



## **Aley Mine Project**

### **Project Description**

**British Columbia**

**Submitted to:**

Canadian Environmental Assessment Agency

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160 Elgin Street

Ottawa ON K1A 0H3

**Submitted by:**

Aley Corporation

A subsidiary of Taseko Mines Limited

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## List of Abbreviations

AC	Aley Corporation Limited
AOA	Archaeological Overview Assessment
AIA	Archaeological Impact Assessment
AIR	Application Information Requirements
ARD	Acid Rock Drainage
BAFA	Boreal Altai Fescue Alpine
BC	British Columbia
BCBBA	BC Breeding Bird Atlas
BCEA	BC Environmental Assessment
BCEAA	BC Environmental Assessment Act
EAO	BC Environmental Assessment Office
FLNRO	BC Ministry of Forests, Lands and Natural Resource Operations
BIS	Breaks-in-slope
CC	calcite carbonatite
CD	dolomite carbonatite
CEAA 2012	Canadian Environmental Assessment Act, 2012
CEA Agency	Canadian Environmental Assessment Agency
CLIR	Cross-Linked Information Resources Database
CO	Carbon monoxide
Cominco	Cominco Limited
DAIR	Draft Application Information Requirements
DFO	(Department of) Fisheries and Oceans Canada
EA	Environmental Assessment
EC	Environment Canada
EAC	Environmental Assessment Certificate
ECOCAT	Ecological Reports Catalogue
ESSF	Engelmann Spruce - Subalpine Fir
FISS	Fisheries Information Summary System
ha	hectare
HADD	Harmful Alteration, Disruption or Destruction
HC	Health Canada
HCA	Heritage Conservation Act
iMapBC	BC Geographic Warehouse
km	kilometre
KP	Knight Piésold Ltd.
LRMP	Land and Resource Management Plan
LUS	Land Use Study
m	meter
mm	millimetre
mtpd	metric tonne per day
LOM	Life-of-mine

MAD	Mean Annual Discharge
MAP	Mean Annual Precipitation
MEM	BC Ministry of Energy and Mines and Responsible for Core Review
ML	Metal Leaching
MMER	Metal Mining Effluent Regulations
MOE	BC Ministry of Environment
MOT	BC Ministry of Transportation and Infrastructure
MSCB	Meteorological Services of Canada Branch
Mt	million tonnes
Mtpy	million tonnes per year
MW	megawatt
NAPS	National Air Pollution Surveillance
Nb	Niobium
Nb <sub>2</sub> O <sub>5</sub>	Niobium pentoxide
NEB	National Energy Board
NHA	BC Northern Health Authority
NI	National Instrument
NO <sub>2</sub>	Nitrogen dioxide
NORECOL	Norecol Environmental Consultants Limited
NPRI	National Pollutant Release Inventory
NRC	Natural Resources Canada
PD	Project Description
PM <sub>2.5</sub>	Particulate matter (2.5 micrometers)
PM <sub>10</sub>	Particulate matter (10 micrometers)
Project	Aley Mine Project
PW	Peace Williston Fish and Wildlife Compensation Program
REE	Rare earth element
ROW	Right-of-way
RPR	Reviewable Projects Regulation
RBC	Rotating Biological Contactor
SBS	Sub-Boreal Spruce
SO <sub>2</sub>	Sulphur dioxide
SPI/WSI	Species Inventory Data System Database
STP	Sewage Treatment Plant
ST	Shovel test
TC	Transport Canada
Taseko	Taseko Mines Limited
TL	Test locations
tpy	tonnes per year
TSE	Tailings Storage Embankment
TSF	Tailings Storage Facility
TSM	Towards Sustainable Mining
TUS	Traditional Use Study

VEC	Valued Ecosystem Component
VOC	Volatile organic compounds
VSEC	Valued Socioeconomic Component
WAC Bennett	William Andrew Cecil Bennett
WRS	Waste Rock Stockpile
WRSA	Waste Rock Storage Area
WMB	Wildfire Management Branch
WSC	Water Survey of Canada

## Table of Contents

1.	Introduction .....	1
1.1	Project Overview.....	1
1.2	Proponent Information .....	2
1.3	Consultation Overview.....	4
1.4	EA Requirements.....	6
2.	Project Information.....	6
2.1	Project Purpose and Rationale.....	6
2.2	Project History .....	7
2.3	Project Components and Activities.....	8
2.3.1	Mining Method.....	12
2.3.2	Mine Site Layout and Facilities.....	12
2.3.3	Mineral Processing .....	13
2.3.4	Supporting Infrastructure.....	15
2.4	Summary of Activities to be Performed in Relation to the Project .....	17
2.5	Options Assessment.....	18
2.6	Emissions, Discharges and Waste .....	18
2.6.1	Water Management .....	18
2.6.2	Tailings and Waste Rock .....	19
2.6.3	Emissions .....	20
2.6.4	Other Waste Streams (camp).....	20
2.7	Construction, Operation, Decommissioning and Abandonment Phases and Schedule .....	21
3.	Project Location .....	23
3.1	Coordinates and Mineral Tenure .....	23
3.2	Site Maps.....	24
3.3	Land and Water Use.....	24
3.3.1	Current Use for Traditional Purposes.....	29
3.3.2	Regional Economic Development.....	29
4.	Federal Considerations .....	31
4.1	Financial Support .....	31
4.2	Federal Lands .....	31
4.3	Legislative Requirements.....	31

4.3.1	Permits, Licences, Authorizations and Approvals .....	33
4.3.1.1	<i>Federal permits, licences and approvals</i> .....	33
4.3.1.2	<i>BC permits, licences, authorizations and approvals</i> .....	34
5.	Preliminary Potential Environmental Effects Under Federal Jurisdiction.....	36
5.1	Physical Setting .....	36
5.1.1	Geology and Geochemistry .....	36
5.1.2	Climate.....	37
5.1.3	Air Quality.....	38
5.1.4	Noise.....	39
5.1.5	Terrain and Soils .....	39
5.1.6	Hydrology .....	40
5.1.7	Hydrogeology .....	40
5.1.8	Water Quality .....	41
5.2	Biological Setting.....	42
5.2.1	Aquatic Ecology, Fish and Fish Habitat.....	42
5.2.2	Vegetation .....	44
5.2.3	Wildlife .....	44
5.3	Potential Effects Within Federal Jurisdiction.....	48
5.3.1	Fish and Fish Habitat .....	48
5.3.2	Aquatic Species at Risk .....	49
5.3.3	Migratory Birds.....	49
5.4	Additional Federal Environment Effect Considerations.....	49
5.5	Potential Effects of Changes to the Environment on Aboriginal Peoples.....	49
6.	Proponent Engagement Consultation with Aboriginal Groups .....	55
6.1	Potentially Affected Aboriginal Communities.....	56
6.2	Aboriginal Engagement and Consultation Summary to Date .....	58
6.2.1	Tsay Keh Dene First Nation.....	58
6.2.2	Treaty 8 First Nations .....	61
6.3	Summary of Concerns raised by Aboriginal Groups.....	63
6.4	Consultation Plan Overview .....	67
7.	Consultation with the Public and Other Parties .....	71
7.1	Stakeholder Engagement and Consultation Summary to Date .....	71

7.2	Consultation Plan Overview.....	74
7.3	Consultation with Other Jurisdictions.....	76
8.	References .....	77

## List of Figures

- Figure 1.1 – Aley Project Location
- Figure 1.2 – Aley Project in Relation to the Ospika Watershed
- Figure 2.1 – Aley Conceptual Site Layout
- Figure 2.2 – Proposed Transmission Line Alignment
- Figure 3.1 – Land Use in the Vicinity of the Aley Project
- Figure 3.2 – First Nations Traditional Territories and Treaty Areas

## List of Tables

- Table 3.1: Location of Lands Under Federal Jurisdiction in Relation to Project Components
- Table 4.1: Anticipated BC EA Schedule
- Table 5.1: Species of Conservation Concern Potentially to Occur in the Project Area
- Table 5.2: Types of Potential Effects on Aboriginal Peoples from Changes to the Environment (Health and Socio-Economic Conditions)
- Table 5.3: Types of Potential Effects on Aboriginal Peoples from Changes to the Environment (Current Use for Traditional Purposes)
- Table 5.4: Types of Potential Effects on Aboriginal Peoples from Changes to the Environment (Heritage and Any Structure, Site or Thing)
- Table 6.1: Summary of Means of Engagement and Consultation to Date with Tsay Keh Dene
- Table 6.2: Summary of Means of Engagement and Consultation to Date with Treaty 8 First Nations
- Table 6.3: Summary of Concerns Raised by Aboriginal Groups and Taseko Responses
- Table 6.4: Consultation Plan and Schedule Summary
- Table 7.1: Summary of Concerns Raised by Stakeholders and the Public to Date
- Table 7.2: Proposed Stakeholder Consultation Plan and Schedule Summary

# 1. Introduction

## 1.1 Project Overview

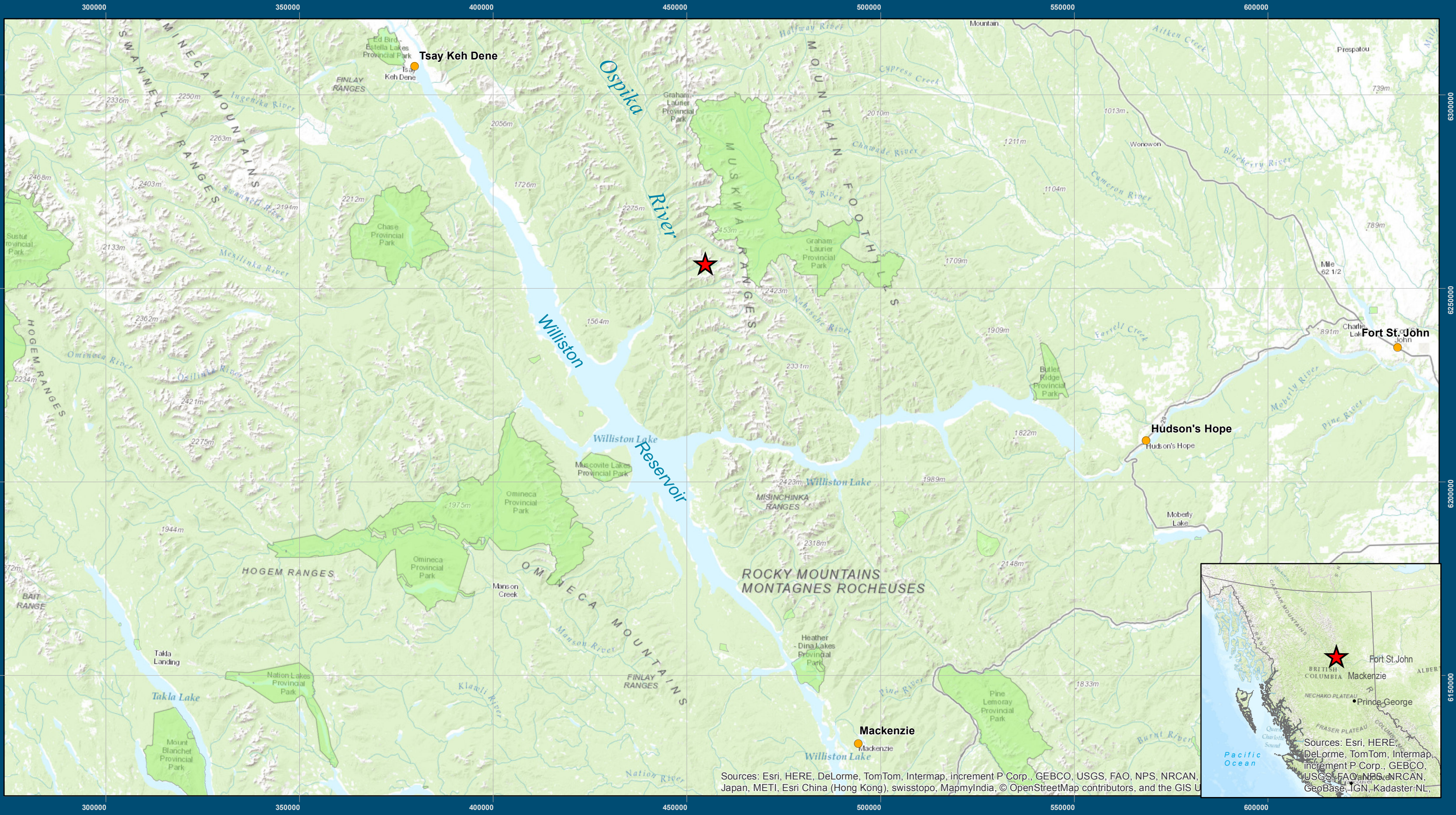
Aley Corporation Limited (AC), a wholly-owned subsidiary of Taseko Mines Limited (Taseko), proposes to build the Aley Mine (the Project), an open pit niobium mine (as defined in the *Mineral Tenure Act*) in north central British Columbia approximately 130 km north of the town of Mackenzie (Figure 1.1 and Figure 1.2). The mine site area is located in the Steve Creek (also known as O'Connell creek) watershed, a tributary to the Ospika River and is situated approximately 20 km northeast of the head of the Ospika Arm of Williston Reservoir. The Project area is located on provincial Crown Land in the Omineca Mining Division of north central British Columbia.

When the Project proceeds to the mine production phase, it will process 10 thousand tonnes of niobium ore per day (mtpd). A total of 94 million tonnes of ore will be processed over a 27 year mine life. Operations would include conventional open pit mining, standard grinding, magnetic separation, and flotation and leaching to produce a concentrate. The concentrate will be converted to a saleable product in the form of ferrous niobium (FeNb) via an aluminothermic process in a converter.




The Project will require construction of a 150 km long transmission line and upgrades to existing road infrastructure.

Pursuant to CEA Agency direction, a separate Project Description Summary that summarizes the key information from this Project Description has been provided in both English and French, and will be the subject of the CEA Agency's public consultation on whether a federal EA is required.





**Figure 1.1 - Aley Project Location**

-  Aley Location
-  Parks/Reserves/Protected Areas
-  Local Communities

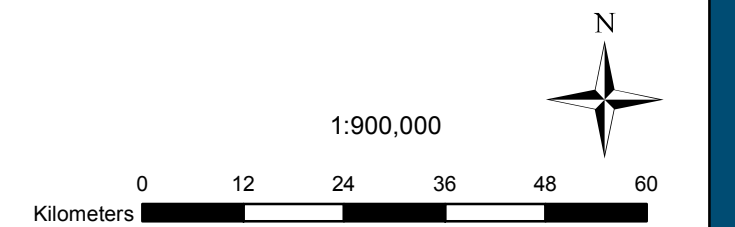


Map Prepared by Taseko Mines Ltd.















Date: 2012-08-24

Data Sources:

Province of British Columbia, Taseko Mines Ltd.  
Projection: UTM Zone 10, NAD 83



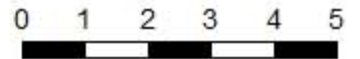
**Figure 1.2  
Aley Project  
in Relation to the  
Ospika Watershed**

-  Plant Site
-  Waste Rock Stockpile
-  Tailings Beach
-  Open Pit
-  Tailings Dam
-  Tailings Pond
-  Explosives Storage
-  Seepage Ponds
-  Ospika Air Strip
-  Ospika Camp
-  Barge Landing
-  Ospika Road
-  Al Creek Watershed
-  Steve Creek Watershed



1:120,000

Kilometers



Map Prepared By  
Taseko Mines Ltd  
Date: 2014-09-28  
Data Sources:  
Province of British Columbia, Taseko Mines Ltd  
Projection: UTM Zone 10, NAD 83

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



## 1.2 Proponent Information

Taseko is a BC based mining company headquartered in Vancouver that was incorporated in British Columbia in 1966, with projects in BC at various phases, including exploration, proposed mine development, and mining operations. Taseko's management team comprises experienced mine developers, owners and operators with a proven and successful track record in developing and operating open pit mines. Taseko's 75% owned Gibraltar Mine, currently employing approximately 700 people, has been operating 65 km north of Williams Lake for 35 of the past 40 years and has an expected long life.

Taseko, through AC is committed to responsible resource development, and working closely with the communities in which we operate. To this end, corporate governance policies have been developed, including a code of ethics, an audit and risk charter, an environmental policy (revised in 2013), health and safety policy, and aboriginal policy. Details on these policies are available on the corporate website ([www.tasekomines.com](http://www.tasekomines.com)). Taseko is committed to Towards Sustainable Mining (TSM) standards for best practices and is employing such principles at the Gibraltar Mine. Actions taken to date include increased policy and commitments in Tailings Management, Biological Diversity Conservation, and Energy Management. At Gibraltar, energy efficiency upgrades in the new mill facilities and diesel reduction programs such as guidelines to reduce idle times, and a new motor procurement procedure are in place. Taseko is also a participant in the BC Power Smart Monitoring and Reporting and Process Control Initiative Assessment Program and Taseko was awarded a Power Smart New Technology Award in 2010 for design of the new energy efficient mill.

The Aley Mine Project is being designed and will be constructed and operated by Taseko's management team, supported by leading edge development and technical service consultants and contractors. Taseko is committed to high standards of business practice, community participation and environmental conduct in all aspects of our work. Taseko has a proven track record of environmental and social responsibility at the Gibraltar Mine, with the City of Williams Lake, surrounding communities and local Aboriginal groups such as Williams Lake Indian Band.

Name of project: Aley Mine

**Proponent contact information is as follows:**

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(Extra-Provincial Jurisdiction: British Columbia)  
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### 1.3 Consultation Overview

Taseko has identified the following government agencies, Aboriginal groups, and stakeholders with whom Project consultation is expected to be required. The Canadian Environmental Assessment Agency, BC Environmental Assessment Office, and Tsay Keh Dene Band were consulted in preparation of the Project Description and their feedback was taken into consideration in finalization of this document. Taseko has already initiated engagement on the Project with several of these groups including the Aboriginal groups, as discussed in more detail in sections 6 and 7:

*Federal Government:*

- Canadian Environmental Assessment Agency;
- Fisheries and Oceans Canada;
- Environment Canada;
- Natural Resources Canada; and,
- Transport Canada – Navigable Waters Protection Program

*Provincial Government:*

- BC Environmental Assessment Office;
- BC Ministry of Transportation and Infrastructure;
- BC Northern Health Authority;
- Mackenzie Forest District;
- Ministry of Energy and Mines and Responsible for Core Review;
- Ministry of Environment; and,
- Ministry of Forests, Lands and Natural Resource Operations

*Local Government:*

- City of Fort St. John;
- City of Prince George;
- District of Chetwynd;
- District of Hudson's Hope;
- District of Mackenzie;
- Peace River Regional District; and,
- Regional District of Fraser-Fort George

*Aboriginal Groups and Organizations:*

- Halfway River First Nation;
- McLeod Lake Indian Band;
- Tsay Keh Dene Band;
- West Moberly First Nations;
- Other Treaty 8 First Nations as appropriate;
- Prince George Nechako Aboriginal Employment and Training Association;
- Treaty 8 Tribal Association of British Columbia;

*Stakeholders:*

- TR0737T003 Trapline;
- Canfor Corporation;
- Chetwynd Chamber of Commerce;
- Christina Falls Outfitters;
- College of New Caledonia;
- Community of Hudson's Hope;
- Community of Mackenzie;
- Community of Prince George;
- TR0736T003 Trapline and Wicked River Outfitters;
- Findlay River Outfitters;
- Hudson's Hope Visitor Center;
- TR0737T001 Trapline;
- Mackenzie Chamber of Commerce;
- Northern Development Initiative Trust;
- Northern Health Authority;
- North Peace Economic Development Commission;
- Torwood Resort; and,
- Williston Lake Resort

## 1.4 EA Requirements

The Project's proposed capacity exceeds the threshold for both the federal and provincial environmental assessment (EA) regulations, thus requiring submission of this Project Description to the BC Environmental Assessment Office (EAO) and Canadian Environmental Assessment Agency (CEA Agency). While the CEA Agency will determine if an EA under federal legislation is required, the Project is expected to require an EA under BC's *Environmental Assessment Act* due to the fact that its production capacity exceeds that listed under BC's *Reviewable Projects Regulations*. The BC EA process is a well-defined process that includes assessment of environmental effects as well as social, economic, heritage, and health effects; provides timelines for government review and decisions; and provides opportunities for public participation in the process. The BC EA process also includes enforced conditions for approval that are supported by compliance and follow-up activities.

