

14. OTHER POTENTIAL EFFECTS ON ABORIGINAL INTERESTS

14.1 INTRODUCTION AND APPROACH

This chapter addresses other interests identified by Aboriginal Groups with respect to economic, social, health, heritage, and environmental conditions that could be affected by the Ajax Project (Project), as well as other general concerns raised by Aboriginal Groups. For each Aboriginal Group this chapter assesses whether the Project is expected to have direct or indirect effects on their identified other interests, makes recommendations to avoid, mitigate or otherwise address adverse effects, and describes potential residual effects. The assessment of potential effects on current use of lands and resources for traditional purposes (CULRTP) is presented in Section 8.5. Results of that assessment have been incorporated in this chapter as relevant. The assessment of Aboriginal rights and title, including assessment of effects and mitigation measures are described in Chapter 13.

Aboriginal Groups considered in the assessment include:

- Stk'emplupsemc te Secwépemc Nation (SSN) which is comprised of the Tk'emlúps te Secwépemc (TteS) and Skeetchestn Indian Band (SIB);
- Ashcroft Indian Band (AIB);
- Lower Nicola Indian Band (LNIB);
- Whispering Pines/Clinton Indian Band (WP/CIB); and
- Métis Nation British Columbia (MNBC).

The section 11 Order (issued on January 11, 2012) identifies the SSN as the Project "First Nations" whom KGHM Ajax Mining Inc. (KAM) is required to consult regarding potential Project effects on their Aboriginal interests. In addition, the section 11 Order identifies LNIB and AIB as "Working Group First Nations" and directs KAM to provide information to them regarding the Project, specifically the Application/EIS. On July 23, 2015, the BC EAO issued a section 13 Order identifying WP/CIB as a "Notification First Nation" and directing KAM to provide information to the WP/CIB regarding the Project. In addition to the Aboriginal Groups identified above, the Canadian Environmental Assessment Agency (CEA Agency) identifies the MNBC as potentially affected by the Project.

The assessment in this chapter is based on information obtained through cooperative engagement and consultation with these Aboriginal Groups during the Pre-Application period and on results of the assessment of potential effects on Valued Components (VCs) presented in Part B of the Application/EIS. For each Aboriginal Group the analysis varies depending on the other interests and concerns raised during the consultation and engagement program. The background information and socio-economic settings for the SSN, LNIB, AIB, WP/CIB, and MNBC are described in Chapter 12, Background and Aboriginal Group Settings, and in Appendix 7-A, Aboriginal Groups Socio-economic baseline reports.

14.1.1 Definition of Other Aboriginal Interests

In addition to asserted Aboriginal rights and title (addressed in Chapter 13), Aboriginal Groups have other interests within the Project area. Other Aboriginal interests discussed in this chapter include interests that have been identified by Aboriginal Groups with respect to potential economic, social, health, heritage, or environmental effects of the Project. These other Aboriginal interests are not directly related to the asserted Aboriginal rights and title discussed in Chapter 13.

Other general concerns raised by Aboriginal Groups with respect to the Project are also discussed in this chapter.

14.1.2 Assessment Methodology

Other Aboriginal interests and general concerns to Aboriginal Groups with respect to the Project were identified through engagement and consultation activities undertaken by KAM with Aboriginal Groups during the Pre-Application period. In particular the following sources were used:

- meetings with Chief and Council and other community representatives;
- written correspondence with Aboriginal Groups;
- community meetings;
- studies completed by the Aboriginal Groups (e.g., SSN Cultural Heritage Study, SSN Preliminary Mitigation Report, and MNBC Ajax Mine Initial Project Report); and
- comments provided to Crown regulators during the draft Application Information Requirements/Environmental Impact Statement Guidelines (AIR/EIS Guidelines) review;
- relevant publicly available information (e.g., Kinder Morgan Pipeline environmental assessment and affidavits).

Detailed consultation activities for each Aboriginal Group are presented in Chapter 15, Procedural Aspects of Aboriginal Consultation. Information collected through consultation is tracked in the Stakeholder and Issues Information Management System (SIIMS). This information was used to identify Aboriginal rights and other Aboriginal interests that could potentially be affected by the Project, as well as, other general concerns raised by Aboriginal Groups. Non-confidential information pertaining to Aboriginal rights and other interests and concerns was disseminated to assessment specialists (through bi-weekly meetings, issues tracking tables, and focused meeting with discipline leads) and integrated into the Application/EIS, including the assessment of effects and proposed mitigation strategies and management plans. Aboriginal Groups' inputs have also been considered in the selection of VCs and indicators assessed in Part B of the Application/EIS.

The assessment provided in Part B of the Application/EIS informs the assessment in this chapter. In particular, description of baseline conditions and the characterization and conclusions of any residual effects and cumulative effects of the Project on VCs, presented in Part B, are considered when assessing the seriousness of the potential effects on other interests for each potentially affected Aboriginal Group.

Drawing on the effects assessments developed in Part B, this chapter identifies the potential inter-relationships between VCs and the identified other Aboriginal interests, and assesses indirect effects on other Aboriginal interests that result from environmental changes caused by the Project on the following factors:

- economic conditions;
- social condition;
- health conditions; and
- physical and cultural heritage conditions (including physical and cultural heritage and structures, sites or things that are of historical, archaeological, paleontological, or architectural significance).

The assessment of effects on physical and cultural heritage relies on the assessment conducted for various Valued Components including Archaeological Sites (Section 9.1), Aboriginal and Non-Aboriginal Heritage Sites (Section 9.2) and Current Use of Lands and Resources for Traditional Purposes (Section 8.5). Changes to the environment resulting from the Project that have the potential to affect archaeological and heritage sites results from land disturbance and transformation of natural landscapes (e.g., soil removal, soil compaction, filling, clearing etc.) to develop project infrastructure within the proposed Project footprint. Other effects on the environment resulting from the Project that were considered in the assessment of current use of land and resources for traditional purposes include sensorial disturbances such as noise and air quality changes and changes to the visual landscape.

Potential effects on current use of land and resources for traditional purposes are assessed in Section 8.5 of the Application/EIS. Aspects relevant to Aboriginal rights and title are discussed in Chapter 13.

For each Aboriginal Group the potential effects on their identified other interests are assessed in three main steps.

- The first step is to identify the other interests and general concerns raised by the Aboriginal group and the VCs associated with them.
- The second step is to describe the potential effects associated with the identified interest and their inter-relationship with relevant VCs discussed in Part B, as well as relevant mitigation measures to minimize or avoid potential adverse effects. Cross-references to VCs are included when relevant.
- The third and final step involves describing the residual effects (including cumulative residual effects) and discussing the seriousness of the residual effect on the identified other Aboriginal Interests from the perspective of KAM.

The structure of each section may vary depending on the other Aboriginal interests and general concerns identified by the specific Aboriginal group.

14.2 STK'EMLUPSEMC TE SECWÉPEMC NATION

The following subsections discuss other interests and concerns identified by the SSN. The subsections also present measures to mitigate potential effects of the Project on SSN interests and concerns.

14.2.1 Other Aboriginal Interests and Concerns Identified in the Project Area

A range of activities have been undertaken with the SSN to identify their interests and concerns with respect to the Project. Discussions with the SSN regarding the Project commenced in 2008 and are on-going. Consultation activities between SSN and KAM have included meetings with leadership, extensive written communications, agreements, studies, site visits, participation in Archaeological field work and monitoring, and community meetings. Chapter 15 provides detailed information on consultation and engagement activities conducted with the SSN.

In December 2012, KAM and the SSN signed a Cultural Heritage Study Agreement, which provided funding to the SSN to conduct a Cultural Heritage Study (CHS) for use in the Application/EIS. The CHS included three main reports:

- SSN 5 Questions (March 2013), which sets out SSN's fundamental cultural heritage concerns towards a future EA review;
- Cultural Heritage Report, which includes research on the nature of Aboriginal interests in the study area; and
- A Mitigation Report, which includes recommendations to lessen potential impacts of the Project on the continuing existence and expression of Secwépemc cultural heritage. This report summarizes SSN's concerns about the potential impacts of the Project on SSN's cultural heritage based on the finding of the CHS.

In October 2014, the SSN and KAM signed a Capacity Funding Agreement aiming to support SSN's participation in the Pre-Application phase of the EA process and ensure accurate understanding of SSN's Aboriginal interests and other concerns.

The SSN's other Aboriginal interests and general concerns have been identified primarily through review of consultation records, the CHS, Ajax Project Working Group meetings attended by KAM, comments provided by SSN on the draft AIR/EIS Guidelines, and other written communication between the SSN and regulators that was made available to KAM. Detailed information on consultation activities undertaken with the SSN is provided in Chapter 15, Procedural Aspects of Aboriginal Consultation. Table 14.2-1 provides a summary of the other interests and concerns identified by the SSN to date in relation to the Project. It also shows how the concerns were identified and the associated VC in Part B where direct potential Project effects are assessed. Issues related to Aboriginal rights and title are addressed in Chapter 13, Aboriginal Interests (Rights and Title). Appendix 15-B provides a comprehensive list of the issues raised by the SSN and KAM's responses to these issues.

Table 14.2-1. Other Interests and Concerns Expressed by the SSN

Other Interests and General Concerns	SSN Issue/Concern/Comment	Manner Raised	Valued Component Affected
Economic conditions	Interest expressed in employment and training and skills development for members.	Consultation	Labour Force, Employment and Training
	Interest expressed in contracting opportunities.	Consultation	Business
Social conditions	Potential effects from population increases that could reduce accessibility to health care, and other community services (some of which already have capacity issues).	AIR/EIS Guidelines Comments	Infrastructure, Public Facilities, and Services Community Health and Well-being
	Concern that proximity to mine will encourage outmigration of physicians.	Consultation	Labour Force, Employment and Training Community Health and Well-being
	Concern that increases in disposable income could bring additional social problems (e.g., crime, drugs, gambling).	Consultation	Community Health and Well-being
Health conditions	Potential effects on human health from consumption of contaminated country foods (including as a result of dust deposition).	Mitigation Report	Human Health Country Foods
	Potential negative effects on human health as a result of air quality changes and dust (i.e., potential effects on respiratory tissue).	Mitigation Report Consultation	Human Health Air Quality
	Potential effects to domestic drinking water	Consultation	Human Health Domestic Water Quality
	Effects on human health from noise and vibration (in particular, blasting).	Mitigation Report	Noise and Vibration
Heritage Resources	Effects to potential burial sites and burial cairns located in the Project footprint.	AIR/EIS Guidelines Comments Consultation	Heritage Sites
	Destruction of the Hunting Blind Complex and the historical, cultural and instructional values associated with it.	Cultural Heritage Report Mitigation Report AIR/EIS Guidelines Comments Consultation	Archaeological Sites Current Land and Resource Use for Traditional Purposes

Other Interests and General Concerns	SSN Issue/Concern/Comment	Manner Raised	Valued Component Affected
Heritage Resources (<i>cont'd</i>)	Potential effects on Jacko Lake which is considered an important cultural landscape and place with spiritual value.	AIR/EIS Guidelines Comments Consultation	Current Land and Resource Use for Traditional Purposes
	Potential effects on Goose Lake which has cultural value.	AIR/EIS Guidelines Comments Consultation	Current Land and Resource Use for Traditional Purposes
	Potential effects on sacred sites at Mount Lolo.	Community Meetings	Current Land and Resource Use for Traditional Purposes
Water quality and quantity	Potential deterioration of water quality (Thompson River, Jacko Lake, Peterson Creek watershed).	Mitigation Report Consultation	Surface Water Quality Groundwater Quality
	Contamination of waterbodies by acid rock drainage generated by mine waste.	AIR/EIS Guidelines Comments Consultation	Surface Water Quality Groundwater Quality
	Potential effects on Cherry Creek watershed as a result of dust and/or seepage from the mine site.	AIR/EIS Guidelines Comments Consultation	Surface Water Quality Groundwater Quality
	Potential connectivity between Jacko Lake and the open pit that could result in seepage from Jacko Lake into the pit.	AIR/EIS Guidelines Comments Consultation	Surface Water Quantity
	Changes to water quantity in Kamloops Lake and the Thompson River.	AIR/EIS Guidelines Comments Consultation	Surface Water Quantity
Accidents and malfunctions	Concern regarding potential malfunctions and accidents (i.e., Kinder Morgan pipeline) and potential failure of the TSF.	AIR/EIS Guidelines Comments Consultation	n/a
Reclamation and closure	Concern about potential contamination occurring during the Post-Closure phase. Importance of ensuring the Ajax property is properly reclaimed and restored.	Consultation	n/a
Cumulative effects	Potential cumulative effects of the Project and other industries and developments in the Project area overlapping SSN's Territory.	Mitigation Report Consultation	Multiple VCs as appropriate

14.2.2 Potential Effects of the Project and Proposed Mitigation on SSN Other Interests

This section discusses how SSN's other interests could potentially be affected by the Project. The analysis considers both potential direct and indirect effects of the Project and identifies interrelations between the VCs presented in Part B of the Application/EIS and the other Aboriginal interests. This section also identifies measures to avoid, mitigate or otherwise accommodate potential adverse effects or enhance positive effects.

14.2.2.1 Potential Economic Effects

SSN has expressed interest in benefiting from potential economic opportunities of the Project including employment opportunities, business and contracting opportunities, and training and skills development.

The Project will generate considerable regional and local economic activity during Construction and Operation, including direct, indirect, and induced jobs and business activity, but these will cease when the mine closes.

Employment and Training

The Project will require a large workforce in a range of occupations. This include positions in trades, engineering and technical, management and supervisory, and administrative and support occupations. Table 14.2-2 presents examples of Project occupations anticipated to be required by the Project during both Constructions and Operation phases.

Table 14.2-2. Ajax Project Sample Project Occupations

Type of Occupation	Example Positions
Designated Trades	Electrician, Welder, Mechanic, Steelworker, Scaffold Worker, Rebar Worker, Carpenter, Concrete Finisher, Millwright, etc.
Non-designated Trades	Heavy Equipment Operator, Truck Driver, Labourer, Blaster, Warehouse Attendant, etc.
Engineering and Technical	Metallurgist, Assayer, Geologist, Mine Engineer, Environmental Technician, etc.
Management and Supervisory	Superintendent, Foreman, Supervisor, Trainer, Safety Supervisor
Administrative and Support	Clerk, Shipper and Receiver, Security, First Aid

As noted in Section 2.7, Project Benefits, it is estimated that at peak of Construction (year 2), the Project will employ approximately 1,800 workers. Of them, around 74% (1,340) will be designated trades positions and 18% (316) will be non-designated trade positions. The remaining 8% (144) will be a mix of professional, technical, managerial, and administrative positions. Out of the total 1,800 positions, it is estimated that residents of the LSA will provide between 47% and 64% of the total labour, this amounts to between 850 and 1,150 positions. At least 43% of designated trade positions and approximately 75% of non-designated trades are expected to be filled locally, as well as approximately 50% of administrative positions, 32% of engineering and technical occupations and 23% of managerial positions (in the most conservative scenario).

The Operation phase of the Project is expected to last approximately 23 years. During Operation the Project is conservatively estimated to employ approximately 470 workers in an average year. Of them, the majority would be employed in non-designated trade occupations (53%, 249), or designated trade occupations (22%, 105), while the remainder will be employed in engineering and technical occupations (11%, 50), management and supervisory (7%, 32) and administrative occupations (7%, 32). Out of the total 470 positions in an average year, the percentage of local hires could range from 58% to 74% (about 270 to 350 positions). As in Construction, it is expected that a large proportion of occupations classified as non-designated trades could be filled locally (between 69% and 83%). Refer to Section 2.7, Benefits Section, for detailed calculations.

In addition, the Project is expected to create indirect employment (by industries supplying goods and services to the Project) and induced employment (additional spending in the community by Project workers).

It is expected that a number of SSN members will benefit from these employment opportunities created by the Project. The ability of SSN members to benefit from these opportunities is linked to their current skills and experience, as well as KAM policies and commitments to local and Aboriginal hiring.

On-reserve workforce statistics (Table 14.2-3) indicate that as of 2011, 115 SSN members were experienced in trades, transport and equipment operations (over 20%) and another 40 members were experienced in occupations unique to primary industry occupations (7%). These proportions are considerably higher than for the rest of the LSA and RSA.

