

## 2. PROJECT OVERVIEW

### 2.1 INTRODUCTION

The Ajax Project (the Project), located south of City of Kamloops, British Columbia (BC), will be an open pit copper and gold mine producing 65,000 tonnes per day (t/d) ore for processing. Ore will be processed in a conventional flotation processing plant, producing copper/gold concentrate that will be transported to the Port of Vancouver for shipment to offshore smelters.

#### 2.1.1 Proponent Description

KGHM Ajax Mining Inc. (KAM) is a joint venture company between KGHM Polska Miedź S.A. and Abacus Mining and Exploration Corp. (AME). KGHM Polska Miedź S.A. is a Polish copper mining and smelting company that formed in 1961, and is the ninth largest copper producer in the world. Since 1997, it has traded publically on the Warsaw Stock Exchange under the symbol “KGHM.” It currently employs over 18,000 people in three mines, two copper smelters, a wire rod plant, and various auxiliary business units. KGHM International Ltd. is a wholly owned subsidiary of KGHM Polska Miedź S.A., operator of mines in the United States (Carlotta Mine, Robinson Mine, Morrison Mine, McCreedy Mine) and Chile (Franke Mine) and is currently constructing the Sierra Gorda copper-molybdenum project in Chile. In Canada KGHM International is progressing the Victoria project in the Sudbury Basin and the Ajax Project. AME is a BC-registered company, incorporated on October 17, 1983. It has engaged in mineral exploration in the Province, with its primary focus being the deposits associated with the Project. It is a company in BC and a Tier One issuer that trades on the Toronto Stock Exchange Venture Exchange under the symbol “AME”.

The primary contacts for the project are:

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## 2.1.2 Consultants

Consultants who have contributed to the Application for an Environmental Assessment Certificate/ Environmental Impact Statement (Application/EIS) include:

- AMEC Environment and Infrastructure (Aboriginal engagement);
- BGC Engineering Inc. (hydrogeology and hydrology);
- ERM (Application/EIS coordination, heritage resources);
- InterGroup Consultants Ltd. (social and economic assessment);
- Keystone Wildlife Research Ltd. (wildlife and vegetation);
- Klohn Crippen Berger (Jacko Lake hydrogeological assessment);
- Knight Piésold Ltd. (climatology/meteorology, geology/landforms, surface and ground water quality, fish and aquatic ecology);
- Lorax Environmental Services Ltd. (geochemistry);
- Norwest Corporation (dam breach inundation study);
- Opus International Consultants Ltd. (traffic impact assessment);
- Stantec (air quality, noise and vibration, country foods, human and ecological health risk assessment);
- Terra Archaeology (Archaeological Impact Assessment); and
- VAST Resource Solutions Inc. (soils and reclamation, forage and range analysis).

## 2.2 PROJECT BACKGROUND

### 2.2.1 Provincial and Federal Triggers

Under the BC *Environmental Assessment Act* (BCEAA; 2002a) a person cannot undertake or carry out any activity on a reviewable project without having an environmental assessment (EA) certificate. The Reviewable Projects Regulation of the BCEAA identifies the types of projects that are reviewable and therefore trigger an EA. The production capacity of the proposed mine will exceed 75,000 t/year of mineral ore, and therefore has triggered an EA under Part 3 of the Reviewable Projects Regulation.

The Project is subject to review under the former *Canadian Environmental Assessment Act* (1992). It is anticipated that the Project will require an Authorization from Fisheries and Oceans Canada (DFO) under Section 35(2) of the *Fisheries Act* (1985b), as well as a licence from Natural Resources Canada under Section 7(1)(a) of the *Explosives Act* (1985a). The Canadian Environmental Assessment Agency (CEA Agency) will exercise the powers and perform the duties and functions of the responsible authority in relation to the Project until the Minister is provided with the comprehensive study report as required in Section 21.3 of the former CEAA (1992).

A comprehensive study is required when the project contains one or more components listed in the Comprehensive Study List Regulations (SOR/94-638). The Project contains components listed in paragraph 16 of the above regulation, as follows:

- (a) a metal mine, other than a gold mine, with an ore production capacity of 3,000 t/d or more;
- (b) a metal mill with an ore input capacity of 4,000 t/d or more; and
- (c) a gold mine, other than a placer mine, with an ore production capacity of 600 t/d or more.

The Major Projects Management Office (MPMO) has designated the Project to be a major resource project subject to review in accordance with the procedures and practices developed under the *Cabinet Directive on Improving the Performance of the Regulatory System for Major Resource Projects*. The MPMO has developed a Project Agreement and will track key milestones in the conduct of the federal EA.

### 2.2.2 Project Location

The Project is located in the South-Central Interior of BC, south of the city of Kamloops, within the Thompson Nicola Regional District as shown in Figure 2.2-1. The Project lies within the traditional territory of the Secwepemc Nation. The section 11 Order (issued on January 11, 2012) identifies the SSN as the Project “First Nations” whom KGHM Ajax Mining Inc. (KAM) is required to consult regarding potential Project effects on their Aboriginal interests. The Project also lies within the Nlaka’pamux traditional territory. In addition, the section 11 Order identifies LNIB and AIB as “Working Group First Nations” and directs KAM to provide information to them regarding the Project, specifically the Application/EIS. On July 23, 2015, the BC EAO issued a section 13 Order identifying WP/CIB as a “Notification First Nation” and directing KAM to provide information to the WP/CIB regarding the Project. In addition to the Aboriginal Groups identified above, the Canadian Environmental Assessment Agency (CEA Agency) identifies the MNBC as potentially affected by the Project.

The coordinates for the centre of the proposed mine are approximately 50°36' N latitude and 120°24' W longitude. The primary components are proposed to be adjacent to, but outside Kamloops city limits. The closest proposed Project facility to town will be the East Mine Rock Storage Facility, which is approximately 850 metres (m) from the City of Kamloops’ Urban Growth Boundary, approximately 1.4 kilometres (km) from the Knutsford community, and approximately 1.7 km from the neighbourhood of Aberdeen. Approximately 87% of the main project infrastructure footprint will be located on private land owned by KAM, with approximately 13% utilization of Crown land (Figure 2.2-1).

The Kinder Morgan Transmountain Pipeline is currently located within the proposed Project area. KAM has engaged Kinder Morgan to prepare and submit a Section 58 and Section 74 permit to the National Energy Board, proposing to reroute the Pipeline further to the west of the Project footprint. Information related to Kinder Morgan’s proposed rerouting can be found on the National Energy Board’s website: <http://www.neb-one.gc.ca/pplctnflng/mjrpp/trnsmntnxpnsn/index-eng.html>.

During the initial Construction phase, access to the Project area from Kamloops will be via exit 366 off the Trans-Canada Highway (No. 1), west along Frontage Road, and then south along Lac Le Jeune Road to the old Afton Mine Haul Road near the Inks Lake Road Junction (approximately

9 km by road). During Construction a new Access Road will be developed for use during the latter stages of Construction and throughout Operations that will link the Project and Inks Lake Interchange off the Highway No. 5. Terrain

The Project area consists of rolling grasslands, and timber at the higher elevations. Elevations range from 800 to 1,100 m above sea level. Sugarloaf Hill is the prominent landform in the area with an elevation of 1,130 m. The area has been glaciated and numerous drumlins (i.e. small hill that resembles the shape of an egg with its steepest slopes and summit at the up-ice end) are present.

At lower elevations, the vegetation typically comprises bunchgrass, sagebrush, and prickly pear cacti. Higher elevations commonly sustain growths of Lodgepole Pine, Douglas Fir, and Ponderosa Pine. More detail related to terrain is presented in Section 6.2 of the Application/EIS, and associated appendices.

#### 2.2.2.1 *Climate*

The Ajax area has a semi-arid climate with a long-term average annual temperature of 6.3°C, with average monthly temperatures ranging from -4.5°C in January to 18.5°C in July. Mean annual precipitation for the Project area is estimated to be 310 millimetres (mm), with 70% falling as rain (217 mm) and 30% falling as snow (93 mm). Mean annual potential evapotranspiration is estimated to be 565 mm which also represents lake evaporation conditions.

Wind speed and direction in the Project area varies throughout the year with with predominantly north-westerly winds in the summer and south-easterly winds in the winter. Monthly mean wind speeds range from 1.8 m/second (s) to 3.1 m/s with mean annual wind speed during the period of record of 2.4 m/s.

More detail related to climate is presented in Section 10.1 of the Application/EIS and associated appendices.

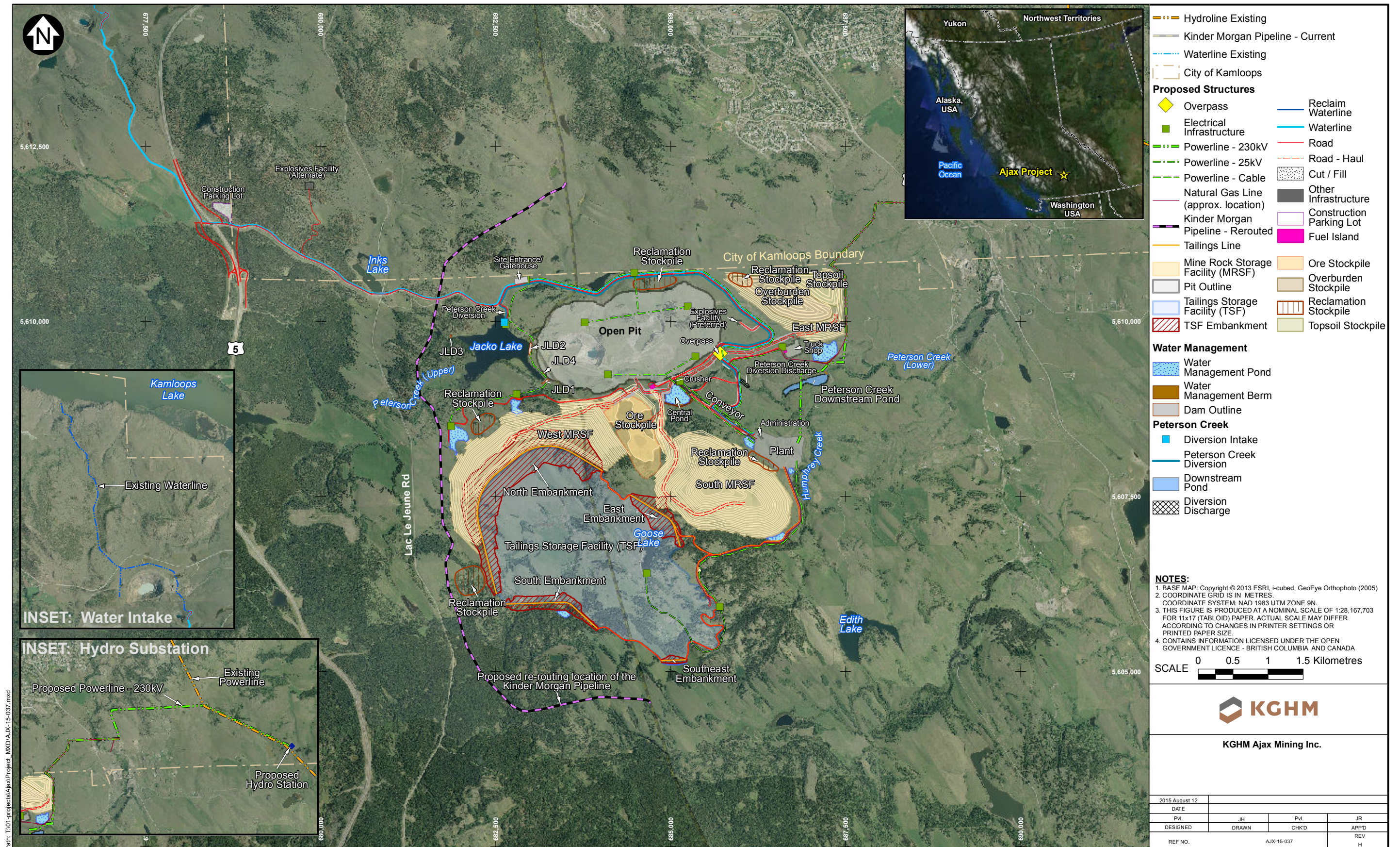
#### 2.2.3 **Project History**

Exploration and production in the Project area can be traced back over 100 years with exploration in the Project area beginning in the 1880s and continuing intermittently until the 1980s. Copper, gold, and iron mineralization was discovered at the Iron Mask Mine near Kamloops in 1896. Nearby properties, including the Wheal Tamar, Ajax, and Monte Carlo claims were explored in the following years.

Claims in the Project area include Afton, Karen, Galaxy, Lucky Strike, Rainbow, Rogers, No. 7, Ajax, Gold Plate, Windsor, Buda, Lone Tree, Iron Mask, Iron Cap, Crescent, Winty, DM, Ned, Cliff, and Big Onion. Copper and gold are the main deposits of interest in the area.

In the Project area, underground exploration began on the Wheal Tamar claim in 1898; development work was completed on the Monte Carlo claim as early as 1905, and on the Ajax claim in 1906. Exploration continued in the Wheal Tamar, Ajax, and Monte Carlo areas, becoming sporadic after 1914.

**Figure 2.2-1**  
**Location of Ajax Project**



In 1928, the Consolidated Mining and Smelting Company of Canada Ltd. obtained options on claims in the Project area and completed surface drilling on the Ajax and Monte Carlo claims. In 1952, the Ajax property was optioned to Berens River Mines Ltd. In 1954, Consolidated Mining and Smelting Company of Canada Ltd. and its successor, Cominco Limited, entered into option agreements and explored the area until 1980.