Taseko is not aware of any regional environmental studies that have been or are being carried out in the Project area.

## 2. Project Information

This Project Description has been developed to satisfy *Canadian Environmental Assessment Act* requirements, as the Aley Mine meets the definition of a designated project that may require a federal EA, pursuant to the *Regulations Designating Physical Activities*. This regulation identifies that metal mines with ore production capacity of 3,000 t/d or more, and metal mills with an ore input capacity of 4000 t/day or more, as physical activities potentially requiring an EA. As the Aley Mine Project exceeds both the metal mine and metal mill production capacity thresholds described in the *Regulations Designating Physical Activities*, a Project Description is being submitted to the CEA Agency for determination of whether a federal EA is required. The proposed mine is not a component of a larger project or the expansion of an existing project.

### 2.1 Project Purpose and Rationale

The Project is a large undeveloped niobium deposit. Niobium (Nb) is primarily used to manufacture high strength, light-weight, and corrosion resistant steel. Niobium-based steel, which is experiencing a steady increase in global demand, is found in turbines, aerospace and automobile machinery, oil and gas pipelines, construction, and green technology such as wind turbines and electric engines. The purpose of the Project is to utilize this resource responsibly to create value and opportunity for the people of British Columbia and Canada, and for the shareholders of Taseko. As stated in the Taseko Environmental Policy, we recognize that responsible environmental management is critical to our success and therefore commit to

continual improvement in the stewardship of the natural environment. The Project will provide social and economic benefits for northern British Columbia communities, including contracting and high-paying employment opportunities for local residents.

When built and operating, the mine will be one of only four primary niobium producers in the world. Capital and operating cost estimates are currently being refined but it is expected that these will be roughly \$700 million for pre-production capital and \$100 million in annual operating expenditures for a 27 year period. The Project has the potential to create approximately 700 direct jobs during a 24-30 month construction period and 350 direct jobs during operations. Mining projects also create a significant number of indirect jobs as a result of the increased economic activity created by the project. An estimate of indirect job creation will be included as part of the EA documentation but this is expected to be 700 to 1000 jobs. These would be positive impacts for an area with limited long-term, stable employment opportunities. The project would also bring economic diversity to the local area where employment opportunities are currently primarily forestry sector dependant.

The Project is expected to generate local and provincial economic value in the following ways:

- Labour demand during construction and operations will have a positive effect on direct and indirect employment.
- Wages during operations are anticipated to be higher than the average personal income in the region.
- New opportunities will be created for contractors and suppliers.
- Benefits in local communities that have been negatively affected from changes in the forestry sector.
- Government revenues would increase through corporate, income, and consumption taxes payable as a result of the Project proceeding to operations.

## **2.2 Project History**

Cominco Ltd. (Cominco) acquired the property in 1980 after following up on base metals soil anomalies in the northern part of the property. Cominco geologists followed the stratigraphy from the anomalies to the southeast and encountered the carbonatite complex. Field work by Cominco commenced in 1983 and continued regularly through the 1986 field season. The work included access trail construction, geophysical surveys, geologic mapping, soil and rock chip sampling and drilling.

Following the acquisition of control of the mineral claims by AC in 2004, exploration efforts concentrated on trench sampling for metallurgical material and the confirmation of previous



geology and drill hole collar locations. In 2007, Taseko purchased AC and completed a program of helicopter supported exploration drilling. In 2010, an additional exploration program was completed comprising geological mapping, diamond drilling, and petrological work. In the fall of 2011, a technical report supporting the announcement of an inferred mineral resource estimate was prepared (Geosim, 2011). An extensive diamond drill program was completed in 2011 resulting in a geological model and upgraded resource reported in a technical report in March 2012 (Geosim, 2012).

The Aley deposit is estimated to contain a measured and indicated resource of 286 million tonnes grading 0.37% Nb<sub>2</sub>O<sub>5</sub>. An additional 144 million tonnes averaging 0.32% Nb<sub>2</sub>O<sub>5</sub> is classified as inferred resource. The resource is reported at a base-case cut-off grade of 0.2% Nb<sub>2</sub>O<sub>5</sub>. The resource of the mine was classified in accordance with the Canadian Institute of Mining (CIM) definition standards and best practices referred to in NI 43-101.

The positive outcome of a preliminary economic assessment (PEA) completed in mid-2012 resulted in the decision to proceed with additional engineering to support a mineral reserve. Taseko has spent approximately \$30 million advancing the Project.

### **2.3 Project Components and Activities**

The Project would involve an open pit mine development with a 27 year operating life. Project components are expected to include the following:

#### **1. Mine: approximate area of 400 hectares (ha):**

- Open pit (62 ha)
- Waste Rock Storage Areas (WRSAs) (three sites totalling 51 ha)
- Topsoil Stockpile (10 ha)
- Tailings Storage Facility (TSF) and related water management (216 ha)
- Processing plant (14 ha)
- Site infrastructure - camp, admin building, truck shop, warehouse, fuel depot, sediment collection pond, explosives magazine, and laboratory (15 ha)

Specific mine site components are discussed in greater detail in section 2.3.4. Mine site development will occur within provincial Crown land over which AC currently holds mineral claims. All proposed site features are on mineral tenures that are 100% held by AC.

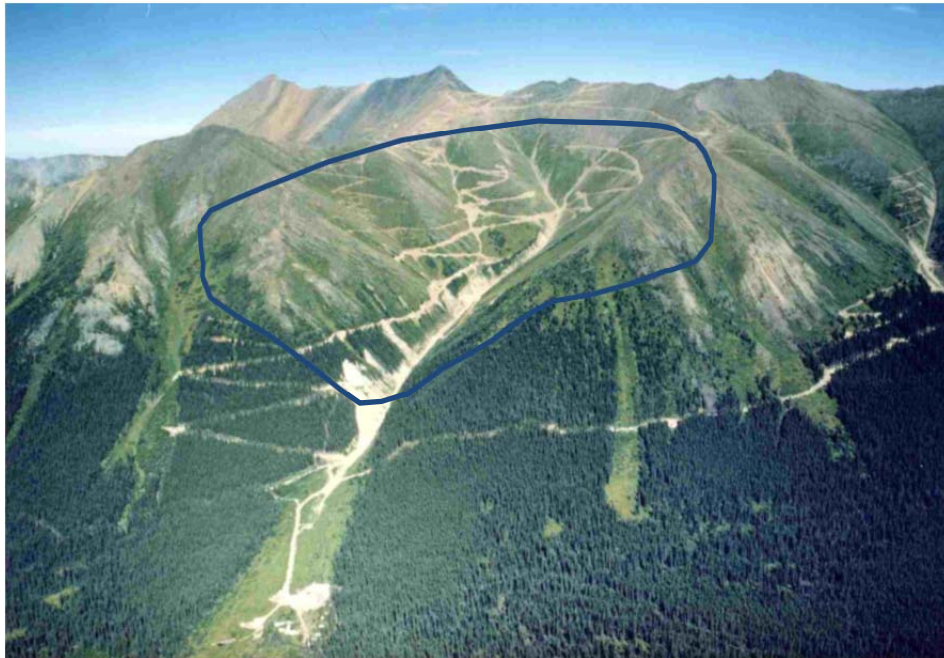
#### **2. Transmission Line (approx. 750 ha)**

The Project includes an approximately 150 km long, 138 kV power transmission line routed from Mackenzie as discussed in section 2.3.4.

3. Access Road/Transportation Corridor (including a major upgrade of 12 km of new trail under construction by Chu Cho Industries LP (Chu Cho), a Tsay Key Dene business, and minor upgrade of 40 km of existing forest service road (FSR).

Upgrading of existing road and trail access is required to access the plant site from Ospika. Transportation to/from Ospika is discussed in section 2.3.4. The conceptual plan is to transport materials by truck from Mackenzie to the mine site for construction and maintenance, and to transport processed ore from the mine site to a transfer station in Mackenzie by truck and on to port by truck or rail for shipping to buyers. As discussed in section 2.3.4, Taseko is also planning to barge some materials to and from the mine site via existing services available on Williston Reservoir.

Photographs of development areas associated with the Project and components or supporting infrastructure are provided below.



Photograph 1 – proposed pit area. The blue line shows the pit outline. The trails in the alpine area were created by Cominco in the 1980's and are no longer in service.



Photograph 2 – the red circle shows the approximate location of the plant and camp site. The yellow circle shows the approximate location of the TSF.



Photograph 3 – the site access road currently under construction. The road, constructed to support exploration activities, links into the existing forestry road network.



Photograph 4 – the existing barge landing at Ospika



Photograph 5 – the existing barge landing and access road at Ospika.

The Project will be run at a maximum productivity, currently estimated at 10 thousand tonnes per day (mtpd). This would result in a total of approximately 94 million tonnes of ore being processed. With an anticipated life-of-mine (LOM) average waste to ore strip ratio of 0.36:1, 34 million tonnes of waste rock would be mined during the operating life. Proactive and environmentally motivated design principles such as minimizing the mine footprint and ensuring features are contained in a single watershed (Steve Creek drainage area) were used to identify a potential area of disturbance in the same watershed as the proposed open pit.

The following description is conceptual and uses the above-mentioned design principles. A preliminary site layout covering an approximate footprint of 400 ha can be seen in Figure 2.1.

### **2.3.1 Mining Method**

The mining method proposed involves a conventional open pit operation. The mine will operate using industry standard blast hole drills, shovels and/or loaders, haulage trucks and a fleet of support equipment to maintain roads, dumps, and stockpiles. Equipment will be smaller in scale than that currently utilized in large tonnage copper porphyry mines in BC. It is anticipated that 90 tonne class haul trucks will be used to haul both waste and ore. Shovels and loaders will be sized to match these trucks. The mine is currently being designed to work on ten meter benches. Pending geotechnical review of the structure and rock strength characteristics in the pit, the walls are being designed at a conservative 42 degree overall angle. The approximate dimensions of the pit are 1200m x 400m.

Within the pit the ore and waste rock will be drilled by blast hole drills and blasted using ammonium nitrate based or emulsion based explosives as required. It is anticipated that a smaller pioneering drill will also be utilized for road development, starting upper benches and for pit wall control.

Overburden within the pit, tailings dam base and plant site areas will be salvaged and stockpiled for later use in reclamation of the mine site area. Blasted open pit material falls into one of two categories; mineralized ore and waste rock. Ore will be transported from the pit to the plant site with haul trucks and dumped into a crusher located next to the plant. The plant is planned to be located approximately three kilometers up the valley from the pit. An uncrushed ore stockpile will be located adjacent to the crusher.

Waste rock from the pit will also be moved with haul trucks and will be placed in WRSAs located on the southern perimeter of the proposed pit and near the northwest corner of the TSF. Waste rock will also be utilized as construction material for the tailings dam. Waste rock characterization is currently being completed and the results of these investigations will be used to determine the appropriate method of storage.

### **2.3.2 Mine Site Layout and Facilities**

The conceptual layout in Figure 2.1 is based on ore body delineation, and preliminary geotechnical information. The main principle applied in this layout was to confine the overall footprint of the mine to as small an area as possible and to impact as few watersheds as possible. Haulage and access roads are located to provide safe access past the mine workings and WRSAs with the least disturbance.

The TSF is located in the valley below the processing plant in a location that will minimize impacts while being able to contain the total tailings produced over the life of the mine. The

processing plant is located at the top of the valley in a wide, relatively flat area, clear of avalanche terrain. This area provides an open space where movement of personnel and equipment is not restricted by steep landforms or water courses. It also provides for less land disturbance since cut and fill work for the construction of the facilities will be minimized.

There will be three WRSAs; one located directly on the southern perimeter of the proposed pit location, and two located near the northwest corner of the TSF. Water seepage from the TSF and from the WRSA will be collected in either the seepage collection ponds and returned to the TSF or in sediment control ponds and released to the downstream watershed depending on discharge water quality.

A storage facility for ammonium nitrate prill and emulsion will be located on site, south of the pit and west of the TSF. Stored ammonium nitrate and emulsion are non-explosive oxidizers and will not form explosives until mixed with other constituents at the blast site in the pit. The storage facility compound will include a bulk explosive truck maintenance building, storage tanks, and silos. Magazines will be located and operated in accordance with Section 8 of the *Health Safety and Reclamation Code for Mines in British Columbia*.

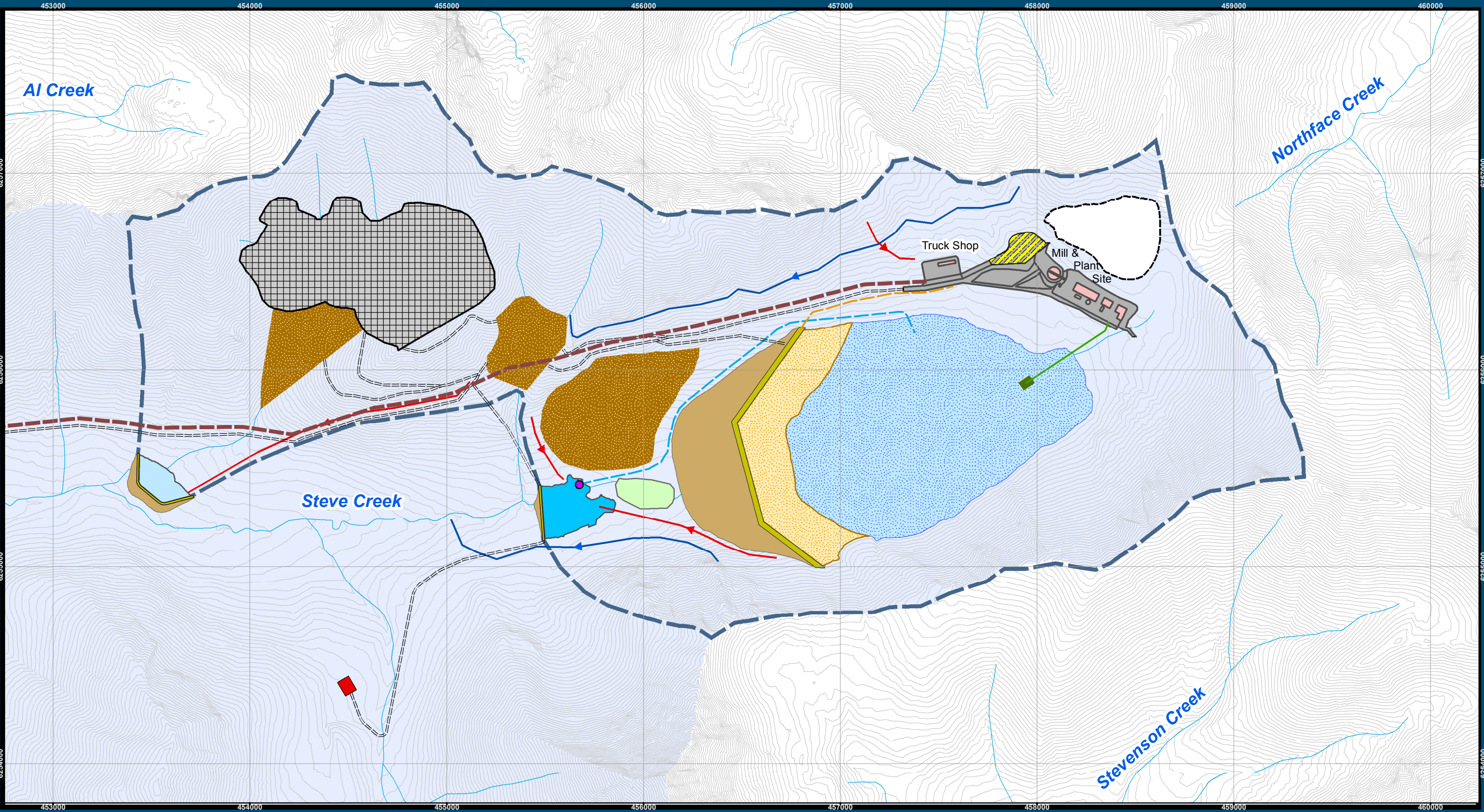
### **2.3.3 Mineral Processing**

The plant site location is approximately 2-3 km east of the pit location on a flat plateau. Ore will be hauled from the pit location to a primary crusher located proximate to the concentrator. Crushed ore is to be delivered to a live 10 thousand tonne capacity mill feed stockpile.

The concentrator will consist of a crushing/grinding circuit to produce a 50um product for further treatment. The 50um product will undergo magnetic separation to remove magnetite, followed by pyrite flotation to remove the pyrite. The pyrite tails will be fed to a multistage niobium flotation circuit to produce final niobium concentrate. The magnetite and pyrite will be combined with the niobium flotation waste tails and will be sent to the TSF embankment, located 2500m southeast (and down gradient) of the plant site location, by gravity. The niobium flotation stage will produce approximately 100 tonnes of niobium concentrate per day and the concentrate will be leached with acid and sodium hydroxide to remove impurities, then thickened and filtered to produce a low moisture content feedstock for the converter.

The converter will produce ferrous niobium (FeNb) using an aluminothermic reaction. The mineral processing system will result in a single shipped product stream in the form of FeNb, a single tailings stream from the flotation plant, and a refuse product from the converter. The converter refuse will be deposited in the TSF.

The TSF will be a conventional tailings pond. A starter embankment will be used followed by tailings deposition and sequential embankment construction in order to progressively build the dam beach and embankment height. The embankment construction is to follow a centerline design.