Table 14.2-3. Labour Force Experience in Relevant Project Occupations for SSN, LSA and RSA (2011)

Population Segment	By Occupation				By Industry			
	Trades, Transport and Equipment Operators, and Related		Primary Industry Related Occupations		Mining, Quarrying, and Oil and Gas Extraction ⁴		Construction	
	Count	% of Labour Force	Count	% of Labour Force	Count	% of Labour Force	Count	% of Labour Force
Kamloops IR ¹	85	24	25	7	10	3	45	13
Skeetchestn IR ¹	30	15	15	7	n/a	n/a	10	5
LSA ²	1,471	3	980	2	1,471	3	3,922	8
RSA ³	3,371	5	2,022	3	2,997	4	5,393	8
BC	337,140	14	60,295	3	25,450	1	181,510	8

Notes:

BC = British Columbia; LSA = Local Study Area; % = percent; RSA = Regional Study Area

1. Includes Aboriginal population only living on-reserve.

2. The LSA is comprised of City of Kamloops, TteS IR, SIB IR, and the TNRD-J.

3. The RSA is comprised of the TNRD.

4. This Statistics do not include employment in mining operations commencing in the area post 2011, such as New Afton Project.

Source: SC (2013a, 2013b), AANDC (2014).

According to Statistics Canada, TteS and SIB reserves have higher unemployment rates than the rest of the LSA. The unemployment rate at the Kamloops Indian Reserve (IR) #1 is 23.6% (or approximately 85 people), while the unemployment rate at the Skeetchestn IR is 16% (or approximately 33 people), compared to 8.5% for the entire LSA (SC 2013a, 2013b; AANDC 2014). It is expected that with appropriate training some of these unemployed members could be employed at the Project. It should be noted that over 40% of SSN members live off-reserve. Many of them likely live in Kamloops or other parts of the RSA and are also expected to have access to employment opportunities offered by the Project.

A number of SSN members are currently employed in mining-related activities. The SSN has a joint participation agreement in place with New Gold Inc. for the New Afton Project (which began commercial production in 2012). It is estimated that up to 25% of the New Gold employees (over 100 employees) could be SSN members at some point.

In addition, many SSN members have transferable skills. Many Construction and primary sector workers, particularly in the forestry industry, have skills that are highly transferable to mining jobs. Many of these workers would require limited amount of additional education to be eligible for relatively high-paying jobs in the mining sector, in particular, heavy equipment operators, heavy duty mechanics, labourers and road builders, log hauling and transportation, wood processing, electricians, safety officers, administrators, and managers.

Overall, effects on employment and training are anticipated to be positive during Construction and Operation. However, as the Project moves out of Operation, there will be a reduction of Project employment reverting to pre-Project conditions. However, investments in training and capacity-development and skills gained at the Project will improve the employability of workers and thus their capacity to maintain incomes after the Project closes.

Business Opportunities

As described in Section 2.7, Project Benefits, the Project will require several contract services for the Construction and Operation phases, including site clearing, open pit mining, mobile and fixed equipment maintenance, transportation services and fuel services, security, communications, among others. Given the Project's proximity to Kamloops and the scope of business currently engaged in the mining industry both directly and indirectly, it is expected that a high proportion of Project contracting needs (up to 35%) will be addressed by local or regional businesses, including SSN businesses.

KAM has made efforts to engage SSN businesses in Project activities. Between July 2013 and March 2015, KAM awarded over \$3.5 million in contracting opportunities to SSN companies and joint ventures. For example KAM has successfully contracted with the following SSN companies or partnerships:

- the Stk'emlupsemc Amalgamated Ventures Inc. (a joint venture partnership between SSN and a local security company) to provide First Aid and security services from 2006 to 2014;
- the Stk'emlupsemc Forestry Development Co. (a TteS business) for timber removal, temporary road and parking lot construction, temporary drill pad construction, and upgrades to water crossings;

- drilling services for the Project site to a business partnership between the SSN and Target Drilling in 2014;
- Stk'emlupsemc Enterprises Incorporated (the business arm of the SSN) to complete all civil works on site in 2015; and
- all janitorial service requirements until 2016 to a joint venture between SSN and T'n'T Janitorial.

It is anticipated that these and other SSN companies will continue to benefit from future Project contracting opportunities. Benefits are expected to accrue mainly during the Operation phase. Given the length of the Operation phase, it is more likely that SSN businesses will develop working relationships with KAM and provide more competitive response to procurement requests, as they would have greater incentives to make capital investments to serve long term demands. Business opportunities will gradually decrease during the Decommissioning and Closure and Post-Closure phases.

Apart from interest in business opportunities, the SSN have also raised concerns that the Project could negatively affect businesses in the region, by increasing competition for local labour. SSN business activities in forestry, agriculture, tourism, real estate could experience some increase in competition for labour. The increased availability of high-paying employment opportunities with the Project has the potential to create challenges for small to medium businesses in employee retention resulting in capacity pressures and a need for higher wages. Although, in the short term, some businesses may experience some turn-over and growth challenges, in the long term they may benefit from an increased skilled labour force and from new sources of income flowing into the communities (refer to Section 7.4, Business for further details).

14.2.2.2 *Mitigation and Enhancement Measures for Potential Economic Effects*

Employment and Training

KAM is committed to maximizing long-term career and business opportunities for SSN members. KAM will work with the SSN to develop and implement a First Nations Human Resources Development Plan for all Project phases.

Section 2.7, Project Benefits, provides details of the KAM Human Resources Development Policy. This includes measures to be implemented by the Project to enhance employment and training opportunities for local communities and Aboriginal Groups including:

- commitment to hiring locally;
- pursuing partnership opportunities with local education and training institutions to ensure that the expertise required for Operation is available;
- commitment to maximize recruitment of qualified Aboriginal candidates, in accordance with any established agreements;
- implementing cross-cultural training to recognize and support diversity, multicultural workforce; and
- facilitating continued training and development of employees, including provision of financial assistance to pursue educational opportunities and professional designations.

Additional details on the KAM Human Resources Development Policy is provided in Section 2.7, Project Benefits.

To mitigate potential adverse effects associated with the reduction in Project employment and contracting opportunities during Decommissioning and Closure and Post-Closure, KAM will implement a Communications and Transitioning Program. A workforce transition plan will be developed and implemented to support education and training and career development opportunities to assist employees in obtaining employment elsewhere. In addition, potentially affected contractors will be informed regarding status and schedule as the Project progresses from Operation into Decommissioning and Closure. This will allow contractors to prepare for any transitioning that may be required (see Section 7.2, Labour Force, Employment and Training, for additional details).

Business Opportunities

To assist local businesses to take advantage of business opportunities with the Project, KAM is developing a business procurement plan, with specific elements to enhance local business participation, including Aboriginal businesses.

KAM is also pursuing a Project agreement with SSN to define common objectives and working arrangements, including promoting the development of the SSN workforce and businesses. Such an agreement will build on developing long-term partnerships to identify employment barriers, the actions required to remove them, and other opportunities for the enhancement of the SSN workforce and businesses.

KAM will implement a Communications and Transitioning Program to help contractors and employees to adjust as the Project transitions to Closure (See Section 7.4). With respect to increased labour competition with SSN businesses, it is expected that the businesses will have mechanisms in place to accommodate or alleviate competitive pressures as required. However, KAM will engage with local businesses and the Community Liaison Group to jointly identify and mitigate potential concerns related to labour competition. Potential working solutions may include joint recruitment efforts or training and education initiatives.

14.2.2.3 Potential Social Effects

The SSN has expressed concerns regarding potential effects associated with population increases. In particular SSN members are concerned about reduced accessibility to health care and other community services due to population increases.

Changes to the population, including the presence of a temporary workforce during Construction and some population growth during Operation may result in increased pressure on existing community infrastructure and services, in particular within the City of Kamloops, as the main service centre for the Project. In addition, SSN is concerned that some medical professionals servicing Kamloops and surrounding communities may move away from the community in response to the Project going forward (due to negative perceptions of the potential Project effects). These could further reduce access for SSN members to local health care services.

The SSN is also concerned that increased disposable income from Project employment could lead to socially disruptive activities such as increased alcohol and drugs use, crime, or gambling.

Access to Health Services

The TteS and SIB access some health services through the Q'wemtsin Health Society (QHS), located at the Kamloops IR #1. The QHS has been delivering primary care services to TteS and SIB members since 2007, in partnership with the Interior Health Authority (IHA). The centre is staffed with one nurse practitioner (two days per week), a naturopathic practitioner, home care nurses, community health nurses, personal care aides, and a dental hygienist. The health centre is currently without a doctor. There is a long list of members who need a family doctor (QHS pers. comm., 2015).

The QHS recently opened an additional location at the SIB reserve to facilitate access to SIB members. The clinic on the SIB reserve is visited by a variety of staff throughout each week and month (QHS, pers. comm., 2015).

Effects on access to health services will depend on the number of SSN members who decide to move to (or back to) their communities due to work on the Project. It is expected that most SSN members potentially employed at the Project would already reside at the TteS and SIB communities or in Kamloops. If some members decide to move back to their communities, it is anticipated that community health services have the capacity to absorb the small increase in demand from the relatively small influx of Project-related workers that could be expected. Therefore, it is not expected that the Project will affect health services within the reserves.

There is no specific information about health services accessed off-reserve by SSN members, but it is expected that specialist care is accessed through the IHA facilities in Kamloops and other communities in the TNRD. Healthcare services in Kamloops are currently facing challenges related to a chronic shortage of family doctors (for example there are approximately 1.1 general practitioners per 1,000 residents in Kamloops Local Health Area compared to 1.3 in BC). Royal Inland Hospital (RIH), located in Kamloops, is the primary medical facility in the TNRD. The RIH currently operates above its capacity, as occupancy has increased every year. The emergency department at the RIH has also seen an increase in emergency visits, in part due to the lack of family doctors, and is operating at capacity (Section 8.1, Infrastructure, Public Facilities and Services).

Section 8.1, Infrastructure, Public Facilities and Services, estimates how the Project will add to the existing populations in the LSA, as a result of direct, indirect and induced employment. During the Construction phase, given its short duration, it is not expected that workers will relocate to the area, but the presence of a temporary non-local workforce may place additional strain on emergency services at the RIH, if workers need to access to medical services during their stay in Kamloops.

During the Operation phase, it is estimated that between 373 and 774 individuals will in-migrate to the LSA and will, therefore, create additional pressure on the health services in Kamloops and exacerbate the current shortage of family doctors. These effects are expected to occur at the beginning of the Operation phase, as the population will gradually stabilize and be accounted for in population projections for service provision.

The additional Project-related demand for health services in Kamloops, could affect the ability of SSN members to access doctors, in particular for those who currently do not have family doctors. This may increase waiting times for appointments and affect the ability of the QHS to attract a new physician to the community.

Out-migration of Medical Professionals

An outmigration of physicians and/or medical professionals as a result of the Project could exacerbate the pre-existing shortage of family doctors in Kamloops. It is difficult to predict with any accuracy whether the Project will result in an out-migration of medical professionals. The Project could affect the perception of liveability of the local community, but many other factors are likely to affect an individual's overall decision to leave the community, including availability of employment, competitive wages, and liveability of alternative locations, among others.

Representatives of the Interior Health Authority have indicated that recruitment of physicians and medical professionals, with or without the Project, will continue to be a priority and the challenges to be faced will be similar to other parts of the province facing similar shortages (See Section 7.2 Labour Force, Employment and Training and Section 10.7, Community Health and Well-being).

Community Well-being

The SSN have expressed concern that increased disposable income could result in increased social problems for communities (e.g., crime, drugs, gambling). This could cause stress for the communities and residents of the LSA.

Anticipated effects on family and community well-being associated with Project employment are linked to income changes, and are also, to a lesser extent, linked to behavioural changes associated with Project-related migration. These effects are discussed below. Other aspects of community well-being are assessed in Section 10.7, Community Health and Well-being.

Income-related Effects

Employment and income available to local residents will directly benefit community well-being by reducing economic hardship (i.e., reducing unemployment for existing residents, providing higher incomes, and reducing dependency on government transfers). Project-related improvements to worker skills and experience will provide residents of the LSA with opportunities to pursue higher-paying jobs. Increased income could improve the standard of living, allowing people to purchase higher quality foods and housing, to pay for advanced education opportunities, or to access lifestyle amenities (e.g., buy equipment and supplies such as boats, fishing gear, fuel, etc., to engage in TLU activities) that may not be accessible with less income; therefore, enhancing their overall well-being.

Baseline information shows that Aboriginal residents of TteS and SIB reserves have lower personal and household income compared to the overall LSA and RSA. They also have lower educational achievement than other residents of the LSA (see Section 7.3). By providing additional income, employment, and training, the Project has the potential to increase living standards in the SSN communities.

On the other hand, there could be some negative effects on well-being related to bad spending decisions. Relevant studies (Gibson and Klinck, 2005; Goldenberg et al., 2010) noted that increased incomes associated with resource extraction can lead to a greater potential for alcohol and drug use, increased sexually transmitted diseases, and other social and health problems. Negative consequences, however, are expected to diminish over time, after a period of adjustment by the workers and their families. Research suggests that, after one or two years, communities can adjust to increased income levels through an increase in social stability and improved services (NAHO, 2008). This suggests that while there could be an opportunity for negative spending during the Construction phase and/or early Operation phase, employment income during the Operation phase is more likely to contribute to the overall improvement of well-being of the local communities.

The overall income-effect will largely depend on how workers choose to spend their increased income.

Population-related effects

As described in Section 8.1 at the peak year of Construction (Year 2), there could be a maximum of 950 non-local workers in the LSA over the course of the year. This represents approximately 1.1% of the total population of the LSA and is within its average annual mobility rate (4.9% or approximately 4,300 people¹) (SC, 2013b). It is expected that the majority of these non-local workers will temporarily stay in the city of Kamloops.

During the Operation phase, it is estimated that a maximum of 774 individuals in-migrate to the LSA in response to direct, indirect and induced employment opportunities (refer to Section 8.1). This represents 0.9% of the population of the LSA and is well within its average annual mobility rate (4.9%) (SC, 2013b).

This influx of population to the local area could affect existing family and community well-being through behavioural changes. For example, if transient populations engage in socially disruptive or illegal activities, this could create negative well-being effects such as increase in crime, alcohol abuse, or drug abuse. Behavioural change-related problems, if any, are anticipated to occur early in Construction, and are expected to lessen over time as migrants settle into the communities.

14.2.2.4 Mitigation Measures for Potential Social Effects

Development of appropriate socio-economic mitigation measures is a shared responsibility between KAM, the government, and the communities. As a result, all these parties must share responsibility for social effects management for it to be effective. KAM will work with local stakeholders to assist in monitoring socio-economic effects and to take corrective actions where appropriate.

KAM will establish a Socio-economic Monitoring Advisory Committee. This committee will be comprised of municipal and regional governments, SSN representatives, KAM, and relevant local

¹ Includes the City of Kamloops, TteS IR and the TNRD-J. Data was not available for SIB IR.

service providers (e.g., health service representatives, RCMP). This committee will be involved in monitoring and providing input to potential adaptive measures.

In addition, the following mitigation measures will be implemented:

- on-going dialogue with service providers to inform them of workforce requirements and timing;
- implement a Code of Conduct for Project workers describing the expected behaviours of direct and contractor employees both on and off the job;
- contracting a family physician to be the designated medical resource for the construction workforce. This physician would provide services such as physicals, inoculations, and routine medical attention for minor injuries and illnesses; and
- contributing financially or in-kind to physician recruitment efforts and the new residency program for family physicians currently in place in Kamloops.

Refer to Section 8, Assessment of Potential Social Effects, for more information about potential Project effects and mitigation on Social VCs. In addition to these proposed measures, to minimize potential adverse effects on community well-being, KAM will implement the following mitigation measures:

- provide access to money management training to employees as required;
- offer counselling services to employees as well as cultural awareness training; and
- implement a zero tolerance policy with respect to drug and alcohol at the Project site for Project employees and contractors.

KAM recognizes that there are uncertainties associated with predicted socio-economic effects and the effectiveness of mitigation measures. To address these uncertainties the Project will implement a Socio-economic Monitoring Plan (SEMP) to track performance, evaluate mitigation measures, and implement adaptive follow-up programs as needed. The SEMP is described in Chapter 11.

14.2.2.5 *Potential Physical and Cultural Heritage Effects*

The SSN considers cultural heritage to be comprised of a range of past and continuing manifestations of tangible and intangible objects, resources, and knowledge systems which are inseparable from particular places within the landscape of their traditional territory. The SSN believes in a reciprocal and mutually accountable relationship between humans and the environment and value the intactness of landscape to the continued enjoyment of their cultural heritage (Ignace et al., 2014). SSN members have expressed concerns regarding the effects that the loss of the land would have on their culture and spiritual essence.