The area within the Iron Mask batholith has seen production through five open pit deposits: Afton, Ajax East, Ajax West, Crescent, and Pothook. In the 1980s, Afton Operating Company (owned in majority by Teck Cominco) defined the Ajax mineral resource. Mining operations were initiated by Afton in 1989 on the Ajax East and Ajax West claims and subsequently suspended in 1991 due to depressed metal prices. A second period of production began in 1994 and was again suspended in 1997. During these periods of production, it is estimated that 17 million tonnes (Mt) of ore was mined and 13 Mt of ore was milled from all five open pits. The tailings storage facility (TSF) and project components were decommissioned by Afton in accordance with their closure plan, which includes maintenance requirements for dams, hydraulic structures, and appurtenances to ensure that they are safe and stable. The historic Afton mine site, including the mill building and deactivated and decommissioned TSF, is situated 10 km west of the Project.

In 2002 and 2004, AME signed option agreements with Teck and Discovery Enterprises Corp. to earn a 100% interest in 52 mineral claims and 20 patented claims, which encompass the Crescent and Ajax pits. In 2004, AME fulfilled the terms of the agreement to hold a 100% interest in the Afton area claims, subject to a Teck Cominco back in right.

In June 2009, AME completed a National Instrument 43-101 compliant positive Preliminary Assessment Technical Report on the Ajax property, after a series of successful drill programs from 2005 to 2008. The results of the Technical Report indicate the potential for a robust mining operation capable of processing 60,000 t/d of ore. More recent evaluations show positive implications with a raise of the processing rate to 65,000 t/d.

KGHM Ajax Mining Inc., a joint venture between KGHM Polska Miedź S.A. (KGHM S.A.) and Abacus Mining and Exploration Corporation, was established in June 2010 following KGHM S.A.'s acquisition of a 51% ownership stake in the Ajax Project. In April 2012, KGHM SA exercised their option to increase ownership in the Project to 80%.

In January 2012, the Project Feasibility Study Technical Report was completed (Wardrop 2012). This was submitted as a Technical Report with Canadian Securities Regulatory Authorities pursuant to National Instrument 43-101, *Standards of Disclosure for Mineral Projects*. The feasibility study and the resulting economic evaluation recommended that the Ajax Project proceed to the Detailed Engineering Design stage.

KAM currently controls approximately 97 km<sup>2</sup> of land in the Project area, with ownership of 57 mineral claims and 31 Crown Granted mineral claims. Of these claims, 50 of the mineral claims and 28 of the Crown Grants are contiguous with the Ajax area. The remaining claims are near Ajax but are not contiguous.

The Project is located on the footprint of the previous Ajax East and Ajax West open pits and associated access and haul roads and reclaimed mine rock piles (Figure 2.2-1).

## 2.2.4 Project Schedule

The overall Project construction duration, from commencement to plant commissioning is expected to last approximately three (3) years. The duration from commencement of field construction to completion of construction is approximately two (2) years, which includes the main access road upgrades, site access road improvement and construction and early earthworks, followed by commissioning of the plant during the first year of operation.

The anticipated Operation phase of the Project is twenty-three (23) years, which is contingent on material changes that could arise during the continued exploration work, process refinement or throughput modifications.

Decommissioning and Closure activities are expected to take approximately five (5) years, followed by a post closure monitoring phase to ensure that all mitigation and closure facilities and structures are functioning properly. The length, location and frequency of required monitoring will be based on requirements of relevant government agencies and reflected in associated permits. Progressive closure and reclamation activities will occur throughout the Project life where feasible.

Post-Closure will begin after decommissioning and closure activities are completed, as determined by the onsite plans and regulatory requirements.

## 2.2.5 Environmental Management System

An Environmental Management System (EMS) will ensure that all Project-related activities, from construction to decommissioning, are conducted in an environmentally responsible manner. This system is described in more detail in section 11 of the Application/EIS. The objectives of the EMS will be to:

- ensure compliance with applicable legislation and regulations;
- promote conformance with applicable government policies and practices;
- ensure environmental conditions in authorizations, approvals, and licences are being met; and
- ensure operations are consistent with good environmental practices and sustainable development objectives.

A company environmental policy is an integral part of an EMS. KAM has adopted a comprehensive Environmental, Health, and Safety Policy and is committed to meeting or exceeding the requirements of the environmental and occupational health and safety legislation for each authority in which it operates. KAM is committed to protecting the health and safety of the public, its employees, and the natural environment. Where Project activities may negatively affect people and/or the environment, KAM is committed to eliminating or mitigating the extent and magnitude of potential impacts. To achieve this, KAM is committed to:

- implement, and continually improve upon, an effective health, safety, and EMS;
- identify, assess, and manage risks to employees, contractors, communities, and the environment in which it operates;

- provide and ensure understanding of the health, safety, and environmental risks through effective risk assessment and training to all its employees and contractors;
- reduce, re-use and recycle waste in order to minimize waste and encourage the efficient use of resources;
- use appropriate technologies to prevent and reduce waste and pollution;
- ensure financial preparations are made throughout the life of the Project to ensure decommissioning is implemented appropriately;
- meet, and where practical, exceed legal requirements for health, safety, and the environment;
- maintain transparent relationships and consultation with all stakeholders and Aboriginal groups;
- support the fundamental human rights of all people potentially affected by a project, including employees, contractors, and communities;
- respect the traditional rights of Aboriginal groups; and
- contribute to the long-term socio-economic and institutional development of employees and the communities within which projects occur.

Other components of the EMS will include:

- **Planning:** KAM will identify legal requirements, consider how Project activities interact with the environment, and develop a plan to reduce any adverse effects operations may have on the environment.
- **Implementation:** The policy and plans to improve environmental performance will be documented, communicated to employees, assign responsibilities, and train employees to ensure that staff is aware of the plan and able to perform any required duties related to it.
- **Checking and Correction:** KAM will develop a process or processes to monitor and record how well it is doing with respect to the environmental plan and regulatory obligations. The EMS will outline the monitoring frequency, recording and correction procedures, and revision tracking processes.

The EMS is meant to be a living document and will be revised and refined through key features such as:

- incorporating the results of environmental monitoring programs;
- monitoring the performance or condition of mine infrastructure, including the water management system, containment structures, and the TSF;
- planning of alternative methods using best available information regarding technological developments and changing environmental conditions;
- an iterative decision making process - design changes based on sound scientific principles; and
- identification of risk and uncertainty towards development of understanding and acknowledgement that predictions of effects have high uncertainty and are best assessed through an experimental approach to management.

## 2.3 PROVINCIAL SCOPE OF THE PROJECT

Pursuant to the section 11 Order issued by the British Columbia Environmental Assessment Office (BC EAO) on January 11, 2012, and subsequent section 13 Order (July 23, 2015) the provincial scope of the Project includes the following components:

- open pit;
- mine maintenance facility;
- Crushing and conveying system;
- processing plant;
- tailings distribution and management system;
- tailings storage facility;
- waste rock management facilities;
- water management facilities;
- access road and interchange;
- on-site roads;
- borrow sources;
- transmission line and transformer upgrades;
- natural gas supply line;
- explosives manufacturing and storage facility;
- water supply, including pumphouse upgrades;
- process and potable water system;
- concentrate storage and shipping area; and
- concentrate transport via truck to Port of Metro Vancouver.

Excluded from this scope are exploration activities and activities (e.g. baseline environmental studies) required to prepare the Application.

Also pursuant to the section 11 and 13 Orders, the scope of the Project assessment will consider:

- potential adverse environmental, social, economic, health and heritage effects, and potential cumulative effects, and practical means to prevent or reduce to an acceptable level any such potential adverse effects; and
- potential adverse effects on Working Group First Nations' and First Nations' Aboriginal interests and, to the extent appropriate, ways to avoid, mitigate or otherwise accommodate such potential adverse effects.

## 2.4 FEDERAL SCOPE OF THE PROJECT

As described in Section 2.2.1, the Project falls under the transitional provisions of CEAA (2012), where it will continue to be assessed as a comprehensive study in accordance with regulated timelines, as if the former CEAA (1992) had not been repealed.

In accordance with the definition of a project under the former CEAA, the federal scope of the Project includes all activities and physical works associated with its proposed construction, operation, and decommissioning. Pursuant to Section 5 of the former CEAA, the Project will require an EA under the former CEAA, by virtue of it requiring permits and authorizations. It is anticipated that the Project will require Authorization from DFO under the *Fisheries Act* (1985b) section 35(2), as well as a licence from Natural Resources Canada under Section 7(1) (a) of the *Explosives Act* (1985a).

## 2.5 ALTERNATIVE MEANS OF UNDERTAKING THE PROJECT

In planning the Project, KAM has taken an iterative approach to identifying alternatives and evaluating Project options based on technical, economic, environmental and social criteria. This approach demonstrates key decisions that KAM has taken to plan mining activities that, in aggregate, minimize adverse effects and maximize beneficial environmental, cultural, and socio-economic effects, while also remaining technically and economically feasible.

Evaluating the alternative means of undertaking the proposed Project meets the requirements of Section 16(2b) of the former CEAA, and also satisfies the information requirements as outlined in the BC Application Information Requirements/EIS Guidelines (AIR/EISG) document (BC EAO 2015).

“Alternatives to” the Project are the different ways to meet the needs of the project and achieve the project purpose. Project advancement options include the following:

- proceed with the Project in the near terms as planned to produce copper-gold for sale and provide a return on investment to shareholders;
- delay the Project until circumstances are more favourable; or
- abandon the Project.

With respect to the general arrangement site layout, KAM received public and regulatory comments and incorporated them into the engineering and feasibility considerations. As a result, the general arrangement was revised to move the Project components and activities further away from Kamloops neighbourhoods to the south and east of the open pit. Key location changes included:

- processing plant, crushers, and temporary ore stockpiles relocated more than 2 km from Kamloops;
- mine rock storage facilities relocated 4.5 km from the Aberdeen neighbourhoods; and
- TSF relocated 2.5 km from the Coquihalla Highway.

The following project components were assessed in the alternative “means” assessment in the Application/EIS:

- site access road;
- transport corridor route;
- open pit;
- discussion of alternative mining methods;
- analysis of different processing throughputs and rationale for current production configuration;
- mine rock storage facilities;
- explosives facility and magazine;
- blasting schedules;
- tailings management and location of TSF;
- power supply and transmission line;
- water use; and
- closure options, such as back-filling of waste into the pit.

In accordance with the alternatives assessment regulatory requirements, the analysis included a thorough, transparent, and systematic process to identify, evaluate, and provide the rationale for selecting the preferred alternative. Alternatives assessment methodology and outcome is presented in Section 17.4.

## **2.6 PROJECT LAND USE**

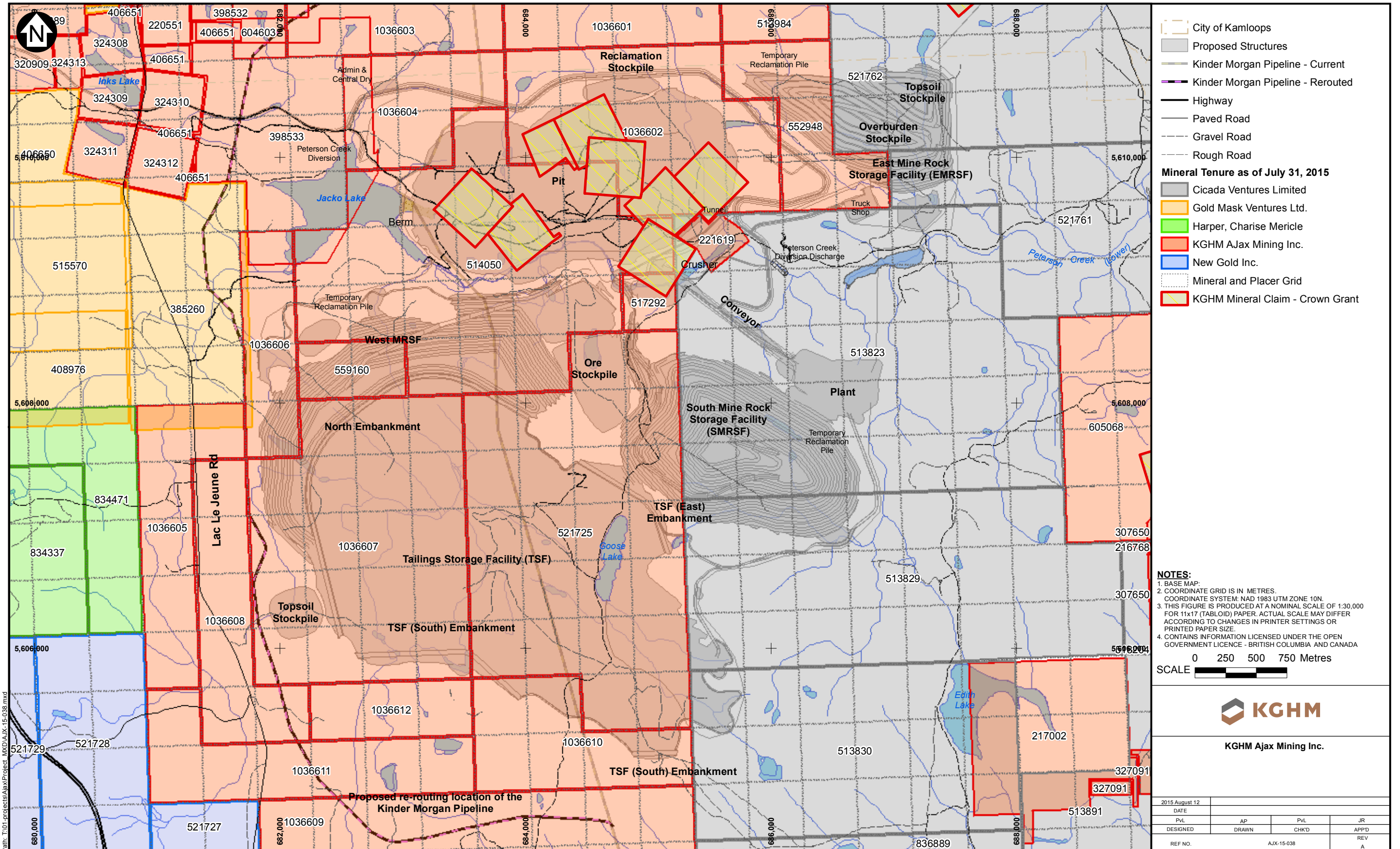
### **2.6.1 Land Use and Aboriginal Territories**

#### *2.6.1.1 Project Land and Mineral Tenure*

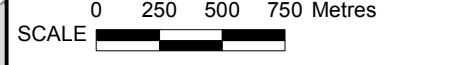
KAM currently controls land in the Project area, with ownership of 61 mineral claims and 31 Crown-granted mineral claims (Figure 2.6-1). Of these claims, 48 of the mineral claims and 28 of the Crown Grants are contiguous with the Ajax area. The remaining claims are near the Project but are not contiguous. In 2012, KAM purchased the Sugarloaf Ranch lands, as well as adjacent land parcels held by Teck Resources. KAM, in conjunction with the Sugarloaf Ranch, now holds the majority of lands within the Project footprint.