**Figure 2.1 - Aley Project Conceptual Site Layout**



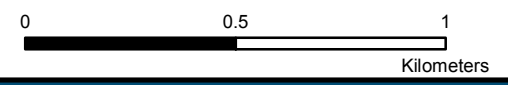
Map Prepared By  
Taseko Mines Ltd  
Date: 2014-08-28

Data Sources: Knight Piesold Consulting,  
Province of British Columbia, Taseko Mines Ltd  
Projection: UTM Zone 10, NAD 83

- |                    |                         |                      |                       |                   |                       |
|--------------------|-------------------------|----------------------|-----------------------|-------------------|-----------------------|
| Catchment Boundary | Transmission Line       | Open Pit             | Waste Rock Stockpiles | Ore Stock Pile    | Pump                  |
| Road               | Reclaim Pipeline        | Tailings 27 Yr Beach | Overburden Stockpile  | Lay Down Area     | Crests                |
| Collection Ditch   | Seepage Return Pipeline | Tailings 27 Yr Pond  | Sediment Control Pond | Explosive Storage | Reclaim Barge         |
| Diversion Ditch    | Tailings Pipeline       | Embankments          | Water Management Pond | Plant Site        | Steve Creek Watershed |



1:18,000





### 2.3.4 Supporting Infrastructure

Supporting infrastructure may include the following elements

- **Site Access Route** – The site access route is to be from Mackenzie along approximately 610 km of existing road infrastructure on the west side of Williston Reservoir, returning down the east side to the Ospika arm. This transportation corridor would be used for transporting supplies and equipment to the mine site during all phases of the Project from construction through to closure and product from the mine site during operations. Roughly 570 km of existing FSRs along Williston Reservoir and the Ospika arm are currently the main artery for industrial traffic for the forest sector and can accommodate the traffic proposed by the Project with no significant upgrading. Approximately 40 km of existing access will be upgraded to connect the FSR from Canfor's Logging Camp near the Ospika landing to the mine site, including 12 km of new trail currently under construction under contract between AC and Chu Cho. Road infrastructure maintenance and transportation of goods to and from the site (including saleable product) would be conducted by contracting out to a third party with control of the system by Taseko. Contractors would be guided by a protocol outlining standards for transportation and loading of product. Road traffic on the FSRs related to construction of the Project is anticipated to increase by 10-20% over current levels, but will not approach historical levels experienced before the forestry sector downturn. During operations, it is estimated that 4 to 5 truck round trips will be required each day. The majority of personnel will be transported by air.
- **Transfer Station in Mackenzie** – product would be transported from the site to Mackenzie via truck using the existing road network. Rail siding infrastructure and appropriately zoned industrial properties are currently available in Mackenzie. The transfer station and transportation by rail would be managed by a third party. Contractors would be guided by their contracts and clear protocols outlining environmental standards for transportation and loading of product.
- **Barge** – Barge service is available on Williston Reservoir and will be used as economically appropriate to transport commercial material, supplies and equipment, both to and from the site, to support construction and operational activities. An existing barge landing and access road is present at the Ospika Camp. No additional infrastructure would be required to support barging of materials. Due to fluctuations in water levels in the reservoir and formation of ice during the winter, barging activities would likely be restricted to seasonal use. All barge services would be provided by a third party on a contract basis. Contractors would be guided by their contracts and clear protocols outlining environmental standards for transportation and loading of product, and in

compliance with Federal and Provincial regulations and statutes. With the use of barge services for the Project, it is anticipated that one trip per day would effectively eliminate truck traffic when in use and would not have a significant impact on barge traffic.

- Water – Potable water will be obtained from surface or groundwater sources in the immediate vicinity of the mine site, and treated appropriately.
- Process water will be reclaimed from the TSF. The overall facility design will contain any process water within the mine site footprint. Pipelines will remain within the mine site area and be less than 3 km long. Surplus water is projected during operations and closure, primarily from pit dewatering and clean water diversions. If necessary, water quality mitigation would be applied prior to discharge to the environment.
- Onsite infrastructure – Additional onsite infrastructure would include a 230 bed camp, a 28 office administration building, a 7 bay truck shop, warehouse, fuel depot, explosives magazine, and analytical/metallurgical laboratory. A camp facility at the mine site would be operational during construction and operations phases of the mine. Mine workers would be transported to and from the site by plane. An existing 30m x 1800m all-weather air strip is located at the Ospika Camp. Pickup points currently being considered include Mackenzie and Prince George.
- Transmission Line – The Project includes a proposed 138 kV power transmission line in order to fulfill anticipated electrical power requirements (~30 MW). The proposed regional power connection would begin at the existing infrastructure in the community of Mackenzie as can be seen in Figure 2.2. The proposed transmission line route is approximately 150 km long from Mackenzie to the mine site. The estimate of disturbance for the proposed transmission corridor footprint is ~ 750 ha. The first segment of the route runs from Mackenzie north to a crossing of the Peace Arm close to the existing Parsnip West FSR. An alternative alignment from the dam at Hudson's Hope to the mine site has been considered, but is currently not preferred based in part on feedback from Halfway River First Nation and West Moberly First Nations that it may cross valued caribou habitat and areas of cultural significance. Halfway River First Nation and West Moberly First Nations also indicated support for projects that make use wherever possible of existing disturbance, as is the case with the currently proposed alignment.



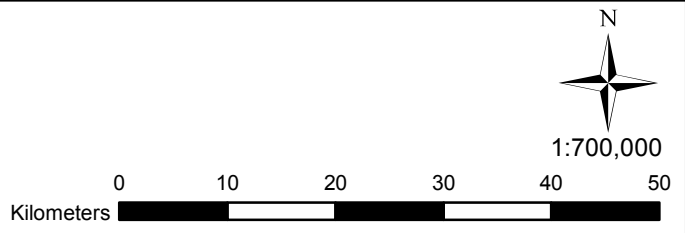
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**Figure 2.2 - Proposed Transmission Alignment**

- Aley Deposit
- BC Communities
- Barge Landing
- Ecological Reserve
- Mackenzie Base Alignment
- Mackenzie Alternate Alignment
- Protected Area
- Provincial Park

**Taseko** Aley

Map Prepared by Taseko Mines Ltd.  
 Date: 2014-08-28  
 Data Sources:  
 Province of British Columbia, AECOM,  
 Taseko Mines Ltd.  
 Projection UTM Zone 10, NAD 83



## 2.4 Summary of Activities to be Performed in Relation to the Project

As previously described in Section 2.3, and further discussed in Section 2.7, the activities to be performed in relation to the Project are summarized below. See also Section 4.3.1 for a listing of Provincial and Federal permits, license, authorizations and approvals that may be related to activities.

The activities that will be undertaken by Taseko for the sole purpose of carrying out the Project include:

- Salvaging and stockpiling of overburden for use in reclamation
- Open pit mining (including drilling, blasting, excavation, and movement of ore and waste within the Project site)
- Constructing of ponds for surface water control and management,
- Constructing of starter tailings embankment and thereafter, centreline construction of embankment,
- Carrying out progressive reclamation activities during operations
- Closing the mine

For these activities, provincial authorizations from MeM and MoE are required. It should be noted that for tailings embankment construction and operations, design, monitoring, auditing and inspections would be conducted by third party qualified professionals for quality control and assurance.

The activities that will be undertaken by third party contractors under the direction or influence of Taseko for the sole purpose of carrying out the Project include:

- Timber harvesting in mine component areas,
- Truck transporting of product to Mackenzie or other chosen shipping facility,
- Constructing all mine site components and required associated site infrastructure,
- Transporting materials during construction,
- Installing pipelines for tailings transport to the TSF and water reclaim
- Installing the transmission line,
- Air transporting personnel on the existing runway at Ospika,
- Barging of materials during operation and construction, as appropriate, using existing facilities and services located on Williston Reservoir.

Provincial authorizations from MeM, MoE and FLNRO would be required. Federal authorizations may be required for transmission line crossings of navigable waters or disrupting fish habitat.

The activities that will be undertaken by a third party under the direction or influence of Taseko that would provide an immediate infrastructure benefit to other users include:

- Constructing and/or improving existing access infrastructure.

Provincial authorizations from FLRNO and MoE would be required. Federal authorizations may be required if disrupting fish habitat.

As discussed in Section 2.3.4, accredited third party contractors will operate in compliance with regulatory requirements and with Taseko protocols defined under contract outlining environmental and safety standards.

## **2.5 Options Assessment**

Alternatives have been considered for various components of the Project. These alternatives and the rationale for selecting the preferred alternative will be discussed in more detail in the EA Application/EIS. Alternatives evaluated include:

- Transmission line routing
- Tailings and waste rock disposal sites

Appropriate environmental, economic, social, health, traditional use and heritage factors were used to evaluate the alternatives and will also be discussed in the EA Application.

Alternate power supply options such as diesel generation and liquefied natural gas have also been considered; however, electric power delivered by transmission line was found to be the preferred option.

## **2.6 Emissions, Discharges and Waste**

### **2.6.1 Water Management**

A water management plan will be developed to control all surface water within the mine site area. The main objective of the water management plan is to control all water that originates from within the mine to supply the milling process and related mining activities and eliminate the demand for external make-up water. Key water management activities include the following:

- During operations –
  - Controlling, collecting, and utilizing surface water runoff upstream of the mine area;

- Optimizing the volume of water stored in the tailings supernatant pond to meet operations and closure requirements;
- Collecting and recycling surficial site water and seepage from the TSF and stockpiles;
- Diverting clean water around the mine site where feasible;
- Monitoring and, if required, treating surplus water from pit dewatering and clean water diversions to meet suspended solids criteria prior to release to the environment (Steve Creek).
- For closure –
  - Collecting, monitoring and, if required, treating all site water prior to its release to the environment (Steve Creek); at this time water quality is predicted to meet water quality guidelines.

During construction and operations, surficial and groundwater collected in and around the pit will be managed for suspended solids prior to release to the environment. Water that comes in contact with the WRSAs will be collected through a series of diversion ditches and routed to sedimentation ponds and/or the TSF seepage collection pond. The TSF seepage will be returned to the impounded area located upstream of the TSF. Although not predicted as being required at this time, the likelihood for passive or chemical water treatment being required at closure prior to release of water into Steve Creek will be confirmed through modeling of water quality for the environmental assessment.

### **2.6.2 Tailings and Waste Rock**

Various alternative locations for the waste rock and TSF were considered. Figure 2.1 shows the preferred location that supports the objective of keeping the mine infrastructure in one watershed (Steve Creek). The TSF would be a conventional tailings pond. A starter embankment would be used followed by tailings deposition and sequential embankment construction in order to progressively build the dam beach and embankment height. Waste rock not required for tailings embankment construction will be placed in WRSAs located immediately south of the low exit point of the pit, and near the northwest corner of the TSF. Placement of converter refuse would be such that these materials would be encapsulated in tailings and below the liquid interface. The embankment construction is to follow a centerline-type design. These pro-active and environmentally motivated early design considerations will minimize potential environmental effects from the storage of waste rock and tailings.

### **2.6.3 Emissions**

The Project will utilize conventional open pit mining methods. Diesel and electric powered pit production equipment, blasting, and crushing will generate the majority of air emissions from the mine site area. The criteria air contaminants (CAC's) expected from the mine site are from diesel use, blasting (explosives), other energy sources such as gasoline, propane and natural gas and fugitive dust from mine components. Greenhouse gases from these fuel sources may include nitrogen oxides (NO<sub>x</sub>), sulphur oxide (SO<sub>x</sub>), particulate matter (PM), volatile organic compounds (VOC), carbon monoxide (CO) and Ammonia (NH<sub>3</sub>). The sources of air contaminants for the Project are typical of an open pit mine, with the major air emissions resulting from fugitive dust (which may affect ambient particulate matter concentrations - PM<sub>2.5</sub> and PM<sub>10</sub>), and fuel consumption during construction and operations. The mine site is not in close proximity to human settlements, with the closest community to the Project (Tsay Keh Dene on the Williston Reservoir) approximately 90 km northwest of the Project. Fugitive dust emissions from the mine site are not expected to affect any communities due to the distance from the Project to regional populations and low dustfall levels. As currently conducted at Gibraltar, a database of energy use and greenhouse gas emissions will be kept in order to set management targets for energy reduction and report as required in federal and provincial legislation.

Emissions associated with transportation of supplies, product, and personnel to and from the site may include greenhouse gas emissions from transport vehicles and aircraft and dust generated by road traffic. Road traffic on local FSRs (existing FSRs are mapped on Figure 3.1) related to construction and operation of the Project is anticipated to increase by 10-20% over current levels and hence emissions could be predicted to increase a corresponding amount during dry weather conditions, but will not approach historical levels experienced on these roads before the forestry sector downturn. Given the current and historical levels of commercial and recreational activity in the vicinity of Williston Reservoir and the limited amount of traffic associated with the Project, impacts to air quality associated with the transportation corridor are expected to be minimal. The closest community that may experience dust from the FSRs proposed for use in this Project is Tsay Keh Dene.

### **2.6.4 Other Waste Streams (camp)**

#### *Water Waste Treatment*

Sewage from the mill site and camp areas will be collected by a gravity system flowing to a sewage treatment plant (STP). Sewage treatment will be by commercially available packaged units. The appropriate number of units will be used to service the mine during the construction

phase, with fewer units continuing service for operation. The maximum capacity of the plant will be based on an estimated maximum workforce of 500 during construction.

The STP will be located well away from the camp and other occupied areas. During construction, the treated effluent will be pumped to a tile field or lagoon. Once the mine is operational, the treated effluent will be discharged to the TSF.

### *Solid Waste Treatment*

The standard approach of segregating waste streams for disposal and recycling will be adopted on site. The solid waste management program will be primarily focused on recycling as many products as possible. All oil, glycols and chemicals will be separately stored for transportation to appropriate facilities to be reconditioned and re-introduced into the market place. These efforts will also be undertaken with paper, metal, and computer products. Putrescible garbage from the camp and any other locations will be stored and disposed of appropriately with respect to reducing human and animal interactions.

During the permitting process of the Project, as well as during mine operations, alternative options that are economically viable and environmentally appropriate will continue to be investigated to take advantage of any improved technological advances.

## **2.7 Construction, Operation, Decommissioning and Abandonment Phases and Schedule**

The four phases of the Project include construction, operation, closure, and post-closure. The following section provides schedules and activities for each of the phases specific to the Project.

### *Construction*

The construction phase starts with the issuance of appropriate permits and an upgrade of the site access road and ends at that point at which the concentrator reaches commercial production. The construction phase will take approximately 24-30 months and is expected to commence in 2017 and be completed in 2019.

Activities associated with the construction phase will include:

- upgrade of access road;
- mobilization of equipment;
- clearing and grubbing of the development area and stockpiling of overburden;
- transportation of materials required for construction and to support the construction camp;



- construction of site infrastructure (camp, administration building, concentrator, converter, truck shop, warehouse, fuel depot, explosives magazine, and analytical/metallurgical laboratory);
- pre-production pit development;
- construction of the starter dam for the TSF and collection ponds and ditches; and
- construction of the transmission line.

### *Operations*

The operations phase is anticipated to begin in late 2019 and will continue for approximately 27 years until the cessation of mine and concentrator activity. Concurrent and progressive reclamation activities also begin during the operations period.

Activities associated with the operational phase will include:

- mining of the ore body and processing of ore (including drilling, blasting, and excavation);
- transportation of ore to the plant and waste rock to the WRSA;
- transportation of product for shipping;
- transportation of tailings to the TSF;
- transportation of materials and supplies necessary to support operation and the camp facility; water treatment and management; and
- progressive reclamation where possible.

### *Closure*

The definitive closure phase will begin at the cessation of mine and concentrator activity, in approximately 2046, and last for a period of approximately 5 years while the pit is filling with water. Decommissioning of site infrastructure and reclamation will occur early in this period. The following are key activities related to closure in each Project component:

- Open Pit – appropriate erosion control features;
- TSF – stabilization and revegetation of the dam and beach;
- WRSAs – resloping and stabilization of the stockpile faces and revegetation;
- Processing Plant - removal of plant and infrastructure, transport and disposal of any remaining chemicals, recontouring of site and revegetation;
- Access and Haul Roads – general recontouring and revegetation of access and haul roads. Sufficient road access will remain to maintain post closure monitoring activities; and,

- Transmission Line – remove power line and poles, and where appropriate, reclaim any access routes that were used for maintenance.

### *Post-closure*

The post-closure phase begins in approximately 2051 when reclamation is completed and the open pit has filled with water and begins to discharge to Steve Creek. Activities in this period are all related to environmental monitoring of water quality and reclamation success, inspections for stability of remaining site infrastructure, implementing follow-up measures and repair if required, and annual reporting to government. Although not predicted as being required at this time, the likelihood for passive or chemical water treatment being required at closure prior to release of water into Steve Creek will be confirmed through modeling of water quality for the environmental assessment. Further discussion of post-closure requirements will occur during the EA process and subsequent permitting processes. This period will continue until all conditions of the *Mines Act, Health, Safety and Reclamation Code*, and conditions in all permits have been fulfilled and Taseko has been released from all regulatory obligations.

## **3. Project Location**

### **3.1 Coordinates and Mineral Tenure**

The Aley claims are located in the Mackenzie land and resource management plan (LRMP) area in the Lower Ospika General Resource Management Zone. The site is in northeastern BC, situated approximately 20 km northeast of the head of the Ospika Arm of Williston Reservoir, centered at 56°27'00"N and 123°44'00"W. No legal description for the land is available. The property derives its name from Aley Creek, a prominent valley located northeast of the claims. No other named topographic features on NTS topographic sheet 94B/05 (1:50,000 scale) occur on the property. Topography is steep with elevations ranging from 1260 to 2050 masl.

### 3.2 Site Maps

Mine site development will occur within provincial Crown land over which AC currently holds 109 mineral claims. The total area encompassed by these claims is 43,763 hectares. All proposed site features are on mineral tenures that are 100% held by AC and will be confined to an area of approximately 400 hectares. It is anticipated that four of the 109 claims will be converted to mineral leases for the purpose of carrying out mining.

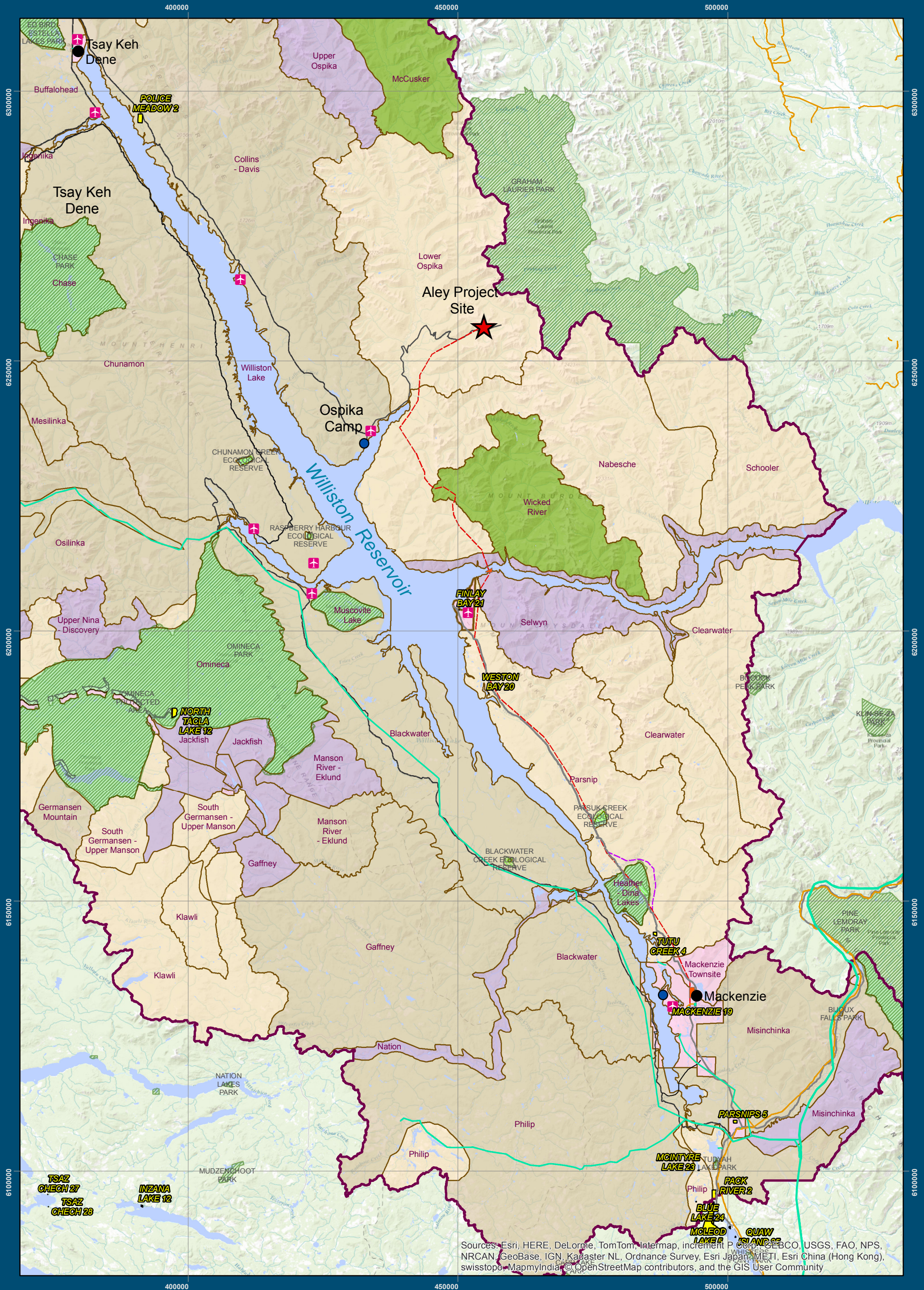
Figure 1.2 shows the location of the Aley Mine which is located in the Lower Ospika General Management Resource Zone. The general management direction for this zone provides for sustainable use of land and resources in this region. Specific reference is given to management for a wide array of extractive and non-extractive uses to maintain opportunities for timber, mineral, and oil and gas development.