In particular, the following concerns were expressed during engagement and consultation activities:

- loss of the Hunting Blind Complex and the historical, cultural and instructional values associated with it;
- effects on potential burial sites and burial cairns located in the Project footprint;

- potential effects on Jacko Lake and the surrounding area (“Pípsell”) which is considered an important cultural landscape and place with spiritual value;
- loss of Goose Lake; and
- potential effects on sacred sites at Mount Lolo. Mount Lolo is located approximately 20 km north east of the mine site. No effects on sacred sites at Mount Lolo are anticipated.

These concerns were considered during the Archaeological Impact Assessment (AIA) investigations and in the assessment of potential heritage effects (Section 9) developed in Part B. This section is informed by those findings. TteS and SIB members participated in the AIA fieldwork. In addition, SSN archaeologists and field technicians were contracted to conduct archaeological investigations and monitoring on priority drilling sites and pit areas during on-site activities for EA studies. The SSN have reviewed the heritage effects assessment methodology and deemed it acceptable.

In a letter to CEAA (SSN, 2015), the SSN expressed that the Trout Children story has cultural heritage value, and is linked to areas of historical and archaeological importance to the SSN. The SSN considers the area encompassed in the Trout Children story to constitute a cultural keystone area for the SSN, which must be recognized and protected as a cultural heritage site and landscape. Ignace (2014) notes that the Secwépemc *stsptekwll* (stories, oral traditions) have for generations sustained the moral, spiritual, legal and social fabric of the Secwépemc and Interior people and provide evidence of life in the Shuswap territory (Ignace et al. 2014).

The SSN identified the Trout Children story is related to, but not limited to, the following areas and cultural values:

- Pípsell [place of] small trout’ (including Jacko Lake, Goose Lake, Peterson Creek, the Hunting Blind Complex), and its Water World and People and associated aquifers, K’ecúseu (The Prayer Tree), X7ensq’t; and
- the red headed woodpecker and chickadee habitats.

KAM understands the cultural value of the landscape to the SSN and has designed the Project to avoid or minimize effect on the environment and in particular to areas of cultural significance to the SSN. Potential effects on physical and cultural heritage and on any structure, site or thing that have been identified as having historical, archaeological, paleontological, or architectural significance to the SSN are summarized below.

Pípsell “[Place of] Small Trout”

Pípsell (Jacko Lake and its surroundings) is considered an important cultural landscape and place with spiritual and cultural value (SSN, 2014). The area is noted to be a storied site with spiritual and cultural values which include an offering tree, spiritual connections and a place of prayer to communicate with water beings (Ignace et al. 2014).

Pípsell is noted to be connected to *The Trout Children story*. The story outlines the human connections to the water-cycle and the guardianship of the land. It explains the moral fibre of kinship relations among generations of humans, and the mutual relationship, respect and obligations that exists

between humans, fish, birds, and the land animals (SSN, 2014). According to the Secwepemc oral history, the Secwépemc ancestors Xqelmecwétkwe or “Water People” live in the depths of Jacko Lake as well as in other waterbodies throughout Secwépemc territory, including Kamloops Lake, Adams Lake and Shuswap Lake. The SSN believe there is an underwater system (aquifers) that connects the South Thompson, Adams Lake and Shuswap Lake with the North and Main Thompson Rivers (Ignace et al. 2014).

The *Trout Children story* was connected to a prayer tree named K’ecúseu, that the SSN has identified was located at the eastern entrance of the mine site, north of the crossing of Peterson Creek just off Long Lake Road. K’ecúseu is believed to have served as a medium for human communication with the sky world and was attributed to have powers of X7ensq’t (Ignace et al. 2014). This marker was presumably destroyed in the 20th century when the current Long Lake Road was built (Ignace et al. 2014).

X7ensq’t (The Power of Place) expresses the relationship of reciprocal accountability between humans and the land, which Secwepemctsin (the language of the Secwepemc people) speakers translate as “the land will turn on you” (Ignace et al. 2014). X7ensq’t places and sites are places imbued with spiritual power left as deeds to present generations. The SSN believes that the deeds on the lands and to the land are inseparably connected and that humans have responsibility to safeguard these places.

Ignace (2014) notes that the Secwépemc people was alienated from the area upon pre-emption by settlers starting in the 1860s and 1705 and that the area has already been changed by past industrial and agricultural activities. “Despite the destruction that has already occurred, SSN asserts that the area around Pípsell is a vital cultural landscape” (SSN, 2014). The SSN notes that the Secwépemc people continue to carry out various cultural and spiritual ceremonies and communicate with the water people at Jacko Lake to prevent any future disturbances from the water people (SSN, 2014).

As described in Section 8.5, CULRTP, Project activities during Construction, Operation, and Decommissioning and Closure phases may result in changes to the ability to access or use some areas identified as Pípsell. Clearing and construction of the Project components may result in losses or changes to areas, including unique features of some areas within Pípsell that have cultural value to the SSN (e.g., the Hunting Blind Complex, Goose Lake). The Project could also affect the enjoyment or experience of using ceremonial or cultural sites by creating sensory disturbances (i.e., dust, noise, visual disturbances).

The Hunting Blind Complex

During the AIA a number of petroform features were identified, including a more prominent feature to the North of Peterson Creek that consists of three semi-circular petroforms with a series of rock outcrops. The SSN conducted additional studies and defined this site as a Hunting Blind Complex where historical hunting of ungulates would occur (Ignace et al. 2014). The lay-out and functionality of these petroforms are consistent with hunting blinds identified in other areas of North America, (Ignace et al. 2014). The Hunting Blind Complex includes stones that could have been used for seats or altars, which the SSN noted may have been used during ceremonies. There are other petroform features and trees in the area that the SSN believe to be markers of past spiritual and cultural activities.

For the SSN, culture is inextricably connected to the environment, including the activities ancestors carried out on the land, therefore, the Hunting Blind Complex represents an area of heritage value. It also poses an important area for future use, to teach the youth about the SSN heritage such as traditional hunting methods. Ignace (2014) notes that if the Hunting Blind Complex is removed, a highly significant, unique, and irreplaceable cultural resource, ideal as an aid to demonstrate and teach Stk'emplups people about their culture and practices, and their long-term, intimate connection to the land and natural world will be lost forever.

Direct effects to this site will occur during the Construction phase of the Project. The site is located within the Project footprint and avoidance of the site is not feasible.

Additional discussion of the potential effects on current uses of areas of ceremonial or cultural value, including the Hunting Blind Complex, are presented in Section 8.5, CULRTP.

Potential Burial Sites and Burial Cairns

Ninety-two rock piles were recorded within the LSA² during the AIAs conducted for the Project. These features were recorded from 2009 to 2014 and were identified as historic features related to non-Aboriginal activities (ranching and farming). These features are not recorded as archaeological sites (Morin, 2014).

SSN concerned that rock piles to the north of the LSA (within the RSA³), may have been used to cover and protect prehistoric or historic burial locations. SSN has conducted Ground Penetrating Radar (GPR) studies on some of the cairns to verify this assertion. KAM is aware of two locations where SSN conducted investigations, however, KAM has not been provided with the results of these investigations. Field inspection by ERM archaeologists indicates that some of the rock piles are likely associated with historical fence lines (ERM, 2015a).

KAM has continued to contact SSN to discuss the potential burial sites identified in SSN's CHS. KAM also offered to collaborate with SSN on identifying and formally recording locations of cultural significance.

At the time of writing this report, none of the rock piles were recorded as archaeological sites; however, further research and discussion with the SSN is on-going and the interpretation and protection status of these rock pile features may be revisited if new data become available.

These rock piles (of interest to the SSN) are located outside the Project impact area, and will not be affected by Project activities (refer to Section 9.2).

² The LSA incorporates the Project footprint within which direct effects can occur and a 500 metre buffer within which indirect effects can occur

³ The RSA is based on the Terrestrial Biophysical Effects study area for consistency of reporting. This large area provides a sample of Heritage sites within the region and allows the effects on Heritage sites within the Project area to be placed in a larger context.

14.2.2.6 *Mitigation Measures for Potential Physical and Cultural Heritage Effects*

Pípsell (Jacko Lake and Surrounding Area)

As described in Section 8.5, KAM will implement the following mitigation measures to minimize changes in access to or use of preferred ceremonial or other cultural uses sites:

- Develop an Access Management Plan in consultation with Aboriginal Groups;
- To accommodate SSN's use of Jacko Lake as an early spring trout fishery, KAM will avoid construction activities within Jacko Lake during spring;
- Develop an alternate road access to Jacko Lake to facilitate access to Jacko Lake area for cultural/ceremonial use;
- Develop an alternate parking lot to Jacko Lake to facilitate access to Jacko Lake area for cultural/ceremonial use;
- Implement appropriate signage indicating blasting times and communicating with Aboriginal Groups regarding when blasting is likely to occur;
- Continue to support the permit system (provisions to allow Aboriginal users access to ranch lands) for accessing ranch or grazing leases owned by KAM;
- Reduce traffic by implementing the Transportation Management Plan.

In addition the following measures will be implemented to avoid or mitigate potential effects on sensory disturbances:

- The Project has been designed to minimize noise and vibration effects (see Section 14.2.2.8), including increasing buffer distance, optimizing equipment usage, and using enclosures for noise emissions;
- Implement best management practices during all Project phases to reduce noise emissions (e.g., best practices for vehicle and equipment handling, select best achievable technology, provide training for operators, implement planning and engineering controls, etc.);
- To reduce visual disturbances, progressive re-vegetation of Project components and other disturbed areas on an ongoing basis during the Construction and Operation phases with larger Project components further re-vegetated at Closure (Section 8.4);
- Employ good visual design principles (Section 8.4);
- Infrastructure aesthetics will consider use of non-reflective materials in the construction of buildings and other infrastructure;
- Infrastructure will be painted with natural colours that blend into the landscape, or screened with tall shrubs or trees;
- During Post-Closure, monitor the re-vegetation of the large Project components to ensure that the vegetation is taking hold and growing in a manner sufficient to mimic the surrounding landscape;

- Implement the following management and monitoring plans: Air Quality Monitoring and Dust Control Plan, Dark Sky Management and Monitoring Plan, Noise and Vibration Management Plan, Landscape Design and Restoration Plan (Chapter 11).

KAM will also provide support to the SSN to participate in accessing, harvesting, and/or documenting plants or other resources of cultural value prior to the Project footprint disturbance. KAM will work with the SSN to identify opportunities to support cultural heritage programming for SSN members.

To mitigate potential effects on cultural and heritage values, KAM implemented a site disturbance policy which stipulates:

- provide SSN with a minimum of 30 days advance notice (prior to formal submission to regulators) outlining the details of NOW/Multi-Year Area Based Permitting Applications;
- discuss the pre-screening materials with SSN during the 14 day period;
- implement, where possible, use of existing roadways and access trails;
- maintain, where possible, a 50 m setback distance from all waterbodies, wetlands and riparian habitat for mechanical earthworks;
- conduct archaeological, ecological and cultural assessments prior to work, where practical;
- implement an Archaeological Chance Finds Procedure and a Wildlife Management Plan (both were provided to SSN for reference);
- invite SSN to site during site disturbances including mechanical trenching/digging, drill pad and sump construction, roadworks, etc.; and
- reclaim site disturbances, conditions permitting.

Hunting Blind Complex

Prior to disturbance of the site systematic data recovery will be implemented to offset any potential loss of archaeological data. However, given the heritage value of this site for the SSN, additional mitigation is required. The Archaeological Sites assessment (Section 9.1) recommends undertaking further research, focusing on determining the antiquity and function of the site, understanding the cultural values associated with it and how these could be related to possible mitigation options in accordance with cultural practices of the SSN.

A final mitigation strategy will be determined in consultation with the SSN and the Archaeology Branch of the British Columbia Ministry of Forests, Lands and Natural Resource Operations prior to Construction. Additional mitigation measures could include but are not limited to relocating features of the Hunting Blind Complex to a suitable location identified by the SSN, documenting the Hunting Blind Complex using 3D imagery, preparation of a documentary or scaled 3D model of the Hunting Blind Complex for educational purposes, and funding for heritage education or other relevant programming (refer to Section 8.5).

Potential Burial Sites and Burial Cairns

Rock piles located to the north of the LSA that could have potential cultural heritage value to the SSN will be avoided, therefore no effects are anticipated.

No rock piles associated with potential burials have been identified within the LSA. If unknown burial sites are identified as a result of chance-find during Project activities, they will be protected under the *Heritage Conservation Act* and adequate mitigation measures will be implemented.

14.2.2.7 *Potential Health Effects*

SSN expressed concerns regarding potential effects to human health from:

- air quality deterioration (i.e., potential health effects from airborne contaminants);
- contamination of domestic drinking water;
- consumption of contaminated country foods (including as a result of dust deposition) and reduced availability of country foods; and
- noise and vibration (in particular blasting).

Project activities may release dust, breathable particulate matter and chemicals to the atmosphere or water thereby increasing exposures to those chemicals for people living or engaging in other activities in the vicinity of the Project, which could have implications in their health. SSN member's health could be affected directly as a result of changes to air quality and drinking water quality, and indirectly by consumption of country foods (plants, animals, and fish) that have absorbed Project-related chemicals.

Potential Project effects to human health are addressed in Section 10.4. The assessment considers all potential exposure pathways (including air, soil, drinking water and country foods), for human receptors (Aboriginal and non-Aboriginal) for all age groups and considers sensitive members of the population (e.g., young children, the elderly, pregnant women, etc.).

This section focuses on the effects on Aboriginal IR where it is likely that the majority of SSN members reside. It also discusses potential health effects on temporary users who may practice TLU activities around the Project area (e.g., SSN members fishing in Jacko Lake). Potential effects on the quality of the resources (i.e., fish, plants, and animals) that Aboriginal Groups harvest are assessed in Section 8.5, CLRUTP.

The Human Health and Ecological Risk Assessment (HHERA) model estimated the change in risk of exposure to metals due to the Project for Aboriginal people who reside at the Kamloops IR #1. Residents of IR #1 may have backyard gardens, but may also hunt, fish, and collect traditional plants in the LSA. The Riverside area of Kamloops, which is downwind of the Project has been used as a surrogate to estimate exposure for Kamloops IR #1 residents⁴. Other Aboriginal Groups in the

⁴ Riverside area is closer to the Project than the Kamloops IR #1 and provides a more conservative assessment of potential Project effects.

region may also use the land in the RSA for traditional purposes, but their exposure would be less than those who reside at Kamloops IR #1. The HHERA model also estimated the changes in risk exposure for temporal users (recreational receptor) of Jacko Lake and the lands immediately adjacent to the Project Boundary⁵.

This section is informed by the results of HHERA. For detailed model results and assumptions refer to Section 10.4, Human Health. Each potential pathway of concern to the SSN is described below.

Air Quality

The SSN raised concerns regarding the potential health effects resulting from air contaminants associated with the Project.

Project activities have the potential to affect ambient air quality during all phases of the Project, in particular during the Construction and Operation phase. The sources of emissions include diesel exhaust from haul trucks and other heavy equipment, fugitive dust from haul roads, conveyances and transfer points and from mining areas (e.g., open pit, TSF, and Mine Rock Storage Facility [MRSF]), and dust and gaseous emissions from blasting.

Potential effects of the Project on dustfall and changes in air quality were modelled in accordance with a detailed Air Dispersion Modelling Plan approved by the BC Ministry of Environment (BC MOE). Criteria air contaminant (CAC) and metals concentrations resulting from worst-case emissions were modelled for residential areas in Kamloops, as well as for the Kamloops IR #1 and other rural and recreational areas adjacent to the Project Boundary.

The model predicts small changes in maximum concentration for inhalation exposures to respirable and inhalable particulate matter (PM_{2.5} and PM₁₀) of up to 4.4% and 1.9%, respectively for Kamloops IR#1 (see Section 10.4). These small changes with respect to baseline conditions occur infrequently and are not expected to result in meaningful contribution to the health risk for Aboriginal receptors. Predicted concentration ratios for all other CACs (SO₂, NO₂, and CO) do not exceed the applicable regulatory criteria.

With respect to the temporal user of Jacko Lake and other areas adjacent to the Project Boundary, the model predicts maximum concentration ratios for SO₂, NO₂, CO, and PM₂₅ that do not exceed the applicable regulatory criteria. Predicted concentration ratios for PM₁₀ exceeded regulatory criteria in less than 0.3% of the time. Concentration ratios were calculated for each day of the worst year and only one exceedance was identified, thus potential health concerns related to inhalation of CACs is not expected for a temporal user of Jacko Lake and surrounding area.

The predicted changes in cancer risk associated with the inhalation of dust-bound metals at all locations are below the cancer risk acceptability benchmark set by Health Canada and the BC Ministry of the Environment (refer to Section 10.4).

