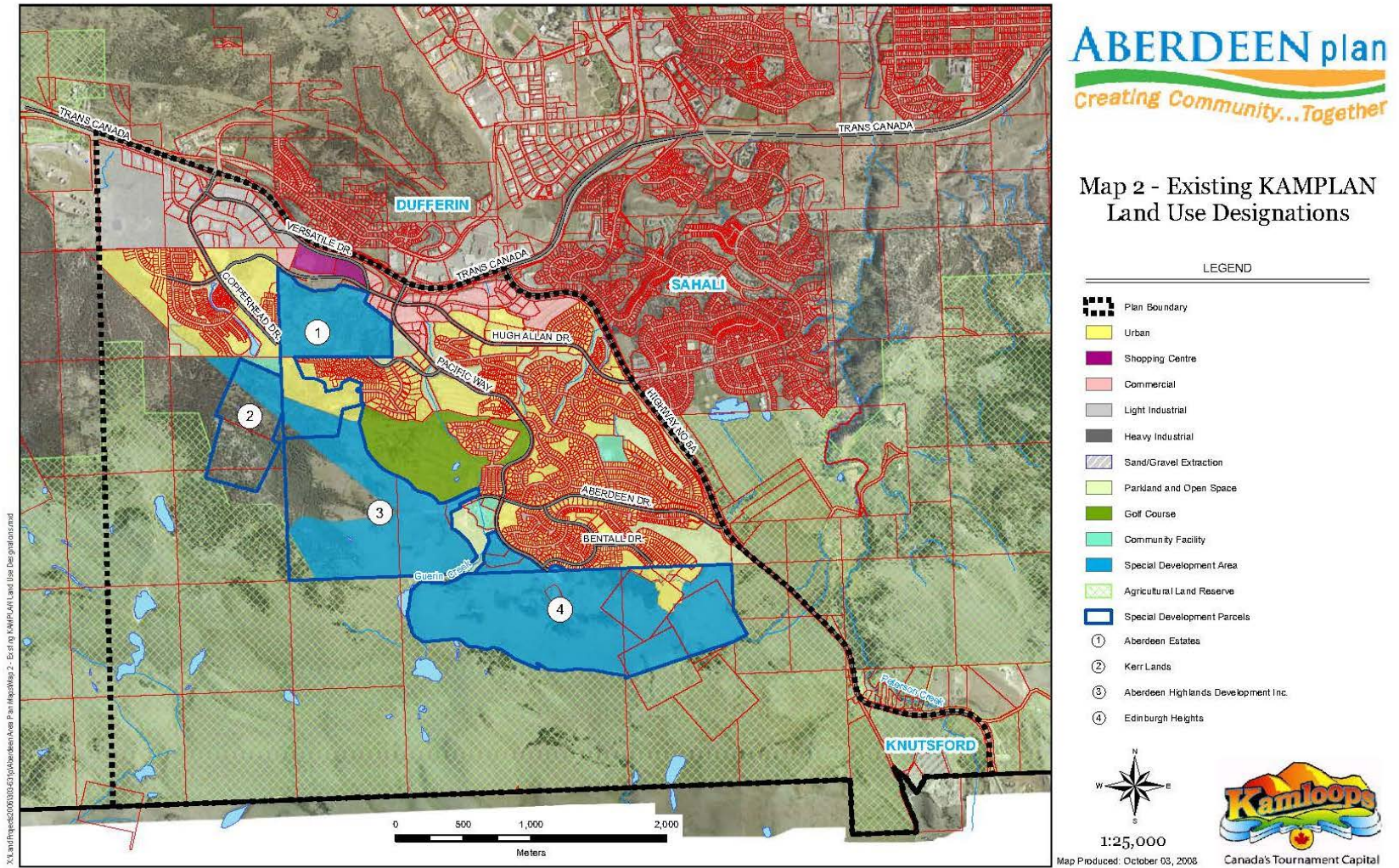


Source: True Consulting Group 2008.

Figure 3-6: Growth Management Strategy

Existing Land Use Strategy

The KAMPLAN designates the southwestern-most area of Kamloops, south and west of Aberdeen, for agricultural use and is protected within the Agricultural Land Reserve (ALR). Most of the agricultural lands support seasonal forage use (Figure 3-7).



Source: True Consulting Group 2008.

Figure 3-7: Existing KAMPLAN Land Use Designations

In addition, there is an area that has been designated as a sensitive ecosystem directly southwest of Aberdeen and south of and possibly including, Guerin Creek, which does not overlap with the Project site. The Guerin Creek corridor is recognized as an environmentally sensitive area. Sections of Guerin Creek adjoining the Special Development Areas have been protected as parkland and the Plan recommends a similar strategy for the protection of the upper sections of the Creek.

Environmental Sustainability

The KAMPLAN provides the context for principles of environmental sustainability that apply to the Aberdeen area. Sustainability strategies applicable to the Aberdeen area are the following:

- Preserve agricultural lands; and
- Protect environmentally sensitive areas.

Grasslands

The City of Kamloops partnered with the Grasslands Conservation Council to research environmentally sensitive areas within the Aberdeen area. The Grasslands Conservation Council completed their research in the fall of 2007 and prepared a summary of the project in the document titled "An Ecological Assessment for the Aberdeen Area Plan". The Grasslands Conservation Council identified the southwest portion of the Aberdeen planning area a Conservation Area, meaning the area is highly suitable for species at risk and rare ecosystem and the area maintains ecological, wildlife habitat, and agricultural values.

Growth Context

Since most of the lands that are outside of the Special Development Areas are either natural or agricultural areas it was recommended that the municipality established a Growth Management Boundary (Figure 3-6) to perform the following functions:

- Re-enforce the commitment to reduce urban sprawl and efficiently and cost effectively concentrate development on the urban side of the Growth Management Boundary;
- Delineate between areas where urban services are either existing or proposed and areas where the municipality does not intend to extend services within the KAMPLAN planning horizon;
- Recognize areas where there has been preliminary planning consideration and/or support for urban growth; and
- Recognize existing agricultural land uses, and ecological and environmental resources that can be preserved and protected for the KAMPLAN planning horizon.

The municipal strategies for addressing lands on the “rural” side of the Growth Management Boundary include the following, which suggests that there will be a buffer between the southern-most community development and the southern municipal boundary:

- No public funds for extending servicing (e.g., roads, water, sewer), except as required to improve health and safety of existing development;
- Applications for the exclusion of lands from the Agricultural Land Reserve will not be supported;
- The City recognizes that the Agricultural Land Commission (ALC) gave “approval in principle” (e.g., subject to revising, roads and buffers) in 1983 for approximately 300 ha of land south of Aberdeen Drive. This area is on the rural side of the Growth Management Boundary and these lands are not anticipated to be required for urban growth during the timeline of this plan (i.e., not before 3036 or 120,000 population) (see Figure 3-6), Growth Management Strategy for ALR land);
- Lot sizes will remain large in recognition of the continuation of existing agricultural operations and land tenure structure;
- The City will encourage strategies to manage the sensitive nature of these environments while recognizing the working nature of agricultural landscapes; and
- The City will support efforts to raise awareness of the private tenure and agricultural nature of lands on the “rural” side of the Growth Management Boundary. Education will include raising awareness of the right of property owners on the “rural” side of the Growth Management Boundary to restrict public access to their lands.

Agriculture

Approximately half of the plan area is protected within the ALR. Most of this area is used for grazing. The two main ranches in this area are the Sugarloaf Ranches Ltd., which is owned by KGHM, and Frolek Cattle Co. Ltd. Both of these operations had representatives in the planning process and they identified issues that are addressed in the plan, including the need for more public awareness and respect of private property and farm activities. Buffers and fencing were also raised as issues to be addressed as development in the area proceeds.

Mineral Resources

Although not specifically recognized in the KAMPLAN, the Aberdeen Area Plan area contains lands subject to Crown granted mineral claims.

Sustainable Kamloops Plan

Kamloops’ vision of sustainability, as expressed in the Sustainable Kamloops Plan, is as follows:

“In 2050, Kamloops, Canada’s Tournament Capital, is an innovative, vibrant, and diverse community. Social, economic, and environmental challenges are welcomed as opportunities to further enhance its beautifully unique landscape. It is known for its bold

ecological and healthy living initiatives that shape one of the most inviting and liveable cities in Canada. Kamloops offers a wide variety of housing choices that provides affordable and attractive neighbourhoods. It continues to minimize its corporate and community footprint and leads by example when making sustainable choices for future generations. Kamloops is a place where blue skies, clean air, and fresh water complement the strong sense of belonging, where residents feel safe and secure, where community input is valued and encouraged, and where all citizens have abundant opportunities to live, learn, work, and play" (City of Kamloops 2010f).

These key sustainability components were identified through extensive consultation with stakeholders on various subjects. The following key sustainability components are presented by rank of priority determined through community consultations and described in terms of how the Sustainable Kamloops Plan envisions their success:

1. That Kamloops will continue to have healthy air quality and residents will be knowledgeable about how the airshed is impacted by key activities.
2. That all highly-valued environmentally-sensitive areas will be protected and enhanced with adequate natural areas set aside for conservation and outdoor recreation purposes.
3. That the production and consumption of local foods will be promoted.
4. That energy consumption will be reduced in the community and in Kamloops' corporate operations. At the same time, the amount of money spent on energy will be reduced. Further, the community will embrace the use of clean alternative sources of energy.
5. That the amount of solid waste that is generated by Kamloops will be greatly reduced, with a greater proportion of waste being reused or recycled rather than being landfilled.
6. That sufficient land is available on an on-going basis to meet the community's needs for housing, business, industry, institutions, and other activities. Land will be developed in a compact and efficient manner and will be done in a way to reduce the impacts of the built environment on the natural environment. Further, there will be an increase in local production.
7. That greenhouse gas emissions (GHG) from community and municipal operations will be significantly reduced. At the same time, areas that are valuable carbon sinks, such as grasslands and forests, will be protected. Further, Kamloops will use the money it pays for carbon offsets to invest in local projects.
8. That Kamloops will evolve to being a community where optimal health outcomes can be more easily achieved. Kamloops, and its partners, will take measures that improve the quantity and quality of life in the community. This will be accomplished by maximizing the potential of all directly and indirectly related inputs to health and wellness and ensuring that resources dedicated to health and wellness are optimized.
9. That Kamloops will continue to reduce water demands, particularly during peak demands periods when use is highest and impacts greatest.

10. That the Kamloops economy will continue to be well diversified and will have attracted a number of environmentally and socially sustainable businesses. This diversity has supported strong employment rates. Basing economic development on sound environmental principles will be fruitful and a source of pride for Kamloops.
11. That a safe community will be provided through crime reduction and fire prevention.
12. That Kamloops' transportation system will be made more sustainable. Specially, Kamloops will significantly reduce automobile usage, particularly single-occupant vehicles. In addition, Kamloops will balance providing more roads to ease automobile movement with other considerations related to the environmental, economic, and social impacts of providing roads.
13. That improved stormwater management practices will be put in place.
14. That the quality of drinking water will be improved. Kamloops will continue to provide clean, safe drinking water for residents. The primary source of Kamloops' drinking water (the South Thompson River) will be protected to the greatest extent possible. At the same time Kamloops will ensure that there is a secondary source of water in case of emergencies.
15. That a vibrant, diverse range of arts and cultural opportunities will be encouraged.
16. That Kamloops will be adequately prepared for the impacts of climate change. This will include adjusting flood protection, water intake, and stormwater systems, and other facilities to manage the impacts of climate change. Further, the community will better understand climate change impacts through more specific modelling and study and communicate this to residents. In this regard, Kamloops will have to work with regional, provincial, and national partners to ensure the community is adequately prepared for a range of climate change impacts.
17. That Kamloops will ensure that residents of all ages, income levels, and abilities have access to high quality recreational facilities and opportunities. The proportion of residents leading healthy and active lifestyles will increase as the diversity of potential recreational activities, both organized and unorganized expands capturing the interest of a wider range of people. Kamloops and key community partners will recognize the value of natural areas to achieving health and wellness opportunities for hiking and biking. Kamloops will continue to enhance its reputation as the Tournament Capital of Canada.
18. That opportunities to pursue a high level of educational achievement will be provided.
19. That hazardous conditions do not threaten public safety or damage property. These natural areas will be recognized for the ability to support passive outdoor recreation, as well as an important sink for greenhouse gas emissions.
20. That the unique combination of ancient and recent heritage in the Kamloops area will be protected and celebrated to the benefit of residents and tourists alike. Working with community partners, Kamloops will ensure that the environment is in place for a diverse range of arts and cultural opportunities in the community (City of Kamloops 2010f).

Corporate Strategies

The City has identified two key priorities to address corporate sustainability issues. The first is the development of a strategy to become carbon neutral. The second is waste use efficiency, where City efforts will complement those of the rest of the community who have been provided an additional incentive to conserve water through the recently-approved universal water metering program (City of Kamloops 2010f).

Draft Kamloops Airshed Management Plan

The development of the Kamloops Airshed Management Plan is currently underway. The goal of the process was to present a completed plan to Council by early summer 2012. A draft of the Plan is currently publicly available and a summary is provided below (City of Kamloops 2012a).

Air quality was the top priority for sustainability identified through extensive public consultation for the Sustainable Kamloops Plan: Foundations for Sustainability, adopted in 2010. The main pollutants present in the air in the Kamloops airshed, and thus targeted by this draft Plan, include particulate matter, ground level ozone, and odorous reduced sulphur gases. Other pollutants of concern in this draft Plan include nitrogen dioxide, sulphur dioxide, and volatile organic compounds. These pollutants were identified as concerns due to their effects on human health and/or the Kamloops Airshed (City of Kamloops 2012a).

The draft Plan identified baseline data as having critical importance to its success. According to the draft Plan, the City of Kamloops has scored consistently better than the Canada Wide Standards and Provincial Objectives for air quality. As such, the Plan aims to provide a means to maintain this clean air and strive toward air quality improvement where feasible (City of Kamloops 2012a).

TravelSmart Project

The TravelSmart Project is a broadly based program that integrates land use and transportation system planning management to achieve a number of key objectives. These objectives are as follows:

1. To develop an integrated land use and transportation strategy tailored to Kamloops;
2. To provide clear direction for updating land use planning policies;
3. To prepare a transportation plan that embraces all modes of travel, realistic mobility targets, affordability, and addresses travel demand management; and
4. To ensure that environmental, economic development, and quality of life goals are taken into account (City of Kamloops 1999).

The TravelSmart Project incorporates the following principles:

- Integrate land use and transportation planning by managing future development patterns in a manner that minimizes the rate of increase in travel demand;
- Protect the integrity of the provincial highway corridors within Kamloops;

- Recognize the linkage between the goal of environmental sustainability and an integrated land use and transportation system;
- Ensure compatibility of transportation facilities with adjacent land uses and the overall character and image of the community, specifically:
 - Intrusion of new facilities into established neighbourhoods should be avoided; and
 - Attention must be paid to the appearance of new facilities (City of Kamloops 1999).

Land Use Growth Strategies

The southwest sector is well-served by transportation facilities that exhibit some excess capacity. Growth is therefore promoted for this area. A new or upgraded corridor will be required to serve this area as the 120,000 population threshold approaches. It is predicted that 48% of the increase in population of Kamloops will be absorbed by the southwest area of the City. The population of the southwest area of the City is predicted to increase from 17,900 to 39,700 by 2036 (City of Kamloops 1999).

Neighbourhood Design Considerations

One aim of the TravelSmart Project is to disperse employment opportunities. As such, residents would have a greater opportunity to work at or closer to home to reduce the need for automobile trips (City of Kamloops 1999).

Road Network Improvements

Some road network improvements will be required prior to the population reaching the 100,000 person mark, and other improvements will be required prior to the population reaching the 120,000 person mark (City of Kamloops 1999). Prior to the population reaching 100,000 people, the Hillside Extension will be required. This new link will connect Hillside Drive at Notre Dame Drive to Summit Drive (City of Kamloops 1999).

As the population in the southwest area approaches 120,000 people, primary access will be required and accomplished through the westward extension of Aberdeen Drive and southward extension of Copperhead Drive. These extensions will permit the intersection of these two roadways. The extensions will be development-driven with two lane facilities. Right-of-way for four-lane roadways should be protected to serve population growth beyond 120,000 (City of Kamloops 1999).

Additional network upgrades will be required prior to reaching a population of 120,000 people, including the Sixth Avenue Extension from Columbia Street to Summit Drive (at Springfield Drive), improvements to the Trans Canada Highways Valleyview Corridor to Highway 5A, and some widening of Summit Drive south of the Trans-Canada Highway (City of Kamloops 1999). Since this project was completed, the City and the Ministry of Transportation and Infrastructure have completed or commissioned additional studies of the road network, including a highway and interchange study (Urban Systems 2013).

Other Transportation Network Improvements

The TravelSmart Project discusses the enhancement of other transportation types. In terms of public transit, TravelSmart recommends more frequent service, route expansions, the use of smaller buses, and the installation of bicycle racks on buses. More specifically for bicycles, TravelSmart recommends the development of dedicated and shared bicycle paths and the implementation of end-of-trip facilities (such as lockers and showers) at key locations (City of Kamloops 1999).

Industrial Land Review (draft)

The City of Kamloops is required through provincial legislation to identify an adequate supply of available industrial lands for a period of five years within its Official Community Plan. As such, the Industrial Land Review catalogues currently vacant industrial land, identifies lands that could be used for future development, analyzes rates of absorption of industrial land in the City and predicts land availability up to 2015, analyzes patterns of industrial land vacancy across the City, and makes recommendations regarding management of existing and potential industrial land.

The closest industrial areas to the proposed mine are the Iron Mask East and Iron Mask West industrial areas, which are about 15 km driving away from the Project. The Iron Mask East Industrial Area has access to Trans-Canada Highway West and is located 2 km east of the provincial commercial vehicle weigh station. The area does not have rail access. The total area of Iron Mask East is 94.3 ha, with 13.24 ha vacant as of 2010. Of the 21 properties in the Iron Mask East Industrial Area, five are vacant.

There are two main components to the Iron Mask West Industrial Area: three lots accessed from a cul-de-sac and eight lots that act as potential expansion of industrial land. The expansion area has limited road access and no City utility services. The proposed expansion area within Iron Mask West is considered a future option only and would require rezoning, an Official Community Plan amendment, and a comprehensive development review prior to any approvals being granted. The total area of Iron Mask West is 8.25 ha, with 3.25 ha vacant as of 2010. Of the three properties in the Iron Mask West Industrial Area, one is vacant.

The City of Kamloops' inventory of vacant industrial land is expected to last another 20 years. The review recommends the subdivision and intensification of existing industrial lands, such as in the Iron Mask East industrial zone.

3.2.3 Land Use Planning by Aboriginal Groups

Where readily available to the public, land use plans for the First Nations in the LSA and the RSA will be discussed below.

3.2.3.1 The Stk'emplusemc te Secwépemc Nation

Stk'emplusemc te Secwépemc Nation involvement in the KLRMP is discussed above in Section 3.2.1.

The TteS and Province endorsed a Forestry Consultation and Revenue Sharing Agreement (FCRSA) in March and April 2012, which has a term of three years. The agreement is intended to facilitate consultation through TteS participation through an agreed-upon consultation process and provide TteS with

opportunities to identify and pursue activities meant to enhance the social, cultural, and economic well-being of TteS members. These activities are also intended to reduce the socio-economic gap between TteS members and non-Aboriginal persons in BC (AMEC FW 2015).

The TteS and SIB, as SSN, and three other Shuswap Nation Tribal Council members endorsed, along with BC, a Reconciliation Framework Agreement, which has a term of three years. The agreement provides funding support to First Nations signatories to participate in the processes described in the Reconciliation Framework Agreement. According to AMEC FW (2015), the agreement is meant to:

- Increase consultation effectiveness;
- Support Secwépemc economic participation in the natural resource sector;
- Increase process certainty with respect to sustainable land and resource management;
- Encourage a positive and respectful government to government relationship;
- Support dialogue and increase the signatories' understanding of Secwépemc cultural heritage resources;
- Identify and explore ways to mitigate adverse effects of sensitive Secwépemc sites; and
- Provide a forum to discuss strategic topics such as mining, forestry, lands and other key topics.

The SIB has some land use planning within their traditional territory. These include Cultural Resource Management Zones, which are within 100 m of riparian features and water sources. According to the Cultural Resource Management Zone, silviculture activity may not take place closer than 50 metres to streams and road building must have at least a 20 metre setback from fish-bearing streams. In addition, within the Cultural Resource Management Zones, only diseased pine may be harvested (AMEC FW 2015).

3.2.3.2 The Lower Nicola Indian Band

The LNIB would like to develop land codes and laws for reserve lands and the Nlaka'pamux territory, which would help them manage their lands and resources more effectively (AMEC FW 2015).

The LNIB's land and resource use management are intended to reflect the needs, wants, and values of LNIB members. Members expressed their views through a Comprehensive Community Planning project and expressed concern in quality housing, clean air and water, among other topics (AMEC FW 2015). The Comprehensive Community Planning project also revealed that Band members would like land management to protect the social, cultural, and nutritional importance of traditional activities and help preserve them. Among the land and resource management and planning initiatives currently implemented by the LNIB are:

- Sustainable Forest Management Strategy: proposes Nlaka'pamux territory level sustainable forest management strategies;
- Invasive Plant Management Strategy: proposes a reserve land treatment and monitoring plan;

- Mountain Pine Beetle Planning and Mitigation Strategies: projects that identify impacts, risks and mitigation strategies. The emphasis is on preparing for emergencies;
- Species at Risk Projects and Workshops: projects through which suitable habitat and management strategies for wildlife and plant species at risk are identified;
- Environmental Management Systems: LNIB intends to develop environmental management systems and monitoring policies;
- LNIB Web Map Server: has the ability to support land use planning on reserve lands; and
- Land TRUSTT: LNIB submitted a proposal to the Canadian Culture Online Gateway Fund to develop a website entitled "LNIB's Traditional Resource Use through the Seasons on the Traditional Territory." The proposed website would preserve, enhance and promote traditional ecological knowledge with emphasis on engaging the youth of the LNIB (AMEC FW 2015).

3.2.4 Agriculture and Ranching

Section 3.2.2 describes land use planning for agricultural and ranching in its various contexts, while this section describes actual land use for agricultural and land use.

3.2.4.1 Regional Agriculture

The agricultural production capacity of the RSA (i.e., the TNRD) varies widely in accordance with geographic and climatic variation in the region. The southeastern portions of the RSA are close to the Okanagan Valley, which is one of the most productive agricultural areas in the province. However, most of the RSA is higher in elevation and drier in climate and therefore less suitable for crop production.

The total area used by farming operations in the TNRD-J in 2006 was approximately 262 km², or about 8% of the total area within the TNRD-J. About half of that area was owned by farms, and the remainder was leased from government or leased from other farms. There were a total of 100 operators.⁴

As of 2006, there were a total of 58 farms in the TNRD-J subdivision.⁵ The majority of the farms were between 10 and 69 acres in size, although ten of the farms were over 1,600 acres. Cattle ranching and horse keeping accounted for most of the agricultural activity in the region. Of the 58 farms, 28 were classified as cattle ranching and farming and 16 were classified as other animal production (14 of these were horse or other equine ranches). The remainder of the farms produced poultry, sheep and/or goats, vegetables, greenhouse products, and other crops (Statistics Canada 2006b).

Almost all planted crops were comprised of alfalfa; tame hay, which is hay cut from cultivated grasses; and fodder crops, to a total of 1,398 hectares. There were also a small number of hectares devoted to potatoes

⁴ According to Statistics Canada, a farm operator is a person responsible for the day-to-day management decisions made in operating a farm. Each farm can report up to three operators (Statistics Canada 2010).

⁵ Statistics Canada defines a census farm as a "farm, ranch, or agricultural operation that produces at least one of the following products intended for sale: crops, livestock, poultry, animal products, greenhouse or nursery products, Christmas trees, mushrooms, sod, honey or bees, and maple syrup products" (Statistics Canada 2010).

and fruits, berries and nuts. About 916 hectares were irrigated in the region, 911 of which were irrigated for hay and pasture.

In total, the farms in the area had 8,309 cattle and calves and 280 horses and ponies, as well as a variety of other livestock.

3.2.4.2 Agriculture in Kamloops

The BC Ministry of Agriculture publishes agricultural profiles for each agricultural region within the agricultural land base. The Ministry's "Agriculture in Brief" for the City of Kamloops shows that the total area farmed within the City of Kamloops in 2006 was 22,148 hectares. Approximately 44% of the land in the City of Kamloops is part of the ALR. Eighty percent of the total area farmed was used as unmanaged pasture for livestock, with the remainder being used for managed pasture, crops, and a small percentage of summer fallow. The majority of the livestock raised were cattle and calves, and beef cows. There were also relatively small numbers of sheep and lambs, horses and ponies, pigs, llamas and alpacas, and poultry. Approximately 11% of the total area farmed was irrigated. The annual gross farm receipts totalled slightly over \$9.2 million and annual cash wages paid were slightly over \$2.2 million (BC Ministry of Agriculture n.d.).

3.2.4.3 Agricultural Water Use

The major uses of water in agriculture in the study area are irrigation and livestock watering. Water use for agricultural purposes must be licensed through the B.C. Water Act, and must abide by all the provisions under which the license was granted. A license generally imposes limits to use in terms of diversion and volume of water as well as associated infrastructure and end uses (Government of British Columbia 2012).

The BC Ministry of Environment maintains an online database of water licenses in British Columbia. The province is divided into water districts, one of which is the Kamloops water district. The Kamloops water district covers an area that is roughly equivalent to the RSA. A search of the water licenses database returned a total of 6,356 water licenses located within the Kamloops water district (BC Ministry of Environment n.d.a.). The Project site lies within the Peterson Creek and minimally within the Cherry Creek watersheds. There is one water licence on Jacko Creek for the purpose of agricultural irrigation (BC Ministry of Environment n.d.a.). There is one licence on Keynes Creek for stockwatering and agricultural irrigation (BC Ministry of the Environment n.d.c.). There are 106 licenses on Peterson Creek, about 50 of which are used for irrigation and stock watering. Many of the other licences are used by farms and ranches for domestic or storage purposes (BC Ministry of Environment n.d.b.).

3.2.4.4 Cattle Ranching

Cattle ranching is the primary agricultural activity in proximity to the Project. Calves are the most commonly produced commodity by ranchers in British Columbia. The majority of calves produced in B.C. are sold to Alberta, whereas the majority of the cattle produced in British Columbia are sold to the US (British Columbia Cattlemen's Association 2012a). Cattle ranching typically involves the production of hay (which is normally baled for winter feed), movement of cattle between ranges (on private and Crown land), reproduction operations, and the sale of steers, heifers, and herd culls. Grazing cattle on pasture is recommended by the Cattlemen's Association as a best management practice that has the potential to benefit farmers and

society at large by making use of land that has low crop value and sequestering carbon and mitigating other greenhouse gasses (British Columbia Cattlemen's Association 2012b).