Figure 2.1 provides details of the general location of conceptual project infrastructure. More details on the land use setting of the Project are provided in section 3.3 below.

Figure 2.2 shows the proposed alignment for the transmission line, from Mackenzie to the Project site.

### 3.3 Land and Water Use

Land use in relation to the Project is depicted on Figure 3.1. The Project is located within the traditional territory of the Tsay Keh Dene Nation and within the boundaries of Treaty 8 (Figure 3.2 – note, this information was obtained from the Province of BC through <http://www.data.gov.bc.ca/dbc/geographic/index.page> and is not endorsed by Aboriginal groups; therefore, may not reflect the territory boundaries asserted by the Aboriginal groups); the Project is located on lands that may currently be used for traditional purposes by Tsay Keh Dene members and the BC Treaty 8 First Nations. These Aboriginal groups are discussed in Section 5.5 and 6 of this document. The nearest lands under federal jurisdiction, including reserves, are summarized in Table 3.1 and depicted in Figure 3.1.



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

**Figure 3.1 - Land Use in Vicinity of the Aley Project**



- Mackenzie LRMZ Zones Subdivisions**
- Agriculture/Settlement
  - Enhanced
  - General
  - Protected
  - Special
  - Special - Wildland

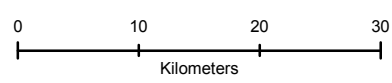
- Mackenzie Base Alignment
- Mackenzie Alternate Alignment
- Major Road
- Ospika Road
- Forest Service Roads
- Aley Area Airports/Airstrips
- Barge Landing

- Ecological Reserve
- Protected Area
- Provincial Park
- Indian Reserves
- Private Lots
- Findlay Bay Settlement
- Mackenzie LRMZ Area

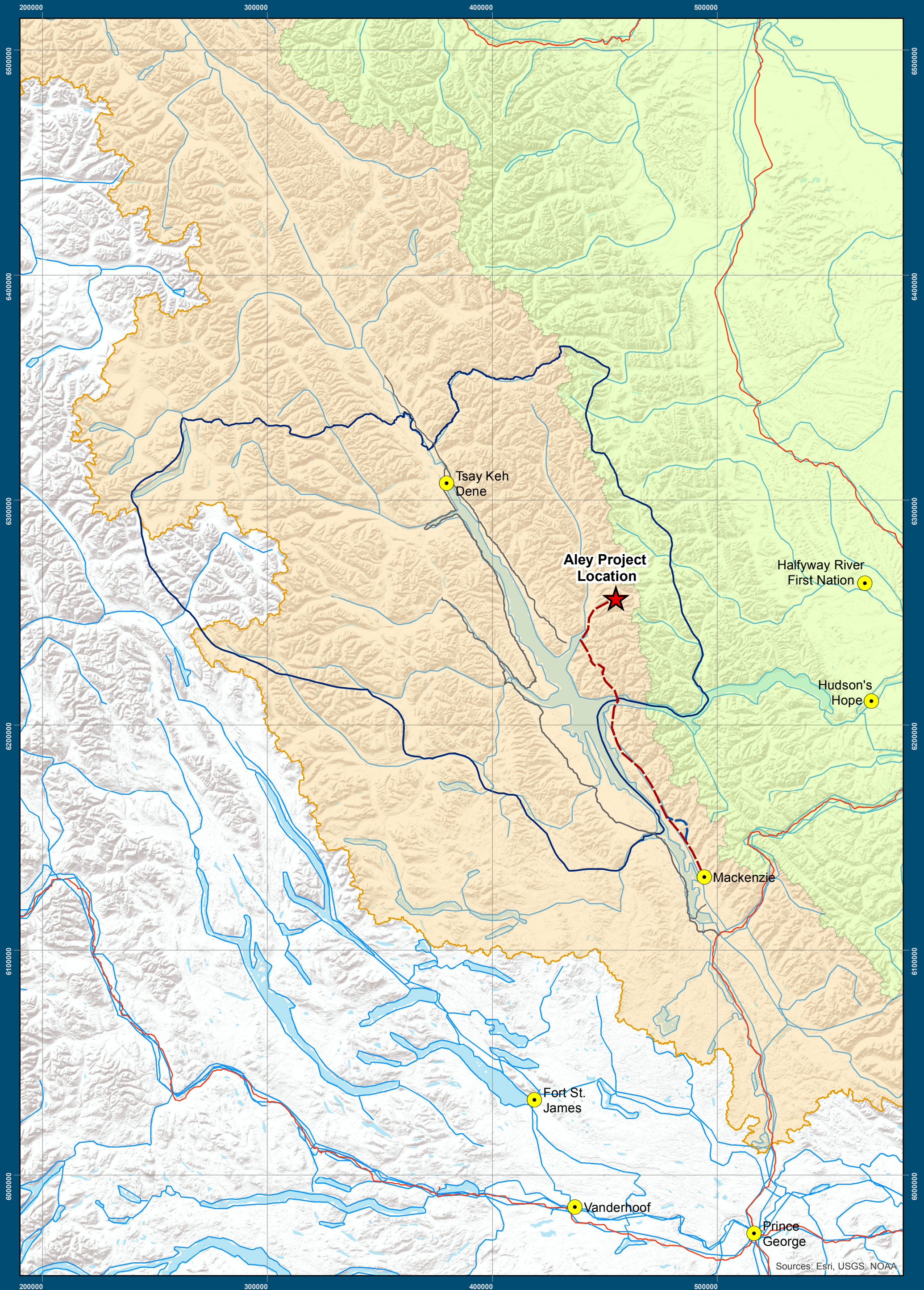
- Electric Power Line
- Gas & Oil Pipeline



1:625,000



Map Prepared by Taseko Mines Ltd.  
 Date: 2014-08-28  
 Data Sources:  
 Province of British Columbia, AECOM  
 Taseko Mines Ltd.  
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Sources: Esri, USGS, NOAA

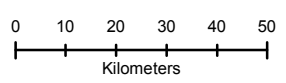
**Figure 3.2 - First Nations Traditional Territories and Treaty Areas**



- Forst Service Road to Aley
- Provincial Hwy
- - - Transmission Line Route
- - - Transmission Line Alternate Route
- ▭ Tsay Keh Dene Traditional Territory
- ▭ Federal Treaty 8 Boundary
- ▭ Provincial Treaty 8 Boundary
- ▭ Treaty 8 Disputed Area



1:1,500,000



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 Data Sources:  
 Province of British Columbia,  
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**Table 3.1: Location of Lands Under Federal Jurisdiction in Relation to Project Components**

Aboriginal Group	Lands Under Federal Jurisdiction	Location in Relation to Mine Site	Location in Relation to Proposed Transmission Line Route
Tsay Keh Dene	<b>Police Meadows 2 Indian Reserve</b>	74 km northwest of the mine site	74 km northwest of the transmission line
	<b>Tutu Creek 4 Indian Reserve</b>	115 km south of the mine site	2 km west of the transmission line
	<b>Parsnips 5 Indian Reserve</b>	155 km southeast of the mine site	24 km south of the transmission line
	<b>Ingenika Settlement*</b>	90 km northwest of the mine site	90 km northwest of the transmission line
	<b>Mesilinka*</b>	58 km southwest of the mine site	35 km southwest of the transmission line
Takla Lake First Nation	<b>North Takla Lake 12 Indian Reserve</b>	90 km southwest of the mine site	63 km west of the transmission line
Halfway River First Nation	<b>Halfway River First Nation Indian Reserve 168</b>	115 km east of the mine site	115 km east of the transmission line
West Moberly First Nations	<b>West Moberly First Nations 168A Indian Reserve</b>	135 km southeast of mine site	100 km east of the transmission line
McLeod Lake Indian Band	<b>Findlay Bay 21 Indian Reserve</b>	50 km south of the mine site	3.5 km west of the transmission line
	<b>Weston Bay 20 Indian Reserve</b>	65 km south of the mine site	1 km west of the transmission line
	<b>Mackenzie 19 Indian Reserve</b>	130 km southeast of mine site	2 km south of the transmission
	<b>McIntyre Lake 23 Indian Reserve</b>	160 km southeast of the mine site	30 km south of the transmission line
	<b>Pack River 2 Indian Reserve</b>	165 km southeast of the mine site	35 km south of the transmission line
	<b>McLeod Lake 1 Indian Reserve</b>	170 km southeast of the mine site	40 km south of the transmission line

\*Note: Ingenika Settlement and Mesilinka are parcels of federal crown land not yet converted to reserve; these parcels are not mapped on Figure 3.1. Ingenika is the location of Tsay Keh Dene village on the northern tip of the Williston Reservoir. Mesilinka is located on the west side of the Williston Reservoir.

All Project components will be situated on BC Crown land within the Mackenzie Land and Resource Management Plan (LRMP). Zoning designations for the Project are as follows:

- Mine Site:
  - Lower Ospika General Resource Management Zone;
- Transmission Line:
  - Lower Ospika General Resource Management Zone ;
  - Nabesche General Resource Management Zone;
  - Wicked River Special: Wildland Resource Management Zone;
  - Selwyn Special Resource Management Zone;
  - Parsnip General Resource Management Zone; and,
  - Mackenzie Townsite Settlement Area
- Transportation Corridor:
  - Lower Ospika General Resource Management Zone;
  - Collinns-Davis Enhanced Resource Management Zone;
  - Khak'i Tse (Buffalohead) Enhanced Resource Management Zone;
  - Ingenika Special Subzone;
  - Ingenika General Resource Management Zone;
  - Chunamon Enhanced Resource Management Zone;
  - Osilinka Enhanced Resource Management Zone;
  - Blackwater Enhanced Resource Management Zone;
  - Nation River Special Resource Management Zone;
  - Philip Enhanced Resource Management Zone;
  - Misinchinka Enhanced Resource Management Zone; and,
  - Mackenzie Townsite Settlement Area
- Transfer Station
  - The transfer station would be located within the Mackenzie Townsite Settlement Area in the District of Mackenzie and operated by a third party. The zoning designation of the area is industrial – heavy and industrial – light.

General Resource Management Zones allow for a range of extractive and non-extractive uses and values with the intent of maintaining opportunities for timber, mineral and oil and gas development balanced against other values such as wildlife and wildlife habitat, fish and fish habitat, heritage and culture, scenic areas and recreation.

The intent of the Special Wildland Resource Management Zones is to manage for ecological conservation as a priority; heritage and cultural values; and scenic and remote wilderness

characteristics while providing for commercial and non-commercial back-country recreation and maintaining opportunities for oil and gas and mineral exploration and development.

The intent of Special Resource Management Zones is to manage for the conservation of non-extractive values such as wildlife and wildlife habitat, fish and fish habitat, heritage and culture, scenic areas and recreation as a priority while maintaining opportunities for timber, mineral and oil and gas development.

The intent of the Enhanced Resource Management Zones is to optimize timber growth and utilization with the recognition that other industrial users such as mineral development may also benefit in the zone. Restrictions to activities may apply in special areas where wildlife and wildlife habitat, fish and fish habitat, heritage and culture, scenic areas and recreational values are present.

The intent of the Ingenika Special Subzone is to manage Aboriginal groups' historical and traditional values as a priority to minimize adverse impacts from resource development and to manage for moose and moose habitat and elk and elk habitat.<sup>1</sup> The existing road through this area will be used and no disturbance alongside it is contemplated.

The Project is not located in a marine environment. The existing barge landing on Williston Reservoir and the access road to it are located on Crown land at the Ospika landing. These facilities have been previously used to support forestry activities in the area. No additional infrastructure is required to support barging activities associated with the Project.

Existing rail siding infrastructure and appropriately zoned industrial properties are currently available for use in Mackenzie.

Although the mine site is not close to any communities (nearest communities with permanent residences is Tsay Keh Dene Village with a road distance of approximately 135 km or direct distance of 90 km, and Mackenzie with a road distance of approximately 610 km or direct distance of 130 km), recreational sensitivity and significance is designated as low and low to moderate respectively at the mine site, with higher values approximately 11 km west of the Project area in the Ospika valley running north from the Ospika Arm (FLNRO, Recreational Features Inventory, accessed via iMap). The nearest residences, camps and cabins in proximity to the Project include:

- 27 camp sites have been identified in the Ospika watershed, two of which are located within the mine site footprint. The remaining 24 camp sites are located along the Ospika

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<sup>1</sup> Province of British Columbia, 2000. *Mackenzie Land and Resource Management Plan*. Victoria, BC.



River ranging from approximately 43 km northwest to 23 km southwest of the Project area. Camp sites are generally used seasonally.

- 5 cabins have been identified in the Ospika watershed. Cabins are predominately used seasonally for hunting and trapping activities. Cabins in the Ospika watershed range from approximately 23.5 km northwest to 16 km southwest of the mine site footprint with the closest cabin located approximately 10 km west of the mine site footprint.
- Findlay River Outfitters has a lodge at the Ospika Camp, located on the Ospika Arm of Williston Reservoir, approximately 30 km southwest of the mine site footprint. The lodge is used on a seasonal basis.

Williston Reservoir is also a recreational area, but it does contain several hazards, such as floating and submerged wood debris and strong winds that can cause high waves and strong currents.

There are two guide outfitters operating within licenced areas within 10 km of the mine site. There are also three different trapline holders which have licenced areas within 10 km of the mine site footprint. As described in section 1.3, consultation will be undertaken as appropriate during the EA process and subsequent permitting processes with the guide outfitter and trapline holders to better understand potential effects of the Project on their activities, and appropriate mitigation measures.

There are a number of resource development projects in the area which are currently in the proposal phase, in closure or under construction. Further details on mining activities in the region are discussed in Section 3.3.2.

There are no forestry cut blocks in direct proximity to the mine site. The nearest protected area to the mine site is Graham-Laurier Provincial Park, whose nearest boundary is six kilometres to the northeast of the proposed footprint. The nearest other protected areas are more than 49 km away. According to the Mackenzie LRMP completed in 2000, the mine site is situated in an area identified as the Lower Ospika which is a designated general resource management zone. The LRMP allows for resource development in the area, and also identifies the recreational values of the area, the importance of trapping among the Aboriginal communities, and that a primary concern is the management of motorized vehicle use on access roads.

The proposed transmission line route is approximately 150 km long from Mackenzie to the mine site. Between Mackenzie and the Peace Arm crossing (a total of 90 km) there are a number of different types of land tenure starting from within 10 km of Mackenzie. These include Heather-Dina Lakes Park, Heather Lake Ecological Reserve, and Patsuk Creek Ecological Reserve, as well as residential and other tenures. There are existing roads and other

development in this area. Detailed route alignment work will consider tenure constraints and maximizing use of existing disturbed areas. The route will be in the vicinity of the Parsnip West FSR which is at lower elevations, away from areas identified as ungulate winter range and caribou wildlife habitat areas.

This route may run for approximately eight kilometres through Heather Dina Provincial Park if it is able to follow the FSR alignment. In early engagement discussions with Aboriginal groups, Taseko has heard that the preference is for the road to follow existing disturbance as much as possible. The Parsnip West FSR runs through this park and opportunities to align in proximity to this road would be used to minimise any disturbance to the park's key values. Alternatively, if routing through the park is not permitted, deviation to the east of the park boundary could be considered. This would require new access in a previously undisturbed area. The crossing on the Peace Arm is contemplated as a suspended span of approximately one kilometre. The area between the Peace Arm and the Ospika Arm (approximately 40km in length) has limited forest road access on or near the proposed alignment. The last segment of the route would extend from the Ospika Arm to the mine site utilizing existing FSRs to the maximum extent possible.

### **3.3.1 Current Use for Traditional Purposes**

As the Project's proposed location is in an area that is subject to Aboriginal traditional territory claims and certain provisions of Treaty 8, it may involve access to, use of, and/or development of lands and resources that are currently used for traditional purposes by aboriginal peoples. Taseko has engaged with Aboriginal groups to discuss their interests in the Project area, and will continue to work with these Aboriginal groups throughout the EA process to determine how changes to the environment arising from the Project affects their use of the lands and resources, and how those effects can be avoided or mitigated. More information on the potential effect on aboriginal people is provided in Section 5, and the consultation process to date is provided in Section 6.

### **3.3.2 Regional Economic Development**

#### *Other projects and workforce requirements*

Although the nearest major existing projects are more than 75 km away, there are a number of other projects that have been identified around the Project through the Major Projects Inventory that are either in the proposal phase or under construction (BC Ministry of Jobs, Tourism and Innovation, 2012):

- Near Mackenzie, the Mount Milligan Copper/Gold Mine is in the early stages of operation.

- Near Hudson's Hope, the Gething Coal Project is currently in the proposal stage.
- There are eight mining projects either currently under construction or being proposed around the communities of Chetwynd (2), Prince George (1) and Tumbler Ridge (5).
- The Site C Dam currently being proposed by BC Hydro will likely have regional implications with respect to necessary resources and labour if it receives approval.

One project that is currently under consideration but not included in the Major Projects Inventory is the Akie Zinc-Lead-Silver Project (Canada Zinc Metals Corp., 2008). The Akie Project is currently road accessible and is located to the north-east of Tsay Keh Village. It has not yet entered the BC EA process, and is currently conducting exploration.

Interviews with local officials revealed that there are a number of coal mines not listed above that are being considered around Hudson's Hope. The Stronsay and Brule coal mining projects have also been identified as being within 200 km. Projects in the region that were in operation include the Kemess mine, which in 2011 was undergoing closure reclamation and is looking at feasibility of an underground Copper-Gold mine opportunity for potential future operations. Kemess appears to be the nearest mine facility at approximately 195 km to the northwest.

At this stage none of these projects has been identified as being likely to physically interact with the Project, but combined, if all proceed, these projects could affect labour availability in northeastern BC in the future. If skills shortages are identified as an issue, there may be opportunities to work with local education providers to help ensure that the workforce is equipped to gain from the opportunities created by the Project.

