27. Assessment of Nisg̲a'a Nation Treaty Rights, Interests, and Information Requirements

27.1 INTRODUCTION

This chapter assesses the environmental effects of the Project on residents of Nisg̲a'a Lands, Nisg̲a'a Lands, and Nisg̲a'a interests during the Construction, Operation, Closure, and Post-closure phases pursuant to Chapter 10, 8(e) of the *Nisg̲a'a Final Agreement* (NFA)[1]. The chapter also presents an assessment of the effects of the Project on the existing and future economic, social, and cultural wellbeing of Nisg̲a'a citizens pursuant to paragraph 8(f), Chapter 10 of the NFA. The chapter provides a summary of past and planned consultation activities, including key issues raised by Nisg̲a'a Nation during consultation and engagement in the pre-Application/pre-EIS review stage. The chapter is intended to address the requirements of Section 17 of the provincial Application Information Requirements (AIR; (BC EAO 2014), and Sections 9.2 and 10.2 of the federal Environmental Impact Statement (EIS) Guidelines (CEA Agency; CEA Agency 2013).

The BC Environmental Assessment Office (BC EAO) Section 11 Order confirms that portions of the proposed Project lie within the Nass Area as identified in the NFA (Figures 27.1-1 and 27.1-2). The NFA, signed by the Government of BC, the Government of Canada and Nisg̲a'a Lisims Government (NLG), came into effect on May 11, 2000. BC and Canada, in undertaking the environmental assessment (EA) of the Project, are required to comply with Chapter 10 of the NFA. Specific provisions of Chapter 10 applicable to the conduct of the EA are:

> 6. *If a proposed project that will be located off Nisg̲a'a Lands may reasonably be expected to have adverse environmental effects on residents of Nisg̲a'a Lands, Nisg̲a'a Lands or Nisg̲a'a interests set out in this Agreement, Canada or British Columbia, or both, as the case may be, will ensure that the Nisg̲a'a Nation:*
>
> *(a) receives timely notice of, and relevant available information on, the project and the potential adverse environmental effects;*
>
> *(b) is consulted regarding the environmental effects of the project; and*
>
> *(c) receives an opportunity to participate in any environmental assessment under federal or provincial laws related to those effects, in accordance with those laws, if there may be significant adverse environmental effects.*
>
> 8. *All environmental assessment processes referred to in this Agreement will, in addition to the requirements of applicable environmental assessment legislation:*
>
> *(e) assess whether the project can reasonably be expected to have adverse environmental effects on residents of Nisg̲a'a Lands, Nisg̲a'a Lands, or Nisg̲a'a interests set out in this Agreement and, where appropriate, make recommendations to prevent or mitigate those effects;*

[1] The Project will require a two year construction period and will operate for approximately 22 years once commissioned.

Figure 27.1-1

Nisga'a Lands, the Nass Wildlife Area and the Nass Area

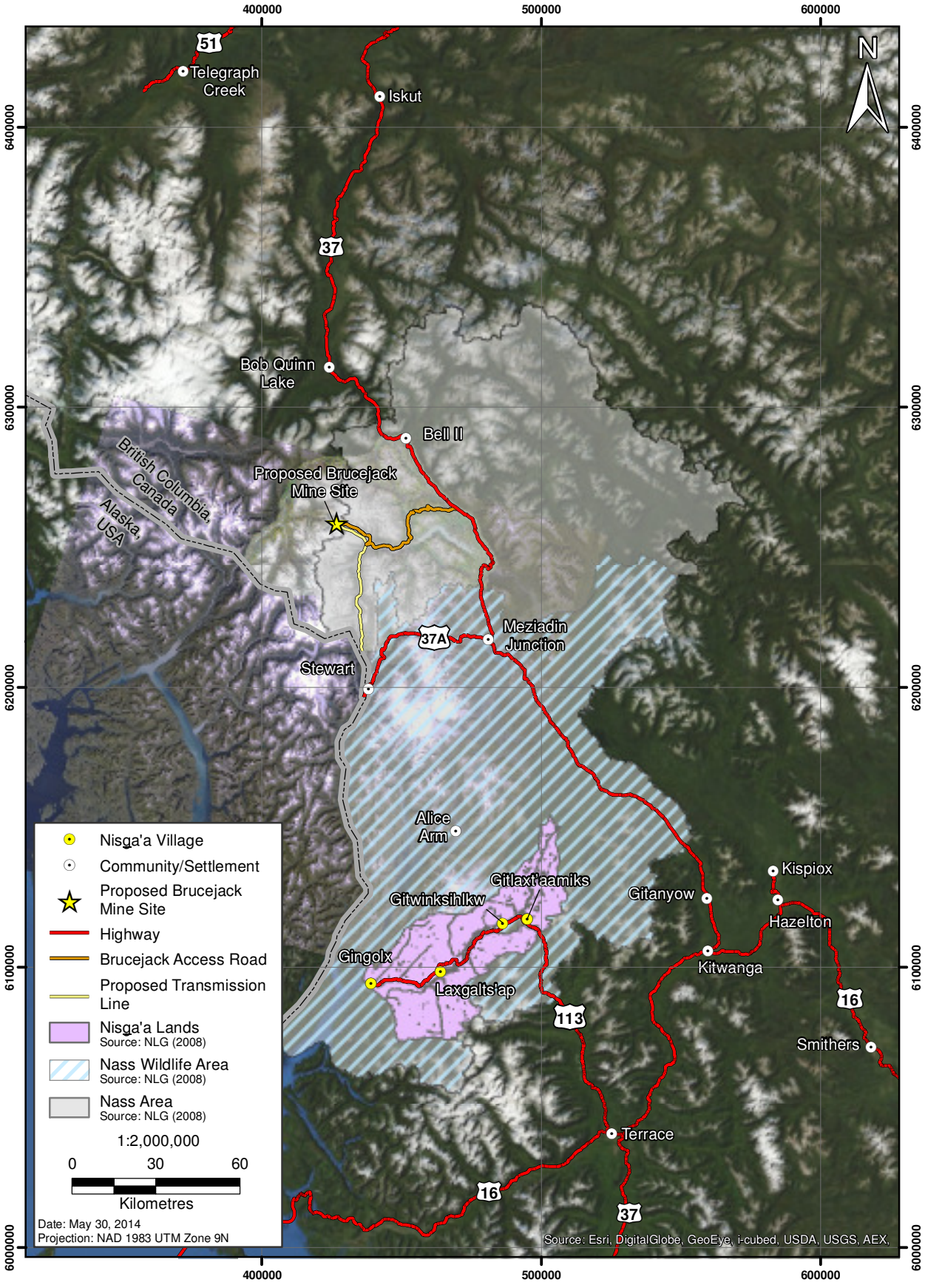
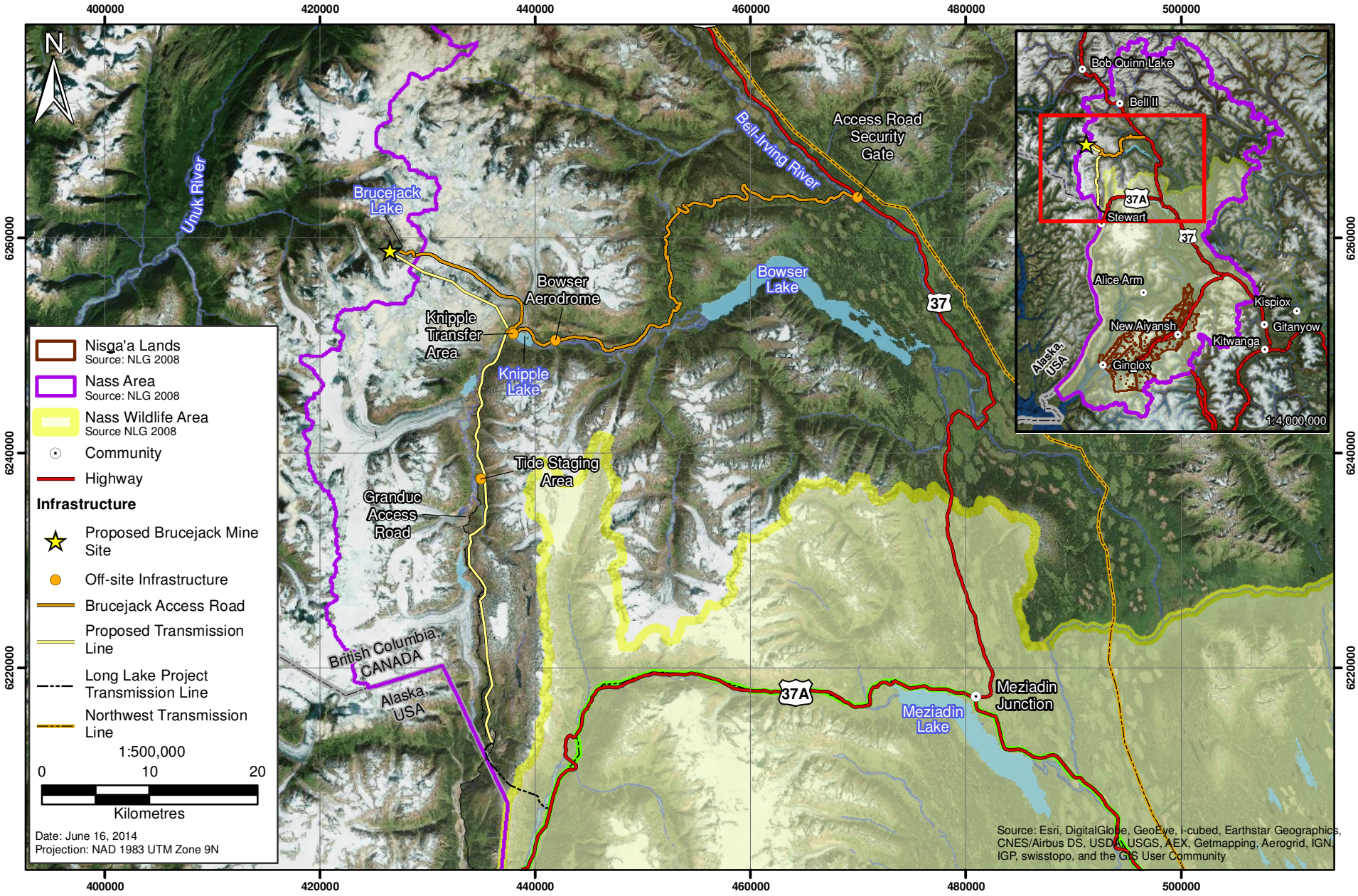


Figure 27.1-2

***Nisga'a Final Agreement*, Brucejack Gold Mine Project**



> *(f) assess the effects of the project on the existing and future economic, social and cultural well-being of Nisg̲a'a citizens who may be affected by the project; and*
>
> *(i) take into account any agreements between the project proponent and the Nisg̲a'a Nation or a Nisg̲a'a village concerning the effects of the project.*
>
> 10. *In exercising decision-making authority for projects that may have adverse environmental effects on residents of Nisg̲a'a Lands, Nisg̲a'a Lands or Nisg̲a'a interests set out in this Agreement, the decision maker will take into account, but will not be bound by, any agreement between the Nisg̲a'a Nation or a Nisg̲a'a village and the project proponent concerning the project* (NLG, Province of BC, and Government of Canada 1998).

The BC EAO (2013) guidance document, *Guide to Involving Proponents when Consulting First Nations in the Environmental Assessment Process* was used to inform this chapter.

27.1.1 Location of the Project in Relation to Nisg̲a'a Lands, Nass Wildlife Area, and Nass Area as Defined in the *Nisg̲a'a Final Agreement*

Some of the Project components are located in the Nass Area. The primary mine access route traverses the Nass Area from Highway 37 up Wildfire Creek, across Swift Pass and down Scott Creek into the Bowser River Valley above Bowser Lake. The road continues up to the toe of the Knipple Glacier. The Knipple Transfer Area will include a camp that will be constructed near the base of the glacier to support the transfer of personnel and materials from vehicles to tracked vehicles to traverse the glacier. The existing exploration access road will be upgraded to handle construction and operating mine traffic. A transmission line will run from the Long Lake Hydroelectric Project just north of Stewart, past the old Granduc Mine Site and across high alpine and glaciated terrain north to Brucejack Lake and the Brucejack Mine Site. The Project footprint is approximately 400 ha, including the Mine Site, Brucejack Access Road, and Brucejack Transmission Line.

The access route up to the glacier is part of the Bowser drainage system, which flows into the Bell-Irving and thence the Nass River. Brucejack drains to the west, away from the Nass Area, into Sulphurets Creek, a tributary of the Unuk River. The transmission line will traverse the northwest portion of the Nass Area and will not pass through the Nass Wildlife Area. The Mine Site itself falls outside of the Nass Area and lies about 160 km northwest of the nearest Nisg̲a'a village. By road, the Project is about 125 km from Gitlax̲t'aamiks, the closest Nisg̲a'a community to the turn-off from the exploration road at Highway 37.

27.1.2 Nisg̲a'a Treaty Rights and Interests under the *Nisg̲a'a Final Agreement*

The contemporary Nisg̲a'a Nation is a constitutionally recognized government with protected rights and interests as defined by the *Nisg̲a'a Final Agreement* (NFA), which came into effect as of May 2000 under the *Constitution Act* (1982; NLG, Province of BC, and Government of Canada 1998). NFA grants Nisg̲a'a rights including right to self-government, law-making authority, and rights over land and resources in the Nass Area (NLG, Province of BC, and Government of Canada 1998). The NFA exhaustively sets out the Aboriginal rights and title of Nisg̲a'a (Chapter 2, Section 23); the full and final settlement in respect of the Aboriginal rights and title of Nisg̲a'a (Chapter 2, Section 22); and provides that Nisg̲a'a releases any other Aboriginal right different to those set out in the NFA to Canada (Chapter 2, Section 26).

Under the NFA, Nisg̲a'a owns approximately 1,992 km^2 of Nisg̲a'a Lands in fee simple, has wildlife harvesting rights in the Nass Wildlife Area (16,101 km^2), rights to harvest migratory birds in the Nass

Area (28,838 km^2), and rights to harvest fish and aquatic plants (AANDC 2000). Harvesting rights for Nisga'a citizens are identified in Chapters 8 and 9 of the NFA.