⁵ The recreational receptor was assumed to be present near the Project Boundary for 5 hours per day 5 days per week for 52 weeks a year. This is considered to be a reasonable upper limit scenario for the Recreational receptor.

Drinking Water

Drinking water at the Kamloops IR #1 is sourced from the South Thompson River and is treated at the TteS Water Treatment Plant.

Project activities have the potential to change domestic water quality at Kamloops IR #1 by deposition of ore dust containing trace metals into the Thompson River. Based on deposition modeling, dust deposition from the Project is not expected to reach the Thompson River or is too low to influence the water quality of the Thompson River. In addition, treatment of the raw water to remove suspended solids from water will further reduce the potential for Project-related metal-bearing dust to alter the quality of the domestic water supply. Therefore, trace metal concentrations in the Kamloops IR #1 domestic water supply will not be affected by Project activities. Refer to Section 10.2, Domestic Water Quality for additional details.

Country Foods

The Project could alter natural metal concentration in the environment and affect the quality of country foods, thereby affecting the health of people consuming those country foods. The Project could contribute to deposition of metal-bearing dust onto surrounding plants, soils, and surface water. Over time, seepages from the MRSFs and TSF may lead to an increase in some metal concentrations in the receiving waters. Metals deposited onto soils or discharged into the water may be taken up directly by plants and retained in their tissues. Animals may also ingest soil, water, and vegetation containing metals from dust and effluent discharges. Potential effects on country foods, including changes in metal concentrations in plant and animal tissue are assessed in Section 10.3, Country Foods.

The assessment identifies representative species that are typically harvested from the LSA that could be affected by the Project. Deer, snowshoe hare and grouse, were selected as representative species of wild meat because they are the most popular species that are harvested by the SSN. Rainbow trout from Jacko Lake and Peterson Creek were used to represent fish harvested in the study area, as these locations have the greatest potential to be affected by the Project. Twelve samples of forage (i.e., any edible part of the plant) and twelve samples of browse (i.e., leaves and twigs) were collected from a variety of plant species that SSN members harvest and consume. Forage samples were applied as surrogates to represent local berries. Cattle and garden produce were also selected and analysed for trace metals.

The assessment found that increases in trace metal concentrations between baseline conditions and modelled conditions are very small over the life of the Project and do not represent a health risk. The predicted incremental increase in lifetime cancer risk associated with Project-related exposures to contaminants are below the Health Canada cancer risk acceptability benchmark for each of the individual country food groups and for total country foods (Section 10.3).

Exposure to trace metals through the consumption of country foods represents one component of the overall exposure to trace metals from the Project. Changes in metal concentrations associated with country food consumption are used in conjunction with change in metal concentrations from the other ingestion and direct contact pathways (soil, drinking water etc.) to estimate the overall change in potential human health risk (Section 10.4, Human Health).

The exposure estimates associated with total ingestion (includes exposure to metals in soil, water and country food) of non-carcinogens for each of the Aboriginal receptor groups are below the acceptability benchmark of 1.0. Similarly the combined incremental increase in lifetime cancer risk for total ingestion are below the Health Canada cancer risk acceptability benchmark of 10^{-5} for each of the Aboriginal receptor groups.

In addition to country food contamination, the SSN are concerned that the Project may affect their access to country foods and, therefore, increase their reliance on store-bought foods.

The assessment of the Project effects on Aboriginal uses of lands and resources are addressed in Section 8.5, CULRTP. The assessment concludes that residual effects to fish, wildlife, or plant resources utilized by the SSN are anticipated to be not significant (minor to moderate) as a result of Project activities. Changes to SSN fishing practices are anticipated to be minor and will not impede SSN member's ability to fish for traditional purposes. The Project affect a relative small area (north east arm of Jacko Lake and Middle Peterson Creek), which has already been affected by past projects and activities. Changes to SSN hunting and gathering for traditional purposes are predicted to be moderate and will be detectable from baseline conditions mainly due to losses of suitable habitat for harvested wildlife and plants within the LSA. Some hunting and gathering sites within the Project footprint will be altered (Goose Lake, Peterson Creek). The losses in the ability to harvest will be mitigated during Post-Closure phase mainly through habitat rehabilitation and by implementing an Access Management Plan (refer to Section 8.5).

Depending on the reliance on the areas where Project residual effects are anticipated for obtaining food sources, SSN member who rely on fish, wildlife and plants from the Project area could experience some change on their consumption levels of country foods, and therefore require to purchase more store-bought foods to make up for the shortfall. Given that the Project will affect a relatively small portion of the SSN traditional territory, which has already been affected by past activities, the overall consumption level of country foods by SSN members is not predicted to change substantially.

Noise and Vibration

The Project has the potential to change the existing acoustic and vibration environment that may affect SSN member's health or may damage buildings within their reserves. Construction and operation activities such as clearing, earthworks, transport, infrastructure construction, drilling and blasting, crushing, etc. are expected to generate noise and vibration emissions.

The noise and vibration assessments (Section 10.5) consider potential effects on a list of sensitive receptors that could be most affected by the Project. These are receptors closest to the Project boundary. Other receptors further away from the Project are expected to be less affected than these sensitive receptors as noise and vibration levels are expected to attenuate at increasing distances from the sources. The assessment considers the worst case years in terms of highest activity during Construction and Operation phases. Decommissioning and Closure, and Post-Closure activities are expected to have no interaction or negligible to minor interaction with the noise and vibration effects, thus effects exceeding acceptable levels are not expected.

The TteS and SIB reserves are outside the local study areas where potential direct noise and vibration effects of the Project are expected to occur (1.5 km from the plant boundary and 3 km from the edge of the mine pit, respectively). The closest reserve to the Project boundary is Kamloops IR #1, which is the largest and most populated reserve of the TteS, with over 700 members residing on the reserve. The reserve is located approximately 9 km away from the Project site. Other TteS reserves are located over 15 km away from the Project site.

The Skeetchestn IR, which is the largest and most populated reserve of the SIB with over 200 members residing on the reserve is located more than 30 km away from the Project site. Other SIB reserves are more than 60 km away from the Project site.

Within the LSA, changes in noise levels will comply with the BC Oil and Gas Commission noise guideline Permissible Sound Level and the Health Canada noise guidance at all receptors where guidance is available. The predicted ground vibration and air blast level at all residential receptors are considerably below the damage threshold.

Changes to the acoustic or vibration environment are not expected to be perceptible at TteS and SIB reserves for any phases of the Project. SSN members living on reserve will be exposed to noise levels equivalent to the baseline noise levels. Potential effects of noise and vibration on harvesting and other cultural activities (e.g., at Jacko Lake, Inks Lake, Peterson Creek and Goose Lake Road) are assessed in Section 8.5, CULRTP, and Chapter 13, Aboriginal Interests (Rights and Title).

14.2.2.8 *Mitigation Measures for Potential Health Effects*

Air Quality, Drinking Water, and Country Foods

Mitigation measures specific to human health have not been recommended; however, a number of mitigation measures identified in other VCs will reduce effects on human health. The Project will implement measures to minimize adverse effects on air quality. These measures will reduce air emissions and dust deposition, as well as, potential metal loading to waterbodies and soil. Measures include:

- installation of covers over coarse and fine ore stockpiles;
- using dust collectors and covered concentrate transport trucks;
- minimizing haul distances and using coarse gravel and aggregate material on road beds to minimize road-associated dust generation; and
- implementing best management practices, including watering haul roads, reducing idling of vehicles and equipment, and maintaining mobile equipment to meet emission standards.

Based on feedback received from Aboriginal Groups and the public during the consultation process, KAM conducted additional engineering studies and changed the General Arrangement (GA) of the Project to address health concerns related to dust and noise generation. The updated GA relocates key facilities (e.g., TSF) further away from residential areas and closer to mine operations. In addition, the TSF was re-designed from a dry stack to a conventional wet design storage facility to allow for a more effective management of dust.

Detailed air quality mitigation measures are described in Section 10.1, Air Quality Effects Assessment. Mitigation measures additional to those outlined in Section 10.1 are not required.

Effects on fish, wildlife, and plants (including metal uptake by plants and animals) will be monitored throughout the life of the Project through the implementation of the Fisheries and Aquatic Life Monitoring Plan and the Wildlife and Vegetation Monitoring Plan (Section 11).

Noise and Vibration

The Project has been designed to minimize noise and vibration effects. To minimize noise effects, facilities will be located away from the City of Kamloops boundaries and roads will be designed to minimize haul distances. Noise will be further reduced by optimizing equipment usage (i.e., minimize number of trips) and by using enclosures (e.g., locate noise emissions – conveyor from crusher to plant, coarse ore stockpile, heavy equipment, etc. – inside gallery, enclosure or buildings).

Similarly, blasting activities have been designed to comply with regulatory thresholds at the closest receptor (i.e., Jacko Lake, other receptors are located further away) and to reduce annoyance effects from blast induced ground vibrations and air blast. The maximum amount of explosives that will be used decreases substantially (from 1,020 kg to 68 kg) as the blast approaches Jacko Lake. Details on the blast plan design are presented in Appendix 10.5-A, Noise and Vibration Technical Data Report.

In addition, KAM will implement best management practices during all phases of the Project, including best practices for vehicle and equipment handling and maintenance to reduce noise emission, select best achievable technology, provide training for operators on best practices and management plans, implement proper planning and engineering controls during blast activities, implement on-going seismic and air blast monitoring, as well as atmospheric conditions monitoring to avoid blasting at unfavourable conditions. KAM will implement a Transportation Management Plan and a Noise and Vibration Management Plan, which will include a process to address noise and vibration complaints in a timely manner (refer to Chapter 11).

Detailed noise and vibration mitigation measures are described in Section 10.5, Noise and Vibration Effects Assessment. Based on KAM's understanding of SSN's other Aboriginal interests, no mitigation measures that are additional to those outlined in Section 10.5, are required.

14.2.3 Residual Effects

14.2.3.1 Residual Economic Effects

A number of potential benefits are expected from the Project, including employment (and associated income) for SSN members, increased training opportunities and capacity, and increased opportunities and revenue for SSN businesses.

The overall net effects of Project Construction and Operation on SSN employment and businesses are anticipated to be positive. While Project Construction and Operation will occur at a time when other large projects are also underway, possibly resulting in competition for available labour, there is a relatively large number of unemployed or under-employed SSN members who could be trained for long-term Project work.

KAM will enhance SSN benefits by implementing employment, training and procurement strategies that increase SSN employment and business opportunities. This would contribute to skill attainment and upgrading for SSN members, and will provide long term economic benefits to the SSN.

By the end of Operation, there will be a net loss of employment and business opportunities. The magnitude of these effects will be at least partially mitigated by the implementation a communications and transition program that will better position workers to be able to find work on other projects. In addition, investments in training and capacity-development, and accumulated experience will improve the employability of workers and thus their capacity to maintain incomes after Project Closure. The duration of employment and business opportunities are expected to be long-term and sustained.

14.2.3.2 *Residual Social Effects*

It is not anticipated that there would be a substantial change to the ability of SSN members to access primary health care services on-reserve, relative to baseline conditions.

With respect to off-reserve health services, the temporary influx of non-resident workers to the city of Kamloops will slightly increase the demand for emergency services at the RIH during the two years of Construction phase. This could to some extent affect the ability of SSN members to access emergency services at RIH.

The permanent in-migration of workers and their families during Operation will likely increase the demand for family physicians. This could exacerbate the existing shortage of family doctors in Kamloops in the short term. The predicted influx of population during Operation, represent less than 1% of the population of Kamloops and is expected to fall within the City's growth projections used for planning purposes. The number of physicians anticipated to leave Kamloops as a result of the Project is expected to be small. Mitigation measures implemented by KAM and concerted recruitment efforts currently in place are expected to increase the supply of doctors in the LSA. The residual effect is expected to be negligible on the ability of the SSN to access health care services.

There is an opportunity for increased employment income to be spent unwisely; however, it is expected that negative consequences will diminish during the Operation phase. In addition, measures such as implementing money management training for employees would help to improve money management skills. After a period of adjustment by the workers and their families, it is expected that increased income would improve standard of living and therefore contribute to the overall improvement of well-being of the local communities.

Any unanticipated changes will be monitored through the implementation of a Socio-economic Monitoring Plan, and adaptive follow-up programs will be implemented as needed.

14.2.3.3 *Residual Physical and Cultural Heritage Effects*

Pípsell (Jacko Lake and Surrounding Area)

Residual effects will occur on sites identified as having cultural value for the SSN, specifically in the areas known as Pípsell. This will include the following (for a detailed assessment refer to Section 8.5).

Jacko Lake

Construction and Operation of the Project will result in the removal of the northeast arm of Jacko Lake which comprises 6% of the total area of Jacko Lake at full pool and approximately 12% of the Jacko lake littoral area. This portion of the lake will no longer be available to the SSN for ceremonial or cultural uses. It should be noted that the northeast arm of Jacko Lake, which will be removed by the Project, was created by artificially raising the water level of the lake. Water levels in Jacko Lake have actively been managed historically through dam raises, with the last raise occurring in 1990.

Access to the eastern half of Jacko Lake will be temporarily restricted during Construction and Operation phases while conducting blasting activities. Safety zones will be enforced around the open pit during blasting periods and will include restricted access to Jacko Lake for approximately two hours a day. During this period SSN users will be unable to engage in activities within the specified blasting buffer area.

During Construction, Operation, and Closure, emission and dispersion of dust from Project activities could affect the quality of experience of using Jacko Lake if dust is noticeable.

Project-related noise (e.g., from blasting, traffic, etc.) will be noticeable in the Jacko Lake area and could diminish the experience of using the lake. The highest noise impact in Jacko Lake is expected during the Construction phase, during sheet-piling activities. Piling activities will occur during the day for a period of approximately two months and are expected to be noticeable, in particular in the eastern part of the lake. The piling activities will not “disallow” the use of the lake; but could affected the enjoyment of the lake (subjective to the user for no longer than two months).

There will be a moderate degree of visual effect during Construction and Operation at Jacko Lake (including the boat launch). It is anticipated that the main project components such as the MRSFs and the TSF will be noticeable from Jacko Lake. Visual disturbances will reduce to slight in some areas during the Post-Closure Phase.

During Decommissioning and Closure phase, noise and air quality effects will diminished. No air and quality and noise effects are expected during Post-Closure.

Goose Lake

Goose Lake will be overprinted by the TSF and will no longer be available. It should be noted that access to this area is limited due to private property and fencing.

Peterson Creek

The section of Peterson Creek that runs through the Mine Site (middle Peterson Creek from the discharge of Jacko Lake to the Peterson Creek diversion discharge) will no longer be available, as it will be overprinted by Project components. Other portions of Peterson Creek outside the mine footprint (upper - including Jacko Creek and lower portions) will remain available to the SSN as the Project is not anticipated to affect availability of these areas.

There will be flow reductions in the lower Peterson Creek catchment as a result of mining activities during the Construction and Operation phases, but this will be restored to similar to existing conditions during the Decommissioning and Closure phase.

It is anticipated that the main project components (e.g., MRSF and the TSF) will be noticeable from lower Peterson Creek. The Peterson Creek water pond will also be visible. Visual disturbances will reduce to slight in some areas during the Post-Closure Phase.

Hunting Blind Complex

Avoidance of the Hunting Blind Complex is not feasible, as it is located within the proposed mine pit. Based on the stated importance of this site as a heritage resource for the SSN the magnitude of the effect is considered high. An appropriate mitigation strategy for this site will be determined in cooperation with the SSN and the Archaeology Branch.

In summary, based on the results of the assessment of effects on VCs that are linked to Aboriginal physical and cultural heritage interests (CULRTP, archaeological sites, Aboriginal and non-Aboriginal heritage sites), the Project is anticipated to result in moderate effects to heritage resources for the SSN. As described earlier, the Project will result in some disturbances to the availability, access and experience of sites associated with Pipsell including the Hunting Blind Complex, Goose Lake, portions of Peterson Creek and minor losses to areas surrounding Jacko Lake, and will impede the ability to use the sites for heritage purposes.

Given the importance of Pipsell to the SSN and the presence of unique features such as the Hunting Blind Complex, the effects are considered moderate. The residual effect can be partially reversed during the Post-Closure phase mainly through habitat rehabilitation and because sensorial disturbances will cease once Closure measure are fully executed.

Potential Burial Sites and Burial Cairns

No rock piles associated with burial sites were identified within the LSA. Rock piles located to the north of the LSA that are of interest to the SSN will not be affected by Project activities, therefore no residual effects are anticipated.

14.2.3.4 Residual Health Effects

Based on the results of the assessment of effects to Human Health (Section 10.4), and the summary of residual effects on VCs that are linked to Aboriginal health interest (air quality, drinking water, country foods and noise and vibration), the Project is not expected to have significant residual effects on SSN health.