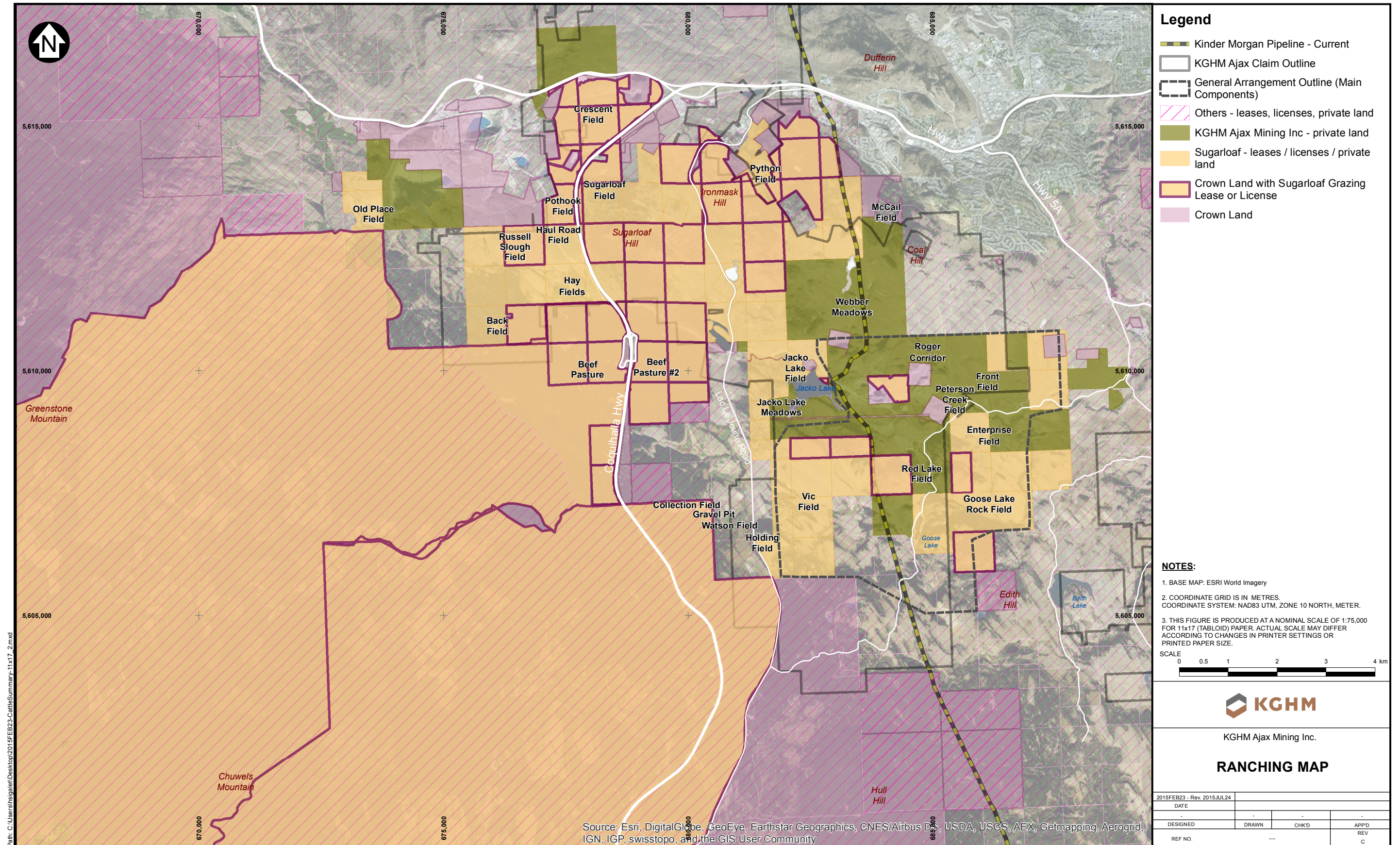
Ranching activities in proximity to the Project are affected by grazing leases, licenses and permits. Grazing leases are an historic type of land tenure issued by the provincial government, and if currently in place have typically been grandfathered in as part of the Land Act. A grazing lease gives the holder exclusive use of the forage on Crown Land for grazing purposes. The Province retains timber and mineral rights on the leases that have been granted, while things such as public roads are often exempt from the lease itself. Public access to lands within grazing leases is legally restricted, with access requiring permission from the lease holder. Grazing leases are no longer granted by the province, although existing grazing leases may be extended if applied for by the existing lessee. Under the *Range Act*, the Crown may grant either licences or permits for grazing and/or hay-cutting. Licences must be for a term of between 15 and 25 years and permits must be less than 10 years in duration (*Range Act*, SBC 2004, c. 71). They require the holder to submit a range use plan that must be approved by the district manager prior to livestock being turned onto the range. Similar to licences, a permit requires a range use plan be approved by the district manager. (BC Ministry of Forests 2000).

Grazing leases in proximity to the Project share common terms with the land to be used for grazing livestock or for harvesting purposes. The lessee is responsible for paying associated taxes and rents for the land, and cannot construct, place or affix any improvement on or to the land except as permitted by a management plan. The lessee is entitled to "quiet enjoyment of the land". For those leases that overlap with the Project footprint, there are provisions that provide the Secwépemc First Nations to access the land to use and gather traditional sustenance resources, medicines and other cultural heritage resources, including hunting and fishing and maintain their traditional practices and spiritual relationship to the land, in a manner that respects the grazing lease activities and does not interfere with grazing or forage use.

The mine footprint itself overlaps with an area referred to as the Sugarloaf Ranch, parts of which are governed by agreements between KAM and the ranch owners to enable mine development, while allowing for continued ranching activities to occur. Figure 3-8 presents an overview of the fields used in proximity to the Project, in addition to identifying where there are existing grazing leases, grazing licenses, privately held lands, and Crown lands, including those pertaining to Sugarloaf Ranch and to other ranchers in the area. While use of the fields depicted in

Figure 3-8 are guided by the requirements of the various grazing leases and licenses, there are also a series of legal and gentlemen's agreements that enable use of the area. While confidentiality prohibits the disclosure of the details of these agreements, KAM is working closely with Sugarloaf Ranch and others to understand the use of the area.

Figure 3-8
Cattle Fields in the Local Study Area



Path: C:\Users\shs\gait\Desktop\2015FEB23-CattleSummary-11x17_2.mxd

Table 3-9 provides a summary of the current use of the fields depicted in Figure 3-8, including consideration of Sugarloaf Ranch’s activities, other ranchers use, and approximate annual timing of each. The majority of activity is associated with Sugarloaf Ranch, while other rancher’s use tends to occur when cattle are being moved from one location to another. The timing of activities described in Table 3-9 is provided as a general overview of activities/uses, and is based upon seasonal conditions each year, which may vary. Generally, after calving, cattle are turned out by their respective ranches in the spring, moved through a series of fields over the course of the Spring/Summer, and return to their respective ranches in the fall. The various ranchers work together to guide the movements of cattle (in particular during larger drives in the spring and fall), although it is generally accepted that the “old girls” in each herd know the general pattern of movement and often lead herds to the appropriate location. Ranchers also utilize several water sources in the area, the largest of which is Jacko Lake.

Table 3-9: Cattle Fields and Associated Uses

Field Name ¹	Sugarloaf Ranch Activity	Approximate Timing	Other Ranchers Use	Approximate Timing
Hay Fields	Cattle start and end their annual cycle of movement here.	Calving begins between March and May and cows are turned out into pasture sometime after that. Cows return here in January.	Currently, another rancher has an agreement with Sugarloaf Ranch for their cattle to cycle through various fields together. ²	March-May
Crescent Field	Half of the herd move north from the Hay Fields into Crescent Field.	Occurs during spring for about three weeks.		
Pothook Field				
Haul Road Field	Haul Road Field is the corridor from Hay Fields to Crescent Field/Pothook Fields. Branding occurs here near underpass.	As required. Branding requires a single day in May.		
Sugarloaf Field	Used for grazing.	About one month in late Spring		
Russell Slough Field	Cattle move from Sugarloaf Field through Russell Slough for cow/calf pairing. From there, cattle move onto Greenstone Mountain for the summer range.	Late Spring-Summer	Cattle are turned out through the field before moving onto Greenstone Mountain for the summer range.	Late Spring-Summer
Beef Pasture	Cows move from summer range for fall grazing to the Beef Pasture.	Fall		

Field Name ¹	Sugarloaf Ranch Activity	Approximate Timing	Other Ranchers Use	Approximate Timing
Jacko Lake Field	Half of the herd move from Hay Fields to here to graze. Pregnancy testing.	Spring Summer		
Vic Field	Branding.	Mid-May to Mid-June		
Holding Fields	Cattle move from Vic Field for cow/calf pairing then onto Chuwels Mountain for summer range.	Summer		
Collection Field/gravel pit	Cattle return from Chuwels Mountain in fall.			
Jacko Lake Meadows	Grazing area	April-December		
Old Place Field	Cows come through this area when moving back to the Sugarloaf and Hay Fields.	Fall	Cows come through this area when moving back to the Sugarloaf and Hay Fields.	Fall
Peterson Creek Field	Summer breeding.	June-October		
Red Lake Field	Used for cow/calf pairing.	April-May after calving. Some summer use.		
Roger's Corridor	Summer breeding.	June-October		
Webber Meadows			Occasional use for grazing.	Spring-Summer
Back Field	Collection area for when cattle come off Greenstone	July-August	Occasional use for grazing or collection of cows coming off other pastures.	July-August
Enterprise Field	Used for breeding. Used for replacement heifers.	Summer As required.	Used for breeding.	Summer
Front Field	Used for yearlings and replacement stock.	As required.		

Source: Field impact data provided by KAM.

Notes:

1. Some fields indicated on Figure 3-8 are not included in the table. For these fields, there are no ranching activities that will be affected by Project activities.
2. This is likely to change in future years as that rancher will have new facilities available at their own ranch for use.
3. Table is intended to provide an overview of current usage only. It is subject to change depending on annual needs and land conditions.

3.2.5 Mining

The Kamloops Land and Resource Use Management Plan indicates that mineral and mine development are allowable in all general management zones outside of protection resource management zones. The Ajax project area does not overlap with any protection resource management zones. The objectives of the KLRMP with regard to mining are to: 1) encourage new mining development; 2) strive for diversified mineral industries; and 3) maintain or enhance access to lands for mineral development (BC Ministry of Forests, Lands and Natural Resource Operations 1995).

3.2.5.1 The Mines Act

The Mines Act is a piece of provincial legislation that applies to all exploration, development, construction, production, closure, reclamation, and abandonment of mines in British Columbia. The Act stipulates that the minister designate a chief inspector of mines, who has the rights and powers conferred by the Act.

Permitting

Any work in, or relating to a mine must be done under a permit issued by the chief inspector of mines unless the chief inspector chooses to exempt the work from the permitting process in the absence of any foreseeable negative effects of the work. The application for the permit must include a detailed outline of the proposed work with considerations for cultural heritage resources, protection and reclamation of the land and effects on watercourses.

The chief inspector may issue the permit with any conditions they may consider necessary. For example, they may require security payments for mine reclamation and/or mitigation of negative effects of the work. The chief inspector has the authority to add additional conditions or change existing conditions in the permit. Additionally, the chief inspector may order the permit holder to stop the work or close the mine. If conditions in the permit are not adhered to the permit can be cancelled.

Operation

The Act has numerous stipulations that apply to the operation of a permitted mine. Most of the stipulations pertain to health and safety, impact of operations on other public works, and the system of management, supervision, and contracting of operations work. Inspection is the foremost tool used to enforce provisions of the Act that pertain to operations of a mine.

For example, there are several provisions intended to ensure a safe work environment for workers. The chief inspector has the authority to conduct health and safety inspections at any time and compel personnel to answer questions relating to the inquiry. Another requirement of the Act is that up-to-date (quarterly) mine plans must be kept on the premises. The chief inspector can also order the mine to hire a licensed professional to conduct a health and safety study of the mine.

Reclamation

As previously mentioned, the chief inspector may require that an applicant for a mine work permit put aside money for mine reclamation before granting the permit. In addition, the Lieutenant Governor in Council

has the power to establish a mine reclamation fund. The mine reclamation fund is a mechanism whereby money from the mine owner or manager is credited to a separate account in the name of the mine. The money in the fund can be given back to the mine owner or manager if the chief inspector determines that it will not be needed for reclamation.

3.2.5.2 The Mineral Tenure Act

The Mineral Tenure Act sets out the rights and responsibilities of holders of mineral titles. It also delineates the procedures for acquisition, maintaining mineral claims in good standing, turning a claim into a lease, and transfer of claims.

3.2.5.3 Historical Overview of Mine Site

The Ajax deposits are located within an area known as the Iron Mask-Afton batholiths, where explorations began in the 1880s. Although the first development on the Ajax claims was reported in 1906, G.J. Rogers was the first recorded owner of the claims, acquiring them prior to 1923. The Consolidated Mining and Smelting Company of Canada (Limited) (Cominco) acquired the Ajax claims from Mr. Rogers late in 1928 and carried out diamond drilling in the following years. Diamond drilling exploration by Cominco and later Afton Mines Ltd. continued on and off from 1929 to the 1970s, during which time there were several changes in ownership of specific claims. Exploration efforts by Afton Mines Ltd. between 1973 and 1980 identified a reserve consisting of copper, gold, and silver and recoverable reserves were defined as of 1988 (BC Ministry of Energy 2008). Teck Corporation, through the Afton Operating Corporation (AOC) took 70% interest from Cominco and Imperial Metals Corporation in 1986 and began further exploration in 1987.

The AOC began mining operations at the east and west pits of the Ajax deposit in June of 1989, after the economic open pit reserves at Afton had been depleted early that year (BC Ministry of Energy 2008). Operations at the Ajax east deposit ceased in 1991 due to depressed metal prices and recommenced in 1995, again under AOC, which was a subsidiary of Teck Corp. (Teck) In 1996, AOC began mining operations at the Ajax west deposit, but ceased in 1997 again due to low metal prices and a low ore grade (BC Ministry of Energy 2008; Ministry of Energy, Mines and Natural Gas and Responsible for Housing 2006). Abacus Mining and Exploration (AME) Corp acquired claims in the Ajax area from Teck Corp in 2002. Abacus Mining and Exploration Corp. continued the exploration of the Ajax properties by drilling from 2005 to 2010 (Abacus Mining and Exploration Corp. 2012), during which time Wardrop (2009) completed a resource estimate and a preliminary economic assessment on behalf of AME for the Ajax resource.

3.2.6 Ajax Project Land Use

The proposed KGHM-Ajax mine operation would take place primarily on land south of the City of Kamloops. All of this land is allocated by either privately owned mineral claim or Crown grant. Table 3-10 shows that KGHM-Ajax currently has rights to 67 mineral claims and 32 Crown grants. From Mineral Titles Online records, the total area of claims held by KAM is 11,192 hectares. The following table provides the tenure number, name of claim site, owner, expiration date, and area of all the mineral claims and Crown grants that comprise the mine's direct land use.

Table 3-10: KGHM Ajax Claims and Crown Grants

Tenure Number	Title Type	Claim Name	Good To Date	Area (ha)
216688	Mineral	RAINBOW NE	2018/Oct/31	150
216689	Mineral	RAINBOW SE	2018/Oct/31	300
216690	Mineral	RAINBOW SW	2018/Oct/31	150
216740	Mineral	OR #14	2018/Oct/31	25
216745	Mineral	REFER TO LOT TABLE	2018/Oct/31	25
216761	Mineral	DELTA 1061	2018/Oct/31	25
219961	Mineral		2016/Mar/02	20.05
219963	Mineral		2016/Aug/10	20.89
220089	Mineral	PYTHON NO.15	2015/Sep/26	25
220167	Mineral	DOT NO.2	2015/Sep/26	25
220168	Mineral	DOT NO.3	2015/Sep/26	25
220169	Mineral	DOT NO.5	2015/Sep/26	25
220551	Mineral	X #16	2018/Oct/31	25
221619	Mineral	PLANE 19 FR.	2018/Jun/01	25
320909	Mineral	JAXD 8	2018/Oct/31	25
324308	Mineral	INK 1	2018/Oct/31	25
324309	Mineral	INK 2	2018/Oct/31	25
324310	Mineral	INK 3	2018/Oct/31	25
324311	Mineral	INK 4	2018/Oct/31	25
324312	Mineral	INK 5	2018/Oct/31	25
324313	Mineral	INK 6	2018/Oct/31	25
398532	Mineral	DCE 1	2018/Oct/31	300
398533	Mineral	DCE 2	2018/Oct/31	300
398643	Mineral	WIRE 1	2018/Oct/31	25
398644	Mineral	WIRE 2	2018/Oct/31	25
398645	Mineral	WIRE 3	2018/Oct/31	25
398646	Mineral	WIRE 4	2018/Oct/31	25
406651	Mineral	GM 70	2015/Nov/22	200
505378	Mineral		2018/Oct/31	225.395
510019	Mineral		2018/Oct/31	1659.012
513984	Mineral	AJ 9	2018/Jun/01	82.001
514050	Mineral		2018/Jun/01	451.2
517292	Mineral	AJAX	2018/Jun/01	20.511
521725	Mineral	AJAX	2018/Jun/01	492.422
522216	Mineral	DAVES DREAM	2018/Oct/31	122.947
528528	Mineral	522216 EXTRA	2018/Oct/31	40.988
552948	Mineral	AJ	2018/Jun/01	102.5259
559160	Mineral	NEW GOLD OPTION	2018/Jun/01	41.0241

Tenure Number	Title Type	Claim Name	Good To Date	Area (ha)
604603	Mineral	AJ P EAST	2015/Sep/26	20.5013
705924	Mineral	OR11	2018/Oct/31	245.6925
1014370	Mineral	EB12	2015/Nov/08	20.4746
1014407	Mineral	EB13	2015/Nov/09	61.4187
1016432	Mineral	Bill1	2018/Oct/31	40.9884
1016433	Mineral	Bill2	2018/Oct/31	20.4924
1016435	Mineral	Dianna1	2018/Jun/01	266.4627
1023220	Mineral	Bill1	2018/Oct/31	655.944
1023221	Mineral	Bill2	2018/Oct/31	348.44
1036601	Mineral	Clyde1	2018/Jun/01	123.0045
1036602	Mineral	Clyde2	2018/Jun/01	246.0605
1036603	Mineral	SRLNorth	2018/Jun/01	471.4538
1036604	Mineral	SRLSouth	2018/Jun/01	102.5202
1036605	Mineral	AJAX1S	2018/Jun/01	123.0998
1036606	Mineral	AJAX1N	2018/Jun/01	82.0441
1036607	Mineral	AJAX2E	2018/Jun/01	389.8338
1036608	Mineral	AJAX2W	2018/Jun/01	123.1174
1036609	Mineral	AJAX3S	2018/Jun/01	390.0242
1036610	Mineral	AJAX3N	2018/Jun/01	123.1441
1036611	Mineral	AJAX4S	2018/Jun/01	143.6688
1036612	Mineral	AJAX4N	2018/Jun/01	61.5681
KGHM Claims Non-Contiguous with Ajax				
216739	Mineral	OR #13	2015/Sep/26	25
216768	Mineral	WILDROSE 2	2015/Oct/31	25
217002	Mineral	SUNNY	2015/Oct/31	225
220160	Mineral	ACE NO. 1	2015/Sep/26	25
307650	Mineral	JOKER	2015/Oct/31	450
324337	Mineral	ACE	2015/Oct/31	500
327091	Mineral	ACE 2	2015/Oct/31	375
605068	Mineral	GRADEN	2015/Oct/31	328.2491

Source: Abacus Mining and Exploration Corp. 2012.

Table 3-11 lists a number of privately owned mineral claims that are adjacent to the KGHM Ajax claims and Crown grants.

Table 3-11: Mineral Claims Adjacent to KGHM Properties

Tenure Number	Tenure Type	Claim Name	Owner	Good to Date	Area (ha)
506003	Mineral	IVY 2	BOITARD, CHARLES ROGER	1/15/2016	451.7470
516119	Mineral		BOITARD, CHARLES ROGER	8/15/2015	266.5004
519609	Mineral	IVY 4	BOITARD, CHARLES ROGER	1/15/2016	41.0600
836775	Mineral	IVY 7	BOITARD, CHARLES ROGER	1/15/2016	205.3348
1022486	Mineral	DAVE 2	BOITARD, CHARLES ROGER	8/15/2015	123.0290
513823	Mineral		CICADA VENTURES LIMITED	10/10/2015	676.9100
513829	Mineral		CICADA VENTURES LIMITED	10/10/2015	471.9480
513830	Mineral		CICADA VENTURES LIMITED	11/30/2015	369.4430
518204	Mineral	LINCOLN 1	CICADA VENTURES LIMITED	10/10/2015	205.2150
521761	Mineral	LINCOLN 3	CICADA VENTURES LIMITED	10/10/2015	287.1230
521762	Mineral	LINCOLN 5	CICADA VENTURES LIMITED	10/10/2015	369.0630
521765	Mineral	LINCOLN 6	CICADA VENTURES LIMITED	10/10/2015	327.9680
836889	Mineral	LINK	CICADA VENTURES LIMITED	10/10/2015	451.6912
398534	Mineral	SUGAR 1	DISCOVERY-CORP ENTERPRISES INC.	8/30/2018	25.0000
398535	Mineral	SUGAR 2	DISCOVERY-CORP ENTERPRISES INC.	8/30/2018	25.0000
398538	Mineral	SUGAR 5	DISCOVERY-CORP ENTERPRISES INC.	8/30/2018	25.0000
398539	Mineral	SUGAR 6	DISCOVERY-CORP ENTERPRISES INC.	8/30/2018	25.0000
364665	Mineral		DUGUAY, DARLENE LOUISE	11/24/2015	108.0000
1034411	Mineral	NEW MINE	EARL, CODY DAN	2/20/2016	40.9706
373338	Mineral	GM 10	GOLD MASK VENTURES LTD.	11/22/2023	25.0000
373339	Mineral	GM 11	GOLD MASK VENTURES LTD.	11/22/2023	25.0000
385260	Mineral	GM-18	GOLD MASK VENTURES LTD.	11/22/2023	200.0000
406650	Mineral	GM 69	GOLD MASK VENTURES LTD.	11/22/2023	500.0000
409786	Mineral	GM 22	GOLD MASK VENTURES LTD.	11/22/2023	25.0000
515570	Mineral		GOLD MASK VENTURES LTD.	11/22/2023	266.6110
930170	Mineral		GOLD MASK VENTURES LTD.	11/22/2023	20.5012

Tenure Number	Tenure Type	Claim Name	Owner	Good to Date	Area (ha)
1012161	Mineral	GOLD MASK WEST	GOLD MASK VENTURES LTD.	11/22/2023	307.5689
834471	Mineral	TIMBER 2	HARPER, CHARISE MERICLE	3/1/2016	164.1202
835554	Mineral		LAROCHE, FRANCIS RENE	5/24/2016	40.9796
835557	Mineral		LAROCHE, FRANCIS RENE	4/28/2016	20.4888
526829	Mineral	MIK 3	LITTLE NICHOLAS MINING CORP.	6/20/2015	492.3320
220090	Mineral	PYTHON NO.16 FR.	NEW GOLD INC.	9/26/2016	25.0000
220275	Mineral	LINE NO.3	NEW GOLD INC.	9/26/2016	25.0000
221488	Mineral	FAY 1 FR	NEW GOLD INC.	9/26/2016	25.0000
372644	Mineral	AFTON 8	NEW GOLD INC.	3/8/2017	25.0000
372645	Mineral	AFTON 9	NEW GOLD INC.	3/8/2017	25.0000
372646	Mineral	AFTON 10	NEW GOLD INC.	3/8/2017	25.0000
372647	Mineral	AFTON 11	NEW GOLD INC.	3/8/2017	25.0000
378688	Mineral	AFTON 8	NEW GOLD INC.	3/8/2017	500.0000
378920	Mineral	HUGH 3	NEW GOLD INC.	6/17/2016	25.0000
378922	Mineral	HUGH 5	NEW GOLD INC.	6/17/2016	25.0000
379304	Mineral	AFTON 19	NEW GOLD INC.	3/8/2017	25.0000
379305	Mineral	AFTON 20	NEW GOLD INC.	3/8/2017	25.0000
513980	Mineral		NEW GOLD INC.	6/1/2018	553.2050
517047	Mineral	AFTON	NEW GOLD INC.	3/8/2017	40.9740
517259	Mineral	AJAX	NEW GOLD INC.	6/1/2018	81.9670
517263	Mineral		NEW GOLD INC.	6/1/2018	20.4950
521727	Mineral	AJAX	NEW GOLD INC.	6/1/2018	451.6960
521728	Mineral		NEW GOLD INC.	6/1/2018	513.2600
528243	Mineral	SMELTER	NEW GOLD INC.	3/8/2017	20.4850
546063	Mineral		NEW GOLD INC.	11/29/2024	902.3000
552399	Mineral	ML EXT 1	NEW GOLD INC.	2/20/2016	20.4819
552400	Mineral	ML EXT 2	NEW GOLD INC.	2/20/2016	20.4834

Tenure Number	Tenure Type	Claim Name	Owner	Good to Date	Area (ha)
650330	Mineral	PYTHON NW CELL	NEW GOLD INC.	10/10/2016	20.4853
654890	Mineral	IRON MASK 1	NEW GOLD INC.	10/19/2016	20.4853
654891	Mineral	IRON MASK 2	NEW GOLD INC.	10/19/2016	20.4870
765242	Mineral	HUGH 6 REPL	NEW GOLD INC.	5/2/2016	20.4942
835552	Mineral	AJ MAGNUM W	NEW GOLD INC.	10/10/2016	40.9742
1026061	Mineral	DORADO	NEW GOLD INC.	9/20/2016	102.4832
1032391	Mineral	JW	SCOTT, BRIAN WILLIAM	11/25/2015	40.9476
1029247	Mineral		SCOTT, STEVEN JEFFREY	6/28/2015	61.4489
Mineral Claims Adjacent to KGHM SE Claim Block Only					
513891	Mineral		CICADA VENTURES LIMITED	10/10/2015	595.4440
516592	Mineral	ST.PATRICK	LITTLE NICHOLAS MINING CORP.	6/20/2015	492.5490
517610	Mineral	ST. PETER	LITTLE NICHOLAS MINING CORP.	6/20/2015	184.7300
521733	Mineral	LINCOLN 2	CICADA VENTURES LIMITED	10/10/2015	307.7320
526621	Mineral	MIK 1	LITTLE NICHOLAS MINING CORP.	6/20/2015	513.2750
526830	Mineral		LITTLE NICHOLAS MINING CORP.	6/20/2015	205.1017
1032832	Mineral	SHUM 7	LITTLE NICHOLAS MINING CORP.	12/19/2015	143.7514

Source: Data BC 2014.

Notes:

1. Mapping data from iMap was compiled by Intergroup Consultants Ltd. and put in tabular format.

3.2.7 Traditional and Current Land Use by Aboriginal Groups

Traditional and current land use by Aboriginal Groups is provided Section 12 of the Application/EIS, which AMEC FW (2015) drafted. Additional information about SSN use of the area around Jacko Lake can be found in Section 3.3.2.

3.2.8 Outdoor Recreation

This section includes a description of parks and protected areas in the RSA; other recreational activities of interest near the Project site, such as mountain biking and astronomical observation; and hunting and fishing. Resource harvesting discussed in this section focuses on recreational use and not on traditional use by Aboriginal people. A discussion of the recreational use of Jacko Lake is included in Section 3.3.2.