#### *Economic benefit at the local, regional and provincial levels*

A key benefit of mining activity is the economic activity it generates in the local and regional economy. Mining projects create direct employment during construction, operation and closure phases, as well as contracting opportunities for local businesses. Mining projects have the potential to create challenges for other economic activity such as forestry, tourism, outfitting, hunting and trapping. At the provincial level, the direct and indirect economic effects of the Project will be estimated using economic modeling, and interviews will be conducted with local stakeholders to assess the need to mitigate for any potential negative impacts. Additional feedback is expected from anticipated local government representation on the EAO's working group during the EA process.

#### *Government Revenue and Costs*

Mining projects also generate significant revenues for all levels of government through various taxes and fees. Preliminary estimates of direct government revenue in the form of mineral,

corporate, and income taxes are expected to be in excess of \$1 billion over the life of the Project. The demand for community services may also increase, including road use and expanded services for project workers and their families. Economic modeling will be used to provide an estimation of tax generation in the EA Application/EIS, and information will be gathered to provide an understanding of any effects on community services that may be associated with the Project.

## **4. Federal Considerations**

### **4.1 Financial Support**

The Project does not involve any federal financial support from any federal authorities.

### **4.2 Federal Lands**

The Project does not overlap with any Indian Reserve land, and is not anticipated to involve any other federal lands or require the granting of any interests in federal land. Furthermore, there are no expected impacts to any federal lands outside of the Project footprint.

The nearest federal lands to the Project are Indian Reserves, including Weston Bay No. 20 (1 km from the proposed transmission line for the Project), and Findlay Bay No. 21 (50 km from the proposed mine site). No Project-related effects to federal lands are anticipated.

### **4.3 Legislative Requirements**

A mining project of the scale proposed for the Project in BC typically goes through a formal environmental review process and when approved the necessary permits and approvals for construction and operation can be issued.

Only once the Project is approved through the EA process can permits and approvals for construction and operation be issued. The proposed production level and/or activities associated with the Project could trigger a review under both the BCEAA and the CEAA 2012.

#### *BC Environmental Assessment Act (BCEAA)*

The BCEAA, which is administered by the BC Environmental Assessment Office (EAO), will be triggered as this act's *Reviewable Projects Regulations* stipulates that any new mineral mine that has a production capacity of 75 thousand tonnes per year or more is reviewable under the Act. The current plan estimates processing of 3.6 million tonnes per year of ore. If the EAO

confirms that an assessment is required, in order for the Project to proceed, an EA certificate needs to be issued after the review of the EA Application, before the Project can proceed to obtain permits for construction and operation. As described in section 1.4, the provincial review will be focused on assessing the potential environmental, economic, social, heritage, and health effects of a project and includes associated aboriginal consultation. The EAO has the ability to define specific EA requirements for a particular project in its section 11 order, which sets out, among other things, the scoping of the EA and consultation requirements with aboriginal groups, government entities, and the public. Taseko's anticipated BC EA schedule is provided in Table 4.1. The delay between AIR approval and submission of the EA application is to enable Taseko to collect additional site data for inclusion in the EA application.

**Table 4.1: Anticipated BC EA Schedule**

Action	Expected Date
<b>Taseko submits Project Description</b>	September 2014
<b>EAO issues Section 10 Order</b>	September 2014
<b>EAO issues Section 11 Order</b>	November 2014
<b>EAO approves/issues AIR</b>	April 2015
<b>Taseko submits EA Application</b>	February 2016
<b>Application Review Phase</b>	February 2016 – August 2016
<b>Ministers' EA Decision</b>	October 2016
<b>Construction</b>	2017 – 2019
<b>Operations</b>	2019
<b>Closure</b>	2046
<b>Post Closure</b>	2051

*Canadian Environmental Assessment Act, 2012 (CEAA 2012)*

CEAA 2012 came into effect in July 2012 and applies to projects described in the *Regulations Designating Physical Activities* (a regulation which describes the physical activities that may require an environmental assessment under CEAA 2012). This regulation identifies that metal mines with ore production capacity of 3,000 t/d or more, and metal mills with an ore input capacity of 4000 t/day or more, as physical activities potentially requiring an EA. As the Aley Mine Project exceeds both the metal mine and metal mill production capacity thresholds described in the *Regulations Designating Physical Activities*, a Project Description is being submitted to the CEA Agency for determination of whether a federal EA is required.

Upon receipt of an acceptable Project Description, the CEA Agency will have 45 days to determine if a federal EA will be required. This determination will be based on the potential for adverse environmental effects in areas of federal jurisdiction. This 45 day time limit includes a

20-day period during which the public is invited to provide comments on the Project Description and necessity of an EA.

If it appears that the Project is likely to require a federal EA, BC may decide to request that the review responsibility be transferred to the EAO (a process known as substitution). In this case, the federal minister would retain the final decision-making authority using the results of the provincial EA. In March 2013, the CEA Agency and EAO signed a memorandum of understanding (MOU) that establishes “an administrative framework that will facilitate efficient and effective substituted environmental assessments...” pursuant to the provisions of CEAA 2012. This MOU outlines the process and considerations for a decision on whether a project will be subject to a substituted process. If BC makes a substitution request prior to the initiation of the federal public comment period on the Project Description, the federal minister will endeavour to make a decision on substitution at the same time a decision is made on whether a federal EA is required (i.e. within 45 days of receipt of the Project Description).

For a substituted process, the federal cabinet (Governor in Council) could take the further step of declaring the provincial process equivalent to the requirements of the CEAA 2012, in which case there would be no federal process or decision – the BC EA process (which would include expert advice from federal agencies) and decision would stand in place of a federal process and decision.

If a full federal EA is conducted by the CEA Agency, the new legislation establishes timelines for EAs include a 365 day period (government time only) of review. This period begins with the day on which the notice of commencement is posted to the CEA Agency’s website, and concludes with the Minister’s decision statement. The federal Major Projects Management Office (MPMO) would likely be involved in its role “providing overarching project management and accountability for major resource projects in the federal regulatory review process, and to facilitate improvements to the regulatory system for major resource projects<sup>[1]</sup>”. Part of the MPMO’s role is to coordinate project timelines and activities between federal agencies, not just for the EA but for subsequent federal permitting and approvals as well.

### **4.3.1 Permits, Licences, Authorizations and Approvals**

#### *4.3.1.1 Federal permits, licences and approvals*

For explosives storage, approval will be required under the *Explosives Act*. Taseko will work directly with Natural Resources Canada (NRCAN) to ensure any requirements are fulfilled.

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<sup>[1]</sup> From MPMO web site [www.mpmo-bggp.gc.ca/index-eng.php](http://www.mpmo-bggp.gc.ca/index-eng.php)

An authorization from Transport Canada will be required for aeronautical clearance of the overhead transmission line crossing of the Peace Arm. It is anticipated that the line will be of sufficient height so as to avoid interference with navigation on Williston Reservoir. Discussions will be held with Transport Canada to determine any potential legislative or regulatory requirements prior to finalization of the AIR/EIS Guidelines.

Other federal permits, licences or approvals that may be required for the construction, operation, or closure of the Project are the following:

- Environment Canada
  - *Metal Mining Effluent Regulations* (MMER) under the *Fisheries Act*: As a Project design feature, water may be discharged from the pit during operations and from the TSF in closure. The Project's current design does not discharge mine water into fish bearing streams or water bodies; however, MMER authorizations may be required. Taseko will carry out the appropriate monitoring and control of discharge.
- Fisheries and Oceans Canada
  - *Fisheries Act* authorizations may be required. Current field data and presence of downstream barriers suggests that the mine site area is not providing habitat to any fish species. Proposed transmission line crossings will be designed to avoid habitat disruption in riparian areas. Discussions will be held with DFO to determine any potential *Fisheries Act* requirements prior to finalization of the AIR/EIS Guidelines.

Information will be exchanged with federal departments as early as possible in order to confirm the presence or absence of requirements. It is expected that during the EA process and the exchanges with federal departments the nature of any federal authorizations will be identified. An updated list will be provided in the EA Application/EIS.

#### 4.3.1.2 BC permits, licences, authorizations and approvals

A list of provincial permits, licences and approvals that may be required for the Project follows:

- BC Ministry of Energy and Mines and Responsible for Core Review
  - *Mineral Tenure Act*
    - Mining Lease
  - *Mines Act* Permit:
    - Approval of the Mine Plan
    - Approval of the Reclamation Plan
- BC Ministry of Forests, Lands and Natural Resource Operations

- *Land Act* Authorizations
  - Licence of Occupation
- *Water Act*
  - Approvals for “Changes In and About a Stream” (Section 9)  
Water licences for sediment control/detention ponds and surface water diversion, storage and use
- *Forestry Act* Licence:
  - Occupant Licence to cut
- *Heritage Conservation Act*
  - Section 14, Inspection Permit
  - section 12, Site alteration permit
- *Provincial Forest Use Regulation*
  - Special Use Permit for use of new and existing road access
- BC Ministry of Environment
  - *Environmental Management Act* permits
    - Effluent Discharge Permit (e.g., TSF, sewage, etc.)
    - Air Discharge Permit
    - Discharge to Land Permit – disposal of refuse
    - Fuel Storage Permit
    - Sewage Registration –sewage disposal facility
- Ministry of Transportation and Infrastructure
  - *Transportation Act, Motor Vehicles Act*
    - Utility Permit
- BC Northern Health Authority
  - *Public Health Act*
    - Food Premises Permit
    - Drinking water
    - Filing of Certification Letter for sewage disposal facility
  - *Drinking Water Protection Act and Regulations*
    - Construction Permit
    - Operating Permit

It is expected that during the EA process and the exchanges with BC authorities more specific requirements will be refined. An updated list will be provided in the EA Application.



## 5. Preliminary Potential Environmental Effects Under Federal Jurisdiction

A background data review of existing information on the physical, biological and social conditions for the Project area has been conducted by AECOM, Knight Piésold Ltd., and SRK Consulting. The purpose of the background review was to assess the utility and validity of the available information, in order to:

- Identify background information available
- Identify any significant issues/findings of special concern which had not been previously anticipated

Using the preliminary reviews described above, the following sections provide a description of the physical and biological setting, including the physical and biological components in the area that may be adversely affected by the Project.

### 5.1 Physical Setting

#### 5.1.1 Geology and Geochemistry

##### *Regional Geology*

The Aley Project region lies within the Western Foreland belt of the Rocky Mountains which is characterized by Early to Middle Paleozoic deep water carbonates and shales. These slope to off-shelf deep water strata defining the paleogeographic Kechika Trough. In the Aley region, the north-south trending, 50 km wide trough is bound to the west by the Northern Rocky Mountain Trench (NRMT).

The Aley Creek area lies near the eastern limit of Paleozoic volcanism and coarse clastic sedimentation in the Foreland Belt. The Lady Laurier volcanics and westerly derived Earn Group conglomerates, exposed to the immediate north and west of the Aley carbonatite, have been cited as evidence for tectonism in the mid-Paleozoic. Synmagmatic contractional deformation structures in continental margin strata that is host to the Aley carbonatite suggest that this activity was at least in part the result of convergence along the parent margin and associated with carbonatite emplacement.

##### *Property Geology*

The Aley Carbonatite complex intrudes Cambrian to Ordovician sedimentary rocks of the Kechika (limestone), Skoki (dolomite to volcanoclastics) and Road River Group formations

(clastic sedimentary rocks). The intrusion is ovoid in plan view with a diameter of approximately 2 km and surrounded by a fenite aureole up to 500 m thick that has previously been mapped as “amphibolite” (Pride, Cominco Ltd., 1987) and “syenite” (Mäder, 1986). The complex is predominantly composed of dolomite carbonatite (CD) with minor calcite carbonatite (CC). Texturally relationships suggest that CD is metasomatic in origin while CC is interpreted to be primary.

The niobium (Nb) minerals at Aley consist of pyrochlore, fersmite, and columbite. The alteration follows a general sequence whereby pyrochlore, and to a lesser degree, columbite, alter to fersmite. The chemistry of the alteration minerals appears to be inherited from the parent mineral. At Aley, no significant amount of tantalum (Ta) has been noted in the pyrochlore and the alteration minerals do not contain it. Likewise, the reduction of solid solution capacity in the minerals reduces in the alteration sequence. The iron (Fe) content appears to increase in atomic proportion towards columbite.

#### *Environmental Geochemical Characterization*

Appropriate mineralogical studies, static testing (acid-base accounting and elemental analyses), laboratory kinetic testing (humidity cells) and on-site kinetic testing (barrel tests) of drill core samples from the Central Zone are being used to investigate metal leaching (ML) and acid rock drainage (ARD) potential of the waste rock, ore and tailings. In addition, the potential for an onsite Converter, and the resulting converter refuse is also being assessed. Results from these tests will be used in assessing potential effects of the Project and will be incorporated into the EA Application/EIS.

#### **5.1.2 Climate**

The mine site is typical of northern BC, high elevation with a large temperature range between seasons typical of the Boreal forest climate. The summers are generally short (from late June to late September). Typically, heavy rains or snowstorms can begin in late September. Previous drilling identified permafrost to a depth of about 100 m in 3 holes in the area between the headwaters of Al and Steve Creeks.

Eight Meteorological Services of Canada (MSCB) and six Wildfire Management Branch (WMB) climate stations are located near the mine site area. Seven of the eight MSCB stations are now discontinued, and only four have more than one complete year of record. The closest MSCB station is Finlay Forks 2 (Climate ID: 118BHQ1), which is approximately 50 km south of the area. The furthest one is Chetwynd A (Climate ID: 1181508), with a distance of 160 km to the southeast.

MSCB climate stations can continuously monitor the following parameters, which are reported on a daily and monthly basis:

- Temperature;
- Total rain;
- Total snow;
- Total precipitation;
- Snow on ground;
- Wind speed; and,
- Wind direction.

All six of the WMB climate stations are still in operation, although they only collect data during non-freezing months. Therefore, none of the WMB records are complete, but will be used to better characterize the summer precipitation and temperatures. The closest WMB station is Nabeshe, which is approximately 30 km to the southeast.

Regional data will be used to support project-specific climate data collected at the proposed mine site. Concurrent regional and site data cannot be compared as there are no active regional stations in the vicinity of the mine site. Therefore, the regional data have been used as a temporary indication of parameters such as mean annual precipitation (MAP), and mean monthly temperatures, until site specific data have been collected.

Based on MSCB climate data, the average annual air temperature is estimated as -2.4 °C, with monthly average temperatures ranging from -15.7°C in January to 10.0°C in July. Total precipitation is estimated as 1200 mm, with minimum monthly average of 33 mm in April and maximum 153 mm in July. Rainfall constitutes 44% of the total precipitation in a year and occurs between April and October.

### **5.1.3 Air Quality**

The project is located in a non-urban region. At present, there are no background ambient air quality monitoring stations in the region which can provide background air quality conditions in the mine site area.

A baseline air quality program has been initiated which focuses on the collection of settleable particulate matter (dustfall) using a passive sample collection technique for analysis of total, soluble and insoluble particles, and their metal content. The dispersion of particulate matter, and hence metals, will be predicted by following BC guidelines (MOE 2008) and compared with National and Provincial ambient air quality objectives and standards. Mine developments have the potential to affect air quality through emissions associated with mining and from

transportation of supplies, product, and personnel (see Section 2.6.3). Changes in air quality and the deposition of dust from mine activities have the potential to effect human and ecological health, and country foods.

#### **5.1.4 Noise**

No information on background sound levels exist for the Project area. Ambient noise data will be collected during the preparation of the EA Application. This will consist of a sound level meter being used to assess sound levels at a given instant in time at a given location. The approach to evaluating environmental sound levels will consist of measuring existing environmental sound levels (slow response, A or C weighted decibel scale) at representative sites around the mine site area. These data will be used to help predict noise levels associated with the mine during operation. Changes in noise levels from mine developments have the potential to cause sensory disturbance to wildlife.

#### **5.1.5 Terrain and Soils**

Elevation at the mine site varies from about 700 m in the creek valleys to about 2000 m in the upper ridge area above the proposed pit. The topography consists of steep mountain terrain with U to V shaped glacial valleys. Small creeks drain from several peaks in the mine area towards the Ospika River. Below the treeline at about 1600 m, the area is covered by Boreal forest. The existing terrain mapping provides valuable insight into the diversity of surficial materials and landforms. Nearly all of the area is underlain by calcareous sedimentary and metamorphic bedrock. Quaternary glaciations have carved U-shaped valleys, alpine cirques (basins) and rugged peaks. The contemporary landscape reflects both the geological origins and the glacial and post-glacial history of the region.

A possible geohazard within the area is snow avalanches. Snow avalanche paths from narrow creek-wide gullies to kilometre-wide, coalescent paths originating in high alpine basins are common on most valley sides of the tributaries draining into the Ospika River valley. Rockfall events are also a potential hazard below steep, rugged bluffs and peaks.

In the 2011 soil and terrain field survey program, 79 sites were investigated within the mine site area. Eighty-one surface (0 – 20 cm) and subsurface (20 – 50 cm) soil samples were collected from 44 representative sites and were analyzed for soil pH, total organic carbon content, and metals.

Preliminary soil analytical results indicate that the soils in the area are mostly neutral to slightly acidic (with some extremely acidic sites present as well) and have generally low organic carbon content. Existing background metal concentrations of the soils in the area appear to be quite

variable with only a few percentages of the samples with elevated metal levels that exceeded either federal or provincial regulatory soil quality guidelines.

Potential effects from mine developments are loss of soil or alteration of soil quality, or alteration of landforms, such that wildlife habitat capability and land use is altered.

### **5.1.6 Hydrology**

Regional hydrology data is available from the Water Survey of Canada (WSC) branch of Environment Canada (EC): Seven active (currently operating) and three discontinued regional stations were located within approximately 100 km of the mine site area. The closest WSC station is Ospika River above Aley Creek (Station ID: 07EB002), which is approximately 10 km west of the area. The furthest station is Halfway River above Graham River (Station ID: 07FA003), with a distance of 90 km to the east of the area. All stations are on relatively large hydrologic systems, with drainage areas ranging from 621 km<sup>2</sup> to 43,300 km<sup>2</sup>. Watershed drainage area is directly related to the Mean Annual Discharge (MAD) of a stream.

These data can provide a general understanding of the hydrology of the region, but should be used with caution for estimating the MAD for the mine site, due to the relative size of the regional watershed areas. A more relevant value is the Equivalent Average Annual Unit Runoff (l/s/km<sup>2</sup>), which is the MAD per square kilometre of watershed drainage area. This value is dependent on the aspect, median elevation, glacier content, and exposure, but not the area of the watershed. Therefore, it allows comparison of large and small watersheds in a region where some or all of the watershed characteristics are deemed to be similar.

The current data collection program includes six streamflow stations. These stations were initially installed in July 2011 in relatively small hydrologic systems (compared to the WSC regional stations), with watershed drainage areas ranging from 2.7 km<sup>2</sup> to 76.8 km<sup>2</sup>. The proposed mine site is located in the headwaters of Steve Creek. The mine site area is thought to have similar watershed characteristics to several of the WSC stations, particularly Ospika River above Aley Creek due to its close proximity to the area. As data become available from the Project-related stations, it will be compared and regressed against the WSC stations during concurrent periods to verify similarities/differences.

Potential effects from mine developments are alterations to water volumes and seasonal flows such that immediate or downstream habitat alterations occur or land use is altered.