Project activities are being designed so that emissions and exposures comply the relevant provincial or federal guidelines. Mitigation measures to control air and dust emissions outlined in the air quality effects assessment (Section 10.1), mitigation measures to control surface water and groundwater discharges outlined in the water quality effects assessment (Section 6.3) and mitigation measures to control noise and vibration outlined in the noise and vibration effects assessment (Section 10.5) will reduce Project emissions to levels that are protective of human health..

14.2.3.5 *Summary of Residual Effects*

Table 14.2-4 provides a summary of mitigation measures and residual effects for SSN other interests.

14.2.4 **Other Environmental Concerns Expressed by SSN**

This section discusses and provides KAM's responses to other general concerns raised by SSN (e.g., accidents and malfunctions, reclamation activities, changes to water quality, etc.).

14.2.4.1 *Water Quality and Quantity*

SSN has expressed a number of concerns with respect to changes in water quality and quantity, including:

- contamination of water bodies by acid rock drainage and metal leaching generated by Project activities;
- potential deterioration of water quality in Jacko Lake, Peterson Creek and the Thompson River;
- potential connectivity between Jacko Lake and the open pit that could result in seepage from Jacko Lake into the pit; and
- water quantity in Kamloops Lake from Project related withdrawals.

In addition, SSN raised concerns regarding potential effects on the Cherry Creek watershed, in particular through dust contamination and groundwater interaction in the vicinity of the Project. Based on the current Project infrastructure layout, no direct effects on water quality in the Cherry Creek watershed are anticipated. The air quality model does not predict a substantial increase of dustfall deposition concentrations in waterways distal to the site such as Cherry Creek. Groundwater is not predicted to migrate across the boundary between the Cherry Creek and Peterson Creek watersheds. Groundwater flow simulations suggest that the gradient induced by the open pit will further direct groundwater flow towards the mine site, and not towards the Cherry Creek watershed at the end of Operation.

Detailed results of the assessment of potential effects on surface and groundwater quality are presented in Section 6.3 and Section 6.5, respectively.

Water Quality

The SSN expressed concerns related to metal leaching and acid rock drainage and its potential effect on water quality, as well as concerns about the potential release of contaminants into Jacko Lake, Peterson Creek and the Thompson River. The Project has been designed to minimize adverse effects to surface water quantity and quality through the development and implementation of a Water Management and Hydrometric Monitoring Plan (Section 11.7). The Project has been designed to operate without direct effluent discharge. Water management strategies focus on diverting non-contact water, minimizing the amount of contact water (seepage and runoff) generated, and maximizing reclaim use of contact waters within the mine footprint.

Table 14.2-4. Summary of Adverse Residual Effects on SSN Other Interests

Other Aboriginal Interest	Potential Effect (Including Cumulative Effects)	Project Phase	Mitigation Measures	Residual Effect
Economic conditions	Decrease in Project activity could result in reductions in employment and income for SSN members.	Decommissioning and Closure	Implementation of a communications and transition program.	Decreased employment and income for SSN members after Project Closure.
	Pressure on SSN businesses to compete with the Project to attract and retain employees could lead to staff turnover and a need for higher wages.	Construction and Operation	Engagement with local business community and Community Liaison Group to jointly address potential challenges.	Increase in costs associated with staff turnover and increasing wages to compete against the Project for employees.
Social conditions	Reduced access for SSN members to health services due to additional stress placed on services by in-migrants.	Construction and Operation	<p>Establish a Socio-economic Monitoring Advisory Committee.</p> <p>Ongoing dialogue with service providers to inform them of workforce requirements and timing.</p> <p>Contracting a family physician to be the designated medical resource for the construction workforce.</p> <p>Contributing financially or in-kind to physician recruitment efforts and the new residency program for family physicians currently in place in Kamloops.</p> <p>Implementing a Socio-economic Monitoring Plan.</p>	Reduction in access for SSN members to health services.
	Potential increase in social problems associated with increased disposable income and migration.	Construction and Operation	<p>Offer counseling services to employees</p> <p>Provide money management training as required.</p> <p>Implement a zero tolerance policy with respect to drug and alcohol at the Project site for Project employees and contractors.</p> <p>Implement a Code of Conduct for Project workers.</p> <p>Establish a Socio-economic Monitoring Advisory Committee which will include the SSN.</p> <p>Work with local agencies to monitor Project socio-economic effects and to take corrective actions where appropriate.</p> <p>Implementation of a Socio-economic Monitoring Plan.</p>	Increased social problems in SSN communities if additional disposable income is spent unwisely

Other Aboriginal Interest	Potential Effect (Including Cumulative Effects)	Project Phase	Mitigation Measures	Residual Effect
Physical and cultural heritage resources	Project activities could result in disturbances to the availability, access and experience of sites that have cultural heritage value for the SSN	All	<p>Systematic data recovery. Mitigation measures approved by the Archaeology Branch and the SSN.</p> <p>Develop an Access Management Plan in consultation with Aboriginal Groups.</p> <p>Provide support to the SSN to participate in accessing, harvesting, and/or documenting plants or other resources of cultural value prior to the Project footprint disturbance.</p> <p>Work with the SSN to identify opportunities to support cultural heritage programming for SSN members.</p> <p>Implement a site disturbance policy.</p> <p>Mitigation measures to mitigate effects on CULRTP outlined in Section 8.5.</p> <p>Mitigation measures to control noise and vibration emissions outlined in Section 10.5.</p> <p>Mitigation measures to control air and dust emissions outlined in Section 10.1.</p> <p>Mitigation measures described in Section 8.3, Visual Impact/Aesthetic Features.</p>	Disturbances to the availability, access and experience of sites associated with Pipsell including the Hunting Blind Complex, Goose Lake, portions of Peterson Creek and minor portions of Jacko Lake
Health conditions	<p>Change in air quality could result in health risks for SSN members due to inhalation exposures to CACs and particulate-bound metals.</p> <p>Changes in soil, drinking water and country food quality could result in a health risks for SSN members associated with exposures to metals though direct contact and ingestion.</p>	<p>All</p> <p>All</p>	<p>Mitigation measures to control air and dust emissions outlined in the Air Quality section (Section 10.1).</p> <p>Mitigation measures to control surface water discharges outlined in the Surface Water Quality section (Section 6.4).</p> <p>Mitigation measures to control air and dust emissions outlined in the Air Quality section (Section 10.1).</p> <p>Mitigation measures to control surface water discharges outlined in the Surface Water Quality section (Section 6.4).</p>	<p>With the implementation of mitigation and management plans KAM will reduce Project emissions to levels that are protective of human health.</p> <p>With the implementation of mitigation and management plans KAM will reduce Project emissions to levels that are protective of human health.</p>

Mitigation measures to protect water quality include:

- implementing erosion prevention and sediment control measures, including isolation of work areas from waterbodies, establishing water diversion and sediment collection structures such as sediment traps, geotextile cloth, sediment fences, gravel berms, and straw bales to mitigate and control erosion and sediment;
- establishing water management ponds to capture and temporarily store contact runoff from a number of facilities, including TSF seepage and water that infiltrates the MRSF; and
- all contact water, including open pit runoff, will be pumped to the central pond where it will be reclaimed for reuse in the process plant.

In addition, KAM will implement the following management plans that contain measures that will protect surface water quality (refer to Chapter 11):

- Dust Control Plan;
- Erosion and Sediment Control Plan;
- Acid Rock Drainage Management Plan;
- Construction Waste Management Plan;
- Solid Waste Management Plan;
- Soil Salvage and Handling Plan;
- Hazardous Waste Management Plan (including liquid effluent disposal);
- Accidents and Malfunctions Management Plan;
- Emergency Response Plan;
- Reclamation and Closure Plan; and
- Fisheries and Aquatic Life Monitoring Plan.

The Project activities are not expected to result in significant adverse effects to water effluent quality in relation to concentrations of total and dissolved metals, nutrients, and chemicals (ions). (Section 6.3, Surface Water Quality).

Water will be monitored throughout the life of the Project, through the implementation of the Groundwater Quality Management and Monitoring Plan, the Surface Water Quality Management and Monitoring Plan, and the Hydrometric Monitoring Plan.

Potential effects on the current use of lands and resources in relation to changes in water quality are assessed in Section 8.5, CULRTP and Chapter 13, Aboriginal Interests (Rights and Title).

Jacko Lake

The majority of mine infrastructure will be located downstream of Jacko Lake. No residual effects on water quality at Jacko Lake have been identified (Section 6.3, Surface Water Quality). No parameters

are predicted to exceed the water quality guidelines and benchmarks under the most conservative scenarios for all Project phases.

Peterson Creek

Project-related effects to water quality in Peterson Creek are associated with dust deposition and groundwater seepage from the MRSFs and the TSF. Water quality predictions for most parameters in Peterson Creek are below guideline levels through all Project phases, with the exception of sulphate, chloride, and selenium; where existing baseline conditions show elevated concentrations. For these parameters, science-based environmental benchmarks were developed, based on the site specific conditions and the most sensitive species found in the creek. Predictions for these parameters are below benchmark levels, even for the most conservative scenarios (Section 6.3). Fish and aquatic life monitoring will be implemented throughout the life of the Project to effectively monitor any potential accumulation of contaminants in aquatic life and implement any adaptive follow-up programs as needed.

Thompson River

No residual effects have been identified in the Thompson River. Water quality at the Thompson River will not be degraded by Project activities.

Water Quantity

The Project components and activities, including construction of the TSF, various MRSFs and water management ponds, have the potential to affect streamflows in Peterson Creek (Lower). Water supply for the Project will be pumped from Kamloops Lake. The Project has been designed to minimize adverse effects to water quantity (and quality) through the development and implementation of a Water Management Plan (Chapter 11). The plan describes a range of mitigation measures to reduce or eliminate the potential effects of the Project on surface water quantity, including the reuse of contact water in the process plant, thereby limiting the amount of make-up water required for process.

Kamloops Lake and the Thompson River

The Project will extract water from the Kamloops Lake for use as make-up water during Construction and Operation (e.g., filling the TSF pond for start-up, water for the Process plant, potable water and dust control). This has the potential to reduce streamflows in Kamloops Lake and the Thompson River. Flow abstractions are not planned beyond Operation.

The Project is being designed to minimize water demand, with water recycled on-site to its greatest extent. At peak operation, maximum water use from Kamloops Lake will be 1,700 m³/h. This represents less than 0.3% of the average monthly flow through the lake and less than 0.4% of the lake lowest flow. The magnitude of changes on Kamloops Lake streamflows are considered negligible and will not affect other water licence holders. Changes in streamflows further downstream, such as the Thompson River will be even less and are also considered negligible. Detailed results of the assessment of potential effects on surface water quantity is presented in Section 6.4.

Cumulative effects with other existing and proposed actions, including existing and proposed New Afton water licenses has little impact on the maximum abstraction rate from Kamloops Lake (refer to Section 6.4.)

Jacko Lake

The SSN are concerned about changes to water quantity at Jacko Lake. The SSN raised concerns about the potential connectivity between Jacko Lake and the open pit, which could result in seepage from Jacko Lake into the pit.

The Project will result in minor changes to surface water quantity at Jacko Lake. The current drainage area of the Jacko Lake watershed will be reduced by about 80 ha following the construction of the MRSF and the downstream North Embankment Pond 1 and a minor expansion of the open pit into Jacko Lake. This represents approximately 2% of the 3,730 ha watershed of Jacko Lake.

In addition, flows into Jacko Lake will be slightly reduced as a result of a progressive drawdown of the bedrock groundwater table around the open pit, as the pit is excavated downward. Groundwater simulations indicate that small volumes of water will seep into the open pit from Jacko Lake through bedrock at the end of mining.

Changes to water quantity in Jacko Lake are considered not significant and will be mitigated through the implementation of a Water Management Plan. Refer to Section 6.4, Surface Water Quantity, for further details. Potential effects to SSN rights due changes in water quantity are assessed in Chapter 13, Aboriginal Interests (Rights and Title) and Section 8.5, CULRTP.

Peterson Creek

Residual effects on surface water quantity at Peterson Creek are predicted to be not significant (moderate) for annual flow volumes and low flows and not significant (minor) for monthly flow distribution and peak flows. Annual streamflow volumes in Peterson Creek (Lower) will be reduced by approximately 9% under average precipitation conditions. Downstream effects (to the confluence with the South Thompson River) will be less noticeable and are also considered not significant.

Overall residual effects on surface water quantity due to Project activities are predicted to be not significant for all water quantity indices assessed. Detailed results of the assessment are presented in Section 6.4, Surface Water Quantity.

Potential effects to Aboriginal rights due to changes in water quantity are assessed in Chapter 13, Aboriginal Interests (Rights and Title) and Section 8.5, CULRTP.

14.2.4.2 Accidents and Malfunctions

The SSN has expressed concerns regarding potential accidents or failure of the TSF.

Accidents and malfunctions are assessed in Section 17.6 and include scenarios for TSF and MRSF failure, Kinder Morgan pipeline leakage or failure, and other relevant incident scenarios. KAM will implement design and operational procedures to limit risks associated with malfunctions and accidents. The TSF embankment will be designed in accordance with the Canadian Dam Association's

Dam Safety Guidelines. The TSF design has been optimized to reduce the risks of failure of the TSF by using conventional thickened tailings, and by using mine rock to buttress the embankments.

The Kinder Morgan pipeline currently runs through the Project area. KAM has engaged Kinder Morgan to prepare and submit a Section 58 and Section 74 permit to the NEB, proposing to reroute the Pipeline further to the West of the Project footprint.

KAM will implement an Accidents and Malfunctions Management Plan to proactively manage risks associated with accidents, malfunctions or unplanned events throughout the life of the Project. KAM has extended an offer to the SSN to participate in the design of the TSF so that the SSN can feel comfortable with the design and safety of the facility. All costs for an SSN representative would be paid by KAM.

14.2.4.3 Reclamation

The Project will implement a Mine Closure and Reclamation Plan (Section 3.17). Environmental monitoring plans will be developed to inform the Environmental Management System and to support progressive reclamation and closure at the end of mine life.

Closure planning has guided Project design with the end objective of returning the site to the Agricultural Land Reserve to support the same land uses in place today. A key factor in the Project design is consideration of the physical and chemical stability of the reclaimed structures in the long term and preserving, where possible, or restoring mine-affected waterways.

Detailed description of the Mine Closure and Reclamation Plan is presented in Section 3.17.

14.2.4.4 Assessment of Cumulative Effects

SSN expressed concerns regarding increases in the number of projects in their traditional territory. KAM completed Cumulative Effects Assessments (CEAs) for VCs where the Project-specific effects assessments identified a residual effect. The results of these assessments are described in each respective VC in Chapters 6 through 10. A summary of the expected cumulative environmental, economic, social, heritage, and health effects are summarized in Chapter 17.

The assessment in this section has considered the results of the cumulative effects assessments developed in Chapters 6 through 10 when assessing potential effects on SSN other interests.

14.3 ASHCROFT INDIAN BAND

14.3.1 Other Aboriginal Interests and Concerns Identified in the Project Area

A number of activities have been undertaken to understand the AIB interests and concerns. KAM initiated discussions with the AIB in January 2011. Consultation activities have included in-person meetings with AIB representatives, exchange of written communication, and a site tour. In October 2014, KAM signed a Consultation and Benefits Agreement with AIB to facilitate their participation in consultation and engagement activities and support their review of the Application/EIS. Detailed

information on consultation activities undertaken with AIB is provided in Chapter 15, Procedural Aspects of Aboriginal Consultation.

In addition to reviewing KAM consultation records, AIB interests and concerns were identified by reviewing feedback provided by AIB to the Ajax Project EA Working Group, including comments on the draft AIR/EIS Guidelines. Table 14.3-1 provides a summary of the other interests and concern identified by the AIB in relation to the Project. It also shows how the concerns were identified and the associated VC in Part B where direct potential Project effects are assessed. Issues related to Aboriginal rights and title are addressed in Chapter 13, Aboriginal Interests (Rights and Title). Potential effects on CULRTP are assessed in Section 8.5, CULRTP. Appendix 15-B provides a comprehensive list of the issues raised by the AIB and KAM's responses to those issues.