3.2.8.1 Parks and Protected Areas

Parks, ecological reserves, and protected areas contain many nationally and internationally significant natural and cultural values. Establishing these areas ensures that these values are afforded legal protection (BC Parks 2011a). Parks are managed and protected for important conservation values and are committed to the preservation of their natural habitat, ultimately for public use, enjoyment, and inspiration (BC Parks 2011a).

A Wildlife Management Area (WMA) is a conservation area requiring a special level of protection and management. This designation for an area may be given due to the area's wildlife/habitat values being of regional, provincial or national significance. Special management zones for wildlife, fish and their habitats may have been identified in a local or regional strategic land use plan (BC Parks 2011c).

An Ecological Reserve is an area selected to preserve representative and special natural ecosystem, plant and animal species, features, and phenomena (BC Parks 2011a.). Ecological Reserves provide the highest level of protection for the maintenance of physical and biological diversity while allowing for research and educational activities (BC Parks 2011b).

Table 3-12 provides summary information for all the provincial parks, ecological reserves, WMAs and historical sites within 30 km of the potential mine site listed on the British Columbia Parks website. The information listed includes the name, size, year created, type, and attractions of each recreation site and is listed by increasing distance from the potential mine site. Figure 3-9 provides a map with provincial parks and ecological reserves.

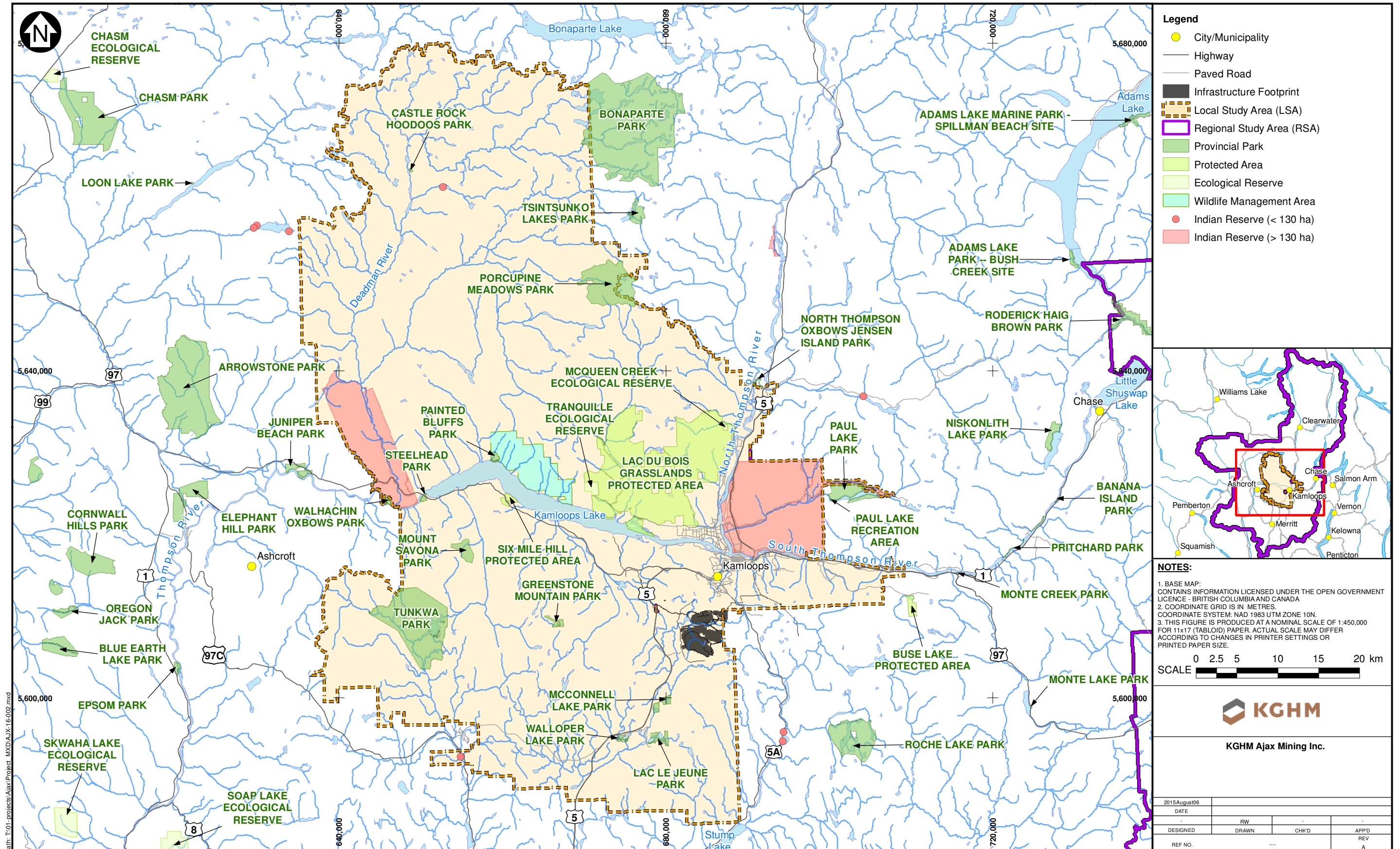
Table 3-12: Key Parks, Ecological Reserves, and WMAs within 75 km of the Project Site

Site Name	Area (km ²)	Year Created	Type	Site Attractions	Distance from Project Site (km)
McConnell Lake Park	1.02	1996	Provincial Park	Fishing, hiking, canoeing, swimming, snow shoeing, cross-country skiing, ice fishing.	10
Lac du Bois Grasslands Protected Area	150	1996	Provincial Park & Protected Area	Cycling, fishing, hiking, wildlife viewing, snowshoeing, cross-country skiing, hunting.	13
Tranquille Wildlife Management Area	2.54	1987	Wildlife Management Area	Management of valuable wetland habitat for waterfowl and other wetland dependent species.	13
Greenstone Mountain Provincial Park	1.24	1996	Provincial Park	Cycling, fishing, hiking, horseback riding, snowshoeing, snowmobiling.	15
Lac Le Jeune Park	2.13	1956 – original parcel Addition in 1996	Provincial Park	Swimming, fishing, boating, canoeing, cycling, camping, hiking, biking, wildlife viewing, nature appreciation, interpretive programs, cross country skiing, ice skating.	15
Tranquille Ecological Reserve	2.35	1971	Ecological Reserve	Hiking, nature observation and photography.	16
Wallop Lake Park	0.55	1987	Provincial Park	Fishing, picnicking, boating, canoeing, swimming.	17
Paul Lake Provincial Park	6.7	1961 – Original parcel Addition in 1996	Provincial Park	Camping, cycling, fishing, canoeing, swimming, boating, picnicking, wildlife viewing, hiking, snowshoeing, cross-country skiing.	21
Roche Lake Park	20.41	1996	Provincial Park	Camping, canoeing, cycling, hiking, horseback riding, swimming wildlife viewing, fishing, cross-country skiing, snowmobiling, snowshoeing, ice skating, hunting.	21
McQueen Creek Ecological Reserve	0.35	1982	Ecological Reserve	Hiking, nature observation and photography.	23

Site Name	Area (km ²)	Year Created	Type	Site Attractions	Distance from Project Site (km)
Six Mile Hill Protected Area	1.51	2001	Provincial Park & Protected Area	Climbing, hiking, hunting.	25
Buse Lake Protected Area	2.28	2000	Provincial Park & Protected Area	Birding, nature appreciation, hiking, rock collecting, wildlife viewing.	26
Mount Savona Provincial Park	3.82	?	Provincial Park	Cycling, hiking, horseback riding, hunting.	27
Tunkwa Provincial Park	51	1996	Provincial Park	Trout fishing, canoeing, hiking, swimming, camping, horseback riding, wildlife viewing, hunting, cross country skiing, snowmobiling.	30
North Thompson Oxbows Jensen Island Park	0.3	1996	Provincial Park	Canoeing, fishing, wildlife viewing.	30

Source: BC Parks n.d.

Figure 3-9
Parks, Protected Area and Ecological Reserves in the vicinity of Ajax Project



3.2.8.2 Hunting, Trapping and Fishing

Hunting and trapping in British Columbia is regulated by the Ministry of Forests, Lands, and Natural Resource Operations (FLNRO). The Project would be located within Resource Management Region 3, which covers Kamloops and much of the RSA. Resource Management Region 3 is comprised of 30 management units, each with specific season and species harvesting regulations. The Project would be located in management unit 3-19 (BC Ministry of Forests, Lands and Natural Resource Operations 2014).

Hunting

The Project is located in Resource Management Unit 3-19, which has seasons for mule deer, whitetail deer, moose, wolf, black bear, coyote, cougar, bobcat, lynx, raccoon, snowshoe hare, Colombian ground squirrel, grouse (blue, ruffed, and spruce), pheasant, mourning dove, coots, common snipe, ducks, and geese. The Greenstone Mountain Burn within management unit 3-19 is closed to motor vehicle access for hunting purposes except for Duffy Lake Road, Beaton Lake Road, and Greenstone Mountain Road (BC Ministry of Forests, Lands and Natural Resource Operations 2014).

Hunting within the LSA is limited because of land ownership. The majority of the land is privately owned, so hunters must have permission from the owners. The most popular game hunted in the area are deer and moose. Hunters and residents in the area have noted that the area between the Coquihalla Highway and Lac le Jeune Road is an important area for both white-tail and mule deer populations. The area is thought to be key for over-wintering mule deer populations and important for calving of white-tail deer. Although there is no season for big horn sheep in management unit 3-19, hunters have noted a small herd of the sheep establishing themselves near Cherry Creek (Ajax KPI Program 2011-2012).

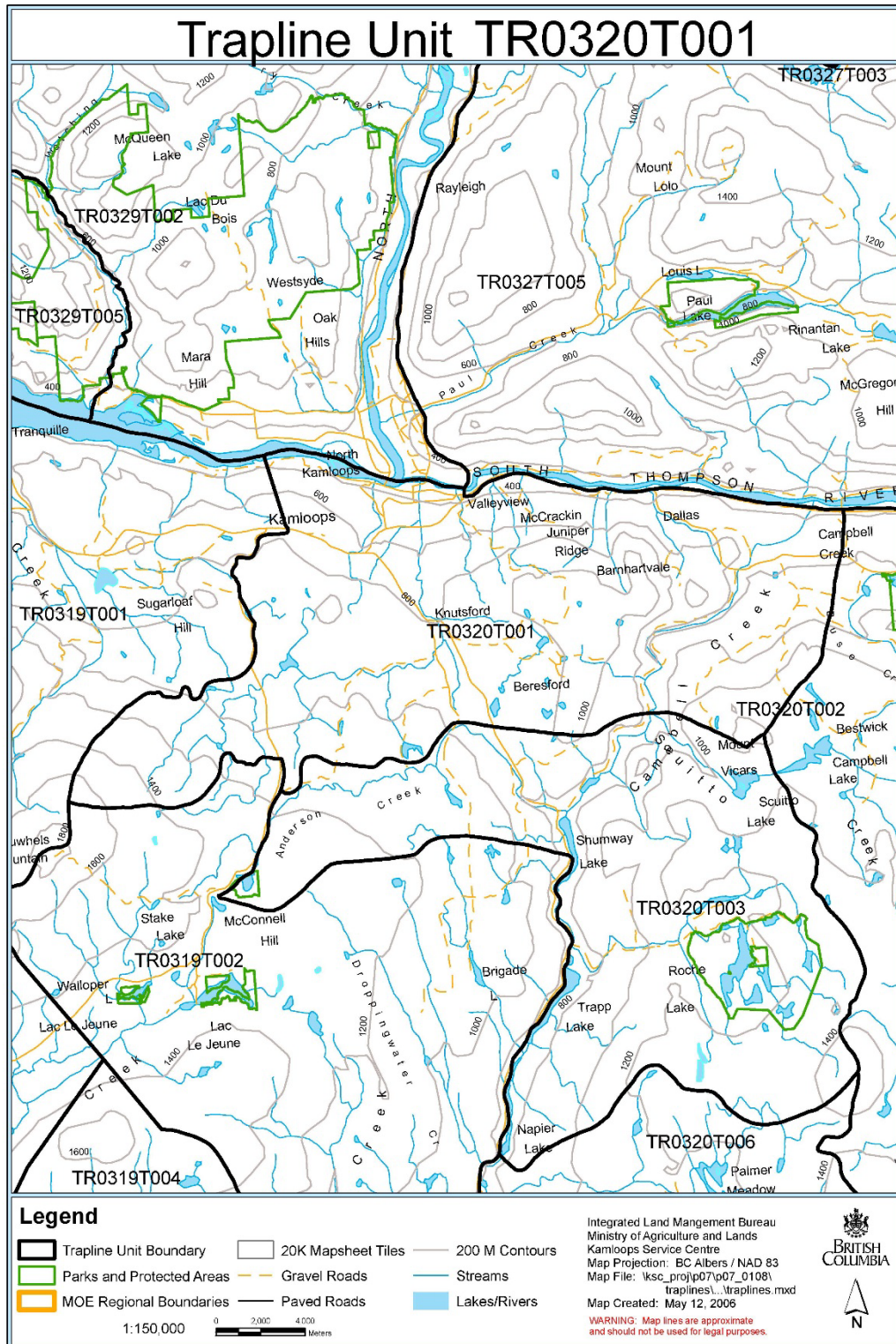
Interview participants also noted that some bird hunting occurs in the area. Blue and ruffed grouse are hunted around Sugarloaf Mountain and Coal Hill, and ducks and geese are hunted on pockets of water in the area (Ajax KPI Program 2011-2012).

Trapping

Trapping in the LSA is limited as it is an offence to trap on private property without written permission of the property owner and a valid trapping licence. Trappers must be the registered holder of a trapline for an area, or otherwise authorized by regulation or permit. Species that can be trapped in management unit 3-19 (and their respective bag limits) include black bear (2), wolf (3), coyote (no bag limit), cougar (2), bobcat (1), lynx (1), raccoon (no bag limit), snowshoe hare (10 daily), and ground squirrel (no bag limit).

The Project falls entirely within the trapline unit TR0320T001. Data from 1986 through 2008 indicate the trapline within the project site was not active between 2001 and 2008. This trapline unit is adjacent to several other trapline units: TR0319T001, TR0319T002, and TR0320T003. Two of these traplines were active in 2010: TR0319T001, which has an eastern border that runs along the Coquihalla Highway just west of the Project site, and TR0320T003, which is south and east of the Project site around Stake Lake, Walloper Lake and Lac le Jeune (Cebuliak pers. comm. 2012).

Figure 3-10: Trapline Unit TR0320T001



Source: Cebuliak, pers. comm. 2012.

Trapping data from traplines TR0320T001 and TR0319T001, which are neighbouring traplines, in Table 3-13 below indicate that muskrat, weasel, coyote and squirrel are the most commonly trapped animals in the area around the Project site.

Efforts were made to identify the trapline holder with FrontCounter BC and efforts were made to contact the trapline holder based on the most current information available to KAM. Should contact be made later in the licensing process, the additional information will be considered and incorporated into the effects assessment.

Table 3-13: Trapping Harvest for Traplines TR0319T001 and TR0320T001, 1986-2008

Trapline	Beaver	Bobcat	Coyote	Lynx	Marten	Muskrat	Raccoon	Squirrel	Weasel
TR0319T001									
1986	3	3	3	4		6			1
1987	10	4	13	3		31		23	28
1988				6					
1992		2		3					
1999							2		
2003				1					3
2004		1	6						2
2005		1							
2006	4	4	11	0	0	4	0	0	8
2007	1	1	1			1			1
2008	0	1	3	0	0	14	0	0	4
Total	18	17	37	17	0	56	2	23	47
TR0320T001									
1986			2						
1987			7						
1993						50			
2000		1			1	8			1
2001		2	2						
Total	0	3	11	0	1	58	0	0	1

Source: FLNRO 2013.

Fur auction prices for different pelts can be used to estimate an annual trapping income. The estimated trapping income for TR0319T001 in 2008 is shown below in Table 3-14.

Table 3-14: Estimated 2008 Trapping Income for TR0319T001

	Bobcat	Coyote	Muskrat	Squirrel	Weasel
Harvest	1	3	14	0	4
Approx. Revenue	\$180.00	\$107.48	\$47.60	\$0.00	\$19.60
Total					\$354.68

Source: Beaver, coyote, lynx, raccoon, squirrel; North American Fur Auction prices, 2008. Bobcat, marten, muskrat, weasel; Saskatchewan Ministry of Environment Saskatchewan Wild Fur Harvest and Cash Values, 2010-2011.

Fishing

Freshwater fishing in British Columbia is regulated by the FLNRO. The regional divisions and management units are the same as those used for wildlife, which are described above in Section 3.2.8.1. Resource management Region 3 has a spring closure that from January 1 to June 30 (with some exceptions). There are 306 lakes used for fishing in Region 3. The lakes closest to the Project site are Jacko Lake, Edith Lake, McConnell Lake, and Stake Lake (Freshwater Fishing Society of BC 2012b). More detail on fishing at Jacko Lake can be found in Section 3.3.2.

3.2.8.3 Mountain Biking, Hiking, and Bird Watching

Aside from the popular Kamloops Bike Ranch in Juniper Hills, there are numerous bike trails throughout the City, and the hills around the City. Mountain biking takes place on the Inks Lake trail system to the east of the proposed project site, on the west side of Lac La Jeune Rd., and also north of the proposed project site on the hillside behind Pineview Valley, Frontage Road, and the Iron Mask Industrial Park. There are hiking and mountain biking trails in the grasslands behind Aberdeen as well. The Coal Hill trail and the access road are popular mountain biking and hiking routes. While there is little mountain biking at the proposed Project site because it is largely privately owned ranch land, and there are numerous fences to negotiate, mountain bikers in the area have established a system of “pirate trails” near the Project site (Andersen, et al. *pers. comm.* 2014).

There is currently a Pineview Recreational Trails Pilot Project, which is a collaboration between not-for-profits, the business sector (led by KAM), and the municipal and federal governments, which aims to provide seasonal access to approved Pineview trails while also preserving ranching activities in the area. There are also rules in place regarding trail maintenance, access seasonality, and preventing the spread of noxious weeds (Kamloops Performance Cycling Center, KGHM Ajax Mining Inc., FLNRO, Taboo Cycles, Kamloops Bike Riders Association, Bicycle Cafe, Kinder Morgan 2014).

Inks Lake, Sugarloaf Mountain, and Jacko Lake, as well as the ALR lands behind Aberdeen, including Coal Hill, are very popular walking, hiking, and bird-watching areas. Residents may also engage in nature photography. Many of these activities take place on private land.

3.2.8.4 Astronomical Observation

The Kamloops Astronomical Society (KAS) is an astronomy club which promotes interest and participation in astronomy. The Society holds scheduled observing sessions at their observatory in the Stake Lake recreation area, located on the south western shore of Stake Lake, approximately 13 km south by south west of the proposed Project site. The Stake Lake observatory’s location is rated at about four out of nine on the Bortle scale, which quantifies astronomical observability of celestial objects and the level of interference from light pollution with one being the best and nine being the worst (KAS n.d.).

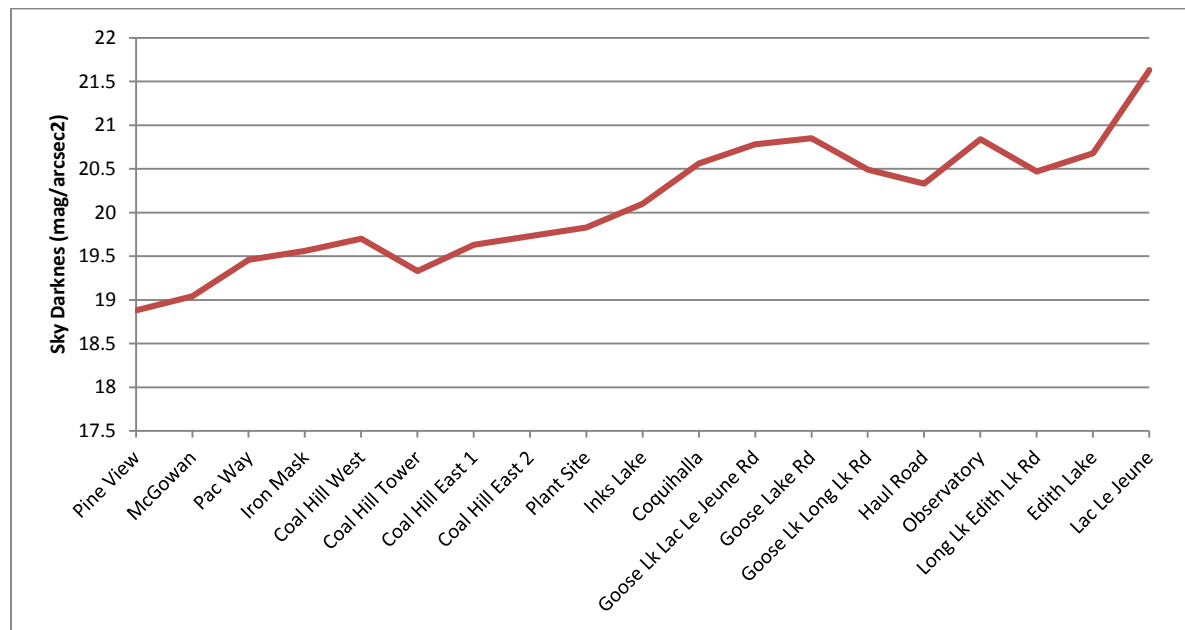
KAS is also currently in the process of establishing a dark sky preserve at the Stake Lake observatory under the guidelines of the Royal Astronomical Society of Canada. The guidelines focus on quantitatively

measuring the quality of the night sky above the observatory dome, encouraging shielding of light fixtures proximal to the observatory, improving night-time accessibility to the observatory, and working with neighbours to mitigate sky glow (KAS n.d.).

Dark Sky

Baseline measurements were taken of the quality of the sky darkness at 20 locations near the proposed Project site, within the City of Kamloops, and at the KAS observatory on 17 different dates between June 2012 and October 2014. The goal was to sample on clear, moonless nights; however this was difficult to achieve due to weather conditions and the timing of new moons (KGHM International 2014).

Figure 3-11 shows the dark sky levels at the different locations. The residential measurements (McGowan, Pacific Way and Pineview) have the least sky darkness, while the darkest samples were collected from the KAS Observatory (approximately 12 km from Project) and the entrance to Lac Le Jeune Provincial Park, although outdoor ski lighting near the KAS Observatory has reduced average sky darkness (KGHM International 2014).



Source: KGHM International 2014.

Figure 3-11: Sky Darkness Increases with Increasing Distance from Kamloops, BC

3.2.8.5 Off-Road Vehicles

The Greater Kamloops Motorcycle Association, which promotes off-road motorcycling in the TNRD, maintains more than 400 km of trails in the Inks Lake, Greenstone Mountain, and Chewhels Mountain riding areas. Authorization to maintain these trails was initially granted to the Greater Kamloops Motorcycle Association under the *Forest Practices Code*. More trails were later authorized under the *Forest and Range Practices Act*, Section 57. The off-road vehicle trail system closest to the Project site has a staging area at the Inks Lake turn-off located east of the Project on the west side of the Coquihalla Highway. The trail

system stretches in a long corridor to Greenstone Mountain, to Savona, and out towards Logan Lake along the Coquihalla. There is very little off-road vehicle travel on the east side of the Coquihalla Highway in the vicinity of the Project because much of that land is private property. There is substantially more activity to the west of the Coquihalla Highway in the Chewels Mountain and Greenstone Mountain areas.

The Greater Kamloops Motorcycle Association use these recreational trails to generate income for their non-profit society, which allows them to give back to the community through a variety of activities, including trail signage, education, ecosystem restoration projects, and garbage clean-up.

3.2.8.6 Skiing and Snowboarding

Stake Lake Cross Country ski trails, maintained and managed by the Overlander Club, is a popular local trail system. Outdoor lighting was recently installed for night skiing activities (KHGM International 2014). Stake Lake is approximately 12 km south of the Project site. Sun Peaks Resort is an all-season resort offering downhill and cross-country skiing and snowboarding in the winter, and golf and other activities in the summer. Sun Peaks Resort is a training site for the Austrian Downhill Ski Team. Sun Peaks is located northeast of the City of Kamloops.

3.2.8.7 Water-based Recreation

Water-based recreation is gaining popularity in the LSA. On Kamloops Lake, boater activity has increased over the past 15 years as new access points to the lake have been created, including the new Bruker Marina, which has 110 boat slips (Andersen et al. *pers. comm.* 2014; Tourism Kamloops 2015a). There are also boat launches on Kamloops Lake in Savona Park and Steelhead Provincial Park. Along the Thompson River there are four boat launches – at McArthur Island Park, the Yacht Club on River Street, Pioneer Park, and on Thompson Drive in Valley View (Tourism Kamloops 2015a). There is no public beach on Kamloops Lake so individuals who want to experience the lake need to have a boat.

3.3 JACKO LAKE

Jacko Lake is located within the Mine Site at the western edge of the pit. The lake's surface is at an altitude of approximately 892 metres above sea level and the Lake has a maximum depth of about 24 metres. The Lake normally drains into Peterson Creek but can also drain westward toward Inks Lake in years when the water level of the lake surpasses the height of the spillway. The lake is stocked with triploid (not reproductive) and diploid (viable) trout.

Existing facilities at the lake include an access road, parking area, outhouse, and boat launch. The access road runs eastward from Lac Le Jeune Road roughly parallel to the existing haul road. The first section of the access road is through private property and accessed via an easement from April to October. The boat launch is located on the northern arm of the Lake. The Lake is surrounded by a number of unofficial trails located on private land that are used for hiking and to access different locations of the Lake from shore. As part of the Project's activities, a section of the northeast arm of the Lake would have to be altered.

3.3.1 History of Jacko Lake

Based on information provided in the SSN Cultural Heritage Study (Ignace 2014), Jacko Lake shares its name with an early resident of the area, Alexander Jacko, who may have been Métis. According to Ignace (2014), Alexander Jacko came into the area with the fur trade in the 1830s and in the 1850s was running horses in the area. His son, Philip, was believed to be a member of the TteS as he is listed as a Tk'emlupsemc in documents from the 1870s to his death in the 1880s. After his father's death, Philip pre-empted a portion of the family horse range from Jacko Lake to the creek mouth.

The Jacko Lake that its namesake, Alexander Jacko knew, is not the same as the Jacko Lake of today. Beginning in the early twentieth century, modifications have been made to the lake. A survey dating from 1913 shows a dam on the southeast arm of Jacko Lake, which is the outflow to Peterson Creek. The dam was built to store water and offer flood control for Kamloops. Jacko Lake at the beginning of the twentieth century did not have the northeast arm (i.e., Mine Bay) or the southeast arm, while the western arms were not as pronounced.

The Jacko Lake dam has been modified and rebuilt over the course of the twentieth century, which has, in turn, affected the size and shape of the lake and its water levels. In the 1950s, the lake was about 40 hectares with an inlet and outlet. In the 1970s, the lake area and level were increased. Jacko Lake was raised by about 1 metre for improved water storage for licence holders and the lake area was increased to 46.7 ha. Two additional arms were created (the northeast and southeast arms) with a dam and spillway and the west arms of the lake were expanded. Two decades later, in 1989, the lake was raised an additional metre when the dam was reconfigured and also raised a metre. The increased storage was allocated to Ministry of Environment for fish conservation (Prince 1991). These alterations increased the area of the lake to 48.5 ha and the potential lake volume by 60%.