Surface tenure and ownership is shown in Figure 2.6-2 over the Project and Figures 2.6-3, 2.6-4, and 2.6-5 show surface ownership along the power line corridor, road corridor, and water supply pipeline respectively.

**Figure 2.6-1**  
**Ajax Property Mineral Tenure**



**NOTES:**  
 1. BASE MAP:  
 2. COORDINATE GRID IS IN METRES.  
 3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:30,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.  
 4. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - BRITISH COLUMBIA AND CANADA



**KGHM Ajax Mining Inc.**

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**Figure 2.6-2**  
**Ajax Property Surface Tenure**

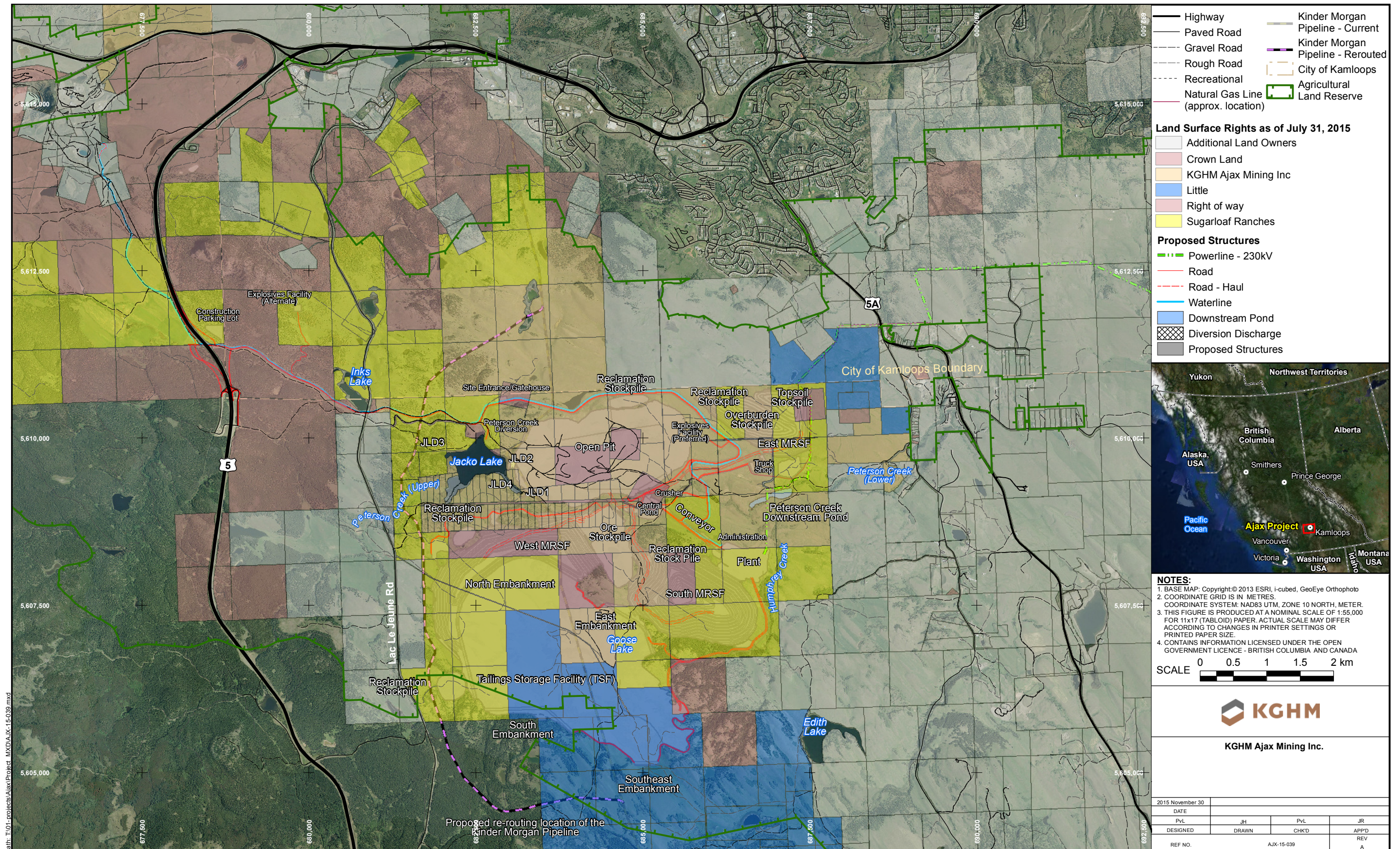
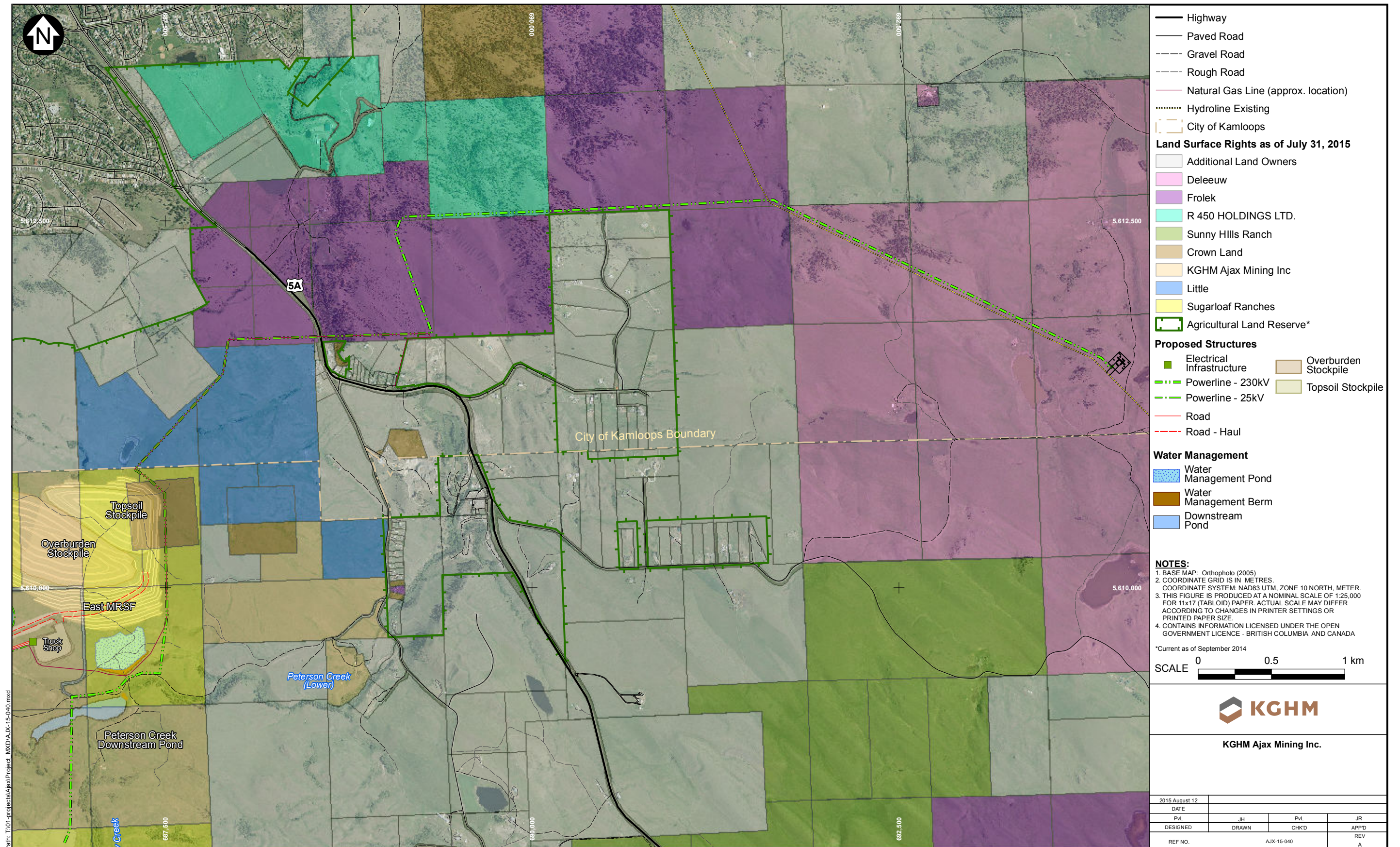
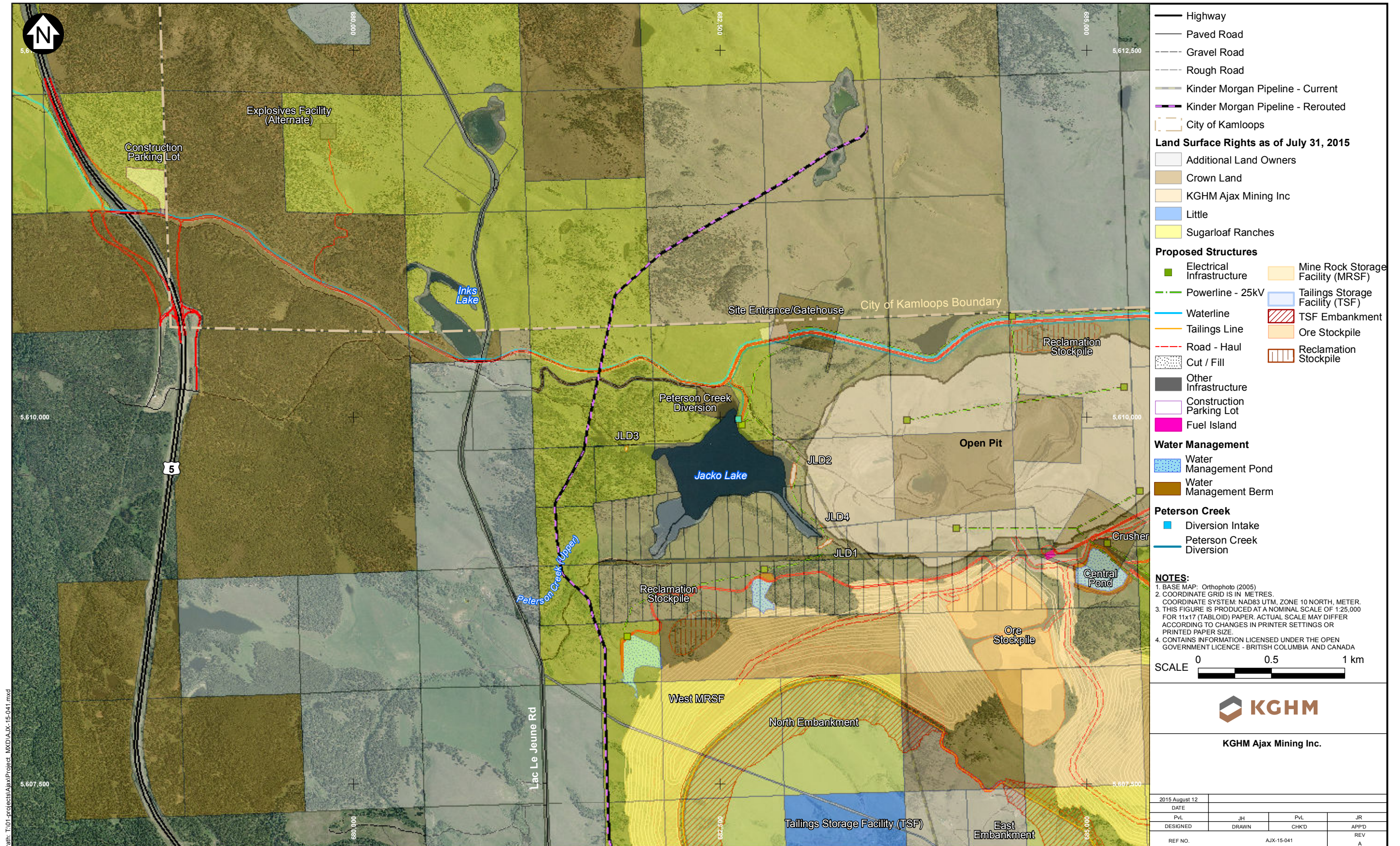