Table 14.3-1. Other Interests and Concerns Expressed by the AIB

Other Interests and General Concerns	AIB Issue/Concern/Comment	Manner Raised	Valued Component Affected
Economic conditions	Interest expressed in contracting, employment, training and procurement opportunities.	Consultation	Labour Force, Employment and Training
	Concern about the potential use of temporary foreign workers as employees for the Project.	Consultation	Labour Force, Employment and Training
Health conditions	Potential effects on cattle from metals	Consultation	Human Health
Water quality and quantity	General concerns about changes to water quantity and quality.	Consultation	Surface Water Quality Surface Water Quantity Groundwater Quality Groundwater Quantity
	Potential effects on Thompson River.	BC EAO Working Group Meeting	Surface Water Quality Surface Water Quantity
Cumulative effects	Concern about cumulative effects (including the Kinder Morgan pipeline).	Consultation	Multiple VCs as appropriate

At the time of writing, consultation records and secondary research did not identify key features that are important to the AIB (such as Pipsell or the hunting blind identified by the SSN).

14.3.2 Assessment of Effects on Identified AIB Other Interests

14.3.2.1 Economic Conditions

AIB has expressed interest in benefiting from potential employment, contracting and training and skills development opportunities provided by the Project, and is concerned that the Project would use foreign workers to fulfill its labour needs

As discussed in Section 2.7, Project Benefits, the Project will generate considerable regional and local economic activity during Construction and Operation, including direct, indirect, and induced employment and business activity. The Project will require a large workforce in a range of

occupations. This includes positions in trades, engineering and technical, management and supervisory, and administrative and support occupations. The nature and extent of these opportunities is discussed in detailed in Section 2.7.

KAM recognizes that proactive measures are needed to enhance employment of Aboriginal workers, and proposes a Human Resources Development Policy that includes various measures to enhance employment and training opportunities for local communities and Aboriginal Groups including:

- commitment to hiring locally;
- pursuing partnership opportunities with local education and training institutions to ensure that the expertise required for Operation is available;
- commitment to maximize recruitment of qualified Aboriginal candidates, in accordance with any established agreements;
- implementing cross-cultural training to recognize and support diversity, multicultural workforce; and
- facilitating continued training and development of employees, including provision of financial assistance to pursue educational opportunities and professional designations.

Additional details on the KAM Human Resources Development Policy is provided in Section 2.7, Project Benefits.

As the Project moves out of Operation, there will be a net loss of employment and contracting opportunities. To mitigate potential adverse effects associated with the reduction in Project employment and contracting opportunities, KAM will implement a Communications and Transitioning Program. A workforce transition plan will be developed and implemented to support education and training and career development opportunities to assist employees in obtaining employment elsewhere. Potentially affected contractors will be informed regarding status and schedule as the Project progresses from Operation into Decommissioning and Closure. This will allow them to prepare for any transitioning that may be required (see Section 7.2, Labour Force, Employment and Training, for additional details). In addition, investments in training and capacity-development and skills gained at the Project are expected to improve workers employability and thus their ability to obtain jobs after Project Closure.

To assist local businesses to take advantage of business opportunities with the Project, KAM is developing a business procurement plan, with specific elements to enhance local business participation, including Aboriginal businesses (see Section 7.4, Business).

It is expected that a number of AIB members and businesses will benefit from these employment and contracting opportunities created by the Project.

14.3.2.2 *Health Conditions*

AIB is concerned that deposition of metals from mine activities could contaminate livestock.

KAM has conducted the HHERA to evaluate existing human and ecological exposures to metals in soil, water, country foods (including cattle) and vegetation, and CACs in air as a result of the Project.

Section 10.3, country foods, assesses potential changes in metal concentrations in plant and animal tissue (including cattle, wild meat, fish, wild edible plants, and garden produce). The assessment found that increases in trace metal concentrations between baseline conditions and modelled conditions are very small over the life of the Project and do not represent an unacceptable health risk. Results of this assessment are used in conjunction with change in metal concentrations from other ingestion and direct contact pathways (soil, drinking water etc.) and inhalation exposures (air pathway) to estimate the overall change in potential human health risk.

Potential Project effects to human health are addressed in Section 10.4. The assessment considers eight human receptor areas, including the Kamloops IR #1, which has been used to represent all Aboriginal receptors. AIB reserves are considerably further away from the Project than the Kamloops IR #1. The closest AIB reserve (Ashcroft IR #4) is located approximately 63 km away from the Project, and residents would be less exposed to Project emissions than those who reside at the Kamloops IR #1.

Project activities are being designed so that emissions and exposures comply with relevant provincial or federal guidelines. The implementation of mitigation measures and management plans will reduce Project emissions (i.e., air emissions and dust deposition, potential metal loading to waterbodies and soil) to levels that are protective of human health. Effects on wildlife and plants (including metal uptake by plants) will be monitored throughout the life of the Project by implementing the Wildlife and Vegetation Monitoring Plan (Chapter 11). Detailed results of the Human Health assessment are presented in Section 10.4.

Effects on temporary users who may hunt or fish in the area (e.g., AIB members fishing in Thompson River) are assessed in Section 8.5, CULRTP and Chapter 13, Aboriginal Interests (Rights and Title).

14.3.2.3 *Other Environmental Concerns Expressed by AIB*

Water Quantity and Quality

AIB has expressed concerns with respect to changes to water quantity and quality, in particular with respect to the potential effects on the Thompson River. The Project has been designed to minimize adverse effects to surface water quantity and quality through the development and implementation of a Water Management and Hydrometric Monitoring Plan (Section 11.7). The Project has been designed to operate without direct effluent discharge. Water management strategies focus on diverting non-contact water, minimizing the amount of contact water (seepage and runoff) generated, and maximizing reclaim use of contact waters within the mine footprint, thereby limiting the amount of make-up water required for process.

Mitigation measures to protect water quality and quantity include:

- implementing erosion prevention and sediment control measures, including isolation of work areas from waterbodies, establishing water diversion and sediment collection structures such as sediment traps, geotextile cloth, sediment fences, gravel berms, and straw bales to mitigate and control erosion and sediment;

- establishing water management ponds to capture and temporarily store contact runoff from a number of facilities, including TSF seepage and water that infiltrates the MRSF; and
- All contact water, including open pit runoff, will be pumped to the central pond where it will be reclaimed for reuse in the process plant.

In addition, KAM will implement the following management plans that contain measures that will protect surface water quality (see Chapter 11):

- Air Quality Monitoring and Dust Control Plan;
- Erosion and Sediment Control Plan;
- Metal Leaching and Acid Rock Drainage Management and Monitoring Plan;
- Construction Waste Management Plan;
- Solid Waste Management Plan;
- Soil Salvage and Handling Plan;
- Hazardous Waste Management Plan (including liquid effluent disposal);
- Risk Management Plan (Accidents and Malfunctions);
- Emergency Response Plan;
- Reclamation and Closure Plan; and
- Fisheries and Aquatic Life Monitoring Plan.

With the implementation of mitigation and management measures Project activities are predicted to result in negligible to minor streamflow changes to Peterson Creek and Kamloops Lake. Given the minor magnitude and limited geographic extent, these effects are not expected to be significant. Detailed results of the assessment are presented in Section 6.4, Surface Water Quantity. Similarly, Project activities are not expected to result in significant adverse effects to water effluent quality in relation to concentrations of total and dissolved metals, nutrients, and chemicals (ions) (Section 6.3, Surface Water Quality).

Water will be monitored throughout the life of the Project, through the implementation of the Groundwater Quality Management and Monitoring Plan, the Surface Water Quality Management and Monitoring Plan, and the Hydrometric Monitoring Plan.

Potential effects to Aboriginal rights due to changes in water quality and quantity are assessed in Chapter 13, Aboriginal Interests (Rights and Title) and Section 8.5, CULRTP.

Kamloops Lake and the Thompson River

The Project will extract water from the Kamloops Lake for use as make-up water during Construction and Operation (e.g., filling the TSF pond for start-up, water for the Process plant, potable water and dust control). This has the potential to reduce streamflows in Kamloops Lake and the Thompson River. Flow abstractions are not planned beyond Operation.

The Project is being designed to minimize water demand, with water recycled on-site to its greatest extent. At peak operation, maximum water use from Kamloops Lake will be 1,700 m³/h. This represents less than 0.3% of the average monthly flow through the lake and less than 0.4% of the lake lowest flow. The magnitude of changes on Kamloops Lake streamflows are considered negligible and will not affect other water licence holders. Changes in streamflows further downstream, such as the Thompson River will be even less and are also considered negligible. Detailed results of the assessment of potential effects on surface water quantity is presented in Section 6.4.

Cumulative effects with other existing and proposed actions, including existing and proposed New Afton water licenses has little impact on the maximum abstraction rate from Kamloops Lake (refer to Section 6.4.)

No residual effects on water quality have been identified in the Thompson River. Water quality at the Thompson River will not be degraded beyond background (refer to Section 6.3).

Cumulative Effects

AIB has expressed concerns regarding cumulative effects, in particular with respect to the Kinder Morgan Pipeline. The Proponent completed CEA for VCs where the Project-specific effects assessments identified a residual effect. The assessment methodology has been developed in accordance with BC EAO and CEA Agency regulatory requirements and is explained in Chapter 5, Assessment Methodology. A number of projects and activities have been included in the Cumulative Effects Assessments as potential actions that could interact with the Project, including the Kinder Morgan's Trans Mountain Pipeline System (current and expansion). The results of these assessments are described in each respective VC in Chapters 6 through 10. A summary of the expected cumulative environmental, economic, social, heritage, and health effects are summarized in Chapter 17.

14.4 LOWER NICOLA INDIAN BAND

14.4.1 Other Aboriginal Interests and Concerns Identified in the Project Area

KAM initiated discussions with the LNIB in January 2011. Since that time, KAM has continued to meet with LNIB leadership to discuss interests and concerns related to the Project. Approaches used to gather information on LNIB interest and other concerns include meetings with LNIB representatives, written communication, a community meeting and a site tour. In addition, feedback provided by LNIB to the Ajax Project Working Group was reviewed. LNIB and KAM have finalized a mutually agreeable Capacity Funding Agreement to support LNIB's participation in the assessment of Project. Detailed information on consultation activities undertaken with LNIB is provided in Chapter 15, Procedural Aspects of Aboriginal Consultation.

Table 14.4-1 provides a summary of the other interests and concern identified by the LNIB in relation to the Project. It also shows how the concerns were identified and the associated VC in Part B where direct potential Project effects are assessed. Issues related to Aboriginal rights and title are addressed in Chapter 13, Aboriginal Interests (Rights and Title). Potential effects to CULRTP are assessed in Section 8.5, CULRTP. Appendix 15-B provides a comprehensive list of the issues raised by the LNIB and KAM's responses to these issues.

Table 14.4-1. Other Interests and Concerns Expressed by the LNIB

Other Interests and General Concerns	LNIB Issue/Concern/Comment	Manner Raised	Valued Component Affected
Economic conditions	Interest in potential education, training, and employment opportunities.	Consultation	Labour Force, Employment and Training
	Interest in developing economic and business opportunities.	Consultation	Business
	Interest in creation of economic diversification.	Consultation	Economic Diversification
Water quantity and water quality	Potential downstream effects from changes in water quantity and quality.	Consultation	Surface Water Quality Surface Water Quantity Groundwater Quality Groundwater Quantity
Accidents and malfunctions	Potential failure of the TSF, including potential effects on the Kinder Morgan pipeline, which is located under the proposed mine rock and TSF.	Consultation	n/a

At the time of writing, consultation records and secondary research did not identify key features that are important to the LNIB (such as Pipsell or the hunting blind identified by the SSN).

14.4.2 Assessment of Effects on Identified LNIB Other Interests

14.4.2.1 Economic Conditions

LNIB has expressed interest in economic diversification and in benefiting from potential education, training, and employment and business opportunities provided by the Project.

As discussed in Section 2.7, Project Benefits, the Project will generate considerable regional and local economic activity during Construction and Operation, including direct, indirect, and induced employment and business activity. The Project will require a large workforce in a range of occupations, including positions in trades, engineering and technical, management and supervisory, and administrative and support occupations. The nature and extent of these opportunities is discussed in detailed in Section 2.7.

In addition, Project employment and business opportunities are expected to positively contribute to the diversification of the local and regional economies. Creating mining jobs will help to diversify basic employment and to support current non-basic employment in the region, reducing the economy's vulnerability to changes in the forestry sector (see Section 7.6, Economic Diversification).

KAM recognizes that proactive measures are needed to enhance employment of Aboriginal workers, and proposes a Human Resources Development Policy that includes various measures to enhance employment and training opportunities for local communities and Aboriginal Groups including:

- commitment to hiring locally;

- pursuing partnership opportunities with local education and training institutions to ensure that the expertise required for Operation is available;
- commitment to maximize recruitment of qualified Aboriginal candidates, in accordance with any established agreements;
- implementing cross-cultural training to recognize and support diversity, multicultural workforce; and
- facilitating continued training and development of employees, including provision of financial assistance to pursue educational opportunities and professional designations.

Additional details on the KAM Human Resources Development Policy is provided in Section 2.7, Project Benefits.

As the Project moves out of Operation, there will be a net loss of employment and contracting opportunities. To mitigate potential adverse effects associated with this reduction in Project employment and contracting, KAM will implement a Communications and Transitioning Program. A workforce transition plan will be developed and implemented to support education and training and career development opportunities to assist employees in obtaining employment elsewhere. Potentially affected contractors will be informed regarding status and schedule as the Project progresses from Operation into Decommissioning and Closure. This will allow them to prepare for any transitioning that may be required (see Section 7.2, Labour Force, Employment and Training, for additional details). In addition, investments in training and capacity-development and skills gained at the Project are expected to improve workers employability and thus their ability to obtain jobs after Project Closure.

To assist local businesses to take advantage of business opportunities with the Project, KAM is developing a business procurement plan, with specific elements to enhance local business participation, including Aboriginal businesses.

It is expected that a number of LNIB members and businesses will benefit from these employment and contracting opportunities created by the Project.

14.4.2.2 Other Environmental Concerns Expressed by LNIB

Water Quantity and Quality

LNIB is concerned about potential downstream effects from changes in water quantity and quality, although no specific waterbodies were identified.

Personal communications with LNIB members during consultation activities revealed that LNIB members consider Spences Bridge, at the confluence of the Thompson and Nicola Rivers, an important location for salmon fishing (Chapter 12, Aboriginal Background).

No residual effects on water quality or quantity have been identified in the Thompson River. Water quality at the Thompson will not be degraded beyond background (refer to Section 6.3).

Water withdrawal from the Kamloops Lake will have negligible effects in the Thompson River stream flows (refer to Section 6.4).

The Project has been designed to minimize adverse effects to surface water quantity and quality through the development and implementation of a Water Management and Hydrometric Monitoring Plan (Section 11.7). The Project has been designed to operate without direct effluent discharge. Water management strategies focus on diverting non-contact water, minimizing the amount of contact water (seepage and runoff) generated, and maximizing reclaim use of contact waters within the mine footprint, thereby limiting the amount of make-up water required for process.

Mitigation measures to protect water quality and quantity include:

- implementing erosion prevention and sediment control measures, including isolation of work areas from waterbodies, establishing water diversion and sediment collection structures such as sediment traps, geotextile cloth, sediment fences, gravel berms, and straw bales to mitigate and control erosion and sediment;
- establishing water management ponds to capture and temporarily store contact runoff from a number of facilities, including TSF seepage and water that infiltrates the MRSF; and
- all contact water, including open pit runoff, will be pumped to the central pond where it will be reclaimed for reuse in the process plant.

In addition, KAM will implement the following management plans that contain measures that will protect surface water quality (see Chapter 11):

- Air Quality Monitoring and Dust Control Plan;
- Erosion and Sediment Control Plan;
- Metal Leaching and Acid Rock Drainage Management and Monitoring Plan;
- Construction Waste Management Plan;
- Solid Waste Management Plan;
- Soil Salvage and Handling Plan;
- Hazardous Waste Management Plan (including liquid effluent disposal);
- Risk Management Plan (Accidents and Malfunctions);
- Emergency Response Plan;
- Reclamation and Closure Plan; and
- Fisheries and Aquatic Life Monitoring Plan.

With the implementation of mitigation and management measures Project activities would result in not significant (negligible to minor) streamflow changes to Peterson Creek and Kamloops Lake (Section 6.4, Surface Water Quantity). Similarly, Project activities are not expected to result in significant adverse effects to water effluent quality in relation to concentrations of total and dissolved metals, nutrients, and chemicals (ions) (Section 6.3, Surface Water Quality).

Water will be monitored throughout the life of the Project, through the implementation of the Groundwater Quality Management and Monitoring Plan, the Surface Water Quality Management and Monitoring Plan, and the Hydrometric Monitoring Plan.

Potential effects to CULRTP and Aboriginal rights due to changes in water quality and quantity are assessed in Section 8.5 and Chapter 13, respectively.