The land surrounding Jacko Lake was owned by ranchers since before the 20th century. Water rights for irrigation date back to 1877. There was an agreement in 1962 between ranchers and the Kamloops Fish and Game Association that there be public access to the Lake in the non-winter months for fishing. The Afton Operating Corporation (AOC) purchased the land surrounding Jacko Lake from the Morrison Ranch in 1988 to access the Ajax ore bodies. When the AOC purchased the land, agreements were made that guaranteed continuity of public access for recreational fishing through a legal road easement to the Lake and a lease for the land to be used for parking and a boat launch (Afton Operating Corporation 1992). This agreement was made to assuage concerns that mining could not be contemporaneous with other uses of Jacko Lake. The road easement leading to Jacko Lake, as well as the area set aside for parking and the boat launch, was then purchased by the Ministry of Environment Fish and Wildlife branch. The Fish and Wildlife branch also obtained a conservation water license on Jacko Lake.

At present, the Lake is heavily used for recreation in the spring, summer, and fall months and there are currently five water licences associated with the lake for various purposes, along with an additional licence on Jacko Creek.

3.3.2 Cultural Significance of Jacko Lake for the Stk'emlupsemc te Secwépemc Nation

The Project falls within the traditional territory of the Project First Nations, the TteS and SIB, who jointly form SSN. Jacko Lake is one component of Pipsell, which also includes the area surrounding Jacko Lake. SSN considers Pipsell a “cultural keystone place,” which Nancy Turner (2013 qtd. in SSN 2014) defines as “a site or location with high cultural salience for one or more groups of people and which plays, or has played in the past, an exceptional role in a people’s cultural identity.” These areas can be used for a variety of purposes, including resource-based activities, stories, and social and ceremonial practices. In the Cultural Heritage Study (Ignace 2014), the associations with and uses of Jacko Lake are described below. It is a supernatural residence, site of a story in the sacred oral tradition, site of ceremonial practices, and the location of resource harvesting.

3.3.2.1 Social and Ceremonial Uses

Ethnographers and Secwépemc elders in interviews describe *xqelmucwétke* (“water people”), who reside in various water bodies throughout Shuswap country, including in Jacko Lake. *Xqelmucwétke* travel via underground rivers and connectors to other places like Kamloops Lake. They are believed to be protectors of the water to whom people should make offerings when travelling on waterways; this would provide protection when travelling via canoe, boat, or fishing. Jacko Lake was also one of several locations in Secwépemc traditional territory used to perform *Etsxem* or ritual fasting and vision quests. Ignace (2014) notes the presence of culturally modified trees in the Jacko Lake area that support the stories claiming the area has special significance to SSN people.

Jacko Lake is also the setting for “The Trout Children and Their Grandmother,” which is part of the Secwépemc *stsptekwll*, or sacred oral tradition. The story depicts social and environmental relationships as it connects the human world with other realms, including the underwater and sky realms. It also shows the connections between humans and various animals, such as trout and grizzly bear (Ignace 2014).

3.3.2.2 Resource Use by Stk'emlupsemc te Secwépemc Nation Members

Hunting

According to Ignace (2014), the area around Jacko Lake supported large elk herds and also provided areas to hunt deer and moose; however, by the mid-1800s, many of the elk were displaced by grazing horses and then cattle. Elk were likely the primary species harvested in the hunting blind complex that is located northeast of Jacko Lake. The decline in the elk population likely reduced the frequency with which SSN members used the Jacko Lake area for traditional hunting activities. Other factors have also played a role in making hunting near Jacko Lake more difficult. According to SSN members, a changing landscape and restrictions to access have reduced their use of the area. Ranching, urbanization, and mining have altered the way the landscape is used, and in the case of mining, have changed the landscape through the creation and reclamation of mining waste rock piles. The presence of private property with its attendant fencing and gates hamper access to the area. Despite these difficulties, SSN members note that they still hunt around Jacko Lake and Peterson Creek, especially for moose and deer (Ignace 2014).

Fishing

Before European contact and in the twentieth century, Jacko Lake was an important rainbow trout fishery (Ignace 2014). Stk'emlupsemc of the Secwépemc Nation members used a traditional method of catching trout by scoop-netting them as they prepared to spawn at the Jacko Creek inlet of the lake. The method was used because the focus was on catching enough fish to feed the community. Interviews of SSN members by Ignace (2014) suggest that members no longer feel comfortable fishing Jacko Lake using traditional methods, other interviews suggest that members still fish Jacko Lake, but use fishing rods instead. Fishing on Jacko Lake is now also primarily angling. SSN members in interviews have noted that access to the Jacko Lake area is limited and that provincial fishing regulations, which prohibit ice fishing and also limit access, apply to the lake.

Plant Gathering

In addition to hunting and fishing, the area around Jacko Lake has been used to gather traditional medicinal plants. Potentially due to the mineralization of the soil around the lake, it was a considered a prime area for gathering medicinal plants. Species gathered around Jacko Lake include soapberries, sweet sage, squirrel tails, Indian potatoes, and other berries (SSN Affidavits 2011; Ignace 2014).

Interviewees from SSN have noted that private property, gates, and fences have limited access to the area, meaning that SSN members have not been able to engage in plant gathering in the area. In addition, SSN members have noted the introduction of alien species, including noxious weeds in the area (Ignace 2014).

Archeological Sites

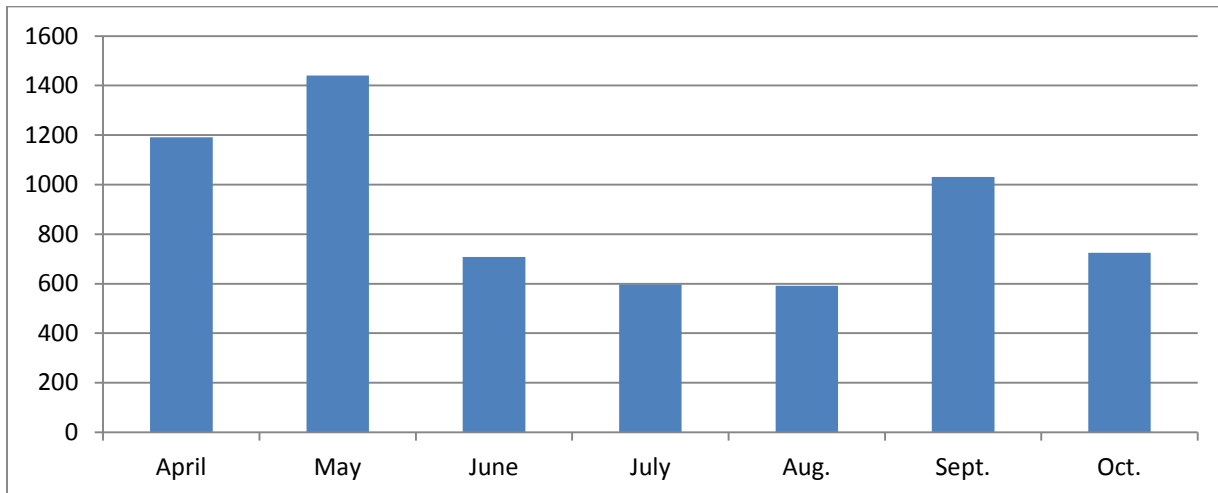
The cultural importance and use of Jacko Lake and the surrounding area is confirmed by the five archaeological sites that have been located near the shore of Jacko Lake and at one of the sites (EdRc-19) an Early Nesikep projectile point was found indicating use of this area extends back approximately 7,000 years Before Present (B.P.) (ERM Consultants Canada Inc. 2015a). One of these sites (EdRc-25) is the hunting blind complex noted in the Cultural Heritage Study (Ignace 2014) that was likely used to harvest elk when they were more abundant in the area.

3.3.3 Recreational Use of Jacko Lake

Angling is currently the most common recreational use of Jacko Lake. Bird watching and boating also take place, but anglers represent the vast majority of users of the Lake. The fishing season on the Lake typically runs from the beginning of April, when the ice has melted, to November. There is no ice fishing allowed on the lake. The lake is well-known as one of the premier fly-fishing lakes in the region and draws anglers from the immediate vicinity (Kamloops and area) and as far as Vancouver. The Fish and Wildlife branch of the Ministry of Forests, Lands, and Natural Resource Operations is the primary organization responsible for fisheries management of Jacko Lake. The Department of Fisheries and Oceans may also be involved in certain key management decisions where federal input is required, such as was the case during the construction of the boat launch. Anglers are drawn to Jacko because of its ease of access, high quality and productive fishery of rainbow trout, and aesthetically favourable surroundings. The Lake also has a longer ice-free period than many other lakes in the area due to its relatively low elevation. The Lake is relatively unique because it is one of the few low-elevation grassland lakes that has not suffered from recent

degradation due to the loss of pine trees from the mountain pine beetle, as has been the case in many other low-elevation grassland lakes (FLNRO 2015).

A creel census of Jacko Lake was undertaken in 1986 by R. G. Bison for the Ministry of Environment (Bison 1989), illustrated below in Figure 3-12. The study found that there were an estimated 6,285 angler days spent at the Lake during the fishing season that went from April 1 to October 31.

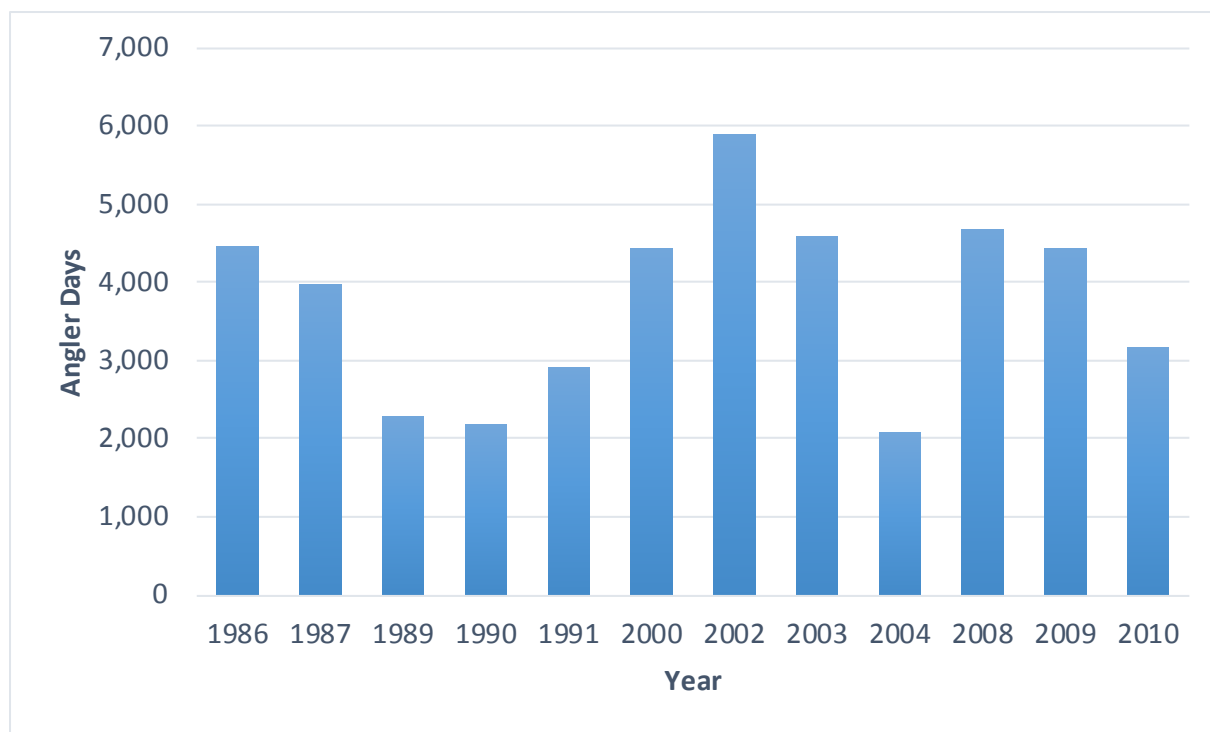


Source: Bison 1989.

Figure 3-12: Angler Days in Jacko Lake by Month, 1986

Approximately 43.4% of the angler days occurred on weekends, with the remainder occurring on weekdays. Catch per unit effort was determined to be .766 fish/hr. Of the captured fish, 54.9% were killed and the remaining 46.1% were released (Bison 1989).

More recent information on angler days is available from FLNRO (2014) and presented in Figure 3-13. The data from FLNRO present annual angler days from 1986 to 2010 with data from certain years unavailable (1988, 1992-1999, 2001, and 2005-2007). Except for dips in angler days in 1989, 1990, and 2004 and a spike in 2002, the number of angler days spend on Jacko Lake annually has remained fairly consistent. The average annual angler days as calculated by FLNRO are 4,245 for 2000 to 2004 and 4,094 for 2008-2010. While annual angler days give a picture of how popular Jacko Lake is, they do not present the complete picture. Data do not include the months of April and November, which are typically very busy on Jacko Lake (FLNRO 2015). In light of the lake’s lower elevation and proximity to Kamloops, it has a longer fishing season and is more easily accessible than other lakes in the TNRD (DFO et al. 2015).



Source: FLNRO 2014.

Figure 3-13: Angler Days, 1986-2010

Angling is currently the most common recreational use of Jacko Lake, which has been stocked annually by the Ministry of Environment since 1954, when 74,000 rainbow trout were introduced (Knight Piésold 2015). Stocked lakes are stocked with diploid and triploid or all-female strains of fish. Triploid fish, which are sterile, improve the recreational fishing experience as they tend to grow larger since no energy is expended on reproductive development (Knight Piésold 2015). In addition to stocking, the Fish and Wildlife branch has also undertaken other forms of management such as habitat improvement (Ajax KPI Program 2011-2012; 2014-2015).

Table 3-15: Rainbow Trout Stocking Rates in Jacko Lake, 2010-2014

Year	2010	2011	2012	2013	2014
Number of fish stocked	13,500	6,500	10,000	9,500	16,000

Source: Freshwater Fisheries Society of BC 2015.

Although the vast majority of fishing that takes place on Jacko Lake is recreational, there are four fishing outfitters that use the Lake for commercial guiding purposes. The outfitters typically draw clients from the immediate area, Vancouver and other coastal locations, and the United States. None of the outfitters rely exclusively on Jacko Lake; however it is an important Lake for the outfitters that use it (Ajax KPI Program 2011-2012).

3.3.3.1 Water Use Associated with Jacko Lake

Water licences for Jacko Lake date back to 1877 (Price 1991). There is one water license listed for Jacko Creek, registered for the purpose of agricultural irrigation (BC Ministry of Environment n.d.a). In addition,

there are 36 current water licences on Peterson Creek, including Jacko Lake for domestic use, irrigation, stockwatering, non-power storage, and conservation. Seven of the 36 licenses have no identified purpose or quantity (Knight Piésold 2015).

3.4 AESTHETIC CHARACTERISTICS OF THE AREA

The *Forest Practices Code of British Columbia Act* recognizes that viewsapes in the Province are a natural resource. Viewsapes are also recognized in City of Kamloops municipal planning documents, such as the *Draft Parks Master Plan* and the *Aberdeen Plan*, which seek to protect scenic corridors for the benefit and enjoyment of the public. The proposed Project site is situated at the southern boundary of the City of Kamloops, over the crest of a ridge, at a higher elevation than the City itself. The site is characterized as a hilly grassland with mixed coniferous stands, and sage brush. Water bodies in vicinity of the Mine Site include Jacko Lake, Inks Lake, Petersen Creek, Wallender Lake, Nelson Lake, Lockie Lake Wallender Lake, Edith Lake, Humphries Creek, and Keynes Creek.

Sugarloaf Hill is a local landmark near the proposed Project site which stands at the southwestern entrance of the City on Hwy 5. Coal Hill is another landmark and is located north of the Mine Site.

There are a few rural residential and ranching properties in proximity to the Project site on the Lac le Jeune Road and the Goose Lake Road. The landscape bears the infrastructure of past and present ranching operations; old cabins, corrals, fencing and cattle guards. Cattle and horses can be seen from highways approaching the site. There is also visible evidence of past mining activity on the landscape near and around the Project site, including old prospecting claim posts (Terra 2012). Portions of the proposed Project site are part of the former Ajax mine operation and include two pits, access roads, haul roads, an overpass, diversion ditches, dry seepage ponds, and reclaimed mine rock storage facilities.

4.0 COMMUNITY HEALTH AND WELL-BEING

The health of individuals, families, and communities is shaped by a variety of factors or determinants of health, which include the social and economic environment, the physical environment, and an individual's characteristics and behaviours (World Health Organization 2013). Determinants related to the social and economic environment include income and education levels; determinants related to the physical environment include exposure to contaminants and distance to services; and determinants related to individual characteristics and behaviours include genetics and personal practices (e.g. diet and smoking). Since these determinants are extensive and diverse, it can be challenging to measure them. Additionally, it can be difficult to draw direct correlations between indicators and the status of a community's health and well-being.

Health care for the communities in the local study area (LSA) and the regional study area (RSA) is provided by the Interior Health Authority (IHA). The IHA itself is divided into four Health Service Delivery Areas (HSDA). Each HSDA is then further divided into local health areas (LHA). The communities in the LSA and regional study area are located in the Thompson Cariboo Shuswap HSDA. The City of Kamloops, Savona, the TteS, and Skeetchestn Indian Band (SIB) are located in the Kamloops LHA, which will be the primary focus of discussions in this section. Also included in this section is the North Thompson LHA because the combined boundaries of the Kamloops and North Thompson LHAs closely conform to the boundaries of the RSA (i.e., the regional study area). Where data are available for the LHAs, it will be presented. When data has not been collected for the smaller areas, it will be presented for the next smallest spatial entity available, which is usually the Thompson Cariboo Shuswap HSDA.

4.1 HEALTH INDICATORS

4.1.1 Population

Table 4-1, Table 4-2 and Table 4-3 present population data for communities in the LSA and RSA from Statistics Canada (Table 4-1 and Table 4-2) and Aboriginal Affairs and Northern Development Canada (AANDC) Table 4-3).

4.1.1.1 Statistics Canada Population Counts

The 2011 census population estimate of the RSA was 128,478 with just over two thirds of the population concentrated in the City of Kamloops (Table 4-1). For First Nations in the LSA, 2,577 people were living on the TteS reserve (Kamloops 1 reserve) and the SIB reserve had 253 members living on-reserve (Statistics Canada 2012a). Statistics Canada also breaks out the population of the TteS reserve by Aboriginal identity, which gives a more accurate picture of the TteS population living on-reserve as the Sun Rivers development is also on-reserve and most of its residents are not Aboriginal persons (D. Aird, *pers. comm.* 2015). The total number of individuals on the Kamloops 1 reserve who self-identified as Aboriginal in 2011 was 745. The on-reserve populations for both the TteS and SIB decreased slightly between 2006 and 2011 according to Statistics Canada. The proportion of the population on the Kamloops 1 reserve that did not self-identify as Aboriginal, increased substantially between 2006 and 2011 from about 55% to about 71%. Kamloops also had a positive growth rate between 2006 and 2011, as did the LSA as a whole. The Aboriginal ancestry

population of the City of Kamloops made up 43% (6,200) of the 14,420 total Aboriginal ancestry population in the TNRD (Table 4-2).

In the RSA, the on-reserve populations for the LNIB, AIB, and WP/CIB fluctuated. Caution should be used when interpreting the population data for the smaller LNIB reserve parcels, the AIB and WP/CIB. Small fluctuations in absolute numbers may be reflected as large percentages of change. In 2011, according to Statistics Canada, the AIB had 97 members living on-reserve, which is a 76% increase from 2006, the WP/CIB (Whispering Pines 4) had 60 on-reserve members, which is a decrease from 2006 population counts; and the LNIB (Nicola Mameet 1, Zoht 4, Joeyaska 2, Hamilton Creek 7 reserves) had a total on-reserve population of 677, which is an overall increase of on-reserve population. About 11.5% of the total population in the RSA self-identified as Aboriginal, which includes First Nations members and Métis.

From 2006 to 2011 the population of the RSA experienced growth of 5.1%, which was less than the provincial increase of 7%. TteS showed the most growth with 44.3%. Skeetchestn experienced a total growth of -1.9% between 2006 and 2011. The growth rates may be attributable to data collection techniques for the 2011 Census of Canada as the population counts kept by Aboriginal and Northern Development Canada (AANDC) (see Table 4-2 below) suggest that population growth between 2006 and 2011 was about 10% for TteS. The population of the LSA grew by 6.2% from 2006 to 2011 and contained about 70% of the regional population in 2011 (Table 4-1).

Table 4-1: Census Populations of Local and Regional Communities, 2001, 2006, 2011

Census Divisions and Sub-division ¹		2001	2006	2011	% Change 2006-2011 ²
City of Kamloops		77,281	80,376	85,678	6.6
TNRD-J		1,509	1,609	1,560	-3.0
TteS – non-Ab		695	990	1,795	81.3
TteS – Ab ³		720	795	745	-6.3
SIB		241	258	253	-1.9
LSA ⁴		80,441	84,029	90,068	6.2
AIB	Ashcroft 4	77	50	76	52.0
	105 Mile Post 2	10	5	21	320.0
WP/CIB		60	64	60	-6.3
LNIB	Nicola Mameet 1	442	483	603	24.8
	Zoht 4	35	37	25	-32.4
	Joeyaska 2	37	37	44	18.9
	Hamilton Creek 7 ⁵	0	0	5	--
RSA ⁶		119,222	122,286	128,473	5.1
British Columbia		3,907,738	4,113,487	4,400,057 ⁷	7.0

Source: Statistics Canada 2002, 2006a, 2007a, 2013.

Notes:

1. The figures shown in the table have been subjected to a confidentiality procedure known as random rounding; values are rounded either up or down to a multiple of '5', and in some cases '10'.
2. Calculated by InterGroup Consultants.
3. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
4. The LSA is the City of Kamloops, the TteS, the SIB, and the TNRD-J.
5. Hamilton Creek 7 is a dissolved census subdivision.
6. The RSA is the TNRD.
7. Excludes census data for one or more incompletely enumerated Indian reserves or Indian settlements.

**Table 4-2: Aboriginal Identity Population for LSA Communities,
RSA, and BC, 2001, 2006, 2011**

Aboriginal Identity ¹	2001				
	Kamloops	TteS	SIB	TNRD-J	RSA
Total population ²	76,820	1,410	240	1,510	118,665
Total Aboriginal identity population ³	3,965	720	215	155	11,590
North American Indian - single response ⁴	2,485	685	205	60	9,045
Métis - single response	1,295	25	10	90	2,165
Inuit - single response	35	0	0	0	95
Multiple Aboriginal identity responses ⁵	15	0	0	0	45
Aboriginal responses not included elsewhere ⁶	130	15	0	10	240
Non-Aboriginal identity population	72,850	695	30	1,355	107,075
Aboriginal Identity ¹	2006				
	Kamloops	TteS	SIB	TNRD-J	RSA
Total population ²	79,440	1,785	N/A	1,610	121,220
Total Aboriginal identity population ³	5,165	795	N/A	85	13,200
North American Indian - single response ⁴	2,865	760	N/A	15	9,340
Métis - single response	2,145	20	N/A	75	3,550
Inuit - single response	35	0	N/A	0	45
Multiple Aboriginal identity responses ⁵	50	0	N/A	0	75
Aboriginal responses not included elsewhere ⁶	70	15	N/A	0	185
Non-Aboriginal identity population	74,280	990	N/A	1,520	108,025
Aboriginal Identity ¹	2011				
	Kamloops	TteS	SIB	TNRD-J	RSA
Total population ²	83,725	2,540	255	1,530	125,960
Total Aboriginal identity population ³	6,245	745	220	75	14,425
North American Indian - single response ⁴	3,445	715	215	10	10,260
Métis - single response	2,485	20	10	50	3,690
Inuit - single response	55	0	0	0	80
Multiple Aboriginal identity responses ⁵	85	0	0	0	140
Aboriginal responses not included elsewhere ⁶	170	10	0	0	260
Non-Aboriginal identity population	77,485	1,795	35	1,455	111,535

Source: Statistics Canada 2002, 2007a, 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. 'Total population' were derived from 20% sample data for 2006 Census year and 30% sample data for 2011 Census year. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population.
3. 'Total Aboriginal identity population' is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the *Indian Act* of Canada, and/or those who reported they were members of an Indian band or First Nation.
4. Users should be aware that the counts for this item are more affected than most by the incomplete enumeration of certain Indian reserves and Indian settlements. The extent of the impact will depend on the geographic area under study. In 2006, a total of 22 Indian reserves and Indian settlements were incompletely enumerated by the census. The populations of these 22 communities are not included in the census counts. In 2011 there were a total of 36 Indian reserves and Indian settlements that were 'incompletely enumerated' in the NHS. For these reserves or settlements NHS enumeration was either not permitted or was interrupted before it could be completed or was not possible because of natural events (specifically forest fires in Northern Ontario). For additional information please refer to the Aboriginal Peoples Reference Guide National Household Survey (NHS) 2011.
5. 'Multiple Aboriginal identities' includes persons who reported being any two or all three of the following: First Nations (North American Indian) Métis or Inuk (Inuit).
6. 'Aboriginal responses not included elsewhere' includes those who identified themselves as Registered Indians and/or band members without identifying themselves as North American Indian, Métis or Inuit in the Aboriginal identity question.
7. The RSA is the TNRD.
8. 2006 data for the SIB were suppressed.

4.1.1.2 Indian Register Population Data

Aboriginal Affairs and Northern Development Canada's Indian Registry System provides population counts for on and off reserve populations of registered Indians as of December 31 of the appropriate year. Table 4-3 shows the population counts for registered Indians in the TteS, SIB, LNIB, AIB, and WP/CIB. The TteS showed notable change over the years with a steady decline in on-reserve population by 10% from 2001 to 2011. The SIB also had a decrease in the on-reserve population, from 52% (233) in 2001 to 48% (246) in 2011. The LNIB showed a relatively equal division of the on- and off-reserve population, with an increase in the off-reserve population from 2001 to 2011. The AIB had close to three quarters of the population living off-reserve in 2001 and 2006, but this figure decreased to 69% (176) in 2011. The proportion of on-reserve members of WP/CIB has remained constant between 2001 and 2010 at about 40% (between 47 and 61). It is important to understand the limitations of Indian Registry System data, and how it differs from census data. On-reserve population numbers have limitations because they include only registrants of the particular Band. Furthermore, they do not include non-registered individuals; they contain no information on any members registered to other bands who may be living on reserve or Crown lands; and they may include counts pertaining to First Nation registrants residing on reserve or Crown lands belonging to other bands.