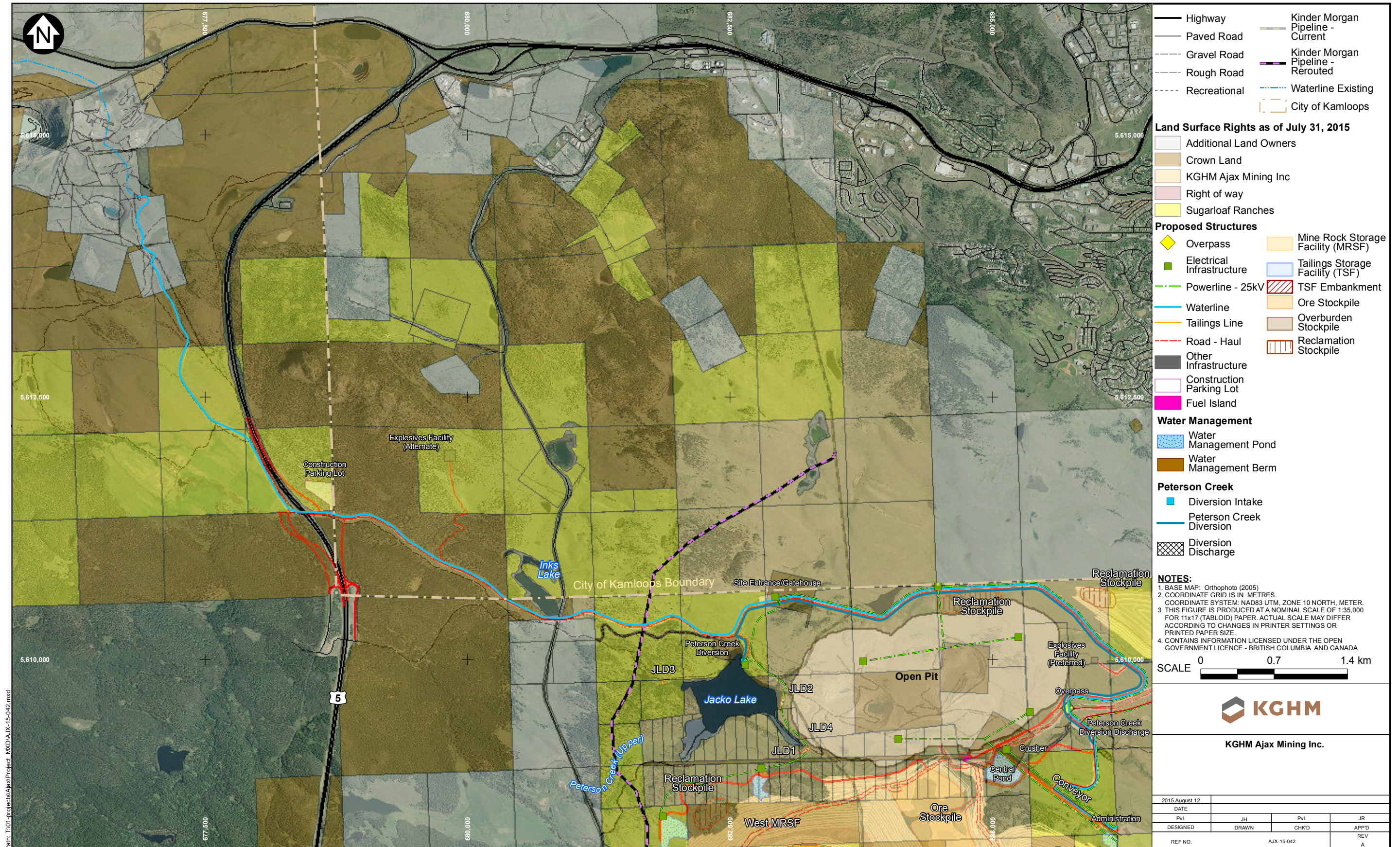
Figure 2.6-3  
 Ajax Property - Transmission Line Corridor and Surface Tenure



**Figure 2.6-4**  
**Ajax Property - Access Road Corridor and Surface Tenure**



**Figure 2.6-5**  
**Ajax Property - Water Supply Pipeline and Surface Tenure**



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KAM has negotiated Purchase Agreements, Option Agreements, and Right-of-Way Agreements with a number of local landowners in order to acquire surface rights to certain lands on which mine infrastructure such as mine rock storage facilities and power lines might be located. KAM also holds authorizations and permits that are in place for the mineral exploration activities and baseline data collection activities that are occurring on the Property and associated activities and infrastructure in the area.

#### 2.6.1.2 *Background and Aboriginal Group Setting*

The BC EAO section 13 Order for the Project identified the following Aboriginal groups who could potentially be affected by the Project:

- Tk'emlúps te Secwépemc (TteS) and Skeetchestn Indian Band (SIB), jointly known as the Stk'emlupsemc te Secwépemc Nation (SSN). The term "First Nations" applies to the SSN according to the section 13 order. The SSN represents the TteS and the SIB. In 2007, the two groups formed the SSN to manage negotiations, conservation and resources for the New Afton open pit mine (BC Aboriginal Business and Investment Council n.d.). The SSN aims to strengthen the economic and social conditions for its Nation members and works to capitalize on business opportunities arising from the resource sector;
- Lower Nicola Indian Band (LNIB) located 6 km from Merritt and a part of the Nlaka'pamux Nation; and
- Ashcroft Indian Band (AIB) located close to the town of Ashcroft and part of the Nlaka'pamux Nation.

The Whispering Pines/Clinton Indian Band (WP/CIB) is identified by the section 13 order as the Notification First Nation. The WP/CIB was formerly located outside the village of Clinton on Highway 97 (Whispering Pines/Clinton Indian Band 2014).

The Project lies within the Secwépemc traditional territory. SSN assert Aboriginal Title and Rights to the Project area (SSN, 2015). The Project also lies in the Nlaka'pamux Nation traditional territory. The Lower Nicola Indian Band and the Ashcroft Indian Band are part of the Nlaka'pamux Nation. However, they are not affiliated with the Nlaka'pamux Nation Tribal Association. KAM also continues to engage Métis Nation BC (MNBC), as directed by the CEA Agency.

KAM's efforts to engage with Aboriginal communities are described in Chapter 4 and Aboriginal information considered in the Application/EIS document is presented in detail in Chapter 12.

#### 2.6.1.3 *Land Use Context*

The Project is located in the Thompson-Nicola Region, an area that contains a mix of rural agricultural lands, small acreage holdings and Crown forest lands. The Kamloops Land and Resource Management Plan (KLRMP) administered by the British Columbia Ministry of Forests, Lands and Natural Resource Operations provides broad direction for sustainable use of Crown land and resources in the region. The Plan divides the area into five zones:

- Settlement Resource Management Zone;

- Protection Resource Management Zone;
- Community Watershed Resource Management Zone;
- Habitat Resource Management Zone/Wildlife Management Area; and
- Recreation and Tourism Resource Management Zones.

The Project development area is located principally within private land with limited areas within Crown land or Settlement Land, and the KLRMP outlines general resource management objectives and strategies that apply with respect to land, water management, ecosystem, biodiversity, grasslands, fisheries, tourism, recreation, agriculture/grazing, mineral resource development, wildlife, cultural, heritage and traditional use management. General Resource management objectives aim to integrate all values: social, environmental and economic. More specific to mineral exploration and mine development, the KLRMP states: mineral exploration and mine development are allowable land uses in all resource management zones outside Protection Regional Management Zones (and where prohibited by law). This means that all (100%) of the land outside of protected areas is available to exploration and development, guided by the *Mineral Tenure Act* (1996d) and the *Mines Act* (1996e). This respects the industry's requirement for as large a land base as possible to explore for resources and recognises that the more intensive activities and impacts tend to be focused on the relatively small areas found to have potential for economically viable mineral occurrences.

Ranching activities in proximity to the Project are managed through grazing leases. These leases give the holder exclusive use of the forage on Crown Land for grazing purposes. They share common terms with the land to be used for either grazing livestock or for harvesting purposes. The Project overlaps with two grazing leases held by Sugarloaf Ranch. KAM intends to encourage continued ranching activities, subject to safety and access restrictions. Additional information regarding ranching can be found in Section 8.4 (Land and Resource Use).

The Project is located within the Agricultural Land Reserve (ALR) and KAM will be applying for the temporary use of the Project area for non-agricultural purposes. Grazing leases and herds are maintained by KAM and upon completion of the Project, the closure objectives include returning the area to the Agricultural Land Reserve.

The Project is primarily located outside the City of Kamloops municipal boundary, with access corridors (road alignments, water supply pipeline and power lines) within City limits. The main area of the Project is approximately 4 km from the Aberdeen and Pineview Valley residential neighbourhoods. As these neighbourhoods, and an industrial area on the southwest area of Kamloops, may experience development over the mine life, there is a potential of overlapping use of the access roads and highways. Access alternatives considered are described in Chapter 17 and the potential for cumulative effects is evaluated as part of the assessment in Section 8.1 (Infrastructure, Public Facilities, and Services).

Under section 15 of the BC *Land Act*, the Crown may designate land as a land use reserve, recreation reserve, or UREP (Use, Recreation and Enjoyment of the Public Reserve). The intent is to protect against unwarranted disposition or unplanned use that may compromise the area's current or potential recreational uses. Jacko Lake road, the day use area north of the lake and the lake itself are

considered to be covered by the UREP (see Figure 2.6-2). As noted in Section 8.6 (Outdoor Recreation), effects of the Project relevant to the UREP designation include those related to removal or changes in access (i.e., restrictions during blasting activities) and diminished outdoor recreation experience, real or perceived (i.e., due to effects on air quality, noise and vibration, visual impacts and aesthetic features, traffic and over-utilization). With respect to access, a Project Access Management Plan has been developed by KAM (Section 11.21). The objective of the plan will be to maintain public safety and worker safety, while allowing for continued use and enjoyment of areas in proximity to the Project. To address concerns related to diminished recreation experience, mitigation measures will be developed for air quality and other factors. A recreation/angling working group made up of recreational users will be assembled to discuss changes in enjoyment of the area resulting from the Project.

A portion of the Kinder Morgan Transmountain Pipeline is located within the proposed Project area. The Pipeline currently runs underground from north to south through the Project site, with one segment beneath the northeast arm of Jacko Lake and near the southwest portion of the proposed pit (Figure 2.2-1). As noted in Section 2.2.2 (Project Location), KAM has engaged Kinder Morgan to reroute the Pipeline further to the west of the Project footprint.

Based on consideration of the following tenures: crown, coal, range, mineral, recreation, PNG, and forest, and accounting for overlap, it has been calculated that some form of tenure exists across 80% of the Secwepemc Traditional Territory in BC. This means that 20% of the territory is non-tenured. This number would not change pre- or post-Project.

A more detailed discussion of land use activities, community plans and communities potentially affected by the Project, including KAM's understanding of the traditional territories of the First Nations, can be found in Section 8.4 (Land and Resource Use), Section 8.5 (Current Use of Lands and Resources for Traditional Purposes), and in Chapters 12 (Background and Aboriginal Groups Setting) and 14 (Other Potential Effects on Aboriginal Interests).

## 2.7 PROJECT BENEFITS

### 2.7.1 Introduction

This section presents information on the anticipated benefits of the Project. This information is provided in the valued component (VC) framework documented in the Application Information Requirements/Environmental Impact Statement Guidelines (Application/EIS). Estimates on Project expenditures have been prepared for the purpose of the environmental assessment and are intended to reflect a conservative estimate of Project economics to forecast the distribution of Project Construction and Operations expenditures within British Columbia and the rest of Canada. Potential adverse economic and social effects are considered in Chapters 7 and 8 of the Application/EIS, respectively, while potential adverse effects to health are considered in Chapter 10. This section includes details on potential project benefits related to:

- **Economic Impacts (correlates to the Economic Growth VC):** Includes information about general economic benefits as described by the Statistics Canada input-output model. This includes estimates of contributions to Gross Domestic Product (GDP), employment and

government revenues. These are primarily presented at the provincial level but local (i.e., Kamloops and surrounding area), regional (i.e., the Thompson-Nicola Regional District), and national information is included where appropriate.

- **Labour Force, Employment, and Training:** Includes information about potential Project-related employment opportunities and anticipated Project workforce requirements in relation to local labour supply (by occupational category). Potential workforce training opportunities associated with these opportunities are discussed. In advance of the finalization of a detailed local hiring, recruitment and procurement strategy, KAM has developed a policy framework to guide this process. This framework is presented in this section.
- **Income:** Includes information about potential benefits associated with income derived from Project-related employment (direct and indirect).
- **Business Opportunities:** Includes information about business opportunities associated with the Project (including provision of goods and services), ranging from large-scale participation in Project activities to smaller scale entrepreneurial opportunities. In advance of the finalization of a Project procurement strategy, KAM has developed a policy framework to maximize local engagement in Project opportunities. An overview of the expected procurement strategy is included in this section.
- **Economic Diversification:** Includes information about the contribution of the Project to local economic diversification.
- **Healthy Living and Health Education:** Includes information about relevant practices and policies that KAM intends to implement to promote healthy living and health education within the workforce and broader community.
- **Community Development:** Includes information related to ongoing relationships with and support for community benefits and development initiatives.

The Project is expected to make a positive contribution to social and economic conditions in the City of Kamloops (Kamloops) and the surrounding area, as well as within the Province of British Columbia (BC). The magnitude and nature of these benefits will differ between the Project phases (i.e., Construction, Operations, Decommissioning and Closure, and Post-Closure). During the Construction and Operations phases, the Project is expected to create substantial employment, business activity, and income around Kamloops and in the Thompson-Nicola Regional District (TNRD).

The geographic proximity of the Project to Kamloops and surrounding area help frame the potential economic and social benefits of the Project. The Project's relative proximity to a major city centre with current and historic experience with resource development, including mining, is beneficial to both the Project and surrounding area. Kamloops and region has the potential to provide a knowledgeable and experienced local workforce, businesses and available infrastructure and services. The presence of other nearby mining operations (i.e., New Afton and Highland Valley Copper) helps to support the capacity to service the Project during all phases of the Project. Kamloops and surrounding area stand to benefit as well as much of the direct and indirect hiring and spending will take place locally, contributing to the community both economically and socially.