Accidents and Malfunctions

The LNIB has expressed concerns regarding potential failure of the TSF, including potential effects on the Kinder Morgan pipeline, which is located under the proposed mine rock and TSF.

Accidents and Malfunctions are assessed in Section 17.6 and include scenarios for TSF and MRSFs failure and Kinder Morgan pipeline leakage or failure. KAM will implement design and operational procedures to limit risks associated with malfunctions and accidents. The TSF embankment will be designed in accordance with the Canadian Dam Association's Dam Safety Guidelines. The TSF design has been optimized to reduce the risks of failure of the TSF by using conventional thickened tailings, and by using mine rock to buttress the embankments

The Kinder Morgan pipeline currently runs through the Project area. KAM has engaged Kinder Morgan to prepare and submit a section 58 and section 74 permit to the NEB, proposing to reroute the Pipeline further to the West of the Project footprint.

KAM will implement an Accidents and Malfunctions Management Plan to proactively manage risks associated with accidents, malfunctions or unplanned events throughout the life of the Project. Aboriginal Groups and other stakeholders will be provided opportunity to engage in preparedness planning as the Project develops.

14.5 WHISPERING PINES/ CLINTON INDIAN BAND

14.5.1 Other Aboriginal Interests and Concerns Identified in the Project Area

The CEA Agency identifies the WP/CIB as potentially affected by the Project and directed KAM to engage with and collect information from the WP/CIB. In addition, on July 23, 2015, the BC EAO issued a section 13 Order identifying WP/CIB as a "Notification First Nation" and directing KAM to provide information to the WP/CIB regarding the Project.

KAM notified WP/CIB about the Project in March 2013. Since that time, KAM has continued to develop the relationship with WP/CIB leadership. WP/CIB provided comments on the June 2014 and November 2014 revised AIR/EIS Guidelines for the Project. In May 2015, KAM and WP/CIB signed a Capacity Funding Agreement to facilitate WP/CIB participation in the EA process. Detailed information on consultation activities undertaken with the SSN is provided in Chapter 15, Procedural Aspects of Aboriginal Consultation.

KAM has gathered information about the interests and concerns of the WP/CIB through in-person meetings, written communication and by reviewing comments provided by WP/CIB on the draft

AIR/EIS Guidelines. Table 14.5-1 provides a summary of the other interests and concern identified by the WP/CIB to date in relation to the Project. It also shows how the concerns were identified and the associated VC in Part B where direct potential Project effects are assessed. Appendix 15-B provides a comprehensive list of the issues raised by the WP/CIB and KAM’s responses to these issues. Issues related to Aboriginal rights and title are addressed in Chapter 13, Aboriginal Interests (Rights and Title). Potential effects on CULRTP are assessed in Section 8.5, CULRTP.

Table 14.5-1. Other Interests and Concerns Expressed by the WP/CIB

Other Interests and General Concerns	WP/CIB Issue/Concern/Comment	Manner Raised	Valued Component Affected
Economic conditions	Potential effects on tourism opportunities from sensory disturbances such as effects to aesthetic and visual resources and noise.	Consultation	Business Outdoor Recreation
	Potential increase of unemployment and poverty due to mine activities.	AIR/EIS Guidelines Comments	Community Health and Well-being
	Potential effects of boom and bust periods on employment, including spillover effects.	AIR/EIS Guidelines Comments	Labour Force, Employment and Training Community Health and Well-being
Social conditions	Potential effects on access to health care facilities and medical practitioners (i.e., loss of physicians and health personnel) due to mine Operation.	AIR/EIS Guidelines Comments	Infrastructure, Public Facilities, and Services Community Health and Well-being
Health conditions	Potential effects of air pollution on human health including: <ul style="list-style-type: none"> • effects from chemicals in blast emissions (including uranium) • effects from transportation-related emissions (large diesel generators, heavy equipment) on nearby Indian Reserves and traditional use areas • effects from chemicals in fugitive dust on nearby traditional use areas • potential for dust to be distributed at considerable distance from the mine site including to WP/CIB Reserve No 4 	Consultation AIR/EIS Guidelines Comments	Human Health Air Quality
	Potential contamination of plants, wildlife, and country foods, including through soil contamination and dust emissions	Consultation AIR/EIS Guidelines Comments	Human Health Country Foods
	Potential sensory disturbances (noise and vibration effects) for those residing on the WP/CIB Indian Reserves.	Consultation	Noise and Vibration

Other Interests and General Concerns	WP/CIB Issue/Concern/Comment	Manner Raised	Valued Component Affected
Water quantity and water quality	Effects on water quality from acid rock drainage and other potential contamination during and after production.	Consultation	Surface Water Quality Groundwater Quality
	Concern about the significant amount of water that will be used by the Project from Kamloops Lake and the Thompson River, which could deplete water resources available for the community and other uses including cattle and hay ranching.	Consultation	Surface Water Quantity
	Potential effects on water quality due to dust deposition on nearby waterbodies.	Consultation AIR/EIS Guidelines Comments	Surface Water Quality
Reclamation and closure	Potential for contamination during the Post-Closure phase.	Consultation	Surface Water Quality Groundwater Quality Human Health
	Potential use of contaminated soil in reclamation programs.	AIR/EIS Guidelines Comments	Geology, Landforms and Soils
Accidents and malfunctions	Potential effects on traditional resources from a spill or accident along the transportation corridor.	AIR/EIS Guidelines Comments	n/a
	Potential failure of mine facilities (in particular the TSF and the MRSF, as well as potential accidents/malfunctions associated with the Kinder Morgan pipeline	AIR/EIS Guidelines Comments Consultation	n/a
Cumulative effects	Potential cumulative effects of various mining Operation on traditional land use.	Consultation AIR/EIS Guidelines Letter	Multiple VCs as appropriate

At the time of writing, consultation records and secondary research did not identify key features that are important to the WP/CIB (such as Pipsell or the hunting blind identified by the SSN).

14.5.2 Assessment of Effects on Identified WP/CIB Other Interests

14.5.2.1 Economic Conditions

Tourism and Outdoor Recreational Opportunities

As described in Section 7.4, Business, tourism has become an increasingly important component of the local and regional economy. The tourism market is both domestic and international and mainly

consists of opportunities related to fishing, biking, hiking, snowshoeing, skiing and various other outdoor opportunities.

Section 8.9, Outdoor Recreation, assesses the effects of the Project on outdoor recreation activities. The assessment considers reduced access to recreational areas, diminished quality of outdoor recreation experience and reduced recreational opportunities resulting from changes to resources. A wide array of existing outdoor recreation activities was examined. With mitigation (e.g., development or enhancement of alternative recreation opportunities), the assessment concludes that adverse effects on outdoor recreation resulting from the Project will be not significant (minor to moderate). Refer to Section 8.9 for a detailed assessment of Project effects on Outdoor Recreation Opportunities and proposed mitigation measures.

Boom and Bust and Potential Unemployment

WP/CIB raised concerns regarding the potential for a “boom and bust” economic cycle, typically characterized by an increase in employment and income and a subsequent drop in employment and income following mine closure. The Project will generate considerable economic activity (direct, indirect, and induced jobs and business activity); however, social problems may occur during both the boom and bust ends of this cycle, including effects on family dynamics and family finances due to possible loss of income at the end of the boom cycle.

An adverse economic effect is predicted at Decommissioning and Closure associated to reduction of Project employment and business opportunities. To mitigate this potential adverse effect, KAM will implement a Communications and Transitioning Program. A workforce transition plan will be developed and implemented to support education and training and career development opportunities to assist employees in obtaining employment elsewhere. Potentially affected contractors will be informed regarding status and schedule as the Project progresses from Operation into Decommissioning and Closure. This will allow them to prepare for any transitioning that may be required (see Section 7.2, Labour Force, Employment and Training, for additional details). In addition, investments in training and capacity-development and skills gained at the Project are expected to improve workers employability and thus their ability to obtain jobs after Project Closure.

14.5.2.2 Social Conditions

WP/CIB is concerned that the Project could affect access to health care facilities and medical practitioners, including loss of physicians and health personnel due to mine location.

The QHS, located on Kamloops IR #1, also provides services to the WP/CIB members. Health care staff visit the WP/CIB Indian Reserves every month. In 2014, a total of 10 WP/CIB members were served by the QHS. The centre currently does not have a doctor and many of its members need family doctors. For additional details on the QHS, see Chapter 12.

There is no specific information about health services accessed off-reserve by WP/CIB members, but it is expected that specialist care is accessed through the IHA facilities in Kamloops and other communities in the TNRD. As described earlier, healthcare services in Kamloops are facing shortage of family doctors and the RIH, the primary medical facility in Kamloops, currently operates above

its capacity. The emergency room is at capacity and there are insufficient in-patient beds (Section 8.1, Infrastructure, Public Facilities and Services).

As estimated in Section 8.1, the temporary influx of non-resident workers to the city of Kamloops will slightly increase the demand for emergency services at the RIH during the two years of Construction phase. This could to some extent affect the ability of WP/CIB members to access emergency services at RIH.

The permanent in-migration of workers and their families during Operation will likely increase the demand for family physicians. This could exacerbate the shortage of family doctors in Kamloops in the short term and affect the ability of the QHS to attract a new physician. The predicted influx of population during Operation, represent less than 1% of the population of Kamloops and is expected to fall within the City's growth projections used for planning purposes.

An outmigration of physicians and/or medical professionals due to deterioration of the community image could exacerbate the pre-existing shortage of family doctors in Kamloops. The number of physicians anticipated to leave Kamloops is expected to be small. Mitigation measures implemented by KAM and concerted recruitment efforts currently in place are expected to increase the supply of doctors in the LSA (refer to Section 10.7 Community Health and Well-being for additional details).

Mitigation measures to reduce potential Project effects on local health services will include:

- establishing a Socio-economic Monitoring Advisory Committee, with participation of municipal and regional governments, Aboriginal representatives, KAM, and relevant local service providers (e.g., health service representatives, RCMP). This committee will be involve in monitoring and providing input to potential adaptive measures;
- on-going dialogue with service providers to inform them of workforce requirements and timing;
- contracting a family physician to be the designated medical resource for the construction workforce. This physician would provide services such as physicals, inoculations, and routine medical attention for minor injuries and illnesses; and
- contributing financially or in-kind to physician recruitment efforts and the new residency program for family physicians currently in place in Kamloops.

Refer to Chapter 8, Assessment of Potential Social Effects, for more information about potential Project effects and mitigation on Social VCs.

With the implementation of mitigation measures, residual effects on the ability of the WP/CIB to access health care services are expected to be negligible.

14.5.2.3 *Health Conditions*

During consultation activities WP/CIB expressed concerns regarding potential effects to human health from air contaminants (i.e., from diesel exhaust, blast emissions, and transportation activities). WP/CIB are also concerned regarding contamination of country foods and potential sensory disturbances affecting WP/CIB members residing in their reserves.

Section 10.3, Country Foods, assesses potential changes in metal concentrations in plant and animal tissue (including cattle, wild meat, fish, wild edible plants and garden produce). The assessment found that increases in trace metal concentrations between baseline conditions and modelled conditions are very small over the life of the Project and do not represent an unacceptable health risk.

Potential Project effects to human health are addressed in Section 10.4. The assessment considers all potential exposure pathways (including air, soil, drinking water and country foods), for human receptors potentially affected by the Project (Aboriginal and non-Aboriginal), including sensitive members of the population (young children, the elderly, pregnant women, etc.).

The Human Health VC considers eight human receptor areas, including the Kamloops IR #1, which has been used to represent all Aboriginal receptors. WP/CIB reserves are further away from the Project than the Kamloops IR #1. Whispering Pines #4, located on the West side of the Thompson River, is the closest and most populated WP/CIB reserve. The reserve is located approximately 40 Km away from the Project and residents would be less exposed to Project emissions than those who reside at the Kamloops IR #1.

Project activities are not predicted to result in an increase in health risk for WP/CIB members residing on reserves. Project activities are being designed so that emissions and exposures comply with relevant provincial or federal guidelines. The implementation of mitigation measures and management plans will reduce Project emissions (i.e., air emissions and dust deposition, potential metal loading to waterbodies and soil) to levels that are protective of human health. Effects on wildlife and plants (including metal uptake by plants) will be monitored throughout the life of the Project by implementing the Wildlife and Vegetation Monitoring Plan (Chapter 11). Detailed results of the Human Health assessment are presented in Section 10.4.

Effects on WP/CIB temporary users who may hunt or fish in the area are assessed in Section 8.5, CULRTP and Chapter 13, Aboriginal Interests (Rights and Title).

Noise and Vibration

The noise and vibration assessments (Section 10.5) consider potential effects on a list of sensitive receptors that could be most affected by the Project. These are receptors closest to the Project boundary. Other receptors further away from the Project are expected to be less affected than these sensitive receptors as noise and vibration levels are expected to attenuate at increasing distances from the sources. The assessment considers the worst case years in terms of highest Project activity.

The WP/CIB reserves are outside the local study areas where potential direct noise and vibration effects of the Project are expected to occur (1.5 km from the Plant boundary and 3 km from the edge of the mine pit, respectively). As noted earlier, the closest WP/CIB reserve is over 60 km away from the Project site.

No changes to the acoustic or vibration environment are expected at WP/CIB reserves.

Potential effects of noise and vibration on harvesting and other cultural activities are assessed in Section 8.5, CULRTP and Chapter 13, Aboriginal Interests (Rights and Title).

14.5.2.4 *Other Environmental Concerns Expressed by WP/CIB*

Water Quantity and Quality

WP/CIB has expressed concerns with respect to water contamination by acid rock drainage and dust deposition, as well as, water withdrawals from Kamloops Lake and the Thompson River, which could deplete water resources available to other users.

The Project has been designed to minimize adverse effects to surface water quantity and quality through the development and implementation of a Water Management and Hydrometric Monitoring Plan (Section 11.7). The Project has been designed to operate with no direct effluent discharge. Water management strategies focus on diverting non-contact water, minimizing the amount of contact water (seepage and runoff) generated, and maximizing reclaim use of contact waters within the mine footprint.

Mitigation measures to protect water quality include:

- implementing erosion prevention and sediment control measures, including isolation of work areas from waterbodies, establishing water diversion and sediment collection structures such as sediment traps, geotextile cloth, sediment fences, gravel berms, and straw bales to mitigate and control erosion and sediment;
- establishing water management ponds to capture and temporarily store contact runoff from a number of facilities, including TSF seepage and water that infiltrates the MRSF; and
- all contact water, including open pit runoff, will be pumped to the central pond where it will be reclaimed for reuse in the process plant.

In addition, KAM will implement the following management plans that contain measures that will protect surface water quality (see Chapter 11):

- Air Quality Monitoring and Dust Control Plan;
- Erosion and Sediment Control Plan;
- Metal Leaching and Acid Rock Drainage Management and Monitoring Plan;
- Construction Waste Management Plan;
- Solid Waste Management Plan;
- Soil Salvage and Handling Plan;
- Hazardous Waste Management Plan (including liquid effluent disposal);
- Risk Management Plan (Accidents and Malfunctions);
- Emergency Response Plan;
- Reclamation and Closure Plan; and
- Fisheries and Aquatic Life Monitoring Plan.

Water will be monitored throughout the life of the Project, through the implementation of the Groundwater Quality Management and Monitoring Plan, the Surface Water Quality Management and Monitoring Plan, and the Hydrometric Monitoring Plan.

The Project will extract water from the Kamloops Lake for use as make-up water during Construction and Operation (e.g., filling the TSF pond for start-up, water for the process plant, potable water and dust control). This has the potential to reduce streamflows in Kamloops Lake and the Thompson River. Flow abstractions are not planned beyond Operation.

The Project is being designed to minimize water demand, with water recycled on-site to its greatest extent. At peak operation, maximum water use from Kamloops Lake will be 1,700 m³/h. This represents less than 0.3% of the average monthly flow through the lake and less than 0.4% of the lake lowest flow. The magnitude of changes on Kamloops Lake streamflows are considered negligible and will not affect other water licence holders. Changes in streamflows further downstream, such as the Thompson River will be even less and are also considered negligible. Detailed results of the assessment of potential effects on surface water quantity is presented in Section 6.4.

Cumulative effects with other existing and proposed actions, including existing and proposed New Afton water licenses has little impact on the maximum abstraction rate from Kamloops Lake (refer to Section 6.4.).

With the implementation of mitigation and management measures Project activities are predicted to results in not significant (negligible to minor) streamflow changes to Peterson Creek and Kamloops Lake (Section 6.4, Surface Water Quantity). Similarly, Project activities are not expected to results in significant adverse effects to water effluent quality in relation to concentrations of total and dissolved metals, nutrients, and chemicals (ions) (Section 6.3, Surface Water Quality).