Table 4-3: Registry System Population Counts for the Tk'emlúps te Secwépemc, Skeetchestn Indian Band, Lower Nicola Indian Band, Ashcroft Indian Band, and Whispering Pines/Clinton Indian Band, 2001, 2006, 2011

	2001	2006	2011
TteS Population	989	1,050	1,158
On Reserve	665 (67%)	617 (59%)	641 (55%)
Off Reserve	324 (33%)	433 (41%)	517 (45%)
SIB Population	450	475	509
On Reserve	233 (52%)	258 (54%)	246 (48%)
Off Reserve	217 (48%)	217 (46%)	263 (52%)
LNIB Population	927	1,007	1,115
On Reserve	530 (57%)	517 (51%)	549 (49%)
Off Reserve	397 (43%)	490 (49%)	566 (51%)
AIB Population	227	243	255
On Reserve	63 (28%)	69 (28%)	79 (31%)
Off Reserve	164 (72%)	174 (72%)	176 (69%)
WP/CIB Population	115	129	148
On Reserve	47 (41%)	52 (40%)	61 (41%)
Off Reserve	68 (59%)	77 (60%)	87 (59%)

Source: AANDC 2002, 2007, 2012.

Notes:

1. Data do not include non-registered individuals.
2. Data contain no information on any members registered to other bands who may be living on reserve or Crown lands.
3. Data may include counts pertaining to First Nation registrants residing on reserve or Crown lands belonging to other bands.
4. An individual's information on the Indian Registry System (IRS) is usually updated on the reporting of a life event to the First Nation's Indian Registry Administrator (IRA), although some bands may update the system more frequently. Late reporting of events can affect the accuracy of the IRS data.
5. According to recent history, nearly 70% of all births reported in any particular year actually occurred in a prior year. This is not out of the ordinary since it is common practice for children to be registered between the ages of 1 to 5.
6. Individuals can remain on the Indian Register for some time after they are deceased. A certificate of death or a confirmation of presumed death is normally required to remove a name from the system.

Similar to life events, residency codes tend to be updated by the Indian Registry System when a life event is reported (although some bands may again update the system more frequently). This makes it possible for an individual to move back and forth on and off reserve, and never have his/her information updated if a life event was not reported.

4.1.1.3 Age and Sex Distribution

The following figures are population pyramids that give a visual depiction of the gender and age distribution for the LSA, communities in the LSA (City of Kamloops, SSN, and the TNRD-J) and the RSA.

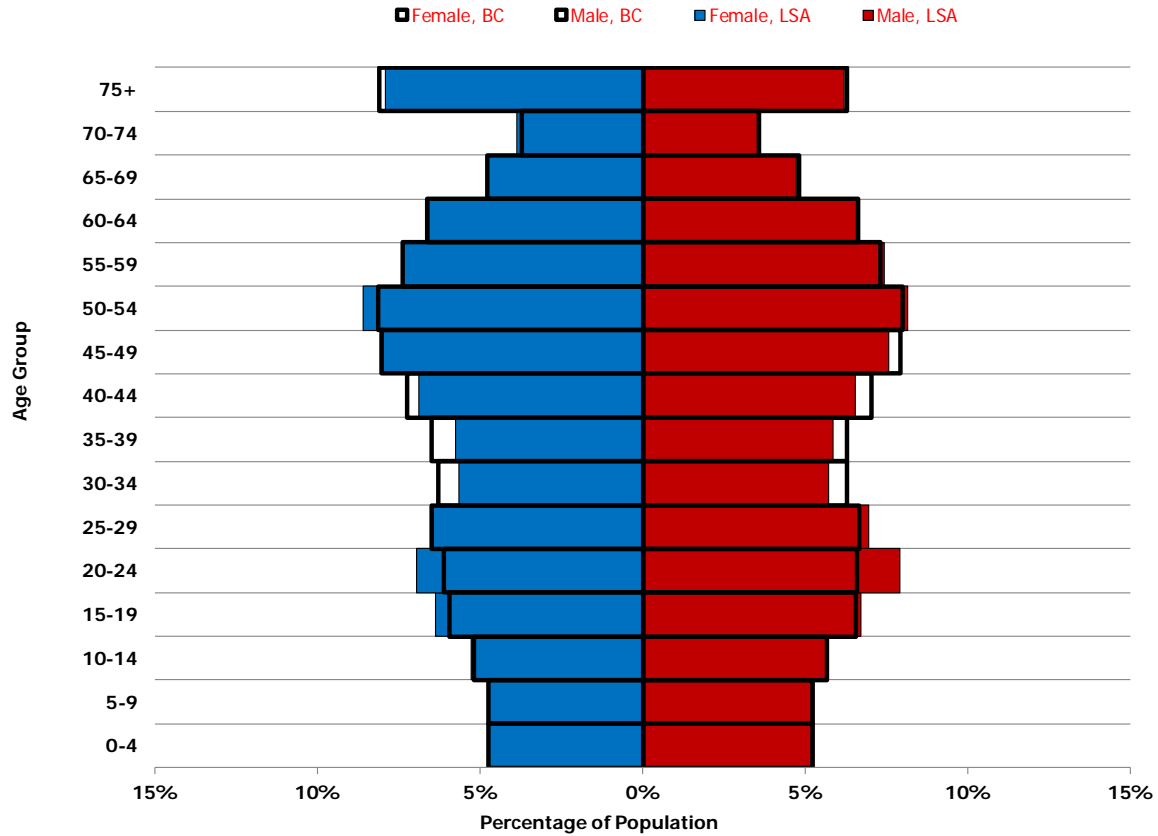


Figure 4-1: Population Distribution for the LSA (2011)

Population distribution for the LSA (Figure 4-1) roughly mirrors the population distribution for the Province and City of Kamloops.

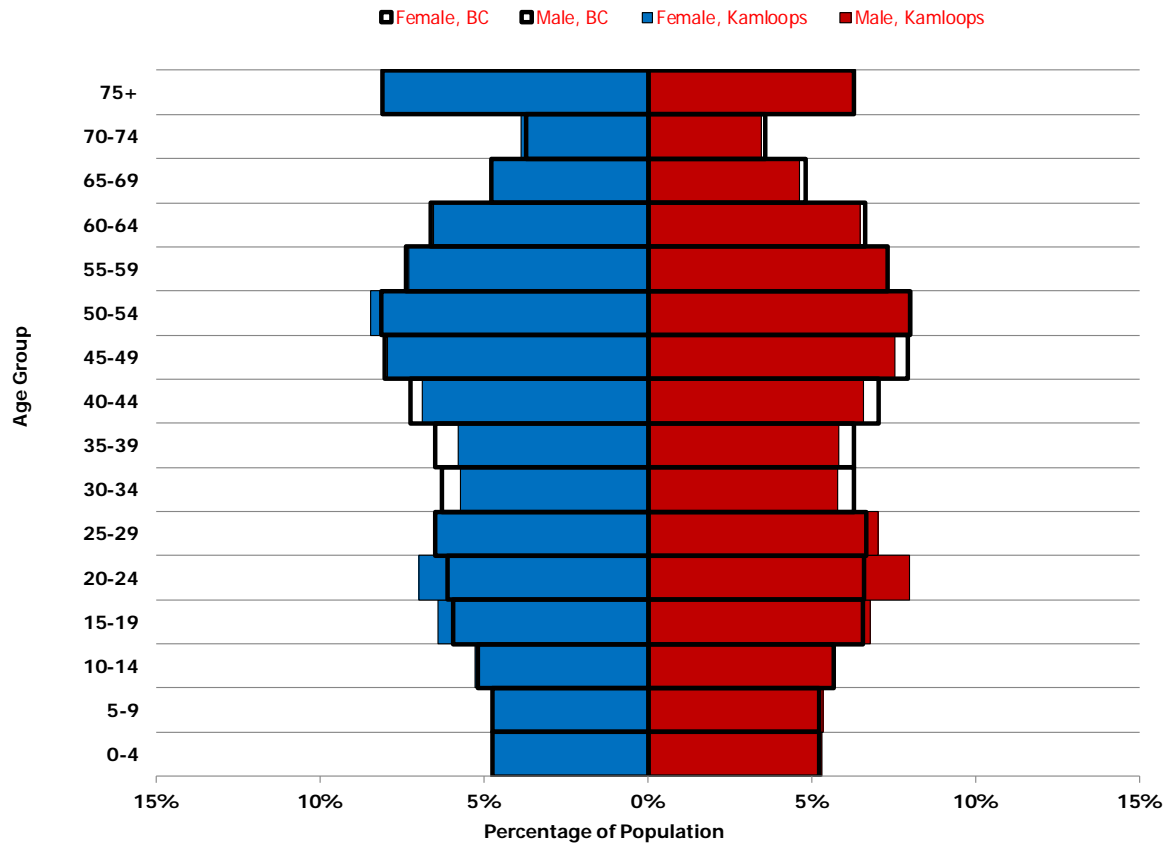


Figure 4-2: Population Distribution for the City of Kamloops (2011)

The City of Kamloops showed a classic bimodal population distribution with the highest proportion of individuals in the early forties to mid-fifties age range and the second highest proportion of individuals in the 15-24 year age range, although there were almost as high a proportion of individuals in the 75+ year range. The high proportion of individuals over 75 years of age may reflect the growing popularity of City of Kamloops as a retirement destination. There were also higher proportions of women in the older age categories, which is congruent with life expectancy data (Table 4-14). The gender and age distribution was similar for the City of Kamloops (Figure 4-2), the RSA (Figure 4-5), the LSA (Figure 4-1), and British Columbia.

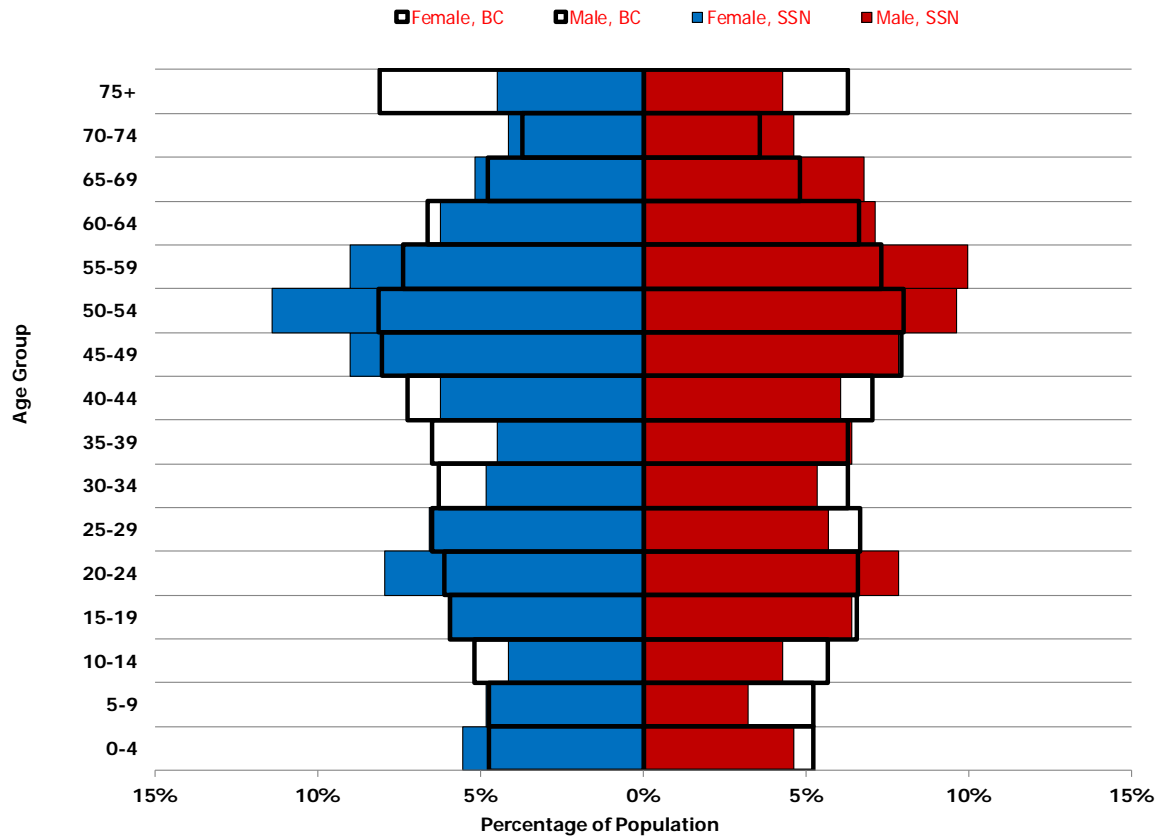


Figure 4-3: Population Distribution for SSN Reserves, 2011

The population distribution for the SSN reserves (Kamloops 1 and Skeetchestn) differs from the population distribution for the Province (Figure 4-3). There is a higher proportion of the population between the ages of 45 and 59 than there in the Province. Overall, the population in the SSN communities skews older than the Province. This may reflect the nature of the Sun Rivers development, which is located on the TteS reserve, since several subdivisions are aimed at older adults, including empty nesters and snowbirds (Sun Rivers n.d.a).

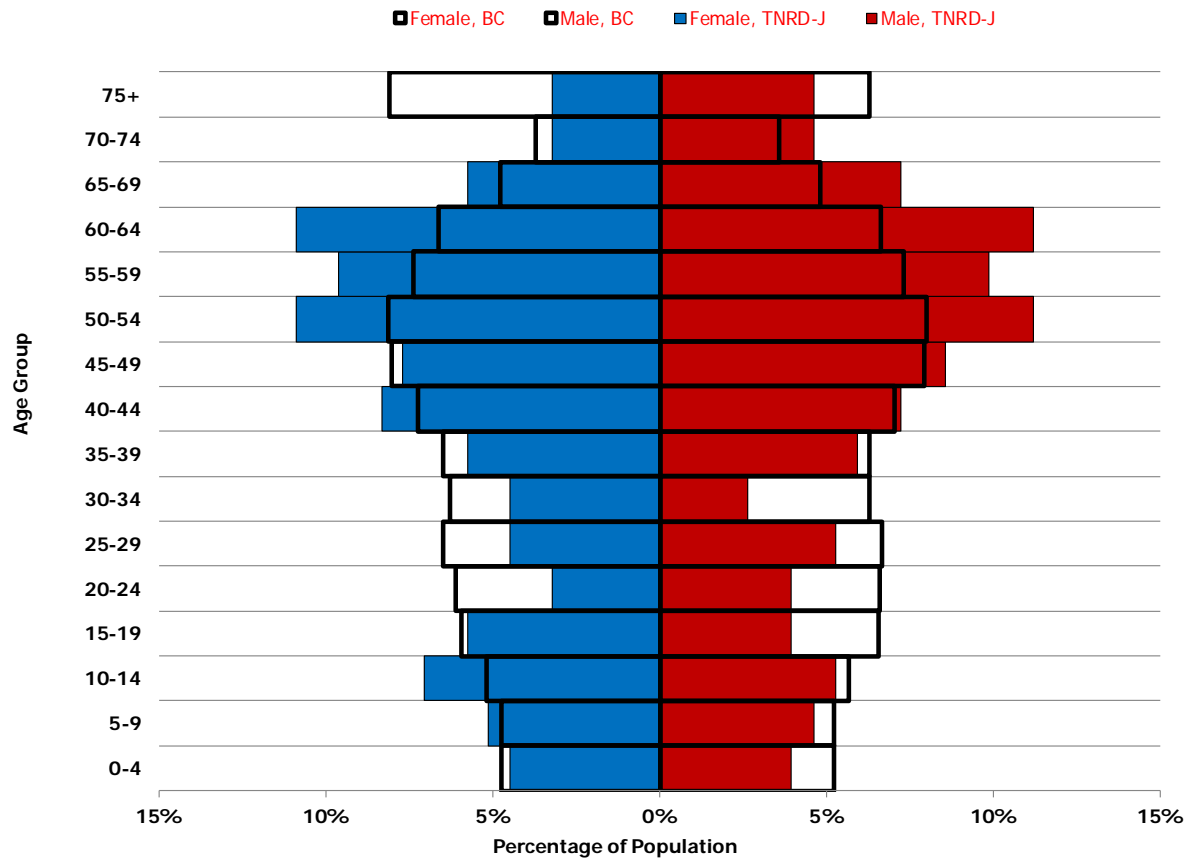


Figure 4-4: Population Distribution for TNRD-J (2011)

The population in the TNRD-J is concentrated in the age ranges between 50 and 69, with a small proportion of the population being under 35 years old and over 69 (Figure 4-4).

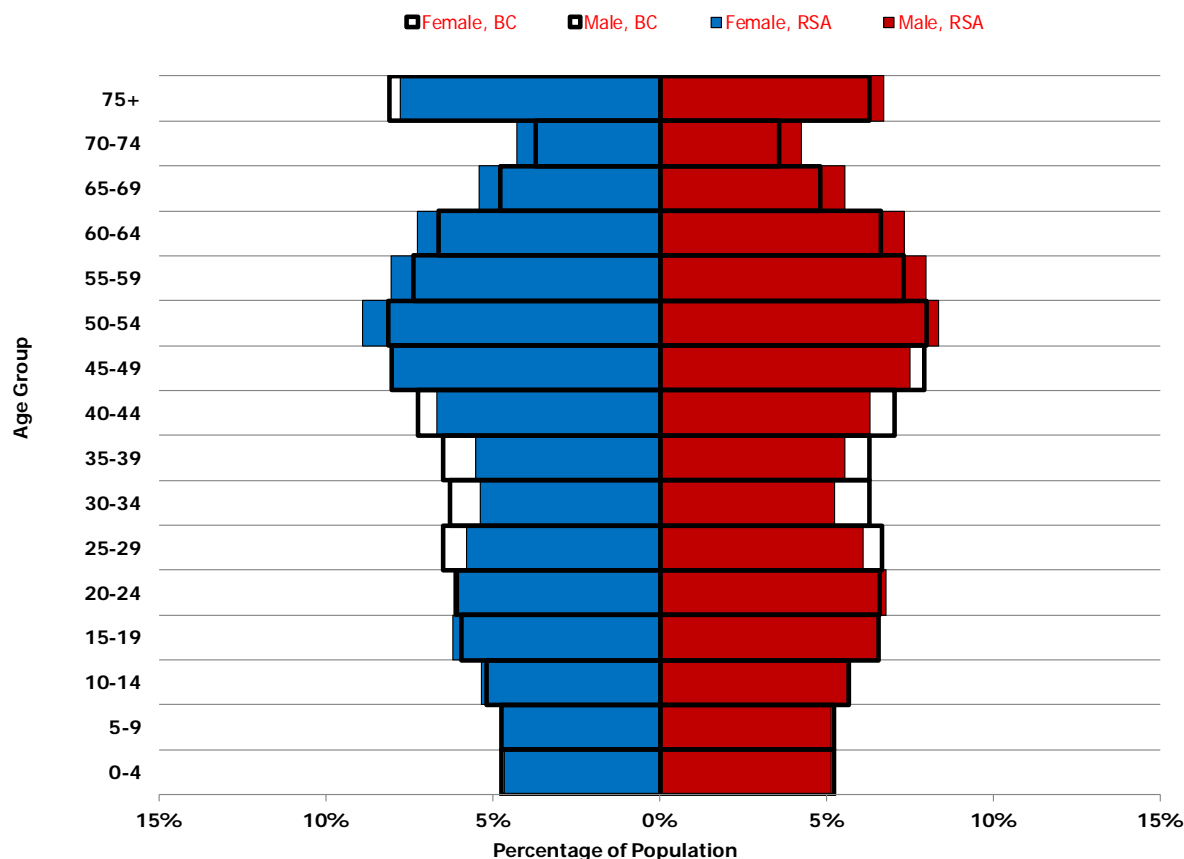


Figure 4-5: Population Distribution for the RSA (2011)

The population distribution of the RSA is similar to that of the Province, although the population tends to skew older (i.e., 50 years of age and older) (Figure 4-5). This trend reflects the overall aging population trend cited in Interior Health Authority (IHA) reports. The gender and age distributions for the First Nations communities were different, but the differences may in large part be due to the small population sizes. SSN shows a distribution that has the same basic characteristics as the LSA distribution (Figure 4-5). The distribution is bimodal, with the largest proportions of the population in roughly the same age categories.

4.1.1.4 Family Structure

Table 4-4 depicts family structure and average family size for the LSA. Kamloops, the LSA, and the Province had an average family size of 2.8 and around 70% of census families in family households were married couples. Common law couples made up between 13% and 15% of the family households in City of Kamloops, the LSA, and the Province, and male parent families made up between 3% and 4% of family households. Lone Female parent families made up 12-13% of families.

Of the census subdivisions in the LSA, TNRD-J had higher percentages of married and common-law couples, and correspondingly lower percentages of lone female and lone male parent families at 6% and 2%, respectively. The SIB had the highest percentage of lone male parent families at 8% while families headed by a single female accounted for nearly a quarter of the families. The SIB also had the largest average family size at 3.2 persons. Data broken out by Aboriginal identity were not available for the TteS so the

totals for the on-reserve population are included in Figure 4-4. For population living on-reserve 62% were married couples, which is close to the percentage for Kamloops and the TNRD-J.

Table 4-4: Family Structure for the LSA, 2011

Family Household ^{1,2,3,4}	Kamloops	TNRD-J	TteS	SIB	LSA ⁹	RSA ¹⁰	BC
Total number of census families in private households ^{5,6}	24,340	505	825	65	25,735	37,595	1,238,155
Married couples	68%	71%	62%	23%	68%	68%	72%
Common-law couples	15%	20%	19%	54%	15%	16%	13%
Female parent	13%	6%	14%	23%	13%	12%	12%
Male parent	4%	2%	4%	8%	4%	4%	3%
Average family size ⁷	2.8	2.7	2.6	3.2	2.8	2.7	2.8

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Family household data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. Modifications to the definition of 'Family' across Census years should be noted. For 2006 data set, married couples may be of the same or opposite gender. The 2001 Census counted same sex couples as common law. Beginning in 2001, a Census family, including a three generation household, may include a child who was previously married and no longer lives with their spouse or partner, whereas prior censuses would only count individuals as children in Census families who were 'never married'. Censuses prior to 2001 only counted the two older generations in a three generation household. In the 2001 Census a third generation grandchild, providing they are not residing with their spouse or partner, are counted as children in the Census family. As of 2001, children who live with their grandparents are considered children in the Census families of their grandparents, even if their parents do not reside in the household.
6. Structural characteristics of One Family Household types are derived variables in the 2011 data sets.
7. It should be noted that average family size of the SSN, LSA and WGFN is the weighted average of the subdivisions included in the region.
8. Data for Ttes Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and Ttes aboriginal identity population. The number of census families in private households were not available for Aboriginal population.
9. The LSA is the City of Kamloops, TteS, SIB, and the TNRD-J.
10. The RSA is the TNRD.

As indicated in Table 4-5, the RSA had similar family structure characteristics as the Province, the only difference being a 4% lower percentage of married couples, and a 3% higher percentage of common-law couples. Within the RSA, the LNIB reserves Nicola Mameet 1 and Joeyaska 2 and the WP/CIB had the largest average family size at 3.3 individuals. The LNIB also the largest percentage of married couples at 41%. The WP/CIB had an even distribution of families at one-third married, one-third common-law and one-third female lone parent. Families in the Ashcroft Indian Band (AIB) also had an even distribution of family structure type, between all categories, including single male parent.

Table 4-5: Family Structure for the RSA, 2011

Family Household ^{1,2,3,4}	LNIB ⁸	AIB ⁹	WP/CIB	RSA ¹⁰	BC
Total number of census families in private households ^{5,6}	160	25	15	37,595	1,238,155
Married couples	41%	20%	33%	68%	72%
Common-law couples	28%	20%	33%	16%	13%
Female parent	25%	20%	33%	12%	12%
Male parent	9%	20%	0%	4%	3%
Average family size ⁷	3.3	2.4	3.3	2.7	2.8

Source: Statistics Canada 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. Family household data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. Modifications to the definition of 'Family' across Census years should be noted. For 2006 data set, married couples may be of the same or opposite gender. The 2001 Census counted same sex couples as common law. Beginning in 2001, a Census family, including a three generation household, may include a child who was previously married and no longer lives with their spouse or partner, whereas prior censuses would only count individuals as children in Census families who were 'never married'. Censuses prior to 2001 only counted the two older generations in a three generation household. In the 2001 Census a third generation grandchild, providing they are not residing with their spouse or partner, are counted as children in the Census family. As of 2001, children who live with their grandparents are considered children in the Census families of their grandparents, even if their parents do not reside in the household.
6. Structural characteristics of One Family Household types are derived variables in the 2011 data sets.
7. It should be noted that average family size is the weighted average of the subdivisions included.
8. Includes data for Nicola Mameet 1 Indian Reserve and Joeyaska 2 Indian Reserve. Data for Hamilton Lake 7 Indian Reserve and Zoht 4 Indian Reserve were suppressed.
9. Includes data for Ashcroft 4 Indian Reserve. Data for 105 Mile Post 2 Indian Reserve were suppressed.
10. The RSA is the TNRD.

4.1.1.5 Population Mobility

Mobility is an important factor in analyzing present and future population trends and Statistics Canada data for the LSA are presented in Table 4-6. In the City of Kamloops, 35,305 people reported living at a different address on May 10, 2011 than they did five years earlier. This translates to approximately 44% of the population, which was about the same as for British Columbia (43%) as a whole. Although the majority of the movers were relocating from an address in the same census division, (e.g., to a new house in a different neighbourhood in the same city), 43% of the movers had moved from outside the census division. The RSA and the LSA both experienced a population mobility of over 40% over the five-year period. In keeping with the provincial average, more of the movers moved within the same census division than from a different census division, province, or country. The TNRD-J was the exception, with a greater percentage of the movers coming from outside the census division. Overall, the percentage of movers within the TNRD-J population was lower, however at 28%. The non-Aboriginal population of the TteS reserve had the highest population of movers of all, at 66%, likely because of the recent construction of Sun Rivers and other new housing developments on-reserve. The bulk of the non-Aboriginal people who moved to the TteS reserve were residents of the same census division. Only 31% of population that self-identifies as Aboriginal on the TteS reserve had moved in the past 5 years, and only a quarter of the SIB population had moved within the past five years.

Table 4-6: One and Five Year Mobility Status for the LSA, 2011

Mobility Status ^{1,2,3,4}	Kamloops	TNRD-J	TteS Non-Ab ⁸	TteS Ab ⁹	SIB	LSA ¹⁰	RSA ¹¹	BC
Total population Mobility status 1 year ago ^{5,6,7}	82,950	1,515	1,770	740	250	87,225	124,770	4,282,100
Non-movers	70,060	1,390	1,330	670	230	73,680	107,245	3,665,460
Movers	12,885	125	435	75	20	13,540	17,525	616,650
Moved within the same census division	8,850	25	320	35	10	9,240	11,185	347,835
Moved from a different census division, different province, or different country	4,035	100	115	40	15	4,305	6,335	268,810
Moved from a different census division within the same country	3,635	100	75	40	20	3,870	5,830	212,385
Moved from a different census division within the same province	2,770	90	50	40	15	2,965	4,775	167,280
Moved from a different province	860	0	0	0	0	860	1,055	45,105
Moved from a different country	400	0	40	0	0	440	510	56,425
Total population 5 years and over by mobility status 5 years ago ^{5,6,7}	79,430	1,485	1,700	690	235	83,540	119,685	4,104,200
Non-movers	44,125	1,070	580	470	185	46,430	68,500	2,349,525
Movers	35,305	420	1,130	215	60	37,130	51,185	1,754,670
Moved within the same census division	20,175	160	675	150	0	21,160	26,785	888,335
Moved from a different census decision, different province, or different country	15,130	255	455	65	50	15,955	24,400	866,335
Moved from a different census division within the same country	13,570	255	380	65	50	14,320	22,390	653,285
Moved from a different census division within the same province	9,475	175	280	60	45	10,035	16,820	486,835
Moved from a different province	4,095	85	95	10	0	4,285	5,570	166,455
Moved from a different country	1,560	0	75	0	0	1,635	2,005	213,050
Percentage of the 2006 population that moved from a different census division, province, or country within the previous year	4.86%	6.60%	6.50%	5.41%	6.00%	4.94%	5.08%	6.28%

Source: Statistics Canada 2002, 2007 and 2013.