Aboriginal groups in the vicinity of the Project, including the SSN, also stand to benefit from employment, training, and other economic aspects of the Project. Economic indicators for SSN are

not dissimilar from those for Kamloops but unemployment rates are higher for SSN communities than for Kamloops. Other Aboriginal groups in the broader region, including the AIB, LNIB, and WP/CIB, all tend to experience higher levels of unemployment and lower levels of educational attainment, and could benefit from access to Project-related opportunities. Similarly, citizens of Métis Nation BC could benefit from Project-related opportunities (although baseline employment and educational attainment rates are more difficult to quantify as Métis citizens are integrated within the City of Kamloops and other communities).

## 2.7.2 Economic Impacts

Economic Growth, assessed as a VC in Section 7.1, is intended to provide information regarding the overall estimated economic impact of the Project, including direct impacts (e.g., contract expenditures by the proponent), indirect impacts (expenditures by industries supplying goods and services to the Project) and induced impacts (e.g., additional spending in the community by Project workers). This topic also considers tax revenues generated in relation to the Project.

The key methodological tool for this discussion is the Statistics Canada input-output model, which uses Project expenditure information to predict overall economic benefits within the provincial, national, and, in some cases, international context.

Estimates on Project expenditures have been prepared for the purpose of the environmental assessment and are intended to reflect a conservative estimate of Project economics to forecast the distribution of Project Construction and Operations expenditures within British Columbia and the rest of Canada. Project cost estimates for each project phase reference data developed to support economic feasibility studies for the Project. Where feasible, as the mine design and development planning process advanced, this information was updated. In order for all cost estimate data to be consistent and directly comparable, currency values have been standardized to 2015 Canadian dollars (Cdn\$) based on the average value of the dollar from January to mid-April. The process followed to complete the currency standardization is described in Appendix 7.1-B.

### 2.7.2.1 Construction Phase

Construction is expected to last approximately three years (from commencement to plant commissioning)<sup>1</sup>. The total cost of the Project Construction phase is estimated at \$1.54 billion (2015 Cdn\$). This is a sum of all wages and benefits paid to mine staff, all purchases of machinery and equipment, all payments to construction companies and other service providers, and all other spending on goods and services, utilities, and taxes.

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<sup>1</sup> The Project Construction phase is defined as a two-year period for the purposes of the environmental assessment; however, the total period between the start of construction activities and plant commissioning is approximately three years (see Section 2.2.4). The Construction and Operations phases overlap. Since the magnitude of construction activities in the third year is much smaller than in the previous two years, the overlap does not influence the conclusions of many of the effects assessments. For the effects assessments on the Economic Growth; Labour Force, Employment, and Training; Income; Business; and Economic Diversification VCs the three-year construction phase is more relevant as these assessments are particularly influenced by Project construction workforce and expenditures. Therefore, these VCs will refer to the three-year Construction phase instead of to the two-year phase.

Approximately two-thirds of all direct expenditures in the Construction phase are expected to be made within BC and one-third imported from elsewhere in Canada and internationally. The majority of expenditures, estimated at slightly more than \$1 billion, will be made in the Kamloops area and elsewhere in BC. Some expenditures, such as specialized mining machinery and equipment, are only available from outside the province. Based on information provided by KAM, as well as industry averages reflected in Statistics Canada's Interprovincial Input-Output Model, an estimated \$522 million of the direct mine construction expenditure will be for items imported from outside BC, including \$323 million of international imports and \$199 million of imports from the rest of Canada.

Approximately \$697 million of the total estimated construction costs are expected to be spent on land, buildings and associated equipment during the Construction phase. The Construction phase may include use of local facilities, where available, depending on the timing and specific needs of the Project. While limited facilities currently exist within the Kamloops area that suitable for use during construction, the identification and use of these facilities will be made at the discretion of the general contractor.

The input-output model calculates direct, indirect, and induced economic impacts. Direct impacts are those associated with the initial expenditures towards the construction of the Project. This includes the hiring of all employees of KAM, as well as the direct employment in construction companies, manufacturers, and various service providers that receive part of the initial \$1.54 billion in expenditures.

Indirect impacts are those associated with suppliers to the directly impacted industries. There is a chain reaction as each industry that received direct spending has to increase its production and employment, causing them to increase spending on their inputs, which increases spending on the inputs to those inputs, and so on down the production stream.

Employment generated through direct and indirect impacts creates additional household income among the affected workers and company owners. This additional income generates induced impacts as the extra income is spent on a wide variety of household expenditures, supporting additional employment in household-serving industries and additional demand for all of the inputs to those industries. Retail trade (e.g., grocery and clothing stores), food services (e.g., restaurants) and personal services (e.g., hair stylists) are good examples of induced impacts.

The total impacts of the Project are the sum of the direct, indirect and induced impacts, as summarized in Table 2.7-1. In addition to employment, the input-output model also provides estimates of total industry output (analogous to total revenue for all companies in the supply chain), GDP, which is the value-added component of the additional revenue, and tax revenue for all three levels of government. Note that even though the Project is located in BC, the additional demand created for goods and services elsewhere in Canada will lead to additional provincial and local taxes as companies increase sales, expand their buildings and hire more workers in those other provinces.

The total predicted employment impact in the Project's Construction phase is 9,725 person-years of employment within BC and a further 3,715 person-years of employment in the rest of Canada. Employment extending beyond BC includes 1,700 person-years in Ontario, 1,000 person-years in Alberta, 600 person-years in Québec and about 400 person-years distributed among the other provinces.

**Table 2.7-1. Total Economic Impacts for Ajax Project Construction Phase (Direct, Indirect, and Induced Impacts)**

Impact	Total Construction Phase	
	British Columbia	Rest of Canada
Estimated Construction Expenditure	\$1,000 million	\$522 million
Total Output <sup>1</sup>	\$1,800 million	\$820 million
Gross Domestic Product (GDP) <sup>2</sup>	\$873 million	\$409 million
Full Time Equivalent Employment (FTE) <sup>3</sup>	9,725	3,715
Government Tax Revenue <sup>4</sup>	\$354 million (all taxes, Canada-wide)	
• Federal Taxes	\$162 million (Canada-wide)	
• Provincial Taxes	\$115 million	\$40 million
• Local Taxes	\$25 million	\$12 million

Note: Tax revenue figures include estimates from the input-output model as well as personal and corporate income tax estimates generated separately by InterGroup Consultants (see Appendix 7.1-B).

<sup>1</sup> Total Output: The total dollar increase in expenditures in the economy, including the direct, indirect and induced impacts, including the purchase of intermediate inputs used to produce final goods and services.

<sup>2</sup> GDP: The total "value-added" generated in the economy after the value of intermediate inputs are removed from Total Output. It is consequently smaller than Total Output, but is a better measure of the true dollar impact on the economy.

<sup>3</sup> FTE: Expressed as person-years of FTE (assuming 2,000 hours per year). Includes direct employment (including contractors) as well as indirect and induced employment related to goods and services. Estimates for construction are provided for the entire phase.

<sup>4</sup> Total government tax revenues include tax revenue estimates from the input-output model as well as personal and corporate income tax estimates generated separately by InterGroup Consultants. See Appendix 7.1-B for description of calculation methodology.

### 2.7.2.2 Operations Phase

The operating life of the Project is currently estimated at 23 years. The projected average level of operating expenditures each year is \$299 million (2015 Cdn\$), yielding direct operating expenditures over the projected mine life of \$6.9 billion.

Direct employment at the mine during operations is conservatively projected at 453 full-time equivalent (FTE) positions (based on 2,000 hours per year)<sup>2</sup>. Total direct wages plus benefits will be nearly \$62 million per year and approximately \$1.41 billion over the projected mine life of 23 years. Direct employment composition is expected to include full-time, part-time, and seasonal worker positions, though the majority of positions are expected to be full-time.

The total impacts during Operations, including all direct, indirect and induced impacts, are summarized in Table 2.7-2. Total annual employment supported by the Project is estimated at 1,450 FTE positions in BC and an additional 540 FTE positions in the rest of Canada. The cumulative increase in GDP, over the life of the mine, is estimated at \$5.1 billion for the province (average of \$222 million per

<sup>2</sup> The economic input-output model has assumed on average 453 FTE positions are required during the Operations phase of the project. For the economic modelling and assessment of economy VCs, 453 was considered conservative for the purposes of assessing estimated Project benefits. For social VCs, where projections were made on population and the assessment focused on potential adverse effects, an average annual workforce of up to 580 FTE positions was used. This figure was based on current workforce estimates and remains conservative. Total workforce levels may fluctuate over the 23-year period and could be as high as 500 positions.

year), plus a total of \$1.5 billion in the rest of Canada. Total tax revenue to all levels of government is estimated at \$84 million per year, or a total of \$1.9 billion over the life of the mine.

**Table 2.7-2. Total Economic Impacts for Ajax Project Operations Phase (Direct, Indirect, and Induced Impacts; 2015 Cdn\$)**

Impact	Total Operating Phase (23 years)		Annual Average	
	British Columbia	Rest of Canada	British Columbia	Rest of Canada
Total Estimated Expenditures	\$6.9 billion		\$299 million	
Total Output <sup>1</sup>	\$11.4 billion	\$3.3 billion	\$495 million	\$143 million
Gross Domestic Product (GDP) <sup>2</sup>	\$5.1 billion	\$1.5 billion	\$222 million	\$67 million
Full Time Equivalent (FTE) Employment <sup>3</sup>	33,400	12,400	1,450	540
Government Tax Revenue <sup>4</sup>	\$1.9 billion (all taxes, Canada-wide)		\$84 million (all taxes, Canada-wide)	
• Federal Taxes	\$858 million		\$37 million	
• Provincial Taxes	\$710 million	\$152 million	\$31 million	\$6.6 million
• Local Taxes	\$160 million	\$41 million	\$6.9 million	\$1.8 million

Note: Tax revenue figures include estimates from the input-output model as well as personal and corporate income tax estimates generated separately by InterGroup Consultants (see Appendix 7.1-B).

<sup>1</sup> Total Output: The total dollar increase in expenditures in the economy, including the direct, indirect and induced impacts, including the purchase of intermediate inputs used to produce final goods and services.

<sup>2</sup> GDP: The total "value-added" generated in the economy after the value of intermediate inputs are removed from Total Output. It is consequently smaller than Total Output, but is a better measure of the true dollar impact on the economy.

<sup>3</sup> FTE: Expressed as person-years of FTE employment (assuming 2,000 hours per year per position). Includes direct employment (including contractors) as well as indirect and induced employment related to goods and services. Total estimated employment impacts have been divided by the number of years to generate average annual employment estimates.

<sup>4</sup> Total government tax revenues include tax revenue estimates from the input-output model as well as personal and corporate income tax estimates generated separately by InterGroup Consultants. See Appendix 7.1-B for description of calculation methodology.

### 2.7.2.3 Decommissioning and Closure Phase

Decommissioning and closure activities are expected to occur over a five-year period at a cost of approximately \$195 million<sup>3</sup>. Activities during Decommissioning and Closure would include salvage and demolition, remediation and restoration, and environmental monitoring. The monitoring of the site will extend beyond the end of the closure phase.

### 2.7.3 Labour Force, Employment, and Training

Project Construction, Operations and, to a lesser extent, Decommissioning and Closure and Post-Closure, will require a large workforce made up of a broad range of occupations. This includes positions in trades, engineering and technical, management and supervisory, and administrative and support occupations. The Project is close to Kamloops, which has a long history of resource

<sup>3</sup> These cost estimates have been prepared for the purpose of the environmental assessment and assume third party costs associated with closure activities. Actual costs for decommissioning and closure could vary by up to 30%.

development, including mining. With this awareness and capacity, much of the anticipated workforce requirement is expected to be provided by local residents.

Employment opportunities provide both direct and indirect benefits. This section considers the capacity of the local labour force to fill Project employment opportunities and estimates the number of employees who may be sourced locally versus from outside of the region. These estimates are useful as an indication of the size and composition of Project-related employment opportunities, although actual workforce requirements may vary. All employment estimates in this section, including all graphic representations of workforce demand, are based on current labour regulations, and Project plans as of February 2015. Hiring by contractor companies, particularly during the Construction phase when contractors will be responsible for many aspects of construction, will be subject to contractor hiring practices. Successful contractors will understandably develop their own approach to the assignment, which could affect the timing, level, and skill mix of workers required to complete the work.

Mining has historically been, and continues to be, an important sector within the TNRD. The industry is viewed by city officials as an important sector in the economy of Kamloops, and contributes to the diversity of the economy (Ajax KPI Program 2011-2012). In the Thompson Okanagan Development Region (excluding the Kelowna Census Metropolitan Area), in which the TNRD is located, the number of individuals employed in the mining and oil and gas extraction sector has grown at a faster rate than all industries between 1997 and 2013. Compared to the rest of the province, Kamloops also has a larger than average proportion of trades positions (19.3% compared to 16.2%), illustrating the importance of trades workers in the local economy (Venture Kamloops 2014).

Discussions with local mining operators in the area indicate that a majority of the employees hired for construction-related jobs were local hires. Approximately 85% of New Afton's construction workforce consisted of local residents (Ajax KPI Program 2011-2012). Highland Valley Copper (HVC) recently completed a mill expansion and modernization project that added between 500 and 700 contractors to regular positions, bringing total employment to above 2,000 employees. The majority of this construction workforce was drawn from the local and regional labour supply market. As in the case of construction, local mining operations indicated that most of their employees were sourced locally (Ajax KPI Program 2014-2015).