Potential effects to CULRTP and Aboriginal rights due to changes in water quality and quantity are assessed in Section 8.5 and Chapter 13, respectively.

Reclamation and Closure

WP/CIB has expressed concerns regarding potential contamination after Post-Closure and the use of contaminated soil in reclamation programs.

The Project will implement a Mine Closure and Reclamation Plan. Environmental monitoring plans will be developed to inform the Environmental Management System and to support progressive reclamation and closure at the end of mine life.

Closure planning has guided Project design with the end objective of returning the site to the Agricultural Land Reserve to support the same land uses in place today. A key factor in the Project design is consideration of the physical and chemical stability of the reclaimed structures in the long term and preserving, where possible, or restoring mine-affected waterways. A detailed description of the Mine Closure and Reclamation Plan is presented in Section 3.17.

Section 6.2, Geology, Landforms, and Soils, includes baseline soils information and outlines the plans for stripping and stockpiling of the appropriate soil horizons for use in reclamation and

restoration programs after the mine is decommissioned. The suitability of soils for reclamation purposes was assessed utilizing criteria consistent with the BC *Mines Act* permitting requirements. Decommissioning and Closure activities will employ well known and proven closure approaches and technologies. To the extent possible, concurrent reclamation will be implemented during mining operations. This approach allows for ongoing monitoring and maintenance of reclamation success. Adaptive management techniques can be implemented during the Project life to respond to reclamation requirements. KAM will implement a Soil Salvage and Handling Plan (Section 11.3).

Accidents and Malfunctions

WP/CIB noted concerns regarding potential failure of mine facilities (e.g., TSF and the MRSF) and potential spills or accidents along the transportation corridor. WP/CIB also expressed concerns about potential accidents and malfunctions associated with the Kinder Morgan pipeline.

Accidents and Malfunctions are assessed in Section 17.6 and include scenarios for TSF and MRSFs failure, Kinder Morgan pipeline leakage or failure, transportation accidents, and other relevant incident scenarios. KAM will implement design and operational procedures to limit risks associated with malfunctions and accidents. The TSF embankment will be designed in accordance with the Canadian Dam Association's Dam Safety Guidelines. The TSF design has been optimized to reduce the risks of failure of the TSF by using conventional thickened tailings, and by using mine rock to buttress the embankments.

The Kinder Morgan pipeline currently runs through the Project area. KAM has engaged Kinder Morgan to prepare and submit a section 58 and section 74 permit to the NEB, proposing to reroute the Pipeline further to the West of the Project footprint.

KAM will implement an Accidents and Malfunctions Management Plan to proactively manage risks associated with accidents, malfunctions or unplanned events throughout the life of the Project. Aboriginal Groups and other stakeholders will be provided opportunity to engage in preparedness planning as the Project develops.

Cumulative Effects

WP/CIB has expressed concerns regarding potential cumulative effects of various mining projects on traditional land use. KAM completed CEAs for VCs where the Project-specific effects assessments identified a residual effect. The assessment methodology has been developed in accordance with BC EAO and CEA Agency regulatory requirements and is explained in Chapter 5, Assessment Methodology.

A number of projects and activities have been included in the CEAs as potential actions that could interact with the Project, including mining projects such as New Afton Mine and Highland Valley Copper Mine.

Potential effects, including cumulative effects, on WP/CIB land use for traditional purposes are presented in Section 8.5, CULRTP.

14.6 MÉTIS NATION

14.6.1 Other Aboriginal Interests Identified in the Project Area

The CEA Agency has advised KAM that the Project has the potential to affect Métis interests. KAM initiated discussions with the MNBC in October 2012. Since that time consultation activities have included in-person meetings with leadership, community meetings, and written communication. In 2014 KAM provided MNBC with funding to support information-sharing and engagement in the Project. As part of the funding, MNBC developed a report titled MNBC - KGHM/ Ajax Mine Initial Project Report (Initial Project Report) (MNBC, 2015). The report uses a database of Métis harvesters to identify Métis land users in the Project vicinity. It also summarizes MNBC members' questions, comments and concerns regarding the Project. Detailed information on consultation activities undertaken with the MNBC is provided in Chapter 15, Procedural Aspects of Aboriginal Consultation.

Information on the other interests and concerns of the MNBC with respect to the Project has been identified through consultation and engagement activities and by reviewing the Initial Project Report. Table 14.6-1 provides a summary of the other interests and concern identified by the MNBC to date in relation to the Project. It also shows how the concerns were identified and the associated VC in Part B where direct potential Project effects are assessed. Appendix 15-B provides a comprehensive list of the issues raised by the MNBC and KAM's responses to these issues. Issues related to harvesting and other land uses are addressed in Section 8.5, CULRTP. Issues related to Aboriginal rights and title are addressed in Chapter 13, Aboriginal Interests (Rights and Title).

Table 14.6-1. Other Interests and Concerns Expressed by the MNBC

Other Interests and General Concerns	MNBC Issue/Concern/Comment	Manner Raised	Valued Component Affected
Economic conditions	Interest expressed in potential employment and economic opportunities.	Initial Project Report Consultation	Labour Force, Employment and Training
	Interest expressed in training and skills development.	Initial Project Report	Labour Force, Employment and Training
	Concern about the use of foreign labour force.	Consultation	Labour Force, Employment and Training
Social conditions	Potential effects on property values such as increases in housing costs.	Initial Project Report Consultation	Infrastructure, Public Facilities, and Services
	Potential effects from transportation of ore and increased truck traffic.	Consultation	Infrastructure, Public Facilities, and Services
Health conditions	Potential noise effects from blasting and crushing activities on local residents.	Initial Project Report	Noise and Vibration
Water quantity and water quality	Potential effects on water quality in Jacko Lake as well as other waterbodies (such as the Thompson River).	Consultation	Surface Water Quality

Other Interests and General Concerns	MNBC Issue/Concern/Comment	Manner Raised	Valued Component Affected
Water quantity and water quality (cont'd)	Changes in water quantity to nearby waterbodies	Initial Project Report Consultation	Surface Water Quantity
Accidents and malfunctions	TSF safety and potential malfunctions.	Initial Project Report Consultation	n/a

At the time of writing, consultation records and secondary research did not identify key features that are important to the MNBC (such as Pipsell or the hunting blind identified by the SSN).

14.6.2 Potential Effects of the Project and Proposed Mitigation on MNBC Other Interests

14.6.2.1 Economic Conditions

The MNBC has expressed interest in potential Project employment, training and business opportunities and is concerned that the Project would use foreign workers to fulfill its labour needs.

As discussed in Section 2.7, Project Benefits, the Project will generate considerable regional and local economic activity during Construction and Operation, including direct, indirect, and induced employment and business activity. The Project will require a large workforce in a range of occupations. This include positions in trades, engineering and technical, management and supervisory, and administrative and support occupations.

KAM is committed to maximize long-term career and business opportunities for Aboriginal Groups' members. Section 2.7, Project Benefits, provides details of the KAM Human Resources Development Policy. This includes measures to be implemented by the Project to enhance employment and training opportunities for local communities and Aboriginal Groups including:

- commitment to hiring locally;
- pursuing partnership opportunities with local education and training institutions to ensure that the expertise required for Operation is available;
- commitment to maximize recruitment of qualified Aboriginal candidates, in accordance with any established agreements;
- implementing cross-cultural training to recognize and support diversity, multicultural workforce; and
- facilitating continued training and development of employees, including provision of financial assistance to pursue educational opportunities and professional designations.

Additional details on the KAM Human Resources Development Policy is provided in Section 2.7, Project Benefits.

As the Project moves out of Operation, there will be a net loss of employment and contracting opportunities. To mitigate potential adverse effects associated with the reduction in Project employment and contracting, KAM will implement a Communications and Transitioning Program. A workforce transition plan will be developed and implemented to support education and training and career development opportunities to assist employees in obtaining employment elsewhere. Potentially affected contractors will be informed regarding status and schedule as the Project progresses from Operation into Decommissioning and Closure. This will allow them to prepare for any transitioning that may be required (see Section 7.2, Labour Force, Employment and Training, for additional details). In addition, investments in training and capacity-development and skills gained at the Project are expected to improve workers employability and thus their ability to obtain jobs after Project Closure.

To assist local businesses to take advantage of business opportunities with the Project, KAM is developing a business procurement plan, with specific elements to enhance local business participation, including Aboriginal businesses.

Overall economic effects are expected to be positive for MNBC. It is expected that a number of MNBC members and businesses will benefit from these employment and contracting opportunities created by the Project.

14.6.2.2 *Social Conditions*

Housing Costs

The MNBC has expressed concerns regarding potential increase in housing costs.

The assessment of local infrastructure and services (Section 8.1) indicates that there is a good availability of short-term and temporary accommodations in the LSA (3,000 hotel/motel rooms and more than 300 sites at campgrounds and RV parks). Vacancy rates suggest that the temporary non-local construction workforce is not expected to place substantial stress on temporary and short-term accommodations during months not traditionally associated with tourism and major events. However, if peak construction coincides with a major event in the LSA (during summer), the LSA may experience a shortage of short-term and temporary accommodations. This could be exacerbated if peak construction overlaps with the expansion of the Trans Mountain Pipeline System, during high season (refer to Section 8.1, Infrastructure, Public Facilities and Services for additional details).

To mitigate potential shortage of temporary and short-term accommodation KAM will implement the following measures:

- forming an advisory committee comprised of relevant representatives from the City, the TNRD, health and social service providers (e.g., IHA and Interior Community Services), and organizations to discuss potential issues and solutions;
- on-going dialogue with the relevant organizations (e.g., Tourism Kamloops, the City in connection with Tournament Capital of Canada branding, social service providers) to inform them of the Project's workforce requirements and timing; and

- KAM will discuss potential accommodation requirements and alternatives with relevant construction contractors and develop a Construction Phase Workforce Accommodation Plan.

With respect to long term housing, housing shortages are not expected. The housing market in Kamloops is currently in balance, residential building permits issued by Kamloops are increasing, and the number of people expected to in-migrate during Operation (less than 1% of the current population) is within the expected growth rate for Kamloops (Section 8.1, Infrastructure, Public Facilities and Services).

After the implementation of mitigation measures, it is anticipated that there will be a minor residual effect on temporary and short-term accommodation. The temporary resettlement workers in the LSA during the Construction phase, will increase the demand for temporary and short-term accommodations above current supply and could drive prices up, in particular during summer months (refer to Section 8.1). The effect is expected to be local, short terms and reversible and neutral in resilience as accommodations are expected to be able to respond to changing market conditions.

No negative effects are expected on the housing market during Operation, as the housing market is expected to easily absorb the additional demand placed by in-migrants. Refer to Section 8.1, Infrastructure, Public Facilities and Services, for a detailed assessment of effects on housing and temporary/short-term accommodation.

Increased Traffic

Project transportation activities (transportation of workers, equipment, goods, services, and mine products) could affect existing road infrastructure and traffic volumes. It is expected that overall impact on the principal highways (Highway 1 and Highway 5) is within the design capacity for these roads.

The Traffic Impact Assessment developed for the Project (Opus, 2015) finds that increase traffic volumes are expected during peak construction, in particular on the Inks Lake interchange, which is the access point to the Project. During Operation, minimal effects are anticipated.

The Project will implement a Traffic Management Plan (Chapter 11) to minimize effects of Project related traffic. Key mitigation measures include:

- implementing carpooling incentives during Construction and Operation;
- providing workforce personnel shuttles from key locations within the City of Kamloops to the mine site during Construction; and
- staggering shifts during the Construction phase and, to a lesser extent, during the Operation phase.

The existing roads and bridges will be upgraded to handle construction and operating mine traffic. The completion of the new Inks Lake interchange will reduce traffic impact on Lac Le Jeune Road. With the implementation of mitigation measures, no significant effects are expected on local traffic. Refer to Section 8.1 for a detailed assessment of potential Project effects on traffic.

14.6.2.3 *Health Conditions*

MNBC has expressed concerns regarding potential noise effects on local residents.

The noise and vibration assessments (Section 10.5) identifies 28 noise receptors and 31 vibration receptors that could be most affected by the Project. These are receptors closest to the Project boundary. Other receptors further away from the Project are expected to be less affected than these sensitive receptors as noise and vibration levels are expected to attenuate at increasing distances from the sources. The assessment considers the worst case years in terms of highest Project activity.

Within the LSA, changes in noise levels will comply with the BC Oil and Gas Commission noise guideline Permissible Sound Level and the Health Canada noise guidance at all receptors where guidance is available. The predicted ground vibration and air blast level at all residential receptors are considerably below the damage threshold.

KAM will implement a Noise and Vibration Management Plan that will include noise and vibration monitoring during Construction, Operation, and Decommissioning; as well as including a process to address noise complaints in a timely manner.

Potential effects of noise and vibration on harvesting and other cultural activities are assessed in Section 8.5, CULRTP and Chapter 13, Aboriginal Interests (Rights and Title).

Residual effects on MNBC members' health are anticipated to be not significant.

14.6.2.4 *Other Environmental Concerns Expressed by MNBC*

Water Quantity and Quality

MNBC has expressed concerns regarding Potential effects on water quality in Jacko Lake and the Thompson River, as well as, general concerns with respect to changes in water quantity.

Project activities are not expected to results in adverse effects to water quality in Jacko Lake. No parameters are predicted to exceed the water quality guidelines and benchmarks under the most conservative scenarios. Similarly, no residual effects have been identified in the Thompson River. Water downslope of the mine site will not be directly connected to the Thompson River and will not be degraded beyond background (Section 6.3, Surface Water Quality).

The Project has been designed to minimize adverse effects to surface water quantity and quality through the development and implementation of a Water Management and Hydrometric Monitoring Plan (Section 11.7). The Project has been designed to operate without direct effluent discharge. Water management strategies focus on diverting non-contact water, minimizing the amount of contact water (seepage and runoff) generated, and maximizing reclaim use of contact waters within the mine footprint.

Mitigation measures to protect water quality include:

- implementing erosion prevention and sediment control measures, including isolation of work areas from waterbodies, establishing water diversion and sediment collection

structures such as sediment traps, geotextile cloth, sediment fences, gravel berms, and straw bales to mitigate and control erosion and sediment;

- establishing water management ponds to capture and temporarily store contact runoff from a number of facilities, including TSF seepage and water that infiltrates the MRSF; and
- all contact water, including open pit runoff, will be pumped to the central pond where it will be reclaimed for reuse in the process plant.

In addition, KAM will implement the following management plans that contain measures that will protect surface water quality (Chapter 11):

- Air Quality Monitoring and Dust Control Plan;
- Erosion and Sediment Control Plan;
- Metal Leaching and Acid Rock Drainage Management and Monitoring Plan;
- Construction Waste Management Plan;
- Solid Waste Management Plan;
- Soil Salvage and Handling Plan;
- Hazardous Waste Management Plan (including liquid effluent disposal);
- Risk Management Plan (Accidents and Malfunctions);
- Emergency Response Plan;
- Reclamation and Closure Plan; and
- Fisheries and Aquatic Life Monitoring Plan.

Water will be monitored throughout the life of the Project, through the implementation of the Groundwater Quality Management and Monitoring Plan (Section 11.24), the Surface Water Quality Management and Monitoring Plan (Section 11.23), and the Water Management and Hydrometric Monitoring Plan (Section 11.7).

The Project is being designed to minimize water demand, with water recycled on-site to its greatest extent. The Project will extract water from the Kamloops Lake for use as make-up water during Construction and Operation. At peak operation, maximum water use from Kamloops Lake will be 1,700 m³/h. This represents less than 0.3% of the average monthly flow through the lake and less than 0.4% of the lake lowest flow. Changes on Kamloops Lake streamflows are considered negligible and will not affect other water licence holders. Changes in streamflows further downstream, such as the Thompson River will be even less and are also considered negligible. Residual effects on water quantity for all indices assessed are predicted to be not significant. Detailed results of the assessment of potential effects on surface water quantity is presented in Section 6.4.

Accidents and Malfunctions

Accidents and Malfunctions are assessed in Section 17.6 and include scenarios for TSF and MRSFs failure, and other relevant incident scenarios. KAM will implement design and operational

procedures to limit risks associated with malfunctions and accidents. The TSF embankment will be designed in accordance with the Canadian Dam Association's Dam Safety Guidelines. The TSF designed has been optimized to reduce the risks of failure of the TSF by using conventional thickened tailings, and by using mine rock to buttress the embankments.

KAM will implement an Accidents and Malfunctions Management Plan to proactively manage risks associated with accidents, malfunctions or unplanned events throughout the life of the Project. Aboriginal Groups and other stakeholders will be provided opportunity to engage in preparedness planning as the Project develops.

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