In addition to confirming Nisga'a ownership and jurisdiction over Nisga'a Lands and Nisga'a fee simple lands, Chapter 3 provides for Nisga'a ownership and jurisdiction over Nisga'a Lands and Nisga'a fee simple lands and ownership of all mineral resources on or under Nisga'a Lands and Category A Nisga'a fee simple lands. Chapter 3 also provides for rights related to:

- commercial recreation tenure;
- heritage sites;
- the Anhluut'ukwsim Laxmihl Angwinga'asanskwhl, also known as Nisga'a Memorial Lava Bed Park (the Park);
- Gingietl Creek Ecological Reserve (the Ecological Reserve);
- water reservations for domestic, agricultural and industrial purposes; and
- investigating potential of streams for hydro power purposes.

Chapter 5 provides for that Nisga'a Nation owns all forest resources on Nisga'a Lands and may make laws regarding the management, harvesting and conservation of timber and non-timber forest resources. Chapter 6 of the NFA provides Canada and BC with a broad right to access Nisga'a Lands. Nisga'a will allow public access to Nisga'a Public Lands for "temporary non-commercial and recreational uses" and will also provide reasonable opportunities for the public to fish and hunt. Canada and BC are also guaranteed a right of access to "enter, cross, and stay temporarily on Nisga'a Lands to deliver and manage programs and services, to carry out inspections under law, to enforce laws, to carry out the terms of this Agreement, and to respond to emergencies" (NLG, Province of BC, and Government of Canada 1998).

Chapter 6 of the NFA affords Nisga'a citizens with the right to reasonable access to and onto Crown lands that lie outside Nisga'a Lands, including streams and highways, for the exercise of Nisga'a rights and interests. Where a disposition of Crown land would have the effects of denying reasonable access or use of resources, the Crown must ensure that alternative reasonable access is provided.

Chapter 8 of the NFA addresses Nisga'a citizens' rights to harvest fish and aquatic plants subject to measures that are necessary for conservation and legislation enacted for the purposes of public health and safety. Nisga'a fish allocation is set out as a percentage of the total allowable catch and includes specific allocations for Nass salmon and steelhead as well as oolichan and intertidal bivalves. In addition, Chapter 8 of the NFA identifies Nisga'a fish entitlements of non-salmon species and aquatic plants as well as fisheries management and Nisga'a rights to participate in the general commercial fishery.

Chapter 9 of the NFA addresses Nisga'a citizens' right to harvest wildlife in the Nass Area and migratory birds, subject to measures that are necessary for conservation and legislation enacted for the purposes of public health and safety. Pursuant to Chapter 9 of the NFA, Nisga'a wildlife allocation is set out as a percentage of the total allowable harvest consistent with the priorities for the recreational and commercial harvest of the total allowable harvest of designated species. Designated species identified in the NFA are moose, grizzly bear and mountain goat. Chapter 9 also identifies responsibilities regarding trapping and guiding as well as the management and trade (barter and the sale) of marine wildlife.

The NFA defines other interests, including forestry tenures, commercial recreation tenures, guide-outfitting and angling licences and traplines.

27.2 NISGA'A NATION CONTEXT AND OVERVIEW

Nisga'a people have inhabited the region of the Nass drainage for thousands of years. This section provides background information related to Nisga'a social, economic, health, and heritage settings, as well as Nisga'a current use of lands and resources for traditional purposes in the Project area.

27.2.1 Social Setting

27.2.1.1 Political Structure

Nisga'a Nation is governed by Nisga'a Lisims Government (NLG) established under the NFA. The overarching framework of Nisga'a governance is derived from the traditional laws and practices of Nisga'a people known as *Ayuukhl Nisga'a*, with guidance and interpretation provided by the Council of Elders (NLG 2002b). NLG governance is also guided by, and operates within, the *Constitution Act* (1982) and the *Canadian Charter of Rights and Freedoms*.

The structure of NLG consists of executive and legislative branches, as well as a Council of Elders. NLG has jurisdiction over Nisga'a Lands which includes the four Nisga'a villages. The president, chairperson, secretary-treasurer, and chairperson of the Council of Elders are elected at-large by Nisga'a Nation citizens. The remaining members of the Council of Elders are appointed by NLG. The executive also includes one representative of each Nisga'a Urban Local (Terrace, Prince Rupert and Vancouver), to represent Nisga'a citizens who do not live in the Nass Valley (NLG 2002b, n.d.-a). Finally, each of the four Nisga'a villages is administered by its own village chief and council elected by village residents.

27.2.1.2 Population and Communities

The four Nisga'a villages (Gitlaxt'aamiks, Gitwinksihlkw, Laxgalts'ap, and Gingolx) are located on Nisga'a Lands, which are connected by road to Hwy 113 (Nisga'a Highway). Gitlaxt'aamiks and Gitwinksihlkw are located approximately 200 km south of the Project and approximately 100 km north of Terrace. Laxgalts'ap is located 235 km south of the Project and 140 km north-east of Terrace. Gingolx is located 265 km south of the Project and 170 km north-east of Terrace.

About one-third of Nisga'a citizens reside in one of the four Nisga'a villages, while most Nisga'a citizens living outside the Nass Valley live in Terrace, Prince Rupert, or Vancouver (described in the NFA as "Nisga'a Urban Locals") and have official representation within NLG.

Table 27.2-1 summarizes the populations of the four Nisga'a villages in comparison to those living outside of Nisga'a Lands.[2]

27.2.1.3 Social Organization

Nisga'a people organize themselves into four *pdeek* (clans). Each pdeek is associated with two crests which identify families (NTC, Fiegehen, and Rose 1993; Table 27.2-2). Pdeek are made up of many *huwilp* (houses), each of which has its own chiefs, rights, history, traditions, songs, dances, stories (*adaawak*), and territory (*ango'osxw*). The members of a *wilp* (house) are all descended from a common female ancestor (NTC, Fiegehen, and Rose 1993; SD 92 1996).

[2] Figures reported from the 2011 Census are slightly below those compiled by Aboriginal Affairs and Northern Development Canada (AANDC). For instance, Statistics Canada reports 1,728 residents in the four Nisga'a villages and 1,909 residents on Nisga'a Lands (Statistics Canada 2012).

Table 27.2-1. Nisga'a Nation Community Populations: March 2014

Community	Community Population 2012	Population on Other Reserves	Population off Nisga'a Lands	Total Population
Gitlaxt'aamiks	869	51	917	1,837
Gitwinksihlkw	186	28	184	398
Laxgalts'ap	576	59	1,128	1,764
Gingolx	407	69	1,504	1,980
Total	**2,014**	**201**	**3,689**	**5,904**

Source: (AANDC 2014)
Note: AANDC population data is provided by an administrator from each community on a monthly basis and is based on total membership on and off Nisga'a Lands.

Table 27.2-2. Nisga'a Kinship Structure

Pdeek (clans)	*Ayukws* (crests, two per clan)
Gisk'aast	Killer Whale and Owl
Laxgibuu	Wolf and Bear
Ganada	Raven and Frog
Laxsgiik	Eagle and Beaver

Source: NTC, Fiegehen, and Rose (1993)

Rights are passed down through matrilineal succession; title and ownership of resources or particular sites is formalized through the settlement feast or *yukw*. The highest-ranking woman in the wilp is the *sigidimnak'* (matriarch) who makes the ultimate decisions regarding names and inheritance (NTC, Fiegehen, and Rose 1993; SD 92 1996). The highest ranking man in a wilp is the *sim'oogit* (chief).

Nisga'a people are governed by their traditional laws, customs and practices known collectively as *Ayuukhl Nisga'a*, with guidance and interpretation by the Council of Elders (NLG 2002b). The *Ayuukhl Nisga'a* covers areas of respect, education, chieftainship and matriarchy, property rights, death, marriage, divorce, conflict resolution, and trade (NTC, Fiegehen, and Rose 1993). The adaawak encapsulates oral history and stories that, among other things, describe the activities of a wilp's ancestors, its rights, the identity of its members, and the locations of its properties, including fishing sites, berry patches, hunting grounds, and forest resources. (NTC, Fiegehen, and Rose 1993; SD 92 1996). According to the 2012 Social, Economic, Resource Use, and Culture (SERC) survey (Rescan 2012a), 65% of respondents have very limited ability to speak, read or write nisga'amk, the Nisga'a language, although almost 25% ranked their ability to understand the language highly. Language revitalization efforts are underway.

27.2.1.4 Housing and Community Infrastructure

The Nisga'a villages and village-based housing committees are responsible for daily operations and delivery of management, financing, renovations, and new construction of housing in Nisga'a villages. The average housing values for single-family homes on Nisga'a Lands ranged from $130,000 to $150,000 (NLG et al. 2010).

A shortage of adequate housing has led to overcrowding in Nisga'a villages, and much of the current housing stock is in need of repair. Nisga'a villages and village-based housing committees are responsible housing management, construction and financing, and some housing subdivisions with serviced lots have been developed. NLG and Nisga'a villages are responsible for the provision of community utilities,

infrastructure and related services such as water, sewer, and garbage collection/landfill within Nisga'a Lands. Most of these services would have the capacity to accommodate a modest increase in community population. Nisga'a villages are connected to the provincial electricity grid, and Internet service is provided by enTel Communications Inc., a Nisga'a-owned corporation.

27.2.1.5 Education Facilities, Programs, and Post-secondary

Nisga'a village schools fall within School District (SD) 92. Each village has an elementary school, and one secondary school is located in Gitlaxt'aamiks. Enrolment in Nisga'a village schools has declined over the past five years. SD 92 and Nisga'a villages are currently implementing initiatives to restructure and improve the Nisga'a education system. Wilp Wilxo'oskwhl Nisga'a Institute (WWNI) is a post-secondary institute located in Gitwinksihlkw. It jointly offers some programs with the University of Northern British Columbia (UNBC), Northwest Community College (NWCC), and Royal Roads University. According to the 2006 Census, high-school non-completion rates in Nisga'a villages were notably higher than that of the province as a whole. The proportion of Nisga'a village members with an apprenticeship or trades certificate was higher than the provincial average (Statistics Canada 2007), most likely a result of the need for trained employees in the resource extraction industries in the region.

According to the SERC Survey (Rescan 2012a) nearly 75% of respondents had at least a high school diploma or equivalency certificate, while about 40% had a college diploma or higher. Two-thirds of respondents reported general labour skills, and 50% reported vocational skills; 25% reported technical or professional skills, and the same number reported management skills[3]. The SERC Survey also showed that most Nisga'a survey respondents (90%) do not have any experience in the mining industry. Of the 7% who reported having worked in the industry, 40% had worked in the construction or operation of a mine. Of these, 70% had less than five years of experience.

27.2.2 Economic Setting

Until recent decades, the Nisga'a economy, like most of northwest BC, was tied to resource-based industries, especially forestry and commercial fishing. The dominance of forestry and fishing has now declined. Tourism, construction and mining-related activities have grown somewhat, although the current Nisga'a economy is especially dependent on the public sector, and many Nisga'a citizens are employed by either NLG or one of the local village governments. Private sector employment is more limited, and is typically associated with resource extraction industries such as commercial fishing or forestry, and to a lesser degree, construction, mining, retail trade and services. Within Nisga'a Lands, hunting, fishing and non-timber forest products such as berries are an important component of household livelihoods, and help to support the local economy and sustain community well-being (CWB).

According to the most recent publically available, audited financial statement, the operating revenue of NLG was slightly over $73 million, with an accumulated budget surplus of almost $187 million for the fiscal year 2010 to 2011 (NLG 2011).

27.2.2.1 Employment

While unemployment in Nisga'a villages is high, most of those who do have jobs are employed in the public sector, generally with either NLG or one of the local village governments. Private sector employment is more limited and typically associated with resource extraction industries such as commercial fishing or forestry, and to a lesser degree in construction, mining, retail trade, and services (SNDS 2007; Statistics Canada 2007).

[3] Respondents in the survey could select more than one skill.

As discussed in the *Brucejack Gold Mine Project: Socio-economic Baseline Report* (2013; Appendix 19-A), there is considerable variation in the estimated rates of unemployment, employment participation, and employment among the four Nisga'a communities. Employment statistics also vary sharply across a number of different sources of data. The key message is that labour participation in Nisga'a villages (i.e., the number of people either working or available to work) is generally equal to or higher than the provincial average, which hovers around two-thirds of the population 15 years and older. Unemployment, as noted, is persistently high in Nisga'a villages, ranging from about 18% to over 50%, well above the provincial average (currently around 6 to 7%; SNDS 2007; Statistics Canada 2007).

Recent research (SNDS 2007b; Rescan 2012a) identifies a weak economic base and the lack of job opportunities as the primary causes of high unemployment. Other contributing factors include lack of education, skills, and training; seasonally restricted employment; limited local funding; nepotism; and lack of incentive due to dependency on social services.

A recent survey of Nisga'a citizens, including both those living in one of the villages or residing outside of the Nass Valley, suggests that the potential size of Nisga'a labour supply is about 1,140, with those living off of Nisga'a Lands outnumbering those living on Nisga'a Lands by a factor of about 2:1. However, this estimate of Nisga'a labour supply includes adults potentially interested in mine-related employment, and does not take into account whether or not the individuals are able to secure employment. Workers will need to have the necessary education, skills and training for the available positions. Other personal factors and competing commitments may also hinder employment with the Project. Ultimately, the employable Nisga'a labour force that is currently available is likely a small fraction of the total labour supply. Currently, many Nisga'a citizens do not have the appropriate qualifications for many of the more specialized mine construction and operation jobs. Part-time workers represent around 40% of the labour force, with almost half of them having worked less than five months during 2010. The largest proportion of Nisga'a labour force (nearly two-thirds) is unemployed or employed only part-time (Rescan 2012a).

27.2.2.2 Income and Earnings

Due to data suppression by Statistics Canada, income and earnings statistics from 2005 are only publically available for the Nisga'a communities of Gitlaxt'aamiks and Gingolx. Community data on income and earnings from the 2011 Census were unavailable at the time of writing. Total median earnings in these two communities for persons over 15 years old, including full-time, seasonal, and part-time workers, were considerably lower than the provincial average (Statistics Canada 2007). Earnings for those working year-round and full-time were notably better and, in fact, higher than the average for Aboriginal people in BC, and only slightly lower than for the province as a whole. While Nisga'a citizens with full-time employment are doing comparatively well, the broader community may need to rely more on non-wage activities and government sources of income in order to meet household livelihood needs.