Discussions with representatives from the mining sector, training sector, and others suggested that there is a degree of transferability of skills from the forestry sector. Recent changes in the forestry sector have led to a reduction in available employment opportunities, potentially increasing the size of the labour pool from which the Project might draw. In some cases, forestry workers with certification related to welding, millwright, and other designated trades may require a limited amount of additional education to be eligible for Project jobs. Transferability would likely be limited on some occupations due to code/certification differences between sectors (e.g., heavy equipment operation; Ajax KPI Program 2011-2012).

First Nations in the region have historically participated in mining-related employment opportunities, SSN have a formal agreement in place with New Gold on the New Afton project. SSN representatives have commented that the available labour pool within the SSN communities has

decreased over time as the number of potential candidates for potential training and employment have become employed in other sectors or mining projects (Ajax KPI Program 2011-2012).

The SSN continue to express an interest in capacity building (e.g., contracting, employment, and training). To support these requests, KAM has:

- worked on development of an SSN Human Resources development plan which will apply to all Project phases and provide SSN members with opportunities to be successfully integrated in the Project;
- worked on supporting future employment opportunities for SSN members. One of KAM's objectives is to provide employment for SSN members that want employment on the Project. To achieve this goal, KAM is developing a strategy to provide hard and soft skill training to SSN members. KAM has discussed a potential framework for training with key SSN personnel and will continue to work with them on training programs for adults and for students (beginning in grade 9). KAM has also committed to assisting the SSN in the creation of a database containing all SSN members for human resource purposes. The database will track each member's education, training strengths and areas for improvement. This approach is based largely on learning from the former BC Aboriginal Mine Training Association (BCAMTA). For adult members, the focus will be to provide training opportunities that will enhance their ability to gain employment, in or out of the mining industry. For youth and students, focus will be placed on helping them choose a viable career path while mentoring them along the road to achieving their desired jobs through education or other vocational training.

### 2.7.3.1 Workforce Requirements

Table 2.7-3 provides an overview of the types of positions that will be available on the Project, organized into five different classifications corresponding to anticipated skill set requirements. This information is helpful to understand the capacity of the local labour market to fill potential employment opportunities. For example, designated and non-designated trades positions are typically more readily filled locally, compared to the more specialized engineering and technical positions.

**Table 2.7-3. Ajax Project Sample Project Occupations**

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

Classifications have been organized as follows:

- **Designated Trades:** These occupations typically require three or more years (levels) of classroom and practical training. Designated trades are expected to include carpenters, concrete finishers, steelworkers, scaffold installers, electricians, millwrights, pipefitters, rebar workers, welders, and crane operators.
- **Non-designated Trades:** These occupations typically require a less onerous process for certification with respect to classroom and practical training, although they may require substantive work experience. Non-designated trades are expected to include heavy equipment operators, warehouse personnel, truck drivers, and labourers.
- **Engineering and Technical:** These occupations typically require technical training involving a multi-year college or university program. This classification is expected to include engineering technicians, engineers, and laboratory technicians.
- **Management and Supervisory:** These occupations are presented separately on the basis of having different skill and experience requirements. Management and supervisory occupations include foremen, managers, and supervisors.
- **Administrative and Support:** These occupations are similar to management and supervisory occupations but typically require less training and experience to undertake the work.

### Construction

Table 2.7-4 illustrates annual peak workforce requirements during the Project's Construction phase divided into the five broad occupational categories defined above. As noted previously, estimates presented are useful primarily as an indication of the size and composition of Project-related employment opportunities. Actual workforce requirements may vary from these estimates, depending on contractor hiring practices and other factors.

**Table 2.7-4. Construction Phase Estimated Direct Workforce Requirements for the Ajax Project**

Occupational Classification	Estimated Employment Positions		
	Year 1	Year 2	Year 3
Designated Trades	498	1,340	630
Non-designated Trades	565	316	163
Engineering and Technical	28	28	28
Management and Supervisory	66	98	59
Administrative and Support	18	18	18
<b>Total</b>	<b>1,175</b>	<b>1,800</b>	<b>898</b>

Source: Derived from workforce estimate data provided by KGHM Ajax (2014).

The Construction phase of the Project is expected to last approximately three years (from commencement to plant commissioning). Employment opportunities represent both direct and indirect benefits associated with construction, particularly in the vicinity of Kamloops and other nearby communities. The intent of this discussion is to characterize the proportion of employment opportunities expected to be filled locally.

Highlights of Table 2.7-4 are as follows:

- The largest category of employment opportunities is the designated trades, which peak in Year 2 at greater than 1,300 positions. Large numbers of millwrights, steel workers, pipefitters, electricians, and scaffold installers will be required during this phase.
- Non-designated trades, which include heavy equipment operators, truck drivers, and labourers peak in Year 1 at approximately 565 positions.
- Engineering and technical positions (e.g., metallurgists, geologists), as well as administrative and support positions, remain constant at between near 30 positions during each year.
- Management and supervisory positions fluctuate depending on the overall workforce requirements, ranging between 50 and 100 jobs.

### Operations

The Operations phase of the Project is expected to last approximately 23 years. As with the Construction phase, Operations employment opportunities represent both direct and indirect benefits that will contribute to Kamloops and other communities where unemployment is typically higher. The primary intent of this discussion is to characterize the proportion of employment opportunities expected to be filled locally.

The occupational breakdown shown in Table 2.7-5 below mirrors that for the construction analysis, although distribution of occupations is different. The estimates presented are useful primarily as an indication of the size and composition of Project-related employment opportunities. Actual workforce requirements will vary from the estimate presented in the following sections.

**Table 2.7-5. Operations Phase Estimated Direct Workforce Requirements (Annual Average) for the Ajax Project**

Occupational Classification	Estimated Average Employment Positions
Designated Trades	105
Non-designated Trades	249
Engineering and Technical	50
Management and Supervisory	32
Administrative and Support	32
<b>Total</b>	<b>468</b>

*Note: Derived from workforce estimate data provided by KGHM Ajax (2014).*

During the Operations phase, total potential employment opportunities range between 400 and 500 in an average year. Other highlights include:

- Approximately 250 non-designated trade positions are expected to be required on average during an operating year. This is the largest category of employment opportunities and includes haul truck operators and associated maintenance personnel.
- Approximately 100 designated trade positions are anticipated in an average year for positions that include millwrights and pipefitters.

- Approximately 50 engineering and technical positions (e.g., metallurgists, geologists) are expected to be required in an average year.
- Between 30 and 40 positions are expected to be required for each of administrative/support and management/supervisory occupations in an average year.

As for the Construction phase, prospective Operations employees will be expected to have at least a Grade 12 diploma or equivalent. The majority of employment opportunities expected to be available during Operations represent occupations in the non-designated trades, which includes a wide range of heavy equipment operators. Haul truck operators make up a substantial proportion of this category in operations. Much of this training can be accessed through Okanagan College.

The remainder of Operations phase employment opportunities are anticipated in the designated trades (e.g., mechanics, electricians, and heavy equipment maintenance personnel), engineering and technical positions (e.g., engineers, geologists, metallurgists, technicians), management/supervisory, and administrative and support positions. Depending on the specific occupation, training opportunities can be accessed through TRU, Okanagan College, and other institutions.

### Decommissioning and Closure

Decommissioning and Closure of the Project would take place over a five year period, with the associated workforce decreasing over that time. The number of employment opportunities would be very small compared to Construction and Operations workforces. It is anticipated these positions will be filled by workers previously employed during the Operations phase and these workers are also expected to reside in the local area.

### Post-Closure

Post-Closure employment opportunities (e.g., environmental monitoring, site maintenance) would be limited and would be relatively short-term in nature. These opportunities are expected to be filled by residents of the local area.

#### 2.7.3.2 *Local Hire Scenarios*

The central consideration with respect to labour force and employment is the capacity of the local labour market to meet the requirements of the Project. It is important to determine the percentage of the workforce expected to be drawn from the local labour pool versus outside of the region as it influences potential Project effects in other areas (e.g., infrastructure, public facilities, and services). In addition, the number of employment opportunities and the skill sets that would be required provide potential opportunities for planning with local educational and training institutions.

A range of factors was taken into consideration to frame the development of a set of high and low local-hire scenarios. These factors include the Project workforce requirements, local labour supply, local training capacity, and KAM employment policy. Representatives of a local training institution and relevant industry professionals were consulted to refine estimates based on these factors.

Table 2.7-6 presents the estimates derived to describe local and non-local hire scenarios for construction. The ranges presented in this table represent low and high levels of local hiring, based on the total estimated workforce requirements provided in Table 2.7-4.

**Table 2.7-6. Estimates of Local and Non-local Hires for Project Construction**

Occupational Classification	Local Hires	Non-local Hires
<b>Year 1</b>		
Designated Trades	293 to 384	114 to 205
Non-designated Trades	424 to 509	57 to 141
Engineering and Technical	9 to 12	16 to 19
Management and Supervisory	15 to 27	39 to 51
Administrative and Support	9 to 13	5 to 9
<b>Total</b>	<b>750 to 944</b>	<b>231 to 425</b>
<b>Year 2</b>		
Designated Trades	573 to 800	540 to 768
Non-designated Trades	237 to 284	32 to 79
Engineering and Technical	9 to 12	16 to 19
Management and Supervisory	23 to 43	55 to 75
Administrative and Support	9 to 13	5 to 9
<b>Total</b>	<b>850 to 1,152</b>	<b>648 to 950</b>
<b>Year 3</b>		
Designated Trades	279 to 398	232 to 351
Non-designated Trades	122 to 147	16 to 41
Engineering and Technical	9 to 12	16 to 19
Management and Supervisory	13 to 24	35 to 46
Administrative and Support	9 to 13	5 to 9
<b>Total</b>	<b>433 to 593</b>	<b>305 to 465</b>

Note: Derived from workforce estimate data provided by KGHM Ajax (2014).

During Year 1 of Construction, the Project could hire between 750 and 940 positions locally, out of a total of an estimated 1,175 positions. This represents a local-hire percentage of between about 63% and 80% for the low and high scenarios, respectively. In the high scenario, up to approximately 77% of designated trades positions and up to about 90% of non-designated trades are assumed to be filled locally, as well as approximately 41% of management and supervisory positions.

In Year 2 of Construction, local hires are expected to range between 850 and about 1,150 out of a total of up to 1,800 positions. This represents a local-hire percentage of between approximately 47% and 64%. The key difference from Year 1 is that the Project will require a larger number of workers in the designated trades (e.g., millwrights, pipefitters). These positions are expected to be more difficult to fill locally. During Year 1, a higher number of positions in the non-designated trades (e.g., truck drivers and heavy equipment operators) will be required.

During Year 3 of Construction, the Project is expected to hire between about 275 and 400 local positions out of a total of almost 900 positions. This represents a local-hire percentage of between 48% and 66%. This resembles the percentages for Year 2 due to the higher requirements associated with the higher skilled positions.

During years 2 and 3 of Construction, occupational areas with potentially limited local capacity include millwrights, pipefitters, steel workers, and scaffold installers. It is important to note that given the Project schedule, development and implementation of training related to these occupations is unlikely to be effective in addressing local hiring for these positions. Although some on-the-job training may be offered, training programs for these skill areas will not be able to sufficiently address Project needs until the Operations phase.

Table 2.7-7 presents estimates of local and non-local hires during the Operations phase. Out of almost 470 positions in an average year, the percentage of local hires could range from 58% to 74% (about 270 and 350 positions, respectively). As in construction, it is expected that a large proportion of occupations classified as non-designated trades could be filled locally (between 69% and 83%).

**Table 2.7-7. Estimates of Local and Non-local Hires for Project Operations (Annual Average)**

Occupational Classification	Estimate of Potential Local Hires	Estimate of Potential Non-local Hires
Designated Trades	45 to 67	38 to 60
Non-designated Trades	171 to 207	42 to 78
Engineering and Technical	19 to 29	21 to 31
Management and Supervisory	9 to 15	16 to 22
Administrative and Support	26 to 28	4 to 6
<b>Total</b>	<b>271 to 347</b>	<b>121 to 197</b>

These estimates are provided for illustration purposes and may differ from actual outcomes for a number of reasons including:

- **Changing labour market circumstances:** The estimates represent the most current knowledge regarding local labour market conditions including the availability of potential workers in specific trades. The circumstances could be different once the Project operations phase begins.
- **Training programs:** Programs may be implemented in advance of operations that could help to increase the local supply of labour in occupations required on the Project.
- **Potential changes to Project workforce requirements:** Specific requirements could change by the time the Project goes into the operations phase.

KAM has identified potential challenges to local hiring for the Operations phase, based on the current local labour supply, and is developing a human resource development plan to help ensure sufficient operations labour is available locally.

#### KAM Human Resource Development Policy

KAM is currently in the process of completing a human resource development plan that will be implemented prior to the start of construction activities. Key aspects of KAM's human resource development plan relevant to this discussion include the following:

- A strategic workforce plan will describe workforce requirements for the Project development

phase, from construction through to operations. This plan will outline the requirements of both KAM and its contractors and will reflect the fluctuating workforce needs of the Project.

- A Project recruitment strategy will also be developed. The strategy incorporates a commitment to hiring locally (Kamloops and the BC interior) and looking for partnership opportunities with local education and training organizations and institutions to ensure that the expertise required for operations is available. Attention will be given to recruiting potential employees who currently leave the region to work on resource development projects in other parts of the province or elsewhere.
- Efforts will be put in place to maximize recruitment of qualified Aboriginal candidates, in accordance with any established agreements. An Aboriginal liaison will facilitate this process.
- Efforts to encourage recruitment of local personnel will include utilization of an applicant tracking database, internet and social media, advertising, associations and institutions, career/job fairs, and agencies.
- With respect to training, federal and provincial programs will be accessed where feasible and appropriate to support workforce development. Efforts will also be undertaken to work with local universities and community partners to develop training programs and/or co-op programs. On-the-job training and apprenticeship programs may also be implemented as required.
- New employee orientation will include a component of cross-cultural training to recognize and support a diverse, multicultural workforce.
- Programming will be in place to facilitate continued training and development of employees, including provision of financial assistance to pursue educational opportunities and professional designations.