Notes:

1. Statistics Canada refers to Kamloops as Kamloops City, SIB as Skeetchestn Indian Reserve, TteS as Kamloops 1 Indian Reserve, TNRD-J as Thompson-Nicola J (Copper Desert Country) Regional District Electoral Area. The TteS and SIB have additional reserve parcels that are either not populated or for which Statistics Canada does not report data. These reserve parcels are omitted.
2. Mobility status data for the 2001 and 2006 Census were derived from 20% sample data; Mobility status data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. Variable examines whether the person lived in the same residence on Census Day as he or she did one year ago, or five years ago. Enumeration occurred May 10 2011 for the 2011 Census. Excludes households outside Canada (military and diplomatic).
6. Some Statistics Canada Mobility categories have been renamed for easier interpretation. The terms 'Non-Movers' and 'Movers' are original Statistics Canada categories, meaning those who did not change addresses, and those who did, respectively. There are various sub-categories of 'Movers'. Statistics Canada uses the term "Movers - Non-Migrants" to refer to a person who changed addresses but stayed within the same census division. This has been replaced with "Moved within the same census division". The term "Migrants" has been replaced by its definition "Moved from a different census division, different province, or different country". Statistics Canada also uses the terms 'Internal Migrants' further classified as either 'Intraprovincial' or 'Interprovincial' and 'External Migrants' to distinguish between people who moved from a different location within Canada, or from a different country, respectively. These terms have been replaced with 'Moved from a different census division within the same country' 'Moved from a different province' and 'Moved from a different country'.
7. "Internal migration data may be less accurate for small geographic areas, areas with a place name which is duplicated elsewhere, and for some Census Subdivisions (CSD) where previous residents may have provided the name of the Census Metropolitan Area or Census Agglomeration instead of the specific name of the component CSD from which they migrated." (Statistics Canada 2009).
8. Data for TteS Non-Ab identity population are calculated by InterGroup Consultants as the difference between total population and TteS aboriginal identity population.
9. "Total Aboriginal identity population" is composed of those persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Métis or Inuit, and/or those who reported being a Treaty Indian or a Registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation.
10. The LSA is the City of Kamloops, TteS, SIB, and the TNRD-J.
11. The RSA is the TNRD.

As illustrated in Table 4-7 below, the census subdivisions in the RSA had slightly lower percentages of movers, than did the RSA as whole, or the Province. The percentage of residents who moved within the past five years at the LNIB, AIB, and WP/CIB was between 33-38%, compared to 43% in the Province, and the RSA. Most of the LNIB movers had been residing in the same census division, while half of the WP/CIB movers had come from other census divisions, and all of the AIB movers had come from other census divisions.

Table 4-7: One and Five Year Mobility Status for the RSA, 2011

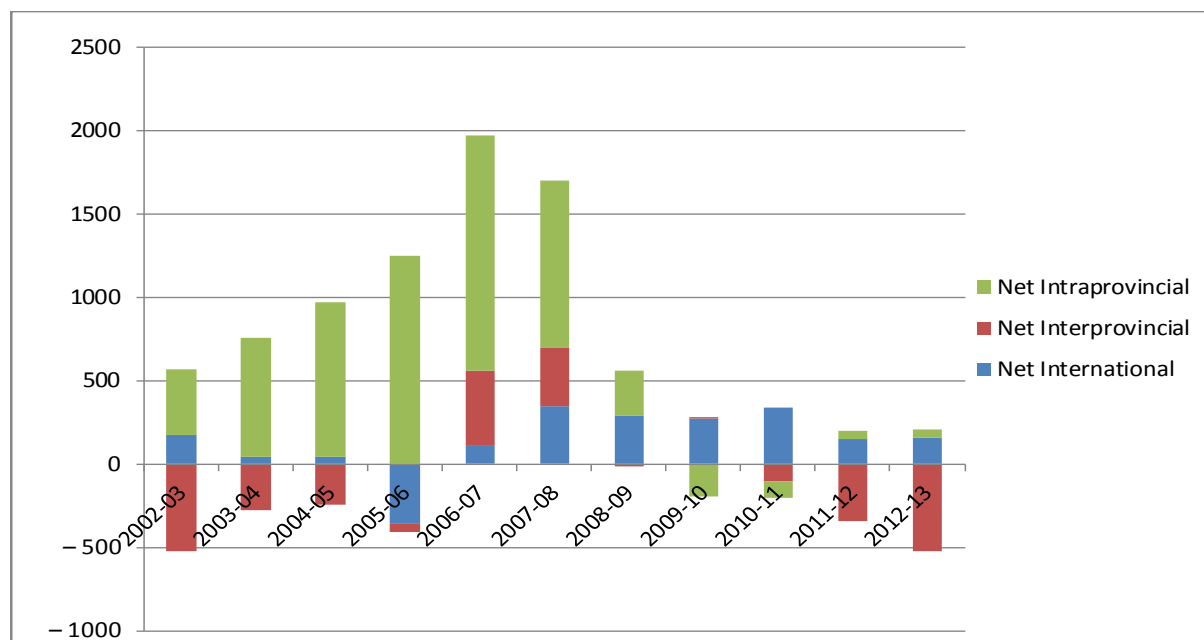
Mobility Status ^{1,2,3,4}	LNIB ⁸	AIB ⁹	WP/CIB	RSA ¹⁰	BC
Total population Mobility status 1 year ago ^{5,6,7}	615	75	55	124,770	4,282,100
Non-movers	535	70	55	107,245	3,665,460
Movers	80	0	10	17,525	616,650
Moved within the same census division	55	0	0	11,185	347,835
Moved from a different census division, different province, or different country	25	0	0	6,335	268,810
Moved from a different census division within the same country	25	0	0	5,830	212,385
Moved from a different census division within the same province	25	0	0	4,775	167,280
Moved from a different province	0	0	0	1,055	45,105
Moved from a different country	0	0	0	510	56,425
Total population 5 years and over by mobility status 5 years ago ^{5,6,7}	565	65	60	119,685	4,104,200
Non-movers	345	40	40	68,500	2,349,525
Movers	210	25	20	51,185	1,754,670
Moved within the same census division	135	0	10	26,785	888,335
Moved from a different census decision, different province, or different country	75	20	10	24,400	866,335
Moved from a different census division within the same country	70	20	10	22,390	653,285
Moved from a different census division within the same province	55	20	10	16,820	486,835
Moved from a different province	15	10	0	5,570	166,455
Moved from a different country	0	0	0	2,005	213,050
Percentage of the 2006 population that moved from a different census division, province, or country within the previous year	4.07%	0.00%	0.00%	5.08%	6.28%

Source: Statistics Canada 2002, 2007 and 2013.

Notes:

1. Statistics Canada refers to the AIB as Ashcroft 4 Indian Reserve and 105 Mile Post 2 Indian Reserve; LNIB as Nicola Mameet 1 Indian Reserve, Zoht 4 Indian Reserve, Joeyaska 2 Indian Reserve, and Hamilton Lake 7 Indian Reserve; and WP/CIB as Whispering Pines 4 Indian Reserve. These First Nations have additional reserve parcels, which are either unpopulated or for which Statistics Canada does not report data. These reserve parcels have been omitted.
2. Mobility status data for the 2001 and 2006 Census were derived from 20% sample data; Mobility status data for the 2011 NHS were derived from 30% data. However, on Indian reserves and in remote communities, attempts are made to obtain data from 100% of the population for all years.
3. Data have been subjected to a confidentiality procedure known as random rounding whereby values are rounded either up or down to a multiple of 5, and in some cases, 10. Columns may not add due to rounding.
4. The global non-response rate (GNR rate) is a data quality indicator; the higher the rate of non-response, the greater the risk of data error. For 2001 and 2006 census, results for any geographic area with a global non-response rate greater than or equal to 25% were suppressed and not available in the standard Statistics Canada products, while for 2011, GNR rate greater than or equal to 50% were suppressed. Caution should be exercised when interpreting and comparing these data sets from Census year to Census year.
5. Variable examines whether the person lived in the same residence on Census Day as he or she did one year ago, or five years ago. Enumeration occurred May 10 2011 for the 2011 Census. Excludes households outside Canada (military and diplomatic).
6. Some Statistics Canada Mobility categories have been renamed for easier interpretation. The terms 'Non-Movers' and 'Movers' are original Statistics Canada categories, meaning those who did not change addresses, and those who did, respectively. There are various sub-categories of 'Movers'. Statistics Canada uses the term "Movers - Non-Migrants" to refer to a person who changed addresses but stayed within the same census division. This has been replaced with "Moved within the same census division". The term "Migrants" has been replaced by its definition "Moved from a different census division, different province, or different country". Statistics Canada also uses the terms 'Internal Migrants' further classified as either 'Intraprovincial' or 'Interprovincial' and 'External Migrants' to distinguish between people who moved from a different location within Canada, or from a different country, respectively. These terms have been replaced with 'Moved from a different census division within the same country' 'Moved from a different province' and 'Moved from a different country'.
7. "Internal migration data may be less accurate for small geographic areas, areas with a place name which is duplicated elsewhere, and for some Census Subdivisions (CSD) where previous residents may have provided the name of the Census Metropolitan Area or Census Agglomeration instead of the specific name of the component CSD from which they migrated." (Statistics Canada 2009).
8. Includes data for Nicola Mameet 1 Indian Reserve and Joeyaska 2 Indian Reserve. Data for Hamilton Lake 7 Indian Reserve and Zoht 4 Indian Reserve were suppressed.
9. Includes data for Ashcroft 4 Indian Reserve. Data for 105 Mile Post 2 Indian Reserve were suppressed.
10. The RSA is the TNRD.

According to BC Stats, net migration into the RSA (international, interprovincial, and intraprovincial) hit a peak in 2006-07 of 1,930 people (Figure 4-6). This peak came after a steady incline in migration since 2002-03. Since the peak, migration slowed in 2007-08 and fell down to below 400 in 2008-09 and then below 300 net in 2009-10. Net migration in 2011-12 and 2012-13 fell into the negative for the first time since 2001-02 (Figure 4-6).



Source: BC Stats 2014f.

Notes:

1. Adapted from British Columbia Regional District Migration Components Tables for Thompson-Nicola Regional District.
2. Net international migration calculated by subtracting number of emigrants from immigrants.

Figure 4-6: RSA Migration, 2002-2013

4.1.1.6 Population Growth

Birth and Death Rates

Population change is a direct function of birth and death rates. Some statistics related to birth and death rates are available from BC Stats. The smallest geographical areas for which data are presented are the local health areas (LHAs). Data are also presented for larger areas such as regional districts and development districts, but not by individual community.

The Kamloops LHA includes all of the City of Kamloops and TteS. In the Kamloops LHA there were 885 deaths recorded from 2009 to 2013, 484 of which were men and 401 of which were female (Table 4-8). The male life expectancy was 78 years whereas the female life expectancy was 82.95 years. The North Thompson LHA includes most of the northern section of the RSA, overlapping with electoral areas “A” and “B”. In the North Thompson LHA, there were 40 deaths recorded from 2009 to 2013, 19 of which were men and 21 of which were women. Life expectancy was not recorded (BC Stats 2014b, 2014c).

In the RSA, there were 1,111 recorded deaths recorded from 2009 to 2013, 605 of which were male, and the remaining 506 were female. The life expectancy was 77.75 years for males and 82.26 for females (BC Stats 2014c). Life expectancy is shown in Table 4-8.

Table 4-8: Total Deaths Recorded 2009-2013

Deaths	Total Deaths (Life expectancy)	Deaths Male (Life expectancy)	Deaths Female (Life expectancy)
Kamloops LHA	885 (80.39)	484 (78)	401 (82.95)
North Thompson LHA ¹	40 (NA)	19 (NA)	21 (NA)
RSA ²	1,111 (79.91)	605 (77.75)	506 (82.26)
British Columbia	31,754 (82.25)	16,276 (80.2)	15,478 (84.27)

Source: BC Stats 2014b, 2014c, 2014d.

Notes:

1. Life expectancy for the North Thompson LHA is suppressed because they had over five zero cells, i.e., over five age groups out of 20 that had no reported deaths over the five-year period.
2. The RSA is comprised of the TNRD.

Total fertility rates (Table 4-9) in the Kamloops and North Thompson LHAs have been higher than British Columbia average since 2009. Fertility Rate data is presented only by LHA and it was therefore not possible to include the regional study area in the comparison (BC Stats 2014e).

Table 4-9: Total Fertility Rate¹ of Women Aged 15-49, 2009-2013

Fertility Rate	2009	2010	2011	2012	2013
Kamloops LHA	1,635	1,544	1,485	1,533	1,459
North Thompson LHA	1,935	1,516	1,578	1,836	1,606
BC	1,507	1,478	1,440	1,430	1,435

Source: BC Stats 2014e.

Notes:

1. The total fertility rate (TFR) of a population is the average number of children that would be born to a woman over her lifetime if she were to experience the exact current age-specific fertility rates through her lifetime, and she were to survive from birth through the end of her reproductive life. It is obtained by summing the single-year age-specific rates at a given time (BC Stats 2014e).

Population Projections

According to projections made by BC Stats, the population of the RSA is projected to increase by about 8.2% over the next decade from a 2013 population of 133,931 to a 2023 population of 145,845. The projection predicts a 21.4% increase in population from 2011 to 2036. This is notably lower than the provincial population projected increase of 29.9% over the period of 2011 to 2036 (BC Stats 2012e, 2012f).

Population projections for all communities are not publicly available. In its planning documents, Kamloops has been using a growth rate of 1.25%, with the community expecting to reach 100,000 and 120,000 in population in 2021 and 2036, respectively (City of Kamloops 2004). In 2012, Urban Futures completed a series of projections for the TNRD. According to the final report (Urban Futures 2012), the TNRD has an aging population and a projected fertility rate that is expected to remain below replacement levels, which are expected to slow growth in the TNRD. It is projected that the population of the TNRD will reach 151,064 by 2026 and 161,071 by 2036, which represents an average expected growth rate of 0.8%.

4.1.2 Infant and Maternal Health

Information about births and infant health such as infant mortality rates and low birth rate ratios provide good information about the health of a community in general. The infant mortality rate is widely considered one of the best health and wellness indicators (Foster et al. 2011) because it reflects the health status and health care of a population, the efficacy of preventative care, and the attention a society pays to maternal and child health. Additionally, it reflects broad social factors such as education levels, smoking, and deprivation (Health Canada 2008). Table 4-10 presents the infant mortality rates in the Kamloops LHA, North Thompson LHA, and the Province in four-year averages.

Table 4-10: Infant Mortality Rates¹ in the Kamloops Local Health Area, North Thompson Local Health Area, and British Columbia (1995-1999, 2000-2004, 2005-2009)

	1995-1999	2000-2004	2005-2009
Kamloops LHA	4.38	4.74	3.41
North Thompson LHA	6.83	8.70	NA
British Columbia	4.68	4.12	3.87

Source: British Columbia Vital Statistics Agency 2001, 2006, 2011.

Notes:

1. The infant mortality rate is the number of deaths per 1,000 live births.

Infant mortality rates are measured as the number of deaths per 1,000 live births of infants under the age of one. In British Columbia as a whole, the infant mortality rate has consistently decreased between 1995 and 2009, which, at the time of writing, is the last year for which a four-year average is available from the British Columbia Vital Statistics Agency. In the Kamloops LHA, the infant mortality rate has generally been lower than the infant mortality rate in the province. The one exception is the average for 2000-2004, which was higher in the Kamloops LHA (4.74 deaths per 1,000 live births) than in the Province (4.12 deaths per 1,000 live births). In the North Thompson LHA, the infant mortality rates for the years reported were higher than in both the province and the Kamloops LHA, with the infant mortality rate being double the provincial rate for 2000-2004 (8.70 deaths per 1,000 live births and 4.12 deaths per 1,000 live births, respectively). No infant mortality information was reported for the North Thompson LHA for 2005-2009.

Low birth weight is another measure of the overall health of a given community. Low birth weight is considered less than 2,500 grams (British Columbia Vital Statistics Agency 2011). The indicator is linked with infant survival, health, and development. Often, it is associated with poor maternal health, including poor nutrition, maternal smoking, economic circumstances, and low pre-pregnancy body mass index (Health Canada 2008). Infants with low birth weight have increased risks of morbidity, mortality, and disability in infancy and childhood (IHA 2013a). Table 4-11 presents the low birth weight rates in the Kamloops LHA, the North Thompson LHA, and British Columbia from 2004 to 2010 in four-year averages.

Table 4-11: Low Birth Weight Rates¹ in the Kamloops Local Health Authority, North Thompson Local Health Authority, and British Columbia (2004-2008, 2005-2009, 2006-2010)

	2004-2008	2005-2009	2006-2010
Kamloops LHA	58.8	55.5	57.6
North Thompson LHA	57.0	57.5	76.9
British Columbia	55.8	55.5	55.6

Source: IHA 2013a, 2013b.

Notes:

1. Number of low birth weights per 1,000 live births.

In British Columbia, the low birth weight rate has remained steady between 2004-2008 (55.8 per 1,000 live births) and 2006-2010 (55.6 per 1,000 live births). The low birth weight rates in the Kamloops LHA and the North Thompson LHA are higher than the provincial rates. While the low birth rate in the Kamloops LHA decreased slightly from 58.8 per 1,000 live births in 2004-2008 to 57.6 per 1,000 live births in 2006-2010. In the North Thompson LHA, the low birth weight rate has increased from 57.0 per 1,000 live births in 2004-2008 to 76.9 per 1,000 live births in 2006-2010.

4.1.3 Chronic Disease

Chronic disease is an important measure of a community's overall health because not only does it reflect a community's demographics, it also has negative impacts on the quality of life of affected individuals, causes premature deaths, and creates adverse economic effects on families, communities, and societies (World Health Organization 2005). The IHA reports on the chronic diseases include in Table 4-12 as they affect "many Interior Health residents." According to the IHA, as the population in the health authority continues to age, the prevalence rates of chronic disease are expected to increase (IHA 2013a, 2013b). Below are the prevalence rates of select chronic diseases in the LHAs as compared to the prevalence rates in the health authority and the Province (Table 4-12).

Table 4-12: Chronic Disease Crude Prevalence Rates in the Kamloops Local Health Authority, North Thompson Local Health Authority, Interior Health Authority, and British Columbia (2011-2012)

Chronic Disease	Kamloops LHA	North Thompson LHA	IHA	British Columbia
Depression/Anxiety	27%	21%	27%	25%
Asthma (5-54 years)	12%	12%	10%	10%
Chronic Obstructive Pulmonary Disease (COPD) (45+ years)	9%	10%	8%	6%
Diabetes Mellitus	8%	8%	8%	8%
Dementia (45+ years)	3%	2%	3%	3%
Heart Failure	3%	3%	3%	2%

Source: IHA 2013a, 2013b.

4.1.4 Depression/Anxiety

Depression/anxiety can have profound impacts on individuals and communities. According to a survey conducted by the Canadian Mental Health Association, approximately 3.4 million Canadians have experienced a major bout of depression at some point in their lives. Women and those between 25-54 years of age are more likely to have experienced depression or anxiety (Canadian Mental Health Association 2002). A Statistics Canada survey reported that half a million Canadian workers experience depression and almost 80% of them indicate that the symptoms they experience interfere with their ability to work (Statistics Canada 2007c). The high incidence and prevalence of mental illness that often goes untreated means the human and economic costs of mental illness are considerable.

As indicated in Table 4-12, in both LHAs in 2008-09, depression/anxiety was the most prevalent chronic condition at 25.3% in the Kamloops LHA and 17.7% in the North Thompson LHA (IHA 2010a, 2010b). The prevalence rates in the LHAs have increased between 2008-09 and 2011-12. In the Kamloops LHA, depression/anxiety in 2011-12 had a prevalence rate of 27.0%. It also has the same prevalence rate in the IHA for 2011-12. In British Columbia, during the same time period the prevalence rate of depression/anxiety was lower at 25.0%. In the North Thompson LHA, depression/anxiety had a prevalence rate of 21.0%, but it had a lower prevalence rate than in the other regions.

4.1.5 Asthma

In 2011-12 the crude prevalence rates for asthma were in the Kamloops LHA (12.0%), North Thompson LHA (12.0%), and the comparison communities 10% in the IHA and 10.0% in British Columbia (Table 4-12). In both LHAs, the rates of asthma were higher than in the health authority, and the Province.

The implications of being diagnosed with asthma are diverse. The economic impacts include direct medical costs from hospital admission to pharmaceutical costs and indirect costs such as time lost from work and premature death (World Health Organization 2005). Individuals diagnosed with asthma may also have co-morbidities, which could complicate treatment, increase the cost of treatment, and contribute to missed works and rates of premature death. In 2008-09 in the Kamloops LHA, 20% of asthma sufferers have also been diagnosed with depression/anxiety/neuroses and 15% also suffer from another respiratory ailment (e.g., COPD, emphysema, or chronic bronchitis). In the North Thompson LHA, 12% of asthma sufferers have also been diagnosed with depression/anxiety/neuroses and 16% also suffer from another respiratory ailment (e.g., COPD, emphysema, or chronic bronchitis) (IHA 2010a, 2010b).

4.1.6 COPD

Another respiratory condition, Chronic Obstructive Pulmonary Disease (COPD), is a chronic condition of concern in the health authority, which is developing a strategy aimed at those with COPD (Ajax KPI Program 2011-2012). The condition is characterized by shortness of breath, cough, and increased mucus production, and usually appears in individuals 55 years of age and older (Public Health Agency of Canada 2012c). According to the Public Health Agency of Canada (2012c), 80% to 90% of COPD cases have smoking as their principal underlying cause. Other risk factors include exposure to second-hand smoke, occupational exposure to dusts and fumes, and outdoor air pollution.

As shown in Table 4-12, the rate in the North Thompson LHA, which was 10.0% was approximately one percentage point higher than the rate in the Kamloops LHA (9.0%). In the Kamloops LHA, the prevalence rate was about one percentage point higher than the rate in the IHA (8.0%). All three regions (Kamloops and North Thompson LHAs and the IHA) had a higher prevalence rate for COPD was higher than the rate in the Province (6.0%).

4.1.7 Diabetes Mellitus

Table 4-12 shows that the crude prevalence Diabetes Mellitus, which includes Type 1 and Type 2 diabetes, is the fourth most prevalent chronic condition in the Kamloops and North Thompson LHAs, both at 8.0%. Both LHAs had the same incidence of the condition than in the province as a whole (8.0%). In general, the prevalence of diabetes has been increasing. For example, in Canada, the prevalence of diagnosed diabetes has increased by 70% between 1998/99 and 2008/09 (Public Health Agency of Canada 2011a). Although the condition is not typically a primary cause of death, individuals with the condition experienced mortality rates at least two times higher than those without and overall had decreased life expectancy (Public Health Agency of Canada 2011a).

4.1.8 Other Chronic Diseases of Concern

The other chronic diseases of concern in the two LHAs are dementia and heart failure. It is felt that the area could benefit from the development of a program targeting dementia (Ajax KPI Program 2011-2012). The Kamloops LHA has the same incidence of dementia as in the Province, while it has a higher incidence of heart failure than in the Province. The North Thompson LHA has a lower incidence of dementia than in the Province, but a higher incidence of heart failure.

4.1.9 Mental Health

Mental health can be measured not only by the prevalence of diagnosed conditions, such as depression/anxiety in Section 4.1.4, but also through surveys that require respondents to self-rate their mental health. The Canadian Community Health Survey, which was first conducted in 2001, includes a series of questions asking respondents to rate their mental health. Self-rated responses have been proven to be a good indicator of a population's general mental health (Foster et al. 2011). The data for these mental health indicators are only available for the HSDA.

Table 4-13 provides a summary of mental health indicators for the Thompson Cariboo Shuswap HSDA. In the Thompson Cariboo Shuswap HSDA, perceived mental health was reported to be "very good or excellent" by 66.4% of the over 12 population, down from 76.5% in 2008. The perceived mental health rate increased in 2010 to 70.0% and remained about the same in 2011 at 69.6%. Perceived life stress of the over 15 population in the Thompson Cariboo Shuswap HSDA declined from 2007 to 2009 going from 24.6% to 16.4% of the people reporting "quite a lot" of stress but has since increased to 23.1% in 2011.

Table 4-13: Mental Health Indicators, Thompson Cariboo Shuswap Health Service Delivery Area¹ (2007-2011)

Mental Health Indicator	2007	2008	2009	2010	2011
Perceived mental health, very good or excellent ²	63.5%	76.5%	66.4%	70.0%	69.6%
Perceived life stress, quite a lot ³	24.6%	15.4%	16.4%	21.2%	23.1%

Source: IHA 2010a; Statistics Canada 2012b.

Notes:

1. Mental health indicator data were not available at the LHA level.
2. Percentage of the population aged 12 and older.
3. Percentage of the population aged 15 and older.

4.1.10 Mortality

Mortality data, which includes life expectancy, leading causes of death, and potential years of life lost (PYLL) is another set of information that can provide insight into the health status of a community.

Combined, mortality (death) and life expectancy provide information about the overall health of the population. That is, most typically, communities with high mortality rates will also have lower life expectancy. Mortality rates can be a useful indicator to examine changes over time. For example, while life expectancy measures do not change a great deal in the short term, some mortality rates can be drastically reduced in short periods of time. One example is the reduction in SIDS-related (sudden infant death syndrome) deaths that has been observed since the implementation of “Back to Sleep” and other education campaigns. Other examples include suicide or other injury prevention programs that can have an immediate impact on risky behaviours.

Mortality rates that take longer to change include cancer-related mortalities as they often occur, at least partially, as a result of risk factors engaged in over a lifetime. For example, lung cancer mortality rates are impacted by smoking behaviours over decades. Therefore, smoking cessation campaigns that occur today will not immediately have an impact on lung cancer mortality rates.

Table 4-14 provides a summary of life expectancy in the Kamloops LHA, North Thompson LHA, Thompson Cariboo Shuswap HSDA, the IHA, and British Columbia. The life expectancy increased in the Kamloops LHA between 1997 and 2012. For females, life expectancy increased by 1.86 years to 82.95 years. For males, life expectancy increased by 2.54 years to 78 years. In the North Thompson LHA, life expectancy decreased between 1997 and 2011. For males, life expectancy decreased by 0.6 years to 74.19 years. For females, no statistics are reported for the period of 2007-2011. For both males and females, no statistics were reported for 2009-2013. Life expectancy for females in 1997-2001 was 81.06 years in the North Thompson LHA. Both LHAs have lower life expectancies than the health authority and the province as a whole.

4.1.11 Overweight/Obesity

Obesity is a growing health concern in Canada. It increases the risk of certain chronic conditions, including Type 2 diabetes, hypertension, cardiovascular disease, and some cancers. Obesity also has economic costs.