The SERC Survey, found that about 60% of respondents had total income of less than $25,000 in 2010; more than three-quarters (78%) had total income of less than $40,000. In 2005, earnings comprised between 60% and 78% of residents' income, with government transfers amounting to over 37% in Gingolx as compared to less than 11% for the province (Statistics Canada 2007). More than one-third of survey respondents received at least 50% of their total income from government assistance (Rescan 2012a).

27.2.2.3 Nisga'a Nation Businesses

Approximately 32 Nisga'a or NLG-owned businesses are based in Nisga'a villages, Terrace, and Prince Rupert. The Nisga'a Business Survey (Rescan 2012b) reported that of the 22 businesses surveyed, over half were single proprietorships, and more than a third were owned and operated by one of the four

village governments The majority (75%) reported fewer than five employees, while the top four reported 129, 42, 40, and 21 employees respectively. Over two-thirds (68%) reported that at least half of their earnings came from either or both levels of Nisga'a government.

The Nisga'a Commercial Group (NCG) is a consortium of companies, partnerships and other business ventures that are owned collectively by Nisga'a Nation through NLG, but which operate as independent businesses. The NCG promotes the surrounding wilderness area through a culture and eco-adventure-based-operation known as Lisims Backcountry Adventures Inc. (NLG 2011, n.d.-b). Other enterprises under the NCG umbrella include Nisga'a Fisheries Ltd., enTel Communications Inc. and Lisims Forest Resources LP.

Other business income is generated from forest products (including non-timber forest products such as pine mushrooms), and fish and seafood products (NLG n.d.-b). For example, over $6.6 million has entered the Nisga'a economy through the harvest of salmon since the NFA went into effect (NLG 2009). Some Nisga'a businesses are currently expanding into other sectors such as mining and energy.

27.2.3 Health Setting

27.2.3.1 Community Health Facilities and Services

The Nisga'a Valley Health Authority (NVHA) manages healthcare services and delivery in Nisga'a villages, through a primary health centre in Gitlaxt'aamiks, and satellite clinics in the other Nisga'a villages. For more complex, long-term care, the nearest full-service health facility is Mill Memorial Hospital in Terrace.

27.2.3.2 Emergency and Social Services

The RCMP Lisims / Nass Valley detachment provides policing services to the Nisga'a villages and is based in Gitlaxt'aamiks. Emergency services are provided by the Volunteer Fire Department in Gitlaxt'aamiks and by community-run Fire and Rescue Services in Laxgalts'ap. For ambulance, Nisga'a communities are serviced by the northern region of BC Ambulance, and the NVHA operates an emergency phone service.

Nisga'a Child and Family Services (NCFS) provides family support and development programs. Each Nisga'a village government also has its own social development department, which provides programs at the community level, including day care and pre-school facilities and youth programs (NLG N.d.-d).

Each Nisga'a village has a recreation centre with a gymnasium and various activity rooms that house community-based recreation programs organized and funded by NCFS (NLG 2009). Nisga'a village governments each have a social services or development department intended to provide or manage a range of programs including basic and special needs, home care for seniors and/or disabled, training and education support, domestic violence prevention, and support services (Rescan 2010; NLG 2011). Nisga'a Child and Family Services (NCFS) has offices in Gitlaxt'aamiks, Terrace, and Prince Rupert. NCFS coordinates and provides services in compliance with the child welfare statues as well as broader, non-statutory child and youth services delivered through community volunteers (NLG 2009).

27.2.3.3 Health and Community Well-being

AANDC produces a community well-being index (CWBI) for Aboriginal communities based on an aggregate of income, education, housing conditions, and labour force activity. The four Nisga'a

communities had an average CWBI rating of 65 in 2006 (AANDC 2011),[4] which was slightly above the national average of 62 for Aboriginal communities, although lower than the national average for CWBI of 80 for non-Aboriginal communities.

Provincially, BC Stats data ranks overall CWB for Local Health Area (LHA) 92, which includes the four Nisga'a villages, as the fifth-lowest in the province.[5] LHA 92 scored highest in education concerns, and second-highest in crime. However, it was closer to the median of LHAs across the province in terms of economic hardship and children (less than 15 years) at risk (BC Stats 2011a).

BC Stats uses a variety of indicators to measure and report on crime at the LHA scale, including total serious crime rate per thousand population, the number of serious crimes per police officer, the rate of violent crime per thousand, and percentage of serious crime committed by juveniles (age 12 to 17). LHA 92 generally has a poorer ranking than provincial averages for rates in all crime statistics categories. One notable exception is the rate of serious crime which in recent years has enjoyed a substantial decline in LHA 92 (-23.5%) equivalent to that seen across BC (BC Stats 2011b).

In 2011, Nisga'a LHA 92 reported life expectancy in the area at 75.2 years, compared to 78.0 years for the Regional District of Kitimat-Stikine (RDKS) and 82.0 years for the province as a whole. In terms of potential years of life lost (PYLL), LHA 92 is comparable to the RDKS as a whole according to most indicators, except for PYLL due to suicide, which was nearly quadruple that of the RDKS, and ten times that of the province in the 2006-2010 period (BC Stats 2011b).[6]

The infant mortality rate reported for LHA 92 is zero, likely because there are no hospitals in the LHA, and women usually travel to Terrace for maternity care and childbirth. The rate of children in care for the LHA (19.8/1,000 children) was more than double the provincial rate (9.1/1,000 children); the percentage of lone parents in the Nisga'a LHA was 32.9%, compared to the provincial rate of 25.7% (BC Stats 2011b).

The percentage of young adults who did not graduate in LHA 92 (72.1%) was more than double that of the province (27.9%). LHA 92 had the highest number of teenage pregnancies[7] at 138.7 per 1,000, more than double, and in a few cases triple, the number of teenage pregnancies in other LHAs (BC Stats 2011b).

27.2.4 Heritage Setting

The Nisga'a Land Use Plan (NLG 2002a) identifies heritage preservation as a priority for Nisga'a Nation. Sites of heritage interest to Nisga'a Nation include old village sites, trails, gravesites, house sites, oral history landmarks, and culturally modified trees. Nisga'a attach general traditional/heritage value to the land, linked to historical and traditional use and occupation, and place heritage value on the Nass Area.

Treaty Creek, north of Bowser Lake, marks the traditional boundary between the Tahltan and Nisga'a. In the late 19th Century, a peace treaty between Nisga'a Nation and the Tahltan Nation was concluded at a spot along the creek (now called "Treaty Rock"). Treaty Rock, a one-hectare site located on the south side of Treaty Creek, is of cultural and historic significance to Nisga'a and Tahltan people, and, is designated a provincial heritage site (Borden Number HdTj-1) under the NFA (NTC/Ayuukhl Nisga'a Department, Aiyansh BC, cited in GeoBC n.d.).

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[4] Except for Laxgalts'ap, which did not register a CWB index rating in 2006 due to data suppression by Statistics Canada. The index is out of 100; theoretically, the higher the number, the greater the community's well-being.
[5] The boundaries of LHA 92 correspond to Nisga'a Lands, as does Nisga'a SD 92.
[6] Potential years of life lost (PYLL) is the sum, over all persons dying from a particular cause, of the years that these persons would have lived had they experienced normal life expectation.
[7] Average 2008-2010 for women aged 15 to 19.

27.2.5 Current Use of Lands and Resources

Chapter 25 describes Nisga'a current use of land and resources for traditional purposes.

Current Fishing

Nisga'a harvest a variety of aquatic resources including sockeye, pink, Chinook, coho and chum, steelhead, oolichan, intertidal bivalves, seaweed, halibut and marine mammals and freshwater fish. NLG and the Government of Canada manage the Nass salmon fishery. Between the effective date of the NFA (2000) and 2009, approximately $6.7 million has entered the Nisga'a economy through the harvest of salmon (NLG 2009). Nisga'a Fisheries Ltd. oversees the harvest and sale of Nisga'a fish and operates three landing sites on the Nass River (NLG n.d.-c).

Nisga'a reported they fish for sockeye and Chinook salmon in Bowser Lake, where 8% of Nass River sockeye spawn. Bowser Lake drains into the Bell-Irving River approximately 36 km upstream from the Bell-Irving confluence with the Nass River (Figure 27.4-1).

Current Wildlife

Nisga'a hunt various mammal and bird species, including moose, mountain goats, deer, bears, grouse, ducks and geese (Table 25.3-2). Available information identifies hunting activity to be occurring in more southerly areas of their territory, particularly within the NWA (McNeary 1976; Sterritt et al. 1998).

NLG manages and regulates wildlife harvesting. For example, to address recent moose population declines, NLG and BC have reduced moose harvest allocations in the Nass Wildlife Area for both Nisga'a citizens and resident/non-resident hunters (Rescan 2013). NLG has introduced a five-year moose conservation plan to help the population rebuild itself and mitigate for effects of over-harvesting and resource development on moose (NLG 2008).

Nisga'a people have traditionally trapped fur-bearing mammals, including marmot, fisher, marten, mink, and weasel, although the level of trapping activity, according to recent data collection in Nisga'a communities may be in decline. To date, Nisga'a have not identified any hunting areas within the Wildlife LSA or RSA (Figure 27.4-2).

There is a lack of information on Nisga'a use of the Wildlife LSA or RSA for hunting or trapping.

Current Gathering

Nisga'a harvest a variety of berries, plants, trees, and aquatic plants for domestic, medicinal and commercial uses (Table 25.3-3). For example, pine mushrooms are commercially harvested throughout Nisga'a Lands. NLG requires all Nisga'a and non-Nisga'a pine mushroom harvesters to acquire a permit (Avanti 2012). Lisims Forest Resources LP, a Nisga'a-owned corporation, is engaged in the harvest and sale of non-timber forest products, including pine mushrooms (NLG n.d.-c). In 2008, Nisga'a harvested 11,656 kilograms (kg) of mushrooms, which generated over $43,000 in revenue (NLG 2009). To date Nisga'a have not identified gathering areas that overlap with project components and activities (Figure 27.4-2).

Habitations, Trails, Burial Sites, and Cultural Landscapes

Under the NFA, Treaty Rock is a designated heritage site (Borden number HdTj-1), located on the edge of the Heritage RSA. The one ha site is located 5 km northwest of the access road. Both the Tahltan Nation and Nisga'a Nation have identified Treaty Rock as an important cultural site. There are no other sites designated in the NFA in the Heritage LSA or RSA (Figure 22.1-1).

27.3 SUMMARY OF NISGA'A CONSULTATION ACTIVITIES

This section provides a summary of the Proponent's information distribution and consultation activities undertaken with Nisga'a Nation until May 16, 2014, and an overview of planned consultation during the Application/EIS review stage. Further information is provided in Sections 3.2 of Chapter 3, Information Distribution and Consultation and Table 3D-3 of Appendix 3-D. Table 3E-3 of Appendix 3-E identifies issues and interests raised by Nisga'a Nation and the Proponent's response to the issues. Section 27.6.3 also contains a copy of the Table in Appendix 3-E. Nisga'a Nation consultation has been guided by:

- requirements set out in the BC EAO Section 11 Order issued for the Project;
- the Project Aboriginal Consultation Plan (Appendix 3-K);
- the Project AIR and EIS Guidelines;
- Chapter 10, Section 6 of the NFA; and
- direction provided by the BC EAO and CEA Agency.

27.3.1 Capacity Funding and Agreements

Capacity funding in the amount of $49,998 was provided to NLG to enable their participation in the review of the EA EIS and EA report. The Proponent is in discussions with NLG on capacity funding to participate in the EA process and other matters. To date, no agreements have been finalized.

Pretivm is committed to developing an IBA, or similar negotiated agreement, with NLG. Although discussions are ongoing, to date no agreements have been made with NLG or any Village governments.

27.3.2 Aboriginal Consultation Plan and Aboriginal Consultation Reports

The Proponent prepared an Aboriginal Consultation Plan, which outlined their approach to Aboriginal engagement during the pre-Application/pre-EIS stage and provided a plan for Aboriginal engagement during the Application/EIS review stage (Appendix 3-K). The Proponent provided the draft plan to NLG in August 2013 for review and comment, and NLG did not provide any comments on the plan. The final plan is appended in Appendix 3-K.

As directed by the Section 11 Order, the Proponent prepared two Aboriginal Consultation Reports which reported on the results of consultations based on the Aboriginal Consultation Plan. The first report, *Brucejack Gold Mine Project: Interim Pre-Application Aboriginal Consultation Report,* covered the period consultation activities from November 1, 2011 to November 30, 2013. This report was provided to NLG for review and comment. The report was revised to address NLG comments and the final report was submitted to the BC EAO. The second report, *Brucejack Gold Mine Project: Pre-Application Aboriginal Consultation Report*, covered consultation activities from November 1, 2011 to March 31, 2014. This report was provided to the NLG in April 2014. The final report is appended in Appendix 3-L.

27.3.3 EAO Working Group

The BC EAO/CEA Agency established the Brucejack Gold Mine Project Working Group in May 2013 and invited NLG to participate on the Working Group. The first Working Group meeting was held September 4, 2013 to environmental baseline study results, and to seek comments on the proposed valued components and draft AIR. A second Working Group meeting was held on May 8, 2014 to discuss water quality and water quality modelling results. The Proponent attended both meetings and will attend future meetings, as requested by BC EAO, to provide information and respond to questions.

27.3.4 Consultation on Draft Conclusions Related to Nisga'a Rights and Interests

The Proponent prepared and provided a memo to Nisga'a Lisims Government in May 2014 summarizing the conclusions in the Application/EIS related to the Project's potential effects on Nisga'a interests and rights. At the time of writing the Application/EIS, no comments had been received from Nisga'a.