The overall intent of these measures is to maximize the extent to which the Project can draw upon and support a local labour pool to fill employment needs, including enhancing the opportunities for workforce participation among potentially underutilized local human resources.

#### 2.7.3.3 *Training*

With the history and important role of mining in the region, regional mine operators have developed relationships with Thompson Rivers University (TRU) to help develop the local mining workforce. For example, HVC has sponsored TRU's heavy duty trades program, provided used equipment, and has actively engaged environmental students in co-op programming (KPI Program 2011-2012). New Gold has similarly worked with TRU to develop its heavy equipment programming. TRU re-evaluates its curriculum every two to three years to ensure it remains current with the needs of the regional economy (Ajax KPI Program 2011-2012).

While there have been training programs in place for many of the potential employment opportunities on the Project, training for many of the more technical/professional and management/supervisory positions is only offered outside the region. Discussions with other mining operations suggest that the region could benefit from more advanced engineering programming. For the purpose of this analysis, it is assumed that occupations for which there are local training programs in place would be more likely to be filled locally.

Although training requirements differ widely depending on occupation, all employment opportunities are expected to require at least a high school diploma or equivalent. The majority of employment opportunities expected to be available during construction are in the designated trades. These trades typically include multiple years of classroom training accompanied by practical job experience. Example occupations on the Project include carpenters, concrete finishers, steel workers, scaffold installers, electricians, millwrights, pipefitters, and rebar workers. Some of this training (e.g., carpenters, electricians, welders and pipefitters) is available through local and regional institutions, including TRU, Okanagan College, and College of the Rockies.

A sizeable number of employment opportunities are also anticipated in the non-designated trades which include heavy equipment operators, truck drivers, and labourers. These positions typically require less intensive training, although in many cases will still require experience depending on the specific occupation. Training opportunities are offered through Okanagan College, TRU, and others.

Training for many of the more technical/professional and management/supervisory positions is only offered outside the region. Discussions with other mining operations suggest that the region could benefit from more advanced engineering programming.

#### **2.7.4 Income**

New income will be generated through employment earnings in the City of Kamloops and surrounding communities during all phases of the Project. This in turn will lead to indirect economic activity in retail, hospitality and other sectors through the spending of wage income.

##### Construction

Total Construction employment in Year 1 is expected to approximate 1,175 jobs, of which between 750 and 945 jobs are expected to be taken up by residents of the LSA. A further 350 jobs are expected in companies providing various services and supplies to the Project (i.e., indirect employment). Between 105 and 130 local jobs will be supported by the additional household income of mine workers (i.e., induced employment). In total therefore, the local employment impact is expected to be between 3,480 and 4,225 person-years of employment.

According to Statistics Canada's National Household Survey, full-time employees in BC in the engineering construction industry in 2010 had an average income of \$83,600 and those in building construction earned an average of \$56,900<sup>4</sup>. The Statistics Canada input-output model results for the Ajax Mine estimate that 96% of construction employment on the Project will be in engineering construction and 4% in building construction. Average full-time earnings across all of the industries that are included in indirect and induced employment is \$51,200.

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<sup>4</sup> A separate analysis of average employment earnings from 2012 tax returns for Kamloops and BC showed that average employment earnings, including part-time workers, are slightly higher in Kamloops (\$41,000) compared to the provincial average (\$40,300). Average BC earnings by industry are therefore considered to be a reasonable estimate for earning levels by sector in the Kamloops area.

Hourly earnings in BC have increased by approximately 9% from 2010 to 2015 (0.8% increase in construction; 9.4% increase across all industries). These inflated earnings were applied to the local employment data to yield estimates for the local income impacts of the Ajax Mine construction phase. As above, there are low and high scenarios depending on how many construction jobs are taken by local residents. In total, over the entire construction phase, the Project is expected to generate local employment earnings (including earnings derived from direct, indirect, and induced employment) in the range of \$264 million to \$328 million.

### Operations

In the Operations phase, average annual Project employment will comprise an estimated 468 jobs. It is estimated that between 271 and 347 of these jobs will be filled from the local labour market.

The expected operating life of the Project is 23 years. Most non-local residents that take jobs on the Project will effectively become local residents, as the expected work schedule will assume people reside locally instead travelling to home communities elsewhere, so the induced impact of their household expenditures will be captured in the local area. Given the relatively long mine life, the appropriate BC Statistics multipliers for regional impacts are from the “migration (no safety net/no public sector)” scenario.

The total employment impact on the Kamloops area is expected to approximate 933 FTE jobs per year, including 185 indirect jobs (supplying goods and services to the mine) and 295 induced jobs (providing goods and services to the households of direct and indirect workers).

Total wages paid to the mine’s direct workforce is expected to be \$53 million per year, which is an average of \$117,000 per FTE. Average earnings for indirect and induced workers are \$56,000 (based on the estimated National Household Survey average of \$51,200 from 2010, inflated by 9.4%).

### Decommissioning and Closure

Decommissioning and Closure of the Project would take place over a five-year period, with associated expenditures decreasing over that time. Jobs will be substantially reduced compared to the Construction and Operations phases although they are largely expected to be filled with local residents. Wage levels for workers employed during the mine decommissioning and closure phase are expected to be similar to during the Operations phase, or an average of \$117,000 per FTE position. As experienced with construction and operations phases, wage levels will vary depending on the type of job category.

### Post-Closure

Post-Closure job opportunities will be limited but are expected to be filled by local residents. Wage levels for workers employed during the post-closure phase are expected to be similar to those found during the Operations phase.

## **2.7.5 Business Opportunities**

While much of the economy of the TNRD is largely based on government services, including health care and education, substantial contributions also come from the resource (i.e., mining, forestry, and

agriculture), retail, and manufacturing sectors. Mining is seen by City of Kamloops officials as an important sector in the economy of Kamloops, which contributes to the diversity of the economy (Ajax KPI Program 2011-2012). In the Thompson Okanagan Development Region (excluding the Kelowna Census Metropolitan Area), in which the TNRD is located, the number of individuals employed in the mining and oil and gas extraction sector has grown at a faster rate than all industries between 1997 and 2013 (Venture Kamloops 2014).

KAM is developing a business procurement plan. The Project may depend on several contract services during construction and operations phases. These could include, but are not limited to:

- open pit mining;
- mobile and fixed equipment maintenance;
- site services including security and maintenance;
- transportation services and fuel services;
- expediting/mine resupply; and
- communications.

Given the Project's proximity to Kamloops and the scope, experience and capacity of businesses currently engaged in the mining industry both directly and indirectly, it is anticipated that a high proportion of Project contracting needs will be addressed locally or regionally during all Project phases. Transportation, fuel supply, catering, security, and some equipment maintenance services could all tentatively be provided by local and regional suppliers.

Based on the operating experience of another BC mining project, and given the factors identified above (e.g., proximity to City of Kamloops), it is reasonable to expect that between 25% and 35% of expenditures on supplies and services will take place within the Kamloops area. With average operating year expenditures on supplies and services of approximately \$220 million, that could amount to between \$55 and \$77 million.

Local expenditures during the Construction phase are also expected to be sizable although the local percentage will likely be lower given the purchases of major equipment that will have to be sourced nationally and internationally.

Business opportunities for local contractors will also be available during the Decommissioning and Closure, and Post-Closure phases, although expenditures and related businesses opportunities will progressively decrease over these phases.

Aboriginal groups close to Kamloops and in the TNRD have expressed interest in participating in Project economic opportunities associated with employment and business. To date, KAM has signed contracts with Aboriginal and/or Aboriginal-affiliated companies for provision of various services including environmental monitoring and fieldwork, site support services, test drilling, and civil works. Additional information regarding these interests is included in Section 12. Further engagement between these various Aboriginal groups and KAM is expected to further identify and define these potential opportunities.

### 2.7.6 Economic Diversification

Economic diversification refers to the “spreading of economic activity across a relatively wide range of industries/sectors in order to mitigate the effects of a sudden downturn in any one” (Canada West Foundation 2011). Two measures used to describe economic diversification include income dependency and the Diversity Index.

With respect to income dependencies in the Kamloops area, incomes associated with the public sector have represented the largest percentage of contribution to after-tax incomes (21% to 27% from 1991 to 2006 census years, respectively). Mining and related manufacturing, including oil and gas, were relatively minor contributors (6% in 1991 to 7% in 2006). In 2011, primary industries (e.g., mining and quarrying, agriculture, forestry, fishing, hunting, and utilities) employed approximately 6.2% of the local workforce. For comparison, the primary industries employed 4.1% of the total provincial workforce in BC (Venture Kamloops 2014).

The Diversity Index measures the extent to which a community is dependent on specific sectors. A value of zero would suggest that the local economy is completely dependent on one sector while a value of 100 denotes equal dependence on all sectors. The Diversity Index for the Kamloops Local Area in 2006 was 74, which was within the top ten ranked areas in the Province out of more than 60 areas (Horne 2009). The Project is expected to positively contribute to the economic diversity of the Kamloops local area through new employment and business opportunities during the Construction and Operations phases of the Project.

### 2.7.7 Healthy Living and Health Education

For the Project workforce, KAM will foster an environment where health and safety are maximized by striking a balance between investing in its employees and implementing appropriate systems and programs. A culture of safety will be reinforced on site during all Project phases, with a goal of Zero Harm. This will include a commitment to continual improvements related to health and safety performance by setting objectives and monitoring performance results. Risk assessment techniques will be used to identify hazards and mitigate them so as to prevent injury and ill health. All relevant provincial and federal health and safety legislation will be continuously met or exceeded.

In addition to fostering a culture of safety, there are several ways in which KAM will provide support to its workforce to pursue healthy lifestyle choices. These initiatives will help provide health benefits to those choosing to participate in them.

KAM has a company-wide *Participation* plan that rewards employees with gift certificates for participating in a designated amount of events every three months. Each event aims to raise the employee’s heart rate to a level where the exertion benefits their body and assists in physical conditioning. The more events that an employee participates in, the greater the reward. Company incentives could encourage workers to engage in physical activity more frequently.

KAM will also implement a company-wide employee wellness program. Within this program, employees will be eligible to have up to \$500 in expenses related to health and wellness equipment and activities reimbursed annually. This will include reimbursement for things such as gym

memberships, fitness classes, park passes, ski passes, fitness and sports equipment, athletic footwear and apparel, health improvement programs (e.g., smoking cessation, weight loss), and holistic services (e.g., para-medical services not covered by medical insurance).

In addition, KAM will consider recommendations put forward by the Province (e.g., BC Ministry of Health n.d.), which includes information and suggestions for developing a healthy work environment, healthy eating, smoking cessation, and vending choices.

Within the public sphere, KAM will provide opportunities to enhance healthy living and health education through support and sponsorship to community organizations, as well as supporting continued opportunities to use the area around the Project for recreational purposes where it is safe and appropriate to do so. Through these efforts, KAM hopes to support healthy living and health education for residents in the area.

### **2.7.8 Community Development**

KAM is committed to building lasting relationships with the communities in which they operate. KAM will continue to actively engage in activities and events that support community enhancement and/or environmental sustainability with support for local events, clubs, local businesses, community groups, local athletics and arts initiatives, as well as a variety of non-profit organizations. This may be accomplished through donations (i.e., one-time contributions to organizations), sponsorship (i.e., a contribution to an organization or event with the purpose of raising funds in support of another cause), and project investment partnerships (i.e., a joint venture between KAM and another business and/or organization in which both parties are investing in community enhancement or environmental sustainability).

KAM is also committed to building strong and lasting relationships with First Nations communities, and will continue to consult and collaborate with local First Nations regarding the Project and its design. This will include continued consultation and negotiations towards a Project-related agreement that supports the interests and concerns of the SSN.

KAM also recognizes that the Project is uniquely situated in an area that is used by residents of the region for various outdoor recreation pursuits (see Section 8.6), which contributes to individual healthy lifestyles. KAM is committed to working with local stakeholders to enable continued use of certain areas where it is safe and appropriate to do so. For example, a pilot project is currently underway to develop a bike trail network in the Pineview area northwest of the Project. Additional initiatives to offset the loss of recreational uses may be considered over the course of the life of the Project, and will be identified in part with the development of an overall access management plan. An access management plan will be developed with stakeholders affected by Project activities to support continued use where appropriate. The access management plan will place public safety above all recreational or land use values, but will provide opportunities to allow for continued access to certain areas of the Project footprint, such as Jacko Lake. The access management plan will identify mechanisms to ensure effective and timely communication with potential users of the area.

Through these efforts, KAM hopes to support healthy living and health education for residents of the area.

## 2.8 APPLICABLE PERMITS

### 2.8.1 Permits and Approvals

Beyond the environmental assessment process, the Project will require multiple permits and approvals for construction, operation, and closure of the Project. The following summarizes the relevant legislation that serves as the basis for the identified applicable permits.

#### 2.8.1.1 *First Nations Consultation and Accommodation*

Before issuing authorizations for any project activity, the Province has a legal responsibility to consult and, where appropriate, accommodate First Nations with aboriginal interests in the proposed project area. The Province also has treaty-specific responsibilities where there are established treaty rights. The scope of each responsibility is project-specific.

Proponent-driven initiatives and committee activities can contribute to the consultation process through:

- First Nations participation as members of the Mine Review Committee (MRC);
- accommodation through recommendations leading to permit conditions;
- proponent outreach and information sharing;
- proponent – First Nation agreements;
- proponent initiatives to address non-technical issues raised by First Nations; and/or
- government – First Nations agreements.