In 2000, it is estimated that obesity cost the Canadian economy approximately \$3.9 billion. Since then the cost of obesity to the Canadian economy has increased to approximately \$4.6 billion (Public Health Agency of Canada 2011b).

In the Thompson Cariboo Shuswap HSDA, the rate of residents aged 18 and older reporting a body mass index that fell into the overweight or obese categories has been increasing. In 2007, the rate was 51.8% of the population. In 2011, the rate had increased by slightly more than 5 percentage points to 56.9%. During the same period of time, the rate increased by less than three percentage points from 43.9% to 46.6% in the Province.

Table 4-14: Life Expectancy in the Kamloops Local Health Authority, the North Thompson Local Health Authority, the Thompson Cariboo Shuswap Health Service Delivery Area, Interior Health Area, British Columbia (1997-2001, 2002-2006, 2007-2011, 2009-2013)

		Male	Female	Average
1997-2001	Kamloops LHA	75.46	81.06	78.21
	North Thompson LHA	74.79	81.55	77.7
	Thompson Cariboo Shuswap HSDA	75.38	81.01	78.09
	IHA	76.85	82.19	79.47
	British Columbia	77.2	82.38	79.81
2002-2006	Kamloops LHA	76.35	81.29	78.77
	North Thompson LHA	76.62	NA	79.5
	Thompson Cariboo Shuswap HSDA	76.19	81.21	78.61
	IHA	77.24	82.34	79.75
	British Columbia	78.52	83.08	80.82
2007-2011	Kamloops LHA	78.11	82.92	80.47
	North Thompson LHA	74.19	NA	76.79
	Thompson Cariboo Shuswap HSDA	77.66	82.43	79.97
	IHA	78.55	83.28	80.88
	British Columbia	79.84	84.13	82.01
2009-2013	Kamloops LHA	78	82.95	80.39
	North Thompson LHA	NA	NA	NA
	Thompson Cariboo Shuswap HSDA	77.78	82.44	80.01
	IHA	78.81	83.36	81.05
	British Columbia	80.2	84.27	82.25

Source: BC Stats 2014b, 2014c, 2014d.

Table 4-15 provides a summary of the leading causes of death in the Kamloops and North Thompson LHAs in comparison to the province. Diseases of the circulatory system, malignant neoplasms (cancer) at all sites, and diseases of the respiratory system were the top three causes of death in the Kamloops LHA for 2001-2005 and 2006-2010 and in the North Thompson LHA in 2006-2010. In the North Thompson LHA for 2001-2005, diseases of the circulatory system; malignant neoplasms (cancer); and endocrine, nutritional, and metabolic diseases were the top three causes of death. In the Kamloops LHA, endocrine and metabolic diseases, and diseases of the digestive system were the fourth and fifth leading causes of death in both time periods. In the North Thompson LHA during the 2006-2010 time period, diseases of the digestive system and motor vehicle accidents were the fourth and fifth leading causes of death.

Table 4-15: Leading Causes of Death in Kamloops Local Health Authority, North Thompson Local Health Authority, and British Columbia (2001-2005, 2006-2010)

Causes of Death ¹	2001-2005			2006-2010		
	Kamloops LHA	North Thompson LHA	British Columbia	Kamloops LHA	North Thompson LHA	British Columbia
Diseases of Circulatory System ²	30.5%	27.3%	30.6%	28.3%	28.4%	33.6%
Malignant Neoplasms (all sites) ³	29.0%	36%	28.3%	27.7%	22.6%	27.9%
Diseases of Respiratory system ⁴	9.7%	3.6%	10.7%	9.1%	13.9%	10.4%
Endocrine, Nutritional, and Metabolic Diseases ⁵	4.5%	5.0%	4.1%	4.7%	1.4%	4.0%
Diseases of Digestive System ⁶	4.2%	4.3%	4.1%	4.3%	7.2%	3.9%
Motor Vehicle Accidents	2.1%	7.2%	1.1%	2.0%	3.4%	1.4%

Source: British Columbia Vital Statistics 2006, 2011. Calculations by InterGroup Consultants.

Notes:

- List contains the top five causes of death for each LHA. In the Kamloops LHA, the top five causes of death are Diseases of Circulatory System, Malignant Neoplasms (all sites), Diseases of Respiratory System, Endocrine and Metabolic Diseases, and Diseases of Digestive System (IHA 2010a). In the North Thompson LHA, the top five causes of death are Diseases of Circulatory System, Malignant Neoplasms (all sites), Disease of Respiratory System, Diseases of Digestive System, and Motor Vehicle Accidents (IHA 2010b).
- According to the International Classification of Disease and Cause of Death Classifications, diseases of the circulatory system are those that affect movement of the blood in heart and lung vessels (World Health Organization 2010).
- According to the International Classification of Disease and Cause of Death Classifications, neoplasms are a group of diseases in which cells grow unusually and uncontrolled (World Health Organization 2010).
- According to the International Classification of Disease and Cause of Death Classifications, diseases of the respiratory system are those that affect breathing. Examples include the common cold, asthma, pneumonia, and COPD (World Health Organization 2010).

5. According to the International Classification of Disease and Cause of Death Classifications, endocrine , nutritional, and metabolic diseases are the result of not eating properly, by glands that do not work properly or the presence of substances in the body that are toxic (World Health Organization 2010).
6. According to the International Classification of Disease and Cause of Death Classifications, diseases of the digestive system are conditions that affect the digestive tract of the body (World Health Organization 2010).

The rates for deaths from diseases of the circulatory system decreased in the Kamloops LHA from 2001-2005 to 2006-2010, while same rate increased in British Columbia. The LHA also had a lower rate of deaths from circulatory diseases than the Province as a whole. In the Kamloops and North Thompson LHAs, the percentage of deaths from malignant neoplasms decreased from 2001-2005 to 2006-2010. The LHAs had a higher percentage of deaths from malignant neoplasms than the Province in 2001-2005 but a lower percentage than the Province in 2006-2010. In the Kamloops LHA, the percentage of deaths from diseases of the respiratory system decreased slightly between 2001-2005 and 2006-2010, while the percentage of deaths from the same diseases increased in the North Thompson LHA from 3.6% in 2001-2005 to 13.9% in 2006-2010. The percentages of deaths from endocrine and metabolic diseases and diseases of the digestive system were higher in the Kamloops LHA and the North Thompson LHA than in the Province for both ranges. Although the percentage of deaths from motor vehicle accidents in both LHAs was higher than in the Province, the percentage of deaths due to these was markedly higher in the North Thompson LHA (7.2% in 2001-2005 and 3.4% in 2006-2010).

It is important to look at mortality and causes of mortality both in terms of all deaths as well as specifically at deaths that occur at younger ages as these deaths are more likely to be preventable. Potential Years of Life lost (PYLL) measures the impact of death occurring at younger ages. Table 4-16 provides a summary of leading causes of PYLL in the Kamloops LHA, the North Thompson LHA, the Thompson Cariboo Shuswap HSDA, the IHA, and British Columbia for 2007-2011. Potential years of life lost is calculated by subtracting age at death from age 75 (the standard "death age") for each person who died, and then adding all of these differences for a total PYLL. This information is usually grouped by cause of death for comparison with cause-specific death rates. This measure emphasizes causes of death that tend to be more common among younger persons, such as injuries and inherited anomalies.

Table 4-16: Potential Years of Life Lost per 1,000 Population Average in the Kamloops Local Health Authority, North Thompson Local Health Authority, Thompson Cariboo Shuswap HSDA, Interior Health Authority, and British Columbia (2007-2011)

Health Condition	Kamloops LHA	North Thompson LHA	Thompson Cariboo Shuswap HSDA	IHA	British Columbia
PYLL due to suicide/homicide	4.1	11.8	5.6	4.9	4.0
PYLL due to natural causes	33.4	35.5	35.1	32.3	29.7
PYLL due to accidents	11.8	32.1	14.4	11.2	7.0

Source: BC Stats 2012h, 2012i, 2012m, 2012n.

Potential Years of Life Lost due to Suicide/Homicide was higher in the Kamloops and North Thompson LHAs, the Thompson Cariboo Shuswap HSDA, and the IHA than in the Province. The Potential Years of Life Lost due to natural causes was higher than the rates of PYLL due to suicide/homicide in all populations. Within the Thompson Cariboo Shuswap HSDA, there was a divergence in health conditions between the more urban and southerly Kamloops LHA and the more rural and northerly North Thompson LHA. Potential years of life lost due to suicide/homicide was quite low in the Kamloops LHA, but in the North Thompson LHA the PYLL due to suicide/homicide was over 2.5 times greater than the provincial average. Potential years of life lost due to natural causes was high in the Kamloops LHA (33.4) but lower than in the North Thompson LHA (35.5). Potential years of life lost due to accidents was higher in the Kamloops LHA than in the Province, but less than in the HSDA average. It was equal to the average in the IHA. In contrast, PYLL due to accidents in the North Thompson LHA was more than twice than in the HSDA, and over five times greater than the provincial average.

4.2 OTHER DETERMINANTS OF HEALTH

4.2.1 Health Service Delivery

The IHA is responsible for administering health care services in the RSA, which includes the Kamloops and North Thompson LHAs and the Thompson Cariboo Shuswap HSDA. Kamloops has a tertiary level hospital and a Health Centre, while North Thompson has a Community Level 1 Hospital and a Health Centre. Both LHAs offer public health, mental health, primary health care, and community care services (IHA 2010a, 2010b).

In the Kamloops LHA, there were 118 general practitioners compared with five in the North Thompson LHA in 2009-2010, the last time period for which statistics at the LHA are publicly available. This translates into 1.1 and 1.2 general practitioners per 1,000 population in the Kamloops LHA and North Thompson LHA, respectively. The number of general practitioners per 1,000 population in the Kamloops and North Thompson LHAs is lower than the number of general practitioners per 1,000 population in the IHA. Generally, it is more difficult to access services and practitioners in the more rural parts of the health authority, although in the Kamloops LHA specifically, it is difficult for residents to find a family physician (Ajax KPI Program 2011-2012). More recent statistics are available for the Health Service Delivery Area. The Kamloops LHA would be included in the Thompson/Cariboo region, which had 117 family medicine physicians per 100,000 population, which is a 4.9% increase over the past five years. The number of family medicine physicians in the Thompson/Cariboo Health Region is less than the British Columbia (123 per 100,000 population) and higher than in Canada (111 per 100,000 population). The IHA expects to experience a shortage of physicians and clinical staff as the workforce ages and doctors and clinical staff begin retiring in larger numbers (IHA 2014). Currently there are issues recruiting and retaining certain specialities both among physicians and nursing, including offering competitive salaries. It is hoped that by working with educational facilities in the health authority, more medical staff can be recruited and retained (Ajax KPI Program 2011-2012).

The North Thompson LHA had higher rates of inpatient cases, acute/rehab days, and emergency department visits in every year except 2012-13 where emergency department visits were lower. The Kamloops LHA had higher rates of alternate level of care days. Rates for inpatient surgical cases, hip and knee surgery cases, and cataracts surgery cases were similar in the two LHAs (Table 4-17).

Table 4-17: Acute Care Statistics in Kamloops Local Health Area and North Thompson Local Health Area - 2008-09- 2012-13

Acute Care (age standardized, per 1,000 population)	2008-09		2009-10		2010-11		2011-12		2012-13	
	Kamloops LHA	North Thompson LHA	Kamloops LHA	North Thompson LHA	Kamloops LHA	North Thompson LHA	Kamloops LHA	North Thompson LHA	Kamloops LHA	North Thompson LHA
Inpatient cases	90	115	88	111	90	105	90	101	90	92
Acute/Rehab days	518	661	482	625	481	505	448	460	475	545
Alternate Level of Care (ALC) Days	138	125	122	52	149	72	200	145	166	138
Inpatient Surgical (IP) Cases	34	30	31	34	32	28	31	32	29	23
Surgical Day Care (SDC) Cases	107	88	109	86	115	96	126	98	129	86
Hip & Knee Surgery Cases	3	4	3	4	3	3	4	3	4	1
Cataracts Surgery Cases	9	9	9	7	9	7	10	10	11	7
Emergency Department visits ¹	458	604	475	589	468	577	495	538	510	480

Source: IHA 2012d, 2012e, 2013a, 2013b.

Notes:

1. The crude rate for emergency department visits is provided.

The Royal Inland Hospital, which is located in Kamloops, operates above its capacity (IHA 2013d) as occupancy has increased every year (Ajax KPI Program 2011-2012, 2015; IHA 2013d). There have been a small number of inpatient beds added and strategies are in place to lower the number of alternate level care days, which would free up beds. Additionally, a new clinical services building for out-patient diagnostics is currently under construction. The facility is expected to open in May 2016. It will free up space in the RIH but how the space will be used is currently being discussed (Ajax KPI Program 2011-2012, 2014-2015).

The emergency department at the Royal Inland Hospital is also an area of concern. Unscheduled visits to the emergency department have increased by close to 5,000 visits from 49,748 visits in 2009-10 to 56,695 visits in 2012-13 (IHA 2012f, 2013d). The reasons for the increase in visits include a lack of family physicians in general and the lack of care alternatives available on weekends (Ajax KPI Program 2011-2012). To help alleviate some of the pressure on the emergency department, the RIH works on access and flow, creating stronger relations with community partners to smoothly transition patients, and planning to use out-patient clinics more effectively (Ajax KPI Program 2011-2012, 2014-2015).

Community Care Services fall under the IHA's Community Integrated Services, which include initiatives that strengthen primary care services. The Kamloops and North Thompson LHAs show marked differences in their rates of clients in community care services for those age 75 and older (Table 4-18). For example, in 2011, there were about 103 home support clients for every 1,000 people over the age of 75 in North Thompson LHA, compared with about 74 in the Kamloops LHA. The number of clients per 1,000 population age 75 and older has been increasing. The aging population in Kamloops may exacerbate this situation and affect the quality of care for older individuals. A new residential care facility opened in fall 2013. It houses 125 publicly funded beds and 5 private-pay beds. The facility will offer programs for physically frail seniors and seniors in the mild-to-moderate stages of dementia (BC Ministry of Health and Interior Health 2013).

Table 4-18: Community Care Services in Kamloops and North Thompson LHAs, 2009-10, 2010-11, 2011-12

Community Care Services	2011		2012		2013	
	Kamloops LHA	North Thompson LHA	Kamloops LHA	North Thompson LHA	Kamloops LHA	North Thompson LHA
Home support clients per 1,000 75+	74	103	84	110	89	116
Adult day service clients per 1,000 75+	16	50	16	33	15	13
Case management clients per 1,000 75+	8	10	15	8	26	11
Home care nursing clients per 1,000	22	22	22	11	21	16
Community rehab clients per 1,000	11	7	13	8	14	7
Assisted living clients per 1,000 75+	14	n/a	14	n/a	13	n/a

Source: IHA 2013a, 2013b.

4.2.2 Aboriginal Health

In 2006, Aboriginal people comprised 6.3% of the population in the IHA (First Nations Health Council 2011). Despite making up a relatively small percentage of the total population, the Aboriginal population in the IHA experienced a disproportionate rate of many diseases and injuries when compared to other segments of the population. For example, the Status Indian population is twice as likely to be hospitalized or more likely to be hospitalized for medically preventable conditions. In the IHA specifically, Aboriginal persons fare worse than other residents for dental surgery rates for all children age 14 and younger, infant mortality rates, and mortality rates from all causes (IHA 2010c).

The reasons underlying the disparities in health status and access to health care between Aboriginal peoples and other segments of the population are complex. Among the determinants potentially affecting the gap in health and wellness between Aboriginal and non-Aboriginal British Columbia residents include a range of non-medical determinants from higher unemployment rates, lower levels of education, and greater food insecurity due to poverty. Some of the contributing factors to health disparities stem from historical reasons, including colonization, systemic discrimination, and the residential school experience (British Columbia Provincial Health Officer 2009). In the IHA, access, cultural safety, and jurisdictional issues were cited as some of the issues created disparity between Aboriginal and non-Aboriginal residents (Ajax KPI Program 2011-2012).

4.2.2.1 Health Service Delivery On-reserve

The Tk'emlúps te Secwépemc

The Q'wemtsin Health Society (QHS) provides services to TteS members (Q'wemtsin Health Society [QHS] 2014). The society's health centre is located on the TteS reserve parcel and has been delivering primary care services since 2007 in partnership with the IHA. Among the services provided include home and community care, prenatal care, a dental clinic, naturopathic medicine, addictions counselling, and public health services (QHS, *pers. comm.* 2015).

The centre has one nurse practitioner who is there two days a week, a naturopathic doctor, home care nurses, community health nurses, personal care aides, and a dental hygienist. There is currently no doctor at the centre as the previous doctor retired. The nurse practitioner cannot meet the demand for medical services and will turn away patients when necessary. There are many TteS members who need a family physician (QHS, *pers. comm.* 2015).

When necessary, QHS will refer patients to external organizations, but it was noted that transportation can sometimes be a barrier for members in accessing health care services that are located off-reserve (QHS, *pers. comm.* 2015).

The Skeetchestn Indian Band

The Q'wemtsin Health Society provides services to SIB members (QHS 2014). A health clinic opened on-reserve in January 2014. Q'wemtsin Health Society staff visits the clinic on specific days to deliver services and programming. Home care nurses visit the SIB reserve once a week, the naturopathic doctor visits twice

a month, the community health nurses visit twice a month, and a mental health counsellor visits once a week (QHS, *pers. comm.* 2015).

When necessary, QHS will refer patients to external organizations, but it was noted that transportation can sometimes be a barrier for members in accessing health care services that are located off-reserve (QHS, *pers. comm.* 2015).

The Lower Nicola Indian Band

The LNIB Health Centre is located in the Shulus neighbourhood of the Nicola Mameet 1 reserve, and most health and social development programs are delivered out of this building. The Health Centre has a staff of 14. The LNIB is an active member of the BC FN Health Authority.

The health services and programs offered out of the Health Centre are:

- Community health;
- Prenatal and family nutrition;
- Dental/oral health;
- Aboriginal Diabetes Initiative;
- HIV/AIDS Strategy;
- Mammogram clinic;
- Optometry clinic;
- Flu clinics;
- First Nation Health Benefits;
- Arthritis education and prevention;
- Mental health;
- Immunizations;
- Communicable disease control;
- TB Screening;
- Fetal Alcohol Syndrome;
- Podiatry clinic;
- Nursing services;
- Patient travel; and
- Uninsured Health Benefits (LNIB 2014).

The Ashcroft Indian Band

There are limited health care services available on-reserve. Currently, there is a nurse working about 80% full-time-equivalent at the Ashcroft Indian Band Health Centre. The nurse has good relationships with service providers and facilities in the City of Kamloops and helps facilitate care there that members may require (AIB *pers. comm.* 2014).

The Whispering Pines/Clinton Indian Band

The QHS provides health care services to WP/CIB members. Health care staff visit the reserve once a month (QHS, *pers. comm.* 2015).

4.2.2.2 Strategies to Improve Aboriginal Health Status

In British Columbia and the IHA, several initiatives have been undertaken to address the inequalities in health between Aboriginal and non-Aboriginal persons. This section will briefly outline the Tripartite First Nations Health Plan, the ultimate goal of which is to improve the health status of First Nations members in BC, the IHA's Aboriginal Health and Wellness Plans and Strategy, and the IHA's Aboriginal Patient Navigator service. The IHA's plans would have an impact on the health status and health care services available to Métis residents of the health authority, anyone who self-identified as Aboriginal, and members of TteS and SIB. Members of TteS and SIB have access to health care services offered by the IHA and through the Q'wemtsin Health Society (Q'wemtsin Health Society n.d.).

4.2.2.3 BC First Nations Health Authority

In October 2013, health services for First Nations in BC officially transferred from Health Canada's First Nations Inuit Health Branch – Pacific Region to the First Nations Health Authority (FHNA), a provincial entity (FHNA 2013). The First Nations Health Authority grew out of the Tripartite First Nations Health Plan. In 2007, the Canadian government, British Columbian government, and the First Nations Leadership Council signed the Tripartite First Nations Health Plan to directly involve First Nations in health care delivery, improve service coordination by the federal and provincial governments, and to define a new role for Health Canada in First Nation health. Over the course of ten years, the plan will focus on:

- **Governance, relationships, and accountability**, which will involve developing a First Nations Health Governing Body, a First Nations Health Council, a tripartite First Nations Health Advisory Committee, and a professional association to create and implement a plan for developing capacity by community-based services for First Nations;
- **Health promotion and injury/disease prevention**, which will focus on developing a health promotion and disease and injury prevention strategy;
- **Health services**, which will create a multi-jurisdictional health planning framework to help close jurisdictional gaps and optimize funding; and

- **Performance tracking**, which will track seven indicators to measure the progress on closing the gap between the health status of First Nations members and other residents of British Columbia (First Nations Leader Council, et al., 2007).

The transfer between Health Canada and the provincial Health Authority included:

- 135 permanent and 30 term Health Canada BC Region staff;
- 208 contribution agreements with First Nations health service providers;
- 2013/14 Health Canada annual budget of \$377.8 million; and
- Capital resources including nursing stations and office space in BC (FNHA 2013).

The FNHA is responsible for the federal health programs and services that had formerly been delivered by Health Canada's First Nations Inuit Health Branch and has been working towards addressing gaps in services. The work of the FNHA is not intended to replace the work of the Ministry of Health and the regional health authorities in BC (FNHA n.d.).

4.2.2.4 Aboriginal Health and Wellness Plans and Strategies

At the health authority level, the IHA has formulated and released dedicated Aboriginal Health and Wellness Plans since 2003, two years after its formation. The first plan was the Aboriginal Health and Wellness Plan, 2002-2006 (IHA 2003). The second plan covers 2006-2010. In 2010, the IHA released its Aboriginal Health and Wellness Strategy, 2010-2014 to inform its initiatives to reduce the existing gaps between the health status of Aboriginal and non-Aboriginal residents of the health authority.

In the plan covering 2006-2010, the health authority lists eight priority areas: early childhood development, mental health and addictions, Aboriginal Elders, communicable disease, injury prevention, collaboration, cross-cultural education, and communication. Each priority area consists of a goal or series of goals, proposed strategies, key partnerships for achieving the goal, and measurable performance indicator. The Aboriginal Health and Wellness Strategy released in 2010 focuses on creating an overarching framework to guide the health authority in achieving its ultimate goal. The strategies are meant to improve the health and wellness of the Aboriginal and Métis residents of the IHA and to establish inclusive services across the Care and Service Continuum. The strategies are to develop a sustainable Aboriginal health program, ensure access to integrated services, delivery culturally safe services, effectively monitor and evaluation Aboriginal health, and ensure meaningful Aboriginal participation in healthcare planning (IHA 2010c). The strategy is intended to be a high-level guiding document that does not supplant the eight priority areas from the previous plans; rather, it provides a funnel for how to direct initiatives (Ajax KPI Program 2011-2012).

4.2.2.5 Aboriginal Patient Navigators

The IHA highlights the Aboriginal Patient Navigator service as one of the health authority's key efforts in working with and for Aboriginal patients (IHA 2013c). In the Kamloops LHA, the service is available at the Royal Inland Hospital in Kamloops.

The Aboriginal Patient Navigator acts as a liaison among the patient, family, community, and health care providers through all stages of care from intake to after discharge (IHA 2010c). They help patients understand the health care system and access services. For health care providers, they provide knowledge about cultural and spiritual practices and help eliminate barriers to health care services (IHA 2010c). Any patient who self-identifies as Aboriginal can access the service. The program is considered effective, and there is hope that it can be expanded in the future (Ajax KPI Program 2011-2012).

4.2.2.6 Other Aboriginal Health Initiatives

Besides the above initiatives and plans to improve Aboriginal health in the IHA, the health authority has a series of additional initiatives. These include:

- Aboriginal Self ID Program, the information from which will allow the IHA to better understand how, why, and when Aboriginal persons access health services and therefore create effective programming to meet their needs;
- The establishment of sacred spaces at health care facilities, including the Royal Inland Hospital; and
- Developing a human resources policy to recruit and retain Aboriginal staff (Ajax KPI Program 2011-2012).

4.2.3 Socio-economic Indicators of Health

4.2.3.1 Economic Hardship

BC Stats provides a variety of economic hardship indicators including average family income, income share of bottom half of households, dependency of government transfer payments, and population receiving income assistance. The RSA and the Kamloops and North Thompson LHAs all had average family incomes lower than the provincial income in both the “all families” and “lone mother families” categories, with the North Thompson LHA having the lowest numbers. Kamloops LHA had larger average family incomes than the North Thompson LHA and the RSA (Table 4-19). Both LHAs and the RSA also had a greater income share of the bottom half of households and greater dependency on government transfer payments than the provincial averages for these statistics. The RSA and both LHAs had larger percentages of the population in all reported age categories receiving income assistance compared with the provincial average.

Table 4-19: Economic Hardship Indicators in the Regional Study Area

	Average Family Income (\$) ¹		Income Share of Bottom Half (Poorest) of Households ²	Dependency on Government Transfer Payments	Population Receiving Income Assistance		
	All Families	Lone-Mother Families			Total (0-64 years)	Children (0-18 years)	Youth (19-24 Years)
Kamloops LHA ³	73,682	38,187	22.3%	11.1%	2.7%	5.5%	3.2%
North Thompson LHA ⁴	59,95	24,71	23.7%	19%	3.5%	7.5%	3.9%
RSA ⁵	71,523	36,538	22.2%	13.3%	2.9%	6.1%	3.5%
BC	80,511	43,491	20.7%	9.6%	1.9%	3.4%	2.2%

Source: BC Stats 2012g, 2012h, 2012i.

Notes:

1. Average Family Income reported in 2005 dollars.
2. The proportion of each region's household income that accrues to households earning less than the median income. In a situation of perfect equality, the bottom half (poorest) households would receive 50% of the total income.
3. The Local Health Area (LHA) is the smallest reporting unit for Statistical Profiles released by BC Stats. The Kamloops LHA is comprised of the City of Kamloops and the immediate outlying areas.
4. The North Thompson LHA overlaps with the TNRD Electoral Areas "A" and "B".
5. The RSA is comprised of the TNRD.

4.2.3.2 Children at Risk

Table 4-20 compares child risk indicators for the LHAs of Kamloops and North Thompson and the RSA with the provincial averages. The infant mortality rate in the Kamloops LHA is not notably different from the rate in British Columbia, while the rate in the RSA is higher than in the Kamloops LHA and the Province. Children in need of protection rates in the LHAs and the RSA are well above the provincial average, with North Thompson LHA having a rate close to twice that of the province. Conversely, the North Thompson LHA has the lowest number of children in care. The Kamloops LHA and the RSA have higher rates of children in care than the provincial average. Percentages of children below the standard reading level do not differ widely between the different areas. The LHAs and the RSA all have higher percentages of children under the age of 15 receiving income assistance as compared to BC.

Table 4-20: Children at Risk Indicators in Kamloops and North Thompson LHAs

	Kamloops LHA	North Thompson LHA	RSA ¹	British Columbia
Infant Mortality (Per 1,000) ²	3.6	0	5.8	3.7
Children in need of protection (Per 1,000) ³	10.0	11.9	12.3	6.8
Children in Care (Per 1,000) ⁴	15.0	7.6	17.3	9.1
Below Standard Reading (Grades 4 & 7) ⁵	20.4%	22.7%	22.6%	20.2%
Children <15 Years Receiving Income Assistance ⁶	5.3%	3.8%	5.8%	3.5%
Children < 15 Years Receiving Income Assistance Living with Lone Parent	4.7%	2.8%	5.2%	3.0%

Source: BC Stats 2012g, 2012h, 2012i.