### **5.1.7 Hydrogeology**

This section includes information regarding groundwater quantity. No historical groundwater studies have been found for the mine site. A review of the groundwater well database managed

by the MOE did not identify any water well users in the mine area. In 2011, there were 11 monitoring wells installed in six locations and in 2012 there were four additional monitoring wells installed in two locations within the area of the proposed mine development. Hydraulic testing (e.g. slug testing) was completed in the 2011 monitoring wells and transducers were installed for continuous water level monitoring. These tasks are ongoing for the wells installed in 2012.

Groundwater data that are collected from exploration, geomechanical, geotechnical and hydrometeorological work that is ongoing at the site will be used to develop and support the hydrogeological study and effects assessment for the EA documentation. Potential groundwater quantity effects will be defined and addressed as required in the EA process for mine development, operation and closure.

Potential effects from mine developments are alterations to water volumes and flows such that immediate or downstream habitat alterations occur or land use is altered.

#### **5.1.8 Water Quality**

Limited historical water quality data are available for the mine site. Norecol Environmental Consultants Ltd. (NORECOL) initiated a water quality monitoring program in 1985 and six sites were sampled from August 1985 through to December 1987. Ten water quality sites were established in the mine site area in 2011. Initial analysis of the 2011 data indicates that general water quality within the mine site area remains unchanged from those results obtained in earlier studies. The water is hard to very hard, and the pH is neutral to slightly basic. The specific conductance of the recent water samples falls within the lower end of the range obtained from previous studies.

Steve Creek is the unofficial name of a tributary to Ospika River immediately south of Aley Creek. Initial sampling found that total concentrations of aluminium, copper, iron and vanadium exceeded Aquatic life guidelines within Steve Creek. Concentrations of these parameters increased with distance downstream in the Steve Creek samples. Dissolved concentrations for these samples were consistently at or below the limits of detection, and there were no guideline exceedances. In Al Creek (unofficial name of a tributary to Steve Creek) initial water quality sampling revealed no aquatic life guideline exceedances for any parameters.

Aquatic life guideline exceedances were noted for aluminum and iron in the initial samples from Northface Creek (unnamed tributary to Aley Creek, north of the proposed open pit and associated infrastructure). In the Ospika River there were aquatic life guideline exceedances for the total concentrations of aluminium, cadmium, copper, and iron. Dissolved concentrations of

these parameters were consistently at or below the limits of detection. The historical data summary indicated similar aquatic life guideline exceedances. Cadmium was not noted, likely due to lower detection limits that can now be achieved for this parameter.

Potential effects associated with the Project include possible impact on aquatic ecology in the lower sections of Al and Steve Creeks that might result from the diversion of any flows in the upper watershed as part of mine water management and any changes to water quality.

## **5.2 Biological Setting**

### **5.2.1 Aquatic Ecology, Fish and Fish Habitat**

The mine's footprint will be confined to the headwaters of a single watershed, Steve Creek. The aquatic environment in the mine site area generally consists of small mountainous streams flowing into the Ospika River which is a 4<sup>th</sup> order tributary of Williston Reservoir. The Ospika watershed provides a natural boundary for the study of aquatic ecology and fish and fish habitat programs in the region surrounding the mine site.

Map information including the MOE 1:50,000 scale of stream macro-reaches and 1:20,000 trim data is available for the mine site area and was used to analyze stream gradients using ArcGIS. This analysis revealed that all stream segments were below 20% and did not reveal any gradient barriers to fish within the area. Subsequent field work identified 4 – 5 m high water falls on both Steve Creek and Al Creek located at the edge of the Ospika River floodplain as shown in the following photos. These falls were obvious barriers to upstream fish movement on these creeks.



Photographs 6 and 7 – the falls on Steve Creek (left) and Al Creek (right).

The following are key results from a review of fish distributions using Fisheries Information Summary System (FISS) and Habitat Wizard for the Project area:

- In the Ospika River, arctic grayling (*Thymallus arcticus*), mountain whitefish (*Prospium williamsoni*), and bull trout (*Salvelinus confluentus*) are noted to be present.
- In Aley Creek, Bull trout (*Salvelinus confluentus*) and slimy sculpin (*Coltus cognatus*) are noted to be present in the lower reaches.
- In Steve Creek (unnamed tributary to Ospika River immediately south of Aley Creek), bull trout (*Salvelinus confluentus*), rainbow trout (*Oncorhynchus mykiss*), mountain whitefish (*Prospium williamsoni*), and slimy sculpin (*Coltus cognatus*) are noted to be present.
- In Al Creek (unnamed tributary of Steve Creek), rainbow trout (*Oncorhynchus mykiss*) and bull trout (*Salvelinus confluentus*) are noted to be present.

Fish sampling was carried out in August and September, 2011 and rainbow trout, bull trout, slimy sculpin and kokanee were collected from the lower reaches of Steve and Al Creeks, below falls located on both creeks several kilometres below the Project site. No fish have been captured above the falls on Steve and Al Creeks. Sampling effort above the falls included the use of minnow traps, electrofishers and pole seines. Additional sampling effort above the falls took place in the spring and summer of 2012. Fish are not present in the upper reaches of Al



and Steve Creeks, within the vicinity of the mine site; therefore direct effects on fish are not predicted. As mentioned above, alterations to water flow or quality could potentially affect fish or fish habitat at lower reaches

### 5.2.2 Vegetation

The following three biogeoclimate zones are present within the mine site area:

- Engelmann Spruce — Subalpine Fir (ESSF) Zone: Dominant zone and occurs at elevations of 900-2300 m in BC, and represents the biogeoclimate zone comprising most of the proposed disturbance area. The growing season in this region is cool and short while winters are long and cold. The ESSF is comprised of continuous forest at lower to middle elevations and subalpine parkland at its upper elevations. The subalpine area has trees occurring in clumps with areas of heath, meadow and grassland. Dominant climate tree species are the Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*). In mature stand, spruce usually dominates the canopy, which subalpine fir is more abundant in the understory, however at some high elevations and in wetter areas subalpine fir can dominate the canopy.
- Sub-Boreal Spruce (SBS) zone: Second dominant biogeoclimatic zone comprising approximately one third of the total area. This zone generally occurs from the valley bottoms to 1100-1300 m in elevation. The climate of the SBS zone is characterized by severe, snowy winters and relatively warm, moist and short summers. The dominant forest of the sub-boreal spruce zone is upland coniferous forest, which has hybrid white spruce (*Picea engelmannii x glauca*) and subalpine fir (*Abies lasiocarpa*) as the dominant climax tree species.
- Boreal Altai Fescue Alpine (BAFA) zone: Comprises a small portion of the mine site area, yet it is the most extensive alpine zone in north eastern BC. Winters are very long and cold and summers are brief and cool with long day length in this zone. Ground freezing and cryoturbation features are common; however this region is well vegetated.

### 5.2.3 Wildlife

Terrain, soils and vegetation data have been collected to generate terrestrial ecosystem mapping for the mine site area. Detailed sampling of plant communities and rare plant surveys have been conducted within the vicinity of the proposed mine site and will be used to characterize wildlife habitat values. No environmentally sensitive areas or SARA listed Schedule 1 plant species were detected during the surveys. Potential effects on vegetation and vegetation communities could generally be described as the alteration or removal of a portion of the vegetation within the mine area and transmission line footprint. Wildlife species in the

Ospika Valley and generally around Williston Reservoir have been fairly well studied. Searches of databases were focused on records in an area of 80 x 84 km (E 416932 N 6299604, northwest corner, and E 496048 and N 6215928, southeast corner). The extent of the data searched ensured that information was gathered on wide ranging wildlife species such as wolverine (*Gulo gulo*) that may have been observed adjacent to Aley Creek and could also have ranged within the area proper. Available data were collected from government online databases and map tools including iMapBC; ECOCAT; CLIR, SPI/WSI, PW, BCBBA, and additional government data requests were made through local government offices. Internal office resources included a digital journal library, and a customized wildlife inventory management database (telemetry and census data in excess of ~20,000 records). The general area is part of local industrial forestry operations and so enquires were made to those private and government offices as well.

The following are wildlife species expected or known to occur in the Project area and are of interest because they are thought to be of cultural importance to Aboriginal people:

- Mountain Goats (*Oreamnos americanus*). Not a provincially or federally listed species, but sensitive species of cultural importance. Goats in this area have been well studied and baseline environmental conditions for this species are known. There is a resident band of goats on the mountains of the Aley mine property and this population has only minor connectivity to adjacent populations. Historic studies include work on home range, distribution, population demographics, and identification of critical habitats. Some work has been conducted to examine the effects of reduced forested habitats. The goats that occupy the Aley area are known to travel to low-elevation mineral licks.
- Grizzly Bear (*Ursus arctos*); Blue listed by BC, Species of Special Concern by COSEWIC. Grizzly bears were considered an important ecosystem component in the Mackenzie Land and Resource Management Plan (LRMP) and there was a management strategy developed for the species. Although apparently common in the area, there has been little direct research or inventory on grizzly bears in the Ospika River valley.
- Northern Caribou (*Rangifer tarandus caribou*). Species of special concern; Blue listed by BC, Species of Special Concern by COSEWIC, and Schedule 1 of SARA. The Graham River caribou herd is located to the east of the Project area; their most westerly summer range is documented to be on the western edge of the Graham Laurier Park, approximately nine kilometres east of the mine site. There are incidental occurrences of caribou in the Ospika valley but no specific herd has been identified and therefore caribou are considered to occur only at trace levels. Caribou have been well studied elsewhere in Williston Reservoir and the Graham River herd is currently under study.

- Moose (*Alces americanus*). Not a provincially or federally listed species, but species of cultural importance. Moose are a sustenance species of known value and concern to Aboriginal people. Provincial government surveys have been undertaken to locate moose along the Ospika River in the winter (density estimated at 0.9 moose/km<sup>2</sup>), and moose have been observed in summer months in the mine site area.
- Wolverine (*Gulo gulo*). Blue listed by BC, Species of Special Concern by COSEWIC. Tsay Keh Dene have indicated that Wolverine is an important species for trappers in the area. Wolverine is suspected to inhabit portions of the Project area.
- Hoary Marmot (*Marmota caligata*). Not a provincially or federally listed species, but species of cultural importance. This species was indicated by the Tsay Keh Dene to be of significance to them. Marmot is used for traditional medicines within Tsay Keh Dene communities and other Aboriginal people in the area. At this time the hoary marmot is suspected to inhabit portions of the Project area.
- Amphibians and insects (Indicators of ecosystem change). Work on amphibians and dragonflies has been conducted near Aley Creek, and various species are expected to inhabit the Project area.

Species that may occupy the Project area, that are listed federally in Schedule 1 of the SARA, by COSEWIC, or by the Province are listed in Table 5.1.

**Table 5.1: Species of Conservation Concern Potentially to Occur in the Project Area**

Species	Conservation Status			
	BC List	COSEWIC	SARA	MBCA
<b>Amphibians</b>				
Western Toad ( <i>Anaxyrus boreas</i> )	Blue	SC	1-SC	
<b>Birds</b>				
Barn Swallow ( <i>Hirundo rustica</i> )	Blue	T	-	Y
Black-throated Green Warbler ( <i>Dendroica virens</i> )	Blue	-	-	Y
Cape May Warbler ( <i>Setophaga tigrina</i> )	Red	-	-	Y
Common Nighthawk ( <i>Chordeiles minor</i> )	Yellow	T	1- T	Y
Olive-sided Flycatcher ( <i>Contopus cooperi</i> )	Blue	T	1- T	Y
Rusty Blackbird ( <i>Euphagus carolinus</i> )	Blue	SC	1-SC	Y
<b>Invertebrates</b>				
Hagen's Bluet (damselfly) ( <i>Enallagma hageni</i> )	Blue	-	-	
Beaverpond Baskettail (dragonfly) ( <i>Epitheca canis</i> )	Blue	-	-	
Quebec Emerald (dragonfly) ( <i>Somatochlora brevicincta</i> )	Blue	-	-	
Forcipate Emerald (dragonfly) ( <i>Somatochlora forcipata</i> )	Blue	-	-	
Arctic Skipper, mandan subspecies (butterfly) ( <i>Carterocephalus palaemon Mandan</i> )	Red	-	-	
<b>Mammals</b>				
Grizzly Bear ( <i>Ursus arctos</i> )	Blue	SC	-	
Northern Caribou ( <i>Rangifer tarandus caribou</i> )	Blue	E/SC	1-SC	
Wolverine ( <i>Gulo gulo</i> )	-	SC	-	
Fisher	Blue	-	-	
Northern Myotis ( <i>M. septentrionalis</i> )	Blue	E	-	
Little Brown Myotis ( <i>M. lucifugus</i> )	Yellow	E	-	

BC List: Red = Threatened, Blue = Special Concern, Yellow = Secure

COSEWIC Codes: E = Endangered, SC = Species of Special Concern, T = Threatened, NAR = Not at Risk

SARA = Species at Risk Act, T = Threatened, SC = Special Concern

MBCA = Migratory Birds Convention Act; Y = Yes

Habitat availability, bird surveys, amphibian surveys and insect investigations have been initiated in the Project area to identify species present.

Wildlife Species listed under the *Species at Risk Act* or COSEWIC have the potential to occur, or have been identified, within the Project area. Potential effects to wildlife species listed under Schedule 1 of the *Species at Risk Act* and their habitat can result from Project activities. General mine developments have the potential to affect wildlife through the loss of habitat because of site clearing activities and disturbance from noise and Project related traffic. The potential exists for increased mortality risk through clearing activities. Sensory disturbance can occur primarily through Project generated noise, as well as ingestion of contaminants directly or indirectly and dermal absorption. Appropriate best management practices and strategies will be considered and implemented to the extent possible to minimize potential effects to wildlife or any critical habitat identified. There will be future wildlife studies conducted as part of the environmental assessment to inform the assessment of potential effects.

### **5.3 Potential Effects Within Federal Jurisdiction**

#### **5.3.1 Fish and Fish Habitat**

Potential Project effects include possible reduction in fish habitat and impact on aquatic ecology in the lower sections of Al and Steve Creeks that might result from the diversion of any flows in the upper watershed as part of mine water management. It is expected that mine water discharged from the site will meet regulatory requirements but there could be some effects from erosion and sediment runoff from disturbed areas such as access roads and the transmission corridor; however, these effects are readily managed through routine monitoring and the application of appropriate sediment and erosion control measures.

The transmission line will cross a number of streams and rivers over its 150 km length which may temporarily alter the nature of the riparian habitat until closure of the Project. It is Taseko's intent to follow DFO Operational Statements and best management practices wherever possible to avoid impacts to fish and fish habitat during pre-construction, construction, operations and decommissioning of the Project. Taseko will work with Fisheries and Oceans Canada (DFO) to determine appropriate best practices for this routine type of work to avoid impacts to fish and fish habitat. In addition, measures to mitigate the impact to riparian vegetation during operation and reclamation of the transmission corridor at the end of the Project will limit the potential impacts of the transmission line corridor on riparian habitat.

The EA Application/EIS will address whether the Project has the potential to affect fish and fish habitat and aquatic ecology through changes in water quantity or quality. No effects are anticipated on marine fish as defined in the Act, do not exist in the area.

### **5.3.2 Aquatic Species at Risk**

The Project is not anticipated to cause any changes to aquatic species (note that fish are discussed in section 5.3.1) as defined in subsection 2(1) of the *Species at Risk Act*, as no such species occur in the Project area based on studies to date.

The EA Application/EIS will address whether the Project has the potential to affect aquatic species (as defined in subsection 2(1) of the *Species at Risk Act*) through changes in water quantity or quality. Appropriate best management practices and strategies will be implemented to minimize risk to any critical habitat if identified.

### **5.3.3 Migratory Birds**

Migratory birds (as defined in the *Migratory Birds Convention Act, 1994*) potentially impacted by the Project are listed in Table 5.1. Baseline studies/surveys are underway to better determine if and how the Project may affect some bird species. Migratory birds (as identified under the *Migratory Birds Convention Act, 1994*), may be affected via direct mortality from collisions with transmission lines, buildings, or vehicles, removal or disruption of nests, loss of habitat due to vegetation clearing, interference from Project lighting and noise, and effects to health from potential degradation of air and water quality.

Clearing of vegetation during the breeding season may affect nesting habitats of certain species and require mitigation measures such as adhering to timing windows to avoid clearing or conducting pre-clearing nest surveys to ensure the absence of nesting activity.

## **5.4 Additional Federal Environment Effect Considerations**

Due to proximity of the Project, it is not anticipated to result in any change to the environment on federal lands, in a province other than BC, or outside of Canada. The Project is not located near any provincial, federal, territorial or national borders. The Project is located approximately 230 km from the Alberta border, 390 km from the Yukon and Northwest Territories border, 50 km from the closest federal lands (Indian Reserves, see Figure 3.1) and 400 km from the United States border. The Project does not affect any major water way with direct connectivity to other jurisdictions.

## **5.5 Potential Effects of Changes to the Environment on Aboriginal Peoples**

There are some changes to the environment potentially arising from mine developments which could also result in an effect on Aboriginal peoples, specifically on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes or any structure, site or thing that is of historical, archaeological, paleontological or

architectural significance (Section 5.1 (c) of the *CEAA 2012*). Potential effects on Aboriginal people as a result of changes to the environment are discussed below. Additional consultation and engagement activities as part of the environmental assessment process, will further inform how the Project could affect Aboriginal peoples so that avoidance, mitigation and accommodation measures can be considered as part of the environmental assessment. Locations of asserted territories, treaty boundaries, and reserves relative to the Project are mapped on Figures 3.1 and 3.2.

#### *Health and Socio-Economic Conditions*

As outlined in Section 6, Taseko has engaged with the Aboriginal communities in whose traditional territories or treaty lands the Project is located and has already received some information on Aboriginal interests in the Project area. It is Taseko's intent to further engage with Aboriginal groups throughout the EA process in order to gain a better understanding of changes to the environment arising from the Project and how they may affect the health of either Aboriginal individuals or communities, and how the social and economic interests of the Aboriginal group may be affected. Table 5.2 summarizes potential effects on the environment (previously discussed in section 5.3) and how these may affect Aboriginal people's interests relative to health and socio-economic conditions.

**Table 5.2: Types of Potential Effects on Aboriginal Peoples from Changes to the Environment (Health and Socio-Economic Conditions)**

Potential Changes to the Environment	Potential Effects on Aboriginal Peoples
<ul style="list-style-type: none"> <li>Change in the quality or abundance of available vegetation due to dust associated with project activities, alteration of soil and terrain, or changes in hydrology</li> </ul>	<ul style="list-style-type: none"> <li>Effect on human health, or, in the case of reduced quality or abundance of country food available for medicinal or sustenance purposes, the cost and inconvenience to travel to an alternate location; potential for increased reliance on non-traditional foods with associated health effects</li> </ul>
<ul style="list-style-type: none"> <li>Changes in wildlife species distribution due to habitat alteration resulting from changes in noise levels, soils and terrain, vegetation, and hydrology</li> </ul>	<ul style="list-style-type: none"> <li>Cost and inconvenience to hunt or trap in alternate locations; potential for increased reliance on non-traditional foods with associated health effects</li> </ul>
<ul style="list-style-type: none"> <li>Change in the quality or abundance of aquatic resources due to alteration of hydrology</li> </ul>	<ul style="list-style-type: none"> <li>Cost and inconvenience to fish, hunt or trap in alternate locations; potential for increased reliance on non-traditional foods with associated health effects</li> </ul>

*Current Use of Lands and Resources for Traditional Purposes*

As outlined in Section 6, Taseko has engaged with the Aboriginal communities in whose traditional territories or treaty lands the Project is located and has already received some information on Aboriginal interests in the Project area. It is Taseko's intent to further engage with Aboriginal groups throughout the EA process in order to gain a better understanding of their current use of the land for traditional purposes and to understand potential impacts the Project may have on that use, and ways to mitigate those impacts. Changes in the environment arising from the Project, particularly with regard to water, vegetation and wildlife, could potentially affect Aboriginal peoples current use of the Project area for fishing, gathering and hunting. Table 5.3 summarizes potential effects on the environment (previously discussed in section 5.3) and potential effects on Aboriginal people's interests relative to current use for traditional purposes.