Accommodation, where appropriate, can include a range of mitigation and environmental protection and management strategies developed by the committee, or through other forums, such as Level 4 work groups established through negotiated agreement between the Province and affected First Nations.

#### 2.8.1.2 *British Columbia Mines Act*

The BC *Mines Act* (1996e) require mining operations to carry out a program of environmental protection and reclamation to return, where practical, land, watercourses, and cultural heritage resources to a safe and environmentally sound state and to an acceptable end land use upon termination of mining.

The Act is administered by the Ministry of Energy and Mines (MEM). The Chief Inspector of Mines has authority for all permits and approvals under the *Mines Act* and the Code. Proponents of mining projects are required to obtain a permit from the MEM prior to commencing any work on a mine site, in accordance with section 10 of the *Mines Act* (1996e). Section 10 of the *Mines Act* requires that a permit application must include “a plan outlining the details of the proposed work and a program for the conservation of cultural heritage resources and for the protection and reclamation of the land, watercourses and cultural heritage resources affected by the mine, including the information, particulars and maps established by the regulations or the code” (Section 10.1). As a condition of

issuing a permit, the Chief Inspector may require a financial security for mine reclamation, and to provide for protection of, and mitigation of damage to, watercourses and cultural heritage resources affected by the mine (Section 10.4).

### 2.8.1.3 Water Act

In BC, ownership of water is vested in the Crown as stated in the *BC Water Act* (1996f). The Act is the principal law for managing the diversion and use of Provincial water resources. Under the Act, approvals are required for making changes in and about a stream, to authorize construction of works, and the diversion and use of water and water withdrawals. The Project surface water management system will be constructed, operated and closed in compliance with the *Water Act*.

### 2.8.1.4 Land Act and Transportation Act

The Ministry of Forests, Lands and Natural Resource Operations administers the *Land Act* (1996c) and is responsible for the sale, lease and license of Crown lands throughout BC. Tenure for the use of provincial Crown land for highway operations and construction, including the disposition of Crown land by lease, license of occupation, right-of-way and easement, is issued under the Act. Activities related to highway development that are often undertaken on Crown land include: geotechnical field investigations; construction of a temporary access road; establishment of a borrow pit or a quarry; and construction of a road or highway.

Section 48 of the *Transportation Act* (2004a) is used to designate some highways as “controlled access highways” and these are usually numbered routes and are intended to carry higher volumes of inter-regional traffic. The Ministry of Transportation and Infrastructure has developed a Controlled Access Strategy which applies along controlled access highways and in controlled areas. The intent of Controlled Access highways and Controlled Areas is to preserve a reasonable level of service to long-trip vehicles on the major highway and street system, and to enhance safety.

### 2.8.1.5 Environmental Management Act

The Ministry of Environment administers the *Environmental Management Act* (2003a) which prohibits the discharge of waste to the environment unless specifically authorized. While there are different types of authorizations issued under the Act, most mining operations require air emissions, solid refuse, and effluent discharge permits.

A permit is required to authorize the discharge of wastes from an industry, trade, business, operation, or activity to the environment, and sets the terms and conditions under which the discharge may occur so that pollution is prevented. The terms and conditions include limiting the quantity and quality of waste contaminants, monitoring the discharge and the receiving environment, and reporting information to the Ministry. Permits are ongoing authorizations and may be amended, transferred to other dischargers, suspended or cancelled.

### 2.8.1.6 Fisheries Act

The Fisheries and Oceans Canada (DFO) administers the *Fisheries Act* (1985b) and amendments to this legislation in 2012 established new Fisheries Protection Provisions which focus on the

management of threats to the sustainability and productivity of commercial, recreational and Aboriginal fisheries, or to fish that support such a fishery. Subsection 35(1) of the *Fisheries Act* prohibits the carrying on of a work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery or to fish that support such a fishery. However, under Paragraph 35(2)(b) of the *Fisheries Act*, the Minister of Fisheries and Oceans may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in serious harm to fish.

#### 2.8.1.7 Forest Act

The BC Ministry of Forests, Lands and Natural Resources is the principal government agency which regulates the use of BC's public forest, and administers the *Forest Act* (1996a). The Ministry's objective is to protect, manage, and conserve BC's diverse forest resources on an environmental, economically and socially sustainable basis.

Trees on Crown land may not be cut without a permit under the Act. An Occupant Licence to Cut is issued where a person has the legal right to occupy Crown Land through another form of Crown land tenure. As the other forms of *Land Act* (1996c) tenure do not provide the legal right to harvest the timber, a permit under the *Forest Act* is required.

#### 2.8.1.8 Mineral Tenure Act

The BC Ministry of Energy and Mines regulates the province's mineral rights through the *Mineral Tenure Act* (1996d). The *Mineral Tenure Act* is the primary statute that authorizes the registration of mineral tenures with the Province and provides the policy framework for the administration of mineral titles.

### 2.8.2 List of Permits and Approvals

In order to support the early stages of Construction activity, select permits under these legislative instruments will be prepared in parallel with the Application/EIS and submitted to government during the review of the Application/EIS. Table 2.8-1 summarizes these permits that would be needed over mine life. The list of required permits is preliminary and subject to change via discussions with regulatory agencies.

**Table 2.8-1. Permits Applicable to the Ajax Project**

Permit Required	Enabling Legislation	Applicable Project Component
<b>Regional/Local Permits</b>		
Development Permit (TNRD)	TNRD Bylaw 1449 Kamloops South OCP	Mine Site GA
Zoning Amendment or Variance		Mine Site GA
Development Permit (City of Kamloops)		Development of offsetting habitat in Inks Lake Riparian area
Zoning Amendment or variance		Explosives Manufacturing Facility area

(continued)

**Table 2.8-1. Permits Applicable to the Ajax Project (continued)**

Permit Required	Enabling Legislation	Applicable Project Component
<b>Provincial Permits</b>		
Mines Act Permit	Mines Act (1996e)	Authorization of Work System and Reclamation Program
Air Emissions Discharge Permit	Environmental Management Act (2003a)	Point sources of dust (e.g., rock transfer locations, conveyor systems), exhaust from the mill and mine, and exhaust from onsite laboratory facilities
Liquid Effluent Discharge Permit	Environmental Management Act (2003a)	Discharge of liquid effluent: tailings and sewage treatment plant discharges to TSF
Solid Waste Discharge	Environmental Management Act (2003a)	On-site inert and non-hazardous waste disposal
Fuel Storage Registration	Environmental Management Act (2003a) and Petroleum Storage and Distribution Facilities Storm Water Regulation (BC Reg. 168/94)	Fuel storage with >100,000 L stored per location
Sewage Registration Amendment	Environmental Management Act (2003a) and Municipal Wastewater Regulation (BC Reg. 87/2012)	Sewage treatment plant
Temporary Use/Works Permit	Land Act (1996c)	Temporary (short term) use of Crown land portions for construction of water pipeline, power line and fish habitat offsetting works
License of Occupation and Statutory Right-of-Way	Land Act (1996c)	Establishment and construction of the fresh water pipeline, access road and interchange, and power line
Special Use Permit	Forest Practices Code Act (1996i), Provincial Forest Use Regulation (BC Reg. 281/2009)	Authority to construct ramps for Inks Lake Interchange on Crown lands designated as Provincial forest lands outside the Mine site GA
Occupant Licence to Cut	Forest Act (1996a) Pursuant to Division 8.2 of the Forest Act	Tree clearing on Crown land surface tenure
Water Licenses	Water Act (1996f) and Water Regulation (BC Reg. 204/88) and Water Protection Act (1996g)	Infrastructure and facilities that store, use and/or divert surface water including: Water supply from Kamloops Lake; Replacement of Jacko Lake dyke; Peterson Creek diversion and Downstream Pond; Enlargement of Inks Lake to support fisheries offsetting plan
Changes in and about a stream	Section 9 of the Water Act (1996f) and Part 7 of the Water Regulation (BC Reg. 204/88)	Notifications may be required where the proposed access road or project utilities cross mapped streams
Access Permits	Transportation Act (2004a)	Construction of new MOTI access points including: Inks Lake Interchange, Lac Le Jeune Road/AMAR Intersection, Park and Ride facilities, Construction Parking Lot
Access and Works on MOTI Right-of-Way Permits	Transportation Act (2004a)	Utility crossings of MOTI Rights of Way including: Fresh water pipeline crossing Highway 5 and Lac Le Jeune Road, power line crossing Highway 5 and Highway 1 and Lac Le Jeune Road

(continued)

**Table 2.8-1. Permits Applicable to the Ajax Project (continued)**

Permit Required	Enabling Legislation	Applicable Project Component
<b>Provincial Permits (cont'd)</b>		
Road Closure Permit	<i>Transportation Act (2004a)</i>	Approval to close section of Goose Lake Road prior to construction and operation of tailings storage facility.
Mining Lease	<i>Mineral Tenure Act (1996d)</i>	Conversion of mineral claims that underlie the mine site general arrangement area; must include the areas of mineral production
Temporary Non-agricultural use of ALR	<i>Agriculture Land Commission Act</i>	Use of Project areas and linear corridors within the Agricultural Land Reserve including: Mine site general arrangement, fresh water pipeline RoW, access interchange site, access road corridor, and powerline RoWs
Permanent Non-agricultural use of ALR	<i>Agriculture Land Commission Act</i>	Area of Open Pit at mine closure that cannot be reclaimed for agricultural use
Fish Collection / Fish Salvage	<i>Fisheries Protection Act</i>	Fish salvage prior to diversion of Peterson Creek
Inspection Permit	<i>S 14. Heritage Conservation Act (1996b)</i>	Areas of archaeological importance throughout Project area; renewal when necessary
Site Alteration Permit	<i>S 12. Heritage Conservation Act (1996b)</i>	Alteration of an archaeological site for each site throughout Project area
Grazing Lease Amendment	<i>Land Act (1996c)</i>	Grazing areas associated with Sugarloaf Ranch as applicable
Waterworks Construction and Operations Permit	<i>Drinking Water Protection Act (2001)</i>	Potable water treatment and supply systems
Sewage Disposal (certification letter)	<i>Public Health Act (2008)</i>	Sewage treatment
Wildlife Handling	<i>Wildlife Act (1996h)</i>	If and as required for wildlife relocation
Hazardous Waste Registration Amendment	<i>Hazardous Waste Regulation (BC Reg. 63/88)</i>	Amendment of existing registration to produce, store, treat or recycle hazardous wastes
Noxious Weed Control Permit	<i>Integrated Pest Management Act (2003b)</i>	Recently disturbed lands within the Project area where invasive plants have vigorously established
<b>Federal Permits</b>		
<i>Fisheries Act Authorization (s. 35.2)</i>	<i>DFO Fisheries Act (1985c)</i>	Unavoidable serious harm to fish and fish habitat that support recreational and aboriginal fisheries associated with the impacts to the NE arm of Jacko Lake and diversion of Peterson Creek
Explosives Manufacturing License	<i>Explosives Act</i>	On site explosive manufacture
Explosives Magazine License	<i>Explosives Act</i>	Storage of explosive products
Radioisotope License	<i>Atomic Energy Control Act</i>	Nuclear density gauges and x-ray analysis in processing plant

(continued)

**Table 2.8-1. Permits Applicable to the Ajax Project (completed)**

Permit Required	Enabling Legislation	Applicable Project Component
<b>Federal Permits (cont'd)</b>		
<i>Navigation Protection Act</i> Approval	<i>Navigation Protection Act (1985e)</i>	Temporary dewatering and dredging of Inks Lake for fish habitat offsetting works; Dewatering a portion of Jacko lake for dam construction
Radio Licences	<i>Radio Communication Act (1985d)</i>	On-site radio communication system
Wildlife or vegetation handling	<i>Species at Risk Act (2002b)</i>	As applicable for wildlife salvage
Works in migratory bird habitat	<i>Migratory Birds Convention Act (1994)</i>	Migratory bird habitat displacement – wetlands

### 2.8.3 Permitting Process

Administration of provincial authorization processes will be facilitated by BC Ministry of Energy and Mines Major Mine Permitting Office (MMPO) and a project specific Mine Review Committee (MRC). Federal approvals are obtained separately in coordination with the CEA Agency MPMO. The MMPO (provincial) and MPMO (federal) have committed to work with KAM towards an efficient permit review process.

KAM has initiated discussions with the MMPO regarding permitting of the Project and establishment of the MRC. Once the MRC is established it will confirm the list of permitting requirements and develop a schedule for the submission, review, and issuance of permits. Options for the permitting phase include consideration either concurrently with the Application/EIS submission in accordance with the provisions of the BCEAA (2002a), Concurrent Approval Regulation (BC Reg. 371/2002) or using a synchronous permitting process under agreement with Provincial permitting agencies. In the latter, the applications would be submitted during review of the Application/EIS.

KAM intends to submit applications for provincial permits during the Application/EIS review under agreement with Provincial permitting agencies via a synchronous permitting process. Provincially, the *Mines Act* (Mine Construction, Operation, Closure and Reclamation), *Mineral Tenure Act* (Mining Lease), *Environmental Management Act* (waste discharges), *Water Act* (Water License, Water Diversion), *Land Act and Forest Act* (Transmission Line), *Transportation Act* (Highway connection) approvals represent the major permits needed to commence the construction and operation of the Project. Federally, approvals under the *Fisheries Act* (Jacko Lake dyke and Peterson Creek Diversion) and *Explosives Act* (Explosives Manufacture and Storage) represent the major permits needed to commence the construction and operation of the Project. KAM will continue discussions with the MMPO to establish the MRC and an agreement outlining a permitting schedule for Provincial permits and MPMO to coordinate federal authorization application review.

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