Notes:

1. The RSA is comprised of the TNRD.
2. Infant mortality calculated as rate per 1,000 births from 2007-2011 average, July 1 to June 30.
3. Children in need of protection calculated as rate per 1,000 population age 0-18 years as of December 2011.
4. Children in care calculated as rate per 1,000 population age 0-18 years as of December 2011.
5. Below standard reading calculated as average between grade 4 and 7 of those writing the provincial exams, averaged over the school years 2008-2009 and 2010-2011.
6. Children under the age of 15 receiving income assistance calculated as of September 2011.

4.2.3.3 Youth at Risk

Table 4-21 shows British Columbia Statistic indicators for youth at risk. In the Kamloops and North Thompson LHAs, as well as in the RSA, a greater percentage of youth age 15-24 received income assistance relative to the provincial average. The same was true for youth age 15-24 receiving income assistance who were employable. The Kamloops LHA and the RSA had higher percentages of youth receiving income who are single parents than the provincial average. In the RSA, an average of 30.6% of 18 year olds did not graduate over the school years 2010-2011 and 2010-2011. This was slightly higher than in the Kamloops LHA, which was itself just above the provincial average. In the North Thompson LHA, slightly over half of

18 year olds had not graduated over that same period of time. Juvenile crime was higher in the RSA than in British Columbia. The crime rate was higher in the more urban Kamloops LHA when compared with the rural North Thompson LHA.

Table 4-21: Indicators of Youth at Risk for Kamloops and North Thompson LHAs

	Kamloops LHA	North Thompson LHA	RSA¹	British Columbia
Youth age 15-24 receiving income assistance (%) ²	3.2	4.0	3.4	2.1
Youth age 15-24 receiving income assistance who are Single Parents (%) ³	0.7	n/a	0.8	0.4
Youth age 15-24 receiving income assistance who are employable (%) ³	1.5	1.8	1.6	0.9
18 year olds that did not graduate ⁴	28.4%	46.9%	30.6%	27.9%
Serious juvenile (12-17) crime rate ⁵	5.5	1.9	6.3	3.8

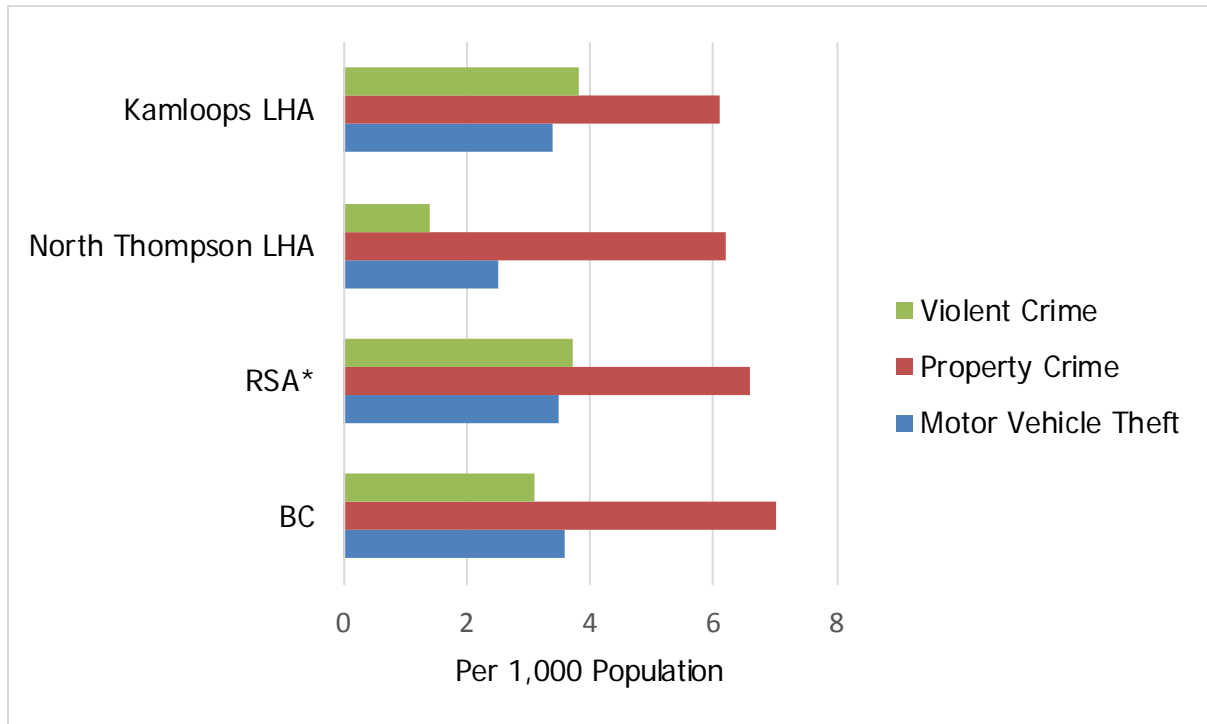
Source: BC Stats 2012g, 2012h, 2012i.

Notes:

1. The RSA is comprised of the TNRD.
2. Youth receiving income assistance calculated in September 2011.
3. Excludes youth classified as dependents.
4. 18 year olds that did not graduate calculated as average 2008-2009 and 2010-2011 school years.
5. Serious juvenile crime rate calculated as number of offences per 1,000 population, average of 2008-2010.

4.2.3.4 Crime

Figure 4-7 shows a comparison of crime rates between the two different LHAs within the RSA, the RSA as a whole, and the Province. The rates are represented as number of crimes reported per 1,000 people. The property crime rate was lower in the RSA than in the Province, and was slightly higher in the Kamloops LHA than in the North Thompson LHA. Violent crime was higher in the RSA and the Kamloops LHA than the provincial average, but it was lower in the North Thompson LHA.



Source: Adapted from BC Stats 2012g, 2012h, 2012i.

* The RSA is the TNRD.

Figure 4-7: Serious Crime and Motor Vehicle Theft Rates in the Regional Study Area, 2009-2011

4.2.4 Community Well-Being Index

The Community Well-Being Index uses data from Statistics Canada on education, labour force, income, and housing to provide “a relatively quick and convenient measure of well-being, focusing on the socio-economic dimensions” (Murphy 2010). A community's CWB index score is a single number that can range from a zero to 100. The lower a community's Community Well-Being Index, the poorer that community's well-being is considered to be.

The component scores consider the following:

- **Income**, which is based on income per capita;
- **Education**, which factors in the proportion of a community's population, 20 years and older, that has at least a high school certificate and the proportion of a community's population, 25 years and older that has at least a bachelor's level degree;
- **Housing**, which comprises indicators on housing quantity and quality; and
- **Labour Force Activity**, which quantifies the labour force participation and employment rate in the community (INAC 2010a).

The CWB index is calculated as follows:

$$CWB = \frac{Income [(2/3) Literacy + (1/3) HSP] + (HQual + HQuant/2) + (LFP + Employment/2)}{4}$$

Where: HSP: High School Plus
 HQual: Housing Quality
 HQuant: Housing Quantity
 LFP: Labour Force Participation

Table 4-22 presents the Community Well-Being Index for Kamloops, the TteS, the TNRD-J and the RSA. Data were not available for SIB.

Table 4-22: Community Well-being Index for Kamloops, TteS, TNRD-J, RSA (2006)

Census subdivision (CSD)	2006 income Score ¹	2006 Education Score ²	2006 Housing Score ³	2006 Labour Force Activity Score ⁴	2006 CWB Score
Kamloops	86	60	96	88	83
TteS ⁵	81	54	82	83	75
TNRD-J ⁶	85	58	93	85	80
RSA averages ^{7,8}	82	54	93	84	79

Source: INAC 2010b.

Notes:

1. Composed of data on income per capita.
2. Relates to 1) the proportion of a community's population, 20 years and over, that has obtained at least a high school certificate and; 2) the proportion of a community's population, 25 years and over, that has obtained a university degree at the bachelor's level or higher.
3. Composed of indicators relating to housing quantity and quality.
4. Relates to labour force participation and employment rate.
5. The Tk'emlúps Indian Band is listed as Kamloops 1 by Statistics Canada.
6. Statistics Canada lists TNRD-J as Thompson-Nicola J (Copper Desert Country).
7. The RSA is comprised of the TNRD.
8. RSA averages calculated by InterGroup Consultants. Weighted averages include census subdivisions for TNRD regions A,B,E,I,J,L,M,N,O, and P.

Kamloops has a 2006 Community Well-Being Index score of 83. The component scores for Kamloops range from 60 for education to 96 for housing. Its component scores for income and labour force activity were both in the high 80s. The TteS had a Community Well-Being Index score of 75 in 2006. Three of the community's component scores, income, housing, and labour force activity, were in the low 80s, and its education score was 54. Kamloops had higher component and aggregate scores than both the TNRD-J and all RSA regions averaged, while TteS had lower component and aggregate scores than the TNRD-J and all RSA regions averaged with the exception of the education component. For education, TteS had the same score as the averaged RSA regions. The Tk'emlúps Indian Band had higher component and aggregate scores than the average scores for First Nations communities in Canada (INAC 2010b).

Of the three component scores, education, income, and housing are generally acknowledged as key non-medical determinants of health. Detailed information about the communities on all these topics and on

labour force activity can be found in other sections of this document: Section 2.1.2 presents information on detailed educational attainment rates; Section 2.2 discusses personal income, family income, household income, and income composition; Section 4.1.3 discusses household characteristics; and Section 2.1.1 discusses labour force activity, including labour force participation rates and employment rates.

4.3 COMMUNITY IMAGE

For the purpose of this discussion, City of Kamloops image has been framed by the Community Vision outlined in the Official Community Plan (City of Kamloops 2004). Key tenets of this Vision include:

- Building strong and diverse neighbourhoods;
- Providing a variety of housing types;
- Encouraging healthy and active lifestyles;
- Supporting cultural and athletic pursuits;
- Diversifying economic and education opportunities; and
- Maintaining sustainable environmental stewardship.

Although its roots go back earlier, the current iteration of the Official Community Plan has served as a basis for community development since 2004. All other planning processes and documents tie back to this document and the Vision above. Taken as a whole, this helps to frame how the City of Kamloops sees itself – its community image. This image has changed over the last several decades, as described below.

Much of the evolution of Kamloops' image rests on the development of its economic base. Through much of its history, Kamloops was considered heavily reliant on resource extraction like mining and forestry although agriculture (primarily ranching) was also very prominent. There was a perception amongst some residents that the City was a "dirty mining town". More recently, even up to a decade ago, poor water and air quality were cited as contributors to a negative community image (City of Kamloops and InterGroup Consultants 2012).

There has been a notable shift in the community's image over the last several years. This image is one that largely reflects the Vision points as outlined in the Official Community Plan. A surge in community pride has led to a perception of the community as one that is clean, healthy and beautiful and can facilitate exceptional quality of life. Key contributors to this include:

- **Adoption of the Tournament Capital brand:** This branding idea first developed in the early 1990's when Kamloops hosted the Canadian Summer Games and in 2003 City residents agreed to fund the required sports and related infrastructure through municipal taxes. The campaign enjoys wide support from the public (with good levels of volunteerism) and leadership (City of Kamloops and InterGroup Consultants 2012). In the past, Kamloops has hosted events such as the 2006 IHF World Junior Hockey Championships, the 2010 National Gymnastics Championships, and the 2011 Western Canada Summer Games (City of Kamloops 2012b). Most recently, Kamloops hosted the Men's Brier Curling Competition in 2014 (Canadian Curling Association 2013).

- **Participation in the Communities in Bloom program:** Communities in Bloom originally began in Canada as part of an international challenge in which communities are judged on eight criteria - tidiness, environmental action, heritage conservation, urban forestry, landscape, turf and groundcovers, floral displays, and community involvement (Communities in Bloom 2012). Kamloops participates in Communities in Bloom.⁶ Initially, it was hoped that through participation, the program would help beautify the community (City of Kamloops and Intergroup Consultants 2012). Based on the 2009 Citizen Survey, it appears that the program is working; 95% of residents had a positive opinion of the City's appearance (Ipsos Reid 2009). In addition to beautifying Kamloops, the program hopes to cultivate civic pride, environmental responsibility and encourage residents to be more involved in their community (City of Kamloops n.d.f). In the City of Kamloops, the Communities in Bloom Committee serves in an advisory role to the Mayor, City Council and appropriate City departments (e.g., Parks, Recreation and Culture) (City of Kamloops 2012e).
- **Improvements in municipal water quality:** Kamloops' water treatment systems have undergone a period of renewal and improvement since February 2005, beginning with a new water treatment centre and ending with a water main flushing program in 2008 (Net Resources International 2012).
- **Improvements in air quality:** Development of Kamloops' Airshed Management Plan took place from 2010 through July 2012. Key strategies outlined to improve and maintain air quality include limiting contaminant emissions from industrial and other sources and expanding the role of local government to act on concerns (City of Kamloops 2012a).
- **Economic diversification:** There is a view from some Kamloopsians that the City has become much more diversified from an economic point of view; less heavily reliant on resource extraction and more diversified in the areas of health, education and public administration.
- **Focus on sustainable development:** Kamloops has given attention to sustainability for decades. In 2006 however, City Council decided to embark upon the 2006-2008 Council Strategic Plan. This would evolve into a four-phase integrated community sustainability plan. The resulting Sustainable Kamloops Plan outlines the vision of a sustainable Kamloops and sets out principles to move forward (City of Kamloops 2010f).

As a result of these developments, the image of the City of Kamloops has evolved from what some considered a dirty mining town into a clean, beautiful, vibrant community that offers high quality of life.

The resulting civic pride/engagement can be measured through a variety of indicators, including voting, volunteering, and participating in civic events (CIRCLE n.d.). Voter turnout rates are a well-accepted measure of civic engagement (Uppal and LaRochelle-Côté 2012). Higher voter turnout rates mean that residents have greater confidence in government institutions and administration (Organisation for Economic Co-operation and Development n.d.). During the November 2011 municipal elections in British Columbia, the voter turnout rate in Kamloops was 29.76%, while the provincial turnout rate was 29.55%

⁶ A community that wins the Communities in Bloom competition is required to sit out the competition for two years before competing again. It is expected that a community that has won will compete to a higher standard (City of Kamloops 2015).

(Civic Info BC 2011). For the federal elections in May 2011, the national voter turnout rate was 60% (Elections Canada 2012).

Volunteer rates are also believed to correlate with civic pride. As residents feel better about their community, they want to participate in community activities and show off Kamloops. This important theme was raised during information gathering sessions with the City of Kamloops – community residents currently take great pride in the City of Kamloops and are concerned about anything that may jeopardize that (City of Kamloops and InterGroup Consultants 2012). One of the selling points for the Tournament Capital of Canada brand is the pool of volunteers available to help out at events. The City also has a non-profit organization, Volunteer Kamloops, which serves as a clearing house for volunteer opportunities (City of Kamloops 2012c). During the 2011 Western Canada Summer Games, over 2300 residents of Kamloops volunteered (City of Kamloops 2012d).

4.4 HEALTHY LIVING AND HEALTH EDUCATION

4.4.1 Healthy Living

Broadly defined, healthy living is the inter-related undertaken practices that support, improve, maintain, and/or enhance health. In particular, the Public Health Agency of Canada (2012b) concentrates on healthy eating, physical activity, and maintaining a healthy weight as the critical components for leading a healthy life. The focus is explained in the Integrated Pan-Canadian Healthy Living Strategy, which was agreed upon by the Federal, Provincial, and Territorial governments (excluding Québec) in 2005. The strategy asserts that more than two-thirds of deaths in Canada each year are a result of four groups of chronic diseases that share preventable risk factors (physical inactivity, unhealthy diet, and tobacco use) and environmental, or non-medical, determinants that include income, employment, and education (The Secretariat for the Intersectoral Healthy Living Network, et al. 2005).

Healthy living is affected not only by available opportunities to make healthy choices, but also an individual's willingness and ability to take advantage of those opportunities. According to the Public Health Agency of Canada (2012a), personal health practices are actions an individual uses to, among other things, prevent disease, promote self-care, and enhance health. Among the indicators listed as relevant health practices were smoking, engaging in high-risk behaviour, and diet. This section will describe indicators related to dietary practices, smoking, alcohol consumption, and physical activity.

Since one aspect of the healthy living VC is fitness and recreation levels, this section will also describe physical activity rates in terms of how often residents engage in physical activity, the type of physical activity in which they engage, and the opportunities available for engaging in physical activity, and overall trends for each indicator.

Table 4-23 presents a general view of health behaviour statistics for the Thompson Cariboo Shuswap HSDA and British Columbia; data are not available for the LHAs.

Table 4-23: Health Behaviour Statistics for Thompson-Cariboo-Shuswap Health Service Delivery Area and British Columbia (2007-2011)

Year	HDSA	Leisure Time Physical Activity ¹	Percentage of youth (12-19) active / moderately active	Healthy Eating ²	Tobacco Use ³	Overweight /Obesity ⁴	Alcohol Consumption ⁵
2007	Thompson Cariboo Shuswap HSDA	53.8%	77.9%	40.9%	27.3%	51.8%	15.3%
	BC	56.7%	73.5%	44.4%	17.8%	43.9%	14.4%
2008	Thompson Cariboo Shuswap HSDA	51.2%	82.7%	37.1%	22.7%	58.5%	19.7%
	BC	58.7%	72.9%	42.4%	18.6%	45.1%	15.5%
2009	Thompson Cariboo Shuswap HSDA	65.9%	89.2%	48.4%	21.6%	52.0%	22.7%
	BC	60.3%	75.9%	45.7%	16.0%	45.1%	16.1%
2010	Thompson Cariboo Shuswap HSDA	63.2%	72.6%	37.4%	21.7%	55.2%	22.7%
	BC	58.3%	75.3%	42.3%	17.4%	44.4%	15.7%
2011	Thompson Cariboo Shuswap HSDA	64.0%	58.6%	34.1%	21.3%	56.9%	16.6%
	BC	59.6%	72.9%	40.7%	15.8%	46.6%	16.6%

Source: IHA 2010a, 2010b, Statistics Canada 2012b.

Notes:

1. Leisure time physical activity calculated as percentage of population 12 and over who are active or moderately active.
2. Healthy eating is a measure of the percentage of the population 12 and over who eat vegetables and fruits 5 or more times per day.
3. Tobacco use is a measure of the percentage of the population 12 and over who are daily or occasional smokers.
4. Overweight/obesity is a measure of the percentage of the population 18 and over who are overweight or obese.
5. 5 or more drinks on one occasion, at least once a month in the past year, percentage of the population 12 and over.

4.4.1.1 Healthy Eating

Healthy eating is the percentage of the population 12 and over who eat vegetables and fruits 5 or more times per day. The percentage has fluctuated between 2007 and 2011, with a high of 48.4% in 2009 and a low of 34.1% in 2011 (Table 4-23). Except for in 2009, the percentage of HSDA residents eating vegetables or fruits 5 or more times per day was lower than in the province as a whole. In British Columbia, the rate fluctuated between a high of 45.7% in 2009 and a low of 40.7% in 2011.

Food security overall was good in the HSDA based on the percentage of households in the region that were always able to afford balanced meals in the past 12 months in 2007/08, which was 92.54% (Foster et al. 2011). This percentage was approximately 1.5 percentage points lower than the provincial rate, which was 93.95% in 2007/08.

4.4.1.2 Smoking

While British Columbia has the lowest tobacco smoking rates in Canada, smoking and coming into contact with second- and third-hand smoke are still key to causing chronic diseases, such as hypertension and emphysema, and premature death (Foster et al. 2011). It is also important to recognize that tobacco-related morbidity and mortality affect not only smokers themselves, but also non-smokers who come into contact with smoking by-products.

Table 4-23 presents the percentage of the population in the Thompson Cariboo Shuswap HSDA that reports smoking daily or occasionally. Since 2007 the percentage of smokers in the HSDA has decreased from 27.3% to 21.3%. The decreasing rate of smokers in the HSDA is the same as the trend in the Province (Statistics Canada 2012b). While both regions have decreasing rates of smoking rates, the HSDA still has a higher percentage of its population reporting as daily and occasional smokers than in British Columbia (Statistics Canada 2012b).

The self-reported statistics on smoking rates are supported by the tobacco attributable morbidity rates, which measure the number of morbidities attributable to tobacco per 100,000 residents and the tobacco attributable mortality rates, which measure the number of deaths due to tobacco per 100,000 residents. The mortality rate is also age and sex standardized (Centre for Additions Research of BC n.d.).

In the Kamloops LHA, the tobacco attributable morbidity rate has fallen between 2002 and 2009. In 2002, the morbidity rate attributable to tobacco was 645.15 cases per 100,000 residents. In 2009, the rate was 617.09 cases per 100,000 residents. The tobacco attributable morbidity rates in the HSDA, health authority, and the Province have also decreased since 2002. The rate in the Kamloops LHA is lower than the rates in the HSDA but higher than in the Province.

The same pattern holds true for tobacco attributable mortality rates. In the Kamloops LHA, tobacco attributable mortality rates have decreased from 134.14 deaths per 100,000 residents in 2002 to 95.81 per 100,000 residents in 2009. On average, the mortality rate due to tobacco is lower than the same rate in the HSDA but higher than the rate for the Province.

4.4.1.3 Physical Activity

Engaging in physical activity during one's leisure time has increased in the Thompson Cariboo Shuswap HSDA between 2007 and 2011 from 53.8% to 64% for all residents aged 12 and older (Table 4-23). While this rate has been increasing, the percentage of youth aged 12 to 19 engaging in moderately active or active activities in their leisure time has decreased from a high of 89.2% in 2009 to 58.6% in 2011. The downward trend is different from the general trend in British Columbia where the rate has remained relatively stable above 72% (Statistics Canada 2012b).

The BC Atlas of Wellness also provides information about the physical activity levels that Thompson Cariboo Shuswap residents engaged in, in the past three months – walking, gardening, swimming, and cycling in 2007/08. Overall, residents of the HSDA had a higher percentage of its population engaging in these activities than in the Province. Additionally, the difference was greatest for doing gardening and yard work in the past 3 months; 42.76% of the population engaged in these activities in British Columbia, while 60.06% of the population in the HSDA engaged in these activities during the same period (Foster et al., 2011).

The available recreation and fitness opportunities, including facilities are discussed in sections 3.1.9 (general recreation facilities), 3.2.6 (outdoor recreation), and 3.3.2 (recreational use of Jacko Lake).

4.4.1.4 Alcohol Consumption

Alcohol consumption levels depicted in Table 4-23 are considered to be for the population 12 and older who consume 5 or more drinks on one occasion at least once a month over the past year. Alcohol consumption in the Thompson Cariboo Shuswap HSDA has fluctuated between 2007 and 2011, increasing between 2007 and 2010 and then showing a decline by 2011. Provincial percentages show a similar pattern. Thompson Cariboo Shuswap HSDA levels are consistently higher than the province except for 2011 where percentages are the same.

4.4.2 Health Education

One aspect of public health is educating the general populace in hopes that they adopt practices that enhance health and wellness and prevent disease. Through the municipal government, provincial government, public school system, and health authority, residents of Kamloops are exposed to a range of public health initiatives to help them improve, maintain, and/or enhance their health and well-being. In light of the size of Kamloops, the list below is not intended to be comprehensive:

- **Public Health Centres:** The IHA has public health centres throughout the health authority that offer a range of services. There are two in Kamloops – the Kamloops Downtown Health Centre and the Kamloops Public Health Services. The centres offer a range of programs and services to, among other things, promote prenatal and maternal health, support independent living for community residents, monitor air quality concerns, and foster healthy eating habits (IHA 2012d).
- **Healthy Families BC:** began in 2011 to improve the health and well-being of British Columbians and their communities. It is focused on supporting proper nutrition, personal responsibility, investing in healthy lifestyles, and helping vulnerable families provide a healthy start for their

children. The initiative includes a blog with daily posts about healthy living; a program to help British Columbians with unhealthy lifestyles talk to their family doctors; a program to help residents make informed decisions when dining out, and an array of online tools (Healthy Families BC 2012).

- **Community Food Action Initiative:** Food security is a key issue in Kamloops that has been addressed in municipal planning documents. The IHA, the City of Kamloops, and the Kamloops Food Policy Council authored the Community Food Action Initiative in 2006 with the goal of increasing the capacity of municipal stakeholders to support food security practices and policy around the municipality. One goal of the initiative is to encourage policies and practices that promote nutrition and healthy eating (IHA et. al. 2006).
- **Affordable Recreation for Community Health:** The City of Kamloops supports a number of organizations and activities aimed at promoting recreation. Affordable Recreation for Community Health (ARCH) is a subsidy program for residents with limited incomes to participate in a variety of recreational activities (City of Kamloops n.d.a).

4.4.2.1 Health-Related School Curriculum

Besides public health initiatives aimed at the general populace or specific segments of the population, students from kindergarten to grade 12 receive health-related education through the provincial curriculum. This section will briefly describe the relevant aspects of the provincial curriculum before characterizing two of the health-related programs specific to School District No. 73, which includes the schools in Kamloops and North Thompson. It should be noted that the provincial curriculum below applies only to provincially funded schools. Federally funded schools, which include on-reserve schools, and private schools may have different curriculum.

The BC Ministry of Education's curriculum changes as students' progress, but builds on the previous years' curriculum. The discrete stages include:

- Daily Physical Activity Kindergarten to Grade 12, which requires students to engage in either 30 minutes daily or 150 minutes weekly of physical activity (British Columbia Ministry of Education 2011).
- Health and Career Education K to 7 and Health and Career Education 8 and 9, organizes the curriculum around the following for topics:
 - *Healthy Living*, which promotes physical and emotional health and also includes puberty and reproduction;
 - *Healthy Relationships*, which focuses on developing interpersonal skills and recognizing problems like bullying and discrimination;
 - *Safety and Injury Prevention*, which teaches students how to recognize and avoid unsafe situations in all areas of their lives; and
 - *Substance Misuse Prevention*, which explores the ramifications of substance abuse (BC Ministry of Education 2006).

- Graduation Transitions, the goal of which is to have students who can be healthy individuals by engaging in regular exercise, developing a long-term healthy living plan, and by making positive health-related choices (BC Ministry of Education 2008).

In addition to implementing provincial curriculum, School District 73 has adopted the Action Schools BC model that is associated with ActNow BC to promote comprehensive health. Among the programs included are:

- Extra-Curricular Athletics, in which 44.8% of secondary students participated during the 2010-11 school year;
- ARCH Program, which refers families to special recreational programs; and
- See It, Try It, Do It Afternoons, which are aimed at higher needs schools to provide free after-school workshops that teach students skills that support healthy living. In collaboration with this program, the City of Kamloops then offers a related program at below cost at the students' home school (School District No. 73 2013).

Additionally, the school district offers health and wellness programs for staff in association with the Kamloops Thompson Teachers' Association, the Canadian Union of Public Employees, and the Kamloops/Thompson Principals and Vice Principals' Association (School District No. 73 2012a).

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