27.3.5 Proposed Nisga'a Consultation – Application/EIS Review Stage

Once the Application/EIS is accepted for formal review, the 180-day review will be initiated and this stage will include a public comment period established by BC EAO. During the Application review stage, Pretivm will:

- provide copies of the Application/EIS to NLG for review and comment;
- within the time limits set by the BC EAO, notify Nisga'a communities about the public comment period;
- provide written responses to comments received from the NLG on the Application/EIS within the timeframe specified by the BC EAO;
- attend Working Group meetings organized by the BC EAO and CEA Agency to provide information related to the Application/EIS and respond to questions on the Application/EIS;
- by mutual agreement, hold discussions with NLG to discuss potential adverse effects of the proposed Project on the rights and interests of the Nisga'a Nation under the NFA and proposals to avoid, mitigate, or otherwise address the impacts as appropriate;
- in discussion with NLG and BC EAO, host a community meeting in at least one of the Nisga'a villages;
- review and consider Nisga'a Nation comments during the Application/EIS review stage;
- compile, track, and, where possible, address issues raised by Nisga'a Nation during engagement activities, including attempting to resolve any outstanding issues;
- within time limits set by the BC EAO (Section 17.3 of the Section 11 Order) prepare an Aboriginal Consultation Report that summarizes engagement to date with Nisga'a Nation including feedback and information received from Nisga'a Nation; identifies potential adverse impacts of the proposed Project on the rights and interests of Nisga'a Nation under the NFA and proposals to avoid, mitigate, or otherwise address the impacts as appropriate; and discuss next steps/future engagement activities if different from those outlined in the Plan;
- provide the Aboriginal Consultation Report to NLG for review and discussion, and incorporate feedback received from NLG into the final Aboriginal Consultation Reports to be distributed to the NLG, BC EAO, and CEA Agency;
- within time limits set by the BC EAO, provide a summary report of any potential agreements reached with Nisga'a Nation or a Nisga'a Village within the meaning of paragraphs 8(i) and 10 of Chapter 10 of the NFA;
- consider other means of engagement brought forward by NLG, if applicable; and
- undertake further engagement with Nisga'a Nation as directed by the BC EAO.

Additional information distribution materials will be developed for use during this stage (e.g., information handouts, posters, etc.).

27.3.6 Issues raised by Nisga'a to Date

During the pre-Application/pre-EIS stage, NLG and Nisga'a Village governments have raised issues with respect to the topics listed in Table 27.3-1. These issues are considered in the assessment of effects on Nisga'a interests, where appropriate.

27.4 ASSESSMENT OF ENVIRONMENTAL EFFECTS PURSUANT TO PARAGRAPH 8(E) OF CHAPTER 10 OF THE *NISGA'A FINAL AGREEMENT*

The assessment of effects on Nisga'a 8(e) interests considers the potential effects on Nisga'a citizens' right to harvest fish and aquatic plants, wildlife and migratory birds, and non-salmon species of fish and aquatic plants, including marine mammals. This section provides an analysis of whether the Project can reasonably be expected to have adverse environmental effects on residents of Nisga'a Lands, Nisga'a Lands, or Nisga'a interests set out in the NFA, including any measures to prevent or mitigate such effects.

27.4.1 Establishing the Scope of the 8(e) Assessment

There is potential for project components and activities to interact with Nisga'a rights and interests in the Nass Area.

The scope of the assessment of environmental effects on Nisga'a 8(e) interests includes fish and migratory birds for the following reasons:

- Nisga'a reported they use Bowser Lake to harvest chinook and sockeye salmon; and
- The Project is located in the Nass Area where Nisga'a citizens have a right to harvest migratory birds.

Environmental effects on Nisga'a 8(e) interests related to land, including Nisga'a Lands and Nisga'a fee simple lands (Category A and B lands), and other land-related interests (i.e., Nisga'a Memorial Lava Bed Park and ecological reserve, commercial recreation tenure, traplines, angling guide licences, any guide-outfitter certificate and licence, water reservations, designated heritage site), Nisga'a citizens' abilities to access Crown lands and Nisga'a citizens' rights to harvest wildlife are not assessed for the following reasons:

- the Project is located outside of Nisga'a Lands, approximately 125 km from the junction of the Brucejack Access Road and Highway 37 to the nearest Nisga'a village of Git'laxt'aamiks;
- the Project is not located in the Nass Wildlife Area; project traffic will travel through this area but traffic effects were not scoped into the assessment by the BC EAO;
- other Mine Site is not located in the Nass Area and the mine site drains to the Unuk River watershed;
- there is a lack of information on the use of the Project area by Nisga'a citizens for hunting or trapping;
- there is a lack of information on Nisga'a use of Crown land in the Project area; and
- Treaty Rock, a provincially designated heritage site is not located near project infrastructure or activities.

Table 27.3-1. Issues identified by Nisga'a Lisims Government and Nisga'a Village Governments (until May 16, 2014)

Issue	Proponent Response	Issue Raised by
Country Foods Any impact to traditional foods (e.g., fish harvesting - present and future) is an impact to treaty rights regardless of whether or not it is consumed.	Potential effects on traditional or country foods are assessed in Chapter 21, Assessment of Potential Health Effects and considered in Chapter 25, Assessment of Potential Effects on Current Use of Land and Resources for Traditional Purposes. The Application/EIS predicts there will be no residual effects on the quality of country foods. A Screening Level Risk Assessment (SLRA) for the LSA (Chapter 21, Section 21.6.4.2) predicted no unacceptable risks related to consumption of moose, snowshoe hare, grouse, or berries (the species selected for testing and representative of all country foods in the LSA and RSA) during Operation and Closure. Based on the measured baseline conditions and the modelled Operation and Closure conditions, the quality of country foods is not expected to change substantially. The Exposure Ratio (ER) and Recommended Maximum Weekly Intake (RMWI) of the assessed country foods did not change substantially from baseline to Operation and Closure scenarios.	NLG
Consultation Concern about low level of attendance by Nisga'a at the Nov. 25, 2013 Open House in New Aiyansh.	Pretivm placed notices advertising the dates of the open houses, and the locations and timing of the public comment period for a three-week period in the following newspapers: Northern Connector, Terrace Standard, and Interior News. Pretivm notified NLG and the four village governments of the open house in New Aiyansh and provided advertising materials for posting in the villages including small posters. Pretivm will work with NLG and village governments to advertise the open house to be held following submission of the Application/EIS.	Gitlaxt'aamiks Village Government
Consultation Establishment of, and adherence to, a formal Nisga'a communications protocol.	A Communications Protocol was signed by Pretivm and NLG in February 2013.	NLG
Consultation Pretivm to provide baseline material to NLG directly (not via provincial and federal governments).	Baseline reports have been distributed to the BC EAO Project Working Group, of which NLG is a member.	NLG
Consultation Would like the PEA to be presented to NLG.	Pretivm presented NLG with the PEA results in an April 4, 2012 meeting in Vancouver, BC.	NLG
Employment/Economic Opportunities	In the Application/EIS, Pretivm has committed to communicate the Project development schedule, workforce requirements, hiring schedule, workforce recruitment process, and procurement to Aboriginal and non-Aboriginal communities. The distribution of this information is intended to assist communities with planning and making decisions to help them take advantage of the economic opportunities that will be offered by the Project. Hiring practices will follow provincial and federal legislation and regulations. LSA and RSA residents will be hired, where possible. The Project will provide regional, provincial and national benefits (Section 1.9 of Chapter 1, Project Overview). Indirect and induced Project benefits include increase in household income and GDP/output as well as benefits to supplier industries.	Gitlaxt'aamiks Village Government NAE

(continued)

Table 27.3-1. Issues identified by Nisga'a Lisims Government and Nisga'a Village Governments (until May 16, 2014; continued)

Issue	Proponent Response	Issue Raised by
Employment/Economic Opportunities NLG would like to be involved in all stages of the Project from construction, to maintenance, to reclamation.	Pretivm is committed to developing an agreement to IBA, or similar negotiated agreement, with NLG.	NLG
Employment/Economic Opportunities Select the union for contracting so Nisga'a villages can start speaking with them proactively	Pretivm will offer assistance in connecting the relevant individuals within Nisga'a Nation and First Nations with external organizations including contractors and other potential suppliers to the Project. This will be to facilitate the development of relationships between Aboriginal workers and businesses, and between Aboriginal businesses and non-Aboriginal businesses. It is not appropriate for Pretivm to preferentially encourage the development of relationships with specific unions; rather, ongoing communications will foster the development of relationships among all interested and active participants who have an interest in benefiting from the Project, as appropriate.	Gitlaxt'aamiks Village Government
Fish and Fish Habitat A water quality incident could affect sockeye salmon in Bowser Lake	Pretivm acknowledges the importance of sockeye salmon in Bowser Lake. The proposed Project is not expected to affect sockeye in the Bowser River and Lake watersheds, nor any other watershed with sockeye salmon within the regional study area. Significant effects on sockeye salmon spawning or rearing (e.g., fish habitat loss) habitat are not predicted due to access road upgrades or use with the proposed mitigation measures (Sections 15.6.1 to 15.6.4 of Chapter 15, Assessment of Potential Fish and Fish Habitat Effects). Significant effects on sockeye salmon populations and habitat due to a spill are not predicted because of the spill prevention measures proposed and spill response plan (Chapter 31, Accidents and Malfunctions, and Section 15.5.1). Effects on sockeye populations and habitat downstream in Bowser Lake, due to a change in water quality, are not predicted to occur because tailings are proposed to be deposited in Brucejack Lake, which is located in the Unuk River watershed. Furthermore, the Mine Site discharges will be directed to Brucejack Lake, which is not hydrologically connected to the Nass River or Bowser Lake watersheds; therefore, there would not be any effects on the downstream receiving environment as a result of the discharge of tailings.	NLG
Fish and Fish Habitat Nisga'a fish for Chinook salmon in Bowser Lake	Pretivm acknowledges the importance of Nisga'a Chinook fishing in Bowser Lake. Chinook are known to be present in Bowser Lake (see Table 15.3-3 in Chapter 15, Assessment of Potential Fish and Fish Habitat Effects). The proposed Project is not expected to affect Chinook salmon in the Bowser River and Lake watersheds, nor any other watershed with Chinook salmon within the regional study area. Effects on Chinook salmon spawning or rearing (e.g., fish habitat loss) habitat are not predicted due to access road upgrades or use with the proposed mitigation measures (Sections 15.6.1 to 15.6.4 of Chapter 15). Effects on Chinook salmon populations and habitat downstream in Bowser Lake are not predicted to occur because tailings are proposed to be deposited in Brucejack Lake, which is located in the Unuk River watershed. Furthermore, the Mine Site discharge will be directed to Brucejack Lake, which is not hydrologically connected to the Nass River or Bowser Lake watersheds; therefore, there would not be any effects on the downstream receiving environment as a result of the discharge of tailings.	NLG

(continued)

Table 27.3-1. Issues identified by Nisga'a Lisims Government and Nisga'a Village Governments (until May 16, 2014; continued)

Issue	Proponent Response	Issue Raised by
Human Health Consider a food web study in Nass area to ensure impacts are captured	Country foods are included in the human health impact assessment both for baseline conditions (Appendix 21-A of Chapter 21) and for predicted Project-related potential effects (Chapter 21). The approach for the assessment of potential effects on country foods was based on Health Canada guidelines for assessing food issues in environmental impact assessment (Health Canada 2010a, 2010c, 2010b, 2010d). The spatial boundary for the country foods baseline study area was based on the proposed infrastructure footprint, Project development, physical barriers, and watershed boundaries (see Appendix 21-A, Section 5). The country foods baseline LSA was adopted as the country foods effects assessment LSA. For further information on the country foods baseline study area, please refer to Appendix 21-A, Section 5. The Nass Area is to the southeast of the country foods LSA. The extent of any potential Project related changes in the quality of country foods are expected to remain within the country foods LSA. Therefore no Project related human health effects due to consumption of country foods from the Nass Area are expected.	NLG
Hydrology Potential impacts on the Knipple Glacier and the watershed due to glacial melt and vehicle traffic	Glaciers were considered as a sub-component of surface water hydrology in the Application/EIS (Chapter 10, Surface Water Hydrology Predictive Study; Section 10.4.1, Selecting Intermediate Components). Glacier ablation was selected as an indicator for this sub-component. Potential effects of the Project, including increased debris and dust, on the Knipple Glacier have been qualitatively characterized. The potential effects of debris from traffic on the glaciohydrology of the glacier are assessed in Appendix 10-C. Based on a first approximation analysis of the glaciohydrology, the changes in the summer ablation of Knipple Glacier due to the access road are predicted to be less than 1% of the baseline summer ablation values. Increased fugitive dustfall levels were estimated due to their potential effect on albedo, and in turn, on glacier melt. The air quality dispersion model (Chapter 7, Air Quality Predictive Study) predicted increased dustfall levels covering approximately 3 km of the southeast end, and 200 m of the northwest end, of the glacier. The dustfall level on these segments of the glacier is predicted to be up to 0.95 mg/dm^2/day (Chapter 7). Compared to the baseline level of 0.71 gm/dm^2/day, this is approximately an increase of 34%, but it is still lower than the objectives of 1.7 to 2.9 mg/dm^2/day stated in the provincial objectives (BC MOE 1979).	NLG
Scope of Assessment Brucejack Access Road should be included within the scope of the EA.	The already built exploration access road is not included in the scope of the assessment. The EA considers the potential effects of upgrading, using, maintaining and decommissioning the access road. Pretivm has committed to prepare a report for NLG to assess the impacts of constructing the exploration road. This report is not part of the EA review.	NLG
Water Quality Add Knipple Creek to baseline water quality program (related to concerns related to glacial melt and potential sedimentation).	Knipple Creek was added to the baseline water quality program in September 2013, referred to as "Knipple Glacier outflow" in both the cumulative water quality and aquatic resources baseline reports, appended to Chapters 13, Assessment of Potential Surface Water Quality Effects, and Chapter 14, Assessment of Potential Aquatic Resources Effects, respectively. In 2013, the Knipple Glacier outflow was sampled monthly from September to November, and it will be sampled monthly in 2014. Samples were also collected at three points along the Knipple Glacier to determine whether there are effects from the existing road. Water quality parameters measured at these sites include: general physicochemistry (total suspended solids, pH), nutrients, anions and metals (total and dissolved).	NLG

(continued)

Table 27.3-1. Issues identified by Nisga'a Lisims Government and Nisga'a Village Governments (until May 16, 2014; completed)

Issue	Proponent Response	Issue Raised by
Water Quality Concern about potential for leach tailings to affect Bowser Lake.	Pretivm acknowledges the importance of water quality within Bowser Lake. Changes in water quality are not predicted to occur as tailings and waste rock are proposed to be deposited in Brucejack Lake, which is located in the Unuk River watershed. Furthermore, the Mine Site discharge pathway is towards Brucejack Lake, which is not hydrologically connected to the Bowser Watershed; therefore, there would not be any effects to the Bowser Lake as a result of tailings discharge.	NLG
Wildlife Cumulative impacts to moose, especially as a result of the access road.	The potential effects of access road traffic on moose are assessed in the Wildlife chapter (Section 18.6.1 of Chapter 18) in the Application/EIS. Predicted residual effects on moose (Section 18.7.1 of Chapter 18) include: disruption of movement, direct mortality, and indirect mortality. The potential residual effects of disruption of movement, direct mortality, and indirect mortality due to the Project (including the access road) is rated as not significant.	NLG
Wildlife Assessment of effects	Chapter 18, Assessment of Potential Wildlife Effects, assesses potential effects on. Wildlife VCs included in the Application/EIS are moose, mountain goat, grizzly bear, American marten, hoary marmot, bats, migratory waterbirds, migratory landbirds, raptors, and amphibians (western toad). The rationale for inclusion and exclusion of wildlife VCs in the effects assessment is provided in Tables 18.4-2 and 18.4-3 of Chapter 18. The Wildlife Management and Monitoring Plan is provided in Chapter 29.21.	Gitlaxt'aamiks Village Government

27.4.1.1 Spatial and Temporal Boundaries

The spatial boundaries for the assessment of potential environmental effects on Nisga'a 8(e) interests are informed by the spatial boundaries identified in the respective biophysical chapter that relates to the Nisga'a interest. These boundaries are cross referenced below.