**Table 5.3: Types of Potential Effects on Aboriginal Peoples from Changes to the Environment (Current Use for Traditional Purposes)**

Potential Changes to the Environment	Potential Effects on Aboriginal Peoples
<ul style="list-style-type: none"> <li>Change in the quality or abundance of available vegetation due to dust associated with project activities, alteration of soil and terrain, or changes in hydrology</li> </ul>	<ul style="list-style-type: none"> <li>Cost and inconvenience to travel to an alternate location</li> <li>Changes to or loss of locations used for teaching or cultural purposes.</li> </ul>
<ul style="list-style-type: none"> <li>Changes in wildlife species distribution due to habitat alteration resulting from changes in noise levels, soils and terrain, vegetation, and hydrology</li> </ul>	<ul style="list-style-type: none"> <li>Cost and inconvenience to hunt or trap in alternate locations</li> <li>Changes to or loss of locations used for teaching or cultural purposes.</li> </ul>
<ul style="list-style-type: none"> <li>Change in the quality or abundance of aquatic resources due to alteration of hydrology</li> </ul>	<ul style="list-style-type: none"> <li>Cost and inconvenience to fish, hunt or trap in alternate locations</li> <li>Changes to or loss of locations used for teaching or cultural purposes.</li> </ul>
<ul style="list-style-type: none"> <li>Terrain modified (from excavation, filling, installing physical barriers) limiting or preventing access</li> </ul>	<ul style="list-style-type: none"> <li>Temporary restrictions on access to areas currently used for gathering, hunting or trapping</li> </ul>

### *Heritage and Any Structure, Site or Thing<sup>2</sup>*

Changes to the environment caused by the Project may subsequently affect physical and cultural heritage or any structure, site or thing with respect to Aboriginal peoples. The *Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance* under the Canadian Environmental Assessment Act, 2012 states that “physical and cultural heritage” is an inclusive term that is associated with important aspects of human history and culture; and, a specific land or resource that has heritage value will most likely also be considered a structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

The following information on known archaeological resources is provided as background information:

<sup>2</sup> “physical and cultural heritage” is hereafter referred to as heritage, and “any structure, site or thing that is of historical, archaeological, paleontological or architectural significance” is referred to as any structure, site or thing.

An Archaeological Overview Assessment (AOA) was conducted for an area of 16,929 ha containing the potential mine footprint, portions of proposed and related ancillary developments, and the adjacent general surroundings that would not be affected. There were no previously recorded, known, or otherwise identified archaeological, cultural or heritage sites within the area. The mine area may be defined by the approximate height of land of Aley Creek to the north and east, Nabesche River to the southeast, Stevenson Creek to the south, the Ospika River Valley to the west, and an unnamed tributary of the Ospika River to the north and west. The mine area covers elevations ranging from 720 m to 2320 masl.

Halfway River First Nation, West Moberly First Nations and Tsay Keh Dene First Nation were made aware of the AOA assessment through:

- In person discussions regarding the Project and archaeological assessment activities:
  - Numerous discussions with Tsay Keh Dene staff June 2011 – November 2011
  - May 3, 2012 meeting with Halfway River First Nation - Roslyn Pokiak
  - May 4, 2012 meeting with West Moberly First Nations - Chief Roland Willson and Councillor Clarence Willson

An Archaeological Impact Assessment (AIA) of a 993 ha area was initiated in the summer and fall of 2011 which focused on the proposed mine footprint shown in Figure 2.1 and areas immediately adjacent. Communities of Tsay Keh Dene, Halfway River First Nation, West Moberly First Nations, and other Treaty 8 First Nations were made aware of AIA activities proposed on site as copies of the Heritage Conservation Act Permit were distributed by the Ministry of Forests, Lands and Natural Resource Operations on August 10, 2011. Archaeological studies at the site were discussed at the following meetings:

- An in person discussion regarding the Project and archaeological assessment activities:
  - Numerous discussions with Tsay Keh Dene staff June 2011 – August 2012
  - May 3, 2012 meeting with Roslyn Pokiak, Halfway River First Nation
  - May 4, 2012 meeting with Chief Roland Willson and Councillor Clarence Willson

Input into the AIA including methodology was received from Tsay Keh Dene community members and their archaeology consultant, Millennia Research Limited. In addition, opportunities for Tsay Keh Dene members and elders and other nearby community members to participate in field studies were made available. The AIA identified three previously unrecorded archaeological sites:

- HcRw-9307-T1: This site is located around 150 m east of the proposed plant site. 26 artifacts have been recovered. The scientific significance of the site is currently unknown. (high-altitude site with numerous archaeological resources and one tool);
- HcRw-9307-T2: This site is located in the TSF proposed area. 200 artifacts have been recovered here. The scientific significance of the site is currently unknown (high-altitude site with numerous archaeological resources); and,
- HcRw-9307-T3: This site is located in the plant site area. 9 artifacts have been recovered here. The scientific significance of the site is currently unknown (high-altitude site with numerous archaeological resources).

No culturally modified trees were noted in the course of the AIA.

Based on the findings of the 2011 assessment, an interim report was issued to the Archaeology Branch who then distributed it to interested Aboriginal groups..

Based on archaeological work conducted in 2011 and in consultation with Tsay Keh Dene, an additional area for study was incorporated into the 2012 program. This area was immediately adjacent to the area studied in 2011 and is located in the proposed TSF basin. An additional previously unrecorded archaeological site (HcRw-9307-T4) was identified, consisting of 134 artifacts. The scientific significance of the site is currently unknown (high-altitude site with numerous archaeological resources).

Additional archaeological work is expected to be carried out in the mine site area to further understand archaeological resources, to address provincial archaeology requirements, and to mitigate any project effect, such as through avoidance, of objects, sites or structures of significance to Aboriginal people. Potential effects on objects of historical, archaeological, cultural heritage, paleontological, or architectural significance are expected to be avoided or minimized through best practices such as archaeological overviews and field inspections, chance find protocols, and other management plans/practices developed in consultation with Aboriginal groups and qualified archaeologist(s).

Table 5.4 summarizes potential effects on the environment (previously discussed in section 5.3) and potential effects on Aboriginal people's interests relative to physical and cultural heritage, and related historical interests identified in *CEAA 2012*.

**Table 5.4: Types of Potential Effects on Aboriginal Peoples from Changes to the Environment (Heritage and Any Structure, Site or Thing)**

Potential Changes to the Environment	Potential Effects on Aboriginal Peoples
<ul style="list-style-type: none"> <li>Land disturbance and transformation of natural landscapes (e.g. clearing, excavation, filling, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Damage, disturbance or destruction of archaeological remains or sites, or areas of cultural significance</li> </ul>
<ul style="list-style-type: none"> <li>Terrain modified (from excavation, filling, installing physical barriers) limiting or preventing access</li> </ul>	<ul style="list-style-type: none"> <li>Temporary restrictions on access to areas of cultural significance</li> </ul>

The Project area may be a cultural landscape of heritage value to Aboriginal people based on its past use for hunting, gathering for consumption and medicinal purposes and travel. While no known site, structure or thing of significance has been identified by Aboriginal groups to date in the project area, engagement and consultation during the EA review process will further inform how the Project could affect such sites if they are present.

## 6. Proponent Engagement Consultation with Aboriginal Groups

Engagement and consultation with potentially affected Aboriginal groups and other local communities are important components of the environmental review process and Project success. Early and on-going engagement builds effective relationships, based on mutual trust and respect. It involves a broad spectrum of activities that extend throughout the life of a project and range in scope, from information-sharing, to consultation, negotiation and dispute resolution, to participation in project planning. Current engagement is premised on Taseko's responsible mineral development philosophy, to develop a respectful and collaborative working relationship with potentially affected communities and invite active Aboriginal groups participation in project planning and EA field study programs.

This section of the document will discuss the following:

- 6.1 Potentially Affected Aboriginal Communities
- 6.2 Aboriginal Engagement or Consultation activities carried out to date
- 6.3 Summary of key comments and concerns expressed by Aboriginal groups
- 6.4 A Consultation Plan Overview

## 6.1 Potentially Affected Aboriginal Communities

Taseko understands that the mine and associated components may fall within the traditional territories or treaty territories of the following Aboriginal groups; however, it should be noted that this list may change as the EA progresses and at various stages of project development as it is not absolute and is based on information available to date:

### Tsay Keh Dene First Nation

1877 Queensway  
 Prince George, BC  
 V2L 1L9  
 Phone: (250) 562-8882

Treaty 8 Tribal Association  
 10233 100th Avenue  
 Fort St. John, BC  
 V1J 1Y8  
 Phone: (250) 785-0612  
 Fax: (250) 785-2021  
 Email: [reception@treaty8.bc.ca](mailto:reception@treaty8.bc.ca)

Blueberry River First Nation  
 PO Box 3009  
 Buick Creek, BC  
 V0C 2R0  
 Phone: (250) 630-2584  
 Fax: (250) 630-2588

Doig River First Nation  
 Box 56  
 Rose Prairie, BC  
 V0C 2H0  
 Phone: (250) 827-3776  
 Fax: (250) 827-3778  
 Email: [reception@doigriverfn.com](mailto:reception@doigriverfn.com)

Fort Nelson First Nation  
 RR1 Mile 295 Alaska Highway  
 Fort Nelson, BC  
 V0C 1R0  
 Phone: (250) 774-7257  
 Fax: (250) 774-6317

Halfway River First Nation  
 PO Box 59  
 Wonowon, BC  
 V0C 2N0  
 Phone: (250) 772-5058  
 Fax: (250) 772-5200  
 Email: [reception@hrfn.ca](mailto:reception@hrfn.ca)

McLeod Lake Indian Band  
 General Delivery  
 McLeod Lake, BC  
 V0J 2G0  
 Phone: (250) 750-4415  
 Fax: (250) 750-4420

Prophet River First Nation  
 Box 3250  
 Fort Nelson, BC  
 V0C 1R0  
 Phone: (250) 773-6555  
 Fax: (250) 773-6556

Saulteau First Nations  
 Box 1020  
 Chetwynd, BC  
 V0C 1J0  
 Phone: (250) 788-7260  
 Fax: (250) 788-7261  
 Email: [reception@saulteau.com](mailto:reception@saulteau.com)

West Moberly First Nations  
 PO Box 90  
 Moberly Lake, BC  
 V0C 1X0  
 Phone: (250) 788-3663  
 Fax: (250) 788-9792

### *Tsay Keh Dene Overview*

The mine area and a portion of the infrastructure (road and transmission line) are within the Tsay Keh Dene traditional territory. The main community of Tsay Keh Dene (known as Tsay Keh Dene Village) is located at the north end of the Williston Reservoir, approximately 430 kilometres north of Prince George and 90 kilometres in a direct line from the mine site. Tsay Keh Dene Village is the closest community to the mine site and is connected to the Project area by FSRs.

Tsay Keh Dene occupies three reserves totalling 201 hectares and two parcels of federal Crown land that are in the process of being converted to reserves. It also maintains administrative offices in Prince George.

In the 1960's, the Province built the Bennett Dam, Williston Reservoir and road and railway infrastructure. With the completion of the dam and reservoir, a large part of Tsay Keh Dene territory was permanently flooded including their homes at Fort Grahame. In 1971, the Tsay Keh Dene moved back within their traditional territory, and established Tsay Keh Village. In 2010, Tsay Keh Dene reached a final settlement with BC Hydro and the Province regarding claims arising from the Bennett Dam and Williston Reservoir.

According to AANDC, Tsay Keh Dene's registered population was 454 as of July 2013. Of that population, approximately 243 live in Tsay Keh Dene Village. Tsay Keh Dene has a Chief and four Councillors elected under a custom election system. In 2012, Tsay Keh Dene adopted a new custom election code.

Employment for Tsay Keh members consists primarily of seasonal jobs in the forestry and mining sectors. The Tsay Keh Dene Government is also a source of employment for members. Tsay Keh Dene currently operates several band owned businesses including Chu Cho. Chu Cho is a Mackenzie based earthworks and transportation contractor serving northern British Columbia.

Traditional pursuits, including hunting, fishing and gathering, still feature very prominently in the lives of most Tsay Keh Dene members. Some maintain trap lines from which they earn a modest living.

Tsay Keh Dene asserts un-extinguished Aboriginal rights and title to its traditional territory. Tsay Keh Dene entered the BC Treaty process in 1994 and is currently in stage 4 (or the agreement-in-principle stage) of the six stage process.

### *Treaty 8 First Nations Overview*

For the purposes of this document, references to “traditional territories” of Treaty 8 First Nations is intended to mean those areas within the lands subject to Treaty 8 in which those specific Aboriginal groups practice treaty rights or have other treaty interests.

Treaty 8, signed on June 21, 1899, includes lands in northeast BC, much of northern Alberta and northern Saskatchewan, and parts of the Northwest Territories. Adhesions to this agreement were made on the 13 subsequent occasions between 1899 and 1900 (Government of Canada 1966b). In 1910, an additional adhesion was made in Fort Nelson, BC. Treaty provisions include the right for signatory First Nations to carry out their “usual vocations” of hunting, fishing, and trapping within the Treaty 8 area. This right is protected by section 35 of the *Constitution Act*, 1982, but is subject to the right of the Crown to “take up” lands for settlement, mining, lumbering, trading or other purposes.

Components of the Project are also in the region asserted by Halfway River First Nation, West Moberly First Nations, and McLeod Lake First Nations as being within the western limits of their traditional territories and the historical boundaries of Treaty 8, according to the BC Treaty 8 Tribal Association. The Treaty 8 Tribal Association and British Columbia acknowledge they have different positions on the western boundary of Treaty 8 in an Amended Economic Benefits Agreement signed in 2009 (BC & T8 First Nations, 2009).

## **6.2 Aboriginal Engagement and Consultation Summary to Date**

### **6.2.1 Tsay Keh Dene First Nation**

Taseko staff commenced engagement with Tsay Keh Dene staff and community members in 2007 in relation to exploration activities on site. Exploration-related engagement continued in 2010, and in 2011 engagement was expanded to include broader discussions related to the Project and environmental baseline studies.

Engagement consists of meetings with Chief and Council, regular conference calls with staff, community meetings, and periodic environmental baseline planning meetings focused on areas of specific interest to the community.

Over the past two years Taseko and Tsay Keh Dene have been engaged in ongoing regular dialogue about the Aley Project, including:

- Communication Protocols
- Agreements
- Information about Exploration Programs and Environmental Studies

- Employment Opportunities
- Land Use Study
- Archaeology
- Information, data and map requests
- Project concerns
- Project in general

#### *Exploration Cooperation and Benefit Agreement (ECBA)*

Taseko and Tsay Keh Dene signed an Exploration Cooperation and Benefit Agreement (ECBA) in May 2012. This agreement provides a framework for a formal relationship that allows both parties to participate in the planning and field work during the exploration and environmental studies stage of the Project. The ECBA also provides for the negotiation of a Comprehensive Cooperation and Benefit Agreement between Tsay Keh Dene and Taseko with the intent that an agreement will be concluded before the environmental assessment process for development of a mine at the Aley site is completed.

#### *Implementation Committee*

Currently, Taseko has a joint implementation committee with the Tsay Keh Dene specific to the mine site which was formed to help implement the ECBA. The goal of the Joint Implementation Committee(s) is to build trust and enhance understanding of the Project, communications and cooperation.

#### *Participation in Field Programs*

Tsay Keh Dene community members participated in the 2011 and 2012 environmental field programs as field assistants. Following a request by Tsay Keh Dene in August 2012, attempts were also made to incorporate elders into environmental field program.

In order to enable Tsay Keh Dene's participation in the planning of environmental programs, Taseko provided funding to Tsay Keh Dene to support their review of Project information generated to date. The intent of the review was to enable Tsay Key Dene to understand the studies completed to date and provide meaningful participation and input into the 2012 environmental program. The 2012 field programs incorporated applicable community input and recommendations.

#### *Community Meetings*

Community meetings in Tsay Keh Dene Village were held in November 2011, April 2012, November 2012 and March 2014 to update the community on the Project and to hear from



Elders and other community members about their interests and concerns. In the meetings, special attention was given to traditional land use, wildlife, water and archaeology in the vicinity of the Project. Taseko acknowledges that the interests and concerns of the Tsay Keh Dene community are not limited to these areas, and expects further discussion of Tsay Keh Dene interests and the potential impacts of the Aley Project on Tsay Keh Dene rights as the EA process and associated consultation process advances.

Through conversations with Tsay Keh Dene, Taseko understands that the community has a range of concerns regarding potential environmental and socio-economic impacts of the Project. These include, but are not limited to:

- potential impacts of the Project on use of the land for traditional purposes and cultural activities or practices;
- potential impacts to the environment (with special attention to wildlife and water);
- potential increased access to the areas affected by mine development;
- potential impacts on archaeological values and resources;
- potential social and economic impacts of the Project on the Tsay Keh Dene community; and,
- cumulative impacts from industrial activities in general.

Taseko has made a number of accommodations in response to these identified interests and/or specific requests, including involving elders in meetings and site visits, signing the ECBA, funding a land use study, involving Tsay Keh Dene in environmental field programs, and holding community meetings for all interested members to obtain information on the Project. A summary of the means of engagement and consultation to date with Tsay Keh Dene is provided in Table. 6.1.

Taseko is considering the land use and traditional information provided in Project related planning and assessments.

**Table 6.1: Summary of Means of Engagement and Consultation to Date with Tsay Keh Dene**

Means of Consultation or Engagement	Details or Comments	Date
Community Meetings/Open Houses	Provided project overview and collected project feedback on issues, or concerns.	November 2011, April 2012, November 2012, March 2014
Implementation Committee Meetings	Formed to help implement the ECBA	Monthly - 2012, 2013, 2014
Participation in Field Studies	To build trust and enhance understanding of the Project.	Field Season - 2011, 2012, 2013, 2014
Elders Tours	To build trust and enhance understanding of the Project. To exchange information about the project site.	August 2012
Community Newsletters	The quarterly newsletter contained information to keep the community up-to-date as the project progresses.	2012, 2013, 2014

### 6.2.2 Treaty 8 First Nations

Engagement has also been initiated with Treaty 8 First Nations, specifically with the communities of West Moberly First Nations, Halfway River First Nation, and McLeod Lake Indian Band. A summary of means of engagement and consultation with Treaty 8 First Nations is provided in Table 6.2.

Taseko representatives have shared information with representatives from West Moberly First Nations and Halfway River First Nation regarding early exploration activities, starting in February 2011. Meetings with the land and resource manager for Halfway River First Nation and Chief and council of West Moberly First Nations occurred in May 2012. The purpose of these meetings was to introduce the Project and outline exploration and baseline studies planned for 2012 and potential options for power generation or transmission line routing.