The temporal boundaries are:

- **Construction:** 2 years;
- **Operation:** 22 years;
- **Closure:** 2 years (includes Project decommissioning, abandonment, and reclamation activities); and
- **Post-closure:** minimum of 3 years (includes ongoing reclamation activities and post-closure monitoring).

27.4.2 Assessment of Effects under Paragraph 8(e)

The assessment of effects on each Nisga'a interests included in the assessment based on the discussion in Section 27.4.1. The effects assessment generally follows the methodology outline in Chapter 6 and includes a brief summary of the baseline setting relating to Nisga'a interest, identification of potential effects, and identification of residual effects. Residual effects are characterized using the criteria (magnitude, duration, frequency, geographic extent, and reversibility) outlined in Chapter 6, Assessment Methodology, and defined below:

- **Magnitude** refers to the expected severity or size of the residual effect and resulting impact on the exercise of treaty rights and interests.
- **Duration** refers to the length of time the right and interest is/are anticipated to be at risk of infringement.
- **Frequency** refers to how often the residual effect occurs and relates to the frequency of the physical work or activity causing the residual effect.
- **Geographic extent** refers to the spatial extent over which the residual effect is expected to occur.
- **Reversibility** refers to whether or not the residual effect on Nisga'a interest can be reversed once the physical activity causing the disturbance stops.

The likelihood of a residual effect occurring is also considered using the definition provided in Chapter 6, Assessment Methodology. The level of confidence in the predictions of project effects can vary depending on the availability of data and the effectiveness of mitigation measures, environmental management plans and follow-up programs.

The effects assessment does not include a determination of the significance of residual adverse effects on Nisga'a interests. The assessment on Nisga'a interests is informed by the effects assessments and conclusions reached in the relevant biophysical chapters in the Application/EIS.

27.4.2.1 Effects on Nisga'a Nation Interests in Fish and Aquatic Plants

Nisga'a citizens have the right to harvest fish and aquatic plants subject to measures that are necessary for conservation and legislation enacted for the purposes of public health and safety. Nisga'a fish allocation is set out as a percentage of the total allowable catch and includes specific

allocations for Nass salmon and steelhead as well as oolichan and intertidal bivalves. Nisga'a also have the right to harvest non-salmon species and aquatic plants, including marine mammals, in the Nass Area. Nisga'a also have as well as fisheries management and Nisga'a rights to participate in the general commercial fishery.

During consultations, Nisga'a raised concerns about the Project's effects on Bowser Lake salmon. Nisga'a reported they fish for sockeye and Chinook salmon in Bowser Lake, where 8% of Nass River sockeye spawn. Bowser Lake drains into the Bell-Irving River approximately 36 km upstream from the Bell-Irving confluence with the Nass River.

Baseline Characterization

Section 15.3.3 describes the fish and fish habitat baseline studies. The objectives of the studies were to:

- assess the quality of fish habitat in streams, rivers, and lakes;
- locate and document barriers to fish movement within the study area;
- identify critical habitat, particularly for spawning salmon, in the baseline fish and fish habitat study area;
- determine fish presence, community composition, and distribution in streams, rivers, lakes, and wetlands within the baseline fish and fish habitat study area; and
- characterize aspects of the physiology and biology of sentinel fish species in the baseline study area, including tissue metal content and indicators of survival, energy use, and energy storage in accordance with guidelines contained in the Metal Mining Effluent Regulations (MMER; SOR/2002-222) of the *Fisheries Act* (1985).

The effects assessment focussed on two VCs: fish (Dolly Varden, bull trout and Pacific salmon) and fish habitat. The identified fish species were grouped together because of similar species habitat requirements and distribution within the baseline fish and fish habitat study area. Section 15.3.4 describes the fish and fish habitat baseline setting. A description of the baseline setting for fish harvested by Nisga'a is provided below.

Pacific Salmon

Pacific salmon include coho, Chinook, and sockeye salmon. These species use certain watersheds (i.e., Unuk, Bell-Irving, Bowser) within the baseline fish and fish habitat study area as spawning, rearing, and overwintering habitat. Coho salmon spawn in the Todedada Creek mainstem and tributaries and Bowser River tributaries. Sockeye salmon spawn in the Bowser River mainstem upstream of Bowser Lake and Todedada Creek tributaries. Bowser River inlet and portions of the lake are believed to provide spawning habitat for a substantial sockeye salmon population. The last three years of available sockeye salmon escapement data for this area (1997 to 1999) indicate returns of 3,000 to 66,625 sockeye salmon, making it one of the four main stocks in the Nass system. The Bowser Lake population makes up approximately 8% of the Nass River stock.

Steelhead

Steelhead are present within baseline study area watersheds (i.e., Bell-Irving, Bowser, and Unuk watersheds) based upon baseline and historical data. Summer-run steelhead are present in these watersheds, but not in the Mine Site.

Bull Trout

Bull trout is a blue-listed species (species of concern) in BC. Bull Trout distribution is less widespread within the baseline study area than is Dolly Varden distribution, based on baseline and historical data. Stream-resident, fluvial, and adfluvial life history forms are present within the baseline fish and fish habitat study area, but are not present at the Brucejack Mine Site. Historical and baseline studies confirm that Bull Trout are present in the Bell-Irving River mainstem, Bowser Lake, Bowser River mainstem, and Scott Creek.

Bull trout are not present in the Unuk River watershed based upon baseline studies and previous studies in the study area.

Dolly Varden

Dolly Varden is a yellow-listed species (species of concern) in BC. Dolly Varden has the widest distribution and abundance compared to all other species within the baseline fish and fish habitat study area, based on baseline and historical data, but are not present at the Brucejack Mine Site. Stream-resident, migratory (sea-run), and lake-resident life history forms are present within the baseline fish and fish habitat study area. Resident and anadromous Dolly Varden are present within the Unuk River watershed.

Other Trout (Coastal Cutthroat Trout)

Coastal cutthroat trout is a blue-listed species (species of concern) in BC. Coastal Cutthroat Trout are present within the Unuk Watershed based upon baseline and historical data. Anadromous coastal cutthroat trout are present in the Unuk Watersheds, but not in the Mine Site.

As outlined in Chapter 15, Assessment of Potential Fish and Fish Habitat Effects, there is no fish or fish habitat within the Brucejack Mine Site, located outside of the Nass Area. There is fish and fish habitat along the Brucejack exploration access road, the proposed transmission line, and near the Bowser Aerodrome and Knipple Transfer Area.

Spatial Boundaries

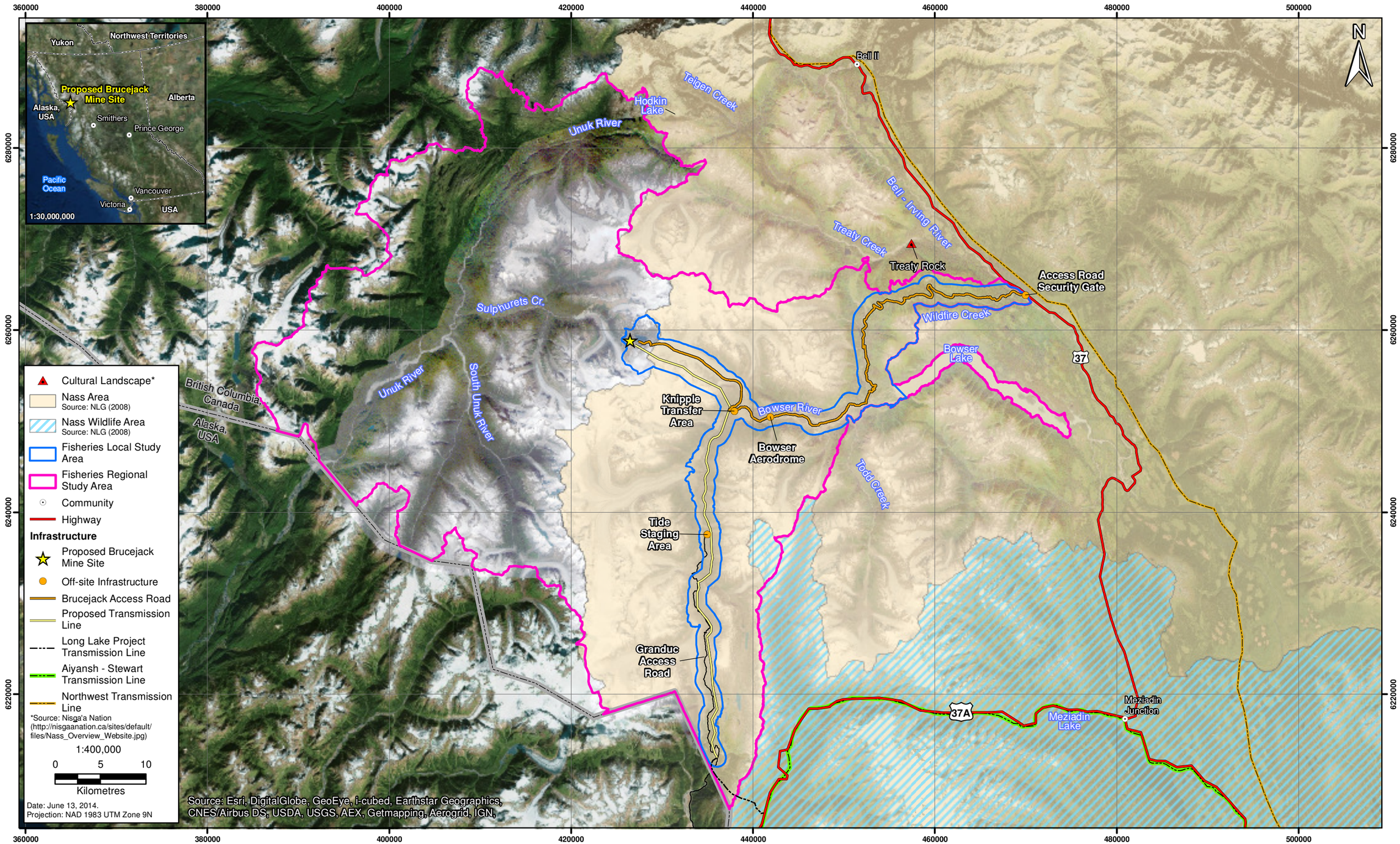
The spatial boundaries for the effects assessment are the Fish and Fish Habitat LSA and RSA (Figure 27.4-1). Approximately 0.9% of the Nass Area is in the LSA and approximately 4% of the RSA is in the Nass Area.

Potential Effects

The Project has the potential to impact fish and fish habitat during Construction, Operation, and Closure. Potential effects include direct mortality during construction, maintenance and decommissioning, erosion and sedimentation, and change in water quality.

Direct mortality of fish may occur along the access road due to direct contact with heavy equipment and dewatering activities during stream crossing maintenance. There may also be increased fishing pressure from unauthorized land users to the opening up of the area. Upgrading of the access road during construction and maintenance of the road during Operation could result in increased sedimentation in fish bearing streams. There could also be increased erosion and sedimentation in fish bearing streams due to runoff during spring freshet and summer rains. Other sources of sedimentation include particulates from construction equipment activity and dust. Sedimentation events can cause fish mortality and physically alter fish habitat as well as fish behaviour. Sedimentation to fish-bearing waters during transmission line construction and maintenance are not anticipated.

Figure 27.4-1
Location of the Nass Area and Nass Wildife Area in Relation to the Fish and Fish Habitat Study Areas



Upgrading of the exploration access road during construction and maintenance during Operation may result in habitat loss. There could also be habitat loss or degradation during the clearing for the Brucejack Transmission Line, Bowser Aerodrome, and the Knipple Transfer Area. Habitat loss or alteration due to water quantity changes was not considered a potential effect for the Project because there will be no interaction between water quantity changes and fish.

Changes in water quality may occur due to diesel fuel or lubricants entering fish habitat, either directly or from runoff associated with precipitation. Activities involving mechanized equipment in or near waterways, such as road, bridge, dam, or other infrastructure construction and activities during Closure and Post-closure reclamation could lead to introduction of small amounts of fuel, oil, or petroleum-based lubricants into the aquatic environment.

Potential Residual Effects

The Application concludes there are residual effects on fish and fish habitat, taking into account the implementation of mitigation (Section 15.6). These residual effects include loss of fish habitat due to erosion and sedimentation during Construction, Operation, and Closure. This effect is rated as **not significant.** Potential effects on fish during Construction, Operation, and Closure include direct mortality due to interaction with heavy equipment and erosion and sedimentation causing smothering of eggs, decreased feeding efficiency, and habitat avoidance. These effects are rated as not significant.

Mitigation Measures

Measures to mitigate impacts on fish and fish habitat include:

- adhering to in-stream construction BMPs;
- implementing a "no fishing" policy to prohibit employees and contractors from fishing at the Mine Site, or while travelling to and from the mine on company business;
- installing a manned gate on the access road to prevent unauthorized access to the area;
- implementing a Transportation and Access Management Plan (Section 29.16);
- following DFO's operational statements for bridge and culvert construction (DFO 2007), and DFO's (1993) *Land Development Guidelines for the Protection of Aquatic Habitat*;
- employing an Environmental Monitor to monitor construction activities;
- implementing a Spill Prevention and Response Plan (Section 29.14); and
- in the unlikely event that instream work will be required, the necessary permits will be obtained from the appropriate agencies and work will comply with permit conditions.

Characterization of Residual Effects

The Project is predicted to have a low level of impact on Nisga'a citizens' right to harvest fish as a result of residual effects on fish species harvested by Nisga'a. A low level of impact is concordant with the findings of the above analysis which demonstrates:

- the magnitude of the residual effects on fish are of minor concern or severity;
- the geographic extent of the effects are predicted to be localized to the access road footprint;
- the effects are anticipated to be reversible in the short to medium-term; and
- the duration is short and the frequency is sporadic.

The likelihood of the effects are considered to be low to medium and the confidence in the assessment is high.

27.4.2.2 Effects on Nisga'a Citizens to Harvest Migratory Birds

Nisga'a citizens have the right to harvest migratory birds in the Nass Area. The effects assessment considers the potential for the Project to result in a change in the ability of Nisga'a citizens to harvest migratory birds in the Nass Area. The Project has the potential to impact migratory birds during Construction, Operation, and Post-closure.

Baseline Characterization

Section 18.3.3 of the Application/EIS describes the wildlife baseline studies. Ten wildlife VCs are considered including waterbirds and landbirds. The wildlife baseline reports (Appendices 18-A, *2013 Wildlife Characterization Baseline Report*) provides details on methods and results for wildlife characterization studies conducted from 2010 to 2013 for the Project.

Baseline studies were conducted to characterize wildlife presence and distribution within the LSA and RSA, and to inventory habitat for the VCs concerned. This included an examination of current wildlife land use management objectives and existing wildlife inventories, identification of species of conservation concern, field inventories, habitat suitability modelling, and DNA programs. The objectives of baseline studies for waterbirds[8] were to:

- characterize seasonal diversity and distribution throughout the LSA and RSA;
- identify important habitats (e.g., breeding sites, migratory staging lakes) in the LSA and RSA;
- identify species of conservation concern in the LSA and RSA during breeding or staging periods.

The objectives of baseline studies for landbirds[9] were to:

- estimate the relative abundance and species richness of landbird species;
- determine habitat associations of landbird communities; and
- determine breeding evidence and presence of species of conservation concern, with a focus on the LSA.

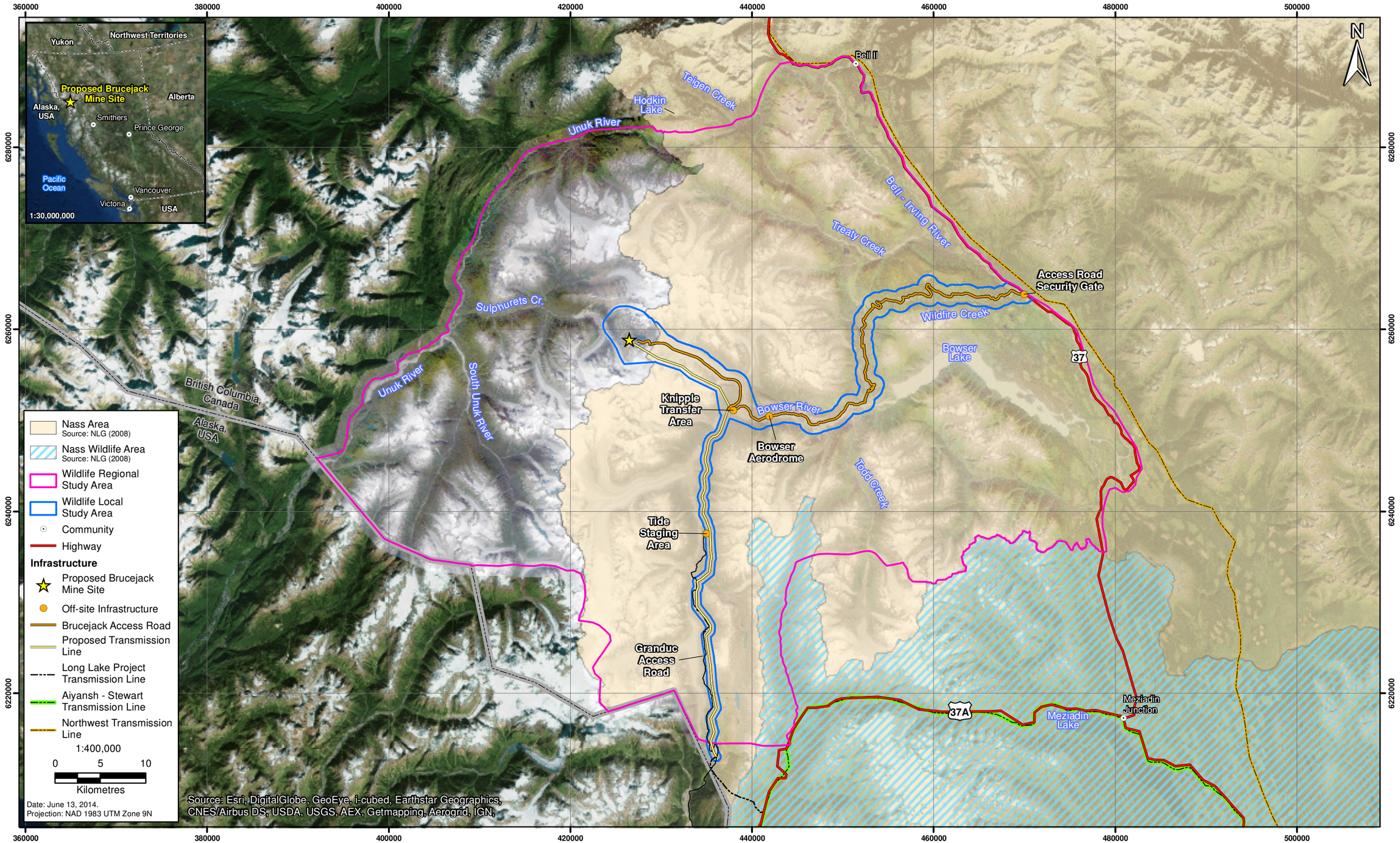
Traditionally, the Nisga'a have harvested grouse, ducks, geese, ptarmigan, and swan in the Nass Wildlife Area. Grouse and ptarmigan are resident birds in the area, while ducks, geese and swans are migratory and so included in the *Migratory Birds Convention Act* (1994). There is no freely available information on the current harvesting rates of these migratory and non-migratory birds in the NWA by the Nisga'a.

Spatial Boundaries

The spatial boundaries for the effects assessment are the Wildlife LSA and RSA (Figure 27.4-2). Approximately 0.6% of the Nass Area is in the LSA and approximately 9.8% of the RSA is in the Nass Area.

[8] Waterbird is encompasses all birds that exclusively use water as habitat for foraging, breeding, or spring and fall staging during the year and includes diving and dabbling ducks, loons, geese, swans, shorebirds, and riverine birds.
[9] Landbirds include songbirds, hummingbirds, woodpeckers, and game birds in terrestrial areas.

Figure 27.4-2
Location of the Nass Area and Nass Wildlife Area in Relation to the Wildlife Study Areas



Potential Effects

The Project has the potential to impact migratory birds during Construction, Operation, and Post-closure. Potential effects include loss and alteration of habitat due to clearing activities during Construction, sensory disturbance due to project noise and lighting, direct mortality due to vehicle interactions and attractants.

Potential Residual Effects

Waterbirds

Potential residual effects on migratory water birds are identified in Section 18.6.8 of the Application/EIS. These effects include:

- **Habitat loss and alteration** - is not predicted to result in a residual effect for migratory waterbirds as the loss is less than 0.3% suitable habitat within the RSA.
- **Sensory disturbance** - is not anticipated to result in a residual effect on migratory waterbirds as the extent of the wetlands, cavity-nesting habitat, and riverine habitat that are considered functionally lost or disturbed due to noise is less than 1% of the available habitat in the RSA for any group regardless of the Project phase (Table 18.6-14). Due to the small area of disturbed habitat, no residual effect of sensory disturbance on migratory waterbirds is anticipated.
- **Direct mortality** - is not anticipated to result in a residual effect on waterbirds with the implementation of mitigation measures.
- **Attractants** - is not anticipated to result in a residual effect on waterbirds with the implementation of mitigation measures.

Landbirds

Potential effects on landbirds are assessed in Section 18.6.9.1 of the Application/EIS. These effects include:

- **Habitat loss and alteration** - is not predicted to result in a residual effect on landbirds, including SARA-listed species and provincial species of conservation concern, with the implementation of mitigation measures.
- **Sensory disturbance** - is not predicted to result in a residual effect on migratory landbirds as less than 1% of the available habitat in the RSA may be disturbed due to Project noise.
- **Direct mortality** - is not anticipated to result in a residual effect on landbirds with the implementation of mitigation measures.
- **Attractants** - is not anticipated to result in a residual effect with the implementation of mitigation measures.

Mitigation Measures

The following measures are proposed to mitigate impacts on waterbirds and landbirds:

- to prevent habitat loss and alteration, active waterbird nests will be avoided by doing clearing outside of breeding periods (April 1 to July 31) or conducting pre-construction surveys for active nests in suitable habitat when clearing is required within the breeding season (April 1 to July 31);
- the design of the transmission line designs will follow established guidelines for bird protection;

- waterbird use of Brucejack Lake will be monitored; if species are attracted to the area and it is considered a potential hazard, measures will be taken to prevent waterbirds from using these areas;
- implementation of the Wildlife Management and Monitoring Plan (Section 29.21);
- enforcing speed restrictions on project roads to reduce incidences of collisions with vehicles; and
- to prevent effects due to attractants, access to infrastructure by birds will be prevented and nesting material will be removed prior to egg-laying.

Characterization of Residual Effects

Based on the effects assessment in Chapter 18, Assessment of Potential Wildlife Effects, of the Application/EIS, no residual effects are predicted on migratory birds with the implementation of mitigation. Therefore, Nisga'a citizens' right to harvest migratory birds in the Nass Area will not be impacted.

Section 17.3 of the AIR requires that cumulative effects on VCs relevant to paragraph 8(e) interests are assessed. Based on the assessment above, no cumulative effects on VCs were identified.

27.5 ASSESSMENT OF EFFECTS PURSUANT TO PARAGRAPH 8(F) OF CHAPTER 10 OF THE *NISGA'A FINAL AGREEMENT*

To assist Canada and BC to comply with the requirements of Chapter 10, paragraph 8(f) of the NFA, the Proponent prepared the Nisga'a Economic, Social and Cultural Impact Assessment (ESCIA; Rescan 2012a) prepared for the environmental assessments of the Kitsault and KSM mine projects. The information in these reports was augmented by interviews with Nisga'a Village governments in February 2014 to update socio-economic baseline data and gather additional information on key issues of concern related to economic, social, and cultural effects of the Project. The Proponent has provided a draft of the ESCIA report to NLG and the parties will discuss the report during the Application/EIS review stage.

The assessment of effects on Nisga'a interests in paragraph 8(f) is informed by the ESCIA report and mitigation measures and environmental management plans identified for social, economic and cultural VCs. Relevant chapters of the Application/EIS are cross-referenced throughout this section. This section is not intended to duplicate the assessment of the Project's effects in Chapter 19, Assessment of Potential Economic Effects; Chapter 20, Assessment of Potential Social Effects; and Chapter 25, Assessment of Potential Effects to Current Use of Lands and Resources for Traditional Purposes. It is intended to focus on the specific issues and interests of Nisga'a citizens with respect to the economic, social, and cultural well-being of Nisga'a Nation.

27.5.1 Establishing the Scope of the Assessment

The scope of the paragraph 8(f) assessment considers effects of the Project on the Nisga'a interests as they relate to the following VCs:

Economic Well-being

- Nisga'a employment and income;
- Nisga'a business revenue;
- Nisga'a business capacity and investment;

- Nisga'a natural resource related earnings and values; and
- NLG revenues and expenses.

Social Well-being

- Housing;
- Community services;
- Community well-being; and
- Nisga'a worker health.

Cultural Well-being

- Culturally important resources and sites; and
- Participation in cultural activities and practices.

In keeping with the approach of the Application/EIS, potential positive effects of the Project are not assessed. However, these are described and assessed more fully in the ESCIA report.

27.5.1.1 Spatial and Temporal Boundaries

The spatial boundaries for the assessment of potential economic, social, and cultural effects pursuant to paragraph 8(f) effects is the Nass Area.

The temporal phases of the Project are:

- **Construction:** 2 years;
- **Operation:** 22 years;
- **Closure:** 2 years (includes Project decommissioning, abandonment, and reclamation activities); and
- **Post-closure:** minimum of 3 years (includes ongoing reclamation activities and post-closure monitoring).

27.5.2 Assessment of Effects under Paragraph 8(f)

Residual effects are those interests that are predicted to remain after the application of mitigation measures. The approach used to identify potential residual effects for each Nisga'a interest included in the effects assessment, as well as the characterization of residual effects (using the criteria of magnitude, duration, frequency, geographic extent, and reversibility) is as outlined in Chapter 6, Assessment Methodology, and described in Section 27.4.3 for the assessment of effects under paragraph 8(e).

27.5.2.1 Effects on Nisga'a Economic Well-being

A number of effects of the Project on economic well-being are positive including: increased employment for Nisga'a citizens; increased income levels in Nisga'a villages and among Nisga'a citizens; increased business activity and income for Nisga'a businesses; and increased business capacity and investment. These positive effects are not assessed further. The potential adverse effects on Nisga'a economic well-being as discussed below.

Nisga'a Employment and Income

At Closure, an adverse economic effect is anticipated as most Project-related income from jobs, contracts and business opportunities come to an end. There will continue to be beneficial employment effects but there will be a loss of total direct employment. Decommissioning, reclamation, and ongoing operation/maintenance activities during Closure and Post-closure will provide employment opportunities, although these specific workforce requirements have yet to be determined. Many of the skills gained at the mine are transferrable and will have benefits beyond the life of the mine, enabling Nisga'a workers to apply at other mines or similar resource development or heavy industrial projects in the region.