During the May 2012 meetings, West Moberly First Nations and Halfway River First Nation both expressed interest in potential impacts to wildlife and sites of cultural significance, and

increased access to previously undisturbed areas. These interests were specific to potential development of an alternate transmission line route from the W.A.C. Bennett Dam, east of the Project footprint. West Moberly First Nations also indicated that they would be supportive of development that takes advantage as much as possible of existing disturbance. Based on the concerns expressed by West Moberly First Nations and Halfway River First Nation, a proposed transmission line route from the W.A.C Bennett Dam has been dropped. Taseko will consider the interests raised by these communities during Project design and development of the EA Application.

In addition to meetings, West Moberly First Nations and Halfway River First Nation have been informed about upcoming project activities through notice of work and *Heritage Conservation Act* permit referrals and have received copies of archaeological reports generated for the site. Engagement with the McLeod Lake Indian Band commenced mid-2012 when a decision was made regarding the proposed routing of the transmission line.

Taseko community relations personnel have been in contact with West Moberly First Nations, Halfway River First Nation and McLeod Lake Indian Band regularly via phone and email since July 2012. Project newsletters have been distributed since September 2012. Further engagement and consultation with West Moberly First Nations and Halfway River First Nation on the entire Project, and McLeod Lake Indian Band on the transmission line, is planned as Project development progresses. Taseko representatives visited McLeod Lake Indian Band on March 20, 2013 to present project information.

Taseko has not yet met with the Treaty 8 Tribal Association; however, it is Taseko's intent to commence discussions with the Association in the near future in their capacity as supporting Treaty 8 First Nations.

**Table 6.2: Summary of Means of Engagement and Consultation to Date with Treaty 8 First Nations**

Means of Consultation or Engagement	Details or Comments	Date
Meetings with Halfway River	Met with staff to provide project overview and collect feedback on issues, or concerns	February 2011, May 2012
Meetings with West Moberly	Met with staff to provide project overview and collect feedback on issues, or concerns	February 2011, May 2012, January 2013, January 2014
Meetings with McLeod Lake Indian Band	Met with staff to provide project overview and collect feedback on issues, or concerns	January 2013, March 2013
Email/phone calls (Halfway River, West Moberly, and McLeod Lake)	To describe next steps	At various times and ongoing
Project Newsletter (Halfway River, West Moberly, and McLeod Lake)	Newsletter provided up-to-date project information	September 2012

### 6.3 Summary of Concerns raised by Aboriginal Groups

Table 6.3 provides a summary of issues and concerns raised to date from Aboriginal groups, and responses by Taseko.

**Table 6.3: Summary of Concerns Raised by Aboriginal Groups and Taseko Responses**

Comments/Issues of Concern	Raised by	Taseko's Response/Actions Taken
Transmission Line –a proposed Hudson Hope Transmission Line route would increase access to pristine wilderness.	Tsay Keh Dene/West Moberly/Halfway River	<ul style="list-style-type: none"> <li>Based on the concerns expressed by West Moberly First Nations and Halfway River First Nation a proposed transmission line route from the W.A.C Bennett Dam has been dropped.</li> </ul>
Land – Impact on cultural activities/traditional use  Archaeological values and resources	Tsay Keh Dene/West Moberly/Halfway River	<ul style="list-style-type: none"> <li>TKD LUS study was funded and developed.</li> <li>Taseko has engaged the Elders of Tsay Keh Dene in meetings, environmental studies and tours to gain further understanding of traditional use and cultural activities in the proposed area.</li> <li>Tsay Keh Dene and their archaeological consultant have been provided the opportunity to review archaeological reports and provide input into archaeological field studies. Members of Tsay Keh Dene were hired to assist in the Archaeological surveys.</li> <li>Discussions on this topic are held at the monthly Taseko/Tsay Keh Dene Implementation Committee</li> <li>West Moberly First Nations/Halfway River First Nation were informed about the project and received archaeological reports.</li> </ul>
Environmental - with special attention to wildlife and water	Tsay Keh Dene/West Moberly/Halfway River	<ul style="list-style-type: none"> <li>Community Information Sessions are held in Tsay Keh Dene bi-annually to explain</li> </ul>

Comments/Issues of Concern	Raised by	Taseko's Response/Actions Taken
		<p>the exploration and environmental programs.</p> <ul style="list-style-type: none"> <li>• A Tsay Keh Dene Environmental Monitor was retained to participate in and oversee exploration activities and construction of the access road.</li> <li>• Field assistants were retained to participate in and contribute to environmental field programs</li> <li>• Taseko has engaged the Elders of Tsay Keh Dene in meetings and tours to provide an understanding of our exploration and environmental baseline studies.</li> <li>• Discussions on this topic are held at the monthly Taseko/Tsay Keh Dene Implementation Committee</li> </ul>
<p>Access - increased access to the areas affected by mine development. (See Transmission Line Comment above)</p>	<p>Tsay Keh Dene/ West Moberly/Halfway River</p>	<ul style="list-style-type: none"> <li>• Access management will be an area of discussion in future meetings.</li> <li>• Barrier was installed on the access trail during exploration activities</li> </ul>
<p>Traffic – consider barging as a method of moving commercial material consistent with activities already in practise by other industries.</p>	<p>Tsay Keh Dene</p>	<ul style="list-style-type: none"> <li>• Taseko is considering barging as a potential method of moving material.</li> </ul>

Comments/Issues of Concern	Raised by	Taseko's Response/Actions Taken
<p>Social and Economic - impacts of the Project on the Tsay Keh Dene community.</p> <p>Effects of increased income on families, including potential for substance abuse</p>	Tsay Keh Dene	<ul style="list-style-type: none"> <li>• Discussions on this topic are held at the monthly Taseko/Tsay Keh Dene Implementation Committee.</li> <li>• Discussions are ongoing to identify potential project impacts and mitigation measures with respect to the community in the areas of health, culture, and capacity building.</li> </ul>
Cumulative impacts of industrial activities in general.	Tsay Keh Dene	<ul style="list-style-type: none"> <li>• A cumulative effects assessment will be completed as part of the EA</li> <li>• Taseko is monitoring other activity in the area.</li> </ul>
<p>Training and Employment - Ability for member participation in jobs and the mining industry.</p> <p>Providing ongoing training and employment opportunities for members throughout all phases of Mine development/operations.</p>	Tsay Keh Dene	<ul style="list-style-type: none"> <li>• Taseko/Tsay Keh Dene have developed a training program to increase the capacity of the community. The program, which would provide essential skills is currently being considered by Tsay Keh Dene.</li> <li>• Discussions on this topic are held at the monthly Taseko/Tsay Keh Dene Implementation Committee</li> </ul>
Business Development - Identify or recommend approaches for developing aboriginal business opportunities. Provide business opportunities	Tsay Keh Dene	<ul style="list-style-type: none"> <li>• Discussions on this topic are held at the monthly Taseko/Tsay Keh Dene Implementation Committee</li> <li>• Business opportunities provided to Tsay Keh Dene as</li> </ul>

Comments/Issues of Concern	Raised by	Taseko's Response/Actions Taken
		part of the Aley Exploration program have included clearing and road construction, road maintenance and repair, sanitation services for the exploration camp, and provision of catering services.
Agreements - Develop agreements for participation for Taseko and Aboriginal groups consideration	Tsay Keh Dene	<ul style="list-style-type: none"> <li>• Taseko and Tsay Keh Dene have an Exploration Agreement</li> </ul>
Communication – the need for ongoing communication to help facilitate a successful relationship	Tsay Keh Dene	<ul style="list-style-type: none"> <li>• A communication Protocol has been developed with Tsay Keh Dene</li> <li>• Implementation Committee meetings are held monthly.</li> <li>• Newsletters and project information are provided to the community.</li> <li>• A Tsay Keh Dene Community Liaison was hired</li> <li>• Community Information Sessions are held bi-annually in Tsay Keh Dene</li> </ul>

#### 6.4 Consultation Plan Overview

Taseko will continue to engage with Aboriginal groups to determine their Aboriginal and community interests and to discuss ideas on how the Project can best avoid impacts on their aboriginal or treaty rights through construction, operations and closure of the Project.

It is Taseko's intent to work closely and cooperatively with participating Aboriginal groups throughout the EA process to ensure that potential project-related impacts on identified interests are appropriately addressed. Additional consultation and engagement activities will further inform how the Project could affect asserted Aboriginal rights or established treaty



rights, so that avoidance, mitigation and accommodation measures can be considered as part of the environmental assessment in accordance with principles set out by the Court in *Haida*.

Involvement and input from Aboriginal groups throughout the Project Description and EA application review phase will be facilitated and supported by Taseko through working group meetings, and the provision of Project-related information.

#### *Implementation Committee*

Currently, Taseko has a joint implementation committee with the Tsay Keh Dene specific to the mine site which was formed to help implement the ECBA. The goal of the Joint Implementation Committee(s) is to ensure compliance of both parties with the ECBA and to build trust and enhance understanding of the Project, communications and cooperation.

#### *Working Groups*

It is Taseko's intent to establish a working group with Aboriginal groups, including Tsay Keh Dene and Treaty 8 First Nations, subject to their interest, to discuss the transmission line component of the Project.

The working group is to be made up of an equal number of members representing the local Aboriginal group and Taseko. Initial tasks or objectives included in their terms of reference will include the following:

- To assist Taseko to understand Aboriginal peoples' culture, values and aspirations, and assist Aboriginal peoples to understand Taseko's principles, objectives, operations and practices.
- To assist in the communications and the exchange of information between the parties, and to ensure early, timely and culturally appropriate engagement with Aboriginal peoples.
- To provide a forum to gather concerns and issues raised during review processes.
- To help coordinate community discussions and presentations as required.

The terms of reference for the working group would include:

- Working collaboratively to:
  - identify opportunities to participate in existing education and training programs, or recommending the development of new ones;
  - identify and communicate the existing employment opportunities;
  - provide information to youth about career opportunities in mining and education/training requirements;

- identify or recommend approaches for developing aboriginal business opportunities; and,
- recommend approaches for addressing other community needs and priorities in the areas of health, culture, and capacity building
- develop agreements for participation for Taseko and Aboriginal groups consideration; and,
- take appropriate steps to fulfill the objectives of any future agreements which may be established between Aboriginal groups and Taseko.

Until the establishment of the Transmission Line working group, Taseko will continue to make efforts to communicate with and provide information to Aboriginal groups at regular intervals via personal contact, phone, letter and email. A consultation and information gathering plan outlining the ongoing and proposed Aboriginal engagement and consultation activities is summarized in Table 6.4.

**Table 6.4: Consultation Plan and Schedule Summary**

Proposed Activity	Schedule	Purpose of Engagement and Type of Information Shared
Community Information Sessions, Open Houses, Presentations	Ongoing, quarterly throughout pre-application and application phases	To explain the relevant project information and the status of the EA process. Understand issues/concerns and potential effects on Aboriginal interests. Record any traditional knowledge provided. Explore potential mitigation measures.
Newsletters	Ongoing, quarterly throughout pre-application and application phases	To build trust and enhance understanding of the Project. The newsletter will contain information to keep the community up-to-date as the project progresses.
Field Studies	Ongoing, various times through pre-application phase	To build trust and enhance understanding of Project, and provide employment and training opportunities, through participation in field studies. Understand and record issues, concerns and any traditional knowledge shared by participants.
Elders Tours	Ongoing and as requested during pre-application and application phase	To build trust and enhance understanding of the Project Record any traditional knowledge provided. Understand issues and concerns relative to traditional use and cultural heritage.
Meetings with Aboriginal employment and training associations	Ongoing, throughout pre-application and application phases	To collaboratively plan construction and operation phase mine-related training for the communities.
Working Groups (Transmission Line)	Proposed, pre-application and application phase, frequency to be yet determined	To explain the status of the project and EA process. To jointly assess alignment options, and potential effects on Aboriginal interests. Record any traditional knowledge provided. Explore potential mitigation measures.
Meetings with Leadership	Ongoing, throughout (at a minimum, to coincide with issuance of S10, S11 Orders, review of draft AIR, and draft Application during pre-application; and, during the review of application)	Meeting with Chief and Council to explain the project and status of EA process. Discuss the engagement process. Request confirmation and clarification on Taseko's understanding of how the Project could affect their Aboriginal interests and/or asserted Aboriginal or Treaty rights. Explore potential mitigation measures, training and employment opportunities.
Implementation Committee Meetings supplemented with regular emails/phone calls	Ongoing, monthly throughout pre-application and application phase	To build trust and enhance understanding of the Project, and implement conditions of Agreements.

## 7. Consultation with the Public and Other Parties

Taseko researched those individuals, groups or communities who may be affected by, have an interest in, or have the ability to influence the Project. The mapping and analysis of these groups provides for identification of interests, aboriginal rights, and potential issues or concerns. This mapping and analysis includes Aboriginal groups with asserted or established aboriginal rights in the Project area. Aboriginal groups are discussed in Section 6.

Secondary and primary research is being conducted to identify groups and understand their interests and issues. This process is informed by the Socio-Economic Baseline and Impact Assessment study.

A preliminary list of groups is provided below; however, it should be noted that this list may change as the EA progresses and at various stages of project development as it is not absolute and is based on information available to date:

- Trappers
- Guide Outfitters
- Local communities (including local government) and associations
- Local business organizations
- Educational and training institutions
- Health centres and service providers
- Provincial and Federal regulators

A detailed list of stakeholders, government agencies, and Aboriginal groups that have been identified to date as potentially interested in and/or affected by the Project is provided in Section 1.3.

This section of the document will provide the following:

- 7.1 Stakeholder Engagement and Consultation Summary to date.
- 7.2 Consultation plan overview
- 7.3 Consultations with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the project.

### 7.1 Stakeholder Engagement and Consultation Summary to Date

The Project is located in a remote area of the Peace River Regional District in northeastern British Columbia. The two communities identified as a priority for engagement are Mackenzie and Fort St. John. They were selected because of their proximity to the Project. Both

communities have diversified economies and familiarity and experience with the resource extraction industries. These communities will be included in engagement and consultation activities, with open house information sessions planned. Other nearby communities or regional centres, such as Hudson's Hope, Chetwynd, and Prince George may also be included in engagement activities as Project and regulatory/EA processes proceed.

Taseko has initiated public engagement on the Aley Project through the release of Project newsletters, engagement with the Mackenzie Chamber of Commerce and presentations at various Mining Week events and conferences in the Region. Taseko has begun preliminary discussions with regional governments of potentially affected communities including:

- City of Fort St. John;
- City of Prince George;
- District of Chetwynd;
- District of Hudson's Hope;
- District of Mackenzie;
- Peace River Regional District;
- Regional District of Fraser-Fort George

In addition, preliminary discussions with the North Peace Economic Development Commission and South Peace Economic Development Commissions were conducted in conjunction with baseline socio-economic studies.

Taseko has engaged with guide outfitters and trapline holders whose tenures overlap with Aley claims on Project specific activities including exploration. It is Taseko's intent to further engage stakeholders as the Project and regulatory/EA processes proceed.

Table 7.1 provides a summary of issues and concerns raised to date, and Taseko's responses.

**Table 7.1: Summary of Concerns Raised by Stakeholders and the Public to Date**

Comments/Issues of Concern	Taseko's Response/Actions Taken
Transmission Line - Proximity of Transmission Line to the Gun Range	Ongoing discussions regarding transmission alignment will be held.
Transmission Line - Routing of Transmission Line through Provincial Park along existing road or around park	Ongoing discussions regarding transmission alignment will be held. Practicality of power line routing and placement through the park have not been determined
Transmission Line - Spanning of transmission line over the Peace Arm. Concern for air traffic and wind conditions	Ongoing discussions regarding transmission alignment will be held.
Shift Schedules - concern about schedules, depending on choice of schedule it will attract employees from other areas and take away from local employment	The shift rotations will be determined such that they promote living in Mackenzie and regionally
Transportation of employees – questions about use of Mackenzie airport.	Ongoing discussions will be held.
Local Business Development - local businesses being able to participate	Taseko is committed to ensuring that the businesses within the communities of the region benefit from the Project's development and operation.
Jobs and Employment – how can we get people job-ready	Taseko will work with the local education and training organizations.
Potential concern of impact on tenures that overlap over the minesite	Taseko will work with local tenure holders to identify concerns and work to develop mitigation measures.
Cumulative impacts on social services, housing, and health services due to other mines, and oil and gas industry.	Cumulative impact study will be part of EA.
Downstream water quality and quantity concern raised by trapline holder	We have been developing a positive relationship with this trapline holder and providing ongoing communication. Involvement in our onsite work.
Need for Community Office and established community presence	As the project develops this will be discussed with the chamber and the district.

## **7.2 Consultation Plan Overview**

Future community engagement activities will be planned with the goal that community members and stakeholders can meaningfully participate in a discussion of the potential impacts and opportunities related to the Project. Taseko will continue to conduct additional public engagement in the form of open houses and information sessions, or other methods of communication as appropriate. During the EA and permitting consultation phases of the Project, there will be an on-going need to generate communications materials that provide information about field studies and other Project activities in a meaningful, accessible and plain-language format. A summary of the proposed stakeholder consultation plan and a schedule is provided in Table 7.2.

**Table 7.2: Proposed Stakeholder Consultation Plan and Schedule Summary**

Proposed Activity	Schedule	Purpose of Engagement and Type of Information Shared
Public Open Houses and Presentations	To coincide with regulatory public comment periods: Pre application on draft AIR and draft Application, and during review of application	To explain the relevant project information and the status of the EA process. Obtain feedback and explore potential mitigation measures.
Newsletters	Ongoing, quarterly throughout pre-application and application phases	To build an understanding of the Project. The newsletter will contain information to keep the interested members of the public and stakeholders up-to-date as the project progresses.
Email and phone notifications	Ongoing, throughout pre-application and application phases as required	To notify stakeholders of status of the EA process and provide responses to information requests.
Meetings with tenure holders and other stakeholders	Pre-application; and at minimum to coincide with regulatory public comment periods on draft AIR and draft Application	To discuss effects of the Project on their interests and land uses, discuss alternatives for transmission line alignment, and explore mitigation measures.
Meetings with regional employment and training associations	Ongoing, throughout pre-application and application phases, no frequency yet determined	To collaboratively plan construction and operation phase mine-related training.
Meetings with business community	Ongoing, throughout pre-application and application phases, no frequency yet determined	To discuss opportunities for economic development and contract procurement
Meetings with social organizations	throughout pre-application and application phases, no frequency yet determined	To discuss potential social effects of the Project on community services and potential mitigation measures.
Meetings with local and regional governments	Ongoing, Throughout all phases and at minimum to coincide with regulatory public comment periods: Pre application on draft AIR and draft Application, and during review of application	Meeting with politicians and staff to explain the project and status of EA process. Explore potential mitigation measures, training and employment opportunities.



### **7.3 Consultation with Other Jurisdictions**

Taseko has undertaken early discussions with the MEM, and has met with the EAO and CEA Agency to better understand the requirements of the federal and provincial EA processes. The EA process is expected to bring together key government agencies who may have an interest in the Project, and will also provide opportunity for interested local government representatives to participate. As follow up to an initial meeting with the CEA Agency in April 2013, Taseko will endeavour to meet with key federal departments (as listed in section 1.3) to discuss potential regulatory requirements.

In addition to early project meetings with EAO, Taseko has engaged with MOE, MEM, FLNRO and representatives of the Archaeology Branch to discuss exploration and baseline study activities and permits.

Other than the provincial and federal agencies mentioned above, Taseko is not aware of any other jurisdictions that have EA or regulatory decisions to make with respect to the Project.

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