Nisga'a Business Capacity and Investment

Highly-qualified Nisga'a are expected to continue to be in high demand, resulting in competition among potential employers with the likelihood that the Brucejack Gold Mine Project and other projects will attract some workers away from their current jobs. This is predicted to make it more difficult for Nisga'a businesses to find workers with the necessary skills, and potentially lead to wage inflation.

However, the evidence is that this is not a substantial concern of Nisga'a businesses. From the results of the a Nisga'a business survey conducted to support the ESCIA report, the concern that "mines may directly hire some of my employees" was rated as very a likely challenge by fewer than 10% of survey respondents. Similarly, "mines may directly hire some of my employees" was considered not likely a challenge by more than 75% of respondents. Although there is expected to be a shortage of skilled workers in the short run that will put pressure on the market for labour, in the long run it is expected that the market will adjust. The impacts on individual businesses are expected to be highly variable, depending on the extent to which the respective labour markets overlap (i.e., in terms of the economic structure of the communities in question, labour force skill sets, labour force experience, geography, and wage levels). Such pressures on individual businesses due to competition in the labour market is a natural and, in the long term, desirable feature of economic development.

Nisga'a Natural Resource Related Earnings and Values

Nisga'a jobs associated with the natural resource sector include fishing, guide outfitting, mineral and energy resource exploration, recreation and tourism, and timber harvesting. Although a number of traditional natural resource use activities take place on Nisga'a Lands, in the Nass Wildlife Area and elsewhere in the Nass Area, Nisga'a citizens are not known to actively use areas within the vicinity of the Brucejack Gold Mine Project. The Project is not located in the Nass Wildlife Area and is not on Nisga'a Land. Therefore, the Project is not expected to directly affect Nisga'a harvesting activities or Nisga'a land-based activities related to the use of those lands. However, as certain components of the Project are located in the Nass Area, there is the potential for the Project to interfere with commercial activities if they do happen in proximity. The main potential for interaction with Nisga'a land use activities is with respect to use of the Brucejack Access Road, but this is expected to be negligible given the limited area of interaction. Given the minimal interaction, an adverse effect on the availability and accessibility of resources is not assessed further.

Nisga'a natural resource use activities, such as fishing and forestry, may experience some increase in competition for labour. Some businesses, may find it difficult to compete with the mining sector, at least for those employees with the appropriate skills and ability (and willingness) to work for the Project. As previously stated, the results of the Nisga'a Business Survey indicates that some adverse impact on local businesses due to labour market demands is expected, but it is not believed to be a pervasive issue across Nisga'a businesses. With respect to incomes, it is not expected that Project worker earnings will differ markedly from the earnings of skilled and experienced Nisga'a workers currently active in other sectors,

such as fishing and forestry. In sum, the adverse effects related to natural resource-related employment and income are predicted to be minimal and are not assessed further.

NLG Revenues and Expenses

It is expected that there will be expenditure components to support the review of the Brucejack Application/EIS, as well as costs associated with any participation of NLG in the review of ongoing environmental and socio-economic monitoring for Construction, Operation, Closure, and Post-closure phases of the Project. Estimates of these costs are not provided at this time because they are to be the subject of subsequent discussions between the Proponent and governments (including NLG). Participation of NLG in monitoring and/or responding to social and cultural impacts occurring in the Nisga'a communities is a question of community priorities and the focus of NLG governance. These issues are best determined at the appropriate time by the communities through NLG.

The Brucejack Gold Mine Project, as well as other prospective projects being developed in the region, is expected to have an overall positive effect on the revenues of NLG related to the potential for additional earnings from a Revenue Sharing Agreement, if one is established for the Project, IBA-related income, and/or Nisga'a Own Source Revenue Agreement.

Mitigation Measures

A number of mitigation measures will be adopted to facilitate the transition of the workforce to other employment following the completion of the Operation phase. The mitigation measures will seek to minimize the adverse effects associated with increased levels of unemployment and will focus on enhancing the ability of Project employees to find employment elsewhere and aims to achieve the following:

- Communications with NLG:
  - provide formal, clear, and transparent communications with NLG in advance of when Closure is going to occur so that affected Project contractors and local business employees are able to adjust accordingly; and
  - engage with NLG to ensure they are aware of the current Project activities and when Closure is going to occur.

- Workforce transition programs:
  - support training and career development opportunities prior to Closure, including worker training programs as part of worker recruitment and on-the-job training to enhance worker job expertise;
  - implement measures prior to Closure to assist employees to identify opportunities for Post-closure employment, including providing job search assistance to workers seeking the service to maximize the number of workers that find alternative suitable employment; and
  - identify skills acquired during employment with the Project and match the identified skills to similar positions available at Closure, as well as alternative industries.

These measures are thought to contribute to Project employees' ability to transition to other employment once Project Operations are discontinued.

With respect to the adverse effect on Nisga'a businesses of an increase in the competition for labour, mitigation includes:

- Communications with NLG on:

  - the Project development schedule, including timing of major activities and key milestones;
  - workforce requirements and the hiring schedule, including types of experience and qualifications required to work at the Project, in particular once it enters the Operation phase; and
  - the workforce recruitment process and where information on recruitment can be obtained.

- Communications with educational institutions:
  - The Proponent will inform NLG, regional, and local educational institutions (including Wilp Wixo'xskwhl Nisga'a Institute), as appropriate, on the Project development schedule and workforce requirements to encourage educational institutions to ensure that relevant programs are available within the RSA and LSA communities, including Nisga'a villages, for residents to take advantage of training and education opportunities relevant to Project employment. Communications are to provide educational institutions throughout the RSA with early notice with respect to workforce job categories, the workforce schedule, and training needs to assist administrators in taking pro-active steps to prepare resources to meet the demand.

- Human resources policies and programs:
  - Hiring practices will follow BC and federal legislation and regulations with a focus on hiring LSA and RSA residents, where possible, in consultation with NLG.

- Nisga'a Nation:
  - through the pursuit of IBAs or other forms of agreements work with NLG to address some of the barriers their community members face with respect to gaining higher levels of education and skill attainment; and
  - work to support pre-existing government training initiatives in order to maximize their effectiveness.

27.5.2.2 Effects on Nisga'a Social Well-being

Direct, indirect, and induced employment and Project expenditures on goods and services are expected to produce intermediate effects, which in turn may have an adverse effect on the social well-being of Nisga'a citizens and communities. The intermediate effects include the potential migration of people to, or back to, the Nisga'a villages in response to economic opportunities during Construction and Operation of the Project, as well as an increase disposable income levels in the communities which can lead to a range of social issues. Mining related shift rotations can also be linked to adverse social effects.

Housing

The current lack of adequate housing in the Nisga'a villages could lead to three possible effects, although the actual outcome is likely to be a combination of these factors:

- a net influx of people to the Nisga'a villages may lead to an increase in over-crowding in some households;
- over-crowding may be a disincentive for some people who would otherwise choose to move to (back to) the Nass Area for mine employment; and
- proceeds of mine-generated employment, businesses, and NLG revenues re-invested in construction and development to upgrade and increase local housing stock in some or all of the Nisga'a villages.

The Project is expected to result in some level of increased pressure on the current housing stock in the Nisga'a villages. The extent of pre-existing housing challenges (e.g., overcrowding, need for repair) is noted in baseline research. This effect is not expected to materialize during Project construction. Rather, this would likely be experienced following the first few years of Project Operation, or once a notable number of people have relocated to the Nisga'a villages for Project-related employment opportunities. Given the modest scale of net immigration anticipated, an increase in housing development to meet the increased demand over the medium to long-term is expected.

Community Services

The Project may impact Nisga'a Nation education services either through effects on delivery and access (i.e., effects on availability of and level of service provided by teachers and administration) and/or on facilities (i.e., availability and capacity of classrooms, equipment, and supplies). Impacts may arise simply from changes in the numbers of students; that is, more students would place greater demands on the system. Impacts on education might also arise from changes in student behaviour, such as the emergence or worsening of social issues in the home or in the community, which might affect young people and spill over into the school environment (ERM Rescan 2014).

The Project may also impact education services within the Nisga'a villages through the influence of its contribution to local employment opportunities in terms of the focus of education and type of training programs available. Typically, local resource development generates employment in specific occupations. In an effort to be prepared for and take advantage of these opportunities, education organizations in Terrace, Smithers, the Hazeltons, and elsewhere have developed targeted training strategies. Baseline research indicates that Nisga'a Valley SD 92 is no exception and has planned, as part of current restructuring efforts, to implement a trades options programs as part of high school curriculum (Brulot 2012; ERM Rescan 2014).

Young people might be induced to leave high school early to pursue comparatively higher paying employment in the mining sector. While this may have been an attractive alternative to finishing school in the past, in today's mining industry high school graduation (or equivalent) is often the minimum requirement for entry-level positions. The modern mining industry is increasingly complex and technology driven and the need for unskilled labour is in decline. Rather, the development of the Project and the skill requirements of Project employment may serve to diversify the type of education and training programs available to Nisga'a (ERM Rescan 2014).

Despite the focus of many of the post-secondary institutions in the LSA on vocational training, trades and technical skills, access is not evenly distributed throughout the study area, with most programs being offered in either Terrace or Smithers. This may create barriers for Aboriginal groups, including Nisga'a Nation, in terms of limited access to post-secondary facilities and programs. A number of other variables (including, for example, education funding and parental expectations), rather than the Project, are expected to play a greater role in the educational outcome of Nisga'a students. The availability of social services (broadly defined to include medical, health, emergency response, seniors' care, childcare, education, training and skills development, and various forms of counselling and domestic support) varies between the Nisga'a villages. Anticipated Project interactions would arise mainly from increased demand related to population increase or, in some cases, increased social issues linked to Project-related employment and income. The size, duration, and location all imply that there is a very low likelihood of Project-specific impacts. Cumulative effects from increased resource development in the region in general are much more likely and are discussed at length in the ESCIA Report (ERM Rescan 2014).

Mine related migration of Nisga'a citizens (or others) living outside of Nisga'a Lands moving to (or back to) the Nisga'a villages will place some additional demand on local facilities and services. Increased pressure on local services may also arise should social issues such as substance abuse, domestic problems, or crime worsen or emerge in relation to mine-related employment, incomes, and work schedules (Gibson and Klinck 2005). Such a situation would likely put an additional strain on local police services and likely on medical/ambulatory services as well (ERM Rescan 2014). In the longer term, enhanced local services could be an outcome for Nisga'a if they are effectively managed to take advantage of economic opportunities and development that may be realized from mine-related employment and income (ERM Rescan 2014).

Community Well-being

Research and experience from other jurisdictions suggest that the influx of workers associated with mining and other large resource development projects can influence changes in individual behaviour, social conditions, and community dynamics in small, remote communities and lead to an increase in social issues. However, given the modest level of in-migration predicted due to the Project, it is unlikely that Nisga'a villages will experience these social impacts to any substantial degree. Ultimately, it is the behaviours and choices of individuals that will have the greatest effect on whether or not changes to the local population lead to the emergence or worsening of social problems. Specifically, should individuals who relocate to the Nisga'a villages for Project employment choose to participate in negative social behaviours (e.g., drinking, drug use), other negative outcomes are anticipated. Alternatively, should individuals who related the Nisga'a villages for Project employment choose to participate in positive social behaviours (e.g., attending to family and community, participating in cultural activities) additional positive outcomes will likely follow. Higher incomes associated with Project employment and the rotational work schedule can lead to potential adverse indirect effects to lifestyle choices. Disposable income, and long periods of down time, can increase incidences of drug and alcohol misuse, gambling, and transmission of sexually transmitted infections among workers (Storey 2010). Also, higher income levels without the experience or knowledge on money management can lead to poor choices on how to spend additional income. Increased work-related stress can also result in a potential increase in substance misuse and other negative social behaviors (Gibson G. 2005).

For Aboriginal communities that already suffer from poor indicators around well-being, increases in wages and the work rotation may serve to exacerbate existing social problems, such as drinking and drug misuse. The Nisga'a LHA has a total serious crime rate of 18.6/1,000 — almost double the provincial rate. These communities are more sensitive to the adverse effects of the Project with respect to the increase in poor lifestyle choices due to their current social challenges.

As with most contemporary mining projects in northwest BC, which tend to be remote from established settlements, current practice is to build well-appointed camps and operate on a fly-in/fly-out basis. A recent literature review by InterGroup (2005) examined the effects of fly-in/fly-out work schedules on family and community dynamics in northern Saskatchewan communities including effects on children, relationships, and members of the extended family. Household level effects included: the strain of independent decision making and an increased workload on the (usually female) spouse who remained at home; increased level of concern and worry for the absent family member; and increased spending as a result of the increased household income on transportation, home improvement, entertainment, and clothing, among others (InterGroup 2005). The Nisga'a focus groups revealed similar concerns, pointing in particular to the case of families and the additional demands of single parenting that fall to the stay-at-home partner (Rescan 2012a). Gibson and Klinck (2005) examined the impacts of mines on communities in the NWT including the problems associated with loss or fragmentation of family time and noted the linkages between the extended absences of a parent (often the father), behavioural

issues in children, and in some cases increased incidents of domestic violence. Although some of these social impacts can be expected, perspectives from the Nisga'a focus groups are that if the employment available included fly-in/fly-out shift work, families would see this as an opportunity and that they would adjust and adapt to work schedules as necessary (Rescan 2012a).

In sum, the development of the Project is expected to have an impact on community well-being. The extent of the effect will be determined by the number of Nisga'a that obtain employment with the Project and the number of people that choose to re-locate to the Nisga'a villages for the same reason. Even then, should many Nisga'a obtain Project employment and higher levels of in-migration are realized, changes to family and community well-being will be based on how individuals respond to increased incomes and Project work rotation schedules. In many respects, positive outcomes as a result of increased income and employment are just as likely, if not more so, than negative outcomes.

Nisga'a Worker Health

Potential negative health effects of the Project are expected to be localized to the Mine Site. The only Nisga'a citizens that might be exposed to any effects that arise will be those Nisga'a who find employment with the Project. The Application/EIS presents an analysis of the potential environmental health hazards related to Project effects on noise, air quality, surface water quality, country foods, and drinking water quality. In general, the analyses find that there is likely to be little in the way of negative occupational and/or non-occupational impacts with respect to the above components. Activities are being designed and planned so that emissions and exposures fall within the relevant provincial or federal guidelines. The actual level of health risks related to the Construction and Operation on Nisga'a citizens is predicted to be negligible. This adverse effect is not assessed further.

There are hazardous occupations and activities involved in large-scale construction projects and mining operations. Given the level of employment of Nisga'a directly with the Project, a very small number of incidences of recordable lost time injury is expected during Construction and Operation. Other accident risks, which fall more readily into the non-occupational accident risk category, are linked to transportation and vehicular traffic servicing the Mine Site. Nisga'a citizens who use Highway 37 for travel or to access harvestable plants along the roadway would be exposed to some level of accident risk from traffic, including the movement of heavy trucks and equipment, buses, and other industrial transport along Highway 37. However, the risk is low and Nisga'a are no more or less exposed than others who may use the road. The Proponent is committed to adhering to high environmental and health and safety performance standards.

Mitigation Measures

In the short term there may be some adverse effects felt in Nisga'a villages with respect to housing; however, it is expected that in the long term communities will adapt and there will be beneficial effects for the communities, including the Nisga'a Villages. This effect will be mitigated by communicating the Project development schedule to NLG. This communication is expected to help reduce the in-migration of speculative, opportunistic workers, so that the number of people coming to Nisga'a communities is minimized and largely comprised of those who have secured work.

There is the potential for adverse effects associated with health and social services during the Construction and Operation phases. This effect will be mitigated by communicating the Project development and workforce schedule to NLG.

Workers moving into the LSA are more likely to settle in the larger regional communities than in the Nisga'a villages. However, to address the potential for transient workers to move into Nisga'a villages and to support appropriate decision-making and response from NLG, the Proponent will engage in

communication and information sharing with NLG (commission date, daily operations, mode of transportation, workforce rotation schedule) associated with permitting and the use of the camp. Strategies, such as human resource policies to identify expected behaviours when traveling to and from work, will be developed to manage the work camp and to effectively anticipate and mitigate its impacts on the region. Further, the remote location of the camp will prevent workers from traveling to communities reducing the magnitude of the potential adverse effect.

To address the potential for adverse indirect effects associated with work rotation during the Operation phase of the Project, the Proponent will have programs in place to assist employees who are experiencing work or family stress, or who may be experiencing difficulty with poor lifestyle choices, such as an Employee Assistance Program, or will connect workers to external service organizations that have such programs.

It is anticipated that uncertainty around mine closure will lead to adverse indirect effects of increased stress for workers and their families. The Proponent will communicate the Closure Plan to employees and assist them to find and transition to new employment.

27.5.3 Effects on Nisga'a Cultural Well-being

The potential effects of the Project on Nisga'a cultural well-being considered in this assessment include: reduced ability of Nisga'a citizens and Nisga'a mine workers to access culturally important resources and sites; and reduced ability of Nisga'a citizens and Nisga'a mine workers to participate in culturally important activities and ceremonies.

Culturally Important Resources and Sites

Nisga'a use natural resources on Nisga'a lands within the Nass area for a number of traditional, cultural, and commercial activities. Key cultural-environmental practices and activities identified in the survey and focus group research conducted for the ESCIA report included hunting, trapping and fishing, mushroom picking, and the harvest of country foods, medicinal plants, materials (e.g., cedar bark for fibre), and other culturally important resources (Rescan 2012a). The development of the Project access road and transmission right-of-way could make it easier for vehicles and people on foot to access some of the back country in the vicinity of the Project, which could have both beneficial and adverse effects on Nisga'a cultural values related to natural resource practices and activities. Controlled access along Project roads will help to limit additional hunting and fishing pressure in the back country although restrictions are likely to apply only to Project-specific roadways (e.g., Brucejack Access Road). There is potential for increased harvesting of cultural resources by Nisga'a and non-Nisga'a as a result of the transmission line right-of-way running north from the old Granduc mine area. The relative remoteness of the Project and control of access will reduce additional pressure on these resources induced by Project development.

Neither the Project site nor its infrastructure including access roads or transportation routes intersect with Nisga'a trap lines or other formal land or resource use tenures, as those which belong to Nisga'a citizens are located well to the south of the Project and, therefore, based on available information, effects on Nisga'a activities in the vicinity of the Project are expected to be negligible.

Project-related environmental effects, which may in turn result in an impact on cultural resources and sites, are described and assessed in Section 27.4, as well as elsewhere in the Application/EIS. In sum, environmentally induced impacts on Nisga'a cultural activities and practices are predicted to be minimal and are not assessed further here.

Participation in Cultural Activities and Practices

The cultural effects related to shift work and increased income may be either positive or negative and depend on the number of Nisga'a that obtain mine employment, their ability to balance their current cultural activities and obligations, and the availability of family and community support. Results from Nisga'a survey research (Rescan 2012a) reveal the range of opinion about how Nisga'a view the potential cultural impacts of mining projects.

The work schedule for the Project is expected to require employees to live at the mining camp away from their families and community. Mining work schedules reduce the amount of time people are able to dedicate to hunting, fishing or the gathering of plant and berries. In one study 71% of Aboriginal workers reported spending less time out on the land (Gibson and Klinck 2005). Nisga'a employees working shift rotations may have less opportunity to participate in a range of cultural activities and practices. Participation in harvesting activities while on shift is likely to be prohibited and when off-shift workers may prefer or find it necessary to spend time with family and friends in their home community rather than spend their time-off out on the land.

Similarly, Nisga'a focus group participants interested in mine employment indicated a need for employers to better understand Nisga'a cultural commitments, such as attendance at funerals. Other cultural ceremonies and events are planned well in advance, giving employees and employers opportunity to plan around such events. The presence of certain individuals to facilitate funeral arrangements and fulfill other related cultural obligations may, at times, be required without prior notice (Rescan 2012a).

In considering the impacts of Project employment and work schedules on Nisga'a, extended periods of time off may enable individuals who are designated as undertakers to fulfil their cultural duties either in their regular time off work (e.g., two weeks) or by swapping shifts to adjust time off schedules to be ensure their availability and ensure their cultural duties.

Traditional land and resource use may even be enhanced by mine development to the extent that increased incomes associated with mining employment would enable individuals to purchase needed equipment and supplies (e.g., boats, motors, firearms, fuel, ammunition, traps, fishing gear, all-terrain vehicles) and thereby increase their opportunities to engage in resource harvesting activities.

27.6 EFFECTS TO OTHER NISGA'A NATION INTERESTS AND MITIGATION MEASURES

The effects summarized in this section were selected because NLG raised the issue during consultations during the consultation process in the pre-Application/pre-EIS stage. A summary of these issues and interests are found in Table 27.3-1.

27.6.1 Effects on the Knipple Glacier

Nisga'a raised concerns about impacts on the Knipple Glacier and the watershed due to glacial melt and vehicle traffic. There is potential for fugitive dust to cause albedo and glacier ablation during Construction and Operation of the Project.

Glaciers were considered as a sub-component of surface water hydrology in the Application/EIS (Section 10.4.1). Glacier ablation was selected as an indicator for this sub-component. Potential effects due to the deposition of debris and dust from traffic on the glaciohydrology of the Knipple Glacier were qualitatively assessed (Appendix 10-C). Changes in the summer ablation of the glacier are predicted to be less than 1% of baseline values.

The air quality dispersion model (Chapter 7, Air Quality Predictive Study) predicted dustfall levels to increase from baseline levels of 0.71 mg/dm^2/day to 0.95 mg/dm^2/day in an approximately 3 km area of the southeast end and a 200 m area of the northwest end of the glacier. This increase represents a 34% change; however, it is lower than the provincial objective of 1.7 to 2.9 mg/dm^2/day stated in (BC MOE 1979).

Measures to minimize fugitive dust deposition include implementing best management practices related to erosion prevention and sediment control. The Proponent has committed to continue the glacier monitoring program to enable to glacier mass balance to be assessed on an annual basis.

27.6.2 Effects of the Access Road on Moose

During consultations with NLG, Nisga'a raised concerns about the effects of the Brucejack access road on moose. NLG assert they were not properly consulted during the permitting of the exploration access road. Section 18.6.1 of the Application/EIS assesses the residual effects on moose. Potential residual effects on moose during the Construction, Operation, and Closure of the Brucejack Access Road and Brucejack Transmission Line include:

- **Disruption of wildlife movement** – The distribution of infrastructure along the Bowser River, the presence of the access road, and traffic along the access road may impede movement of moose between valley systems, beginning during Construction. After mitigation, the residual effect of disruption of moose movements is expected to have a low magnitude. The extent of this effect will be at the landscape scale because movement may be disruptive to individuals within the watershed. The duration will be long term because infrastructure will be either fully or partially reclaimed and traffic volumes will cease in the Post-closure phase when the road has been reclaimed. The frequency will be sporadic, as the moose movement will likely only be disrupted when moose are travelling through the Project footprint. The effect will be reversible long term because of reclamation. The context of the moose population is high, as the moose population in the RSA is considered to have low resilience to imposed stresses. The effect of disruption of moose movement is assessed as **not significant**.
- **Direct mortality** – Direct mortality due to vehicle collisions is assessed as a residual effect for moose because of traffic during Construction and Operation. With mitigation and monitoring, the residual effects of direct mortality on moose will have a low magnitude (estimate of 1.3 vehicle-moose collisions per year along the access road), as it will likely remain within the natural variation of the local population. The extent of this effect will be landscape because it will remain tied to the Project. The duration will be long term because traffic will continue through the life of the mine, but will cease when the road is reclaimed. The frequency will be sporadic. The effect will be reversible long term because the risk of collision will decline when traffic volumes decline at closure. Because of the status of the moose population in the area (i.e., declining in the NWA and Highway 37 corridor) and the high-value habitat along the low elevation portions of the access road, the context of the population is high (and resiliency low). Direct mortality is not expected to affect the viability of the local moose population (magnitude low), and thus this effect is considered to be **not significant.**
- **Indirect mortality** – The effect of indirect mortality is predicted to result in a residual effect on moose due to increase hunting pressure on moose in the RSA. The access road will be gated and controlled for the life of the Project and will be reclaimed during the Post-closure phase, limiting unauthorized entry. Increased access may not be completely avoided or mitigated, thus a potential adverse residual effect of low magnitude is predicted for moose. The extent of this effect will be landscape because it remains tied to the Brucejack Access Road. The duration will be long term because the area may be accessible to some degree during

Post-closure. The frequency will be sporadic. The effect will be reversible long term with planned road closure and adaptive mitigation. Because of the status of the moose population in the NWA and Highway 37 corridor (i.e., declining) and the high-value habitat along the access road, the context of the population is high. The effect of indirect mortality on moose was assessed as **not significant.**

Due to NLG concerns related to the construction of the access road, the Proponent has committed to prepare a report for NLG, outside of the environmental assessment review process, to assess the potential effects of the road on wildlife.

27.7 SUMMARY

This chapter of the Application/EIS assesses the potential effects of the Project on Nisga'a treaty rights and interests as defined in Chapter 10, paragraphs 8(e) and 8(f) of the NFA. The chapter provides an overview of Nisga'a economic, social, health, and heritage setting as well as current use of lands and resources for traditional purposes in the Project area. A summary of consultation activities during the pre-Application/pre-EIS is provided. The Proponent will continue to implement the Aboriginal Consultation Plan during the Application/EIS review stage. Should NLG bring forward additional information relating to their rights and interests and/or potential mitigation measures, the Proponent will consider this information, in consultation with NLG.

Environmental effects on Nisga'a 8(e) interests related to land, including Nisga'a Lands and Nisga'a fee simple lands (Category A and B lands), and other land-related interests (i.e., Nisga'a Memorial Lava Bed Park and ecological reserve, commercial recreation tenure, traplines, angling guide licences, any guide-outfitter certificate and licence, water reservations, designated heritage site), Nisga'a citizens' abilities to access Crown lands and Nisga'a citizens' rights to harvest wildlife are not assessed for the reasons provided in Section 27.4.1. The scope of the assessment of environmental effects on Nisga'a 8(e) interests includes fish and migratory birds.

The Project is predicted to have a low level of impact on Nisga'a citizens' right to harvest fish as a result of potential residual effects on fish species harvested by Nisga'a. This assessment is based on the following assumptions: the magnitude of the residual effects on fish are of minor concern or severity; the geographic extent of the effects are predicted to be localized to the Brucejack Access Road footprint; the effects are anticipated to be reversible in the short to medium-term; the duration is short; and the frequency is sporadic. The likelihood of the effects are considered to be low to medium and the confidence in the assessment is high.

No residual effects are predicted on migratory birds with the implementation of mitigation measures. The Project is not expected to affect the ability of present or future generations to exercise their rights or to modify Nisga'a Nation's customs and practices related to fishing, hunting, and gathering.

Potential effects on Nisga'a paragraph 8(f) economic, social and cultural interests is informed by the ESCIA report and mitigation measures and environmental management plans identified for economic, social and cultural VCs. Section 27.4 describes the effects and mitigation measures.

Section 27.6 describes effects on two issues raised by NLG during the pre-Application/pre-EIS review stage. Due to NLG concerns related to the Brucejack Access Road, the Proponent has committed to prepare a report for NLG, outside of the environmental assessment review process, to assess the potential effects of the road on wildlife.

Table 27.7-1 summarizes the potential effects of the Project on Nisga'a treaty rights and the measures to mitigate impacts on those rights.

Table 27.7-1. Summary of Potential Effects on Nisga'a Nation Treaty Rights and Accommodation Measures

Residual Effect to VC Related to Nisga'a Treaty Right	Nisga'a Treaty Right Potentially Affected	Mitigation/Accommodation Measures	Impact on Nisga'a Treaty Right
Direct Mortality to fish	Treaty right to fish	Use of best management practices to minimize fish mortality with construction machinery. Adhere to DFO's operational statements. Adhere to appropriate construction operating window for instream work. Site isolation; controlled access; implement of no fishing policy for employees and contractors.	Low
Erosion and Sedimentation affecting fish and fish habitat	Treaty right to fish	Use of best management practices to minimize sediment entry to waterbodies. Adhere to DFO's operational statements. Adhere to appropriate construction operating window for instream work and the Soils Environmental Management Plan. Riparian re-vegetation; dust suppression on roads; work site isolation; water quality maintenance.	Low

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